

DEPARTMENT OF STATE LANDS



STAN STEPHENS, GOVERNOR

CAPITOL STATION

STATE OF MONTANA

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ENVIRONMENTAL
QUALITY COUNCIL

October 28, 1991

To Whom it may concern:

We have reviewed the attached Preliminary Environmental Review for the December 3, 1991 lease sale. The stipulations, as listed in appendix C, sufficiently mitigate environmental concerns with leasing the proposed tracts.

- Monte G. Mason 10/29/91
Monte Mason, MMB Chief Date
- M. Jeff Hagener 10/31/91
Jeff Hagener, Lands Division Administrator Date

PRELIMINARY ENVIRONMENTAL REVIEW

December 3, 1991

Montana Department of State Lands
OIL AND GAS LEASE SALE

I. INTRODUCTION

In accordance with the requirements of the Montana Environmental Policy Act, ARM 26.2.601 ET.SEQ., Rules Implementing the Montana Environmental Policy Act, this Preliminary Environmental Review has been prepared to determine if the proposed action will have significant effects upon the human environment, thereby requiring the preparation of an Environmental Impact Statement.

The tracts have been evaluated using existing information available in the Department's records. Further specific information, when available, was provided by the Montana Department of Fish, Wildlife and Parks, the Montana Historic Preservation Office, and the Department of State Lands Area Offices. This information is included as Appendix B. Late comments are included in Appendix C.

II. PROPOSED ACTION

The proposed action by the Department of State Lands is to offer for lease 42 tracts of land totalling 15,704.54 acres for the purpose of oil and gas exploration and development. The tracts to be offered are listed in Appendix A, along with their respective stipulations which were developed to protect the other land use values.

III. THE OIL AND GAS INDUSTRY

1. Geologic Origin of Oil and Gas

There are two generally accepted major schools of thought as to the origin of oil and gas. These are the inorganic theory and the organic theory of hydrocarbon development.

The inorganic theory indicates that carbon and hydrogen were combined under intense heat and pressure at extremely deep levels to form oil and gas. The substance then seeped through porous rocks and collected in various underground geologic formations. Inorganic development of oil and gas, as proposed by this theory, is generally not believed to be the primary source of hydrocarbon by most scientists.

The organic theory is the most popular and is currently the most widely accepted by scientists. The arguments for this theory have arisen because oil bearing strata quite often bear the fossils and chemical evidence of organic origins. The theory states that organic material, including plant and animal life, dies and is incorporated into sediments. These sediments are deposited in both marine and terrestrial settings. With the passage of hundreds of millions of years the sedimentary process gradually built tremendously thick layers of muds, sands, and remnants of living organisms. The great weight of the accumulated sediment beds, along with chemical processes, solidifies the sediment into rock. Through heat and pressure, the organic material is "cooked" and becomes hydrocarbon. This hydrocarbon liquid, either in gaseous or fluid form, is then squeezed out of the "source" rock, and migrates upward through the sedimentary sequence. Further geologic processes of change and transformation, such as faulting, folding, and thrusting during periods of continent building, moved and transformed the sediment beds into numerous

geologic structures. Oil and gas, migrating upward through these beds, collects in porous sedimentary layers at the tops of these structures within "traps". It is these traps that oil and gas exploration companies attempt to exploit through exploration.

2. Exploration

Exploration for oil and gas utilizes a number of methods. The preliminary and simplest include surface examination from air and ground. Mapping and identification of surface features and formations and samples of surface outcrops can be gathered in this manner. To further define a formation or describe subsurface features requires more extensive measures. The methods commonly utilized include gravity, magnetic, and seismic surveys along with subsurface mapping and correlation.

a. Gravity Surveys

Gravity is a force which exerts a pull on all masses in the earth's neighborhood in space. The direction of that pull (the line of least resistance), is toward the center of each mass. There is both empirical and speculative material concerning the precise nature and origin of this force. For the purpose of this review, it is assumed that the earth as a mass is responsible for the gravitational forces described in the gravity surveys. Variations in the gravitational field occur in conjunction with variations in densities of material in the subsurface. These variation patterns are measured and used to predict the geologic nature of rocks comprising the substrata.

The instrument used is called a gravimeter. It is small and portable for use in aircraft or in the field.

b. Magnetic Surveys

When a magnetized iron bar is allowed to hang freely near the earth's surface, it will orient itself with the magnetic field of the earth. The precise nature and origin of this field, like the gravitational field, is still unknown.

Some substances are magnetic in their own right, independent of the earth's magnetic field. Both the earth's magnetic field and local variations can be measured by instruments called magnetometers. These instruments are utilized by geologists to measure the strength, direction, and variation of the field. Magnetometers are also small and relatively portable instruments.

c. Seismic Methods

All seismic methods are based on the idea that the velocity of shock waves, when travelling through rock, will vary with the density of the rock. Shock waves may be generated by detonating an explosive charge near or under the surface of the ground. There are a number of methods utilizing vibratory equipment called vibroseis, including a truck mounted vibratory pad set on the surface or a heavy weight dropped on the surface to produce shock waves.

A line of highly sensitive receivers, called geophones, are set out at known distances from the source of the waves. These geophones record the waves which are transmitted through the geologic substrata and bounce (reflect) back from interfaces between the layers of differing densities. The patterns of waves are interpreted by geophysicists.

Whereas gravimetric and magnetic surveys require only light vehicles and two or three persons, the seismic effort may occupy up to thirty-five people and several specialized trucks to carry drilling, source, and recording equipment.

d. Subsurface Mapping and Correlation

Another method of defining subsurface formations and features is through subsurface mapping and correlation of the units. Geologists utilize well logs and cores from surrounding wells to interpret the depositional setting, geometry, physical character, and structural setting of various formations.

This work is completed almost entirely at the oil companies office, and has no impact on the ground.

3. Exploratory Drilling

After preliminary geologic evaluation, the only way to confirm an oil or gas reservoir is to drill.

Prior to drilling the site, a drill pad is prepared. An area of one to five acres is cleared and leveled for the drill rig, mud pits, mud pump, generators, tool rack, tool house, and work trailers.

Up to 100,000 gallons of water per day may be used for mixing drilling mud, cleaning equipment, etc. For this purpose, a surface pipeline may be laid to a stream or surface water well, or, as in most cases, the water may be trucked to the site.

Drill rigs are large and extremely heavy. The rigs and accessory equipment may require from 25 to as many as 60 semi-trailer loads which move in caravan to the drilling location. Temporary roads may be built to accommodate this equipment. Road sizes 16 feet in width are commonly employed. Road curves 55 to 75 feet radius may be required. Bulldozers, graders, and other types of heavy construction equipment may be used to construct and maintain temporary roads.

Once the drill rig is completely assembled, drilling begins. A piece of casing is set into the ground with cement, through which the drill string will pass. This casing serves to protect the drill stem from material sloughing into the hole. The process is called "spudding in." Another sequence of casing is set in the first several hundred feet to prevent surface and subsurface aquifers from flowing into the well and changing the density of the drilling mud as well as to protect the aquifers from degradation from the drilling and production process.

Large, heavy valves are attached to the well casing called "blowout preventers." Should the drill bit encounter fluid or gas under extreme pressure, the valves are designed to prevent the pressure from escaping. The valves reduce the hazard due to blowout to both personnel and equipment.

During drilling, bentonite, clay, water, and chemical additives are mixed together (called "mud") and constantly pumped down the drill pipe. The mud exits through holes in the drill bit and returns to the surface through the area between the drill stem and borehole. The drilling mud serves to carry drill cuttings away from the drill bit teeth and to cool and lubricate the drill bit. It also serves to seal and strengthen the sides of the hole and to increase the hydrostatic pressure in the hole. This pressure helps control the formation pressure of water, gas, or oil encountered by the drill bit during drilling. Mud returning to the surface is sent through a shaker screen where the cuttings are removed and examined by a wellsite geologist. The remainder of the mud is recycled back into the system.

A more detailed discussion of the drilling process is presented in Gerding (1986).

Drilling an oil well is a complex process. A major firm may finance the exploration and a single contractor may do the drilling. However, at every stage of the operation, specialized service operators may be called in to assist in the operation. Ten to twenty or more different companies specializing in different aspects of the operation may be called in during the drilling process, depending on problems encountered and the phase of operation. Each company possesses its own vehicles, tools, and specially trained personnel which are transported on site to assist the effort.

4. Development

If an exploratory well contacts a strata bearing gas and/or oil, it is then evaluated to determine the nature and extent of the reservoir. More wells may be required to accomplish this. The nature of the reservoir dictates the facilities which will be needed to extract the resource. Roads may be improved and maintained for they will be required for the life of the operation. If the well is not free-flowing, pumps are transported into the

well area. Special service crews may be called in to utilize various physical or chemical methods to enhance the flow of gas or oil from the well. A system of pipelines and storage tanks may be developed for the site. Should the area develop into a field of wells, extensive roads may be required to maintain access to the facilities.

IV. IMPACTS OF THE PROPOSED ACTION

A. Activities Associated with Preliminary Exploration

1. Soils

Impacts on soils that are associated with oil and gas exploratory activity could include minor drilling to set explosive charges. Should roads be built into an area, consequences can involve serious erosion and contribution of sediment to water courses during periods of runoff.

The most serious consequence of road building is the act of opening the area to human activity, specifically the action of recreational vehicles including motorcycles, dirt bikes, and snowmobiles. The impact cannot be totally mitigated even upon abandonment and reclamation.

Roadways necessitate a certain amount of soil compaction and will, for a length of time, call further attention that this was once a roadway. The effect is to further encourage use of the area by motorized recreationists.

Other potential environmental impacts upon the soils include 1) the loss of productivity because of direct soil disturbance, loss of soil structure, and soil compaction during road building and continued use and maintenance of the road; 2) soil erosion from areas during the above activities that have no or inadequate soil erosion prevention measures applied on steep slopes; 3) salt contamination of soils from escape of brine waters used in drilling or release after tapping into a salt-water aquifer; 4) soil biological activity and organic matter could be reduced and soil structure lost. This would probably cause minor changes in soil productivity and infiltration rates; 5) loss of vegetative cover affects the ability of the soil to fix nitrogen by altering the community of micro-organisms which inhabit the soil.

2. Water

Impacts upon water should be minimal except in areas where crews would remain for a period of time. During seismic drilling, formulations of clay, water and additives (called "mud") are sometimes used to cool and lubricate the drill bit. Escape of clay and/or chemical additives into surface or groundwaters could result in temperature elevation of the waters, lining the stream bottom channels with clay, and the addition of potentially deleterious or toxic substances into surface or groundwater systems. Shot holes are sometimes drilled to one hundred feet or more. Tapping into salt water could result in escape of deleterious water into surface or groundwater systems.

In some areas removal of significant amounts of water from the stream system could result in loss or alteration of stream habitat.

An additional effect, though minor in the exploration phase, would involve the addition of nitrogen in lakes and ponds if large amounts of vegetative cover were removed during road building (see B-1).

3. Fire

Wildfire is a risk at all stages of exploration and development. The tracts on State Forest land are in areas of commercially productive timber. Wildfires in these areas could cause significant damage and result in an elimination of a timber crop. The chance of fire during the exploratory phase is particularly critical because of the common use of explosives.

Range fires are also risked during the exploration phase in grazing and agricultural land.

4. Solid Waste

Solid waste in the form of wire, unused blasting caps or other materials could present hazards if left in the area.

5. Vegetation

Impact on vegetation would be greatest if road building is required. Road building would require removal of vegetation cover. The effect on soils would be sufficient to alter the rate and type of re-establishment of plant species and result in the loss of a certain amount of habitat for all plant species for the life of the roadway. A minor amount of disturbance would occur in the area of seismic shot holes and thumper pads.

6. Noise

Should seismic work involve detonation of explosives, noise could produce negative impacts on the wildlife in the area. These concerns are covered in the following section.

7. Wildlife

The most serious impact on wildlife could involve human presence in areas where solitude is more or less total. It has been suggested that certain free-ranging species such as Bighorn sheep, antelope, elk and moose may be exceedingly sensitive to pressure imposed by man's presence and the noise of explosions. Migration patterns could be upset and reproductive periods for calving and fawning altered. In general man's presence and his associated equipment present a source of irritation which could be disruptive if allowed to continue over a period of time. Presently the time required for such disruption is under investigation.

8. Human Ecology

A similar impact could occur in human populations as in wildlife. Should exploration occur in areas where solitude and aesthetic values are important, the presence of seismic or exploration crews and equipment, including drill rigs could present a source of irritation to isolated residents and people involved in recreational activities.

B. Impacts of Exploratory Activity - Drilling

Impacts associated with exploratory drilling would be somewhat greater than those experienced during preliminary exploration. In most cases, the impacts discussed in the previous section will apply here. Information on additional impacts or impacts greater in degree will be discussed in this section.

1. Soils

Drill pads may disrupt 2 to 8 acres. These structures and roads could cause significant erosion in areas where soils tend to slide or slump easily. The greatest impact would be erosion and runoff from road building, required for access by heavy machinery. Also compaction could occur in soils under facilities and roadways. Escape of drilling fluids, bentonite, chemical additives, or salt or brine water from salt aquifers into soil systems could result in permanent loss of productivity.

2. Water

Sediment and erosion from drill pads, drilling mud, and improperly built roads could contribute to the pollution of both surface and groundwater systems. Sediment could line the bottom of stream courses and waterways and contribute to destruction of aquatic habitat. Chemicals and clays used to prepare drilling mud could escape from waste pits and improperly drilled holes into surface and groundwater systems, thereby adding chemically toxic or deleterious substances to the system. Also tapping of salt or brine aquifers could provide a source of deleterious water to surface and groundwater systems.

Improperly drilled holes could contaminate surface aquifers by oil and gas sources, thereby destroying the groundwater resource.

Nitrogen loss from exposed soil systems as discussed in section 2 above could result in enhanced eutrophication, or aging, of waters within the system.

3. Fire

Fire is of a particular concern on the State Forest tracts. Wildfire would adversely affect the production of timber for decades, and is always a threat to human and wildlife and property.

4. Solid Waste

The discussion in section A-3 is appropriate here.

5. Vegetation

The presence of a drill rig, mudpits, accessory storage areas and the continual presence of man would remove a certain amount of vegetation from the area. Road building would require removal of significant amounts of vegetation in isolated previously roadless areas.

6. Wildlife

Extended presence of humans and heavy machinery could disrupt local wildlife patterns in species either directly sensitive to man's presence or sensitive during critical times of the year (during reproductive activity). Man's presence could be a serious irritation to species of herd mammals which are free ranging and require large territories.

7. Human Ecology (Social and Economic Impacts)

The appearance of 25-30 individuals for 3 daily work shifts in an area in which population levels are normally low and scattered could create land use conflicts between exploration crews and surface lessees. Local recreation sites and other businesses would realize some increased revenue. Individuals who would work at physically demanding jobs on the oil rig would tend to seek equally demanding recreational outlets which might become a point of contention with the local populations. Loss of soil productivity, contaminated aquifers or surface water could create loss of crops and agricultural capability of an area.

C. Development

Development presents a dimension of its own in environmental concerns. Should a well prove productive, and the decision made to develop the resource, additional wells may be drilled in the area. A field of wells could conceivably result. This Preliminary Environmental Review (PER) does not have the scope of an Environmental Impact Statement. The following discussion is developed to consider general impacts which might be expected to occur in conjunction with oil and gas development, even though the concerns already noted would in some measure apply to the development phase.

1. Soils and Topography

During development phase, the greatest impact on soils would occur as a result of road building and facility placement. Such facilities might involve pipelines, transmission lines, storage tanks, "sweetening plants" (see section 3 Air), parking areas, and associated shops for maintenance of the facilities. Soil loss from erosion and compaction could result in loss of productivity due to disturbance.

Oil is a contaminating substance. Escape into the soil profile from broken pipelines or accidental spills could result in long term disruption of the soil productivity. Also escape of salt or brine water from tapped aquifers into the soil profile could result in permanent loss of soil productivity in exposed areas.

2. Water

As indicated in the previous section, the presence of roads in an area contribute significantly to the amount of sediment which moves into surface and groundwater systems. This increases the capacity of water to hold heat and may promote the growth of algae. The chemical nature of water changes with change in temperature. Higher temperatures tend to speed up the process of aging of the waters (a process called eutrophication).

It sometimes becomes necessary to enhance oil well flow by chemical treatment. Chemicals, usually an acid, are pumped into the well and out into the oil-bearing strata to enhance the flow of the well. These substances could have deleterious or toxic effects upon living systems if they were allowed to enter the surface or groundwater systems.

It is not uncommon for oil reservoirs to contain brackish or salt water. Produced water is often reinjected into subsurface strata. Water containing salt or chemically incompatible with surface or subsurface aquifers could produce potentially deleterious effects by changing the chemical nature of the water or produce direct toxic effects upon life in the system. The injection of produced water is regulated by the EPA and the Board of Oil and Gas Conservation.

Oil, gas or less desirable hydrocarbons, such as hydrogen sulfide could produce deleterious or toxic effects if they were to enter surface or groundwater systems. Living systems, both plant and animal, are comprised of a cellular skeletal network which is comprised partially of biologically produced fats and oils. Fats and oils are also used by biological systems as a storage medium for energy. Crude oil could be made accessible to these systems upon contact (oil is soluble in oil). Any deleterious minerals, metals, or dissolved gas (hydrogen sulfide) present would have immediate access to the systems. Effects would vary depending on the contaminant, and could be extended over a period of time if contaminants were accumulated in the storage products of fats and oils. These contaminants could then be released and produce effects as the system drew upon its stored energy reserves. The plant or animal organism might be especially sensitive to effect if it were drawing upon the stored energy during times of stress.

3. Air

Reservoirs of oil and natural gas which contain undesirable gaseous substances particularly hydrogen sulfide, are said to contain "sour" natural gas. These substances are typically removed in a process called "sweetening". Undesirable products are removed at special plants placed near the site of production. Hydrogen introduction is through air or water-borne means. Treatment facilities could represent significant sources of air pollution. In addition, unwanted gas is sometimes burned off or "flared" at the well site, and this activity could produce air pollution hazards.

4. Wildfire

Oil and gas are flammable substances. Accidental fire would present a serious potential hazard, especially in isolated, rugged terrain. Wildfire could remove timber resources for at least three decades, and have a detrimental effect on agriculture or grazing land.

5. Vegetation

A significant amount of vegetation could be removed or altered by placement of pipelines, transmission lines, wellheads, storage tanks, roads and any other facilities necessary to maintain and service the well or wells. Accidental oil or chemical spills could also directly and adversely impact vegetation.

6. Wildlife

Placement of development related facilities including storage tanks, maintenance roads, pipelines, or electrical transmission lines could disrupt the normal movements of wildlife in and around the area for the life of the development and perhaps longer. In areas inhabited by certain sensitive species such as antelope, bighorn sheep, elk, or grizzly bear, placement of

oil and gas facilities could present a chronic source of disruption. This would particularly be evident in herd animals which are adjusted to certain patterns of annual movement. Some evidence exists, however, that shows animals can habituate to a certain amount of disturbance.

Dust from haul roads, removal of significant food sources, and man's presence during critical times of the year has been shown to produce medically defined stress in herds of Bighorn Sheep in Colorado (Lange 1980), and elsewhere (Straker 1980). In Colorado the situation developed in a construction area and resulted in serious illness in the herd and significant death loss due to stress induced pneumonia. The predisposition of wild animal species to illness due to stress is known, and an area to intense current investigation. Each species may react in an individual manner in its response to stress.

7. Human Ecology (Social and Economic Impacts)

The results of oil and gas development upon human populations could involve both positive and negative impacts. The continued development of an oil or gas field can bring about positive economic changes, increasing demands on local businesses and services. Some negative stresses include the sudden influx of workers during development, creating an abnormal demand on local businesses and recreational facilities. Small, isolated developments will usually have little impact on human life.

V. Environmental Assessment

The Department of Fish, Wildlife and Parks Regional Divisions, the State Historic Preservation Office, and the Department of State Lands Area Land Offices were notified of the tracts up for leasing and were asked to comment on wildlife and other land use concerns. Their comments resulted in protective stipulations being developed and applied to the appropriate tracts. All lessees are required to contact the DSL Area Land Office in their region prior to beginning activities. The meeting between the lessee and Area Office personnel is to discuss the placement of facilities and roads making sure that the plans are environmentally sound. The impacts mentioned under Impacts Of The Proposed Action will be mitigated as needed by Area Office personnel. Through this process the Department feels it has identified those tracts with potential impacts and mitigated those possibilities with stipulations. See Appendix A for a list of tracts with their assigned stipulations.

VI. SCHOOL TRUST LAND USE ISSUES, CONFLICTS, CONCLUSION

Leasing state-owned tracts under the present system would commit the Department to a ten year course of events, including the right and the obligation of the lessee to both explore and develop any oil and/or gas resource found on these lands. At this stage of the process, the Department has no information, including oil and gas resource information, on what the lessee proposes to implement upon obtaining the lease.

As of September 30, 1982, state-owned school trust lands totaled 6,185,275.91 acres. It is reasonable to assume that the most desirable, or promising of the tracts are leased, and those lands presently remaining are the least desirable, the most speculative and unproven in terms of oil and gas resource, and pose the greatest economic risk for oil and gas exploration and development.

Much of the unleased acreage is in western Montana. Many of the tracts are isolated and distant from production facilities including pipelines and market outlets. Extensive alteration of lands on and adjacent to the tracts would be required to develop an oil and gas resource. These lands contain resources of extrinsic and intrinsic value to the school trust, including steep, isolated and roadless mountain terrain, extensive water, fishery, wildlife, recreational resources, river beds and islands, and numerous lakes. State Forestry tracts are managed for their timber reserves. Some of the area is inhabited by threatened and endangered animal species including grizzly bear, gray wolf, and bald eagle. A survey of threatened and endangered plants has not been taken on school trust lands, however, data compiled by a group headed by Dr. Kathleen Peterson, Department of Botany, University of Montana, indicates the presence of a number of threatened and endangered plant species in Montana. The presence of specific habitat in western and northwestern

Montana and particularly on and adjacent to State Forestry tracts indicate that presence of some threatened and endangered plant species is extremely likely.

At present, broad stipulations are designed and attached to nominated tracts of land so that in the event of development, trust resources will be protected. Under the present lease system, tracts of land are leased despite a lack of information concerning exploration and development activities including placement of roads, drill sites, pipelines, transmission lines, water requirements and sources, and oil and gas storage and treatment facilities.

The stipulations presently attached to the lease tracts will allow the Department to assure for an adequate resource protection on its lands if future development of the leases is proposed.

References

- Baker, Ron, A Primer of Oil-Well Drilling, 4th ed., Petroleum Extension Service, University of Texas, Austin, Texas, 1979.
- Gerding, Mildred, Fundamentals of Petroleum, 3rd Edition, Petroleum Extension Service, University of Texas, Austin, Texas, 1986.
- Lange, Robert, The Physiology of Stress in Handling (Bighorn) Sheep, National Wildlife Health Lab., USDA, U.S. Forest Service, Madison, Wisconsin.
- Spraker, Terry T., D.V.M., Ph.D., Capture Myopathy of Rocky Mountain Bighorn Sheep, Wild Animal Disease Center, Fort Collins, Colorado, 1977.
- Spraker, Terry R., Elizabeth Williams, Charles Hibler, Waterton Canyon Bighorn Sheep Die-Off, Wild Animal Disease Center, Colorado State University, 1981.

APPENDIX A: Tracts and Associated Stipulations

THE FOLLOWING DESCRIBED LANDS WILL BE OFFERED FOR OIL AND GAS LEASING THROUGH ORAL COMPETITIVE BIDDING IN THE DEPARTMENT OF HIGHWAYS AUDITORIUM, 2701 PROSPECT AVE., HELENA, MONTANA, BEGINNING AT 9:00 A.M., DECEMBER 3, 1991.

TRACT	STIP	TWP	RGE	SEC	DESCRIPTION	ACRES	BIDDER	BID \$/ACR
LESSOR: DEPT OF STATE LANDS								
BIG HORN								
1	1,2,3,4,5	1.0S	33.0E	16	ALL *	640.00	_____	_____
CUSTER								
2	1,2,3,4	1.0N	45.0E	16	ALL	640.00	_____	_____
DANIELS								
3	1,2,3,4	34.0N	44.0E	28	S1/2 SW1/4, SE1/4 SE1/4	120.00	_____	_____
4	1,2,3,4	34.0N	44.0E	32	W1/2	320.00	_____	_____
5	1,2,3,4	34.0N	44.0E	33	NE1/4 NE1/4, NE1/4 SE1/4, S1/2 SE1/4	160.00	_____	_____
6	1,2,3,4	34.0N	45.0E	9	W1/2 SW1/4, SE1/4 SW1/4	120.00	_____	_____
7	1,2,3,4	34.0N	45.0E	10	W1/2	320.00	_____	_____
8	1,2,3,4	34.0N	45.0E	15	NW1/4	160.00	_____	_____
9	1,2,3,4	34.0N	45.0E	16	N1/2	320.00	_____	_____
10	1,2,3,4,5	35.0N	44.0E	24	SW1/4, E1/2, E1/2 NW1/4 *	560.00	_____	_____
11	1,2,3,4	35.0N	44.0E	25	N1/2	320.00	_____	_____
12	1,2,3,4,5	35.0N	44.0E	26	ALL *	640.00	_____	_____
13	1,2,3,4	35.0N	44.0E	27	NE1/4, S1/2	480.00	_____	_____
14	1,2,3,4	35.0N	44.0E	34	N1/2 NE1/4, S1/2SE1/4	160.00	_____	_____
15	1,2,3,4	35.0N	45.0E	19	LOTS 1 AND 2	73.75	_____	_____
DAWSON								
16	1,2,3,4	21.0N	52.0E	16	ALL	640.00	_____	_____
GLACIER								
17	1,2,3,4	36.0N	5.0W	16	ALL	640.00	_____	_____
18	1,2,3,4	36.0N	5.0W	20	SW1/4 SE1/4	40.00	_____	_____
HILL								
19	1,2,3,4	31.0N	16.0E	16	ALL	640.00	_____	_____
LEWIS & CLARK								

TRACT	STIP	TWP	RGE	SEC	DESCRIPTION	ACRES	BIDDER	BID \$/ACR
20	1,2,3,4,5, 6,7	14.ON	7.0W	4	NW1/4 NE1/4, NW1/4 *	200.00	_____	_____
21	1,2,3,4,6, 7	15.ON	7.0W	2	LOTS 3 AND 4	86.23	_____	_____
22	1,2,3,5,6	15.ON	7.0W	8	N1/2 *	320.00	_____	_____
23	1,2,3,5,6	15.ON	7.0W	9	W1/2 W1/2 *	160.00	_____	_____
24	1,2,3,4,6, 7	15.ON	7.0W	10	SW1/4 NE1/4, S1/2 NW1/4, SW1/4	280.00	_____	_____
25	1,2,3,4,6, 7	15.ON	7.0W	12	N1/2 NE1/4, NE1/4 SW1/4, W1/2 SE1/4	200.00	_____	_____
26	1,2,3,4,6, 7	15.ON	7.0W	16	ALL	640.00	_____	_____
27	1,2,3,5,6	15.ON	7.0W	22	NW1/4*	160.00	_____	_____
28	1,2,3,5,6	15.ON	7.0W	24	W1/2 SE1/4, SE1/4 SE1/4 *	120.00	_____	_____
29	1,2,3,4,5, 6,7	15.ON	7.0W	36	ALL*	640.00	_____	_____
30	1,2,3,4,6, 7	16.ON	6.0W	34	SE1/4 NE1/4, SE1/4	200.00	_____	_____

MUSSELSHELL

31	1,2,3,4	11.ON	24.0E	16	ALL	640.00	_____	_____
32	1,2,3,4	11.ON	24.0E	17	N1/2, SW1/4, W1/2SE1/4, SE1/4 SE1/4	600.00	_____	_____

PARK

33	1,2,3,5	2.0S	8.0E	16	N1/2 NE1/4, W 1/2 EXCEPT RAILROAD R/W *	386.25	_____	_____
34	1,2,3,4	2.0S	9.0E	16	ALL EXCEPT RAILROAD R/W	622.72	_____	_____

PONDERA

35	1,2,3,5	30.ON	4.0W	16	ALL *	640.00	_____	_____
36	1,2,3,5	30.ON	4.0W	36	ALL *	640.00	_____	_____

ROSEBUD

37	1,2,3,4	12.ON	33.0E	31	LOTS 11,12,13,14,15	215.59	_____	_____
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SHERIDAN

38	1,2,3,4,5	34.ON	54.0E	36	ALL *	640.00	_____	_____
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SWEET GRASS

39	1,2,3,4	3.ON	18.0E	16	ALL	640.00	_____	_____
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STIPULATIONS

1. Lessee shall notify and obtain approval from the Department of State Lands prior to constructing well pads, roads, powerlines, and related facilities that may require surface disturbance on the tract. Lessee shall comply with any mitigation measures stipulated in the Department's approval. Lessee shall also notify and obtain approval from the Department of State Lands prior to plugging a well on State Lands.

Prior to the drilling of any well, Lessee shall send one copy of the well prognosis, including Form 22 "Application for Permit" to the Department. After a well is drilled and completed, Lessee shall send one copy of all logs run and Form 4A "Completion Report", with attached geologic report, if any, to the Department. A copy of the Form 2 "Sundry Notice and Report of Wells" or other appropriate Board of Oil and Gas Conservation form shall be sent to the Department whenever any subsequent change in well status, operator, or NGPA classification is intended or has occurred.

2. The Department will complete an initial review for cultural resources of the area intended for disturbance and may require a cultural resources inventory. Based on the results of the inventory, the Department may restrict surface activity for the purpose of protecting significant archaeological or historic resources located on the tract.
3. The lessee shall be responsible for controlling any noxious weeds introduced by Lessee's activity on State-owned land and shall prevent or eradicate the spread of those noxious weeds onto land adjoining the leased premises.
4. The lessee is responsible to pay for all damages, including penalties and charges assessed by the ASCS on CRP lands, as a result of drilling and production on the tract. All damages will be assessed by the Department and paid directly to the State Land Department.
5. Lessee must contact the owner of the surface in writing at least 30 days prior to any surface activity. A copy of the correspondence shall be sent to the Mineral Lease Bureau, Montana Department of State Lands, Capitol Station, Helena MT 59620.
6. Prior to the cutting or removal of timber on this tract for exploration or development related activities, the lessee must obtain a timber permit from the Department of State Lands.
7. Potential wildlife conflicts have been identified for this tract. The lessee shall contact the regional Fish, Wildlife and Parks office in the area for advice on alleviating any possible conflicts.

* Part or all of the tract is not state-owned surface.

Sight drafts will not be accepted. The State Board of Land Commissioners reserves the right to reject any and all bids. All payments are due within ten days after date of sale.

STATE BOARD OF LAND COMMISSIONERS

APPENDIX B: Agency Comments

DEPARTMENT OF STATE LANDS

DATE: 10/7/91

TIME: 8:25 a.m. p.m.

FILE NO./NAME DEC 3, 1991 LEASE SALE COMMENTS

CONTACT: MARK ABERG - EASTERN LAND OFFICE

ADDRESS: MILES CITY

PHONE: 232-2045

RESULTS OF CONVERSATION OR DISCUSSION

CUSTER Co:

5041 - OK

Dawson Co:

5001 - 285 Ac of CRP scattered throughout section. Drilled last year (lease 7573) and requested well moved off CRP at that time.

ROSEBUD Co:

5025 - OK

FOLLOWUP ACTION REQUIRED? Yes _____ No X

Gary M. ...
DSL EMPLOYEE

10/7/91

DATE

DEPARTMENT OF STATE LANDS



STAN STEPHENS, GOVERNOR

CAPITOL STATION

STATE OF MONTANA

(406) 444-2074

1625 ELEVENTH AVENUE
HELENA, MONTANA 59620

October 2, 1991

MEMORANDUM

TO: **Craig Roberts, Area Manager, NELO,**
Dwayne Andrews, Area Manager, ELO
Garry Williams, Acting Area Manager, CLO
Don Kendall, Area Manager, SLO

FROM: Gary Weissmann, Hydrologist, Minerals Management Bureau *Gary*

RE: December 3, 1991 Oil and Gas Lease Sale

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OCT 11 1991

STATE LANDS

Attached is the list of tracts in your area. Please let me know if there are any concerns which may require stipulations on the lease. We also need to know if any of these tracts are in CRP so that paperwork and payments can be adjusted.

Please return your comments by October 25, 1991.

Thank you for your time.

/ns

Attachment

Gary, 10-10-91
 The tracts with CRP on them
 are highlighted in yellow
 Carol Feist
 NELO

10-03-91

STATE OF MONTANA
OIL & GAS LEASE SALE - DECEMBER 3, 1991

PRE-SALE APPLICATION REPORT

APP#	STIP	TWP	RGE	SEC	DESCRIPTION	ACRES
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LESSOR: DEPT OF STATE LANDS

BIG HORN

5042	SURFACE ONLY IN E $\frac{1}{2}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$	1.0S	33.0E	16	ALL	640.00
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CUSTER

5041		1.0N	45.0E	16	ALL	640.00
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DANIELS

5027		34.0N	44.0E	28	S1/2 SW1/4, SE1/4 SE1/4	120.00
5026	156.0 CRP acres - NW $\frac{1}{4}$	34.0N	44.0E	32	W1/2	320.00
5028		34.0N	44.0E	33	NE1/4 NE1/4, NE1/4 SE1/4, S1/2 SE1/4	160.00
5034		34.0N	45.0E	9	W1/2 SW1/4, SE1/4 SW1/4	120.00
5035		34.0N	45.0E	10	W1/2	320.00
5036		34.0N	45.0E	15	NW1/4	160.00
5037		34.0N	45.0E	16	N1/2	320.00
5029	SURFACE ONLY IN E $\frac{1}{2}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$	35.0N	44.0E	24	SW1/4, E1/2, E1/2 NW1/4	560.00
5030	60.1 CRP acres - NE $\frac{1}{4}$	35.0N	44.0E	25	N1/2	320.00
5031	SURFACE ONLY IN E $\frac{1}{2}$	35.0N	44.0E	26	ALL	640.00
5032	214.2 CRP acres in W $\frac{1}{2}$	35.0N	44.0E	27	NE1/4, S1/2	480.00
5033		35.0N	44.0E	34	N1/2 NE1/4, S1/2SE1/4	160.00
5038		35.0N	45.0E	19	LOTS 1 AND 2	73.75

DAWSON

5001		21.0N	52.0E	16	ALL	640.00
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GLACIER

5040		36.0N	5.0W	16	ALL	640.00
5039		36.0N	5.0W	20	SW1/4 SE1/4	40.00

HILL

5002		31.0N	16.0E	16	ALL	640.00
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LEWIS & CLARK

APP#	STIP	TWP	RGE	SEC	DESCRIPTION	ACRES
5010	NO SURFACE IN NW¼	14.ON	7.OW	4	NW1/4 NE1/4, NW1/4	200.00
5011		15.ON	7.OW	2	LOTS 3 AND 4	86.23
5012	NO SURFACE	15.ON	7.OW	8	N1/2	320.00
5013	NO SURFACE	15.ON	7.OW	9	W1/2 W1/2	160.00
5014		15.ON	7.OW	10	SW1/4 NE1/4, S1/2 NW1/4, SW1/4	280.00
5015		15.ON	7.OW	12	N1/2 NE1/4, NE1/4 SW1/4, W1/2 SE1/4	200.00
5016		15.ON	7.OW	16	ALL	640.00
5017	NO SURFACE	15.ON	7.OW	22	NW1/4	160.00
5018	NO SURFACE	15.ON	7.OW	24	W1/2 SE1/4, SE1/4 SE1/4	120.00
5019	NO SURFACE IN SW¼	15.ON	7.OW	36	ALL	640.00
5020		16.ON	6.OW	34	SE1/4 NE1/4, SE1/4	200.00
MUSSELSHELL						
5023		11.ON	24.OE	16	ALL	640.00
5024		11.ON	24.OE	17	N1/2, SW1/4, W1/2SE1/4, SE1/4 SE1/4	600.00
PARK						
5009	NO SURFACE	2.OS	8.OE	16	N1/2 NE1/4, W 1/2 EXCEPT RAILROAD R/W	386.25
5008		2.OS	9.OE	16	ALL EXCEPT RAILROAD R/W	622.72
PONDERA						
5003	NO SURFACE	30.ON	4.OW	16	ALL	640.00
5004	NO SURFACE	30.ON	4.OW	36	ALL	640.00
ROSEBUD						
5025		12.ON	33.OE	31	LOTS 11,12,13,14,15	215.59
SHERIDAN						
5005	32.0 CRP acres in NW¼ SURFACE ONLY ON NW¼	34.ON	54.OE	36	ALL	640.00
SWEET GRASS						
5007		3.ON	18.OE	16	ALL	640.00
TETON						
5021		23.ON	7.OW	20	NW1/4 SW1/4, SW1/4 NW1/4	80.00

APP#	STIP	TWP	RGE	SEC	DESCRIPTION	ACRES
5022		23.0N	8.0W	26	N1/2 NW1/4, SW1/4 NW1/4, N1/2 SW1/4	200.00
TOOLE						
5006		36.0N	2.0E	16	W1/2, S1/2 NE1/4	400.00

DEPARTMENT OF STATE LANDS



STAN STEPHENS, GOVERNOR

CAPITOL STATION

STATE OF MONTANA

(406) 444-2074

1625 ELEVENTH AVENUE
HELENA, MONTANA 59620

October 10, 1991

MEMORANDUM

TO: Gary Weissmann, Hydrologist, Minerals Management Bureau

FROM: Dori Passmann, Archaeologist, Land Management Section 

RE: Cultural Resources - December 3, 1991 Oil & Gas Lease Sale

Only three lease tracts contain recorded cultural properties:

5023 - 24ML406
5009 - 24PA324, 633, 392
5008 - 24PA702

The standard cultural stipulation should be placed on all tracts. The above site information has been added to my data files so that when a notice is received, the information is readily available.

Please let me know if I can be of further assistance.

la

**Montana Department
of
Fish, Wildlife & Parks**



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OCT 03 1991
STATE LANDS

Rural Route 1 4210
Glasgow, MT 59230
October 7, 1991

Gary Weissman, Hydrologist
Minerals Management Bureau
Lands Division
1625 Eleventh Avenue
Helena, MT 59620

Dear Mr. Weissman:

My comments pertain to the December 3, 1991, oil and gas lease sale stated in your October 2, 1991 letter. My comments are pertinent to those sites in Daniels, Hill and Sheridan counties.

It is not possible to conduct the on-site investigations needed to accurately assess potential impacts of these activities on wildlife by October 25, 1991. Generally, I recommend no surface occupancy or other activity be allowed on any of the sites during the March 1 through July 1 period. This will help protect breeding and nesting upland game birds, and fawning and early rearing big game animals. If the activity is to take place exclusively on cultivated cropland, the recommendations do not apply.

Thank you for requesting my input.

Sincerely,

Harold J. Wentland
Region 6 Wildlife Manager

HJW/jee
cc: Steve Knapp

DEPARTMENT OF STATE LANDS

DATE: 10/30/91

TIME: 8:45 (a.m.) p.m.

FILE NO./NAME Dec 3 Lease Sale

CONTACT: GREG LEVITZ -

ADDRESS: LINCOLN UNIT OFFICE

PHONE: 362-4999

RESULTS OF CONVERSATION OR DISCUSSION

Re: Tracts in Lincoln Valley, Lewis & Clark County

TRACT #	CONCERNS	
SWLD	5010 WET AREA - BLACKFOOT RIVER RUNS THROUGH IT - EA possible - Timbered	
	5011 NO ROADS - ON EDGE OF NFS BOUNDARY - WITHIN 4-5 MILES OF WILDERNESS. ON STEEP TOPOGRAPHY. TIMBER & WILDLIFE. ISOLATED.	
	5012 ROADED - LOCATED ON PRIVATE RANCH. - WET	
	5013 ROADED - LOCATED ON PRIVATE RANCH	
	5014 CLOSE ROADS - TIMBERED	
	5015 CLOSE ROADS - TIMBERED	
	5016 WELL ROADED - NO TIMBER TO SPEAK OF.	
	5017 ROADED & LOGGED. Some TIMBER	
	5018 BLACK FOOT RIVER RUNS THROUGH - WET/TIMBERED.	
5019 ROADS TO BOUNDARY - TIMBER		
CLD	5020	

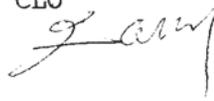
ALL HAVE ELK CALLING & POSSIBLE GRIZZLY BEAR CONCERNS.

FOLLOWUP ACTION REQUIRED? Yes _____ No _____

DSL EMPLOYEE

DATE

TO: Gary Weissmann, Hydro Geologist - Minerals Management
FROM: Garry Williams, Acting Area Manager - CLO
DATE: October 30, 1991
SUBJECT: Oil & Gas Lease



Following are my comments regarding the oil and gas lease sale in December on Sec. 34, T16N, R6W:

This tract is located just east of the Continental Divide along Highway 200. We have recently evaluated the tract for a potential timber harvest next summer. However the timber value is marginal and may be uneconomical to harvest. We will determine the feasibility of harvest in the near future. If an application to drill is submitted there may need to be restrictions requiring coordination of activities with the harvest operations. This area is also on the edge of known grizzly bear habitat. The bears have wandered through this area occasionally while foraging. If drilling operations occur, restrictions to limit activity when bears are sighted may be appropriate.

dh

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OCT 30 1991

STATE LANDS

DEPARTMENT OF STATE LANDS



STAN STEPHENS, GOVERNOR

CAPITOL STATION

STATE OF MONTANA

(406) 444-2074

1625 ELEVENTH AVENUE
HELENA, MONTANA 59620

October 28, 1991

MEMORANDUM

TO: Barbara Hamburg, Mineral Leasing Section Supervisor
FROM: Gary Weissmann, Hydrologist, MMB *Gary*
RE: December 3, 1991 Oil and Gas Lease Sale
Stipulations

Attached is a list of tracts that require additional stipulations beyond the normal notification (A), Cultural (B), and Weeds (C):

Big Horn County

5042 G

Daniels County

5026 D
5029 G
5030 D
5031 G
5032 D

Dawson County

5001 D

Lewis and Clark County

5010 G
5012 G
5013 G
5017 G
5018 G
5019 G

Pondera County

5003 G
5004 G

Sheridan County

5005 D, G

Let me know if you have any questions.

DEPARTMENT OF STATE LANDS



STAN STEPHENS, GOVERNOR

CAPITOL STATION

STATE OF MONTANA

(406) 444-2074

1625 ELEVENTH AVENUE
HELENA, MONTANA 59620

October 30, 1991

MEMORANDUM

TO: Barbara Hamburg, Mineral Leasing Section Supervisor
FROM: Gary Weissmann, Hydrologist, MMB *Gay*
RE: December 3, 1991 Oil and Gas Lease Sale
Additional Stipulations

Here's a list of additional stipulations for the Lewis and Clark County tracts.

Lewis and Clark

5010 M,P
5011 M,P
5012 M
5013 M
5014 M,P
5015 M,P
5016 M,P
5017 M
5018 M
5019 M,P
5020 M,P

Greg Leritz suggested we place the environmental stipulation (E) on tract 5010 since the Blackfoot River runs through the center of the tract. I don't feel that this strong language is needed since the tract does border highway 200 and the area is in close proximity to human activity. Notification will still be required, and the Board of Oil and Gas Conservation must approve a drill pad site using MEPA. I believe that DSL is covered without the environmental stipulation.

Let me know if you have any questions. Sorry about the confusion.

STIPULATIONS

Notification

- A. Lessee shall notify and obtain approval from the Department of State Lands prior to constructing well pads, roads, powerlines, and related facilities that may require surface disturbance on the tract. Lessee shall comply with any mitigation measures stipulated in the Department's approval. Lessee shall also notify and obtain approval from the Department of State Lands prior to plugging a well on State Lands.

Prior to the drilling of any well, Lessee shall send one copy of the well prognosis, including Form 22 "Application for Permit" to the Department. After a well is drilled and completed, Lessee shall send one copy of all logs run and Form 4A "Completion Report", with attached geologic report, if any, to the Department. A copy of the Form 2 "Sundry Notice and Report of Wells" or other appropriate Board of Oil and Gas Conservation form shall be sent to the Department whenever any subsequent change in well status, operator, or NGPA classification is intended or has occurred.

Cultural

- B. The Department will complete an initial review for cultural resources of the area intended for disturbance and may require a cultural resources inventory. Based on the results of the inventory, the Department may restrict surface activity for the purpose of protecting significant archaeological or historic resources located on the tract.

Weeds

- C. The lessee shall be responsible for controlling any noxious weeds introduced by Lessee's activity on State-owned land and shall prevent or eradicate the spread of those noxious weeds onto land adjoining the leased premises.

CRP Land and Damages

- D. The lessee is responsible to pay for all damages, including penalties and charges assessed by the ASCS on CRP lands, as a result of drilling and production on the tract. All damages will be assessed by the Department and paid directly to the State Land Department.

Sensitive Areas

- E. This lease includes areas that may be environmentally sensitive. Therefore, if the lessee intends to conduct any activities on the leased premises, the lessee shall submit to the Department of State Lands one copy of an Operating Plan or Amendment to an existing Operating Plan, describing in detail the proposed activities. No activities shall occur on the tract until the Operating Plan or Amendments have been approved in writing by the Commissioner of State Lands.

The Department shall review the Plan or Amendment and notify the lessee if the Plan or Amendment is approved or disapproved.

After an opportunity for an informal hearing with the lessee, surface activity may be denied or restricted on all or portions of any tract if the Commissioner determines in writing that the proposed surface activity will be detrimental to trust resources and is, therefore, not in the best interests of the trust.

Surface not State Owned

- G. Lessee must contact the owner of the surface in writing at least 30 days prior to any surface activity. A copy of the correspondence shall be sent to the Mineral Lease Bureau, Montana Department of State Lands, Capitol Station, Helena, MT 59620.

Forested Tracts - Timber

- M. Prior to the cutting or removal of timber on these tracts for exploration or development related activities, the lessee shall notify the Department's Southwestern Land Office, 1401 27th Avenue, Missoula, MT 59801.

Wildlife Restrictions

- P. Potential wildlife conflicts have been identified for this tract. The lessee shall contact the regional Fish, Wildlife & Parks office in their area for advise on alleviating any possible conflicts.

APPENDIX C: LATE COMMENTS