Look Before You Lease: A Lawyer's Guide to Oil & Gas Leasing

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With high oil prices and the recent boom in natural gas, landowners being approached by companies who want to search for oil and gas beneath their land is an increasingly common experience. This can be a wonderful opportunity, but can also be perilous if not done properly. The companies have done this many times before, but the legal and technical issues in oil and gas development can be overwhelming for people inexperienced with the industry. Most landowners are not aware of what interests they should protect, what questions to ask, and what they can negotiate. Too many landowners sign away more than they have to, receive less compensation than they should, and do not realize the potential hidden costs and impacts that oil and gas development may have on their lives.

The purpose of this guidebook is to demystify the quite complicated oil and gas leasing process and help you advise your client in making the best, most informed decision regarding an oil or gas lease on their property.¹ Being well-informed is 90% of the battle in achieving an agreement that contains optimal terms and protects the interests of the landowner.

Steps in the Process

Quite often, the entire process begins with the client being contacted by a representative of an oil and gas company, called a “landman.”² If contacted by a landman, the client should not sign a leasing, surface use, exploration, or any other agreement. Instead, the client should keep a detailed log of all communications, including any quoted offers, and seek professional advice from an attorney like you who, with the help of this guidebook, can make sense of the terms, recognize potential pitfalls, and help the client protect their interests throughout the process.

STEP 1: Determining Property Rights

Lease agreements for oil and gas development involve property rights, so it is important to have an understanding of some key property terms and concepts. First and foremost is the distinction between “surface rights” and “subsurface rights” (aka “mineral rights”).

Traditionally, real property is a collection of many different rights and interests, and each interest in this “bundle” can be separated, leased, sold, or bequeathed as the owner sees fit. Thus, the mineral resources beneath a parcel of land can be “severed” (i.e. separated) from the other property interests and leased or sold. This is called the “mineral estate” or “subsurface estate.” The “surface estate,” on the

¹ Both due to space constraints and because a company is highly unlikely to approach an attorney for advice on a lease with a landowner, this document is written from the most realistically practical perspective, which is to guide the landowner.

² Though it is a misogynistic anachronism, this remains the way company representatives will be referred to, even if they are female, so for simplicity and accuracy this guide will use the term.
other hand, refers to property interests in the surface (e.g., occupation, the right to exclude, easements, rights of way, etc.) for dwellings, agriculture, urban development, and so forth.

In many states, the owners of the surface are not necessarily the owners of the subsurface minerals. Sometimes previous owners (including the U.S. disposing of public lands) retained ownership of the minerals when they sold or granted the surface property. When the surface and subsurface estates are owned by different parties, they are referred to as a “split estate” or “severed estate.” In Colorado, for example, only about 15% of landowners also own the rights to the minerals under their lands.

Consequently, a key preliminary question is whether the surface owner also holds title to the minerals underneath. The main takeaway here is that the landowner must first have some idea about the extent of their property ownership before they ever sit down to negotiate a lease agreement for oil and gas development on their land.

**STEP 2: Laws & Regulations**

Most states have laws and regulations that govern leasing and operations for oil and gas extraction. These laws vary from state to state, and each transaction is unique, so even small legal variations from place to place can have enormous implications for individual transactions. Thus, it is essential in any consideration of a mineral rights transaction to have at least some understanding of state laws to ensure that the lease agreement will protect the client’s interests.

Obviously, the landowner gets nothing if the company concedes something they were already legally required to do. So being aware of legal requirements beforehand can significantly strengthen the landowner’s bargaining position and have implications for the terms in a lease agreement. In any successful negotiation it is crucial to know one’s real bargaining chips and to avoid giving away more than necessary.

**STEP 3: The Lease Agreement**

Prior to exploration or production, companies must acquire the mineral rights to the targeted oil or gas deposit, typically through a lease. Once the client has

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**Pre-Negotiation Tip #1: Determine Subsurface Ownership**

There are several places to find out whether the client owns the minerals beneath their land. The two most informative sources are usually the property deed itself, and the files at the county office. These are likely to state whether there are mineral deeds, grants or reservations related to the land. A third option is to have a title company thoroughly research a property’s history and produce a mineral estate report, but this can be very expensive. And sometimes the landman will conduct research of the courthouse records to determine mineral ownership.

**Pre-Negotiation Tip #2: Know the Laws & Regulations**

There are several places to find out whether the client owns the minerals beneath their land. The two most informative sources are usually the property deed itself, and the files at the county office. These are likely to state whether there are mineral deeds, grants or reservations related to the land. A third option is to have a title company thoroughly research a property’s history and produce a mineral estate report, but this can be very expensive. And sometimes the landman will conduct research of the courthouse records to determine mineral ownership.
verified mineral ownership and is armed with knowledge of the law, negotiation can begin. A lease may be something the landowner has to live with for years, so they should compile a list of important issues before negotiating. Everything except the client’s name and the property’s legal description is negotiable!

There is no universal lease in the oil and gas industry. Instead, each company has a pre-drafted standard lease agreement. These short, standardized agreements are written heavily in the company’s favor, so the mineral owner will almost always want to negotiate to protect their own interests. This standardized lease should be carefully reviewed and any questions about its provisions should be compiled. Many landowners do not realize that they may have interests beyond just the financial payoff of the lease, such as protection of surface property, water supply, their quality of life, and other land uses (e.g., grazing or crop production). In fact, sometimes these “ancillary” concerns can prove so impactful that they cost more than the lease brings in and make the lease a net loss, so the need for thorough and cautious forethought cannot be overemphasized.

If possible, the landowner should also talk with neighbors and other area landowners who have dealt with the same company to find out about the negotiation process, their lease terms, and how well the company lived up to its lease obligations. This can be a significant negotiating advantage, help the landowner protect their interests, prevent being undercompensated, and ultimately make fully informed decisions.

Before we discuss some of the specific terms that every landowner will want to have in their lease, it is helpful to have at least a basic understanding the actual exploration and extraction process itself. The techniques and impacts of these processes have implications for and should fundamentally inform how the lease is actually written.

STEP 4: The Development Process

Once a lease is signed, there are 3 main stages of oil and gas development: 1) exploration; 2) production; and 3) site abandonment. Regardless of whether the company actually produces oil or gas from the property or only explores, all phases can potentially have enormous impact on the property for
many years. Thus, when entering into a lease agreement the property owner must anticipate the potential effects of the company’s various activities in each phase and strongly consider both present and future desires for their land and lifestyle to be protected in the lease agreement.

Exploration and production might include seismic testing, drilling holes, opening excavations, or using heavy machinery, to name but four. Site abandonment is fundamentally about whether and how to address the wide range of impacts from these activities. It is central to a good lease agreement for the landowner to give serious thought to what activity they would like to allow, if and how they would like the property to be restored, what might go wrong, and to then write a contract that will preserve these wishes.

In the first “exploratory” phase, the company conducts preliminary testing for oil or natural gas deposits of marketable quantity and quality. Surveying, seismic testing, “exploratory well” drilling, and other exploration activities can be quite impactful on both the surface and subsurface. This exploratory right is valid for a limited time (usually a few months to a few years). If the company does not explore—or explores and does not find marketable oil or gas—then the lease expires and the company’s rights revert back to the landowner.

Landowners should ask the company to show them beforehand where they intend to conduct their exploration activities. State regulations will require the company to implement some protective measures, but they will often be minimal. As stated above, knowing the law greatly helps to ensure that the company is acting responsibly and to negotiate the best possible deal. If the company plans to use seismic testing, landowners may want to negotiate higher payment and/or stronger surface-damage provisions due to a greater degree of surface disturbance.

If exploration shows marketable oil or gas, the second phase of the lease allows the company to begin production. Drill site selection can be an important issue for landowners. Landowners may not want to hear or see the drilling operations, or live with the noise or pollution associated with the heavy

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3 Drilling for oil or natural gas usually disturbs, at a minimum, several acres of land. A few acres are usually cleared for the drill pad, and sometimes a couple of acres are needed for water runoff capture or treatment. And if the gas well is successful, large storage tanks or a pipeline will be built to transport the gas to market during the production phase.

4 Farming activities (like making hay) can shred the wire flags, and the resulting metal bits can kill livestock that eat the feed. The landowners may also want to require the markers to be removed after the exploration phase, as livestock and wildlife can also die from eating ribbons or flags on all types of markers.

5 State rules commonly regulate things like the plugging of holes, notification of exploration, posting a bond to cover potential surface damages, etc. Remember, though, that these are minimums—the landowner can always negotiate for more.
equipment. Also, the company’s preferred site may cause damage to valuable aspects of a landowner’s property, such as crops or ecologically sensitive areas.

Finally, site abandonment involves shutting down a well that is no longer producing enough oil or gas to be profitable. All states will have laws and regulations that govern the minimal restoration of the land. A good lease, though, will usually go beyond this and also contain language protecting the owner’s future property and way of life after exploration and production, including crops, livestock, buildings, water, personal property, and physical health.

For all phases, the use of “best management practices” is required by law in numerous states (see Appendix B for the websites and phone numbers of each state’s regulatory entity that has this information). Courts have found that mineral owners may not cause unreasonable damage to the surface estate if there are reasonable alternative methods available to develop the minerals in a way that does not cause the damage. Consequently, it is useful for surface owners to be aware of some of the alternative technologies and practices that are available (see Appendix C for some excellent resources on this).

It should be obvious from the above process description that while payments are central to an oil and gas lease agreement, there is usually much more to a good contract than money. State laws provide some basic protections for landowners, but many every surface owner should decide if stronger protections are needed.

The bottom line is that the company is going to want to do as little as possible, and will attempt to draft the lease agreement accordingly. The company has an inherent motivation and often fiduciary responsibilities to shareholders to maximize profits, so they naturally want to minimize expenses and help their bottom line. The bottom line for the client, though, is to negotiate lease provisions that will protect present and future interests!

Clauses & Other Standard Lease Considerations

A key theme thus far has been the need to tailor the lease terms according to the interrelations between state law, the company’s siting and operational methods, and the desires of the landowner. Bearing that in mind, here are some of the standard provisions that most oil and gas lease should contain.

Granting Clause

The opening paragraph of the lease is the granting clause. It states the purpose of the lease, scope, and a description of the substances that can be explored and produced. Standard provisions include the following:

- Legal description of the land and number of acres involved.

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6 For instance, one alternative practice usually considered safer and less disruptive is “closed-loop” drilling, which eliminates the need for open storage pits to hold drilling wastes that can be a threat to animals, soil, water, and people.
• **Minerals.** Typically, the pre-drafted company clause will state something like “the lease is given for the purpose of exploring, drilling, mining and producing oil and gas and all other minerals, whether similar or dissimilar.” Beware of this “all other minerals” language—instead, be specific and expressly limit the lease rights to oil and/or gas, and be sure the leased substances are referred to consistently throughout the lease. Otherwise, the company may end up with rights to any other valuable minerals they find. Example language is “all petroleum, natural gas, and related hydrocarbons, excluding coal, lignite and uranium.”

• **Access rights.** The company will desire various rights of way and other easements for things like roads, ditches, pits, fences, buildings, pipelines, power lines, tanks, water disposal facilities, and equipment. As a general rule, the more access the company asks for, the more money and/or reclamation the landowner should request. The landowner should also be sure that these easements are temporary and terminate upon lease expiration.

**Duration of the Lease**

Oil and gas leases are divided into two periods. The first period (“primary term”) is a set number of years negotiated by the parties during which drilling operations must begin or delay rentals must be paid. The primary term is measured from the “effective date” (simply the beginning date of the lease), and one year from the effective date is the “anniversary date”—these dates are both important because they are used to calculate royalty and delay rental (see below) due dates as well as other lease obligations. The “secondary term” is the period of actual production, and usually lasts as long as production (i.e. is open-ended).

• **Primary Term & Secondary Term.** The primary term of the lease may be any period of time, but is commonly 1 - 10 years. Companies may claim they will drill quickly, but only a short term lease will ensure that action. If a shorter primary term is not possible, ask for higher delay rental payment. Ask for removal of any standard lease provisions that automatically renews the lease or holds it in force without landowner permission to protect against the company continuing to encumber the land. If production has been established, the lease will continue into its secondary term and last so long as substances named in the Granting Clause continue to be produced.
• **Delay Rental.** The lease should state that if production is not established by the end of the primary term, the lease will terminate “unless” an agreed sum is paid to the landowner. This sum is called a *delay rental* and keeps the lease from expiring. Delay rentals should be paid on each subsequent anniversary date of the primary term whenever drilling operations or production are inactive. Drafting language is key here: be sure to use the word “unless” to indicate the necessity of the payment, and that non-receipt of a required delay rental automatically terminates the lease.

**Royalty Clauses**

Each lease contains a *royalty clause* that pays the landowner a certain portion of the production income. The allocation may be stated in terms of market price or value, proceeds or in kind. From an economic standpoint, royalty clauses this may be the most important to the landowner.

• **Signing Bonus.** Generally landowners can ask for a payment up-front—this is called a "signing bonus." These are highly variable. Asking other area landowners what they received is a way to benchmark this amount. A landowner may also consider starting quite high and then using reductions in signing bonus to gain other desired terms in exchange.

• **Royalties.** In addition to a signing bonus, most lease agreements require the company to pay the owner a share of the production income called a “royalty.” A good lease agreement will clearly specify the royalty payment. It can be a fixed amount per ton of minerals produced, a percentage of the production value, or other term that the parties desire. Some states have laws that require a minimum royalty, but the customary royalty percentage is 12.5% of the value of the oil or gas. However, highly desirable properties and good negotiating can sometimes yield 15% - 25% or more. For a pipeline, it is customary to negotiate for separate royalty (usually $5-8 per lineal foot). One helpful tool here can be a royalty estimation calculator, a good example of which is contained in the supplemental materials that accompany this guide (see Appendix C). The royalty is the monetary share of the proceeds received from the oil or gas that is produced.

• **Royalty Valuation.** The royalty payment can sometimes vary greatly depending on how the commodity is valuated. One basis for the mineral owner’s royalty is "market price." This has the advantage of being objective and timely, but the disadvantage of volatility (i.e. the market price can fluctuate unpredictably month to month). A second basis for the royalty is "proceeds," which is
actual revenue derived from the sale of the oil or gas. This may be more or less than market price, depending on whether the company is selling the commodity under long-term contracts (which would give the landowner a steady, predictable price) or on the spot market. The third valuation method is inserting an option to take royalties either "in proceeds" or "in kind." The landowner can get the best of both worlds here: when the market price rises above the company’s long-term contract price, they can take their share "in kind" and seek a market outlet; and when the market price falls below the company’s long-term contract price, the lessor’s share can be taken in "proceeds" (option 2 above). The downside of this third option is that the landowner potentially has the added responsibility of getting their “in kind” gas to market, which might be pricey and more trouble than the extra money is worth.

**Expense Deductions.** Some leases will divide expenses in the exploration phase between the landowner and the company, and then provides that they be deducted from lease and/or royalty payments. The landowner should negotiate this, but in no instance should the landowner’s share of the exploration expenses exceed the royalty percentage (e.g. if the royalty is 12.5%, the landowner’s share of expenses should not be more than 12.5%). The costs encountered throughout the exploration, production and site abandonment phases should be borne solely by the company, never the landowner.

**Payment.** Detail the time, place and frequency of royalty payments. Requiring receipt of payment within 30 days of production and each 30 days thereafter is typical. The lease should also clearly state the consequences for missing royalty payments. The landowner need not limit the penalty to interest only—consider language that terminates the lease if the delinquency exceeds a stated period, such as 180 days. And should the lease terminate for nonpayment, try to provide for forfeiture of the production equipment so that the landowner may use them to continue production or sell them to be made whole for the missing payment.

**Pooling**

Most leases will contain some provision giving the company the right to consolidate the leased premises with adjoining leased tracts. This consolidation of all the mineral owners under one operator is called a *pool* or sometimes a *pooled unit*. This is designed to avoid unnecessary drilling, protect the rights of mineral owners in the common reservoir, and prevent waste. Sometimes pooling is voluntary, and sometimes it is compulsory under state statute. The mineral owner can do little to avoid compulsory...
pooling, but they may want to be cautious before consenting to voluntary pooling. The landowner may wish to withhold consent until the full implications of pooling on the lease terms. Alternatively, the landowner may consent to voluntary pooling in the lease but state that any pooled unit must contain a minimum percentage of their land. As always, knowing the law of the client’s state is powerful.

**Assignment Clause**

A common practice is for companies to lease a tract and assign part or all of it to another company, sometimes without telling the landowner. Leases are similar to going into business with the company, so the landowner wants some say over who they are partnered with. To retain partial control over assignments, the landowner can require that the company must notify them of any assignment—within 30 days of transfer is recommended. A provision that automatically cancels the lease if the company fails to notify or get landowner permission for a transfer helps protect against the risk of ending up with a bad partner. And if the landowner is willing to allow assignment, they should make sure that the new company is beholden to all the same obligations as the original lease. Do not release the original lessee from liability for a default on any assigned portion of the lease or leased area. This is particularly important in the event that surface damages or royalties are unpaid.

**Warranty Clause**

Leases generally contain provisions requiring the landowner to defend their title to the leased premises should an ownership dispute arise. This is known as the warranty clause. This exposes your client to suit by the company for return of payments and/or the reduction of future payments. For example, if the landowner purports to own all but ends up owning half, the company may pay the landowner only half the bonus, half the delay rentals and half the royalties (this is described in a lease provision as a proportionate reduction clause). Mineral owners should delete any language that infers they will warrant or defend the chain of title to the land. Instead, a limited or special warranty should be used. Because many companies generally conduct title searches prior to leasing, negotiating a special warranty should not be a problem.

- **Liability and Indemnity.** Landowners should include a liability and indemnification provision in the lease making the operator liable for any damage from their operations. The wording should include damage specifically to crops, trees, fences, buildings, tile lines and drainage ditches, springs, water wells, surface damage, and any other items of significance to the landowner. Unless these interests are expressly included, the lease may not entitle the landowner to damages, no matter how serious. Based on the valuation of these types of damages, the landowner should require the company to carry adequate liability insurance.
**Force Majeure Clause**

Leases generally contain provisions that protect the oil companies from liability and loss of the lease whenever causes reasonably beyond their control suspend operations. This is known as the force majeure clause. The landowner should require timely written notice of any sustained work stoppage, and during the primary term, require delay rental payments to continue. The lease should also specify how soon operations must resume once the cause is removed. As close to 90 days as possible is reasonable and preferable for the landowner. Consider whether financial difficulties, lack of water, lack of materials, lack of transportation facilities, or other non-natural, non-political conditions constitute force majeure. Limiting force majeure as much as possible means limiting risk exposure for your client.

**Other Important Clauses**

- **Pipeline Restrictions.** Many leases authorize installation of pipelines, but the provision should expressly authorize only pipelines that serve the wells on the landowner’s property. Any additional pipelines desired by the company (e.g., from other producing tracts in the area) should be negotiated separately as a right-of-way easement.

- **Burying Pipelines.** If visual or land use interests are important, the landowner may want to ask the company to bury the pipeline, and even to do so at a desired depth (e.g., below tillage depth). The company laying the pipeline should be required to file a map of line location with the landowner.

- **Siting.** If the client lives on the land, ample setbacks between the well activities and the client’s home are one way to address the many quality of life impacts we discussed above. Likewise, if the client farms, keeps livestock, grazes, or has other specific uses of the land, proper siting can minimize or avoid the negative economic impacts to the landowner and the concomitant reduced value of the lease.

- **Implied Covenants.** In virtually all states, significant mineral owner protections are implied by law in oil and gas leases (for example, requirement of prudent operations, protection against drainage, exploration and development, and marketing of oil or gas). The lease should not limit the covenants normally implied in oil and gas leases.

**Endgame Provisions**

The landowner will want a number of provisions that become operative at the end of the lease. These most commonly relate to phase three, which is site abandonment and remediation (e.g., hole plugging, equipment removal, cleanup, land restoration, etc.). Some additional considerations are:

- **Delayed Surface Damage.** The consequences of oil and gas extraction will be passed on to all subsequent owners, yet are not always immediately visible. “Subsidence” (i.e., a sinking of the surface land) is one form of delayed surface damage that might not occur until months or even
years after extraction. Likewise, certain forms of environmental damage (such as water quality and quantity) may not be immediately detected. The owner should account for this possibility by using the lease terms to protect against these delayed risks.

- **Remedies.** Naturally, the landowner needs to consider what can go wrong, and what remedies they would like to be available if the lease terms are breached. For example, will money damages compensate the landowner in a way that is a satisfactory substitution for performance, or would they prefer specific performance (such as to restore the land)? This will be highly variable and need to be tailored to the particular lease and its provisions by a knowledgeable attorney.

- **Covenants vs. Conditions.** Because many of the company’s standard oil and gas lease clauses are covenants, keeping in mind the difference between a lease covenant and a lease condition is crucial to protecting your client. Aside from the strength of the obligation and other formal characteristics, the important difference in this context is the respective consequence for their breach. The breach of a covenant permits a lawsuit for damages, whereas the breach of a condition automatically terminates the lease. When the landowner’s only recourse is to sue for damages, they risk never being paid, having payment greatly delayed, and/or having their net payment greatly reduced due to the cost of that litigation. For all payment clauses and likely other terms in the lease, it will make sense to draft lease language that creates conditions or obligations, not covenants.

**Conclusion**

Oil and gas lease transactions involve large amounts of money and are very complex. They can be a wonderful opportunity for landowners, but only if they are done well. Landowners should never sign a lease without doing several important things first:

- Know their property ownership rights
- Know the laws in their state
- Understanding the entire oil and gas development process, from exploration through site abandonment, and its physical and lifestyle impacts
- Consider and prioritize both monetary and non-monetary interests
- Negotiate and tailor the lease to maximally protect those interests

Though this guidebook was intended to be no more than a brief introduction, it should be ample to allow any attorney to provide proper preliminary orientation and advising for the landowner client.
Abstract: A chronological history of the ownership or events affecting a particular piece of property; prepared by an abstract or title company.

Anniversary date: The date, usually one year from the effective date of a lease, by which rentals must be paid to maintain the lease in the absence of actual production.

Battery: Storage facility receiving production from a well or wells. Includes equipment for separating the fluid into oil, gas and water for measurement, as well as tanks for holding the separated fluids.

Bcf: The abbreviation for billion cubic feet of gas.

BLM: Abbreviation for the Bureau of Land Management, a federal agency commonly involved in the permitting of oil and gas leases.

Bond: A financial guarantee supplied by the company to ensure the reclamation of the lands disturbed by exploration and production. If required reclamation is not completed, the surface owner can use the bond money to complete the necessary work or for compensation.

Bonus: Cash or other payment by a lessee to the owner upon signing an oil and gas lease. For tax reasons, some owners may request partial payment over a number of years.

Casing: Steel pipe that is placed in the borehole and cemented in to prevent the hole from collapsing; and to prevent undesired movement of fluids.

Complete a well: To finish exploratory work and bring a well to productive status.

Compulsory pooling: Also known as forced pooling, it is the right, granted by a state regulatory body, for a company to include adjacent tracts in its drilling unit, even against the adjacent lessee’s or owner’s desire. Certain payments are due the mineral owners of compulsory pooled tracts.

Covenant: A promise to do something. Under a lease there are two types of covenants: (a) stipulated, (i.e. explained in the lease), and (b) implied (i.e. assumed by courts to be present in the lease, whether written out or not). Some examples of implied covenants include fully developing the property, due diligence in bringing the well production, etc.

Damages: Compensation paid by an operator to the surface owner for actual and potential damage to the surface.

Delay rentals: The payment made to the landowner for the privilege of continuing the lease without entering the production phase. This payment is usually made annually if drilling does not take place.

Drilling unit: The maximum area from which one well can efficiently and effectively extract the oil or gas. Drilling unit size is determined by a state agency.

Drilling window: The section of a drilling unit where drilling must take place.

Dry hole: A drilled well that does not produce oil or gas in commercial quantities.

Easement: A temporary right given to a non-owner of the land for a specific purpose; i.e., an easement to lay a pipeline from a well, cross the land with a road, etc.

Exploratory phase: The initial phase that covers the company’s testing and exploratory drilling of the property to determine the viability of developing marketable oil or gas.

Field: An area of oil and gas production with at least one common reservoir for the entire area.

Flaring: Burning of hydrocarbon gases for commercial or technical reasons.

Flow line: The surface pipe through which oil or gas travels from a well to processing equipment or storage tanks.

Formation: A layer of rock with distinct features such as texture or mineral composition.

Fracking fluid: Fluid used in the hydraulic fracturing process which creates cracks in reservoir rock to release the oil or gas.
Gas well: A well that primarily produces gas. Legal definitions vary among the states.

Gas field: A field containing natural gas but no oil.

Hydrogen sulfide: Chemical formula H2S, also known as sour gas. It is a flammable, colorless gas that is often associated with oil and gas development. Hydrogen sulfide is toxic and smells like rotten eggs at low concentrations. It is heavier than air, and may accumulate in low-lying areas.

Independent producer: An energy company, usually in the exploration and production segment of the industry and generally, with no marketing, transportation or refining operations.

Injection well: A well through which fluids are injected into a subsurface formation to increase reservoir pressure and to displace oil (e.g., during oil enhancement or waterflooding operations). Also called an input well.

Landman: An employee of an oil and gas company or an agent for the company who negotiates oil and gas leases with mineral owners, cures title defects, and negotiates with other companies on agreements concerning the lease.

Lease: A legal instrument that could be a contract, profit-share agreement, joint venture or other agreement between a mineral owner (lessor) and another party (lessee) that grants exclusive right to the lessee to explore for, drill, produce and remove oil or gas from a piece of land.

Lessee: The party receiving the lease, sometimes called the tenant.

Lessor: The landowner giving the lease, sometimes called grantor or landlord.

Mcf: Abbreviation for one thousand cubic feet.

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Mineral estate: The ownership of minerals lying below the surface of land, and considered to be "real property." The mineral ownership may or may not be tied to surface ownership. If the surface ownership and the mineral ownership are different, the minerals are said to be "severed" (aka "severed estate").

Mud pit: Originally, an open pit dug in the ground to hold drilling fluid or waste materials discarded after the treatment of drilling fluid. Steel tanks are much more commonly used for these purposes now, but they are still usually referred to as pits.

Mud tank: A series of open tanks, usually made of steel, through which the drilling mud is cycled to allow sand and sediments to settle out.

Oil field: The surface area overlying an oil reservoir or reservoirs. The term usually includes not only the surface area, but also the reservoir, the wells, and the production equipment.

Operator: A company that operates a well or lease.

PAH: Abbreviation for polynuclear aromatic hydrocarbon; a class of known carcinogens that is typically a components of asphalts, crude oil, coal, coal tar pitch, fuels, and greases and can be formed during the incomplete burning of coal, oil, and gas.

Pooling: Pooling is the combining of small or irregular tracts into a unit large enough to meet state spacing regulations for drilling permits. Not to be confused with unitization (below). See also compulsory and voluntary pooling.

Primary term: The period of time during which a lease may be kept alive by a lessee (even though there is no production in paying quantities) by virtue of drilling operations on the leased lands or the timely payment of rentals.

Production: The second phase of the leasing operation, after exploration, that deals with bringing the well fluids to the surface and separating them and storing, gauging, and otherwise preparing the product for delivery. Also, may refer to the amount of oil or gas produced in a given period.

Proven reserves: The estimated quantities of oil or natural gas that geological and engineering data demonstrate with reasonable certainty to be recoverable in future years from known reservoirs under existing economic and operating conditions.
**Reclamation:** The restoration of lands disturbed by oil and gas activity, usually by refilling, recontouring, and reseeding the land.

**Record title:** The county records of various property interests, including leases. Under federal leases, the official chain of title is kept by the government. Each time lease ownership changes, the changes must be made with the government and an instrument also filed in the county records to update both. Unrecorded changes can run the risk of being invalid and voided.

**Regulation:** A rule issued by a governmental agency. Regulations have the force of law and generally provide more details on a particular subject than the authorizing statute.

**Reserves:** Unproduced but recoverable oil or gas in a formation.

**Reservoir:** The underground formation where oil and gas have accumulated. It consists of porous, permeable or fractured rock which holds the oil or gas.

**Royalty:** An interest in an oil and gas lease that gives the owner of the interest the right to receive a portion of the production from the leased acreage (or a share of the proceeds of the sale of production). Normally, royalty interests are free of all costs of production (drilling or operating the wells), except production taxes.

**Setback:** The minimum allowable distance from operations to a principal building or structure (e.g. a wall or a house).

**Shale:** The most frequently occurring sedimentary rock. This geologic formation often holds natural gas.

**Shut-in well:** A well that is capable of producing but is not being produced. Common reasons for wells being shut-in are lack of a pipeline or changed market conditions.

**Spacing:** The distance between wells allowed by the regulatory body. The spacing is based on what is deemed to be the amount of acreage that can be efficiently and economically drained by a well.

**Subsidence:** A sinking of the surface land that can occur when subsurface minerals are removed.

**Tract:** Any specific area of land.

**Underground Injection Control (UIC):** Required in each state by a provision of the federal Safe Drinking Water Act (SDWA) for the regulation of injection wells. An applicant must demonstrate that the well has no reasonable chance of adversely affecting the quality of an underground source of drinking water before a permit is issued.

**Unitization:** This occurs when companies pool their individual interests and turn over operation to a single company on behalf of the group. In contrast to "pooling," unitization involves a group of actual wells in an area, rather than the pooling of leases.

**Well:** The hole drilled for the purpose of finding or producing oil or natural gas. Wells may also be referred to as a boreholes, holes, or wellbores.
### Appendix B: STATE OIL & GAS REGULATORY AGENCIES

<table>
<thead>
<tr>
<th>State</th>
<th>Regulatory Agency</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>State Oil &amp; Gas Board</td>
<td><a href="http://www.ogb.state.al.us">http://www.ogb.state.al.us</a> <a href="https://www.ogb.state.al.us">205-349-2852</a></td>
</tr>
<tr>
<td>Alaska</td>
<td>Department of Natural Resources, Division of Oil &amp; Gas</td>
<td><a href="http://dog.dnr.alaska.gov/">http://dog.dnr.alaska.gov/</a> <a href="https://www.dnr.alaska.gov">907-269-8800</a></td>
</tr>
<tr>
<td>California</td>
<td>Department of Conservation, Division of Oil, Gas &amp; Geothermal Resources</td>
<td><a href="http://www.consrv.ca.gov/DOG/">http://www.consrv.ca.gov/DOG/</a> <a href="https://www.consrv.ca.gov">916-445-9686</a></td>
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<tr>
<td>Colorado</td>
<td>Colorado Oil &amp; Gas Conservation Commission</td>
<td><a href="http://cogcc.state.co.us/">http://cogcc.state.co.us/</a> <a href="https://www.cogcc.state.co.us">303-894-2100</a></td>
</tr>
<tr>
<td>Florida</td>
<td>Department of Environmental Protection, Geological Survey</td>
<td><a href="http://www.dep.state.fl.us/geology/">http://www.dep.state.fl.us/geology/</a> <a href="https://www.dep.state.fl.us">850-488-4191</a></td>
</tr>
<tr>
<td>Illinois</td>
<td>Illinois Department of Natural Resources, Division of Oil &amp; Gas</td>
<td><a href="http://dnr.state.il.us/mines/dog/welcome.htm">http://dnr.state.il.us/mines/dog/welcome.htm</a> <a href="https://www.dnr.state.il.us">217-782-7756</a></td>
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<tr>
<td>Indiana</td>
<td>Indiana Department of Natural Resources, Division of Oil &amp; Gas</td>
<td><a href="http://www.state.in.us/dnroil/">http://www.state.in.us/dnroil/</a> <a href="https://www.state.in.us">317-232-4055</a></td>
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<tr>
<td>Kansas</td>
<td>Kansas Corporation Commission, Conservation Division</td>
<td><a href="http://www.kcc.state.ks.us/conservation/conservation.htm">http://www.kcc.state.ks.us/conservation/conservation.htm</a> <a href="https://www.kcc.state.ks.us">315-337-6200</a></td>
</tr>
<tr>
<td>Kentucky</td>
<td>Department of Mines &amp; Minerals, Division of Oil &amp; Gas</td>
<td><a href="http://dmms.prr.ky.gov/OilAndGas.htm">http://dmms.prr.ky.gov/OilAndGas.htm</a> <a href="https://www.dmms.prr.ky.gov">502-573-0147</a></td>
</tr>
<tr>
<td>Louisiana</td>
<td>Department of Natural Resources, Office of Conservation</td>
<td><a href="http://www.dnr.state.la.us/cons/conserv.asinh">http://www.dnr.state.la.us/cons/conserv.asinh</a> <a href="https://www.dnr.state.la.us">225-342-5570</a></td>
</tr>
<tr>
<td>Michigan</td>
<td>Department of Environmental, Quality, Geological &amp; Land Management Division</td>
<td><a href="http://www.michigan.gov/deq/0,1607,7-135-3311_4111---,00.html">http://www.michigan.gov/deq/0,1607,7-135-3311_4111---,00.html</a> <a href="https://www.michigan.gov">517-373-7917</a></td>
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<tr>
<td>Mississippi</td>
<td>Oil &amp; Gas Board</td>
<td><a href="http://www.ogb.state.ms.us">http://www.ogb.state.ms.us</a> <a href="https://www.ogb.state.ms.us">601-354-7142</a></td>
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<tr>
<td>Missouri</td>
<td>Department of Natural Resources, Geological Survey &amp; Resource Assessment Division</td>
<td><a href="http://www.dnr.mo.gov/geology/geostr/oil.htm">http://www.dnr.mo.gov/geology/geostr/oil.htm</a> <a href="https://www.dnr.mo.gov">573-368-2100</a></td>
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<tr>
<td>Montana</td>
<td>Department of Natural Resources &amp; Conservation, Montana Board of Oil &amp; Gas Conservation</td>
<td><a href="http://bogc.dnrc.state.mt.us/">http://bogc.dnrc.state.mt.us/</a> <a href="https://www.bogc.dnrc.state.mt.us">406-656-0040</a></td>
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<tr>
<td>Nevada</td>
<td>Commission on Mineral Resources, Division of Minerals, Oil, Gas, &amp; Geothermal</td>
<td><a href="http://minerals.state.nv.us/programs/ogg.htm">http://minerals.state.nv.us/programs/ogg.htm</a> <a href="https://www.minerals.state.nv.us">775-684-7040</a></td>
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<tr>
<td>New Mexico</td>
<td>Energy, Minerals &amp; Natural Resources Department, Oil Conservation Commission</td>
<td><a href="http://www.emmrd.state.nm.us/ocd">http://www.emmrd.state.nm.us/ocd</a> <a href="https://www.emmrd.state.nm.us">505-476-3440</a></td>
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<tr>
<td>State</td>
<td>Bureau/Facility</td>
<td>Website</td>
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<tr>
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<tr>
<td>New York</td>
<td>Department of Environmental Conservation, Division of Mineral Resources</td>
<td><a href="http://www.dec.state.ny.us/website/dmn">http://www.dec.state.ny.us/website/dmn</a></td>
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<tr>
<td>North Dakota</td>
<td>Industrial Commission, Oil &amp; Gas Division</td>
<td><a href="http://www.oilgas.nd.gov/">http://www.oilgas.nd.gov/</a></td>
</tr>
<tr>
<td>Ohio</td>
<td>Ohio Department of Natural Resources</td>
<td><a href="http://www.ohiodnr.com/mineral/oil">http://www.ohiodnr.com/mineral/oil</a></td>
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<tr>
<td>Oklahoma</td>
<td>Corporation Commission, Oil &amp; Gas Conservation Division</td>
<td><a href="http://www.occ.state.ok.us/Divisions/OG/Og.htm">http://www.occ.state.ok.us/Divisions/OG/Og.htm</a></td>
</tr>
<tr>
<td>Oregon</td>
<td>Department of Geology &amp; Mineral Industries; Oil, Gas &amp; Geothermal Program</td>
<td><a href="http://www.oregon.gov/DOGAMI/Pages/oil/oilhome.aspx">http://www.oregon.gov/DOGAMI/Pages/oil/oilhome.aspx</a></td>
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<tr>
<td>Pennsylvania</td>
<td>Department of Environmental Protection, Bureau of Oil &amp; Gas Management</td>
<td><a href="http://www.dep.state.pa.us/dep/deputate/minres/oilgas/oilgas.htm">http://www.dep.state.pa.us/dep/deputate/minres/oilgas/oilgas.htm</a></td>
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<tr>
<td>South Dakota</td>
<td>Department of Environment &amp; Natural Resources, Minerals &amp; Mining Program</td>
<td><a href="http://www.state.sd.us/demr/des/mining/oil&amp;gas/o&amp;ghome.htm">http://www.state.sd.us/demr/des/mining/oil&amp;gas/o&amp;ghome.htm</a></td>
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<tr>
<td>Tennessee</td>
<td>Department of Environment &amp; Conservation, State Oil &amp; Gas Board</td>
<td><a href="http://www.state.tn.us/environment/boards/oilandgas.php">http://www.state.tn.us/environment/boards/oilandgas.php</a></td>
</tr>
<tr>
<td>Utah</td>
<td>Division of Oil, Gas &amp; Mining</td>
<td><a href="http://www.ogm.utah.gov/oilgas/">http://www.ogm.utah.gov/oilgas/</a></td>
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<tr>
<td>Virginia</td>
<td>Department of Mines, Minerals &amp; Energy, Division of Gas &amp; Oil</td>
<td><a href="http://www.mme.state.va.us/Dgo/default.htm">http://www.mme.state.va.us/Dgo/default.htm</a></td>
</tr>
<tr>
<td>Washington</td>
<td>Department of Natural Resources, Division of Geology &amp; Earth Resources, Energy (Oil &amp; Gas) Regulation</td>
<td><a href="http://www.dnr.wa.gov/ResearchScience/Topics/EarthResources/Pages/oil_gas_resources.aspx">http://www.dnr.wa.gov/ResearchScience/Topics/EarthResources/Pages/oil_gas_resources.aspx</a></td>
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<td>West Virginia</td>
<td>Department of Environmental Protection, Office of Oil &amp; Gas</td>
<td><a href="http://www.dep.state.wv.us/item.cfm?ssid=23">http://www.dep.state.wv.us/item.cfm?ssid=23</a></td>
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<td>Wyoming</td>
<td>Oil &amp; Gas Conservation Commission</td>
<td><a href="http://wogcc.state.wy.us/">http://wogcc.state.wy.us/</a></td>
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<tr>
<td>Resource</td>
<td>Rating</td>
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</tr>
</tbody>
</table>
| **Earthworks—Best & Alternative Practices**  
[http://www.earthworksaction.org/issues/detail/best_practices_overview#.UWe5ncogtbY](http://www.earthworksaction.org/issues/detail/best_practices_overview#.UWe5ncogtbY)  
This is probably the single best site out there to orient oneself to the types of best practices and alternative practices that a landowner may want to negotiate for in a lease agreement. It hits all the major key practices clearly and succinctly, but does not overwhelm the reader with information or jargon. |

| **Earthworks—Minimizing Oil & Gas Wastes**  
This site provides a great deal of information on oil and gas pollution prevention alternatives for all stages of development (drilling, well completion, oil and gas processing, oil and gas storage, pipelines, well servicing, oil recovery, transportation and more). The site also provides lists of wastes associated with various stages of oil and gas operations. |

| **American Association of Professional Landmen (AAPL)**  
[www.landman.org](http://www.landman.org)  
This is an excellent resource containing good publications and white papers to orient one to the world of oil and gas leasing. Because the site is aimed at oil and gas company professionals, the information naturally is very pro-industry—but this also can make it a valuable window into the company's perspective and how that may inform their bargaining process.  
See in particular the Forms & Contracts section at [http://www.landman.org/industry-resources/forms-contracts](http://www.landman.org/industry-resources/forms-contracts) for a variety of standard industry lease contracts from Kansas, Louisiana, Oklahoma, and Texas. |

| **Oil and Gas Accountability Project**  
[www.ogap.org](http://www.ogap.org)  
Contains a very helpful and accessible “Landowner’s Guide to Oil & Gas Development” to assist owners facing oil and gas development on their land and in their communities. |

| **NaturalGas.org**  
[http://www.naturalgas.org](http://www.naturalgas.org)  
An excellent walk through all stages, from exploration to development, and understandable to non-experts. |

| **Pollution Prevention Best Practices Manual**  
This guide provides tools and information regarding pollution prevention best practices and alternative operational methods for the oil and gas industry. It is especially good on the “closed-loop drilling” mentioned in the guidebook above (p.6). |

| **Pollution Prevention Pocket Guide**  
[http://www.emnrd.state.nm.us/OCD/documents/pocketguide_003.pdf](http://www.emnrd.state.nm.us/OCD/documents/pocketguide_003.pdf) |
This is a quick lookup companion reference to the Pollution Prevention Best Practices Manual for common oil and gas pollution prevention and waste management practices.

<table>
<thead>
<tr>
<th><strong>U.S. Bureau of Land Management (BLM)</strong></th>
<th><a href="http://www.blm.gov">www.blm.gov</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>A bit difficult to navigate, but has some decent general information to orient you to extraction processes like hydraulic fracturing (aka “fracking”), but is generally very wonky (lots of stats and higher level technical information). In short, this should not be your first stop.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Federal Energy Regulatory Commission</strong></th>
<th><a href="http://www.ferc.gov">www.ferc.gov</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>This site has sections dedicated to oil and natural gas. This site is good for statistics, project information, studies, and regulations, but not for basic or general information to orient one to private oil and gas leasing.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Geology.com</strong></th>
<th><a href="http://www.geology.com/royalty">www.geology.com/royalty</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wonky and scientific, but worth a stop just for the natural gas royalty calculator (<a href="http://www.geology.com/royalty">www.geology.com/royalty</a>)!</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>U.S. Environmental Protection Agency</strong></th>
<th><a href="http://www.epa.gov/">http://www.epa.gov/</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wonky, difficult to navigate, not well organized, and generally unhelpful. Like trying to find a needle in a haystack. This might seem like a natural place to start, but instead it’s probably worth avoiding altogether.</td>
<td></td>
</tr>
</tbody>
</table>
Here is an initial list of questions to foster dialog with a prospective client considering an oil and gas lease. This will inform both the extent of the guidance the client will need, and some of the legal questions that will need to be decided.

- Have you ever participated in an oil and gas lease previously?
- In what state is your land, and how long have you owned it?
- Do you have the deed for your land, a title report, or a mineral report?
- Do you know whether you own the mineral estate under your land?
- Do you live (or plan to live) on your land?
- How large is your acreage?
- Are there any notable natural or manmade features to your land? (e.g. Standing or flowing surface water? Wells? Trees? Notable wildlife?)
- What do you do with your land? Do you have recreational uses for your land, or crops, cattle, or any other economic uses?
- What non-monetary things are important to you? What aspects of your livelihood or lifestyle would you not want to be disturbed or changed?
- What would you estimate is your annual income or other valuation from recreational and/or economic uses?
- Do you intend for future generations to use this land in a similar way when you pass on your estate?