

## Las Vegas Basin White Paper

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**Introduction:** Depletion of easily-accessed domestic oil and gas resources coupled with national security fears of continuing dependency on foreign supplies from hostile nations has led from conventional to unconventional fossil fuel “recovery”, which is extraction especially focused on extracting hydrocarbons from deep tight sands and shale strata.

Unconventional extraction utilizes directional drilling and hydraulic fracturing. The toxic chemicals used in hydraulic fracturing are not disclosed and are considered proprietary. Decades of industry lobbying culminated in the evisceration of Federal oil and gas regulations and oversight by the Energy Policy Act of 2005; the oil and gas industry currently enjoys significant exemptions from major Federal environmental laws.<sup>(1)</sup>

**Background:** At the state level, the New Mexico Oil Conservation Division (OCD) experiences budget cuts, “pit rule” roll backs, is chronically understaffed and has an antiquated penalty system.<sup>(2,3)</sup> However, the OCD has been forced—due to public outcry—by Executive Orders to enact special drilling rules for selected areas of Sierra and Otero Counties as well as for Santa Fe County and the Galisteo Basin. The Special Rules tend to focus on protection of water resources.<sup>(4)</sup> There is also at least one Federally-protected and Federally-owned surface/subsurface area of New Mexico, the Valle Vidal, that is no longer available for mineral leasing due to a Congressional Act: The Valle Vidal Protection Act of 2005.<sup>(5)</sup>

A gas drilling boom and a National energy policy calling for natural gas to be a pivotal “bridge” fuel to an alternative energy future have led to an expansion of extractive efforts not only throughout the Rocky Mountain West but in thirty-two (32) states.<sup>(5a)</sup> In many areas, such as Northern New Mexico, these efforts have been mostly unwelcome; however, there are some mineral owners, lured by the promise of profits, who support drilling. In New Mexico, drilling advocacy groups, funded by the oil and gas industry, clamor for more deregulation in spite of the fact that the industry already enjoys a less

regulatory environment than other industries, along with favorable tax incentives. Vulnerable areas targeted for wildcatting tend to be rural with lower median incomes and population densities.

**Issue:** Oil and gas “wildcat” exploratory drilling in the fragile, water-rich ecosystem of the Las Vegas Basin.

**Oil and Gas Background & Property Definitions:** Throughout the Western United States, the surface estate can be and often is severed from the sub-surface or “mineral” estate. This is called “split estate.” The sub-surface mineral estate has been referred to in some court cases as the “dominant” estate. However, this concept is eroding due to changes in the legal landscape.<sup>(6)</sup> The mineral estate is similar to the surface estate in terms of three possible types of ownership: Federal, State and Private. Jurisdictionally, there are also three layers: Federal, State and Local, and possibly four—Tribal. An ownership interest in either the mineral or surface estate is regarded as “property” under the Constitution, and therefore, unreasonable regulation that effectively strips the property of any value may be regarded as a “taking.” Furthermore, state regulation of oil and gas may preempt local regulations if the local regulations conflict with or frustrate the purpose of the state regulations or if the state regulations are so pervasive as to leave no room for local regulation. Both estates have certain rights as against each other. On the other hand, New Mexico is a forced pool state. Basically this means that the oil and gas resources beneath a landowner’s land can be extracted, even if he does not enter into any oil and gas lease, if those lands are within a “pool” or well spacing unit established by the Oil Conservation Division. If the landowner also owns the mineral interest, he will be paid a royalty on any production in proportion to his interest in the pool or unit.<sup>(3)</sup>

**The OCD and Local Oil and Gas Ordinances:** The New Mexico State Legislature granted by statute to “the Oil Conservation Division (OCD) and the Oil Conservation Commission (OCC) jurisdiction and authority over matters relating to the conservation of oil and gas, the prevention of waste of oil and gas (and of potash as a result of oil and gas operations), the protection of correlative rights and the disposition of wastes resulting from oil and gas operations.” However, home rule counties and municipalities also have power to regulate aspects of oil and gas development and this authority need not be expressly delegated by the State.<sup>(3)</sup> For example, a County can adopt a reasonable oil and gas ordinance that addresses local concerns and that supplements and does not conflict with the regulations of OCD. In other words, the ordinance must be carefully designed to avoid both the “takings” and preemption issues.

An oil and gas ordinance enacted by a County and/or Municipality would need to be internally consistent and compatible with the Land Use Plan of the County/Municipality and be reasonable and rational. If a local entity were to adopt an oil and gas ordinance with a permitting policy, this would lead to a dual permitting process – State and Local. The permitting process would need to be transparent with citizens’ involvement.

A countywide ban on oil and gas drilling would likely be challenged by industry as a “per se” “takings,” since it would outright prohibit any development of oil and gas.

To allow time for the County to draft and adopt an oil and gas ordinance, an emergency interim development ordinance with a specific timeframe could be passed and adopted by the County, which would be reasonable and rational.<sup>(7)</sup> Counties can also adopt temporary moratoriums that temporarily disallow any oil and gas development to occur until the County has an oil and gas ordinance in place.

***Geographical Boundaries:*** The Las Vegas Basin lies primarily under the Counties of Mora and San Miguel. It is bordered on the north by State and private lands on the northern side of Ocate Creek and into Colfax County; on the east by the Canadian River; on the south in the area including the Sabinoso Wildlife Management Area and the Las Vegas National Wildlife Refuge; on the west by the Sangre de Cristo Mountains. It compasses the 827,631-acre Mora Land Grant, which is central to *El Valle* (The Valley, as it is colloquially called).<sup>(8)</sup>

***Las Vegas and Tucumcari Basins:*** The Las Vegas and Tucumcari Basins are considered to be “frontier” basins.<sup>(8)</sup> There has been renewed interest in these unconventional basins due to natural gas and helium extractive potential.<sup>(8,9,10)</sup> Both extractive processes use extensive hydraulic fracturing. Industry seeks greater-than two (>2) to five (5) Total Organic Carbon (TOC) as a good-to-excellent source of hydrocarbons.

The entire Las Vegas Basin is potentially drillable, its deepest part located just east of Naranjos on the Ocate Creek. Pennsylvanian-era black shale appears to be the principal target strata, including in what Dr. Broadhead of the New Mexico Bureau of Geology describes as “elevator basins.” Elevator basins, according to Dr. Broadhead, “were the sites of deposition of thick sections of organically rich shales that, when buried, were turned into thermally mature source rocks of oil and gas.”<sup>(8)</sup>

The Tucumcari Basin’s Pennsylvanian stratum stretches up from the south, deeply into San Miguel County in two elevator sub-basins, the Trementina and Trigg Ranch sub-basins.<sup>(8)</sup>

Another target area in the Las Vegas Basin is the Dakota stratum under the Wagon Mound area.

Two wells were drilled in Mora County in the 1980’s that recorded >2 TOC.<sup>(10)</sup> These wells appear to be located in the groundwater recharge zone of the Las Vegas Basin. Generally speaking, and with little to no existing geo-hydrological studies performed to date, this area, west of Ojo Feliz and along Highway 518 is characterized by highly folded, fractured and faulted geology, creating multiple layers and fissures of rock and water. The area acts like a giant sponge and is the source for surface and sub-surface water in the Las Vegas Basin.

In spite of showings of >2 TOC, the two above-mentioned conventional wells drilled in Mora County were not commercially viable. For new wells to attempt to prove commercially viable in this groundwater recharge area, it would necessitate very tight spacing (OCD well spacing permits would begin with 1 well per 160 acres), and intensive hydraulic fracturing. It is extremely difficult and of high risk to drill in such areas due to the very complex geology and the resulting difficulty in maintaining reservoir pressures as well as the potential impossibility of containing/controlling potential migration of hydrocarbon and chemical contaminants, both in the earth and on the surface.

Drilling should not occur within any groundwater recharge zone and/or through sub-surface layers of usable water, such as thought to exist within the Dakota formation. These waters and their sources should be absolutely protected.

**Mora County:** The County is rural and agricultural with a population of approximately 5,180 (2000 Census). According to OCD, 50 oil and gas wells have been drilled.<sup>(11)</sup> There are no known active wells currently. Mineral ownership in the Las Vegas Basin proper is mostly private, including split estate. There is some State mineral ownership, especially in the area north and contiguous to the Ocate Creek and of the Charette Lakes Wildlife Management Area, and Federal ownership in the National forest.

**Mora County DGS:** According to the New Mexico Environmental Law Center (NMELC) the Mora County DGS does not expressly zone Mora County as “agricultural.”<sup>(12,13)</sup> It does create “a single zoning district, entitled Natural Resources District.” The DGS identifies three types of land uses: Uses as of right, prohibited uses, and conditional uses. There are 12 specific uses “as of right,” such as a single family dwelling. Prohibited uses are generally described as any use, for example, it that would pollute water resources, harm a neighbor’s ability to get water, or cause a public health hazard. All other uses can only occur, if at all, in accordance with a “conditional use” permit issued by the County.

Oil and Gas development is not a “use by right,” and therefore, it could only be allowed under a conditional use permit. The oil and gas applicant should bear the burden of proving that the proposed well or other oil and gas activity will not constitute a “prohibited use” within the meaning of the DGS and that it is compatible with existing local uses.

An oil and gas ordinance, if the County passed one, could be structured to fill in the blanks as to what is required to obtain an Oil and Gas Conditional Use Permit and to assure that oil and gas development will not fall into the “prohibited use” category. Thus, the ordinance could be structured in a way that is consistent with Mora County’s existing DGS. Although the Santa Fe County Oil and Gas Ordinance could not be adopted without substantial modification to fit Mora County’s situation, many of its substantive and procedural provisions could be extracted and organized to be compatible with the DGS.

**San Miguel County:** The County is mostly rural with a population of 30,126 and nearly half (14,565) reside in the County Seat of the City of Las Vegas (2000 Census). According to OCD, 59 oil and gas wells have been drilled.<sup>(11)</sup> There are no known active wells currently. Mineral ownership is mostly private with split estate. There is some State mineral ownership, and Federal lands/minerals in the National Forest, the Sabinoso Wilderness Study Area and the Las Vegas National Wildlife Refuge, which is sustained by the Gallinas River, also the main water supply for the City of Las Vegas.

**Solutions:** Solutions to protecting an area from the adverse impacts from oil and gas drilling and development emanate from an educated and empowered citizenry. The benefits of oil and gas drilling in New Mexico are well known; the adverse impacts are much less well known.

For the Las Vegas Basin, the resources that need to be protected should be identified and studied. Such studies to identify constraints would include, but are not limited to: Ranches, riparian, migration corridors, spawning and calving grounds, amphibian, reptilian, bird richness, mammal richness, natural grasslands, woodlands, forest, natural spring proximity, water body proximity, drainage proximity, groundwater sensitivity, aquifer susceptibility, floodplain constraints, slope constraints, fault line constraints, archaeological and historical constraints, acequias and domestic water well constraints, scenic byway constraints, visual resources inventory constraints, scenic area constraints, public water system constraints, paved roadway proximity constraint, fire station constraints, trail constraints, open space constraints, conservation easement constraints, existing residential structure constraints, and non-residential structures constraints.

Based on such studies, overlay zones can then be created to identify the more sensitive areas that are less appropriate for mineral extraction than other areas of the Basin. These areas should have setbacks from extractive activities, at the very minimum. Areas that have water that is usable for the citizens of New Mexico should be absolutely protected and not simply mitigated. Hydro-geological fault lines and groundwater recharge zones must have protective setbacks.

As part of the cost of being allowed to drill in this unique area, industry should be forced to pay for and provide to the Counties and Citizens, by independent third-parties, vital geo-hydrology studies of the entire Basin *before* any drilling permits are considered. Particularly the groundwater recharge zone must be clearly identified.

An evaluation of the potential reclamation cost of remediation of poisoned ground water and aquifers should also be considered, as it is estimated that between 30-70% of the hydraulic fracturing chemicals remain in the earth.

Further, due to the unique water-rich nature of the Las Vegas Basin, located in the high desert semi-arid region of the American Southwest, only state-of-the-art closed loop systems should be allowed; and no solid hydrocarbon, chemical or drilling tailings waste nor liquid “produced” water waste from any drilling should be allowed to be disposed of

within the Las Vegas Basin in order to further attempt to protect this water resource for New Mexicans. These wastes should be hauled at industry expense to OCD-approved waste sites and injection wells in existing conventional oil and gas fields.

There is a tendency to support “red lining” areas for drilling bans, which could be legally challenged. However, areas that are considered of great importance have been targeted as “drill free zones,” such as the New York watershed in the Marcellus Shale, a subterranean layer of shale rock that runs from New York to Tennessee.<sup>(15)</sup> Recently, Chesapeake Energy Corporation withdrew drilling plans in the New York watershed due to public and political opposition.<sup>(15)</sup> The public land of the Valle Vidal in New Mexico has Federal permanent protections that no longer allowing the minerals to be offered for leasing, in particular, coalbed methane.<sup>(5)</sup>

Another approach, as Dr. Freilich illustrated for Santa Fe County, which is not an oil and gas producing area, is for an applicant for a drilling permit to first submit for approval to have an area of the county zoned for oil and gas.<sup>(7,14,16)</sup> As with any change of zoning within the county, this would require a public process. There are no guarantees for the applicant that an oil and gas zone would be granted. To address the takings issue, in part, the Santa Fe County Oil and Gas Ordinance has a Transfer of Development Rights (TDR) component.<sup>(7,14)</sup> “The TDR program would apply only to the right to develop drilling sites on the surface of the land, and would not apply to subsurface mineral rights,” according to the Santa Fe County Sustainable Land Use Plan, Volume 2-B, Oil and Gas Elements.<sup>(7,14)</sup> Directional drilling techniques allow the non-vertical oil and gas drilling to be conducted from great horizontal distances.

Oil and gas drilling requires much in the way of County infrastructure, for instance, roads, fire protection, emergency response and so forth. Capital Improvement Costs (CIP) would need to be identified and the cost shifted from the tax-payer onto the applicant.

Other effects oil and gas activities have on exploratory areas are displacement of the current workforce with an influx of oil and gas workers (sometimes with man camps) and changes to the local economy and culture.<sup>(18)</sup>

As State and Federal political winds shift and regulations continue to change directions in unexpected ways, the last resort of protections is at the local level.<sup>(17)</sup> There are then three options: Do nothing; take a “no drilling” stance; or adopt the strictest, most environmentally stringent and socially protective local zoning ordinances possible under the law.

**Conclusion:** On Monday, June 23, 2008 before the OCC in a public hearing regarding the wildcat company Approach Resources’ APDs to drill in the Rio Chama Watershed of Rio Arriba County, Mr. Johnny Micou read into the public record the written comments of structural geologist Robert J. Coward, PhD, who worked in the oil and gas industry for 30 years: “The OCD needs to prohibit extraction of oil and gas from formations that

contain potential water supply that could be put to beneficial use for the people of New Mexico.”<sup>(19)</sup>

All of the water, including the deep, interconnected and usable water layers and aquifers within the Las Vegas Basin, needs to be protected from contamination and over-consumption by industry.

The Las Vegas Basin is a place of unique scenic beauty, historic and cultural importance. All of the creeks and rivers within the Las Vegas Basin, including the Ocate Creek, Mora River, Coyote Creek, Rio de la Casa, Sapello River, Gallinas River, Tecolote Creek, amongst others, provide water for consumption and to grow food and maintain pastureland. In some cases, households still use acequia water for drinking supplies.<sup>(20)</sup>

The Las Vegas Basin is a living example of an ongoing water-based cultural heritage: Every creek and river hosts centuries-old established acequia water ditch irrigation networks that “are the lifeblood and connectivity of the communities that depend upon them...that is a communal and sacred tapestry, binding people to their land and each other. This heritage should be protected for the use of the hands and hearts of future generations of New Mexicans.”<sup>(21)</sup>

Mr. Ken Neubecker, President of the Colorado chapter of the conservation group Trout Unlimited, said in a recent article: “There are some places where there are other values that have to be considered, above and beyond the strict natural gas value. And this is one of them (Roan Plateau).”<sup>(22)</sup> So too, the Mora River Valley and the greater Las Vegas Basin.

### **References:**

(1) Energy Policy Act 2005: [http://www.epa.gov/oust/fedlaws/publ\\_109-058.pdf](http://www.epa.gov/oust/fedlaws/publ_109-058.pdf)

Oil and gas currently has significant exemptions from federal environmental laws, including from key provisions of the Safe Drinking Water Act, the Clean Water Act, [http://www.oilandgasbmps.org/laws/federal\\_water Law.htm](http://www.oilandgasbmps.org/laws/federal_water Law.htm) , <http://www.epa.gov/osw/nonhaz/industrial/special/oil/oil-gas.pdf> , the Clean Air Act <http://www.earthworksaction.org/pubs/PetroleumExemptionsIc.pdf> , Resource Conservation and Recovery Act <http://www.ewg.org/reports/Free-Pass-for-Oil-and-Gas/Oil-and-Gas-Industry-Exemptions> , and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) [http://www.epa.gov/OEM/content/reporting/faq\\_subs.htm](http://www.epa.gov/OEM/content/reporting/faq_subs.htm) .

(2) New Mexico Oil Conservation Division (OCD): <http://www.emnrd.state.nm.us/ocd/Index.htm>

(3) Chapter 15, OCD Oil and Gas Rules:  
<http://www.emnrd.state.nm.us/ocd/documents/20098-5currentrules-new17and39.pdf> and  
<http://www.emnrd.state.nm.us/ocd/Rules.htm>

(4) OCD Special Rules: <http://www.emnrd.state.nm.us/ocd/documents/20098-5currentrules-new17and39.pdf>

(11) OCD NMEMNRD Well Information:  
<http://ocdimage.emnrd.state.nm.us/imaging/default.aspx>

(5) Valle Vidal, Coalition for the Valle Vidal, <http://www.vallevidal.org/> and  
[http://www.vallevidal.org/pdf/Valle\\_Information.pdf](http://www.vallevidal.org/pdf/Valle_Information.pdf)

(5a) ASPO 2009 International Peak Oil Conference Denver, Colorado, October 12, 2009: [http://www.aspo-usa.com/2009proceedings/Peter\\_Dea\\_Oct\\_12\\_2009.pdf](http://www.aspo-usa.com/2009proceedings/Peter_Dea_Oct_12_2009.pdf)

(6) “Split Estate” – the documentary: <http://www.splitestate.com/> ; and the BLM website:  
[http://www.blm.gov/wo/st/en/prog/energy/oil\\_and\\_gas/best\\_management\\_practices/split\\_estate.html](http://www.blm.gov/wo/st/en/prog/energy/oil_and_gas/best_management_practices/split_estate.html)

Santa Fe County:

(7) Santa Fe County Oil and Natural Gas Drilling Website:  
<http://www.santafecounty.org/oilandgas/>

(14) Santa Fe County Sustainable Land Use Plan (SLUP):  
[http://www.santafecounty.org/about\\_us/growth\\_management\\_department.php](http://www.santafecounty.org/about_us/growth_management_department.php)

(14) Santa Fe County Sustainable Land Use Plan Oil and Gas Element (28MB):  
[http://www.santafecounty.org/about\\_us/documents/Volume2-B\\_PlanOilandGasElements.pdf](http://www.santafecounty.org/about_us/documents/Volume2-B_PlanOilandGasElements.pdf)

(14) Santa Fe County Oil and Gas Ordinance Primer by Drilling Santa Fe:  
<http://www.drillingsantafe.info/dsf%20sf%20co%20O&G%20ord%20primer.pdf>

Las Vegas and Tucumcari Basins:

(8) Tucumcari Basin:

“Elevator Sub-Basins Draw Interest”:  
<http://www.aapg.org/explorer/2004/06jun/tucumcari.cfm> ; and “Bulletin 119—Petroleum geology of Pennsylvanian and Lower Permian strata, Tucumcari Basin,” east-central New Mexico, Bottom of Form By R. F. Broadhead and W. E. King, 1988, 75 pp., 4 tables, 34 figs., 4 appendices, 18 sheets: <http://geoinfo.nmt.edu/publications/bulletins/119/> ; and

“Inter-American Corporation”: <http://www.helium-corp.com/projects/tucumcari.html> ; and Seismic: (2MB) [http://www.helium-corp.com/files/Tucumcari\\_Seismic\\_Line.pdf](http://www.helium-corp.com/files/Tucumcari_Seismic_Line.pdf) ; “Shell tests gas from New Mexico's Tucumcari area”: <http://www.gasandoil.com/goc/company/cnl91142.htm> ; and “Petroleum geology of the Tucumcari Basin”—overview and recent exploratory activity Ronald F. Broadhead, New Mexico Bureau of Geology and Mineral Resources, New Mexico Institute of Mining and Technology, 801 Leroy Place, Socorro, NM 87801: <http://geoinfo.nmt.edu/publications/periodicals/nmg/26/n3/petgeo.pdf> ; and Map: [http://www.aapg.org/explorer/2004/06jun/tuc\\_toc.gif](http://www.aapg.org/explorer/2004/06jun/tuc_toc.gif) and

(8) Las Vegas Basin:

“Importance of Oil & Gas in New Mexico”:  
<http://geoinfo.nmt.edu/resources/petroleum/> ; SouthwestBooks. Org:  
[http://www.southwestbooks.org/grants\\_co\\_colfax\\_mora.htm](http://www.southwestbooks.org/grants_co_colfax_mora.htm)

(9) Helium in New Mexico: <http://www.aapg.org/explorer/2008/02feb/helium.cfm>

(10) “The natural gas potential of north-central New Mexico: Colfax, Mora and Taos Counties”: <http://geoinfo.nmt.edu/publications/openfile/downloads/OFR500-599/500-525/510/OFR%20510%20Natural%20gas%20in%20north-central%20NM.pdf>

(11) OCD NMEMNRD Well Information:  
<http://ocdimage.emnrd.state.nm.us/imaging/default.aspx> (see (2))

(12) New Mexico Environmental Law Center (NMELC): <http://www.nmenvirolaw.org/>

(17) Group (NMELC): Change for Oil Field Waste the "Pits" for New Mexico:  
<http://www.publicnewsservice.org/index.php?/content/article/10970-1>

(13) Mora County Development Guidance System (DGS) and Comprehensive Land Use Plan (CLUP) at Sites Southwest website: <http://www.sites-sw.com/08webs/projweb.html>

(15) The New York Times, “Gas Company Won’t Drill in New York Watershed,” The New York Times, By JAD MOUAWAD and CLIFFORD KRAUSS  
Published: October 27, 2009: [http://www.nytimes.com/2009/10/28/business/energy-environment/28drill.html?\\_r=1](http://www.nytimes.com/2009/10/28/business/energy-environment/28drill.html?_r=1)

(16) Dr. Robert Freilich: <http://www.freilichpopowitz.com/staff.html>

(18) Headwaters Economics, “Report: NM Now #1 in Oil and Gas, but Challenges Persist,” “New Report Analyzes Energy Impacts on New Mexico, Reviews Impact of Possible Drilling in Otero County”:  
[http://www.commongroundunited.org/index.php?option=com\\_content&task=view&id=7](http://www.commongroundunited.org/index.php?option=com_content&task=view&id=7)

33 and “Drilling not the solution”:

[http://www.commongroundunited.org/index.php?option=com\\_content&task=view&id=488](http://www.commongroundunited.org/index.php?option=com_content&task=view&id=488)

(19) Common Ground United: “Viva Rio Arriba! Hearing Notes and an Albuquerque Journal North Article”:

[http://www.commongroundunited.org/index.php?option=com\\_content&task=view&id=117](http://www.commongroundunited.org/index.php?option=com_content&task=view&id=117)

(20) The class of 2009 studied the Mora River watershed in Mora County in northern New Mexico. The class was taught by Dr. Bruce Thomson (Director, Water Resources Program) and Dr. Abdul-Mehdi Ali (Senior Research Scientist, Analytical Chemistry Laboratory Manager for the Department of Earth & Planetary Sciences). Questions regarding this report should be directed to Dr. Thomson ([bthomson@unm.edu](mailto:bthomson@unm.edu)).

[http://www.unm.edu/~wrp/WRP\\_19.pdf](http://www.unm.edu/~wrp/WRP_19.pdf)

(21) Mora Photography Project: Project Description, by Linda Spier, October 23, 2009

(22) [Plan to Drill on Colorado Plateau Meets Resistance](#), The New York Times, Sean Patrick Farrell, Published: October 29, 2009,

[http://www.nytimes.com/2009/10/30/business/energy-environment/30roan.html?\\_r=1&ref=business](http://www.nytimes.com/2009/10/30/business/energy-environment/30roan.html?_r=1&ref=business)

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#### Other Resources:

Common Ground United: <http://www.commongroundunited.org/index.php>

Drilling Santa Fe: <http://www.drillingsantafe.org>

Go-Tech: <http://octane.nmt.edu/gotech/Main.aspx>

JW Micou & Associates: <http://www.jwmicou.com>

Oil and Gas Accountability Project (OGAP):

[http://www.earthworksaction.org/oil\\_and\\_gas.cfm](http://www.earthworksaction.org/oil_and_gas.cfm)

Otero Mesa: <http://www.oteromesa.org/featured-articles/oterovictory/>