From: Bob Wessely <Wessely@SciSo.com>
Sent: Monday, November 13, 2017 12:02 PM
To: Sidney Hill
Subject: Comments on the Proposed Sandoval County Oil and Gas Ordinance - Ignored Documents
Attachments: O&G-293e-SubmissionOfDocumentLiibrary.pdf

Mr. Hill -

Please accept my seventeen page comment entitled, **"Stop Ignoring Documented Impacts and Risks"**. It is attached in file O&G-293e... .pdf. It is my understanding that you will be passing this comment material on to the Commissioners.

Thanks, Bob W 13 Nov 17 1201 MDT

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Bob Wessely (505) 454-0555 (Land) Wessely@SciSo.com
(505) 259-7842 (Cell)

Comment on the Proposed Sandoval County Oil and Gas Ordinance

Stop Ignoring Documented Impacts and Risks

My name is Bob Wessely.
56 Paseo de San Antonio, Placitas, New Mexico 87043
(505) 259-7842 or <Wessely@SciSo.com>

Mr. Chairman, Commissioners –

Please consider my comments on the proposed "Stoddard" draft oil and gas ordinance for Sandoval County, as follows:

Personal Background –

I am a retired system engineer. For over 30 years, I was technical director for a management consulting company with a staff that ran to over twenty people.

A large portion of our work was writing and critiquing detailed requirements documents for systems' development and test – systems that usually involved hardware, software and people.

Our clients were large companies on both coasts of the U.S. and the Pacific Rim. We worked projects in varied industries: Defense (four services), health care, manufacturing, oil extraction, transportation, aeronautics, nuclear power, and newspaper publishing.

More recently, I have worked for nearly 20 years leading the Middle Rio Grande regional water planning effort and over 8 years advising on local oil and gas ordinances.

My PhD is in theoretical solid state physics from Rutgers University

Issue Synopsis -

The Stoddard ordinance draft appears to have ignored significant input. It should be tabled or postponed until inputs are fully considered, and at least until the all-important New Mexico Tech water study becomes available.

Issue Description –

As you surely know, about 14 months ago, during the formal public input for your oil and gas ordinance, I officially submitted a library of 157 papers to the County records for oil and gas. The papers are peer reviewed studies, reports, analyses, and articles concerning oil and gas development.

Many of the documents identify certain impacts and/or substantial risks from industry

operations. Others address benefits. In addition the library has one document containing links to 509 separate oil and gas articles from The New York Times. A partial summary of the documents' contents is presented below.

I've neither seen nor heard evidence in Planning and Zoning Commission meetings, in County Commission meetings, or in the draft ordinance itself that the impacts and risks cited in those articles and scientifically well-founded studies have been considered by the writers of your "Stoddard" draft ordinance.

In case you can't find the library, I am hereby submitting the documents again. Your staff could download the three-volume set of documents through the link:

https://www.dropbox.com/sh/dswvqpcs0tl2sfb/AAB2NMfzrVYbxWrZEZq5VS4Za?dl=0

The Library Contents -

The library documents are divided into 12 categories:

- General Environmental Assessment with 12 papers.
- Health Effects with 20 papers
- Water Quality with 25 papers
- Air Quality with 23 papers
- Noise Pollution with 4 papers
- Seismicity with 9 papers
- Emergency Response and Roads/Traffic with 10 papers
- Pipelines with 5 papers
- Economics with 32 papers
- Leasing Agents with 6 papers
- Monitoring, Compliance and Enforcement with 19 papers
- Ordinance Contents with 3 papers
- … Plus the 509 New York Times articles.

Even within each category the documents address diverse topics. So, rather than trying to synopsize the whole category, I've identified selected key entries and quotations from each category's collection of studies and articles. The examples in the 12 categories are:

1. **General Environmental Assessment Category with 12 papers.**

   One example of the twelve documents in the "General Environmental Assessment" category is the 66-page document number 01- 07, a GAO report. Its introduction entitled "What GAO Found" says,

   "… shale oil and gas development poses risks to air quality, generally as the result of (1) engine exhaust from increased truck traffic, (2) emissions from diesel-powered pumps used to power equipment, (3) gas that is flared (burned) or vented (released directly into the atmosphere) for operational reasons, and (4) unintentional emissions of pollutants from faulty equipment or impoundments—temporary storage areas. Similarly, a number of studies and

publications GAO reviewed indicate that shale oil and gas development poses risks to water quality from contamination of surface water and groundwater as a result of erosion from ground disturbances, spills and releases of chemicals and other fluids, or underground migration of gases and chemicals. For example, tanks storing toxic chemicals or hoses and pipes used to convey wastes to the tanks could leak, or impoundments containing wastes could overflow as a result of extensive rainfall. According to the New York Department of Environmental Conservation's 2011 Supplemental Generic Environmental Impact Statement, spilled, leaked, or released chemicals or wastes could flow to a surface water body or infiltrate the ground, reaching and contaminating subsurface soils and aquifers. In addition, shale oil and gas development poses a risk to land resources and wildlife habitat as a result of constructing, operating, and maintaining the infrastructure necessary to develop oil and gas; using toxic chemicals; and injecting fluids underground…. "

Another example of the twelve documents in the "General Environmental Assessment" category is the 70-page document number 01-11, a Concerned Health Professionals of NY report. Its Conclusion says,

"All together, the findings from the scientific, medical, and journalistic investigations indicate that fracking poses significant threats to air, water, health, public safety, and long-term economic vitality. …"

2. Health Effects Category with 20 papers

One example of the twenty documents in the "Health Effects" category is the 61-page document number 02-02. It is a NM Department of Health report entitled "The Burden of Asthma in New Mexico". Figure 27 on Page 45 is a map by County of New Mexico showing asthma youth hospitalization rates per 10,000 population.

It shows the northwest and southeast counties of the state with a much higher rate than most other counties. On average, the rate was about six times as high in those counties as in the low rate counties.

A second example of the twenty documents in the "Health Effects" category is the 19-page document number 02-04. It is an Endocrine Disruption Exchange report entitled "Natural Gas Operations from a Public Health Perspective".

"The Abstract says, *"… A list of 944 products containing 632 chemicals used during natural gas operations was compiled…. More than 75% of the chemicals could affect the skin, eyes, and other sensory organs, and the respiratory and gastrointestinal systems. Approximately 40-50% could affect the brain/nervous system, immune and cardiovascular systems, and the kidneys; 37% could affect the endocrine system; and 25% could cause cancer and mutations. These results indicate that many chemicals used during the fracturing and drilling stages of gas operations may have long-term health effects that are not immediately expressed. …"*

The Recommendation section says, *"… the consequences of the health*

impacts to the labor force, residents living in close proximity to the wells, and those dependent upon potable and agricultural water that could be affected by natural gas operations, we make the following recommendations: … "

A third example of the twenty documents in the "Health Effects" category is the 9-page document number 02-11. It is a Science of the Total Environment report entitled "Human health risk assessment of air emissions from development of unconventional natural gas resources".

The Abstract says, *"… Residents living ≤½ mile from wells are at greater risk for health effects from NGD than are residents living >½ mile from wells. Subchronic exposures to air pollutants during well completion activities present the greatest potential for health effects. The subchronic non-cancer hazard index (HI) of 5 for residents ≤½ mile from wells was driven primarily by exposure to trimethylbenzenes, xylenes, and aliphatic hydrocarbons. Chronic HIs were 1 and 0.4. for residents ≤½ mile from wells and >½ mile from wells, respectively. Cumulative cancer risks were 10 in a million and 6 in a million for residents living ≤½ mile and >½ mile from wells, respectively, with benzene as the major contributor to the risk.632 chemicals used during natural gas operations was compiled…."*

A fourth example of the twenty documents in the "Health Effects" category is the 28-page document number 02-19. It is an Environmental Health Perspectives report entitled "Proximity to Natural Gas Wells and Reported Health Status: Results of a Household Survey in Washington County, Pennsylvania".

The Abstract says, *"… The number of reported health symptoms per person was higher among residents living <1 km (mean 3.27 ± 3.72) compared with >2 km from the nearest gas well (mean 1.60 ± 2.14, p=0.02). In a model that adjusted for age, gender, household education, smoking, awareness of environmental risk, work type, and animals in house, reported skin conditions were more common in households <1 km compared with >2 km from the nearest gas well (OR= 4.1; 95% CI: 1.4, 12.3; p=0.01). Upper respiratory symptoms were also more frequently reported in persons living in households less than 1 km from gas wells (39%) compared to households 1-2 km or >2 km from the nearest well (31 and 18%, respectively) (p=0.004). …"*

3. Water Quality Category with 25 papers

An example of the twenty-five documents in the "Water Quality" category is the 5-page document number 03-07a. It is a Duke University study entitled "Methane contamination of drinking water accompanying gas-well drilling and hydraulic fracturing".

The introductory paragraph says, *"… we document systematic evidence for methane contamination of drinking water associated with shalegas extraction. In active gas-extraction areas (one or more gas wells within 1 km), average and maximum methane concentrations in drinking-water wells increased with proximity to the nearest gas well and were 19.2 and 64 mg CH4 L−1 (n ¼ 26),*

a potential explosion hazard; in contrast, dissolved methane samples in neighboring non-extraction sites (no gas wells within 1 km) within similar geologic formations and hydrogeologic regimes averaged only 1.1 mgL−1 (P < 0.05; n ¼ 34). Average δ13C-CH4 values of dissolved methane in shallow groundwater were significantly less negative for active than for nonactive sites (−37 7‰ and −54 11‰, respectively; P < 0.0001). These δ13C-CH4 data, coupled with the ratios of methane-to-higher-chain hydrocarbons, and δ2H-CH4 values, are consistent with deeper thermogenic methane sources such as the Marcellus and Utica shales at the active sites and matched gas geochemistry from gas wells nearby.

A second example of the twenty-five documents in the "Water Quality" category is the 19-page document number 03-24. It is a Proceedings of the National Academy of Sciences (PNAS) report entitled "Noble gases identify the mechanisms of fugitive gas contamination in drinking-water wells overlying the Marcellus and Barnett Shales".

The first paragraph says, *"… Against a backdrop of naturally occurring salt- and gas-rich groundwater, we identified eight discrete clusters of fugitive gas contamination, seven in Pennsylvania and one in Texas that showed increased contamination through time. Where fugitive gas contamination occurred, the relative proportions of thermogenic hydrocarbon gas (e.g., CH4, 4He) were significantly higher (P < 0.01) and the proportions of atmospheric gases (air-saturated water; e.g., N2, 36Ar) were significantly lower (P < 0.01) relative to background groundwater. Noble gas isotope and hydrocarbon data link four contamination clusters to gas leakage from intermediate-depth strata through failures of annulus cement, three to target production gases that seem to implicate faulty production casings, and one to an underground gas well failure. …"*

A third example of the twenty-five documents in the "Water Quality" category is the 3-page document number 03-25. It is a Science Journal report entitled "Well Leaks, Not Fracking, Are Linked to Fouled Water".

The introductory paragraph says, *"A study of tainted drinking water in areas where natural gas is produced from shale shows that the contamination is most likely caused by leaky wells rather than the process of hydraulic fracturing used to release the gas from the rock."*

4. Air Quality Category with 23 papers

An example of the twenty-three documents in the "Air Quality" category is the 12-page document number 04-03. It is an Alberta Energy Resources Conservation Board study entitled "Evaluation of the Potential for Gas and CO_2 Leakage Along Wellbores"

The Conclusion paragraph says, *"The majority of leakage occurrence is because of time-independent mechanical factors controlled during wellbore drilling, construction, or abandonment - mainly cementing … Good quality cementing will likely protect wellbores against cement degradation and casing*

corrosion by reducing contact with formation or injected fluids. ... Enforced regulations are critical in controlling and detecting wellbore leakage from annular flow (SCVF/GM), casing failure, or zonal abandonment failure. … Abandonment methods should incorporate adequate methods to withstand CO_2 attack, especially where elastomers and steel are the main plugging materials."

A second example of the twenty-three documents in the "Air Quality" category is the 6-page document number 04-18. It is a Center for Public Integrity article entitled "Report offers grim predictions for South Texas air quality amid Eagle Ford oil boom"

The introductory paragraph quotes a study prepared by scientists with the Alamo Area Council of Governments (AACOG) in San Antonio and paid for by the Texas Commission on Environmental Quality (TCEQ). It says, *"… Airborne releases of volatile organic compounds (VOCs) could increase 281 percent during the peak ozone season compared to 2012 emissions. VOCs, commonly found at oil and gas production sites, can cause respiratory and neurological problems. Some, like benzene, can cause cancer.*

"Nitrogen oxides — which react with VOCs in sunlight to create ground-level ozone, the main component of smog — could increase 69 percent during the peak ozone season."

A third example of the twenty-three documents in the "Air Quality" category is the 3-page document number 04-23. It is a NASA Science News article summarizing a NASA study, and is entitled "U.S. Methane 'Hot Spot' Bigger than Expected".

The first and third paragraphs say, *"Oct. 9, 2014: One small "hot spot" in the U.S. Southwest is responsible for producing the largest concentration of the greenhouse gas methane seen over the United States – more than triple the standard ground-based estimate -- according to a new study of satellite data by scientists at NASA and the University of Michigan. … The Four Corners area (red) is the major U.S. hot spot for methane emissions in this map showing how much emissions varied from average background concentrations from 2003-2009"*

5. Noise Pollution Category with 4 papers

An example of the four documents in the "Noise Pollution" category is the 56-page document number 05-02. It is an Alberta Energy Resources Conservation Board directive entitled "Noise Control"

Paragraphs 1.2.1 and 1.2.2 say,

"1.2.1 Need for Balance

This directive attempts to take a balanced viewpoint by considering the interests of both the nearby residents and the licensee. It does not guarantee that a resident will not hear noises from a facility; rather it aims to not adversely affect indoor noise levels for residents near a facility. The directive sets permissible sound levels (PSLs) for outdoor noise, taking into consideration that the attenuation of noise through the walls of a dwelling should decrease the indoor sound levels to where

normal sleep patterns are not disturbed (see Appendix 2: Sound Levels of Familiar Noise Sources).

"1.2.2 Receptor Based
The directive considers noise at the point of the receptor, rather than at the property line. Criteria based on property line measurements were considered to be problematic for several reasons:
• They might be too restrictive in rural settings, since a natural buffer often exists between operating facilities and any occupied dwellings.
• It is difficult to select an appropriate maximum noise level that could be applied uniformly.
• More land might be "sterilized" from other development because of the need for industry to purchase land to act as a buffer, extending the property line from the facility.
• Due to the nature of many elevated sources of noise associated with industrial facilities, measurements from property lines may not accurately reflect the noise levels that would exist at a dwelling.
Measuring noise levels at the dwelling allows a licensee to take maximum advantage of the normally substantial distance in rural areas between a facility and any dwellings. The only exception is for facilities in remote areas where a receptor is not present. In such cases a PSL of 40 decibels absolute energy level equivalent (dBA Leq) nighttime must be met at 1.5 kilometres (km)."

A second example of the four documents in the "Noise Pollution" category is the 5-page document number 05-03. It is a Colorado State regulation entitled "Aesthetic and Noise Control Regulations"

Paragraph 802.b says, *"Oil and gas operations at any well site, production facility, or gas facility shall comply with the following maximum permissible noise levels.*

ZONE	***7:00 am to next 7:00 pm***	***7:00 pm to next 7:00 am***
Residential/Agricultural/Rural	*55 db(A)*	*50 db(A)*
Commercial	*60 db(A)*	*55 db(A)*
Light industrial	*70 db(A)*	*65 db(A)*
Industrial	*80 db(A)*	*75 db(A)*

"The type of land use of the surrounding area shall be determined by the Director in consultation with the Local Governmental Designee taking into consideration any applicable zoning or other local land use designation. In the hours between 7:00 a.m. and the next 7:00 p.m. the noise levels permitted above may be increased ten (10) dB(A) for a period not to exceed fifteen (15) minutes in any one (1) hour period. The allowable noise level for periodic, impulsive or shrill noises is reduced by five (5) dB (A) from the levels shown."

6. Seismicity Category with 9 papers

An example of the nine documents in the "Seismicity" category is the 31-page document number 06-01. It is an Oklahoma Geological Survey report entitled "Examination of Possibly Induced Seismicity from Hydraulic Fracturing in the Eola Field, Garvin County, Oklahoma"

The Summary paragraph says, *"… The strong Correlation in Time and Space as well as a reasonable fit to a physical model suggest that there is a possibility these earthquakes were induced by hydraulic---fracturing. However, the uncertainties in the data make it impossible to say with a high degree of certainty whether or not these earthquakes were triggered by natural means or by the nearby hydraulic---fracturing operation."*

A second example of the nine documents in the "Seismicity" category is the 2-page document number 06-07. It is a USGS statement on Oklahoma earthquakes entitled "Record Number of Oklahoma Tremors Raises Possibility of Damaging Earthquakes"

The sixth paragraph says*, "The analysis suggests that a likely contributing factor to the increase in earthquakes is triggering by wastewater injected into deep geologic formations. This phenomenon is known as injection-induced seismicity, which has been documented for nearly half a century, with new cases identified recently in Arkansas, Ohio, Texas and Colorado. A recent publication by the USGS suggests that a magnitude 5.0 foreshock to the 2011 Prague, Okla., earthquake was human-induced by fluid injection; that earthquake may have then triggered the mainshock and its aftershocks. OGS studies also indicate that some of the earthquakes in Oklahoma are due to fluid injection. The OGS and USGS continue to study the Prague earthquake sequence in relation to nearby injection activities."*

7. Emergency Response and Roads/Traffic Category with 10 papers

An example of the ten documents in the "Emergency Response and Roads/Traffic" category is the 4-page document number 07-04. It is a National Geographic article entitled "Colorado Flooding Imperils Oil and Gas Sites, Causes Spill"

The first three paragraphs say, *"In the wake of unprecedented massive flooding over thousands of square miles in Colorado, government officials and private companies are rushing to secure the region's heavy concentration of oil and natural gas wells, and prevent dangerous chemicals and toxic waste from contaminating the region's water. (See related quiz: "What You Don't Know About Oil Spills.")*

"Late Wednesday, reports emerged that at least 5,250 gallons of crude oil had seeped into the South Platte River in the north-central part of the state. The oil was leaking from damaged Anadarko Petroleum tanks. "Anadarko is responding and has absorbent booms in the water," said a statement from the state's Department of Natural Resources (DNR). Another report noted that

Noble Energy was seeing a "limited amount of natural gas" leaking from one of its wells. (See related story: "As the Arctic Melts, a Race to Test Oil Spill Cleanup Technology.")

"Inspectors have yet to reach many of the well sites, in part because many roads remain inaccessible, according to Todd Hartman, a spokesman for the Colorado DNR."

A second example of the ten documents in the "Emergency Response and Roads/Traffic" category is the 1-page document number 07-06. It is a New York Times article entitled "Gas Well Spews Polluted Water"

The first two paragraphs say, *"ALLENTOWN, Pa. (AP) — A blowout at a natural gas well in rural northern Pennsylvania spilled thousands of gallons of chemical-laced water on Wednesday, contaminating a stream and forcing the evacuation of seven families who live nearby as crews struggled to stop the gusher.*

"The Chesapeake Energy Corporation lost control of the well site near Canton, in Bradford County, around 11:45 p.m. Tuesday, officials said. Tainted water continued to flow Wednesday afternoon, though workers finally managed to prevent any more of it from reaching the stream."

A third example of the ten documents in the "Emergency Response and Roads/Traffic " category is the 7-page document number 07-08. It is a New York Times article entitled "Amid Pipeline Debate, Two Costly Cleanups Forever Change Towns"

Paragraphs two, three and four say, *"It has been three years since an Enbridge Energy pipeline ruptured beneath this small western Michigan town, spewing more than 840,000 gallons of thick oil sands crude into the Kalamazoo River and Talmadge Creek, the largest oil pipeline failure in the country's history. Last March, an Exxon Mobil pipeline burst in Mayflower, Ark., releasing thousands of gallons of oil and forcing the evacuation of 22 homes.*

"Both pipeline companies have spent tens of millions of dollars trying to recover the heavy crude, similar to the product Keystone XL would carry. River and floodplain ecosystems have had to be restored, and neighborhoods are still being refurbished. Legal battles are being waged, and residents' lives have been forever changed.

"'All oil spills are pretty ugly and not easy to clean up,' said Stephen K. Hamilton, a professor of aquatic ecology at Michigan State University who is advising the Environmental Protection Agency and the state on the cleanup in Marshall. 'But this kind of an oil is even harder to clean up because of its tendency to stick to surfaces and its tendency to become submerged.'"

8. Pipelines Category with 5 papers

An example of the five documents in the “Pipelines” category is the 4-page document number 08-03. It is a New York Times article entitled “Oil Spill in North Dakota Raises Detection Concerns”

The first four paragraphs say, *“DENVER — For several days last month, Steven Jensen smelled the oil, wafting up over his rolling wheat farm near Tioga.*

“But in that part of northwestern North Dakota, where the rush to tap the Bakken shale field is roaring, the scent of crude is hardly uncommon. It was not until Sept. 29 that Mr. Jensen came across a six-inch spurt of oil gurgling up from his land and reported a spill.

“As it turned out, a Tesoro Logistics pipeline had ruptured, spreading more than 865,000 gallons of oil across seven acres of Mr. Jensen’s farm. The spill is one of the largest inland oil pipeline accidents in the United States.

“State officials, who responded to the spill after being notified by Tesoro, said the oil posed no immediate environmental risk. Fortunately, they said, the accident occurred in a remote area, away from water and homes. But the rupture has raised fresh concerns about the ability of pipeline companies to detect problems before it is too late.”

A second example of the five documents in the “Pipelines” category is the 6-page document number 08-04. It is an Energy & Environment report entitled “Natural Gas Pipeline Plan Creates Rift in Massachusetts”

The first three paragraphs say, *“NORTHFIELD, Mass. — Standing on a dirt road outside his aging barn, Walter Jaworski, a former veterinarian turned cattle rancher in this rural part of north-central Massachusetts, points south across his 200 acres of forest and pasture to a nearby tree line. If things don’t go his way, he says, that’s about where a new natural gas pipeline will slice through his land on a 180-mile journey from central New York to a transmission hub north of Boston.*

“The project, proposed by the pipeline giant Kinder Morgan at a cost of $2 billion to $3 billion “or more,” according to the company, is only in the earliest stages of consideration. But debate over its placement — and even its overall need — is in full swing, with anti-pipeline yard signs and heated public meetings.

“Mr. Jaworski is just one of thousands of public and private property owners here who find themselves wedged between the mammoth shale gas supply being unleashed in states to the west, like Pennsylvania, Ohio and West Virginia, and the increasingly insatiable market for the fuel in New England.”

9. Economics Category with 32 papers

An example of the thirty-two documents in the "Economics" category is the 2-page document number 09-05. It is an article entitled, "Social & Economic Impacts to Sublette County, WY from Natural Gas Development"

The concluding section "Big Impacts to Local Governments Means Big Expenditures" says,

"● The town of Pinedale is currently debating a number of very large housing developments that will potentially help alleviate shortages but will require significant infrastructure expenditures. This comes at a time when the town is struggling to afford a $6M update to the current aging sewer and water infrastructure.

● The town of Marbleton currently needs to upgrade its roads, sewer, and water infrastructure before it can grow and attract new homebuyers.

● Sublette County road system continues to feel the strain of heavy industrial use and many portions continually deteriorate. Traffic levels and accidents have almost quadrupled since 1995[14]. Moreover, material and labor costs continue to rise with competing industrial activity.

● Sublette County School Systems are bracing for the new impacts to the school-age population. New worker-residents tend to be younger and have more children than the historical average.

● Sublette County local services such as EMS, Sheriffs Dept, Health Clinics, are facing huge impacts related to the natural gas boom. In 2006, roughly 25% of ambulance runs went to the gas fields[16], number of arrests has almost quadrupled in the last 5 years[17], and two new health care clinics are under construction to absorb the influx of new residents. As with every other sector of the economy, labor costs have increased greatly and attempts to attract an out-of-the-area workers is difficult at best.

● Moreover, Sublette County is faced with offering significant expenditures to improve equality of life and reduce costs of living. Expenditures to help pay for retirement centers, community centers, library expansions, recreation centers, are being requested to improve quality of live and provide amenities that will make the community attractive to prospective new workers."

A second example of the thirty-two documents in the "Economics" category is the 34-page document number 09-06. It is a Cornell University working paper entitled "A Comprehensive Economic Impact Analysis Of Natural Gas Extraction In The Marcellus Shale"

Concluding Section VIII, "The Guiding Principle: Stewardship" says, *"In thinking about and responding to the environmental and economic challenges posed by shale gas drilling, elected officials and other policy-makers need to start with the realization that natural gas is a non-renewable resource. Once it is gone, it is gone. Good stewardship from an environmental perspective requires assessing the long-term costs and benefits of HVHF technologies and their implications for the natural and human environment in which gas extraction occurs. Although the economic consequences of HVHF gas drilling have been counter-posed to environmental concerns, we hope that we have demonstrated*

in this working paper that positive economic outcomes cannot be taken for granted. Thus, elected officials also need to take responsibility for careful management of the local and regional economies affected by HVHF gas drilling and their longer-term sustainability. This means anticipating what may occur in the short-term during a boom, and in the longer-term when drilling ends. Both of these periods will present difficult issues. It is only by anticipating what may occur, planning for change, and communicating a concrete vision for the future that policy-makers can make the kinds of choices that will stand the test of time. There will be no second chances."

A third example of the thirty-two documents in the "Economics" category is the 15-page document number 09-07. It is a JM Barth & Associates (economics consultants) report entitled "Unanswered Questions About The Economic Impact of Gas Drilling In the Marcellus Shale: Don't Jump to Conclusions"

The Paragraph 8 Conclusion says, *"The entire Marcellus Shale region in New York may be at risk both economically and environmentally. While the environmental risks have been a focus of concern, many stakeholders have assumed that a positive economic impact would result. In reality, the economic impact may very well be negative. And the likelihood is that gas drilling would adversely affect other economic activities such as tourism and sport fishing and hunting. To some extent gas drilling and these other industries are likely to be mutually exclusive. The net effect is what must be considered.*

"It is important for decision makers in New York State to act responsibly and insist on thorough, relevant and unbiased analyses prior to making the bold and possibly inaccurate assumption that gas drilling in the Marcellus Shale will result in positive net economic benefits to New York State and its counties.

"As decisions regarding gas drilling in the Marcellus Shale have potentially severe and in some cases irreversible consequences in the form of health, environmental and infrastructure degradation, it is imperative that all of the possible economic impact outcomes be fully understood."

A fourth example of the thirty-two documents in the "Economics" category is the 3-page document number 09-21. It is an Albuquerque Journal article entitled, "New Mexico oil country struggles as cities boom"

Selected paragraphs read, *"As a result, the city of 26,000 people [Carlsbad] is struggling to keep up with its fast-growing population and the accompanying challenges, from housing shortages, higher crime rates and a spike in deadly accidents between big rigs and cars on narrow country roads. It's one of the few areas of New Mexico experiencing an economic boom.*

"We just can't keep up," Carlsbad Mayor Dale Janway said.

"In Carlsbad, perhaps the biggest public safety danger is the unchecked heavy truck traffic and DWIs on the narrow rural roads lined by oil rigs, said Janway, the mayor. Eddy County has already recorded nine roadway fatalities this year, compared with 15 in all of 2013."

10. Leasing Agents Category with 6 papers

An example of the six documents in the "Leasing Agents" category is the 6-page document number 10-05. It is a New York Times article entitled, "Signing Drilling Leases, and Now Having Regrets"

The first five paragraphs and the eighth read, *"DRYDEN, N.Y. — Four years ago a man and a woman knocked on Katharine D. Dewart's door, offering easy money for the use of her land.*

"Handing her a brochure that included serene before-and-after pictures, they explained that a natural gas company was seeking to drill somewhere on her 35 acres of wildflower fields surrounded by hemlock woods in this Tompkins County town near Ithaca.

"Ms. Dewart, 68, served lemonade and signed, accepting $1,909 upfront and royalty payments of 12.5 percent of any sales of gas extracted from her property. "I assumed it'd be noisy for a couple of months, and I'd have a little extra cash and wouldn't that be great," Ms. Dewart, a writer, said.

"Now, she said, she is stricken with remorse. And she is not alone. Hundreds of other state residents who signed leases allowing gas companies to drill deep into their properties with a method known as horizontal hydraulic fracturing have changed their minds and are trying to break or renegotiate their contracts. Millions of acres in upstate New York are under lease, awaiting permits for the drilling, which has yet to begin, delayed by a state environmental review.

"Some landowners who have soured on the gas companies say they are not opposed to the drilling itself, also called hydrofracking. But, they say, they regret not having bargained harder and are seeking better deals. Then there are residents like Ms. Dewart, who said she did not realize what the lease would mean until the regional debate over the potential environmental risks of the process heated up in recent years.

"Among those who regret signing a lease is Ellen Harrison, a retired environmental scientist in Caroline, an adjacent town, who said she should have known better than to cede control of her 33 acres. She has formed a group called Fleased to fight the gas companies and help property owners get out of their leases."

11. Monitoring, Compliance and Enforcement Category with 19 papers

An example of the nineteen documents in the "Monitoring, Compliance, and Enforcement" category is the 124-page document number 11-02. It is an Earthworks/Oil and Gas Accountability Project report entitled, "The Crisis In Oil & Gas Regulatory Enforcement; States Are Betraying The Public By Failing to Enforce Oil and Gas Development Rules"

The first five Executive Summary paragraphs entitled "A Crisis In Public Oversight: States Do Not Enforce Oil And Gas Extraction Regulations" read, *"The U.S. faces a crisis in the enforcement of rules governing the oil and gas industry. The shale gas and shale oil boom has brought an expansion of oil and gas activity unseen in many parts the country since the 19th century. Unfortunately, as this report shows, states are dangerously unprepared to oversee current levels of extraction, let alone increased drilling activity from the shale boom.*

Battles over rulemakings can be intense – stakeholders spend considerable effort to influence the process whenever regulations are created or revised. They do so because they believe that rules matter – that after the rules are created, the government will enforce them. This report reveals, in the case of state oil and gas rules, that is simply not true.

Based on their own data, every state we studied fails to adequately enforce regulations on the books.

Among our findings:

- *Every year hundreds of thousands of oil and gas wells – 53 to 91% of wells in the states studied (close to 350,000 active wells in the six states in 2010) – are operating with no inspections to determine whether they are in compliance with state rules.*
- *When inspections do uncover rule violations, the violations often are not formally recorded – and the decision whether or not to record a violation is often left to the discretion of the individual inspector.*
- *When violations are recorded, they result in few penalties.*
- *When penalties are assessed, they provide little incentive for companies to not offend again.*

The full report examines in detail the current state of oil and gas enforcement in Colorado, New Mexico, New York, Ohio, Pennsylvania and Texas. It also addresses systemic factors that impede enforcement. Woven throughout are commonsense recommendations to fix the problem."

A second example of the nineteen documents in the "Monitoring, Compliance, and Enforcement" category is the 13-page document number 11-15. It is a New York Times article entitled, "Regulations Lax as Gas Wells' Tainted Water Hits Rivers"

Paragraphs six through ten say, *"While the existence of the toxic wastes has been reported, thousands of internal documents obtained by The*

New York Times from the Environmental Protection Agency, state regulators and drillers show that the dangers to the environment and health are greater than previously understood.

"The documents reveal that the wastewater, which is sometimes hauled to sewage plants not designed to treat it and then discharged into rivers that supply drinking water, contains radioactivity at levels higher than previously known, and far higher than the level that federal regulators say is safe for these treatment plants to handle.

"Other documents and interviews show that many E.P.A. scientists are alarmed, warning that the drilling waste is a threat to drinking water in Pennsylvania. Their concern is based partly on a 2009 study, never made public, written by an E.P.A. consultant who concluded that some sewage treatment plants were incapable of removing certain drilling waste contaminants and were probably violating the law.

"The Times also found never-reported studies by the E.P.A. and a confidential study by the drilling industry that all concluded that radioactivity in drilling waste cannot be fully diluted in rivers and other waterways.

"But the E.P.A. has not intervened. In fact, federal and state regulators are allowing most sewage treatment plants that accept drilling waste not to test for radioactivity. And most drinking-water intake plants downstream from those sewage treatment plants in Pennsylvania, with the blessing of regulators, have not tested for radioactivity since before 2006, even though the drilling boom began in 2008."

A third example of the nineteen documents in the "Monitoring, Compliance, and Enforcement" category is the 4-page document number 11-16. It is a New York Times article entitled, "Wyoming May Act to Plug Abandoned Wells as Natural Gas Boom Ends"

The first four Paragraphs say, *"DENVER — Hundreds of abandoned drilling wells dot eastern Wyoming like sagebrush, vestiges of a natural gas boom that has been drying up in recent years as prices have plummeted.*

"The companies that once operated the wells have all but vanished into the prairie, many seeking bankruptcy protection and unable to pay the cost of reclaiming the land they leased. Recent estimates have put the number of abandoned drilling operations in Wyoming at more than 1,200, and state officials said several thousand more might soon be orphaned by their operators.

"Wyoming officials are now trying to address the problem amid concerns

from landowners that the wells could contaminate groundwater and are a blight on the land.

"This month, Gov. Matt Mead proposed allocating $3 million to pay for plugging the wells and reclaiming the land around them. And the issue is expected to be debated during next year's legislative session as lawmakers seek to hold drilling companies more accountable."

12. Ordinance Contents Category with 3 papers

An example of the three documents in the "Ordinance Contents" category is the 4-page document number 12-01b. It is a Las Vegas Optic article entitled, "What Should Be in the O&G Ordinance?"

The first three Paragraphs say, *"The O&G industry is notorious as a 'bull in a china shop' in localities with weak regulations. If the O&G industry comes into our county, the health, safety, and welfare of the county and its citizens must be protected to the fullest extent permitted by law. Beginning with the application for a permit and continuing for years after the natural gas and oil has been depleted, the industry must demonstrate that operations are safe, pose minimal negative impacts, and do not inflict direct or indirect financial burdens on the county and its populace.*

"Principles - The ordinance should intensely incentivize the industry to protect the County - social, economic, and environmental resources, the citizens, and the County establishment. The industry knows the technology. The ordinance should make the industry apply the protections wholeheartedly.

"The County must be seen as regularly, visibly, and vigorously looking over operators' shoulders, at industry expense. Permission to operate in San Miguel County is a privilege (not a right), that is recognized by industry to be promptly suspended or revoked for missteps."

13. … Plus the collection of 509 other New York Times articles.

In Conclusion, Mr. Chairman, Commissioners -

The previous sections present but samples of the important submissions to your oil and gas ordinance development process. They highlighted a few of the certain Impacts and the risk potentials that stem from oil and gas development.

In developing your "Stoddard" draft ordinance, your staff and advisors should have carefully considered all of the testimony and submissions the County has received. Particularly, staff should have been required to consider each of the 666 writings in the submitted library and the impacts and risks they portray. Most of those industry risks are not well addressed by the state's Oil Conservation Division.

If you have not successfully directed a detailed consideration of those submissions (as

seems to be the case), your staff has a lot of homework to accomplish – both in reading and in draft revision - before you can vote on a legally survivable ordinance.

In Summary -

The Stoddard ordinance draft appears to have ignored significant input. It should be tabled or postponed until inputs are fully considered, and at least until the all-important New Mexico Tech water study becomes available.

Thank you.