

APPENDIX C

PROJECT-WIDE MITIGATION MEASURES AND PROCEDURES

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The following describes applicant-committed and agency-required measures and procedures to avoid or mitigate resource or other land use impacts. These measures and procedures will be referred to as Best Management Practices (BMPs) throughout this document. In addition to public lands, these mitigation measures and procedures will be applied on privately-owned surface unless alternate actions are specifically required by the involved private surface owners. An exception to a mitigation measure and/or design feature may be approved on public land on a case-by-case basis when deemed appropriate by the BLM. An exception will be approved only after a thorough, site-specific analysis determines that the resource or land use for which the measure was put in place is not present or will not be significantly impacted.

PRECONSTRUCTION PLANNING, DESIGN, AND COMPLIANCE MEASURES

1. PEDCO will designate a qualified individual to serve as compliance coordinator. This individual will be responsible for ensuring that all requirements of the APD and Plan of Development (MSUP, MDP, WMP, and Conditions of Approval) are followed.
2. PEDCO and the BLM will make onsite inspections of each proposed and staked facility site (e.g., well sites and other facilities), new access road, access road reconstruction, and pipeline alignment projects to develop site-specific recommendations and mitigation measures.
3. New road construction and maintenance of existing roads in the project area will be accomplished in accordance with BLM Manual 9113 standards for resource roads and construction details outlined in the Master Surface Use Plan (MSUP) and Conditions of Approval, unless private landowners, Carbon County, or the State of Wyoming specify otherwise.
4. Prior to construction, PEDCO will submit an APD package. This package will contain individual APDs for each drill site, Master Drilling Plan, Master Surface Use Plan, Water Management Plan, schematics of facilities, and ROW applications for pipelines, utilities, and access roads. APDs submitted by PEDCO will show the layout of the drill pad over the existing topography, dimensions of the pad, cross sections of the cut and fill (when required), location and dimensions of reserve pit(s), and access road locations.
5. PEDCO will slope-stake construction activities when required by the BLM (e.g., steep and/or unstable slopes) and receive approval from the BLM prior to the start of construction.
6. The BLM will require the road to be crowned and ditched with a 0.03 to 0.05 ft crown, and the topsoil will be pulled back down on the cut slope so there is no berm left at the top of the cut slope.
7. The BLM will require that culverts be covered with a minimum of 12 inches of fill or one-half the pipe diameter, whichever is greater. The inlet and outlet will be set flush with existing ground and lined up in the center of the draw. Before backfilling, the bottom of the pipe will be bedded on stable ground not containing expansive or clay soils, protruding rocks that will damage the pipe, or unevenly-sized material that will not form a good seat for the pipe. The site will be backfilled with unfrozen material and rocks no larger than two inches in diameter. Care will be exercised to thoroughly compact the backfill under the haunches of the conduit. The backfill will be brought up evenly in six inch layers on both sides of the conduit.

8. Additional culverts will be placed in the existing access road as needed or directed by the BLM.
9. The BLM will require surfacing of the access road with an appropriate grade of aggregate or gravel to a depth of four inches, prior to moving the drilling equipment/rig onto the pad.
10. The BLM will require that access roads be maintained in a safe and usable condition. A regular maintenance program will include, but is not limited to, blading, ditching, culvert installation, and surfacing.
11. If snow removal is required outside new and existing roadways, BLM will require that snow removal equipment be equipped with shoes to keep the blade off the ground surface. If the surface of the ground is uneven, the BLM will require that special precautions be undertaken to ensure that equipment blades do not destroy vegetation.
12. The BLM will require wing ditches be constructed, as necessary, to divert water from road ditches.

RESOURCE-SPECIFIC REQUIREMENTS

PEDCO proposes to implement the following resource-specific mitigation measures, procedures, and BLM management requirements on public lands.

Geology/Minerals/Paleontology

Mitigation measures presented in the soils and water resources sections of this EA will avoid or minimize many of the potential impacts to the surface mineral resources. Protection of subsurface mineral resources from adverse impacts will be provided by BLM and WOGCC casing and cementing policies.

Scientifically-significant paleontological resources potentially occurring within the Lewis Shale, the only geologic formation of concern which underlies the project area, will be protected through the following mitigation measures:

1. If recommended by the BLM, each proposed facility located in areas having known and potential vertebrate paleontological resources will be surveyed by a BLM-approved paleontologist prior to surface disturbance (BLM 1987 and 1990).
2. Discovery. Contingency will be made for the accidental discovery of significant fossils by project personnel. If fossils are discovered by construction personnel during implementation of the project, the BLM will be notified immediately. If the fossils could be adversely affected by construction, construction activities will be redirected until a qualified paleontologist has determined the importance of the uncovered fossils, the extent of the fossiliferous deposits, and has made or implemented recommendations regarding further mitigation.
3. Field Survey. No specific data currently exists on deposits of high or undetermined paleontologic potential in project area. For that reason, field survey for paleontologic resources will be conducted on a case-by-case basis, as directed by the BLM, in areas where surface exposures of the Browns Park, Green River, or Wasatch Formations occur. Field survey may result in the identification of additional mitigation measures to lessen adverse impacts to fossil resources. This mitigation may include collection of additional data or representative samples of fossil material, monitoring excavation, or avoidance. In some cases, no action beyond that conducted during the field survey may be necessary.

A report will be submitted to the BLM following the completion of each field survey. That report will detail the results of the survey, including a list of fossils collected, if any, and may include recommendations for additional mitigation. If significant fossils are collected, the report must document the curation of specimens into the collections of an acceptable museum repository and contain appropriate geologic records for the specimens.

Air Quality

1. All BLM-conducted or authorized activities must comply with applicable local, state, tribal and federal air quality regulations and standards. PEDCO will adhere to all applicable ambient air quality standards, permit requirements (including preconstruction, testing, and operating permits), motorized equipment and other regulations, as required by the State of Wyoming, Department of Environmental Quality, Air Quality Division (WDEQ-AQD).
2. PEDCO will not allow the burning of garbage or refuse at well locations or other facilities. Prior to any flaring, the WDEQ-AQD will be notified as required by Wyoming Air Quality Standards and Regulations, Chapter 1, Section 5, *Reporting Guidelines for Well Flaring and Venting*.
3. On federal land, PEDCO will initiate immediate abatement of fugitive dust (by application of water, chemical dust suppressants, or other measures) when air quality, soil loss, or safety concerns are identified by the BLM or the WDEQ-AQD. These concerns include, but are not limited to, potential exceedances of applicable air quality standards. The BLM will approve the control measure, location, and application rates. If watering is the approved control measure, the operator must obtain the water from state-approved source(s).

Soils

1. Reduce the area of disturbance to the absolute minimum necessary for construction and production operations while providing for the safety of the operation.
2. Where feasible, locate pipelines immediately adjacent to roads to avoid creating separate areas of disturbance and in order to reduce the total area of disturbance.
3. Avoid using frozen or saturated soils as construction material.
4. Minimize construction activities in areas of steep slopes.
5. Design cut slopes in a manner that will allow retention of topsoil, use of surface treatment such as mulch, and subsequent revegetation.
6. Selectively strip and salvage topsoil or the best suitable medium for plant growth from all disturbed areas. Remove and conserve topsoil to a minimum depth of six inches and a maximum of twelve inches from all well pads, unless otherwise agreed to by the BLM and the operator.
7. Where possible, minimize disturbance to vegetated cuts and fills on existing improved roads.
8. Install runoff and erosion control measures such as water bars, berms, and interceptor ditches if needed.
9. Install culverts for ephemeral and intermittent drainage crossings. Design all drainage crossing structures to carry the 25-year discharge event, or as otherwise directed by the BLM.

10. Implement minor routing variations during access road layout to avoid steep slopes adjacent to ephemeral or intermittent drainage channels. Where possible, maintain a 100-foot wide buffer strip of natural vegetation (not including wetland vegetation) between construction activities and ephemeral and intermittent channels.
11. Include adequate drainage control devices and measures in the road design (e.g., road berms and drainage ditches, diversion ditches, cross drains, culverts, out-sloping, and energy dissipators) at sufficient intervals and intensities to adequately control and direct surface runoff above, below, and within the road environment to avoid erosive concentrated flows. In conjunction with surface runoff or drainage control measures, use erosion control devices and measures such as temporary barriers, ditch blocks, erosion stops, mattes, mulches, and vegetative covers. Implement a revegetation program as soon as possible to re-establish the soil protection afforded by vegetation.
12. Upon completion of construction activities not specifically required for production operations, restore topography to near pre-existing contours at the well sites, along access roads and pipelines, and other facilities sites; replace up to six inches of topsoil or suitable plant growth material over all disturbed surfaces; apply fertilizer as required; seed; and mulch.

Water Resources

Other mitigation measures listed in the Soils and Vegetation/Wetlands/Noxious Weed sections of this EA will also apply to water resources.

1. Limit construction of all drainage crossings to no-flow periods or low-flow periods.
2. Minimize the area of disturbance within perennial, ephemeral, and intermittent drainage channel environments.
3. Prohibit construction of well sites and other nonlinear features within 500 feet of surface water and/or riparian areas. Possible exceptions to this will be granted by the BLM for linear features based on an environmental analysis and site-specific mitigation plans.
4. Design channel crossings to minimize changes in channel geometry and subsequent changes in flow hydraulics.
5. Implement minor routing variations during access road layout to avoid steep slopes adjacent to ephemeral or intermittent drainage channels. Where possible, maintain a 100-foot wide buffer strip of natural vegetation (not including wetland vegetation) between construction activities and ephemeral and intermittent channels.
6. Design and construct interceptor ditches, sediment traps, water bars, silt fences, and other revegetation and soil stabilization measures as needed.
7. Construct channel crossings by pipelines such that the pipe is buried a minimum of four feet below the channel bottom.
8. Regrade disturbed channel beds to the original geometric configuration containing the same or very similar bed material.

9. Case wells during drilling, and case and cement all wells in accordance with Onshore Order No. 2 to protect all high quality water aquifers. High quality water aquifers are aquifers with known water quality of 10,000 TDS or less. Include well casing and welding of sufficient integrity to contain all fluids under high pressure during drilling and well completion. Further, wells will adhere to the appropriate BLM cementing policy.
10. Construct the reserve pits in cut rather than fill materials. Compact and stabilize fill material as needed. Inspect the subsoil material of the pit to be constructed in order to assess soil stability and permeability and determine whether reinforcement and/or lining are required. If lining is required, line the reserve pit with a reinforced synthetic liner at least 12 mils in thickness and a bursting strength of 175 x 175 pounds per inch (ASTMD 75179). Consideration should be given to use of closed or semi-closed drilling systems in situations where a liner may be required.
11. Maintain two feet of freeboard on all reserve pits to ensure the reserve pits are not in danger of overflowing. Shut down drilling operations until the problem is corrected if leakage is found outside the pit.
12. Extract hydrostatic test water used in conjunction with pipeline testing and all water used during construction activities from sources having sufficient quantities and appropriation permits approved by the State of Wyoming.
13. Discharge hydrostatic test water in a controlled manner onto an energy dissipater. The water is to be discharged onto undisturbed land that has vegetative cover, if possible, or into an established drainage channel. Prior to discharge, a General Permit Authorization of Temporary Discharge will be obtained from WDEQ/WQD, which establishes pollutant limits. Discharge water may need to be treated, filtered, or suspended particles settled, to meet the criteria established in the permit. If discharged into an established drainage channel, the rate of discharge will not exceed the capacity of the channel to safely convey the increased flow. Coordinate all discharge of hydrostatic test water with the WDEQ/WQD and the BLM.
14. Discharge all concentrated water flows within access road ROWs onto or through an energy dissipator structure (e.g., riprapped aprons and discharge points) and discharge into undisturbed vegetation.
15. Develop and implement a pollution prevention plan (PPP) for storm water runoff at drill sites as required per WDEQ storm water permit requirements under the National Pollution Discharge Elimination System (NPDES). All required WDEQ permits will be in place prior to discharge.
16. Exercise stringent precautions against pipeline breaks and other potential accidental discharges of toxic chemicals into adjacent streams. If liquid petroleum products are stored onsite in sufficient quantities (per criteria contained in 40 CFR Part 112), a Spill Prevention Control and Countermeasures (SPCC) plan will be developed in accordance with 40 CFR Part 112, dated December 1973.
17. Coordinate all crossings or encroachments of waters of the U.S. with the U.S. Army Corps of Engineers (COE).
18. Any changes in the produced water disposal method or location must have written approval from the BLM before the changes take place.

Vegetation/Wetlands/Noxious Weeds

Other mitigation measures under Soils and Water Resources of this EA will also apply to vegetation and wetlands.

1. File noxious weed monitoring forms with the BLM and implement, if necessary, a weed control and eradication program.
2. Evaluate all project facility sites for occurrence and distribution of waters of the U.S., special aquatic sites, and jurisdictional wetlands. All project facilities will be located out of these sensitive areas. If complete avoidance is not possible, minimize impacts through modification and minor relocations. Coordinate activities that involve dredge or fill into wetlands with the COE.
3. On BLM lands, an approved Pesticide Use Proposal will be obtained before the application of herbicides or other pesticides for the control of noxious weeds.
4. Disturbed areas will be seeded and stabilized in accordance with BLM-approved reclamation guidelines.

Range Resources and Other Land Uses

Mitigation requirements listed under Soils, Vegetation/Wetlands/Noxious Weeds, and Wildlife sections in this analysis also apply to Range Resources and Other Land Uses.

1. PEDCO will coordinate with the affected livestock operators to ensure that livestock control structures remain functional (as directed by the livestock operator) during drilling and production operations and to coordinate timing of planned activities.
2. When necessary, traffic control and speed limits will be used to limit potential conflicts.

Wildlife

1. During reclamation, establish a variety of forage species that will return the land to a condition approximate or equal to that which existed prior to disturbance .
2. Prohibit unnecessary off-site activities of operational personnel in the vicinity of the drill sites. Inform all project employees of applicable wildlife laws and penalties associated with unlawful take and harassment.
3. Limit construction activities within big game crucial winter range from November 15 to April 30, per BLM authorizations.
4. Complete a raptor survey prior to construction to ensure that well sites are located away from potential conflict areas.
5. Survey and clear well sites within one mile of raptor nests identified in the raptor survey prior to the commencement of drilling and construction during the raptor nesting period (February 1 through July 31).
6. When an "active" raptor nest is within 0.75 to 1 mile (depending on species and line of sight) of a proposed well site, restrict construction during the critical nesting season for that species. For listed and BLM sensitive species (see Chapter 3), the distance should be increased to within one mile of a proposed well site.

7. To determine potential nesting activity, raptor nests must be inventoried annually in areas where work may be occurring during the raptor nesting period from February 1 to July 31.
8. Do not perform construction activities anytime within 0.25 mile of existing greater sage-grouse leks.
9. Provide protection for greater sage-grouse leks during the breeding, egg-laying, and incubation period (March 1 through June 30) by restricting construction activities within a two-mile radius of active greater sage-grouse leks. Exceptions may be granted if the activity will occur in unsuitable nesting habitat.
10. For the protection of livestock and wildlife, all pits and open cellars shall be fenced. Fencing shall be in accordance with BLM specifications. Netting shall be placed over all production pits to eliminate any hazardous substances [CERCLA Section 101(14)] as determined by visual observation or testing. The mesh diameter shall be no larger than one inch.

Fisheries

1. No fisheries mitigation is needed beyond that indicated under Water Resources and Special Status Species section.

Special Status Species

Special Status Plants

1. Employ site-specific recommendations developed by the BLM IDT for staked facilities.
2. Minimize impacts due to clearing and soil handling.
3. Monitor and control noxious weeds.
4. Comply with Section 404(b)(1) guidelines of the federal Clean Water Act (CWA).
5. Perform clearance surveys for plant species of concern.

Special Status Animals

1. If the project will lead to a water depletion (consumption) in the Colorado River system, impacts to the bonytail chub, Colorado pikeminnow, humpback chub, and razorback sucker will need to be evaluated. Any actions that may result in a water depletion to the Colorado River system will need to be described. Water data has been collected and tests are underway to determine if water from the Mesaverde Group is connected to surface waters associated with the Colorado River system. Results of the testing will be submitted to the BLM. BLM staff will review the data submitted and, if necessary, will submit the data to the USFWS for a final determination. If data indicate there is a connectivity between the waters produced concurrent with CBM production and the Colorado River system and the project will result in depletion of waters, formal consultation with the USFWS will be initiated. The project will be approved pending consultation as long as no discharge occurs.

Recreation

Measures under Wildlife, Transportation, Soils, Health and Safety, and Water Resources sections of the EA apply to Recreation.

1. Minimize conflicts between project vehicles and equipment and recreation traffic by posting appropriate warning signs, implementing operator safety training, and requiring project vehicles to adhere to low speed limits.

Visual Resources

1. Utilize existing topography to screen roads, pipeline corridors, drill rigs, wellheads, and production facilities from view.
2. Paint well and central facilities site structures with flat colors (e.g., Carlsbad Canyon or Desert Brown) that blend with the adjacent surrounding undisturbed terrain, except for structures that require safety coloration in accordance with Occupational Safety and Health Administration (OSHA) requirements.

Cultural Resources

1. If a site is considered eligible for, or is already on the National Register of Historic Places (NRHP), avoidance is the preferred method for mitigating adverse effects to that property.
2. Mitigation of adverse effects to cultural/historical properties that cannot be avoided will be accomplished by the preparation of a cultural resources mitigation plan.
3. If cultural resources are discovered at any time during construction, all construction activities will halt and the BLM will be immediately notified. Work will not resume until a Notice to Proceed is issued by the BLM.

Socioeconomics

1. Implement hiring policies will encourage the use of local or regional workers who will not have to relocate to the area.
2. Coordinate project activities with ranching operations to minimize conflicts involving livestock movement or other ranch operations. This will include scheduling of project activities to minimize potential disturbance of large-scale livestock movements. Establish effective and frequent communication with affected ranchers to monitor and correct problems and coordinate scheduling.
3. PEDCO and its subcontractors will obtain Carbon County sales and use tax licenses for purchases made in conjunction with the project so that project-related sales and use tax revenues will be distributed to Carbon County.

Transportation

1. Existing roads will be used as collectors and local roads whenever possible. Standards for road design will be consistent with BLM Road Standards Manual Section 9113.
2. Roads not required for routine operation and maintenance of producing wells and ancillary facilities will be permanently blocked, reclaimed, and revegetated.

3. Areas with important resource values, steep slopes, and fragile soils will be avoided where possible in planning for new roads.
4. Permits are required from Carbon County for any road access to or across a county road or for any pipeline crossing of a county road. These permits should be acquired prior to construction of additional roads. All roads on public lands not required for operation and maintenance of field production should be permanently blocked, recontoured, and seeded. Roads on private lands should be treated similarly, depending on the desires of the landowner.
5. PEDCO will be responsible for preventive and corrective maintenance of roads in the project area throughout the duration of the project. This may include blading, cleaning ditches and drainage facilities, dust abatement, noxious weed control, or other requirements as directed by the BLM or the Carbon County Road and Bridge Department.
6. Except in emergency situations, access will be limited to drier conditions to prevent severe rutting of the road surface. Culverts will be installed where needed to allow drainage in all draws and natural drainage areas. Low water crossings will be utilized where applicable. Onsite reviews will be conducted with BLM personnel for approval of proposed access prior to any construction.

Health and Safety

Measures listed under the Air Quality and Water Quality sections also apply to Health and Safety.

1. Sanitation facilities installed on the drill sites and any resident camp site locations will be approved by the WDEQ.
2. To minimize undue exposure to hazardous situations, the operator will comply with all existing applicable rules and regulations (i.e., Onshore Orders, OSHA requirements) that will preclude the public from entering hazardous areas and place warning signs alerting the public of truck traffic.
3. Haul all garbage and rubbish from the drill site to a state-approved sanitary landfill for disposal. Collect and store any garbage or refuse materials on location in containers approved by the BLM prior to transport.
4. During construction and upon commencement of production operations, PEDCO will have a chemical or hazardous substance inventory for all such items that may be at the site. PEDCO will institute a Hazard Communication Program for its employees and will require subcontractor programs in accordance with OSHA 29 CFR 1910.1200. These programs are designed to educate and protect the employees and subcontractors with respect to any chemicals or hazardous substances that may be present in the work place. It will be required that, as every chemical or hazardous material is brought on location, a Material Safety Data Sheet (MSDS) will accompany that material and will become part of the file kept at the Blue Sky Pod field office as required by 29 CFR 1910.1200. All employees will receive the proper training in storage, handling, and disposal of hazardous substances.
5. Spill Prevention Control and Countermeasure Plans will be written and implemented as necessary, in accordance with 40 CFR Part 112, to prevent discharge into navigable waters of the United States.
6. If quantities exceeding 10,000 pounds or the threshold planning quantity (TPQ) as designated by the Rawlins Field Office are to be produced or stored in association with the project, chemical and hazardous materials will be inventoried and reported in accordance with the Superfund Amendments

and Reauthorization Act (SARA) Title III. 40 CFR Part 335. The appropriate Section 311 and 312 forms will be submitted at the required times to the state and county Emergency Management Coordinators and the local fire departments.

7. Any hazardous wastes, as defined by the Resource Conservation and Recovery Act (RCRA), will be transported and/or disposed of in accordance with all applicable federal, state, and local regulations.
8. All storage tanks and compressor facilities, designed to contain oil, glycol, produced water, or other fluid which may constitute a hazard to public health or safety, shall be surrounded by a secondary means of containment for the entire contents of the largest single tank in use, plus one foot of freeboard. PEDCO will utilize two-foot berms around affected storage tanks and facilities. The containment or diversionary structure shall be impervious to any oil, glycol, produced water, or other toxic fluid for 72 hours and will be constructed so that any discharge from a primary containment system will not drain, infiltrate, or otherwise escape to groundwater, surface water, or navigable waters before cleanup is completed.

Noise

1. Muffle and maintain all motorized equipment according to manufacturers' specifications.
2. In any area of operations (drill site, compressor station) where noise levels may exceed federal OSHA safe limits, PEDCO will provide and require the use of proper personnel protective equipment by employees.
3. The BLM will require that noise levels be limited to no more than 10 dBA above background levels at greater sage-grouse leks located on public lands. In order to comply with the above noise level limits, BLM will require that compressor engines located on public lands be enclosed in a building and located at least 600 feet away from sensitive receptors or sensitive resource areas.