

**UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Buffalo Field Office
Buffalo, Wyoming**

**SURFACE USE
CONDITIONS OF APPROVAL**

POD Name: River Unit Gamma

Operator: Lance Oil & Gas Company

List of Wells:

	Well name	Well #	QTR	Sec	TWP	RNG	Lease
1	LEATH	34-8*	SWSE	8	49N	77W	WYW156694
2	RU	12-15	SWNW	15	49N	77W	WYW128631
3	RU	21-15	NENW	15	49N	77W	WYW128631
4	RU	32-15	SWNE	15	49N	77W	WYW128631
5	RU	41-15	NENE	15	49N	77W	WYW128631
6	RU FEDERAL	14-20	SWSW	20	49N	77W	WYW147346
7	RU	12-29	SWNW	29	49N	77W	WYW129048
8	RU	21-29	NENW	29	49N	77W	WYW129048
9	RU	23-29	NESW	29	49N	77W	WYW129048
10	RU	24-29	SESW	29	49N	77W	WYW129048
11	RU	31-29	NWNE	29	49N	77W	WYW129048
12	RU	43-29	NESE	29	49N	77W	WYW129048
13	RU	12-31	SWNW	31	49N	77W	WYW145626
14	RU	14-31	SWSW	31	49N	77W	WYW145626
15	RU FEDERAL	21-31	NENW	31	49N	77W	WYW145626
16	RU	23-31	NESW	31	49N	77W	WYW145626
17	RU	32-31	SWNE	31	49N	77W	WYW145626
18	RU	34-31	SWSE	31	49N	77W	WYW145626
19	RU	41-31	NENE	31	49N	77W	WYW145626
20	RU	43-31	NESE	31	49N	77W	WYW145626
21	RU	12-32	SWNW	32	49N	77W	WYW145626
22	RU	14-32	SWSW	32	49N	77W	WYW145626
23	RU	21-32	NENW	32	49N	77W	WYW145626
24	RU	23-32	NESW	32	49N	77W	WYW145626
25	RU	32-32	SWNE	32	49N	77W	WYW132936
26	RU	42-32	SENE	32	49N	77W	WYW132936
27	RU	32-33	SWNE	33	49N	77W	WYW132936
28	RU	41-33	NENE	33	49N	77W	WYW132936
29	RU	43-33	NESE	33	49N	77W	WYW132936

List of Impoundments:

	IMPOUNDMENT Name / Number	Qtr/Qtr	Section	TWP	RNG	Lease Number
*1	Pit 12-5-4877	SWNW	5	48	77	WYW145623
2	Pit 33-32-4977	NWSE	32	49	77	Fee

***Note: The Pit 12-5-4877 location is approved but construction of the impoundment is pending approval of the required Right of Way grant as per COA.**

I Programmatic mitigation measures identified in the PRB FEIS ROD

Programmatic mitigation measures are those, determined through analysis, which may be appropriate to apply at the time of APD approval if site specific conditions warrant. These mitigation measures can be applied by BLM, as determined necessary at the site-specific NEPA APD stage, as COAs and will be in addition to stipulations applied at the time of lease issuance and any standard COA.

Groundwater

1. In order to address the potential impacts from infiltration on shallow ground water, the Wyoming DEQ has developed and revised a guidance document, “Compliance Monitoring and sighting Requirements for Unlined Impoundments Containing Coalbed Methane Produced Water” (September, 2006) which can be accessed on their website. For all WYPDES permits the BLM will require that operators comply with the latest DEQ standards and monitoring guidance.

Surface Water

1. Channel Crossings:
 - a) Minimize channel disturbance as much as possible by limiting pipeline and road crossings.
 - b) Avoid running pipelines and access roads within floodplains or parallel to a stream channel.
 - c) Channel crossings by road and pipelines will be constructed perpendicular to flow. Culverts will be installed at appropriate locations for streams and channels crossed by roads as specified in the BLM Manual 9112-Bridges and Major Culverts and Manual 9113-Roads. Streams will be crossed perpendicular to flow, where possible, and all stream crossing structures will be designed to carry the 25-year discharge event or other capacities as directed by the BLM.
 - d) Channel crossings by pipelines will be constructed so that the pipe is buried at least four feet below the channel bottom.
2. Low water crossings will be constructed at original streambed elevation in a manner that will prevent any blockage or restriction of the existing channel. Material removed will be stockpiled for use in reclamation of the crossings.
3. Concerns regarding the quality of the discharged CBNG water on downstream irrigation use may require operators to increase the amount of storage of CBNG water during the irrigation months and allow more surface discharge during the non-irrigation months.

Soils

1. The Companies, on a case by case basis depending upon water and soil characteristics, will test sediments deposited in impoundments before reclaiming the impoundments. Tests will include the standard suite of cations, ions, and nutrients that will be monitored in surface water testing and any trace metals found in the CBNG discharges at concentrations exceeding detectable limits.

Wetland/Riparian

1. Power line corridors will avoid wetlands, to the extent possible, in order to reduce the chance of waterfowl hitting the lines. Where avoidance can't occur, the minimum number of poles necessary to cross the area will be used.
2. Wetland areas will be disturbed only during dry conditions (that is, during late summer or fall), or when the ground is frozen during the winter.
3. No waste material will be deposited below high water lines in riparian areas, flood plains, or in natural drainage ways.
4. The lower edge of soil or other material stockpiles will be located outside the active floodplain.
5. Disturbed channels will be re-shaped to their approximate original configuration or stable geomorphological configuration and properly stabilized.
6. Reclamation of disturbed wetland/riparian areas will begin immediately after project activities are complete.

Wildlife

1. For any surface-disturbing activities proposed in sagebrush shrublands, the Companies will conduct clearance surveys for sage grouse breeding activity during the sage grouse's breeding season before initiating the activities. The surveys must encompass all sagebrush shrublands within 0.5 mile of the proposed activities.
2. Containment impoundments will be fenced to exclude wildlife and livestock. If they are not fenced, they will be designed and constructed to prevent entrapment and drowning.
3. All stock tanks shall include a ramp to enable trapped small birds and mammals to escape. See Idaho BLM Technical Bulletin 89-4 entitled Wildlife Watering and Escape Ramps on Livestock Water Developments: Suggestions and Recommendations.

Threatened, Endangered, or Sensitive Species

Bald Eagle

1. Special habitats for raptors, including wintering bald eagles, will be identified and considered during the review of Sundry Notices.

Black-footed Ferret

2. Prairie dog colonies will be avoided wherever possible.

Mountain Plover

1. Project-related features that encourage or enhance the hunting efficiency of predators of mountain plover will not be constructed within ¼ mile of occupied mountain plover nesting habitat.
2. Work schedules and shift changes will be set to avoid the periods from 30 minutes before to 30 minutes after sunrise and sunset during June and July, when mountain plovers and other wildlife are most active.
3. Creation of hunting perches or nest sites for avian predators within 0.5 mile of identified nesting areas

will be avoided by burying power lines, using the lowest possible structures for fences and other structures and by incorporating perch-inhibiting devices into their design.

4. Reclamation of areas of previously suitable mountain plover habitat will include the seeding of vegetation to produce suitable habitat for mountain plover.

Ute Ladies'-tresses Orchid

1. Suitable habitat will be avoided wherever possible.
2. Moist soils near wetlands, streams, lakes, or springs in the project area will be promptly revegetated if construction activities impact the vegetation in these areas. Revegetation will be designed to avoid the establishment of noxious weeds.

Visual Resources

1. The Companies will mount lights at compressor stations and other facilities on a pole or building and direct them downward to illuminate key areas within the facility while minimizing the amount of light projected outside the facility.

Noise

1. Noise mufflers will be installed on the exhaust of compressor engines to reduce the exhaust noise.
2. Where noise impacts to existing sensitive receptors are an issue, noise levels will be required to be no greater than 55 decibels measured at a distance of one-quarter mile from the appropriate booster (field) compressor. When background noise exceeds 55dBA, noise levels will be no greater than 5dBA above background. This may require the installation of electrical compressor motors at these locations.

Air Quality

1. During construction, emissions of particulate matter from well pad and resource road construction will be minimized by application of water, or other dust suppressants, with at least 50 percent control efficiency. Roads and well locations constructed on soils susceptible to wind erosion could be appropriately surfaced or otherwise stabilized to reduce the amount of fugitive dust generated by traffic or other activities, and dust inhibitors (surfacing materials, non-saline dust suppressants, and water) could be used as necessary on unpaved collector, local and resource roads that present a fugitive dust problem. The use of chemical dust suppressants on BLM surface will require prior approval from the BLM authorized officer.

II Site specific mitigation measures

1. All changes made at the onsite are listed in Attachment 1 will be followed. They have all been incorporated into the operator's POD.
2. All permanent above-ground structures (e.g., production equipment, tanks, etc.) not subject to safety requirements will be painted to blend with the natural color of the landscape. The paint used will be a color which simulates "Standard Environmental Colors." The color selected for the River Unit Gamma POD is Covert Green, 18-0617 TPX.
3. The approval of this project does not grant authority to use off lease federal lands. No surface disturbing activity, or use of off-lease federal lands, is allowed on affected leases until right-of-way grants become effective on the date in which the right-of-way grant is signed by the

authorized officer of the BLM. This includes the construction of Pit 12-5-4878 as well as the installation of infrastructure to this facility.

4. The operator will drill seed on the contour to a depth of 0.5 inch, followed by cultipaction to compact the seedbed, preventing soil and seed losses. To maintain quality and purity, the current years tested, certified seed with a minimum germination rate of 80% and a minimum purity of 90% will be used. On BLM surface or in lieu of a different specific mix desired by the surface owner, use the following:

10-14" Precipitation Zone Shallow Loamy Ecological Site

Species	% in Mix	Lbs PLS*
<i>Thickspike Wheatgrass</i> (<i>Elymus lanceolatus</i> ssp. <i>lanceolatus</i>)	50	4.2
<i>Bluebunch wheatgrass</i> (<i>Pseudoroegneria spicata</i> ssp. <i>Spicata</i>)	35	6
<i>Prairie coneflower</i> (<i>Ratibida columnifera</i>)	5	0.6
<i>White or purple prairie clover</i> (<i>Dalea candidum</i> , <i>purpureum</i>)	5	0.6
<i>Rocky Mountain beeplant</i> (<i>Cleome serrulata</i>) /or <i>American vetch</i> (<i>Vicia americana</i>)	5	0.6
I. Totals	100%	12 lbs/acre

This is a recommended seed mix based on the native plant species listed in the NRCS Ecological Site descriptions, U.W. College of Ag. and seed market availability.

5. All impoundments used for the storage of CBNG produced water for the River Unit Gamma POD will be fenced per BLM range management guidelines as follows:
 - All fences around reservoirs should be wildlife friendly. Fences should be placed far enough away from the high water mark to insure deer can jump the fence without landing in water/ice.
 - Fences should have a gate installed that is large enough to accommodate reclamation equipment entering the dry reservoir bed when CBM begins their reclamation.
 - Fences must stay in place until the reclamation process is complete and native rangeland plants are established and stable.
 - Fence maintenance must be the responsibility of the CBM Company. Maintenance must continue until reclamation is completed and native rangeland plants are established and are stable.
 - Fences should follow specifications listed below:
 - a. Three-strand wire fence with the bottom wire smooth
 - b. Top strand to ground level will be 40 inches
 - c. Second strand to ground level will be 28 inches
 - d. Bottom strand smooth wire to ground level will be 18 inches
6. The culvert locations will be staked prior to construction. The culvert invert grade and finished road grade will be clearly indicated on the stakes. Culverts will be installed on natural ground, or on a designed flow line of a ditch. The minimum cover over culverts will be 12" or one-half the

diameter whichever is greater. Drainage laterals in the form of culverts or waterbars shall be placed according to the following spacing:

<u>Grade</u>	<u>Drainage Spacing</u>
2-4%	310 ft
5-8%	260 ft
9-12%	200 ft
12-16%	150 ft

7. Provide 4" of aggregate where grades exceed 8%. Surfacing material must meet requirements set forth in Wyoming Supplement to BLM Road Manual 9113.
8. Disturbance areas mentioned below have fragile soils and erosive conditions that shall be stabilized in a manner which eliminates erosion until a self-perpetuating non-weed native plant community has stabilized the site. Stabilization efforts shall be finished within 30 days of the completion of construction activities.
 - Well site(s): RU 21-15, RU 32-15, RU 41-15, RU 12-29, RU 24-29, RU 23-29, RU Fed. 21-31, RU 32-31, RU 41-31, RU 12-32, RU 14-32, RU 32-33, and RU 41-33
 - Road / Pipeline segments associated with well(s): RU 21-15, RU 32-15, RU 41-15, RU 12-29, RU 24-29, RU 23-29, RU 12-31, RU Fed. 21-31, RU 32-31, RU 41-31, RU 12-32, RU 14-32, and RU 41-33
 - Roads and Pipeline segment(s): LWRC-12-32, LWRC-22-32, LWRC-23-31, LWRC-33-31 and related spoil pile, LWCR-42-31; PCULV(s) 32-29B, 32-29C, 32-29D, 33-29A, 33-29B 43-31 and 13-32; as well as the utility corridor crossing west of the end of Road D.
9. The operator will follow the guidance provided in the Wyoming Policy on Reclamation (IM WY-90-231) specifically the following:

Reclamation Standards:

 - A. The reclaimed area shall be stable and exhibit none of the following characteristics:
 1. Large rills or gullies.
 2. Perceptible soil movement or head cutting in drainages.
 3. Slope instability on, or adjacent to, the reclaimed area in question.
 - B. The soil surface must be stable and have adequate surface roughness to reduce runoff and capture rainfall and snow melt. Additional short-term measures, such as the application of mulch, shall be used to reduce surface soil movement.
 - C. Vegetation canopy cover (on unforested sites), production and species diversity (including shrubs) shall approximate the surrounding undisturbed area. The vegetation shall stabilize the site and support the planned post disturbance land use, provide for natural plant community succession and development, and be capable of renewing itself. This shall be demonstrated by:
 1. Successful onsite establishment of species included in the planting mixture or other desirable species.
 2. Evidence of vegetation reproduction, either spreading by rhizomatous species or seed production.
 - D. The reclaimed landscape shall have characteristics that approximate the visual quality of the adjacent area with regard to location, scale, shape, color and orientation of major landscape features and meet the needs of the planned post disturbance land use.
10. No surface disturbance will be authorized on federal lands prior to the approval of a Pesticide Use Plan submitted by the operator to the Buffalo Field Office.

11. The operator will eradicate salt cedar present within 500 feet of all disturbance crossing Indian Creek including the following locations: LWRC-12-32, LWRC-22-32, LWRC-23-31, LWRC-33-31, LWCR-42-31 and the utility corridor crossing west of the end of Road D.
12. The operator will construct the following road segments according to design specifications before the commencement of drilling activities: LWRC-12-32, LWRC-22-32, LWRC-23-31, LWRC-33-31, LWCR-42-31; PCULV(s) 43-31 and 13-32; Road A-1, between STA 3+00 and 12+00 including PCULV(s)-32-29B, 32-29C, 32-29D, 33-29A and 33-29B.
13. To minimize the disturbance width, the operator will place the utility corridor within the roadway disturbance of Road A-1, between STA 3+00 and 12+00.
14. All roads, pads, impoundments and locations where engineered construction will occur will be completely slope staked for the pre-construction meeting.
15. Reserve pit will be lined at the following locations: RU Fed. 14-20, RU 23-29, RU 24-29, RU 43-29, RU 42-32, RU 32-32 and RU 21-32.
16. Erosive soils upslope of the RU 32-33 location will be avoided.
17. The access and utility corridor disturbance for the following wells will be a maximum of 35 feet: RU Fed 12-29 and RU Fed. 12-31.
18. Disturbance for pipelines and utility corridors adjacent to access roads will be contained within the disturbance allowed for road construction.
19. Improved roads with utility corridor will not exceed a disturbance width of 50 feet unless specific design is included in the plan and profile section of the master surface use plan.
20. Primitive roads (2-tracks) with utility corridor will not exceed a disturbance width of 45 feet.
21. Pipeline installation and/or corridors without road access will not exceed a disturbance width of 45 feet.
22. Utility corridors will be expediently reclaimed following construction and maintained in a professional and workmanship manner avoiding tire rutting, settling and erosion.
23. A minimum 20 foot undisturbed vegetative buffer will be maintained for erosion features along the following access roads: Road 21-31 and Road 12-29.
24. Mowing at the well site where a constructed pad is not approved as designed will be minimized to a 30 foot radius of the well stake.
25. The operator will maintain well drilling, completion and associated construction operations within a 150 foot by 150 foot work area for those locations where a constructed pad is not approved as designed including the following well locations: Leath 34-8, RU 12-15, RU 32-15, RU Federal 14-20, RU 21-29, RU 23-29, RU 24-29, RU 31-29, RU 43-29, RU 12-31, RU 14-31, RU Federal 23-31, RU 32-31, RU 41-31, RU 43-31, RU 12-32, RU 21-32, RU 23-32, RU 32-32, RU 42-32, RU 32-33, RU 41-33 and RU 43-33.
26. Liberal travel space beyond the well location will be allowed to facilitate truck turn around at the

following locations: RU Fed.12-29 and RU Fed. 21-31. The operator will rip the surface to a depth of 12 inches and seed the area(s) compacted by truck traffic following well completion.

27. This decision does not approve water disposal from federal wells in the River Unit Gamma POD to be discharged into any impoundments until the operator supplies a copy of the complete approved SW-4, SW-3, or SW-CBNG WSEO permits with a description of facilities as required in Onshore Oil and Gas Order No. 7 (59 FR 47365) to BLM authorized officer, and approval is obtained.
28. This decision does not approve water disposal from federal wells within the River Unit Gamma POD into impoundments. Prior to discharging water from the approved wells the to impoundments the operator is required to submit a copy of the State of Wyoming approved WYPDES permit, including a current water quality analysis and description of facilities as required in Onshore Oil and Gas Order No. 7 (59 FR 47365).
29. An impoundment will be non-compliant if the proposed mitigation, or approved action, is not successful, i.e. leaking if permitted under full-containment. Disposal of federally produced water will cease into the non-compliant impoundment until successful mitigation is achieved. If produced water resurfaces below the mitigation site, or in adjacent drainages, the mitigation will be deemed unsuccessful and the impoundment will be lined or reclaimed.
30. Construction associated with the outfall 014 included in WYPDES permit WY0051934 is not allowed prior to the approval of a sundry notice requesting an addendum to the operator’s Powder Valley Unit Gamma POD water management plan in association with the Merrill Meadows EMITs facility.
31. The following conditions will minimize impacts to nesting and roosting bald eagles;
 - a. No surface disturbing activity shall occur within one mile of bald eagle habitat (Powder River and Dead Horse Creek) annually from November 1 through April 1 (CM9), prior to a winter roost survey or from February 1 through August 15 (CM8) prior to a nesting survey. This affects the following wells and infrastructure:

Township/Range	Section	Wells and Infrastructure
49/77	8	Well: Leath Fed 34-8-4977 ALL project related activities within this ENTIRE section.
49/77	15	Wells: RU Fed: 12-15-4977, 21-15-4977, 32-15-4977, and 41-15-4977 ALL project related activities within this ENTIRE section.
49/77	20	Well: RU Fed 14-20-4977 ALL project related activities within this ENTIRE section.
49/77	28	ALL project related activities within this ENTIRE section.
49/77	29	Wells: RU Fed: 12-29-4977, 21-29-4977, 23-29-4977, 24-29-4977, 31-29-4977, and 43-29-4977 ALL project related activities within this ENTIRE section.
49/77	31	Wells: RU Fed 32-31-4977, 34-31-4977 and

Township/Range	Section	Wells and Infrastructure
		41-31-4977 and 43-31-4977 ALL project related activities within the eastern ½ of this section.
49/77	32	Wells: 12-32-4977, 14-32-4977, 21-32-4977, 23-32-4977, 32-32-4977, and 42-32-4977 Impoundment: Pit 33-32-4977 ALL project related activities within this ENTIRE section.
49/77	33	Wells: 41-33-4977 and 43-33-4977 ALL project related activities within this ENTIRE section.
48/78	5	Impoundment: Pit 12-5-4878 ALL project related activities within this ENTIRE section.

- b. If a roost is identified and construction has not been completed, a year round disturbance-free buffer zone of 0.5 mile will be established for all bald eagle winter roost sites (November 1 - April 1). Additional measures such as remote monitoring and restricting maintenance visitation to between 9:00 AM and 3:00 PM may be necessary to prevent disturbance.
- c. If a nest is identified and construction has not been completed, a minimum disturbance-free buffer zone of 0.5 mile (i.e., no surface occupancy) would be established year round for all bald eagle nests. A seasonal minimum disturbance-free buffer zone of 1-mile will be established for all bald eagle nest sites (February 1 - August 15).
- d. Additional mitigation measures may be necessary if the site-specific project is determined by a Bureau biologist to have an adverse affect to bald eagles or their habitat.

32. The following conditions will minimize impacts to raptors:

- a. No surface disturbing activity shall occur within ½ mile of all identified raptor nests from February 1 through July 31, annually, prior to a raptor nest occupancy survey for the current breeding season. This affects the following:

Township/Range	Section	Wells and Infrastructure
49/77	8	Well: Leath Fed 34-8-4977 ALL project related activities within the east ½ of this section.
49/77	9	ALL project related activities within this ENTIRE section.
49/77	15	ALL project related activities within the SE ¼ of this section.
49/77	20	ALL project related activities within this ENTIRE section.
49/77	28	ALL project related activities within the NW, SW, and SE ¼s of this section.
49/77	29	Wells: 31-29-4977 and 43-29-4977 ALL project related activities within the east ½ of this section. The road corridor north of the 21-29 well.
49/77	31	Well: 41-31-4977

Township/Range	Section	Wells and Infrastructure
49/77	32	Wells: 21-32-4977, 32-32-4977, and 42-32-4977 Impoundment: Pit 33-32-4977 ALL project related activities within this ENTIRE section east of the existing stock tank in the NWSW ¼ ¼ of this section.
49/77	33	Wells: 41-33-4977 and 43-33-4977 ALL project related activities within this ENTIRE section.
48/77	5	Impoundments: Pit 12-5-4877 and Pit 41-5-4877 ALL project related activities within this ENTIRE section.
48/77	6	ALL project related activities within this ENTIRE section.

- b. Surveys to document nest occupancy shall be conducted by a biologist following BLM protocol, between April 15 and June 30. All survey results shall be submitted in writing to a Buffalo BLM biologist. Surveys outside this window may not depict nesting activity. If a survey identifies active raptor nests, a ½ mile timing buffer will be implemented. The timing buffer restricts surface disturbing activities within ½ mile of occupied raptor nests from February 1 to July 31.
- c. Nest occupancy checks shall be completed for all raptor nests within the River Unit Gamma POD listed in the table below. The occupancy checks shall be completed for the first five years following project completion. The occupancy checks shall be conducted no earlier than June 1 or later than June 30 and any evidence of nesting success/production shall be recorded. Survey results will be submitted to a Buffalo BLM biologist in writing no later than July 31 of each survey year.

BLM ID	UTM E	UTM N	Species
2140	412378	4896263	RTHA
2688	408145	4890586	GOEA
2728	408103	4897032	RTHA
2730	409056	4898269	GOEA
2731	409329	4898664	Unknown
2732	409201	4897402	RTHA
2733	410207	489275	AMKE
3194	409628	4892352	Unknown
3196	409381	4892471	GOEA
3199	412995	4896263	RTHA
3200	412917	4896579	RTHA
3231	410319	4892257	Unknown
3495	407823	4895044	Unknown
4127	409025	4893829	GOEA
4128	410210	4892941	GHOW
4129	410187	4892948	GHOW
4130	410165	4892954	GHOW
4131	410334	4892534	UNK
4132	410319	4892168	UNK
4133	410336	4892544	RTHA

BLM ID	UTM E	UTM N	Species
4134	412644	4892667	AM KE
4135	410158	4892199	AM KE
4136	409588	4891167	AM KE
4137	410329	4892450	UNK
4138	410329	4892520	AM KE
4139	413244	4892579	LEOW
4140	408470	4892424	UNK
4141	408695	4892451	RTHA
4142	410475	4892195	UNK

- d. Routine maintenance should be scheduled outside the nesting season (Feb 1-July 31) for all active nests. Emergency activities should be reduced as much as possible and restricted between the hours of 9:00 am and 3:00 pm.

33. A mountain plover nesting survey is desired in suitable habitat prior to commencement of surface disturbing activities in the prairie dog towns located in Sections 27-29 and 31-33 in Township 49 North, Range 77 West and Section 5 of Township 48 North, Range 77 West. If the survey is not conducted prior to commencement of surface disturbing activities, it shall be conducted during the first breeding season following POD approval. No surface disturbing activities are permitted in suitable habitat areas listed above, from March 15-July 31, until a mountain plover nesting survey has been conducted for the current breeding season. This affects the following:

Township/Range	Section	Wells and Infrastructure
49/77	28	ALL project related activities within the east ½, SW ¼ and SWNW ¼ ¼ of this section.
49/77	29	Well: RU Fed 43-29-4977 ALL project related activities within the SE ¼ and SENE ¼ ¼ of this section.
49/77	32	The proposed water line in the southern half of this section.
49/77	33	Well: RU Fed 43-33-4977 ALL project related activities within the SE ¼ and the NENW, NWNW, NWSW, and SWSW ¼ ¼s of this section.
48/77	5	Impoundments: Pit 12-5-4877 and Pit 41-5-4877 ALL project related activities within this ENTIRE section.
48/77	6	ALL project related activities within this ENTIRE section.

- a. If a mountain plover is identified, then a seasonal disturbance-free buffer of ¼ mile shall be maintained between March 15 and July 31. If no mountain plovers are identified, then surface disturbing activities may be permitted within suitable habitat until the following breeding season (March 15).
- b. Work schedules and shift changes will be set to avoid the periods from 30 minutes before to 30 minutes after sunrise and sunset during June and July, when mountain plovers and other wildlife are most active.
- c. Reclamation of areas of previously suitable mountain plover habitat will include the seeding of vegetation to produce suitable habitat for mountain plover.

34. The following conditions will minimize impacts to sage-grouse:

- a. A survey is required for sage-grouse between April 1 and May 7, annually, within the project area for the life of the project and results shall be submitted to a BLM biologist. The required sage grouse survey will be conducted by a biologist following the most current WGFD protocol. All survey results shall be submitted in writing to a Buffalo BLM biologist and approved prior to surface disturbing activities.
 - b. If an active lek is identified during the survey, the 2 mile timing restriction (March 1-June 15) will be applied and surface disturbing activities will not be permitted until after the nesting season. If surveys indicate that the identified lek is inactive during the current breeding season, surface disturbing activities may be permitted within the 2 mile buffer until the following breeding season (March 1).
 - c. Creation of raptor hunting perches will be avoided within 0.5-mile of documented sage grouse lek sites. Perch inhibitors will be installed to deter avian predators from preying on sage grouse.
 - d. Well metering, maintenance and other site visits within 0.5 miles of documented sage grouse lek sites shall be minimized as much as possible during the breeding season (March 1– June 15), and restricted to between 0900 and 1500 hours.
35. All earth moving activity in the following areas will be monitored by an archeologist who meets or exceed the qualification standards recommended by the Secretary of the Interior. The Bureau has identified these areas as containing the potential for buried cultural deposits (areas containing alluvial and colluvial deposits with a nearby eligible prehistoric site). The Bureau will require the submission of two copies of a monitoring report within 30 days of the completion of all monitoring work.
- a. **Buried pipelines between the 32-32 well and the 42-32 well in T49N R77W Section 32:**
All earth moving activity associated with pipeline trenching must be monitored.
 - b. **Construction of pits associated with the 42-32 well in T49N R77W Section 32:**
Excavation of the pit associated with the well must be monitored. Additionally, the archeologist should ensure that no surface disturbance occurs within site 48CA3395. As appropriate, the monitor may suggest that temporary fencing is placed to protect the site.
36. Please contact Jim Verplancke, Natural Resource Specialist, @ (307) 684-1057 Bureau of Land Management, Buffalo, if there are any questions concerning these surface use COAs.

III Standard Conditions of Approval

A. General

1. If any cultural values [sites, artifacts, human remains (Appendix L FEIS)] are observed during operation of this lease/permit/right-of-way, they will be left intact and the Buffalo Field Manager notified. The authorized officer will conduct an evaluation of the cultural values to establish appropriate mitigation, salvage or treatment. The operator is responsible for informing all persons in the area who are associated with this project that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are uncovered during construction, the operator is to immediately stop work that might further disturb such materials, and contact the authorized BLM officer (AO). Within five working days the AO will inform the operator as to:
 - whether the materials appear eligible for the National Register of Historic Places;

- the mitigation measures the operator will likely have to undertake before the site can be used (assuming in situ preservation is not necessary); and,
 - a time-frame for the AO to complete an expedited review under 36 CFR 800.11 to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction measures.
2. If paleontological resources, either large or conspicuous, and/or a significant scientific value are discovered during construction, the find will be reported to the Authorized Officer immediately. Construction will be suspended within 250 feet of said find. An evaluation of the paleontological discovery will be made by a BLM approved professional paleontologist within five (5) working days, weather permitting, to determine the appropriate action(s) to prevent the potential loss of any significant paleontological values. Operations within 250 feet of such a discovery will not be resumed until written authorization to proceed is issued by the Authorized Officer. The applicant will bear the cost of any required paleontological appraisals, surface collection of fossils, or salvage of any large conspicuous fossils of significant scientific interest discovered during the operation.
 3. The operator shall restrict travel on unimproved two-track roads during periods of inclement weather or spring thaw when the possibility exists for excessive surface resource damage (e.g., rutting in excess of 4-inches, travel outside two-track roadway, etc.).
 4. The first producing well drilled to each targeted coal zone will be designated as the POD "Reference Well". Reference wells will not be required for PODs within a 6 mile radius of the first reference well designated by the operator, nor for co-mingled coal zones. The designated reference well must be equipped to be sampled at the well head. A reference well sample will be collected from the wellhead and submitted for analysis; using the list of analytes identified in WDEQ WYPDES Application for Permit to Surface Discharge Produced Water from CBM New Discharges, Renewals, or Major Modifications, within 30 to 60 days of initial water production. Results of the analysis will be submitted to the BFO-BLM authorized Officer as they become available.
 5. By November 1 each year, companies will provide georeferenced spatial data depicting as-built locations of all facilities, wells, roads, pipelines, power lines, reservoirs, discharge points, and other related facilities to the BLM for all PODs where construction and development have been completed.
 6. If any dead or injured threatened, endangered, proposed, or candidate species is located during construction or operation, the U.S. Fish and Wildlife Service's Wyoming Field Office (307-772-2374), their law enforcement office (307-261-6365), and the BLM Buffalo Field Office (307-684-1100) shall be notified within 24 hours. If any dead or injured sensitive species is located during construction or operation, the BLM Buffalo Field Office (307-684-1100) shall be notified within 24 hours.
 7. Wildlife species are dynamic and new individuals may have moved into the River Unit Gamma POD area after the initial wildlife surveys were completed. The Record of Decision for the PRB FEIS includes a programmatic mitigation measure that states, "The companies will conduct clearance surveys for threatened and endangered or other special-concern species at the optimum time". The measure requires companies to coordinate with the BLM before November 1 annually to review the potential for disturbance and to agree on inventory parameters. Should this project not be completed by January 15, and surface disturbance is

planned for that year, a Lance Oil & Gas Company Inc. representative will coordinate with the BLM to discuss required surveys.

8. All other conservation measures and terms and conditions identified in the Powder River Basin Oil and Gas Project Biological Opinion (WY07F0075) shall be complied with.
9. If an undocumented raptor nest is located during project construction or operation, the Buffalo Field Office (307-684-1100) shall be notified within 24 hours.
10. All Lance Oil & Gas Company Inc. representatives associated contractors will have a copy of the master surface use plan, work plan map(s) and conditions of approval with them at all times.

B. Construction

1. A pre-construction field meeting shall be conducted prior to beginning any dirt work approved under this POD. The operator shall contact the BLM Authorized Officer Jim Verplancke, NRS @ 307-684-1057 at least 4-days prior to beginning operations so that the meeting can be scheduled. The operator is responsible for having all contractors present (dirt contractors, drilling contractor, pipeline contractor, project oversight personnel, etc.) including the overall field operations superintendent, and for providing all contractors copies of the approved POD, project map and BLM Conditions of Approval pertinent to the work that each will be doing.
2. The operator will limit vegetation removal and the degree of surface disturbance wherever possible. Where surface disturbance cannot be avoided, all practicable measures will be utilized to minimize erosion and stabilize disturbed soils.
3. Construction and drilling activity will not be conducted using frozen or saturated soil material during periods when watershed damage or excessive rutting is likely to occur.
4. Remove all available topsoil (depths vary from 4 inches on ridges to 12+ inches in bottoms) from constructed well locations including areas of cut and fill, and stockpile at the site. Topsoil will also be salvaged for use in reclamation on all other areas of surface disturbance (roads, pipelines, etc.). Clearly segregate topsoil from excess spoil material. Any topsoil stockpiled for one year or longer will be signed and stabilized with annual ryegrass or other suitable cover crop.
5. The operator will not push soil material and overburden over side slopes or into drainages. All soil material disturbed will be placed in an area where it can be retrieved without creating additional undue surface disturbance and where it does not impede watershed and drainage flows.
6. Construct the backslope no steeper than 1½:1, and construct the foreslope no steeper than 2:1, unless otherwise directed by the BLM Authorized Officer.
7. Maintain a minimum 20-foot undisturbed vegetative border between toe-of-fill of pad and/or pit areas and the edge of adjacent drainages, unless otherwise directed by the BLM Authorized Officer.
8. With the overall objective of minimizing surface disturbance and retaining land stability and productivity, the operator shall utilize equipment that is appropriate to the scope and scale of work being done for roads and well pads (utilize equipment no larger than needed for the job).
9. To minimize electrocution potential to raptors, all overhead electrical power lines will be constructed to Avian Power Line Interaction Committee (1996) standards and additional

standards identified in the PRB FEIS Biological Opinion (Volume 3, Appendix K, page 43).

10. The operator shall utilize wheel trenchers or ditchers to construct all pipeline trenches, except where extreme topography or other environmental factors preclude their use.
11. Reserve pits will be adequately fenced during and after drilling operations until pit is reclaimed so as to effectively keep out wildlife and livestock. Adequate fencing, in lieu of more stringent requirements by the surface owner, is defined as follows:
 - Construction materials will consist of steel or wood posts. Three or four strand wire (smooth or barbed) fence or hog panel (16-foot length by 50-inch height) or plastic snow fence must be used with connectors such as fence staples, quick-connect clips, hog rings, hose clamps, twisted wire, etc. Electric fences will not be allowed.
 - Construction standards: Posts shall be firmly set in ground. If wire is used, it must be taut and evenly spaced, from ground level to top wire, to effectively keep out animals. Hog panels must be tied securely into posts and one another using fence staples, clamps, etc. Plastic snow fencing must be taut and sturdy. Fence must be at least 2-feet from edge of pit. 3 sides fenced before beginning drilling, the fourth side fenced immediately upon completion of drilling and prior to rig release. Fence must be left up and maintained in adequate condition until pit is closed.
12. The reserve pit will be oriented to prevent collection of surface runoff. After the drilling rig is removed, the operator may need to construct a trench on the uphill side of the reserve pit to divert surface drainage around it. If constructed, the trench will be left intact until the pit is closed.
13. The reserve pit will be lined with an impermeable liner if permeable subsurface material is encountered. An impermeable liner is any liner having a permeability less than 10^{-7} cm/sec. The liner will be installed so that it will not leak and will be chemically compatible with all substances that may be put in the pit. Liners made of any man-made synthetic material will be of sufficient strength and thickness to withstand normal installation and pit use. In gravelly or rocky soils, a suitable bedding material such as sand will be used prior to installing the liner.
14. The reserve pit will be constructed so that at least half of its total volume is in solid cut material (below natural ground level).
15. Culverts will be placed on channel bottoms on firm, uniform beds, which have been shaped to accept them, and aligned parallel to the channel to minimize erosion. Backfill will be thoroughly compacted.
16. The minimum diameter for culverts will be 18 inches. However, all culverts will be appropriately sized in accordance with standards in BLM Manual 9113.
17. Construction and other project-related traffic will be restricted to approved routes. Cross-country vehicle travel will not be allowed.
18. Maximum design speed on all operator-constructed and maintained roads will not exceed 25 miles per hour.
19. Pipeline construction shall not block nor change the natural course of any drainage. Pipelines shall cross perpendicular to drainages. Pipelines shall not be run parallel in drainage bottoms. Suspended pipelines shall provide adequate clearance for maximum runoff.
20. Pipeline trenches shall be compacted during backfilling. Pipeline trenches shall be routinely inspected and maintained to ensure proper settling, stabilization and reclamation.

21. During construction, emissions of particulate matter from well pad and road construction would be minimized by application of water or other non-saline dust suppressants with at least 50 percent control efficiency. Dust inhibitors (surfacing materials, non-saline dust suppressants, and water) will be used as necessary on unpaved roads that present a fugitive dust problem. The use of chemical dust suppressants on public surface will require prior approval from the BLM Authorized Officer.
22. Operators are required to obtain a National Pollution Discharge Elimination System (NPDES) Storm Water Permit from the Wyoming DEQ for any projects that disturb five or more acres (changing to one acre in March 2005). This general construction storm water permit must be obtained from WDEQ prior to any surface disturbing activities and can be obtained by following directions on the WDEQ website at <http://deq.state.wy.us>. Further information can be obtained by contacting Barb Sahl at (307) 777-7570.
23. The operator shall submit a Sundry Notice (Form 3160-5) to BLM for approval prior to construction of any new surface disturbing activities that are not specifically addressed in the approved APD or POD Surface Use Plan.
24. Weed educational material will be reviewed with operators during pre-construction on-site meetings with operators, subcontractors, and landowners and will also be attached to approved APDs and PODs.
25. Companies will contact the counties to pursue development of maintenance agreements to ensure county roads are adequately maintained for the projected increase in use.

C. Operations/Maintenance

1. The operator shall complete coal bed natural gas wells (case, cement and under ream) as soon as possible, but no later than 30 days after drilling operations, unless an extension is given by the BLM Authorized Officer.
2. If in the process of air drilling the wells there is a need to utilize mud, all circulating fluids will be contained either in an approved pit or in an aboveground containment tank. The pit or containment tank will be large enough to safely contain the capacity of all expected fluids without danger of overflow. Fluid and cuttings will not be squeezed out of the pit, and the pit will be reclaimed in an expedient manner.
3. Confine all equipment and vehicles to the access road(s), pad(s), and area(s) specified in the approved APD or POD.
4. All waste, other than human waste and drilling fluids, will be contained in a portable trash cage. This waste will be transported to a State approved waste disposal site immediately upon completion of drilling operations. No trash or empty barrels will be placed in the reserve pit or buried on location. All state and local laws and regulations pertaining to disposal of human and solid waste will be complied with.
5. Rat and mouse holes shall be filled and compacted from the bottom to the top immediately upon release of the drilling rig from the location.
6. The operator will be responsible for prevention and control of noxious weeds and weeds of concern on all areas of surface disturbance associated with this project (well locations, roads, water management facilities, etc.) Use of pesticides shall comply with the applicable Federal and State laws. Pesticides shall be used only in accordance with their registered uses and within limitations imposed by the Secretary of Interior. Prior to the use of pesticides on public land, the holder shall obtain from the BLM authorized officer written approval of a plan showing the type and quantity of material to be used, pest(s) to be controlled, method of

application, location of storage and disposal of containers, and any other information deemed necessary by the authorized officer to such use.

7. Sewage shall be placed in a self-contained, chemically treated porta-potty on location.
8. The operator and their contractors shall ensure that all use, production, storage, transport and disposal of hazardous and extremely hazardous materials associated with the drilling, completion and production of these wells will be in accordance with all applicable existing or hereafter promulgated federal, state and local government rules, regulations and guidelines. All project-related activities involving hazardous materials will be conducted in a manner to minimize potential environmental impacts. In accordance with OSHA requirements, a file will be maintained onsite containing current Material Safety Data Sheets (MSDS) for all chemicals, compounds and/or substances which are used in the course of construction, drilling, completion and production operations.
9. Produced fluids shall be put in test tanks on location during completion work. Produced water will be put in the reserve pit during completion work per Onshore Order #7.
10. The only fluids/waste materials which are authorized to go into the reserve pit are RCRA exempt exploration and production wastes. These include:

- drilling muds & cuttings
- rigwash
- excess cement and certain completion & stimulation fluids defined by EPA as exempt

It does not include drilling rig waste, such as:

- spent hydraulic fluids
- used engine oil
- used oil filter
- empty cement, drilling mud, or other product sacks
- empty paint, pipe dope, chemical or other product containers
- excess chemicals or chemical rinsate

Any evidence of non-exempt wastes being put into the reserve pit may result in the BLM Authorized Officer requiring specific testing and closure requirements.

11. Reserve pits will be closed as soon as possible, but no later than 90 days from time of drilling/well completion, unless the BLM Authorized Officer gives an extension. Squeezing of pit fluids and cuttings is prohibited. Pits must be dry of fluids or they must be removed via vac-truck or other environmentally acceptable method prior to backfilling, re-contouring and replacement of topsoil. Mud and cuttings left in pit must be buried at least 3-feet below re-contoured grade. The operator will be responsible for re-contouring any subsidence areas that develop from closing a pit before it is sufficiently dry.
12. Operators are advised that prior to installation of any oil and gas well production equipment which has the potential to emit air contaminants, the owner or operator of the equipment must notify the Wyoming Department of Environmental Quality, Air Quality Division (phone 307-777-7391) to determine permit requirements. Examples of pertinent well production equipment include fuel-fired equipment (e.g., diesel generators), separators, storage tanks, engines and dehydrators.
13. If this well is drilled during the fire season (June-October), the operator shall institute all necessary precautions to ensure that fire hazard is minimized, including but not limited to mowing vegetation on the access route(s) and well location(s), keeping fire fighting

equipment readily available when drilling, etc.

D. Dry Hole/Reclamation

1. All disturbed lands associated with this project, including the pipelines, access roads, water management facilities, etc will be expediently reclaimed and reseeded in accordance with the surface use plan and any pertinent site-specific COAs.
2. Disturbed lands will be re-contoured back to conform with existing undisturbed topography. No depressions will be left that trap water or form ponds.
3. The fluids and mud must be dry in the reserve pit before re-contouring pit area. The operator will be responsible for re-contouring of any subsidence areas that develop from closing a pit before it is completely dry. The plastic pit liner (if any) will be cut off below grade and properly disposed of at a state authorized landfill before beginning to re-contour the site.
4. Before the location has been reshaped and prior to redistributing the topsoil, the operator will rip or scarify the drilling platform and access road on the contour, to a depth of at least 12 inches. The rippers are to be no farther than 24 inches apart.
5. Distribute the topsoil evenly over the entire location and other disturbed areas. Prepare the seedbed by disking to a depth of 4-to-6 inches following the contour.
6. Phased reclamation plans will be submitted to BLM for approval prior to individual POD facility abandonment via a Notice of Intent (NOI) Sundry Notice. Individual facilities, such as well locations, pipelines, discharge points, impoundments, etc. need to be addressed in these plans as they are no longer needed. Individual items that will need to be addressed in reclamation plans include:
 - Pit closure (Close ASAP after suitably dry, but no later than 90 days from time of drilling unless an extension is given by BLM Authorized Officer.) BLM may require closure prior to 90 days in some cases due to land use or environmental concerns.
 - Configuration of reshaped topography, drainage systems, and other surface manipulations
 - Waste disposal
 - Revegetation methods, including specific seed mix (pounds pure live seed/acre) and soil treatments (seedbed preparation, fertilization, mulching, etc.). On private surface, the landowner should be consulted for the specific seed mix.
 - Other practices that will be used to reclaim and stabilize all disturbed areas, such as water bars, erosion fabric, hydro-mulching, etc.
 - An estimate of the timetables for beginning and completing various reclamation operations relative to weather and local land uses.
 - Methods and measures that will be used to control noxious weeds, addressing both ingress and egress to the individual well or POD.
 - Decommissioning/removal of all surface facilities
 - Closure and reclamation of areas utilized or impacted by produced CBM water, including discharge points, reservoirs, off-channel pits, land application areas, livestock/wildlife watering facilities, surface discharge stream channels, etc
7. BLM will not release the performance bond until all disturbed areas associated with the APD/POD have been successfully revegetated (evaluation will be made after the second complete growing season) and has met all other reclamation goals of the surface owner and surface management agency.

8. A Notice of Intent to Abandon and a Subsequent Report of Abandonment must be submitted for abandonment approval.
9. For performance bond release approval, a Final Abandonment Notice (with a surface owner release letter on split-estate) must be submitted prior to a final abandonment evaluation by BLM.
10. Soil fertility testing and the addition of soil amendments may be required to stabilize some disturbed lands.
11. Any mulch utilized for reclamation needs to be certified weed free.
12. Waterbars are to be constructed at least one (1) foot deep, on the contour with approximately two (2) feet of drop per 100 feet of waterbar to ensure drainage, and extended into established vegetation. All waterbars are to be constructed with the berm on the downhill side to prevent the soft material from silting in the trench. The initial waterbar should be constructed at the top of the backslope. Subsequent waterbars should follow the following general spacing guidelines:

Slope (percent)	Spacing Interval (feet)
$\leq 2 - 4$	310
5 - 8	260
9 - 12	200

E. Producing Well

1. Landscape those areas not required for production to the surrounding topography as soon as possible. The fluids and mud must be dry in the reserve pit before re-contouring pit area. The operator will be responsible for re-contouring and reseeded of any subsidence areas that develop from closing a pit before it is completely dry.
2. Reduce the backslope to 2:1 and the foreslope to 3:1, unless otherwise directed by the BLM Authorized Officer. Reduce slopes by pulling fill material up from foreslope into the toe of cut slopes.
3. Production facilities (including dikes) must be placed on the cut portion of the location and a minimum of 15 feet from the toe of the back cut unless otherwise approved by the BLM Authorized Officer.
4. Any spilled or leaked oil, produced water or treatment chemicals must be reported in accordance with NTL-3A and immediately cleaned up in accordance with BLM requirements. This includes clean-up and proper disposition of soils contaminated as a result of such spills/leaks.
5. Distribute stockpiled topsoil evenly over those areas not required for production and reseed as recommended.
6. Upgrade and maintain access roads and drainage control (e.g., culverts, drainage dips, ditching, crowning, surfacing, etc.) as necessary and as directed by the BLM Authorized Officer to prevent soil erosion and accommodate safe, environmentally-sound access.
7. Prior to construction of production facilities not specifically addressed in the APD/POD, the operator shall submit a Sundry Notice to the BLM Authorized Officer for approval.
8. If not already required prior to constructing and drilling the well location, the operator shall

immediately upgrade the entire access road to BLM standards (including topsoiling, crowning, ditching, drainage culverts, surfacing, etc.) to ensure safe, environmentally-sound, year-round access. This requirement does not supercede or apply where specific road requirements are addressed in the APD/POD surface use plan (e.g., two track road, spot upgrade, etc.)

9. Waterbars shall be installed on all reclaimed pipeline corridors per the guidelines in D #12.

F. Monitor Well Drilling Guidelines; 7/13/04

As part of the approval of this POD, the operator will be responsible for drilling, completing, and equipping a set of monitoring wells, as described below. The specific location will be determined in consultation with the BLM, and may only be drilled in a location where the oil and gas mineral estate is owned by the Federal Government.

USBLM CBNG groundwater monitoring sites in the Powder River Basin generally consist of two types of wells and a common data collection platform. The two types of wells are: 1) coal or production zone completion(s) and 2) under- or over-burden sand zone completions. Descriptions of these three components are as follows:

1. Coal Zone Monitor Wells

There could be one or more of these wells at each monitor site, depending on the number of CBNG producing zones. Because of the presence of methane, and potential for significant well head pressure, these wells must be shut in (not open to the atmosphere). These wells are completed the same as actual production wells and are subject to the same Conditions of Approval (COA) associated with CBNG production wells. The finished well will include the following:

The well(s) will be drilled to the top of the production zone(s) and 5 1/2" OD (minimum) API steel casing will be set and cemented from the top of coal to the surface. The coal will then be drilled out, leaving an open-hole completion. The well will then be circulated with fresh water to remove any remaining drilling fluids and solids, and air lifted to get a yield estimate. If the coal doesn't appear to be making water during the clean up of the well bore, water enhancement (and possibly under reaming) may be required. The well must be completed on top with a standard well head, i.e. KVF 'Gillette Special' well head (2x2 or 2x4 with a 2", centered tubing port and threaded auxiliary access port in the mandrel).

Standard equipment includes:

- a. KVF wellhead as described above
- b. downhole transducer to measure total head (gas + water) - we are currently using Druck PTX1835, 250 psig pressure transmitters
- c. wellhead pressure transducer to measure well head pressure (this allows separation of gas and water pressures) - we are currently using Druck PTX621 transmitters (10, 100, up to 900 psig, depending on anticipated well head pressure)
- d. an airline consisting of 1/8" ID by 3/8" OD poly tubing, running from the surface to near the bottom of the hole, suspending a weight to keep the line taught. This arrangement allows verification measurements without opening the wellbore.
- e. access ports to allow for pressure testing, sampling (gas and water), and

detection of methane.

2. Sand Zone Monitor Wells

There could be one or more of these wells at each monitor site, depending on parameters of interest, local concerns, etc. Typically there is a well completed in an overburden sand to monitor leakage of the shallower, generally more accessible sands. Wells are completed in under-burden sands when the under-burden sands are of more local interest or are of more significant thickness and quality, and some sites are established with wells in each of the sands from the surface down to the production zone to study recharge/discharge relationships, inter-aquifer communication, and changes in water quality. In addition, some sites will require shallow alluvial wells along ephemeral drainages receiving CBM discharge water - again to look at recharge. These wells are completed as follows:

The depth of the sand well(s) will be determined in the field utilizing the geophysical logs from the adjacent coal well(s). On wells where coal is penetrated (as determined from the logs from the adjacent coal well(s)) and on wells greater than 500 feet in depth, drilling and casing will be done as described above for the coal zone well(s). One of two completion methods may be used. The decision on which method to use will be determined by the authorized officer depending on the objectives and use of the well.

Method 1: Steel casing will be set through the sand zone, cemented to surface, and perforated, 4 shots per foot, through the sand zone.

Method 2: On wells where water quality sampling is a primary concern, steel casing will be set above the sand zone and cemented to the surface. The sand zone will then be drilled out and a screened or slotted casing string set through the sand zone. This screened casing string can either be placed using packers (i.e. K-packer) or hung on a string of casing from the surface.

On wells not penetrating coals and less than 500 feet (and optionally on wells from 500 to approximately 700 feet), the hole must be drilled with a minimum of a 9" bit to accommodate SDR17, 5 inch ID (minimum) PVC casing and 1" (minimum) flush joint tremie pipe allowing for proper placement of gravel pack and bentonite grout. If larger casing is used, a larger hole will have to be drilled. Upon completion of drilling, geophysical logs will be run to determine the exact placement of the well screen. The well casing will include 10 to 20 feet of blank pipe on the bottom (capped), .020 slot well screen open to the selected sand zone, and blank pipe to the surface. The well will then be gravel packed with 10-20 silica sand to cover the well screen (and associated sand zone).

On very shallow wells (less than 200 feet) the annulus above the gravel pack will be backfilled with bentonite gravel (or pellets) to the surface. On wells from 200 to approximately 700 feet total depth, the annulus above the gravel pack must be grouted from the bottom to the surface using a tremie. The top of the well casing must have threads (slip to thread adapter) and a vented cap.

The well(s) will then be cleaned up by air lifting until all drilling fluids and solids are removed, clear water is produced, and a yield is estimated.

Standard equipment includes:

Either a submersible transducer as in the coal wells (we generally use these if depth to water is greater than 400 feet or so) or a shaft encoder (Handar, Sutron, Stevens) and float-tape-weight arrangement.

3. Data collection platform and miscellaneous support equipment.

All wells are linked to a central data logger (Campbell CR10 or CR510) located in a central shelter and powered via 12 volt batteries and solar modules.

All wells are enclosed in secure, weather proof shelters and fenced in to protect from livestock and wildlife damage.

Attached are photo examples of two and four well setups.

Other Requirements:

1. Equipment Funding: The methane operator will be required to provide the BLM with \$5000 for each monitoring well bore (i.e. \$10,000 for a typical two well setup, \$15,000 for a three well setup, etc.).
2. Schedule: Wells must be completed and funding provided 30 days prior to initiating pumping of production wells in proximity of the monitoring wells.
3. Access: If no public access exists to the monitor well site, the CBM operator must provide access in the form of a right of way or access agreement with the private landowners involved.
4. The operator shall submit APDs to BLM for the monitor wells. The APDs should include the completed APD cover sheet (Form 3160-3), survey plats, a drilling plan and a surface use plan (including a map). The monitor wells will require a cultural clearance report. In addition, they are subject to the same spud notification requirements and completion report requirements as regular federal wells (see General Conditions of Approval). If you have any questions concerning this stipulation and for information on locating and equipping of the wells, please contact Mike Brogan, BLM Hydrologist, at (307) 261-7600.
5. Monitor wells are subject to the same standard COA applied to CBNG production wells.
6. Prior to installation of monitoring equipment by the BLM, the operator will submit to the BLM copies of the following:
 - State Engineers Well Permit (U.W. 5) and Well Completion (U.W. 6) forms
 - Signed landowner access agreement (if applicable)
 - Final copies of all well logs

Attachment 1

Well #	QTR	Sec	TWP	RNG	Lease	Changes
34-8	SWSE	8	49N	77W	WYW156694	The pad was withdrawn and replaced with a 30' x 120' rig slot.
21-15	NENW	15	49N	77W	WYW128631	The well was re-staked approximately 500' south to avoid 3 erosion features and mitigate effects to the visual resources. Surface owner approved.
12-15	SWNW	15	49N	77W	WYW128631	The well was re-staked approximately 70' north to allow more working room and truck turn around.
14-20	SWSW	20	49N	77W	WYW147346	The well was re-staked approximately 100' east toward the existing oil & gas road and outside the 1/4 mile buffer of an active raptor nest and in front of trees to absorb the outline of the well box.
12-29	SWNW	29	49N	77W	WYW129048	The designed road segment was shifted east and down hill approximately 70' to avoid erosive soils.
14-29	SWSW	29	49N	77W	WYW129048	LOG re-staked the well to the 24-29 spot. A rig slot is required with drainage ditches needed on the north and south edges of the work area. The designed access and well pad were withdrawn.
21-29	NENW	29	49N	77W	WYW129048	LOG re-staked the well approximately 750' west to accommodate better spacing for drainage since the 41-29 well was re-staked west. The proposed rig slot just off the proposed Road 12-29 was withdrawn.
23-29	NESW	29	49N	77W	WYW129048	BLM requires designs for the segment of Road A-1 just to the north to well 21-32 showing soil stabilization measures; this includes PCULV(s)32-29b, 32-29C, 32-29D, 33-29A and 33-29B. Construct road according to design specifications before the commencement of drilling activities. Install hydrologic and erosion control measures to optimize road stabilization.
41-29	NENE	29	49N	77W	WYW129048	The well was re-staked to the 31-29 location to avoid highly erosive soils, multiple erosion features and 25% side slopes. The designed well pad was replaced with a 30' x 120' rig slot. This mitigates potential effects to the visual resources by placing it behind a small hill.

Well #	QTR	Sec	TWP	RNG	Lease	Changes
43-29	NESE	29	49N	77W	WYW129048	LOG re-staked the well 30' SE outside a 1/4 mile raptor nest buffer and still 60' from a P&A well on an abandoned conventional well location.
14-31	SWSW	31	49N	77W	WYW145626	Oil & gas access will not follow the utility corridor crossing Indian Cr. Well access is by the existing improved road from the south via Schoonover Road. The existing primitive road crossing Indian Creek will remain Wardner Ranch access and will be signed "Road Closed to all Oil & Gas Traffic" on both side of the creek crossing.
21-31	NENW	31	49N	77W	WYW145626	The designed well pad was withdrawn and replaced by a 30' x 120' rig slot.
32-31	SWNE	31	49N	77W	WYW145626	BLM requires detailed design to show soil stabilization measures for designed access Road 32-31. The well was re-staked 100' east to allow for more work room and buffer the adjacent drainage.
34-31	SWSE	31	49N	77W	WYW145626	The location was re-staked 150' NE to buffer the drainage below and reduce the side slope.
41-31	NENE	31	49N	77W	WYW145626	Access was changed to begin at the 12-32 location avoiding erosion feature at the ridge top. It will follow the west side of the ridge
43-31	NESE	31	49N	77W	WYW145626	To balance the cut/fills at the LWRC 33-31, there is up to 8' of fill for this segment of Road D on either side to the low water crossing. LOG requested that they be allowed to stockpile the spoil rather than use it as road fill; BLM will allow this and requires the road design diagram to include the stockpile including stabilization methods and onsite the staked location. Construct road according to design specifications before the commencement of drilling activities.

Well #	QTR	Sec	TWP	RNG	Lease	Changes
12-32	SWNW	32	49N	77W	WYW145626	The proposed well access from the east was withdrawn to avoid a cultural site. LOG investigated an alternate route requiring a LWRC through Indian Cr. requiring a design accepted by BLM. During a subsequent onsite of the new route it was agreed to mow the area left of road (STA 0+00 to 1+00) to increase turning radius for large equipment at road intersection during initial well development. Reclaim mowed area as necessary to repair disturbance upon well completion.
14-32	SWSW	32	49N	77W	WYW145626	BLM requires detailed design for Road 14-32 to show soil stabilization measures. Construct road according to design specifications before the commencement of drilling activities. Install hydrologic and erosion control measures to optimize road stabilization. Use ditching to route water away from headcuts as much as possible. The beginning of the access road was shifted west to follow an old 2-track that will avoid erosive soil. A stock tank was added to this location.
23-32	NESW	32	49N	77W	WYW145626	The access was shifted uphill from the well to avoid the headcut and the rig slot was incorporated into the access road.
32-32	SWNE	32	49N	77W	WYW132936	The well was re-staked approximately 1000' west and behind an old sheep pen to shield it from raptor nests.
12-33	SWNW	33	49N	77W	WYW132936	The well was re-staked to the 43-32 spot to avoid a cultural site & flood plain. The designed road segment was withdrawn.
14-33	SWSW	33	49N	77W	WYW132936	The 2007 wildlife surveys identified approximately 8 eagles within the project area. Due to this, a 0.5 mile NSO buffer will be applied. The well and associated infrastructure are not authorized with the project design.
34-33	SWSE	33	49N	77W	WYW132936	The well was re-staked approximately 200' east because there was not enough work area at the staked location and need to avoid fragile soils. The 2007 wildlife surveys identified approximately 8 eagles within the project area. Due to this, a 0.5 mile NSO buffer will be applied and the well and associated infrastructure are not

Well #	QTR	Sec	TWP	RNG	Lease	Changes
						authorized with the project design.
41-33	NENE	33	49N	77W	WYW132936	The well was re-staked approximately 700' NE out of line of sight of a raptor nest and the access was rerouted to begin at Dead Horse Road @ SE section 28. LOG submitted design plans and staked the new route for BLM inspection.
43-33	NESE	33	49N	77W	WYW132936	The well was re-staked approximately 150' south placed opposite the existing stock tank to shield the well from a raptor nest to the NW.
CBM-MON	NENW	16	49	77	STATE	This was not included with the POD submittal. BLM requested that it be added to the POD. Lance has an obligation to install a CBM-Monitoring well set. Lance has offered the State 11-16-4977, an existing coal well, in addition to a commitment to install 2 additional wells completed in the over-burden sand zones at this same location. LOG will submit well logs of the State 11-16-4977 well to BLM as well as a signed surface use agreement with the surface owner(s) to guarantee access to the well for BLM employees to monitor the wells.

Impoundment	QTR	Sec	TWP	RNG	Lease	Changes
Pit12-5	SWNW	5	49	77	WYW130110	This impoundment had to be reduced in size due to a new road & corridor Anadarko built through the location. LOG submitted a new permit/application/reclamation estimate for the impoundment.
Pit 41-5	NENE	5	49	77	WYW132936	The 2007 wildlife surveys identified approximately 8 eagles within the project area. Due to this, a 0.5 mile NSO buffer will be applied. The off-channel pit, outfall and associated infrastructure are not authorized with the project design.

Impoundment	QTR	Sec	TWP	RNG	Lease	Changes
Pit 22-27	SENW	27	49	77	WYW145625	The landowner asked LOG to shift the proposed pit east into the hill side to use the existing cultivated field for land application of treated CBNG effluent water. LOG withdrew the impoundment from the POD.
Pit 12-14	SWNW	14	49	77	WYW145624	The impoundment is proposed within the VRM II area, approximately 500 feet from Interstate 90 and would be very visible. BLM recommended the operator withdraw the impoundment or consider it a secondary impoundment not to be approved at this time due to VRM issues. The operator did not accept the recommendation. The off-channel pit, outfall and associated infrastructure are not authorized with the project design.
Pit 42-31	SENE	31	49	77	WYW145626	Withdrawn by the operator prior to the onsite inspection.
Pit 13-27	NWSW	27	49	77	FEE	The impoundment is proposed within the VRM II area and would be very visible from Interstate 90. BLM recommended the operator consider it a secondary impoundment not to be approved at this time and/or submit mitigation to address VRM issues. The operator did not accept the recommendation. The off-channel pit, outfall and associated infrastructure are not authorized with the project design.
Pit 43-28	NESE	28	49	77	WYW129048	The impoundment is proposed within the VRM II area and would be very visible from Interstate 90. BLM recommended the operator consider it a secondary impoundment not to be approved at this time and/or submit mitigation to address VRM issues. The operator did not accept the recommendation. The off-channel pit, outfall and associated infrastructure are not authorized with the project design.
Pit 14-33	SWSW	33	49	77	WYW132937	The 2007 wildlife surveys identified approximately 8 eagles within the

Impoundment	QTR	Sec	TWP	RNG	Lease	Changes
						project area. Due to this, a 0.5 mile NSO buffer will be applied. The off-channel pit, outfall and associated infrastructure are not authorized with the project design.
Pit 33-33	NWSE	33	49	77	WYW132937	The 2007 wildlife surveys identified approximately 8 eagles within the project area. Due to this, a 0.5 mile NSO buffer will be applied. The off-channel pit, outfall and associated infrastructure are not authorized with the project design.
P14-27	SWSW	27	49	77	WYW129048	Withdrawn by the operator prior to the onsite inspection.
P23-32	NESW	32	49	77	WYW145626	Withdrawn by the operator prior to the onsite inspection.
P23-27	NESW	27	49	77	WYW132936	Withdrawn by the operator prior to the onsite inspection.
P42-10	SENE	10	49	77	WYW145624	Withdrawn by the operator prior to the onsite inspection.
P34-10	SWSE	10	49	77	WYW145625	Withdrawn by the operator prior to the onsite inspection.
E12-14	SWNW	14	49	77	WYW145623	Withdrawn by the operator prior to the onsite inspection.