

## Law Offices of M. Brian McMahon

333 s. grand ave., suite 1670, los angeles, ca 90071

Joni Gray Chair, Board of Supervisors County of Santa Barbara 105 East Anapamu Street Santa Barbara, CA 93101

June 6, 2011

Re: Comments on Hydraulic Fracturing, Board Hearing, June 7, 2011

Dear Ms. Gray:

#### I. Introduction.

I am Brian McMahon (Resume, Attachment 1), and I represent Gerard J. and Kathleen M. Kilgallon, whose ranch is located at 2480 Highway 135, Los Alamos, California 93440. They are greatly concerned about hydraulic fracturing because Venoco has recently drilled a well on their ranch, Careaga Canyon 6-21, and has engaged in hydraulic fracturing operations in the well. Venoco denies that the Kilgallons own any of the oil and gas rights beneath their property and has not entered into a surface use agreement with them. The Kilgallons are very worried that Venoco's operations will pollute their water supplies.

Venoco did not inform the County that it planned to engage in hydraulic fracturing in the well. The County issued a Notice of Violation to Venoco on May 26, 2011.

My comments will address the following:

- The practice of hydraulic fracturing, customarily referred to as "fracing," causes substantial environmental risks (1) in underground in oil and gas wells; (2) on the surface at or near the well-site; (3) in the transportation of fracing fluids; and (4) in disposal wells.
- Fracing uses enormous amounts of fresh water--a use that the County of Santa Barbara can ill afford.
- Fracing creates much higher noise levels at well-sites than does usual drilling for oil and gas.
- Santa Barbara County has not been sufficiently vigilant in monitoring oil and gas drilling operations and in enforcing its regulations given the environmental risks that fracing creates.

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The County should impose a moratorium on fracing until the risks of fracing are fully understood and the appropriate safeguards are put in place.

### II. Fracing creates substantial environmental risks.

Fracing is "a process in which fluid is injected into a well at very high pressures in order to either widen and deepen existing cracks or create new fractures in tight [shale] formations." Fracing operations are usually conducted in horizontally drilled wells in order to maximize the area of the shale formation impacted by fracing. See Attachment 2 (Illustration of horizontal and vertical fracing.) The horizontal portion of a well can extend over several thousand meters. Fracing takes place throughout the length of the horizontal portion of the well bore.

The oil and gas industry refuses to reveal the chemicals in facing fluids.<sup>2</sup> Despite the industry's refusal to identify the chemicals in fracing fluids, it is known that fracing fluids contain, among other chemicals, acid, distillates, including diesel fuel, ethylene, glycol, isoproponal and sodium and potassium carbonate.<sup>3</sup> See Attachment 3, which is Table 4 to the EPA's Draft Plan. Many of the chemicals used are known carcinogens. Enormous amounts of fracing fluids have been injected throughout the United States. Between 2005 and 2009, companies injected 32.2 million gallons of diesel fuel or fracing fluids containing diesel fuel in wells in nineteen states.<sup>4</sup>

<sup>&</sup>lt;sup>1</sup> American Law and Jurisprudence on Fracing, Rocky Mountain Mineral Law Foundation Journal, Vol. 47, No. 2, page 279 (2010.)

<sup>&</sup>lt;sup>2</sup> Environmental Protective Agency (EPA), *Draft Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources*, February, 2011, page 25 "Much of the information regarding the identity and concentration of chemicals used in hydraulic fracturing fluids is considered by the [oil and gas] industry to be proprietary and, therefore, confidential. This makes identifying the toxicity and human health effects associated with these chemicals difficult."

<sup>&</sup>lt;sup>3</sup> American Law and Jurisprudence on Fracing, page 285; EPA Draft Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources, Table 4, page 24 and Appendix D Chemicals Found in Hydraulic Fracturing Fluids (Appendix D consists of eleven pages, referring to hundreds of chemicals.), citing Groundwater Protection Council, Modern Gas Shale Development in the United States, April 2009, p. 78, graphic representation at http://energyindepth.org/frac-fluid.pdf (as of 6/6/11).

<sup>&</sup>lt;sup>4</sup> EPA *Draft Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources*, page 25, citing Waxman, H.A., Markey, E.J. & DeGette, D. (2011, January 31) Letter to EPA Administrator Lisa Jackson regarding the use of diesel fuel in hydraulic fracturing fluids (http://democrats.energycommerce.house.gov/index.php?q=news/waxman-markey-and-degette-investigation-finds-continued-use-of-diesel-in-hydraulic-fracturing-f) (as of 6/6/11).

There are two sources of environmental risks to drinking water associated with fracing. The first is the fracing fluid, which contains a large number of chemicals that can cause severe damage if released into the environment. The second is naturally occurring methane that is released in the fracing process. The risks that fracing creates is especially critical of those areas of Santa Barbara County, for example, the ranches in the Los Alamos area, where fresh water wells are the only source of potable water.

Fracing creates environmental risks to drinking water in several separate locations. (Attachment 4, EPA Water Use in Hydraulic Fracturing Operations). The most obvious is along the horizontal well-bore where fracing fluid is injected into the shale formations. The practice of fracing throughout the length of the horizontal well-bore maximizes the opportunity for the underground migration of fracing fluids into fresh water supplies.

A second location where fracing fluid creates a risk of contaminating fresh water is at the surface of a well-site. About 20% to 40% of the fracing fluids, along with oil and water, return to the surface. An oil spill at the surface will cause fracing fluids brought up to the surface to spill onto the ground. As the EPA has warned, "[r]eleased fluids might flow into a nearby surface water body or infiltrate into the soil and near-surface ground water, potentially reaching drinking water aquifers." The Kilgallons experienced an oil spill on their property. Venoco reported the oil spill to the County, but did not inform the County that it was engaged in fracing operations in that well. Attachment 5 (Venoco's report of the spill on the Kilgallons' property to the County). Venoco's Report provided no notice to the County that the well-site should be carefully examined for spilled fracing fluids.

A third location for potential environmental impact from fracing fluids is in the transportation of fracing fluids to the well-site and storage at the well-site. Fracing fluids are stored in tanks at the well-site in preparation for fracing. The tanks, valves and pipes used to store and mix fracing fluids are subject to spills, releases and leaks.<sup>7</sup>

<sup>&</sup>lt;sup>5</sup> American Law and Jurisprudence on Fracing, page 285, citing Colter Cookson, "Technologies Enable Frac Water Reuse," American Oil & Gas Reporter, March 2010, at 106.

<sup>&</sup>lt;sup>6</sup> EPA Draft Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources, at 25, citing Draft: Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program: Well Permit Issuance for Horizontal Drilling and High-Volume Hydraulic Fracturing to Develop the Marcellus Shale and Other Low-Permeability Gas Reservoirs, September 2009. NYSDEC (New York State Dept. of Environmental Conservation) (ftp://ftp.dec.state.ny.us/download/OGdSGEISFull.pdf) (as of 6/6/11).

<sup>&</sup>lt;sup>7</sup> Id. at 26. A fish kill was linked to a spill of fracing fluids in Pennsylvania. Id. at 56.

A fourth location for potential environmental impact on fresh water supplies is typically disposal wells, where fracing fluids are disposed. Oily wastes, waste water and fracing fluids which are brought to the surface from the well-bore are disposed into waste water disposal wells. The wells are permitted by the County for disposal of waste water and oil wastes. The disposal of fracing fluids into those wells, which was not contemplated when the wells were permitted, could allow for the migration of fracing fluids into fresh water sources. The County should carefully consider whether oil companies should be allowed to dispose of fracing fluids into water disposal wells.

In addition to problems arising from fracing fluids, fracing has caused extensive methane contamination in drinking water. One of the effects of fracing is the release of methane from shale formations. Extensive methane contamination of water has been found in areas where fracing has been used.<sup>9</sup>

### III. Fracing uses enormous amounts of fresh water.

It is estimated that typical fracing operations require between one to five million gallons of fracing fluids, mostly water, per well. The County of Santa Barbara has fairly recently experienced shortages of fresh water. It can ill afford large amounts of fresh water being used in fracing.

# IV. Fracing operations are very noisy and likely exceed the County's maximum decibel levels for well-sites.

The purpose of fracing is to create fractures in shale to allow the free flow of oil and gas from the shale. In order to create fractures, fracing fluids are pumped into the shale at enormous pressures. These operations create high noise levels at the well-sites. Other governmental entities have placed restrictions on fracing operations because of the noise they create. For example, the City of Fort Worth Texas requires that drilling and fracing be no more than five decibel higher during the day than

<sup>9</sup> Methane Contamination of Drinking Water Accompanying Gas-Well Drilling and Hydraulic Fracturing, Center on Global Change, Duke University, April 14, 2011, available at <a href="https://www.pnas.org/cgi/doi/10.1073/pnas.1100682108">www.pnas.org/cgi/doi/10.1073/pnas.1100682108</a> (as of 6/6/11).

<sup>11</sup> American Law and Jurisprudence on Fracing, page 284.

<sup>&</sup>lt;sup>8</sup> Id. at 37.

American Law and Jurisprudence on Fracing, page 285; EPA Draft Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources, page 19, citing Michele Rodgers, et al., Marcellus Shale: What Local Governments Need to Know, Penn State College of Agricultural Sciences (2008) p. 11, at http://pubs.cas.psu.edu/freepubs/pdfs/ua454.pdf (as of 6/6/11).

ambient noise and no more than three decibels higher at night. Santa Fe County in New Mexico and the State of Louisiana restrict fracing to daylight hours. The County should impose restrictions on the noise level at well-sites from fracing operations.

# IV. The County should be much more diligent in monitoring oil and gas operations and in enforcing its regulations.

Venoco applied for and was granted a permit to drill a well on the Kilgallons' property, Careaga Canyon 6-21, based on Venoco's claim that it was redrilling a previously permitted well, OTEC-Hunter 1. Venoco's strategy was obviously to avoid the more stringent CEQA requirements for a new well. These two wells are over a half mile apart. See Attachment 6, DOGGR's map of Careaga Canyon 6-21 and OTEC-Hunter No. 1. Careaga Canyon 6-21 could not possibly qualify as a redrill of the previously permitted OTEC-Hunter 1 well. The County should have caught Venoco's attempt to avoid the stricter CEQA requirements for a new well.

DOGGR's map, Attachment 6, shows further failure on the County's part to monitor and enforce its regulations. Venoco received a permit for the Venoco Monighetti 7-21 well even though it virtually sits on the San Antonio Creek bed. It should never have been permitted.

Moreover, Venoco has never received a grading permit for the Careaga Canyon 6-21well or the Venoco Monighetti 7-21 well, as required by Santa Barbara County, Code of Ordinances, Petroleum Code Ch. 25, sec. 25-22. No one from the County apparently noticed Venoco's failure to obtain grading permits for these two wells. The grading permit is critical because both wells are located very near the San Antonio Creek bed.

Venoco has ignored the County's regulations. It cannot be trusted to protect the Kilgallons' ranch from environmental degradation from its fracing operations.

Venoco's behavior is obtaining a well permit in the Kilgallons' ranch and its subsequent behavior at the well-site cast grave doubt whether Venoco will conduct fracing operations in such a way as to protect the Kilgallons' fresh water supplies.

<sup>&</sup>lt;sup>12</sup> Ft. Worth Municipal Code, Ch. 15, Article II, §§ 15-30 et seq.

<sup>&</sup>lt;sup>13</sup> Santa Fe County Oil and Gas Amendment to the Santa Fe County land Development Code, Ord. 2008-19; Louisiana Dept. of Natural Resources, Office of Conservation, Order No. U-HS, 3(I)(2)(b).

#### V. Conclusion

The County should impose a moratorium on fracing operations until the environmental risks to drinking water are identified and regulations can be put in place to protect against those risks.

Although some forms of fracing are not entirely new, fracing in shale formations along the horizontal well-bores has been brought to a new level in the last few years. Fracing operations have raised concerns throughout the United States about their environmental impact on fresh water supplies, especially in locations where fracing has been especially intense.

In response to the environmental concerns raised by fracing, a number of states, counties and municipalities have either implemented or are in the process of drafting new laws and regulations to regulate fracing. These include California, New York, Pennsylvania, Louisiana, Ohio, Oklahoma, West Virginia, and Wyoming.<sup>14</sup>

If fracing operations in the County were to inject carcinogens into fresh water supplies, especially in areas where the only source of potable water is in wells, the effect would be catastrophic.

The EPA is presently studying these environmental issues. A number of states are in the process of statutes and regulations to protect the environment against possible negative impacts of fracing. The County could learn a lot about how states cope with fracing.

The sensible approach for the County to take would be to impose a moratorium on fracing while the County assesses the environmental risks of fracing and adequate new regulations are put in place.

Thank you for your attention in this matter. Feel free to contact me for further information or resources.

Sincerely,

Mr. Brien Me Mahon

M. Brian McMahon

<sup>&</sup>lt;sup>14</sup> American Law and Jurisprudence on Fracing, pages 300-336, "Eastern Shale Plays – a Game Plan for Success," Nicole R. Bagnell, presented at the 55<sup>th</sup> Annual Rocky Mountain Mineral Law Institute, pages 32-11 and 12 (July, 2009).

#### M. Brian McMahon

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#### **EDUCATION**

- Ph.D. Philosophy, University of Wisconsin, 1972
- J.D. University of California, Los Angeles, 1978

#### PROFESSIONAL BACKGROUND

- Private Practice since 1979
- Law Clerk to Judge Ozell Trask, United States Court of Appeals for the Ninth Circuit, 1978-1979
- Member of the State Bar of California
- Practice before all Federal and State Courts in California, including U.S. Ninth Circuit Court of Appeals and the Federal Circuit
- AV Rating from Martindale-Hubbell
- Lecturer in Philosophy 1970-1972
- Assistant Professor of Philosophy 1972-1975, University of Wisconsin-Parkside
- Incoming President (July 1, 2011) of Antitrust Section, Los Angeles County Bar

#### **AREAS OF PRACTICE**

- Antitrust & Unfair Competition
- Complex Civil Federal and State Business Litigation
- Crude Oil, Natural Gas and Geothermal Resources Law
- Environmental Law
- Appellate

#### **PROFESSIONAL EXPERIENCE**

- Retained by County of Santa Barbara to assist council in dispute with Exxon over crude oil valuation.
- Recovered \$3.5 billion for California natural gas and electricity customers and recovered over \$30 million for the City of Long Beach and its natural gas ratepayers in Natural Gas antitrust case and was a member of joint litigation team.
- Obtained summary judgment dismissing multimillion dollar CERCLA contribution claim against the City of Long Beach.
- Litigated on behalf of the City of Long Beach against major oil companies for conspiracy to underprice crude oil; recovered over \$300 Million.
- Recovered millions of dollars for the State of New Mexico from major oil companies for underpayment of crude oil royalties.
- Provided assistance to a Federal Interagency Task Force on behalf of the State of California concerning underpayment of federal crude oil royalties.
- Special assistance to State of California regarding antitrust concerns over the merger of two major oil companies.
- Represented State of California in successfully urging the U.S. Department of Interior to change its valuation regulations for federal crude oil.

# TESTIMONY ON BEHALF OF CITY OF LONG BEACH, AS TRUSTEE FOR THE STATE OF CALIFORNIA, RE CRUDE OIL ROYALTY MATTERS

- United States House of Representatives, Government Management, Information and Technology Subcommittee, Government Reform and Oversight Committee, June 1996.
- United States House of Representatives, Energy and Mineral Resources Subcommittee, Resources Committee, May 1998 and September 1998.
- United States Senate, Energy and Natural Resources Committee, June 1998.
- Hearing before the Honorable George Miller and the Honorable Carolyn B. Maloney, Members
  of the House of Representatives, July 1998, concerning regulations proposed by the Minerals
  Management Service, United States Department of Interior, for the collection of crude oil
  royalties.
- House of Representatives, Energy and Mineral Resources Subcommittee of the Committee of Resources, June 2001.

#### **PUBLICATIONS**

- "Tying Law: The Clash Between the Supreme Court and Lower Courts," Competition, The Journal
  of the Antitrust and Unfair Competition Section of the State Bar of California, Vol. 16, No. 2,
  Fall/Winter 2007.
- Co-Author and Co-Editor, Chapter 9, "Antitrust and Unfair Competition in Regulated Industries," California Antitrust & Unfair Competition Law, 4th Edit.

#### **ADDRESSES & SPEECHES**

- "Crude Oil and Natural Gas Royalties," for Seminar: Agreements and Disputes in Oil and Gas Production, Speaker, October 2010
- Western States Lands Commission Meeting 1999
- Interstate Oil and Gas Compact Commission, Royalty-In-Kind Workshop, 1998
- California Independent Producers Association, 1998
- Mineral Management Services Meeting, 1998
- Mineral Management Services Meeting, 1996
- National Stripper Well Association, Annual Meeting, 1995
- Western and Eastern States Lands Commission Meeting, 1991

#### **MEMBERSHIPS**

- Los Angeles County Bar (Member, Sections on Antitrust & Unfair Competition, Litigation) (Executive Committee of Antitrust & Unfair Competition, 2004 Present)
- State Bar of California (Member, Sections on: Antitrust & Unfair Competition, Litigation)
- Rocky Mountain Mineral Law Foundation
- Association of Business Trial Lawyers
- American Philosophical Association

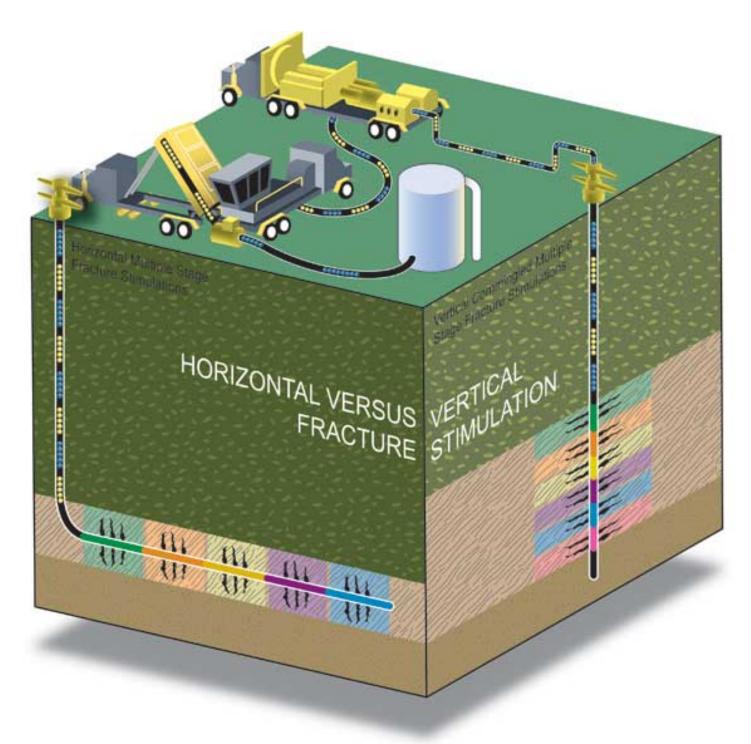


TABLE 4. AN EXAMPLE OF THE VOLUMETRIC COMPOSITION OF HYDRAULIC FRACTURING FLUID

Component/ Additive Type	Example Compound(s)	Purpose	Percent Composition (by Volume)	Volume of Chemical (Gallons) <sup>a</sup>
Water		Deliver proppant	90	2,700,000
Proppant	Silica, quartz sand	Keep fractures open to allow gas flow out	9.51	285,300
Acid	Hydrochloric acid	Dissolve minerals, initiate cracks in the rock	0.123	3,690
Friction reducer	Polyacrylamide, mineral oil	Minimize friction between fluid and the pipe	0.088	2,640
Surfactant	Isopropanol	Increase the viscosity of the fluid	0.085	2,550
Potassium chloride		Create a brine carrier fluid	0.06	1,800
Gelling agent	Guar gum, hydroxyethyl cellulose	Thickens the fluid to suspend the proppant	0.056	1,680
Scale inhibitor	Ethylene glycol	Prevent scale deposits in the pipe	0.043	1,290
pH adjusting agent	Sodium or potassium carbonate	Maintain the effectiveness of other components	0.011	330
Breaker	Ammonium persulfate	Allow delayed breakdown of the gel	0.01	300
Crosslinker	Borate salts	Maintain fluid viscosity as temperature increases	0.007	210
Iron control	Citric acid	Prevent precipitation of metal oxides	0.004	120
Corrosion inhibitor	N,n-dimethyl formamide	Prevent pipe corrosion	0.002	60
Biocide	Glutaraldehyde	Eliminate bacteria	0.001	30

Data are from GWPC and ALL Consulting, 2009, and API, 2010b. Note that the example compounds are not necessarily the compounds used in this fracturing operation in the Fayetteville Shale. <sup>a</sup> Based on 3 million gallons of fluid used.

In the case outlined in Table 4, the total concentration of chemical additives was 0.49 percent. Table 4 also calculates the volume of each additive based on a total fracturing fluid volume of 3 million gallons, and shows that the total volume of chemical additives is 14,700 gallons. In general, however, the overall concentration of chemical additives in fracturing fluids used in shale gas plays ranges from 0.5 to 2 percent by volume with water and proppant comprising the remainder (GWPC and ALL Consulting, 2009), indicating that 15,000 to 60,000 gallons of the total fracturing fluid consist of chemical additives (assuming a total fluid volume of 3 million gallons).

The chemical additives are typically stored in tanks on-site and blended with water and the proppant prior to injection. Flow, pressure, density, temperature, and viscosity can be measured before and after mixing (Pearson, 1989). High pressure pumps then send the mixture from the blender into the well (Arthur et al., 2008). In some cases, special on-site equipment is used to measure the properties of the mixed chemicals *in situ* to ensure proper quality control (Hall and Larkin, 1989).

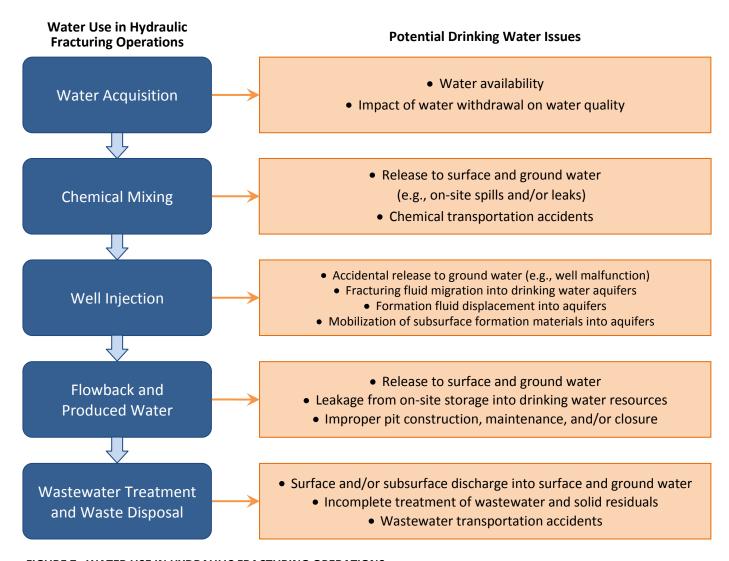


FIGURE 7. WATER USE IN HYDRAULIC FRACTURING OPERATIONS

8054741203

## Hazardous Materials Minor Spill and Release Incident Report Form

Approved Jointly by CAER (Community Awareness & Emergency Response) and Santa Barbara County Fire Chiefs

Fax Completed Report to Santa Barbara County Fire Department Protection Services Division. Follow-up with telephone verification to 686-8170 (805) 686-8183 Fax sent 9:45pm 2/10/11

1. INCIDENT AND RESPONSE DESCRIPTI	ON	911 CALLED? YES NO
Date / Time Discovered 1 /6:03	Date / Time Discharge 1/0:00	Discharge Stopped   ✓ Yes   No
Incident Reporting Date / Time Febr	upry 10, 2011 at 11:00 am	
Incident Business / Site Name Veno	co Careasa Canten	6-21
Incident Address Across from 1	oc Alamos vineyand whose oddres	2265 Hwy 135 Los Alamos
Other Locators (Bldg, Room, Oil Field, Lea	ase, Well #, GIS) Oil Field TEN, RT	W, Sec. 21
Please describe the incident and indicate	specific causes and area affected. While	circulating Water 20170
	son To Monitor/Control Tank L	
un monitored Allowing Tank To a		
Indicate actions to be taken to prevent sim	ilar spills from occurring in the future.	
	cept under continuos supervis	ION
2. ADMINISTRATIVE INFORMATION	THE PARTY OF THE P	1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 -
Business Name Veno (o Inc		
Address 3201 Arrow Drive, 9	ianta Maria, CA	
Supervisor in charge at time of incident /		Phone 805-310-060/
Contact Person Frank Smit	., , , , , , , , , , , , , , , , , , ,	Phone 805-345-1546
3. CHEMICAL / RELEASE INFORMATION		WAYS, WETLANDS, OR AGRICULTURE AREAS.
Chemical - Produced Oil	Quantity ( 2/2	
Chemical - KC   Tot	2 3-5 hbls Quantity	☐ GAL ☐ LBS ☐ FT <sup>3</sup>
Chemical - Freduced water	Quantity	GAL LBS FT
Clean-Up Procedures & Timeline: R-	The state of the s	span @ 11:00 - Send To
Appropriate DISPOSAL Facility		5
Notifications: 11:00 am to 0	ES (Roport # 11-0804), SB Petroku	m Dest 11:15 am DOGGR 11:21 am
SB Fire Dept. 11:41 am (Gan	Brown), APCD (Jon Mundt) 1124	862
Completed By	1 1 1 1	Phone 805-316-060/
Print Name Nathan Cauford	Title well 5.7 - manager	Date and Time 2-/0-i/
	TY FIRE DEPARTMENT PROTECTION SERVICES D	PART
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