

Chapter 2

ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.0 INTRODUCTION

This Chapter describes the alternatives developed to address the issues, presents a comparison of the alternatives and a summary of the effects resulting from implementing each alternative. Section 2.2 presents these alternatives in detail.

2.1 DEVELOPMENT OF ALTERNATIVES

Alternatives present different management options in response to the purpose and need for the Proposed Action and address the relevant issues related to the Proposed Action. As a result, through agency and staff review it was determined the alternatives for analysis would be based on CBNG produced water and produced water management. The effects analysis (Chapter 4) then describes the known or potential effects that would result if the alternatives were implemented.

Alternative A is the No Action Alternative. In this alternative, no approvals would be issued for the PODs. The existing situation would continue and no private and federal wells or associated infrastructure would be constructed. The PODs proposed by Fidelity would be denied in their entirety and the landscape would not be altered. This alternative is required and was included to provide the basis for comparison with the other action alternatives.

Alternative B is Fidelity's Proposed Action. This alternative would analyze the complete implementation of Fidelity's Deer Creek North and Pond Creek POD proposals, including a water treatment facility; while managing CBNG produced water with the use of the proposed MPDES Permit for treated water discharge, the MPDES permit for untreated discharge as modified by MDEQ, three proposed lined impoundments, previous approved lined impoundments, beneficial uses and previous approved irrigation units. Alternative B is the proposal submitted by Fidelity.

Alternative C would analyze the implementation of Fidelity's Deer Creek North and Pond Creek POD proposals; while limiting CBNG produced water management to the use of three proposed lined impoundments, previous approved lined impoundments, beneficial uses, MPDES permit for untreated discharge as modified by MDEQ and previous approved irrigation units. Mitigating measures, not already part of the operator's proposal have been included as part of this alternative. The incorporation of mitigating measures identified during project review would avoid or reduce impacts to cultural, social and natural resources.

Alternative D would analyze the complete implementation of Fidelity's Deer Creek North and Pond Creek POD proposals, including a water treatment facility; while limiting CBNG produced water management to the use of the proposed MPDES Permit for treated water discharge, the MPDES permit for untreated discharge as modified by MDEQ and existing water management. Mitigating measures, not already part of the operator's proposal have been included as part of this alternative. The incorporation of mitigating measures identified during project review would avoid or reduce impacts to cultural, social and natural resources. Based on public comment and issues, Alternative D is the agencies' preferred alternative.

2.1.1 Alternatives considered but eliminated from Detailed Analysis

Treatment of All Produced Water Before Discharge

This suggested method of managing produced water would require all produced water to be "treated" so that the water quality of receiving waters, soils and vegetation and existing beneficial uses would be protected. Under the alternatives analyzed in detail the end use of the produced water and the authorizing permits determine the need for "treatment." Under the alternatives analyzed in detail the anticipated volumes of produced water from the PODs can be discharged "untreated" into the Tongue River under Fidelity's existing MPDES permit, discharged "treated" into the Tongue River under Fidelity's proposed MPDES permit and/or used for beneficial purposes. The MPDES permits specify the quality of the proposed mixture of treated and untreated water to be discharged under the MPDES permits, and the permits only allow qualities which would meet water quality standards and be protective of beneficial uses.

The impacts from the alternatives analyzed in detail in this EA indicate that the maximum mean monthly EC values from the alternatives would be approximately 764 $\mu\text{S}/\text{cm}$. The maximum mean monthly SAR would be approximately 1.43 (SAR is unitless). The MDEQ mean monthly irrigation season standards for EC and SAR are 1,000 $\mu\text{S}/\text{cm}$ and 3.0, respectively. The impact analysis indicates that maximum EC and SAR values during 7Q10 flows would be approximately 1,025 $\mu\text{S}/\text{cm}$ and 1.96, respectively. The MDEQ instantaneous maximum standards for EC and SAR are 1,500 $\mu\text{S}/\text{cm}$ and 4.5 respectively. As such, the analysis shows no unresolved conflicts concerning the management of produced water; therefore, an analysis of a separate water treatment alternative is not necessary to address water quality issues.

2.2 DESCRIPTION OF THE ALTERNATIVES

A comparison of the major components for the four alternatives is found in Table 2.5-1. A detailed description of each alternative follows.

2.2.1 Alternative A—No Action

There would be no agency approved Deer Creek North and Pond Creek POD actions and none of the private or federal wells in the PODs would be drilled, completed and produced; nor would any of the associated production infrastructure that required agency approval be installed or constructed in the project area. The entire Fidelity Deer Creek North and Pond Creek PODs would be denied.

2.2.2 Alternative B—Fidelity’s Proposed Action; Deer Creek North POD and Pond Creek POD, Fidelity’s Current Water Management Options, Added Impoundments, and MPDES Permit for Treated Water Management

Fidelity’s proposed Deer Creek North POD and Pond Creek POD, both include a Master Drilling and Surface Use Plan, a Water Management Plan, a Cultural Resource Inventory Plan, a Wildlife Monitoring and Protection Plan, a Noxious Weed Management Plan, and other supporting information. Each POD describes the project and best management practices designed to implement the project.

The analysis of the Deer Creek North project area, within Alternative B, includes the development and production of wells and infrastructure associated with the proposed fee and federal wells (99 fee, 71 federal and 4 existing-wildcat fee, see Appendix A). Map 1.3-3 shows the Deer Creek North project boundary, existing and proposed well locations, access roads, pipelines for water and gas, overhead and underground power lines, produced water management options, and metering/compressor facilities.

The analysis of the Pond Creek project area, within Alternative B, includes the development and production of wells and infrastructure associated with the proposed fee and federal wells (23 fee, 55 federal, 11 existing-wildcat fee and 2 existing-wildcat federal, see Appendix A). Map 1.3-4 shows the Pond Creek project boundary, existing and proposed well locations, access roads, pipelines for water and gas, overhead and underground power lines, produced water management options, and metering/compressor facilities.

Fidelity’s Proposed Action; Deer Creek North POD and Pond Creek POD, Fidelity’s current water management options, added impoundments, and MPDES Permit for treated water management includes: the MBOGC would approve the drilling, completing and production of 122 fee wells and producing 15 existing fee wells. The BLM would approve the drilling, completing and production of 126 federal wells and producing 2 existing federal wells. Both agencies would approve constructing associated infrastructure of access roads, flowlines, power lines, reclaiming disturbed areas, produced water management and the use of meter and compressor facilities. These 248 wells would be drilled and completed in the Dietz, Monarch and Carney coal zones and the 17 existing-wildcat wells are completed in the Dietz, Monarch and Carney coal zones. The average production life of the project wells is expected to be 10-20 years with final reclamation to be completed 2 to 3 years after plugging of the wells. Components of the proposed projects are listed in Chapter 2, Table 2.5-1.

Fidelity proposes to construct lined containment reservoirs in this alternative. Rights-of-way would be issued to Fidelity for “off-lease” facilities on federal surface within both the Deer Creek North and Pond Creek PODs (see Appendix E for a list of the right-of-way locations). Two of the proposed reservoirs (23-2191 and 33-2191) would be located on federal surface. Fidelity could not construct these impoundments

until a complete right-of-way application is submitted to, and approved by the BLM. A right-of-way would not be issued for the reservoirs at this time; if it is determined the reservoirs are needed Fidelity will apply for a right-of-way.

A right-of-way would be issued to Bitter Creek Pipelines, LLC for gas pipelines and an access road on federal surface within Fidelity's Deer Creek North POD (see Appendix E for the right-of-way location).

A right-of-way would be issued to Powder River Energy Corporation for a buried power line and access road on federal surface within Fidelity's Pond Creek POD (see Appendix E for the right-of-way location).

Drilling

Deer Creek North - Ninety-nine CBNG fee wells would be drilled on 30 well sites and 71 CBNG federal wells would be drilled on 20 well sites (see Appendix A), with 1 to 4 wells drilled on each well site at 160 acre site spacing (1 well per coal seam per 160 acres). Separate vertical wells would be drilled into the Carney, Monarch and Dietz coal seams. In some areas, the Dietz splits into as many as 3 zones. Anticipated depth of the wells would be from approximately 117 to 1,072 feet deep. The drilling and construction period is anticipated to begin in 2005 and last approximately 3 years.

Pond Creek - Twenty-three CBNG fee wells would be drilled on 14 well sites and 55 CBNG federal wells would be drilled on 30 well sites (see Appendix A), with 1 to 2 wells drilled on each well site at 160 acre site spacing (1 well per coal seam per 160 acres). Separate vertical wells would be drilled into the Carney and Monarch coal seams. Three existing wells have been drilled in the Dietz coal seam. Anticipated depth of the wells would be from approximately 297 to 936 feet deep. The drilling and construction period is anticipated to begin in 2005 and last approximately 3 years.

The wells in both PODs would be drilled by truck-mounted water well-type drilling rigs. The wells would be drilled using air and/or water for circulation and supplemented by bentonite, polymer and cedar fiber, as needed. Steel casing would be cemented in place from ground surface to the top of the target coal seam. The casing would be sized to accommodate a downhole pump to lift water, but would typically be 7 inches in diameter. The well would then be drilled to the base of the target coal seam and under reamed 12-14 inches in diameter to increase the exposed coal surface for production. Fresh water, including coal seam water, would be used in the drilling operations; estimated use between 8,000 – 16,000 gallons per well. CBNG production would occur by pumping groundwater from the coal seams, thereby reducing hydrostatic pressure and causing the methane to become desorbed from the coal surface and flow to the wells. All wells capable of commercial production would be completed and produced and the associated infrastructure would be constructed and installed.

At each drilling location, drilling wastes including cuttings, water and drilling muds would be placed into one of two reserve pits. Each pit would be approximately 6 feet wide, by 15 feet long, by 15 feet deep and fenced with a wire fence to keep out livestock and wildlife. After conclusion of drilling operations, fluids in the pits would be removed and either used for other drilling operations or disposed of properly and the pits backfilled after the remaining muds have dried. Wastes accumulated during drilling and completion operations would be contained on the well site and disposed at the Sheridan sanitary landfill. Chemical "porta-potties" would be located at active construction, drilling and battery sites.

Access

Deer Creek North - Vehicles would access the well sites by existing improved roads, two track trails or across undisturbed rangeland along a designated route. Access would primarily use approximately 3 miles of existing (.1 miles federal surface and 2.85 miles private surface) and 17.4 miles of proposed (.26 miles federal surface and 17.18 miles private surface) two track roads and 4.5 miles of proposed improved roads (4.46 miles private surface), including spot upgrades. Pipeline corridors would also be used as temporary roads for access to well sites. There would be one low-water crossing needed on a spot upgrade section of road to access the 31-1291 location, T. 9 S., R. 41 E., N½SW¼ Section 1. Additional culverts or low water crossings would be installed at ephemeral drainage crossings, if needed. Gravel or scoria needed for

surfacing material would come from a pit owned and operated by Fidelity and permitted by Montana and Wyoming DEQ's.

Pond Creek - Vehicles would access the well sites by existing improved roads, two track trails or across undisturbed rangeland along a designated route. Access would primarily use approximately 2.9 miles of existing (.5 miles federal surface and 2.4 miles private surface) and 26.1 miles of proposed (2 miles federal surface and 24.1 miles private surface) two track roads and 2.7 miles of proposed improved roads (2.7 miles private surface), including spot upgrades. Pipeline corridors would also be used as temporary roads for access to well sites. There would be 2-24 inch culverts and one low-water crossing needed on spot upgrade sections of road. One 24 inch culvert would be needed on a spot upgrade section of road to access the 32-0199 location, T. 9 S., R. 39 E., NE $\frac{1}{4}$ SW $\frac{1}{4}$ Section 1; and the other 24 inch culvert to access the 34-0790 location, T. 9 S., R. 39 E., NE $\frac{1}{4}$ NW $\frac{1}{4}$ Section 12. The low-water crossing would be needed on a spot upgrade section of road to access the 24-0590 location, T. 9 S., R. 40 E., NW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 5. Additional culverts or low water crossings would be installed at ephemeral drainage crossings, if needed. Gravel or scoria needed for surfacing material would come from a pit owned and operated by Fidelity and permitted by Montana and Wyoming DEQ's.

The road and pipeline routes for both PODs are proposed as agreed to by the appropriate private surface owner or surface management agency (State/BLM). Where possible, roads would serve as a common corridor for the gas, electric, or water. The project map (1.3-2) shows the project boundary, existing and proposed wells, access roads, pipelines (water and gas), power lines, and the central gathering/metering/water processing facilities in the project area. An approximately a 30 foot wide corridor of disturbance would be expected along the combined access, gas and water lines. An approximately 16 foot wide corridor of disturbance would be expected along the "access only" routes. These corridors would be disturbed by construction activities, and would be expected to be reclaimed within 1 year after a specific activity has been completed. The improved access routes would be reclaimed 2 to 3 years following the end of gas production.

"Off-lease" and third party roads on Federal surface would be authorized by BLM issued rights-of-way.

Well Sites

Deer Creek North - The 170 (plus four existing-wildcat wells) fee and federal CBNG wells would be located at 50 sites, with 1 to 4 wells drilled at each site. Ninety-nine proposed CBNG fee wells would be drilled on 30 well sites and 71 proposed CBNG federal wells would be drilled on 20 well sites. The 4 existing-wildcat CBNG fee wells are located on well sites proposed for additional well placement. The 20 federal well sites would be split, with 18 locations on private surface/federal mineral and 2 locations on BLM administered surface/federal mineral lease. The 30 fee locations would be entirely on private surface/private mineral lease. Approximately one acre at each well site would be disturbed by vehicle traffic, drilling and completion operations, reserve pits and temporary storage of equipment. The well sites would not require construction of a well pad; however, blading may be needed to provide a level surface for the drill rig.

Pond Creek - The 78 (plus 13 existing-wildcat wells) fee and federal CBNG wells would be located at 50 sites, with 1 to 3 wells drilled at each site. Twenty-three proposed CBNG fee wells would be drilled on 14 well sites and 55 proposed CBNG federal wells would be drilled on 30 well sites. One additional well site would be associated with existing-wildcat federal well 24D-2799 and 5 additional well sites for existing-wildcat fee wells 12C,M-0299, 14C-3589, 32C,M-0299, 34C,M-3489, and 22D-2299. The 31 federal well sites would be split, with 23 locations on private surface/federal mineral and 8 locations on BLM administered surface/federal mineral lease. The 19 fee locations would be entirely on private surface/private mineral lease. Approximately one acre at each well site would be disturbed by vehicle traffic, drilling and completion operations, reserve pits and temporary storage of equipment. The well sites would not require construction of a well pad; however, blading may be needed to provide a level surface for the drill rig.

The Deer Creek North and Pond Creek surface facilities, at each producing well, would consist of a wellhead and an insulated, fiberglass well head cover (approximately 5 feet square by 4 feet tall) and an electrical panel all enclosed in a three rail, welded fence. The cover would be painted a color to blend with the surrounding area. The fenced area would be graveled while the area outside the fence would be reclaimed after installation of production equipment. Following this reclamation, approximately ¼ acre per well site will remain disturbed during the production phase of the wells. Final reclamation would be 2 to 3 years following the end of gas production.

Power Lines

Deer Creek North - Electricity would be provided to each battery site by a buried or aerial line. Overhead electricity would be brought into the project area by existing lines along the Otter Creek Road. The approximate 7.2 miles are located on private surface. Overhead power lines would be constructed according to APLIC (Avian Power Line Interaction Committee-1996) guidelines. Buried electrical lines would tie into the aerial power lines at a service tap or drop which typically would serve three well sites. Buried power lines would be installed parallel to access roads or follow the most direct route from a power pole to the well site. Estimated total disturbance of proposed overhead and buried electrical line are: 14.7 miles of overhead power lines (all private surface), 16.4 miles of underground power lines (0.3 miles federal surface; 16.1 miles private surface) and 24 power drops. Approximately 0.61 miles of buried power cable would not be located in a common corridor with water and gas flowlines.

Pond Creek - Electricity would be provided to each battery site by a buried or aerial line. Overhead electricity would be brought into the project area by existing lines established from prior CX Field development, none of which is located within the Pond Creek POD boundary. Overhead power lines would be constructed according to APLIC (Avian Power Line Interaction Committee-1996) guidelines. Buried electrical lines would tie into the aerial power lines at a service tap or drop which typically would serve three well sites. Buried power lines would be installed parallel to access roads or follow the most direct route from a power pole to the well site. Estimated total disturbance of proposed overhead and buried electrical line are: 11.4 miles of overhead power lines (0.3 miles federal surface; 11.1 miles private surface), 18.5 miles of underground power lines (1.9 miles federal surface; 16.6 miles private surface), 0.43 miles of underground high voltage power line (0.26 miles federal surface; 0.17 miles private surface) and 20 power drops. Approximately 0.83 miles of buried power cable would not be located in a common corridor with water and gas flowlines.

The produced water treatment facility would contribute an additional 0.15 miles of underground power and one power drop, all on private surface. The power line totals for both PODs under Alternative B would be approximately 26.1 miles overhead, 35.1 underground, 0.43 high voltage and 45 power drops. Approximately a 10 foot wide corridor of disturbance would be expected along both the overhead and buried power lines. These corridors would be disturbed by construction activities, and would be expected to be reclaimed within 1 year after a specific activity has been completed. Final reclamation would be 2 to 3 years following the end of gas production.

BLM would issue rights-of-way for any “off-lease” buried power lines installed by Fidelity and any buried power lines constructed by Powder River Energy Corporation on federal surface.

Flowlines

Deer Creek North - A plastic flowline to carry gas would be buried from each well to a battery/compressor site. One plastic flowline would be buried, carrying produced water from all wells at the well site, to the discharge point. When feasible, flowline routes would run parallel and be located adjacent to existing or proposed roads and trails accessing the battery or water storage/discharge point. Approximately 27.3 miles (0.7 miles federal surface, 26.6 miles private surface) of these combined flowlines would be installed in the same trench. Approximately 0.24 miles of water pipeline would not be located within the common trench. Areas disturbed for flowline installation would be reclaimed within one year following construction activities.

An 8 to 12 inch steel gas pipeline would be installed to carry gas from each proposed battery/compressor site of the Deer Creek North POD to the previously approved Coal Creek POD Rancholme 21 battery/compressor site, then onto the Symons Central Compressor Station. These pipelines would be installed and maintained by Bitter Creek Pipelines, LLC. Where possible, pipeline routes would coincide with existing or proposed roads and trails. Approximately 10.7 miles of Bitter Creek gas pipeline would be installed on the Deer Creek North POD.

Pond Creek - A plastic flowline to carry gas would be buried from each well to a battery site. One plastic flowline would be buried carrying produced water from all wells at the well site, to the discharge point. When feasible, flowline routes would run parallel and be located adjacent to existing or proposed roads and trails to the battery or water storage/discharge point. Approximately 28.5 miles (1.7 miles federal surface, 26.8 miles private surface) of these combined flowlines would be installed in the same trench. Approximately 0.28 miles of water pipeline would not be located within the combined corridor. Reclamation would be initiated for flowlines within one year following construction activities. Final reclamation would be completed 2 to 3 years following installation.

An 8 to 12 inch steel gas pipeline would be installed to carry gas from the proposed CX 12 battery/compressor site of the Pond Creek POD to the existing Bitter Creek Pipeline between the CX 14 and CX 24 battery/compressor sites, then onto the Symons Central Compressor Station. This pipeline would be installed and maintained by Bitter Creek Pipelines, LLC. The pipeline route would coincide with a proposed two-track trail. Approximately 1.97 miles of Bitter Creek gas pipeline would be installed on the Pond Creek POD.

The produced water management system for both PODs would require the installation of additional water flowlines. The water treatment facilities installation would require an additional 1.7 miles of buried water flowline, all on private surface. The three proposed impoundments would include an additional 0.5 miles of buried water flowline; with most located on private surface for the 31-2991 impoundment. The plastic gas/water flowline totals for both PODs under Alternative B would be approximately 58.5 miles. The Bitter Creek gas pipeline totals for both PODs under Alternative B would be approximately 12.7 miles. A 30 foot wide corridor of disturbance would be expected along the combined gas and water lines and the steel gas pipe line routes. A 10 foot wide corridor of disturbance would be expected along the water or gas only routes. These corridors would be disturbed by construction activities, and would be expected to be reclaimed within one year after a specific activity has been completed. Final reclamation would be 2 to 3 years following the end of gas production.

BLM would issue rights-of-way for any "off-lease" and/or third party buried gas and/or water pipelines installed on federal surface.

Produced Water Management

CBNG produced water would be transported through buried plastic flowlines from each well site to the following water management options: (1) beneficially used for industrial uses (dust suppression) in the Spring Creek and Decker Coal Mines; (2) beneficially used by Fidelity for CBNG drilling, construction, and dust suppression; (3) beneficially used by livestock and wildlife; (4) discharged to the Tongue River using Fidelity's existing MDEQ direct discharge permit (MT0030457), including modifications; (5) treated via ion exchange and discharged to the Tongue River using Fidelity's proposed MDEQ discharge permit for treated water (MT0030724); (6) stored in the existing off drainage impoundment 23-0299; (7) stored in the lined off drainage impoundment 44-3490 which was authorized in the Badger Hills POD, but has not yet been constructed; (8) stored in proposed lined off drainage impoundments 23-2191, 33-2191 and 31-2991; and (9) during the irrigation season, applied to 114 acres of managed irrigation which was authorized in the Badger Hills POD, but is not in use at this time.

Beneficial uses (1, 2 and 3) are estimated to consume 200 gpm of water. Following beneficial uses, the direct discharge permit (MT0030457) (4) would be used to the maximum extent allowable. The next most preferable management option would be for treatment and discharge of the water (5), subject to the proposed permit (MT0030724) being approved by MDEQ. If treatment is used, lined impoundment 34E-

3490 would also need to be constructed for incidental storage and to provide a bypass for treatment plant maintenance. The existing impoundment (23-0299) (6) would be used if storage is needed. The new impoundments (7 and 8) and irrigation areas (9) would be constructed and utilized if the treatment permit is not approved.

Beneficial use by livestock and wildlife (3) would include the installation of large tire constructed stockwater tanks, estimated to hold 800-900 gallons each. The Deer Creek North POD has 25 proposed tire tanks located on private surface and one proposed tire tank located on BLM administered surface. The Pond Creek POD has 26 proposed tire tanks located on private surface and two proposed tire tanks located on BLM administered surface. Each tire stock tank would be equipped with a "float" to regulate the water flow into each tank and alleviate overflow.

The Deer Creek North and Pond Creek discharge points into the Tongue River are located near the main channel in areas with low channel gradients. Each outfall structure consists of a riprap pad surrounding the discharge pipe with a narrow riprap lined trench sloping into the channel area to prevent eroding the channel bank. Initially, untreated produced water would be discharged through all existing outfalls (001-016). If the treatment permit is approved, outfall 15 would be re-designed for the discharge of treated water, and would no longer be used for untreated discharge. Fidelity proposes to install diffusers at outfalls 004, 006, 008, and 016. With these diffusers all outfalls will meet the definition for instantaneous mixing (see MDEQ Fact Sheet MT0030457; April 15, 2005). Under the terms of the draft permit for the renewal of untreated discharge permit (MT0030457), a maximum of 1,600 gpm of untreated water could be discharged to the Tongue River from July-October, 2,500 gpm from November to February, and 5,250 gpm from March to June. The water balance for this alternative indicates that the maximum rate of untreated discharge that is anticipated to result from this alternative is 2,490 gpm during the winter of 2007.

The treatment facility would be located 2.5 miles south-southeast of Decker Montana, Big Horn County; T. 9. S., R. 40 E, SE¼SE¼, Section 34. The facility would cover an area of approximately 280 feet x 360 feet (2.2 acres), and will be located on the south side of Badger Creek. This facility would operate at either 850 gpm or 1,700 gpm; determined by produced water requirements. Discharge to the Tongue River would occur through an instream diffuser that extends the width of the streambed under low flow conditions, providing near instantaneous dilution/mixing at the point of discharge. This diffuser would be installed at the site of the existing outfall 015 under MT0030457. With this diffuser, the definition for instantaneous mixing would be met (see MDEQ Statement of Basis MT0030724; April 15, 2005). Under the terms of the Draft permit (MT0030724), a maximum of 1,700 gpm of treated water could be discharged to the Tongue River. The water balance for this alternative indicates that the maximum rate of treated discharge that is anticipated to result from this alternative is 850 gpm during the summers (July-October) of 2006 and 2007.

Fidelity proposes to utilize ion exchange system technology for the produced water treatment. Ion exchange technology would replace positively charged cations in the CBNG produced water (e.g. sodium, calcium and magnesium) with hydrogen ions obtained from hydrochloric acid (HCl). The addition of these hydrogen ions causes the treated water to have a low pH. This low pH would be managed by running the treated water through a limestone bed, or other suitable base to decrease the acidity. The limestone would also serve as a source of calcium which, when added, decreases the SAR. This process typically would remove 95% or more of the total salts from the water. Treated water may be blended with up to 25% produced water prior to discharge. All treated discharge will comply with the requirements of the MPDES permit developed by the MDEQ.

This treatment process causes a concentrated low pH Na-Cl (sodium-chloride) type brine solution to be generated. This brine would be either transported via licensed waste hauler and disposed of at a permitted Class 1 injection well in Wyoming, or further concentrated on site, crystallized to a solid, and either closed in place on-site or transported and disposed of at a permitted non-hazardous waste landfill. Fidelity has identified Kissack Water and Oil Services, Inc. as a potential contractor for brine disposal. Kissack's Kuehne injection well is operated under UIC permit #01109, and Kissack's Hamm #1 injection well is operated under UIC permit #01036. Both of these wells are permitted as Class I injection wells.

Fidelity proposes to construct a lined off-channel impoundment, 34E-3490. Reservoir 34E-3490 would be located in a natural depression that when constructed with an earthen dam, would contain discharged water. The impoundment, located in T. 9 S., R. 4 E., SE $\frac{1}{4}$ SW $\frac{1}{4}$, Section 34, would be used for incidental storage and as a "bypass" for storage of produced water during treatment plant downtime. This impoundment would provide for 17 acre-feet of storage. The estimated surface coverage would be 1.25 acres. Fidelity has conducted site specific geotechnical and hydrogeological investigations at this site. These analyses indicate that the site is underlain predominantly by inter-bedded, fine grained materials, sands, sandstone and coal beds. If permeable soil layers are encountered during construction they will be "plated" with clay material to reduce infiltration. This impoundment would be constructed to prevent any natural run-off from entering and produced water from exiting. A key way would be excavated along the centerline of the dam and then backfilled with compacted clay soil. The dam would be constructed with clay soil in compacted lifts. Low permeability clay would be placed in lifts along the bottom and sides of the reservoir. The buried flowline bringing water into the impoundment would be installed to discharge near the middle of the impoundment.

Impoundment 23-0299 is an existing impoundment, which is located on private surface and approved by MBOGC. This impoundment is located in a natural depression, which is underlain by clay rich soils. The use of this impoundment for federal wells was approved under the Dry Creek POD. This impoundment has been constructed to prevent natural run-off from entering and produced water from exiting.

Impoundment 44-3490 was authorized under the Badger Hills POD and is located on private surface and approved by MBOGC. This lined impoundment would be constructed to prevent natural run-off from entering and produced water from exiting. This impoundment would be located in a natural depression, which is underlain by clay rich soils. If permeable soil layers are encountered during construction they will be "plated" or "lined" with clay material to reduce infiltration. A key way would be excavated along the centerline of the dam and then backfilled with compacted clay soil. The dam would be constructed with clay soil in compacted lifts. Low permeability clay would be placed in lifts along the bottom and sides of the reservoir. The buried flowline bringing water into the impoundment would be installed to discharge near the middle of the impoundment.

The three proposed lined off-channel impoundments, 23-2191, 33-2191 and 31-2991 would be located in natural depressions that when constructed with an earthen dam, would contain discharged water. Impoundment 23-2191, located in T.9 S., R.41E., NE $\frac{1}{4}$ SW $\frac{1}{4}$, Section 21, is proposed to have a storage capacity of 157.50 acre feet; covering approximately 16 surface acres. Impoundment 33-2191, located in T. 9 S., R. 41 E., NW $\frac{1}{4}$ SE $\frac{1}{4}$, Section 21, is proposed to have a storage capacity of 129.65 acre feet; covering approximately 9 surface acres. Impoundment 31-2991, located in T.9 S., R.41E., NW $\frac{1}{4}$ NE $\frac{1}{4}$ Section 29, is proposed to have a storage capacity of 122 acre feet; covering approximately 9 surface acres. The underlying soils consist of low permeability clays, however if permeable soil layers are encountered during construction they will be "plated" or "lined" with clay material to reduce infiltration. These impoundments would be constructed to prevent any natural run-off from entering and produced water from exiting. A key way would be excavated along the centerline of the dam and then backfilled with compacted clay soil. The dam would be constructed with clay soil in compacted lifts. Low permeability clay would be compacted in lifts on the bottom and sides of each reservoir. The buried flowlines bringing water into the impoundment would be installed to discharge near the middle of the impoundment.

Reservoirs 23-2191 and 33-2191 are proposed to be located on federal surface. A right-of-way would be required before the reservoirs could be approved. The right-of-way would not be issued for the reservoirs at this time. If it is determined the reservoirs are needed, Fidelity would then apply for a right-of-way.

During the irrigation season (mid-May to mid-October), approximately 388 gpm of produced water would be used for managed crop irrigation in the valley bottom along a portion of Badger Creek, and on a plateau above Badger Creek (114 acres total). Both of these irrigation areas were previously approved with the Badger Hills POD. Agricultural amendments (sulfur and gypsum) would be added to the soil as a result of soils monitoring and analyses. Managed irrigation would follow the protocol developed by KC Harvey, Inc. for Fidelity and would be conducted under a contractual agreement with the surface owner. Irrigation

equipment selection and system design would be based on the topography of the landscape, soil texture, soil infiltration rate, soil water holding capacity, cropping requirements, climate, landowner preference, size of the irrigated area and cost. Potential irrigation equipment options include: center pivot, wheel line, hand move/solid set, big gun, subsurface drip and gated pipe. Irrigation system selection and design would be facilitated through the use of a qualified mechanical irrigation vendor. Irrigation scheduling would be accomplished through the development of a soil-water balance. A site-specific, soil-water balance would be developed using local precipitation, crop evapotranspiration data, sprinkler type-specific irrigation efficiencies, soil water holding capacity, crop rooting depth, crop harvesting requirements, and leaching requirements. Any irrigation rates determined from the soil-water balance would not exceed the infiltration rate of the soil. Monitoring of the irrigation areas would follow the mitigation measures developed in the Badger Hills EA, and include soil testing, and monitoring of the depth of the wetting front, which controls the depth at which leached salts are deposited.

Battery/Compressor Sites

Deer Creek North - Gas from the Deer Creek North wells would be transported from each well head to existing and proposed field battery/compressor sites. The batteries/compressor sites include the existing Rancholme 21 Battery (MAQP #3334), the proposed Rancholme 14 (MAQP #3383), Rancholme 2 (MAQP #3388), Montana Royalty 3 (MAQP #3386), and Decker 6 (MAQP #3389) batteries, and the existing sales battery, Symons Central Compressor Station (MAQP #3250).

Pond Creek - Gas from the Pond Creek wells would be transported from each well head to existing and proposed field battery/compressor sites. The batteries/compressor sites include the existing CX 35 (MAQP #3122), CX 24 (MAQP #3036), CX 14 (MAQP #3141) batteries, the proposed CX 12 battery (MAQP #3387), and the existing sales battery, Symons Central Compressor Station (MAQP #3250).

Approximately two acres at each battery/compressor site would be disturbed by vehicle traffic, completion operations, and temporary storage of equipment. Final reclamation would be completed 2 to 3 years following the end of gas production.

Rights-of-way

Deer Creek North - The right-of-way proposed to be issued to Fidelity for their Deer Creek North POD for a buried low pressure 8-inch steel gas line and a buried 6-inch poly water line and access road would total 3,440 feet long and 50 feet wide, consisting of approximately 3.95 acres. The 8-inch gas line would be installed in an 18 to 36-inch wide, 5 to 8 feet deep trench. The 6-inch water line would be buried 5-8 feet deep in an 18 to 36-inch wide trench which would run parallel and 10 to 15 feet from the gas line trench. The right-of-way would be granted under Section 28 of the Mineral Leasing Act of 1920, as amended (MLA) and the pipelines would be constructed, used, maintained, and terminated in conformance with Fidelity's Deer Creek North Plan of Development. The right-of-way would be subject to cost recovery and rental would be issued for a renewable term of twenty years.

Fidelity would construct containment reservoirs. Two of these reservoirs (23-2191 and 33-2191) would be located on federal surface. Reservoir 23-2191 would be located in the NE $\frac{1}{4}$ SW $\frac{1}{4}$, Section 21, T. 9 S., R. 41 E., with a storage capacity of 157.50 acre feet covering approximately 16 surface acres. Reservoir 33-2191 would be located in the NW $\frac{1}{4}$ SE $\frac{1}{4}$, Section 21, T. 9 S., R. 41 E., with a storage capacity of 129.65 acre feet covering approximately 9 surface acres. The reservoirs would be constructed with low-permeability clay materials and the interior of each reservoir would be constructed with a compacted clay liner (bottom) to minimize subsurface infiltration. Fidelity would routinely monitor reservoir locations for signs of seepage and structural stability. They would develop a site-specific reservoir monitoring plan for the reservoirs. No right-of-way would be issued for these reservoirs at this time. If it is determined the reservoirs are needed, Fidelity will then provide additional information and apply for a right-of-way.

A right-of-way would be issued to Bitter Creek Pipelines, LLC, within Fidelity's Deer Creek North POD area, for a buried 12-inch high pressure (rated 1,480 PSI, MAOP) steel gas line and a 16-inch low pressure (rated 280 PSI, MAOP) steel gas line and access road. The right-of-way would be 3,440 feet long and 50 feet wide, consisting of approximately 3.95 acres. Each of the gas lines would be installed in a 24-inch

wide, five foot deep trench with a minimum of three feet coverage. The gas lines would run parallel to each other and parallel to and 10 to 15 feet from Fidelity's gas and water line. The right-of-way would be granted under Section 28 of the Mineral Leasing Act of 1920, as amended (MLA) and the pipeline would be constructed, used, maintained, and terminated in conformance with the company's application/ plan of development. The right-of-way would be subject to cost recovery and rental would be issued for a renewable term of thirty years.

Pond Creek - The right-of-way proposed to be issued to Fidelity for their Pond Creek POD for buried poly gas lines, buried poly water lines, 3-phase .48 kV buried power lines, and access roads would be a total of 5,770 feet long and 50 feet wide, consisting of approximately 6.62 acres. The roads would consist of existing and/or new 2-track roads. The 4 and 6-inch gas lines and 4-inch water lines would be in a trench 18 to 36-inch wide and 5 to 8 feet deep. The buried .48 kV power line would be plowed in 24 inches deep in a trench 4 inches wide, alongside and 10 feet from the pipeline trench. The right-of-way would be granted under Section 28 of the Mineral Leasing Act of 1920, as amended (MLA) and the pipelines, power line, and access road would be constructed, used, maintained, and terminated in conformance with the company's Pond Creek Plan of Development. The right-of-way would be subject to cost recovery and rental would be issued for a renewable term of twenty years.

Fidelity would construct containment reservoirs. Two of these reservoirs (23-2191 and 33-2191) would be located on federal surface. Reservoir 23-2191 would be located in the NE $\frac{1}{4}$ SW $\frac{1}{4}$, Section 21, T. 9 S., R. 41 E., with a storage capacity of 157.50 acre feet covering approximately 16 surface acres. Reservoir 33-2191 would be located in the NW $\frac{1}{4}$ SE $\frac{1}{4}$, Section 21, T. 9 S., R. 41 E., with a storage capacity of 129.65 acre feet covering approximately 9 surface acres. The reservoirs would be constructed with low-permeability clay materials and the interior of each reservoir would be constructed with a compacted clay liner (bottom) to minimize subsurface infiltration. Fidelity would routinely monitor reservoir locations for signs of seepage and structural stability. They would develop a site-specific reservoir monitoring plan for the reservoirs. No right-of-way would be issued for these reservoirs at this time. If it is determined that the reservoirs are needed, Fidelity will then provide additional information and apply for a right-of-way.

The right-of-way proposed to be issued to Powder River Energy Corporation for a 3-phase, 3-wire, 14.4/24.9 kV buried power line and access road would be approximately 1,354 feet long and 40 feet wide, consisting of 1.24 acres. This power line would serve Fidelity's CBNG projects. The underground power line would be installed in an 18-inch wide trench using a trencher to lay the power line at an approximate depth of 3.5 to 4 feet. A backhoe would be used if rock is encountered. Access would be by Fidelity's resource road and/or two-track roads. No additional access road right-of-way would be needed. Actual construction would take approximately two weeks. The right-of-way would be granted pursuant Title V of the Federal Land Policy and Management Act of October 21, 1976 (FLPMA) and the power line would be constructed, used, maintained, and terminated in conformance with the company's application/plan of development. The right-of-way would be subject to cost recovery, but exempt from rental in accordance with 43 CFR 2803.1-2 (b)(1)(iii). It would be issued for a renewable term of fifty years.

The above rights-of-way would be subject to the stipulations in Appendix F. No temporary work areas would be required. The rights-of-way would be monitored for construction, use, and reclamation.

Reclamation

Reclamation would occur in areas where surface disturbing activities have been completed or concurrent with other operations in the project area. Reclamation activities would be conducted in accordance with the surface owner agreements and BLM specifications. Typically, disturbed areas not needed for production operations would be recontoured to resemble the surrounding terrain, stored topsoil spread over the recontoured area, necessary erosion control measures installed, disturbed areas seeded with certified weed-seed free mix, agreed upon with the surface owner and completed within one year after a specific activity has been completed. Seeding typically would occur in the fall of each year, after September 15. However, if spring seeding is selected, it will be completed by May 15. Final reclamation would be completed approximately 2 to 3 years following the end of gas production.

A detailed description of design features, construction practices, water management strategies and reclamation measures associated with Alternative B, can be found in the Master Surface Use Plan, Drilling Plan and Water Management Plan in the Deer Creek North and Pond Creek PODs and their individual APDs.

2.2.3 Alternative C—Deer Creek North POD and Pond Creek POD, Fidelity’s Current Water Management Options and Added Impoundments, with Additional Mitigation

The analysis of the Deer Creek North project area includes the development and production of wells and infrastructure associated with the proposed fee and federal wells (99 fee, 71 federal and 4 existing-wildcat fee, see Appendix A). Map 1.3-3 shows the Deer Creek North project boundary, existing and proposed well locations, access roads, pipelines for water and gas, overhead and underground power lines, water management options (current water management approvals with three additional lined impoundments) and metering/compressor facilities.

The analysis of the Pond Creek project area includes the development and production of wells and infrastructure associated with the proposed fee and federal wells (23 fee, 55 federal, 11 existing-wildcat fee and two existing-wildcat federal, see Appendix A). Map 1.3-4 shows the Pond Creek project boundary, existing and proposed well locations, access roads, pipelines for water and gas, overhead and underground power lines, water management options (current water management approvals with three additional lined impoundments) and metering/compressor facilities.

The Deer Creek North POD and Pond Creek POD, Fidelity’s Current Water Management Options and Added Impoundments, with Additional Mitigation includes: the MBOGC would approve the drilling, completing and production of 122 fee wells and 15 producing/existing-wildcat fee wells. The BLM would approve the drilling, completing and production of 126 federal wells and 2 producing/existing-wildcat federal wells. Both agencies would approve constructing associated infrastructure of access roads, flowlines, power lines, reclaiming disturbed areas, produced water management and the use of meter and compressor facilities. These 248 wells would be drilled and completed in the Dietz, Monarch and Carney coal zones and the 17 existing-wildcat wells are completed in the Dietz, Monarch and Carney coal zones. The average production life of the project wells is expected to be 10-20 years with final reclamation to be completed 2 to 3 years after plugging of the wells. Components of the proposed projects are listed in Chapter 2, Table 2.5-1.

Fidelity proposes to construct lined containment reservoirs in this alternative. Rights-of-way would be issued to Fidelity for “off-lease” facilities on federal surface within both the Deer Creek North and Pond Creek PODs (see Appendix E for a list of the right-of-way locations). Two of the proposed lined reservoirs (23-2191 and 33-2191) would be located on federal surface. A right-of-way would not be issued for the reservoirs at this time. If it is determined the reservoirs are needed, Fidelity would then apply for a right-of-way.

A right-of-way would be issued to Bitter Creek Pipelines, LLC for gas pipelines and an access road on federal surface within Fidelity’s Deer Creek North POD (see Appendix E for the right-of-way location).

A right-of-way would be issued to Powder River Energy Corporation for a buried power line and access road on federal surface within Fidelity’s Pond Creek POD (see Appendix E for the right-of-way location).

Drilling

Drilling operations would be managed in the same manner as described in Alternative B.

Access

Access would be managed in the same manner as described in Alternative B.

Well Sites

Well sites would be managed in the same manner as described in Alternative B.

Power Lines

Power lines would be managed in the same manner as described in Alternative B, without the addition of the water treatment facility. The power line totals for both PODs under Alternative C would be approximately 26.1 miles overhead, 34.9 miles underground, .43 miles high voltage underground and 44 power drops.

Flowlines

Flowlines would be managed in the same manner as described in Alternative B, without the addition of the water treatment facility. The gas/water flowline totals for both PODs under Alternative C would be approximately 56.8 miles.

Produced Water Management

CBNG produced water would be transported through buried plastic flowlines from each well site to the following water management options: (1) beneficially used for industrial uses (dust suppression) in the Spring Creek and Decker Coal Mines; (2) beneficially used by Fidelity for CBNG drilling, construction, and dust suppression; (3) beneficially used by livestock and wildlife; (4) discharged to the Tongue River using Fidelity's existing MDEQ direct discharge permit (MT0030457), including modifications; (5) stored in the existing off drainage impoundment 23-0299; (6) stored in the lined off drainage impoundment 44-3490 which was authorized in the Badger Hills POD, but has not yet been constructed; (7) stored in proposed lined off drainage impoundments 23-2191, 33-2191 and 31-2991; and (8) during the irrigation season, applied to 114 acres of managed irrigation which was authorized in the Badger Hills POD, but is not in use at this time.

Beneficial uses (1,2 and 3) are estimated to consume 200 gpm of water. Following beneficial uses, the direct discharge permit (MT0030457) (4) would be used to the maximum extent allowable. The existing impoundment (23-0299) and new lined impoundments (5, 6 and 7) would be used for storage as needed. The irrigation areas (8) would be utilized during the irrigation season.

Overall, the CBNG produced water managed through the use of the above approvals would be similar to Alternative B, except that water treatment would not occur, lined impoundment 34E-3490 would not be constructed, and the maximum discharge of untreated water would be increased to 2,500 gpm during the winter of 2007. All of the beneficial uses, irrigation areas, and impoundments other than 34E-3490 would be as described in Alternative B.

Battery/Compressor Sites

The Battery/Compressor Sites would be managed in the same manner as described in Alternative B.

Rights-of-way

Rights-of-way would be the same as in Alternative B.

Reclamation

Reclamation would be managed in the same manner as described in Alternatives B.

Additional Mitigating Measures

The following additional mitigating measures are part of Alternative C and would be included as Conditions of Approval with approved permits (see Appendix J for the entire, Alternative C, Additional Mitigating Measures). These mitigating measures would apply to the federal wells, facilities on federal leases needed for the development and production of such federal wells and facilities completed solely for the development and production of federal wells. As a result of inspections or monitoring, BLM can impose necessary mitigation measures not previously identified or rescind mitigation measures that are not necessary.

1. The operator shall notify BLM (406-232-7001) at least 48 hours before beginning construction activities associated with the sites listed below. BLM shall immediately notify the Northern Cheyenne Tribe about construction activities. The company shall have its consulting archaeologist

or an archaeologist holding a valid BLM Cultural Resources Permit at the sites listed below during construction. The operator shall provide the opportunity to the Northern Cheyenne Tribe for a qualified cultural resources specialist to monitor construction in the locations listed below for the Federal portion of the Coal Creek Project Area. The results of monitoring shall be reported in writing by the Consulting Archaeologist and Tribe to BLM within 14 days after completion of monitoring activities.

The purpose of the monitoring is to identify any cultural resources that may be discovered by construction activities. The archaeologist or cultural resources specialist may temporarily halt construction within 300 feet (100 meters) of the find until it can be evaluated by a BLM Cultural Resources Specialist. The operator shall immediately notify BLM (406-232-7001) upon the discovery of cultural resources. The BLM authorized officer shall respond to the operator within the five working days as per Condition of Approval No. 5. The same conditions in Condition of Approval No. 5 would apply for buried cultural resources encountered during monitoring.

Required Monitoring Deer Creek North POD:

Utility Corridor from the 44-0491 Well to the drop point for the 24-0491 Well
Utility Corridor from the 22-1591 Well to the Rancholme 14 Battery

Required Monitoring Pond Creek POD:

Utility Corridor to the 21-1199 Well
Utility Corridor from the 34-1199 Well
Utility Corridor to the 41-1299 Well
Utility Corridor to the 32-1199 Well
Utility Corridor between the CX12 Battery and 14-1299 Well
Utility Corridor to the 32-0299 Well
Utility Corridor to the 41-2299 Well
Portions of the Utility Corridor between the CX14 Battery and the 24-1099 Well

2. Construction and drilling timing stipulation for grouse: No construction and drilling activities from March 1 to June 15 in grouse nesting habitat within two miles of an active lek would apply for the following wells, unless BLM grants an exception (see Appendix K):
 - All wells within the Pond Creek POD.
 - Deer Creek North POD: Timing stipulations would apply for all wells except 44-1191, 42-1591, 11-1191, 24-0291.
3. Construction and drilling timing stipulation for crucial mule deer winter range: No construction and drilling activities from December 1 to March 31 within the boundaries of the crucial winter range would apply to the following wells, unless BLM grants an exception (see Appendix K):
 - All wells within the Pond Creek POD.
 - Deer Creek North POD: Timing stipulations would apply for all wells except 31-0191, 31-1291, 21-0191, 11-0691, 31-0691, and 24-0591
4. Construction and drilling timing stipulation for raptor nests active within the past two years: Construction and drilling activities are prohibited within 0.5 miles of a nest from March 1 to August 1, on the following wells, unless BLM grants an exception (see Appendix K):
 - Pond Creek POD: 34-0399.
 - Deer Creek North POD: 11-1191, 24-0291, 31-0191, 21-0191, 44-1591, 42-2291.
5. Fidelity would be required to submit a right-of-way application and additional information before construction can begin on impoundments 23-2191 and 33-2191, located on BLM administered surface.

6. Prior to stock water tank installation on BLM administered surface, a “Cooperative Agreement for Range Improvements” listing Fidelity and the BLM as a cooperator must be obtained from the BLM’s Miles City Field Office.
7. In order to ensure compliance with Onshore Order #7 the following mitigating measures would apply:
 - Water from federal wells can not be discharged into lined impoundments unless the appropriate State permits are in place.
 - The operator will comply with the groundwater monitoring plan requirements for lined impoundments established by the MDEQ in the MPDES permits. For those impoundments located on BLM surface the operator will provide the BLM with a copy of the monitoring/interpretive reports prepared for the MDEQ.
 - Water from federal wells will not be discharged to surface waters unless a valid MPDES permit is in place for that discharge.

A detailed description of design features, construction practices, water management strategies and reclamation measures associated with Alternative C, can be found in the Master Surface Use Plan, Drilling Plan and Water Management Plan in the Deer Creek North and Pond Creek PODs and their individual APDs.

2.2.4 Alternative D—Deer Creek North POD and Pond Creek POD, MPDES Permit for Treated Water Management and Existing Water Management, with Additional Mitigation: *Agency’s Preferred Alternative*

The analysis of the Deer Creek North project area includes the development and production of wells and infrastructure associated with the proposed fee and federal wells (99 fee, 71 federal and four existing-wildcat fee, see Appendix A). Map 1.3-3 shows the Deer Creek North project boundary, existing and proposed well locations, access roads, pipelines for water and gas, overhead and underground power lines, water management options (including the MPDES Permit for Treated Water), and metering/compressor facilities.

The analysis of the Pond Creek project area includes the development and production of wells and infrastructure associated with the proposed fee and federal wells (23 fee, 55 federal, 11 existing-wildcat fee and two existing-wildcat federal, see Appendix A). Map 1.3-4 shows the Pond Creek project boundary, existing and proposed well locations, access roads, pipelines for water and gas, overhead and underground power lines, water management options (including the MPDES Permit for Treated Water) and metering/compressor facilities.

The Deer Creek North and Pond Creek PODs, MPDES Permit for Treated Water Management and Existing Water Management, with Additional Mitigation Alternative includes: MBOGC would approve the drilling, completing and production of 122 fee wells and producing 15 existing-wildcat fee wells. BLM would approve the drilling, completing and production of 126 federal wells and producing 2 existing-wildcat federal wells. Both agencies would approve constructing associated infrastructure of access roads, flowlines, power lines, reclaiming disturbed areas, produced water management and the use of meter and compressor facilities. These 248 wells would be drilled and completed in the Dietz, Monarch and Carney coal zones and the 17 existing-wildcat wells are completed in the Dietz, Monarch and Carney coal zones. The average production life of the project wells is expected to be 10-20 years with final reclamation to be completed 2 to 3 years after plugging of the wells. Components of the proposed projects are listed in Chapter 2, Table 2.5-1.

Rights-of-way would be issued to Fidelity for “off-lease” facilities on federal surface within both the Deer Creek North and Pond Creek PODs (see Appendix E for a list of the right-of-way locations).

A right-of-way would be issued to Bitter Creek Pipelines, LLC for gas pipelines and an access road on federal surface within Fidelity’s Deer Creek North POD (see Appendix E for the right-of-way location).

A right-of-way would be issued to Powder River Energy Corporation for a buried power line and access road on federal surface within Fidelity's Pond Creek POD (see Appendix E for the right-of-way location).

The Deer Creek North POD was modified as a result of the interdisciplinary review and field visits. During field "on-site" visits, each of the proposed federal locations and areas of proposed surface disturbance were inspected to ensure that potential impacts to natural resources would be minimized. The specific changes identified for these areas were as follows:

- Corridor and access to location 31-1291 was rerouted to mitigate cultural concerns, surface owner and resource concerns.
- Corridor and access to location 24-0291 was rerouted
- Access to location 11-1191 was rerouted
- Overhead power to location 42-0591 was converted to underground
- Overhead power to location 44-1191 was relocated
- Leafy spurge was identified on locations 41-1191 and 11-1191 requiring treatment strategies and management.

The Pond Creek POD was modified as a result of the interdisciplinary review and field visits. During field "on-site" visits, each of the proposed federal locations and areas of proposed surface disturbance were inspected to ensure that potential impacts to natural resources would be minimized. The specific changes identified for these areas were as follows:

- Two existing two-track roads would be blocked or obliterated to accommodate the surface managers request
- Relocation of 41-0399 out of the line of site of an active sage grouse lek
- Relocation of overhead power serving the 41-0399, 34-3489 & 14-3589 locations to a proposed corridor route
- Overhead power to locations 14-0199, 12-0199 & 32-0199 was relocated and a portion was converted from overhead to buried
- Corridor and access to location 32-0199 was rerouted to mitigate cultural concerns, surface owner and resource concerns.
- Relocation of overhead power serving the 41-2299, 23-2299, 22-2299 & 21-2299 locations to another proposed overhead power line and a portion would be converted from overhead to buried
- Corridor and access to location 23-0790 would have a drainage crossing requiring construction materials pulled out of the bottom and armoring an adjacent headcut
- Corridor and access to location 34-0790 was rerouted
- Erosion control would be installed in drainage crossing to locations 24-0590 and 11-0890
- Corridor and access to location 44-2799 was rerouted
- Corridor and access to location 42-2799 was rerouted as per surface lessees request
- Access to locations 44-2799, 24-2799, 42-2799 & 23-2799 was rerouted

Drilling

Drilling operations would be managed in the same manner as described in Alternative B.

Access

Access would be managed in the same manner as described in Alternative B.

Well Sites

Well sites would be managed in the same manner as described in Alternative B.

Power Lines

Power lines would be managed in the same manner as described in Alternative B.

Flowlines

Flowlines would be managed in the same manner as described in Alternative B, without the addition of the proposed impoundments. The gas/water flowline totals for both PODs under Alternative D would be approximately 58 miles.

Produced Water Management

CBNG produced water would be transported through buried plastic flowlines from each well site to the following water management options: (1) beneficially used for industrial uses (dust suppression) in the Spring Creek and Decker Coal Mines; (2) beneficially used by Fidelity for CBNG drilling, construction, and dust suppression; (3) beneficially used by livestock and wildlife; (4) discharged to the Tongue River using Fidelity's existing MDEQ direct discharge permit (MT0030457), including modifications; (5) treated via ion exchange and discharged to the Tongue River using Fidelity's proposed MDEQ discharge permit for treated water (MT0030724); and (6) stored in the existing off drainage impoundment 23-0299 if needed.

Overall, the CBNG produced water managed through the use of the above approvals would be similar to that described in Alternative B, except that the only additional lined impoundment would be 34E-3490. All of the beneficial uses, and the water treatment facility including impoundment 34E-3490 would be as described in Alternative B. For this alternative it is assumed that once the water treatment system is brought on line, it will be kept on line at 850 gpm.

Battery/Compressor Sites

The Battery/Compressor Sites would be managed in the same manner as described in Alternative B.

Rights-of-way

Rights-of-way would be the same as in Alternative B, except reservoirs 23-2191 and 33-2191 would not be considered for location on federal surface.

Reclamation

Reclamation would be managed in the same manner as described in Alternative B.

Additional Mitigating Measures

The following additional mitigating measures are part of Alternative D and would be included as Conditions of Approval with approved permits (see Appendix J for the entire, Alternative D, Additional Mitigating Measures). These mitigating measures would apply to the federal wells, facilities on federal leases needed for the development and production of such federal wells and facilities completed solely for the development and production of federal wells. As a result of inspections or monitoring, BLM can impose necessary mitigation measures not previously identified or rescind mitigation measures that are not necessary.

1. The operator shall notify BLM (406-232-7001) at least 48 hours before beginning construction activities associated with the sites listed below. BLM shall immediately notify the Northern Cheyenne Tribe about construction activities. The company shall have its consulting archaeologist or an archaeologist holding a valid BLM Cultural Resources Permit at the sites listed below during construction. The operator shall provide the opportunity to the Northern Cheyenne Tribe for a qualified cultural resources specialist to monitor construction in the locations listed below for the Federal portion of the Coal Creek Project Area. The results of monitoring shall be reported in writing by the Consulting Archaeologist and Tribe to BLM within 14 days after completion of monitoring activities.

The purpose of the monitoring is to identify any cultural resources that may be discovered by construction activities. The archaeologist or cultural resources specialist may temporarily halt construction within 300 feet (100 meters) of the find until it can be evaluated by a BLM Cultural Resources Specialist. The operator shall immediately notify BLM (406-232-7001) upon the discovery of cultural resources. The BLM authorized officer shall respond to the operator within

the five working days as per Condition of Approval No. 5. The same conditions in Condition of Approval No. 5 would apply for buried cultural resources encountered during monitoring.

Required Monitoring Deer Creek North POD:

Utility Corridor from the 44-0491 Well to the drop point for the 24-0491 Well

Utility Corridor from the 22-1591 Well to the Rancholme 14 Battery

Required Monitoring Pond Creek POD:

Utility Corridor to the 21-1199 Well

Utility Corridor from the 34-1199 Well

Utility Corridor to the 41-1299 Well

Utility Corridor to the 32-1199 Well

Utility Corridor between the CX12 Battery and 14-1299 Well

Utility Corridor to the 32-0299 Well

Utility Corridor to the 41-2299 Well

Portions of the Utility Corridor between the CX14 Battery and the 24-1099 Well

2. Construction and drilling timing stipulation for grouse: No construction and drilling activities from March 1 to June 15 in grouse nesting habitat within two miles of an active lek would apply for the following wells, unless BLM grants an exception (see Appendix K):
 - All wells within the Pond Creek POD.
 - Deer Creek North POD: Timing stipulations would apply for all wells except 44-1191, 42-1591, 11-1191, 24-0291.
3. Construction and drilling timing stipulation for crucial mule deer winter range: No construction and drilling activities from December 1 to March 31 within the boundaries of the crucial winter range would apply to the following wells, unless BLM grants an exception (see Appendix K):
 - All wells within the Pond Creek POD.
 - Deer Creek North POD: Timing stipulations would apply for all wells except 31-0191, 31-1291, 21-0191, 11-0691, 31-0691, and 24-0591
4. Construction and drilling timing stipulation for raptor nests active within the past two years: Construction and drilling activities are prohibited within 0.5 miles of a nest from March 1 to August 1, on the following wells, unless BLM grants an exception (see Appendix K):
 - Pond Creek POD: 34-0399
 - Deer Creek North POD: 11-1191, 24-0291, 31-0191, 21-0191, 44-1591, 42-2291
5. Prior to stock water tank installation on BLM administered surface, a “Cooperative Agreement for Range Improvements” listing Fidelity and the BLM as a cooperator must be obtained from the BLM’s Miles City Field Office.
6. In order to ensure compliance with Onshore Order #7 the following mitigating measures would apply:
 - Water from federal wells can not be discharged into lined impoundments unless the appropriate State permits are in place.
 - The operator will comply with the groundwater monitoring plan requirements for lined impoundments established by the MDEQ in the MPDES permits.
 - Water from federal wells will not be discharged to surface waters unless valid MPDES permits are in place for that discharge.
 - Residual brine, which results from the treatment of water from Federal wells will not be moved off site and injected until a Sundry Notice and a copy of the applicable UIC permit(s) are submitted to, and approved by, the BLM.
 - Residual brine which results from the treatment of water from Federal wells will not be discharged into an on-site lined pit for solidification unless the appropriate state permits are in

place and a Sundry Notice, including a copy of the applicable MBOGC permit(s), and all applicable informational requirements under Onshore Order #7, are submitted to, and approved by, the BLM.

A detailed description of design features, construction practices, water management strategies and reclamation measures associated with Alternative D, can be found in the Master Surface Use Plan, Drilling Plan and Water Management Plan in the Deer Creek North and Pond Creek PODs and their individual APDs.

2.3 CUMULATIVE ACTIONS

The MT FEIS analyzed long-term cumulative effects of CBNG activity throughout the region and disclosed the general types of effects to be considered in more detail during the review of site-specific CBNG proposals, such as the Fidelity's Deer Creek North and Pond Creek PODs. Cumulative effects are the result of impacts from other past, present, or reasonably foreseeable future actions that would overlap in time and locale with the direct effects of the proposed action or alternatives, thus resulting in "cumulative effects" distinctly different (greater or less) than the direct effects. The actions listed below have been considered as potential contributors (relevant) to cumulative effects with the proposed project. A specific cumulative effects analysis for each resource is presented in Chapter 4 by alternative.

2.3.1 Relevant Past and Present Actions

Tongue River Reservoir

The Tongue River Reservoir, located within a few miles of both PODs, was constructed between 1937 and 1940, modified in 1999, and is approximately 79,000 acre feet in size. The reservoir is about 12 miles long and one mile wide, with an average depth of 20 feet; covering around 3,600 acres. The Tongue River Reservoir is a major recreation site for fishing and boating in Southeast Montana; however the reservoir serves as flood protection and irrigation storage. The impact of the Tongue River Reservoir, as well as its location in proximity to the Pond Creek and Deer Creek North PODs, may cause cumulative effects to social/economics, wildlife, surface and ground water, recreation/visuals, cultural and aquatic resources. See Chapter 4, Environmental Consequences, for cumulative effects relating to each resource.

Coal Mines

The Decker Mine is a surface coal mine owned jointly by the Kiewit Company and Kennecott Energy Company and operated by Decker Coal Company, a Kiewit subsidiary. The East Decker Mine is located immediately west of the Deer Creek North project area and the Decker West Mine is located adjacent to the Pond Creek project area. The mining method consists of open pit strip mining. Overburden and interburden are removed by draglines, shovels and trucks, front-end loaders and trucks or dozers. The permitted mine operations area is approximately 11,400 surface acres. The average annual coal production is 10 million short tons. The activities of the Decker Coal Mine, as well as its location in proximity to the POD project area, may cause cumulative effects to social/economics, aquatics, wildlife, surface and ground water, oil and gas, cultural, coal, and air resources. See Chapter 4, Environmental Consequences, for cumulative effects relating to each resource.

The Spring Creek Mine is a surface coal mine owned and operated by Spring Creek Coal Company. The mine is located directly north of the Pond Creek project area. The mining method consists of open pit strip mining. Overburden and interburden are removed by draglines, shovels and trucks, front-end loaders and trucks or dozers. The permitted mine operations area is approximately 7,000 surface acres. The average annual coal production is 11 million short tons. The activities of the Spring Creek Mine, as well as its location in proximity to the POD project area, may cause cumulative effects to social/economics, wildlife, oil and gas, coal, cultural and air resources. See Chapter 4, Environmental Consequences, for cumulative effects relating to each resource.

Railroad

The Decker area railroad line was constructed to support the coal shipping activities of the Decker and Spring Creek Coal mines. The rail line runs from the Spring Creek Coal mine south until it intersects the main rail line located in Sheridan, Wyoming. The rail line is located within a few miles of either POD

boundary. The Spring Creek Coal Mine has approximately 7 miles of the railline within their mine permit boundary. Spring Creek ships around 15 million tons of coal per year, on approximately three trains a day or 1,000 per year. The Decker Coal Mine has 7.9 miles of rail within the permit boundary on two railline loops. Decker ships around 5 million tons of coal per year, on approximately 450 to 500 trains a year. Additionally, there are 2.5 miles of rail not incorporated into either of the coal mine permit boundaries; bring the approximate total of rail in the area to 17.5 miles. The activities of the Decker area railroad, as well as its location in proximity to the POD project areas, may cause cumulative effects to social/economics, wildlife, cultural and air resources. See Chapter 4, Environmental Consequences, for cumulative effects relating to each resource.

CBNG Development

According to BLM, the MBOGC and WOGCC records and websites, prior to June 15, 2005, approximately 572 CBNG wells have been drilled in Big Horn County; approximately 137 wells or less than 24% are Federal wells. In addition, there have been 586 CBNG wells drilled in the entire State of Montana, with approximately 148 wells or 25% being Federal Wells. Status of these wells includes drilling, shut-in, producing and plugged/abandoned. Currently 539 CBNG wells, all in Big Horn County, are considered to be in production. This development is found primarily in the CX Field, near Decker, Montana and the Powder River Gas pilot project near the Tongue River Reservoir Dam.

Montana: The CX Field, including the Tongue River, Badger Hills, Dry Creek, Coal Creek, Deer Creek North and Pond Creek PODs, is a CBNG producing field operated by Fidelity Exploration & Production Company. The field encompasses approximately 92.5 Sections between the Montana/Wyoming state line and the Decker and Spring Creek coal mines. As of June 15, 2005, the BLM records and the MBOGC website demonstrate the CX Field has 516 producing or shut-in wells. The existing CBNG producing wells are located adjacent to the both project plans of development areas. The CBNG wells in the CX Field are finished in the Dietz 1, Dietz 2, Dietz 3, Monarch and Carney coal seams. The activities of the CX Field and its location in proximity to the Deer Creek North and Pond Creek project areas may cause potential cumulative effects to social/economic, wildlife, ground and surface water, air, cultural, coal, oil and gas and aquatic resources. See Chapter 4, Environmental Consequences, for cumulative effects relating to each resource.

Table 2.3-1 Recent CX Field PODs

POD Name	Sections	T S /R E	CBNG Wells	Water Management Plan
Badger Hills	Approximately 10 Sections	9 / 40&41	85 Approved	Untreated Discharge, Containment, LAD and Beneficial Uses
Dry Creek	Approximately 7 Sections	9 / 39&40	24 Approved	Untreated Discharge, Containment and Beneficial Uses
Coal Creek	Approximately 15 Sections	9 / 40&41	210 Approved	Untreated Discharge and Beneficial Uses

Powder River Gas (Coal Creek Project): Powder River Gas Company received approval on November 19, 2004, from BLM and MBOGC to drill and test 16 CBNG wells. This project area is approximately 4 miles north of the Deer Creek North POD and 6 miles northeast of the Pond Creek POD. Powder River Gas has drilled 6 of 8 federal wells (on 4 well sites) and all 8 private wells (on 4 well sites). They are currently testing for CBNG resources and calibrating the water treatment facility. Upon successful completion of testing, Powder River Gas may propose a production related POD. The activities of the Powder River Gas-Coal Creek project, as well as its proposed location in proximity to both PODs, may cause cumulative effects to wildlife, surface water, air, cultural and aquatic resources. See Chapter 4, Environmental Consequences, for cumulative effects relating to each resource.

Wyoming: According to the WOGCC website from 2002 to 2005, the Upper Tongue River Basin predicted at this time to cumulatively have 3,408 CBNG wells drilled and approximately 1.6 billion barrels of produced water. The actual number of CBNG wells drilled is 3,262 wells and the cumulative water

production is only 16.4% of the predicted amount or approximately 22.3 million barrels (2002, 2003, 2004 is actual data and 2005 is predicted).

The BLM's Buffalo Field Office has received 6 CBNG PODs within the Upper Tongue River Basin. These projects are located along the Tongue River, eastward to the Hanging Woman drainage. The Tongue River and Little Badger have not been drilled to date. The other PODs have been approved and are in various stages or completion/production. These include the following:

Table 2.3-2 Recent Wyoming BLM PODs

POD Name	Operator	Sections	T N /R W	CBNG Wells	Water Management Plan
Lower Prairie Dog	J.M. Huber	4,8,9 &10	57 / 83	23 Approved	Containment and LAD
Tongue River	Fidelity	19, 24, 25, 30	58 / 83	23 Approved	Containment and LAD
Little Badger	J.M. Huber	25, 30, 31	58 / 82	30 Approved	Containment, LAD and Injection
Brinkerhoff	Pennaco	5, 6, 7, 8, 17, 18, 20, 21 & 28 12, 13 &24	57 / 82 57 / 83	27 Approved	Containment and LAD
Antelope Draw	Nance Petroleum	19, 20, 21, 28, 29, 31, 32, & 33	58 / 79	31 Approved	Containment
West Antelope Draw	Nance Petroleum	22, 23, 24, 25, 26, & 27	58 / 80	21 Approved	Containment

The Wyoming CBNG development and production, in the proximity to the Deer Creek North and Pond Creek PODs, may have cumulative effects to social/economic, wildlife, ground and surface water, air, cultural, oil and gas and aquatic resources. See Chapter 4, Environmental Consequences, for cumulative effects relating to each resource.

Geophysical Exploration

Grant Geophysical Corporation filed a Notice of Intent to Conduct Oil and Gas Geophysical Exploration Operations for the Pearson Creek Project for Fidelity Exploration & Production Company, in the CX Field, Big Horn County, Montana. The proposed action includes conducting a 2-D Seismic shothole project by using Seisgel, an explosive agent, with a shothole pattern running along the seismic lines. The project would be conducted in three separate lines, all of which overlap into the Pond Creek project boundary. The shotholes will be spaced at one hole per shot at 165 foot intervals, using 10 pounds of charge at a depth of 80 feet. There will be approximately 2.2 miles of line on surface administered by BLM, about 0.78 miles on State surface, and about 17.6 miles on Fee surface. The geophone receivers will be attached to the cables 82.5 feet apart, following the seismic lines. The Geophysical project, in the proximity to the Pond Creek and Deer Creek North PODs, would not be expected to contribute relevant cumulative effects to resources due to the "low impact" nature of the project. See Chapter 4, Environmental Consequences, for cumulative effects relating to each resource.

2.3.2 Reasonably Foreseeable Future Actions

The BLM 1985 Powder River RMP/EIS as amended by the MT FEIS contains Reasonably Foreseeable Development and Reasonable Foreseeable Future Actions scenarios. The scenarios prepared for the amendment estimated that approximately 26,000 federal CBNG wells would be drilled throughout the

life of the plan (page MIN-29). The 248 proposed wells analyzed in this document are part of the 26,000 wells predicted in the MT FEIS.

The MT FEIS predicts that an additional 200 conventional oil and gas wells would be drilled in Big Horn County in the next 20 years.

Future CBNG drill sites would most likely be in proximity to established production, or would offset dry holes to improve interpretation of structural geology. Additional wells could be drilled and produced within the CX Field. MBOGC has established well spacing rules for the field that allow for four wells per coal seam per 160 acres, with the exception of Sections 26 and 35, T. 9 S., R. 40 E. and Sections 9, 10 and 20, T. 9 S. R. 41 E., which allows for 16 wells per coal seam per 640 acres.

It is also reasonably foreseeable that some wells would be plugged and abandoned, and that associated sites would be reclaimed. Based on the predicted 10 percent ratio of future well abandonment to future drilling, (MT FEIS page MIN-29), 25 of the proposed Fidelity Deer Creek North and Pond Creek wells would be dry holes within 20 years, and would count toward the total of 2,600 anticipated dry holes statewide over the same time period.

2.3.3-1 Future rate of CBNG drilling

RFD/RFFA area	Number of wells predicted in the next 20 years	Number of wells drilled to date
Statewide	26,000 wells	586
County (BH, RB) area*	3,500-9,800 wells	572 (BH only)

*BH = Big Horn, RB = Rosebud

Yates Petroleum Corporation:

Yates Petroleum has submitted applications to BLM for the drilling and testing of 14 wildcat CBNG wells scattered across an area from 5 miles north to 20 miles northeast of the producing CX Field. The proposal shows one well would be drilled at each well site, with 640 acre spacing. The activities of the Yates proposal may cause cumulative effects to wildlife and air resources. See Chapter 4, Environmental Consequences, for cumulative effects relating to each resource.

Spring Creek Coal Mine Expansion

On March 7, 2005, The Bureau of Land Management (BLM) received an application to lease the Federal coal adjacent to the Spring Creek Coal Company (SCC) mine. This expansion project is located adjacent to the Pond Creek POD. The tracts, which herein will be referred to as the Lease by Application (LBA) tracts, was assigned case number MTM94378. The LBA tract includes approximately 1207.5 acres with an estimated 151.3 million tons of in-place coal and an estimated 121.4 million tons of recoverable Federal coal. The Spring Creek Coal Mine Expansion and its location in proximity to the Deer Creek North and Pond Creek project areas may cause potential cumulative effects to social/economics, wildlife, oil and gas, coal, cultural and air resources. See Chapter 4, Environmental Consequences, for cumulative effects relating to each resource.

Decker Mine Expansion

On March 18, 2005, The Bureau of Land Management (BLM) received an application to lease the Federal coal within the Decker Coal Company Pit 11, F Section Extension. This expansion project is located adjacent to the Deer Creek North POD. The tract, which herein will be referred to as the Lease by Application (LBA) tract, was assigned case number MTM94393. The LBA tract includes approximately 49.6 acres with an estimated 4.5 million tons of in-place coal and an estimated 4.2 million tons of recoverable Federal coal. The activities of the Decker Coal Mine expansion, as well as its location in proximity to the POD project area, may cause cumulative effects to social/economics, aquatics, wildlife, surface and ground water, oil and gas, cultural, coal, and air resources. See Chapter 4, Environmental Consequences, for cumulative effects relating to each resource.

Tongue River Railroad

The Surface Transportation Board has published a Draft Supplemental Environmental Impact Statement for the Tongue River Railroad Company's (TRRC) proposed rail line construction in Rosebud and Big Horn Counties, Montana. The document analyzes the proposed 17.3 mile "Western Alignment" route, which had been preceded by two related applications that were considered and approved by the Board in 1986 and 1996, respectively. The proposed Western Alignment is an alternative route for the southernmost portion of the 41-mile Ashland to Decker alignment; known as the Four Mile Creek Alternative. The proposed Western Alignment bypasses the Four Mile Creek alignment, which is generally located from the Birney Road (Hwy 566) and the Tongue River Canyon junction, running west to Hwy 314, then south to the Decker Mine. The Western Alignment would continue south along the Tongue River on the ridge, but paralleling the river and ending around the Spring Creek Mine area. The Deer Creek North and Pond Creek project areas are within approximately 5 miles of the southern sections on the proposed TRRC Four Mile Creek and Western Alignment routes. The Tongue River Railroad proposed Western Alignment route and its location in proximity to the Deer Creek North and Pond Creek project areas may cause potential cumulative effects to social/economic, wildlife, surface water, air, cultural, recreation/visuals and aquatic resources. See Chapter 4, Environmental Consequences, for cumulative effects relating to each resource.

Powder River Gas, Coal Creek Field Development Project

Powder River Gas, LLC proposed the Coal Creek Field Development Project to the MBOGC on April 28, 2005. The project would be located in T. 8 S., R. 41 E., Sections 5-8, 19-22 and 30, in Big Horn County, Montana. The project would be approximately 2 miles north of the Deer Creek North POD. The proposed project consists of 18 federal and fee wells previously approved on November 2004, and 48 proposed fee wells on 24 locations, with up to 2 wells per location (Flowers-Goodale and Wall coal seams). As proposed, 48 wells would be drilled on 80 acre spacing per coal seam. The proposed expansion would include private surface and mineral ownership, encompassing five surface owners. The proposed water management would include evaporation, treatment and injection. The activities of the Coal Creek Field Development project proposal may cause cumulative effects to social/economic, wildlife, surface water, air, cultural and aquatic resources. See Chapter 4, Environmental Consequences, for cumulative effects relating to each resource.

2.3.3 Potential Future Actions

The following future actions are probable to be proposed and/or are internally being prepared by project proponents. At this time, these actions are assumed and too vague to be considered in this document's cumulative effects analysis. These actions will not escape a NEPA analysis; rather when they are proposed or known by the BLM, then they will be considered in a cumulative effects analysis. This would include the following actions:

- Wolf Mountain Coal, Inc.
- Nance Petroleum Coal Bed Natural Gas POD
- Otter Creek Coal Tract Development
- Fidelity Exploration and Development, Deer Creek South POD
- Fidelity Exploration and Development, Spring Creek POD
- Pinnacle Gas Resources, Inc., Dietz Project
- Crow Tribe Mineral Development
- Wyoming CBNG PODs

2.4 PREFERRED ALTERNATIVE IDENTIFICATION

The BLM has identified *Alternative D- Deer Creek North POD and Pond Creek POD, MPDES Permit for Treated Water Management and Existing Water Management, with Additional Mitigation*, as its Preferred Alternative.

2.5 COMPARISON OF ALTERNATIVES

Table 2.5-1 compares the major components of the four alternatives. Table 2.5-2 compares the major effects identified in Chapter 4 from each of the alternatives.