Chokecherry and Sierra Madre Wind Energy Project (WYW-167155) Right of Way Application

Road Rock Quarry

Prepared for:

U.S. Bureau of Land Management
Rawlins Field Office

Submitted by:

Power Company of Wyoming LLC

March 2014

Power Company of Wyoming LLC

STANDARD FORM 299 (05/2009)
Prescribed by DOI/USDA/DOT
P.L. 96-487 and Federal
Register Notice 5-22-95

APPLICATION FOR TRANSPORTATION AND UTILITY SYSTEMS AND FACILITIES ON FEDERAL LANDS

FORM APPROVED
OMB Control Number: 0596-0082
Expiration Date: 10/31/2012

FOR AGENCY USE ONLY

Application Number

Date Filed

NOTE: Before completing and filing the application, the applicant should completely review this package and schedule a preapplication meeting with representatives of the agency responsible for processing the application. Each agency may have specific and unique requirements to be met in preparing and processing the application. Many times, with the help of the agency representative, the application can be completed at the preapplication meeting.

1. Name and address of applicant (*include zip code*)	2. Name, title, and address of authorized agent if different from item 1 (*include zip code*)	3. Telephone (area code)
Power Company of Wyoming LLC 555 Seventeenth Street, Suite 2400 Denver, Colorado 80202	Garry L. Miller Vice President, Land and Environmental Affairs garry.miller@tac-denver.com	Applicant 303-298-1000 Authorized Agent 303-299-1546

4. As applicant are you? (*check one*)

a. ☐ Individual
b. ☐ Corporation*
c. ☒ Partnership/Association*
d. ☐ State Government/State Agency
e. ☐ Local Government
f. ☐ Federal Agency

* *If checked, complete supplemental page*

5. Specify what application is for: (*check one*)

a. ☐ New authorization
b. ☐ Renewing existing authorization No.
c. ☐ Amend existing authorization No.
d. ☐ Assign existing authorization No.
e. ☐ Existing use for which no authorization has been received *
f. ☒ Other*

* *If checked, provide details under item 7*

6. If an individual, or partnership are you a citizen(s) of the United States? ☒ Yes ☐ No

7. Project description (describe in detail): (a) Type of system or facility, (*e.g., canal, pipeline, road*); (b) related structures and facilities; (c) physical specifications (*Length, width, grading, etc.*); (d) term of years needed: (e) time of year of use or operation; (f) Volume or amount of product to be transported; (g) duration and timing of construction; and (h) temporary work areas needed for construction (*Attach additional sheets, if additional space is needed.*)

Power Company of Wyoming LLC (PCW or Applicant) is applying for a right-of-way grant (ROW) to construct, operate, maintain, and decommission the access road to the Road Rock Quarry (Quarry Road). The Road Rock Quarry is an element of the Chokecherry and Sierra Madre Wind Energy Project (CCSM Project), ROW Application No. WYW - 167155. The Road Rock Quarry is a surface rock quarry located on private land; however, a portion of Quarry Road crosses federal lands. The Road Rock Quarry and Quarry Road support construction of Phase I of the CCSM Project; thus a ROW grant is requested commencing with the CCSM Project Phase I construction for a term of 10 years or until the completion of construction of Phase I of the CCSM Project, whichever occurs first. Please refer to the attached site-specific plan of development (Attachment A) for further details and information concerning the Road Rock Quarry, including a map showing the location of the CCSM Project, the Road Rock Quarry, and Quarry Road.

8. Attach a map covering area and show location of project proposal

9. State or Local government approval: ☐ Attached ☒ Applied for ☐ Not Required

10. Nonreturnable application fee: ☒ Attached ☐ Not required

11. Does project cross international boundary or affect international waterways? ☐ Yes ☒ No (*if "yes," indicate on map*)

12. Give statement of your technical and financial capability to construct, operate, maintain, and terminate system for which authorization is being requested.

Power Company of Wyoming LLC is a limited liability company. PCW is a wholly owned subsidiary of The Anschutz Corporation (TAC). In turn, TAC is a 100% owned subsidiary of Anschutz Company (Anschutz), a privately held multi-billion dollar diversified company based in Denver, Colorado. The principal offices of PCW are located at 555 Seventeenth Street, Suite 2400, Denver, Colorado. PCW was formed to hold and develop certain electric generation assets for Anschutz. Please refer to Attachment A for further details and information.

13a. Describe other reasonable alternative routes and modes considered.

Please refer to Attachment A.

b. Why were these alternatives not selected?

Please refer to Attachment A.

c. Give explanation as t o why it is necessary to cross Federal Lands.

Please refer to Attachment A.

14. List authorizations and pending applications filed for similar projects which may provide information to the authorizing agency. *(Specify number, date, code, or name)*

Please refer to Attachment A.

15. Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal (construction, operation, and maintenance); (b) estimated cost of next best alternative; and (c) expected public benefits.

Please refer to Attachment A.

16. Describe probable effects on the population in the area, including the social and economic aspects, and the rural lifestyles.

Please refer to Attachment A.

17. Describe likely environmental effects that the proposed project will have on: (a) air quality; (b) visual impact; (c) surface and ground water quality and quantity; (d) the control or structural change on any stream or other body of water; (e) existing noise levels; and (f) the surface of the land, including vegetation, permafrost, soil, and soil stability.

Please refer to Attachment A.

18. Describe the probable effects that the proposed project will have on (a) populations of fish, plantlife, wildlife, and marine life, including threatened and endangered species; and (b) marine mammals, including hunting, capturing, collecting, or killing these animals.

Please refer to Attachment A.

19. State whether any hazardous material, as defined in this paragraph, will be used, produced, transported or stored on or within the right-of-way or any of the right-of-way facilities, or used in the construction, operation, maintenance or termination of the right-of-way or any of its facilities. "Hazardous material" means any substance, pollutant or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. 9601 et seq., and its regulations. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 42 U.S.C. 6901 et seq., and its regulations. The term hazardous materials also includes any nuclear or byproduct material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCIA Section 101(14), 42 U.S.C. 9601(14), nor does the term include natural gas.

Please refer to Attachment A.

20. Name all the Department(s)/Agency(ies) where this application is being filed.

Bureau of Land Management, Rawlins Field Office, 1300 North Third, Rawlins, WY 82301.

I HEREBY CERTIFY, That I am of legal age and authorized to do business in the State and that I have personally examined the information contained in the application and believe that the information submitted is correct to the best of my knowledge.

Signature of Applicant	Date
	09/11/2013

Title 18, U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction.

GENERAL INFORMATION
ALASKA NATIONAL INTEREST LANDS

This application will be used when applying for a right-of-way, permit, license, lease, or certificate for the use of Federal lands which lie within conservation system units and National Recreation or Conservation Areas as defined in the Alaska National Interest lands Conservation Act. Conservation system units include the National Park System, National Wildlife Refuge System, National Wild and Scenic Rivers System, National Trails System, National Wilderness Preservation System, and National Forest Monuments.

Transportation and utility systems and facility uses for which the application may be used are:

1. Canals, ditches, flumes, laterals, pipes, pipelines, tunnels, and other systems for the transportation of water.

2. Pipelines and other systems for the transportation of liquids other than water, including oil, natural gas, synthetic liquid and gaseous fuels, and any refined product produced therefrom.

3. Pipelines, slurry and emulsion systems, and conveyor belts for transportation of solid materials.

4. Systems for the transmission and distribution of electric energy.

5. Systems for transmission or reception of radio, television, telephone, telegraph, and other electronic signals, and other means of communications.

6. Improved right-of-way for snow machines, air cushion vehicles, and all-terrain vehicles.

7. Roads, highways, railroads, tunnels, tramways, airports, landing strips, docks, and other systems of general transportation.

This application must be filed simultaneously with each Federal department or agency requiring authorization to establish and operate your proposal.

In Alaska, the following agencies will help the applicant file an application and identify the other agencies the applicant should contact and possibly file with:

Department of Agriculture
Regional Forester, Forest Service (USFS)
Federal Office Building,
P.O. Box 21628
Juneau, Alaska 99802-1628
Telephone: (907) 586-7847 *(or a local Forest Service Office)*

Department of the Interior
Bureau of Indian Affairs (BIA)
Juneau Area Office
Federal Building Annex
9109 Mendenhall Mall Road, Suite 5
Juneau, Alaska 99802
Telephone: (907) 586-7177

Department of the Interior
Bureau of Land Management
222 West 7th Avenue
P.O. Box 13
Anchorage, Alaska 99513-7599
Telephone: (907) 271-5477 (or a local BLM Office)

U.S. Fish & Wildlife Service (FWS)
Office of the Regional Director
1011 East Tudor Road
Anchorage, Alaska 99503
Telephone: (907) 786-3440

National Park Service (NPA)
Alaska Regional Office, 2225
Gambell St., Rm. 107
Anchorage, Alaska 99502-2892
Telephone: (907) 786-3440

Note - Filings with any Interior agency may be filed with any office noted above or with the Office of the Secretary of the Interior, Regional Environmental Office, P.O. Box 120, 1675 C Street, Anchorage, Alaska 9513.

Department of Transportation
Federal Aviation Administration
Alaska Region AAL-4, 222 West 7th Ave., Box 14
Anchorage, Alaska 99513-7587
Telephone: (907) 271-5285

NOTE - The Department of Transportation has established the above central filing point for agencies within that Department. Affected agencies are: Federal Aviation Administration (FAA), Coast Guard (USCG), Federal Highway Administration (FHWA), Federal Railroad Administration (FRA).

OTHER THAN ALASKA NATIONAL INTEREST LANDS

Use of this form is not limited to National Interest Conservation Lands of Alaska.

Individual department/agencies may authorize the use of this form by applicants for transportation and utility systems and facilities on other Federal lands outside those areas described above.

For proposals located outside of Alaska, applications will be filed at the local agency office or at a location specified by the responsible Federal agency.

SPECIFIC INSTRUCTIONS
(Items not listed are self-explanatory)

7 Attach preliminary site and facility construction plans. The responsible agency will provide instructions whenever specific plans are required.

8 Generally, the map must show the section(s), township(s), and range(s) within which the project is to be located. Show the proposed location of the project on the map as accurately as possible. Some agencies require detailed survey maps. The responsible agency will provide additional instructions.

9 , 10, and 12 The responsible agency will provide additional instructions.

13 Providing information on alternate routes and modes in as much detail as possible, discussing why certain routes or modes were rejected and why it is necessary to cross Federal lands will assist the agency(ies) in processing your application and reaching a final decision. Include only reasonable alternate routes and modes as related to current technology and economics.

14 The responsible agency will provide instructions.

15 Generally, a simple statement of the purpose of the proposal will be sufficient. However, major proposals located in critical or sensitive areas may require a full analysis with additional specific information. The responsible agency will provide additional instructions.

16 through 19 Providing this information is as much detail as possible will assist the Federal agency(ies) in processing the application and reaching a decision. When completing these items, you should use a sound judgment in furnishing relevant information. For example, if the project is not near a stream or other body of water, do not address this subject. The responsible agency will provide additional instructions.

Application must be signed by the applicant or applicant's authorized representative.

EFFECT OF NOT PROVIDING INFORMATION: Disclosure of the information is voluntary. If all the information is not provided, the application may be rejected.

DATA COLLECTION STATEMENT

The Federal agencies collect this information from applicants requesting right-of-way, permit, license, lease, or certification for the use of Federal lands. The Federal agencies use this information to evaluate the applicant's proposal. The public is obligated to submit this form if they wish to obtain permission to use Federal lands.

SUPPLEMENTAL		
NOTE: The responsible agency(ies) will provide instructions	CHECK APPROPRIATE BLOCK	
I - PRIVATE CORPORATIONS	ATTACHED	FILED*
a. Articles of Incorporation	☐	☐
b. Corporation Bylaws	☐	☐
c. A certification from the State showing the corporation is in good standing and is entitled to operate within the State	☐	☐
d Copy of resolution authorizing filing	☐	☐
e. The name and address of each shareholder owning 3 percent or more of the shares, together with the number and percentage of any class of voting shares of the entity which such shareholder is authorized to vote and the name and address of each affiliate of the entity together with, in the case of an affiliate controlled by the entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that entity owned, directly or indirectly, by the affiliate.	☐	☐
f. If application is for an oil or gas pipeline, describe any related right- of-way or temporary use permit applications, and identify previous applications.	☐	☐
g. If application is for an oil and gas pipeline, identify all Federal lands by agency impacted by proposal.	☐	☐
II - PUBLIC CORPORATIONS		
a. Copy of law forming corporation	☐	☐
b. Proof of organization	☐	☐
c. Copy of Bylaws	☐	☐
d. Copy of resolution authorizing filing	☐	☐
e. If application is for an oil or gas pipeline, provide information required by item "I - f" and "I - g" above.	☐	☐
III - PARTNERSHIP OR OTHER UNINCORPORATED ENTITY		
a. Articles of association, if any	☐	☒
b. If one partner is authorized to sign, resolution authorizing action is	☐	☒
c. Name and address of each participant, partner, association, or other	☐	☒
d. If application is for an oil or gas pipeline, provide information required by item "I - f" and "I - g" above.	☐	☐

*If the required information is already filed with the agency processing this application and is current, check block entitled "Filed." Provide the file identification information *(e.g., number, date, code, name)*. If not on file or current, attach the requested information.

NOTICES

Note: This applies to the Department of Agriculture/Forest Service (FS)

This information is needed by the Forest Service to evaluate the requests to use National Forest System lands and manage those lands to protect natural resources, administer the use, and ensure public health and safety. This information is required to obtain or retain a benefit. The authority for that requirement is provided by the Organic Act of 1897 and the Federal Land Policy and Management Act of 1976, which authorize the secretary of Agriculture to promulgate rules and regulations for authorizing and managing National Forest System lands. These statutes, along with the Term Permit Act, National Forest Ski Area Permit Act, Granger-Thye Act, Mineral Leasing Act, Alaska Term Permit Act, Act of September 3, 1954, Wilderness Act, National Forest Roads and Trails Act, Act of November 16, 1973, Archeological Resources Protection Act, and Alaska National Interest Lands Conservation Act, authorize the Secretary of Agriculture to issue authorizations or the use and occupancy of National Forest System lands. The Secretary of Agriculture's regulations at 36 CFR Part 251, Subpart B, establish procedures for issuing those authorizations.

BURDEN AND NONDISCRIMINATION STATEMENTS

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082. The time required to complete this information collection is estimated to average 8 hours hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW, Washington, DC 20250-9410 or call toll free (866) 632-9992 (voice). TDD users can contact USDA through local relay or the Federal relay at (800) 877-8339 (TDD) or (866) 377-8642 (relay voice). USDA is an equal opportunity provider and employer.

The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service.

APPLICATION FOR TRANSPORTATION AND UTILITY SYSTEMS AND FACILITIES ON FEDERAL LANDS

Standard Form 299

Chokecherry and Sierra Madre Wind Energy Project

Road Rock Quarry

ATTACHMENT A

Submitted By:
Power Company of Wyoming LLC
555 Seventeenth Street, Suite 2400
Denver, Colorado 80202

Submitted To:
Bureau of Land Management
Rawlins Field Office
1300 N. Third
Rawlins, Wyoming 82301

Road Rock Quarry
Site-Specific Plan of Development

Prepared for:
US Bureau of Land Management, Rawlins Field Office

Submitted by:
Power Company of Wyoming LLC

March 24, 2014

Table of Contents

1 Introduction 1-1

2 CCSM Project Overview 2-1
2.1 CCSM Project Location 2-2
2.2 PCW's Objectives for the CCSM Project 2-3
2.3 Federal Approvals 2-4

3 Quarry Overview 3-1
3.1 Quarry Location 3-1
3.2 PCW's Objectives for the Quarry 3-3
3.3 Necessary Approvals 3-4

4 Quarry Execution and Resource Use 4-1
4.1 Construction Schedule 4-1
4.2 Labor 4-4
4.3 Equipment 4-9
4.4 Material 4-10
4.5 Water 4-12
4.6 Surface Disturbance 4-14

5 Quarry Design 5-1
5.1 Design Requirements 5-1
5.1.1 CCSM Project 5-1
5.1.2 Quarry Location Selection 5-4
5.1.3 Wyoming Department of Environmental Quality 5-4
5.2 Design Overview 5-5
5.3 Quarry Components 5-9
5.3.1 Quarry Road 5-10
5.3.2 Excavation Area 5-11
5.3.3 Northern Operations Area 5-13
5.3.4 Southern Operations Area 5-14
5.3.5 Soil Storage and Erosion Control 5-15

6 Quarry Construction, Operations and Maintenance 6-1
6.1 Schedule 6-1
6.2 Workforce 6-2
6.3 Access 6-2
6.4 Equipment 6-4
6.5 Material and Components 6-5
6.6 Material and Component Deliveries 6-5
6.7 Communications 6-5
6.8 Mobilization and Demobilization 6-6
6.9 Construction Activities 6-6

6.9.1 Site Preparation 6-7
6.9.2 Operations Areas 6-7
6.9.3 Roads 6-8
6.10 Operations and Maintenance Activities 6-11
6.10.1 Material Extraction 6-12
6.10.2 Aggregate Crushing and Stockpiling 6-12
6.10.3 Loading and Transportation 6-13

7 Decommissioning 7-1
7.1 Pre-Decommissioning 7-1
7.2 Workforce 7-1
7.3 Equipment 7-1
7.4 Material and Components 7-1
7.5 Communications 7-2
7.6 Decommissioning Activities 7-2
7.6.1 Mobilization and Demobilization 7-2
7.6.2 Temporary Facilities 7-2
7.6.3 Roads 7-3
7.6.4 Operations Areas 7-3
7.6.5 Excavation Area 7-3

8 Environmental Resources 8-1
8.1 Land Use 8-1
8.2 Air Quality 8-1
8.3 Soils 8-2
8.4 Vegetation 8-3
8.4.1 Wyoming Big Sagebrush Communities 8-4
8.4.2 Basin Big Sagebrush Communities 8-5
8.4.3 Bluebunch Wheatgrass Communities 8-6
8.5 Water Resources 8-7
8.5.1 Watershed 8-8
8.5.2 Wetlands 8-11
8.5.3 Water Usage 8-11
8.5.4 Water Supply 8-11
8.6 Range Resources 8-13
8.7 Reclamation 8-14
8.8 Wildlife 8-15
8.8.1 Big Game 8-16
8.8.2 Small Game and Furbearers 8-16
8.8.3 Migratory and Breeding Bird Species 8-16
8.8.4 Fisheries 8-17
8.9 Special Status Species 8-17
8.9.1 Avian Species 8-18

8.9.2 White-tailed Prairie Dog 8-20
8.9.3 Pygmy Rabbit 8-20
8.9.4 Wyoming Pocket Gopher 8-20
8.9.5 Amphibians and Reptiles 8-20
8.9.6 Rare Plants 8-22
8.10 Cultural Resources 8-22
8.11 Paleontological Resources 8-23
8.12 Visual Resources 8-23
8.13 Waste 8-24
9 Health and Safety 9-1
9.1 Blasting and Explosive Safety 9-2
10 References 10-1

List of Appendices

Appendix A. Environmental Constraints and Measures
Appendix B. Road Rock Quarry Issued for Permit Plans
Appendix C. CCSM Project Road Design Manual
Appendix D. Transportation Management Plan
Appendix E. Winter Access Plan
Appendix F. Environmental and Construction Compliance Monitoring Plan
Appendix G. Dust Control Plan
Appendix H. Erosion Control Plan
Appendix I. Storm Water Pollution Prevention Plan
Appendix J. Weed Management Plan
Appendix K. Aquatic Resource Inventory
Appendix L. Reclamation Plan
Appendix M. Avian Resource Report
Appendix N. Wildlife Survey Report
Appendix O. Rare Plant Report
Appendix P. Waste Management Plan
Appendix Q. Spill Prevention Control and Countermeasures Plan
Appendix R. Health and Safety Plan

List of Figures

Figure 2-1 CCSM Project Area 2-2
Figure 2-2 CCSM Project Site and Land Ownership 2-3
Figure 3-1. Quarry Location 3-2
Figure 3-2. Quarry Site Land Ownership 3-3
Figure 4-1. CCSM Project Construction Workforce 4-5

Figure 4-2. CCSM Project Operations Workforce 4-7
Figure 4-3. CCSM Project Decommissioning Workforce 4-8
Figure 4-4. Peak Equipment During Construction 4-10
Figure 4-5. Estimate of Aggregate Required During CCSM Project Construction 4-12
Figure 4-6. Water Use Estimate During Construction 4-14
Figure 4-7. Surface Disturbance 4-16
Figure 5-1 Quarry Components 5-10
Figure 5-2 Representative Profile of Excavation Area 5-12
Figure 5-3 Northern Operations Area 5-13
Figure 5-4 Southern Operations Area 5-15
Figure 6-1 Quarry Site Access 6-3
Figure 6-2 Typical Screener (left) and Rock Crusher (right) 6-5
Figure 6-3 Typical Wheel Loader (left) and Excavator (right) 6-5
Figure 6-4. Typical Clearing and Grading 6-7
Figure 6-5. Typical Culvert Installation 6-9
Figure 6-6. Road Subgrade Soil Compaction 6-9
Figure 6-7. Geotextile Fabric Installation 6-10
Figure 6-8. Geogrid Installation 6-10
Figure 6-9. Aggregate Placement 6-11
Figure 6-10. Aggregate Loading 6-13
Figure 7-1. Anticipated Post-Decommissioning Excavation Area Contour 7-4

List of Tables

Table 4-1. CCSM Phase I Construction Schedule 4-2
Table 4-2. CCSM Project Construction Workforce Breakdown 4-4
Table 4-3. CCSM Project Operations Workforce Buildup 4-6
Table 4-4 CCSM Project Decommissioning Workforce Estimate 4-8
Table 4-5. Peak Construction Equipment Estimate 4-9
Table 4-6. Estimate of CCSM Project Construction Aggregate Requirements 4-11
Table 4-7. CCSM Project Construction Water Use Estimate 4-13
Table 4-8. Disturbance Estimate 4-15
Table 5-1 CCSM Project Construction Material Requirements 5-2
Table 5-2. Rock Groups and Associated Uses 5-5
Table 5-3. Location and Quantity of Rock Groups Within Quarry Excavation Area 5-6
Table 5-4. Quarry Material Anticipated Use for CCSM Project Construction 5-7
Table 5-5. Anticipated Quarry Material Amounts by Year (CY) 5-8
Table 5-6. Quarry Facility Components 5-9
Table 6-1. Quarry Schedule 6-1
Table 6-2. Quarry Workforce Estimate 6-2
Table 6-3 Construction Equipment Breakdown 6-4
Table 8-1. Disturbance by Land Ownership 8-1

Table 8-2. Summary of the vegetation communities within the Quarry Site 8-4
Table 8-3 Quarry Disturbance by Sub-Watershed 8-9
Table 8-4. Quarry Water Supply Sources 8-13
Table 8-5. Temporary and long-term disturbance in ecological sites for the Quarry Site 8-15
Table 8-6. Nests in Proximity to the Quarry Site 8-21

Acronyms and Abbreviations

ac	acre or acres
ac-ft	acre-feet
BA	Biological Assessment
BLM	Bureau of Land Management
BO	Biological Opinion
CCSM Phase I	Phase I of the CCSM Project
CCSM Phase II	Phase II of the CCSM Project
CCSM Project	Chokecherry and Sierra Madre Wind Energy Project
cy	cubic yard
EIA	Energy Information Administration
EIS	Environmental Impact Statement
ESA	Endangered Species Act
ft	feet or foot
H:V	Horizontal to vertical ratio
MW	megawatt or megawatts
NEPA	National Environmental Policy Act
NRHP	National Register for Historic Places
PCW	Power Company of Wyoming LLC
PFYC	potential fossil yield classification
Rail Facility	West Sinclair Rail Facility
Ranch	Overland Trail Ranch
RFO	Rawlins Field Office
RMP	Resource Management Plan
ROD	Record of Decision

ROW	right-of-way
SPCC Plan	Spill Prevention, Control, and Countermeasures Plan
SSS	special status species
SWCA	SWCA Environmental Consultants
SWPP Plan	Storm Water Pollution Prevention Plan
TOTCO	The Overland Trail Cattle Company LLC
USFWS	U.S. Fish and Wildlife Service
WGFD	Wyoming Game and Fish Department
WYDEQ	Wyoming Department of Environmental Quality
WYDEQ-LQD	Wyoming Department of Environmental Quality - Land Quality Division
WYDOT	Wyoming Department of Transportation

1 Introduction

Power Company of Wyoming LLC (PCW) proposes to develop the Road Rock Quarry (Quarry) on private lands located approximately two (2) miles south of Rawlins, Wyoming in Carbon County. The Quarry is located within the bounds of the Overland Trail Ranch (Ranch), which is owned and operated by PCW affiliate, The Overland Trail Cattle Company LLC (TOTCO). TOTCO and PCW have reached an agreement in principal to lease the Quarry and are presently finalizing terms and conditions. The Quarry involves surface rock (open cut) mining and processing of sandstones and shales of the Mesaverde Group. Material mined from the Quarry will be used for road construction, construction fill, site grading, and other similar uses for Phase I of the Chokecherry and Sierra Madre Wind Energy Project (CCSM Project).

The Quarry will be accessed by crossing federal lands under the administration of the Bureau of Land Management (BLM), Rawlins Field Office (RFO). Therefore, pursuant to the SF-299, submitted herewith, PCW requests a right-of-way (ROW) grant from the BLM for access to the Quarry across federal lands. The requested ROW grant for access to the Quarry is for a term of 10 years or the completion of construction of Phase I of the CCSM Project, whichever occurs first, with the option to renew the ROW grant subject to BLM's approval.

2 CCSM Project Overview

PCW proposes to construct, operate, maintain, and decommission the CCSM Project, located in Carbon County, Wyoming. The CCSM Project consists of up to 1,000 wind turbines capable of generating approximately 2,000 to 3,000 megawatts (MW) of clean, renewable wind energy. The CCSM Project has a proposed life of 30 years after which, subject to market conditions, the CCSM Project may be repowered as necessary to continue its operations. The CCSM Project will provide enough electricity to power more than 790,000 households, resulting in a reduction in CO_2 emissions of 7 to 11 million tons per year.[1]

The CCSM Project is located south of the city of Rawlins, primarily within the bounds of the Ranch, as shown on Figure 2-1. The Ranch is owned and operated by PCW affiliate, TOTCO. The Ranch is situated within an area of alternating sections of private and federal lands commonly referred to as the "checkerboard." The vast majority of the private lands are owned by TOTCO, and the federal lands are administered by the BLM RFO. A small percentage of the land within the Ranch is owned by the State of Wyoming and is administered by the State Land Board of Land Commissioners. Finally, Anadarko Land Corporation owns some sections located on the periphery of the northwest boundary of the Ranch.

PCW has control of the lands necessary to develop the CCSM Project. PCW has an easement from TOTCO for development of the CCSM Project on TOTCO's private land and a lease from TOTCO for operation of the Quarry. PCW and Anadarko have executed an agreement relating to Anadarko lands where the West Sinclair Rail Facility (Rail Facility) will be located. PCW has a special use lease from the State of Wyoming, Board of Land Commissioners to use certain state lands for the CCSM Project. PCW has also received a Conditional Use Permit from Carbon County for the construction, operation, maintenance, and decommissioning of the CCSM Project.

In 2008, PCW applied to BLM for ROW grants to construct, operate, maintain, and decommission the CCSM Project on federal lands within the CCSM Project Area (Figure 2-1). On June 29, 2012, the Notice of Availability for the Final Environmental Impact Statement (EIS) concerning the CCSM Project was published in the Federal Register (77 FR 63328). On October 9, 2012 the Secretary of the Interior signed the Record of Decision (ROD). In the ROD, BLM determined that over 200,000 acres within the CCSM Project Area are suitable for wind energy development subject to the requirements described under the Selected Alternative in the ROD.

Prior to issuing ROW grants, BLM committed to conduct subsequent environmental analysis of site-specific plans of development submitted by PCW. The site-specific plans of development

[1] This estimate assumes that wind generation is displacing traditional coal generation and that coal generation produces average emissions of 1,050 tons of CO_2 per gigawatt-hour (GWh) (EIA 2011, Tables A8 and A18).

submitted by PCW will be screened against the analysis conducted in the EIS and the requirements of the ROD. PCW anticipates submitting five (5) site-specific plans of development to BLM for various components of the CCSM Project.

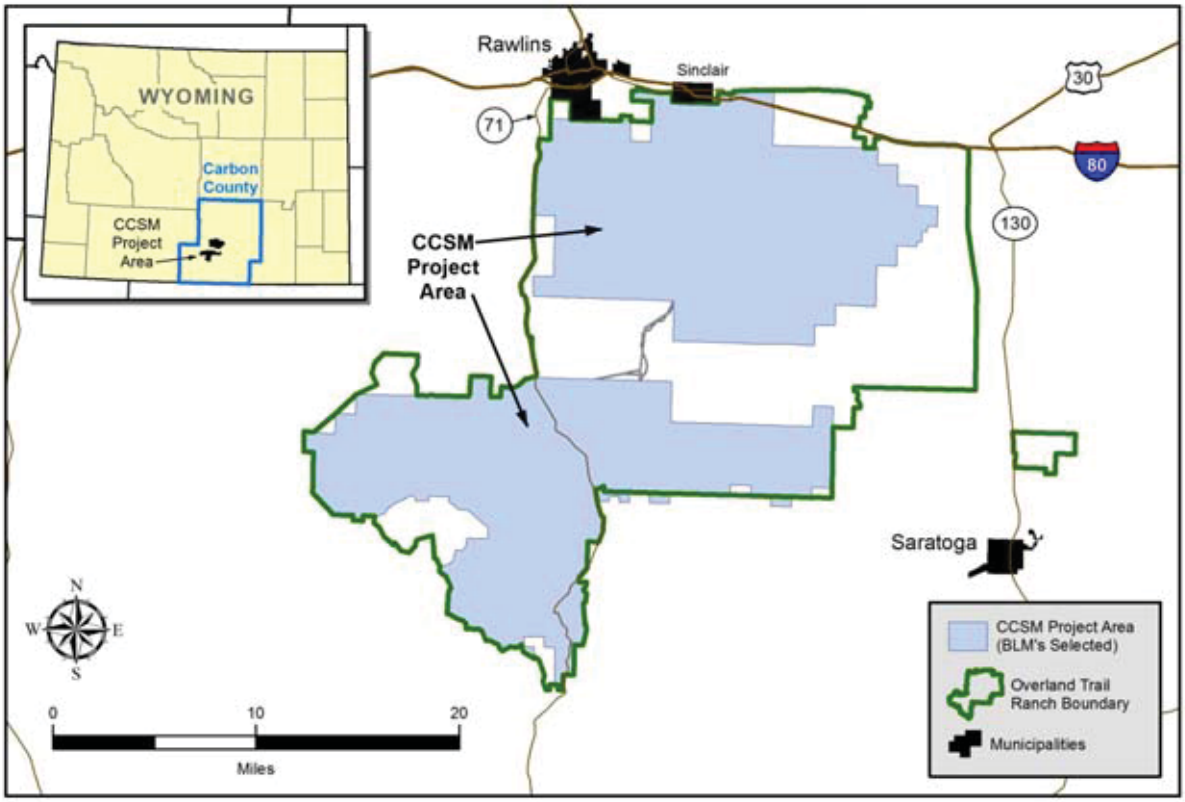

Figure 2-1 CCSM Project Area

2.1 CCSM Project Location

Figure 2-2 shows the CCSM Project Site and land ownership. As shown on Figure 2-2, the CCSM Project Site is the CCSM Project Area expressly:

(1) excluding any part of the designated greater sage-grouse core areas (Order 2011-5, Attachment A, Sage-Grouse Core Breeding Areas Version 3);
(2) excluding any part of the Red-Rim Grizzly Wildlife Habitat Management Area identified by BLM in the ROD for the CCSM Project signed October 9, 2012 (BLM 2012b);
(3) including portions of Sections 25 and 36 of Township 21 N, Range 87 W of the 6th P.M, Carbon County, Wyoming where the West Sincalir Rail Facility Site will be located;
(4) including portions of Section 3, Township 18N, Range 88W of the 6th P.M, Carbon County, Wyoming within the County Road 505W right-of-way where a water line is located; and
(5) including portions of Sections 25 and 36, Township 19N, Range 87W of the 6th P.M, Carbon County, Wyoming to accommodate the final alignment of the Haul Road.

Consistent with the ROD, the CCSM Project Site includes off-site access on 460 acres and two (2) wind turbine development areas: "Chokecherry" is the northern wind development area and "Sierra Madre" is the southern wind development area. PCW will install wind turbines only within the two (2) wind development areas and not elsewhere within the CCSM Project Site.

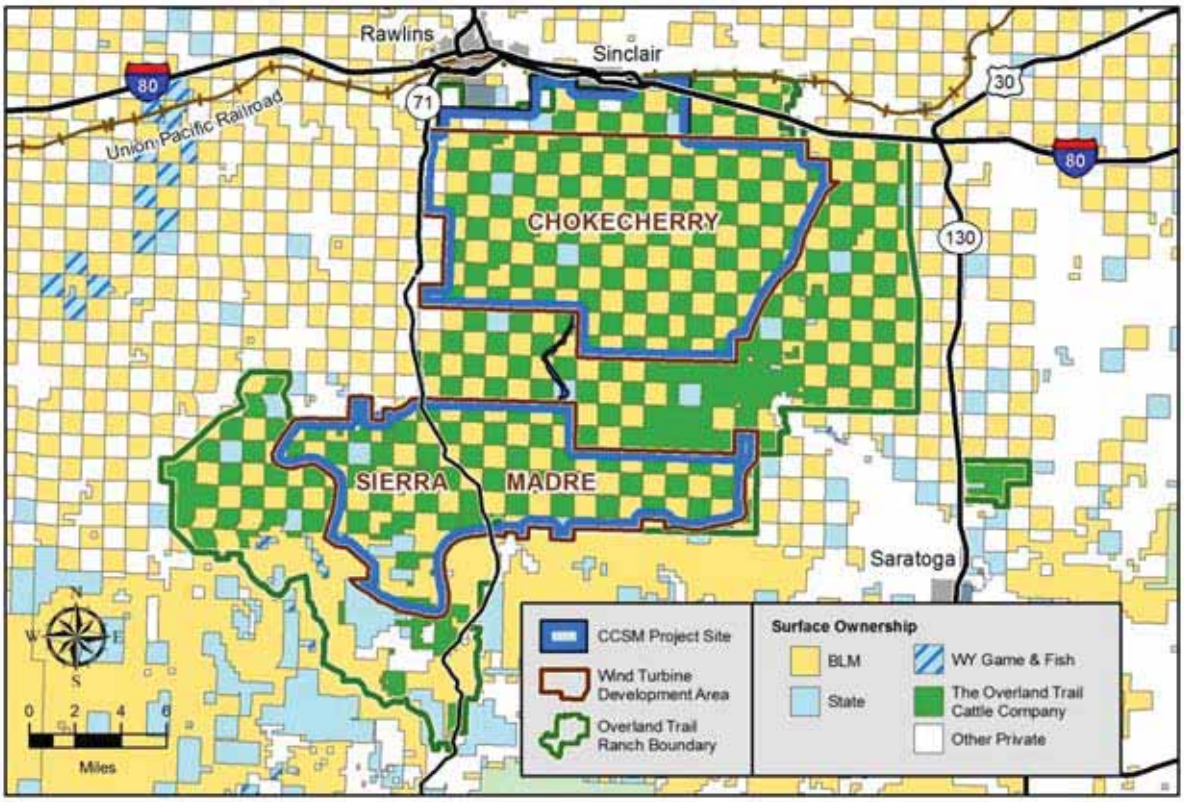

Figure 2-2 CCSM Project Site and Land Ownership

2.2 PCW's Objectives for the CCSM Project

PCW is developing the CCSM Project to help fulfill the projected need for power from renewable energy resources in the Desert Southwest market at competitive rates. There is a strong market for the CCSM Project's wind energy due to state mandates in California, Nevada, and Arizona to use renewable energy (Renewable Portfolio Standards or RPS) and due to the growing recognition that there are numerous benefits to using geographically diverse renewable resources – such as smoothing out grid operations and lower electricity rates. The CCSM Project is uniquely aligned to serve this demand because of the CCSM Project Site's exceptional wind resources – the best onshore winds in the nation. This wind power potential was modeled by AWS Truewind Solutions (2008) and validated by the U.S. Department of Energy's National Renewable Energy Laboratory as Class 5 (excellent), Class 6 (outstanding), or Class 7 (superb).

PCW has determined that the optimum project consists of 1,000 wind turbines with an installed capacity of between 2,000 MW and 3,000 MW that will extract the maximum potential from the wind energy on the CCSM Project Site. Developing the areas with the highest wind resource first, and constructing the CCSM Project on an optimized schedule also directly affect economics. The CCSM Project is designed to achieve a balance between renewable energy demands, economics, and environmental sensitivities.

PCW's objectives for the CCSM Project are:

1. Extracting the maximum potential wind energy from the site;
2. Developing a 1,000 wind turbine project with an installed capacity of between 2,000 MW and 3,000 MW;
3. Developing the highest wind energy potential areas first; and
4. Constructing the CCSM Project as rapidly as possible on an optimized schedule.

Each element of PCW's objectives is described in detail in the Plan of Development for the CCSM Project (PCW 2012). BLM determined in the ROD that over 200,000 acres of the CCSM Project Area are suitable for wind energy development and that the Selected Alternative meets BLM's purpose and need and takes into account PCW's objectives (BLM 2012a).

2.3 Federal Approvals

In 2008, PCW applied to BLM for ROW grants to construct, operate, maintain, and decommission the CCSM Project on federal lands within the CCSM Project Area. Over the next four (4) years, BLM conducted extensive public scoping, performed numerous studies and surveys, analyzed multiple alternatives and prepared a Draft EIS for the CCSM Project, which was published for public comment on July 22, 2011. BLM took the next year to review and incorporate public comments on the Draft EIS and further refine its analysis. On June 29, 2012, the Notice of Availability for the Final EIS concerning the CCSM Project was published in the Federal Register (77 FR 63328). On October 9, 2012, the Secretary of the Interior signed the ROD for the CCSM Project. In the ROD, BLM determined that 219,707 acres are suitable for wind energy development and associated facilities on federal lands - consisting of the 109,086 acre Chokecherry site and the 110,161 acre Sierra Madre site and off-site access on 460 acres - subject to the requirements as described under the Selected Alternative in the ROD.

Prior to issuing ROW grants, BLM will conduct subsequent environmental analysis of site-specific plans of development submitted by PCW. The site-specific plans of development will be screened against the analysis conducted in the EIS and the requirements described under the Selected Alternative in the ROD. Then, prior to issuing ROW grants, BLM will conduct the appropriate level of additional environmental analyses tiering to the EIS and decisions outlined in the ROD. Future siting of wind turbine generators and associated site-specific plans of developments will be submitted consistent with the strategy adopted in the ROD. See Appendix C of the ROD, which contains a detailed description and flow chart regarding the National Environmental Policy Act (NEPA) tiering procedure to be used.

The timing and order of the submission of the site-specific plans of development to BLM will align with PCW's plan to develop the CCSM Project in two (2) phases. Phase I requires the installation of a nameplate capacity of at least 1,500 MW of wind energy generation facilities (approximately 500 turbines). Construction of Phase I of the CCSM Project (CCSM Phase I) is anticipated to begin in the second half of 2014. Completion of construction and commencement of commercial operation of CCSM Phase I is anticipated for 2017. Phase II of the CCSM Project (CCSM Phase II), consisting of development of the remainder of the CCSM Project, is anticipated to follow completion of Phase I.

PCW anticipates submitting five (5) site-specific plans of development, consisting of the following:

1. Phase I Haul Road and Facilities
2. West Sinclair Rail Facility
3. Road Rock Quarry
4. Phase I Wind Development[2]
5. Phase II Wind Development (including Phase II Haul Road and Facilities)

Each site-specific plan of development will contain engineering and natural resource data describing site-specific conditions and activities in the detail necessary to allow BLM to evaluate and analyze site-specific impacts. Although the Quarry was not specifically analyzed in the EIS, PCW is submitting the site-specific plan for the Quarry to BLM, because of: (1) PCW's request for a ROW for access to the Quarry; and (2) its stated purpose to supply base aggregate and fill material for construction of Phase I of the CCSM Project.

[2] If required by BLM, the Phase I and Phase II Wind Development site-specific plans of development may be divided by wind development area (i.e. Chokecherry and Sierra Madre) to create a total of seven (7) site-specific plans of development.

3 Quarry Overview

This site-specific plan of development addresses the Quarry construction, operation, maintenance, and decommissioning activities necessary to support CCSM Phase I. If suitable material remains after completion of CCSM Phase I construction, the Quarry may be expanded to support CCSM Phase II. At that time, PCW will seek all necessary federal, state and local approvals for Phase II of the Quarry.

3.1 Quarry Location

The Quarry Site is located in Carbon County, Wyoming, approximately two (2) miles south of Rawlins in Sections 1 through 5, Township 20 North, Range 87 West and Section 34, Township 21 North, Range 87 West (Figure 3-1). The Quarry Site is an existing quarry that has been operated intermittently over the last one-hundred years. Commercial quarrying last occurred in the 1960s and private quarrying has continued periodically since.

The Quarry Facilities are located entirely on private land, while the access road to the Quarry (Quarry Road) crosses both federal and private land. PCW has entered into a lease with TOTCO for the rights to mine the Quarry. The initial disturbance for the Quarry is anticipated to be 183.5 acres; 158.8 acres of the disturbance will be on private land, including the Quarry Facilities and portions of Quarry Road, and 24.7 acres of the disturbance will be on federal land, limited to Quarry Road. The land ownership in the vicinity of the Quarry is shown on Figure 3-2.

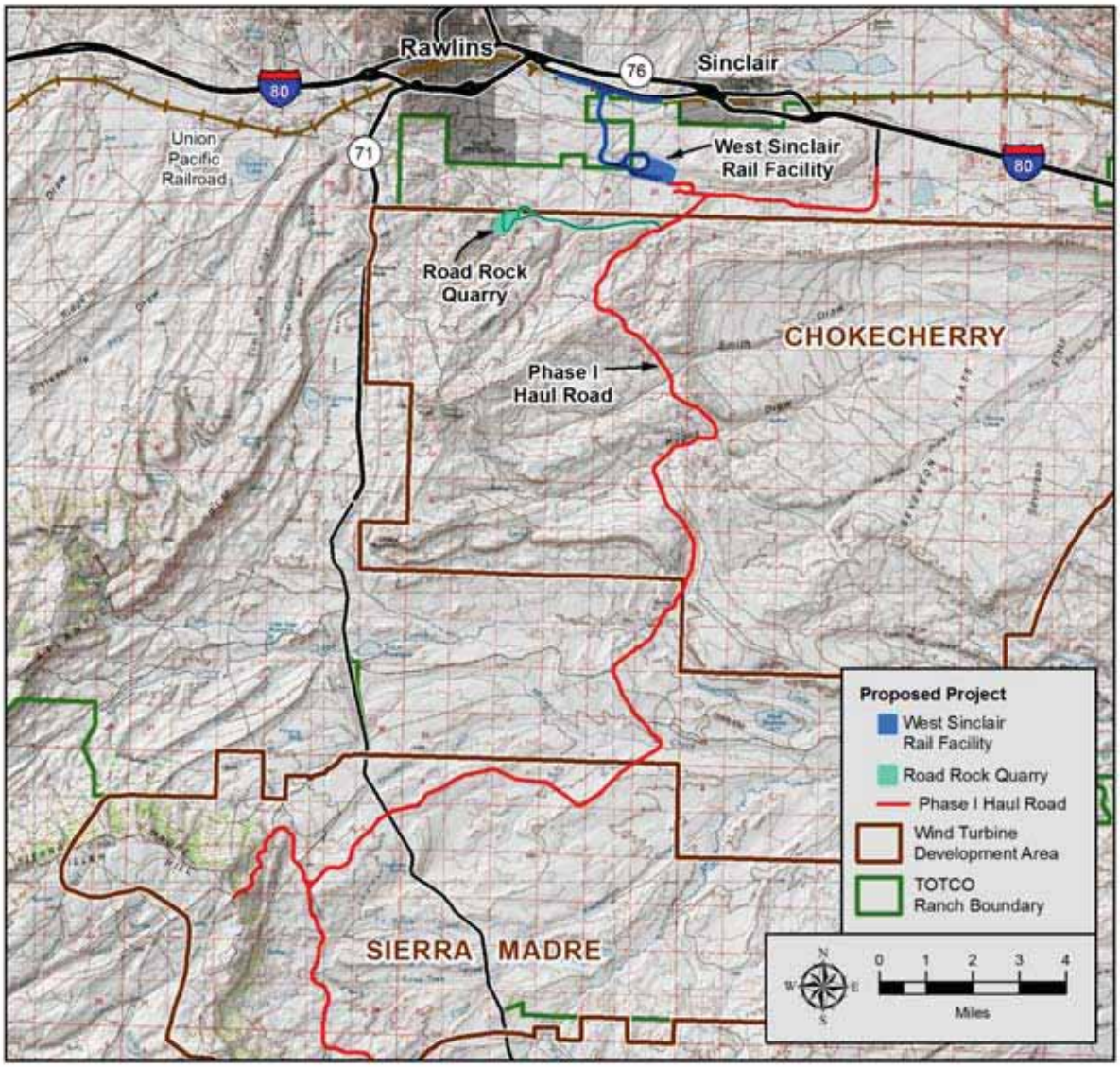

Figure 3-1. Quarry Location

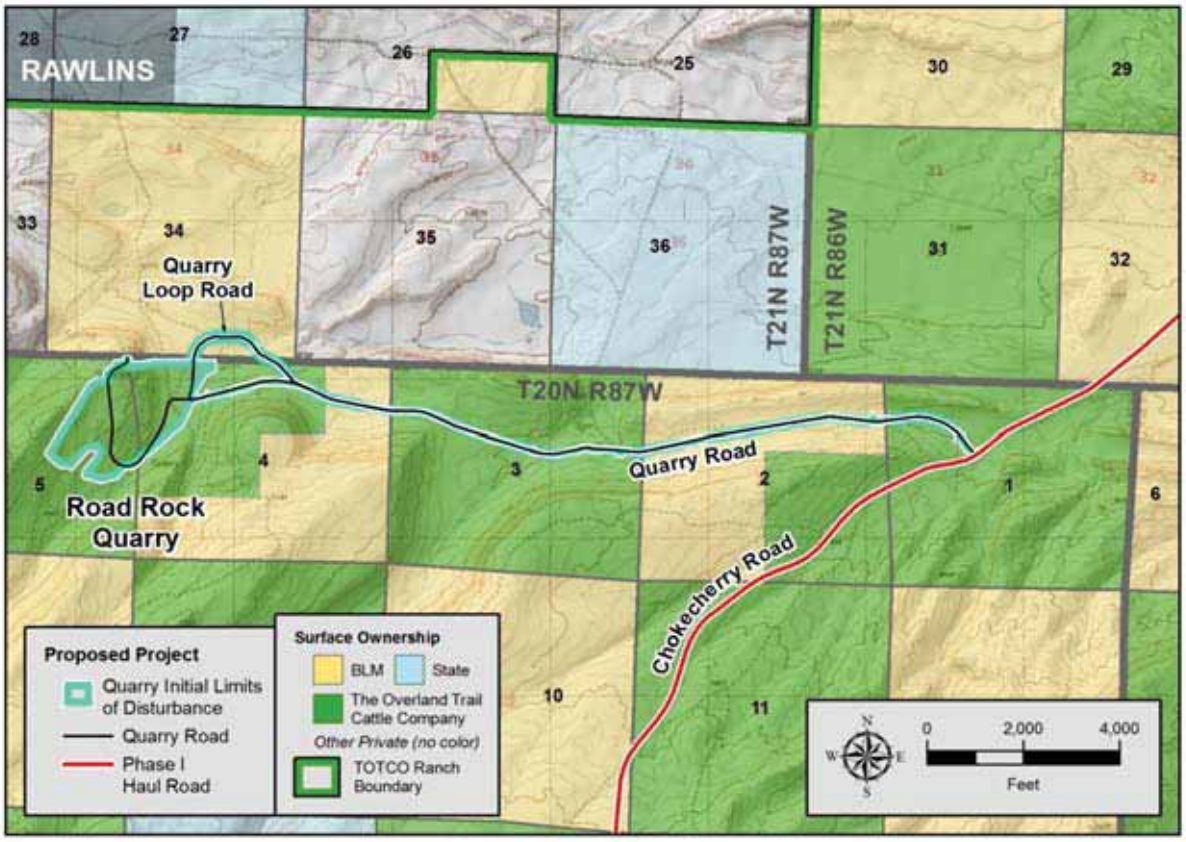

Figure 3-2. Quarry Site Land Ownership

3.2 PCW's Objectives for the Quarry

The Plan of Development for the CCSM Project, submitted to BLM in January 2012, provided for delivery of aggregate by rail and truck from off-site sources to the CCSM Project. Upon receipt, PCW planned to temporarily stockpile the aggregate at the West Sinclair Rail Facility and other CCSM Project laydown areas for delivery by truck to locations throughout the CCSM Project. PCW recently identified a site on land purchased by TOTCO that contains an existing quarry with rock material suitable for base aggregate for road construction. The Quarry, if approved, will provide an internal, local source of base aggregate for the CCSM Project. Development of the Quarry will significantly benefit the efficiency and economics of the CCSM Project without creating significant new impacts.

The Quarry will improve the efficiency of the CCSM Project by decreasing the number of train and truck trips from off-site quarries necessary to supply the CCSM Project with road base aggregate. PCW has prepared a revised Transportation Management Plan for the CCSM Project (Appendix D) to account for the Quarry and the change in the number of truck and train trips. The lower volume of trains allows a portion of the material handling facilities and aggregate storage stockpiles at the West Sinclair Rail Facility to be eliminated, reducing the required surface disturbance and the cost of the West Sinclair Rail Facility. Development of the Quarry

will further insure that local material shortages will not occur while reducing the cost of the aggregate. The Quarry is internal to the CCSM Project so there will be no impact on local roads from Quarry operations.

Developing the Quarry reduces off-site aggregate demand and the footprint of the West Sinclair Rail Facility; however, the material from the Quarry is only suitable as road base, cable trench backfill, and construction fill and does not meet the aggregate demands for the entire CCSM Project. The remaining civil construction materials required for the CCSM Project will be obtained from off-site suppliers and will be delivered via truck using Interstate 80. The traffic levels associated with these deliveries are not expected to cause significant impacts to traffic levels on I-80. PCW is currently estimating the peak CCSM Project delivery rate on I-80 at only 30 vehicles per hour per lane (10 due to civil construction materials and 20 from other deliveries); this represents less than 10 percent of the current peak traffic level on I-80 of 368 vehicles per hour per lane (WYDOT 2011).

PCW's objectives for the Quarry are:

1. Develop a quarry that is internal to the CCSM Project Site;
2. Develop a quarry that meets the CCSM Project aggregate demand during construction to the extent practicable; and
3. Develop a quarry that is economical and efficient to construct, operate, maintain, and decommission.

3.3 Necessary Approvals

PCW will require approvals from the State of Wyoming for the Quarry and from BLM and the State of Wyoming for the Quarry Road. Quarry Road will cross federal lands administered by BLM; therefore, PCW is requesting a federal ROW grant for the construction, operation, maintenance, and decommissioning of Quarry Road, pursuant to the Federal Land Policy and Management Act of 1976. In addition, the Land Quality Division (LQD) of the Wyoming Department of Environmental Quality (WYDEQ) must authorize the Quarry pursuant to the Wyoming Environmental Quality Act. PCW will file an Application for Permit to Mine (Non-Coal) with the Wyoming Department of Environmental Quality - Land Quality Division (WYDEQ-LQD). PCW will obtain additional permits addressing air and water quality through the WYDEQ-Air Quality Division and the WYDEQ-Water Quality Division, as required.

The Quarry is located in Carbon County, Wyoming. If the Quarry is authorized by the WYDEQ-LQD, a permit from Carbon County to operate the Quarry will not be required because landowners in Carbon County are entitled to the principal uses of their land as allowed under the applicable zoning designation. Carbon County Zoning Resolution (adopted January 21,

2003) (CCZR) Section 2.5.[3] The Quarry is located in the Ranching, Agricultural and Mining (RAM) zone, where "quarrying" and "beneficiation" qualify as principal uses of the land with proof of state permit. CCZR Section 4.2(a)(5).

This site-specific plan of development is intended to provide details on mine operations, resource protection measures, and reclamation provisions for the Quarry. In addition to this site-specific plan of development, PCW will submit a Mine Permit Application to the WYDEQ-LQD for approval of the mine. Both the WYDEQ-LQD Mine Permit Application and this site-specific plan of development address reclamation, erosion control, transportation management, dust control, weed management, spill prevention, and health and safety as required by each agency. On federal lands, PCW will work cooperatively with the WYDEQ-LQD and BLM to develop resource protection and reclamation measures that satisfy the requirements of both agencies.

[3] The landowner, lessee, or other person who has legal right to use the land has a vested right to conduct such principal use without securing special permission from the county. *CCZR Ch. III* (definition of "Use, Principally Permitted," subsection d).

4 Quarry Execution and Resource Use

The Quarry will be constructed in 2015 and operated and maintained in 2015 through 2018 to support construction of the CCSM Project. The CCSM Project construction schedule and the associated resource uses are summarized below to assist in the evaluation of the significance of impacts of the Quarry, if any, in the context of the CCSM Project as a whole. The estimated resource usage for the Quarry, as well as for the remainder of the CCSM Project, is included in the following sections for comparison to the resource use analyzed in the EIS.

4.1 Construction Schedule

PCW will construct the CCSM Project in two (2) phases, as described in section 2.3. CCSM Phase I is anticipated to begin in late 2014 and be complete in 2018. CCSM Phase II is anticipated to follow completion of CCSM Phase I.

PCW will construct CCSM Phase I over a five (5) year period (Table 4-1). The CCSM Phase I schedule is designed to first open the CCSM Project Site to road and rail access, then establish the onsite quarry, and finally proceed with wind turbine construction. In accordance with PCW objective number three for the CCSM Project, developing the highest wind energy potential areas first, Phase I of the Sierra Madre wind development area will be constructed first followed by Phase I of the Chokecherry wind development area. PCW anticipates the installation of 229 turbines in 2017 and another 271 turbines in 2018. Similar to Phase I, the wind turbines and associated infrastructure for Phase II will be constructed over a three year period, with the wind turbines installed during the last two years.

This site-specific plan of development addresses the Quarry construction, operation, maintenance, and decommissioning activities necessary to support CCSM Phase I only. If suitable material remains after completion of CCSM Phase I construction, the Quarry may be expanded to support CCSM Phase II. At that time, PCW will seek all necessary federal, state, and local approvals for Phase II of the Quarry.

Table 4-1. CCSM Phase I Construction Schedule

Facility	2014	2015	2016	2017	2018
Phase I Haul Road and Facilities					
Haul roads	3.5 miles	28.5 miles			
Other roads[1]	3.1 miles	21.8 miles			
Laydown yards	North	Chokecherry Basin W. Deadman Miller Hill			
Water facilities	McCarthy	River Extraction Smith Draw Pine Grove			
West Sinclair Rail Facility					
Rail Facility		Construct	Construct	Operate	Operate
Access road	Construct				
Laydown yards		Construct	Construct	Operate	Operate
Road Rock Quarry					
Quarry	Construct	Mobilize & Operate	Operate	Operate	Operate
Access road	Construct				
Phase I Wind Development Area					
Arterial roads			15.1 miles	15.4 miles	12.9 miles
Turbine roads			57.3 miles	39.1 miles	27.3 miles

Facility	2014	2015	2016	2017	2018
Facility roads			1.1 miles	0.4 miles	0.7 miles
Transmission roads			0 miles	0 miles	0 miles
Turbine pads			229	159	112
Turbine foundations			157	231	112
Turbine installation				229	271
Laydown Yards			North (expand) Miller Hill (expand) E. Deadman	Smith Draw	
Facilities				Operations Center, Sierra Madre Maintenance Center	Chokecherry Maintenance Center
Substations				Interconnect, Pine Grove, McCarthy	Smith Draw, Nevins Valley

Notes:
1. Other roads include arterial, turbine and facility class roads

Reclamation activities associated with CCSM Phase I construction will extend beyond 2018.

4.2 Labor

The EIS evaluated the impacts associated with the CCSM Project workforce. For the construction stage of the CCSM Project, the EIS analyzed a peak workforce of 1,200 workers. The current CCSM Project workforce estimates reflect a reduced peak construction workforce of 945 workers.

For the Road Rock Quarry portion of the CCSM Project, construction of the access road and operations area is anticipated to be performed in 2014, with the Quarry beginning operations in 2015. The workforce required to construct the Quarry is anticipated to peak at 22 workers in 2014. After 2014 and for the remainder of the CCSM Project Phase I construction, a workforce of up to 33 workers will operate the Quarry. Table 4-2 and Figure 4-1 detail the CCSM Project construction workforce, as well as the portion specifically supporting construction and operation of the Road Rock Quarry.

Table 4-2. CCSM Project Construction Workforce Breakdown

Year	*EIS Analysis*	Current CCSM Project Estimate	
	Total Project Peak Workforce	Total Project Peak Workforce	Road Rock Quarry
2014	*N/A*	84	22
2015	*300*	255	33
2016	*400*	390	31
2017	*1,200*	945	33
2018	*1,200*	883	31
2019	*1,000*	301	0
2020	*N/A*	925	0
2021	*N/A*	881	0
PEAK	***1,200***	**945**	**33**

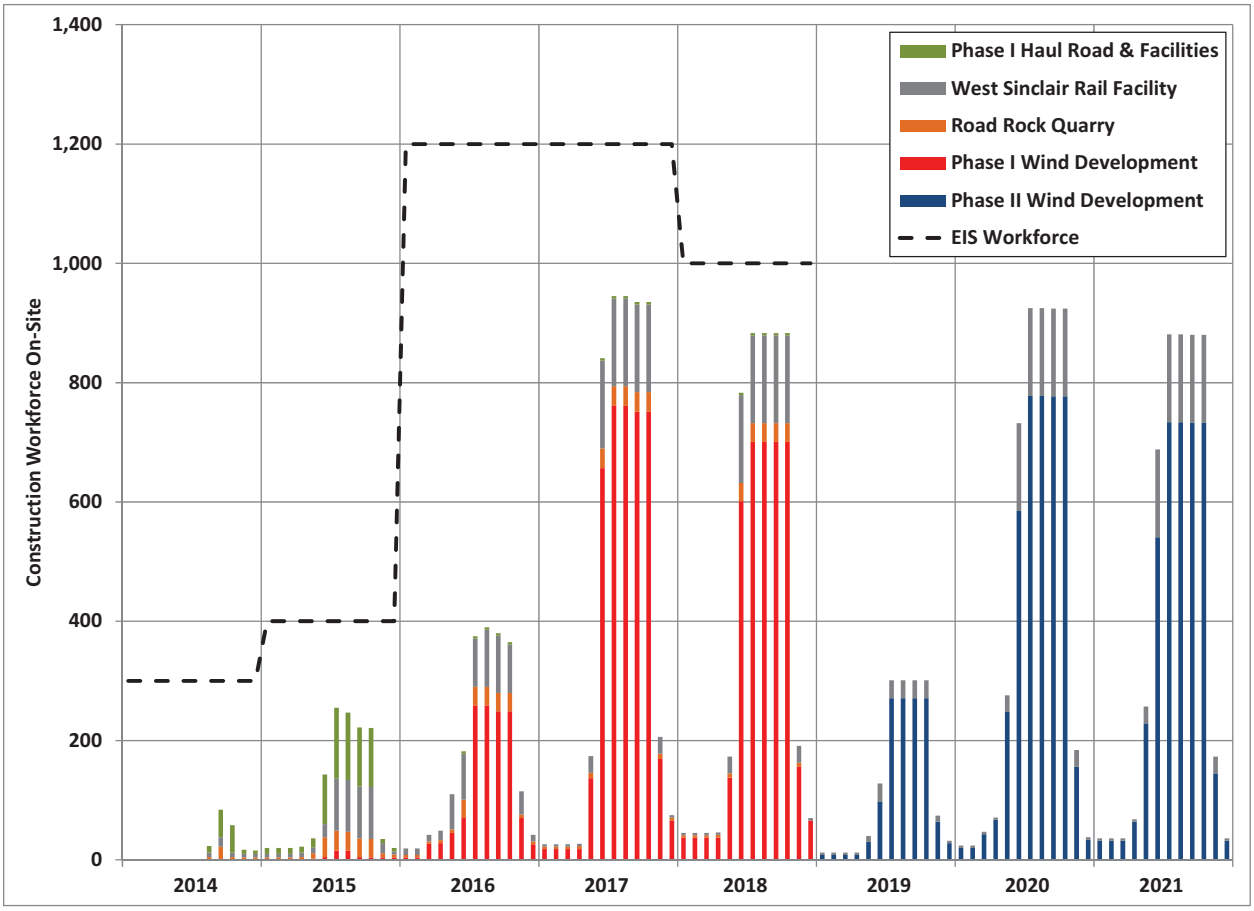

Figure 4-1. CCSM Project Construction Workforce

For the operations stage of the CCSM Project, the EIS evaluated the impacts of a workforce of 158 workers. The CCSM Project operations workforce will be brought on-site gradually as construction is completed. At the completion of Phase I construction, PCW is currently estimating that the CCSM Project's operations workforce will consist of 64 workers. Following construction of Phase II of the CCSM Project, the operations workforce is anticipated to grow to 114 workers.

Table 4-3 and Figure 4-2 summarize the overall CCSM Project operations workforce. The Quarry will no longer be in operation by the time construction of the CCSM Project is completed.

Table 4-3. CCSM Project Operations Workforce Buildup

Year	*EIS Analysis*	Current CCSM Project Plan
	Total Project Workforce	Total Project Workforce
2014	*158*	0
2015		0
2016		0
2017		40
2018		64
2019		64
2020		89
2021		114
PEAK	***158***	**114**

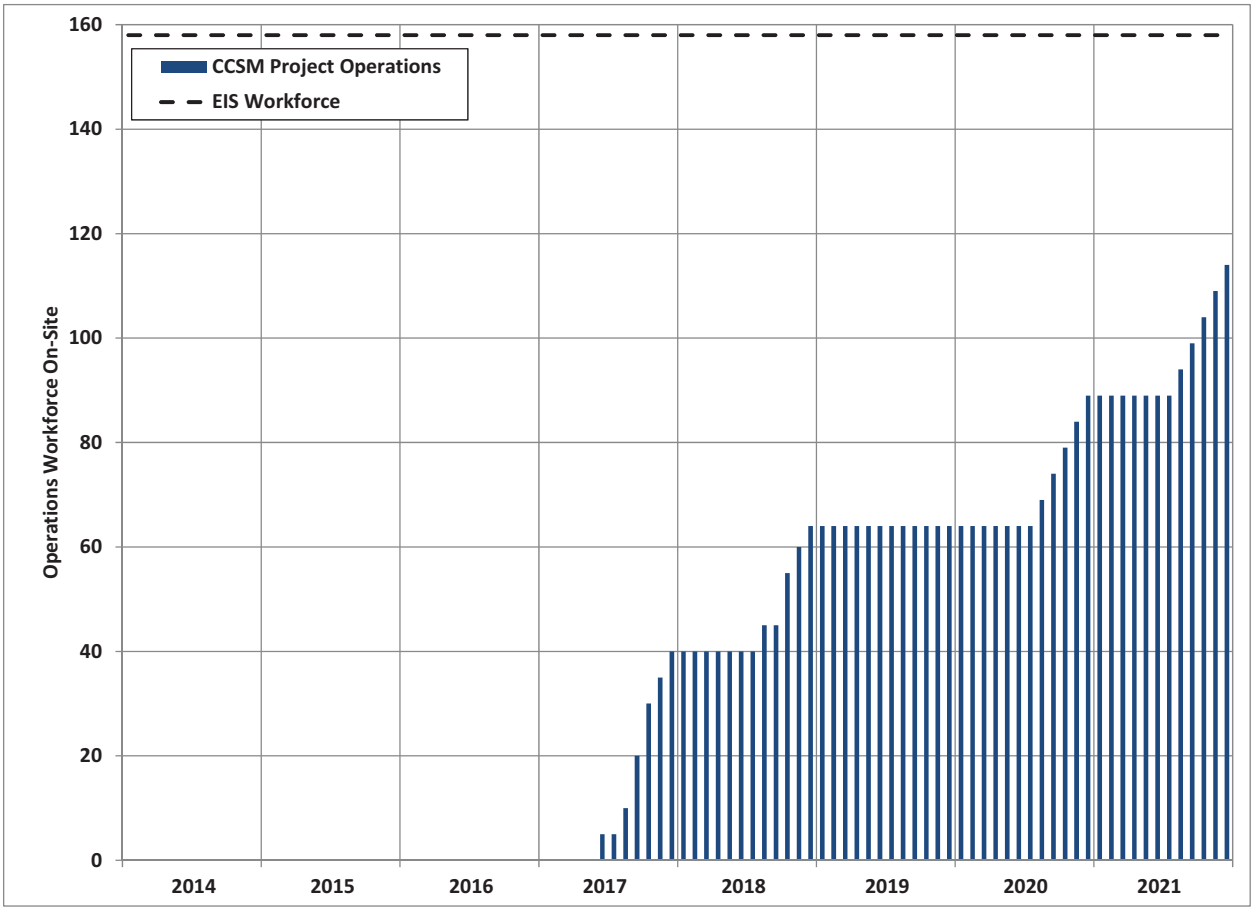

Figure 4-2. CCSM Project Operations Workforce

To decommission the CCSM Project, the EIS evaluated a workforce of up to 400 workers. PCW currently estimates the peak decommissioning workforce at 396. Table 4-4 and Figure 4-3 summarize the CCSM Project decommissioning workforce.

Table 4-4 CCSM Project Decommissioning Workforce Estimate

Year	*EIS Analysis* *Total Project Peak Workforce*	Current CCSM Project Plan Total Project Peak Workforce
Year 1	*400*	387
Year 2	*400*	396
Year 3	*400*	385
PEAK	***400***	**396**

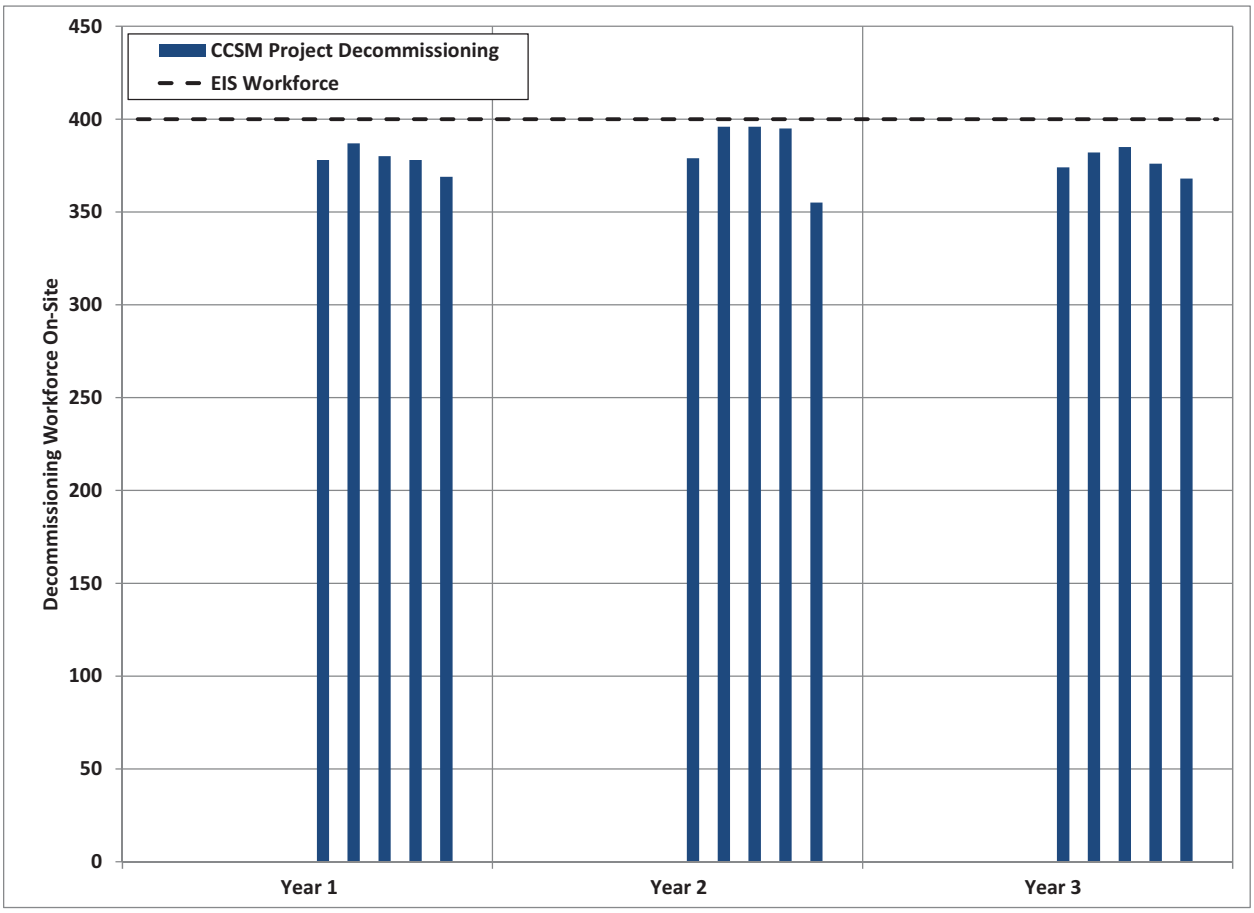

Figure 4-3. CCSM Project Decommissioning Workforce

4.3 Equipment

PCW has estimated the amount of equipment required to construct, operate, maintain, and decommission the CCSM Project. The estimated annual peak amount of equipment for the CCSM Project is shown in Table 4-5 and Figure 4-4 below. The specific types of equipment and the number of each required for the Quarry are provided in section 6.4.

Table 4-5. Peak Construction Equipment Estimate

Year	General Pick-Ups		Other Equipment		Total Equipment	
	EIS	Current	EIS	Current	EIS	Current
2014	*200*	31	*200*	43	*400*	74
2015	*350*	92	*200*	164	*550*	256
2016	*850*	151	*400*	183	*1,250*	334
2017	*900*	347	*450*	451	*1,350*	798
2018	*750*	314	*300*	414	*1,050*	728
2019	*N/A*	125	*N/A*	221	*N/A*	346
2020	*N/A*	352	*N/A*	494	*N/A*	846
2021	*N/A*	316	*N/A*	464	*N/A*	780
Operations and Maintenance	N/A	60	N/A	10	N/A	70
Decommissioning	N/A	230	N/A	150	N/A	380

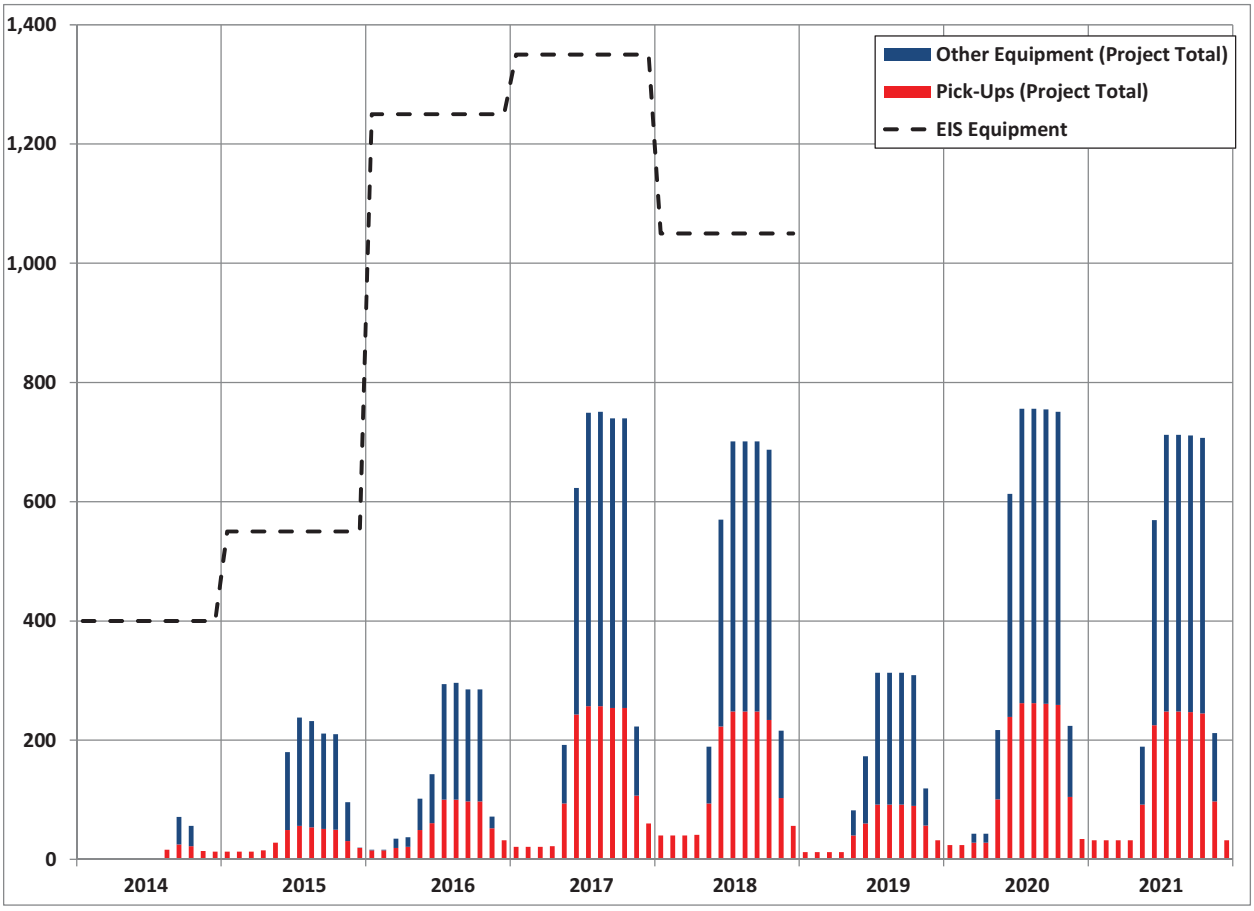

Figure 4-4. Peak Equipment During Construction

4.4 Material

While the Quarry is a source of aggregate, the construction of the Quarry and Quarry Road require aggregate prior to operations. PCW estimates that the amount of aggregate required to build the entire CCSM Project (Phases I and II), including the Quarry, remains at approximately 2,700,000 cubic yards, as shown in Table 4-6 and Figure 4-5. The EIS analyzed 2,800,000 cubic yards of aggregate. The aggregate will be obtained from the on-site Quarry and nearby off-site commercial sources. Aggregate is also required to operate and maintain the CCSM Project; however, the annual amount required is anticipated to be minimal. Aggregate will be removed as part of the decommissioning process, thus no additional aggregate will be required for decommissioning.

Table 4-6. Estimate of CCSM Project Construction Aggregate Requirements

Year	Source		Requirements	
	On-site (Quarry) (cy)	Off-site (cy)	CCSM Project TOTAL (cy)	Quarry (cy)
2014	0	36,000	36,000	12,000
2015	489,000	134,000	623,000	47,000
2016	570,000	348,000	918,000	0
2017	168,000	28,000	196,000	0
2018	107,000	23,000	130,000	**0**
PHASE I TOTAL	**1,334,000**	**569,000**	**1,903,000**	**59,000**
Phase II Year 1	300,000	62,000	362,000	0
Phase II Year 2	233,000	39,000	272,000	0
Phase II Year 3	142,000	46,000	188,000	0
PHASE II TOTAL	675,000	147,000	822,000	**0**
CCSM PROJECT TOTAL	**2,009,000**	**716,000**	**2,725,000**	**59,000**

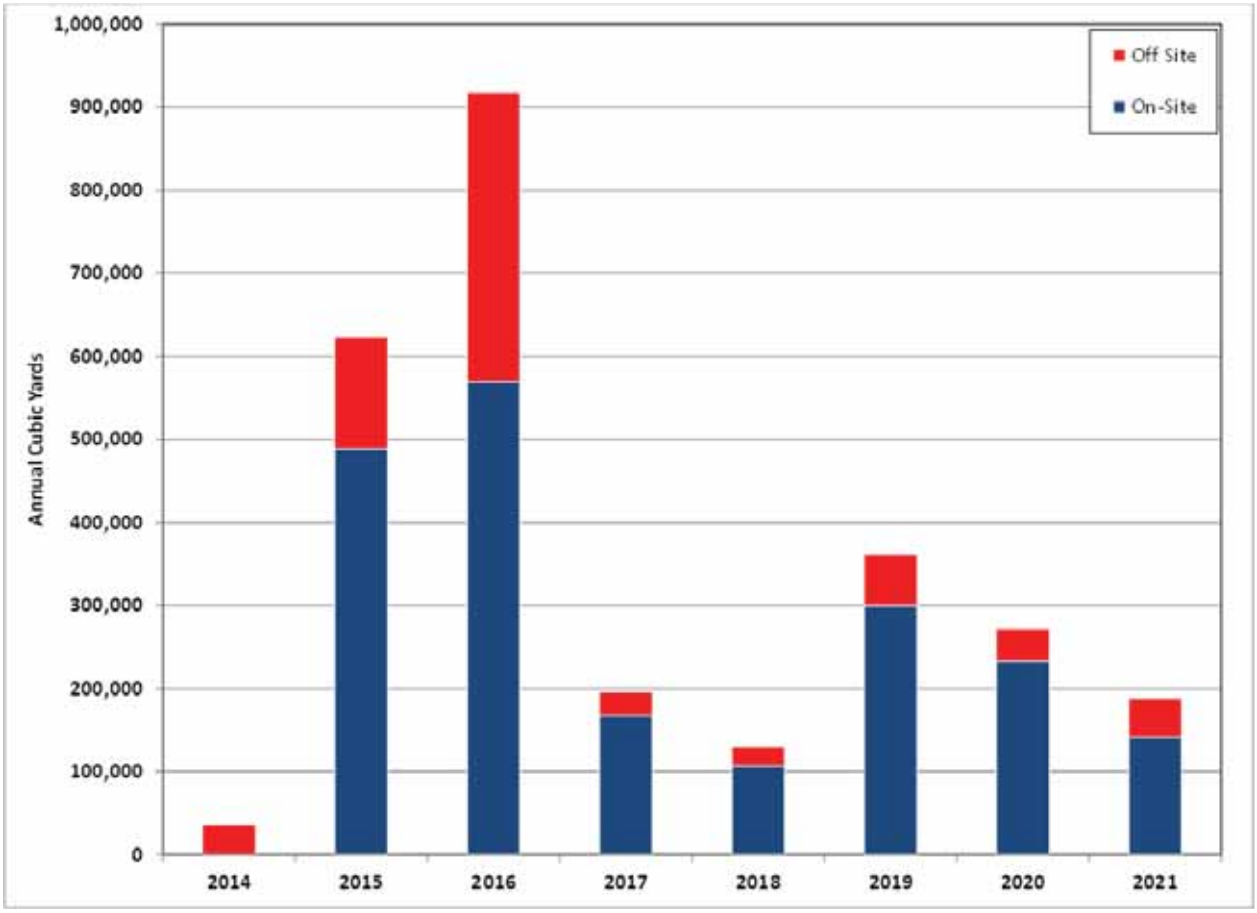

Figure 4-5. Estimate of Aggregate Required During CCSM Project Construction

4.5 Water

The EIS analyzed a total of 553 ac-ft of water consumption for construction of the CCSM Project, with a peak annual use of 168 ac-ft, as shown in Table 4-7. The current construction water consumption estimate for the CCSM Project is a total of 604 ac-ft with a peak annual use of 106 ac-ft as shown in Table 4-7. While the current estimate adds the water requirements of the Road Rock Quarry (55 ac-ft over the life of the quarry), the peak annual consumption has been reduced 60 ac-ft from the peak analyzed in the EIS. Potable water demand for construction of the CCSM Project is anticipated to be minimal. The water required to meet potable demands will likely come from municipal sources

The water consumption for operations, maintenance and decommissioning of the CCSM Project is anticipated to be minimal; less that 50 ac-ft per year during operations and maintenance and less than 100 ac-ft per year during decommissioning. Consistent with the analysis in the EIS, PCW will make use of existing water resources by using existing water rights as well as taking advantage of municipal supplies when available such that water use will not impact current water users or interstate agreements (BLM 2012a).

The CCSM Project water use estimates assume that only water will be used for dust control. PCW is requesting that BLM approve the use of magnesium chloride as an alternative dust control measure to improve the longevity of dust control which will reduce water use for dust suppression.[4] If the use of magnesium chloride is approved, water requirements may be reduced by as much as 30 percent.

Table 4-7. CCSM Project Construction Water Use Estimate

Year	*EIS Analysis*	Current CCSM Project Estimate
2014	*38*	14.6
2015	*109*	82.0
2016	*151*	105.4
2017	*168*	78.6
2018	*87*	58.0
2019	*N/A*	94.2
2020	*N/A*	93.0
2021	*N/A*	78.2
PEAK	***553***	**604**

[4] In accordance with current BLM policy, PCW will not apply chloride compounds or lignin derivatives within 500 feet of a perennial stream on federal lands.

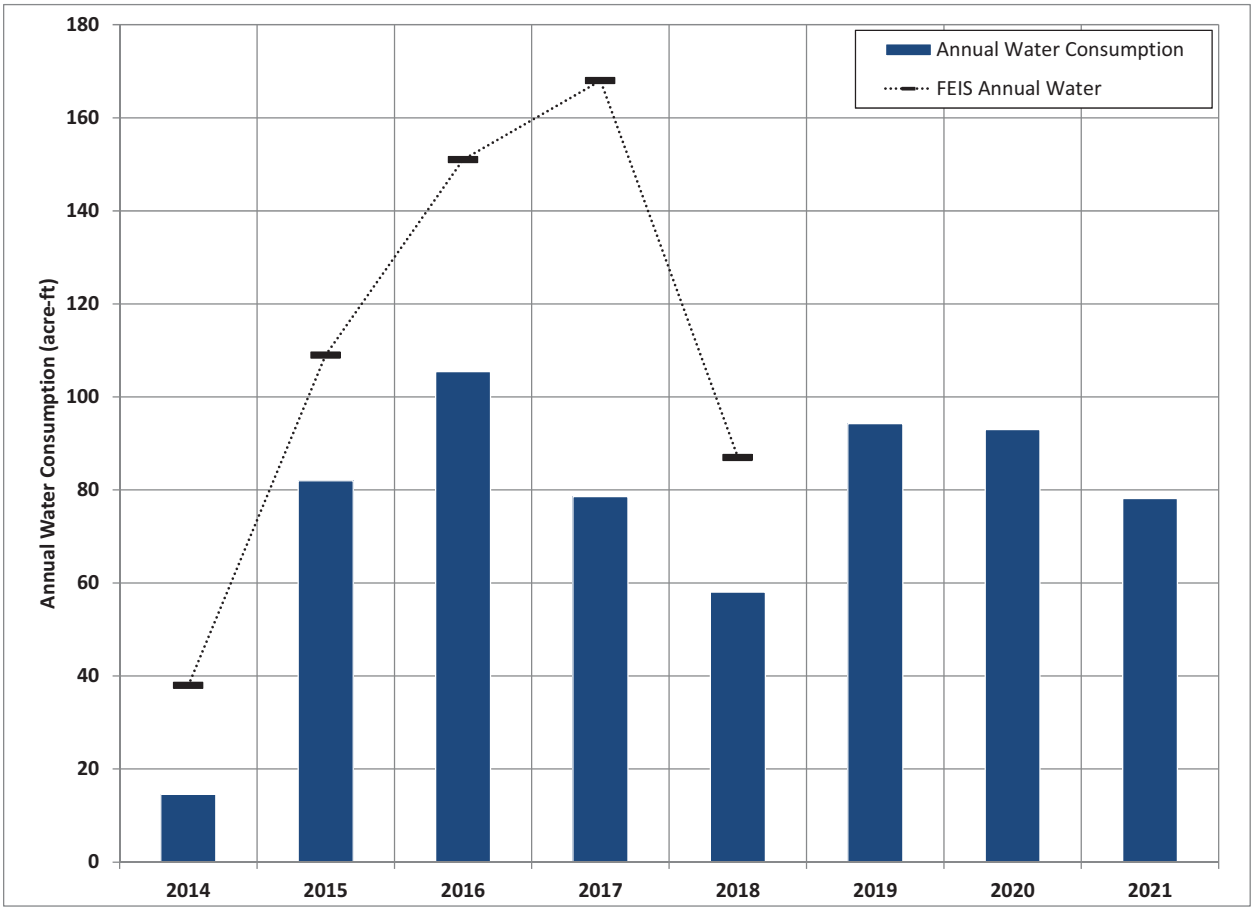

Figure 4-6. Water Use Estimate During Construction

4.6 Surface Disturbance

The initial surface disturbance for the CCSM Project analyzed in the EIS was 7,733 ac, with a long-term disturbance of 1,545 ac (BLM 2012a). Table 4-8 and Figure 4-7 show the estimated initial and long-term disturbance for the CCSM Project by site-specific plan of development and cumulatively for comparison to the EIS. While these estimates may be refined in future site-specific plans of development, the disturbance estimates presented below represent the best available information.

Table 4-8. Disturbance Estimate

Site-specific Plan of Development	Initial Disturbance (ac)	Long-Term Disturbance (ac)
Phase I Haul Road & Facilities	875	225
West Sinclair Rail Facility	370	121
Road Rock Quarry	184	18
Phase I Wind Development	2,946	480
Phase II Wind Development	2,835	479
CURRENT DISTURBANCE ESTIMATE	**7,210**	**1,323**
EIS DISTURBANCE ESTIMATE	**7,733**	**1,545**
CHANGE	***-523***	***-222***

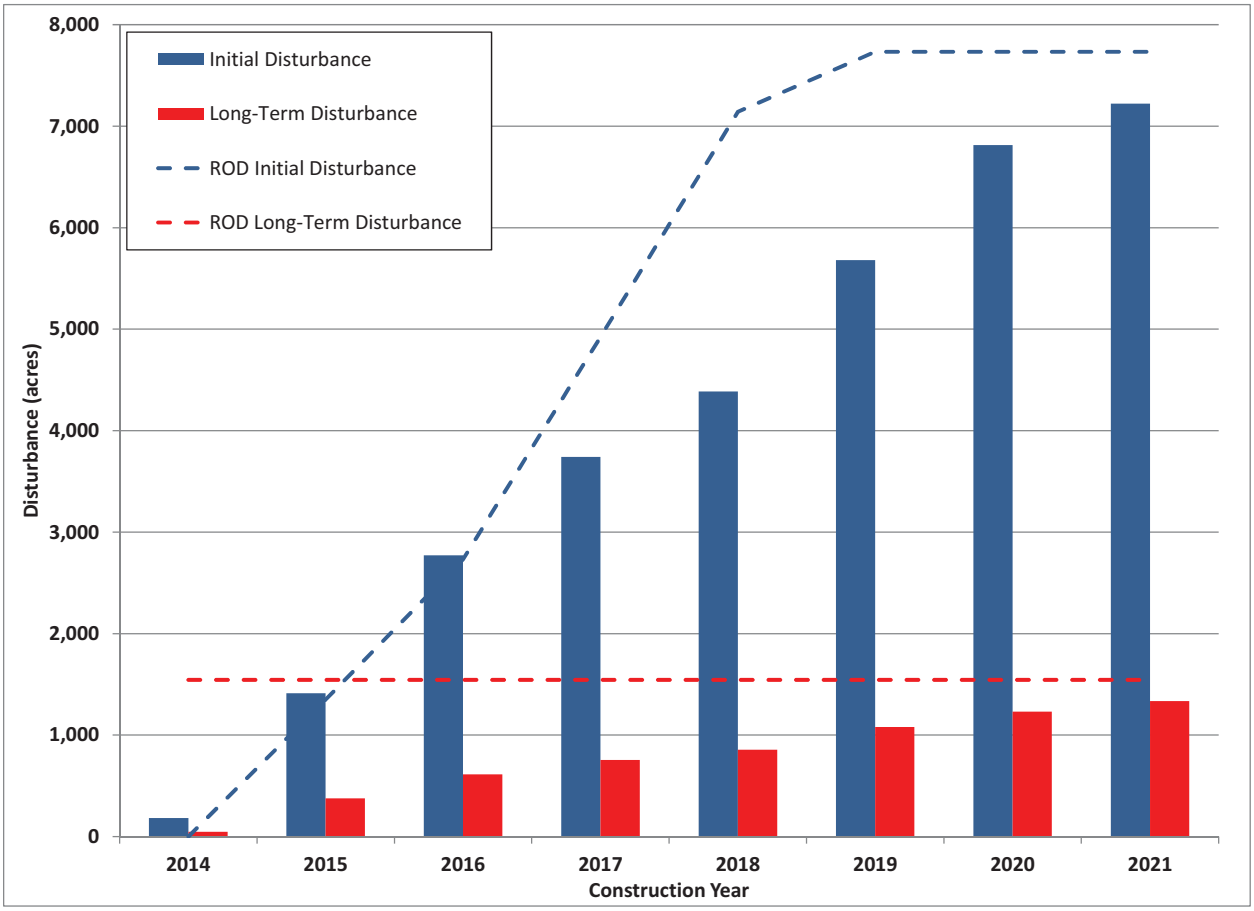

Figure 4-7. Surface Disturbance

5 Quarry Design

The Quarry is a mining operation that provides rock material for exclusive use in Phase I of the CCSM Project. PCW has designed the Quarry to meet PCW's objectives and the specific requirements for CCSM Phase I construction base aggregate, as described below.

5.1 Design Requirements

To locate and design the Quarry, PCW evaluated the material and schedule requirements of the CCSM Project, the geology within the CCSM Project Site, and the regulatory requirements of the WYDEQ-LQD. This section provides an overview of the Quarry design and describes how the design meets PCW's objectives and the requirements of the WYDEQ-LQD in an efficient and effective manner.

5.1.1 CCSM Project

The CCSM Project requires a variety of construction materials, e.g. aggregate, sand, fill material, and specialized rock products such as ballast and rip rap, as shown in Table 5-1. Upon review of the CCSM Project Site, as described in section 5.1.2, it was determined that the only materials that were feasible to quarry within the CCSM Project Site were the base aggregate (Low Durability Wyoming Department of Transportation (WYDOT) W-grade Aggregate), thermal and non-thermal cable trench backfill and general construction fill. The reminder of the material required for the CCSM Project construction was either: (1) not located within the CCSM Project Site; (2) not located in sufficient quantities to make quarrying economically feasible; or (3) not of suitable quality to meet the CCSM Project needs.

Table 5-1 CCSM Project Construction Material Requirements

Material	Use	Description	CCSM Phase I Required Amount (cy)	Percentage of Amount Required
WYDOT W-grade Aggregate (High Durability)	Cap material for high traffic roads Laydown yards with high surface loading	Well graded mix of gravel and binder material ranging in size from 1.5 inch diameter to fine grained material (0.003 inch or less, passing a number 200 sieve). High durability has higher material strength and increased resistance to weathering.	370,000	13%
WYDOT W-grade Aggregate (Low Durability)	Road base Cap material on low traffic roads Wind turbine pad gravel surfaces	Well graded mix of gravel and binder material ranging in size from 1.5 inch diameter to fine grained material (0.003 inch or less, passing a number 200 sieve). Low durability has lower material strength and is more prone to weathering; however, material break down aids in compaction and stabilization.	1,334,000	48%
High Fine Content Aggregate	Road base for stabilization Soil improvement	Larger-diameter aggregate material mixed with a higher content of "fines". This aggregate consists of a well graded mix of gravel and binder material ranging in size from large coarse gravel (3.0 inch diameter) to fines (passing the number 200 sieve).	30,000	1%
Rail Ballast	Aggregate directly under rail ties	Gravel ranging in size from 2.5 inch to about 0.375 inch that does not include fine grained material. Union Pacific requirements vary and alternate gradations include gravel ranging in size from 1.25 inch to about 0.1 inch.	51,000	2%
Rail Subballast	Aggregate under rail ballast (railroad base)	Well graded mix of gravel and binder material ranging in size from 2.0 inch to fine grained material passing the number 200 sieve.	148,000	5%

Material	Use	Description	CCSM Phase I Required Amount (cy)	Percentage of Amount Required
Substation Aggregate	Substations	Aggregate selected to meet strength and electrical insulation requirements of substations. Typical industry specifications for substation aggregate (ASTM C33 #67 or similar) consist of gravel ranging in size from 1 inch to about 0.125 inch. This gravel does not include fine grained material.	60,000	2%
Concrete Aggregate	Concrete batching	Course aggregate ranging between 0.375 and 1.5 inches in diameter, and free of absorbed chemicals or coatings that could degrade concrete.	212,000	8%
Concrete Sand	Concrete batching	Natural sand or fine aggregate less than 0.375 inches in diameter.	135,000	5%
Thermal Backfill	Collection system cable trench backfill	Soil and sand material with low thermal resistivity (for heat dissipation) and free of rocks (avoid cable jacket damage) placed around cables in trenches.	137,000	5%
Non-thermal Backfill	Collection system cable trench backfill	General fill material with reasonable thermal resistivity, placed above thermal backfill in trenches.	225,000	8%
Rip Rap	Erosion control at culverts and other water control structures	Rip rap is typically an assortment of cobbles and boulders between 3 and 24 inches in diameter. Rip rap will consist of hard, durable, angular aggregate that is free of weak laminations and cleavages. The gradation of the rip rap varies based on the size of the culvert and the anticipated velocity of water.	79,000	3%
Construction Fill	Embankment fill Fill throughout the CCSM Project	Construction fill material meeting of various specifications.	Varies[1]	N/A
		TOTAL	**2,781,000**	**100%**

Notes: 1. An overall balance of cut and fill is expected on the CCSM Project including the Quarry, and therefore it is not anticipated that significant amounts of fill material will be needed from off-site sources.

5.1.2 Quarry Location Selection

Following identification of the CCSM Project construction material needs, PCW evaluated the CCSM Project Site to identify potential on-site sources. PCW conducted a geologic, geotechnical and constructability review of the CCSM Project Site to identify locations with suitable and sufficient material to meet some or all of the CCSM Project requirements discussed in section 5.1.1. The review included a desktop evaluation, as well as field reconnaissance and investigation. PCW evaluated issues such as expected material types and amounts, land ownership, land use, and potential environmental constraints. As a result of this investigation, PCW identified sandstone outcroppings on the Chokecherry Mesa as suitable for road sub-base (Fugro 2013) While other potential construction material sources were identified on the CCSM Project Site, they did not meet PCW's objectives (section 2.2).

After desktop review and field reconnaissance of outcroppings on the Chokecherry Mesa, the Quarry location was selected. The Quarry location is composed of large sandstone outcrops of sufficient quality to be used as road sub-base and base material and minimal unusable overburden, meeting PCW's objectives for an on-site quarry. To determine the quantity and engineering properties of the Quarry and confirm the suitability of the material, PCW conducted geotechnical, geophysical, and laboratory investigations.

The geotechnical investigation of the Quarry location included drilling and continuous sampling of two (2) borings to a depth of 101 feet (ft) and one (1) boring to a depth of 176 ft below existing grade. Bulk material samples were also obtained at each boring location. The geophysical investigation included conducting surficial refraction microtremor (ReMi) and interferometric multi-channel analysis of surface waves (IMASW) surveys throughout the Quarry location. Two (2) geophysical survey lines extended in the north-south direction and three (3) geophysical survey lines extended in the east-west direction. The subsequent laboratory investigation included identification, classification, strength, and degradation tests on samples collected from the geotechnical borings. Specifically, laboratory tests included natural water content, Atterberg limits, particle size analysis, unconfined compressive strength, California bearing ratio, resistance value (R-Value), Los Angeles Abrasion, magnesium and sodium sulfate soundness, and soundness of aggregates by freezing and thawing.

The data acquired from the geotechnical, geophysical, and laboratory investigations were used to confirm the suitability of the Quarry material for use on the CCSM Project and to determine the estimated quantity of material at the Quarry.

5.1.3 Wyoming Department of Environmental Quality

PCW evaluated the WYDEQ-LQD requirements for a non-coal quarry for rock materials to insure that the Quarry design meets all regulatory requirements. The WYDEQ has issued regulations, guidelines, and standard operating procedures for non-coal mining operations which specify the planning, construction, operation, and reclamation requirements for proposed rock quarries. While the WYDEQ-LQD does not issue specific design requirements for surface rock

quarry operations, the WYDEQ-LQD guidelines require applicants to thoroughly explain their designs in the permit application prior to approval. While additional requirements and modifications may be imposed upon the Quarry through the WYDEQ-LQD permitting process, PCW does not anticipate that these requirements will substantially change the footprint of the Quarry Facilities or Quarry Road. On federal lands used for access to the Quarry, PCW will work cooperatively with the WYDEQ-LQD and BLM to develop resource protection and reclamation measures that satisfy the requirements of both agencies.

5.2 Design Overview

The Quarry is a single-site, sandstone surface rock quarry operation designed to provide aggregate for construction of CCSM Phase I. The primary material to be obtained from the Quarry is unweathered sandstone and shale. Data from the Quarry geotechnical and geophysical investigations indicates the subsurface stratigraphy below the top soil is composed of sandstone and shale of three (3) general classifications. These materials were assigned a Rock Group Designation (i.e., Rock Group A, Rock Group B, and Rock Group C). Table 5-2 below provides a description of each Rock Group, its engineering properties (Fugro 2013), and the anticipated use for each material on the CCSM Project. Through the geophysical mapping of the Quarry, PCW estimates the locations and quantities of the rock groups within the excavation area are as described in Table 5-3

Table 5-2. Rock Groups and Associated Uses

Rock Group	Weathering	Cementation	RQD (%)	UCS (tsf)	Vs (ft/sec)	RMR	Potential CCSM Project Use
C	Highly to Moderately Weathered	Weakly Cemented	35	200	2,000	45	General Fill Only
B	Slightly Weathered to Unweathered	Weakly to Moderately Cemented	85	350	5,000	66	General Fill and Some Low Durability W-Grade Aggregate Applications
A	Unweathered	Moderately to Strongly Cemented	99	600	8,000	90	All Low Durability W-Grade Aggregate Applications

Notes: RQD = Rock Quality Designation (% of core pieces 100mm or longer)
UCS = Unconfined Compressive Strength, expressed in tons per square foot
Vs = Shear Wave Velocity
RMR = Rock Mass Rating

Table 5-3. Location and Quantity of Rock Groups Within Quarry Excavation Area

Rock Group	Estimated Depth Below Existing Grade to Rock Group	Estimated[1] Quantity of Material (yd^3)
Top Soil	Ground Surface	N/A
C	Ground Surface	100,000
B	Ground Surface – 36 ft	550,000
A	16 – 76 ft	2.45 million

The aggregate obtained from the Quarry will be used as base material to construct roads and laydown yards, as well as capping material for some roads and for surface aggregate around wind turbine pads. The material expected to be available from the Quarry meets approximately 64 percent of the aggregate demand for the CCSM Phase I construction. Rock Group A is the material that is targeted for use as base aggregate on the CCSM Project; however, to obtain Rock Group A, PCW must excavate Rock Groups B and C. PCW has evaluated each rock group to determine other potential uses within the CCSM Project, as summarized in Table 5-4. Any excess material from Rock Groups B and C will be used in the reclamation of the Quarry at the end of CCSM Phase I construction.

Table 5-4. Quarry Material Anticipated Use for CCSM Project Construction

Use	Rock Group A	Rock Group B	Rock Group C
General Site Construction			
General Fill Material			●
Road Construction			
Haul Road Sub-base		●	
Haul Road Base	●		
Haul Road Capping	Off-Site Material Required		
Arterial Road Sub-base		●	
Arterial Road Base	●	○	
Arterial Road Capping	Off-Site Material Required		
Turbine/Facility Road Sub-base		●	
Turbine/Facility Road Base	●	○	
Turbine/Facility Road Capping	●		
Rail Facility			
Embankment Fill		●	●
Ballast and Sub-Ballast	Off-Site Material Required		
Laydown Yard Base	●		
Laydown Yard Capping	Off-Site Material Required		
Facilities[1]			
Facility Base	●		
Facility Capping	Off-Site Material Required		
Laydown Yard Capping	●		
Quarry			
Reclamation Fill		●	●
Collection System			
Thermal Backfill			●
Non-thermal Backfill		●	○

Notes: ● = Preferred rock group; ○ = potential alternate rock group
[1]Consists of laydown yards, water stations, and long-term facilities

PCW has designed the Quarry to provide approximately 2.45 million cubic yards of Rock Group A. While the design for CCSM Phase I calls for only 1.18 million cubic yards of low durability W-grade aggregate to be obtained from Rock Group A, PCW applied the following factors to the Quarry design to account for uncertainty:

- A design factor of 30 percent to compensate for uncertainty in the geophysical mapping;
- A suitability factor of 25 percent to account for unsuitable material that may be encountered within Rock Group A; and
- A contingency factor of 10 percent to allow for small changes to the CCSM Project design or material requirements.

While the Quarry design includes contingency factors, PCW will only excavate the material required to construct CCSM Phase I.

PCW has designed the Quarry to provide the amounts of Rock Group A listed in Table 5-5 during each year of CCSM Phase I construction. The volumes include the Quarry design, suitability and contingency factors described above. The Rock Group B and C materials listed in Table 5-5 will be used in the CCSM Project as described above or will be stored at the Quarry Site until reclamation.

Construction of some CCSM Phase I components will occur before the Quarry is operational; therefore, some aggregate that could be sourced from the Quarry is being sourced off-site in 2014. Once the Quarry is operational, PCW will obtain as much material from the Quarry as practicable.

Table 5-5. Anticipated Quarry Material Amounts by Year (CY)

Construction Year	Rock Group A	Rock Group B	Rock Group C	Top Soil	Total
2014[1]	0	0	0	0	0
2015	802,000	180,000	33,000	51,400	1,066,400
2016	778,000	175,000	32,000	20,500	1,005,500
2017	236,000	53,000	10,000	6,200	305,200
2018	140,000	31,000	6,000	3,700	180,700
Total[2]	**1,956,000**	**439,000**	**81,000**	**81,800**	**2,557,800**

Notes:
1. Construction of some CCSM Project components will occur before the Quarry is operational; therefore, some material that could be sourced from the Quarry is being sourced off-site in 2014. Once the Quarry is operational, PCW will obtain as much material from the Quarry as practicable.
2. The design factor was only applied to the total size of the Quarry and not to annual yield amounts.

5.3 Quarry Components

The Quarry shown in Figure 5-1 has been designed to meet the requirements described in section 5.1. The Quarry consists of several different components, as summarized in Table 5-6 below. The Quarry Site is generally divided into Quarry Road, which provides access to the Quarry, and the Quarry Facilities, consisting of the material extraction area, operations areas, and stockpiles. The disturbance associated with the Quarry is detailed in Table 8-1 in section 8.1. The Issued for Permit Plans for the Quarry are included as Appendix B to this site-specific plan of development. Each component is described in detail in the sections below.

Table 5-6. Quarry Facility Components

Component	Primary Purpose
Quarry Access	
Quarry Road	Access from the Quarry to the CCSM Project Haul Road
Quarry Road (loop)	Turnaround and staging area for aggregate trucks
Material Extraction	
Excavation Area	Excavate aggregate for use in the CCSM Project
Northern Operations Area	
Crusher Area	Crush aggregate to meet CCSM Project requirements
Finished Product Stockpile	Store crushed aggregate for delivery to CCSM Project
Truck Loading Area	Load aggregate from the finished product stockpile into aggregate trucks
Southern Operations Area	
Quarry Trailer Complex	Parking and trailers for Quarry operations staff
Soil Storage and Erosion Control	
Overburden Soil Storage Area	Store Rock Group B & C material for use in the CCSM Project or for reclamation of the Quarry
Topsoil Storage Area	Store Topsoil for reclamation of the Quarry
Reclamation Subsoil Storage Area	Store subsoil for reclamation of the Quarry that is unsuitable for use in the CCSM Project
Sediment Basins	Manage runoff from the Quarry for sediment and erosion control

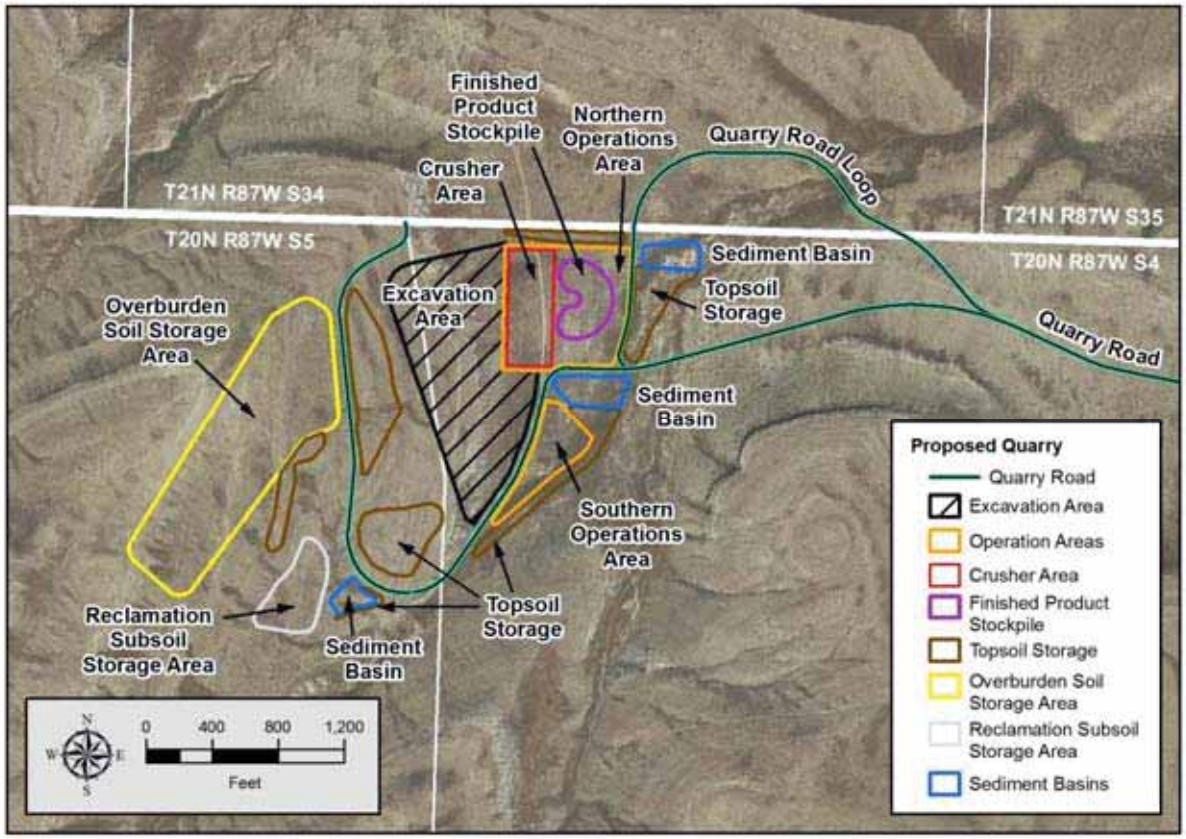

Figure 5-1 Quarry Components

5.3.1 Quarry Road

The Quarry Road connects the Quarry to the CCSM Project's internal road network to facilitate delivery of materials to and from the Quarry. Quarry Road runs from the eastern portion of the Quarry to Chokecherry Road (Figure 3-2). The portion of Quarry Road between the Quarry Facilities and Chokecherry Road is designed to meet the CCSM Project 'haul road' classification, which includes a 40-ft-wide driving surface, a design speed of up to 40 miles per hour, and accommodations for two-way traffic. Quarry Road also includes a loop to facilitate truck loading and turnaround. The loop portion of Quarry Road is classified as an 'arterial road' meaning that it is designed for one-way traffic only. The design elements of Quarry Road, including the road classifications, are described in Appendix C.

5.3.1.1 *Structural Design*

The structural design of Quarry Road takes into account local geologic, geotechnical, and drainage conditions, as well as expected use. The road design accounts for the heavy and frequent loads Quarry Road will encounter throughout CCSM Phase I construction (Appendix B), and considers the site-specific conditions found during geotechnical testing (Fugro 2013). The site-specific soil properties were analyzed to determine the bearing capacity of the soil and confirm that additional subgrade stabilization measures are not required. While the need for

subgrade stabilization is not anticipated, if stabilization becomes necessary it will be provided as described in Appendix C.

5.3.1.2 *Hydrology*

Quarry Road crosses seven (7) natural drainages. The alignment of Quarry Road was chosen to minimize the number of crossings to the extent practicable. Where crossings were necessary, crossing locations were chosen to minimize the disturbance required. Due to the heavy volume of traffic and the need for Quarry Road to remain open during all-weather events, traditional crossings with culverts were selected. The crossings have been designed to accommodate a minimum 25-year storm event. Typical crossing designs are shown in Appendix B. In addition, ditches will be placed adjacent to Quarry Road to collect water and convey it away from the road toward existing natural drainages. The ditches have also been designed to accommodate a minimum 25-year storm event.

5.3.2 Excavation Area

Material extraction at the Quarry will occur within the excavation area and consists of the removal of material to tie the quarry floor into the existing grade at the Northern Operations Area; there will not be an excavation pit (Figure 5-2). Equipment will be used to extract soil and rock for temporary storage prior to processing into construction aggregate, as described in section 5.3.3. Following excavation, the soil and rock will be moved to the Northern Operations Area for processing or to a soil storage area for long-term storage. The size of the excavation area will increase during Quarry operations to a maximum of 20 acres, which includes space for equipment staging and short-term aggregate storage.

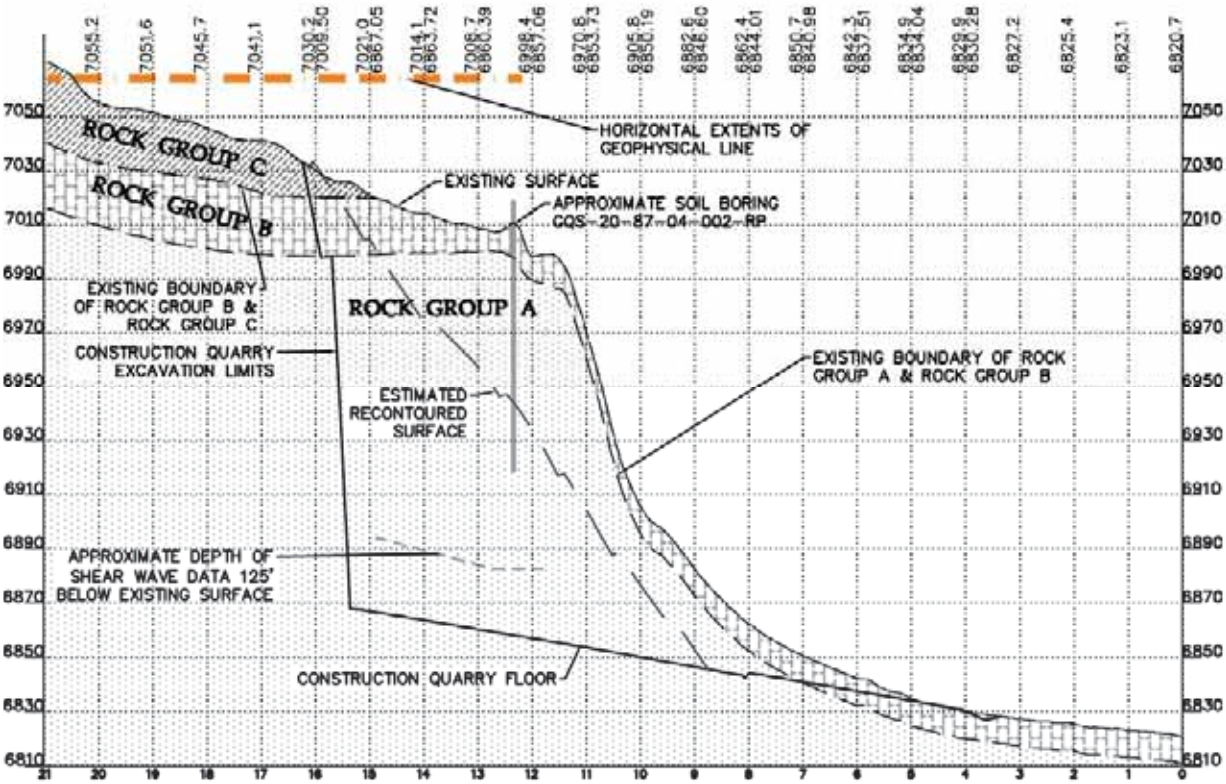

Figure 5-2 Representative Profile of Excavation Area

The excavation area of the Quarry has been designed to meet the excavation recommendations of geotechnical investigation (Fugro 2013) and the applicable OSHA requirements for excavations (29 CFR 1926 Subpart P). Rock Group A has sidewalls that are 0.25:1 (horizontal to vertical ratio [H:V]) slopes. Rock Groups B and C have sidewalls that are 1:1 (H:V). The excavation design includes a 20 ft bench between Rock Groups A and B to allow for construction equipment access. Side slopes within the excavation area will be adjusted if faulting, jointing, and/or inclined discontinuities are exposed. Material extraction within the excavation area will begin adjacent to the crusher area and will move further away as excavation progresses. PCW has designed the Quarry to have a positive grade, meaning the excavation floor will be at the same elevation as the crusher area where the two are adjacent and will then slope upward at a grade of approximately 2 percent as the excavation moves west. The design will create effective passive drainage to avoid water pooling. Water will drain from the excavation area to ditches along the perimeter of the crusher area and into sediment basins prior to being discharged from the site.

PCW will install temporary lights in the excavation area for security and safety. The lights will only be used when there are personnel present. Nighttime operations are anticipated to be infrequent. Temporary lighting will consist of portable light plants with telescoping booms set high enough to limit shadows, but low enough for effective lighting (typically 20 ft above ground level). Lights will have downward shields where compatible with safety.

5.3.3 Northern Operations Area

The Northern Operations Area is where excavated rock material will be processed into aggregate and loaded onto trucks for delivery to the CCSM Project. The Northern Operations Area consists of the crusher area, finished product stockpile, and truck loading area, as shown in Figure 5-3. The equipment used at the Northern Operations Area is portable, and is described in section 6.4 and below.

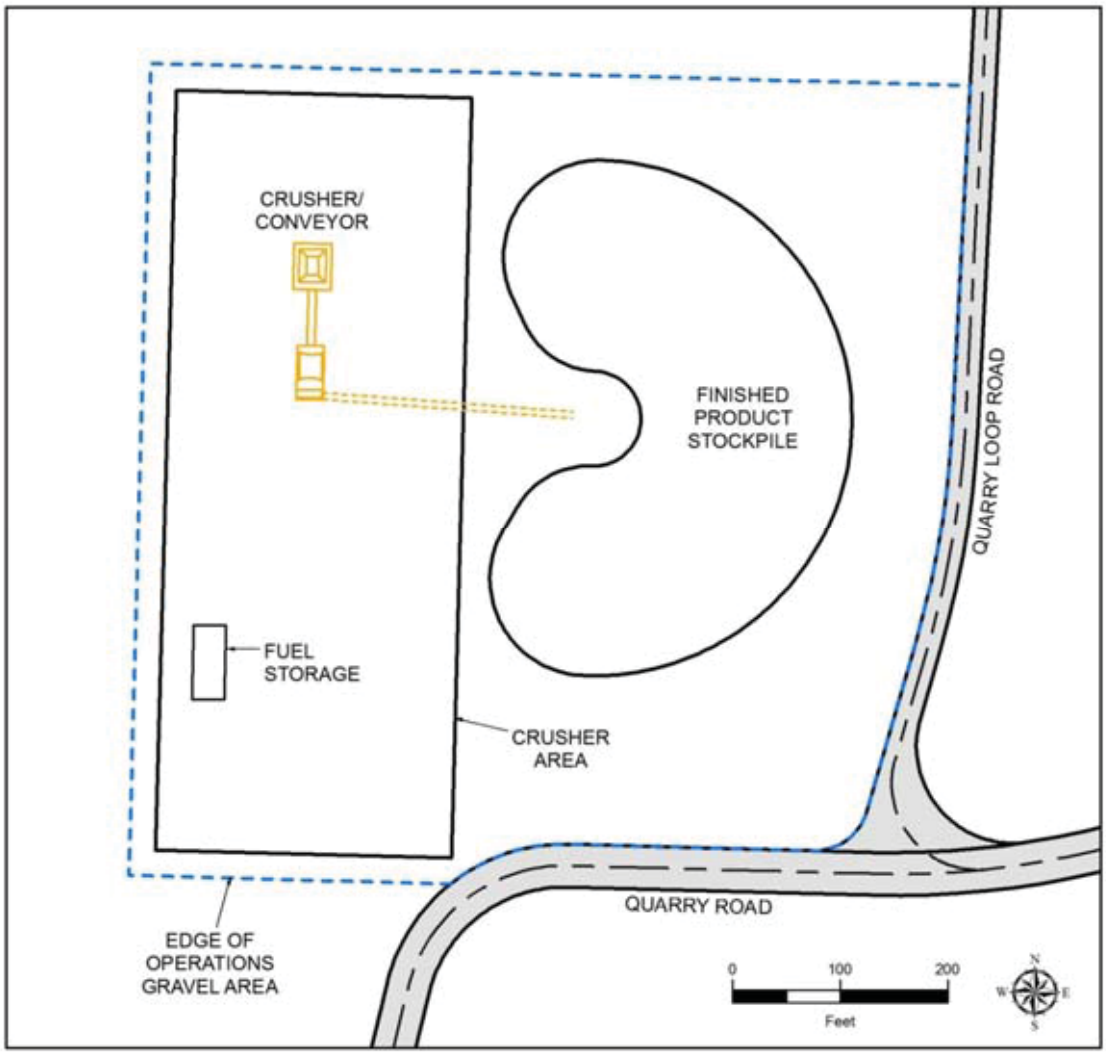

Figure 5-3 Northern Operations Area

The crusher area within the Northern Operations Area is a compacted and graveled surface designed to accommodate the portable crushing equipment necessary to process excavated material into base aggregate that meets the requirements of CCSM Phase I. The area will have an approximately 2 percent grade to facilitate drainage. The crusher equipment will be arranged as shown in Figure 5-3.

The finished product stockpile portion of the Northern Operations Area is where processed aggregate from the crushing area will be stored until it is loaded onto trucks for delivery throughout CCSM Phase I. The finished product stockpile will vary in size up to 250,000 cubic yards of aggregate based on the needs of the CCSM Project and the productivity of the Quarry. At the beginning and end of the construction season there may be minimal or no stockpile.

A conveyor system with a rotating end will be used to move aggregate from the crusher area to the finished product stockpile. The conveyor system will create a stockpile that is semicircular and up to 60 ft high with a 1:1 slope. The precise height and slope of the stockpile will vary during operations based on the properties of the finished aggregate and the material handling. As one part of the stockpile is being created, other portions of the stockpile will be loaded into aggregate trucks and will be reduced in size.

The final component of the Northern Operations Area is the truck loading area. The truck loading area is located adjacent to the finished product stockpile. At the truck loading area wheel loaders will be used to transfer aggregate from the finished product stockpile to aggregate trucks for delivery throughout CCSM Phase I.

The Northern Operations Area will have lighting similar to that discussed in section 5.3.2.

5.3.4 Southern Operations Area

The Southern Operations Area is designed to accommodate the office trailers, parking, and any necessary non-material storage for the Quarry. PCW anticipates up to two double-wide and two single-wide office trailers, along with an on-site temporary laboratory, if needed (Figure 5-4). PCW will also place portable sanitation facilities and waste disposal containers at the Southern Operations Area. The Southern Operations Area will have lighting similar to that discussed in section 5.3.2.

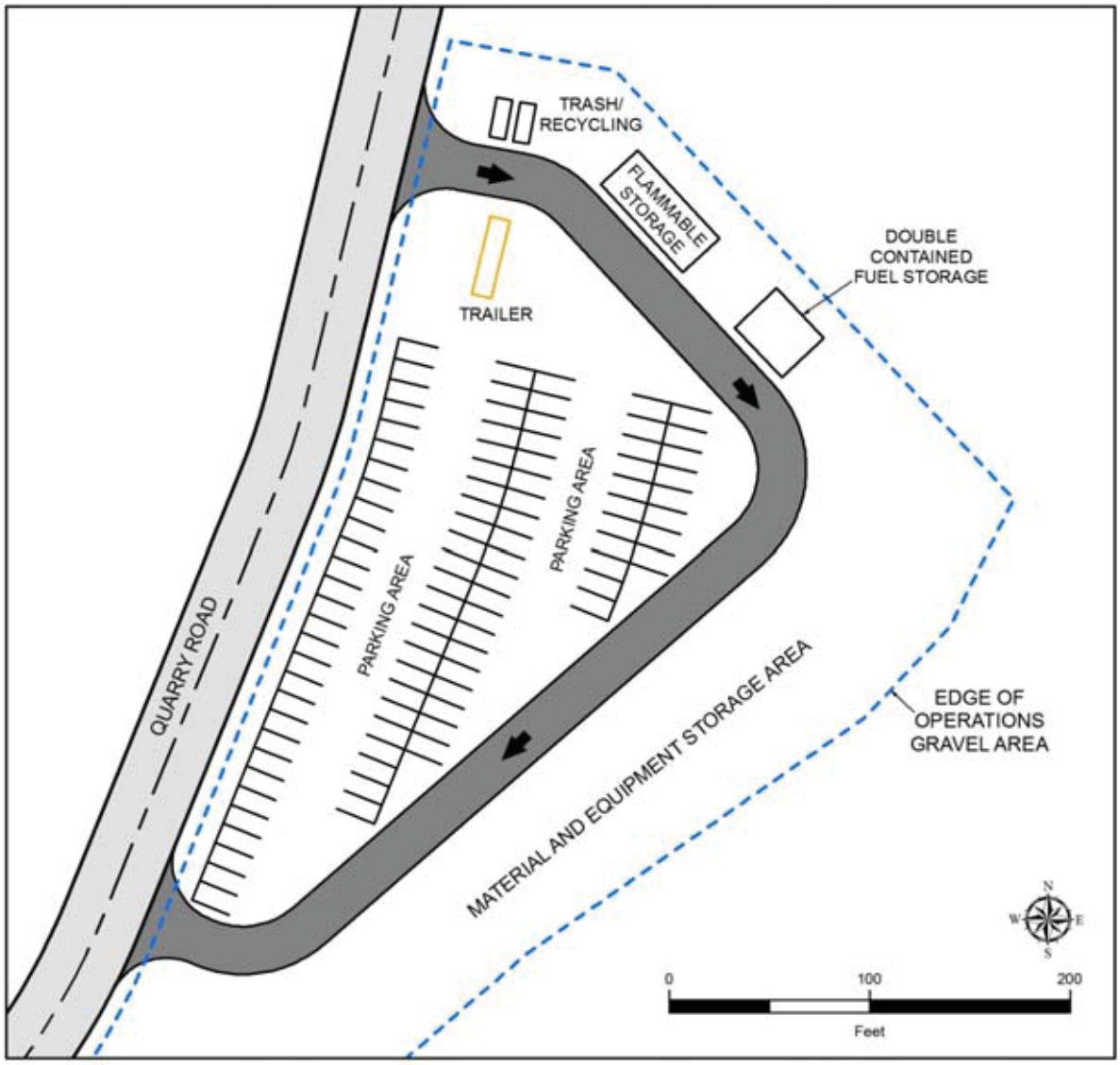

Figure 5-4 Southern Operations Area

5.3.5 Soil Storage and Erosion Control

Materials removed from the excavation area that are not suitable for use as base aggregate will be moved to appropriate soil storage areas. These areas have been designed in accordance with the WYDEQ-LQD requirements and CCSM Project Erosion Control Plan (Appendix H).

The overburden soil storage area is where the portions of Rock Groups A, B, and C that are not needed or that do not meet CCSM Project specifications for base aggregate will be stored for use as fill material or for use during reclamation of the Quarry. The overburden soil storage area is designed to be 23 acres with material piled 15 ft high, creating a 500,000 cubic yard stockpile; however, the height of the stockpile may be increased if more storage is necessary. The side slopes of the soil stockpile will generally be 2:1, but may be adjusted based on the soil

properties. The storage area will be prepared by removing the top soil and creating temporary access for construction traffic using Rock Group B material to establish a 16 to 24 ft wide road. Mass grading and compaction are not anticipated. Runoff in the overburden soil storage area will be directed away from the soil stockpile to a sediment basin using stabilized ditches.

A storage area and stockpile have been designed for soils that will be used in reclamation of the Quarry. The soils stored in the reclamation subsoil storage area will be used for reclamation of the Quarry, specifically recontouring, and will include material excavated from the Quarry, as well as suitable material excavated from other areas of the CCSM Project. The reclamation subsoil storage area is designed to be five (5) acres with material piled t 15 to 20 ft high, creating a 100,000 cubic yard stockpile; however, the height of the stockpile may be increased if more storage is needed. The side slopes of the reclamation stockpile will generally be 2:1, but may be adjusted based on the soil properties. The storage area will be prepared by removing the top soil and creating temporary access for construction traffic using Rock Group B material to establish a 16 to 24 ft wide road. Mass grading and compaction are not anticipated. Runoff in the reclamation subsoil storage area will be directed away from the soil stockpile to a sediment basin using stabilized ditches.

Top soil will be segregated from the overburden and reclamation subsoils and will be stored in four areas across the Quarry Site to minimize top soil handling and to allow for shallower piles. Top soil stockpiles will be established and managed in accordance with the requirements of WYDEQ-LQD.

The Quarry design includes erosion control measures in the form of stabilized ditches and sediment basins. Stabilized ditches will be used to convey water from disturbed areas to sediment basins prior to discharge. Stabilized ditches will have slopes that vary based on the depth of disturbance and slope of the existing terrain. Rock checks will be used to control velocity within the ditches.

There are three sedimentation basins proposed for the Quarry. The basins are intended to receive stormwater runoff from the Quarry operations area, and as such must be located downslope from those operations. One sedimentation basin receives stormwater runoff from stockpiles of topsoil, overburden soil and reclamation subsoil; this basin is located well away from an existing drainage and is separated from the drainage by the basin berm, a linear topsoil storage area, and a natural depression. The other two sedimentation basins receive stormwater runoff directly from the Quarry itself and are located as close to the Quarry as possible and as far from the existing drainage as possible. These two basins are also separated from the drainage by the basin berm structures and considerable distances of existing ground and vegetation that will not be disturbed.

Each basin outlet is protected by an outlet structure that will regulate the flow of water from the basin with rip rap at the discharge of the outlet to protect against erosion. Wherever

possible the basin outlets are not oriented directly toward the existing drainage. The sedimentation basins themselves will improve the quality of the runoff water before it reaches the existing drainage. Each basin will also have an emergency overflow which will be protected with rip rap to prevent erosion should the emergency overflow ever come into operation. Additional information on the sedimentation basins is located in the Storm Water Pollution Prevention Plan (SWPP Plan) in Appendix I.

6 Quarry Construction, Operations and Maintenance

The Quarry is a surface rock quarry operation that will provide an internal, local source of base aggregate and fill material for the CCSM Project. Due to the nature of the Quarry, construction, operations and maintenance are generally synonymous and details on the construction, operation and maintenance of the Quarry are addressed collectively below. Construction, operation, and maintenance of the Quarry is anticipated in 2014 through 2018 to support construction of CCSM Phase I.

6.1 Schedule

In 2014, PCW plans to construct Quarry Road and prepare the quarry operations area site. In 2015, PCW will mobilize the quarry equipment and begin operations. The Quarry will continue to operate seasonally through 2018 to support the construction of CCSM Phase I. The schedule described in Table 6-1 has been developed to meet the requirements of the CCSM Project.

Table 6-1. Quarry Schedule

Activity	Period
2014	
Mobilize	Sept
Construct Quarry Road	Sept - Oct
Site Preparation – Crushing Operations Area	Sept - Oct
Site Preparation – Excavation Area	Sept - Oct
Seasonal Demobilize	Nov
2015 – 2017	
Mobilize	Apr
Commence Seasonal Operations	Apr
Operate Quarry	Apr - Nov
Seasonal Demobilize	Nov
2018	
Commence Seasonal Operations	Apr
Operate Quarry	Apr - Aug
Cease Operations and Commence Decommissioning	Aug

6.2 Workforce

Table 6-2 provides an estimate of the maximum workforce by month necessary to construct, operate and maintain the Quarry. The peak workforce for the Quarry is 33 workers.

Table 6-2. Quarry Workforce Estimate

Month	2014	2015	2016	2017	2018
January	0	4	4	4	4
February	0	4	4	4	4
March	0	4	4	4	4
April	0	5	5	5	5
May	0	9	6	9	7
June	0	33	31	33	31
July	0	33	31	33	31
August	5	31	31	33	31
September	22	31	31	33	31
October	5	31	31	33	31
November	4	7	6	9	7
December	4	5	5	5	0

6.3 Access

Vehicle access to the Quarry will be through the CCSM Project North Entrance. The North Entrance is off of Interstate 80 at Exit 221, then south along CIG Road. Vehicles will then use the CCSM Project Haul Road (North Road and Chokecherry Road) to reach Quarry Road and the Quarry Facilities (Figure 6-1). Material deliveries from the Quarry to the CCSM Project will use the CCSM Project Haul Road to avoid public roads to the maximum extent practicable.

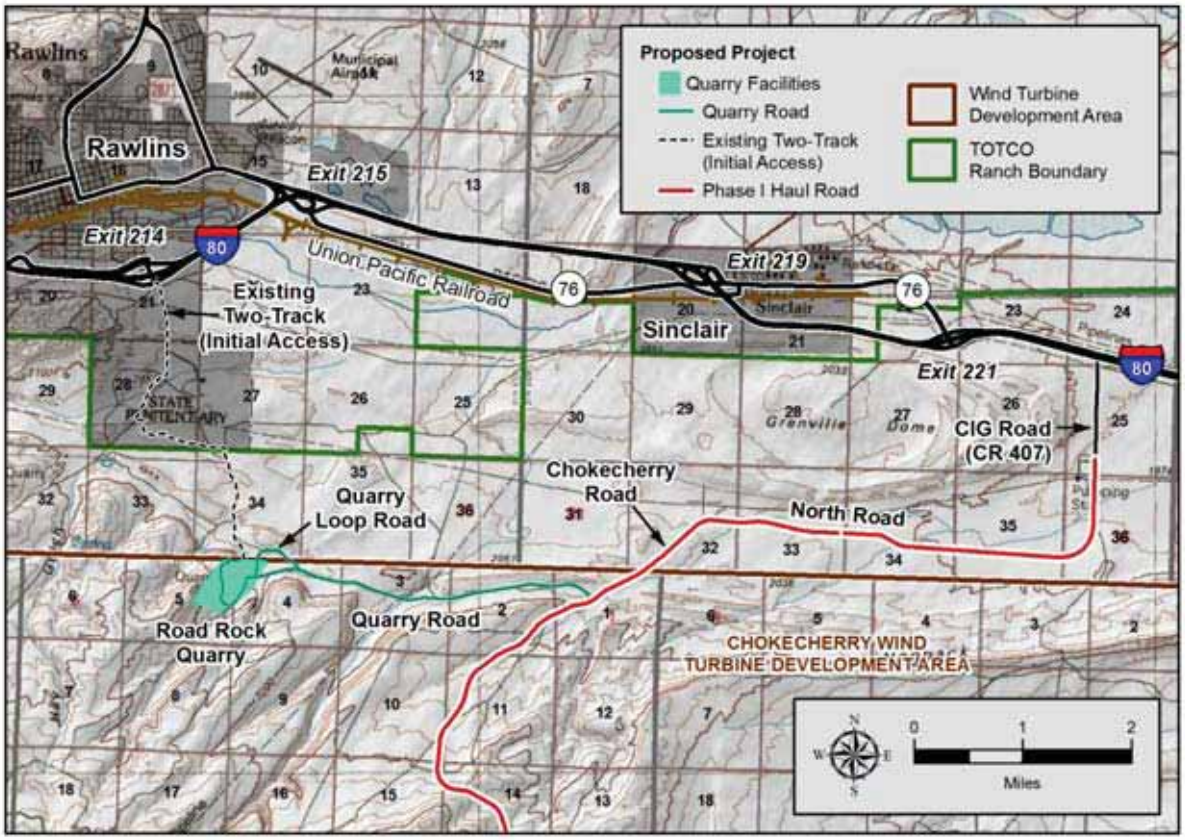

Figure 6-1 Quarry Site Access

To gain access to the Quarry Facilities in 2014, prior to completion of Quarry Road, PCW may use existing two-track roads, as shown in Figure 6-1. The existing two-track roads cross BLM and State of Wyoming lands in Township 21N, Range 87W, Section 27, 28, and 34. The use of the existing two-track roads to access the Quarry Facilities has been previously approved by State of Wyoming (easement #6930) and BLM (ROW grant No. WYW-147575). PCW intends to use the existing two-tracks as needed in 2014 to bring in equipment for site preparation and to allow the workforce to access the Quarry Facilities. Using the existing access roads allows PCW to efficiently develop the Quarry and minimize the amount of material brought onto the CCSM Project Site using public roads. PCW will use Quarry Road as the primary access to the Quarry Facilities.

Access to the Quarry Site will be controlled as needed using fencing and gates to prevent unauthorized access. Specifically, access to the Quarry will be controlled at the CCSM Project North Entrance guard shack and by fencing and gates at vehicle access points to the Quarry Facilities.

Additional information on the transportation of personnel, components, materials and equipment for the CCSM Project can be found in the Transportation Management Plan,

Appendix D. Access to the Quarry during winter conditions is discussed in the CCSM Project Winter Access Plan, Appendix E.

6.4 Equipment

PCW anticipates using the equipment described in Table 6-3 to construct, operate and maintain the Quarry. Figure 6-2 and Figure 6-3 show equipment similar to what will be used at the Quarry. All of the equipment is portable and will be brought to the site as needed. The amount of equipment needed depends on the CCSM Phase I construction activities and schedule; equipment will be mobilized as necessary to support CCSM Phase I construction activities.

Table 6-3 Construction Equipment Breakdown

Quantity	Equipment	Use
2 to 4	Dozer	Strip topsoil, strip Rock Group B & C, move Rock Group A, earthmoving
2 to 4	Scraper	Strip topsoil, strip Rock Group B & C
2 to 4	Excavator	Excavate Rock Group A, B, & C
5 to 80	Tractor Trailer (belly dumps)	Haul materials to delivery locations within CCSM Project Site
1 to 2	Motor Grader	Grade sites for crusher, stockpiles, and access roads
1	Crusher	Crush Rock Group A
1	Screener	Screen material
1	Conveyor System	Convey material to stockpile
2 to 3	Diesel Generator	Power for crusher operation and office trailers
2 to 4	Wheel Loader	Move material
1 to 2	Water Truck	Dust control

PCW intends to use portable diesel generators to supply the electrical power necessary to operate the Quarry electrical equipment and office trailers. Fuel tanks will be brought on site and placed in close proximity to the equipment they support. Up to 20,000 gallons of on-site fuel storage capacity is anticipated during Quarry construction, operation and maintenance. Fuel storage will be in accordance with the Spill Prevention, Control and Countermeasures Plan (SPCC Plan) (Appendix Q). PCW may pursue a tie to local electrical distribution service if it is available and economical. If PCW pursues an electrical connection, PCW will obtain all necessary permits and approvals.

Figure 6-2 Typical Screener (left) and Rock Crusher (right)

Figure 6-3 Typical Wheel Loader (left) and Excavator (right)

6.5 Material and Components

The Quarry provides base aggregate and fill material for the CCSM Project construction; however, construction, operation and maintenance of the Quarry itself also requires aggregate material. PCW anticipates that approximately 54,000 cubic yards of aggregate will be required to establish the Quarry prior to operations. The amount of the material anticipated to be excavated by the Quarry during each year of operation is listed in Table 5-5.

6.6 Material and Component Deliveries

Material deliveries to and from the Quarry will be by truck. Additional information on the transportation of personnel, components, materials and equipment for the CCSM Project can be found in the Transportation Management Plan, Appendix D.

6.7 Communications

Communication between Quarry personnel will be via hand-held radios and cellular phones per the CCSM Project Health and Safety Plan (Appendix R). If hand-held radio reception is inadequate, radio repeater stations will be installed at the Southern Operations Area.

6.8 Mobilization and Demobilization

Due to the nature of the Quarry, mobilization and demobilization are anticipated to occur each year of construction, operations and maintenance coincident with the CCSM Project construction season. Every year, mobilization will begin a few weeks prior to commencement of construction, operations and maintenance activities with the arrival of Quarry management staff and any office trailers necessary for the workforce. Following mobilization of the management staff, the necessary equipment will be brought on site. As particular pieces of equipment are no longer required at the Quarry near the end of the construction season, equipment will either be retasked to other CCSM Project construction activities or demobilized from the Quarry Site. Mobilization and demobilization of all trailers and equipment will be by truck.

For construction of the Quarry in 2014, the construction team will construct the roads and establish the operations areas. The office trailers for the construction team will be located in the North Laydown Yard for the CCSM Project (see Phase I Haul Road and Facilities Site-specific Plan of Development). In 2015 the Quarry operations office trailers will be located in the Quarry's Southern Operations Area. PCW anticipates up to two (2) double-wide and two (2) single-wide trailers will be needed for the Quarry. At the end of each season PCW will either winterize the office trailers and leave them in place or will remove them from the site depending on the economics and efficiency of each option.

For construction of the Quarry in 2014, the construction team will bring equipment, such as bulldozers and graders, on-site. Each year of Quarry operations, the initial mobilization will include equipment similar to that used during construction for the removal and stockpiling of soils. Once the soil handling is underway each year, the excavation and grading equipment will be delivered to the Quarry to begin material extraction. When sufficient reserves of material are established, the mobile crusher, conveyors, and additional equipment will be brought to the Quarry Site.

6.9 Construction Activities

No permanent structures will be constructed on the Quarry Site. Portable office trailers will be used for Quarry construction and operations and portable crushers will be used to process the material. Material load out at the Quarry will be accomplished using wheel loaders or portable conveyor belts to load the aggregate and fill into trucks. Due to the temporary nature of the Quarry Facilities, construction activities for the Quarry consist of establishing Quarry Road and the Quarry operations areas for material and equipment staging. During construction activities for the Quarry, dust control will be performed per the Dust Control Plan (Appendix G). Construction activities are described in detail below.

6.9.1 Site Preparation

Site preparation for the Quarry Facilities and Quarry Road will begin with topsoil removal. Bulldozers, scrapers, and motor graders will clear away existing vegetation and topsoil. Following topsoil removal, the site will be excavated, graded, and compacted per the design requirements (Appendix B). All soil handling will be in accordance with the requirements of the WYDEQ-LQD. The soil handling requirements of the Reclamation Plan (Appendix L) will apply on federal lands which are associated with access to the Quarry. Topsoil that is removed will be segregated and stockpiled for use during reclamation. Excavated subsoil will be stockpiled and used as fill throughout the CCSM Project Site when suitable. Soil stockpile locations are shown on the design drawings (Appendix B). Following site preparation, the necessary drainage structures and features will be installed and aggregate material will be placed.

The equipment used to conduct site preparation includes bulldozers (Figure 6-4 [right]), scrapers, motor graders (Figure 6-4 [left]), compaction equipment, aggregate hauling trucks and water trucks. The bulldozers, scrapers, and motor graders will complete clearing and grading operations. The compaction equipment, typically vibratory rollers, will compact the graded earth to meet design requirements. It will also be necessary to occasionally use a water truck to condition the graded soils in order to meet the compaction requirements, as well as for dust control during construction.

Figure 6-4. Typical Clearing and Grading

6.9.2 Operations Areas

The Northern and Southern Operations Areas will be prepared as described in section 6.9.1. Drainage features will be installed in accordance with the requirements of the SWPP Plan (Appendix I) and as indicated on the Issued for Permit Plans (Appendix B). Procedures for installation of drainage features are set out in section 6.9.3.1. Following drainage feature installation, each operations area will be graded and a gravel surface will be added to the depth prescribed in the Issued for Permit Plans (Appendix B).

The equipment used to establish the operations areas will include bulldozers, motor graders, compaction equipment, aggregate hauling trucks, and water trucks. The bulldozers and motor graders will complete the clearing and grading operations and the compaction equipment, typically vibratory rollers, will compact the subgrade prior to placement of the aggregate. The compaction rollers will also be used after the delivery and grading of the aggregate. It may also be necessary to occasionally use a water truck for dust control during and after construction.

Office trailers will be located in the Southern Operations Area. Once the site is prepared, the trailers will be brought to the CCSM Project Site by truck. The trailers will be placed on stands and the double wide trailers will be connected. Electrical power for the office trailers will be provided by portable generators; however, temporary power service may be set-up for the Quarry if deemed economically feasible. If temporary power service is installed, avian protection methods will be incorporated for any electric power lines.

Portable sanitation facilities, fuel storage, waste disposal containers, and a parking lot for vehicles will be located in the vicinity of the office trailers. Vehicle parking lots will be delineated using signs and rope guides or the equivalent. Temporary lighting and fencing will also be installed as needed for security and safety.

6.9.3 Roads

Following the site preparation described in section 6.9.1, Quarry Road will be constructed as described in the following sections and will meet the requirements of the CCSM Project Road Design Manual (Appendix C).

6.9.3.1 *Drainage Structure Installation*

Quarry Road crosses seven (7) minor drainages. Following site preparation for Quarry Road, PCW will install the necessary drainage structures. PCW will install circular corrugated metal pipe (CMP) culverts at each crossing (Figure 6-5). Locations for each CMP culvert will be excavated using excavators and bulldozers. Following excavation, bedding for the culvert will be placed using in-situ or nearby excavated soils. Culverts will then be placed with forklifts and excavators. Structural backfill will be placed around the culverts with dozers, front end loaders, excavators, and compactors, using soils excavated nearby wherever possible.

Figure 6-5. Typical Culvert Installation

6.9.3.2 *Subgrade Soil Compaction*

Following installation of drainage structures, the roadbed soil will be compacted. Water trucks will add moisture to the soil as needed and compaction equipment, typically vibratory rollers, will compact the subgrade soils to meet design requirements (Figure 6-6).

Figure 6-6. Road Subgrade Soil Compaction

6.9.3.3 *Soil Stabilization*

Geotechnical analysis performed to date on the Quarry Road route has not identified any locations where PCW expects soil stabilization techniques to be required; however, should soil conditions be found during construction where design compaction of the subgrade cannot be achieved, PCW will enhance soil stability. Soil stability will be enhanced through the placement of a geosynthetic material such as geotextile fabric or geogrid. The process for determining

when soil stabilization is required is described in the CCSM Project Road Design Manual (Appendix C).

Where portions of the road call for installation of geotextile fabric or geogrid, PCW will install the material following road base compaction. To install the geotextile fabric or geogrid, the material is rolled out with a front end loader or a forklift while soil is placed along the edges with a motor grader to secure it into place (Figure 6-7). Once the material is placed, smoothed out, and secured on the edges, the road is ready for aggregate placement. Extra care is taken during the aggregate placement to keep the geotextile fabric or geogrid in its correct alignment (Figure 6-8).

Figure 6-7. Geotextile Fabric Installation

Figure 6-8. Geogrid Installation

6.9.3.4 *Aggregate Placement*

Following compaction and any necessary stabilization, PCW will place aggregate over the subgrade (Figure 6-9). As shown in the Road Section Detail of the Quarry Issued for Permit

Plans (Appendix B), different portions of Quarry Road require aggregate layers of varying types and thicknesses. Aggregate requirements are based on soil properties, aggregate properties and anticipated traffic types and levels for each road. PCW will use the aggregate layering thicknesses to determine how many "lifts" of aggregate to place on each section of road. For each lift, a belly dump truck will dump the aggregate in the road section and bulldozers and motor graders will spread the material to the required thickness above the subgrade or above the previously-placed aggregate lift. For thicker aggregate sections, multiple lifts of the same material may be required. If the observed soil conditions do not meet the design assumptions, the aggregate thicknesses may be field adjusted. During the placement of aggregate, water trucks will be used to apply water for compaction and dust suppression.

Figure 6-9. Aggregate Placement

6.9.3.5 *Final Inspection and Testing*

At the completion of road construction, PCW will test Quarry Road to verify that it meets the design requirements. This testing will include proof-rolling or similar techniques for deflection verification. When Quarry Road passes the verification tests, PCW will distribute stockpiled topsoil along the road shoulders and ditches to support revegetation and reclamation in accordance with the requirements of the WYDEQ-LQD. The requirements of the Reclamation Plan (Appendix L) will be applied to federal lands.

6.10 Operations and Maintenance Activities

Operations and maintenance activities at the Quarry generally consist of stripping and stockpiling topsoil and overburden to expose the underlying material for excavation. The target material is then systematically removed by excavation and/or drilling and blasting, transferred to a staging area for separation and crushing, and stockpiled for use throughout the CCSM Project. During operation of the Quarry, dust control will be performed per the Dust Control Plan (Appendix G). Quarry operations are anticipated to begin in 2015 following completion of construction.

6.10.1 Material Extraction

6.10.1.1 *Topsoil*

Topsoil will be stripped using a dozer, scraper, wheel loader, motor grader or a combination of this equipment. Based on geotechnical soil borings and surface geophysical surveys completed for the Quarry, as well as visual examination, topsoil thickness ranges from 0 to 6 inches with the depth of topsoil increasing from east to west. PCW will remove, segregate and stockpile the topsoil on-site consistent with the reclamation requirements of the WYDEQ-LQD.

Topsoil stockpiles will be seeded with a mixture approved by the WYDEQ-LQD. In addition, the stockpiles will have the appropriate signage to prevent mixing and will be placed parallel to the prevailing wind direction in an effort to minimize wind erosion. The topsoil stockpiles will be placed on a relatively flat area outside of drainage areas to prevent water erosion. The stockpiles may also be bermed and ditched to provide additional erosion protection.

At the time of reclamation, topsoil will be hauled from the stockpile to the reclamation area, preferably near its original location. Topsoil will be redistributed with a scraper, dozer, or similar type equipment. Final grading of the reclaimed area will be performed with a motor grader, finish dozer, or similar type of equipment depending on the terrain of the reclamation area. Topsoil will be seeded following placement to minimize loss from wind and water erosion.

6.10.1.2 *Excavation*

To mine the Quarry, topsoil will be stripped as described above. The overburden (Rock Groups B and C) will then be stripped/excavated with dozers, scrapers, and excavators. The overburden will be stockpiled temporarily and will be used as non-structural fill material during reclamation and on other portions of the CCSM Project where applicable. Following removal of the overburden, a rock face will be established for mining. Mining the rock face involves excavation and/or drilling and blasting. The excavated material or shot-rock will be pushed with a dozer into a pile adjacent to the crushing operation, and any remaining overburden will be separated and removed.

6.10.2 Aggregate Crushing and Stockpiling

The crushing operation will convert excavated Rock Group A material into base aggregate for CCSM Project construction. The main components of the crushing operation include a portable jaw crusher (approximately 54 inch x 36 inch) and a secondary cone crusher/tandem screen closed loop system. The jaw crusher reduces shot-rock from large cobbles and boulders to 6-inch or smaller diameter fragments. These fragments are then fed into the secondary cone crusher/tandem screen system. The cone/screen operation takes the fragments and further reduces them to designed diameter for the required material. Remaining larger rock fragments are sometimes reprocessed. A level pad will be graded for the portable crushing operation prior to mobilization and establishment of the rock face.

A large dozer will push the shot-rock from the stockpile to a loader, which will feed the raw material into a vibrating "Grizzly" screen before it enters the jaw crusher. This removes any rock fragments that are too large to fit into the 36 inch jaw opening. The dozer and loader will work together to excavate the face of the Quarry and feed the crusher. At periodic intervals (approximately once per month) another shot will be drilled and blasted to replenish the feedstock material as the Quarry face moves away from the crushing operation. Following crushing, the usable processed base aggregate will be placed in the finished product stockpile via a radial stacking conveyor.

6.10.3 Loading and Transportation

Following stockpiling, finished product will be loaded onto trucks for use throughout the CCSM Project Site. Trucks will be loaded using a combination of wheel loaders, conveyors, and possibly overhead storage (Figure 6-10). A loop has been incorporated into Quarry Road to facilitate the efficient loading of trucks. The trucks the will be used to transport the processed material consist of tractor trailers with appropriate aggregate trailers or tandem axle dump trucks. The traffic to and from the Quarry will use the CCSM Project Haul Road to access construction locations.

Loading of fill material, generally from the overburden soil storage area or temporary soil stockpiles within the Northern Operations Area, will be accomplished using wheel loaders.

Figure 6-10. Aggregate Loading

7 Decommissioning

This chapter describes the methods and means to decommission the Quarry at the end of CCSM Project construction. The Quarry will be decommissioned during of the last year of CCSM Project construction. PCW anticipates that decommissioning will take approximately two (2) months to complete; likely October and November.

PCW will begin reclamation of the Quarry by removing the unnecessary equipment from the Quarry Site. Subsoil in the reclamation subsoil storage area will be used to recontour the excavation area, and the topsoil will be placed in accordance with the requirements of the WYDEQ-LQD. The requirements of the Reclamation Plan (Appendix L) will apply on federal lands, specifically the portions of Quarry Road on federal lands.

7.1 Pre-Decommissioning

Pre-decommissioning activities will occur prior to mobilization of the decommissioning contractor. In general, pre-decommissioning activities for the Quarry include coordination and outreach meetings with stakeholders. It is anticipated that a stakeholder workshop will be held to determine the scope and requirements for decommissioning and to insure that current decommissioning standards are met. PCW will use the stakeholder workshop to solicit input from TOTCO, affected landowners and businesses, as well as appropriate federal, state, and local agencies. Input from the stakeholder meeting will be used to help define the decommissioning scope of work, e.g. roads that will remain in place, recycling and reuse options, and identification of landfill facilities.

Following the stakeholder meeting, PCW will create the final scope of work for decommissioning and a work plan to implement it. PCW will also obtain all permits necessary to complete decommissioning.

7.2 Workforce

During decommissioning, PCW anticipates a constant workforce of about 15 people working 12 hours per day, six (6) days per week.

7.3 Equipment

Decommissioning equipment will include excavators, bulldozers, front end loaders, motor graders, water trucks, forklifts, rough terrain cranes, and dump trucks. Much of this equipment will be on-site already at the end of Quarry operations, and will be retasked for decommissioning.

7.4 Material and Components

The primary materials used to decommission the Quarry are the subsoil and topsoil removed during the Quarry operations and stored in stockpiles on the Quarry Site. The same equipment

used to place the soil into stockpiles will be used to move it back to the excavation area. PCW does not anticipate removing soils from the Quarry Site or importing materials from off-site to support decommissioning of the Quarry.

7.5 Communications

During decommissioning, personnel will communicate via hand-held radios and cellular phones.

7.6 Decommissioning Activities

Decommissioning activities for the Quarry are expected to include the following:

- Removal of road and operations area aggregate
- Decompaction of subbase
- Removal of drainage structures (i.e. culverts)
- Removal of temporary facilities
- Moving excavated material from storage stockpiles to excavation area
- Final earthwork to reshape and re-contour the land
- Placement of topsoil in storage
- Revegetation

PCW does not anticipate that blasting will be required for Quarry decommissioning.

7.6.1 Mobilization and Demobilization

PCW is not anticipating a large mobilization effort for decommissioning of the Quarry. The Quarry will be in operation until immediately prior to decommissioning; therefore, much of the same equipment, facilities and personnel will be used. If additional or specialized equipment is required for decommissioning, it will be brought to the Quarry Site by truck.

As decommissioning progresses and equipment is no longer required, it will be removed from the Quarry Site by truck. At the conclusion of the decommissioning, all temporary facilities will be removed along with any remaining equipment.

7.6.2 Temporary Facilities

The office trailers located within the Southern Operations Area used during the Quarry operations will also be used during decommissioning. PCW anticipates using up to two (2) double-wide and two (2) single-wide trailers, along with associated portable sanitation facilities (portable toilets), fuel storage, waste disposal containers, and parking. Prior to demobilization of the Quarry decommissioning team, all temporary facilities will be removed and the area will be reclaimed in accordance with the requirements of the WYDEQ-LQD. The requirements of the Reclamation Plan (Appendix L) will apply to federal lands.

7.6.3 Roads

Unless deemed necessary for the operation of the CCSM Project or requested to be left in place by the landowners, PCW will decommission Quarry Road upon completion of the Quarry Site's reclamation. Decommissioning Quarry Road will consist of removing the aggregate with a combination of motor grader, scraper, and front end loader. Once the aggregate has been removed, the subbase will be decompacted with a bulldozer equipped with a ripper and/or a pull-type disk similar to those used in agricultural operations. With the subbase decompacted, the drainage structures will be removed with an excavator, front end loader, and forklift. The area will then be recontoured and revegetated in accordance with the requirements of WYDEQ-LQD. The requirements of the Reclamation Plan (Appendix L) will apply to federal lands.

7.6.4 Operations Areas

At the completion of the excavation area decommissioning, the Northern and Southern Operations Areas will be decommissioned and reclaimed. Decommissioning will consist of removing the aggregate with a combination of motor grader, scraper, and front end loader. Once the aggregate has been removed, the operations areas will be decompacted as needed with a bulldozer equipped with a ripper and/or a pull-type disk similar to those used in agricultural operations. Following decompaction, any drainage structures will be removed with an excavator, front end loader, and forklift. The area will then be recontoured and reclaimed in accordance with the requirements of WYDEQ-LQD.

7.6.5 Excavation Area

Material from the reclamation subsoil stockpile will be placed into the excavation area during decommissioning. The material will then be recontoured and covered with topsoil. Following topsoil placement, the excavation area will be revegetated in accordance with the WYDEQ-LQD requirements. Material will be moved, placed, and compacted using motor graders, front-end loaders, bulldozers, and dump trucks.

Material will be placed and contoured to tie the excavation area into the surrounding terrain and re-establish the drainage patterns that existed prior to Quarry operations. PCW anticipates that the final slopes will be approximately one (1) ft vertical to one (1) to three (3) ft horizontal, and include a bench that is approximately 10 ft wide every 25 vertical ft. The current slopes in the area are steeper than this but are not realistic for stable restoration. The contours of the existing terrain as well as the anticipated post-decommissioning terrain are shown in Figure 7-1.

With the material in place and contoured, topsoil will be redistributed with a scraper, dozer, or similar type equipment. Final grading of the reclaimed area before seeding will be performed with a motor grader, finish dozer, or similar type of equipment depending on the terrain of the reclamation area. Revegetation will then occur in accordance with the WYDEQ-LQD. The requirements of the Reclamation Plan (Appendix L) will apply to federal lands. Additional details on soil handling and reclamation requirements are located in section 8.6.

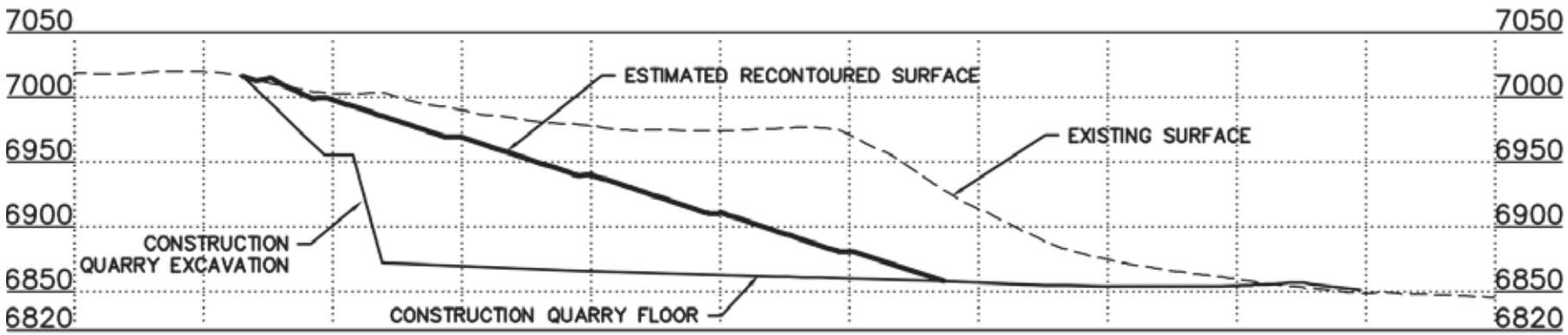

Figure 7-1. Anticipated Post-Decommissioning Excavation Area Contour

8 Environmental Resources

PCW has planned and will implement construction, operation, maintenance, and decommissioning of the Quarry to minimize effects to environmental resources, to the extent practicable. PCW will apply measures to avoid, minimize, or mitigate potential effects to environmental resources on federal lands from the Quarry as described in Appendix A and this site-specific plan of development. While PCW's preference is to use these same measures on private lands and state lands, specific measures on these lands may vary as they will be developed in coordination with private landowners, Wyoming Department of Environmental Quality, Wyoming Industrial Siting Council, the State Land Board, and the Wyoming Game and Fish Commission (WGFC), as appropriate. To implement the measures included in this site-specific plan of development, as well as the EIS and ROD, PCW has developed the CCSM Project Environmental and Construction Compliance Monitoring Plan, Appendix F. The following sections provide site-specific information on the environmental resources within the Quarry Site and the potential effects of the Quarry.

8.1 Land Use

The Quarry is located in the northwestern portion of the CCSM Project Site. The Quarry Facilities are located entirely on private land owned by TOTCO, although portions of Quarry Road are located on federal lands administered by BLM RFO (Table 8-1). TOTCO maintains the grazing leases on the federal lands and operates the Ranch, including the Quarry Site, as a cattle ranch. The Quarry Site was historically used as a rock quarry. Quarry operations will be restricted to private lands; no material will be mined on federal lands. There are no year-round or other residences within the Quarry Site.

Table 8-1. Disturbance by Land Ownership

Component	Initial Disturbance (acres)			Long-Term Disturbance (acres)		
	Private	Federal	Total	Private	Federal	Total
Operations Areas	96.4	---	**96.4**	---	---	**0.0**
Excavation Area	20.1	---	**20.1**	---	---	**0.0**
Quarry Road	42.3	24.7	**67.0**	11.6	6.0	**17.6**
TOTAL	**158.8**	**24.7**	**183.5**	**11.6**	**6.0**	**17.6**

8.2 Air Quality

PCW will comply with all federal, state, and local emissions standards for air quality. PCW has incorporated measures, as detailed in Appendix A, to minimize impacts to air quality. Air pollutants emitted during operations, maintenance, and decommissioning of the Quarry include particulates (fugitive dust) from vehicle traffic and operations activities, as well as

nitrogen dioxide (NO_2), carbon monoxide (CO), and sulfur dioxide (SO_2) from engines powering equipment and other mobile sources. Emissions of fugitive volatile organic compounds (VOCs) from the Quarry, primarily from fuel storage and vehicle fueling, will be very small compared to other local sources including refineries, power plants, oil and gas development, and interstate traffic.

Maximum pollutant emissions associated with the Quarry will be short-term and associated with operations and maintenance. Construction, operations, maintenance, and decommissioning of the Quarry involve the use of earth-moving equipment, including loaders, scrapers, bulldozers, shovels, and backhoes. The equipment inventory for the Quarry is included in section 6.4 of this site-specific plan of development.

Although the Quarry will emit low levels of pollutants principally from mobile sources during construction, operations, maintenance, and decommissioning, the net effect of the CCSM Project will be to improve atmospheric conditions since it will be in support of generation of electricity from wind turbines that will reduce the need for electricity generated in fossil fuel-fired power plants (BLM 2012a). Taking into account the emissions estimated for the CCSM Project and air quality impacts of other projects in the area, BLM concluded that increases in concentrations of CO, NO_X, SO_2, PM_{10}, and $PM_{2.5}$ in the vicinity of CCSM Project will be unlikely to exceed federal or state ambient air quality standards (BLM 2012a).

8.3 Soils

The Quarry Site is located in an arid environment that contains potentially erosive soils; however, because of shallow soil depths, erosion potential is limited at the Quarry Site. In areas with sufficient soil depth, including areas adjacent to Quarry Road, surface disturbing activities may result in exposed soils, accelerated soil erosion, and reduced soil productivity. To minimize effects of Quarry Road on soil resources on federal lands, PCW will implement the measures detailed in Appendix A, as well as the Quarry Reclamation Plan (Appendix L), Erosion Control Plan (Appendix H), and SWPP Plan (Appendix I). These plans include erosion control measures and soil handling protocols to avoid, minimize, or mitigate effects from surface-disturbing activities. In addition, these measures control surface runoff and erosion, and ensure biophysical conditions are maintained for reclamation. Erosion control measures and structures for the Quarry are specified in Appendix B, the Issued for Permit Plans; these structures will be inspected and maintained as outlined in the SWPP Plan.

The Quarry Site is positioned on the northern flanks of the Chokecherry Mesa, characterized by slightly weathered shale and sandstone primarily from the Mesaverde Group/Steele Shale undivided formations. Topography in the area ranges from nearly level to very steep on slopes that are commonly dissected. Soils have developed primarily from residuum and alluvium of mixed lithology on hillslopes and bluffs, underlain by slightly weathered to unweathered bedrock comprised of Mesaverde Group/Steele Shale undivided formations. Subsurface textures are predominantly shaley loams to shallow loams. Geotechnical testing for the Quarry

was completed at three (3) boring locations with drilling depths ranging from 101 ft to 176 ft (Fugro 2013). Soil depths within the Quarry Site are generally very shallow, with deeper and more developed soils along Quarry Road.

Soils within the Quarry Site are primarily derived from sedimentary formations and are predominantly orthents; soils that are shallow to very deep and medium to fine textured and have a frigid temperature regime, an aridic moisture regime, and mixed or bentonitic mineralogy derived from marine shales. Predominant soil series in this area include the Blazon, Rentsac, and Chaperton series.

The Blazon series is shallow (0-4 inches) overlaying unconsolidated shale bedrock that occurs on pediments, hill slopes, plateaus, and ridges (NRCS 2013). Slopes range from 6 to 40 percent. The Blazon series is calcareous and is also compaction prone when moist or saturated. Water erosion potential is high and wind erosion potential is moderate. Topsoil suitability is good.

The Rentsac series occurs on mountains, escarpments, bedrock-floored plains, and hills (NRCS 2013). Slopes range from 10 to 70 percent. Rentsac soils are shallow to moderate depth (0-18 inches) with loamy skeletal textures overlaying calcareous sandstone. Water erosion potential is high and wind erosion potential is moderate. Topsoil suitability is poor due to large stones.

The Chaperton series consist of moderately deep, well-drained calcareous soils that formed in slope alluvium over residuum derived from shale (NRCS 2013). These soils occur on gently sloping to steep rolling hills and cuesta dipslopes, with slopes ranging from 2 to 40 percent. Textures range from loams to clay loams with 0 to 15 percent rock fragments that are dominantly gravel and cobble in size. Depth to accumulated calcium carbonates is 10 to 20 inches and 20 to 40 inches to paralithic shale.

8.4 Vegetation

The Quarry Site is primarily characterized by sagebrush steppe composed of Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) mixed with upland grassland vegetation. Vegetation surveys were conducted for the CCSM Project Site, including the Quarry Site in 2009 and were confirmed during 2012 and 2013 survey efforts. State of Wyoming and Carbon County listed noxious and invasive species in the Quarry Site are identified in the Weed Management Plan (Appendix J). Wetland delineation data was collected in 2013 to characterize the wetland plant communities within the Quarry Site, as further discussed in section 8.5.2 and Appendix K of this site-specific plan of development. No wetland communities occur within the disturbance area of the Quarry. Table 8-2 includes a summary of the vegetation communities within the Quarry Site, as determined, based on PCW's site-specific vegetation data.

Table 8-2. Summary of the vegetation communities within the Quarry Site

Vegetation Community	Acreage	Percentage
Wyoming Big Sagebrush/Greasewood	50.8	27.7%
Wyoming Big Sagebrush/Black Sagebrush	46.1	25.1%
Wyoming Big Sagebrush	24.0	13.1%
Bluebunch Wheatgrass/Wyoming Big Sagebrush	13.8	7.5%
Bluebunch Wheatgrass/Black Sagebrush	12.4	6.8%
Basin Big Sagebrush	8.8	4.8%
Bluebunch Wheatgrass	8.1	4.4%
Other[1]	6.2	3.4%
Disturbed/developed	13.4	7.3%
TOTAL	183.5	100.0%

Notes:

(1) Greasewood/saltbush/basin big sagebrush, threadleaf sedge, greasewood/basin big sagebrush, mountain big sagebrush/Wyoming big sagebrush, mixed mountain shrub, Gardner's saltbush/Wyoming big sagebrush, greasewood/saltgrass, bluebunch wheatgrass/mountain big sagebrush, shadscale saltbush/black sagebrush, mountain big sagebrush/rabbitbrush, and greasewood each make up less than 1 percent of the total acreage of the Quarry Site.

8.4.1 Wyoming Big Sagebrush Communities

Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) is a variety of big sagebrush and is closely related to mountain big sagebrush. Wyoming big sagebrush overlaps in range and elevation with basin big sagebrush (NatureServe 2014). Plants are considerably smaller than those of basin big sagebrush, usually less than 0.9 m tall, and have main stems branching from the ground. Flowering stems are not as widely branching as those of the basin variety, but otherwise closely resemble that subspecies. Leaves are typically shorter, from 1 to 1.5 cm long, and flabelliform. The range of mountain big sagebrush and Wyoming big sagebrush overlap and are known to hybridize with each other.

Pure stands of Wyoming big sagebrush mainly occur on Loamy Ecological Sites, with some on Sandy and Clayey Ecological Sites in 7-9 inch and 10-14 inch precipitation zones. Wyoming big sagebrush steppe communities are prevalent in the West (NatureServe 2014). The species is a native long-lived shrub, generally 18-30 inches tall with rounded uneven crowns. The species typically occurs on foothills, undulating terraces, slopes and plateaus but also occurs in basins and valley bottoms. It is most commonly found on frigid, mesic, and xeric soils of silty, clayey, skeletal and mixed textures. Soil pH varies from moderately acidic to moderately basic. Species diversity is relatively low in Wyoming big sagebrush communities; common associates may include fringed sagebrush, broom snakeweed, western wheatgrass, Sandberg bluegrass,

bluebunch wheatgrass, bottlebrush squirreltail, Idaho fescue (*Festuca idahoensis*), Thurber needlegrass (*Achnatherum thurberianum*) and needle-and-thread grass.

8.4.1.1 *Wyoming Big Sagebrush/Greasewood (Sarcobatus vermiculatus)*

This sub-association mainly occurs on Clayey and Shallow Clayey Ecological Sites in 7-9 inch and 10-14 inch precipitation zones. This association is characteristic of valley bottom positions and the presence of other shrubs in the canopy indicates less saline conditions than pure stands of greasewood (NatureServe 2014). Soils are typically saline, deep and generally sandy, but a few sites are on well-drained silt loams or clays. Total shrub cover for this association is typically between 5 and 30%. The typical sagebrush element is Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis),* but basin big sagebrush (*Artemisia tridentata ssp. tridentate)* may also occur. The sagebrush and the greasewood component can vary in terms of their cover dominance. Four-wing saltbush (*Atriplex canescens),* is also co-dominant with rubber rabbitbrush (*Ericameria nauseosa)*, and yellow rabbitbrish (*Chrysothamnus viscidiflorus)* as other common minor elements of the shrub canopy. Understory cover varies from sparse to dense and non-native species may persist.

8.4.1.2 *Wyoming Big Sagebrush/Black Sagebrush (Artemisia nova)*

This sub-association mainly occurs on Shallow Sandy and Shallow Loamy Ecological Sites. Stands occur on mountain and hillslopes, ridges, mesa tops, alluvial fans and river bluffs (NatureServe 2014). Soils are shallow, well-drained, and coarse-textured ranging from gravelly loam to sandy clay loam. The vegetation is characterized by an open to moderately dense shrub layer that is codominated by Wyoming big sagebrush and black sagebrush. Other woody species may include shadscale saltbush (*Atriplex confertifolia),* basin big sagebrush (*Artemisia tridentata)* and yellow rabbitbrush *(Chrysothamnus viscidiflorus)*. The community typically has a sparse herbaceous understory with only scattered grasses and forbs. Common grasses may include Indian ricegrass (*Achnatherum hymenoides),* purple threeawn *(Aristida purpurea),* needle and thread (*Hesperostipa comata),* James's galleta *(Pleuraphis jamesii),* bluebunch wheatgrass (*Pseudoroegneria spicata)*, and Sandberg bluegrass (*Poa secunda)*. Forbs species may include broom snakeweed (*Gutierrezia sarothrae)*, hairy false goldenaster (*Heterotheca villosa)*, spiny phlox (*Phlox hoodii)*, prickly phlox (*Phlox pungens)*, and stemless mock goldenweed (*Stenotus acaulis)*.

8.4.2 **Basin Big Sagebrush Communities**

Pure stands of basin big sagebrush primarily occur on Loamy and Shallow Sandy Ecological Sites in 7-9 inch and 10-14 inch precipitation zones. Basin big sagebrush is a widespread erect, rounded, or somewhat spreading evergreen shrub which normally grows 3-10 feet in height, maximum stature being reached on deep, well-drained soils in sheltered areas (NatureServe 2014). The species is found in mesic habitats, in valley bottoms, lower foothills, or adjacent to drainages; it frequently coincides with high water tables or deep water accumulations. Basin big sagebrush is most commonly found on stratified sandy loam soils and is generally considered

intolerant of alkaline conditions though some ecotypes may be found in association with salt tolerant species such as shadscale (*Atriplex confertifolia*), black greasewood (*Sarcobatus vermiculatus*), and saltgrass (*Distichlis* spp.). Common shrub associates include broom snakeweed (*Gutierrezia sarothrae)* and yellow rabbitbrush *(Chrysothamnus viscidiflorus).* The community commonly grows in association with bluebunch wheatgrass (*Pseudoroegneria spicata*), Thurber needlegrass (*Achnatherum thurberianum*), needle-and-thread grass (*Hesperostipa comata*), Idaho fescue (*Festuca idahoensis*), and Sandberg bluegrass (*Poa secunda*).

8.4.3 Bluebunch Wheatgrass Communities

Pure stands of bluebunch wheatgrass occur on Shallow Loamy and Shallow Sandy Ecological Sites in 7-9 and 10-14 inch precipitation zones. Bluebunch wheatgrass is a native, cool season perennial grass with densely tufted culms that stands 12-30 inches tall (NatureServe 2014). The species grows in areas with good drainage and full sun, and under a wide precipitation regime making it very drought tolerant, persistent and adapted to stabilization of disturbed soils. It grows within an elevation range of 500-10,000 feet. The species needs at least 10 inches of moderately coarse, loam soils and is intolerant of excessive salts, low pH or high soil moisture. The species is typically a major component of many plant communities, generally occupying 20-60% of the overall composition by weight. When in association, species may include Sandberg bluegrass (*Poa secunda),* Indian ricegrass (*Achnatherum hymenoides),* western wheatgrass (*Pascopyrum smithii),* prairie junegrass *(Koeleria macrantha),* threadleaf sedge (*Carex filifolia),* slender wheatgrass (*Elymus trachycaulus),* James' galleta (*Pleuraphis jamesii)*, and needle and thread (*Hesperostipa comata)*. A sparse forb layer may be present comprising spiny phlox (*Phlox hoodii),* tapertip hawksbeard *(Crepis acuminata),* prairie sagewort (*Artemisia frigida)*, and *Calochortus* spp.

8.4.3.1 *Bluebunch Wheatgrass/ Black Sagebrush*

This sub-association mainly occurs on Shallow Sandy Ecological Sites in 7-9 and 10-14 inch precipitation zones. The association occurs on dry, gently to moderately sloping hills and ridges on any aspect at 4,600-8,560 feet elevation (NatureServe 2014). Soils are typically shallow and gravelly and are often high in calcium carbonate. Unvegetated areas are dominated by rock and gravel cover. The vegetation is characterized by a low-shrub canopy dominated by black sagebrush with 5% to 30% cover. Low cover of other shrubs may include Basin Big Sagebrush (*Artemisia tridentata),* yellow rabbitbrush (*Chrysothamnus viscidiflorus),* spiny hopsage (*Grayia spinosa),* snowberry (*Symphoricarpos* sp.), and broom snakeweed (*Gutierrezia sarothrae)*. Graminoids particularly bluebunch wheatgrass dominate the diverse herbaceous layer; other species include Sandberg bluegrass (*Poa secunda),* Indian ricegrass (*Achnatherum hymenoides),* western wheatgrass (*Pascopyrum smithii),* prairie junegrass *(Koeleria macrantha),* threadleaf sedge (*Carex filifolia),* slender wheatgrass (*Elymus trachycaulus),* James' galleta (*Pleuraphis jamesii)*, and needle and thread (*Hesperostipa comata)*. A sparse forb layer may be present comprising spiny phlox (*Phlox hoodii),* tapertip hawksbeard *(Crepis acuminata),* prairie sagewort (*Artemisia frigida)*, and *Calochortus* spp.

8.4.3.2 *Bluebunch Wheatgrass/Wyoming Big Sagebrush*

This sub-association occurs on Shallow Loamy, Sandy, Loamy, and Shallow Clay Ecological Sites in 7-9 and 10-14 inch precipitation zones. The association is commonly found on gentle to steep slope on any aspect (NatureServe 2014). Stands typically occur on moderately deep to deep loamy soils sometimes with a cemented clay layer limiting water and root penetration. Parent materials are variable but often coarse. Wyoming big sagebrush is dominant in the shrub layer, making up at least 10% canopy cover. Total vegetation cover ranges between 20% and more than 100%, roughly evenly divided between the shrub and herbaceous strata. Other shrub associates may include rabbitbrush spp. (*Chrysothamnus* spp.), shadscale saltbush (*Atriplex confertifolia),* antelope bitterbrush (*Purshia tridentata),* desert snowberry (*Symphoricarpos longiflorus)*, and Utah serviceberry (*Amelanchier utahensis)*. The herbaceous understory is generally a diverse mix of grasses and forbs. Bluebunch wheatgrass is dominant, but may be found in association with Thurber's needlegrass (*Achnatherum thurberianum),* Idaho fescue (*Festuca idahoensis),* needle and thread (*Hesperostipa comata),* Sandberg bluegrass (*Poa secunda),* prairie junegrass (*Koeleria macrantha)*, and muttongrass (*Poa fendleriana)*. Forbs are variable but common species may include sulphur-flower buckwheat (*Eriogonum umbellatum),* scarlet globemallow (*Sphaeralcea coccinea)*, and arrowleaf balsamroot (*Balsamorhiza sagittata)*.

8.5 Water Resources

The Quarry is located within Division 1 of the Wyoming State Engineer's Office and includes waters in the North Platte River basin. The Quarry has the potential to impact water resources through water use, as well as through erosion and sedimentation from construction, operations, maintenance, and decommissioning activities. PCW will implement the measures described in Appendix A on federal lands to minimize impacts to water resources from the Quarry. PCW has also developed a Storm Water Pollution Prevention Plan (Appendix I) and Erosion Control Plan (Appendix H) to further minimize impacts to water resources. In addition, PCW is implementing the Watershed Monitoring Plan for the CCSM Project to detect impacts to watersheds from the CCSM Project for early identification and management. Erosion control is discussed further in Appendix H and Appendix I of this site-specific plan of development.

TOTCO owns numerous water rights within the Ranch far in excess of the amounts required to construct, operate, maintain, and decommission the Quarry. These rights are generally approved for irrigation, domestic, and stock watering uses. PCW has negotiated with TOTCO for the temporary or permanent change of these existing water rights for use on the CCSM Project. Additional options to meet long term water supply needs include purchasing bulk water and negotiating a water supply agreement with the City of Rawlins and/or Town of Sinclair.

The water supply for the Quarry takes into consideration environmental concerns along with water resource availability and infrastructure needs. Where possible, PCW will make use of existing infrastructure and will take advantage of municipal supplies when available.

Throughout construction, operation, maintenance, and decommissioning of the Quarry, PCW will work to minimize water demand and make the most efficient use of the water resources available.

8.5.1 Watershed

The Quarry includes waters in an unnamed tributary to Sugar Creek (HUC12 101800021304) and Grenville Dome (HUC12 101800021005) subwatersheds. No named surface waters occur within the Quarry Site. The estimated initial and long-term disturbance associated with the Quarry is broken down by watershed in Table 8-3.

Table 8-3 Quarry Disturbance by Sub-Watershed

Sub-watershed Name	Sub-watershed Total Area (acres)	Initial Disturbance		Long-term Disturbance		Stream Crossings in sub-watershed
		acres	percent	acres	percent	
NORTH PLATTE BASIN						
North Platte River-First Cottonwood Draw	46,942	--	--	--	--	--
Little Jack Creek	35,771	--	--	--	--	--
Upper Sage Creek-North Platte River	40,935	--	--	--	--	--
Rasmussen Creek	23,488	--	--	--	--	--
Lower Sage Creek-Upper North Platte River	20,079	--	--	--	--	--
Miller Creek	28,571	--	--	--	--	--
Upper Little Sage Creek	30,732	--	--	--	--	--
Lower Little Sage Creek	16,898	--	--	--	--	--
North Platte River-Coal Mine Draw	34,326	--	--	--	--	--
North Platte River-Lost Springs Draw	47,020	--	--	--	--	--
Iron Springs Draw	18,853	--	--	--	--	--
Hugus Draw	35,341	--	--	--	--	--
Grenville Dome	22,059	14.0	<0.1%	4.0	<0.1%	1
Pass Creek-Stage Station Springs	34,785	--	--	--	--	--
Middle Sugar Creek	24,897	--	--	--	--	--

Sub-watershed Name	Sub-watershed Total Area (acres)	Initial Disturbance		Long-term Disturbance		Stream Crossings in sub-watershed
		acres	percent	acres	percent	
Lower Sugar Creek	42,909	--	--	--	--	--
101800021304 (Sugar Creek)	11,042	169.5	1.54%	13.6	0.12%	5
North Platte Basin Subtotals	**514,648**	**183.5**	**<0.1%**	**17.6**	**<0.1%**	**6**
WHITE-YAMPA BASIN						
North Fork Savery Creek	30,812	--	--	--	--	--
Little Savery Creek	30,995	--	--	--	--	--
Muddy Creek-Littlefield Creek	32,259	--	--	--	--	--
McKinney Creek	30,433	--	--	--	--	--
White-Yampa Basin Subtotals	**124,499**	**0**	**0%**	**0**	**0%**	**0**
TOTAL	**639,147**	**183.5**	**<0.1%**	**17.6**	**<0.1%**	**6**

8.5.2 Wetlands

Wetland delineations were completed for the Quarry Site in 2013. No wetlands or open water occur within the Quarry Site.[5] The locations, types, and acres of wetlands and Waters of the United States encountered during surveys are documented in the Aquatic Resource Inventory Report for the Quarry (Appendix K). The measures described in Appendix A will be used to minimize potential impacts to wetlands and other water bodies on federal lands.

8.5.3 Water Usage

PCW estimates it will use approximately 55 ac-ft of water for construction, operations, and maintenance of the Quarry. Water use for the Quarry will primarily be for dust suppression, approximately 95% of the total, with some water used for soil compaction during construction. Since the material being extracted from the Quarry is base aggregate and fill material, there is no need for a wash plant operation. PCW is requesting that BLM approve the use of magnesium chloride for dust suppression to minimize water demands and the vehicular traffic associated with dust suppression activities; the Rawlins Resource Management Plan (RMP) allows the use of magnesium chloride (BLM 2008).[6] Using magnesium chloride for dust suppression may reduce water demands by as much as 30 percent, reducing water consumption for the Quarry to 39 ac-ft.

8.5.4 Water Supply

A combination of water sources will be used to supply water to the Quarry for construction, operations, maintenance, and decommissioning. Water resources will be used in compliance with all applicable Wyoming State Engineer's Office rules and regulations.

Construction of the Quarry will occur in 2014 and operation of the Quarry will commence in 2015 simultaneously with the construction of the water extraction facilities for the CCSM Project; thus, alternate water supplies are required to construct a portion of the Quarry until the CCSM Project water extraction facilities are available. PCW intends to meet a portion of the construction demand for the Quarry, up to twelve (12) ac-ft per year in 2014 and 2015, with municipal supplies from the City of Rawlins and/or the Town of Sinclair. Preliminary analysis and discussions with the City of Rawlins and Town of Sinclair indicate that temporary supplies of bulk water are available for purchase and use, subject to approval. The long-term water supply for the CCSM Project will be brought on-line as soon as possible in 2015 to minimize demand for temporary municipal supplies.

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[5] One drainage with characteristics of a water of the U.S. occurs within the Quarry Site at the intersection of Quarry Road with Chokecherry Road. Information on this drainage is included with the Phase I Haul Road and Facilities Site-specific Plan of Development.

[6] In accordance with current BLM policy, PCW will not apply chloride compounds or lignin derivatives within 500 feet of a perennial stream on federal lands.

Municipal water from the Town of Sinclair will be obtained from a tap located north of Interstate 80 and south of the UPRR main line in Section 21 of Township 21 N, Range 86 W of the Sixth Principal Meridian. Municipal water from the City of Rawlins will be obtained from a tap on the City of Rawlins waste water treatment plant property located in Section 23, Township 21 N, Range 87 W of the Sixth Principal Meridian. As an alternative to using municipal supplies during construction of the Quarry, PCW will obtain water from TOTCO, specifically water from the McCarthy No. 1, Miller Hill No. 3, and Tuttle No. 1 wells (Table 8-4). Water from the McCarthy No. 1, Miller Hill No. 3, and Tuttle No. 1 wells will be hauled by truck from the wells to the Quarry Site via Highway 71 (Sage Creek Road) and Interstate 80.

Water for the operation, maintenance and decommissioning of the Quarry will be obtained from the CCSM Project water facilities. The long-term water supply for the CCSM Project involves extracting water from the North Platte River and using existing groundwater sources on the Ranch opportunistically to supplement the surface water supply. As an alternative to using surface water rights to meet the temporary and permanent water demands of the CCSM Project, PCW is in discussions with the City of Rawlins to provide a supply of raw and treated water to the CCSM Project, subject to approval by the Rawlins City Council and the Wyoming State Engineer's Office. Table 8-4 details the water rights that will be used to supply the Quarry. A detailed discussion of the water extraction facilities for Phase I of the CCSM Project is included in the Phase I Haul Road and Facilities Site-specific Plan of Development.

Table 8-4. Quarry Water Supply Sources

Water Right Name	Type/Source	Permit Number	Maximum Annual Use for Quarry (ac-ft)
Savage No. 1	Direct Flow North Platte River	7883	19
Savage No. 2	Direct Flow North Platte River	7884	19
Tuttle No. 1	Groundwater Non-Tributary	29550	10
Tuttle No. 2	Groundwater Non-Tributary	32966	19
McCarthy No. 1	Groundwater Non-Tributary	339	10
Miller Hill No. 3	Groundwater Non-Tributary	106432	15
City of Rawlins	Municipal	N/A	12[1]
Town of Sinclair	Municipal	N/A	12[2]

Notes:
[1]Maximum requested amount must be available and approved by Rawlins City Council and Wyoming State Engineer
[2]Maximum requested amount must be available and approved by Sinclair Town Council and Wyoming State Engineer

The U.S. Fish and Wildlife Service (USFWS) Biological Opinion (BO) for the CCSM Project (BLM 2012b) evaluated the potential impacts of water depletions for the CCSM Project. The BO concluded that because the CCSM Project is utilizing existing water rights it is already accounted for as an existing system depletion. The BO further stated that the CCSM Project is not likely to jeopardize the continued existence of the federally endangered whooping crane, interior least tern, and pallid sturgeon, or the federally threatened northern Great Plains population of the piping plover, or western prairie fringed orchid, in the central and lower Platte River. Additionally, the BO concluded that the CCSM Project is not likely to destroy or adversely modify designated critical habitat for the whooping crane.

8.6 Range Resources

The Quarry Site is currently used for grazing by livestock (primarily cattle) on a single grazing allotment. Grazing by big game wildlife species also occurs within the Road Rock Quarry Site and consists primarily of mule deer, elk and pronghorn. Private, state, and public lands are currently administered as grazing allotments and the Quarry Site is included in the Pine Grove/Bolten Allotment. Range resources within the Pine Grove/Bolten Allotment are currently managed at 10 acres/AUM with approximately 12,800 AUMs for the entire grazing allotment

(BLM 2008a, 2012b). The long term disturbance associated with the Quarry Site will impact approximately 0.006 percent of the entire allotment and 0.01 percent of the available AUMs.

Range improvements have taken place throughout the Pine Grove/Bolten Allotment to minimize the impacts of grazing and maintain proper functioning conditions (PFCs). Range improvements include fences, wells, developed springs, and sagebrush treatments (BLM 2012b). The Pine Grove/Bolten allotment is currently managed within an intensive rotation system with five adjacent allotments in which grazing is rotated during the growing season among several pastures within each allotment to provide complete growing season rest during alternate years. Range improvements have resulted in increased soil stabilization and infiltration, decreased runoff, and enhanced riparian vegetation health (BLM 2012b, 2014). In 2013, the BLM assessed PFCs for healthy rangeland management for the Pine Grove/Bolten Allotment and two additional allotments managed by TOTCO, and concluded that all allotments have improved conditions and meet BLM Rangeland Health Standards (BLM 2014).

8.7 Reclamation

A Reclamation Plan has been developed for the federal lands within the Quarry Site (Appendix L) to document the site-specific methodologies, monitoring, and reporting requirements for reclaiming disturbed areas on federal lands. The Reclamation Plan identifies the Ecological Sites that occur in the Quarry Site and documents the reclamation standards, site and soil characteristics, and Ecological Site-specific conditions and revegetation methods that will be implemented. While the preference is to implement these measures on private lands and state lands, specific measures on private lands and state lands may vary and will be developed to meet the requirements of WYDEQ-LQD in coordination with private landowners, Wyoming Industrial Siting Council, the State Land Board and the WGFC, as appropriate.

Disturbance will occur within ten (10) ecological sites as part of the construction, operation, maintenance, and decommissioning of the Quarry (Table 8-5). Temporary disturbance will be approximately 183.5 acres, the majority of which (93.9 percent) will occur in sandy, clayey, shallow clayey, and shallow sandy ecological sites. Following reclamation, approximately 17.7 acres of long-term disturbance will remain the majority of which (92.1 percent) will be in sandy and clayey ecological sites.

Table 8-5. Temporary and long-term disturbance in ecological sites for the Quarry Site

Ecological Site	Disturbance During Construction (acres)	(% area)	Disturbance After Reclamation (acres)	(% area)
Sandy 7-9 Inch	82.3	44.8%	8.7	49.2%
Clayey 7-9 Inch	35.3	19.2%	7.6	42.9%
Shallow Clayey 7-9 Inch	29.0	15.8%	0.5	2.8%
Shallow Sandy 7-9 Inch	25.8	14.1%	0.3	1.7%
Coarse Upland 7-9 Inch	6.7	3.6%	0.1	0.6%
Shallow Loamy 7-9 Inch	3.9	2.1%	0.2	1.1%
Saline Lowland 7-9 Inch	0.6	0.3%	0.3	1.7%
TOTAL	**183.5**	**100.0%**	**17.7**	**100.0%**

Limited reclamation potential areas likely occur in portions of the Quarry Site. These include areas of slopes greater than 25 percent and southerly aspects, shallow soils, sandy and clayey soils, and areas with saline conditions. Areas of slopes greater than 25 percent and southerly aspects will be avoided to the extent possible. Shallow ecological sites generally have limited reclamation potential due to poor topsoil quality, increased rock fragment content, and shallow depth to bedrock or a restrictive layer. Saline ecological sites contain soil conditions that are difficult to reclaim due to low strength and high erosive potential and seed sources for suitable plant species in these saline environments are often limited. These soils are generally more difficult to reclaim due to poor topsoil suitability and seed source for suitable plant species are limited.

8.8 Wildlife

The Quarry Site is used by a number of wildlife species. In developing the CCSM Project, PCW has worked in close cooperation with the Wyoming Game and Fish Department (WGFD), BLM, and the USFWS to develop survey protocols and avoidance, minimization, and mitigation measures for wildlife species. Baseline wildlife occurrence information has been collected by SWCA Environmental Consultants, Inc. (SWCA) since 2010 throughout the CCSM Project Area, including the Quarry Site. Surveys for the Quarry Site were completed in 2012 and 2013 and are documented in the Quarry Wildlife Survey Report (Appendix N) and Avian Resource Report (Appendix M).

8.8.1 Big Game

Big game species that may be present within the Quarry Site include mule deer (*Odocoileus hemionus*) and pronghorn (*Antilocapra americana*). Elk (*Cervus canadensis*) may be present but likely use the area infrequently. Big game seasonal ranges were identified for the Quarry Site using the big game seasonal ranges designated by the WGFD (BLM 2012a).

8.8.1.1 *Mule Deer*

The Quarry Site overlaps with one (1) Mule Deer Herd Unit, the Platte Valley Herd Unit (Unit #541). The Quarry Site is located within a finger of crucial winter-yearlong range that is mapped along the Hogback.

8.8.1.2 *Pronghorn*

The Quarry Site overlaps with the Iron Springs Pronghorn Herd Unit (Unit #630). The Quarry Site contains no crucial habitat for pronghorn although the entire area is within spring-summer-fall and winter-yearlong ranges. One mapped migration route crosses the Quarry Site. This mapped route is east of the Quarry and runs northeasterly to Grenville Dome then east along the Hogback to the North Platte River.

8.8.2 Small Game and Furbearers

Small game species in Wyoming include cottontail rabbits (*Sylvilagus* spp.), snowshoe hare (*Lepus americanus*), and the red squirrel (*Tamiasciurus hudsonicus*). Desert and mountain (Nuttall's) cottontails (*S. audubonii* and *S. nuttallii*, respectively) are likely to inhabit the Quarry Site. Snowshoe hares and red squirrel occur within Wyoming mountain ranges but were not observed during wildlife surveys and are not likely to occur within the Quarry Site.

Persons holding the appropriate license in Wyoming are permitted to trap the following eleven (11) furbearing species: badger (*Taxidea taxus*), bobcat (*Lynx rufus*), marten (*Martes americana*), multiple weasel species (*Mustela frenata, Mustela nigripes, Mustela mivalis, Mustela erminea*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), red fox (*Vulpes vulpes*), multiple skunk species (*Spilogale gracilis, Spilogale putorius, Mephitis mephitis*), beaver (*Castor canadensis*), mink (*Mustela vison*), and muskrat (*Ondatra zibethicus*). Coyote, raccoon, red fox, and skunk are classified as predator species and may be taken without a license. Badger, bobcat, all weasel species, beaver, and muskrat may be taken if damage is being caused. Mink, beaver, and muskrat are unlikely to occur in any of the drainages crossed by the Quarry Site. Badger, bobcat, long-tailed weasel, coyote, red fox, and striped skunk all have distributions that include the Quarry Site.

8.8.3 Migratory and Breeding Bird Species

A number of avian species use the Quarry Site (Appendix M). Avian species use in the area is informed by observations of survey crews, as well as data collection efforts in similar habitats across the CCSM Project Site. Data collection efforts in the CCSM Project Site for migratory birds and raptors include a combination of a DeTect Avian Radar System (radar), long-watch

raptor surveys, raptor nest surveys, migratory bird point count surveys, waterbird surveys, and breeding bird grid density surveys.

A total of 295 migratory bird surveys were performed from April 4, 2011 through March 27, 2012, throughout the CCSM Project Site. Point count locations were each surveyed 16 to 23 times, with the variation in number of surveys due to accessibility issues and inclement weather postponing or cancelling surveys. Breeding bird density surveys were completed at 15 locations across the CCSM Project Site. Grid surveys were conducted following the survey protocols published by the Rocky Mountain Bird Observatory (Hanni et al. 2009). The Quarry Site is approximately 1,500 to 2,000 meters north of one (1) migratory bird survey location and one (1) breeding bird grid survey location. Both survey locations are within similar habitats and can be used to assess the probable avian species within the Quarry Site.

Horned lark (*Eremophila alpestris*) dominated the number of observations at the nearby survey points. The species accounted for 72 percent of all individual birds observed in the migratory bird point count surveys and 22 percent of all individuals observed in the breeding bird grid surveys. Horned lark was also the most frequently encountered species on surveys, with the species recorded at 100 percent of grid survey points. Brewer's sparrow (*Spizella breweri*), vesper sparrow (*Pooecetes gramineus*), and sage thrasher (*Oreoscoptes montanus*) were the next most abundant species observed and collectively account for 25 percent to 35 percent of all avian species observed. Other species expected to occur within the Quarry Site include green-tailed towhee (*Pipilo chlorurus*), rock wren (*Salpinctes obsoletus*), sage sparrow (*Amphispiza belli*), and western meadowlark (*Sturnella neglecta*).

8.8.4 Fisheries

The Quarry Site crosses seven (7) drainages within the Sugar Creek (HUD level 5 1018000213) and North Platte River-Iron Springs Draw (1018000210) watersheds. These drainages do not support fish habitat or fisheries.

8.9 Special Status Species

Special status species (SSS) include wildlife species under the jurisdiction of WGFD, species designated as *Wyoming's Species of Greatest Conservation Need* (WGFD 2010), and those federally protected under the Endangered Species Act (ESA) (BLM 2012a). These species include both terrestrial and aquatic animals, and plants. As part of the consultation process with the USFWS completed for the EIS, a Biological Assessment (BA) was prepared and submitted to the USFWS, and a corresponding BO was included with the ROD issued in October 2012 (BLM 2012b).

BLM Sensitive Species are listed in the RFO RMP (BLM 2008) because they depend on specialized habitats located on BLM-administrated lands. The wildlife species for which specific field reviews were completed for the Quarry Site were developed based on management agency input and public concern identified during the NEPA review process (BLM 2012a; BLM

2012b). These species may occur within the Quarry Site as a result of the presence of potentially suitable habitat.

SWCA conducted SSS surveys for the Quarry Site in accordance with the Wildlife Monitoring and Protection Plan for the CCSM Project (Appendix G in BLM 2012b). Survey results are presented in the Quarry Wildlife Survey Report (Appendix N) and Rare Plant Report (Appendix O). Surveys focused on the potential occurrence of SSS and habitat assessments for species identified in the Wildlife Monitoring and Protection Plan.

8.9.1 Avian Species

PCW has collected detailed data on avian use of the CCSM Project Site, including the Quarry Site, through diurnal point count surveys and other monitoring protocols (Appendix M). PCW has also collected data relating to the use of the CCSM Project Area by greater sage-grouse since 2009.

8.9.1.1 *Sagebrush obligates*

Sagebrush habitats occur within the Quarry Site. These habitats provide suitable nesting and foraging locations for sagebrush obligates (sage thrasher, sage sparrow, Brewer's sparrow, and greater sage-grouse). One sage sparrow was observed during the Quarry special status wildlife surveys. The sage sparrow was an adult male in sagebrush steppe approximately 20 meters outside of the Quarry Site. Brewer's sparrow and sage thrasher are both likely to occur within the Quarry Site based on surveys completed at nearby migratory and breeding bird survey locations.

8.9.1.2 *Mountain Plover*

No mountain plovers were observed during surveys of the Quarry Site. Potential mountain plover habitat is restricted to upland grassland habitats in the Quarry Site. Within the Quarry Site, potential habitat is primarily small patches of upland grassland, salt desert shrub, and sparsely vegetated communities, accounting for less than two (2) acres of the Quarry Site. Habitat is not likely to support breeding or nesting activities but might be occasional used by mountain plover moving through the area. No white-tailed prairie dog towns, which are areas that often support mountain plovers, occur within the Quarry Site (section 8.9.2).

8.9.1.3 *Burrowing owl*

Western burrowing owls were not observed during surveys in the Quarry Site. No white-tailed prairie dog burrows were present and therefore the Quarry Site will not support burrowing owl nesting activity.

8.9.1.4 *Greater sage-grouse*

PCW has been conducting greater sage-grouse population monitoring within the CCSM Project Site, the Ranch, and surrounding areas since spring 2010. Surveys completed as part of the greater sage-grouse monitoring program from 2010-2013 include outfitting 50 female greater sage-grouse with GPS Platform Terminal Transmitters, lek counts, nest monitoring, and brood

surveys. The study design for greater sage-grouse monitoring follows a before-after control-impact (BACI) design (Smith 2002). This allows for a stronger inference regarding the success of proposed conservation measures, particularly due to those measures that seek to reduce greater sage-grouse mortality and improve productivity by enhancing nesting and brood-rearing habitat. A discussion of the proposed conservation measures and a detailed greater sage-grouse monitoring report in included as part of the Sage-grouse Conservation Plan for the CCSM Project Plan of Development (BLM 2012b). All CCSM Project infrastructure, including the Quarry, is located outside of designated greater sage-grouse core areas (Order 2011-5, Attachment A, Sage-Grouse Core Breeding Areas Version 3).

Greater sage-grouse habitat occurs throughout much of the Quarry Site. Data from PCW's grouse monitoring program indicate that areas near the Quarry may be used by greater sage-grouse for winter, summer, and late brood-rearing purposes. Based on over three (3) years of GPS telemetry data, greater sage-grouse using the areas surrounding the Quarry are primarily associated with the Chokecherry Bench lek located approximately 1.65 miles from the Quarry and spend the majority of the time within several miles of the lek. Greater sage-grouse that use other leks in the CCSM Project Site generally do not regularly use areas near the Quarry.

8.9.1.5 *Raptors*

Raptor nest surveys have been completed in the CCSM Project area since 2008 and periodically by BLM for several decades. No active or inactive raptor nests are located within the Quarry Site. The site was chosen and the Quarry was designed to avoid conflict with known active raptor nest sites to the extent possible. In several locations, Quarry Road will be constructed in proximity to nests that have been monitored since 2008. Table 8-6 lists the species and location for active nests identified since 2008 and any nest identified in the Rawlins RMP that falls within 825 ft (1,200 ft for ferruginous hawks) of the Quarry disturbance limits.

An exception to the 825 ft (1,200 ft for ferruginous hawks) spatial stipulation will be requested from BLM, as required, for the nests in Table 8-6. Quarry design requirements do not allow for avoidance of these nests by the distances stated in the Rawlins RMP. Each of the nests will be monitored to determine activity in the season prior to construction of the Quarry. If the nests are active, timing stipulations will be followed and construction of the Quarry will not commence around these nests until after the nest has fledged or failed. If nests are not active in the year of construction, an exception will be requested to allow for construction activities during the timing stipulation period.

Habitat exists that could potentially support other, unknown raptor nests. Specifically, the Quarry will be constructed within cliff habitats that might support nesting raptors. Additionally, other ridgelines and escarpments adjacent to Quarry Road could support cliff and ground-nesting raptors.

8.9.2 White-tailed Prairie Dog

No white-tailed prairie dog colonies or habitat were found during surveys of the Quarry Site (Appendix N).

8.9.3 Pygmy Rabbit

Suitable pygmy rabbit habitat was not observed during surveys of the Quarry Site. Much of the vegetation community in the survey area consists of sagebrush steppe that lacks the necessary canopy cover or stem density to provide suitable habitat for pygmy rabbits. The remainder of the Quarry Site is characterized by barren habitats, grassland habitats, and other habitats unsuitable for pygmy rabbit use.

8.9.4 Wyoming Pocket Gopher

One (1) pocket gopher mound complex was identified within the Quarry Site (Figure 1). Following the Griscom and Keinath (2010) model, the mound complex was predicted as Northern pocket gopher (*probability* (*P*) = 0.006). The pocket gopher occurrence was located in greasewood/sagebrush dominated vegetation, sandy soils with high sagebrush cover and low residual herbaceous cover. Burrow diameters of this occurrence averaged approximately 2.04 inches (52 millimeters). Dominant vegetation communities within the Quarry Site typically consist of sagebrush steppe assemblages, upland grasslands, and barren landscapes that are generally more suitable for northern pocket gopher use.

8.9.5 Amphibians and Reptiles

Amphibian and reptile monitoring within the Quarry Site was accomplished through opportunistic wildlife observations while performing other wildlife surveys. Neither northern leopard frog nor Great Basin spadefoot toad or their habitats have been found in the Quarry Site (Appendix N).

Table 8-6. Nests in Proximity to the Quarry Site

Common Name	Scientific Name	BLM Nest ID	Northing (UTM NAD 83)	Easting (UTM NAD 83)	Project Segment	Distance to Edge of Disturbance	Years Monitored for CCSM Project	Years Active
Red-tailed Hawk[1]	*Buteo jamaicensis*	RT20870402	4623395	316330	Quarry and Quarry Road	170 feet	2008, 2011, 2012, 2013	None
Golden Eagle[2]	*Aquila chrysaetos*	GE20870401	4622939	316904	Quarry and Quarry Road	540 feet	2008, 2011, 2012, 2013	2008
Unknown raptor		None assigned	4622655	320341	Quarry and Quarry Road	790 feet	2008, 2011, 2012, 2013	None
Unknown raptor		None assigned	4623166	320766	Quarry and Quarry Road	580 feet	2008, 2011, 2012, 2013	None
Unknown raptor		None assigned	4623169	320822	Quarry and Quarry Road	620 feet	2008, 2011, 2012, 2013	None

Notes:
1. Consists of three stick nests in close proximity located along an east-facing rocky outcropping. Condition varies from poor to good.

8.9.6 Rare Plants

8.9.6.1 *ESA Listed Plants*

Carbon County does not contain ESA critical habitat for any plant species (USFWS 2008); however, the Quarry Site was surveyed for two (2) federally threatened species, the Ute ladies'-tresses orchid (*Spiranthes diluvialis*) and Colorado butterfly plant (*Gaura neomexicana* spp. *coloradensis*). No suitable habitat occurs for either species within the Quarry Site.

8.9.6.2 *BLM Sensitive Species*

A review of BLM and WYNDD plant records identify that only persistent sepal yellowcress (*Rorippa calycina*) has been documented within the immediate vicinity of the CCSM Project Site. Habitat maps for BLM sensitive plant species were consulted prior to surveys to ensure that surveys occurred in modeled potential habitat. Surveys for BLM sensitive plants and their habitats were completed in 2013. No BLM sensitive plants or potential habitat were identified within the Quarry Site.

8.10 Cultural Resources

A Class I file search and a Class III cultural resource inventory were completed for the Quarry Site in 2013. The purpose of the file search and inventory was to identify and assess the cultural resources that occur within the Road Rock Quarry Class III inventory area.

The Class I review, conducted through the Wyoming Cultural Resources Office and the BLM RFO, identified all previously conducted cultural resources investigations and previously recorded cultural resources within a 1-mile buffer surrounding the Quarry. A total of 15 cultural resources investigations have been previously conducted in the files search study area (Zietz et al. 2013 and Hurlburt et al. 2013). Previous cultural resource investigations identified a total of 33 cultural sites in the search area. Of these resources, six sites are located within the Road Rock Quarry Class III cultural resource inventory area and fall within the Quarry Site; 3 were not eligible for inclusion on the National Register of Historic Places (NRHP), 2 were unevaluated, and 1 was eligible for NRHP nomination. The 6 sites that were previously recorded within the Road Rock Quarry Site are multicomponent sites consisting of both prehistoric and historic components.

The Class III inventory of the Quarry Site was completed in 2013. Results of the Road Rock Quarry Class III inventory have been documented in one technical report submitted to the BLM and Wyoming State Historic Preservation Office (SHPO) for review and concurrence (Baer et al. 2013). During the Class III inventory SWCA revisited six previously recorded sites and eight newly recorded sites and three isolated resources. A total of 11 of those sites lie in the Quarry Site. Of these, three sites (48CR4009, 48CR9097, and 48CR10118) are recommended eligible for NRHP nomination.

The Quarry, as currently designed, will result in adverse effects to historic properties Avoidance and minimization measures for cultural resources have been incorporated into the CCSM Project as described in Appendix A. Where avoidance is not possible, sites will be mitigated in accordance with the CCSM Project Programmatic Agreement (PA) for cultural resources (BLM 2012b). Unexpected discoveries of cultural resources during construction will be handled in accordance with the CCSM Project PA.

8.11 Paleontological Resources

The probability of finding paleontological resources can be broadly predicted from the geologic units present at or near the surface. The potential fossil yield classification (PFYC) system is a method of classifying geologic units based on the relative abundance of vertebrate fossils or scientifically important fossils (plants and invertebrates) and their sensitivity to adverse impacts (BLM 2009). Geologic mapping in conjunction with the PFYC system can be used for assessing the potential for the occurrence of paleontological resources.

The geologic units underlying the Quarry Site include Steele Shale and Niobrara formations (PFYC of 3 and 5, respectively) and Mesaverde Group (PFYC of 3). Geotechnical testing occurred at three (3) locations within the Quarry Site. Mesaverde Group and Steele Shale formations were encountered at depths ranging from 0-170 ft during geotechnical boring.

A pedestrian paleontological assessment of the Quarry Site was completed and found that the upper material layers within the Quarry Site have little potential for fossil resources. Several non-significant fossil locations were identified in the quarry survey area. These included disarticulated bivalve fossils, tooth fragments, and a partial fern frond impression. Fossil potential could increase as quarrying operations expose shale layers at greater depths. As the Quarry Site is on private lands primarily located within the Mesa Verde Group, there is a low potential for fossils and it is anticipated that no impacts will occur to fossil-bearing formations on federal lands. Along the Quarry Road, potential for exposure of fossil bearing formations occurs on steep slopes generally greater than 25 percent; however, Quarry Road has been designed to avoid steep slopes. As a result, it is anticipated that neither the Quarry nor Quarry Road will result in substantial impacts to fossil-bearing formations on federal lands.

8.12 Visual Resources

Visual resources on federal lands within the Quarry Site are managed as Visual Resource Management (VRM) Class IV; which provides for management activities that may result in major modifications to the existing character of the landscape with a high level of change. The Quarry Site is over three (3) miles south of Interstate 80 and is expected to minimally impact visual resources. Much of Quarry Road and associated traffic will be hidden by topography and vegetation. The Quarry Site will be visible from a number of locations along Interstate 80; however, the viewshed surrounding the Quarry Site already contains visual impacts associated with existing roads, electrical transmission lines, railroad facilities, Interstate 80, underground

utility corridors, railroad facilities, and other industrial developments consistent with the types of disturbances associated with the Quarry.

8.13 Waste

Waste from the construction, operations, maintenance, and decommissioning of the Quarry will be handled in accordance with the CCSM Project Waste Management Plan (Appendix P). The Quarry is expected to generate up to 24.34 tons of waste during construction and negligible amounts during operations and maintenance. Waste estimates for decommissioning of the Quarry will be developed in the decommissioning plan when recycling options are identified. Waste materials generated by the Quarry will include municipal solid waste (trash or general supervision waste), construction debris (e.g. soil, concrete, pallets, packaging, etc.), and sanitary waste. Small amounts of used oil, waste oil, oil-contaminated materials, and hazardous waste may also be generated. Used oil, waste oil, and oil-contaminated materials will be handled in accordance with the requirements of the SPCC Plan (Appendix Q). Hazardous materials will be managed in accordance with the requirements of the hazardous material management portion of the Health and Safety Plan (section 9 and Appendix R). All sanitary waste will be handled by a licensed sanitary waste vendor.

All materials and debris associated with the Quarry will be removed and properly recycled or disposed of at off-site facilities; waste will not be disposed of on-site.

9 Health and Safety

PCW will implement a health and safety program at the Quarry in accordance with the Health and Safety Plan (Appendix R) and all applicable rules and regulations. The Health and Safety Plan developed by PCW applies to all stages of the CCSM Project, i.e. development, construction, operations, maintenance, and decommissioning and applies to all PCW employees working on the CCSM Project Site.

PCW also requires that the general contractor or operating entity for the CCSM Project provide a site safety policy and site health and safety plan that will be applicable to all work within the CCSM Project Site. All personnel on the CCSM Project Site (general contractor, subcontractor, vendor, PCW, and BLM) must adhere to the site health and safety plan. The site health and safety plan will, at a minimum, address the following topics:

- Site Evaluation and Pre-Work Planning
- Blasting
- Electrical safety (including lock out/tag out)
- Fire prevention
- Public access control and interaction (including work in areas with public access)
- Drug and alcohol policy and testing
- Weapons policy and hunting restrictions
- On-site speed limits
- Fall protection
- Suspended loads
- Wildlife and livestock interactions
- Emergency response plan
- Security
- Required levels of Personal Protective Equipment (PPE)
- Severe weather
- Work permits and notifications
- Night work
- Safety briefing requirements
- Hazardous materials
- Training and record keeping

In addition to adhering to the site health and safety plan, all contractors and entities working on the CCSM Project are responsible for developing a health and safety plan that is specific to their particular scope of work and that meets all applicable legal and regulatory requirements.

In addition to the Health and Safety Plan, PCW has also prepared for the possibility of fuel and oil spills from the Quarry with a SPCC Plan (Appendix Q). The SPCC Plan describes measures to avoid, minimize, and mitigate potential oil spills. This plan establishes emergency response procedures, lines of communications, and responsibilities. Although hazardous spills are not anticipated during project activities, the SPCC Plan provides the protocols and control measures that will be implemented in the event of a spill.

9.1 Blasting and Explosive Safety

PCW is committed to providing a safe environment for employees and the public. Drilling and blasting will be necessary to operate the Quarry. A blasting safety program will be a key element to the Quarry's safety program. PCW will develop a blasting safety program in coordination with its contractors. Elements of the blasting safety program will include, at minimum, the following items:

- **Blasting Plan.** A blasting plan will be developed whenever blasting is to occur. Rock characteristics, nearby work plans, and anticipated weather conditions will be considered in the Blasting Plan. The Blasting Plan will be provided to all contractors working in the vicinity of the Quarry around the time of the blasting activity. Contractors will be required to brief their crews about blasting activities at the start of the shift.
- **Limited Blasting Hours.** To limit potential disruption to the public and increase safety, blasting will only occur during prescribed daytime hours, likely 8:00 a.m. to 8:00 p.m.
- **Advanced Notification.** PCW will develop a list of nearby residents and landowners, emergency services providers, and appropriate local government agencies to be notified prior to blasting activities. Blasting activities and safety protocols will be explained and contact information for Quarry personnel will be provided.
- **Safety Setbacks.** Once the blasting sites are prepared and charges are brought on-site, the areas around the blasting will be cleared of all personnel. Quarry safety personnel will establish a safety perimeter until all charges are detonated or removed and the site is deemed safe by the blasting contractor.
- **Audible Warnings.** Prior to blasting activities, audible warnings will be given. Typically warnings are done by an air horn, and include one (1) signal five (5) minutes before the blasting is to commence, another signal right before the blasting, and then an all-clear signal when blasting has concluded. Audible warning will be loud enough to be heard throughout the Quarry and within one (1) to two (2) miles.
- **Secure Storage of Explosives.** The blasting contractor will secure all charges and other blasting equipment following federal, state and local regulations and industry practices.

Given the proximity of the Quarry to the Wyoming State Penitentiary and the unique needs of that facility, PCW will provide advance notification of blasting activity more frequently and will review each Blasting Plan and schedule with the penitentiary staff to insure that their concerns are addressed.

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APPENDIX A

Chokecherry and Sierra Madre Wind Energy Project
Environmental Constraints and Measures

Road Rock Quarry

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September 2013

(Updated March 2014)

TABLE 1. SUMMARY OF BLM ENVIRONMENTAL CONSTRAINTS (ROD TABLE D-1)

Resource Area	Resource Concern	Protection Measure	Application to Jurisdiction[1]			Mitigation Type[2]	Authority/Source	Implementation
			Private Land[3]	State Land	Public Land			
Cultural – Historic Trails	Within either 0.25-mile or the visual horizon (whichever is closer) of a cultural property/ historic trails.	No surface disturbing activities. Management actions resulting in visual elements that diminish the integrity of the property's setting will be managed in accordance with the Wyoming State Protocol and BMPs.	Yes[4]	Yes	Yes	1	2008 Rawlins RMP ROD; Wyoming BLM Mitigation Guidelines; Wind Energy Programmatic EIS ROD Policies and BMPs.	The Quarry has been designed to minimize adverse effects to historic properties. PCW will follow the stipulations of the PA regarding the treatment of historic properties, including mitigation of adverse effects.
Recreation Sites	Within 0.25-mile of developed and undeveloped recreation sites.	Lands closed to operation of public land laws.	Yes[4]	Yes[4]	Yes[4]	1	2008 Rawlins RMP ROD.	There are no developed or undeveloped recreation sites within 0.25 mile of the Quarry.
Soils – Slopes	Steep slopes >25 percent.	Surface disturbance will be prohibited. No turbines, staging or substations.	Yes[5]	Yes[5]	Yes[5]	1	Wyoming BLM Mitigation Guidelines.	This Protection Measure is not applicable to the Quarry extraction area where mining will occur because the nature of a quarry naturally gives rise to slopes greater than 25%. However, facilities associated with the Quarry and the Quarry Road[8] will not be located on slopes of 25% or greater.
Special Management Areas – Designated Areas	Designated areas part of the National Landscape Conservation System (e.g., Continental Divide National Scenic Trail [CDNST]).	Lands will be excluded from wind energy site monitoring and testing and development on lands on which wind energy development is incompatible with specific resource values. (0.25-mile swath centered on the trail)	n/a	Yes[4]	Yes	1	Wind Energy Programmatic EIS ROD Policies and BMPs.	The Quarry Site[8] is not located within 0.25 mile of areas designated as part of the National Landscape Conservation System.
Water – Ephemeral Channels	Within 100 feet from the inner gorge of ephemeral channels.	Avoidance areas for surface-disturbing and disruptive activities and linear crossings. Only those actions within areas that cannot be avoided and that provide protection for the resource identified will be approved.	No[5]	No[5]	Yes[5]	1	2008 Rawlins RMP ROD.	Only Quarry Road involves federal lands. Surface disturbance within 100 feet from the inner gorge of ephemeral channels has been avoided on federal lands to the extent practicable. Erosion control measures will be in put place in accordance with the Erosion Control Plan and SWPP Plan.
Water – Floodplains	Identified 100-year floodplains.	Surface disturbing activities will be avoided. Only those actions within areas that cannot be avoided and that provide protection for the resource identified will be approved.	No	No	Yes	1	2008 Rawlins RMP ROD.	Only Quarry Road involves federal lands. Regardless, the Quarry Site is located outside the 100 year floodplain. Erosion control measures will be in put place in accordance with the Erosion Control Plan and SWPP Plan.
Water – Perennial Waters, Springs, Wetlands, Riparian	Within 500 feet of perennial waters, springs, and wetland and riparian areas.	Surface disturbing activities will be avoided. Only those actions within areas that cannot be avoided and that provide protection for the resource identified will be approved.	No[4,5]	No[4,5]	Yes[5]	1	2008 Rawlins RMP ROD; Wyoming BLM Mitigation Guidelines; Executive Orders (EOs) 11990 and 11988.	Only Quarry Road involves federal lands. Surface disturbing activities within 500 feet of perennial waters, springs, and wetland and riparian areas on federal lands have been avoided to the extent practicable. Erosion control measures will be in put place in accordance with the Erosion Control Plan and SWPP Plan.

TABLE 1. SUMMARY OF BLM ENVIRONMENTAL CONSTRAINTS (ROD TABLE D-1)

Resource Area	Resource Concern	Protection Measure	Application to Jurisdiction[1]			Mitigation Type[2]	Authority/Source	Implementation
			Private Land[3]	State Land	Public Land			
Water – Unstable Areas	Unstable areas (such as landslides, slopes >25 percent, slumps, and areas exhibiting soil creep).	Surface disturbing activities will be avoided. Reclamation practices and BMPs will be applied as appropriate for surface disturbing activities.	No	No	Yes	1	2008 Rawlins RMP ROD.	Only Quarry Road involves federal lands. Surface disturbing activities on identified unstable areas on federal lands have been avoided to the extent practicable. Stabilization measures have been applied in accordance with the CCSM Project Road Design Manual (Appendix C)
Water – Wetlands	Wetlands identified on National Wetlands Inventory (NWI) or proper functioning condition (PFC).[6]	No disturbance.	No	No	Yes	1	EOs 11990 and 11988.	Wetlands identified in NWI or PFC have not been identified within the Quarry Site.
Wildlife – Amphibians	Identified 100-year floodplains; within 500 feet of perennial waters, springs, wells, and wetlands; and within 100 feet of the inner gorge of ephemeral channels.	Surface disturbing and disruptive activities will be avoided.	No	No	Yes	1	2008 Rawlins RMP ROD.	Only the Quarry Road involves federal lands. Surface disturbance and disruptive activities for the Quarry on federal lands have been avoided to the extent practicable within (1) identified 100-year floodplains; (2) 500 feet of perennial waters, springs, wells, and wetlands; and (3) 100 feet of the inner gorge of ephemeral channels.
Wildlife – Fish	Waterbodies that potentially support fish for a portion of the year.	Design road crossings to simulate natural stream processes.	No	No	Yes	1	2008 Rawlins RMP ROD.	Waterbodies that potentially support fish for a portion of the year have not been identified within the Quarry Site.
Wildlife – Raptors	825 feet of active raptor nests (ferruginous hawks, 1,200 feet).	Well locations, roads, ancillary facilities, and other surface structures requiring a repeated human presence will not be allowed. Distance may vary depending on factors such as nest activity, species, natural topographic barriers, and line-of-sight distances.	Yes	Yes	Yes	1	2008 Rawlins RMP ROD.	As discussed in the site-specific plan of development for the Quarry, PCW will request exceptions to this spatial stipulation from BLM based on factors such as nest activity, species, natural topographic barriers, and line-of-sight distances.
Wildlife-Columbian Sharp-tailed Grouse	0.25 mile to 1 mile of an occupied or undetermined Columbian sharp-tailed grouse lek.	High-profile structures (e.g., buildings, storage tanks, overhead powerlines, wind turbines, towers, and windmills) would be authorized on a case-by-case basis from one-quarter mile to 1 mile of an occupied greater sage-grouse and sharp-tailed grouse lek.	No	No	Yes	1	2008 Rawlins RMP ROD.	No known active or inactive Columbian sharp-tailed grouse leks are located within 1 mile of the Quarry Site.
Wildlife – Greater Sage-grouse	Inside Core Areas: 0.60 mile NSU from lek perimeter (includes occupied and undetermined leks).	Surface disturbing activities or surface occupancy is prohibited or restricted.	Yes	Yes	Yes	1	BLM IM No. WY-2012-019	The Quarry Site is located outside designated greater sage-grouse core areas (Order 2011-5, Attachment A, Sage-Grouse Core Breeding Areas Version 3). No known active or inactive greater sage-grouse leks are within 0.25 mile of the Quarry

TABLE 1. SUMMARY OF BLM ENVIRONMENTAL CONSTRAINTS (ROD TABLE D-1)

Resource Area	Resource Concern	Protection Measure	Application to Jurisdiction[1]			Mitigation Type[2]	Authority/Source	Implementation
			Private Land[3]	State Land	Public Land			
	Outside Core Areas: 0.25 mile NSU from lek perimeter (includes occupied and undetermined leks).							Site.
Wildlife – Greater Sage-grouse	Inside Core Areas.	Limit development to one disturbance location per 640 acres. Cumulative value of one location and existing disturbance to not exceed 5 percent of sagebrush habitat within 640 acres	No	No	Yes	1	BLM IM No. WY-2012-019	The Quarry Site is located outside designated greater sage-grouse core areas (Order 2011-5, Attachment A, Sage-Grouse Core Breeding Areas Version 3).
Wildlife – Greater Sage-Grouse	0.25-mile to 1 mile of an occupied sage-grouse lek.	High-profile structures (e.g., buildings, storage tanks, overhead power lines, wind turbines, towers, and windmills) will be authorized on a case-by-case basis.	No	No	Yes	1	2008 Rawlins RMP ROD.	No high-profile structures associated with the Quarry are within 1 mile of any known active or inactive greater sage-grouse leks.
Wildlife – Greater Sage-grouse	Inside Core Areas: Within 0.60-mile of the perimeter of an occupied or undetermined greater sage-grouse lek. Outside Core Areas: Within 0.25-mile of the perimeter of an occupied or undetermined greater sage-grouse lek.	Disruptive activities are restricted between 6:00 p.m. and 9:00 a.m. from March 1 to May 20.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD; BLM IM No. WY-2012-019.	The Quarry Site is located outside designated greater sage-grouse core areas (Order 2011-5, Attachment A, Sage-Grouse Core Breeding Areas Version 3). No known active or inactive greater sage-grouse leks are located within 0.25 mile of the Quarry Site.
Wildlife – Greater Sage-grouse	Inside Core Areas: In suitable greater sage-grouse nesting and early brood-rearing habitat. Outside Core Areas: In suitable greater sage-grouse nesting and early brood-rearing habitat within 1) mapped habitat important for connectivity, or 2) within 2 miles of any occupied or undetermined lek.	Surface disturbing and/or disruptive activities are prohibited or restricted from March 1 – July 15.	No[7]	No[7]	Yes	2	BLM IM No. WY-2012-019; 2008 Rawlins RMP ROD.	The Quarry Site is located outside designated greater sage-grouse core areas (Order 2011-5, Attachment A, Sage-Grouse Core Breeding Areas Version 3). Only the Quarry Road involves federal lands. PCW will not perform surface disturbing activities and/or disrupting activities on federal lands between March 1 and July 15 in suitable greater sage-grouse nesting and early brood-rearing habitat within 1) mapped habitat important for connectivity, or 2) within two miles of any occupied or undetermined lek unless an exception is authorized by BLM.

TABLE 1. SUMMARY OF BLM ENVIRONMENTAL CONSTRAINTS (ROD TABLE D-1)

Resource Area	Resource Concern	Protection Measure	Application to Jurisdiction[1]			Mitigation Type[2]	Authority/Source	Implementation
			Private Land[3]	State Land	Public Land			
Wildlife – Greater Sage-grouse	Greater sage-grouse delineated winter concentration areas.	Surface disturbing and/or disruptive activities in mapped or modeled greater sage-grouse winter habitats/concentration areas that support Core Area populations, are prohibited or restricted from November 15 – March 14.	No[7]	No[7]	Yes	2	BLM IM No. WY-2012-019; 2008 Rawlins RMP ROD.	The Quarry Site is not located within greater sage-grouse delineated winter concentration areas, including mapped or modeled winter habitats/concentration areas that support core area populations.
Wildlife – Columbian Sharp-tailed Grouse	Within 0.25-mile of the perimeter of an occupied or undetermined Columbian sharp-tailed grouse lek.	Surface disturbing activities or occupancy are prohibited. Disruptive activities are prohibited between 6:00 p.m. and 9:00 a.m. from March 1 to May 20.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	No known active or inactive Columbian sharp-tailed grouse leks are located within 0.25 mile of the Quarry Site.
Wildlife – Barn Owl	Within 0.75-mile of barn owl nests.	Surface disturbing and disruptive activities potentially disruptive are prohibited February 1–July 15.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	No known barn owl nests are located within 0.75 mile of the Quarry Site.
Wildlife – Big Game	Big game crucial winter range.	Surface disturbing and disruptive activities will not be allowed during the period of November 15 to April 30. Disruptive activities will require the use of BMPs designed to reduce the amount of human presence and activity during the winter months.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD; Wyoming BLM Mitigation Guidelines.	Only the Quarry Road involves federal lands. The Quarry Site includes crucial winter range for mule deer. Surface disturbing and disruptive activities will not occur in mule deer crucial winter range on federal lands between November 15 and April 30 unless an exception is authorized by BLM.
Wildlife – Big Game	Big game parturition areas.	Surface disturbing and disruptive activities will not be allowed during the period of May 1 to June 30.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD; Wyoming BLM Mitigation Guidelines.	No big game parturition areas are present within the Quarry Site.
Wildlife – Burrowing Owl	Within 0.75-mile of burrowing owl nests.	Surface disturbing and disruptive activities potentially disruptive are prohibited April 15–September 15.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	Wildlife surveys have been completed for the Quarry (Appendix M). The Quarry Site does not contain potential burrowing owl nesting habitat associated with white-tailed prairie dog colonies.
Wildlife – Cooper's Hawk	Within 0.75-mile of Cooper's hawk nests.	Surface disturbing and disruptive activities potentially disruptive are prohibited April 1–July 31.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	No known Cooper's hawk nests are located within 0.75 mile of the Quarry Site.
Wildlife – Ferruginous Hawk	Within 1-mile buffer of ferruginous hawk nests.	Surface disturbing and disruptive activities potentially disruptive are prohibited March 1–July 31.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	No known ferruginous hawk nests are located within 1 mile of the Quarry Site.

TABLE 1. SUMMARY OF BLM ENVIRONMENTAL CONSTRAINTS (ROD TABLE D-1)

Resource Area	Resource Concern	Protection Measure	Application to Jurisdiction[1]			Mitigation Type[2]	Authority/Source	Implementation
			Private Land[3]	State Land	Public Land			
Wildlife – Golden Eagle	Within 1-mile buffer of golden eagle nests.	Surface disturbing and disruptive activities potentially disruptive are prohibited February 1–July 15.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	All Golden Eagle nests will be monitored to determine activity. PCW will comply with the stipulations as described in this table (Table 1; ROD Table D-1) or request an exception from BLM.
Wildlife – Goshawk	Within 0.75-mile of Goshawk nests.	Surface disturbing and disruptive activities potentially disruptive are prohibited April 1–August 31.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	No known Goshawk nests are located within 0.75 mile of the Quarry Site.
Wildlife – Great-Horned Owl	Within 0.75-mile of great-horned owl nests.	Surface disturbing and disruptive activities potentially disruptive are prohibited February 1–July 15.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	No known great-horned owl nests are located within 0.75 mile of the Quarry Site.
Wildlife – Kestrel	Within 0.75-mile of kestrel nests.	Surface disturbing and disruptive activities potentially disruptive are prohibited April 1–July 31.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	No known kestrel nests are located within 0.75 mile of the Quarry Site.
Wildlife – Long-Eared Owl	Within 0.75-mile of long-eared owl nests.	Surface disturbing and disruptive activities potentially disruptive are prohibited March 1–July 31.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	No known long-eared owl nests are located within 0.75 mile of the Quarry Site.
Wildlife – Merlin	Within 0.75-mile of Merlin nests.	Seasonal wildlife stipulation April 1–July 31.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	No known Merlin nests are located within 0.75 mile of the Quarry Site.
Wildlife – Mountain Plover	Potential and occupied habitat Mountain plover.	Habitat will be avoided where practical. All surface-disturbing activities will be restricted from April 10 to July 10. Additional protection measures will be applied if this area is later determined to be within occupied habitat. Occupied habitat is defined as areas where broods and adults have been found.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	Only the Quarry Road involves federal lands. Wildlife surveys have been completed for the Quarry Site (Appendix N). The Quarry Site contains potential mountain plover habitat. PCW will comply with the stipulations as described in this table (Table 1; ROD Table D-1) or request an exception from BLM.
Wildlife – Northern Harrier	Within 0.75-mile of northern harrier nests.	Surface disturbing and disruptive activities potentially disruptive are prohibited April 1–July 31.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	No known northern harrier nests are located within 0.75 mile of the Quarry Site.
Wildlife – Osprey	Within 0.75-mile of osprey nests.	Surface disturbing and disruptive activities potentially disruptive are prohibited April 1–July 31.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	No known osprey nests are located within 0.75 mile of the Quarry Site.
Wildlife – Peregrine Falcon	Within 0.75-mile of peregrine falcon nests.	Surface disturbing and disruptive activities potentially disruptive are prohibited March 1–July 31.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	No known peregrine falcon nests are located within 0.75 mile of the Quarry Site.
Wildlife – Prairie Falcon	Within 0.75-mile of prairie falcon nests.	Surface disturbing and disruptive activities potentially disruptive are prohibited April 1–July 31.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	No known peregrine falcon nests are located within 0.75 mile of the Quarry Site.

TABLE 1. SUMMARY OF BLM ENVIRONMENTAL CONSTRAINTS (ROD TABLE D-1)

Resource Area	Resource Concern	Protection Measure	Application to Jurisdiction[1]			Mitigation Type[2]	Authority/Source	Implementation
			Private Land[3]	State Land	Public Land			
Wildlife – Raptor	Defined raptor and game bird winter concentration areas.	Activities or surface use will not be allowed from November 15 to April 30.	No[7]	No[7]	Yes	2	Wyoming BLM Mitigation Guidelines.	No defined raptor or game bird concentration areas are located within the Quarry Site.
Wildlife – Raptor	Raptor nesting habitat.	Activities or surface use will not be allowed from February 1 to July 31.	No[7]	No[7]	Yes	2	Wyoming BLM Mitigation Guidelines.	Only the Quarry Road involves federal lands. Raptor nesting habitat on federal lands within the Quarry Site will be monitored for nesting activity prior to construction. PCW will comply with the stipulations as described in this table (Table 1; ROD Table D-1) or request an exception from BLM.
Wildlife – Raptors	Within 0.75-mile of other raptor nests.	Surface disturbing and disruptive activities potentially disruptive are prohibited February 1–July 15.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	Nests for 'other' raptors on federal lands within 0.75 mile of surface disturbing and disruptive activities associated with the Quarry will be monitored to determine activity in the season prior to construction. PCW will comply with the stipulations as described in this table (Table 1; ROD Table D-1) or request an exception from BLM.
Wildlife – Red-Tailed Hawk	Within 0.75-mile of red-tailed hawk nests.	Surface disturbing and disruptive activities potentially disruptive are prohibited February 1–July 15.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	Red-tailed hawk nests on federal lands within 0.75 mile of surface disturbing and disruptive activities associated with the Quarry will be monitored to determine activity in the season prior to construction. PCW will comply with the stipulations as described in this table (Table 1; ROD Table D-1) or request an exception from BLM.
Wildlife – Screech Owl	Within 0.75-mile of screech owl nests.	Surface disturbing and disruptive activities potentially disruptive are prohibited March 1–July 31.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	No known screech owl nests are located within 0.75 mile of the Quarry Site.
Wildlife – Sharp-Shinned Hawk	Within 0.75-mile of sharp-shinned hawk nests.	Surface disturbing and disruptive activities potentially disruptive are prohibited April 1–July 31.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	No known sharp-shinned hawk nests are located within 0.75 mile of the Quarry Site.
Wildlife – Short-Eared Owl	Within 0.75-mile of short-eared owl nests.	Surface disturbing and disruptive activities potentially disruptive are prohibited March 1–July 31.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	No known short-eared owl nests are located within 0.75 mile of the Quarry Site.
Wildlife – Swainson's Hawk	Within 0.75-mile of Swainson's hawk nests.	Surface disturbing and disruptive activities potentially disruptive are prohibited April 1–July 31.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	No known Swainson's hawk nests are located within 0.75 mile of the Quarry Site.
Wildlife – Western Yellow-billed Cuckoo	Within 0.5 mile radius yellow-billed cuckoo nest.	Seasonal wildlife stipulation April 15–August 15.	No[7]	No[7]	Yes	2	2008 Rawlins RMP ROD.	No known yellow-billed cuckoo nests are located within 0.5 mile of the Quarry Site.

Notes:

TABLE 1. SUMMARY OF BLM ENVIRONMENTAL CONSTRAINTS (ROD TABLE D-1)

Resource Area	Resource Concern	Protection Measure	Application to Jurisdiction[1]			Mitigation Type[2]	Authority/Source	Implementation
			Private Land[3]	State Land	Public Land			

The terms "Quarry," "Quarry Site," "Quarry Facilities," and "Quarry Road" are as defined in the Site-specific Plan of Development for the Quarry. The term "Quarry Site" is inclusive of both the "Quarry Facilities" and "Quarry Road."

[1] Sources of information for application of stipulations for private and state lands include *Applicant Proposed Alternative and BLM Response Letter* (April 23, 2010), *PCW Response and Data on BLM Alternatives* (December 2009), and the *Plan of Development for the Chokecherry and Sierra Madre Wind Energy Project* (January 12, 2012).
[2] 1 = Restriction; 2 = Seasonal.
[3] As indicated in PCW's submittal entitled *Applicant Proposed Alternative and BLM Response Letter* (April 23, 2010).
[4] Applicant imposes more restrictive measures or applies measure to a specific area, see summary table of PCW ACMs.
[5] Per the *PCW Response and Data on BLM Alternatives* (December 2009) footnotes to Alternatives Summaries #18, "No Surface Uses (NSUs), as provided by BLM, were avoided to the extent practicable; however, some NSUs could not be completely avoided in a small number of discreet instances (mainly ephemeral streams, slope, and perennial streams/springs/wetlands/riparian). An example of an exception to the NSUs is where a turbine is located in an area that cannot be accessed without crossing an ephemeral stream. If it is determined that the stream is a Water of the U.S., then a Section 404 permit will be obtained thereby allowing an access road to be constructed. Another example is the slope criteria. The accuracy of the digital terrain model used for this analysis is insufficient for micro-siting. Engineering judgment was used to determine in a limited number of cases that it may be possible to grade a resource road to design criteria."
[6] See Chapter 8.0, Glossary.
[7] Per the *PCW Response and Data on BLM Alternatives* (December 2009) footnotes to Alternatives Summaries #10, "seasonal timing restrictions were not applied to construction activities on private land."

TABLE 2. SUMMARY OF APPLICANT COMMITTED MEASURES (ROD TABLE D-2)

Item	Environmental Resource	Applicant Committed Measure	Implementation
A-1-01	ESA, sensitive species, and other wildlife and fish species	Site-specific surveys and/or monitoring for ESA threatened and endangered species, BLM sensitive species and other wildlife and fish species will take place during each phase of construction. Survey and monitoring approaches will be developed in coordination with USFWS, BLM, and WGFD and will be identified in the site-specific PODs developed for each construction right-of-way grant.	In coordination with BLM, PCW will implement the Wildlife Monitoring and Protection Plan included in the CCSM Project ROD.
A-1-02	Avian and Bat Species, Golden and Bald Eagles	PCW will develop an Avian Protection Plan (APP), a Bat Protection Plan (BPP) and an Eagle Conservation Strategy (ECS) to identify measures to avoid, minimize, and mitigate project impacts through siting, operations, and monitoring.	An APP, BPP and ECS are not required for the Quarry. An APP, BPP and ECS will be developed for the wind turbine site-specific plans of development.
A-1-03	Greater Sage-grouse	PCW will comply with EO 2011-5 and commit to no construction activities within Wyoming's SGCA as they are identified in EO 2011-5 (Core Area Version 3 Map).	The Quarry Site is located outside designated greater sage-grouse core areas (Order 2011-5, Attachment A, Sage-Grouse Core Breeding Areas Version 3).
A-1-04	Wildlife Habitat Management Areas	PCW will not construct any facilities within portions of the Red Rim-Grizzly WHMA and Upper Muddy Creek Watershed-Grizzly WHMA that are within the Wyoming Sage-Grouse Core Management Area Version 3 Map (EO 2011-5).	The Quarry Site is located outside designated greater sage-grouse core areas (Order 2011-5, Attachment A, Sage-Grouse Core Breeding Areas Version 3).
A-1-05	Mule Deer	PCW will continue to coordinate with WGFD on ongoing mule deer monitoring efforts on the Ranch.	PCW continues to coordinate with WGFD with respect to ongoing mule deer monitoring on the Ranch.

TABLE 2. SUMMARY OF APPLICANT COMMITTED MEASURES (ROD TABLE D-2)

Item	Environmental Resource	Applicant Committed Measure	Implementation
A-1-06	Colorado River Fishes – bluehead sucker, flannelmouth sucker, roundtail chub, Colorado River cutthroat trout	PCW will continue to work with WGFD and BLM to develop conservation and monitoring strategies for native fish species in the Upper Muddy Creek watershed.	PCW continues to work with WGFD and BLM to develop conservation and monitoring strategies for native fish species in the Upper Muddy Creek watershed.
A-1-07	Fish species, amphibian species, other stream obligates; water quality	PCW will monitor watershed and stream conditions throughout the Application Area to document hydrologic conditions and stream channel characteristics (see Appendix F – Watershed Monitoring Plan).	PCW is monitoring watershed and stream conditions as described in the Watershed Monitoring Plan for the CCSM Project.
A-1-08	Other wildlife species	PCW will continue to incorporate the outcome of site-specific surveys to microsite infrastructure in order to avoid, minimize, or mitigate impacts to wildlife species.	Surveys of the Quarry Site were used to microsite the infrastructure, specifically, the Quarry Road, to avoid, minimize and mitigate impacts to wildlife species.
A-1-09	Wildlife Stipulations	PCW will adhere to the timing and spatial stipulations and exception processes as they are described in the Project ROD.	The Quarry design and schedule reflects the timing and spatial stipulations identified in the ROD; to the extent that exceptions are required, PCW will follow the exception/variance process described in the ROD.
A-1-10	Wildlife Stipulations	Timing and spatial stipulations will be used on public lands.	The Quarry design and schedule reflects the use of the timing and spatial stipulations identified in the ROD on federal lands.
A-1-11	Avian and Bat Monitoring	PCW will develop a project Avian Protection Plan, Bat Protection Plan and Eagle Conservation Strategy that will each describe post-construction monitoring efforts for avian and bat species.	Pursuant to the Record of Decision, an APP, BPP and ECS are not required for the Quarry. In conformance with the ROD, an APP, BPP and ECS will be developed for the wind turbine site-specific plans of development.

TABLE 2. SUMMARY OF APPLICANT COMMITTED MEASURES (ROD TABLE D-2)

Item	Environmental Resource	Applicant Committed Measure	Implementation
A-1-12	Wildlife Monitoring and Survey	PCW will continue to incorporate the outcome of site-specific surveys to microsite infrastructure in order to avoid, minimize, or mitigate impacts to sensitive wildlife species.	Surveys of the Quarry Site were used to microsite the infrastructure, specifically, the Quarry Road, to avoid, minimize and mitigate impacts to sensitive wildlife species.
A-1-13	Vegetation	Vegetation datasets developed by PCW will be used during project design to identify sensitive vegetation types for avoidance, minimization or mitigation and to optimize the reclamation plans for each construction phase.	PCW has used its vegetation datasets to avoid and minimize impacts to sensitive vegetation within the Quarry Site. The reclamation plan for the Quarry identifies appropriate BMPs to minimize and mitigate remaining impacts on federal lands. Private lands within the Quarry Site will be reclaimed to meet the requirements of WYDEQ-LQD.
A-1-14	Colorado butterfly plant and Ute ladies'-tresses orchid	Site-specific surveys for both plant species will be completed prior to surface disturbing activities in suitable habitat.	Surveys of the Quarry Site were completed and no suitable habitat for Colorado butterfly plant or Ute ladies'-tresses orchid was identified.
A-1-15	Revegetation and Reclamation	PCW will develop detailed reclamation plans for each of the construction phases and right-of-way grants. These plans will consider site-specific conditions and design considerations to maximize reclamation success.	PCW has developed a reclamation plan for the federal lands within the Quarry Site that accounts for site-specific conditions. The reclamation plan is included in the site-specific plan of development. Private lands within the Quarry Site will be reclaimed to meet the requirements of WYDEQ-LQD.
A-1-16	Wetland Resources	Facilities would be sited to avoid and/or minimize impacts.	No wetlands have been identified within the Quarry Site.
A-1-17	Wetland Resources	Any construction that occurs in or adjacent to wetlands and streams would use BMPs to protect surface water quality and minimize impacts to those resources.	BMPs to protect surface water quality and minimize impacts to wetlands will be implemented for construction in or adjacent to wetlands and streams per the Stormwater Pollution Prevention Plan for the Quarry.
A-1-18	Cultural Resources	Class III inventories of all proposed disturbance areas associated with the site-specific POD will be conducted prior to construction.	Class III inventories have been conducted for all proposed disturbance areas within the Quarry Site.

TABLE 2. SUMMARY OF APPLICANT COMMITTED MEASURES (ROD TABLE D-2)

Item	Environmental Resource	Applicant Committed Measure	Implementation
A-1-19	Cultural Resources	All cultural resource identification, evaluation, and treatment, including as a result of unexpected discovery at such time that construction has been permitted, will follow the stipulations of the Programmatic Agreement (PA) established for the project.	PCW will follow the stipulations of the PA regarding cultural resource identification, evaluation, and treatment, including unexpected discoveries.
A-1-20	Paleontological Resources	In the event that fossils are discovered on public lands during construction activities, PCW will suspend work in that area, have an on-call paleontologist review the fossils, and notify the BLM. PCW expects the significance of the discovery and the resulting course of action to be determined within 48 hours of discovery.	PCW will have a paleontologist on-call and agrees to suspend construction activities within the immediate area if fossils are discovered on federal lands for up to 48 hours while BLM evaluates the fossils' significance.
A-1-21	Watershed Resources	PCW has implemented a watershed monitoring program to evaluate potential impacts of project construction and operations. PCW commits to continue watershed monitoring efforts for three years post-construction.	PCW will continue watershed monitoring until three years post-construction, in accordance with the Watershed Monitoring Plan for the CCSM Project.
A-1-22	Greater Sage-Grouse	PCW will work cooperatively with BLM and WGFD to perform annual lek monitoring within the Ranch in accordance with approved WGFD protocols during pre-construction, construction and for five years post-construction.	PCW will continue to work with BLM and WGFD to perform annual lek monitoring within the Ranch prior to and during construction, as well as for five years post-construction.
A-1-23	Greater Sage-Grouse	PCW will work with BLM and private landowners to identify fences that pose a significant collision risk to sage-grouse. Identified fences will be removed or marked as practicable. To date PCW and TOTCO have removed over 10 miles of fence and have marked an additional 16 miles of fence with reflective bird diverters.	PCW will continue to work with BLM and private landowners to identify fences that pose a significant collision risk to sage-grouse and to remove or mark them as practicable.

TABLE 2. SUMMARY OF APPLICANT COMMITTED MEASURES (ROD TABLE D-2)

Item	Environmental Resource	Applicant Committed Measure	Implementation
A-1-24	Greater Sage-Grouse	PCW will work with BLM and private landowners to evaluate proposed new fences and determine the risk of such fences to sage-grouse. If significant risk exists, new fence construction will be deferred where possible; if fences must be constructed they will be marked with reflective bird diverters.	Temporary and permanent fences required by the Quarry have been evaluated. No fences have been identified that pose a significant risk to greater sage-grouse.
A-1-25	Avian Species including Bald and golden Eagles and Greater Sage-Grouse	Guy wires on meteorological towers will be marked with reflective bird diverters. To date PCW has marked all guy wires on Project meteorological towers with reflective bird diverters.	Not applicable. The Quarry site-specific plan of development does not include meteorological towers .
A-1-26	Wildlife including Greater Sage-Grouse, Other Avian Species and Small Mammals	PCW will work with private landowners to install metal mesh escape ladders in water tanks that pose a risk to wildlife species. To date, PCW and TOTCO have installed metal mesh escape ramps on many Ranch water tanks.	PCW will continue to work with private landowners to identify water tanks on the Ranch that pose a risk to wildlife species and will continue to install metal mesh escape ladders in those tanks.
A-1-27	Wildlife including Greater Sage-Grouse and Bald and Golden Eagles	PCW will work with BLM and private landowners to stabilize and rehabilitate burned areas to promote the biological integrity of the site and limit expansion of invasive species. In 2010 PCW and TOTCO pursued stabilization and recovery of a burned area in the Chokecherry site with an emphasis on rapid recovery and use of the area by sage-grouse and other species.	PCW will continue to work with BLM and private landowners to stabilize and rehabilitate any newly or recently burned areas on the Ranch.
A-1-28	Wildlife including Greater Sage-Grouse and Bald and Golden Eagles	PCW will work with private landowners and water right owners to pursue water improvement conservation projects to benefit greater sage-grouse and other wildlife species in accordance with all applicable rules and regulations.	PCW will continue to work with private landowners and water right owners to pursue water improvement conservation projects to benefit greater sage-grouse and other wildlife species.

TABLE 2. SUMMARY OF APPLICANT COMMITTED MEASURES (ROD TABLE D-2)

Item	Environmental Resource	Applicant Committed Measure	Implementation
A-1-29	Wildlife including Greater Sage-Grouse and Bald and Golden Eagles	PCW will work with private land owners to enhance fallow agricultural fields on the Ranch located east of the North Platte River. Enhancements include vegetation treatments to improve forage and cover for greater sage-grouse.	PCW will continue to work with private land owners to enhance fallow agricultural fields on the Ranch located east of the North Platte River.
A-1-30	Wildlife including Greater Sage-Grouse and Bald and Golden Eagles	To minimize habitat fragmentation PCW will work with BLM and private landowners to close unnecessary roadways and reclaim such roads where practicable.	No unnecessary roadways have been identified within the Quarry Site for closure or reclamation.
A-1-31	Wildlife including Greater Sage-Grouse and Bald and Golden Eagles	PCW will work with BLM and private landowners to control the spread of noxious and invasive plant species.	PCW will work with BLM and private landowners to control the spread of noxious and invasive plant species.
A-1-32	Greater Sage-Grouse	PCW will work with private landowners to suspend the hunting of sage-grouse on private lands within the Ranch	Hunting of greater sage-grouse has been suspended on all private lands within the Ranch owned by TOTCO for purposes of greater sage-grouse conservation.
A-1-33	Greater Sage-Grouse	PCW will cooperate with agencies and private land owners to evaluate and implement predator control techniques to benefit sage-grouse as appropriate.	PCW continues to cooperate with agencies and private land owners to evaluate and implement predator control techniques to benefit sage-grouse as appropriate

Notes:
The terms "Quarry," "Quarry Site," "Quarry Facilities," and "Quarry Road" are as defined in the Site-specific Plan of Development for the Quarry. The term "Quarry Site" is inclusive of both the "Quarry Facilities" and "Quarry Road."

TABLE 3. SUMMARY OF APPLICANT COMMITTED MEASURES (ROD TABLE D-2)

Item	Resource Concern	Restriction Distance	Jurisdiction			Applies To			Notes	Implementation
			Private	State	BLM	WTGs	Subs	Roads Collection T-Line		
A-2-01	Cultural Historic Trails	1 mile WTGs, 0.25 mile surface of the Overland Trail	Y	Y	Y	Y	Y	No, minimize crossings, cross at right angles	1 mile setback from the center of the Overland Trail as presently mapped (2008 RMP/ROD) in all areas except the following sections, where the BLM's RMP requirement of 0.25 miles were used: T18N R87W S6; T18N R88W S1; T18N R88W S2; T18N R88W S4; T18N R88W S7; T18N R88W S9; T18N R89W S11; T18N R89W S12; T18N R89W S13; T18N R89W S14; and the unmapped Overland Trail alternative route located in T18N R88W S6, T18N R89W S1, T18N R89W S2, T18N R89W S11, and T18N R89W S10.	The Quarry Site is located more than 1 mile from any contributing segments of the Overland Trail.

TABLE 3. SUMMARY OF APPLICANT COMMITTED MEASURES (ROD TABLE D-2)

Item	Resource Concern	Restriction Distance	Jurisdiction			Applies To					Notes	Implementation
			Private	State	BLM	WTGs	Subs	Roads	Collection	T-Line		
A-2-02	Lands and Realty - City/Town Limits	Structure base 0.5 mile setback	Y	Y	Y	Y	Y	No			Setback only applies to "towers," term not defined in Act; PCW to apply setback to WTGs, overhead collection, and transmission structures based on the height of each structure	Not applicable. The Quarry site-specific plan of development does not include any wind turbines, overhead collection, or transmission structures.
A-2-03	Lands and Realty Homes/ Occupied Buildings	Greater of 5.5 times total structure height or 1,000 ft. setback	Y	Y	Y	Y	N	No			Setback only applies to "towers," term not defined in Act; PCW to apply setback to WTGs, overhead collection, and transmission structures based on the height of each structure	Not applicable. The Quarry site-specific plan of development does not include any wind turbines, overhead collection, or transmission structures.
A-2-04	Lands and Realty - ROW Setback	5D from ROW boundary	N	N	Y	Y	N	No			Waiver may be granted	Not applicable. The Quarry site-specific plan of development does not include any wind turbines.

TABLE 3. SUMMARY OF APPLICANT COMMITTED MEASURES (ROD TABLE D-2)

Item	Resource Concern	Restriction Distance	Jurisdiction			Applies To			Notes	Implementation
			Private	State	BLM	WTGs	Subs	Roads Collection T-Line		
A-2-05	Lands and Realty - Subdivisions	Greater of 5.5 times total structure height or 1,000 ft. setback	Y	Y	Y	Y	Y	Yes, except underground	Setback applies to all above-ground construction, underground appears permissible within setback	The Quarry Site is more than 1,000 feet from existing subdivisions.
A-2-06	Lands and Realty - WTGs	Tower base 1.1 times total structure height from external property lines	Y	Y	Y	Y	N	No	Setback only applies to "towers," term not defined in Act; PCW to apply setback to WTGs, overhead collection, and transmission structures based on the height of each structure	Not applicable. The Quarry site-specific plan of development does not include any wind turbines, overhead collection, or transmission structures.
A-2-07	Lands and Realty - WTGs	Tower base 1.1 times total structure height from any public ROWs	Y	Y	Y	Y	N	No	Setback only applies to "towers," term not defined in Act; PCW to apply setback to WTGs, overhead collection, and transmission structures based on the height of each structure	Not applicable. The Quarry site-specific plan of development does not include any wind turbines, overhead collection, or transmission structures.

TABLE 3. SUMMARY OF APPLICANT COMMITTED MEASURES (ROD TABLE D-2)

Item	Resource Concern	Restriction Distance	Jurisdiction			Applies To					Notes	Implementation
			Private	State	BLM	WTGs	Subs	Roads	Collection	T-Line		
A-2-08	Recreation - Teton Reservoir	1 mile boundary WTGs of Teton Reservoir	Y	Y	Y	Y	N	No			WTG placement would be prohibited within one mile of the Teton Reservoir Recreation Site.	Not applicable. The Quarry site-specific plan of development does not include any wind turbines; regardless, the Quarry Site is well over one mile from the boundary of Teton Reservoir.
A-2-09	Water - North Platte River	1 mile high water mark WTGs of the North Platte River	Y	Y	Y	Y	Y	No, avoid if possible			WTG placement would be prohibited within one mile of the ordinary high water mark of the North Platte River.	Not applicable. The Quarry site-specific plan of development does not include any wind turbines or substations; regardless, the Quarry Site is well over one mile from the North Platte River.

TABLE 3. SUMMARY OF APPLICANT COMMITTED MEASURES (ROD TABLE D-2)

Item	Resource Concern	Restriction Distance	Jurisdiction			Applies To					Notes	Implementation
			Private	State	BLM	WTGs	Subs	Roads	Collection	T-Line		
A-2-10	Wildlife - Red Rim Grizzly Wildlife Habitat Area (WHMA)	No development within Red Rim-Grizzly WHMA within the Wyoming Sage-Grouse Core Management Areas Version 3 Map (finalized June 29, 2010)	Y	Y	Y	Y	Y	Yes			The Wyoming Game and Fish Department's (WGFD) Red Rim-Grizzly WHMA is approximately 37,630 acres in total, of which approximately 1,200 acres (3%) lie outside Sage-Grouse Core Management Areas Version 3. The area outside Sage-Grouse Core Management Areas Version 3 is located in the northeast corner of the Grizzly WHMA and is a part of or adjacent to Miller Hill. PCW may locate facilities within this area of the Grizzly WHMA.	The Quarry Site is not located within the Red-Rim Grizzly WHMA.

TABLE 3. SUMMARY OF APPLICANT COMMITTED MEASURES (ROD TABLE D-2)

Item	Resource Concern	Restriction Distance	Jurisdiction			Applies To					Notes	Implementation
			Private	State	BLM	WTGs	Subs	Roads	Collection	T-Line		
A-2-11	Wildlife- Sage-Grouse Core Breeding Area	No facilities within the Wyoming Sage-Grouse Core Management Area Version 3 Map (finalized June 29, 2010)	Y	Y	Y	Y	Y	Yes			No construction of any facilities (WTGs, roads, transmission lines, collector lines, substations, staging areas, etc.) in Wyoming's Sage-Grouse Core Management Areas Version 3 (finalized June 29, 2010).	The Quarry Site is located outside designated greater sage-grouse core areas (Order 2011-5, Attachment A, Sage-Grouse Core Breeding Areas Version 3).

Notes:
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TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-01	Air – Dust Control	Water would be applied twice per day, or as deemed necessary by the Environmental Inspector, to all disturbed surfaces (i.e., exposed, dry, and unfrozen) during construction. During operation, dust control would occur twice per day in those areas where vehicular traffic exceeds normal operational needs. If, for example, heavy equipment is brought on site for maintenance or if vehicular traffic exceeds a few vehicles per day, additional dust control watering would be initiated.	PCW will apply water as necessary per the CCSM Project Dust Control Plan.
A-3-02	Air – Dust Control	Magnesium chloride may be applied, if necessary, for adequate dust suppression. These treatments would occur on an as-needed basis, depending on weather conditions and the amount of traffic on the road.	PCW will apply magnesium chloride as necessary per the CCSM Project Dust Control Plan. In accordance with current BLM policy, PCW will not apply chloride compounds or lignin derivatives within 500 feet of a perennial stream on federal lands.
A-3-03	Air – Dust Control	The driving surface of all roads constructed for project access would be surfaced with gravel to further reduce potential dust emissions.	Quarry Road will be surfaced with gravel.
A-3-04	Air – Dust Control	Dust abatement techniques would be used on unpaved, unvegetated surfaces to minimize airborne dust. Dust abatement techniques would be employed on construction materials and stockpiled soils if they are a source of fugitive dust. Dust abatement techniques would be used before and during surface clearing, excavation, or blasting activities.	PCW will use dust abatement techniques on unpaved, unvegetated surfaces and material stockpiles, as described in the CCSM Project Dust Control Plan.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-05	Air – Dust Control	Speed limits (e.g., 25 miles per hour [mph] [40 kilometers per hour [km/h]) would be posted along all access roads and enforced during construction and maintenance activities and enforced to reduce airborne fugitive dust.	Quarry Road will have a posted speed limit that will be enforced during construction, operation, maintenance, and decommissioning of the Quarry.
A-3-06	Air – Vehicle Emissions	All construction equipment would be maintained in good working condition and would contain appropriate pollution control devices to minimize trace gas emissions.	PCW will maintain construction equipment for the Quarry in good working condition. All construction equipment will have appropriate pollution control devices.
A-3-07	Cultural and Paleontological Resources	Unexpected discovery of cultural or paleontological resources during construction would be brought to the attention of the responsible BLM authorized officer immediately. Work would be halted in the vicinity of the find to avoid further disturbance to the resources while they are being evaluated and appropriate mitigation measures are being developed.	PCW agrees to suspend activities within the immediate area of cultural or paleontological resources discovered on federal lands. PCW will follow the stipulations of the PA regarding cultural resource identification, evaluation, and treatment, including unexpected discoveries. For paleontological resources, PCW will have a paleontologist on-call and agrees to suspend construction activities within the immediate vicinity of fossils discovered on federal lands for up to 48 hours while BLM evaluates the fossils' significance.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-08	General – Decommissioning	Prior to the termination of the right-of-way authorization, a decommissioning plan would be developed and approved by the BLM. The decommissioning plan would include a decommissioning impact analysis, site reclamation plan and monitoring program. All management plans, BMPs, and stipulations developed for the construction phase would be applied to similar activities during the decommissioning phase as agreed to between BLM and PCW.	PCW will develop a decommissioning plan for the Quarry, as described in the site-specific plan of development, section 7.
A-3-09	General – Decommissioning	All turbines and ancillary (above-ground) structures would be removed from the site.	All above-ground structures associated with the Quarry will be removed during decommissioning.
A-3-10	General – Avoidance of sensitive areas	PCW would work with the BLM to mitigate for environmentally sensitive areas. Marshy soils, drainage bottoms, and riparian areas would be avoided to the extent practicable.	The Quarry has been designed to avoid and minimize impacts to environmentally sensitive areas. Marshy soils, drainage bottoms, and riparian areas have been avoided to the extent practicable.
A-3-11	General – Electrical Lines	All underground electrical collector lines would be buried in a manner that minimizes additional surface disturbance (e.g., along roads or other paths of surface disturbance when possible).	The Quarry site-specific plan of development does not include electrical collector lines. Additionally, no other buried utilities are anticipated; however, if buried utilities are required they will be routed adjacent to Quarry Road or other disturbance areas to minimize additional surface disturbance.
A-3-12	General – Environmental Compliance	An Environmental Compliance Plan (ECP) would be developed and implemented to monitor implementation of mitigation measures during project construction. An Environmental Inspector would be on-site to oversee the implementation of the Project ECP.	The Environmental and Construction Compliance Plan for the CCSM Project is included in the site-specific plan of development for the Quarry.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-13	General – Maintenance	The transmission lines would be inspected two times per year by ground or aerial patrols, and maintenance would be performed as necessary. Substation maintenance activities would include routine, scheduled equipment maintenance and grounds keeping. Once reclamation is complete and vegetation is stable, noxious weed surveys of the Project areas would be conducted on a regular basis. Inspection of the Project access roads and internal resource roads would include weed monitoring and treatment, as outlined in the Weed Management Plan.	Not applicable. The Quarry site-specific plan of development does not include transmission lines or substations.
A-3-14	General – Maintenance	Inoperative turbines would be repaired, replaced or removed in a timely manner.	Not applicable. The Quarry site-specific plan of development does not include wind turbines.
A-3-15	General – Mitigation Measures	All control and mitigation measures established for the Project in the POD and the resource-specific management plans that are part of the POD would be maintained and implemented throughout the operational phase, as appropriate. These control and mitigation measures would be reviewed and revised, as needed, based on the mutual agreement of PCW and BLM, to address changing conditions or requirements within the Project area, throughout the operational phase. This dynamic approach would help ensure that impacts from operations are kept to a minimum.	PCW will implement applicable resource protection measures outlined in the decision record and right-of-way grant approving construction, operation, maintenance and decommissioning of the Quarry on federal lands.
A-3-16	General – Project Disturbance	The number and size/length of roads, temporary fences, lay-down areas, and borrow areas would be minimized.	PCW has minimized the disturbance associated with the Quarry to the extent practicable to meet the needs of the CCSM Project.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-17	General – Project Footprint	The area disturbed by construction-related activities (i.e., footprint) would be kept to a minimum.	PCW has minimized the disturbance associated with the Quarry to the extent practicable to meet the needs of the CCSM Project.
A-3-18	General – Project Footprint	The area disturbed by operational-related activities (i.e., footprint) would be kept to a minimum.	PCW has minimized the disturbance associated with the Quarry to the extent practicable to meet the needs of the CCSM Project.
A-3-19	Geology – Seismic Considerations	All structures will be built to appropriate seismic requirements for the local geology.	PCW has completed geologic testing to insure that the Quarry design is appropriate to the local geology and seismology.
A-3-20	Hazardous Materials – SPCC Plan	A Spill Prevention, Control, and Countermeasures (SPCC) Plan would be implemented during the construction and operation phases of Project. The SPCC would define procedures to be used in the event of an accidental spill from vehicles or other equipment.	A SPCC Plan is included in the site-specific plan of development for the Quarry. The SPCC will be implemented during construction, operation, maintenance and decommissioning of the Quarry.
A-3-21	Hazardous Materials – Accidental Release	In the event of an accidental release of hazardous materials to the environment, the operator would document the event, including a root cause analysis, appropriate corrective actions taken, and a characterization of the resulting environmental or health and safety impacts. Documentation of the event would be provided to the BLM authorized officer and other federal and state agencies, as required.	PCW will comply and will require its contractors to comply with this provision. Procedures to respond to accidental releases of hazardous materials will be included in the site health and safety plan for the CCSM Project. The site health and safety plan will be developed by the general contractor immediately prior to construction.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-22	Hazardous Materials – ESA	A Phase I Environmental Site Assessment would be required prior to the purchase of a property and would be conducted by a trained and experienced environmental professional. If the Phase I Environmental Site Assessment identifies potential hazardous substances, a Phase II Environmental Site Assessment is usually conducted to confirm the presence and extent of contamination.	Not applicable. No property will be purchased for development of the Quarry.
A-3-23	Hazardous Materials – Handling	Pursuant to the Project's Hazardous Materials Management Plan, all personnel handling hazardous materials would be trained appropriately on the dangers of, and safety precautions to be taken, when working with hazardous materials. Any hazardous materials used on-site would be documented and properly labeled. Material Safety Data Sheets (MSDS) and proper handling procedures would be located on-site. In the event a significant chemical spill occurs, personnel should evacuate the immediate area (as required) and report the release. The Emergency Response Team would be called to the area to assess the extent of the emergency and would determine appropriate response actions based on the Emergency Response Plan.	PCW will comply and will require its contractors to comply with this provision. A detailed hazardous materials management plan compliant with this measure will be included in the site health and safety plan for the CCSM Project. The site health and safety plan will be developed by the general contractor immediately prior to construction.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-24	Hazardous Materials – Secondary Containment	Secondary containment would be provided for all on-site hazardous materials and waste storage, including fuel. In particular, fuel storage (for construction vehicles and equipment) would be a temporary activity occurring only for as long as is needed to support construction activities.	PCW will comply and will require its contractors to comply with this provision. Hazardous material and hazardous waste will be stored in secondary containment. A detailed hazardous materials management plan will be included in the site health and safety plan for the CCSM Project. The site health and safety plan will be developed by the general contractor immediately prior to construction. Fuel storage will be in accordance with the SPCC Plan for the Quarry.
A-3-25	Hazardous Materials – Storage, Handling, and Disposal	Safety measures would be implemented in accordance with Occupational Safety and Health Administration (OSHA) standards and operator requirements. Petroleum products (e.g., lubricating oils and greases) and items such as touch-up paint and fiberglass blade repair materials would be stored on-site for maintenance operations. All such wastes/substances would be handled, stored in a secured location, and disposed of in accordance with applicable federal, state, and local regulations.	PCW will comply and will require its contractors to comply with this provision, including following all applicable federal, state, and local regulations, including OSHA standards and operator requirements. Oil products will be handled in accordance with the SPCC Plan. Hazardous materials and hazardous waste will be managed in accordance with the hazardous materials management plan. A detailed hazardous materials management plan will be included in the site health and safety plan for the CCSM Project. The site health and safety plan will be developed by the general contractor immediately prior to construction.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-26	Health and Safety – Crane Operation	Crane safety training would be conducted to ensure riggers and ground workers understand the hazards of working around mobile cranes and that they watch for signs of problems at all times, especially if power lines are nearby. Standard operating procedures would be developed and implemented for safely lifting loads. A written engineered lift plan for all critical lifts would be developed and followed.	PCW will comply and will require its contractors to comply with this provision. Crane safety training requirements and standard operation procedures for lifts will be included in the site health and safety plan for the CCSM Project. The site health and safety plan will be developed by the general contractor immediately prior to construction.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-27	Health and Safety – Crane Operation	Crane operators would take the following steps to protect themselves and other workers when operating mobile cranes on the Project Sites: 1) the minimum clearance between power lines and the crane or load would be 10 ft. for lines rated 50-kV or below; 2) for lines over 50-kV, the minimum clearance would be 10 ft. plus 0.4 foot for each 1-kV over 50-kV; 3) operation of a crane outside of design limitations, manufacturer's specifications, or without the load charts would be prohibited; 4) cranes would be operated only when wind velocities are under the maximum speeds stipulated for safe operation (these velocities are generally stated in the manufacturer's specifications); 5) cranes would be inspected daily prior to each use, monthly, and annually, and the records of these inspections would be available on the machine; 6) rigging equipment would be inspected daily; 7) all operators of mobile cranes would have, and be familiar with, the additional requirements in the ANSI standard; 8) the latch in the hook throat opening would never be tied back; and 9) employees would not be suspended from the cranes and the use of cranes for suspended personnel platforms would be avoided.	PCW will comply and will require its contractors to comply with this provision. Crane safety training requirements and standard operation procedures for lifts will be included in the site health and safety plan for the CCSM Project. The site health and safety plan will be developed by the general contractor immediately prior to construction.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-28	Health and Safety – Crane Operation	Meteorological stations would monitor wind speeds on the job site to support safe crane operating standards.	PCW will comply and will require its contractors to comply with this provision. Crane safety training requirements and standard operation procedures for lifts will be included in the site health and safety plan for the CCSM Project. The site health and safety plan will be developed by the general contractor immediately prior to construction.
A-3-29	Lands and Realty – Foreign Lines, Monuments, and Markers	All foreign lines would be marked. Monuments and markers (i.e., General Land Surveys and BLM Cadastral Survey Corners, reference corners, U.S. Coastal and Geodetic benchmarks) would be protected during the construction and operational phases of the Project. In the event that a monument or marker is disturbed, the employee would report the incident in writing to the Authorized Officer. PCW, in consultation with the BLM or other appropriate agency, would be responsible for re-surveying and replacing any markers that are disturbed.	PCW will protect monuments and markers during construction, operation, maintenance and decommissioning of the Quarry. Disturbance of any monuments or markers will be reported to the BLM Authorized Officer.
A-3-30	Noise – Blasting and Noisy Activity	If blasting or other noisy activities are required during the construction period, nearby residents would be notified in advance.	PCW will notify landowners adjacent to the Quarry Site of general construction activities prior to commencement of construction each season. Additionally, if blasting is required, PCW will notify nearby residents in accordance with Section 9.1 of the Quarry Site-specific Plan of Development.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-31	Noise – Construction Equipment	All equipment would have sound-control devices no less effective than those provided on the original equipment. All construction equipment used would be adequately muffled and maintained.	PCW will maintain construction equipment for the Quarry in good working condition. All construction equipment will have appropriate sound control devices no less effective that those provided by the manufacturer.
A-3-32	Noise – Construction Equipment	All stationary construction equipment (i.e., compressors and generators) would be located as far as practicable from nearby residences.	PCW will locate stationary construction equipment as far from nearby residences as practicable.
A-3-33	Noise – Road Use	Road use specifications designed to keep traffic to a minimum would be implemented to the maximum extent practical.	PCW will minimize traffic on Quarry Road to the maximum extent practical.
A-3-34	Noise – Turbine Noise	All WTGs would be properly maintained to prevent excessive noise.	Not applicable. The Quarry site-specific plan of development does not include wind turbines.
A-3-35	Public Health and Safety – Construction Practices	A Project Health and Safety Plan would be implemented in accordance with OSHA standards. Hard hat requirements and "authorized personnel only" signs would be posted at the entrance to the main access points during construction. Permanent signs would be posted at gates on the main access roads. Safety signs (e.g., speed limits, steep grades, etc.) would be placed along the main access roads in accordance with local, state, and federal regulations. Safety signing would be posted on all transformers, at high-voltage facilities, along roads, and around towers (if necessary) in conformance with applicable state and federal regulations.	PCW will comply and will require its contractors to comply with this provision. A detailed site health and safety plan will be implemented for the CCSM Project in accordance with applicable local, state and federal regulations. The site health and safety plan will be developed by the general contractor immediately prior to construction. Signage will be posted as required throughout the Quarry Site in accordance with local, state, and federal regulations.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-36	Public Health and Safety – Construction Practices	A comprehensive and continuous occupational Injury and Illness Prevention Program (IIPP) would be implemented and enforce a code of safe practices (CSP) for all employees. A designated field safety person would be responsible for on-site management and administration of the IIPP and CSP. Occupational safety and health matters would be communicated to employees by written documentation, staff meetings, formal and informal training, weekly safety meetings, and posted information. Communication from employees to supervisors or safety representatives about unsafe or unhealthy conditions would be encouraged and may be verbal or written. Results of investigations of any employee safety suggestion or report of hazard would be distributed to all employees affected by the hazard or posted, as appropriate.	PCW will comply and will require its contractors to comply with this provision. A detailed site health and safety plan compliant with this measure will be developed for the CCSM Project. The site health and safety plan will be developed by the general contractor immediately prior to construction.
A-3-37	Public Health and Safety – Construction Practices	Each supervisor would conduct an inspection to identify unsafe working conditions and practices, as follows: 1) weekly in all areas; 2) whenever new substances, procedures, or equipment that may represent a new safety or health hazard are introduced to the job site; and 3) whenever a supervisor is made aware of a new or previously unrecognized hazard. A hazard checklist or hazard assessment form would be used to document inspections. Employees may not enter a hazard area without appropriate protective equipment, training, and prior specific approval by the IIPP and CSP administrator.	PCW will comply and will require its contractors to comply with this provision. A detailed site health and safety plan compliant with this measure will be developed for the CCSM Project. The site health and safety plan will be developed by the general contractor immediately prior to construction.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-38	Public Health and Safety – Fire Management	Fire control would be provided pursuant to the Project's Fire Safety Plan.	PCW will comply and will require its contractors to comply with this provision. A fire safety plan compliant will be included in the site health and safety plan for the CCSM Project. The site health and safety plan will be developed by the general contractor immediately prior to construction.
A-3-39	Public Health and Safety – Fire Management	Fire prevention standards would be followed to reduce the risk of a fire, in accordance with 36 CFR 261 and the Wyoming Interagency Fire Restriction Plan. All hot work that is to occur on site would be done in accordance with OSHA Regulation 29 CFR 1910.252(a).	PCW will comply and will require its contractors to comply with this provision. A detailed site health and safety plan compliant with this measure will be developed for the CCSM Project as part of the site health and safety plan. The site health and safety plan will be developed by the general contractor immediately prior to construction.
A-3-40	Reclamation	All areas of disturbed soil would be reclaimed using weed-free native grasses, forbs, and shrubs. Reclamation activities would be undertaken as early as possible on disturbed areas not required for operation.	Reclamation of federal lands within the Quarry Site will be completed in accordance with the reclamation plan for the Quarry (Appendix L). Reclamation of private lands will be reclaimed in accordance with the requirements of the WYDEQ-LQD.
A-3-41	Reclamation – Roadways	Access roads would be regraded, the topsoil replaced, and all disturbed areas would be re-vegetated. Any roadway damage due to the transport of the heavy equipment would be repaired on the public roadways upon the completion of Project construction and decommissioning.	Reclamation of federal lands within the Quarry Site will be completed in accordance with the reclamation plan for the Quarry (Appendix L). Reclamation of private lands will be reclaimed in accordance with the requirements of the WYDEQ-LQD. PCW will repair any damage to existing or public roadways following CCSM Project construction and decommissioning in coordination with appropriate federal, state and local agencies and private landowners.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-42	Reclamation – Topsoil	Topsoil from all decommissioning activities would be salvaged and reapplied during final reclamation.	Reclamation of federal lands within the Quarry Site will be completed in accordance with the reclamation plan for the Quarry (Appendix L). Reclamation of private lands will be reclaimed in accordance with the requirements of the WYDEQ-LQD.
A-3-43	Reclamation – Vegetation	All areas of disturbed soil would be reclaimed using weed-free native shrubs, grasses, and forbs. The vegetation cover, composition, and diversity would be restored to values commensurate with the ecological setting.	Reclamation of federal lands within the Quarry Site will be completed in accordance with the reclamation plan for the Quarry (Appendix L). Reclamation of private lands will be reclaimed in accordance with the requirements of the WYDEQ-LQD.
A-3-44	Recreation – Public Access	Temporary fencing would be installed around staging areas and storage yards during construction to limit public access. Public access to open excavations would be limited by either installation of locked gates at public access points, or utilization of other approved means of limiting public access.	PCW will install fencing and signage as needed to protect public safety and prevent unauthorized access.
A-3-45	Recreation – Public Access	Permanent fencing would be installed and maintained around electrical substations, and turbine tower access doors would be locked to limit public access during operations.	Not applicable. The Quarry site-specific plan of development does not include any wind turbines or substations.
A-3-46	Roads – General Design	DELETED[1]	
A-3-47	Roads – General Design	Access roads and on-site roads would be surfaced with aggregate materials, wherever appropriate.	Quarry Road will have a gravel surface where appropriate, as described in the site-specific plan of development.

[1] Power Company of Wyoming (PCW). 2012. Memorandum from G. Miller (PCW) to P. Murdock (BLM) dated April 10, 2012.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-48	Roads – General Design	Access roads would be located to follow natural contours where possible and minimize side hill cuts.	Quarry Road will follow natural contours to the extent practical.
A-3-49	Roads – General Design	DELETED[1]	
A-3-50	Roads – General Design	Roads would be located upwind from WTG rows, where possible, such that drifting caused by towers or transformers is not likely to accumulate on roads.	The Quarry site-specific plan of development does not include roads in close proximity to wind turbines such that drifting caused by wind turbines is anticipated to be an issue.
A-3-51	Roads – General Design	Roads are designed in accordance with the BLM Gold Book (BLM 2007a) design criteria as well as the BLM Manual 9113: Roads (BLM 1985).	Quarry Road is designed to meet the BLM Gold Book and BLM Manual 9113 design criteria, as applicable. Detailed information on the road design criteria is included in Appendix C to the Quarry site-specific plan of development.
A-3-52	Roads – General Design	Existing roads would be used, but only if in safe and environmentally sound locations. If new roads are necessary, they would be designed and constructed to the appropriate BLM road design standards where practical and be no higher than necessary to accommodate their intended functions (e.g., traffic volume and weight of vehicles).	Quarry Road is designed to meet the BLM Gold Book and BLM Manual 9113 design criteria, as applicable. Detailed information on the road design criteria is included in Appendix C to the Quarry site-specific plan of development.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-53	Roads – General Design	Final roadway alignments will include erosion control measures to stabilize steeper slopes and to prevent loss of soil. These measures will include hay bales, shallow swales and ditches, rock/rip rap embankments, and culvert outlet protection. Final alignments will be ground-verified using BLM Rawlins Field Office knowledge of potentially problematic areas for road construction and/or maintenance.	Erosion control measures for Quarry Road are described in the Erosion Control Plan and are detailed in the Issued for Permit Plans.
A-3-54	Roads – General Design	Where road intersection improvements are required to accommodate extra-long vehicles, potential upgrades could include placement of relocating signs, placement of temporary paving, and use of flaggers, as needed. All intersection improvements would be restored to their original condition upon the completion of construction.	Not applicable. PCW does not anticipate that any road intersection improvements will be required for the Quarry.
A-3-55	Roads – General Design	Where road-cattle guard intersection improvements are required to accommodate overweight vehicles, potential road profile upgrades may be required to allow travel safely over the cattle guards. All damaged cattle guards would be replaced upon the completion of construction.	Not applicable. PCW does not anticipate impacts to existing cattle guards or the need for intersection improvements at existing cattle guards; however, if cattle guards are damaged due to CCSM Project traffic, PCW will repair or replace the cattle guards upon the completion of CCSM Project construction.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-56	Roads – General Design	All existing roads that would be used as primary access locations to the Project area would need to be upgraded to accommodate the anticipated extra traffic generated by the Project. Most of these roads are county roads or two-track roads that would need to be widened to accommodate the construction traffic. All necessary federal, state, and local permits would be obtained to complete this work prior to construction.	This measure is not directly applicable to the Quarry because it addresses the CCSM Project as a whole. With respect to the Quarry, primary access to the Quarry will be via Quarry Road. PCW will obtain all necessary federal, state, and local permits prior to construction of Quarry Road.
A-3-57	Roads – General Design	During the course of construction, if excessive wear and tear to the existing roadway surface is evident, these road surfaces would be restored to their original condition upon the completion of construction. Where necessary, consultation with the UPRR would be required to change the roadway profile at specific at-grade railroad crossings to smooth the existing hump for low-profile vehicles; consultation with various utility companies would be required to elevate the risk of oversized vehicles in relation to low-hanging power lines.	This measure is not directly applicable to the Quarry because it addresses the CCSM Project as a whole; however, PCW has committed to restore road surfaces to their original condition if excessive wear and tear to existing roads is caused by the CCSM Project.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-58	Roads – General Design	Due to crest and sag vertical curves in the roadway profile, select locations would require re-grading prior to hauling extra-long loads. Any grades greater than 10 percent would require assist vehicles on-hand for the large tractor-trailers hauling WTG components. Any grades greater than 7 percent would require assist vehicles on-hand. These locations would be verified during the final design process. In addition, any construction site with grades ranging from 5 to 7 percent on non-paved roadways would require an assist vehicle on stand-by during adverse weather or road conditions.	Not applicable. Steep grades have been avoided for Quarry Road to the extent practicable. No WTG components will be delivered using the Quarry Road.
A-3-59	Roads – General Use	Traffic would be restricted to the roads developed for the Project. Use of other unimproved roads would be restricted to emergency situations. Signs would be placed along construction roads to identify speed limits, travel restrictions, and other standard traffic control information.	Traffic associated with the Quarry will be restricted to the CCSM Project road network once it arrives on-site. Signs will be placed as needed to identify speed limits, travel restrictions, and other standard traffic control information.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-60	Roads – Maintenance	Most road maintenance would be performed on an as-needed basis. The frequency and type of maintenance that would be required would be determined by routine inspections. The inspections would be performed on a regular basis and following snowmelt or heavy or prolonged rainfall. Inspections would identify maintenance needs for reduction of ruts and holes, maintenance of crowns and outslopes to keep water off the road, replacement of surfacing materials, clearing of sediment blocking ditches and culverts, maintenance of interim reclamation, and noxious weed control.	PCW will perform routine inspections of Quarry Road and will perform maintenance as needed.
A-3-61	Roads – Maintenance	All roads would be maintained in a safe and environmentally responsible manner.	PCW will perform routine inspections of Quarry Road and will perform maintenance as needed.
A-3-62	Roads – Operation Access	Project operation would require the use of the new roads for equipment and personnel to reach the WTGs. In addition, an access road that runs adjacent to each WTG site and the project substations would be used.	The site-specific plan of development for the Quarry describes the roads that will be used during construction, operation, maintenance and decommissioning of the Quarry.
A-3-63	Roads – Operation Access	Internal resource roads would be located within the project boundaries and would provide access to each WTG. All internal resource roads would be surfaced with gravel. As part of routine maintenance activities, internal resource roads would be maintained in a condition that allows for continued access to the WTGs.	Quarry Road will have a gravel surface, as described in the site-specific plan of development. PCW will perform routine inspections of Quarry Road and will perform maintenance as needed.
A-3-64	Roads – Reclamation	Abandoned roads and roads that are no longer needed would be recontoured and revegetated.	No unnecessary roads have been identified within the Quarry Site for closure or reclamation.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-65	Soils and Geology –Slopes	Operators would identify unstable slopes and local factors that can induce slope instability. Operators also would avoid creating excessive slopes during excavation and blasting operations. Special construction techniques would be used where applicable in areas of steep slopes, erodible soil, and stream channel crossings.	The Quarry design accounts for slope stability and local soil conditions.
A-3-66	Soils – Erosion Control	Erosion control measures would be employed as described in the Master Reclamation Plan	Erosion control measures for the Quarry Site are detailed in the Erosion Control Plan and Stormwater Pollution Prevention Plan for the Quarry.
A-3-67	Soils – Erosion Control	Permanent erosion control devices would be installed during project construction and may include, but are not limited to, waterbars, roadside ditches with subsurface culverts, berms, trash racks on culverts, energy-dissipating structures, mulches, and establishment of permanent vegetation. Erosion controls that comply with county, state, and federal standards would be applied. Practices such as jute netting, silt fences, and check dams would be applied near disturbed areas. The Environmental Inspector would monitor construction to ensure that erosion control devices are functioning properly.	Erosion control measures for the Quarry is detailed in the Erosion Control Plan and Stormwater Pollution Prevention Plan for the Quarry. Erosion control devices will be inspected and maintained in accordance with the Erosion Control Plan and Stormwater Pollution Prevention Plan for the Quarry.
A-3-68	Soils – Erosion Control	Final roadway alignments would include erosion control measures to stabilize steeper slopes and to prevent loss of soil. These measures would include hay bales, shallow swales and ditches, rock/rip rap embankments, and culvert outlet protection.	Erosion control measures for the Quarry is detailed in the Erosion Control Plan and Stormwater Pollution Prevention Plan for the Quarry.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-69	Soils – Erosion Control	If, during operation, it is determined that snow accumulation causes significant accelerated erosion, appropriate mitigation measures (e.g., snow fence construction) would be developed and implemented.	Erosion control measures for the Quarry is detailed in the Erosion Control Plan and Stormwater Pollution Prevention Plan for the Quarry. Snow accumulation control through snow fencing is detailed in the Winter Access Plan.
A-3-70	Soils – Excavation and Blasting Activities	Foundations and trenches would be backfilled with originally excavated material as much as possible. Excess excavation materials would be disposed of only in approved areas or, if suitable, stockpiled for use in reclamation activities.	Soil handling for the construction, operation, maintenance, and decommissioning of the Quarry will be in accordance with the requirements of the WYDEQ-LQD on private lands. On federal lands, soil handling for the construction, operation, maintenance, and decommissioning of the Quarry will be in accordance with the reclamation plan for the Quarry.
A-3-71	Soils – Excavation and Blasting Activities	Borrow material would be obtained only from authorized and permitted sites. Existing sites would be used in preference to new sites when possible.	Borrow materials for the Quarry will be obtained from the Quarry Site or other areas within the CCSM Project where suitable.
A-3-72	Soils – Topsoil Handling	Topsoil from all excavations and construction activities would be salvaged and reapplied during reclamation.	Soil handling for the construction, operation, maintenance, and decommissioning of the Quarry will be in accordance with the requirements of the WYDEQ-LQD on private lands. On federal lands, soil handling for the construction, operation, maintenance, and decommissioning of the Quarry will be in accordance with the reclamation plan for the Quarry.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-73	Soils – Topsoil Handling	Topsoil material suitable for site reclamation would be removed in conjunction with clearing and grading and reserved in local stockpiles. Topsoil storage areas would generally be located within staging areas and alongside roadways during construction.	Soil handling for the construction, operation, maintenance, and decommissioning of the Quarry will be in accordance with the requirements of the WYDEQ-LQD on private lands. On federal lands, soil handling for the construction, operation, maintenance, and decommissioning of the Quarry will be in accordance with the reclamation plan for the Quarry.
A-3-74	Soils – Wet Soils During Construction	Construction activities would be suspended when soils are wet. Construction would resume when soils become dry enough to support construction equipment. The Environmental Inspector (EI) would determine when conditions are too wet to continue.	PCW will suspend construction activities when soils are too wet to support construction equipment without significant rutting. In general, activities that cause in excess of four inches of rutting will be halted, unless such rutting occurs in subsoils that will be cut or filled beyond the extent of the rutting.
A-3-75	Transportation – Traffic Considerations	To minimize impacts on local commuters, consideration would be given to limiting construction vehicles traveling on public roadways during the morning and late afternoon commute time. Consideration would also be given to opportunities for busing of construction workers to the job site to reduce traffic volumes.	Impacts to traffic levels on public roadways caused by the CCSM Project, including the Quarry, are evaluated in the Transportation Management Plan. PCW will consider the use of mitigation measures such as off-peak commuting where necessary to maintain acceptable intersection levels of service.
A-3-76	Transportation – Transportation Planning	Ongoing ground transportation planning would be conducted to evaluate road use, minimize traffic volume, and ensure that roads are maintained adequately to minimize associated impacts.	Impacts to traffic levels on public roadways caused by the CCSM Project, including the Quarry, are evaluated in the Transportation Management Plan, including mitigation measures that will be implemented as needed.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-77	Transportation – Transportation Planning	Following the finalization of site access locations and proposed roadways, a Traffic Management Plan would be developed for traffic both on and off-site. The Traffic Management Plan would discuss flagging guidelines on and off site, specifics of auxiliary lanes if needed, requirements for signage during construction of the project, passing zone and striping details for the existing public roadways, and other details specific to the individual approved access locations leading to and from, and on, the Project area.	Impacts to traffic levels on public roadways caused by the CCSM Project, including the Quarry, are evaluated in the Transportation Management Plan, including mitigation measures that will be implemented as needed.
A-3-78	Vegetation – Noxious Weed	Noxious weed surveys would be conducted to evaluate the presence and aerial extent of noxious weed and invasive species populations within the Project area. Preventative management measures would be applied as warranted pursuant to the Project's Weed Management Plan.	PCW has inventoried noxious and invasive plants on the Quarry Site (Appendix J). PCW will work with BLM and private landowners to control the spread of noxious and invasive plant species.
A-3-79	Visual Resources	Operators would reduce visual impacts during construction by clearly delineating construction boundaries and minimizing areas of surface disturbance; preserving vegetation to the greatest extent possible; utilizing undulating surface disturbance edges; stripping, salvaging and replacing topsoil; contoured grading; controlling erosion; using dust suppression techniques as required; and restoring exposed soils as closely as possible to their original contour and vegetation.	PCW has minimized the disturbance associated with the Quarry to the extent practicable to meet the needs of the CCSM Project. Reclamation of private lands will be in accordance with the requirements of the WYDEQ-LQD. Reclamation of federal lands will be in accordance with the reclamation plan for the Quarry.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-80	Visual Resources	Operators would monitor and maintain visual mitigation measures for the approved project in accordance with a visual monitoring and compliance plan. The operator would maintain revegetated surfaces until a self-sustaining stand of vegetation is reestablished and visually adapted to the undisturbed surrounding vegetation.	Reclamation of private lands will be in accordance with the requirements of the WYDEQ-LQD. Reclamation of federal lands will be in accordance with the reclamation plan for the Quarry.
A-3-81	Waste Management – Disposal	Wastes would be properly containerized and removed periodically for disposal at appropriate off-site permitted disposal facilities.	Waste from the Quarry will be managed in accordance with the requirements of the CCSM Project Waste Management Plan.
A-3-82	Waste Management – Wastewater	Any wastewater generated in association with temporary, portable sanitary facilities would be periodically removed by a licensed hauler and introduced into an existing municipal sewage treatment facility or otherwise disposed of in accordance with applicable state and local laws and regulations. Temporary, portable sanitary facilities provided for construction crews would be adequate to support expected on-site personnel and would be removed at completion of construction activities.	PCW will provide adequate sanitary facilities for personnel working on the Quarry. All sanitary waste from the Quarry will be handled by a licensed sanitary waste vendor.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-83	Water – SWPPP	The Project's SWPPP would be implemented in accordance with the Wyoming Department of Environmental Quality (WDEQ) requirements to obtain National Pollutant Discharge Elimination System (NPDES) compliance under Wyoming's NPDES permit WYR10-0000. The SWPPP would describe site-specific erosion control and stream crossing measures that would be implemented during the construction and operation phases of the Project. The Environmental Inspector would direct activities to ensure compliance with the SWPPP.	A SWPP Plan has been developed for the Quarry to meet the requirements of the WYDEQ (Appendix I).
A-3-84	Water – Excavation and Blasting Activities	DELETED[2]	
A-3-85	Water – Excavation and Blasting Activities	Operators would avoid creating hydrologic conduits between two aquifers during foundation excavation and other activities.	Based on geologic investigations conducted to date, PCW does not anticipate that any excavations associated with the Quarry will be deep enough to impact aquifers.
A-3-86	Water – Road Design	DELETED[2]	

[2] Power Company of Wyoming (PCW). 2012. Memorandum from G. Miller (PCW) to P. Murdock (BLM) dated April 10, 2012.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-87	Water – Road Drainage	Whenever possible, existing drainage systems would not be altered, especially in sensitive areas such as erodible soils or steep slopes. Potential soil erosion would be controlled at culvert outlets with appropriate structures. Catch basins, roadway ditches, and culverts would be cleaned and maintained regularly.	The Quarry design minimizes impacts to existing drainage to the extent practical. Erosion control measures will be inspected and maintained as described in the SWPP Plan and Erosion Control Plan for the Quarry.
A-3-88	Water – Road Locations	Roads would be located away from drainage bottoms and avoid wetlands, if practicable.	Quarry Road avoids wetlands and drainage bottoms to the extent practicable.
A-3-89	Water – Stream Crossings	Access roads would be located to minimize stream crossings. All structures crossing streams would be located and constructed so that they do not decrease channel stability or increase water velocity. Operators would obtain all applicable federal and state permits.	Quarry Road has been designed to minimize stream crossings. All stream crossings have been designed to maintain channel stability.
A-3-90	Water – Waterbodies and Wetlands	Waters of the U.S., including wetlands, will be avoided to the maximum extent practicable. Where these features cannot be completely avoided, impacts will be minimized through design modification, as necessary. Facilities (e.g., turbines, substations, staging areas) would be sited to avoid and/or minimize impacts; however, where impacts are anticipated (e.g., use of Project roads), minimization measures would be employed to minimize impacts (e.g., use of culverts to maintain downstream flow/drainage).	Not applicable. Wetlands have not been identified within the Quarry Site.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-91	Water – Waterbodies and Wetlands	All impacts would be the minimum necessary to accomplish the Project, would be mitigated, and the appropriate Section 404 permit would be obtained from the U.S. Army Corps of Engineers (USACE) Wyoming Regulatory Office prior to the start of construction. To complete the Section 404 permit, a delineation of all Waters of the U.S. (WUS), including wetlands, would be performed by qualified wetland scientists to obtain current site-specific data regarding the location and extent of aquatic features within the Project area. Current resource mapping (e.g., U.S. Geological Survey (USGS) topographic maps, U.S. Fish and Wildlife Service (USFWS) NWI maps, Federal Emergency Management Agency (FEMA) floodplain maps, Natural Resources Conservation Service (NRCS) soils data, etc.) would be used to guide this future delineation effort. All aquatic features delineated in the field would be recorded using Global Positioning System (GPS) with sub-meter accuracy.	Not applicable. Wetlands have not been identified within the Quarry Site.
A-3-92	Water – Waterbodies and Wetlands	Any construction that occurs in or adjacent to wetlands and streams would use Applicant Committed BMPs listed in Appendix A to protect surface water quality and to minimize impacts to those resources.	PCW has applied the BMPs listed in this appendix to protect surface water quality and minimize impacts to wetlands and streams.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-93	Wildlife – Department of the Interior (DOI) Wind Turbine Guidelines	Although strictly voluntary on non-federal lands, PCW will review the DOI Wind Turbine Guidelines Advisory Committee Wind Turbine Guidelines (anticipated in late summer 2010) once they are finalized with the intention of complying with them as applicable and appropriate and to the extent they do not conflict with any requirements set out by the BLM in its ROD, any agreements entered into between PCW and the USFWS, or other controlling laws, permits, or regulations.	The DOI Wind Turbine Guidelines are not applicable to the Quarry.
A-3-94	Wildlife – Disturbance and Harassment	All employees, contractors, and site visitors would be instructed to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., courtship and nesting) seasons. During construction, pets would not be permitted on site; during operation, pets would be controlled to avoid harassment and disturbance to wildlife.	All employees, contractors, and site visitors will receive a site orientation during which they will be instructed to avoid harassment and disturbance of wildlife.
A-3-95	Wildlife – Excavation and Blasting Activities	Explosives would be used only within specified times and at specified distances from sensitive wildlife or streams and lakes, as established by the BLM or other federal and state agencies.	Explosives will not be used on federal lands. PCW will develop a Blasting Plan for the Quarry in compliance with the requirements of WYDEQ-LQD.
A-3-96	Wildlife – Habitat Restoration	In accordance with the habitat restoration plan, restoration would be undertaken as soon as practical after completion of construction activities to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats.	Reclamation of private lands will be in accordance with the requirements of the WYDEQ-LQD. Reclamation of federal lands will be in accordance with the reclamation plan for the Quarry.

TABLE 4. APPLICANT COMMITTED BEST MANAGEMENT PRACTICES (ROD TABLE D-3)

Item	Resource Concern	Measure	Implementation
A-3-97	Wildlife – Vehicle Collisions	Project personnel and contractors would be instructed and required to adhere to speed limits commensurate with road types, traffic volumes, vehicle types, and site-specific conditions, to ensure safe and efficient traffic flow and to reduce wildlife collisions and disturbance and airborne dust.	All employees, contractors, and site visitors will receive a site orientation during which they will be instructed to comply with the CCSM Project rules, including adherence to speed limits.
A-3-98	Wildlife – Yellow-billed Cuckoo	Yellow-billed cuckoo habitat (i.e., riparian areas) would be avoided to the maximum extent possible.	No known yellow-billed cuckoo habitat is located within the Quarry Site.

Notes:
The terms "Quarry," "Quarry Site," "Quarry Facilities," and "Quarry Road" are as defined in the Site-specific Plan of Development for the Quarry. The term "Quarry Site" is inclusive of both the "Quarry Facilities" and "Quarry Road."

TABLE 5. PROPOSED MITIGATION MEASURES (ROD APPENDIX D-4)

Resource	Code	Proposed Mitigation Measure	Implementation
General	GEN-1	Phased Construction Sequencing. Limit surface disturbance to areas where turbines would be constructed within 12 months with a goal to mitigate impacts from surface disturbance to wildlife, soils, water, and vegetation (e.g., weeds). Four ROW grants would be issued for the project: 1) internal haul road; 2) transmission line between the two sites; 3) Sierra Madre development; and 4) Chokecherry development.	The construction schedule for the Quarry was developed to comply with requirement GEN-1.
	GEN-2	Off-site Compensatory Mitigation. Off-site compensatory mitigation may be considered through future consultations between the BLM, Cooperating Agencies, and PCW if mitigation measures established through the project-wide EIS are later determined to not be adequate.	PCW acknowledges that BLM, in consultation with PCW and the Cooperating Agencies, may consider off-site compensatory mitigation if the existing mitigation measures for impacts on federal lands are determined not to be adequate.
Air		No additional mitigation measures proposed.	
Cultural	CR-1	To minimize unauthorized collecting of archaeological material or vandalism to known archaeological sites, PCW and its contractors, and all construction personnel, shall attend mandatory training and be educated on the significance of cultural resources and the relevant federal regulations intended to protect them.	PCW, its contractors, and all other construction personnel will attend mandatory training and be educated on the significance of cultural resources and the relevant federal regulations intended to protect them.
	CR-2	Additional mitigation measures will be included in the Programmatic Agreement, which will be developed in coordination with the BLM, SHPO, ACHP, PCW; Indian tribes; and other interested parties.	PCW acknowledges that additional mitigation measures for cultural resources are being developed under the provisions of the Programmatic Agreement for the CCSM Project.

TABLE 5. PROPOSED MITIGATION MEASURES (ROD APPENDIX D-4)

Resource	Code	Proposed Mitigation Measure	Implementation
Geology and Mineral Resources		No additional mitigation measures proposed.	
Land Use		No additional mitigation measures proposed.	
Paleontology	PALEO-1	If any vertebrate fossils or scientifically important fossils are discovered during construction operations on federal lands, the permittee shall cease activities immediately and notify the BLM so the agency can determine the significance of the discovery. The BLM shall evaluate or have evaluated such discoveries and shall notify PCW what action shall be taken with respect to such discoveries. Additionally, PCW also would contract with a qualified paleontologist approved by the BLM who shall be on call during all construction periods and available to travel to the site within 24 hours following notice of a discovery, and that the on-call paleontologist shall consult with the BLM to reach agreement on the significance of the discovery within 24 hours following arrival at the site by the on-call paleontologist. The BLM will then promptly notify PCW as to what actions shall be taken.	PCW will have a paleontologist on-call and agrees to suspend construction activities within the immediate area if fossils are discovered on federal lands for up to 48 hours while BLM evaluates the fossils' significance.

TABLE 5. PROPOSED MITIGATION MEASURES (ROD APPENDIX D-4)

Resource	Code	Proposed Mitigation Measure	Implementation
	PALEO-2	Any fossils recovered during the assessment of paleontological resources will be prepared in accordance with standard professional paleontological techniques. The fossils will be curated in a BLM-approved facility. A report on the findings and significance of the salvage program, including a list of the recovered fossils, will be prepared following completion of the program. A copy of this report will accompany the fossils, and a copy will be submitted to the Wyoming Museum, University of Wyoming.	Fossils discovered on federal lands will be curated in a BLM-approved facility. A report on the findings and significance of the salvage program, including a list of the recovered fossils, will be prepared following completion of the program. A copy of this report will accompany the fossils, and a copy will be submitted to the Wyoming Museum, University of Wyoming.
Range	RANGE-1	Coordinate construction schedules and ranching operations to allow sequencing of pasture use to the extent practicable within the Pine Grove/Bolten allotment and other affected allotments (Cottonwood Draw, Middlewood Hill, Grizzly, McCarty Canyon, and Sage Creek) in a manner to minimize conflicts between grazing and construction activities.	PCW will coordinate construction schedules related to the Quarry with TOTCO's ranching operations to minimize conflicts between grazing and construction activities.
Recreation		No additional mitigation measures proposed.	
Socioeconomics		No additional mitigation measures proposed.	
Soils	SOIL-1	Road fabric, or equivalent base stabilization as determined by the BLM, will be applied where roads cross sensitive soils (wet, severely erodible soils, and soils with low soil strength).	Potential methods for soil stabilization for Quarry Road are discussed in the site-specific plan of development. PCW will coordinate with BLM to identify areas where soil stabilization is required on federal lands.

TABLE 5. PROPOSED MITIGATION MEASURES (ROD APPENDIX D-4)

Resource	Code	Proposed Mitigation Measure	Implementation
	SOIL-2	Excess subsoil excavated from tower foundations will not be used as topsoil or spread on top of topsoil without further laboratory testing of the subsoil physical and chemical characteristics, and agency approval. PCW will identify the acceptable disposal method for excess subsoil in the final reclamation plan.	Soil handling for the construction, operation, maintenance, and decommissioning of the Quarry will be in accordance with the requirements of the WYDEQ-LQD on private lands. On federal lands, soil handling for the construction, operation, maintenance, and decommissioning of the Quarry will be in accordance with the reclamation plan for the Quarry.
	SOIL-3	Areas identified as having limited reclamation potential (as defined in the Rawlins Instruction Memorandum No. WYD-03-2011-002) will be avoided during construction unless an acceptable site-specific reclamation plan is approved by the BLM.	Limited reclamation potential areas have been avoided on federal lands to the extent practicable; remaining impacts to limited reclamation potential areas on federal lands will be managed in accordance with the reclamation plan for the Quarry.
	SOIL-4	To reduce impacts related to road density in the Application Area, roads that are no longer needed will be effectively reclaimed.	No unnecessary roads have been identified within the Quarry Site for closure or reclamation.
	SOIL-5	PCW will be required to submit a snow removal plan as part of the ROW grant application. The snow removal plan will include measures to ensure protection of soil and water resources.	A winter access plan, including snow removal measures, is included in site-specific plan of development for the Quarry.
	SOIL-6	Drainages, vegetated sand dunes, salt flats, steep slopes, and gullied areas will be avoided for towers, laydown areas, facilities, and roads (to the extent possible). Towers, laydown areas, and other facilities will be re-located to areas of generally stable soils. These avoidances shall be taken into consideration during site specific analyses.	The Quarry has been designed to minimize impacts to sensitive soils to the maximum extent practicable.

TABLE 5. PROPOSED MITIGATION MEASURES (ROD APPENDIX D-4)

Resource	Code	Proposed Mitigation Measure	Implementation
Transportation	TRANS-1	To the extent that all governmental entities are willing to participate, PCW shall participate in a coordinated transportation planning process with the BLM, WYDOT, Carbon County, the Town of Sinclair and the City of Rawlins, to identify and develop measures to avoid, manage or mitigate transportation impacts of construction. The BLM shall coordinate with affected local governments to solicit input from the Sinclair Refinery, the CIG compressor station, affected grazing operators, and other major property owners (including the operator of the truck stop just north of I-80 Exit 221) in the affected area. The group shall meet prior to and during the construction phase of the project and in the initial year of project operations, as needed.	Significant transportation impacts are not anticipated from the Quarry; however, for the CCSM Project as a whole, PCW will participate in a coordinated transportation planning process to identify appropriate measures to avoid, manage or mitigate transportation impacts.
	TRANS-2	PCW shall develop measures to inform and update Carbon County residents and travelers on I-80 near Sinclair and WY 71 about potential delays during peak months and especially during peak hours. In coordination with WYDOT, electronic signage shall be used near I-80 Exit 221 to encourage I-80 travelers to use alternate access to Sinclair during peak hours.	Significant transportation impacts are not anticipated from the Quarry; however, for the CCSM Project as a whole, PCW will coordinate with WYDOT and Carbon County to inform the public about potential travel delays that may be caused by the CCSM Project.

TABLE 5. PROPOSED MITIGATION MEASURES (ROD APPENDIX D-4)

Resource	Code	Proposed Mitigation Measure	Implementation
	TRANS-3	PCW shall coordinate with WYDOT to identify measures to control traffic and enhance traffic flows in the vicinity of I-80 Exit 221 during shift changes and at times when oversized vehicles will be crossing the bridge over I-80, and along WY 71 within the City of Rawlins if the WY 71/CR 407 (Sage Creek Road) workforce commuting option is selected.	Development of the Quarry will not result in substantial transportation impacts; however, for the CCSM Project as a whole, PCW will coordinate with WYDOT to identify appropriate measures to avoid, manage or mitigate transportation impacts.
	TRANS-4	PCW shall implement incentives for carpooling and/ or other workforce transportation measures to reduce traffic and congestion during shift changes.	Development of the Quarry will not result in substantial transportation impacts; however, for the CCSM Project as a whole, PCW will develop and implement workforce transportation measures to reduce traffic and congestion during shift changes.
Vegetation	VEG-1	Survey and mark the disturbance boundary to minimize unintentional surface disturbance. Actively monitor construction to ensure construction and staff stays within the defined limits.	PCW will mark the limits of disturbance for the Quarry Site. Construction supervisory personnel will monitor construction to ensure that activities stay within the marked limits.
	VEG-2	Salvage vegetative debris and redistribute to reclaimed surface areas in order to reduce erosion and preserve native organic material and seed sources.	Reclamation of the Quarry will be in accordance with the requirements of the WYDEQ-LQD on private lands. On federal lands, reclamation of the Quarry will be in accordance with the reclamation plan for the Quarry.
	VEG-3	In areas where excavating soil is not necessary, such as temporary laydown areas or temporary access roads, avoid disturbing native soil and root zones where possible to preserve soil structure and soil biology and improve the success for reclamation.	PCW will avoid excavation and disturbance of soil where excavating of soil is not necessary to the construction and operation of the Quarry.

TABLE 5. PROPOSED MITIGATION MEASURES (ROD APPENDIX D-4)

Resource	Code	Proposed Mitigation Measure	Implementation
Visual	VR-1	Monopole and H-frame transmission structures and overhead collector line structures would be treated to have a muted, darker color than conventional galvanized steel or laminated wood to reduce color contrasts. The recommended paint color for transmission structures is Shadow Gray from the BLM Standard Environmental Colors Chart CC-00 or an equivalent color. Steel pole equivalents used in the installation of the overhead electric collector lines should be finished with paint or a self-weathering finish that will harmonize with colors of the surrounding landscape (i.e., approximate the color of wood when used with wood overhead collector lines). When not used with wood poles, the recommended paint color for powerline structures is Shadow Gray from the BLM Standard Environmental Colors Chart CC-00. Conductors would have a non-reflective finish.	Not applicable. The Quarry site-specific plan of development does not include any transmission structures or overhead collector lines.
	VR-2	Place vegetative debris on cut-and-fill slopes to vary texture and color of cut-and-fills until vegetation has been re-established.	Reclamation of the Quarry will be in accordance with the requirements of the WYDEQ-LQD on private lands. On federal lands, reclamation of the Quarry will be in accordance with the reclamation plan for the Quarry.
	VR-3	Lighting for ancillary facilities shall be motion-activated and shielded downward to limit night lighting impacts beyond the site.	Lighting for ancillary facilities will be motion-activated and shielded downward. Temporary lighting that is not motion-activated may be used as needed for safety and security to supplement ancillary facility lighting for nighttime activities.

TABLE 5. PROPOSED MITIGATION MEASURES (ROD APPENDIX D-4)

Resource	Code	Proposed Mitigation Measure	Implementation
	VR-4	Audio Visual Warning System (AVWS) for aircraft detection and warning may be required to reduce day and night lighting impacts from WTGs if technologies become available that are approved by FAA, are proven reliable at the scale of CCSM, and BLM determines that systems are cost effective.	Not applicable. The Quarry site-specific plan of development does not include any wind turbines.
	VR-5	Substation components and fencing would be Shadow Gray from the BLM Standard Environmental Colors Chart CC-00 or a similar color in a dark gray color range. Color mitigation would not be required on facilities that are treated in accordance with safety and engineering concerns.	Not applicable. The Quarry site-specific plan of development does not include any substations.

TABLE 5. PROPOSED MITIGATION MEASURES (ROD APPENDIX D-4)

Resource	Code	Proposed Mitigation Measure	Implementation
Wetlands	WET-1	Conduct on-site delineations of all waters of the U.S., including wetlands and waterbodies within the Alternative Development Area prior to construction. The surveys would be performed and documented by qualified wetland scientists to determine the types and spatial extent of site-specific wetland and riparian features. Current resource mapping (e.g., USGS topographic maps, USFWS NWI maps, FEMA floodplain maps, AECOM wetland and riparian data, NRCS soils data, etc.) would be used to guide this future delineation effort. All features would be recorded using a GPS unit with sub-meter accuracy, in addition to photographic and written documentation of each feature according to standardized USACE delineation data requirements and any additional BLM data requirements. Subsequent NEPA tiering would include the site-specific waters of the U.S. delineation results.	Wetlands and waters of the U.S. within the Quarry Site have been delineated (Appendix K).
Water	WR-1	Stream water quality monitoring sites will be identified by the BLM. Stream monitoring shall continue through construction, operation, and decommissioning of the project by PCW to monitor for changes in water quality.	PCW and BLM have identified watershed monitoring locations for the CCSM Project in the Watershed Monitoring Plan. Data collection includes water quality. PCW will continue to collect water quality data at the watershed monitoring locations through construction, operation, maintenance and decommissioning.
	WR-2	PCW will be required to submit the site-specific SWPPP as part of the ROW grant application for approval by the BLM.	A SWPP Plan has been developed for the Quarry (Appendix I).

TABLE 5. PROPOSED MITIGATION MEASURES (ROD APPENDIX D-4)

Resource	Code	Proposed Mitigation Measure	Implementation
Wildlife and Fisheries	WFM-1	Workers, with the exception of security personnel, will not be allowed to possess firearms during work activities and will attend mandatory training (provided by WGFD) on wildlife regulations and ways to reduce disturbance to wildlife.	Workers, with the exception of security personnel, are not allowed to possess firearms during work activities and will attend mandatory training (provided by WGFD) on wildlife regulations and ways to reduce disturbance to wildlife.
	WFM-2	Snow fences, if used, will be limited to segments of one-quarter mile or less. In addition, escape openings will be provided along roads, every one-quarter mile or less, to facilitate exit of big game animals from snowplowed roads.	As addressed in Appendix E, snow fences will be limited to segments of one-quarter mile or less and escape openings for animals will be provided along snow-plowed roads every one-quarter mile or less.
	WFM-3	If measured bat mortality is determined to be above levels of concern for the project (as presented in section 4.14 of the EIS), measures appropriate to avoid, minimize, and mitigate impacts to bat species will be identified in the Bat Protection Plan for the Project. Thresholds of impacts to bats and appropriate responses to exceeding such impact thresholds will be determined by BLM in coordination with the WGFD, and if appropriate, the USFWS, as part of the conservation, avoidance, minimization and mitigation measures identified in the Bat Protection Plan.	Bat mortality is not anticipated to be an issue for the Quarry.
	WFM-4	Instream construction (stream crossings and stream construction activities) will occur during the low flow period (July 15 to September 30).	Live stream crossings have been scheduled to occur during the low flow period to the extent practicable

TABLE 5. PROPOSED MITIGATION MEASURES (ROD APPENDIX D-4)

Resource	Code	Proposed Mitigation Measure	Implementation
Special Status Species	SSS-1	Prior to construction activities in suitable pygmy rabbit habitat, presence/absence surveys would be conducted following appropriate protocols. Areas within 0.25 mile of proposed disturbance that show characteristics of pygmy rabbit habitat will be surveyed in accordance with the Interagency Pygmy Rabbit Working Group Survey Protocols (Ulmschneider et al. 2004). If the surveys conclude that the pygmy rabbits occur, the "Habitat Preservation and Restoration" conservation measures will apply (Keinath and McGee 2004).	Wildlife surveys were completed for the Quarry (Appendix N). No occurrences of pygmy rabbit or suitable habitat were identified within the Quarry Site.

TABLE 5. PROPOSED MITIGATION MEASURES (ROD APPENDIX D-4)

Resource	Code	Proposed Mitigation Measure	Implementation
	SSS-2	Prior to construction activities in suitable Wyoming pocket gopher habitat, presence/absence surveys will be conducted following appropriate protocols. If active Wyoming pocket gopher mounds are identified by the presence/absence survey, the proposed surface disturbing activities will avoid the active pocket gopher mounds by 75 m (BLM 2009f). However, if PCW does not wish to avoid the active pocket gopher mounds by 75 m, classification surveys (via live capture) must be completed to identify the pocket gopher to the species level responsible for the mounds. If the results conclude that the Wyoming pocket gopher is responsible for the mounds, the "Occupied Wyoming Pocket Gopher Habitat Protection Measures" will apply (BLM 2009f). If the results conclude that the associated species is a Northern pocket gopher, then the proposed surface disturbance may proceed without mitigation. If the classification survey fails to conclusively identify the associated pocket gopher to the species level, then it will be assumed that the species is a Wyoming pocket gopher and the "Occupied Wyoming Pocket Gopher Habitat Protection Measures" will apply (BLM 2009f).	Wildlife surveys were completed for the Quarry (Appendix N). No Wyoming or unknown pocket gopher mounds or mound complexes were identified within the Quarry Site.

TABLE 5. PROPOSED MITIGATION MEASURES (ROD APPENDIX D-4)

Resource	Code	Proposed Mitigation Measure	Implementation
	SSS-3	To protect potential mountain plover habitat, prior to any surface disturbance, a presence/absence survey for active mountain plover nests will be conducted in all potential habitat within the area proposed for surface disturbance. Surveys are to be performed by a wildlife biologist familiar with mountain plover and their associated habitat. If evidence of mountain plovers is found during the preconstruction survey, then additional stipulations may apply (BLM 2009a).	Potential mountain plover habitat is present in the Quarry Site. If surface disturbing activities are proposed in potential mountain plover habitat on federal lands during the mountain plover nesting period, pre-construction presence/absence surveys will be conducted.
Noise	N-1	USEPA guidance stipulates the threshold for residential noise impacts resulting from construction activities, including blasting, is reached at 55 dB(A) at 1,600 feet (USEPA 1974). When a residence is within 1,600 feet of construction activities, construction activities exceeding 55 dB(A) would only be allowed to occur between the hours of 7 a.m. and 10 p.m., and on weekdays.	PCW will schedule construction activities with noise exceeding 55 dB(A) within 1,600 feet of occupied residences to occur on weekdays between 7am and 10pm.
	N-2	Whenever feasible, multiple construction activities (e.g., blasting and earthmoving) shall be scheduled to occur concurrently to minimize the length of time residences within 1,600 feet may be affected.	PCW will schedule multiple construction activities within 1,600 feet of occupied residences to occur concurrently whenever feasible.

Notes:
The terms "Quarry," "Quarry Site," "Quarry Facilities," and "Quarry Road" are as defined in the Site-specific Plan of Development for the Quarry. The term "Quarry Site" is inclusive of both the "Quarry Facilities" and "Quarry Road."

APPENDIX B

See Attached CD

APPENDIX C

Chokecherry and Sierra Madre Wind Energy Project

Road Design Manual

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TABLE OF CONTENTS

Page

1.0 INTRODUCTION 1
2.0 ROAD DESIGN REQUIREMENTS 2
2.1 BLM Road Design Guidance 2
2.2 CCSM Project Requirements 4
2.3 Final Design Criteria 5
2.3.1 Haul Roads 5
2.3.2 Arterial Roads 6
2.3.3 Turbine and Facility Roads 6
2.3.4 Structure Roads 6
2.3.5 Unimproved Access Routes 6
3.0 ROAD DESIGN ELEMENTS 7
3.1 Structural Section 7
3.2 Alignment 8
3.3 Drainage Crossings 8
3.3.1 Hydrology 8
3.3.2 Design Storm Event 10
3.3.3 Hydraulics 11
3.3.4 Drainage Structure Structural Design 17
3.3.5 Drainage Structure Scour Design 17
3.4 Ditches 20
3.4.1 Ditch Design 20
3.4.2 Wing Ditch Use 21
3.4.3 Relief Culverts 21
4.0 REFERENCES 23

LIST OF FIGURES

Figure **Page**

Figure 1. Example Wind Energy Project Haul Roads 5
Figure 2. Typical Road Structural Section 7
Figure 3. Example Watershed Delineation 10
Figure 4. Example Perennial Stream Crossing Pre-Cast Concrete Arches 12
Figure 5. Example CMP Culvert Crossing 13
Figure 6. Example Concrete Box Culvert Crossing 13
Figure 7. Typical At-Grade Low Water Crossing 14
Figure 8. Diagram of At-Grade Low Water Crossing 15
Figure 9. Examples of At-Grade Low Water Crossings 15
Figure 10. Typical Horizontal Culvert Placement 16
Figure 11. Typical Vertical Culvert Placement in Natural Watercourse 16
Figure 12. Typical Vertical Culvert Placement with Grading 16
Figure 13. Typical Minor Culvert Inlet and Outlet Protection Detail 18

Figure 14. Typical Minor Culvert Outlet Apron 19
Figure 15. Scour Protection Options for Open Bottom Arch Structure Footings 20
Figure 16. Grade Control Protection for Open Bottom Arch Structure 20
Figure 17. Example Relief Culvert 22

LIST OF TABLES

Table **Page**
Table 1. Road Design Parameters 3

1.0 INTRODUCTION

Power Company of Wyoming LLC (PCW) proposes to construct, operate, maintain and decommission the Chokecherry and Sierra Madre Wind Energy Project (CCSM Project), located in Carbon County, Wyoming. The CCSM Project consists of up to 1,000 wind turbines capable of generating approximately 2,000 to 3,000 megawatts (MW) of clean, renewable wind energy. The primary components of the CCSM Project include the wind turbine generators, an internal road network, a rail facility, a quarry, an internal electrical collection and transmission system, substations, and operations and maintenance buildings.

The CCSM Project is located south of the city of Rawlins, primarily within the bounds of the Overland Trail Ranch (Ranch). The Ranch is owned and operated by PCW affiliate, The Overland Trail Cattle Company LLC (TOTCO). The Ranch is situated within an area of alternating sections of private and Federal lands commonly referred to as the "checkerboard." The vast majority of the private lands are owned by TOTCO and the Federal lands are administered by the Bureau of Land Management (BLM) Rawlins Field Office (RFO). A small percentage of the land within the Ranch is owned by the State of Wyoming and is administered by the State Board of Land Commissioners. Finally, Anadarko Land Corporation owns some sections located on the periphery of the northwest boundary of the Ranch.

In 2008, PCW applied to BLM for right-of-way grants to construct, operate, maintain and decommission the CCSM Project on Federal land within the CCSM Project Area. On June 29, 2012, the Notice of Availability for the Final EIS concerning the CCSM Project was published in the Federal Register (77 FR 63328). On October 9, 2012 the Secretary of the Interior signed the Record of Decision (ROD). In the ROD, BLM determined that over 200,000 acres within the CCSM Project Area are suitable for wind energy development subject to the requirements described under the Selected Alternative in the ROD. The area that was determined to be suitable for wind energy development consists of two wind development areas (WDAs) in which turbines would be located. The northern WDA is known as Chokecherry and the southern WDA is known as Sierra Madre. The WDAs are located approximately 9 miles apart.

Prior to issuing right-of-way grants for the CCSM Project, BLM will conduct subsequent environmental analysis of site-specific plans of development submitted by PCW. The site-specific plans of development will be screened against the analysis conducted in the EIS and the requirements described under the Selected Alternative in the ROD. PCW anticipates submitting five (5) site-specific plans of development to BLM, consisting of the following:

1. Phase I Haul Road and Facilities
2. West Sinclair Rail Facility
3. Road Rock Quarry
4. Phase I Wind Development
5. Phase II Wind Development (including Phase II Haul Road and Facilities)

A common element in each site-specific plan of development is establishment of the roads necessary to access each CCSM Project component. Roads are a critical element of the CCSM Project; therefore, PCW has created this Road Design Manual (Manual) to provide a single

reference on the design features and requirements of the CCSM Project Roads. All roads constructed for the CCSM Project will meet the applicable requirements of the BLM Gold Book (BLM 2007), BLM Manual 9112: Bridges and Major Culverts (BLM 2009), and BLM Manual 9113: Roads (BLM 1985; BLM 2011).

2.0 ROAD DESIGN REQUIREMENTS

PCW developed design criteria for the CCSM Project roads based on BLM design guidance and the CCSM Project requirements. PCW used the BLM road classifications as the starting basis for the CCSM Project's road classifications, but tailored each CCSM Project road classification to meet the specific needs of the project. **Error! Reference source not found.** summarizes the final design criteria established for each CCSM Project road class.

2.1 BLM ROAD DESIGN GUIDANCE

PCW initially consulted the BLM Gold Book (BLM 2007) and BLM Manual 9113 (BLM 1985; BLM 2011) for guidance on road design on federal lands. The BLM Gold Book is specifically designed for use in oil and gas development; however, it does provide additional guidance and clarification. Together the BLM manuals establish guidance for three primary classes of roads on federal lands. The road classes established by BLM in the guidance are as follows:

- **BLM Collector Roads:** double lane roads with a travelway of 20 to 24 feet serving large land areas. BLM collector roads are designed to be major access routes into major development areas.

- **BLM Local Roads:** single or double lane roads with a travelway of 12 to 24 feet (travelway minimum width is 24 feet for double lane roads) providing access to large areas and for various uses. BLM local roads connect collect traffic from BLM resource roads.

- **BLM Resource Roads:** low volume, single lane roads with a travelway of 12 to 14 feet (preferred travelway width is 14 feet) connected to terminal facilities such as wells.

Table 1. Road Design Parameters

Design Criteria		Haul Road	Arterial Road	Turbine and Facility Roads	Structure Road
BLM Classification Basis		Collector Road	Local Road	Resource Road	Resource Road
Preferred Design Speed[1]		40 mph	20 mph	20 mph	20 mph
Road Width - Permanent		40 feet	24 feet	16 feet	12 feet
Temporary Shoulder Width (both sides) – Construction Stage Only		N/A	6 feet (12 feet total)	10 feet (20 feet total)	0
Tangent Length Between Hor. Curves (min)		140 feet	140 feet	140 feet	N/A
Design Road Profile Grades		0%(min) 10% (max)	0%(min) 16% (max)	0%(min) 16% (max)	0%(min) 16% (max)[2]
Culvert/Water Crossing Design (storm event)		10-25 year	10-25 year	10 year	10 year
Allowable Deflection		6 inches in 50 feet	6 inches in 50 feet	6 inches in 50 feet	N/A
Horizontal Curves (Centerline) (min)		750 feet	300 feet	150 feet	50 feet
Intersection Turning Radius (Edge of Traveled way) (min)		135 feet	135 feet	135 feet	N/A
Tangent Length Between Vertical Curves (min)		100 feet	50 feet	50 feet	0 feet
Vertical Curve Length (min)		100 feet	50 feet	50 feet	25 feet
K-Value (min)	Crest	30	20	12.5	12.5
	Sag	30	20	12.5	12.5
Roadway crown		1% (min) 3% (max)	1% (min) 3% (max)	1%	3%
Roadway cross slope (continuous)		1% (min) 3% (max)	1% (min) 3% (max)	1%	3%
Roadway cross slope (superelevations) (max)		6%	6%	N/A	N/A

[1]The design speeds were adjusted in some locations to accommodate the requirements of crane travel. PCW will post reduced speed limits where necessary.
[2]Locations that exceed the design maximum grade are indicated on the Issued for Permit Plans
max maximum
min minimum
mph miles per hour
N/A not applicable

2.2 CCSM PROJECT REQUIREMENTS

The access roads throughout the CCSM Project Site can be broken down into five general classifications based on the types of traffic and the frequency of use expected. PCW used the BLM road classes as a starting point to develop the design criteria for each CCSM Project road classification. Design criteria were finalized based on anticipated traffic volumes and the CCSM Project load types and schedule requirements. While each road classification has a design speed, as indicated below, in some instances the design speeds may not be achievable due to conflicting design requirements (e.g. due to allowances for both vehicle and crane travel). Appropriate speed limits for each road will be established based on the actual design speed achieved.

1. **Haul Roads:** [*Based on BLM Collector Roads*] Haul class roads are the primary heavy haul routes throughout the CCSM Project, connecting the rail facility, quarry, and laydown yards with the wind development areas. These roads must accommodate 40 mph traffic while allowing for two-way truck passing due to the expected traffic volumes and overall construction schedule requirements.
2. **Arterial Roads:** [*Based on BLM Local Roads*] These roads provide access from haul class roads into wind development areas. Two-way truck traffic is still required; however, the passing speed can be greatly reduced. Overall, arterial roads still have a minimum design speed requirement of 20 mph to accommodate the traffic levels associated with the CCSM Project construction schedule. Arterial roads must also accommodate crane travel and compacted shoulders are planned to achieve adequate width.
3. **Turbine and Facility Roads:** [*Based on BLM Resource Roads*] Any turbines or facilities not directly on the haul or arterial-class roads still require an all-weather access road. The turbine and facility class roads must accommodate turbine component deliveries and significant traffic volumes over short durations. As most of these roads will provide access to wind turbines, they must also be designed to accommodate crane travel using compacted shoulders to achieve adequate width. These roads are designed to allow for two-way pick-up truck traffic at 20 mph; for large delivery trucks, however, passing may require turn-outs in complex terrain.
4. **Structure Roads:** [*Based on BLM Resource Roads*] The construction of the CCSM Project electrical system structures (overhead transmission and select collection line structures) requires access roads for the delivery of large components, assembly of these components using a rough-terrain crane, and all-weather access during operations. While structure class roads are also based on BLM resource roads, there are no minimum speeds required; therefore, structure class roads can be narrower than turbine and facility class roads.
5. **Unimproved Access Routes:** A few elements of the CCSM Project (notably the overhead collection line poles) require construction access by light duty vehicles and infrequent access during operations. For these elements, PCW will endeavor to use existing ranch two-track roads as-is or with minimal improvement. Where two-track roads do not exist and topography, soil, and vegetation conditions allow, PCW may establish unimproved vehicle access routes. These unimproved access routes will be

clearly marked using t-posts to contain activity within the route; however, no vegetation will be removed and grading will not be performed. If site conditions do not allow for an unimproved access route, PCW will build structure roads instead.

2.3 FINAL DESIGN CRITERIA

The following sections describe each road classification in more detail, including how the BLM road guidance was adjusted to meet the specific needs of the CCSM Project.

2.3.1 Haul Roads

Haul roads are designed to allow for two-way semi-truck traffic and to safely accommodate high traffic volumes. PCW utilized the BLM Collector Road designation as the basis of the haul road classification. However, due to the CCSM Project-specific traffic types and volumes, PCW determined it was necessary to expand the driving surface width from 24 feet to 40 feet. Specifically this expanded width is required to meet the high traffic volume and to allow for two-way passing of superload component delivery trucks at the design speed of 40 mph while maintaining acceptable levels of safety. The 8 foot shoulders on each side of the travelway, along with 4:1 safety slopes, create the recovery zone for vehicles that leave the travelway as defined by the AASHTO Roadside Design Guide and WyDOT Road Design Manual (Section 3-02 Cross Sectional Elements). Without the 8 foot shoulders more disturbance would be needed from the edge of the road to the back slope of the ditch to provide an equal recovery zone. The increased overall width of the haul roads allows disabled vehicles to stop off the travelway and two way traffic to safely pass the disabled vehicle at a reduced speed. Similarly, due to the high volume of traffic on haul roads, increased maintenance (watering for dust control and blading of aggregate surfacing) of the haul road will be required and the wider overall road width will allow traffic to pass maintenance activities more safely.

Figure 1 shows examples of wind energy project haul roads similar to the CCSM Project haul class roads.

Figure 1. Example Wind Energy Project Haul Roads

2.3.2 Arterial Roads

The purpose of the arterial class roads is to provide access to large areas of turbines. This purpose aligns well with the purpose of the BLM local roads; therefore, PCW based the design of the arterial roads on the BLM local road specifications. The aggregate driving surface width of the arterial roads was set to 24 feet to match the preferred double lane travelway width specified in BLM Manual 9113 (BLM 1985; BLM 2011) for the collector-class roads. In addition to the aggregate driving surface, PCW will install temporary shoulders out of compacted native material for road segments where crane travel is required. Following construction of the CCSM Project, the temporary shoulders will be reclaimed.

2.3.3 Turbine and Facility Roads

Based on the relatively short period in which turbine and facility roads will see high traffic followed by years of lower traffic levels, PCW elected to base the design of these roads on the BLM resource roads. This classification allows for more flexibility to traverse complex terrain by utilizing steeper slopes and tighter turns; however, to align with turbine manufacturer transportation specifications for component deliveries, PCW increased the aggregate driving surface width to 16 feet. As with the arterial roads, in addition to the aggregate driving surface, PCW will install temporary shoulders out of compacted native material as needed to accommodate crane travel and safe two-way passage for construction vehicles. At the conclusion of CCSM Project construction, the compacted shoulders will be reclaimed.

2.3.4 Structure Roads

Structure class roads have been designed based on the BLM resource roads. Structure roads are required to construct the transmission line structures and provide access to the structures for maintenance. Traffic estimates during construction are expected to be high only when construction of the structure is occurring and minimal at other times during construction and operations. Structure class road horizontal designs attempt to minimize effects to drainages, slopes, and highly vegetated areas while also minimizing the overall disturbance footprint. The vertical design of structure class roads generally follows the existing terrain with earthwork required only to grade localized highpoints and low points. A 12 foot road surface width was selected for structure class roads to meet the requirements of construction and operations traffic and minimize the long term disturbance of the roads. Where practicable, structure class roads were routed on existing unimproved ranch roads or other previously disturbed areas. Large track crane travel is not anticipated along these roads so temporary crane shoulders are not required for structure class roads.

2.3.5 Unimproved Access Routes

Unimproved access routes are not intended to be improved and thus do not have specific design criteria or design elements. Unimproved access routes were selected to use existing roads or where cross-country travel is required to avoid steep slopes (16% or more) and drainages. Unimproved access routes will ideally use ground with an existing grade of 16% or less; however, some routes may exceed this grade in localized areas (e.g. existing roads or other

disturbed areas). Where cross-country travel is required, a 12 foot wide path will be marked to contain vehicles.

3.0 ROAD DESIGN ELEMENTS

In addition to the road design requirements described above, the primary design elements for all classes of roads are the structural section, alignment, and drainage crossings. The haul road class is the most robust since it will have highest volume of traffic and design speed. The arterial, turbine and facility, and structure roads will be proportionally less based on the volumes of traffic and anticipated use of each road class.

3.1 STRUCTURAL SECTION

The structural section of the road is the design of the material layers that make up the road, including the surface and all supporting layers underneath it. The elements of the structural section are listed below and a typical structural section is shown in Figure 2:

- Aggregate cap - provides driving surface and drainage
- Aggregate base - provides additional strength, stability, and weight distribution
- Lower aggregate base (if needed) - provides additional stability
- Geosynthetic material, such as geotextile fabric or geogrid (if needed) - provides additional stability
- Subgrade/subbase - provides road base in existing soils

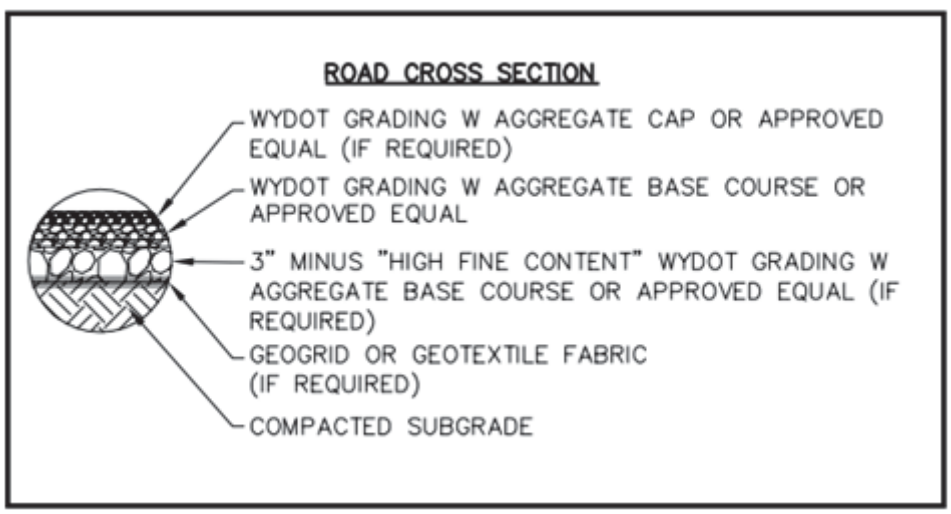


Figure 2. Typical Road Structural Section

The primary factors that impact the design of the structural section of a road are the properties of the existing soil and the anticipated use of the road. PCW has completed geotechnical investigations for the CCSM Project to identify the soil classes (as defined by the Unified Soil Classification System), as well as laboratory investigations to characterize soil (e.g. California Bearing Ratio (CBR), a measure of the compactibility). PCW has also identified the anticipated

use of each class of road, as described in Section 2.0. Based on the results of this analysis, PCW determined that the CCSM Project roads are expected to achieve sufficient subgrade compaction without requiring additional stabilization from geotextile fabric or geogrid. PCW also determined that the combined aggregate base and cap thicknesses required for haul and arterial class roads is at least 8 inches, and at least 4 inches for turbine and facility class roads.

During construction of roads, the compaction of the road base will be tested frequently (approximately every 500 feet). If PCW determines that the design compaction has not been achieved, PCW will determine the appropriate solution. The design solutions chosen by PCW may include the following, as appropriate to the specific conditions:

- **Aggregate:** The application of additional aggregate is the most common solution to compaction problems, especially if the achieved CBR values are close to the design requirements. The engineer will specify the additional aggregate thickness required.
- **Geosynthetic (geotextile fabric or geogrid):** The use of geosynthetics is a common design solution for short lengths of road. Geosynthetics are placed over a road subgrade followed by an aggregate base.
- **Subbase replacement:** When design strength cannot be achieved using any other stabilization methods, soft subsoils are excavated and replaced with more suitable fill.
- **Placement of surge material:** When localized soft spots that cannot reach the specified compaction are encountered, some of the soft subsoil is removed and large rock, roughly 3-6 inches in diameter is driven into the ground to provide additional stabilization.

3.2 ALIGNMENT

The alignment of the CCSM Project roads is designed to balance engineering design requirements with constructability and environmental resource considerations. The roads have been aligned to avoid cultural and biological resources to the extent possible, to minimize impacts to drainage patterns, and to comply with other applicable constraints and setbacks defined in the ROD. Where possible, given these constraints, road alignments are designed to follow existing two-track roads to minimize overall disturbance.

3.3 DRAINAGE CROSSINGS

While the CCSM Project roads have been designed to minimize drainage crossings and avoid disturbing existing drainage patterns, it is necessary for the roads to cross natural drainage channels and streams in a number of locations throughout the CCSM Project Site. Where drainage crossings were deemed necessary, each crossing was reviewed to identify the location that would minimize disturbance and impacts to drainage patterns.

3.3.1 Hydrology

The CCSM Project is located within a semi-arid region of Wyoming, receiving approximately 10 inches of precipitation per year. While there are variations in elevation, soil, and rainfall across the CCSM Project Site, the watersheds are generally rather homogeneous from a hydrology

perspective. The watershed size is the largest variation within the CCSM Project Site, ranging from as little as 1 acre to over 60 square miles.

Hydrology in the vicinity of the CCSM Project Site is typically dominated by snowmelt conditions during the springtime; however, moderate rainfall events can occur during the spring and summer that generally exceed the peak runoff generated by snowmelt. Snowmelt typically generates long duration runoff events with low to moderate runoff rates. Moderate to large rainfall events typically generate shorter runoff durations, but higher peak flows. Therefore, from an engineering perspective, because the rainfall events have higher runoff rates, they "control" in terms of design. In order to conservatively estimate peak runoffs, published rainfall events were used to model the CCSM Project Site hydrology.

The BLM Road Design Handbook (BLM 2011) states the following:

> *"Culverts are to be designed using the appropriate hydraulic design procedures. Refer to AASHTO "Highway Drainage Guidelines" and State highway agencies for guidance. In addition, other publications are available from FHWA. Use any of the standard hydrologic and hydraulic design methods, but use a second method as a check to ensure that the solution is adequate but not extravagant. Special consideration may be necessary for debris passage."*

PCW used the Wyoming Department of Transportation (WyDOT) and Federal Highway Administration (FHWA) hydraulic design procedures, which are considered industry standards. For hydrologic design, PCW used the Soil Conservation Service (SCS) Curve Number method for smaller watersheds (under approximately 1 square mile) and the United States Geological Survey (USGS) Regression Equations for larger watersheds.

The SCS Curve Number method requires delineation of each small watershed based on existing topography and runoff patterns. Figure 3 shows how a watershed is delineated for a proposed culvert crossing. The SCS Curve Number method uses the following characteristics to evaluate each watershed:

- Watershed area – geographical footprint of the watershed being studied
- Topography – flow path steepness
- Soil type – capacity of soil to infiltrate water
- Precipitation – rainfall depth and intensity
- Design storm event – a less frequent storm event produces a higher rainfall amount
- Land cover – capacity of plants to absorb runoff

Typically for large watersheds over approximately 1 square mile, the USGS regression equations are used to determine peak flows for various storm events. The regression equation is a statistical analysis of other similar watersheds whose runoff discharges have been measured over many years and many rainfall events. That data is reduced down to an equation that uses a limited set of watershed characteristics, such as the watershed area and slope, to calculate the peak discharge for a given storm event. Several different regression equations have been

developed for the region of Wyoming where the CCSM Project is located. Consistent with WyDOT recommendations, PCW used engineering judgment to choose the equation that best represents the site conditions, more specifically, the equations used are from USGS report "Peak-Flow Characteristics of Wyoming Streams, Water-Resources Investigations Report 03-4107" (USGS 2003).

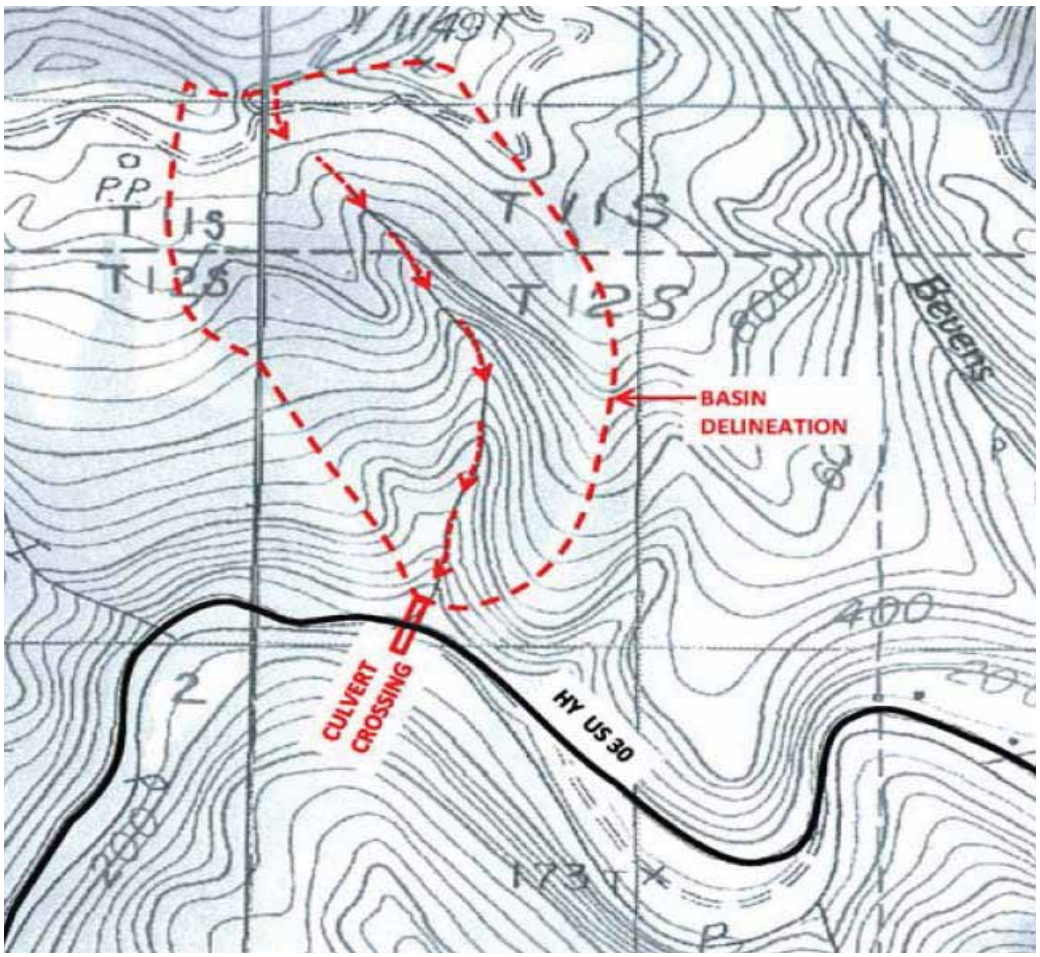


Figure 3. Example Watershed Delineation

3.3.2 Design Storm Event

The CCSM Project haul and arterial class roads are designed to provide access throughout the CCSM Project under various weather conditions. Culverts (round, box, or arch) are used as appropriate on the haul and arterial roads where water crossings occur. These culverts are typically designed for a storm event of between 10 and 25 years, with most culverts designed for a 25-year storm event (approximately 2.1 inches over a 24-hour period). This ensures that the road is not overtopped during most rainfall events. Roads throughout the United States with similar hydrologic design parameters include county roads and low volume state highways.

Drainage crossings on turbine and facility and structure class roads are designed for a lesser storm event due to the lower volumes of traffic and flexibility regarding access. Based on BLM guidance, a minimum 10-year storm event has been used for the project. Culverts will still be used at crossing locations within larger watersheds and where the road design and existing terrain require it; however, at-grade low water crossings (described in the sections below) will be used where watersheds are smaller and the road design and terrain allow for it

3.3.3 Hydraulics

There are multiple drainage crossings and structures associated with the CCSM Project roads. These drainages, crossings, and structures can generally be organized into four crossing types:

- Stream and larger drainage crossings - watersheds greater than 30 square miles, typically crossed with round, box, or open-bottomed arch culverts
- Moderate drainage crossings - watersheds between 3 square miles and 30 square miles, typically crossed with round or box culverts
- Small drainage crossings - watersheds less than 3 square miles, typically crossed at-grade or with a round culvert
- Relief culverts - allow water to flow from one side of a road to the other to follow terrain, typically round culverts

3.3.3.1 Stream and Larger Drainage Crossings

According to BLM's Engineering Manual (BLM 2008), culvert crossings are classified as "major culverts" if they have a design cross sectional area greater than 35 square feet on a 25-year storm event. Hydraulic designs for these crossings must meet the requirements of section ".22-A-3-a" of BLM's Manual 9112 (BLM 2009) which states:

> *"The minimum design flood for permanent bridges is the 50-year flood. At a minimum, major culverts in permanent installations should be designed to pass a 25-year flood with zero head above the pipe and 50-year flood with head above the pipe limited to one-half the rise (or diameter) of the pipe, but not less than 2 feet below the finished travelway shoulder."*

Based upon these requirements, PCW analyzed several types of crossings for the stream and larger drainage crossings. The first type of crossing selected was one or more corrugated metal pipe (CMP) culverts, the most common form of drainage crossings used on rural roads similar to the CCSM Project roads. Box culverts were also reviewed and selected at crossing locations that convey large volumes of water and have height and/or width restrictions within the channel that prevent the usage of multiple large diameter CMP culverts.

BLM expressed a preference for "live bottom" crossing options of Little Sage Creek and Miller Creek, both perennial streams at the crossing locations. PCW evaluated multiple "live bottom" options including traditional bridges, steel arch culverts, and reinforced concrete arch structures. All these options allow for a natural streambed to be maintained. To further develop an optimal solution, PCW evaluated the impacts of each crossing type during construction. All crossing types require diverting water through a temporary culvert while construction is occurring;

however, a prefabricated concrete arch minimizes the duration of construction and the time that the streams would be impacted. PCW chose the prefabricated concrete arch design due to the lower overall cost and reduced duration of construction. Figure 4 shows typical concrete arch structure designs.

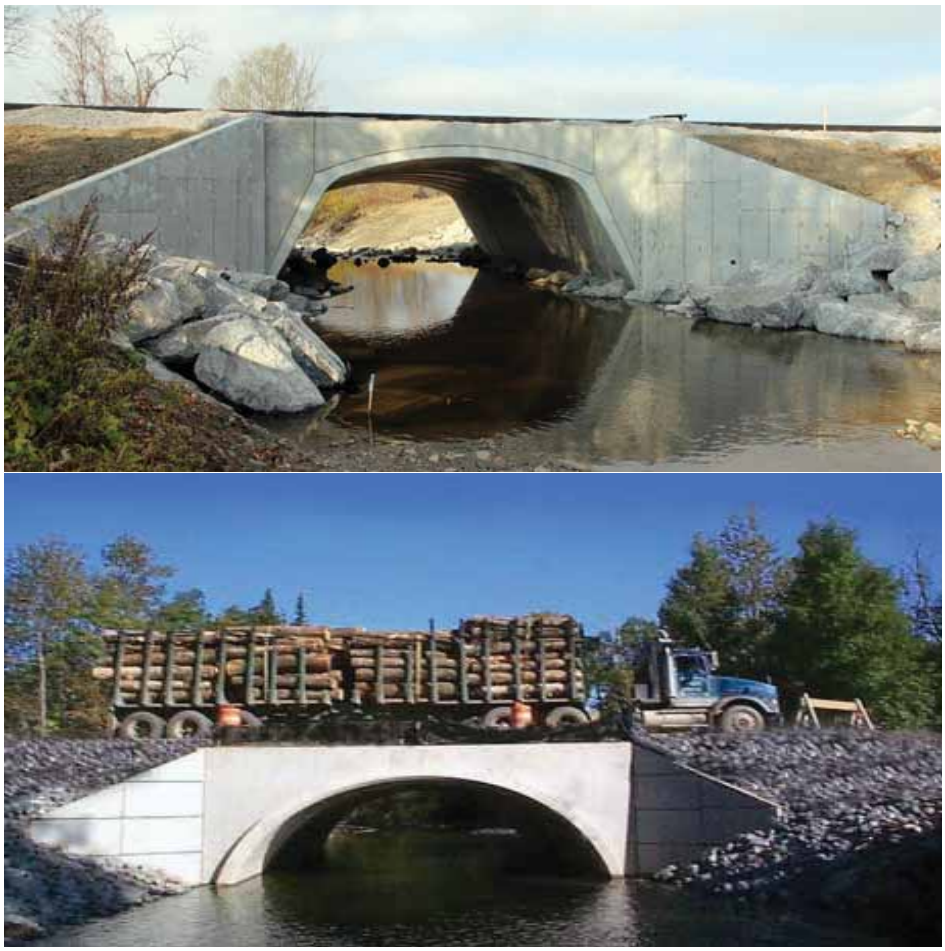


Figure 4. Example Perennial Stream Crossing Pre-Cast Concrete Arches

3.3.3.2 Moderate Drainage Crossings

For most moderate drainage crossings for haul and arterial class roads, PCW is using CMP round culverts (Figure 5).CMP culvert sizes typically range from 60 inches to 84 inches in diameter. In a few select locations, PCW is using two or three CMP culverts in parallel to provide adequate drainage. In locations with higher road grade, lower profile CMP culverts were deemed most appropriate.

At six moderate drainage crossings along the northern portion of the Phase I Haul Road, the drainage requirements caused PCW to select concrete box culverts (Figure 6) over CMP culverts. These were selected in areas with wide drainages where round culverts may not have sufficient discharge rates and could increase the potential for ponding.

Figure 5. Example CMP Culvert Crossing

Figure 6. Example Concrete Box Culvert Crossing

3.3.3.3 Small Drainage Crossings

PCW will use round CMP culverts for small drainage crossings on haul and arterial class roads. Round culverts or at-grade low water crossings ("LWC" also referred to as "Arizona crossings") will be used throughout the CCSM Project Site on turbine and facility class roads at crossing locations with low flows. CMP culvert sizes range from 24 inches to 72 inches in diameter with the vast majority being 36 inches or less

A LWC is an at-grade designed low point in the roadway that matches the elevation of the existing drainage channel as closely as possible, and allows storm water to drain across the road surface (Figure 7, Figure 8, and Figure 9). This type of crossing is also effective in minimizing the erosion potential when crossing undefined drainage ways as it prevents channelizing the

flows through culverts. Channelizing flow in undefined drainages can increase the velocities and erosion potential across existing vegetation and soils that are not naturally accustomed.

Typical LWCs consist of aggregate surfaces with aggregate sizes large enough to support the water velocity without washing (typically 3 to 6-inch diameter). At crossings where the water velocity is too fast for an aggregate surface, a concrete surfaced LWC may be installed. PCW will determine where concrete surfaces are warranted based on site conditions encountered during construction, such as the subgrade soil conditions and the ability to achieve proper compaction. At crossings where runoff from snow melt or other drainage becomes a nuisance or increases the amount of road maintenance required, PCW may decide to install a small culvert (typically 4-6 inches). The culvert will allow small amounts of water to drain under the road keeping the road surface in a better driving condition. If PCW decides to install the culverts, the culverts will be installed at the end of CCSM Project construction once the majority of the heavy hauling is complete.

LWCs will typically be constructed to the full width of the driving surface, or the width required for cranes if the road is to be used for crane travel (refer to **Error! Reference source not found.**). The crane travel shoulders may be constructed out of a more coarsely graded aggregate that will support and distribute the weight of the cranes more effectively. Once CCSM Project construction is complete, these shoulders will be reclaimed, leaving behind the permanent roadway surface width. If the existing soils are suitable to support crane travel, PCW may choose not to install the aggregate for the crane shoulders.

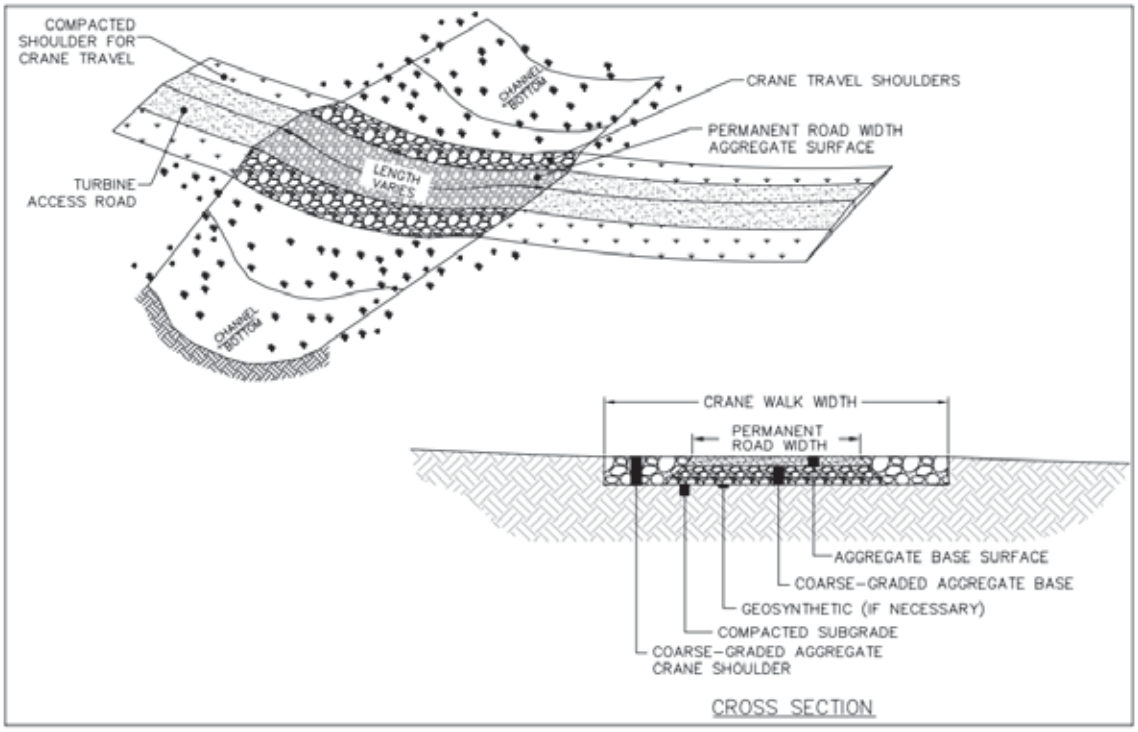


Figure 7. Typical At-Grade Low Water Crossing

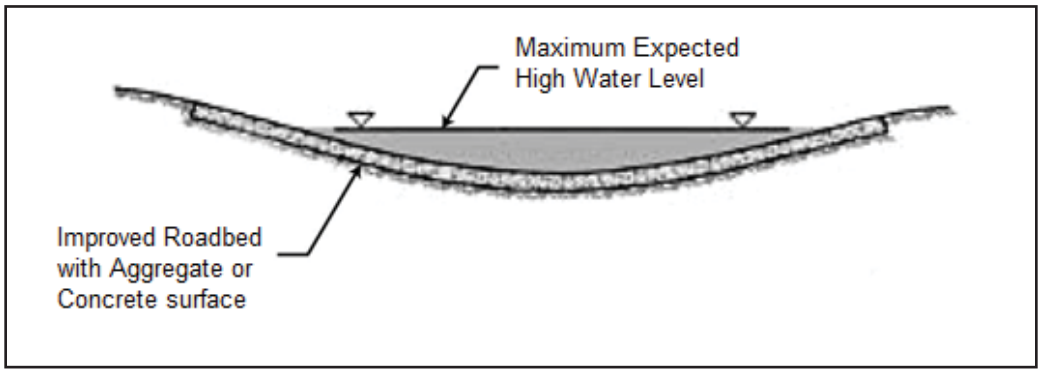


Figure 8. Diagram of At-Grade Low Water Crossing

Figure 9. Examples of At-Grade Low Water Crossings

3.3.3.4 Culvert Placement

All culverts will be placed in a manner that best matches the stream and watercourse morphology, both horizontally and vertically. Horizontally, the culverts will be placed in a manner that closely matches the watercourse orientation (see Figure 10). Vertically, the culvert will match the natural grade of the watercourse when possible (see Figure 11). Where grading is required, the culvert will be placed so there is enough room for runoff to be properly conveyed through the culvert (see Figure 12).

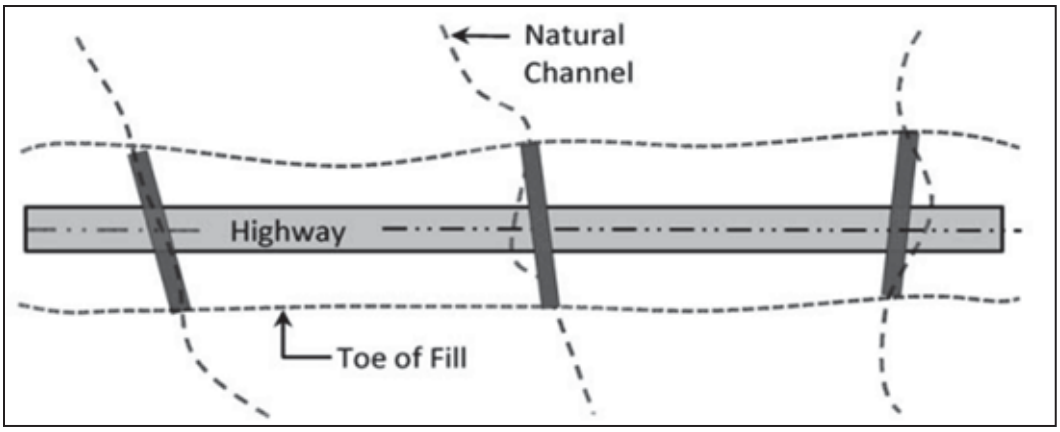


Figure 10. Typical Horizontal Culvert Placement

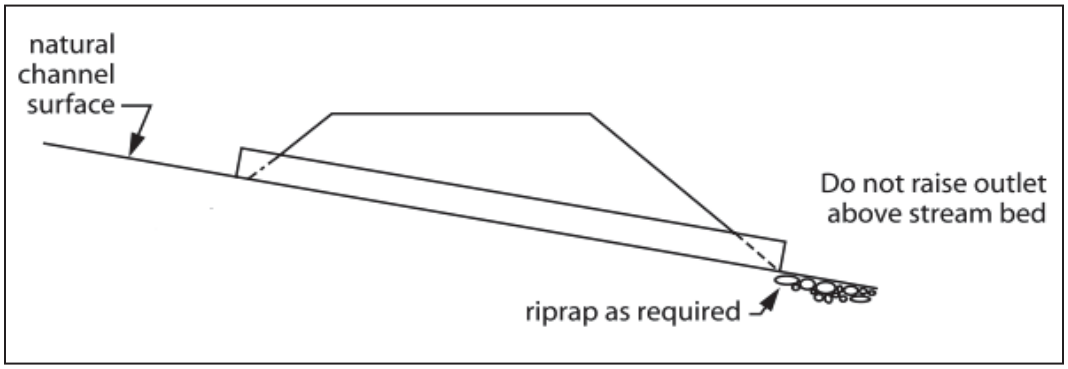


Figure 11. Typical Vertical Culvert Placement in Natural Watercourse

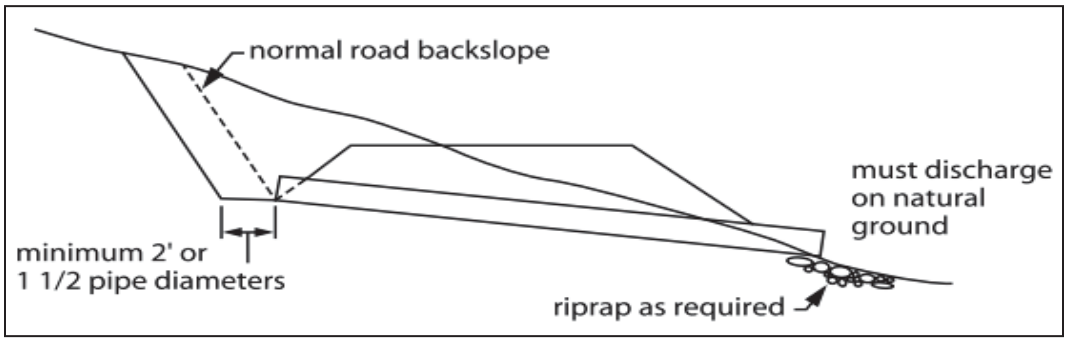


Figure 12. Typical Vertical Culvert Placement with Grading

3.3.4 Drainage Structure Structural Design

All drainage structures will be designed to accommodate the construction and operation traffic that is anticipated to drive on the road surface. The minimum structural design loading for all drainage structures must meet the requirements of section ".1-A-2" of BLM's Bridge Design Manual (BLM 2009) which states:

> *"The minimum design vehicular loading for road crossing structures designed in accordance with the AASHTO LFRD Bridge Design Specifications is load designation HL-93 and for those structures designed in accordance with the Standard Specifications for Highway Bridges, 17th Edition is load class designation HS20."*

The structural design of all drainage structures takes into account any crane travel on the road surface or special delivery truck requirements based on standard wind farm construction practices. If needed to accommodate construction traffic loadings, drainage structures will have increased fill, timber mats, steel plates, or other protection measures for temporary construction loadings that exceed the design capacity of the drainage structure.

3.3.5 Drainage Structure Scour Design

The CCSM Project requires culvert crossings at drainages throughout the CCSM Project Site. The majority of the proposed culvert crossings are classified for scour design as *minor* culverts, with cross-sectional areas less than 35 square feet. Minor culverts include those previously defined in this document as relief or small culverts. The BLM defines the remainder of the culverts (cross-sectional areas greater than 35 square feet) as *major* culverts, those previously defined as moderate or stream crossings.

Measures will be taken to protect the soil around the culvert inlets from erosion, following the BLM Gold Book guidelines (BLM 2007). BLM Manual 9113 indicates that scour should be considered when designing culverts, but doesn't specify a procedure for design. Therefore, minor culvert outlets will be protected from scour using standard WyDOT and FHWA guidelines for outlet aprons. Major culverts will be protected against scour by using BLM, WyDOT and FHWA guidelines and calculations from HEC-14. The Federal Highway Administration publishes HEC-14 as part of its Hydrologic Engineering Center standard publications.

Riprap will be used as the primary means to prevent culvert erosion. However, if PCW determines it is necessary, additional commercially available erosion control products may be used on a limited basis to supplement or replace riprap as a means to protect existing soils around culverts.

3.3.5.1 Minor Culverts

The FHWA and multiple DOTs throughout the country have developed standard details for riprap placement to prevent erosion and scour. These guidelines are based on research and calculations in HEC-14. These outlet protection details are suitable for culverts up to

approximately 72" diameter. The BLM Gold Book further specifies how to place riprap to protect culvert inlets.

The CCSM Project will use the BLM and FHWA guidelines for the minor culverts throughout the project site. Figure 13 gives an example showing how inlet and outlet protection is achieved for a variety of culvert sizes. Figure 14 shows a typical triangular outlet apron. The width is generally around 20 percent wider than the length.

3.3.5.2 Major Cuvlerts

Outlet protection for the CCSM Project's major culverts will be calculated and designed on an individual basis using HEC-14. The procedures in HEC-14 provide design information for analyzing and mitigating energy dissipation problems at culvert outlets and in open channels. The riprap D_{50} size and apron dimensions are calculated based on the culvert's shape, dimensions, design discharge, and tailwater elevation. The outlet protection design intent will be similar to the minor culverts as shown in Figure 13 and Figure 14.

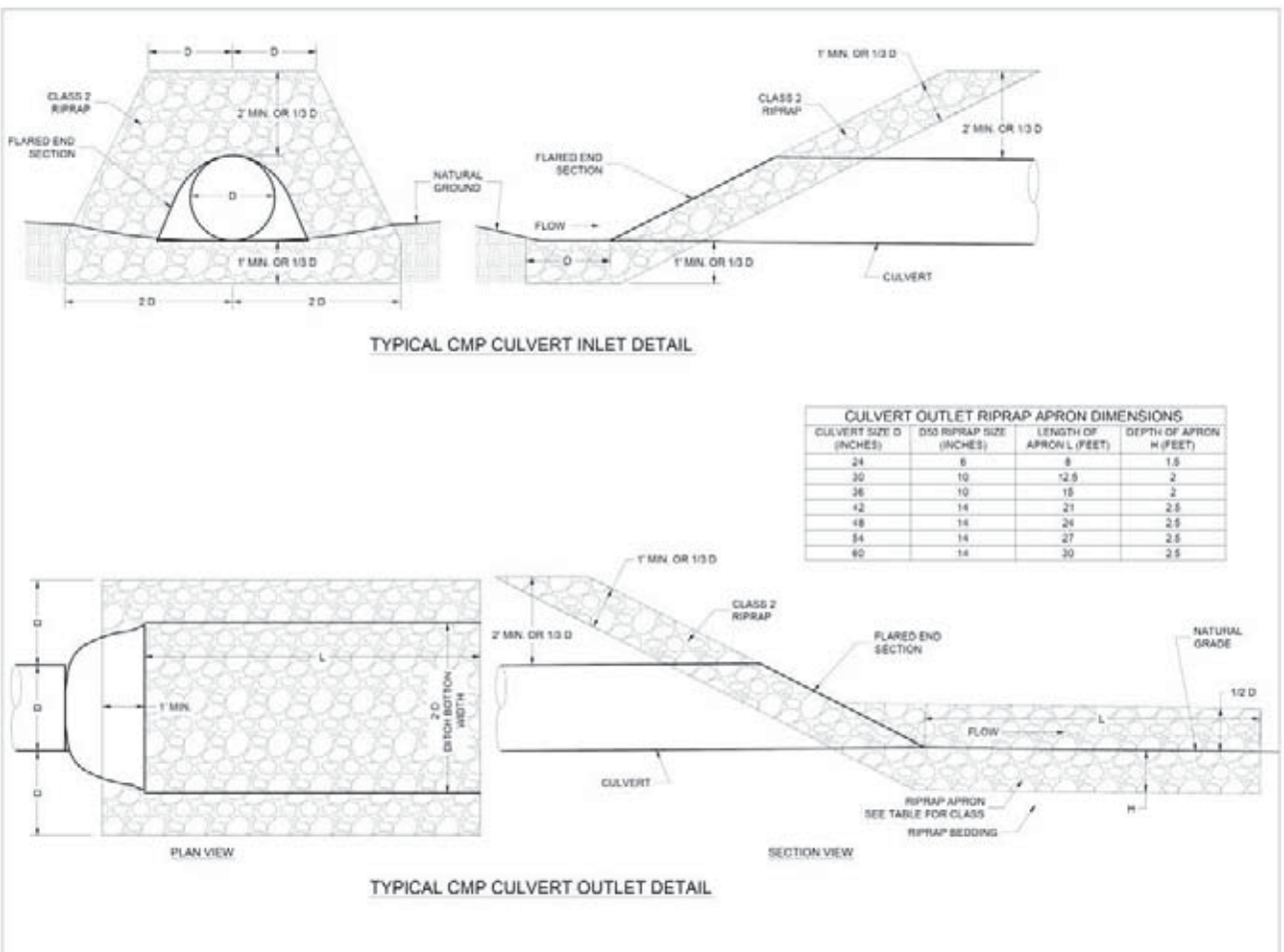


Figure 13. Typical Minor Culvert Inlet and Outlet Protection Detail

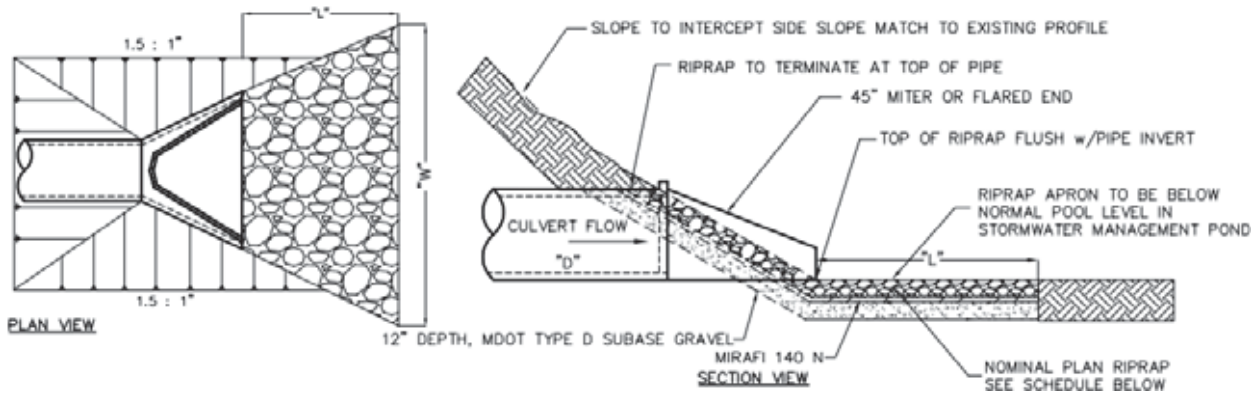
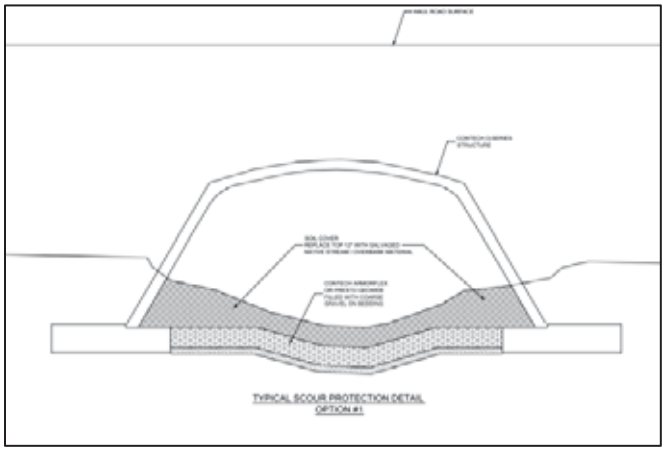


Figure 14. Typical Minor Culvert Outlet Apron

3.3.5.3 Major Natural Bottom Culverts

Two crossings along the Phase I Haul Road are planned to be constructed with long-span, open bottom arch culverts (Contech O-Series or equivalent). The natural channel bottoms will be constructed with the existing native channel material. The arch culvert will have concrete footings to support the structure and roadway over the top of the culvert

Outlet protection will be calculated and designed on an individual basis using HEC-14. The procedures in HEC-14 provide design information for analyzing and mitigating energy dissipation problems at culvert outlets and in open channels. The riprap D_{50} size and apron dimensions are calculated based on the drainage structure's shape, dimensions, design discharge, and tailwater elevation. Riprap or cable concrete will be buried under the native material and will protect the concrete footings from being undermined from excessive scour during a large storm event. A sheet-pile cutoff wall, or other grade control device, on the downstream end will provide protection against a large head-cut undermining the structure Example scour protection options for the arch structure are shown in Figure 15 and Figure 16.



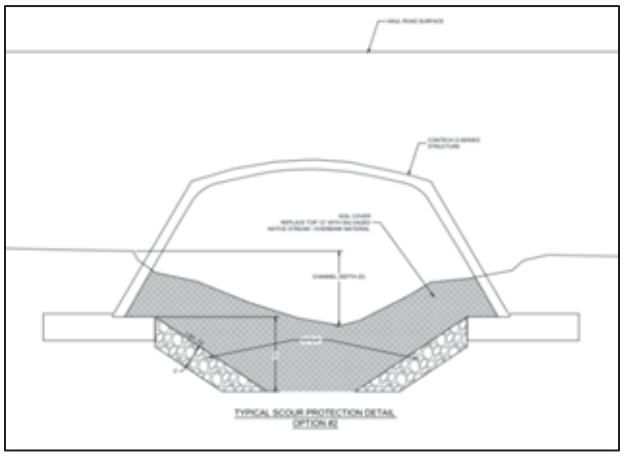


Figure 15. Scour Protection Options for Open Bottom Arch Structure Footings

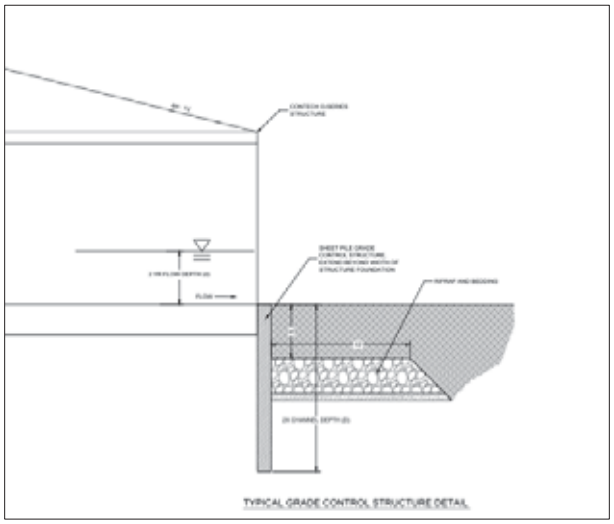


Figure 16. Grade Control Protection for Open Bottom Arch Structure

3.4 DITCHES

CCSM Project roads have been designed to minimize the use of ditches by staying on ridges or flat areas; however, ditches are necessary in several locations. Ditches are designed to protect the road from stormwater runoff, prevent longitudinal flow from conveying on the driving surface, and provide water with a defined location to channelize. While the BLM preference for stormwater management is to direct water to flat, vegetated, stabilized areas, this is not always achievable in the CCSM Project Site and in some instances doing this would increase the CCSM Project disturbance. Where flat, vegetated, stabilized areas are not available or would significantly increase the CCSM Project disturbance, ditches are used to collect water and convey it away from the road toward existing natural drainages. The use of ditches varies based on the road classification. Haul-class roads have significant ditching to maintain the road design requirements. As the road design requirements lessen for each subsequent road type, ditches are needed in fewer locations. Turbine, facility, and structure class roads have limited to no ditches.

3.4.1 Ditch Design

Ditches are designed based on the storm event shown in Table 1 for each of the different road classifications. Each ditch is designed based on the maximum drainage area that will be draining to the ditch at the ditches minimum slope. Based on the design speed of the road class, the ditch fore slope and back slope range from 4:1 on haul-class roads to 2:1 on turbine and facility class roads. The depth of the ditch and the width of the ditch vary based on the hydraulic design requirements of the ditch. All ditches have a minimum bottom width of 2 feet. Ditches will be stabilized using a variety of different methods based on the slope of the ditch and the velocity of the water. The primary sediment control will be rock checks and the primary erosion control

will be the establishment of vegetation. More information on stabilization can be found in the SWPP Plan for each site-specific plan of development.

3.4.2 Wing Ditch Use

The construction of wing ditches for CCSM Project roads has been considered. It has been determined that wing ditches are not appropriate for the CCSM Project because the majority of the road ditches have one or more of the following characteristics:

- Ditches are located on the 'uphill side' of the road and there is no flat area to construct a wing ditch for the water to infiltrate;
- Ditches are less than 200 feet in length, i.e. water that accumulates in the ditch is very shallow and is not anticipated to result in erosion as it outlets;
- Ditches have a longitudinal slope of less than 2%; i.e. water velocity in the ditch is not anticipated to result in erosion; or
- Ditches empty onto the toe of fill slopes located away from existing drainage ways.

In addition, the use of wing ditches will increase the overall disturbance for the CCSM Project. Also, existing vegetated areas that would be needed to disperse the energy are sparse throughout the CCSM Project Site. The road ditches that do discharge to existing drainage ways will outlet into areas of rip rap and other stabilization which will diffuse the ditch flow and avoid additional erosion of the drainage way.

3.4.3 Relief Culverts

Relief culverts will be used on CCSM Project roads that require a ditch on the uphill side of the road. By design, the road centerlines are above the natural ground to allow for ditches and to balance the earthwork as locally as possible. Relief culverts will be placed periodically to allow runoff to be conveyed underneath the road. BLM Manual 9113 provided guidance for the placement of relief culvert. This guidance has been taken into consideration and relief culverts have either been placed at regular intervals according to BLM guidance or at strategic locations where culverts can outlet into existing drainages. This allows for runoff to outlet culverts in existing concentrated flow areas so the water can continue to follow natural patterns while still reducing the amount of water conveyed by roadside ditches. Relief culverts are typically placed at a 30 degree angle with an upstream berm directing the runoff into the culvert (see Figure 17). PCW plans to use round CMP culverts between 18 and 24 inches for relief culverts.

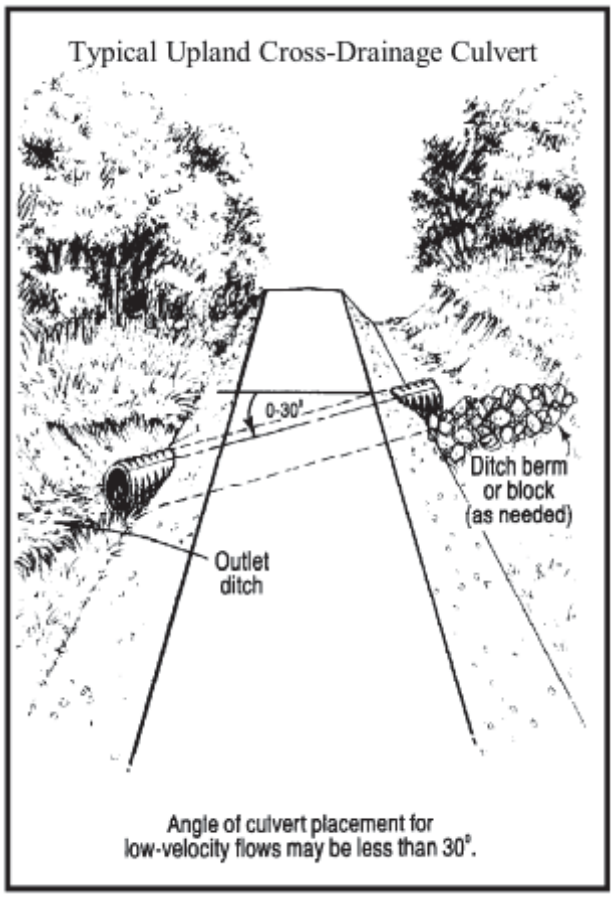


Figure 17. Example Relief Culvert

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APPENDIX D

Chokecherry and Sierra Madre Wind Energy Project

Transportation Management Plan

Prepared for

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Prepared by

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September 2013
(Updated March 2014)

Table of Contents

1. Introduction 1

2. Transportation Strategy 2

3. Transportation Requirements 3
   3.1 Off-Site Deliveries 3
   3.2 Workforce 6

4. Infrastructure 7
   4.1 On-site Material Sources 8
   4.2 Rail 9
   4.3 Roads 11

5. Transportation Plan 11

6. Traffic Study 15

List of Figures

Figure 1. CCSM Project Location 2
Figure 2. Existing Transportation Infrastructure 7
Figure 3. Proposed Transportation Infrastructure 8
Figure 4. West Sinclair Rail Facility Layout 10

List of Tables

Table 1. CCSM Project Delivery Requirements from Off-Site Sources 4
Table 2. Peak Labor Force by Month 6
Table 3. CCSM Project Off-Site Deliveries by Rail 12
Table 4. CCSM Project Off-Site Deliveries by Truck (in quantities of material) 13
Table 5. CCSM Project Off-Site Deliveries by Truck (in truckloads) 17

List of Attachments

Attachment A. Infrastructure Assessment
Attachment B. Traffic Analysis

1. Introduction

Power Company of Wyoming LLC (PCW) proposes to construct and operate the Chokecherry and Sierra Madre Wind Energy Project (CCSM Project), located in Carbon County, Wyoming. The CCSM Project consists of up to 1,000 wind turbines capable of generating approximately 2,000 to 3,000 megawatt (MW) of clean, renewable wind energy. The primary components of the CCSM Project include the wind turbine generators, an internal road network, a rail facility, an internal electrical collection and transmission system, substations, and operations and maintenance buildings.

The CCSM Project is located south of the city of Rawlins, primarily within the bounds of the Overland Trail Ranch (Ranch). See Figure 1. The Ranch is owned and operated by PCW affiliate, The Overland Trail Cattle Company (TOTCO). The Ranch is situated within an area of alternating sections of private and federal lands commonly referred to as the "checkerboard." The vast majority of the private lands are owned by TOTCO and the federal lands are administered by the Bureau of Land Management (BLM) Rawlins Field Office. A small percentage of the land within the Ranch is owned by the State of Wyoming and is administered by the State Board of Land Commissioners. Finally, Anadarko Land Corporation owns some sections located on the periphery of the northwest boundary of the Ranch.

In 2008, PCW applied to BLM for right-of-way grants to construct, operate, maintain and decommission the CCSM Project on federal lands within the CCSM Project Area. On June 29, 2012, the Notice of Availability for the Final EIS concerning the CCSM Project was published in the Federal Register (77 FR 63328). On October 9, 2012 the Secretary of the Interior signed the Record of Decision (ROD). In the ROD, BLM determined that over 200,000 acres within the CCSM Project Area are suitable for wind energy development subject to the requirements described under the Selected Alternative in the ROD. The area that was determined to be suitable for wind energy development consists of two wind development areas (WDAs) in which turbines would be located. The northern WDA is known as Chokecherry and the southern WDA is known as Sierra Madre. The WDAs are located approximately 9 miles apart.

Prior to issuing right-of-way grants for the CCSM Project, BLM will conduct subsequent environmental analysis of site-specific plans of development submitted by PCW. The site-specific plans of development will be screened against the analysis conducted in the EIS and the requirements described under the Selected Alternative in the ROD. PCW anticipates submitting five (5) site-specific plans of development to BLM, consisting of the following:

1. Phase I Haul Road and Facilities
2. West Sinclair Rail Facility
3. Road Rock Quarry
4. Phase I Wind Development
5. Phase II Wind Development (including Phase II Haul Road and Facilities)

Transportation requirements are a primary consideration for the construction, operation, maintenance and decommissioning of the CCSM Project, including each site-specific plan of development. This transportation management plan (TMP) evaluates the transportation requirements of the CCSM Project, the existing and proposed infrastructure in the vicinity of the CCSM Project Site, and existing and anticipated traffic conditions to develop strategies to avoid and minimize transportation impacts from the CCSM Project to the extent practicable.

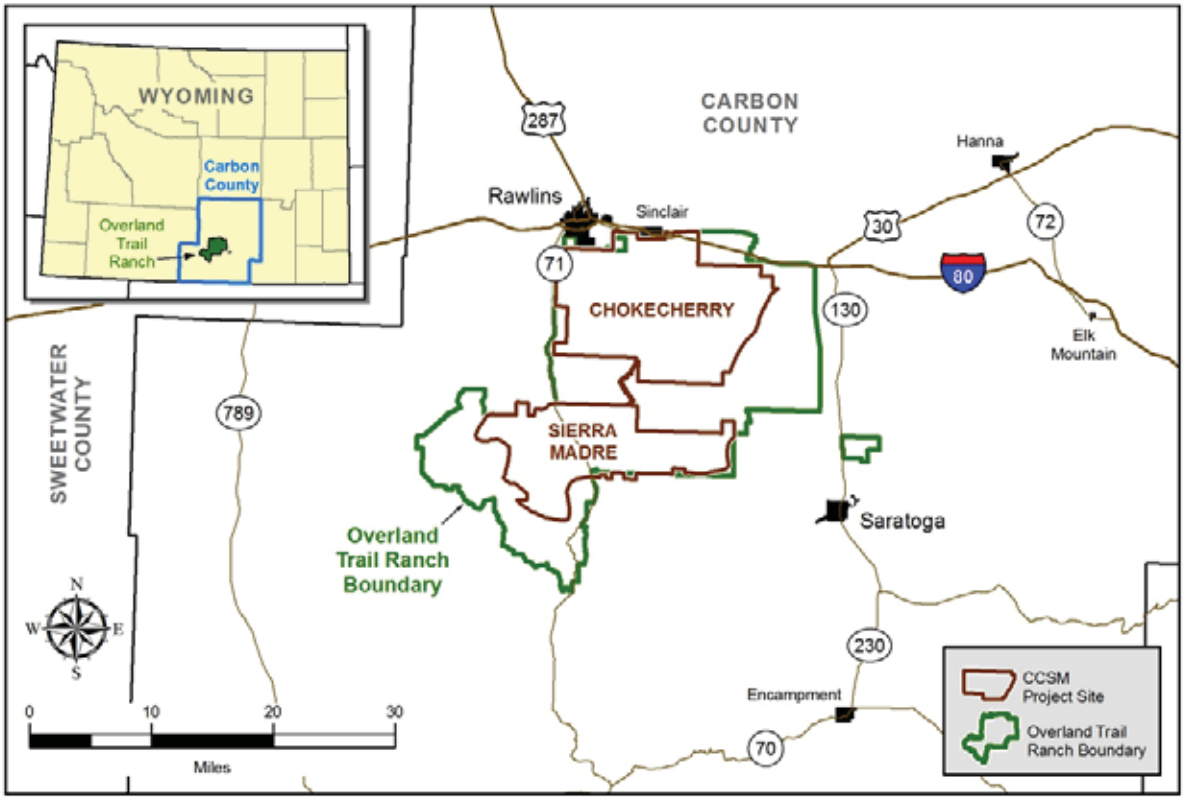

Figure 1. CCSM Project Location

2. Transportation Strategy

PCW has developed a transportation strategy to cost-effectively use local resources and minimize transportation impacts to the extent practicable during construction, operations, maintenance and decommissioning of the CCSM Project. The objective of the transportation strategy is to keep deliveries internal to the CCSM Project Site when possible. To meet this objective, PCW's preference is to: (1) source material on-site where suitable and practicable; (2) deliver components and material by rail to the extent practicable; and (3) obtain any remaining materials and components by truck, prioritizing local sources, to reduce emissions and provide additional benefits to the local economy.

To develop a transportation plan that implements PCW's transportation strategy, PCW first established the transportation requirements of the CCSM Project. Following evaluation of the CCSM Project requirements, PCW reviewed the existing transportation infrastructure and proposed new facilities and upgrades as needed. Finally, PCW re-evaluated the CCSM Project transportation requirements to assign delivery methods to each off-site delivery in accordance with the transportation strategy.

3. Transportation Requirements

PCW evaluated the CCSM Project to identify the transportation requirements during construction, operations, maintenance, and decommissioning. Transportation needs for the CCSM Project are expected to be most complex during construction; therefore, construction is the focus of the transportation plan. PCW does not anticipate that additional transportation infrastructure or management strategies will be required during operations, maintenance, and decommissioning of the CCSM Project. To identify potential transportation impacts of the CCSM Project during construction, PCW estimated the construction delivery and workforce commuting requirements, as described below.

3.1 Off-Site Deliveries

The scope of this TMP is to analyze potential off-site transportation impacts from the CCSM Project; therefore, PCW has reviewed the CCSM Project design and schedule to estimate the off-site delivery requirements for the primary components and materials required to construct the CCSM Project (Table 1)[1].

[1] PCW arrived at the off-site delivery requirements for the CCSM Project by taking the total CCSM Project material requirements and subtracting the aggregate and water that would be obtained on-site, as described in section 4.1.

Table 1. CCSM Project Delivery Requirements from Off-Site Sources

Item	Units	2014	2015	2016	2017	PII Year 1	PII Year 2	PII Year 3	CCSM PROJECT TOTAL
Wind Turbine Components									
Nacelles	ea	0	0	243	257	0	243	257	1,000
Hubs	ea	0	0	243	257	0	243	257	1,000
Tower Sections	ea	0	0	891	942	0	891	942	3,666
Blades	ea	0	0	729	771	0	729	771	3,000
Manifest Items									
Rebar	tons	0	9,000	20,000	12,000	8,000	20,000	12,000	81,000
Steel	tons	0	0	325	200	0	100	100	725
Cable Reels	ea	0	779	1,423	1,187	888	586	427	5,290
Sub Transformers	ea	0	0	8	4	0	2	2	16
WTG Transformers	ea	0	0	243	257	0	243	257	1,000
Poles	ea	0	0	2,200	2,000	0	2000	1800	8,000
Junction Boxes	ea	0	270	404	312	285	446	255	1,972
Construction Material									
Road Cap	cu yd	64,000	127,000	39,000	25,000	62,000	25,000	33,000	375,000
Road Stabilization	cu yd	2,500	17,300	6,400	3,100	5,800	6,200	2,600	43,900
Rail Ballast	cu yd	0	51,000	0	0	0	0	0	51,000

Item	Units	2014	2015	2016	2017	PII Year 1	PII Year 2	PII Year 3	CCSM PROJECT TOTAL
Rail Sub-Ballast	cu yd	0	148,000	0	0	0	0	0	148,000
Laydown Yard Aggregate	cu yd	3,000	126,000	0	0	0	0	0	129,000
Substation Aggregate	cu yd	0	28,000	12,000	0	6,000	6,000	0	52,000
Thermal Backfill	cu yd	0	18,000	46,000	28,000	22,500	45,000	22,500	182,000
Rip-Rap	cu yd	9,100	39,500	20,300	9,800	15,100	19,300	8,100	121,200
Aggregate – Concrete	cu yd	700	52,500	103,300	56,400	48,700	114,200	37,800	413,600
Sand	cu yd	300	32,900	65,400	35,500	31,500	72,400	24,200	262,200
Cement	cu yd	0	16,286	36,492	22,619	14,778	37,849	22,770	150,794
Fly Ash	cu yd	0	2,077	4,654	2,885	1,885	4,827	2,904	19,232
Water (from off-site)	ac ft	26	22	0	0	0	0	0	48
Construction Equipment									
Equipment	ea	88	342	437	431	88	342	437	2,165
Trailers	ea	25	25	25	25	25	25	25	175

Notes: 1. PII = Phase II of the CCSM Project
2. The material estimates presented for Phase II assume that a portion of the aggregate will be obtained on-site.

3.2 Workforce

To further evaluate the CCSM Project transportation requirements during construction, PCW estimated the workforce that will commute to the CCSM Project Site from nearby communities. PCW may elect to house a portion of the workforce in an on-site construction camp; however, for the purposes of this analysis, PCW conservatively assumed that the entire workforce will commute to the CCSM Project Site.

Table 2 summarizes the anticipated peak workforce by month for the CCSM Project including both construction and operations personnel. The construction workforce for Phase I of the CCSM Project reaches a peak of 945 workers in 2017. Operations personnel will commence work as project components (i.e., the rail facility and quarry) become operational. This TMP analyzes a combined peak workforce of 1,290 occurring in August of 2017.

Table 2. Peak Labor Force by Month

Month	2014	2015	2016	2017	Phase II Year 1	Phase II Year 2	Phase II Year 3
Jan	0	14	17	57	76	81	101
Feb	0	14	17	57	76	81	101
Mar	0	14	32	72	81	96	116
Apr	0	32	62	95	99	126	139
May	0	59	157	219	111	319	261
June	0	121	926	602	144	917	666
July	0	408	1,253	1,285	319	1,185	1,060
Aug	0	**487**	**1,258**	**1,290**	**416**	**1,190**	**1,065**
Sep	**107**	427	999	1,167	356	976	1,082
Oct	107	309	392	560	248	461	516
Nov	107	136	178	299	125	227	283
Dec	12	29	64	103	83	113	139

4. Infrastructure

Following establishment of the CCSM Project transportation strategy and requirements, PCW evaluated on-site material sources and reviewed the existing transportation infrastructure in the vicinity of the CCSM Project (Figure 2). PCW proposed new infrastructure, as well as upgrades to existing infrastructure, as needed to accommodate the CCSM Project and implement the transportation strategy (Figure 3). A detailed analysis of the transportation infrastructure in the vicinity of the CCSM Project is included in Attachment A; a summary is provided below.

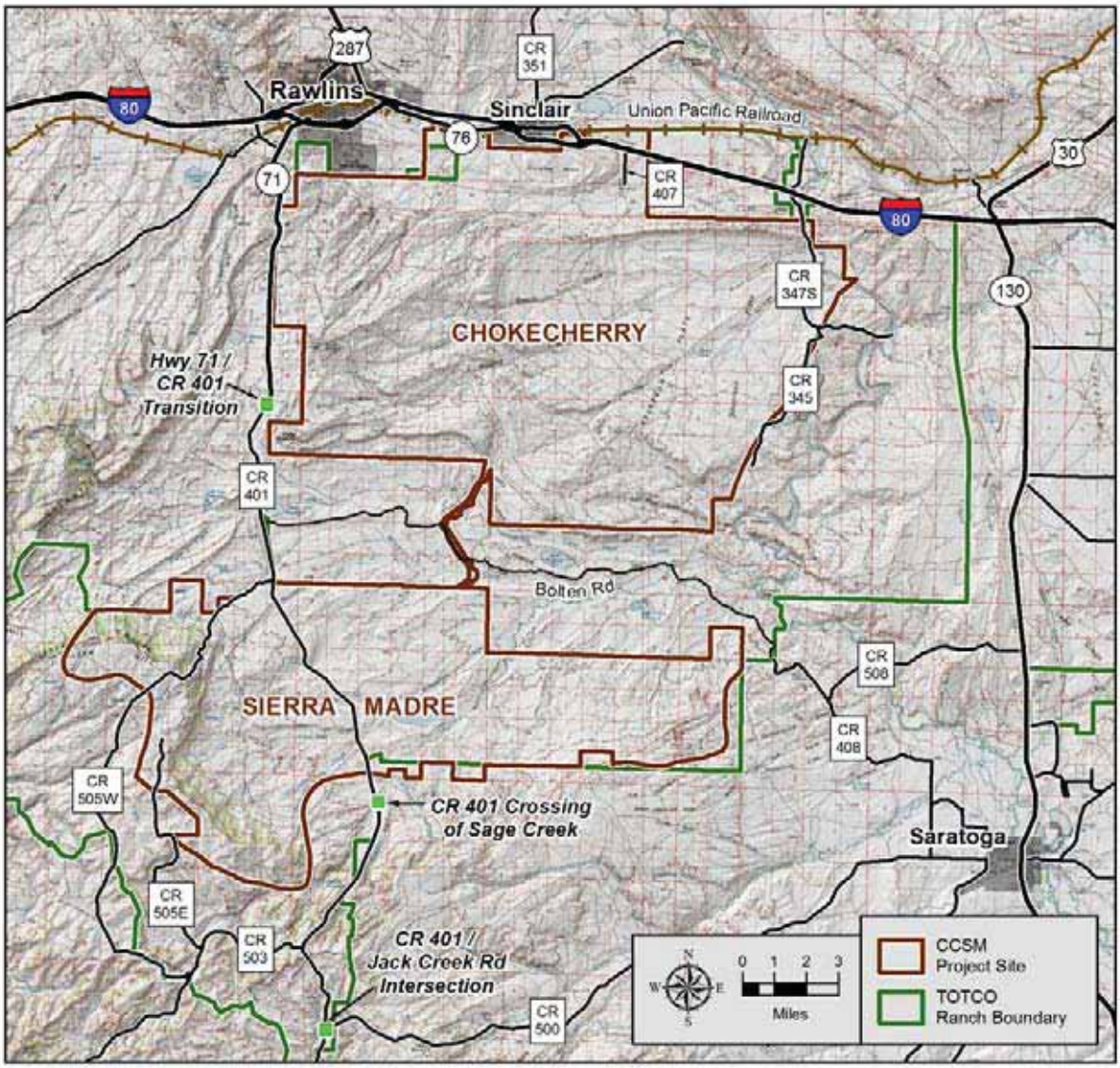

Figure 2. Existing Transportation Infrastructure

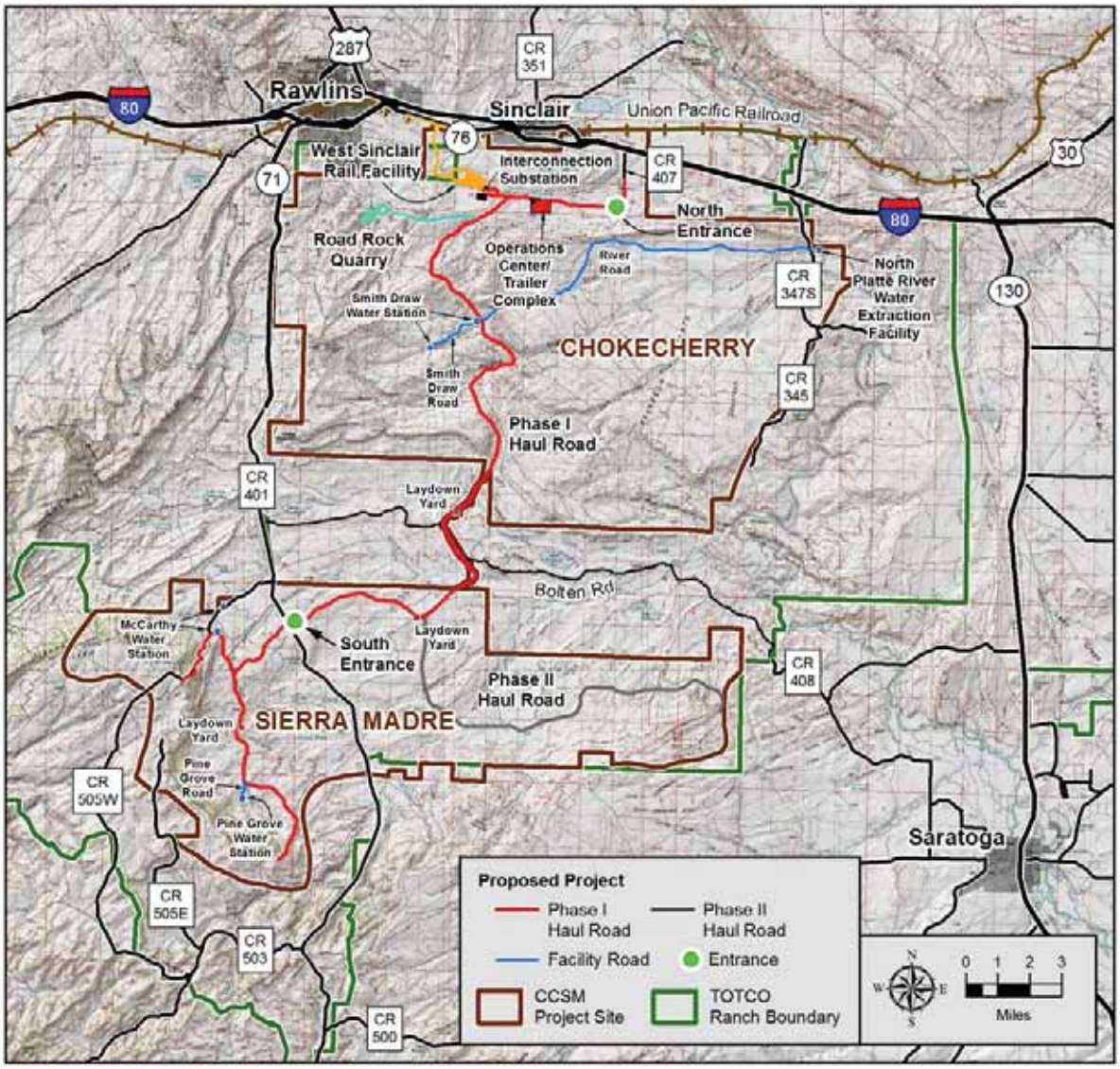

Figure 3. Proposed Transportation Infrastructure

4.1 On-site Material Sources

In accordance with the CCSM Project transportation strategy, PCW evaluated the CCSM Project Site to identify opportunities to use on-site materials where suitable and practicable. PCW's evaluation resulted in the identification of two materials that could feasibly be sourced on-site; water and base aggregate.

For the CCSM Project's water requirements, PCW identified groundwater and surface water rights within the CCSM Project Site that will be used along with locally available municipal supplies to construct, operate, maintain and decommission the CCSM Project. PCW proposes to construct a water system for the CCSM Project to bring water from these sources to five

water stations within the CCSM Project Site where water trucks will be filled (Figure 3). While on-site water sources have been identified, PCW may need to deliver water by truck during construction of the CCSM Project water system. The off-site transportation requirements described in section 3.1 account for the portion of the water that may be obtained off-site. Details on the CCSM Project water sources and water stations are included in the Phase I Haul Road and Facilities Site Specific Plan of Development.

A geotechnical investigation of the CCSM Project Site determined that the most feasible option for obtaining base aggregate on-site is the Road Rock Quarry. The location, a previously established quarry, has sufficient quantities of sandstone to meet a significant portion of the CCSM Project need for base aggregate. PCW proposes to construct, operate, maintain and decommission the Road Rock Quarry to obtain this base aggregate. The Road Rock Quarry is located in the northern portion of the CCSM Project Site and will connect to the CCSM Project internal road network (Figure 3). Details on the Road Rock Quarry are included in the Road Rock Quarry Site Specific Plan of Development.

4.2 Rail

Rail is a key component of PCW's transportation strategy. Many of the components required to build the CCSM Project will be transported long distances; PCW reviewed these components and found that most can be delivered by rail. While it is not economical to bring in all material and components by rail, the use of rail delivery for a large portion of the components reduces transportation impacts and provides an economic benefit to the CCSM Project.

The Union Pacific "Overland Route" corridor, the original "Transcontinental Railroad" completed in 1869, is located along the northern boundary of the CCSM Project Site. The location of the railroad adjacent to the CCSM Project Site presents a unique opportunity for PCW to minimize transportation impacts by delivering materials and components for the CCSM Project by train. While the Overland Route main line is heavily used, Union Pacific has indicated that additional trains used to deliver components to the CCSM Project would not cause any significant impacts to the system. PCW and Union Pacific have estimated that peak rail deliveries to the CCSM Project Site would still be less than a 0.2% increase to daily rail traffic.

PCW conducted a survey of existing rail facilities in the region surrounding the CCSM Project Site. To evaluate the suitability of the existing rail facilities, PCW considered that: (1) many of the wind turbine components will arrive in dedicated unit trains of up to 6,500 feet in length; (2) the CCSM Project has a limited annual working season that requires components to arrive in a shortened window; (3) components may arrive from up to three manufacturers during the working season; and (4) to safely receive, store, unload, and release unit trains requires in excess of 26,000 feet (equivalent to 4 unit trains) of track. All existing rail facilities surveyed in the region surrounding the CCSM Project Site were either too small to be used by the CCSM Project or would require significant expansion and long-distance trucking; therefore, PCW

determined that none of these facilities meet the CCSM Project transportation strategy objective (Attachment A).

To meet the objective of the CCSM Project transportation strategy, maximizing the use of rail delivery, PCW proposes to construct, operate, maintain and decommission a new rail facility, the West Sinclair Rail Facility (Figure 3). The West Sinclair Rail Facility will connect to the UPRR main line between Rawlins and Sinclair and includes a rail loop, various unloading tracks and adjacent laydown yards. An overview of the West Sinclair Rail Facility is included in Figure 4 below. Design details are included in the West Sinclair Rail Facility Site Specific Plan of Development.

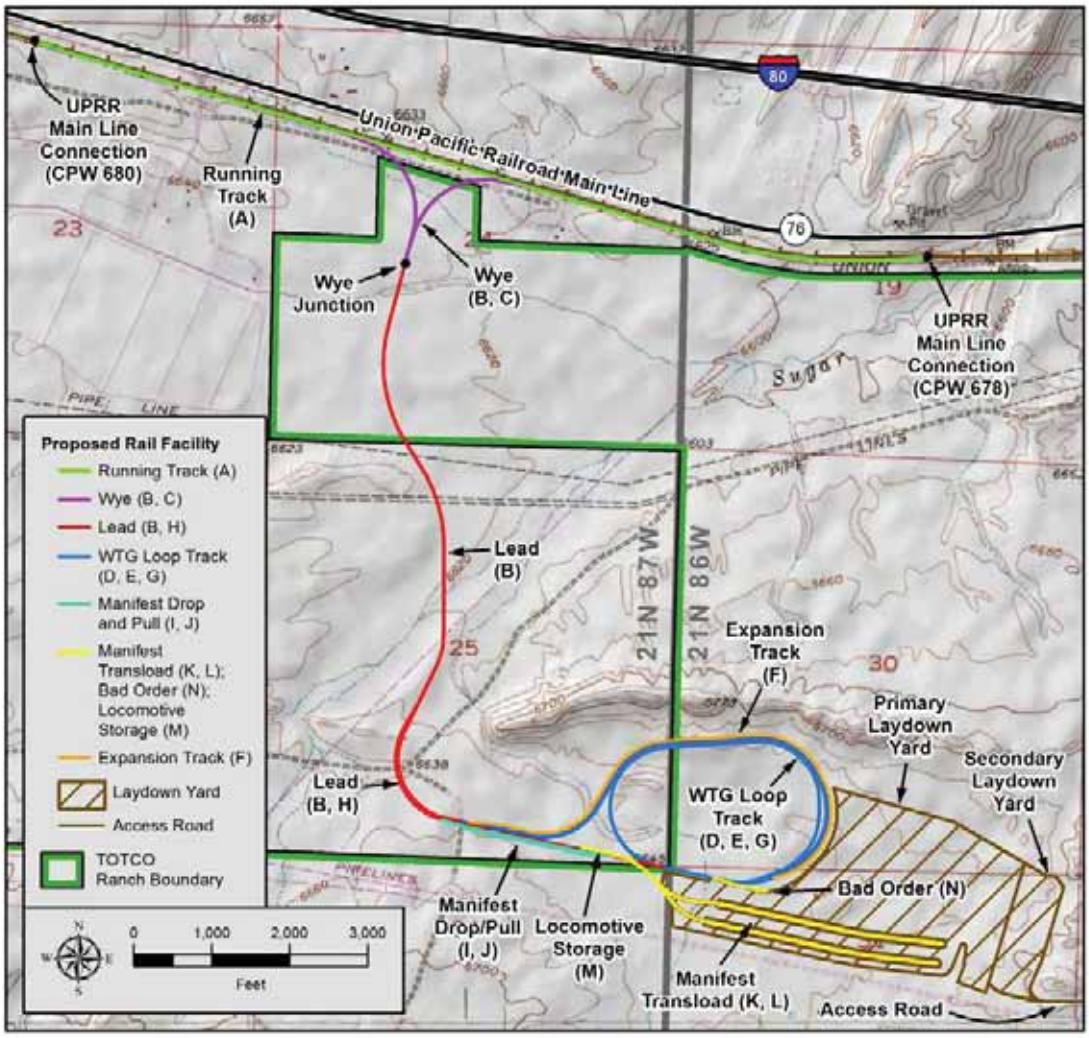

Figure 4. West Sinclair Rail Facility Layout

4.3 Roads

Materials and components that cannot be obtained on-site or by rail will be delivered by truck; these materials primarily consist of aggregate, sand, cement, and fly ash, many of which can be obtained locally or regionally along Interstate 80. Consistent with the transportation strategy, PCW will obtain these materials locally when possible, benefiting local businesses and reducing transportation distances. Some components cannot feasibly be obtained locally; these components will be delivered by long-distance trucking.

To determine transportation options for vehicles, PCW evaluated the location, condition, and physical and legal restrictions of existing roads in the vicinity of the CCSM Project Site, as described in Attachment A and shown in Figure 2. Generally, all of the roads evaluated are sufficient for workforce commuting purposes and other standard vehicles and loads. The majority of the deliveries entering and exiting the CCSM Project are expected to use Interstate 80 to access the CCSM Project North Entrance (Figure 3). PCW may make use of certain existing roads for material delivery, as detailed in Attachment A; however, the use is expected to be minimal.

To minimize the use of public roads for the delivery of materials and components, PCW proposes to construct, operate maintain and decommission the CCSM Project Haul Road that can be accessed from Interstate 80 Exit 221. The CCSM Project Haul Road is the primary route for all material and component delivery traffic to access the wind development areas (Figure 3). The Haul Road connects to Interstate 80 Exit 221 via the CIG Road (CR 407). The Haul Road connects the West Sinclair Rail Facility and the Road Rock Quarry to the wind development areas. Construction of the Haul Road minimizes the use of public roads for deliveries once they enter the CCSM Project Site. Details on the design of Phase I of the CCSM Project Haul Road are included in the Phase I Haul Road and Facilities Site Specific Plan of Development.

In addition to constructing the CCSM Project Haul Road, PCW proposes temporary improvements to Interstate 80 Exit 221, such as shoulder widening, to accommodate extra-long loads. The proposed improvements will be performed within the existing easements and will be removed at the end of CCSM Project construction.

5. Transportation Plan

Using the transportation requirements for the CCSM Project and the existing and proposed infrastructure, PCW developed a transportation plan to meet the objective of the CCSM Project transportation strategy, i.e. keeping deliveries internal to the CCSM Project. The off-site deliveries associated with the CCSM Project were allocated to a transportation mode, i.e. rail or truck, as shown in Table 3 and Table 4. Table 3 and Table 4 constitute the transportation plan for the CCSM Project.

Table 3. CCSM Project Off-Site Deliveries by Rail

Item	Units	2014	2015	2016	2017	PII Year 1	PII Year 2	PII Year 3	CCSM PROJECT TOTAL
Wind Turbine Components									
Nacelles	ea	0	0	243	257	0	243	257	1,000
Hubs	ea	0	0	162	171	0	162	171	666
Tower Sections	ea	0	0	810	856	0	810	856	3,332
Blades	ea	0	0	486	514	0	486	514	2,000
Manifest Items									
Rebar	tons	0	0	18,000	10,800	7,200	18,000	10,800	64,800
Steel	tons	0	0	325	200	0	100	100	725
Cable Reels	ea	0	0	1,290	1,068	800	527	384	4,069
Sub Transformers	ea	0	0	8	4	0	2	2	16
WTG Transformers	ea	0	0	219	231	0	219	231	900
Poles	ea	0	0	1,980	1,800	0	1,800	1,620	7,200
Junction Boxes	ea	0	135	364	281	256	401	229	1,666

Notes: 1. PII = Phase II of the CCSM Project
2. The material estimates presented for Phase II assume that a portion of the aggregate will be obtained on-site.

Table 4. CCSM Project Off-Site Deliveries by Truck (in quantities of material)

Item	Units	2014	2015	2016	2017	PII Year 1	PII Year 2	PII Year 3	CCSM PROJECT TOTAL
Wind Turbine Components									
Nacelles	ea	0	0	0	0	0	0	0	-
Hubs	ea	0	0	81	86	0	81	86	334
Tower Sections	ea	0	0	81	86	0	81	86	334
Blades	ea	0	0	243	257	0	243	257	1,000
Manifest Items									
Rebar	tons	0	9,000	2,000	1,200	800	2,000	1,200	16,200
Steel	tons	0	0	0	0	0	0	0	-
Cable Reels	ea	0	800	142	119	89	59	43	1,252
Sub Transformers	ea	0	0	0	0	0	0	0	-
WTG Transformers	ea	0	0	24	26	0	24	26	100
Poles	ea	0	0	220	200	0	200	180	800
Junction Boxes	ea	0	135	40	31	29	45	26	306
Construction Material									
Road Cap	cu yd	64,000	127,000	39,000	25,000	62,000	25,000	33,000	375,000
Road Stabilization	cu yd	2,500	17,300	6,400	3,100	5,800	6,200	2,600	43,900
Rail Ballast	cu yd	-	51,000	-	-	-	-	-	51,000

Item	Units	2014	2015	2016	2017	PII Year 1	PII Year 2	PII Year 3	CCSM PROJECT TOTAL
Rail Sub-Ballast	cu yd	-	148,000	-	-	-	-	-	148,000
Laydown Yard Aggregate	cu yd	3,000	126,000	-	-	-	-	-	129,000
Substation Aggregate	cu yd	-	28,000	12,000	-	6,000	6,000	-	52,000
Thermal Backfill	cu yd	-	18,000	46,000	28,000	22,500	45,000	22,500	182,000
Rip-Rap	cu yd	9,100	39,500	20,300	9,800	15,100	19,300	8,100	121,200
Aggregate – Concrete	cu yd	700	52,500	103,300	56,400	48,700	114,200	37,800	413,600
Sand	cu yd	300	32,900	65,400	35,500	31,500	72,400	24,200	262,200
Cement	cu yd	-	16,286	36,492	22,619	14,778	37,849	22,770	150,794
Fly Ash	cu yd	-	2,077	4,654	2,885	1,885	4,827	2,904	19,232
Water (from off-site)	ac ft	26	22	0	0	0	0	0	48
Construction Equipment									
Equipment	ea	88	342	437	431	88	342	437	2,165
Trailers	ea	25	25	25	25	25	25	25	175

Notes: 1. PII = Phase II of the CCSM Project
2. The material estimates presented for Phase II assume that a portion of the aggregate will be obtained on-site.

6. Traffic Study

Following development of the CCSM Project transportation plan (section 5), PCW completed a traffic study (Attachment B) to identify traffic impacts from the CCSM Project. A summary of the traffic study is provided in this section. To evaluate the transportation plan in the traffic study, off-site deliveries occurring by truck were converted into equivalent truckloads (Table 5).

The traffic study for the CCSM Project estimates a traffic profile (deliveries and commuting) for construction, operations and maintenance, and decommissioning based on the delivery schedule and workforce requirements. The peak traffic levels are identified and compared to existing traffic levels on roadways and intersections in the vicinity of the CCSM Project Site. The traffic study evaluates the use of the existing and the new or improved infrastructure described in section 4.

Most of the intersections evaluated in the CCSM Project traffic study are classified as passive two-way stop controlled, meaning stop signs are used to control traffic rather than traffic signals. Evaluation of the traffic profiles and peak traffic levels for the CCSM Project determined instances during construction, where traffic generated by the CCSM Project may exceed the capacity of the nearby road network causing the level of service to be degraded at some of these passive intersections. PCW has determined a number of feasible traffic control measures to reduce the effect on these intersections during peak traffic periods when these impacts are anticipated to occur.

During peak traffic periods, PCW will use temporary active traffic control measures, such as flaggers or temporary traffic signals, as needed to reduce wait times for public traffic to acceptable levels. PCW will also use flaggers to control traffic when extra-long or extra-wide loads are delivered to the CCSM Project Site, and where the Haul Road crosses public roads. If needed, PCW will also stagger the shift start and end times for the labor force on the CCSM Project, e.g. PCW would divide the shift into two equal groups with the second starting and ending one hour later than the first.

The effectiveness of staggering the shift times was analyzed in the traffic study and resulted in significant improvements to impacted intersections. The effectiveness of active traffic control measures, such as flaggers, cannot be quantified within the framework of the traffic study; however, practical experience indicates that both flaggers and temporary traffic signals are effective in controlling traffic and reducing impacts. In fact, the ability of flaggers to be flexible and adaptive in traffic management by allowing longer queues of vehicles to clear intersections as needed is generally superior to the addition of temporary timed traffic lights.

The traffic study does not indicate that traffic control measures will be needed during operations and maintenance or decommissioning. With the implementation of the traffic control measures described above during construction, PCW does not anticipate significant impacts to public traffic.

Table 5. CCSM Project Off-Site Deliveries by Truck (in truckloads)

Item	2014	2015	2016	2017	PII Year 1	PII Year 2	PII Year 3	CCSM PROJECT TOTAL
Local Truck Deliveries								
Road Cap	3,114	6,178	1,897	1,216	3,016	1,216	1,605	18,243
Road Stabilization	122	842	311	151	282	302	126	2,136
Rail Ballast	0	2,068	0	0	0	0	0	2,068
Rail Sub-Ballast	0	7,200	0	0	0	0	0	7,200
Laydown Yard Aggregate	146	6,130	0	0	0	0	0	6,276
Substation Aggregate	0	1,362	584	0	292	292	0	2,530
Thermal Backfill	0	778	1,989	1,211	973	1,946	973	7,870
Rip-Rap	332	1,441	741	358	551	704	296	4,422
Aggregate – Concrete	26	1,986	3,909	2,134	1,843	4,321	1,430	15,650
Sand	13	1,423	2,828	1,535	1,362	3,131	1,046	11,338
Water	700	583	0	0	0	0	0	1,283
TOTAL LOCAL TRUCK DELIVERIES	**4,453**	**29,991**	**12,259**	**6,605**	**8,319**	**11,912**	**5,477**	**79,015**
Long Distance Truck Deliveries								
Hubs	0	0	81	86	0	81	86	334
Tower Sections	0	0	81	86	0	81	86	334

Item	2014	2015	2016	2017	PII Year 1	PII Year 2	PII Year 3	CCSM PROJECT TOTAL
Blades	0	0	243	257	0	243	257	1,000
Rebar	0	360	80	48	32	80	48	648
Cable Reels	0	200	36	30	22	15	11	313
Poles	0	0	44	40	0	40	36	160
WTG Transformers	0	0	24	26	0	24	26	100
Junction Boxes	0	135	40	31	29	45	26	306
Cement	0	821	1,839	1,140	745	1,908	1,148	7,600
Fly Ash	0	151	339	210	137	351	211	1,400
Equipment	88	342	437	431	88	342	437	2,165
Trailers	25	25	25	25	25	25	25	175
TOTAL LONG DISTANCE TRUCK DELIVERIES	**113**	**2,034**	**3,269**	**2,410**	**1,078**	**3,235**	**2,397**	**14,535**

Notes: 1. PII = Phase II of the CCSM Project
2. The material estimates presented for Phase II assume that a portion of the aggregate will be obtained on-site.

Attachment A. Transportation Infrastructure Assessment

Table of Contents

1.0 Existing Infrastructure 3
1.1 Rail 3
1.2 Roads 5
1.2.1 Condition and Use 6
1.2.2 Restrictions 10
1.2.3 Permits 11

2.0 Proposed Infrastructure and Improvements 12
2.1.1 West Sinclair Rail Facility 12
2.1.2 CCSM Project Haul Road 13
2.1.3 Temporary Improvements to Exit 221 14

List of Figures

Figure 1. Union Pacific Mainline Corridors 4
Figure 2. Existing Roadway Network 6
Figure 3. Typical Diamond and Trumpet Interchange Schematics 7
Figure 4. WY71/CR401 Road Conditions 9
Figure 5. West Sinclair Rail Facility Layout 13
Figure 6. New CCSM Project Infrastructure 14
Figure 7. Interstate 80 Exit 221 Temporary Improvements 15

List of Tables

Table 1. Union Pacific Network Corridor Line Categories 4

1.0 Existing Infrastructure

To support the CCSM Project and identify transportation infrastructure needs, PCW analyzed the existing transportation infrastructure in the vicinity of the CCSM Project, specifically the Union Pacific Railroad (UPRR), Interstate 80, and other surrounding roads. PCW reviewed the location, condition, and current use of the infrastructure and identified potential uses. The existing transportation infrastructure in the vicinity of the CCSM Project is described below.

1.1 Rail

Rail is a key component of PCW's transportation strategy. The Union Pacific "Overland Route" corridor, the original "Transcontinental Railroad" completed in 1869 is located along the northern boundary of the CCSM Project Site. The location of the railroad adjacent to the CCSM Project Site presents a unique opportunity for PCW to minimize transportation impacts by delivering a portion of the CCSM project components and materials by train.

The Overland Route is a dual-track mainline corridor representing the primary east-west link between the West Coast and Chicago with over 100 trains passing per day. Many of these trains are unit trains carrying coal (up to 8,000 feet long) or intermodal trains carrying overseas containers (up to 10,000 feet long). The speed limit for trains on the tracks between Sinclair and Rawlins is primarily 70 mph, with a 20 mph limit through a portion of Rawlins. The grade is gentle and increases in elevation east to west by approximately 160 feet between Sinclair and Rawlins. There are also three sidings in this area for holding trains or railcar management.

Union Pacific has designated each of its mainline corridors into one of three categories for industry access under their Network Corridor Line Categorization system, as summarized in Table 1 and displayed in Figure 1. The main line near the CCSM Project Site is classified as a "Restricted Access Corridor." This is the most restrictive category, requiring new industry track facilities to invest in significant infrastructure improvements including new switches, signals, and tracks. These rail system upgrades ensure that any new industry track facilities do not hinder existing railroad operations or traffic.

To meet Union Pacific operational requirements, sufficient running track parallel to the main line must be constructed in order for arriving trains to safely decelerate into and for departing trains to accelerate from an industry track facility.

While the main line in the vicinity of the CCSM Project Site is heavily used, Union Pacific has indicated that additional trains used to deliver project components would not cause any significant impacts to the system. PCW and Union Pacific have estimated that peak rail deliveries to the CCSM Project Site would still be less than a 0.2% increase to daily rail traffic.

Table 1. Union Pacific Network Corridor Line Categories

	Restricted Access	Controlled Access	Allowable Access
Volume	High Volume	Medium Volume	Low Volume
Priority	High Priority	Medium Priority	Low Priority
Stopping	No Stopping	Limited Stopping	Many Stops

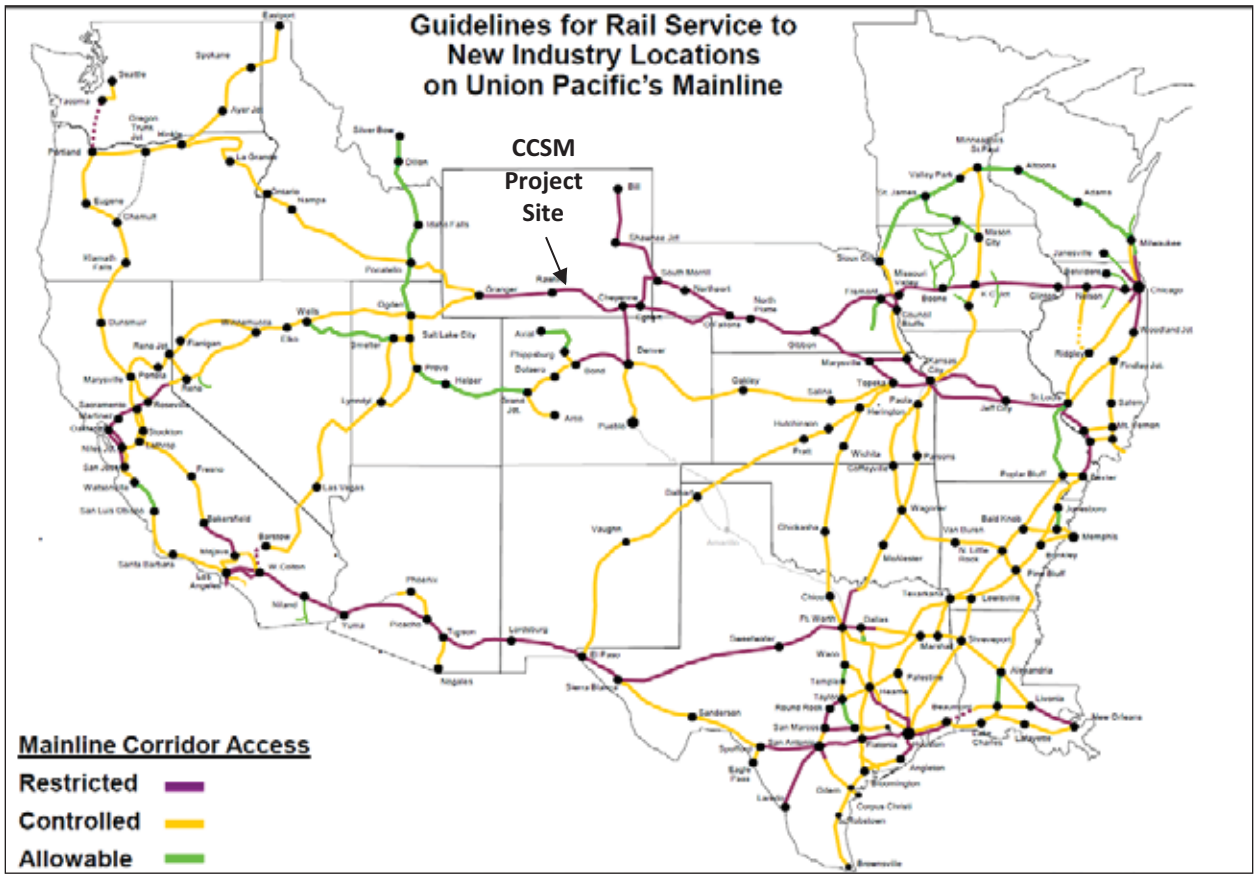

Figure 1. Union Pacific Mainline Corridors

PCW conducted a survey of existing rail facilities in the region surrounding the CCSM Project Site. To evaluate the suitability of the existing rail facilities, PCW considered that: (1) many of the wind turbine components will arrive in dedicated unit trains of up to 6,500 feet in length; (2) the CCSM Project has a limited annual working season that requires components to arrive in a shortened window; (3) components may arrive from up to three manufacturers during the working season; and (4) to safely receive, store, unload, and release unit trains requires in excess of 26,000 feet (equivalent to 4 unit trains) of track.

PCW surveyed, identified, and evaluated the existing rail facilities in the region as summarized below:

- **Rawlins:** There is an existing rail yard in Rawlins that is used primarily for crew changes and fueling. There is insufficient track or space at that location to support the CCSM Project. Use of this facility is not feasible.
- **Sinclair Refinery:** The refinery has a small, privately owned spur that is inadequate in availability or infrastructure for the CCSM Project. Use of this facility is not feasible.
- **Laramie:** This rail yard had sufficient space to take at least some CCSM Project deliveries; however, the yard is 100 miles from the CCSM Project Site and would require long-distance trucking.
- **IDS (Casper):** This is a privately owned and operated transload facility located 135 miles away from the CCSM Project Site, the use of this facility for the CCSM Project would require expansion and long-distance trucking.

All existing rail facilities in the region surrounding the CCSM Project Site were either too small to be used by the CCSM Project or would require significant expansion and long-distance trucking; therefore, PCW determined that none of these facilities meet the needs of the CCSM Project.

1.2 Roads

PCW evaluated the location and condition of the existing roads that can be used to access the CCSM Project. The existing routes that may be used by the CCSM Project are described below and shown in Figure 2. The conditions of the roadways surrounding the Project were initially reviewed by PCW in 2009, and have been periodically observed since.

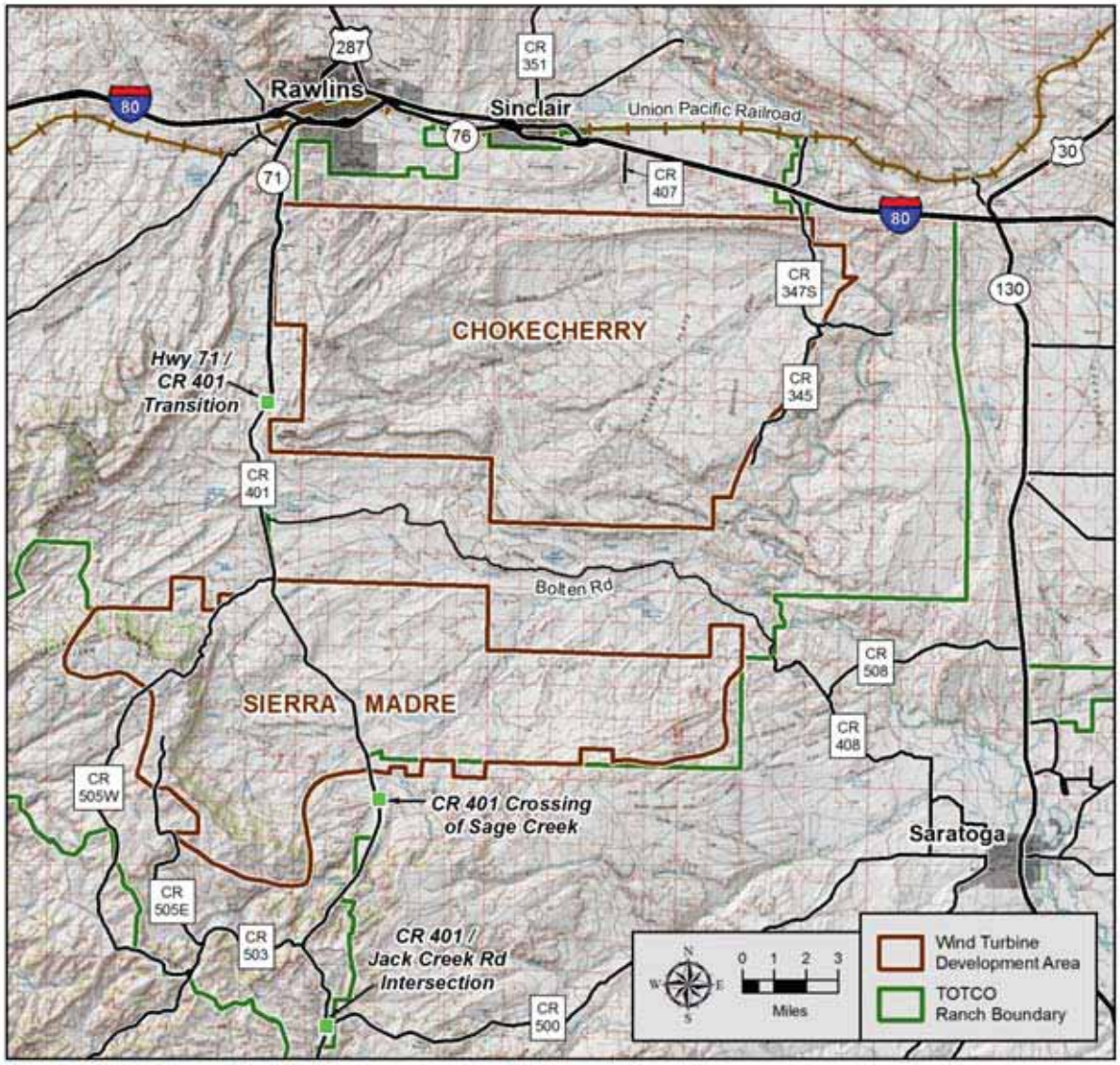

Figure 2. Existing Roadway Network

1.2.1 Condition and Use

Interstate 80

Interstate 80 is a four-lane divided highway with 12-foot lanes, approximately 8-foot shoulders, and is the primary east-west route through southern Wyoming. In the vicinity of the CCSM Project Site, Interstate 80 has one exit west of Rawlins, (exit 209), three exits to Rawlins (exits 211, 214, and 215), two exits to Sinclair (exits 219 and 221) , and an additional exit north of the CCSM Project Site at Fort Steele (exit 228). Walcott Junction (exit 235) is located east of the CCSM Project Site and leads to Saratoga via Wyoming Highway 130 (WY130). All of the interstate exits are diamond interchanges with the exception of exit 215 at Rawlins, which is a trumpet interchange with free movements in all directions (Figure 3). The on- and off-ramps do not typically have acceleration or deceleration lanes on the interstate, but the ramps are

typically at least 1,700 feet, which is an adequate length to allow vehicles to accelerate or decelerate. Interstate 80 has asphalt pavement that is in good condition; due to traffic and weather conditions, Interstate 80 surface improvements occur often to maintain the condition.

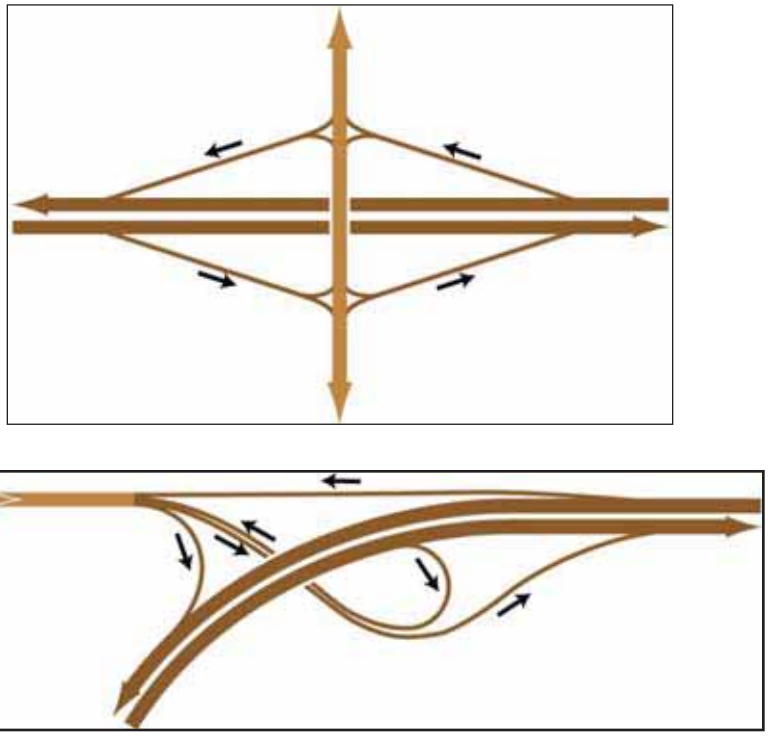

Figure 3. Typical Diamond and Trumpet Interchange Schematics

US287

United States Route 287 (US287) is a major route that carries traffic north and south through Rawlins. The road is a two-lane undivided paved highway with auxiliary lanes through Rawlins with lane widths of at least 12 feet and shoulder widths varying from 1 foot to 4 feet. This road intersects with multiple streets carrying both residential and commercial traffic through town. At the northern end of Rawlins, US287 divides into a business route and a bypass, with the eastern section carrying the bypass traffic that leads to Interstate 80 exit 214 and the western section designated as the business route that leads through town and to Interstate 80 exit 211. From exit 214 eastbound, Interstate 80/US287 is a shared route until US287 splits off in Laramie, Wyoming.

WY130

Wyoming Highway 130 (WY130) is a two-lane undivided highway east of the CCSM Project Site with 12-foot lanes and typically 4-foot shoulders. The segment of this highway from Saratoga to Interstate 80 is a north-south rural route with high speeds, low volumes, and an asphalt surface that is in good condition. This highway does not provide direct access to the CCSM Project Site, but may be used as a commuter route for workers residing in Saratoga.

WY76

Wyoming Highway 76 (WY76) is a two-lane undivided highway that is the primary non-interstate connection between Rawlins and Sinclair. This highway has an asphalt surface in good condition. WY76 will be used by Union Pacific to access their right of way during construction activities associated with the CCSM Project's West Sinclair Rail Facility and may be used as a commuter route for workers residing in Rawlins.

WY71/CR401 (Sage Creek Road)

Wyoming Highway 71 (WY71)/ Carbon County Road 401 (CR401), referred to locally as Sage Creek Road or the South Highway, is a primarily north-south route that is located west of the Chokecherry wind development area and that bisects the Sierra Madre wind development area. WY71 begins in Rawlins just north of Interstate 80 exit 214 and travels along the south side of Rawlins for the first mile in an east-west direction. This section of WY71 does not provide direct access to residences; however, there are collector roads (Davis Street, Jackson Street and Washington Street) that intersect WY71 along the first mile. WY71 then passes under Interstate 80 and primarily becomes a north-south route for the remainder of its length. South of Interstate 80, WY71 is a rural highway with a typical posted speed limit of 65 miles per hour. There are intermittent residential driveways that provide direct access to WY71, as well as multiple county roads, two-track roads, and gated accesses to pastures and fields. There are segments of WY71 with steep vertical curves and limited vertical and horizontal sight distance. Adjacent to the Chokecherry wind development area, state maintenance of the road ends, and the road becomes CR401. CR401 is rural with minimal traffic. The lane widths are typically 12 feet along WY71, and the shoulders vary by section from no shoulders to 3-foot wide shoulders.

WY71/CR401 has various pavement conditions (see Figure 4), with portions being reconstructed in 2012 and 2013. Approximately the first 1.5 miles of WY71 (from Higley Boulevard to the Interstate 80 overpass) is asphalt in good condition. The second segment of WY71 (from the Interstate 80 overpass to the end of WY71 over a distance of 9.5 miles) is a new overlay of asphalt in excellent condition. The remainder of this road (CR401) is being reconstructed into a gravel road with a wider overall driving surface (approximately 40 feet) and updated drainage features. The first segment of CR401 (from the WY71/CR401 transition point to the Sage Creek crossing) was reconstructed in 2012 and is currently in good condition. The second segment of CR401 (from the Sage Creek crossing to at least the intersection with CR500) is currently undergoing reconstruction, and is expected to be in good condition prior to the start of CCSM Project construction.

Figure 4. WY71/CR401 Road Conditions

The CCSM Project's Haul Road will cross CR401 at one location (within the first segment of CR401 described above). Additionally, WY71/CR401 will likely be used as a commuter route for workers residing in Rawlins or working in the Sierra Madre wind development area.

CR505W (Miller Hill Road) and CR505E

Carbon County Road 505W (CR505W), commonly referred to as Miller Hill Road, is the primary access route from CR401 to the top of Miller Hill. It is a low-use gravel road in fair condition. The portion of the road within the CCSM Project Site includes a steep section (approximately 17% grade), and is generally closed due to snow drifts during the winter and spring months.

Carbon County Road 505E (CR505E) is an unsurfaced road on top of Miller Hill. The road dead ends and has very low use.

CR407 (CIG Road)

At Interstate 80 exit 221, Carbon County Road 407 (CR407), commonly referred to as CIG Road, begins south of Interstate 80 (where WY76 ends), travels east and then south and provides access to the Colorado Interstate Gas Energy Plant (CIG Plant). The CR407 from Interstate 80 to CIG Plant (approximately 2.25 miles) has 12-foot lanes with no shoulders, is paved and is in fair to good condition. This portion of CR407 is maintained by both the Wyoming Department of Transportation (WYDOT) and Carbon County. South of the CIG Energy Plant, CR407 ends. PCW anticipates building the CCSM Project's North Road starting at the south end of CR407 to provide access to the North Entrance to the CCSM Project Site. CCSM Project traffic coming in the North Entrance would therefore use CR407.

CR347

Interstate 80 exit 228 (Fort Steele) is near the northern edge of the Chokecherry wind development area. This interchange connects to Carbon County Road 347 (CR347), which travels south along the North Platte River and leads into the Chokecherry wind development area. CR347 is unpaved, less than two lanes wide, and has several instances of steep grades and sharp turns. The use of CR347 for CCSM Project traffic would likely require extensive improvements; therefore, PCW does not anticipate using CR347.

CR500

Carbon County Road 500 (CR500), referred to as Jack Creek Road, is a two-lane gravel road connecting CR401 to Saratoga. Portions of this road are in fair condition, but the condition of the road tends to vary over the course of the year. PCW does not anticipate using CR500 due to concerns regarding its condition and maintenance.

CR408 and CR508

Carbon County Road 408 (CR408) and Carbon County Road 508 (CR508) are two-lane gravel roads that connect Saratoga to the eastern boundary of the CCSM Project Site. There will not be a CCSM Project entrance on the eastern boundary of the CCSM Project Site; therefore, PCW does not expect the CR408 or CR508 will be used by CCSM Project traffic and did not evaluate these roads.

1.2.2 Restrictions

To further evaluate the suitability of the existing road infrastructure for use by the CCSM Project, PCW evaluated the restrictions for use of the roadways in the vicinity of the CCSM Project Site. Road restrictions are described below.

Physical

Physical restrictions are defined as limits to the width, height, or length of trucks or loads. Turbine loads are the most likely to exceed physical restrictions for the CCSM Project. PCW has not yet selected final turbine models for use on the CCSM Project, so to evaluate physical restrictions PCW reviewed the range of candidate turbine models to develop the following maximum physical dimensions:

Height: 18’0”
Width: 17’7”
Length: 180’11”

On WY71, there is an existing underpass at Interstate 80 with a maximum clearance of 15 feet 2 inches. This limitation would likely effect WTG tower base sections and other extra-large components. PCW also predicts that several hills and some curves on WY71/CR401 will be outside the requirements of many wind turbine vendors’ transport guidelines. It is not anticipated that WY71 will be used for large deliveries.

Within Rawlins, there are restrictions for trucks on Washington Street at the UPRR underpass due to a clearance of less than 12 feet. No vehicles other than passenger vehicles or pickup trucks are anticipated on this route.

On 6th Street in Rawlins, there is a bridge crossing the UPRR. There is a truck restriction in place for the bridge that allows local deliveries only. Both the underpass and bridge have relatively

narrow lanes with minimal or no shoulders and are not viable routes for CCSM Project vehicles other than passenger vehicles or pickup trucks.

Weight

In the vicinity of the CCSM Project Site, there are no bridges along or over Interstate 80 or on WY71 that have posted weight restrictions. An annual bridge condition report prepared by WYDOT District 1 in 2009 indicates the WY76 bridge over Interstate 80 at exit 221 (Sinclair) is rated as "fair" overall. Deck, superstructure, and substructure are all rated as "good." The posted status of the bridge is "Open, no restriction." PCW will conduct bridge loading and equivalent single axle load (ESAL) calculations and provide any other pertinent information to determine the suitability of the bridge for CCSM Project deliveries, as required to obtain approval from WYDOT for use of the bridge. This analysis will likely occur during the WYDOT permitting process described below.

Timing

PCW is not aware of any timing-based restrictions on the use of the roads discussed above.

Load Type Restrictions

Load type restrictions are not anticipated for the vast majority of the CCSM Project loads. PCW is not aware of any CCSM project loads that are restricted; however, it is possible that some loads, such as fuel or dust mitigation chemicals, may have permitting requirements and route restriction based on load-type.

1.2.3 Permits

Transportation permits will likely be required for some CCSM Project loads and access roads. These permits may include restrictions. Common permit requirements that may apply to the CCSM Project loads, access roads and highways are described below.

Access Permits

PCW anticipates that the CCSM Project will require access at locations along CR401. New access points along Carbon County roads require review by the Carbon County's Department of Roads and Bridges. This review, patterned after the WYDOT access permitting process, requires that a new access point likely to see more than 50 trips per day have a traffic study performed. The data required for this permit is included in the CCSM Project traffic study.

WYDOT Permits

As indicated above, some of the vehicles transporting equipment to and from the CCSM Project Site are anticipated to be oversized. Vehicles traveling on the interstate and state highway system will comply with WYDOT standards for oversize loads.

Wyoming issues permits for oversize and heavy-load vehicles that are up to 18 feet in width, 17 feet in height, and 90 feet in length for single trailers or 110 feet in length for double trailers. The weight limit for heavy-load vehicles is 150,000 pounds gross vehicle weight (additional guidelines are identified on the state's website). Vehicles that exceed these requirements will

require additional permits to travel on the interstate and state highway system. Additional requirements and restrictions such as escort vehicles, travel hours (i.e. daylight), and convoy size may apply and will be determined during the permitting process.

2.0 Proposed Infrastructure and Improvements

Following evaluation of the existing transportation infrastructure in the vicinity of the CCSM Project, PCW proposed new infrastructure, as well as upgrades to existing infrastructure, to accommodate the CCSM Project.

2.1.1 West Sinclair Rail Facility

To meet the needs of the CCSM Project, PCW proposes to construct, operate, maintain and decommission a new rail facility, the West Sinclair Rail Facility. The West Sinclair Rail Facility will connect to the UPRR main line between Rawlins and Sinclair, and will include a running track and wye junction. Trains delivering CCSM Project components and materials will travel along a lead track to the rail loop and various unloading tracks. A laydown yard will be located within the Rail Facility adjacent to the unloading tracks. An overview of the West Sinclair Rail Facility is included in Figure 5 below. Additional information on the design and anticipated operation of the West Sinclair Rail Facility is included in the West Sinclair Rail Facility Site Specific Plan of Development.

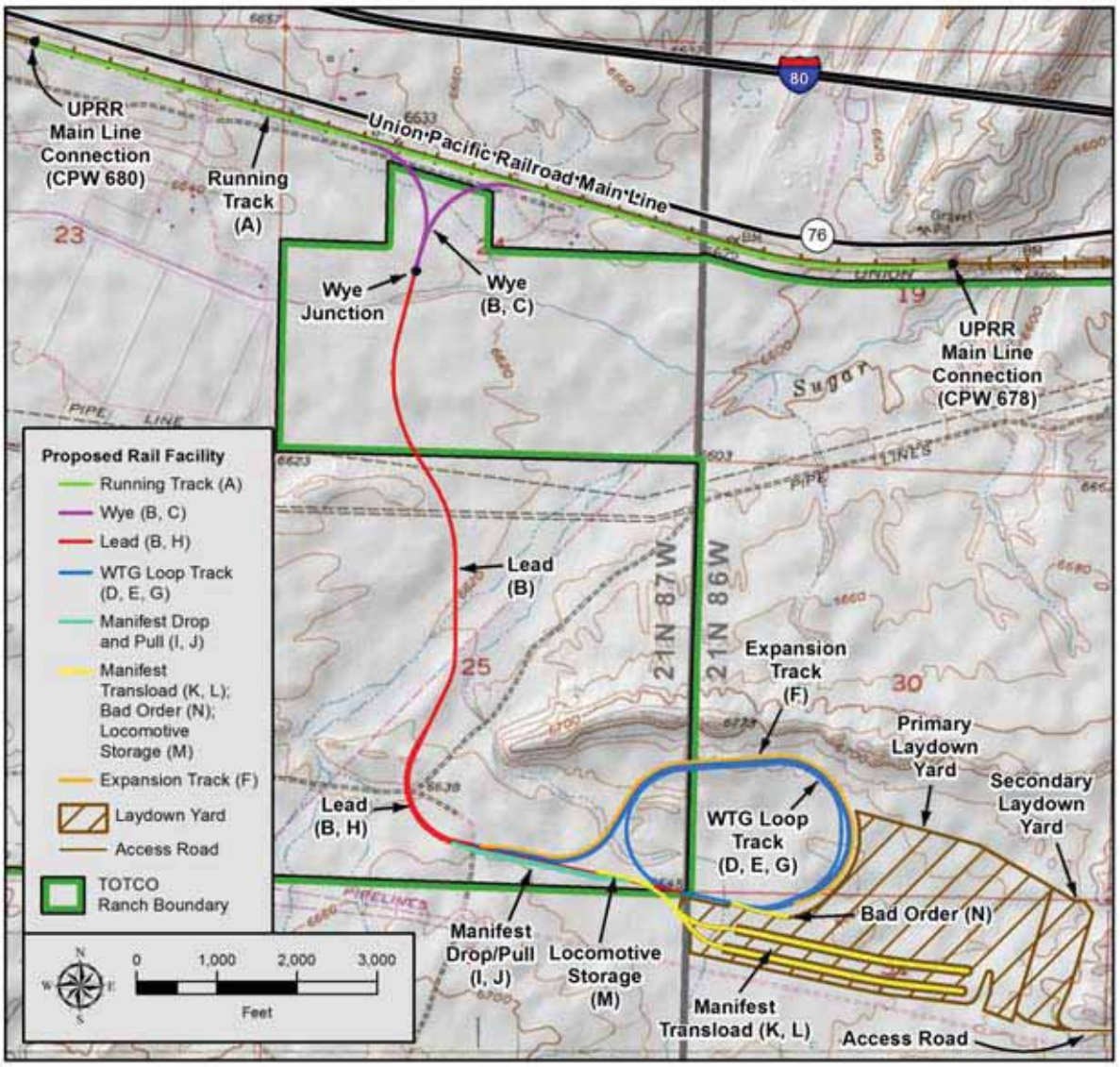

Figure 5. West Sinclair Rail Facility Layout

2.1.2 CCSM Project Haul Road

To keep CCSM Project traffic internal to the extent possible, PCW proposes to construct, operate, maintain, and decommission the CCSM Project Haul Road. The Haul Road is the primary access route for all delivery traffic to the various wind development areas. The Haul Road is accessed using Interstate 80 Exit 221 and CIG Road. The Haul Road connects the West Sinclair Rail Facility and the Road Rock Quarry to the Chokecherry and Sierra Madre wind development areas. The Haul Road minimizes the use of public roads for delivery of materials once they arrive at the CCSM Project Site. The Haul Road crosses CR 401 (Sage Creek Road) in a single location and follows portions of CR505W and CR 407 (Figure 6). Additional information

on the design of the CCSM Project Haul Road is included in the Phase I Haul Road and Facilities Site Specific Plan of Development.

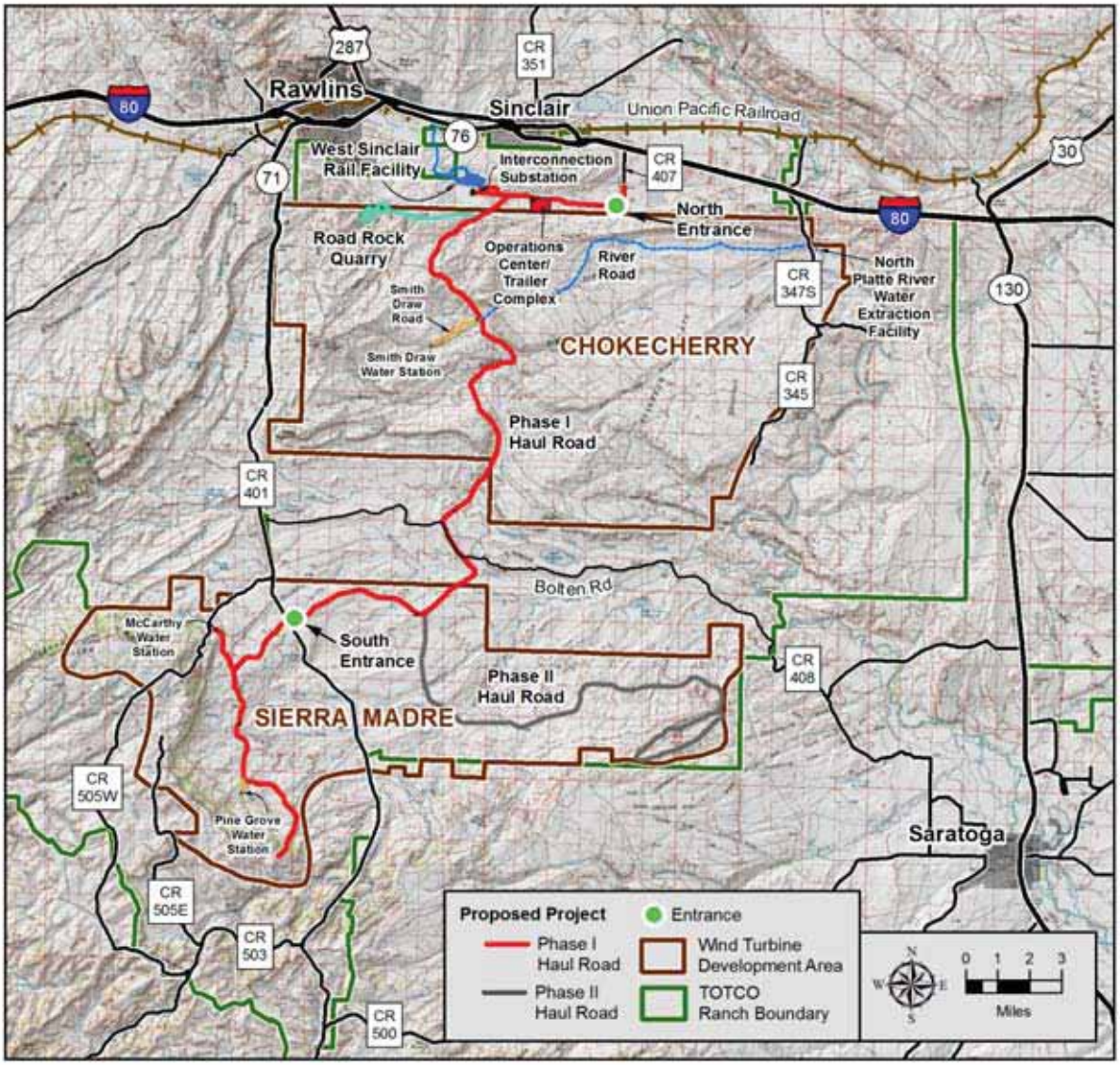

Figure 6. New CCSM Project Infrastructure

2.1.3 Temporary Improvements to Exit 221

While no permanent changes to Interstate 80 Exit 221 are required for the CCSM Project, PCW anticipates that some temporary physical changes may be required to deliver extra-long loads. PCW anticipates shoulder widening of the westbound off-ramp to allow a wider turn radius to the south, and widening of the eastbound off-ramp to avoid the jog onto CIG Road (Figure 7). Also, some minor widening of the 90-degree turn in CIG Road will be beneficial for the extra-long trucks. All of these improvements can be performed within the existing easements for the

public roads, and will be removed at the end of CCSM Project construction. PCW will obtain all necessary permits from WYDOT and Carbon County before installing temporary improvements.

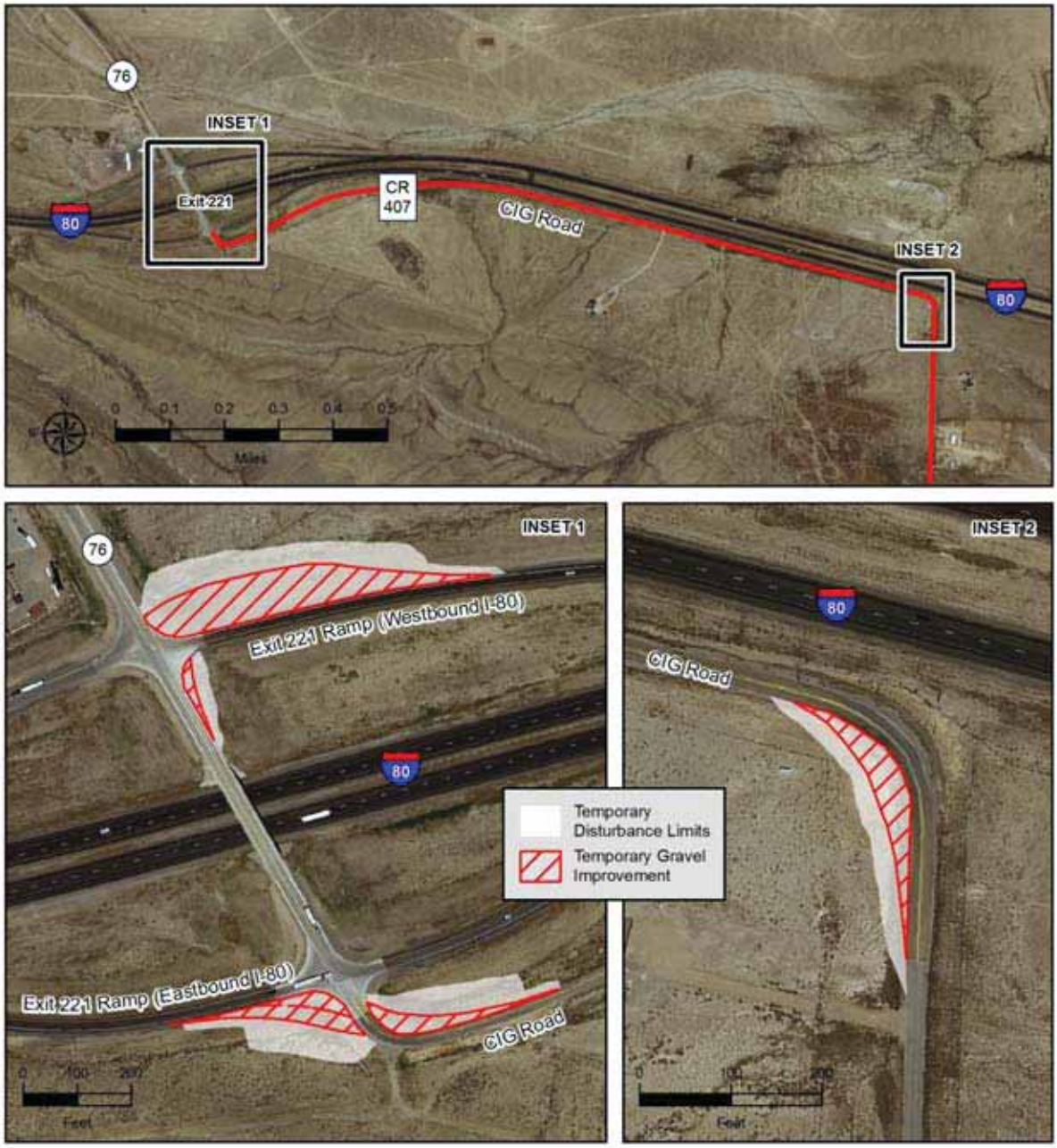

Figure 7. Interstate 80 Exit 221 Temporary Improvements

Attachment B. Traffic Study

Table of Contents

1.0 Introduction 5

2.0 Existing Traffic 6
2.1 Volume 6
2.2 Operating Conditions 8

3.0 Construction Traffic Effects 10
3.1 Construction Traffic 10
3.1.1 Deliveries 10
3.1.2 Truckloads 11
3.1.3 Labor Force 12
3.1.4 Other 12
3.2 Daily Traffic Projection 14
3.3 August 2015 Traffic Case 17
3.3.1 Trip Generation 17
3.3.2 Trip Distribution 17
3.3.3 Trip Assignment 17
3.3.4 Analysis Results 18
3.4 July 2016 Traffic Case 19
3.4.1 Trip Generation 19
3.4.2 Trip Distribution 19
3.4.3 Trip Assignment 19
3.4.4 Analysis Results 19
3.5 July 2017 Traffic Case 20
3.5.1 Trip Generation 21
3.5.2 Trip Distribution 21
3.5.3 Trip Assignment 21
3.5.4 Analysis Results 21

4.0 Operations and Maintenance Traffic Effects 22
4.1 Operations and Maintenance Traffic 22
4.1.1 Types of Trips 23
4.1.2 Labor Force 23
4.2 Operations and Maintenance Typical Year Traffic Case 23
4.2.1 Trip Generation 23
4.2.1 Trip Distribution 23
4.2.2 Trip Assignment 23
4.2.3 Analysis Results 24

5.0 Decommissioning Traffic Effects 24
5.1 Decommissioning Traffic 25
5.1.1 Material/Component Requirements 25

5.1.2 Labor Force 26
5.2 Decommissioning Year Two Traffic Case 27
5.2.1 Trip Generation 27
5.2.2 Trip Distribution 28
5.2.3 Trip Assignment 28
5.2.4 Analysis Results 29

6.0 Potential Mitigation Options 29
6.1.1 Active Traffic Control 30
6.1.2 Shifting Traffic to Off-Peak Times 31

7.0 References 32

List of Tables

Table 1. Daily Count Data 7
Table 2. LOS Criteria for Signalized and TWSC Intersections 8
Table 3. Public Intersection LOS Analysis – Existing Conditions (2008) 9
Table 4. Percent of Workforce By Entrance 14
Table 5. Total Daily Traffic Projection – Phase I Construction 15
Table 6. Total Daily Traffic Projection – Phase II Construction 16
Table 7. Public Intersection LOS Analysis – August 2015 Peak 18
Table 8. Public Intersection LOS Analysis – July 2016 Peak 20
Table 9. Public Intersection LOS Analysis – July 2017 Peak 22
Table 10. Public Intersection LOS Analysis – Operations 24
Table 11. Total Truckloads of Project Decommissioning Material 26
Table 12. Peak Decommissioning Labor Force by Month 27
Table 13. Total Daily Traffic Projection – Decommissioning 28
Table 14. Public Intersection LOS Analysis – Decommissioning 29
Table 15. Level of Service Improvements Due To Mitigation 31

List of Figures

Figure 1. CCSM Project North Entrance 13
Figure 2. CCSM Project South Entrance 13

Acronym List

ADT	average daily traffic
CCSM	Chokecherry and Sierra Madre
CCSM Project	Chokecherry and Sierra Madre Wind Energy Project
EIS	Environmental Impact Statement
HCM	Highway Capacity Manual
LOS	level of service
pc/h/ln	passenger cars/hour/lane
PCW	Power Company of Wyoming LLC
ROD	Record of Decision
TMC	turning movement counts
TRB	Transportation Research Board
TWSC	two-way stop controlled
WYDOT	Wyoming Department of Transportation

1.0 Introduction

PCW studied traffic on public roads in the vicinity of the CCSM Project Site to identify potential impacts from construction, operations, maintenance and decommissioning. This traffic study accounts for:

- Existing traffic levels;
- CCSM Project deliveries and workforce commuting;
- PCW's transportation pan; and
- New and improved infrastructure proposed for the CCSM Project.

To complete the traffic analysis, traffic profiles were created and reviewed for the peak years during construction, operations, maintenance and decommissioning of the CCSM Project. The CCSM Project peak years are estimated to be the following:

- 2015 (Construction Year Two): peak of construction traffic before the West Sinclair Rail Facility begins operations
- 2016 (Construction Year Three): peak of construction traffic with the West Sinclair Rail Facility in operation, and when most of the workforce traffic is using the CCSM Project South Entrance
- 2017 (Construction Year Four): peak of construction traffic with the West Sinclair Rail Facility in operation, and when most of the workforce traffic is using the CCSM Project North Entrance
- Operations and Maintenance Typical Year: significant peaks are not anticipated during operations and maintenance
- Decommissioning Year Two: peak of decommissioning traffic

Following establishment of the CCSM Project peak years, peak traffic hours were identified and evaluated. A common method for evaluating the effectiveness of transportation infrastructure against traffic volumes is by level of service (LOS). Defined within the *Highway Capacity Manual* (HCM) (TRB 2010), the LOS rating system is a measure of motorist perception of travel time, traffic density, and delay. Ratings range from LOS A (free flow, very low density, no delays) to LOS F (highly restricted flow, very high density, significant delays). Evaluation of the peak traffic hours for the CCSM Project determined instances during construction where traffic generated by the CCSM Project may exceed the capacity of the nearby road network causing the level of service at some intersections to exceed LOS D. As such, PCW identified methods for mitigating these instances. Outside of peak hours, traffic will be far lower and is not expected to change current conditions or levels of service; therefore, off-peak traffic mitigation is not necessary.

In determining traffic effects of the CCSM Project, this traffic study evaluates only the traffic directly generated by the CCSM Project. Traffic caused indirectly by the CCSM Project due to induced businesses or other socioeconomic effects is not included due to the uncertainty of what that indirect traffic may be. However, while the traffic study focuses only on direct effects, it was designed to be conservative. The study assumes that workers commuting to and

from the CCSM Project Site will commute during existing peak hours and that the construction schedule each year will be compressed based on the BLM timing stipulations in the ROD. While it is not likely that the CCSM Project morning and evening commuting peak will coincide with the current local peaks or that all timing stipulations in the ROD will apply each year and in all locations, PCW intentionally applied these assumptions to create a more conservative analysis.

2.0 Existing Traffic

PCW conducted an infrastructure analysis to identify roads in the vicinity of the CCSM Project Site that may be used in connection with the CCSM Project, i.e. for deliveries or workforce commuting (Attachment A to the CCSM Project Transportation Management Plan). Once the type and locations of the roads around the CCSM Project Site were identified, PCW evaluated the current use of these roads, including traffic volumes and traffic operations, as described below.

2.1 Volume

As part of this traffic study, PCW performed an analysis of the existing traffic conditions in the vicinity of the CCSM Project Site. Existing traffic volume data was collected at multiple key intersections along potential travel routes through Rawlins and Sinclair during the morning (AM) and evening (PM) peak weekday hours. The data collected in December 2008 for these intersections included turning movement counts (TMC) and daily traffic data. Additional average daily traffic (ADT) volumes for the summer were collected in August 2010.

The TMC data provide distribution information for vehicles entering and exiting key intersections to determine the existing travel patterns in the area. The intersections where counts were taken are all public roads, including the Interstate 80 on- and off-ramps at exits 211, 214, and 221, and several intersections that may be affected by construction traffic along US287 and WY71, as shown in Figure 1 of Exhibit A (Traffic Volume Diagrams). The figure also shows the number of vehicles making each movement during the existing AM and PM peak hours. These volumes serve as the basis for the existing conditions analysis.

Daily counts are used to identify the average daily through-traffic along a corridor throughout an entire day. Table 1 shows the bi-directional (eastbound plus westbound, or northbound plus southbound) daily traffic volumes at several locations near the CCSM Project Site. These values represent a typical weekday traffic level for the road. The daily counts shown in Table 1 were extrapolated from data collected by PCW in December 2008 and August 2010, and data collected by WYDOT in 2009 (WYDOT 2009).

Table 1. Daily Count Data

Count Location	Nearby Intersection	December ADT	August (Peak) ADT
Interstate 80 at MP 208.65[1]	Spruce Street interchange	9,000[3]	14,400[3]
Spruce Street[1]	West of 4th Street	5,500[3]	9,100[3]
WY71	South of Interstate 80 bridge	250[2]	450[4]
WY76	North of truck stop	N/A	490[4]
WY76	North of westbound off-ramp	N/A	1,830[4]
CR407 (CIG Road)	South of Interstate 80	N/A	120[4]

Notes: [1] http://www.dot.state.wy.us/home/planning_projects/Traffic_Data.default.html
[2] Collected in 2008
[3] Collected in 2009
[4] Collected in 2010

Based on the assumption that peak hour traffic volumes are roughly 10 percent of daily totals, Interstate 80 is expected to have traffic volumes of approximately 1,500 vehicles per hour in both directions (375 passenger cars/hour/lane (pc/h/ln)), assuming equal distribution) at peak times. Using the HCM methodology, a four-lane interstate like Interstate 80 (two lanes in each direction) with an estimated free flow speed of 70 miles per hour has a maximum capacity of 770 pc/h/ln to maintain a LOS A rating, and 1,690 pc/h/ln to maintain the minimally acceptable LOS C rating. For this analysis, 375 pc/h/ln is clearly within the LOS A rating.

According to the HCM, two-lane highways have a typical capacity of 1,700 passenger cars per hour per direction to maintain a LOS C rating or better. The ADT volume on WY71, based on data collected in December 2008, is 450 vehicles, which is a LOS A rating and well under capacity for a two-lane highway.

In addition to the data shown in Table 1, PCW collected daily traffic volumes at two locations between September and November of 2010 and between April and October of 2011 to determine the traffic fluctuations due to seasonal and recreational traffic. These additional counts were collected at WY71 just south of Interstate 80 overpass (2010 only), and CR401 near the proposed Haul Road crossing location.

For the data collected in 2010, a significant peak occurred along WY71 and CR401 during two weekends in October. The maximum volume was nearly 800 vehicles per day on WY71 and 580 vehicles per day at on CR401. The maximum hourly volume during the two-month period of combined northbound and southbound traffic was 60 vehicles per hour on WY71 and 45

vehicles per hour on CR401. These peak traffic volumes were short-lived and only occurred on two weekends in October.

Aside from the two peak weekends in 2010, the ADT on WY 71 was 465 vehicles per day consistent with the data collected in December 2008. On CR401, the ADT in 2010 was 230 vehicles per day with an average combined northbound and southbound peak hour volume of 10 vehicles per hour in the AM peak and 15 vehicles per hour in the PM peak. The data collected over six months in 2011 on CR401 had an even lower daily traffic volume (160 vehicles per day). The 2010 and 2011 data in conjunction with the 2008 data show that even during the peak times, the maximum volume of traffic is still well under the capacity of a two-lane road and WY71 and CR401 operate at a LOS A rating.

2.2 Operating Conditions

In accordance with the HCM, operating conditions on roads are a function of the delay experienced by drivers at intersections. Traffic operations for key signalized and un-signalized intersections in the vicinity of the CCSM Project Site were analyzed using the methods described in the HCM. Essentially, the traffic data were input into analysis software (HCS+ for stop-controlled intersections and Synchro for signalized intersections) to determine the LOS rating. For signalized intersections, the delay for each individual turning movement is evaluated, then approaches are graded, and finally the intersection as a whole is given a single LOS rating. For two-way stop controlled (TWSC) intersections, each intersection is assigned a single LOS rating based on the minor approach with the lowest LOS. Table 2 shows the criteria used to assign a LOS to each intersection.

Table 2. LOS Criteria for Signalized and TWSC Intersections

LOS	Control Delay per Vehicle (sec)	
	Signalized	Unsignalized
A	≤ 10	0 – 10
B	> 10 – 20	> 10 – 15
C	> 20 – 35	> 15 – 25
D	> 35 – 55	> 25 – 35
E	> 55 – 80	> 35 – 50
F	> 80	> 50

The existing average AM and PM peak hour intersection LOS rating and delay (average delay in seconds per vehicle) are listed in Table 3. Based on the results of the analysis, all of the intersections operate at LOS B or better during the peak hours of the day, indicating that there are no existing operational deficiencies. The analysis of the existing operating conditions for roads in the vicinity of the CCSM Project Site did not identify any roads with levels of congestion that warrant additional capacity.

Table 3. Public Intersection LOS Analysis – Existing Conditions (2008)

Intersection	Morning Peak (AM)		Afternoon Peak (PM)	
	Delay (sec)	LOS	Delay (sec)	LOS
US287 Bypass/Higley Boulevard and 3rd Street	10.1	B	10.1	B
US287 Bypass/Higley Boulevard and Cedar Street[1]	15.0	B	15.5	B
WY71 and Jackson Street	9.0	A	9.0	A
WY71 and Washington Street	9.1	A	9.3	A
WY71/Locust Street and South Higley Boulevard	10.1	B	10.1	B
Interstate 80 EB and Spruce Street	9.2	A	10.6	B
Interstate 80 WB and Spruce Street	8.9	A	9.7	A
Interstate 80 EB and South Higley Boulevard	10.3	B	10.4	B
Interstate 80 WB and South Higley Boulevard	11.2	B	11.9	B
Interstate 80 EB and WY76	9.1	A	9.2	A
Interstate 80 WB and WY76	8.7	A	8.8	A
Interstate 80 WB and Johnson Road	9.4	A	10.2	B
Interstate 80 EB and Johnson Road	10.3	B	11.7	B
Notes: [1]Signalized intersection				

3.0 Construction Traffic Effects

After analyzing the existing traffic on the roads in the vicinity of the CCSM Project Site, PCW evaluated the effects of traffic generated by the CCSM Project during construction. This section includes a description of the type of traffic that will be generated by the CCSM Project and an evaluation of the CCSM Project traffic effects.

3.1 Construction Traffic

To understand the potential effects of CCSM Project operations and maintenance traffic, PCW evaluated the type and amount of traffic the CCSM Project is expected to generate. PCW has defined two general types of trips generated by the CCSM Project during construction:

1. The delivery of equipment, components, service vehicles, and materials to the CCSM Project Site; and
2. The daily commute of the labor force to the CCSM Project Site.

3.1.1 Deliveries

PCW intends to bring much of the construction materials, components and equipment to the CCSM Project Site via rail. These items will arrive at the West Sinclair Rail Facility and will be off-loaded to an adjacent laydown yard for storage until they are transported by truck to locations within the CCSM Project Site. The vehicles and equipment necessary to transport deliveries from off-site, as well as from the West Sinclair Rail Facility are described below.

Wind Turbine Components

Each complete wind turbine generator (WTG) consists of three or four tower sections, three blades, a nacelle, a hub, a rotor cover, and smaller miscellaneous parts and equipment. PCW estimates that the majority of WTG components (approximately 80%) will arrive at the CCSM Project Site via the West Sinclair Rail Facility. However, some wind turbine components may not meet railroad requirements and will need to be delivered to the CCSM Project Site by long-distance trucking over public roads. Also, near the end of each construction season there may be instances where some additional components are required to complete the remaining turbines, but not in sufficient quantities to fill a unit train. In those instances, the required components will be transported to the CCSM Project Site using long-distance trucking.

The WTG components that are oversize typically have specialized trailers attached to heavy-haul semi tractors. Nacelles use lowboy/flatbed trailers, often with 19 axles or more. Tower sections may also use flatbed trailers, with base sections often transported using Schnabel-type trailer attachments. Blades will use telescoping trailers and will be transported individually or in pairs. For purposes of this traffic study, it was assumed that blades will be transported individually.

Aggregate

For this traffic study, PCW assumed that aggregate would be hauled by belly-dump trucks with a 24 cubic yard volume. Various classifications of aggregate will be used for the construction of the CCSM Project as described in the Road Rock Quarry Site-specific Plan of Development. Some aggregate will be sourced from the Road Rock Quarry, and some from sources outside the CCSM Project Site. Trucks bringing aggregate from off-site are assumed to enter the CCSM Project Site from Interstate 80, exit 221, the North Entrance.

Additional Materials

A variety of other vehicles will deliver the remaining construction materials required for the CCSM Project. Many, like cement, sand, and fly ash and aggregates needed for the concrete batch plants, will use trucks with dump trailers suitable for the loads they are carrying. Prior to construction of the West Sinclair Rail Facility, materials like steel rebar and electrical components will be transported to the CCSM Project Site on flatbed trailers. After the rail facility is built and becomes operational, these components will be delivered primarily by rail.

In 2014 and 2015, water trucks (likely 12,000 gallon capacity) with dispersion nozzles may haul water from off-site sources likely in Rawlins or Sinclair to the CCSM Project Site. This water will be used for dust control and road construction. After the water facilities within the CCSM Project Site become operational, it was assumed that water will be derived from on-site sources.

Heavy Equipment

Heavy equipment consists of WTG assembly haul trucks, graders, dozers, rippers, backhoes, and front-end loaders, as well as mobile cranes that will be used for WTG erection. These pieces of heavy equipment will be transported to the CCSM Project Site by trucks with suitably-designed trailers such as low boys. There will be a peak of approximately 300 pieces of heavy equipment on the CCSM Project Site during construction. Most of this equipment will be trucked to the CCSM Project Site over the course of the first few months of the construction season and hauled back out at the end of the construction year. It is assumed that once these pieces of heavy equipment are delivered to the CCSM Project Site, they will remain on site until they are no longer required and will be incrementally removed as the demand for heavy equipment winds down over the course of the construction year.

3.1.2 Truckloads

Based on the CCSM Project construction schedule and delivery requirements described above, PCW developed the estimated total number of truckloads required to build the CCSM Project by year (section 6.0 of the Transportation Management Plan). The total truckloads include construction materials, components, and equipment transported to the CCSM Project Site, as well as trips made off-site by personnel in the course of completing their work, i.e. not commuting. The truckloads listed in section 6.0 of the Transportation Management Plan also account for any subsequent hauling of components and materials to their final destination within the CCSM Project Site; including internal movements from the West Sinclair Rail Facility, Road Rock Quarry, water stations, batch plants and laydown areas. On-site trucking was

included in the analysis to evaluate potential impacts to CR401 at the Haul Road crossing. It is important to note that the truckloads are not equivalent to trips, as trucks will need to return to their origin after delivering their load.

3.1.3 Labor Force

Another significant source of traffic during construction of the CCSM Project is the daily commute to the CCSM Project Site by the labor force. PCW expects the labor force to use a variety of personal vehicles to commute to the CCSM Project Site. Once workers arrive on-site, they will use CCSM Project pick-up trucks or vans to move to locations within the CCSM Project Site. Daily commuting traffic is expected to make up between 60 and 80 percent of the total construction traffic. The labor force breakdown included in section 3.2 of the Transportation Management Plan was used to determine the total number of workers arriving at the CCSM Project Site daily during construction.

For purposes of this traffic study, PCW conservatively assumed that the construction labor force will commute each day from the surrounding communities, rather than originating from temporary on-site housing, or using public transportation or local bussing. For purposes of this study, PCW assumed the labor force would be housed in the surrounding communities as:

- 50 percent: Rawlins Area
- 40 percent: East of Rawlins (Laramie area)
- 10 percent: South of Rawlins (Saratoga area)

The percentages are assumed to be constant regardless of the labor force size or year of construction. It is further assumed that each worker will make one trip to and one trip from the CCSM Project Site per day. For the workers traveling from outside the Rawlins area, it is assumed that there will be 1.5 workers per vehicle due to carpooling.

For workers originating in Rawlins, the general assumptions made regarding what parts of town they would be coming from (based upon locations of residential properties and hotels) are:

- 56 percent: Near 287/Cedar
- 24 percent: South of Railroad, north of Interstate 80
- 20 percent: Near Spruce Street

PCW intends to allow the construction workforce to report to whichever CCSM Project Site entrance is closest to their work, i.e. the North Entrance off Interstate 80 at Exit 221 (Figure 1) or the South Entrance off CR401 (Figure 2). To support the traffic study, PCW developed an estimate of the construction workforce that would muster at each entrance based on the yearly construction schedule (Table 4).

3.1.4 Other

While there will likely be other types of traffic associated with construction of the CCSM Project (e.g., courier deliveries and inspections), such traffic is not of sufficient volume to affect the traffic study findings and was therefore not considered in the analysis.

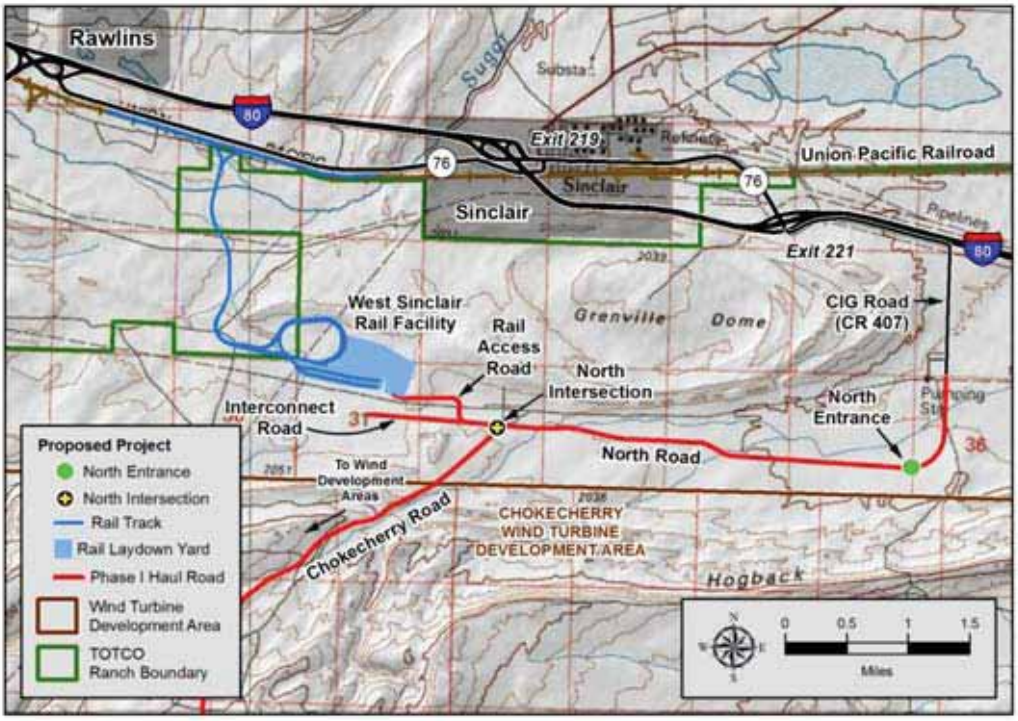

Figure 1. CCSM Project North Entrance

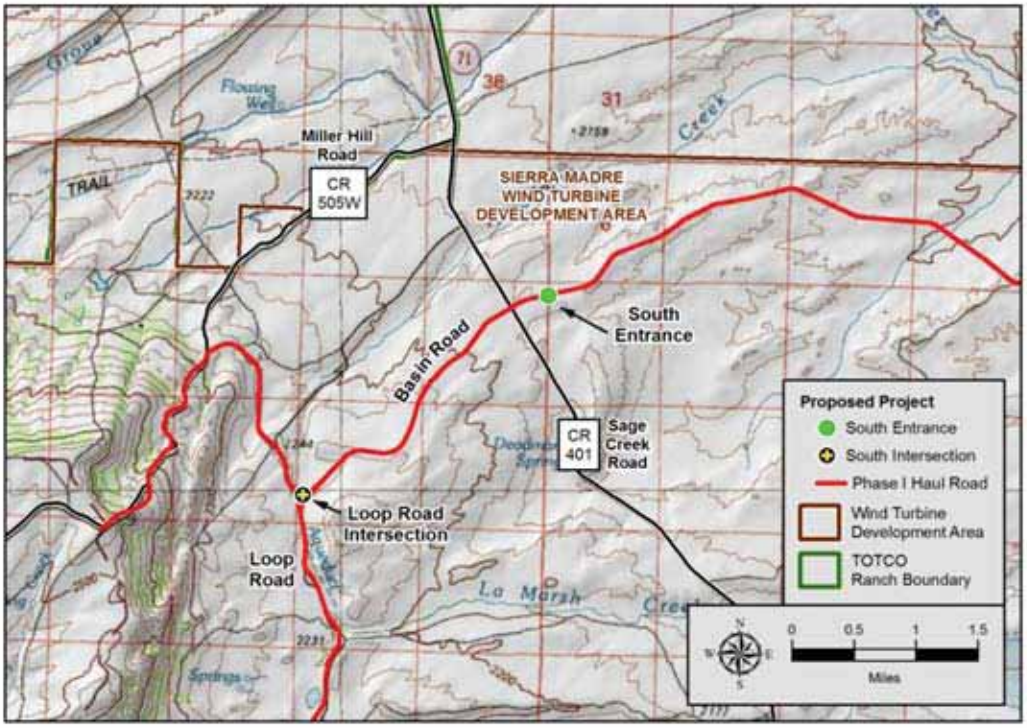

Figure 2. CCSM Project South Entrance

Table 4. Percent of Workforce By Entrance

Year (during peak)	North Entrance	South Entrance
2014	82%	18%
2015	31%	69%
2016	30%	70%
2017	78%	22%
Phase II Year 1	26%	74%
Phase II Year 2	37%	63%
Phase II Year 3	100%	0%

3.2 Daily Traffic Projection

Based on the construction traffic analysis and the CCSM Project schedule, a projection of the average daily traffic during construction of the CCSM Project was created. Using the truckload estimate described in section 3.1.2, each truckload was assigned to a month based on the CCSM Project schedule and then truck trips were calculated by assuming that each truckload generates two trips, one delivery and one return. The monthly truck trips were then assumed to be evenly distributed throughout the month and were divided by the total number of working days in each month to determine the daily trips. Similarly, the monthly workforce numbers described in section 3.1.3 were used to determine daily worker trips. The daily commuting trips were generated by assuming that each worker generates two trips (one entering and one exiting) each day. The trips generated by workers outside the Rawlins area were then decreased by one-third to account for carpooling of 1.5 workers per vehicle.

Table 5 and Table 6 show the average daily traffic projection for construction of Phase I and Phase II of the CCSM Project, respectively.

The traffic patterns in 2014 and 2015 differ somewhat from the other construction years due to the availability of the Road Rock Quarry (later in 2014) and the West Sinclair Rail Facility (end of 2015). During this time, the percentage of the CCSM Project traffic related to the transport of construction components and materials is far higher than in later years. To insure that the traffic effects of construction of the CCSM Project were fully analyzed, PCW chose to study the construction traffic impacts of three peak months due to the difference in the traffic characteristics. PCW analyzed the following traffic cases for construction of the CCSM Project:

- 2015 (Construction Year Two): peak of construction traffic before the West Sinclair Rail Facility begins operations

- 2016 (Construction Year Three): peak of construction traffic with the West Sinclair Rail Facility in operation, and when most of the workforce traffic is using the CCSM Project South Entrance
- 2017 (Construction Year Four): peak of construction traffic with the West Sinclair Rail Facility in operation, and when most of the workforce traffic is using the CCSM Project North Entrance

Table 5. Total Daily Traffic Projection – Phase I Construction

Traffic Type	Trips						
	May	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**
2014							
Delivery Trucks[1]	0	0	0	0	37	37	20
Aggregate	*0*	*0*	*0*	*0*	*37*	*37*	*20*
WTG Components[2]	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Other Deliveries	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Labor Force Commute	0	0	0	0	107	107	107
Total	**0**	**0**	**0**	**0**	**144**	**144**	**127**
2015							
Delivery Trucks[1]	0	0	331	291	183	51	0
Aggregate	0	0	330	285	177	46	0
WTG Components[2]	0	0	0	0	0	0	0
Other Deliveries	0	0	1	6	6	5	0
Labor Force Commute	59	121	408	487	427	309	136
Total	**59**	**121**	**739**	**778**	**610**	**360**	**136**
2016							
Delivery Trucks[1]	14	22	204	188	105	91	0
Aggregate	0	0	171	158	84	81	0
WTG Components[2]	12	21	22	20	11	0	0
Other Deliveries	2	1	11	10	10	10	0
Labor Force Commute	157	926	1,253	1,258	999	392	178

Traffic Type	Trips						
	May	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**
Total	**171**	**948**	**1,457**	**1,446**	**1,104**	**483**	**178**
2017							
Delivery Trucks[1]	15	22	139	129	91	0	0
Aggregate	0	0	109	101	69	0	0
WTG Components[2]	14	21	22	20	14	0	0
Other Deliveries	1	1	8	8	8	0	0
Labor Force Commute	219	602	1,285	1,290	1,167	560	299
Total	**234**	**624**	**1,424**	**1,419**	**1,258**	**560**	**299**
Notes: [1]Sum of all delivery trucks, including aggregate, WTG components, and other. [2]Excludes pilot cars							

Table 6. Total Daily Traffic Projection – Phase II Construction

Traffic Type	Trips						
	May	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**
Phase II - Year 1							
Delivery Trucks[1]	0	0	1	45	114	70	0
Aggregate	*0*	*0*	*0*	*44*	*107*	*63*	*0*
WTG Components[2]	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Other Deliveries	*0*	*0*	*1*	*1*	*7*	*7*	*0*
Labor Force Commute	111	144	319	416	356	248	125
Total	**111**	**144**	**320**	**461**	**470**	**318**	**125**
Phase II - Year 2							
Delivery Trucks[1]	65	124	259	259	183	0	0
Aggregate	0	0	146	146	107	0	0
WTG Components[2]	65	100	100	100	63	0	0
Other Deliveries	0	2	13	13	13	0	0
Labor Force Commute	319	917	1,185	1,190	976	461	227

Traffic Type	Trips						
	May	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**
Total	**384**	**1,041**	**1,444**	**1,449**	**1,159**	**461**	**227**
Phase II - Year 3							
Delivery Trucks[1]	53	102	206	206	158	0	0
Aggregate	0	0	98	98	98	0	0
WTG Components[2]	53	100	100	100	52	0	0
Other Deliveries	0	2	8	8	8	0	0
Labor Force Commute	261	666	1,060	1,065	1,082	516	283
Total	**314**	**768**	**1,266**	**1,271**	**1,240**	**516**	**283**

Notes: [1]Sum of all delivery trucks, including aggregate, WTG components, and other.
[2]Excludes pilot cars

3.3 August 2015 Traffic Case

Using the daily traffic projection from section 3.2 and the existing conditions defined in section 2.0, PCW studied the effects of the CCSM Project construction on the public roads in the vicinity of the CCSM Project Site. The analysis for the peak of construction prior to operation of the West Sinclair Rail Facility (August 2015) is presented below.

3.3.1 Trip Generation

The first step in analyzing the traffic impacts to public roads in the vicinity of the CCSM Project Site is to estimate the daily trips required. This data is presented in

Table 5 above for construction of Phase I of the CCSM Project. For the August 2015 traffic case, PCW used the August 2015 data. The daily truck trips were then split into eleven equal hours to signify an even distribution over an eleven-hour work day and the total daily AM worker trips were grouped for the morning peak hour and the total daily PM worker trips were grouped for the evening peak hour. All construction material trips were assumed to occur by truck because the West Sinclair Rail Facility would still be under construction.

3.3.2 Trip Distribution

The origin and destination for each trip was determined for each CCSM Project construction trip in the peak month. Labor force commute trips were determined based upon the origin assumptions and destination options described in Section 3.1.3. During 2015, PCW estimates that 31% of the workforce will commute to the CCSM Project's North Entrance via CIG Road, and 69% will use the Southern Entrance via Sage Creek Road.

3.3.3 Trip Assignment

After trips were distributed between likely origins and destinations, they were assigned to specific roads and added to existing traffic levels to allow for analysis of the resulting intersection conditions. Construction delivery vehicles arriving from east or west of Rawlins, were routed on Interstate 80, exiting on WY76 (exit 221), and traveling along CIG Road to the CCSM Project's North Entrance where they accessed the CCSM Project Haul Road. Local aggregate deliveries from off-site were assumed to avoid the City of Rawlins by entering Interstate 80 at exit 209 and then traveling east to exit 221, and then along CIG road to the CCSM Project Haul Road. No delivery traffic was assumed to arrive from south of the CCSM Project Site or north of Rawlins. It was assumed that workers accessing the CCSM Project North Entrance would use CR407 and the workers accessing the CCSM project South Entrance would use CR401.

3.3.4 Analysis Results

Once the turning movement volumes were generated for the existing traffic and the CCSM Project traffic, an operating condition analysis was completed for the peak case of August 2015. The existing plus CCSM Project traffic analysis used the same methods for calculating intersection LOS as described in Section 2.2. The LOS and delay (in seconds per vehicle) resulting from the analysis for the peak of 2015 is listed in Table 7 and shown in Figure 2 of Exhibit A. In 2015, the operations of all intersections will operate at LOS C or better. As such, no mitigation measures will likely be required.

Table 7. Public Intersection LOS Analysis – August 2015 Peak

Intersection	Morning Peak (AM)		Afternoon Peak (PM)	
	Delay (sec)	LOS	Delay (sec)	LOS
US287 Bypass/Higley Boulevard and 3rd Street	10.1	B	10.1	B
US287 Bypass/Higley Boulevard and Cedar Street[1]	14.2	B	16.0	B
WY71 and Jackson Street	16.9	C	14.0	B
WY71 and Washington Street	14.8	B	16.8	C
WY71/Locust Street and South Higley Boulevard	13.4	B	11.0	B
Interstate 80 EB and Spruce Street	9.6	A	10.6	B
Interstate 80 WB and Spruce Street	8.9	A	9.7	A
Interstate 80 EB and South Higley Boulevard	10.5	B	13.2	B
Interstate 80 WB and South Higley Boulevard	11.2	B	12.9	B
Interstate 80 EB and WY76	10.5	B	12.6	B
Interstate 80 WB and WY76	9.1	A	10.1	B

Interstate 80 WB and Johnson Road	9.6	A	10.4	B
Interstate 80 EB and Johnson Road	10.6	B	12.0	B
Notes: [1]Signalized intersection				

3.4 July 2016 Traffic Case

Using the traffic projection from section 3.2 and the existing conditions defined in section 2.0, PCW studied the effects of the CCSM Project construction on the public roads in the vicinity of the CCSM Project Site. The analysis for the peak of construction during the highest month of construction activity (July 2016) while the majority of the workforce is using the South Entrance is presented below. This analysis used the same process described in Section 3.3.

3.4.1 Trip Generation

Peak hour workforce commuting and delivery trips were determined in the same manner described in Section 3.3 using the July 2016 data from Table 5.

3.4.2 Trip Distribution

PCW determined the likely origin and destination for each CCSM Project construction trip based on the type of component or material. Labor force commuting trips were determined based on the assumptions described in Section 3.1.3. During 2016, PCW estimates that 30% of the workforce will commute to the CCSM Project North Entrance via CR407, and 70% will use CR401 to reach the CCSM Project South Entrance. The truck deliveries were assumed to use the CCSM Project North Entrance.

3.4.3 Trip Assignment

After trips were distributed between likely origins and destinations, they were assigned to specific roads and added to existing traffic to allow analysis of road operating conditions. The majority of the construction delivery vehicles arriving from east or west of Rawlins, were routed on Interstate 80, exiting on WY76 (exit 221), and traveling along CIG Road to the CCSM Project's North Entrance where they accessed the CCSM Project Haul Road. A small number of delivery vehicles were assumed to arrive from north of Rawlins, using the US287 bypass to Cedar Street, then onto Interstate 80 east to exit 221, and then to CR407 and the CCSM Project Haul Road. No delivery traffic was assumed to arrive from south of the CCSM Project Site. Trucks destined for the Miller Hill area of the Sierra Madre wind development area were assumed to use the Haul Road and cross CR401.

3.4.4 Analysis Results

The LOS and delay (in seconds per vehicle) resulting from the July 2016 case are listed in Table 8 and associated traffic volumes are shown in Figure 3 of Exhibit A. The operating conditions for most of the intersections are at LOS C or better with the addition of project traffic for both peak periods, meaning no mitigation measures for these intersections should be required.

The WY71 intersections at Jackson Street and Washington Street may see significant wait times during both morning and evening commutes, and the intersection at Locust Street/South Higley Boulevard are expected to be at LOS D during the morning peak. Additionally, the Interstate 80 eastbound ramp at South Higley Boulevard is anticipated to be at LOS D during the evening commute. The intersections with LOS D and F ratings will be mitigated as described in Section 6.0.

Table 8. Public Intersection LOS Analysis – July 2016 Peak

Intersection	Morning Peak (AM)		Afternoon Peak (PM)	
	Delay (sec)	LOS	Delay (sec)	LOS
US287 Bypass/Higley Boulevard and 3rd Street	10.1	B	10.1	B
US287 Bypass/Higley Boulevard and Cedar Street[1]	13.3	B	16.8	B
WY71 and Jackson Street	**884.6**	**F**	**51.2**	**F**
WY71 and Washington Street	**425.8**	**F**	**135.4**	**F**
WY71/Locust Street and South Higley Boulevard	**25.9**	**D**	13.7	B
Interstate 80 EB and Spruce Street	10.2	B	10.6	B
Interstate 80 WB and Spruce Street	9.0	A	9.8	A
Interstate 80 EB and South Higley Boulevard	10.8	B	**29.4**	**D**
Interstate 80 WB and South Higley Boulevard	12.9	B	15.4	C
Interstate 80 EB and WY76	14.6	B	20.3	C
Interstate 80 WB and WY76	9.7	A	12.2	B
Interstate 80 WB and Johnson Road	9.5	A	10.3	B
Interstate 80 EB and Johnson Road	10.6	B	11.9	B
Notes: [1]Signalized intersection				

3.5 July 2017 Traffic Case

Using the traffic projection from section 3.2 and the existing conditions defined in section 2.0, PCW studied the effects of the CCSM Project construction on the public roads in the vicinity of the CCSM Project Site. The analysis for the peak of construction during the highest month of construction activity (July 2017) while the majority of the workforce is using the North Entrance is presented below. This analysis used the same process described in Section 3.3.

3.5.1 Trip Generation

Peak hour workforce commuting and delivery trips were determined in the same manner described in Section 3.3 using the July 2017 data from Table 5.

3.5.2 Trip Distribution

PCW determined the likely origin and destination for each CCSM Project construction trip based on the type of component or material. Labor force commuting trips were determined based on the assumptions described in Section 3.1.3. During 2017, PCW estimates that 78% of the workforce will commute to the CCSM Project North Entrance via CR407, and 22% will use CR401 to reach the CCSM Project South Entrance. The truck deliveries were assumed to use the CCSM Project North Entrance.

3.5.3 Trip Assignment

Trip assignments are the same as those described in section 3.4.3.

3.5.4 Analysis Results

The LOS and delay (in seconds per vehicle) resulting from the July 2017 case are listed in Table 9 and associated volumes are shown in Figure 4 of Exhibit A. The Interstate 80 eastbound exit at Wyoming Highway 76 was found to have an LOS F rating during both the morning and afternoon peaks, and the westbound ramp at the same intersection also had a LOS F rating during the afternoon peak. The intersections with LOS F ratings will be mitigated as described in section 6.0.

Table 9. Public Intersection LOS Analysis – July 2017 Peak

Intersection	Morning Peak (AM)		Afternoon Peak (PM)	
	Delay (sec)	LOS	Delay (sec)	LOS
US287 Bypass/Higley Boulevard and 3rd Street	10.1	B	10.1	B
US287 Bypass/Higley Boulevard and Cedar Street[1]	12.2	B	19.0	B
WY71 and Jackson Street	15.1	C	13.1	B
WY71 and Washington Street	14.6	B	15.8	C
WY71/Locust Street and South Higley Boulevard	15.3	C	12.8	B
Interstate 80 EB and Spruce Street	12.7	B	10.6	B
Interstate 80 WB and Spruce Street	9.3	A	10.3	B
Interstate 80 EB and South Higley Boulevard	12.1	B	12.6	B
Interstate 80 WB and South Higley Boulevard	12.5	B	13.8	B
Interstate 80 EB and WY76	**960.1**	**F**	**271.0**	**F**
Interstate 80 WB and WY76	14.8	B	**52.2**	**F**
Interstate 80 WB and Johnson Road	9.5	A	10.2	B
Interstate 80 EB and Johnson Road	10.4	B	11.7	B
Notes: [1]Signalized intersection				

4.0 Operations and Maintenance Traffic Effects

After analyzing the existing traffic on the roads in the vicinity of the CCSM Project Site, PCW evaluated the effects of traffic generated by the CCSM Project during operations and maintenance. This section includes a description of the type of traffic that will be generated by the CCSM Project and an evaluation of the CCSM Project traffic effects.

4.1 Operations and Maintenance Traffic

To understand the potential effects of CCSM Project operations and maintenance traffic, PCW evaluated the type and amount of traffic the CCSM Project is expected to generate. They types of trips generated during operations are likely to be the same as those generated during construction; however they will be substantially smaller in volume. PCW has defined two general types of trips generated by the CCSM Project during operations and maintenance:

1. The delivery of equipment, components, service vehicles, and materials to the CCSM Project Site; and
2. The daily commute of the labor force to the CCSM Project Site.

4.1.1 Types of Trips

During operations and maintenance, the traffic expected on a daily basis will be almost entirely from the labor force, either reporting to and from the site or making trips during the business day. Some additional deliveries of large components will occur at times, however not on such a frequent basis as to affect the daily traffic patterns of the surrounding public roads. To create a conservative analysis, PCW assumed that the entire operations and maintenance labor force would commute to the CCSM Project Site from Rawlins.

4.1.2 Labor Force

PCW is estimating that the Project will have a staff of approximately 114 full-time employees during operations. The labor force is expected to commute to the CCSM Project Site using personal vehicles. For the purposes of this traffic study, it was assumed that all labor force traffic will use Interstate 80 exit 221 to access the CCSM Project Site. Trips made by the labor force during the business day are expected to occur in Project pick-up trucks. Additional trips caused by deliveries to the CCSM Project Site will be few in number and occur only on an as-needed basis.

4.2 Operations and Maintenance Typical Year Traffic Case

Based on the operations and maintenance activities and the type of traffic anticipated, PCW estimated the volume of traffic generated by the CCSM Project and the subsequent effects on the public roads in the vicinity of the CCSM Project Site. This analysis used the same process described in Section 3.3.

4.2.1 Trip Generation

Traffic during CCSM Project operations and maintenance is not expected to have significant peaks; therefore, PCW performed the traffic analysis on a typical day. This included the daily commute of 114 employees, which for the purposes of this traffic study are assumed to work a single shift, meaning all workers arrive to and depart from the site during the same peak hours. PCW also assumed that the labor force may make additional trips to and from the CCSM Project Site to the surrounding communities during the business day. Assuming each employee makes two such off-site trips per day, these would not occur during the peak hour and would not change the peak traffic levels; therefore, the peak commuting hours were the volumes used in this analysis.

4.2.1 Trip Distribution

For purposes of this analysis, PCW assumed that 100 percent of the operations and maintenance workforce will commute to the CCSM Project North Entrance.

4.2.2 Trip Assignment

It was assumed that workers accessing the CCSM Project North Entrance would use CR407.

4.2.3 Analysis Results

The LOS and delay (in seconds per vehicle) resulting from the July 2017 case are listed in Table 10 and associated volumes are shown in Figure 5 of Exhibit A. The analysis concluded that the operations for all intersections studied are at LOS B or better, which indicates that operations and maintenance of the CCSM Project will have little overall effect to the public roads in the vicinity of the CCSM Project Site and that no mitigation measures are required.

Table 10. Public Intersection LOS Analysis – Operations

Intersection	Morning Peak (AM)		Afternoon Peak (PM)	
	Delay (sec)	LOS	Delay (sec)	LOS
US287 Bypass/Higley Boulevard and 3rd Street	10.1	B	10.1	B
US287 Bypass/Higley Boulevard and Cedar Street[1]	13.9	B	16.3	B
WY71 and Jackson Street	9.0	A	9.0	A
WY71 and Washington Street	9.2	A	9.4	A
WY71/Locust Street and South Higley Boulevard	10.5	B	10.5	B
Interstate 80 EB and Spruce Street	9.8	A	10.6	B
Interstate 80 WB and Spruce Street	9.0	A	9.7	A
Interstate 80 EB and South Higley Boulevard	10.6	B	10.4	B
Interstate 80 WB and South Higley Boulevard	11.6	B	11.7	B
Interstate 80 EB and WY76	9.1	A	11.5	B
Interstate 80 WB and WY76	8.7	A	8.8	A
Interstate 80 WB and Johnson Road	9.4	A	10.2	B
Interstate 80 EB and Johnson Road	10.3	B	11.7	B

Notes: [1]Signalized intersection

5.0 Decommissioning Traffic Effects

After analyzing the existing traffic on the roads in the vicinity of the CCSM Project Site, PCW evaluated the effects of traffic generated by the CCSM Project during decommissioning. This section includes a description of the type of traffic that will be generated by the CCSM Project and an evaluation of the CCSM Project traffic effects.

5.1 Decommissioning Traffic

To understand the potential effects of CCSM Project decommissioning traffic, PCW evaluated the type and amount of traffic the CCSM Project is expected to generate. They types of trips generated during decommissioning are the same as those generated during construction; however, since the CCSM Project's decommissioning is anticipated to occur in thirty years, existing traffic volumes were inflated by 2 percent to account for growth in the region. This growth rate is based on growth projections for Carbon County by the Wyoming Department of Administration and Information. PCW has defined two general types of trips generated by the CCSM Project during decommissioning:

1. The delivery and removal of equipment, components, service vehicles, and materials to the CCSM Project Site; and
2. The daily commute of the labor force to the CCSM Project Site.

5.1.1 Material/Component Requirements

The vehicles and equipment necessary to transport the decommissioning material, components, equipment, and labor force to and from the CCSM Project Site are assumed to be the same as those for construction, as described in section 3.1.

Table 11 below lists the estimated total number of truckloads required to decommission the CCSM Project, consistent with values in the EIS. These truckloads include the materials, components, and equipment to be removed from the site, as well as trips made off-site by decommissioning personnel.

For the purposes of this analysis, it is assumed that decommissioned turbine components and related materials will leave the site by truck and that the truckloads for the materials that can be recycled (steel towers, nacelles, cables) will be divided evenly, with roughly half travelling east on Interstate 80 and the other half travelling west on Interstate 80. Materials going to landfill were assumed to all travel west on Interstate 80 based upon current information regarding landfill options.

The on-site truckloads in Table 11 represent the movement of materials within the CCSM Project Site. Water trucks will move water from water stations to areas within the CCSM Project Site for dust control and revegetation. Neither the water nor aggregate truckloads are anticipated to affect the level of service at public road intersections.

TOTCO has requested that all aggregate removed from decommissioned roads be left on-site and stockpiled on TOTCO property for use during maintenance of Ranch roads. Aggregate trucks will move decommissioned aggregate to stockpiles near the Rail Facility and Operations Center sites. This was used as the base case in the analysis; however, PCW also evaluated the potential impacts if the decommissioned aggregate was removed off-site to a location near Interstate 80 exit 209. While there was a slight increase in delay there was no change in the LOS; therefore, only the base case is discussed below in section 5.2.4.

Table 11. Total Truckloads of Project Decommissioning Material

Items	Year 1	Year 2	Year 3	TOTAL
Loads Moved Off-Site				
Wind Turbine Components	5,220	5,220	4,560	**15,000**
Concrete Removal	2,231	2,148	1,862	**6,242**
Collection System Cables/Structures	81	82	71	**233**
Transmission Line Cables/Structures	644	647	559	**1,850**
Substation Components	20	54	36	**110**
Buildings/Trailers	30	20	30	**80**
Other Materials	3,719	2,960	3,321	**10,000**
Equipment Removal	1,180	1,180	1,180	**3,540**
Personnel Off-Site Trips	439	329	47	**815**
TOTAL REMOVED	**13,563**	**12,639**	**11,667**	**37,869**
On-Site Loads				
Aggregate	19,038	29,041	40,822	**88,900**
Water	2,715	2,715	2,715	**8,145**

5.1.2 Labor Force

The other significant source of traffic during decommissioning of the CCSM Project will be the daily commute to the CCSM Project Site by the labor force. Daily commuting traffic is expected to make up over 90 percent of the peak hour CCSM Project decommissioning traffic. Based on current estimates of required workers, this traffic study assumed the breakdown in Table 12 for the total labor force during decommissioning.

The routing options for the CCSM Project decommissioning workforce are assumed to be the same as those for the CCSM Project construction (section 3.1.3); however, given the lower labor force requirements, PCW made the conservative assumption that only the CCSM Project North Entrance, Interstate 80 exit 221, would be used by the decommissioning labor force.

Table 12. Peak Decommissioning Labor Force by Month

Month	Year 1	Year 2	Year 3
July	378	379	374
Aug	387	396	382
Sep	380	396	385
Oct	378	295	376
Nov	369	355	368

5.2 Decommissioning Year Two Traffic Case

Based on the decommissioning activities and the type of traffic anticipated, PCW estimated the volume of traffic generated by the CCSM Project and the subsequent effects on the public roads in the vicinity of the CCSM Project Site. This analysis used the same process described in Section 3.3.

5.2.1 Trip Generation

The estimated daily off-site trips required for each month of the CCSM Project decommissioning is provided in Table 13. The highest overall volumes of traffic occur in October of Year Two, with an average of 927 off-site vehicles trips per day. Approximately 85 percent of the traffic is due to the labor force commute, with nearly 400 trips for the AM and PM commutes. The remaining 126 daily trips associated with material removal and are assumed to occur throughout the work day. It is important to note that half of all truckloads for all decommissioning vehicles will be empty, so only half of the oversized truckloads traveling over structures will be heavy loads.

Table 13. Total Daily Traffic Projection – Decommissioning

Traffic Type	Trips						
	May	Jun	Jul	Aug	Sep	Oct	Nov
Decommissioning Year One							
Removal Trucks[1]	0	0	103	105	127	142	128
Labor Force Commute	0	0	757	773	761	757	739
Total	**0**	**0**	**860**	**878**	**888**	**899**	**867**
Decommissioning Year Two							
Removal Trucks[1]	0	0	101	100	122	136	122
Labor Force Commute	0	0	757	793	793	791	710
Total	**0**	**0**	**858**	**893**	**915**	**927**	**832**
Decommissioning Year Three							
Removal Trucks[1]	0	0	90	92	116	126	122
Labor Force Commute	0	0	748	764	770	751	737
Total	**0**	**0**	**838**	**856**	**886**	**877**	**859**

Notes: [1]Sum of removal trucks, including those removing WTG components, and other material and equipment.

5.2.2 Trip Distribution

The origin and destination of each decommissioning trip in the peak month was determined based on the type of load. Labor force commute trips were determined based upon the origin assumptions and destination options described in Section 3.1.3. To create a conservative traffic analysis, it was assumed that all workers would report to the CCSM Project North Entrance. Long haul truck trips directional estimates on Interstate 80 are as described in section 5.2.1.

5.2.3 Trip Assignment

After trips were distributed between likely origins and destinations, they were assigned to specific roads and added to existing traffic to allow analysis of operational conditions during the CCSM Project decommissioning. Decommissioning vehicles departing to the east or west of Rawlins were assumed to travel CIG Road to Interstate 80 exit 221 (WY76). A small amount of vehicle traffic was assumed to depart to the north using the US287 bypass. No traffic was assumed to depart to the south of the CCSM Project Site.

5.2.4 Analysis Results

The LOS and delay (in seconds per vehicle) resulting from the decommissioning year two case are listed in Table 14 and associated volumes are shown in Figure 6 of Exhibit A. While the delay at one intersection (Interstate 80 westbound at South Higley Boulevard) did extend to LOS D, the operations for all other intersections studied are at LOS C or better. Due to the conservative assumptions used in the analysis, PCW does not anticipate that mitigation measures will be required during decommissioning; however, if mitigation measures are required they will be implemented as described in section 6.0 using any experience gained during construction.

Table 14. Public Intersection LOS Analysis – Decommissioning

Intersection	Morning Peak (AM)		Afternoon Peak (PM)	
	Delay (sec)	LOS	Delay (sec)	LOS
US 287 Bypass/Higley Boulevard and 3rd Street	12.9	B	13.2	B
US 287 Bypass/Higley Boulevard and Cedar Street	14.9	B	20.9	C
WY71 and Jackson Street	9.6	A	9.6	A
WY71 and Washington Street	10.0	A	10.4	B
WY71/Locust Street and South Higley Boulevard	13.3	B	13.2	B
Interstate 80 EB and Spruce Street	11.1	B	14.8	B
Interstate 80 WB and Spruce Street	9.4	A	11.6	B
Interstate 80 EB and South Higley Boulevard	13.7	B	13.8	B
Interstate 80 WB and South Higley Boulevard	19.8	C	30.8	**D**
Interstate 80 EB and WY76	16.1	C	21.8	C
Interstate 80 WB and WY76	10.4	B	15.2	C
Interstate 80 WB and Johnson Road	10.0	B	12.1	B
Interstate 80 EB and Johnson Road	11.9	B	17.3	C
Notes: [1]Signalized intersection				

6.0 Potential Mitigation Options

Using the traffic analysis described above, PCW identified potential effects to the public roads in the vicinity of the CCSM Project Site due to the CCSM Project's expected. Based on the traffic

analysis, PCW anticipates that four intersections during the July 2016 case and two intersections during the July 2017 case will receive LOS ratings of D or lower ratings and will require mitigation.[1] PCW has explored options to mitigate and improve these LOS ratings, and determined that the use of active traffic control and shifting traffic to off-peak times are both effective mitigation techniques. PCW anticipates that these options will be sufficient to avoid the need for any temporary or permanent changes to the affected intersections to mitigate traffic levels, although some temporary geometric improvements may be necessary to accommodate oversize truck deliveries (Appendix A to the Transportation Management Plan).

6.1.1 Active Traffic Control

For purposes of the traffic analysis, PCW assumed the existing traffic control measures would remain in effect. For every intersection where service was estimated to drop to an LOS D rating or lower, the intersections are controlled through stop signs rather than traffic lights. Delays at these intersections were due mostly to large truck deliveries, and high traffic volumes from workforce commuting. Trucks making deliveries of large materials or components (often oversize or heavy) are slow to accelerate and generally make wide turns compared to passenger vehicles. One of these trucks completing a turn will cause traffic in all other directions to stop for several seconds until the truck clears the intersection. This combined with higher-than-typical traffic volumes caused by workforce commuting was anticipated to lead to the longer delay times at the affected intersections.

One of the most common and effective methods for mitigating these types of traffic delays is active traffic control. Flaggers are typically used to manage the flow of traffic and avoid the longer delays. Flaggers can see trucks approaching an intersection and stop traffic in other directions to keep the truck moving, thereby avoiding the long delay of the truck starting from a complete stop. The use of flaggers also avoids the inherent delay caused by all vehicles needing to come to a stop at an intersection with four-way stop signs.

Whenever a significant volume of CCSM Project traffic is using the Haul Road and crossing CR401, PCW expects to use flaggers to control this intersection. PCW intends to instruct the flaggers to favor stopping CCSM Project traffic when public vehicles arrive rather than the reverse. This will minimize any delays to the public traffic while having little effect on CCSM Project traffic as the volume of public traffic on CR401 is very low.

Due to limitations within the available traffic analysis software, PCW was not able to directly quantify the effect that flaggers will have on intersection traffic; however, experience has shown that the ability of flaggers to be flexible and adaptive in traffic management by allowing longer queues of vehicles to clear intersections as needed is superior to the addition of temporary timed traffic lights.

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[1] While a LOS D rating was identified at one intersection during decommissioning, this is likely due to the conservative assumptions of the analysis and not mitigation is anticipated to be required during decommissioning.

6.1.2 Shifting Traffic to Off-Peak Times

The traffic analysis determined that the LOS rating impacts of the studied intersections was caused primarily by the entire workforce commuting to the CCSM Project Site over the same one hour period as the existing peak traffic, an intentionally conservative assumption. During peak periods of the CCSM Project construction, the number of workers reporting to the CCSM Project Site at the same time involves more vehicles than the intersections are designed to accommodate. An option identified by PCW would be to stagger the start- and end-shift times for the labor force on the CCSM Project. Rather than requiring the entire labor force to report to the site at the same time, PCW examined the effect of dividing the shift into two equal groups, with the second starting and ending one hour later than the first. As shown in Table 15 and Figures 7 and 8 of Exhibit A, the effect of this change onto the Interstate 80/WY76 intersection was dramatic, reducing the delay times substantially and improving the expected LOS at significantly impacted intersections one or two levels during the peak traffic times.

Based on these results, PCW does not anticipate further mitigation measures will be required; however, if wait times during construction are found to significantly exceed expectations, PCW will explore additional mitigation measures such as three start times, carpooling or bussing the members of the workforce (especially those commuting from Laramie) and restricting all truck deliveries to off-peak times.

Table 15. Level of Service Improvements Due To Mitigation

Intersection	Peak Time	Single Start		Staggered Start	
		Delay (sec)	LOS	Delay (sec)	LOS
July 2016 Peak Case					
WY71 & Jackson St.	Morning Peak	>880	F	28.8	D
WY71 & Jackson St.	Afternoon Peak	>50	F	16.9	C
WY71 & Washington St.	Morning Peak	>425	F	24.0	C
WY71 & Washington St.	Afternoon Peak	>135	F	22.0	C
WY71 & Locust/S. Higley	Morning Peak	>25	D	14.9	B
Interstate 80 EB & S. Higley	Afternoon Peak	>25	D	10.4	B
July 2017 Peak Case					
Interstate 80 EB & Hwy 76	Morning Peak	>960	F	21.1	C
Interstate 80 EB & Hwy 76	Afternoon Peak	>270	F	28.4	D
Interstate 80 WB & Hwy 76	Afternoon Peak	>52	F	14.3	B

7.0 References

Transportation Research Board (TRB). 2010. Highway Capacity Manual 2010. Transportation Research Board of the National Academies. January 2010

Wyoming Department of Transportation (WYDOT). 2009. Traffic Data. http://www.dot.state.wy.us/home/planning_projects/Traffic_Data.default.html. Accessed July 16, 2013.

Exhibit 1

Traffic Volume Diagrams

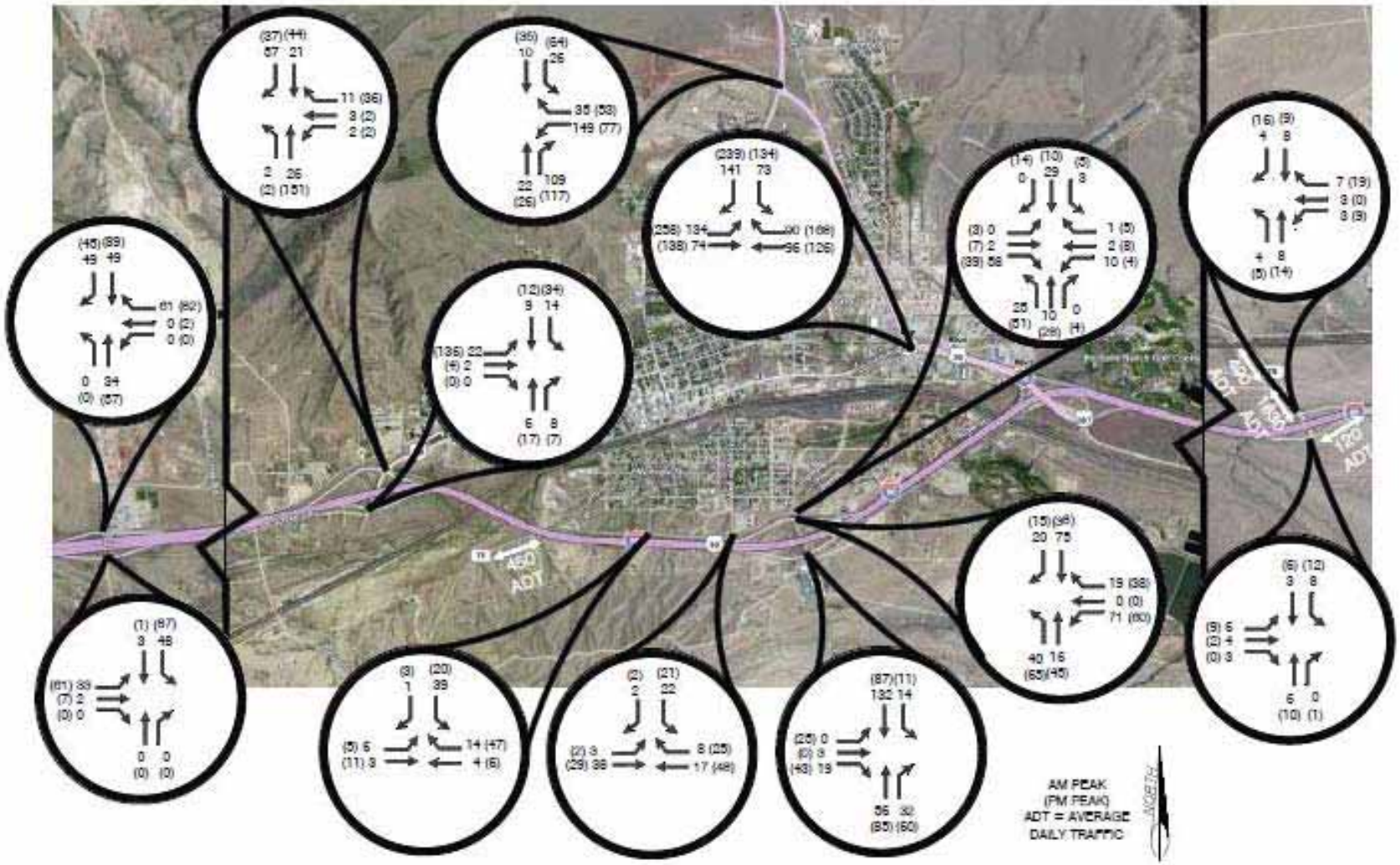

Figure 1. Traffic Volumes - Existing

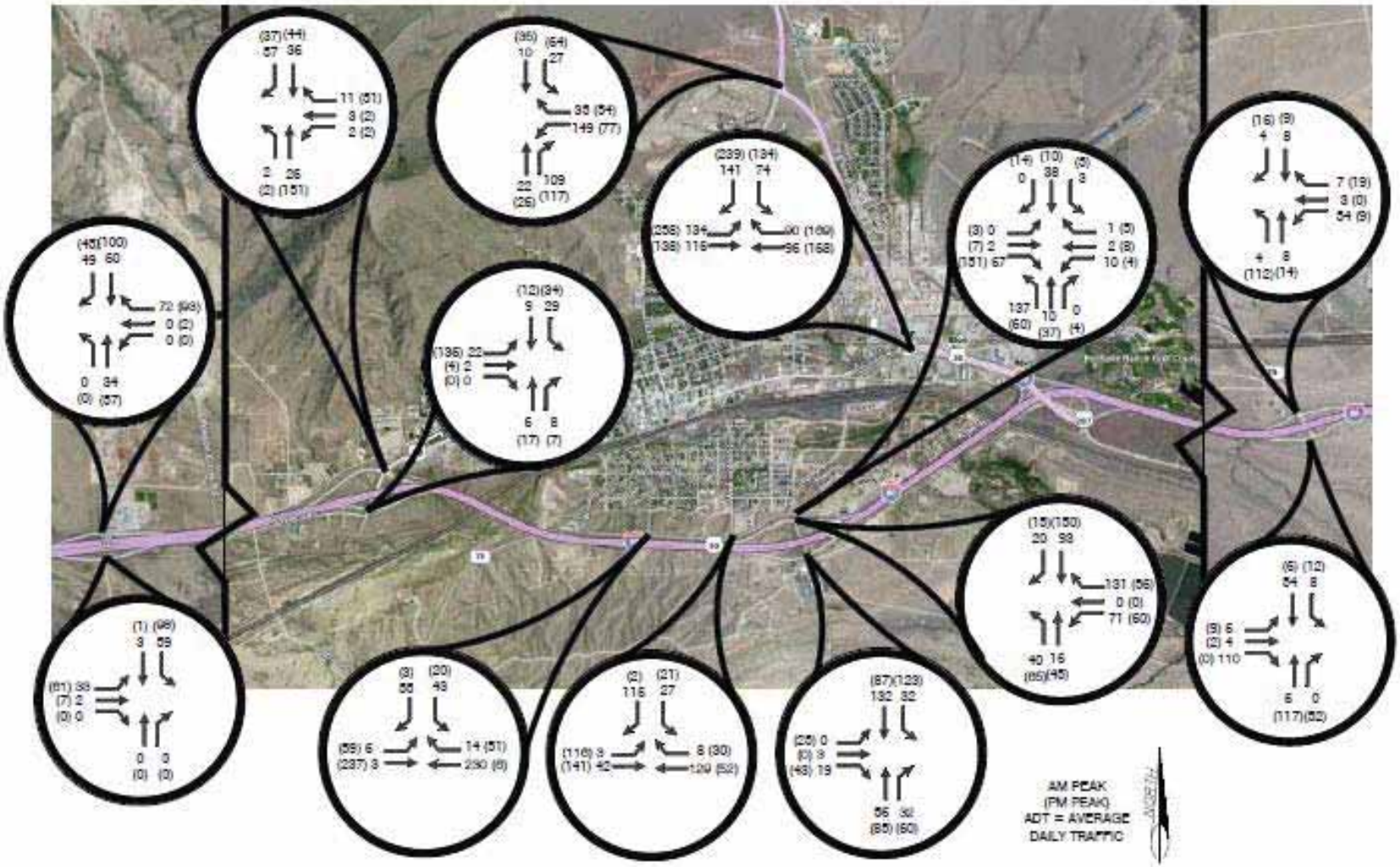

Figure 2. Traffic Volumes – Construction Year 2015 (August)

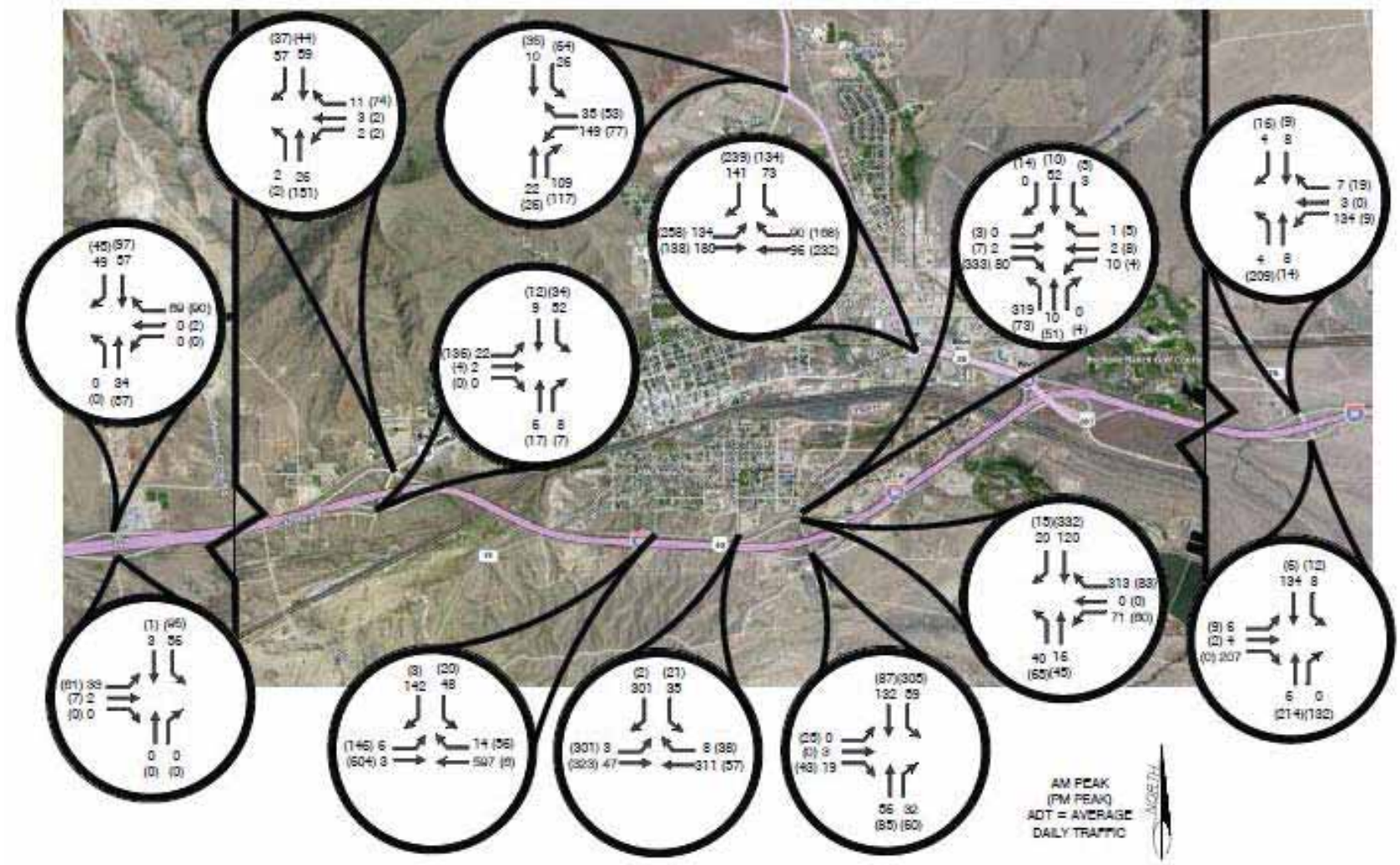

Figure 3. Traffic Volumes – Construction Year 2016 (July)

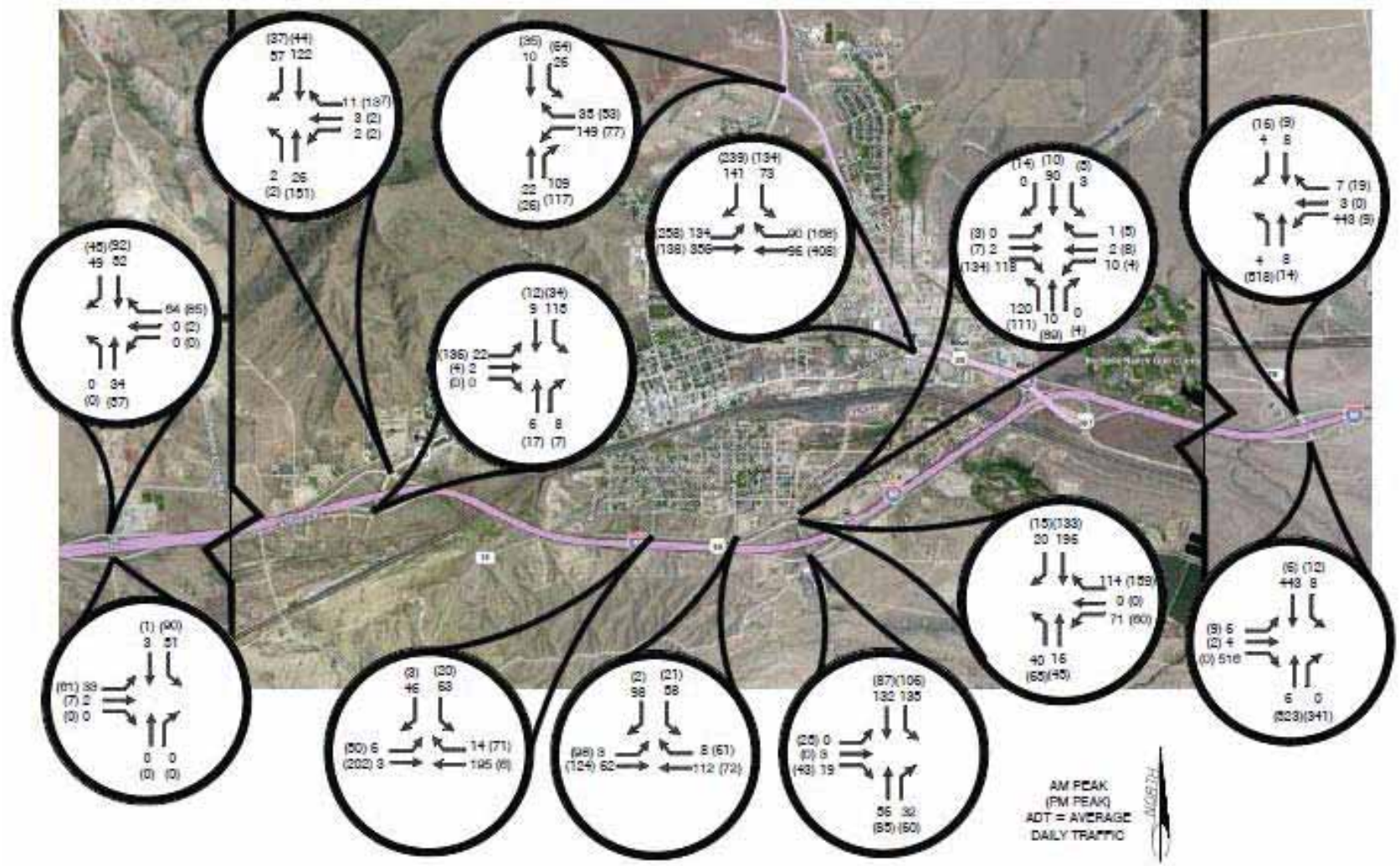

Figure 4. Traffic Volumes – Construction Year 2017 (July)

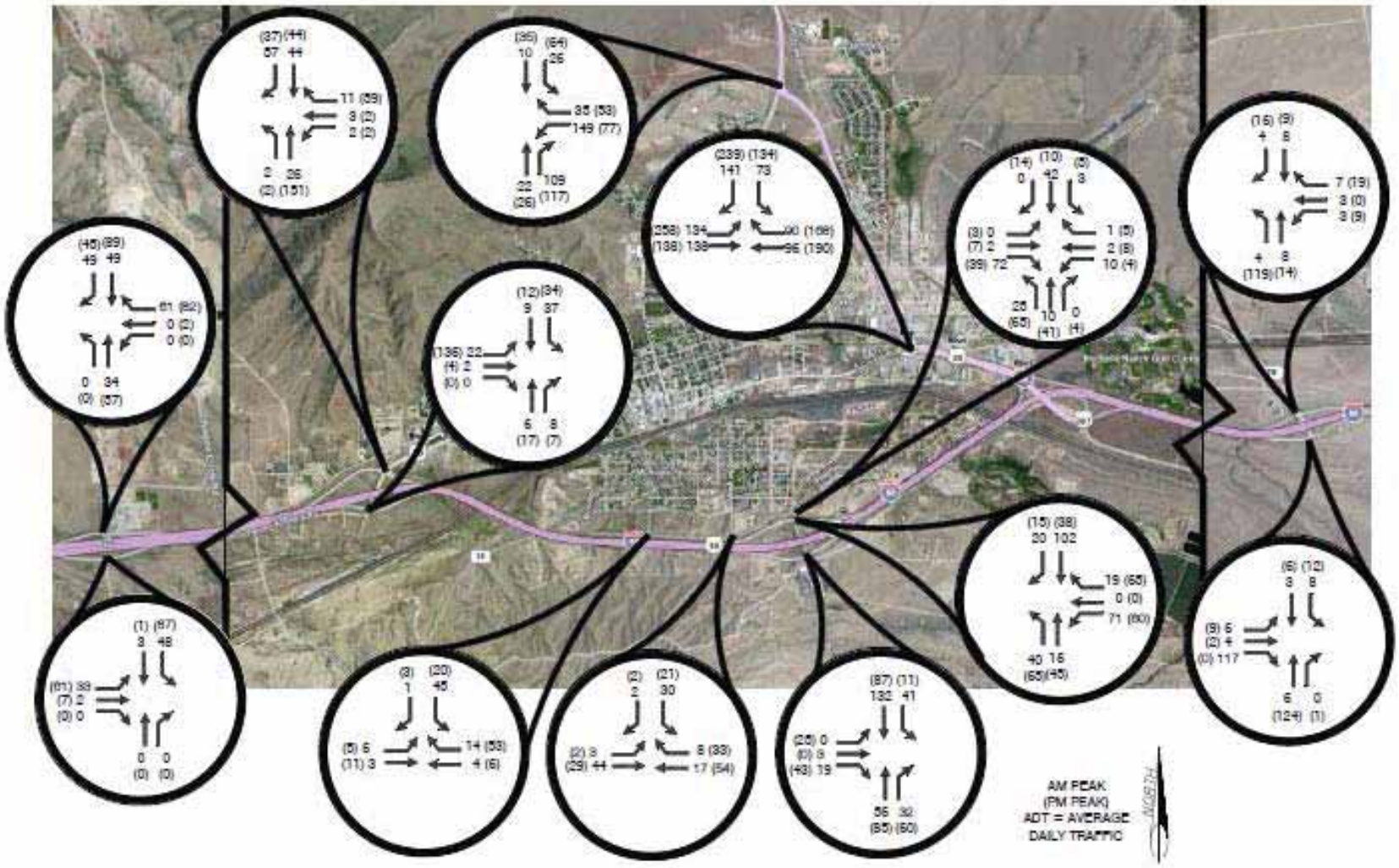

Figure 5. Traffic Volumes – Operations and Maintenance

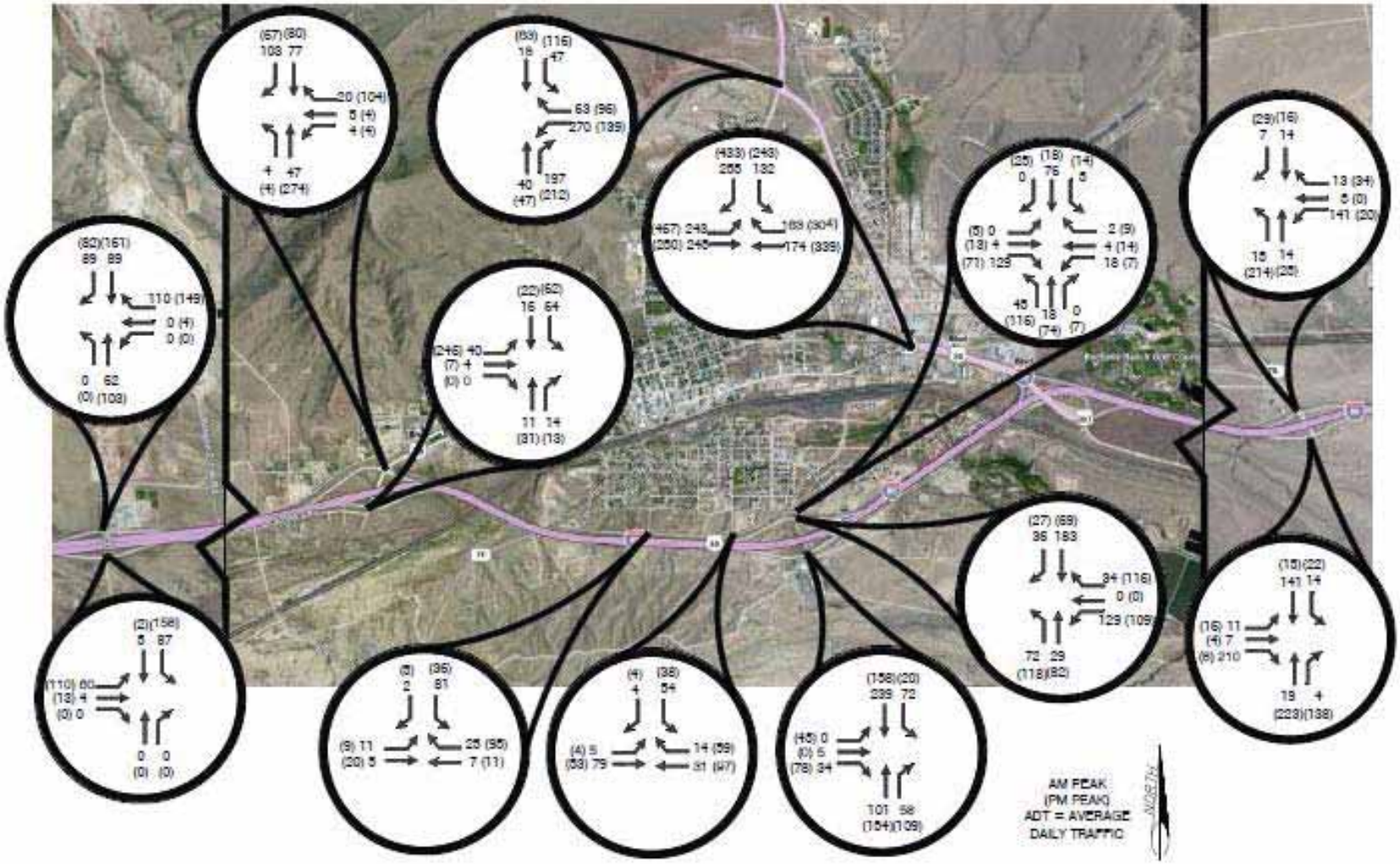

Figure 6. Traffic Volumes – Decommissioning Year Two Peak

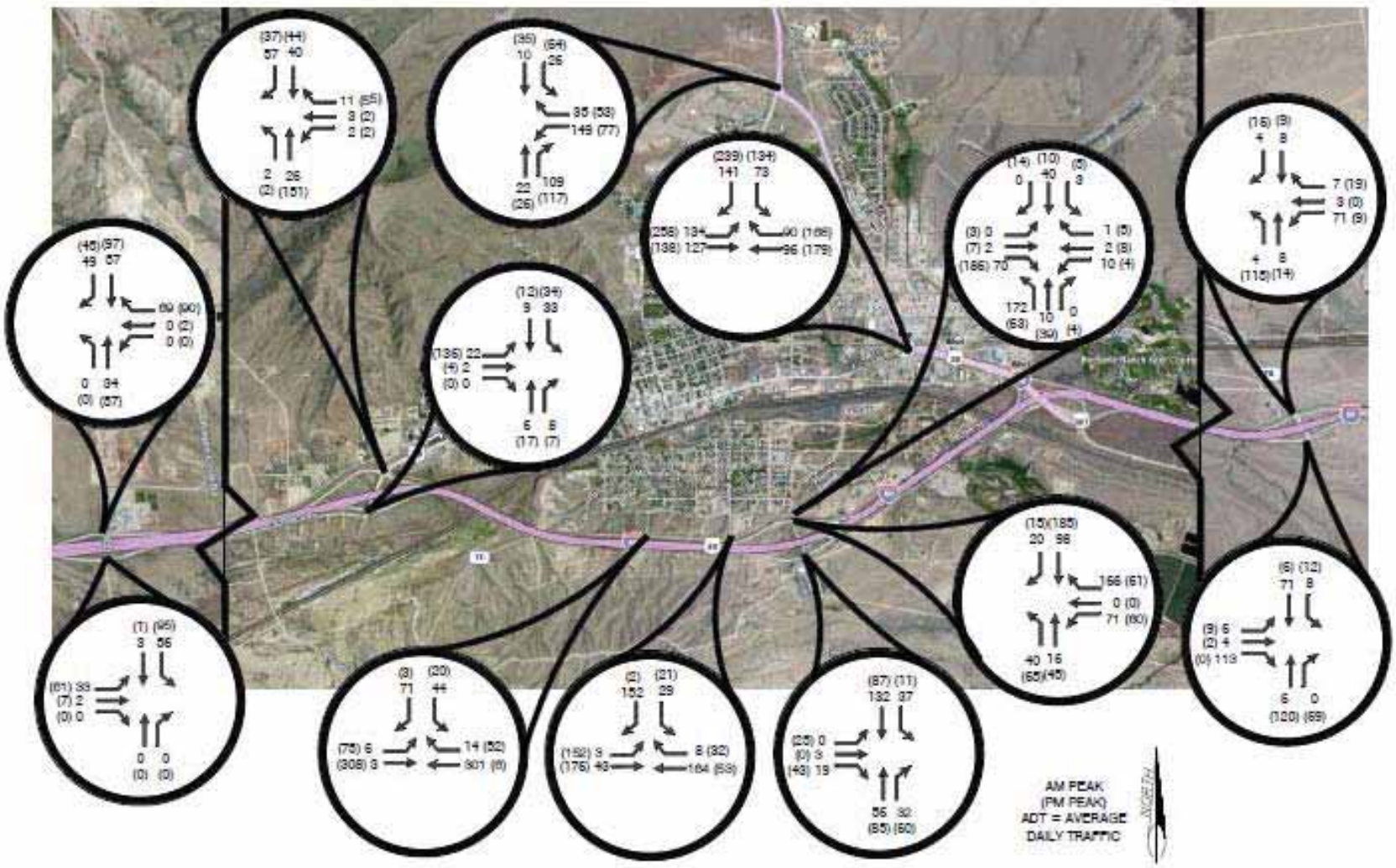

Figure 7. Traffic Volumes – Construction Year 2016 (July) with Staggered Shifts

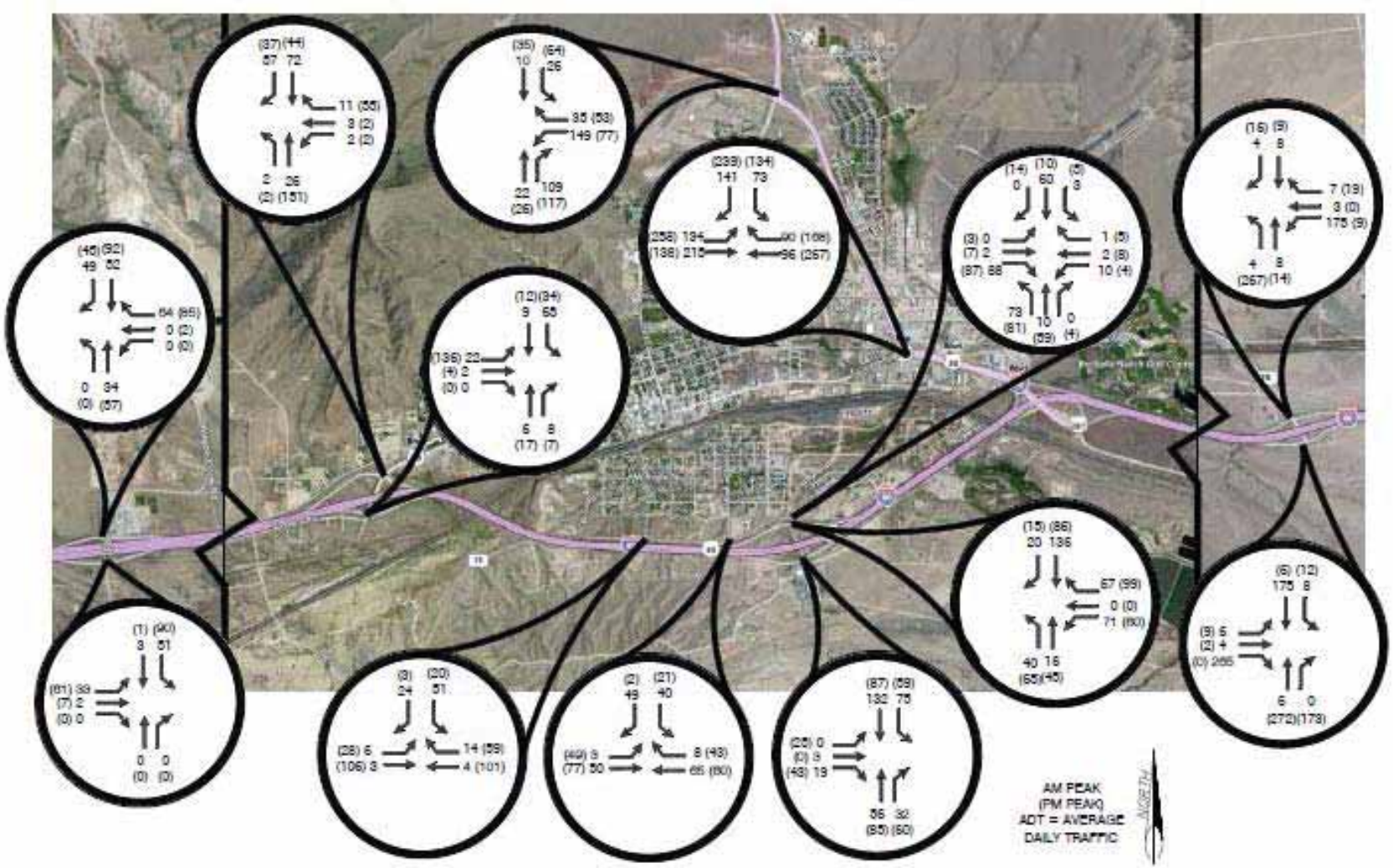

Figure 8. Traffic Volumes – Construction Year 2017 (July) with Staggered Shifts

APPENDIX E

Chokecherry and Sierra Madre Wind Energy Project

Winter Access Plan

555 Seventeenth Street
Suite 2400
Denver, CO 80202

September 2013
(Updated March 2014)

TABLE OF CONTENTS

Page

1.0 INTRODUCTION 1
2.0 STRATEGY 2
3.0 METHODS 2
4.0 IMPLEMENTATION 3

LIST OF TABLES

Table 1. Component-specific Winter Access Measures 3

1.0 INTRODUCTION

Power Company of Wyoming LLC (PCW) proposes to construct, operate, maintain and decommission the Chokecherry and Sierra Madre Wind Energy Project (CCSM Project), located in Carbon County, Wyoming. The CCSM Project consists of up to 1,000 wind turbines capable of generating approximately 2,000 to 3,000 megawatts (MW) of clean, renewable wind energy. The primary components of the CCSM Project include the wind turbine generators, an internal road network, a rail facility, a quarry, an internal electrical collection and transmission system, substations, and operations and maintenance buildings.

The CCSM Project is located south of the city of Rawlins, primarily within the bounds of the Overland Trail Ranch (Ranch). The Ranch is owned and operated by PCW affiliate, The Overland Trail Cattle Company LLC (TOTCO). The Ranch is situated within an area of alternating sections of private and federal lands commonly referred to as the "checkerboard." The vast majority of the private lands are owned by TOTCO and the federal lands are administered by the Bureau of Land Management (BLM) Rawlins Field Office (RFO). A small percentage of the land within the Ranch is owned by the State of Wyoming and is administered by the State Board of Land Commissioners. Finally, Anadarko Land Corporation owns some sections located on the periphery of the northwest boundary of the Ranch.

In 2008, PCW applied to BLM for right-of-way grants to construct, operate, maintain and decommission the CCSM Project on federal lands within the CCSM Project Site. On June 29, 2012, the Notice of Availability for the Final EIS concerning the CCSM Project was published in the Federal Register (77 FR 63328). On October 9, 2012 the Secretary of the Interior signed the Record of Decision (ROD). In the ROD, BLM determined that over 200,000 acres within the CCSM Project Site are suitable for wind energy development subject to the requirements described under the Selected Alternative in the ROD. The area that was determined to be suitable for wind energy development consists of two wind development areas (WDAs) in which turbines would be located. The northern WDA is known as Chokecherry and the southern WDA is known as Sierra Madre. The WDAs are located approximately 9 miles apart.

Prior to issuing right-of-way grants for the CCSM Project, BLM will conduct subsequent environmental analysis of site-specific plans of development submitted by PCW. The site-specific plans of development will be screened against the analysis conducted in the EIS and the requirements described under the Selected Alternative in the ROD. PCW anticipates submitting five (5) site-specific plans of development to BLM, consisting of the following:

1. Phase I Haul Road and Facilities
2. West Sinclair Rail Facility
3. Road Rock Quarry
4. Phase I Wind Development
5. Phase II Wind Development (including Phase II Haul Road and Facilities)

This Winter Access Plan (Plan) describes PCW's strategy for maintaining access to the CCSM Project components listed above during winter conditions. During the winter months, the CCSM

Project Site is known to have periods of significant snowfall and drifting. To effectively operate and maintain the CCSM Project, some limited access to the CCSM Project components will be required during winter conditions. PCW intends to first minimize the need for winter access and then use the methods and strategies described below to access the CCSM Project components as required. PCW will update and modify this Plan as needed to address the changing conditions and requirements of the CCSM Project. PCW will apply adaptive management principles to winter access, using any lessons learned in subsequent plan updates.

2.0 STRATEGY

To provide access to the CCSM Project components during winter conditions while minimizing impacts, PCW will apply the following strategies:

1. Conduct preventative maintenance prior to winter;
2. Stage winter access vehicles (snow cats or equivalent) in strategic locations (e.g. Lower Miller Hill) to provide access without snow removal;
3. Equip select CCSM Project pick-up trucks with snow plows; and
4. Perform snow removal on roads only as needed.

3.0 METHODS

The primary method for maintaining access to CCSM Project components during winter conditions is to clear snow from road and facility surfaces. PCW will use pick-ups, as well as larger snow plow trucks (Ford F-650 or similar) when needed, to clear snow from roads and facilities.

When snow is removed from the driving surface of a road, PCW will attempt to maintain at least a 24 foot clearance on haul-class roads, a 16-feet clearance on arterial, turbine, and facility-class roads, and 12-foot clearance on structure-class roads. Snow removed from roads will be pushed to the shoulder of the road along the edge of the driving surface where possible. When snow piled along the shoulder of the road becomes sufficiently deep, escape openings for big game will be provided every one-quarter mile or less. For snow removal at facilities, snow will be pushed to a location within the facility site where it will not interfere with access.

As an alternative to snow removal, winter access to some CCSM Project components will be accomplished using winter access vehicles, such as snow cats, snow machines (snowmobiles), or equivalent. PCW will use winter access vehicles where access is required over a relatively short distance (5 miles or less). Winter access vehicles will only be used when sufficient snow cover exists to allow the machines to operate effectively; if snow cover is not sufficient, PCW will clear snow as described above.

Over time, operating experience on the CCSM Project will identify locations where snow drifts are likely to occur. PCW may elect to place snow fences upwind of these locations to limit drifting and reduce snow clearing requirements. If snow fences are used, they will be limited to segments of one-quarter mile or less to facilitate the exit of big game.

4.0 IMPLEMENTATION

PCW will implement the winter access strategy and methods for the CCSM Project components as described in Table 1. As PCW gains operating experience on the CCSM Project Site, the measures and strategies listed for each component will be reviewed and updated as required to accomplish efficient and safe winter access to the CCSM Project components.

Table 1. Component-specific Winter Access Measures

Component	Measure
Wind Turbines and Pads	PCW will schedule preventative maintenance for wind turbines prior to winter, to the extent practicable. If preventative maintenance cannot feasibly be completed prior to winter, PCW will attempt to schedule winter maintenance for turbines in areas that are easier to access during winter conditions. For wind turbine work during winter conditions, turbine pads will only be cleared to the extent required to support the activities. Unless required by the work activities, snow clearing would be limited to that required to access the turbine and would not include the entire turbine pad.
Haul Road	The Haul Road is the primary access route for the CCSM Project Site; as such, PCW will clear snow from the Haul Road throughout the winter as appropriate to the road conditions and activity level on-site.
'Other Roads'	Arterial, turbine, facility, and structure-class roads will only be cleared to provide access to turbines and other project elements when required; however, some arterial roads that provide access to large portions of the CCSM Project Site may be cleared more proactively, similar to the Haul Road.
Buildings	All buildings for the CCSM Project (Operations Center, Chokecherry Maintenance Building and Sierra Madre Maintenance Building) are located along or near the Haul Road and/or public roads. Access to each building will be maintained throughout the winter. Since access to the CCSM Project buildings will be maintained, snow plows and winter access vehicles will likely be stored at each location to facilitate winter access throughout the remainder of the CCSM Project.
West Sinclair Rail Facility	When the West Sinclair Rail Facility is in operation during winter conditions, access will be maintained by clearing snow from the access road and active portions of the facility similar to the Haul Road and buildings. When the West Sinclair Rail Facility is not in operation, access to the facility during winter conditions will be established and maintained only as needed.
Road Rock Quarry	PCW does not anticipate that the Road Rock Quarry will operate during winter conditions; however, if the Road Rock Quarry is operated during the winter, access will be maintained by clearing snow from the access road and active portions of the facility similar to the Haul Road and buildings. When the quarry is not in operation, access to the facility during winter conditions will be established and maintained only as needed.
Substations	PCW will maintain access to the CCSM Project substations throughout the winter, similar to the Haul Road and Buildings, for safety.
Water Stations	PCW will keep at least one CCSM Project water station functional during the winter; access will be established only as needed.
North Platte River Extraction	The river extraction facility will not be operated during the winter; therefore River Road will not be cleared and no access will be available.

APPENDIX F

Chokecherry and Sierra Madre Wind Energy Project

Environmental and Construction Compliance Monitoring Plan

Prepared by

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Submitted to

Bureau of Land Management
Rawlins Field Office

Rawlins, Wyoming

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TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 Background 1
1.2 Purpose 1
2.0 OBJECTIVES OF THE ENVIRONMENTAL AND CONSTRUCTION COMPLIANCE MONITORING PROGRAM 2
3.0 ENVIRONMENTAL COMPLIANCE MONITORING AND MANAGEMENT 3
3.1 Construction Plan 3
3.2 Compliance Monitoring and Management 4
3.3 Compliance Monitoring Team 6
3.4 CCSM Project Access 6
4.0 REPORTING AND DOCUMENTATION 6
4.1 Monitoring Reports and Weekly Updates 7
4.1.1 Communication 7
4.1.2 Acceptable 7
4.1.3 Problem Area 7
4.1.4 Noncompliance 8
4.1.5 Serious Violation 8
4.2 Monthly Summary Reports 9
4.3 Non-Public CCSM Project Website 9
5.0 VARIANCES 10
5.1 Tiered Variance System During Construction 10
5.1.1 Level 1: Variances Accomplished Through Field Resolution 11
5.1.2 Level 2: Variances Beyond Field Resolution, Not Requiring an Amendment to the ROW Grant(s) 12
5.1.3 Level 3: Variances Requiring an Amendment to the ROW Grant 13
6.0 STOP WORK AUTHORITY 14
7.0 TRAINING AND PRECONSTRUCTION MEETING 14
7.1 Pre-Construction Meeting 14
7.2 EAP 14
7.3 Compliance Monitoring Team Training 15
8.0 EQUIPMENT 15
9.0 CCSM PROJECT OPERATIONS and Maintenance 15

LIST OF ATTACHMENTS

Attachment A	Monitoring Report Cover Page Form
Attachment B	Monitoring Report Form
Attachment C	BLM Authorized Officer Weekly Report
Attachment D	Certification of Completion of Worker Environmental Awareness Program
Attachment E	Variance Request Form

ACRONYMS AND ABBREVIATIONS

AO	Authorized Officer (BLM)
BLM	Bureau of Land Management
BO	Biological Opinion
CCSM	Chokecherry and Sierra Madre
CM	Compliance Manager (PCW)
ECCMP	Environmental and Construction Compliance Monitoring Plan
ECM	Environmental Compliance Monitor
EIS	Environmental Impact Statement
MW	Megawatts
NEPA	National Environmental Policy Act
PCW	Power Company of Wyoming LLC
PM	Project Manager
POD	Plan of Development
RFO	Rawlins Field Office
ROD	Record of Decision
SPCC	Spill Prevention Control and Countermeasures Plan
SWPPP	Stormwater Pollution Prevention Plan
TOTCO	The Overland Trail Cattle Company LLC
USFWS	United States Fish and Wildlife Service
EAP	Worker Environmental Awareness Program

1.0INTRODUCTION

1.1 BACKGROUND

Power Company of Wyoming LLC (PCW) proposes to construct, operate, maintain and decommission the Chokecherry and Sierra Madre Wind Energy Project (CCSM Project) to. The CCSM Project consists of up to 1,000 wind turbines capable of generating approximately 2,000 to 3,000 megawatts (MW) of clean, renewable wind energy. The CCSM Project has a proposed life of 30 years after which, subject to market conditions, the CCSM Project may be repowered as necessary to continue its operations. The primary components of the CCSM Project include the wind turbine generators, an internal road network, a rail facility, a quarry, an internal electrical collection and transmission system, substations, and operations and maintenance buildings.

The CCSM Project is located south of the city of Rawlins, primarily within the bounds of the Overland Trail Ranch (Ranch). The Ranch is owned and operated by PCW affiliate, The Overland Trail Cattle Company LLC (TOTCO). The Ranch is situated within an area of alternating sections of private and federal lands commonly referred to as the "checkerboard." The vast majority of the private lands are owned by TOTCO, and the federal lands are administered by the BLM Rawlins Field Office (RFO). A small percentage of the land within the Ranch is owned by the State of Wyoming and is administered by the State Board of Land Commissioners. Finally, Anadarko Land Corporation owns some sections located on the periphery of the northwest boundary of the Ranch.

In 2008, PCW applied to BLM for ROW grants to construct, operate, maintain, and decommission the CCSM Project on federal lands within the CCSM Project Area. On June 29, 2012, the Notice of Availability for the Final Environmental Impact Statement (EIS) concerning the CCSM Project was published in the Federal Register (77 FR 63328). On October 9, 2012 the Secretary of the Interior signed the Record of Decision (ROD). In the ROD, BLM determined that over 200,000 acres within the CCSM Project Area are suitable for wind energy development subject to the requirements described under the Selected Alternative in the ROD.

Prior to issuing right-of-way grants for the CCSM Project, BLM will conduct subsequent environmental analysis of site-specific plans of development submitted by PCW. The site-specific plans of development will be screened against the analysis conducted in the EIS and the requirements described under the Selected Alternative in the ROD.

1.2 PURPOSE

The BLM requires holders of ROW grants to prepare and fund an environmental and construction compliance monitoring program to ensure compliance with the BLM terms, conditions, and stipulations in the ROW grants, the Plan of Development, and required mitigation as provided for in the ROD. The ROD requires PCW to develop an Environmental and Construction Compliance Monitoring Plan (ECCMP) for the CCSM Project. The purpose of this ECCMP is to establish a program to address the requirements found in the ROD, including Appendix C "*Project Permitting and BLM Tiering Procedures*" and Appendix D "*Summary of BLM Environmental Constraints, Applicant Committed Measures, Applicant Committed Best Management Practices, and Proposed Mitigation Measures*."

To implement the ECCMP, PCW will establish an ECCMP Team consisting of BLM, PCW and contractor representatives, as described in Section 3. The ECCMP Team will be responsible for ensuring compliance with the conditions and requirements of the CCSM Project environmental permits and approvals, including implementation of this ECCMP and communication and coordination with the appropriate regulatory agencies. The ECCMP Team will also be responsible for the recordkeeping and reporting required by the CCSM Project permits and approvals and will update the environmental documents and plans as needed.

This ECCMP includes the following:

- Description of the responsibilities of the ECCMP Team including the Environmental Compliance Monitor hired to report findings to the BLM;
- Outline of the level of effort anticipated from the ECCMP Team in implementing this ECCMP;
- Definition of the decision-making authority of the ECCMP Team;
- Description of the ECCMP Team's participation in PCW's Environmental Awareness Program (EAP); and
- Discussion of the CCSM Project monitoring, reporting, and documentation requirements, stop work authority, and the variance process.

This ECCMP is intended to be adaptive. With concurrence from the BLM Authorized Officer, PCW may modify this plan as needed to address changing conditions and requirements.

2.0OBJECTIVES OF THE ENVIRONMENTAL AND CONSTRUCTION COMPLIANCE MONITORING PROGRAM

For projects on federal lands, BLM is responsible for insuring compliance with NEPA and the terms and conditions of the ROW grant (which includes the site-specific plans of developments; other federal, state, and local permits; and Project construction drawings and staking plans). The environmental requirements to be monitored for the CCSM Project include measures that either: (1) apply to federal lands or (2) result from federal oversight of a program or resource (e.g. National Historic Preservation Act and Endangered Species Act). These requirements include the environmental provisions of the following, as applicable:

- ROD and ROW grants;
- Final approved site-specific plans of development;
- U.S. Fish and Wildlife Service's (USFWS) Biological Opinion (BO) or letter of concurrence for listed endangered or threatened federal species or their habitat;
- Approved treatment plan(s) for the treatment and protection of cultural resources;
- Approved environmental compliance and management plans, including the final versions of the Stormwater Pollution Prevention Plan (SWPPP) and the Spill Prevention Control and Countermeasure (SPCC) Plan; and
- Permits and approvals from other authorizing federal, state or local environmental agencies.

A list of the major permits, approvals, and authorizations necessary to construct, operate, maintain, and decommission the CCSM Project is provided in Table 1-2 of the EIS.

The objective of this ECCMP is to provide direction to the ECCMP Team regarding environmental compliance, including compliance inspections and evaluating and documenting compliance with the CCSM Project environmental measures and conditions during Project construction. The roles and responsibilities of the ECCMP Team are set forth in Section 3.

The objectives of the ECCMP Team are to:

- Facilitate the timely resolution of compliance issues;
- Provide information to the BLM and other agencies and parties, as authorized, regarding compliance issues and their resolution;
- Review, process, and track construction-related changes to the CCSM Project POD, site specific plan of development and environmental plans; and
- Develop and implement a system for storing the information collected during implementation of the ECCMP that allows for easy retrieval of information.

This ECCMP focuses on the construction of the CCSM Project; prior to commencement of commercial operation, a separate environmental compliance monitoring plan will be issued by PCW to address the operation and maintenance of the CCSM Project. Construction activities not related to environmental compliance are not considered part of this plan. Examples include but are not limited to, items such as structural design, material inspection or quality control requirements, schedule, and pricing.

3.0ENVIRONMENTAL COMPLIANCE MONITORING AND MANAGEMENT

3.1 CONSTRUCTION PLAN

In the event PCW receives the necessary ROW grants and all other applicable federal, state and local permits and approvals, PCW plans to develop the CCSM Project in two phases. Phase I requires the installation of a nameplate capacity of at least 1,500 MW of wind energy generation facilities (approximately 500 turbines). Construction of Phase I of the CCSM Project (CCSM Phase I) is scheduled to begin in the second half of 2014. Completion of construction and commencement of commercial operation of Phase I is scheduled for 2017. Construction of Phase II of the CCSM Project (CCSM Phase II), consisting of development of the remainder of the CCSM Project, is anticipated to follow completion of Phase I.

Prior to issuing ROW grants, BLM will conduct subsequent environmental analysis of site-specific plans of development submitted by PCW. PCW anticipates submitting five (5) site-specific plans of development to BLM, consisting of the following:

1. Phase I Haul Road and Facilities
2. West Sinclair Rail Facility
3. Road Rock Quarry
4. Phase I Wind Development
5. Phase II Wind Development (including Phase II Haul Road and Facilities)

Each site-specific plan of development will contain engineering and natural resource data describing site-specific conditions and activities in the detail necessary to allow BLM to evaluate and analyze site-

specific impacts. Appropriate avoidance, minimization, and mitigation measures will be applied consistent with the ROD and ROW grants.

3.2 COMPLIANCE MONITORING AND MANAGEMENT

To implement the ECCMP, PCW will establish an ECCMP Team consisting of BLM, PCW and contractor representatives. The ECCMP Team will be responsible for ensuring compliance with the conditions and requirements of the CCSM Project environmental permits and approvals, including implementation of this ECCMP and communication and coordination with the appropriate regulatory agencies.

The BLM representatives on the ECCMP Team are as follows:

> BLM Authorized Officer (AO): The BLM official with the administrative authority for issuance of ROW grants and authority for accepting and approving CCSM Project changes. The BLM AO may approve Level 1, Level 2 and Level 3 variances.
>
> BLM Project Manager: The BLM staff level position designated by the AO as the point of contact for compliance issues. The BLM Project Manager may approve Level 1 and Level 2 variances.
>
> Environmental Compliance Monitor (ECM): The third-party contractor team, consisting of a manager and a full-time field monitor, under the direct supervision and control of the BLM (funded by PCW during construction of the CCSM Project). The ECM will provide weekly reports directly to the BLM and will be authorized to address proposed/needed deviations from ROW grant stipulations and the approved site-specific plan of development associated with the ROW grant for minor variances (Level 1 variances) after consulting with the BLM Project Manager to expedite construction while protecting resource values. The ECM will consult with the BLM Project Manager, or his/her designated representative, to determine if a variance will require amendment to the site-specific plans of development or the BLM ROW grant.

The PCW representatives on the ECCMP Team are as follows:

> PCW Project Manager: The person designated by PCW as responsible for all construction related activities at the CCSM Project Site. The PCW Project Manager will be the senior PCW official on-site who is authorized to represent PCW. The PCW Project Manager will be responsible for coordination and communication between PCW, contractors, BLM, landowners and agency personnel regarding environmental compliance for the CCSM Project. The PCW Project Manager will oversee implementation of the ECCMP. The PCW Project Manager will be authorized to prepare and submit Level 1, Level 2 and Level 3 Variance Requests.
>
> Construction Contractor Project Manager (Contractor PM): The senior on-site manager for the lead construction contractor for the CCSM Project. The Contractor PM will communicate and coordinate with PCW, BLM, landowners and agency personnel regarding environmental compliance for the CCSM Project, as directed by the PCW Project Manager.
>
> PCW Compliance Manager (CM): The on-site manager designated by PCW as responsible for routine environmental compliance inspections and monitoring. The CM will communicate

regularly with the PCW Project Manager to ensure compliance with the CCSM Project environmental requirements. The CM will be authorized to prepare and submit Level 1 and Level 2 variance requests to BLM. The Environmental Compliance Inspectors will report directly to the CM.

In addition to communicating with the PCW Project Manager and managing Level 1 and Level 2 variances, the CM responsibilities include:

- Conferring with the BLM Project Manager and the ECM on a regular basis;
- Communicating with Inspectors regularly to obtain/verify environmental guidance and evaluate implementation of environmental requirements;
- Supervising monitoring activities, documentation, and schedules;
- Reviewing daily reports submitted by the Inspectors;
- Preparing and submitting weekly reports to the ECM;
- Ensuring that all reported noncompliance is tracked for resolution by PCW;
- Implementing the environmental training program; and
- Interacting with regulatory agencies as directed by the PCW Project Manager.

<u>Environmental Compliance Inspectors (Inspectors):</u> On-site personnel under the direction of the CM responsible for implementing the compliance program pursuant to this ECCMP. The number of Inspectors may vary during construction of the CCSM Project depending upon the types and levels of activity occurring but will be sufficient to ensure that this EECMP is implemented. Construction activities, especially those in environmentally sensitive areas, will be regularly inspected to ensure protection of resources in accordance with the environmental requirements. Inspectors may include the following disciplines, as appropriate to the work activity and location:

- *Biological Resources*. The biological resource inspector will monitor construction activities in areas that have been identified as having sensitive biological resources, including known locations of threatened, endangered, or sensitive species and/or habitat. Monitoring will occur as defined in the Wildlife Monitoring and Protection Plan, Appendix G of the ROD. The CM will coordinate with the biological resource inspector to ensure that appropriate monitoring is maintained as needed throughout the CCSM Project.
- *Cultural Resources*. In the event of a discovery of cultural resources or as set forth in approved treatment plans, the cultural resource inspector will be assigned to implement the provisions of the CCSM Project Programmatic Agreement, as applicable. The CM will coordinate with the cultural resource inspector during construction to ensure compliance with all cultural resource stipulations set out in the ROW grant (including the site-specific plans of development and appendices).
- *Paleontological Resource Inspectors*. If any vertebrate fossils or scientifically important fossils are discovered during construction activities, PCW will cease activities immediately and notify the BLM Project Manager so the agency can determine the significance of the discovery. The BLM will evaluate the discovery and notify PCW what action will be taken with respect to such discoveries. It may be necessary for a paleontological resource inspector to monitor construction activities in areas surrounding significant fossil discoveries within the CCSM Project Site.

Upon mutual agreement of the AO and the PCW Project Manager, the ECCMP Team may be expanded to include any other federal, state or local agency representative that has regulatory responsibility or has issued permits for the CCSM Project. Should additional agency representatives be added to the ECCMP Team, their roles and responsibilities under this ECCMP will be defined and agreed upon by the AO and the PCW Project Manager.

3.3 COMPLIANCE MONITORING TEAM

The Compliance Monitoring Team is responsible for carrying out the day to day environmental compliance monitoring and reporting activities on the CCSM Project Site. The Compliance Monitoring Team for the CCSM Project consists of a subset of the ECCMP Team. The members of the Compliance Monitoring Team include the following:

- Environmental Compliance Monitor (ECM)
- PCW Compliance Manager (CM)
- Environmental Inspectors

Copies of the CCSM Project environmental conditions and requirements addressed under this ECCMP will be provided to each member of the Compliance Monitoring Team. The Compliance Monitoring Team is required to be familiar with this ECCMP, the roles and responsibilities of each ECCMP Team member, applicable CCSM Project environmental conditions and requirements, and the CCSM Project chain of command during construction. The Compliance Monitoring Team representatives will participate in pre-construction and site coordination meetings, as well as the EAP. Compliance Monitoring Team members will receive additional training as determined necessary by the CM in consultation with the BLM Project Manager.

Each member of the Compliance Monitoring Team will successfully complete and remain current on relevant health and safety training required to work on the CCSM Project Site and will comply with the PCW safety rules and programs. As with all other workforce members, a Compliance Monitoring Team member may be removed from his or her position for violation of PCW safety rules in accordance with PCW's established policy.

3.4 CCSM PROJECT ACCESS

Subject to the requirements of the site health and safety plan, the Compliance Monitoring Team shall have access to all CCSM Project work areas to inspect construction activities in accordance with the terms and conditions of the ROD, ROW grant(s), and any other applicable permits. Access to work areas will not be unreasonably withheld provided that the members of the Compliance Monitoring Team have received all required safety training necessary to enter the work area.

4.0REPORTING AND DOCUMENTATION

The Compliance Monitoring Team will use a database and reporting system that is posted on a non-public, secure website (refer to Section 4.3, Non-Public CCSM Project Website) to create a readily accessible record of construction progress and environmental compliance for the CCSM Project, including photographic documentation used to evaluate compliance. The database and reporting system will be available to BLM and other approved jurisdictional agencies as agreed to by the AO and PCW Project Manager. Each weekly and monthly report, including all compliance levels and

photographic documentation from inspection logs, will be readily available on the database and reporting system.

4.1 MONITORING REPORTS AND WEEKLY UPDATES

Each Compliance Monitoring Team member will compile his/her activity logs and documentation a weekly into monitoring reports on the forms provided in Attachments A and B. A weekly CCSM Project update will be compiled by the ECM for the CCSM Project by aggregating the monitoring reports from the Compliance Monitoring Team. The weekly CCSM Project update will: (1) document the construction progress as a percent complete or other identifying method as agreed to by the AO; (2) document the presence of sensitive species or habitat and culturally sensitive sites; and (3) provide a brief description of the construction activities observed (such as road grading, erosion control, etc.). When appropriate, relevant digital photographs will be taken and included in the weekly CCSM Project update.

Each monitoring report issued by the Compliance Monitoring Team will be reviewed by the ECM and a compliance level will be assigned to the report. The compliance levels that will be used for the CCSM Project are as follows:

- Communication
- Acceptable
- Problem Area
- Noncompliance
- Serious Violation

4.1.1 COMMUNICATION

A monitoring report will be assigned a “communication” compliance level by the ECM if it is prepared to document and track relevant meetings or discussions related to CCSM Project compliance. These communications may be within the Compliance Monitoring Team, within the ECCMP Team, between the ECM and agencies, between the CM and Inspectors, or relevant communications with other on-site personnel.

4.1.2 ACCEPTABLE

A monitoring report will be assigned an “acceptable” compliance level by the ECM when the ECM determines that an inspected area or activity complies with the CCSM Project environmental requirements and applicable mitigation measures have been adequately implemented.

4.1.3 PROBLEM AREA

A monitoring report will be assigned a “problem area” compliance level by the ECM to record an observation that a location or activity does not meet the definition of acceptable but is not considered to be noncompliant. The problem area compliance level will be used to report a range of events and observations including the following:

- An incident where the CCSM Project is not out of compliance with the ROW grant that is accidental or unforeseeable and PCW’s response is appropriate and timely. An example would

be a fuel leak where CCSM Project personnel respond properly by stopping, containing, and cleaning up the spill in accordance with the CCSM Project SPCC Plan.

- A location where the CCSM Project is not out of compliance with the ROW grant but, in the judgment of the ECM, damage to resources could occur if corrective actions are not taken. Some examples are:
  - A topsoil pile located on the bank of a drainage
  - An improperly constructed/located erosion control structure
- An activity that the ECM determines is an unintentional and isolated departure from the ROW grant, with no damage to resources. An example would be a small amount of blading or mowing outside the access pathway that has no effect on sensitive resources such as sensitive plant habitat or a water body.

If a problem area is resolved in a timely manner, it will not be considered noncompliant. If a problem area is not corrected in a timely manner, is found to be a repeat situation, if multiple instances of a similar nature occur, or if it results in resource damage because timely corrective action was not completed, the ECM may document the problem area as "noncompliance" as described in the following section.

4.1.4 NONCOMPLIANCE

A monitoring report will be assigned a "noncompliance" compliance level by the ECM when an activity violates the CCSM Project ROW grants or other environmental requirements; results in damage to resources not authorized in the ROW grants; or places sensitive resources or health and safety (public or employee) at unnecessary risk. Some examples of noncompliant activities are:

- Failure to install or maintain required erosion control devices
- Surface-disturbing activities conducted without an appropriate biological, cultural, or other necessary resource monitor present.

The ECM will notify the CM about a noncompliant activity before issuing a Noncompliance Report. The Noncompliance Report will include the name of the Compliance Monitoring Team member observing the activity and the time of notification. Where practicable and where the nature of the noncompliant activity warrants, the ECM will work closely and collaboratively with the CM to determine the appropriate corrective action.

Resolution of noncompliant activities will be coordinated with the ECCMP Team to ensure that the corrective measures are properly understood and implemented. PCW will provide follow-up documentation to the BLM Project Manager and other jurisdictional agencies, as well as to the ECM regarding resolution of the noncompliance event. Following receipt of documentation regarding resolution, the ECM will inspect the area to verify and document that the noncompliance has been adequately resolved.

4.1.5 SERIOUS VIOLATION

A Compliance Monitoring Team member observing an activity they believe to be a "serious violation" will notify the ECM immediately. If the ECM determines that the activity is in fact a serious violation, a monitoring report will be assigned a "serious violation" compliance level and will be issued by the ECM immediately. Serious violations are activities that are not in compliance with the ROW grants and

may cause substantial harm to resources or pose a serious threat to sensitive resources or health and safety (public or employee). Examples of serious violations include:

- Deliberately conducting an activity that results in disturbance within an exclusion zone for a sensitive resource
- Repeated or cumulative noncompliance activities that could lead to a substantial impact on resources
- Failure to correct previously identified noncompliance activities in an established time frame

A serious violation requires that the ECM and the BLM Project Manager participate in a conference call or meeting with the PCW Project Manager or his/her authorized representative to discuss the violation, the proper corrective actions, and possible follow-up enforcement actions that could be imposed. It is PCW's responsibility to provide follow-up documentation demonstrating resolution of the serious violation to the BLM Project Manager and other jurisdictional agencies, as well as to the ECM. Once PCW documents the resolution of a serious violation, the ECM will inspect the area to verify and document that the issue has been adequately resolved. Violations of permits, stipulations or other requirements will be investigated by the AO or his/her authorized representative and subject to requirements and/or penalties under the Antiquities Act, Archaeological Resources Protection Act (ARPA), Federal Land Policy and Management Act of 1976, the rights-of-way regulations at 43 C.F.R. §2805.12 and/or other relevant laws and regulations.

4.2 MONTHLY SUMMARY REPORTS

Monthly Summary Reports will be issued that briefly describe construction activities during the reporting period and summarize by compliance level the number of reports completed by the Compliance Monitoring Team during the reporting period and cumulatively during construction of the CCSM Project. The Monthly Summary Report will also include a summary of the Level 1, 2, and 3 variance requests approved by the ECM, BLM Project Manager or AO during the reporting period and cumulatively, as well as a table summarizing the net acreage of land affected by approved variances on federal lands. For the Archeological Resources Protection Act and Endangered Species Act, a table summarizing the net acreage of land affected by approved variances on non-federal lands for the reporting period as well as cumulatively. The Compliance Monitoring Team's electronic database and reporting system will be designed to generate all the information in the tables of the Monthly Summary Report.

The Monthly Summary Reports will be posted on the non-public, secure CCSM Project website. When the Monthly Summary Report is posted, the ECM will send an email to the authorized distribution that the report is available. The email will include the link to the website. The entire ECCMP Team will be included in the distribution for the Monthly Summary Report. A sample Monthly Summary Report is provided in Attachment C.

4.3 NON-PUBLIC CCSM PROJECT WEBSITE

The Compliance Monitoring Team will establish and maintain a non-public, password-protected CCSM Project website to display the weekly and monthly monitoring reports and the approved Level 1, 2, and 3 variances (refer to section 5, Variances). The ECCMP Team will have access to the website.

5.0VARIANCES

A critical part of CCSM Project is ensuring the CCSM Project is constructed in compliance with environmental conditions and requirements contained in the ROW grants, which includes the site-specific plans of development; other federal, state, and local permits; landowner agreements; and CCSM Project construction drawings and staking plans. Infrequently, minor changes or deviations from stipulations/mitigation provided in these documents are necessary to accommodate or mitigate unexpected on-site circumstances. These deviations may be necessary to facilitate construction or provide for more effective protection of environmental resources.

When changes from CCSM Project requirements are identified, the PCW Project Manager or CM may file variance requests for approval of these changes. Additionally, the BLM may pursue similar or other types of alterations. Requests may vary in significance from minor changes (e.g., slightly shifting the location of an access road) to more complex requests (e.g., construct a new access road). These variance procedures apply only to activities taking place on BLM lands.

5.1 TIERED VARIANCE SYSTEM DURING CONSTRUCTION

A system using three variance levels (Levels 1, 2, and 3) will categorize variance requests, according to their significance and level of effort associated with the change.

Level 1. Those which do not require an amendment to the site-specific plans of development;

Level 2. Those requiring an amendment to the site-specific plans of development; and

Level 3. Those requiring an amendment to the ROW grant(s).

Level 1 and 2 variances may be used to modify or amend the site-specific plans of development. Level 3 variances will require an amendment to the ROW grant(s). In this case, a Standard Form 299 will be required.

The ECM will be authorized to address proposed/needed deviations from ROW grant stipulations and the approved site-specific plan of development associated with the ROW grant for minor variances after consulting with the BLM Project Manager to expedite construction while protecting resource values. The ECM will consult with the BLM Project Manager, or other designated BLM representative, to determine if a variance will require amendment to the site-specific plans of development or the ROW grant.

If a variance is requested by BLM, a BLM representative can initiate a variance request in consultation with the ECM, PCW Project Manager or CM, or the Contractor PM, as appropriate. The request needs to be in writing using the Variance Request Form (Attachment E). Supporting attachments, such as an alignment sheet or other CCSM Project drawings, photos, and cultural and/or biological clearances (including surveys for invasive weeds if necessary) will be required to process a variance request. The request, and PCW's input to the request, will be documented in the ECM weekly update.

5.1.1 LEVEL 1: VARIANCES ACCOMPLISHED THROUGH FIELD RESOLUTION

A Level 1 variance is a minor field adjustment within the approved ROW grant that conforms to the site-specific plans of development. These variances can be handled in the field by the ECM in consultation with the CM. Such adjustments will be documented on the Variance Request Form (Attachment E).

Examples of minor field adjustments include, but are not limited to, the following:

- Relocation of erosion control devices (note: this also may require a modification to the SWPPP);
- Locating temporary fences inside authorized work areas;
- Constructing ditch plugs and wildlife escape ramps in cable trenches, if needed;
- Permitting waterbars to be extended, if applicable, off the area designated for a cable trench or the transmission line, and into native vegetation "one dozer length" (this includes providing permission for construction equipment to work outside designated work areas);
- Allowing rubber-tired vehicles to use additional designated access roads (in addition to those approved in BLM approval documents) where improvements to the road would not be necessary (note: not intended for authorizing additional haul roads for equipment and materials); and
- Temporarily (for not more than 7 days) placing turbine parts or other assemblies outside areas designated in the site-specific plan of development but within the authorized CCSM Project area. This does not include any surface disturbance associated with temporary storage.

<u>Level 1 Variance Approval or Denial</u>

The ECM can approve or deny Level 1 variance requests in the field after consulting with the BLM Project Manager. Level 1 variance requests may be approved if the results of implementing the changes are not significant. If a Level 1 variance request is approved in the field by the ECM, PCW and the ECM will sign and approve the request using the space provided on the Variance Request Form. A Level 1 variance request can be implemented in the field as soon as it is approved and signed by the ECM. The ECM will document the approved variance and submit it to the BLM Project Manager daily.

The ECM will inform PCW within 24 hours of submittal of the Variance Request Form if the Level 1 variance is denied. PCW may choose to resubmit the request as a Level 2 variance, or to discontinue pursuit of the request. PCW may also appeal the denial to the AO who, after consideration of all facts and circumstances, may approve the Level 1 variance or uphold the denial.

<u>Level 1 Variance Distribution</u>

The ECM will send the approved Level 1 variance request to the CM, who will then distribute the variance to PCW's representatives and construction contractors as appropriate. The ECM will provide the BLM Project Manager copies of approved or denied Level 1 variances daily. The ECM will identify all Level 1 variances approved or denied during the previous week in the weekly update report.

5.1.2 LEVEL 2: VARIANCES BEYOND FIELD RESOLUTION, NOT REQUIRING AN AMENDMENT TO THE ROW GRANT(S)

This type of variance involves a deviation that exceeds the field decision authority of the ECM. Level 2 variances require approval by the BLM Project Manager with concurrence of the appropriate BLM RFO specialists. These alterations generally involve CCSM Project changes that would affect an area outside of the previously approved work area, but within the corridor previously surveyed for cultural resources, wetlands, and sensitive species. Such variance requests typically require review of supplemental documents, correspondence, and records to be provided with the request.

Examples include, but are not limited to the following:

- Shifting extra workspace outside the approved construction corridor a short distance, but within the previously surveyed corridor where overall disturbance type and acreage remains approximately the same, and no cultural, paleontological, biological resources, or invasive weed infestations could be affected;
- Shifting temporary workspace to previously disturbed areas;
- Permitting CCSM Project work to be completed in raptor areas during the construction closure window;
- Moving proposed culvert location(s) to better accommodate natural drainages (note: this also may require a modification to the SWPPP);
- Providing extra work space for topsoil and spoil material storage to prevent mixing of soils;
- Moving a range fence a specified number of feet laterally and permanently installing it to avoid proposed construction (note: this also may require an amendment to the Allotment Management Plan, if applicable.);
- Modifying seed mixes specified in the site-specific plans of development due to unavailability; note: this also may require a modification to the Reclamation Plan; and
- Modification of an access road due to safety hazards.

Variance requests also may be submitted for minor changes that would extend beyond the previously surveyed work area and corridor for sensitive resources. In these situations, additional cultural, biological, and invasive weed surveys will be required. Documentation of the surveys and other applicable correspondence will need to be submitted with the variance request. If sensitive biological resources are encountered during the additional surveys, documentation of consultation with applicable agencies must be provided with the variance request. All BLM approved stipulations, and the terms and conditions of the USFWS BO must be adhered to, in order for the variance to be approved.

To initiate a Level 2 variance request, PCW will determine the need for the variance. The request form, with attached supporting documents, will be prepared by the CM or Inspectors and discussed with the ECM. The ECM will submit the request form and attachments to the BLM Project Manager. The BLM Project Manager, after consulting with the appropriate BLM RFO specialists, will provide the CM written approval or denial (including an explanation) of the request using the space provided on the Variance Request Form. The BLM Project Manager may request additional information, or a modification of the request, before the variance can be approved. In addition, the CM will be informed if an amendment to the ROW grant will be required.

<u>Level 2 Variance Approval or Denial</u>

The BLM Project Manager will review the variance request form and any attachments in consultation with the appropriate BLM RFO specialists. If additional information or a modification to the request is required, PCW will submit the requested information within 5 business days. The BLM Project Manager will provide the CM written approval of the request using the space provided on the Variance Request Form within 5 business days from receipt of a complete request.

If a Level 2 variance is denied, the BLM Project Manager will provide the CM a written denial of the request (including an explanation) by using the space provided on the Variance Request Form within 5 business days from receipt of a complete request. PCW may choose to resubmit the request as a Level 3 variance, or to discontinue pursuit of the request. PCW may also appeal the denial to the AO who, after consideration of all facts and circumstances, may approve the Level 2 variance or uphold the denial.

Level 2 Variance Distribution

Distribution of Level 2 variance requests are the same as stated above for Level 1 variance requests.

5.1.3 LEVEL 3: VARIANCES REQUIRING AN AMENDMENT TO THE ROW GRANT

This type of variance requires an amendment to the ROW grant, completion of an application on a Standard Form 299 (SF 299), and a decision by the AO using the Variance Request Form (Attachment E).

The PCW Project Manager will prepare the SF 299 with supporting documentation, including a site-specific plan of development and map (1:24,000 scale), for submittal to the BLM RFO. The BLM will process the amendment application pursuant to 43 CFR 2800. The BLM may request additional information, or a modification of the request, before the amendment can be approved. Approval of the amendment also requires issuance of a Notice to Proceed (NTP) addressing the amendment, if a NTP is a requirement of the original ROW grant.

The BLM Project Manager will assist the ECM and PCW Project Manager in determining whether a significant proposed change, outside the approved ROW grant, will necessitate submittal of an amendment, or whether the change can be handled with a Variance Request Form.

Examples of a variance requiring an amendment to the ROW grant are as follows:

- Relocation of CCSM Project components onto BLM land; or
- Expansion of the CCSM Project Area from the one defined in the ROW grant and site-specific plans of development.

Level 3 Variance Approval or Denial

The AO will review the SF 299, Variance Request Form, and any attachments in consultation with the appropriate BLM RFO specialists. If additional information or a modification to the request is required, once notified PCW will submit the requested information or a modified request within 5 business days. If a Level 3 variance is approved, the AO will provide the PCW Project Manager written approval of the request using the space provided on the Variance Request Form (Attachment E) within 5 business days

from receipt of a complete request. The decision will be documented in the new or amended ROW grant.

If a Level 3 variance is denied, the AO will provide the PCW Project Manager a written denial of the request (including an explanation) using the space provided on the Variance Request Form (Attachment E) within 5 business days from receipt of a complete request. PCW may choose to discontinue pursuit of the request or proceed with additional NEPA documentation. PCW may also appeal the AO decision pursuant to applicable BLM regulations.

Level 3 Variance Distribution

Distribution of Level 3 variance requests are the same as stated above for Level 1 and Level 2 variance requests.

6.0STOP WORK AUTHORITY

The AO has the authority to stop work related to construction of the CCSM Project if an activity is determined to be a deviation from the CCSM Project environmental requirements or construction plans as authorized by BLM in the ROW grant. This authority may be delegated to the BLM Project Manager or ECM as determined appropriate by the AO. The PCW Project Manager, Contractor PM, CM and the Inspectors also have the authority to halt specific operations to protect cultural and biological resources.

If any member of the ECCMP Team exercises their authority to stop work, they will notify the AO, BLM Project Manager, PCW Project Manager and CM immediately to describe the circumstances of the work stoppage and the recommended resolution. Documentation of the work stoppage including the reason for the work stoppage and the recommended resolution will be submitted to the ECCMP Team by the ECM within 24 hours. PCW and BLM will work diligently to resolve any work stoppage expediently. Upon resolution of the issue by PCW and approval of the AO or his/her designated representative, work will recommence.

7.0TRAINING AND PRECONSTRUCTION MEETING

7.1 PRE-CONSTRUCTION MEETING

Prior to construction, the ECM will ensure that BLM and PCW representatives participate in a preconstruction meeting; at a minimum the Compliance Monitoring Team will be present. At that meeting, the BLM Project Manager will discuss the environmental requirements of the ROD and the ROW grant as well as those of the site-specific plan of development.

7.2 EAP

The ECM will ensure that PCW prepares and conducts an EAP for all construction personnel prior to the start of construction. The ECM will participate in the EAP to present an overview of the ECCMP and to become familiar with construction personnel. The ECM will explain the various components of the ECCMP, emphasizing the objectives of the ECCMP. The discussion will focus on the activities of the Compliance Monitoring Team and their authority and interactions with construction personnel. EAP training will describe the processes for monitoring and documentation of compliance issues and

construction progress, as well as a clear and concise explanation of the variance request process and the authority of the ECM and BLM Project Manager.

7.3 COMPLIANCE MONITORING TEAM TRAINING

In addition to participation in PCW's EAP and the preconstruction meeting, the ECM will train the Compliance Monitoring Team in all CCSM Project-specific procedures, duties, responsibilities, reporting requirements, and authorities as needed to complete their assigned tasks during monitoring of the CCSM Project construction activities.

8.0EQUIPMENT

The Compliance Monitoring Team will require field support equipment such as notebook or tablet computers and associated software, digital cameras, cellular phones, GPS devices and vehicles. Specifically, the ECM, CM and each Inspector will be equipped with a digital camera and a cellular phone, radio or other communication device.

9.0CCSM PROJECT OPERATIONS AND MAINTENANCE

Prior to commencement of commercial operation of the CCSM Project, an Environmental Compliance Monitoring Plan (ECMP) will be issued to identify the roles and responsibilities of the operations personnel, along with procedures to ensure compliance with the environmental requirements of the operational permits, approvals, plans and applicable rules and regulations.

The ECMP will include, at a minimum, provisions for the following:

- A compliance manager representing PCW, in the role of ensuring compliance with the ECMP;
- Adaptive management procedures to address changes in conditions, regulations, etc.;
- Means of accurately tracking compliance (e.g., compliance tracking database);
- Coordination with BLM and other jurisdictional agencies to report noncompliance;
- Training for personnel commensurate with their roles and responsibilities;
- Inspection and monitoring requirements; and
- Reporting and recordkeeping procedures.

Attachment A
Report Cover Page

CHOKECHERRY AND SIERRA MADRE WIND ENERGY PROJECT

COMPLIANCE MONITORING PROGRAM

MONITORING REPORT
OR
WEEKLY UPDATE

MONITORING REPORT:
The following report is for activities conducted on **DATE (Month Day, Year)** by **MONITOR**. Should you have any questions regarding the information contained in this report, please contact **MONITOR** at **PHONE** (office) or **PHONE** (mobile).

WEEKLY UPDATE:
The following report is a compilation of the monitoring reports issued by the Compliance Monitoring Team for activities conducted on **DATE (Month Day, Year)**. Should you have any questions regarding the information contained in this report, please contact **ECM** at **PHONE** (office) or **PHONE** (mobile).

Compliance Level: Communication
Acceptable
Problem Area
Noncompliance
Serious Violation

Variance Level: Approved Level 1
Approved Level 2
Approved Level 3

[SIGNATURE]

Total Pages:
or
Total Reports:

Attachment B
Report Form

CHOKECHERRY AND SIERRA MADRE WIND ENERGY PROJECT

COMPLIANCE MONITORING PROGRAM

MONITORING REPORT

Report Number: _____ Date:_____

Environmental Compliance Monitor: _____

Compliance Level: _____

Environmental Inspector: _____

Location: _____

SITE INSPECTION CHECKLIST

Air Quality	**Yes**	**No**
Is dust control being implemented (i.e., access roads watered, haul trucks covered, streets cleaned on a regular basis)?		
Do vehicles or equipment appear to be idling unnecessarily?		
Biology	**Yes**	**No**
Are appropriate measures in place to protect sensitive habitat (i.e., flagging, signage, exclusion fencing, biological monitor)?		
Are all activities being conducted within the approved limits of disturbance?		
Have impacts occurred to adjacent habitat (sensitive or non-sensitive)?		
Cultural and Paleontological	**Yes**	**No**
Are known cultural resources clearly marked for exclusion?		
Is a cultural monitor on site if required by the approved treatment plan?		
Is a paleontological monitor on site if grading is occurring in the immediate area of a fossil discovery?		
Hazardous Materials	**Yes**	**No**
Have all spills been cleaned-up in accordance with the SPCC Plan?		
Are fuels, oils, lubricants, and other hazardous materials on-site labeled and stored in appropriate containers?		
Water Quality	**Yes**	**No**
Have temporary erosion and sediment control measures been installed?		
Are BMPs in good condition and functional?		
Is mud tracked onto roadways cleaned-up in accordance with the project's SWPPP?		

DESCRIPTION OF OBSERVED ACTIVITY

ISSUES REQUIRING CORRECTIVE ACTION

Description of Issue Requiring Corrective Action	PCW Notification		Description of Corrective Action Implemented by PCW
	Name	Date	

Photos:

Photo 1:	Photo 2:
Photo 3:	Photo 4:

Completed by:

Name:
Firm:
Date:

Distribution:

Attachment C
BLM Authorized Officer Report

BLM Authorized Officer
Weekly Report

Address: Phone: Website:
City, State Zip: Fax:

Project: Chokecherry and Sierra Madre Wind Energy Project

Prepared By:

Reporting Period:

Summary:

Site Inspections/Mitigation Monitoring:

- Compliance Issues with Applicable Conditions of Certification (e.g., areas out of compliance, interpretational disagreements, etc.)
- Issues of Concern with or by the Applicant

Construction Activities:

Compliance:

Construction Progress:

Week	% Complete (projected)	% Complete (updated)

Note: The percentage complete is an estimate only and is not derived directly from the project schedule.

Construction Schedule:

- Scheduled Activities for Next Week
- Potential Delays to the Online Date of the Project

Plan Review Submittal Items:

Submittal Type	Description

Notice to Proceed:

NTP No.	Date Issued	Project Component	Conditions Included (Y/N)

Variance Requests:

Variance Request No.	Submitted	Description	Status	Approval Date

Project Photographs:

Attachment D
Certification of Completion of Environmental Awareness Program

Certification of Completion
Environmental Awareness Program

This is to certify these individuals have completed a mandatory Environmental Awareness Program (EAP). The EAP includes pertinent information on cultural, paleontological, and biological resources for all personnel (construction supervisors and crews) working on the CCSM Project Site. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials.

No.	Employee Name	Title/Company	Signature
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
21.			
22.			
23.			
24.			
25.			

Cultural Trainer: _____ Signature:_____ Date:_____
Paleo Trainer: _____ Signature:_____ Date:_____
Biological Trainer: _____ Signature:_____ Date:_____

Include this completed form in the Monthly Compliance Report.

Attachment E
Variance Request Form

Variance Request Form

Power Company of Wyoming LLC.

Chokecherry and Sierra Madre Wind Energy Project

Variance Request No.:

Date Submitted:

Date Approval Required:

BLM Approval Reference No.:

Location:

Alignment Sheet/

Construction Drawing/Station Number: _____ Approval Agency:

Current Land Use/Vegetative Cover:

Nearby Features (Washes, Wetland, Noxious Weed Area, Residence (distance):

Variance Level	[ ] Level 1	[ ] Level 2	[ ] Level 3
Variance requested in →	[ ] Permit	[ ] Plan/Procedure	[ ] Specification
	[ ] Mitigation Measure	[ ] Drawing	[ ] Other

Detailed Description of Variance: Attachments? [ ] Yes [ ] No Photos? [ ] Yes [ ] No

Variance Justification:

Additional Surveys Required		Surveyed Corridor Description	Additional Surveys Completed
Cultural Survey	[ ] Y [ ] N		[ ] Y [ ] N
T & E	[ ] Y [ ] N		[ ] Y [ ] N
Weeds	[ ] Y [ ] N		[ ] Y [ ] N

Request prepared by:

Sign-off (as appropriate)	Name (Print)	Approval Signature	Date	Conditions Attached
Environmental Manager				[ ] Y [ ] N
Chief Inspector				[ ] Y [ ] N
BLM 1/				[ ] Y [ ] N

For use in approval only.

Variance Approval:_____ Variance Denied: _____ Beyond Authority:

Approval Number: _____ Date:

Signature: _____ Stipulations:

If the ECM is authorized (in the POD or other document included in the BLM ROW authorization documents) to act/sign on behalf of BLM, include the name of ECM with the signature.

Chokecherry and Sierra Madre Wind Energy Project Relating to Wind Turbine Generator Number (if applicable): Variance Conditions (refer below for individual requesting the condition and specific condition(s). Name:	Title:	Organization:
Conditions:		
Name:	Title:	Organization:
Conditions:		
Name:	Title:	Organization:
Conditions:		

APPENDIX G

Chokecherry and Sierra Madre Wind Energy Project

Dust Control Plan

Prepared for

555 Seventeenth Street
Suite 2400
Denver, CO 80202

Prepared by

Westwood Professional Services
7699 Anagram Drive
Eden Prairie, MN 55344
(952) 937-5150
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September 2013
(Updated March 2014)

TABLE OF CONTENTS

Page

1.0 INTRODUCTION 1
2.0 EXISTING CONDITIONS 2
2.1 Geology 2
2.2 Soils 2
2.3 Vegetation 3
3.0 AREAS OF ENHANCED SENSITIVITY 4
4.0 DUST SOURCES 5
5.0 REASONABLY AVAILABLE CONTROL MEASURES 5
5.1 Design Solutions 5
5.2 Temporary Controls 6
5.3 Control Using Additives 6
5.4 Mechanical Controls 7
5.5 Operational Controls 8
6.0 IMPLEMENTATION 8
7.0 REFERENCES 10

LIST OF TABLES

Table **Page**

Table 1. Potential Dust Sources 5
Table 2. Dust Control Design Solutions 6
Table 3. Additive Dust Suppressants and Considerations 7
Table 4. Mechanical Dust Suppressants and Considerations 7
Table 5. Operational Dust Control Methods 8
Table 6. Dust Control Method Implementation 9

1.0 INTRODUCTION

Power Company of Wyoming LLC (PCW) proposes to construct, operate, maintain and decommission the Chokecherry and Sierra Madre Wind Energy Project (CCSM Project), located in Carbon County, Wyoming. The CCSM Project consists of up to 1,000 wind turbines capable of generating approximately 2,000 to 3,000 megawatts (MW) of clean, renewable wind energy. The primary components of the CCSM Project include the wind turbine generators, an internal road network, a rail facility, a quarry, an internal electrical collection and transmission system, substations, and operations and maintenance buildings.

The CCSM Project is located south of the city of Rawlins, primarily within the bounds of the Overland Trail Ranch (Ranch). The Ranch is owned and operated by PCW affiliate, The Overland Trail Cattle Company LLC (TOTCO). The Ranch is situated within an area of alternating sections of private and federal lands commonly referred to as the "checkerboard." The vast majority of the private lands are owned by TOTCO and the federal lands are administered by the Bureau of Land Management (BLM) Rawlins Field Office (RFO). A small percentage of the land within the Ranch is owned by the State of Wyoming and is administered by the State Board of Land Commissioners. Finally, Anadarko Land Corporation owns some sections located on the periphery of the northwest boundary of the Ranch.

In 2008, PCW applied to BLM for right-of-way grants to construct, operate, maintain and decommission the CCSM Project on federal lands within the CCSM Project Site. On June 29, 2012, the Notice of Availability for the Final EIS concerning the CCSM Project was published in the Federal Register (77 FR 63328). On October 9, 2012 the Secretary of the Interior signed the Record of Decision (ROD). In the ROD, BLM determined that over 200,000 acres within the CCSM Project Site are suitable for wind energy development subject to the requirements described under the Selected Alternative in the ROD. The area that was determined to be suitable for wind energy development consists of two wind development areas (WDAs) in which turbines would be located. The northern WDA is known as Chokecherry and the southern WDA is known as Sierra Madre. The WDAs are located approximately 9 miles apart.

Prior to issuing right-of-way grants for the CCSM Project, BLM will conduct subsequent environmental analysis of site-specific plans of development submitted by PCW. The site-specific plans of development will be screened against the analysis conducted in the EIS and the requirements described under the Selected Alternative in the ROD. PCW anticipates submitting five (5) site-specific plans of development to BLM, consisting of the following:

1. Phase I Haul Road and Facilities
2. West Sinclair Rail Facility
3. Road Rock Quarry
4. Phase I Wind Development
5. Phase II Wind Development (including Phase II Haul Road and Facilities).

This Dust Control Plan (Plan) provides an overview of methods that PCW will use to avoid and minimize dust emissions from construction, operations, maintenance, and decommissioning of the CCSM Project. PCW will implement this Plan in accordance with the requirements of the

EIS and ROD for the CCSM Project, as well as all applicable rules and regulations. Upon concurrence from the BLM Authorized Officer, PCW will update and modify this Plan as needed to address the changing conditions and requirements of the CCSM Project.

2.0EXISTING CONDITIONS

The existing conditions on the CCSM Project Site that may affect the potential for dust include geology, soils, and vegetation. These conditions are described below.

2.1 GEOLOGY

According to Chapman et al. (2004), surface geology in the area of the CCSM Project consists of Quaternary alluvium, colluvium, outwash deposits, and eolian deposits derived from Tertiary and Cretaceous claystone, sandstone, and sedimentary rock (majority of CCSM Project Site); and Quaternary alluvium and colluvium, gravel and fan deposits, and areas of active and stabilized dune sand and loess underlain with Tertiary and Cretaceous siltstone, sandstone, claystone, and areas of shale marlstone (northeast portion of the Chokecherry Wind Development Area). Geologic units underlying the CCSM Project Site include Quaternary alluvium, intermixed Steele Shale and Niobrara formations, Mesa Verde Group, Steele Shale and small amounts of Frontier, Mowry and Thermopolis Shales.

2.2 SOILS

Soils within the CCSM Project Site are primarily derived from sedimentary formations and are predominantly Orthents; soils that are shallow to very deep and medium to fine textured and have a frigid temperature regime, an aridic moisture regime, and mixed or bentonitic mineralogy. The CCSM Project Site is located in an arid environment that contains potentially erosive soils. Surface disturbing activities may result in exposed soils, accelerated soil erosion, and reduced soil productivity.

Soils in the northern third of the CCSM Project Area are derived from shale, sandstone, and weathered remnants (i.e. residual soils) of the Mesaverde Group and Steele Shale. The most commonly encountered soils include the Rentsac, Blazon, and Diamondville series (BLM 2012a). Based on geotechnical testing, soils are very shallow to deep and are generally described as medium dense to very dense or soft to hard with occasional sub-rounded to sub-angular gravel, slight ferrous staining, intermittent sandstone seams and layers, and few sandstone fragments.

Soils within the Sage Creek Basin portion of the CCSM Project Site are composed of alluvium underlain by Upper Cretaceous Aged Steele Shale (Fugro 2013). The most commonly encountered soils include the Wellsville, Echemoor, and Lupinto series (BLM 2012). Based on geotechnical testing, soils are moderately deep to deep and are generally described as soft to hard with occasional sub-rounded to sub-angular gravel and slight ferrous staining.

Soils within lower Miller Hill are generally composed of alluvium while the slopes of Miller Hill are generally composed of highly to slightly weathered sandstone of the Niobrara Formation, shale of the Frontier, Mowry, and Thermopolis Shale, and interbedded sandstone and shale of the Browns Park Formation (Fugro 2013). The most commonly encountered soils include the Wellsville, Echemoor, and Lupinto series (BLM 2012).

2.3 VEGETATION

Vegetation in the CCSM Project Site is characterized by areas of rolling sagebrush steppe, salt desert shrub basins, and foothills shrubland. Aspen-mixed conifer woodland, upland grasslands and sparsely vegetated communities are also present. Plant surveys were conducted in the CCSM Project Site in 2009 and confirmed during 2012 and 2013 survey efforts.

Sagebrush steppe is the most common vegetation type in CCSM Project Site and is the predominant vegetation type in the Nevins Ridge and Upper Miller Hill turbine development areas. Sagebrush steppe is also common in the Lower Miller Hill turbine development area. Scattered sagebrush communities are also present in the flats north of Chokecherry and in the Sage Creek basin where the community is intermixed with salt desert shrub communities and along drainages. Sagebrush habitats in the CCSM Project Site consists of a mosaic of sagebrush, allied shrubs and forbs, and grasses and is dominated or codominated by one or more Artemisia species, such as Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) and basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*). In higher elevations, mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) is present. Sagebrush communities occur across approximately 60% of the CCSM Project site

Salt-desert shrub communities are the second most common vegetation and occur across approximately 20% of the CCSM Project Site. Salt desert shrub communities are characterized by salt tolerant plants with a dominant shrub component of one or more *Atriplex* species such as Gardner's saltbush (*Atriplex gardneri*) or shadscale (*Atriplex confertifolia*) and are often codominant with birdsfoot sagebrush (*Artemisia pedatifida*), black greasewood (*Sarcobatus vermiculatus*), or other allied shrub and herbaceous species. These communities primarily occur in the northern flats north of the Chokecherry Wind Development Area, in the Sage Creek Basin, and in saline soils in the Lower Miller Hill area. Salt Desert Shrub Communities also occur along the North Platte River water extraction road in the eastern portions of the Chokecherry Wind Development Area.

Sparsely vegetated and barren communities are scattered throughout the CCSM Project area Sparsely vegetated and barren communities occur across 4-5% of the CCSM Project Site. These communities primarily occur in association with salt-desert shrub communities although sparsely vegetated areas also occur in association with sagebrush communities especially in windswept areas or areas with shallow soils. Vegetation is generally characterized by a patchy distribution of upland sedges and cushion plants and mat-forming forbs composed of stemless mock goldenweed and one or more phlox species such as spiny phlox or prickly phlox. Various buckwheat species (*Eriogonum* spp.) and pricklypear (*Opuntia* spp.) often codominate these barren landscapes, but cover is minimal.

Aspen woodlands and mixed-conifer forests occur at elevations greater than 7,500 feet in the southwestern portions of the CCSM Project Site below the rim of Miller Hill. These communities occupy less than 2% of the CCSM Project Site. The predominant overstory vegetation is an open-canopy of quaking aspen, with a dense understory of forbs, grasses, and scattered montane shrubs.

Montane shrublands cover approximately 1% of the CCSM Project Site, predominantly located in the southern and southwestern portions at elevations ranging between 7,200 to 8,100 feet. These systems are typically associated with dry, exposed sites and are often in the uplands adjacent to aspen communities. Inclusions of sagebrush steppe or grassland often occur, but the vegetation is typically dominated by a variety of shrubs including serviceberry, mountain mahogany, common juniper, currant, snowberry, creeping barberry, antelope bitterbrush.

Upland grasslands occur throughout the CCSM Project Site although the Chokecherry Wind Development Area has a greater occurrence of contiguous grassland cover. These communities typically occur between 6,500 to 8,400 feet in elevation and occur across approximately 7% of the CCSM Project Site. The vegetation is characterized as mixed-grass prairie on gentle to moderate slopes (0–20%), growing on drainage terraces, draws, alluvial flats and plains, escarpments, gulches, hillslopes, knobs, knolls, bluffs, and plateaus. Upland grasslands form a matrix with the surrounding sagebrush steppe, creating a mosaic landscape of rolling grasslands interspersed throughout sagebrush communities.

Remaining vegetation communities include lowland mesic grasslands and riparian communities, agricultural pastures and hay meadows, disturbed/developed areas.

3.0 AREAS OF ENHANCED SENSITIVITY

The vast majority of the CCSM Project Site is uninhabited agricultural land well removed from any cities, towns and major public roads. The closest public receptors to the CCSM Project Site that may have enhanced sensitivity to dust include:

- City of Rawlins
- Towns of Sinclair and Saratoga
- Interstate 80
- Residences along the periphery of the CCSM Project Site
- Teton Reservoir Recreation Site
- Wyoming State Penitentiary

While these areas may be more sensitive to dust from the CCSM Project, most are located miles away from the CCSM Project Site and work activities. According to the EIS, dust emissions from the CCSM Project are expected to be widely dispersed and short lived (BLM 2012). With proper dust control, as described in this Plan, significant effects to areas of enhanced sensitivity are not anticipated from the CCSM Project.

4.0 DUST SOURCES

Table 1 summarizes typical CCSM Project activities that have the potential to generate dust.

Table 1. Potential Dust Sources

Dust Source	Phase I Haul Road and Facilities	West Sinclair Rail Facility	Road Rock Quarry	Phase I Wind Development	Phase II Wind Development
Grading	●	●	●	●	●
Excavation	●	●	●	●	●
Rock crushing			●		
Blasting	●		●	●	●
Material stockpiling	●	●	●	●	●
Aggregate placement	●	●	●	●	●
Concrete batching			●	●	●
Vehicle activity	●	●	●	●	●
Roadway maintenance	●	●	●	●	●

5.0 REASONABLY AVAILABLE CONTROL MEASURES

PCW will control dust during the construction, operations, maintenance and decommissioning of the CCSM Project. To accomplish this, PCW will implement reasonably available dust control measures throughout the CCSM Project Site, as appropriate, to protect soils. The following sections describe the reasonably available dust control measures that will be used on the CCSM Project as needed. Dust control measures that are already incorporated into ROD, such as surfacing roads and controlling site access, are not discussed again below, see Appendix D of the ROD for a description of these measures.

5.1 DESIGN SOLUTIONS

Dust control design solutions were used in the CCSM Project design where practicable and effective, as described in the site-specific plans of development for the CCSM Project. Table 2 includes a list of dust control design solutions.

Table 2. Dust Control Design Solutions

Dust Control Method	Comments	Common Frequency of Use	Relative Cost
Phasing/Pre-grading Planning	Plan soil grading and disturbances to minimize exposure before surfacing is applied or stabilization begun.	One time	Low
Gravel Surface	Where appropriate, design roads and laydown yards to have gravel surfaces.	One time	Moderate
Grading Design	Balance cut/fill earthwork to avoid unnecessary stockpiling of materials to the extent possible.	One time	Low
Stockpile Locations	Locate stockpiles down-wind of construction activities, buildings, and other dust sensitive sites where possible.	One time	Low
Vegetation	Establish temporary vegetation as quickly as possible in accordance with CCSM Project's Master Reclamation Plan.	Ongoing	Low

5.2 TEMPORARY CONTROLS

The CCSM Project Erosion Control Plan and Storm Water Pollution Prevention (SWPP) Plan describe certain best management practices to control water erosion; these practices will also minimize and prevent dust caused by wind erosion. The temporary erosion control practices that will be used on the CCSM Project include:

- Scheduling activities to reduce soil exposure
- Surface roughing
- Riprap slope stabilization
- Erosion control blankets and geotextiles
- Organic mulch
- Rock mulch
- Soil binders and tackifiers
- Vegetation establishment

Additional information on the above erosion control practices and how they will be implemented can be found in the SWPP Plan appended to each site-specific plan of development for the CCSM Project.

5.3 CONTROL USING ADDITIVES

The primary method of dust control on the CCSM Project will be the application of additives. The application of additives includes water application and/or chemical stabilization of soil surfaces during dust-generating activities. PCW anticipates that dust control for the CCSM Project will be accomplished primarily by the application of water using water trucks with

controlled applicators. Upon concurrence from the BLM Authorized Officer, PCW will apply commercial dust suppressants as needed. PCW is proposing the use of the commercial dust suppressants listed in Table 3; however, PCW may identify alternate compounds in the future. When commercial dust suppressants are used, they will be applied in accordance with the manufacturer's specifications. No significant impacts are expected from the use of commercial dust suppressants when they are used in accordance with the recommendations in Table 3 (Addo, 1993). As the CCSM Project progresses, PCW will evaluate the effectiveness of additives at the CCSM Project Site and adjust their use to optimize dust control.

Table 3. Additive Dust Suppressants and Considerations

Dust Suppressant	Comments	Common Frequency of Use	Relative Cost
Fresh Water	Frequent application, significant water usage, can lead to erosion	Daily	Low
Calcium Chloride and Magnesium Chloride[1]	Most effective on roads with low to moderate traffic use; commonly used on rural roads. Should not be applied more frequently than weekly.	Weekly	Medium
Lignin Derivatives[1]	Similar results to chlorides, but more expensive. Care should be taken to prevent spills into water sources.	Weekly	High
Tree Resin Emulsions	Very expensive and less effective than other options. Can increase surface run-off.	Weekly	High

Source: Addo and Sanders 1993
Notes: [1]In accordance with current BLM policy, PCW will not apply these compounds within 500 feet of a perennial stream on federal lands.

5.4 MECHANICAL CONTROLS

Mechanical dust control methods are anticipated to have limited application on the CCSM Project Site; however, mechanical methods will be considered where dust sources can be covered or sheltered from the wind efficiently and effectively. Table 4 includes a list of mechanical dust control methods that will be used on the CCSM Project as necessary and practicable.

Table 4. Mechanical Dust Suppressants and Considerations

Dust Control Method	Comments	Common Frequency of Use	Relative Cost
Covers	Tarps can be used on trucks and small stockpiles as temporary covers. Covers must be anchored to prevent removal by wind.	As needed	Low
Wind Shelters	Wind barriers made of soil berms, fabric or wooden structures to shield sensitive areas from repeated heavy winds.	Very Isolated Circumstances	Medium

5.5 OPERATIONAL CONTROLS

Operational dust control methods involve changes to activities and practices to minimize the potential for dust generation. Operational dust control methods may be appropriate for specific activities, such as land clearing, earthmoving, stockpiling, and transportation. Table 5 includes a list of operational dust control methods that PCW will apply as needed and as practicable.

Table 5. Operational Dust Control Methods

Dust Control Method	Comments	Common Frequency of Use	Relative Cost
Haul Vehicle Restrictions	Speed restrictions due to high winds and other site conditions.	High Wind Days	Low
Gravel and Soil Placement Equipment	Restrict height and speed at which materials are placed.	Daily	Low
Altering Loading and Unloading Procedures	Confine loading and unloading procedures to the downwind side of storage piles.	High Wind Days	Low

6.0 IMPLEMENTATION

PCW has applied the applicable dust control measures described in Section 4 to the design and planning of the CCSM Project. As the CCSM Project progresses, PCW will optimize the dust control measures as needed to improve effectiveness and efficiency. The primary methods of dust control PCW will use on the CCSM Project include:

- Locating facilities with the potential to emit dust in lower-wind areas;
- Surfacing CCSM Project roads with aggregate;
- Posting speed limits; and
- Applying water or other additive when needed.

The anticipated dust control methods for activities with the highest potential to emit dust are described in Table 6.

Table 6. Dust Control Method Implementation

Activity	Dust Control Method
Site preparation	Site preparation activities include the removal and stockpiling of topsoil and subsoil, as well as some ground compaction. PCW will use water application as the primary dust control method during site preparation. Water will be applied frequently during soil stripping, and will be applied to soil stockpiles as needed.
Road, laydown yard, and rail construction	Construction of roads, rail, and laydown yards includes installation of drainage features and aggregate surfacing, as well as additional ground compaction where required. These activities are not expected to be significant sources of dust during typical site conditions; however, PCW will monitor road, rail, and laydown yard construction and will apply water as needed.
Road use	During construction, operation, maintenance and decommissioning of the CCSM Project, traffic on CCSM Project roads will likely generate dust. PCW will surface CCSM Project roads with gravel and will post and enforce speed limits. If additional dust control is necessary, PCW will apply water or another additive to the road surface. For roads with the highest levels of traffic, such as the Haul Road, PCW will likely apply magnesium chloride proactively each spring.[1]
Road maintenance	During operations and maintenance of the CCSM Project, PCW will perform road maintenance as needed to maintain safe driving surfaces and effective access throughout the CCSM Project Site. Road maintenance typically involves aggregate placement, shoulder repair, and culvert cleaning. If dust is generated during road maintenance, PCW will apply water or other additives as needed.[1]
Material handling and storage	PCW will store construction material, such as aggregate, soil, and sand, in stockpiles located within the CCSM Project laydown yards. Material stockpiles may generate dust. To control dust from material stockpiles, PCW will attempt to locate material stockpiles in lower wind areas of the laydown yards and will orient the stockpiles parallel to the primary wind direction, where practicable. To further control dust from material stockpiles, PCW will apply water as needed. When site conditions warrant, PCW may install covers over material stockpiles that create significant dust on a routine basis.
Quarry excavation and crushing	Excavation and crushing operations at the Road Rock Quarry will likely create dust. To avoid and minimize dust at the Quarry, PCW has located the Quarry in a location that is sheltered from wind blowing in the primary direction (from the southwest). In addition, water trucks will apply water during excavation as needed to control dust. When blasting is required and is expected to generate dust, PCW will apply water to the blast area prior to blasting. If dust is observed at the rock crusher, PCW will apply water to the material prior to crushing. If dust continues to occur at the crusher, PCW will evaluate the feasibility of a tank-and-spray nozzle system between the primary and secondary crushers.

[1] In accordance with current BLM policy, PCW will not apply chloride compounds or lignin derivatives within 500 feet of a perennial stream on federal lands.

Activity	Dust Control Method
Concrete batching	Concrete batching involves the handling of aggregate, cement, and other materials which can generate dust, similar to other material handling operations. PCW will control dust from concrete batching operations as described for material handling and storage.
Excavation and trenching	PCW will store material generated by excavation and trenching in low-profile stockpiles to the extent practicable to limit dust generation. PCW will apply water as needed to soil stockpiles to control dust.

7.0 REFERENCES

Addo, Jonathan and Sanders, Thomas, Ph.D. "Effectiveness and Environmental Impact of Road Dust Suppressants." Colorado State University. December 1993.

Bureau of Land Management (BLM). 2012. Chokecherry and Sierra Madre Wind Energy Project Final Environmental Impact Statement (Volume II). Rawlins Field Office, Carbon County, Wyoming. June 2012.

APPENDIX H

Chokecherry and Sierra Madre Wind Energy Project

Erosion Control Plan

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TABLE OF CONTENTS

Page

1.0 INTRODUCTION 1
2.0 EXISTING CONDITIONS 2
2.1 Geology 2
2.2 Soils 2
2.3 Vegetation 3
3.0 DETERMINATION OF EROSION POTENTIAL 4
4.0 EROSION CONTROL MEASURES 6
4.1 CCSM Project Design 6
4.2 Erosion Control Measures 6
5.0 EROSION MONITORING AND MAINTENANCE 8
6.0 DETERMINATION OF EROSION CONTROL COMPLETION 9
7.0 REFERENCES 10

LIST OF FIGURES

Figure **Page**

Figure 1. Typical Erosion Control Measures 8

LIST OF TABLES

Table **Page**

Table 1. Number of surveyed locations in each development area associated with each erosion potential category. 5
Table 2. Percent of surveyed locations in each development area associated with each erosion potential category. 6
Table 3. Erosion Control Measures for the CCSM Project 7

1.0INTRODUCTION

Power Company of Wyoming LLC (PCW) proposes to construct, operate, maintain and decommission the Chokecherry and Sierra Madre Wind Energy Project (CCSM Project), located in Carbon County, Wyoming. The CCSM Project consists of up to 1,000 wind turbines capable of generating approximately 2,000 to 3,000 megawatts (MW) of clean, renewable wind energy. The primary components of the CCSM Project include the wind turbine generators, an internal road network, a rail facility, a quarry, an internal electrical collection and transmission system, substations, and operations and maintenance buildings.

The CCSM Project is located south of the city of Rawlins, primarily within the bounds of the Overland Trail Ranch (Ranch). The Ranch is owned and operated by PCW affiliate, The Overland Trail Cattle Company LLC (TOTCO). The Ranch is situated within an area of alternating sections of private and federal lands commonly referred to as the "checkerboard." The vast majority of the private lands are owned by TOTCO and the federal lands are administered by the Bureau of Land Management (BLM) Rawlins Field Office (RFO). A small percentage of the land within the Ranch is owned by the State of Wyoming and is administered by the State Board of Land Commissioners. Finally, Anadarko Land Corporation owns some sections located on the periphery of the northwest boundary of the Ranch.

In 2008, PCW applied to BLM for right-of-way grants to construct, operate, maintain and decommission the CCSM Project on federal land within the CCSM Project Site. On June 29, 2012, the Notice of Availability for the Final EIS concerning the CCSM Project was published in the Federal Register (77 FR 63328). On October 9, 2012 the Secretary of the Interior signed the Record of Decision (ROD). In the ROD, BLM determined that over 200,000 acres within the CCSM Project Site are suitable for wind energy development subject to the requirements described under the Selected Alternative in the ROD. The area that was determined to be suitable for wind energy development consists of two wind development areas (WDAs) in which turbines would be located. The northern WDA is known as Chokecherry and the southern WDA is known as Sierra Madre. The WDAs are located approximately 9 miles apart.

Prior to issuing right-of-way grants for the CCSM Project, BLM will conduct subsequent environmental analysis of site-specific plans of development submitted by PCW. The site-specific plans of development will be screened against the analysis conducted in the EIS and the requirements described under the Selected Alternative in the ROD. PCW anticipates submitting five (5) site-specific plans of development to BLM, consisting of the following:

1. Phase I Haul Road and Facilities
2. West Sinclair Rail Facility
3. Road Rock Quarry
4. Phase I Wind Development
5. Phase II Wind Development (including Phase II Haul Road and Facilities)

This Erosion Control Plan (Plan) for the CCSM Project provides an overview of the erosion control goals, standards, methodologies and methods that will be used during the construction,

operation, maintenance and decommissioning of the CCSM Project. PCW will avoid and minimize erosion where possible and will use erosion control measures as needed to meet all applicable rules, regulations, and requirements for the CCSM Project. Upon concurrence from the BLM Authorized Officer, PCW will update and modify this Plan as needed to address the changing conditions and requirements of the CCSM Project.

This Plan defines methodologies for determining erosion potential and options for minimizing erosion. Common procedures, methods, and monitoring and reporting requirements for erosion control are also discussed along with the appropriate use of erosion control measures. Details on how erosion control measures will be applied to each CCSM Project component are provided in the Storm Water Pollution Prevention (SWPP) Plan for each site-specific plan of development.

The CCSM Project will have multiple Wyoming Pollutant Discharge Elimination System (WYPDES) permits and activity-specific SWPP Plans due to the complexity of the CCSM project and the scope of the WYPDES permits. Most of the CCSM Project activities will be authorized under the Wyoming Department of Environmental Quality (WYDEQ) general WYPDES permit WYR10-0000. The Road Rock Quarry will likely be covered under the WYDEQ General Permit WYR320000 for Mineral Mining Activities. Refer to the SWPP Plans included in each site-specific plan of development for additional details.

2.0EXISTING CONDITIONS

The existing conditions on the CCSM Project Site that may affect the potential for erosion include geology, soils, and vegetation. These conditions are described below.

2.1 GEOLOGY

According to Chapman et al. (2004), surface geology in the area of the CCSM Project consists of Quaternary alluvium, colluvium, outwash deposits, and eolian deposits derived from Tertiary and Cretaceous claystone, sandstone, and sedimentary rock (majority of CCSM Project Site); and Quaternary alluvium and colluvium, gravel and fan deposits, and areas of active and stabilized dune sand and loess underlain with Tertiary and Cretaceous siltstone, sandstone, claystone, and areas of shale marlstone (northeast portion of the Chokecherry Wind Development Area). Geologic units underlying the CCSM Project Site include Quaternary alluvium, intermixed Steele Shale and Niobrara formations, Mesa Verde Group, Steele Shale and small amounts of Frontier, Mowry and Thermopolis Shales.

2.2 SOILS

Soils within the CCSM Project Site are primarily derived from sedimentary formations and are predominantly Orthents; soils that are shallow to very deep and medium to fine textured and have a frigid temperature regime, an aridic moisture regime, and mixed or bentonitic mineralogy. The CCSM Project Site is located in an arid environment that contains potentially erosive soils. Surface disturbing activities may result in exposed soils, accelerated soil erosion, and reduced soil productivity.

Soils in the northern third of the CCSM Project Area are derived from shale, sandstone, and weathered remnants (i.e. residual soils) of the Mesaverde Group and Steele Shale. The most commonly encountered soils include the Rentsac, Blazon, and Diamondville series (BLM 2012a). Based on geotechnical testing, soils are very shallow to deep and are generally described as medium dense to very dense or soft to hard with occasional sub-rounded to sub-angular gravel, slight ferrous staining, intermittent sandstone seams and layers, and few sandstone fragments.

Soils within the Sage Creek Basin portion of the CCSM Project Site are composed of alluvium underlain by Upper Cretaceous Aged Steele Shale (Fugro 2013). The most commonly encountered soils include the Wellsville, Echemoor, and Lupinto series (BLM 2012). Based on geotechnical testing, soils are moderately deep to deep and are generally described as soft to hard with occasional sub-rounded to sub-angular gravel and slight ferrous staining.

Soils within lower Miller Hill are generally composed of alluvium while the slopes of Miller Hill are generally composed of highly to slightly weathered sandstone of the Niobrara Formation, shale of the Frontier, Mowry, and Thermopolis Shale, and interbedded sandstone and shale of the Browns Park Formation (Fugro 2013). The most commonly encountered soils include the Wellsville, Echemoor, and Lupinto series (BLM 2012).

2.3 VEGETATION

Vegetation in the CCSM Project Site is characterized by areas of rolling sagebrush steppe, salt desert shrub basins, and foothills shrubland. Aspen-mixed conifer woodland, upland grasslands and sparsely vegetated communities are also present. Plant surveys were conducted in the CCSM Project Site in 2009 and confirmed during 2012 and 2013 survey efforts.

Sagebrush steppe is the most common vegetation type in CCSM Project Site and is the predominant vegetation type in the Nevins Ridge and Upper Miller Hill turbine development areas. Sagebrush steppe is also common in the Lower Miller Hill turbine development area. Scattered sagebrush communities are also present in the flats north of Chokecherry and in the Sage Creek basin where the community is intermixed with salt desert shrub communities and along drainages. Sagebrush habitats in the CCSM Project Site consists of a mosaic of sagebrush, allied shrubs and forbs, and grasses and is dominated or codominated by one or more Artemisia species, such as Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) and basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*). In higher elevations, mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) is present. Sagebrush communities occur across approximately 60% of the CCSM Project site

Salt-desert shrub communities are the second most common vegetation and occur across approximately 20% of the CCSM Project Site. Salt desert shrub communities are characterized by salt tolerant plants with a dominant shrub component of one or more *Atriplex* species such as Gardner's saltbush (*Atriplex gardneri*) or shadscale (*Atriplex confertifolia*) and are often codominant with birdsfoot sagebrush (*Artemisia pedatifida*), black greasewood (*Sarcobatus vermiculatus*), or other allied shrub and herbaceous species. These communities

primarily occur in the northern flats north of the Chokecherry Wind Development Area, in the Sage Creek Basin, and in saline soils in the Lower Miller Hill area. Salt Desert Shrub Communities also occur along the North Platte River water extraction road in the eastern portions of the Chokecherry Wind Development Area.

Sparsely vegetated and barren communities are scattered throughout the CCSM Project area Sparsely vegetated and barren communities occur across 4-5% of the CCSM Project Site. These communities primarily occur in association with salt-desert shrub communities although sparsely vegetated areas also occur in association with sagebrush communities especially in windswept areas or areas with shallow soils. Vegetation is generally characterized by a patchy distribution of upland sedges and cushion plants and mat-forming forbs composed of stemless mock goldenweed and one or more phlox species such as spiny phlox or prickly phlox. Various buckwheat species (*Eriogonum* spp.) and pricklypear (*Opuntia* spp.) often codominate these barren landscapes, but cover is minimal.

Aspen woodlands and mixed-conifer forests occur at elevations greater than 7,500 feet in the southwestern portions of the CCSM Project Site below the rim of Miller Hill. These communities occupy less than 2% of the CCSM Project Site. The predominant overstory vegetation is an open-canopy of quaking aspen, with a dense understory of forbs, grasses, and scattered montane shrubs.

Montane shrublands cover approximately 1% of the CCSM Project Site, predominantly located in the southern and southwestern portions at elevations ranging between 7,200 to 8,100 feet. These systems are typically associated with dry, exposed sites and are often in the uplands adjacent to aspen communities. Inclusions of sagebrush steppe or grassland often occur, but the vegetation is typically dominated by a variety of shrubs including serviceberry, mountain mahogany, common juniper, currant, snowberry, creeping barberry, antelope bitterbrush.

Upland grasslands occur throughout the CCSM Project Site although the Chokecherry Wind Development Area has a greater occurrence of contiguous grassland cover. These communities typically occur between 6,500 to 8,400 feet in elevation and occur across approximately 7% of the CCSM Project Site. The vegetation is characterized as mixed-grass prairie on gentle to moderate slopes (0–20%), growing on drainage terraces, draws, alluvial flats and plains, escarpments, gulches, hillslopes, knobs, knolls, bluffs, and plateaus. Upland grasslands form a matrix with the surrounding sagebrush steppe, creating a mosaic landscape of rolling grasslands interspersed throughout sagebrush communities.

Remaining vegetation communities include lowland mesic grasslands and riparian communities, agricultural pastures and hay meadows, disturbed/developed areas.

3.0DETERMINATION OF EROSION POTENTIAL

Surface-disturbing activities associated with the construction, operation, maintenance and decommissioning of the CCSM Project may result in exposed soils and accelerated soil erosion. PCW has surveyed the CCSM Project Site to identify areas of increased erosion potential (SWCA 2013). Generally, the surveyed areas are stable or have only slight erosion

potential. Areas having moderate, critical, or severe erosion potential are generally associated with steep slopes or unstable areas adjacent to previously developed areas and roadways. More than 1,500 erosion potential data points (Table 1) were collected at turbine locations, road intersections, drainage crossings, or areas of obvious erosion. Of these data, 90.6% were classified as being stable or having only slight erosion potential, 8.6% were classified as having moderate or critical erosion potential, and only 0.8% were classified as having severe or extremely severe erosion potential (Table 2). All areas across the CCSM Project Site generally had stable conditions (Table 1 and Table 2).

This Plan, in conjunction with the measures included in the ROD and the SWPP Plan for each site-specific plan of development, will control erosion to minimize impacts to the soil resource, surrounding watersheds, and rangeland. The SWPP Plans for each site-specific plan of development address the anticipated erosion prevention, sedimentation controls, and runoff controls and designs to mitigate the erosion risk during construction. The SWPP Plans include existing conditions of the CCSM Project Site, the activities associated with the WYPDES permit, and the requirements of federal, state, and local permits. The SWPP Plans include best management practices appropriate for each site and activity.

Table 1. Number of surveyed locations in each development area associated with each erosion potential category.

Development Area	Erosion Potential Category		
	Stable/ Slight	**Moderate/ Critical**	**Severe/ Extremely Severe**
Phase I Haul Road and Facilities	139	15	3
West Sinclair Rail Facility	20	2	0
Road Rock Quarry	12	3	0
Phase I Wind Development	1404	130	13
Phase II Wind Development[2]	TBD	TBD	TBD
Total[1]	**1446**	**137**	**13**

Notes: 1. Total is not the sum of the erosion potential across all sites as presented in the table. Because of overlap in project component locations, some erosion data points were used to characterize multiple development areas.
2. TBD = To be determined, Erosion Potential for the Phase II Wind Development will be evaluated and reported in a subsequent update to this Plan.

Table 2. Percent of surveyed locations in each development area associated with each erosion potential category.

Development Area	Erosion Potential Category		
	Stable/ Slight	Moderate/ Critical	Severe/ Extremely Severe
Phase I Haul Road and Facilities	88.5%	9.6%	1.9%
West Sinclair Rail Facility	90.9%	9.1%	0.0%
Road Rock Quarry	80.0%	20.0%	0.0%
Phase I Wind Development	90.8%	8.4%	0.8%
Total	**90.6%**	**8.6%**	**0.8%**

4.0EROSION CONTROL MEASURES

PCW will implement the erosion control measures described below, as appropriate, to control erosion on the CCSM Project Site. The SWPP Plan for each site-specific plan of development includes additional information on the application of best management practices for erosion control.

4.1 CCSM PROJECT DESIGN

PCW has designed the CCSM Project to minimize the overall disturbance, as well as to avoid disturbance in unstable areas to the extent practicable. The avoidance and minimization measures applicable to erosion control are described in Appendix D to the ROD. These measures were implemented on the CCSM Project as described in Appendix A to each site-specific plan of development. By minimizing disturbance and avoiding unstable areas, PCW will preserve existing vegetation and reduce the potential for erosion to occur. The limits of disturbance for each CCSM Project feature, such as the roads, rail, laydown yards, turbine pads, etc., are shown on the issued for permit plans included in each site-specific plan of development. Where disturbance could not be avoided, PCW has characterized the erosion potential, as summarized in section 3.0, to identify appropriate erosion control measures. The range of erosion control measures that will be used on the CCSM Project is described in section 4.2 and the implementation of these measures is detailed in the SWPP Plan for each site-specific plan of development.

4.2 EROSION CONTROL MEASURES

The CCSM Project has been designed to avoid potential erosion to the extent practicable. Where erosion risk is unavoidable, PCW has designed the CCSM Project to incorporate erosion control measures commensurate with the level of remaining risk. Table 3 lists erosion control measures that will be used on the CCSM Project, as appropriate. Specific erosion

control measures applied to the CCSM Project components are discussed in the SWPP Plan for each site-specific plan of development.

Table 3. Erosion Control Measures for the CCSM Project

Measure	Common Usage
CCSM Project Design	Minimize soil disturbance, including disturbance of unstable areas
CCSM Project Schedule	Minimize duration of soil exposure prior to stabilization.
Straw Wattles	Place down gradient from disturbed areas to capture suspended sediment.
Silt Fence	Place down gradient from disturbed areas to capture suspended sediment. Options may also include wire backed silt fence where appropriate.
Rock (Aggregate) Surfacing	Install on CCSM Project roads and where construction access intersects public roads.
Riprap	Install at culvert outlets, ditch intersections, and similar drainage points to prevent scour by decelerating water.
Dewatering	Install temporary pumps to remove accumulated water in initial (short-term) disturbance where positive drainage cannot be achieved.
Mulch Cover	Cover reseeded areas with straw or hay to minimize runoff until vegetation established; may require disc-anchoring or use of tackifier.
Erosion Control Blanket	Cover reseeded areas where additional stabilization support is needed (such as steep slopes, ditches, swales).
Rock Cover/Rock Mulch	Install for temporary stabilization of subsoil stockpiles and final stabilization of areas that were too rocky for vegetation in their native condition.
Sediment Basin	Construct to collect stormwater runoff from active portions of the Quarry extraction area to reduce turbidity prior to release.

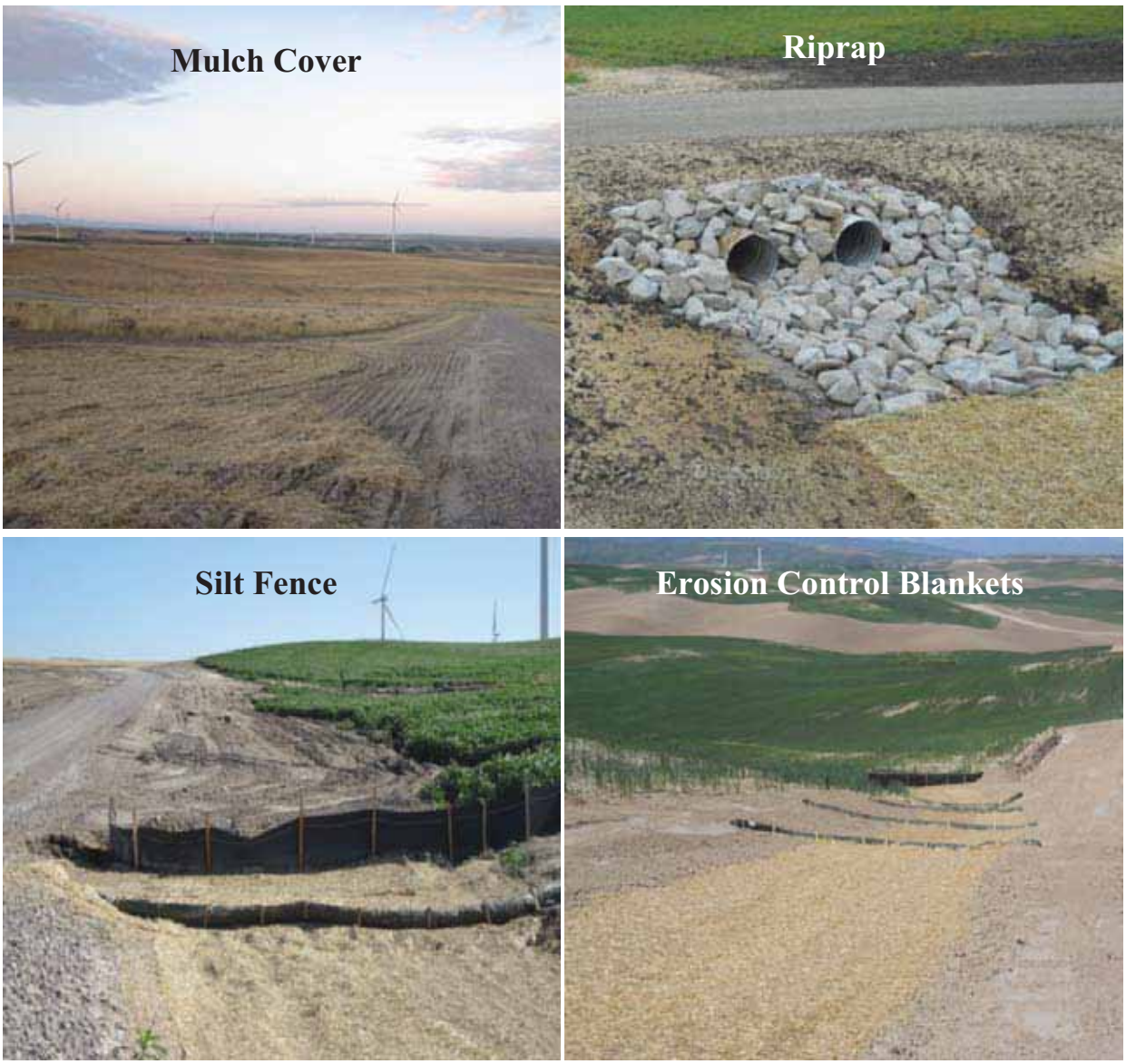

Figure 1. Typical Erosion Control Measures

5.0EROSION MONITORING AND MAINTENANCE

PCW will monitor the CCSM Project Site to insure that erosion control measures are installed as needed and functioning properly, as described in the Environmental Construction and Compliance Plan for the CCSM Project and the SWPP Plan for each site-specific plan of development.

During the CCSM Project's construction, operations, and decommissioning, PCW will continue to monitor the site to identify any new or unforeseen areas of erosion. Additional diligence will be given to locations of greater erosion risk due to steep slopes, sparse vegetation, or highly erosive soils. Should instances of new erosion be observed, PCW will

mitigate the erosion occurrence as soon as practicable utilizing the erosion control techniques contemplated herein in compliance with all applicable plans and permits. The scope of each inspection has been detailed in the Project SWPP Plans.

While erosion control measures are in place, PCW (or its delegate) will perform regular inspections of the erosion control measures. Inspections will be done as detailed in the Project SWPP Plans. Generally the inspections will be performed routinely on 14 day intervals and within 24 hours of a 0.5-inch rainfall occurring within a 24 hour period. The inspections for the quarry are planned on a quarterly basis with an inspection to be completed after larger rainfall events (1.0 inch within 24 hours) within 48 hours after the event. The inspections will be performed by qualified personnel based on their previous experience and project specific training as detailed in the Project SWPP Plans.

Most erosion and sediment control measures require routine maintenance to maintain effectiveness. As part of the inspection of erosion control measures, PCW will perform any necessary maintenance to ensure the measures are operating per their design requirements. Guidelines for when to schedule maintenance based on the condition of the BMP and the necessary timeframes or intervals for maintenance are detailed in the Project SWPP Plans.

Should some measures require extensive or frequent maintenance, PCW may elect to utilize alternative erosion control techniques to better meet the site needs. Any such alternative techniques shall be in compliance with all applicable plans and permits for the CCSM Project.

6.0DETERMINATION OF EROSION CONTROL COMPLETION

As reclamation of the CCSM Project progresses, PCW will phase out the use of erosion control measures where appropriate. Following removal of erosion control measures, monitoring of the CCSM Project Site will continue until stabilization and revegetation have been achieved as defined in the SWPP Plan and WYPDES permit. Once the revegetation requirements of the SWPP Plan are met, inspections and permit coverage for the WYPDES permit will terminate. On federal lands, monitoring of the CCSM Project Site will continue until the requirements of the CCSM Project Master Reclamation Plan and each site-specific Reclamation Plan are met.

7.0 REFERENCES

Bureau of Land Management (BLM). 2012. Chokecherry and Sierra Madre Wind Energy Project Final Environmental Impact Statement (Volume II). Rawlins Field Office, Carbon County, Wyoming. June 2012.

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Fugro Consultants, Inc. (FUGRO). 2013. Geotechnical Data Report 2012 Haul Road Geotechnical Investigation CCSM Wind Energy Project. Carbon County, Wyoming. Report Number 04.30121094-1. Fugro Consultants Incorporated. 2013.

APPENDIX I

Chokecherry and Sierra Madre Wind Energy Project
Storm Water Pollution Prevention Plan

Road Rock Quarry

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TABLE OF CONTENTS

1.0 Introduction 1
2.0 Facility Information 2
2.1 Facility Location 2
2.2 Facility Area 4
2.3 Site Conditions 4
2.3.1 Soils 4
2.3.2 Vegetation and Percentage of Existing Vegetative Cover 5
2.4 Drainage Areas/Receiving Waters 6
2.5 303(d) Impaired Waters, TMDL, and / or Class 1 Waters 8
3.0 SWPPP Contacts (7.2.1) 9
4.0 Site Map(s) (7.2.2) 10
5.0 Exposed Materials Inventory (7.2.3) 11
6.0 Significant Spill/Leak List (7.2.3.5) 13
7.0 Sampling (7.2.4) 14
8.0 Measures and Controls (7.2.5) 15
8.1 Good Housekeeping (7.2.5.1) 15
8.2 Sediment and Erosion Control (7.2.5.4) 17
8.3 Management of Runoff (7.2.5.5) 29
8.4 Preventative Maintenance (7.2.5.2) 34
8.5 Spill Prevention and Response (7.2.5.3) 37
8.5.1 Spill Prevention and Response 37
8.5.2 Spill Reporting 37
9.0 Inspections (7.2.6) 38
10.0 Recordkeeping (7.2.7) 39
11.0 Non-Storm Water Discharges (7.2.8) 40
12.0 Employee Training (7.9) 41
13.0 Stabilization and Termination 42
14.0 References 43
15.0 Certification (7.8) 45

LIST OF TABLES

Table 1. Facility Location 3
Table 2. Facility Latitude and Longitude 4
Table 3. Facility Area and Disturbance 4
Table 4. Vegetation communities within the Facility Site 6
Table 5. Facility Receiving Waters, Stream Classifications and Turbidity Limits 7
Table 6. Material Handling 12
Table 7. Sediment and Erosion Control Best Management Practices 18
Table 8. Stabilization Measures and Applications 19
Table 9. Sediment and Erosion Control Best Management Practices by Activity 21
Table 10. Riprap specifications 22
Table 11. Erosion control blankets and applicability 24
Table 12. Examples of Binders and Tackifiers 26
Table 13. Dewatering bag specifications 29
Table 14. Recommended Soil Berm Spacing 32
Table 15. Maintenance Conditions and Requirements 34
Table 16. Inspection Schedule 38
Table 17. Potential Non-storm Water Discharges 40

ATTACHMENTS

A. Delegation Letter(s)
WYR32-0000 Mineral Mining Activities General Permit

B. [Reserved for: Notice of Intent]
[Reserved for: Permit Authorization]
[Reserved for: Wyoming DEQ Correspondence]
[Reserved for: Sage Grouse Correspondence]

C. Vicinity Map
Existing Conditions Map
Terrain Map
Soil Map

D. Drainage Area Map
Class 1 Waters Map and 303(d) Impaired Waters Map
DEQ Class I Waters List

E. Site Inspection Report
Inspection and Rain Event Log
Corrective Action Report
Storm Water Discharge Log
Grading / Stabilization Log
Subcontractor Certification
Amendment Certification
Amendment Log

F. [Reserved for: Facility Plan Set and Erosion and Sediment Control Plans]

G. [Reserved for: BMP Details]

H. Training Documentation

I. Notice of Intent Form (rev. 6/13)
Notice of Transfer and Acceptance Form (rev. 8/07)
Notice of Termination Form (rev. 8/07)

J. [Reserved for: Sediment Basin Calculations]

K. [Reserved for: Vegetation Monitoring Protocol]

1.0 INTRODUCTION

Power Company of Wyoming LLC (PCW) proposes to construct, operate, maintain and decommission the Chokecherry and Sierra Madre Wind Energy Project (CCSM Project). The CCSM Project consists of up to 1,000 wind turbines capable of generating approximately 2,000 to 3,000 megawatts (MW) of clean, renewable wind energy. The primary components of the CCSM Project include the wind turbine generators, an internal road network, the West Sinclair Rail Facility, the Road Rock Quarry, an internal electrical collection and transmission system, substations, and operations and maintenance buildings. The scope of this Storm Water Pollution Prevention Plan (SWPPP) is limited to the Road Rock Quarry (Facility); a separate SWPPP will be developed for the other components of the CCSM Project.

This SWPPP is prepared in accordance with the Wyoming Pollutant Discharge Elimination System (WYPDES) rules and regulations and the Wyoming Department of Environmental Quality's (WDEQ) "*Authorization to Discharge Storm Water Associated With Mineral Mining Activities (Except Fuels) Under the Wyoming Pollutant Discharge Elimination System*", general permit WYR32-0000, dated April 5, 2012 (**Attachment A**). This SWPPP is a dynamic document and will be updated by PCW as required. This SWPPP will be available on-site at all times during construction and operation of the Facility and will remain on file for three years after submittal of the Notice of Termination (NOT).

The following are outlined in this SWPPP:

- Control measures for storm water pollution prevention prior to, during, and after construction and operation;
- Control measures for sources of potential storm water and non-storm water pollution;
- Implementation, inspection, maintenance, and documentation procedures and requirements; and
- Best Management Practices (BMP).

Note: This document is based on the site-specific plan of development for the Road Rock Quarry; final information will be added prior to submittal of the Notice of Intent to request permit coverage.

The numbers within parentheses following the document headings reference the sections of the WYR32-0000 Permit.

2.0 FACILITY INFORMATION

The Facility, the Road Rock Quarry, is a surface rock quarry operation that will provide an internal, local source of base aggregate and fill material for the CCSM Project (SIC Code 1429). No permanent structures will be constructed on the Quarry Site. Portable office trailers will be used for Quarry construction and operations and portable crushers will be used to process the material. Material load out at the Quarry will be accomplished using wheel loaders or portable conveyor belts to load the aggregate and fill into trucks.

Due to the temporary nature of the Quarry Facilities, construction activities for the Quarry consist of establishing Quarry Road and the Quarry operations areas for material and equipment staging. Construction will begin with topsoil removal, followed by excavation and grading. Topsoil will be stripped, separated and wind-rowed or stockpiled. Following topsoil removal, the subsoils will be corrected as needed to support the access road or other facilities. Subsoil correction methods may include cement stabilization, wick drain installation, or removal and recompaction of fill material, as appropriate. Grading will then be completed using bulldozers, scrapers, and motor graders.

Following grading, drainage structures will be installed. Adequate positive drainage will be needed for operation of the Facility, as well as for soil stability and erosion control. The drainage structures that will be installed at the Facility generally consist of corrugated metal pipe (CMP) culverts. Where drainage areas are too large for CMP culverts, precast concrete structures may be used. Three temporary sediment basins will be constructed for runoff control. Additionally, a diversion ditch and containment berms will be constructed to prevent untreated runoff from discharging into unnamed tributaries that lead to Sugar Creek. Once the site preparation is complete, aggregate material will be placed as needed for the operations areas and Quarry Road.

Following construction of the Facility, operations will begin. Operations at the Quarry consist of stripping and stockpiling topsoil and overburden to expose the underlying material for excavation. The target material is then systematically removed by excavation and/or drilling and blasting, transferred to a staging area for separation and crushing, and stockpiled for use throughout the CCSM Project. Following operations, the Facility will be reclaimed. Reclamation will generally consist of recontouring, reapplication of topsoil, and revegetation. Temporary erosion control measures will be used during reclamation to stabilize areas until revegetation is complete.

The Facility is not yet active, but is scheduled to begin construction in September of 2014 and commence operations in April of 2015. The Facility is anticipated to operate through the end of 2017, coinciding with the CCSM Project construction.

2.1 FACILITY LOCATION

The Facility, referred to as the Road Rock Quarry, is located on a combination of federal and private lands south of Rawlins, Wyoming. Specifically, the Facility is located south of Interstate 80 in Sections 1 through 5 of Township 20 N, Range 87 W of the Sixth Principal Meridian and Section 34 of Township 21 N, Range 87 W of the Sixth Principal Meridian, in Carbon County, Wyoming. The Facility and the associated activities are located in the quarter-quarters (or government lots)

listed in Table 1. The latitude and longitude listed in Table 2 refer to the general perimeter of the Facility. **Attachment C** depicts the Facility features and location.

Table 1. Facility Location

Quarter-Quarter / Government Lot	Section	Township	Range
Lot 3	1	20N	87W
Lot 4	1	20N	87W
Lot 1	2	20N	87W
Lot 2	2	20N	87W
Lot 3	2	20N	87W
Lot 4	2	20N	87W
NW¼SW¼	2	20N	87W
Lot 1	3	20N	87W
Lot 3	3	20N	87W
Lot 4	3	20N	87W
NE¼SW¼	3	20N	87W
NE¼SE¼	3	20N	87W
NW¼SE¼	3	20N	87W
Lot 2	4	20N	87W
Lot 3	4	20N	87W
Lot 4	4	20N	87W
Lot 5	4	20N	87W
NW¼SW¼	4	20N	87W
Lot 1	5	20N	87W
Lot 2	5	20N	87W
NE¼SE¼	5	20N	87W
NW¼SE¼	5	20N	87W
SW¼SE¼	34	21N	87W
SE¼SE¼	34	21N	87W

Table 2. Facility Latitude and Longitude

Facility Feature	Latitude	Longitude
Quarry Road (eastern perimeter)	41° 44' 11.27"	-107° 08' 40.86"
Quarry Facilities (midpoint)	41° 44' 10.41"	-107° 10' 23.00"
Quarry Facilities (western perimeter)	41° 44' 07.08"	-107° 12' 55.44"

2.2 FACILITY AREA

The total Facility site is estimated to be 174.7 acres; which includes all areas of temporary disturbance. Of the 174.7 acres of disturbance, only 17.7 acres are anticipated to be disturbed long-term (Table 3).

Table 3. Facility Area and Disturbance

Component	Initial Disturbance (acres)	Long-term Disturbance (acres)
Operations Areas	96.4	0.0
Excavation Area	20.1	0.0
Quarry Road	67.0	17.6
TOTAL	**183.5**	**17.6**

2.3 SITE CONDITIONS

The Facility site climate is classified as desert and semiarid steppe. Annual precipitation is approximately nine (9) inches. Temperatures vary, on average, between 12 degrees Fahrenheit in January to 83 degrees Fahrenheit in July. The Facility elevation ranges from 6,970 feet above mean sea level to approximately 7,024 feet above mean sea level. Refer to **Attachment C** for terrain maps and existing conditions maps.

2.3.1 Soils

The Facility site is characterized by slightly weathered shale and sandstone primarily from the Mesaverde Group/Steele Shale undivided formations. Topography in the area ranges from nearly level to very steep on slopes that are commonly dissected. Soils have developed primarily from residuum and alluvium of mixed lithology on hillslopes and bluffs, underlain by slightly weathered to unweathered bedrock comprised of Mesaverde Group/Steele Shale undivided formations. Subsurface textures are predominantly shaley loams to shallow loams. Geotechnical testing for the Quarry was completed at three (3) boring locations with drilling depths ranging from 101 ft. to 176 ft. (Fugro 2013). Soil depths within the Facility site are generally very shallow, with deeper and more developed soils along Quarry Road.

Soils within the Facility site are primarily derived from sedimentary formations and are predominantly orthents; soils that are shallow to very deep and medium to fine textured and have a frigid temperature regime, an aridic moisture regime, and mixed or bentonitic mineralogy derived from marine shales. Predominant soil series in this area include the Blazon, Rentsac, and Chaperton series.

The Blazon series is shallow (0-4 inches) overlaying unconsolidated shale bedrock that occurs on pediments, hill slopes, plateaus, and ridges (NRCS 2013). Slopes range from 6 to 40 percent. The Blazon series is calcareous and is also compaction prone when moist or saturated. Water erosion potential is high and wind erosion potential is moderate. Topsoil suitability is good.

The Rentsac series occurs on mountains, escarpments, bedrock-floored plains, and hills (NRCS 2013). Slopes range from 10 to 70 percent. Rentsac soils are shallow to moderate depth (0-18 inches) with loamy skeletal textures overlaying calcareous sandstone. Water erosion potential is high and wind erosion potential is moderate. Topsoil suitability is poor due to large stones.

The Chaperton series consist of moderately deep, well-drained calcareous soils that formed in slope alluvium over residuum derived from shale (NRCS 2013). These soils occur on gently sloping to steep rolling hills and cuesta dipslopes, with slopes ranging from 2 to 40 percent. Textures range from loams to clay loams with 0 to 15 percent rock fragments that are dominantly gravel and cobble in size. Depth to accumulated calcium carbonates is 10 to 20 inches and 20 to 40 inches to paralithic shale.

2.3.2 Vegetation and Percentage of Existing Vegetative Cover

The Facility site vegetation is primarily characterized by is primarily characterized by sagebrush steppe composed of Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) mixed with upland grassland vegetation.. Vegetation communities were confirmed by SWCA Environmental Consultants (SWCA) in 2012 and 2013 across the CCSM Project Site, including the Facility site. Wetland delineation data was collected in 2012 and 2013 to characterize the wetland plant communities within the Facility site. Table 4 includes a summary of the vegetation communities within the Facility site. Additional information on the vegetation communities within the Facility site is included in the site-specific plan of development and site-specific reclamation plan for the Facility. Due to the variable terrain, soils and climate, the vegetative cover on the Facility Site varies between 0 and 35%. For purposes of this SWPPP, site stabilization will occur when vegetation cover is approximately 70% of natural background cover (Attachment K).

Table 4. Vegetation communities within the Facility Site

Vegetation Community	Acreage	Percentage of Site
Wyoming Big Sagebrush/Greasewood	50.8	27.7%
Wyoming Big Sagebrush/Black Sagebrush	46.1	25.1%
Wyoming Big Sagebrush	24.0	13.1%
Bluebunch Wheatgrass/Wyoming Big Sagebrush	13.8	7.5%
Bluebunch Wheatgrass/Black Sagebrush	12.4	6.8%
Basin Big Sagebrush	8.8	4.8%
Bluebunch Wheatgrass	8.1	4.4%
Other[1]	6.2	3.4%
Disturbed/developed	13.4	7.3%
TOTAL	**183.5**	**100.0%**

Notes:
(1) Greasewood/saltbush/basin big sagebrush, threadleaf sedge, greasewood/basin big sagebrush, mountain big sagebrush/Wyoming big sagebrush, mixed mountain shrub, Gardner's saltbush/Wyoming big sagebrush, greasewood/saltgrass, bluebunch wheatgrass/mountain big sagebrush, shadscale saltbush/black sagebrush, mountain big sagebrush/rabbitbrush, and greasewood each make up less than 1 percent of the total acreage of the Facility Site.

2.4 DRAINAGE AREAS/RECEIVING WATERS

Table 5 lists the receiving waters for the Facility site and their stream classification and any applicable turbidity limits. Table 6 includes the outfall/discharge location, type and size for the Facility. See **Attachment D** for drainage maps and drainage area locations.

Table 5. Facility Receiving Waters, Stream Classifications and Turbidity Limits

Watershed Area	Watershed Name	Immediate Receiving Waters	Ultimate Receiving Waters	HUC12	Disturbed Acres	Impaired Waters?	303(d)?	Class 1?	Stream Classification	NTU Limit*
1	Unnamed	Unnamed Tributaries	Lower Sugar Creek	101800021304	169.5	No	No	No	3B	None
2	Greenville Dome	Unnamed Tributaries and drainages	Unnamed interior Basin	101800021005	14.0	No	No	No	N/A	None

Notes:
3B – Other aquatic life, recreation, wildlife, agriculture, industry, scenic value.
NTU - Nephelometric Turbidity Units
* The NTU limit listed is an increase from existing NTU at the time of discharge. Unnamed tributaries do not have a listed NTU limit.

Table 6. Facility outfalls

Outfall #	Discharge to:	Latitude	Longitude	Type and Size
1	Unnamed Tributary to Greenville Dome	41.737491	-107.144331	Existing Stream Channel; Approx. 15' bottom
2	Unnamed Tributary to Lower Sugar Creek	41.736790	-107.171466	Existing Stream Channel; Approx. 8' bottom
3	Unnamed Tributary to Lower Sugar Creek	41.736689	-107.177674	Existing Stream Channel; Approx. 12' bottom
4	Unnamed Tributary to Lower Sugar Creek	41.739197	-107.192154	Existing Stream Channel; Approx. 10' bottom
5	Unnamed Tributary to Lower Sugar Creek	41.741634	-107.198780	Existing Stream Channel; Approx. 20' bottom
6	Unnamed Tributary to Lower Sugar Creek	41.740745	-107.202952	30" CMP Culvert
7	Unnamed Tributary to Lower Sugar Creek	41.738361	-107.204105	24" CMP Culvert
8	Unnamed Tributary to Lower Sugar Creek	41.734485	-107.209712	30" CMP Culvert

2.5 303(D) IMPAIRED WATERS, TMDL, AND / OR CLASS 1 WATERS

The receiving waters for the Facility disturbance were checked against the State of Wyoming's 303(d), TMDL and Class 1 Waters location information. The Facility does not overlap with 303(d) listed waters and there are no existing storm sewer systems within the Facility site. There is a Class 1 River located approximately 12.9 miles from the Facility site. The North Platte River is listed as a Class 1 Waterbody starting at the confluence of Sage Creek and continuing upstream to the Colorado/Wyoming state line. The Facility storm water discharges occur downstream of this segment and thus will not degrade the water quality from a 2 year/24-hour storm event. See **Attachment D** for Class 1 and Main Stem Waterbody locations.

3.0 SWPPP CONTACTS (7.2.1)

SWPPP ADMINISTRATOR

Company or Organization: TBD

Name of Individual: TBD

Title: TBD

Phone: TBD Cell Phone: TBD

Fax: TBD E-mail: TBD

Table 7. SWPPP Contacts

Role	Company / Position	Name	Phone	Email
Legally Responsible Person	TBD	TBD	TBD	TBD
Owner Representative	TBD	TBD	TBD	TBD
Facility Manager	TBD	TBD	TBD	TBD
Facility (Local) Contact	TBD	TBD	TBD	TBD
Engineer of Record	Westwood Professional Services / Project Manager	Robert Copouls, PE	952-906-7470	Rob.Copouls@ westwoodps.com
SWPPP Author	Westwood Professional Services / Sr. Env. Compliance Specialist	Aaron Mlynek, CPESC	952-697-5710	Aaron.Mlynek@ westwoodps.com
Fee Contact	TBD	TBD	TBD	TBD

The Facility Manager and Facility Contact are duly authorized representatives with authority to sign the reports required under this permit (this authority does not apply to Notices of Intent [NOI], Notices or Transfer and Acceptance [NOTA], or Notices of Termination [NOT]). This authority has been delegated in writing by the Legally Responsible Person as part of the NOI or by separate letter to the WYDEQ-WQD (**Attachment A**).

Note: The SWPPP contacts, including the SWPPP Administrator, will be designated at a later date once personnel are assigned.

4.0 SITE MAP(S) (7.2.2)

Site maps are attached to this SWPPP. See **Attachment C** for the USGS Map, Existing Conditions Map and Soils Map. See **Attachment D** for the Drainage Area Map, Class 1 Waters Map and Impaired Water Body Map. See **Attachment F** for the Site Map, Facility plan set and erosion and sediment control plans.

5.0 EXPOSED MATERIALS INVENTORY (7.2.3)

Table 8 describes the significant materials that are processed, handled, treated, stored or disposed of at the Facility that may potentially contribute significant pollutants to storm water discharges. Table 8 also includes the location and/or source of the pollutant, along with the recommended control measures.

Table 8. Significant Materials

Material	Location or Source	Management Practice
Crushed Rock	Excavation area, stockpiles	Sediment and erosion control BMPs (see section 8.0)
Soil	Excavation area, stockpiles, exposed surfaces	Sediment and erosion control BMPs (see section 8.0)
Antifreeze	Equipment, vehicles, laydown yard	Drip pans, secondary containment, dry and secure storage
Diesel Fuel	Equipment, vehicles, storage tanks	Drip pans, secondary containment, double walled tanks, specific fueling areas
Gasoline	Equipment, vehicles, storage tanks, generators	Drip pans, secondary containment, double walled tanks, specific fueling areas
Hydraulic Oils and Fluids	Equipment, laydown yard	Drip pans, secondary containment, dry and secure storage
Grease and Lubricants	Equipment, vehicles, laydown yard	Drip pans, secondary containment, dry and secure storage
Glues / Adhesives	Laydown yard, application	Dry storage, dry application
Curing Compounds	Laydown yard, application for concrete	Dry storage, secondary containment, dry application
Concrete / Grout	Laydown yard, application at site locations, subsoil correction application areas	Secondary containment, dust control, designated washout areas, engineer-determined application rates for subsoil correction.
Trash and Debris	Dumpsters, trash cans in laydown yard and satellite locations	Plugs in dumpsters, covers as necessary, routine maintenance
Concrete Mortar	Laydown yard and application for culverts or other areas	Dry storage, dry application
Portable Sanitary Facilities	Laydown yard, satellite locations	Routine maintenance, cleanout, secure facilities to soil, secondary containment
Coolant	Equipment, vehicles, laydown yard	Drip pans, secondary containment, dry and secure storage
Motor Oil	Equipment, vehicles, laydown yard, maintenance area	Drip pans, secondary containment, dry and secure storage
Detergents / Cleansers	Laydown yard and designated areas	Secondary containment, dry and secure storage

Table 9 describes the type of material handling activity, the storage method, the outdoor processing method, and the disposal method for each material, as applicable.

Table 6. Material Handling

Material	Method of Storage	Method of Outdoor Processing	Method of Disposal	Potential to Contribute Pollutants
Crushed Rock	Stockpiles	Excavation and crushing	N/A	Low
Soil	Stockpiles	Excavation	N/A	High
Antifreeze	Original Containers and vehicles	N/A	Off-site Facility	Low
Diesel Fuel	Vehicles, equipment and storage tanks	N/A	N/A	Low
Gasoline	Vehicles, equipment and storage tanks	N/A	N/A	Low
Hydraulic Oils and Fluids	Vehicles, equipment and storage tanks	N/A	Off-site Facility	Low
Grease and Lubricants	Vehicles, equipment and original containers	N/A	Off-site Facility	Low
Glues / Adhesives	Original containers and cabinets	N/A	N/A	Low
Curing Compounds	Storage Barrels	N/A	Off-site Facility	Low
Concrete / Grout	Trucks, dry bags in dry storage areas	N/A	N/A	Low
Trash and Debris	Dumpsters	N/A	Off-site Facility	Medium
Concrete Mortar	Dry bags in dry storage areas	N/A	N/A	Low
Portable Sanitary Facility	Portable tank	N/A	Contractor maintains on-site and disposes of off-site	Low
Coolant	Vehicles, equipment and original containers	N/A	Off-site Facility	Low
Motor Oil	Vehicles, equipment and original containers	N/A	Off-site Facility	Low
Detergents / Cleansers	Storage Barrels	N/A	Off-site Facility	Low

6.0 SIGNIFICANT SPILL/LEAK LIST (7.2.3.5)

Not applicable. The Facility is not yet operational; therefore, to date there have been no significant spills or leaks of toxic or hazardous materials in areas that are exposed to precipitation or that otherwise drain to a storm water conveyance.

7.0 SAMPLING (7.2.4)

Not applicable. This Facility has not yet been constructed; therefore, sampling data is not currently available.

8.0 MEASURES AND CONTROLS (7.2.5)

PCW will implement measures and controls to manage storm water discharges associated with industrial activities and prevent pollution, contamination, and degradation of waters of the state. This section outlines the best management practices (BMPs) that PCW will implement as appropriate to adequately control a typical 2 year / 24-hour storm event for the Facility. The 2 year / 24-hour storm event for the Facility is defined as 0.9 inches. See **Attachment G** for an alternate format of BMP details for contractor use on-site.

To identify whether storm water discharges associated with industrial activities are adequately controlled, PCW will evaluate visible and measurable erosion. Visible or measurable erosion that is not adequately controlled is defined as:

- Deposits of mud, dirt , sediment exceeding one cubic foot volume in an area of 100 square feet or less on public or private roads, adjacent property, or into waters of the state by deliberate actions or as a result of water / wind erosion; or
- Evidence of: (1) concentrated flows of water over bare soils (rills / gullies); (2) turbid or sediment laden flows where runoff is not filtered, treated, or captured on-site using one or more of the BMPs specified below; or (3) earth slides, mud flows, earth sloughing or other earth movement which originates on the Facility site and leaves the Facility site.

If inspections indicate that the BMPs are not adequately controlling the 2 year / 24-hour storm event, the BMPs will be reviewed and additional or different BMPs will be applied. If the BMPs that must be applied are not contemplated in this SWPPP, PCW will amend this SWPPP and document the changes.

8.1 GOOD HOUSEKEEPING (7.2.5.1)

PCW will implement the BMPs described below in the day-to-day operations of the Facility to maintain areas that may contribute storm water pollutants in a clean and orderly manner.

Litter and Debris (solid waste)

- PCW will locate dumpsters away from watercourses, streams, creeks and other surface waters or conveyances.
- PCW will regularly inspect dumpsters and report excess litter and solid waste and request pickup and retrieval of wastes.
- PCW will require workers to deposit waste, litter, and debris into dumpsters at the laydown yards and/or in various satellite locations where work is active.
- Dumpsters will be supplied and maintained by a waste management company.

Chemicals

- Gasoline, oil, paint, solvents, and other chemicals will not be stored in contact with soil or water and will not be released to soil or water.
- Oil will be handled in accordance with the Spill Prevention Control and Countermeasure (SPCC) Plan for the Facility.

- All chemicals will be kept in their original container, with original labels still attached, unless the container is not re-sealable. If chemicals are transferred to new containers they will be properly marked.
- Hazardous materials will be stored in designated areas.
- PCW will implement a chemical products management program to control the types and amounts of hazardous materials brought on-site.
- Chemical products and wastes that pose a pollution hazard will be stored within secondary containment.
- Waste will be removed from the site on a regular basis and disposed of in accordance with federal, state and local regulations.
- Spill kits will be clearly labeled and will be kept on-site in close proximity to where chemicals are being stored or used.
- All spills will be cleaned up as soon as practicable in accordance with applicable federal, state and local regulations.

Vehicle Maintenance and Washing

- PCW will properly maintain all vehicles and equipment.
- Separate areas will be designated for vehicle maintenance and washing unless appropriate equipment, e.g. oil/water separator, is provided.
- Areas for vehicle maintenance and washing will be surfaced with gravel or concrete.
- A barrier will be provided under gravel surfaces to retard infiltration.
- PCW will supply containment berms, diversion berms and spill kits for vehicle maintenance and washing areas, as appropriate.
- PCW will inspect vehicles and equipment for leaks prior to washing; if leaks are found, vehicle will not be washed until leaks are repaired.

Detergents

- PCW will limit the use of detergents containing phosphorus on site.
- PCW will properly contain water containing detergents.
- Do not allow water containing detergents to discharge into surface waters or conveyances.
- Detergents will only be used in designated areas for rinsing vehicles or equipment.
- PCW will store detergents in a dry, secure storage area with secondary containment.

Pesticides and fertilizers

- PCW will follow all federal, state, and local regulations that apply to the use, handling, or disposal of pesticides and fertilizers.
- PCW will store pesticides and fertilizers in a dry, secure storage area with secondary containment.
- PCW will follow the manufacturer's recommended application rates and methods.

Portable Sanitation Facilities

- PCW will locate portable sanitation facilities away from watercourses, streams, creeks and other surface waters or conveyances.

- PCW will secure portable sanitation facilities to the soil or other non-movable structure to prevent tipping from wind or other factors.
- PCW will schedule routine maintenance and regular cleanout with a licensed sanitary waste company.

Sediment Retrieval / Recovery

- Accumulated sediment will not be washed or diluted into waterbodies or other surface waters and conveyances (such as ditches).
- PCW may delay sediment retrieval due to wet or muddy conditions where more damage would likely result from attempting to retrieve the sediment. PCW will implement additional BMPs as needed until the material can be retrieved. PCW will document the reason for the delay and the BMPs used.
- If removal sediment will cause more discharge of sediment and impact to a critical area (such as a vegetated riparian area), PCW will seed and stabilize the sediment delta if acceptable to the landowner. PCW will document the determination, landowner acceptance and the BMPs used.

8.2 SEDIMENT AND EROSION CONTROL (7.2.5.4)

PCW will implement BMPs to limit erosion and sedimentation from areas with a high potential for significant erosion or contribution of sediment to runoff to the extent practicable, as described in Tables 10 through 12. Each type of BMP and its application is described in additional detail following the summary tables.

Table 7. Sediment and Erosion Control Best Management Practices

Area	Activity	BMP
Facility site	All activities	Schedule work to minimize the duration of the disturbance and the amount of the disturbance.
Facility site	All activities	Schedule BMP installation to provide stable access.
Sensitive areas	All activities	Schedule work in sensitive areas (steeper slopes, riparian areas, stream crossings and conveyance crossings) within a forecasted dry period.
Facility site	Pre-disturbance	Stake or otherwise delineate the limits of disturbance to maintain designated footprint, minimize disturbance, and preserve vegetation to the extent practicable.
Facility site	Clearing	Install principal sediment perimeter controls (sediment traps and barriers, basin traps, sediment fences, culverts) as soon as possible.
Facility site	Clearing	Stabilize stream banks as soon as possible and install a principal runoff conveyance system with runoff control measures. Install the remainder of the systems after grading.
Facility site	Clearing	Stabilize the normal wetted perimeter (from a 2 year / 24-hour event) to a point of at least 200 linear feet above the downstream disturbed soil limit or from the point of discharge to a surface water / conveyance.
Borrow areas	Clearing/ Excavation	Clear borrow areas only as needed.
Soil stockpiles	Excavation	Protect soil with perimeter sediment controls and temporary erosion controls in accordance with the site-specific reclamation plan for the Facility (e.g. mulch and seeding).
Quarry Road and operations areas	Grading	Stabilize any bare areas with gravel and/or temporary mulch.
Facility site	Grading	Install key run-off control measures (runoff control diversions, perimeter dikes, water bars, outlet protection) before exposing more than 10 acres of land graded to a common point.
Facility site	Grading	Install runoff control measures during grading for critical areas of steeper slopes and areas near waterways and receiving waters.
Culverts	Installation	Install energy dissipation within 24 hours of culvert installation when feasible.

Area	Activity	BMP
Facility site	Grading/ Reclamation	Apply temporary or permanent stabilizing measures (surface roughening, seeding, mulching, erosion control blankets, hydromulch, etc.) within 14 days to any disturbed areas where work has been either completed or delayed beyond 14 days.
Facility site	Reclamation	Reclaim all exposed areas in accordance with the site-specific reclamation plan for the Facility, including decompaction, seeding, and temporary stabilization. Remove all temporary control measures once areas are stable.

Table 8. Stabilization Measures and Applications

BMP	Area / Application	Temporary or Permanent (and Duration)
Straw or Hay Mulch	Areas and slopes flatter than 3:1; Larger stockpiles with flatter slopes	Temporary (1 year or less)
Hydromulch	Topsoil berms, stockpiles, areas too small for equipment access, slopes flatter than 3:1.	Temporary (6 months or less)
Bonded Fiber Matrix	Topsoil berms, stockpile areas too small for equipment, Areas flatter than 3:1; areas of 3:1 and steeper (up to 2:1) with less than 75 feet of length, areas of 3:1 and steeper with slopes greater than 75 feet in length*, areas inaccessible for equipment or too steep for blanket application.	Temporary (varies depending upon product but up to 18 months)
Erosion Control Blanket / Turf Reinforcement Mats (TRM)	Areas of 3:1 slope, less than 75 feet in slopes length, areas of 3:1 slope and greater than 75 feet in slopes length, Areas of concentrated flows (ditches)	Temporary (3 to 24 months) TRM: Permanent
Plastic Sheeting / Tarps	Areas of 3:1 slope with less than 75 feet of slope length, stockpiles	Temporary (up to 1 month) and for areas where active work is inevitable.
Rock Base / Aggregate Base	Traffic surfaces (roads), exit locations, parking areas, laydown yards, water and well extraction areas	Temporary and Permanent

BMP	Area / Application	Temporary or Permanent (and Duration)
Riprap	Scour protection, energy dissipation at culverts, pipes and pumps, slopes steeper than 2:1 and less than 75 feet in length, and channel side banks	Temporary and Permanent
Interim and Permanent Seeding	Stockpiles, erosion control for topsoil berms, slopes, soils not actively worked within next 30 days, interim reclamation areas, permanent reclamation areas	Interim and Final Reclamation

*Note: *Slope length of greater than 75 feet with grades of 3:1 or steeper will be graded with slope breaks such as terraces, benches, or V-notch back slope or will have fiber logs installed on contour to maintain sheet flow and minimize erosion potential.*

Table 9. Sediment and Erosion Control Best Management Practices by Activity

Activity	Best Management Practice																	
	Preservation of Existing Vegetation	Scheduling	Surface Roughening	Diversion(s)	Energy Dissipation	Riprap Slope Stabilization	Erosion Control Blankets	Organic Mulch	Rock Mulch / Aggregate	Soil Binders / Tackifiers	Interim Seeding	Permanent Seeding	Wind Erosion Control	Rock Checks/ Rock Weeps	Topsoil Berms	Plastic Sheeting	Hydromulch	Bonded Fiber Matrix
Staking Limits of Disturbance	X	X																
Clearing and Grubbing Necessary to Install Perimeter Control	X	X	X	X			X	X			X	X	X	X				
Installing Perimeter Controls	X	X		X											X			
Remaining Clearing and Grubbing	X	X	X	X			X	X			X	X	X	X				
Stripping and Stockpiling Soil		X						X		X	X		X		X			
Grading		X	X	X			X	X			X	X	X	X				
Ditch/Culvert Installation	X	X			X	X	X				X	X						
Road Construction	X	X	X	X	X		X	X	X	X	X	X	X		X			
Final Grading		X	X	X	X		X	X	X	X		X	X	X				
Operations Areas		X		X	X			X	X	X	X		X	X	X			
Diversion Ditch and Sediment Basin Construction	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
Stabilization	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X