

Oil and Gas Activity on Ranch Operations and Rangelands

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Editor's Note: Everyone dreams of being made wealthy by 'striking it rich.' This is a good paper showing that you should keep your feet on the ground until all facts are known.

The hint of possible oil and gas exploration tends to make dollar signs roll in ranchers' eyes. The expectation of petro dollars from oil and gas activity has the potential to blind individuals to the stark reality of surface disturbance. It is difficult to describe the impact associated with the development of an oil and gas field. The individual must live it to understand the complexities and cumulative effects of mineral development. Prudent planning can minimize adverse impacts.

There is a potential for dispute between the owners of subsurface and surface rights, creating the conflict arena of split estate. A corollary problem arises with intermingled land ownership patterns and the associated access rights. A major complaint with oil and gas development is the erosion of ranch control with respect to the surface operation. The subsurface has been deemed the dominate estate, and the concerns and wishes of the surface operator are secondary in importance to reasonable production needs of the subsurface lessee.

Ranch Benefits from Exploration and Development

Oil and gas development can bring many benefits. Direct compensation payments for the use of land, water, materials, lease payments and, sometimes, signing bonuses. Some non-monetary benefits that can occur to the ranching operation include grading of non-access roads, installing gates and cattleguards, and supplying materials.

Compensation Payments

Oil and gas developers pay ranchers for damages done through the course of resource exploration and development. These payments are primarily for disturbance of rangeland to construct roads and pad sites. The following numbers are for those ranchers who actually received com-

pensation. In further analysis we will average these for all respondents. In New Mexico, the average rancher received nearly \$10,000 compensation for road placement as a one-time payment designed to ameliorate adverse impacts over the life of field development. Pad sites usually remove 2-4 acres from range grass production. For this deterrent, the average rancher was paid nearly \$1,500/pad, with an average of six pads per ranch. Another payment is for easement right-of-ways, which contributed nearly \$17,000 to the surface owner or lessee. Oil and gas development can also bring with it a new market for ranch resources, including caliche, brine water and fresh water. Caliche, an all weather road material, added an average \$12,000 to ranch revenues. Sale of fresh water and brine water, used for core drilling, netted the rancher nearly \$3,000.

Lease Payments

Oil companies lease drilling rights for natural resources from the subsurface mineral owner. Lease rates vary by the length, amount of land involved and location of the lease. Leasing the right to drill can be a substantial amount of income.

Lease rates have changed in both the real and nominal sense during the 1970's and 1980's. Before 1970 the average oil and gas lease value per acre in 1982 dollars was \$7.21. The real dollar value increased to \$10.10 per acre in the 1970's although the real value decreased to \$9.41 per acre during the early 1980's.

Lease duration has decreased over recent years. Before 1970, it was common for a rancher to sign an infinite lease with an oil company. That gave the companies unlimited access and left the rancher with relatively little control. The average lease length before 1970 was nearly 40 years. Infinite leases were abandoned for the most part during the 1970's and 1980's. The average lease length for the 1970's was 7 years. The lease length dropped to an average of less than 6 years in the 1980's. Approximately 4,715 acres per ranch were leased for exploration and development during the 1980's, which amounted to an average of slightly more than 35% of each ranch being leased.

Non-cash Benefits

There are various non-cash benefits associated with increasing the value or ease of management of the ranching operation. Placing a value on the services and benefits is difficult. Road construction is a high non-cash benefit. This includes adding caliche base to existing roads, grading and maintaining road systems, and culvert placement for improved drainage. Cattleguards and gates were also highly valued and greatly appreciated by the ranching sector. Another important benefit, in some instances, is conversion of dry oil wells into productive water wells. Other gratuities include left over materials such as old pipe, sucker rod and fencing materials.

Benefit Summary

A summary of benefits to the average New Mexico rancher is presented in Table 1 and illustrates the various types of direct payments and non-cash services. Total payments and services were valued at \$28,000. The dollar value of royalties derived from non-renewable stock reserves of oil and gas resources are not included.

Table 1. Summary of direct one time payments and non-cash services derived from oil and gas exploration and development in New Mexico, 1982.

Rancher Benefits (Rounded to the nearest \$10)		
Direct Payments		
Lease Value		\$ 12,910
Roads		5,890
Easements		1,490
Pads		2,670
Caliche		1,850
Fresh Water		1,000
Brine Water		30
Contracted Services		20
	Total Cash	\$ 25,860
Non-Cash Service		
Road Maintenance		\$ 1,770
Cattleguards		490
Gates		60
Materials		30
Water		30
Fence Materials		20
Other		90
	Total Non-Cash	\$ 2,490
	Total Benefits	\$ 28,350

Cost Consideration

Oil and gas activity typically results in an array of annually recurring impacts and costs on the ranch operation. These include: (1) loss of animal carrying capacity, (2) additional feed cost, (3) additional labor hours, (4) increased death loss and (5) changes in calving percentage and average market weights.

Carrying Capacity

Reductions in animal carrying capacity may be necessary during seismic activity because the large vibrators crush vegetation along the seismic line. Access roads, well pads, pipeline systems, spill areas, dumps and storage areas required during the developmental stage remove more acreage from grass production. An average of 10.9 animal units (AU's), of the initial 243 AU's per ranch, were lost due to oil and gas exploration and development. There was a direct relationship between the number of oil companies operating on the ranch and the amount of carrying capacity reduction.

With one company operating, the average reduction was nearly two AU's. The reduction increased steadily to an average of 27.5 AU's lost with five or more companies operating on the ranch simultaneously.

Sometimes it is not feasible to reduce carrying capacity. This means the rancher must supplement the lost rangeland forage with additional feed to maintain the same rate of gain and numbers. The overall average feed costs increased by \$445. If five or more companies were operating simultaneously on the ranch, the feed costs were increased by \$1,185, which was 3 1/2 times that with three or four companies.

Labor Hours

Oil and gas activity usually places additional demands upon the ranch operator's time. The activities of production companies and their subcontractors are relatively foreign to the ranch operator. The rancher must accommodate these activities with his own livestock operation such as gathering cattle, fixing downed fences, closing gates, removing litter and repairing vandalism damages. There must also be constant monitoring of increased vehicular traffic, pad site and overflow pits for potential dangers to livestock.

The average ranch in New Mexico had an increase of 223 hours per year related directly to oil and gas activity. Generally, as ranch size and the number of oil companies increased, the additional labor required also increased. When only one company was operating, the ranch had an average of 31 additional labor hours per year. When five or more companies were operating, this number quickly expanded to 378 additional hours per year. In terms of 10-hour days, this amounted to 38 additional work days per year for the ranch organization.

Death Loss

Oil and gas activity brings increased potential for livestock injury and death. Increased vehicular activity, attraction to brine spills and oil contaminated water, and disconnected pipe fittings are common causes. Livestock are also susceptible to injury from the ingestion of over-flow plastic liner and other litter. Death loss ranged from 0 to 22 animals, with an average of 2.3 animals per year, per ranch. Again, as the number of companies increased the number of animals lost increased.

Calving Percent and Market Weights

Another area of conflict between the ranching industry and the oil and gas companies is the impact on livestock calving percentages and market weights. Many ranchers contend that increased vehicular activity significantly affected both the breeding process and the calves' rate of gain. Reduction in calving percentage and calf market weights averaged 1.2% and 2.9 pounds respectively. Both changes seem negligible, but when applied to the average herd of 243 AUs, this quickly translates into rather large losses in potential earnings.

Indirect Cost

There are also intangible disturbances resulting from the entry of personnel and vehicles onto the ranch. Major inconveniences that can occur are noise, dust, vandalism, vehicular activity, litter/trash, and unsightly structures. Vehicular activity was the most often cited disturbance and severe nuisance. Litter, trash and dust are also common. The dollar valuation of nuisances is extremely difficult and highly subjective.

Table 2. Summary of direct and indirect annual cost to ranch operations from the introduction of oil and gas exploration and development in New Mexico, 1982.

Rancher Cost (Rounded to nearest \$10)	
Direct Cost	
Carrying Capacity Loss (10.9 @ 172AU)	\$ 1,870
Additional Labor Hours (223 @ \$3.50/hr)	780
Increased Death Loss (2.3 @ \$172/AU)	400
Calving % Decrease (209 AU \times 1.2% loss \times \$.6280/lbs \times 387 lbs)	610
Market Weight Decrease (209 AU \times 74.1% Clv% \times 2.91lbs \times \$.6280/lbs)	280
Total Direct Cost	\$ 3,940
Indirect Cost	
Noise	\$ 30
Dust	230
Vandalism	410
Vehicular Activity	130
Litter/Trash	130
Unightly Structures	370
Other	510
Total Indirect Cost	\$ 1,820
Total Cost	\$ 5,760

Cost Summarization

Table 2 illustrates the type of costs experienced by the average ranch family in New Mexico with the introduction of oil and gas activity. An average of 10.9 AU's were lost and valued at \$1,870 per year, which represents the change in ranch receipts during 1982. Additional feed costs were not included in the total direct cost to the ranch because this is implicitly incorporated in the value of the carrying capacity loss and would constitute double counting. Total direct costs for the average ranch were \$3,940 per year. In addition, nuisances from oil and gas activity were valued and summed for a direct cost of \$1,820 per ranch. This results in a total direct cost of \$5,760 per ranch from oil and gas development.

Rehabilitation

Many oil and gas companies attempt rehabilitation when the field site is abandoned. Practices include replacing topsoil, reseeding, contouring and ripping. In many instances, much of the 264 acres of rangeland taken out of production can be rehabilitated to a point where previous oil and gas activity is imperceptible. Replacement of topsoil, along with reseeding, was deemed the most successful type of rehabilitation. Probably the most severe and permanent inhibitors to rehabilitation are saltwater and oil spills. Drought also inhibits rehabilitation.

Rancher-Industry Harmony

Several approaches can be taken by both the ranching community and the oil and gas industry to minimize potential conflicts. The most obvious is for both parties to be aware of the legal aspects governing the surface-subsurface estates; all rights are not equal. Understanding the basics of each situation should reduce false expectations, particularly when the rancher signs a so-called standard lease offered by the oil company. The lease payment should be viewed as payment for access and reasonable disturbance. All parties

should enter agreements from an informed position. This allows communication, consultation and bargaining on particulars that are flexible. The ranching industry should focus on road placement during the field planning stages. Exploration vehicles should stay on the roads and company employees should drive at reasonable speeds to reduce danger to livestock.

Oil companies have many options at their disposal to facilitate smooth working relations. These include repairing damaged fences and cattleguards, watering roads to cut down dust, and allowing no night traffic except in production emergencies. In addition, all trash should be cleaned up and removed, and areas rehabilitated as soon as possible. Portable, non-leaking tanks could be used to haul brackish water from the area.

Most ranchers understand the land will not be in the same condition during and following exploration as it was before. Adequate compensation is partial payment, but does not truly reflect the total costs. Ranchers operating on state and federal lands do not feel damage payments adequately compensate them for the loss of carrying capacity and inconveniences. State and federal agencies should keep a closer watch on the oil companies after they are allowed to lease. Ranchers feel oil companies operating on state and federal land should pay them damages when there is destruction of rancher improvements. Small land parcels should be leased using comprehensive contracts that assure rehabilitation and method of payment.

Conclusion

Based on this data, public land ranchers are inadequately compensated for disturbances resulting from oil and gas development. The average rancher received direct payments and non-cash services valued at more than \$28,000, but annual direct costs accrued by the ranch operation were nearly \$4,000 with additional overall indirect costs of more than \$1,800 per year. If the oil field life expectancy exceeded 7 years, costs of oil and gas development exceed the compensated benefits. This is especially true for the public land rancher who does not receive royalty payments, and also when the subsurface estate is separated from the surface rights on privately owned land. The disparity between benefits and costs are exacerbated with the entry of additional companies. The rancher quickly loses control and cannot assign responsibility for disturbance when there are three or more companies and their subcontractors operating simultaneously on a ranch.

Rehabilitation of rangeland would conotate a temporary nature to oil and gas activity; however, this is not the case. Only one-third of the 91 respondents with dry holes or abandoned easements, reported successful rehabilitation. Another one-third on the respondents actually did not have restoration attempted on their land. Failure to rehabilitate prolongs the time span of negative impact, particularly the adverse impact upon carrying capacity, and converts the compensation payment from temporary retribution to a permanent, one-time payment for the damages to the surface estate. ●