Proposed Oil and Gas Drilling – Pike National Forest – near Mount Herman Colorado

Project overview

In 2002 Dyad Petroleum Company of Midland Texas purchased mineral rights to approximately 21,000 acres in the Pike National Forest near Mount Herman Colorado. The mineral rights were purchased for approximately $2.50 per acre. As a part of the approval process Dyad elected to have the Forest Service perform the environmental assessment survey. The Forest Service has recently completed the environmental assessment and plans on releasing its findings for public comments during late March or early April 2008. This environmental assessment will declare the approval or disapproval of the project by the Forest Service. This public comment period will allow input from the local community, including those potentially impacted by this drilling project.

Dyad Petroleum has proposed wildcat drilling at two sites. Wildcat drilling is used for the purposes of exploration where no known deposits exist. The first site is located approximately a half mile northwest of the intersection of Mount Herman road and Red Rocks Road. This site is several hundred feet from homes located on Granite Circle. This site is 39’05’28.11”N and 104’55’30.22W at an elevation of 7844 feet above sea level. This site as verified with a physical inspection is in the bottom of a drainage in the path of an intermittent stream several hundred yards below a natural water spring. The second site is located on top of Raspberry Mountain and roads will need to be constructed to that site.

Figure 1 Photograph of drilling site #1 taken Saturday March 8, 2008. 39’ 05’ 28.11 N 104’ 55’ 03.22 W

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Geologically Speaking

Mount Herman is composed of coarse granite with large crystals of feldspar. Mount Herman is part of the Pikes Peak batholith formed during the Laramide Orogeny. A Batholith is a body of plutonic (igneous intrusive) rock that forms from cooled magma deep within the earth. Batholiths are composed of multiple masses of plutons that rise through the surrounding rock pushing it aside and partially melting it. A Batholith is formed when many plutons converge together. Batholiths shape and form are not uniform. The Laramide Orogeny is the uplift that created the current Rocky Mountains. The proposed drilling site is on a fault between this granite and the Dawson Arkoses. An Arkoses is a loosely formed conglomerate formation of sandstone, siltstone, shale, and conglomerate. Arkoses formations coincidently make great aquifers because of their porous nature. "The sediments that form the Dawson aquifer primarily consist of coarse-grained, poorly to well-consolidated sandstones inter-bedded with conglomerate, siltstone, and shale. Individual conglomerate or sandstone beds commonly are lens-shaped and range in thickness from a few inches to as much as 200 feet. Saturated thickness of the aquifer is 300 to 400 feet in the central part of the formation."[1] Below the Dawson formation lays the Laramie formation. This formation was deposited on a coastal plain containing a swamp. This formation is composed of sandstone, mudstone and thin coal beds.

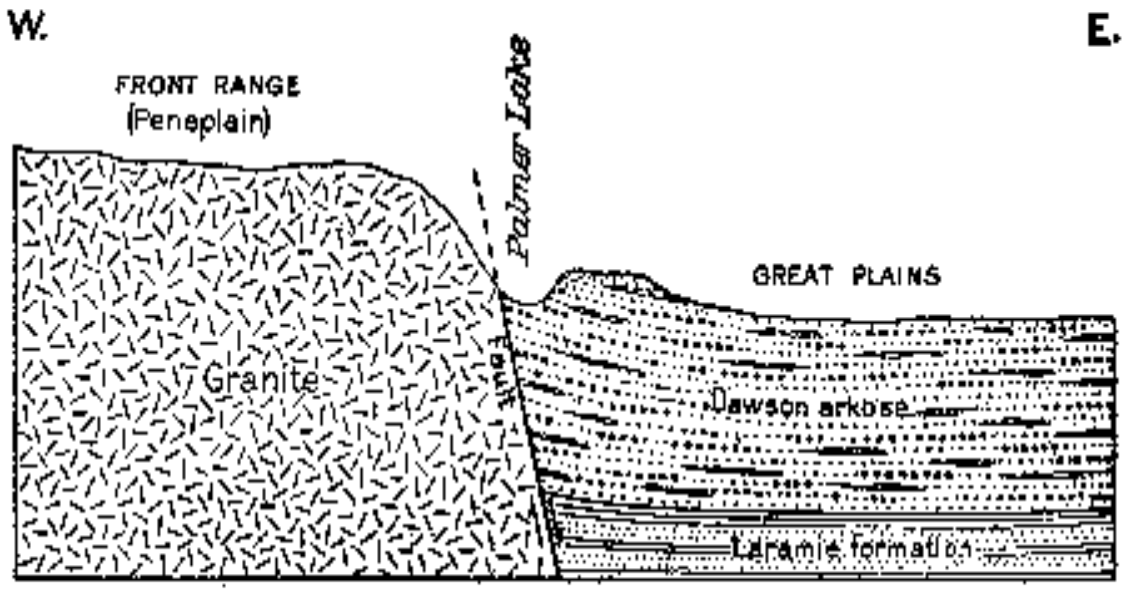

Figure 2 showing a historical interpretation of the relationship of the fault to underlying formations. The depth of and angle below the surface is projected in this illustration based upon information derived and conjectured at the surface.

[1] United States Geological Survey – Ground Water Atlas of the United States – Denver Basin Aquifer System http://capp.water.usgs.gov/gwa/ch_c/C-text6.html

The Denver Basin Aquifer system containing the Dawson Aquifer

The Dawson aquifer is part of the Denver Basin aquifer system and stretches from the foothills of the Rockies out to the Great Plains.

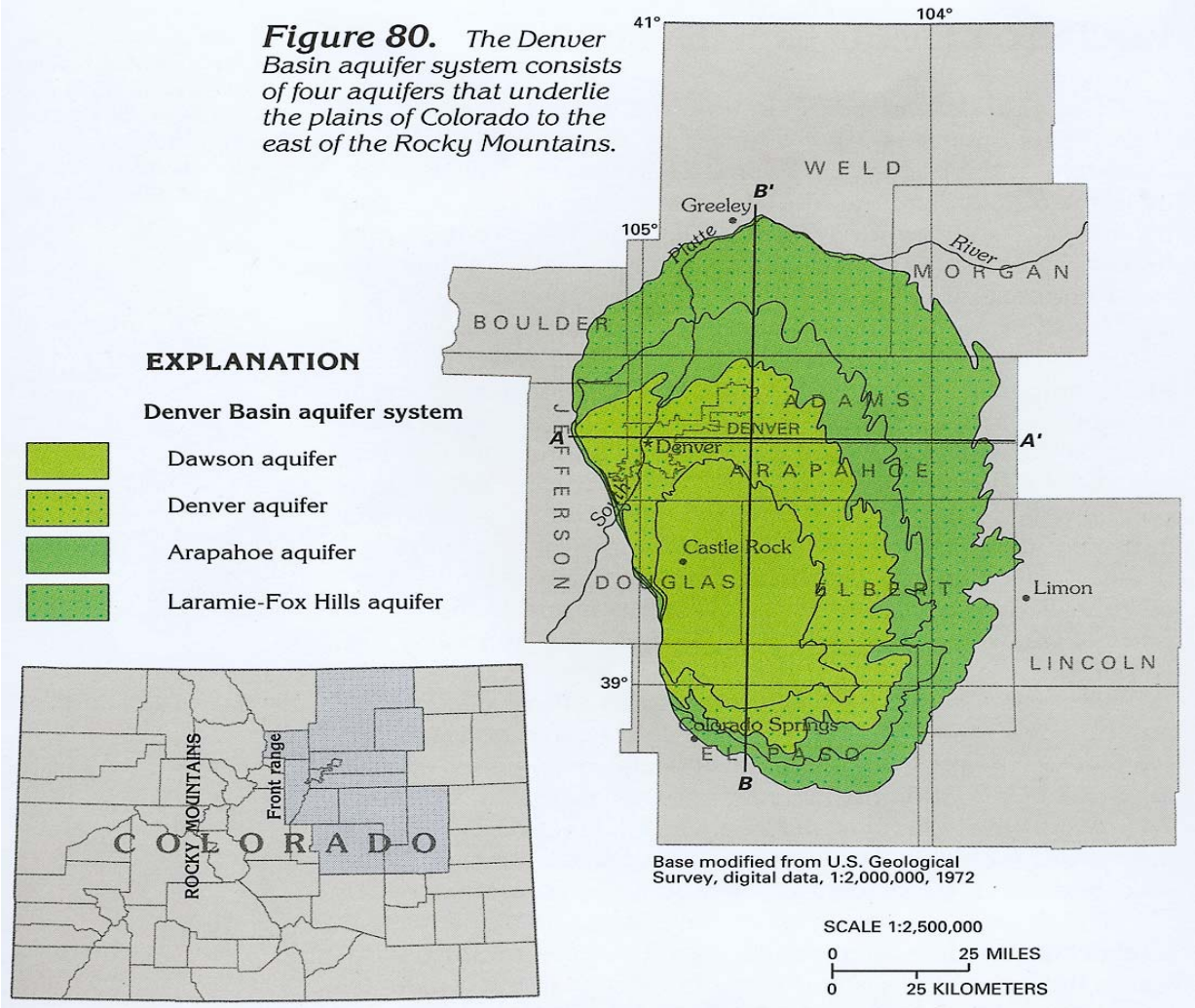

Figure 3 Denver Basin Aquifers. Source: US Geological Survey Ground Water Atlas of the United States

Ground water currently supplies 18% of Colorado's needs for water.[2] With this need for water the protection and preservation of the aquifer system is of paramount importance. For all practical purposes, ground water is all water beneath the surface of the earth. Ground

[2] *Ground water in Colorado A Primer* Rock Talk a publication of the Colorado Department of Natural Resources – Division of Minerals and Geology Colorado geological Survey Volume 5, number 4 October 2002

water hydrology, or hydrogeology, is an interdisciplinary science that deals with the occurrence, movement, and quality of water beneath the surface of the earth.[3]

In the Palmer Lake, Monument area there are two mediums for transporting water in the aquifers. Pikes Peak granite is composed of fractured crystalline rocks. These fractures allow the underground movement of water. The second medium is the poorly sorted sedimentary materials of the Dawson, Denver and Arapahoe aquifers. The water that falls as precipitation into the mountains west of Palmer Lake and Monument moves underground through the fractured Pikes Peak granite into the poorly sorted sedimentary rocks of the Dawson formation.

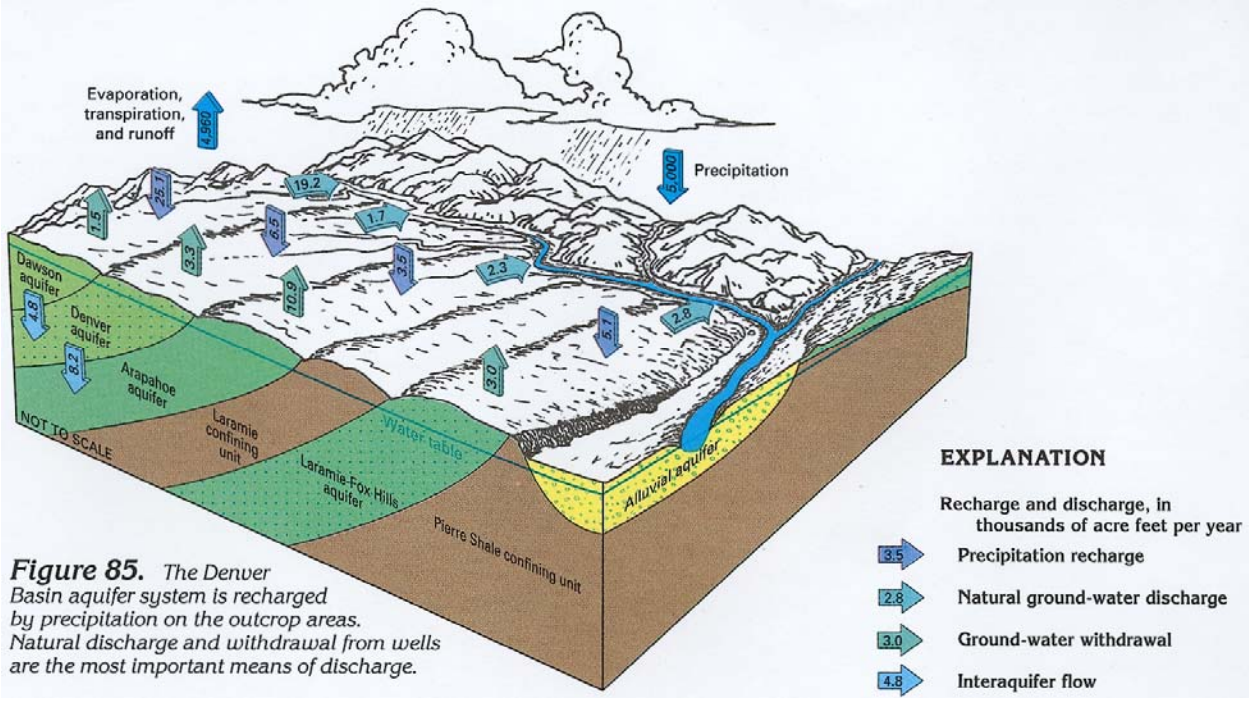

Figure 4 the Denver Basin Aquifers recharge system illustrating the flow of precipitation into the aquifer system. Source: US Geological Survey Ground Water Atlas of the United States

Oil and Gas Drilling

At the Mount Herman site Dyad petroleum will need to prepare an area for exploration. At each drilling site approximately 4.5 acres will be bulldozed to prepare the site for drilling. The 90-foot tall drilling rigs will run for approximately two months. The site will contain a drilling rig, pad area, waster fluid retaining ponds, and equipment storage areas for pipe and employee trailers sometimes used for temporary housing.

[3] Ibid.

Figure 5 Oil and Gas Drilling Image from the United States Forest Service

http://www.fs.fed.us/r8/ouachita/natural-resources/minerals/procedures.shtml

Oil and Gas Drilling – The Process

1.) The drilling site is selected. This site will include the drilling rig, the pad site where pipe and equipment is stored and the reserve pits. This is where waste material is pumped from the well. This reserve pit holds fluid and rock cuttings that come out of the drill hole.
2.) Drilling the well is done by the drilling rig rotating the drill pipes. Mud is circulated in the hole during drilling to remove cuttings and maintain hydrostatic pressure. Mud is circulated through the drill pipe, through the bit, and back to the surface on the outside of the drill pipe.
3.) Once the drilling is complete the well casing and cement is installed. Surface casing, typically placed in a smaller diameter casing is installed inside the conductor casing. The purpose of surface casing is to protect shallow ground water from drilling completion and production operations.
4.) Surface casing is generally 10% of the total well depth – generally 600 to 2000 feet. Surface casing is cemented in place and is permanent. Each layer of casing is cemented in place by highly viscous cement. Once the casing is set in place cement is pumped through the casing and back up into the space between the earth and the casing.
5.) Production Casing provides the conduit from the surface of the well to the petroleum producing formation. Production casing provides a conduit to allow hydro carbons to

be extracted without intermingling with other fluids and formations found underground. This casing is cemented in place and is permanent.

6.) Well stimulation consists of various techniques used to increase the efficiency of the flow of gas into the production tube. Hydraulic fracturing (fracing) is the most commonly used method of well stimulation.

7.) Fracing is accomplished by first penetrating perforating the casing and the cement. Once there is a hole liquid is pumped into the fractures at high pressure. This is known as fracing.

8.) Well completion commonly refers to the process of finishing the well so that it is ready to produce gas. Completion consists of inserting tubing into the well, installing the final wellhead assembly, plumbing the wellhead to the production equipment and flowing back into the well. Completion operations commonly require a short period of venting or flaring to drill out plugs installed during fracing operations. Initial flow back from the well is monitored very closely until impurities (sand, mud, water, etc.) have been completely removed from the gas stream prior to routing the gas the sales pipeline. [4]

Oil and Gas Drilling – "Fracing"

The most common drilling practice used today is called hydraulic fracturing or "fracing". This process is used to increase the production of the well. Pumping a solution of sand and chemicals into the well by means of high-pressure pumps increase output of the well. The sand acts as a wedge to hold open the fractures in the rock and the chemicals act as lubricants and solvents to allow the gas to move freely and out of the well. The Halliburton Company developed fracing during the 1950's as a method for increasing the productivity of a well. Most companies keep their particular "recipes" for hydraulic fracturing fluids under wraps, but many fluids are known to contain toxic chemicals intended to increase the efficiency or the process. [5] In the early decades of the technology, perhaps one in every hundred wells was frac'd. But as the nations fossil energy reserves shrank, fracturing became a common tool in both oil and gas operations. [6]

Hydraulic Fracturing

Hydraulic fracturing, or fracing, is used to initiate production in low-permeability reservoirs and re-stimulate production in older producing wells. In hydraulic fracing, a fluid is injected into a well at pressures so intense that the structure 'cracks,' or fractures. Fracing is used both to open up fractures already present in the formation and create new fractures. Fracture fluid can be oil-based, water-based, acid-based or gel. However, water fracs are the most common and least expensive. Slick water frac jobs are the primary technique used for developing tight-gas reservoirs, such as the Barnett Shale in Texas. In order to retrieve gas at a commercially profitable rate, most tight-gas reservoirs need to be fractured. As part of the frac procedure, propping agents are injected along with the fluid to prop open the new fractures. The U.S. Department of Labor defines a propping agent, or proppant, as: "a granular substance (sand grains, aluminum pellets, or other material) that is carried in

[4] Colorado State government oil and gas commission Rules Making Studies Work Group – Drilling 101 Drilling a Natural Gas Well and Natural Gas Production (in the Pieance Basin) http://oil-gas.state.co.us/RuleMaking/WorkGroups/StudiesGroup/COGCCdrilling101.pdf

[5] How Halliburton's Technology is Wrecking the Rockies by Michelle Nijhuis issue #30 On Earth Summer 2006. http://www.nrdc.org/onearth/06sum/rockies4.asp

[6] Ibid

suspension by the fracturing fluid and that serves to keep the cracks open when fracturing fluid is withdrawn after a fracture treatment."
In order to effectively select the right combination and concentrations of frac fluid and propping agents, geologists must know a lot about a reservoir. To create the right approach to a frac job, geologists gather information from well logs about a variety of factors such as porosity, permeability, saturation levels, pressure and temperature gradients. Using this information, geologists run scenarios through 2D or 3D reservoir models to predict the outcomes of various approaches.
Types of Frac Jobs
Gel-based fracing is one of the oldest approaches. It is most effective in moderately permeable formations. Gel fracs combine water with a polymer to thicken the fluid so that it can carry a significant amount of propellants into the formation. Because gel fracs require a large amount of expensive propellants, they were not economically viable for smaller reservoirs. Eventually, a new approach was developed that achieved better results while reducing costs - slick-water fracing. Slick-water fracs combine water with a friction-reducing chemical additive, which allows the water to be pumped faster into the formation. Water fracs don't use any polymers to thicken and the amount of propellant used is significantly less than that of gels. Slick water fracs work very well in low-permeability reservoirs, and they have been the primary instruments that have opened up unconventional plays like the Texas Barnett Shale. In addition to the cost advantage, water fracs require fewer cleanups and provide longer fractures. In shale formations, brine water is used because the salt content inhibits the formation from swelling. Freshwater is used in other formations where swelling of the clays is not a problem.[7]

Acidizing
Acid Fracing
Acidizing, also known as acid fracing, is the technique in which fluid is injected into subsurface rock formations with greater pressure than the rock can withstand, and the rock is fractured under the pressure. Acid is then forced into the newly formed fractures to dissolve more rock and open up a deep channel for petroleum flow. The acid is held under pressure for a short period of time to allow it to react with the formation matrix. The spent acid is then flowed or swabbed out of the well, after which the well is put back into production. Acidizing is most often used for two functions: increasing permeability throughout the formation and cleaning up formation damage near the well bore caused by drilling or completion fluids.
Damage Removal
Formation damage near the well bore can occur during drilling completion, work over, production or injection. When the formation near the well bore is damaged, it restricts the flow of oil or natural gas to the well bore. There is often a dramatic upturn in production once that damage is removed. Acidizing can also restore or even improve flow rates by creating new flow channels. Horizontal wells in particular often require acidizing to clean up damage due to drilling mud before they can be brought into production.[8]

Pollution and toxic substances

Toxic substances can enter the environment and pose a threat to human health at a number of points in the oil and gas production process. To start, oil and gas contain substances that

[7] Hydraulic fracing Enermax corporation http://www.enermaxinc.com/hydraulic-fracturing/

[8] Acid fracing Enermax corporation http://www.enermaxinc.com/acidizing/

are known to be very hazardous to human health, and exploration and production explorations release hazardous substances found naturally beneath the earth's surface into the environment, [9] such as benzene, toluene, ethyl benzene, and xylene (known as the "BTEX" chemicals); [10] radioactive materials; [11]hydrogen sulfide;[12] arsenic; [13] and mercury. [14] Among the illnesses these substances can cause are cancer, damage to the central nervous system, dizziness, lung diseases and breathing difficulties, headaches, nausea, and eye and nose irritation.

Toxic chemicals released during oil and gas operations

Pollutants:
Arsenic: Chronic arsenic exposure can cause damage to blood vessels, a sensation of "pins and needles" in hands and feet, darkening and thickening of the skin and skin redness. It is a known human carcinogen, and can cause cancer of the skin, lungs, bladder, liver, kidney, and prostate.
Hydrogen Sulfide: Hydrogen sulfide has been linked to irritation of the eyes, nose, and throat, difficulty in breathing, headaches, dizziness, nausea and vomiting. Low-level exposure might also lead to poor attention spans, poor memory, and impaired motor functions. Short-term exposures at high concentrations can lead to a loss of consciousness and death.
Mercury: Mercury can permanently damage the brain, kidneys and developing fetus and may result in tremors, changes in vision or hearing, and memory problems. Even in low doses mercury may affect an infant's developmental and delay walking and talking, shortening attention span causing learning disabilities.
Polycyclic Aromatic Hydrocarbons: Several of the polycyclic aromatic hydrocarbons (PAH's) that can be found in crude oil have caused tumors in laboratory animals and are considered possible or probable human carcinogens. Studies of people have found that individuals exposed for long periods of time to mixtures that contain PHA's can also develop cancer. In addition, animal tests have found reproductive problems and birth defects.

9 Oil and Gas Accountability Project, "Pathways and Sources of Contamination," http://www.earthworksaction.org/contaminantpathways.cfm

10 Williams, S.D., D.E. Ladd, and J.J. Farmer, "Fate and Transport of Petroleum Hydrocarbons in Soil and Ground Water at Big South Fork National River and Recreation Area, Tennessee and Kentucky, 2002-2003," U.S. Geological Survey, Scientific Investigations Report 2005-5104 (2006), p. 7.

11 Smith, K.P., "An Overview of Naturally Occurring Radioactive Materials (NORM) in the Petroleum Industry," Argonne National Laboratory, ANL/EAIS-7 (December 1992). For more information, see Argonne National Laboratory's website on Naturally Occurring Radioactive Materials (NORM), http://www.ead.anl.gov/project/dsp_topicdetail.cfm?topicid=16.

12 Illinois Department of Public Health Fact Sheet, "Hydrogen Sulfide Gas," http://www.idph.state.il.us/envhealth/factsheets/hydrogensulfide.htm

13 Puri, B. K. and K.J. Irgolic, "Determination of Arsenic in Crude Petroleum and Liquid Hydrocarbons," Environmental Geochemistry and Health, 11 (3,4) (December 1989), pp. 95-99.

14 Wilhelm, S.M. et al, "Mercury in Crude Oil Processed in the United States," Environmental Science & Technology 41 (13) (2007), pp. 4509-4514.

Volatile Organic Compounds (VOC's)

Acetone: Acetone can cause nose, throat, lung and eye irritation, headaches, light-headedness, and confusion. In animals it has been linked to kidney, liver and nerve damaged, and increased birth defects.

Benzene: Benzene is a known human carcinogenic and causes leukemia.

Ethyl benzene: Ethyl benzene can cause dizziness, throat and eye irritation, respiratory problems, fatigue and headaches. It has been linked to tumors and birth defects in animals, as well as damage to the nervous system, liver and kidney.

Toluene: Toluene can cause fatigue, confusion, weakness, memory loss, nausea, hearing loss, central nervous system damage, and may cause kidney damage.*

Xylene: can cause headaches, dizziness, confusion, balance changes, irritation of the skin, eyes, nose, and throat, breathing difficulty, memory difficulties, stomach discomfort, and possibility changes in the liver and kidney.

Radioactive Substances

Radium: Radium is a known human carcinogen, causing bone, liver and breast cancer.

Radon: Radon can cause an increased incident of lung diseases such as emphysema, as well as lung cancer.

*State of California Environmental Protection Agency, "Chemicals known to the state to cause cancer or reproductively toxicity," (1 June 2007), available at http://www.oehha.ca.gov/prop65/prop65_list/Newlist.html

Sources:

National Library of Medicine, Hazardous Substances Data Bank (HSDB), http://www.toxnet.nlm.nih.gov/

U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry (ATSDR), http://www.atsdr.cdc.gov/toxfaq.html

U.S. Department of Energy, Office of Environmental Management, Risk Assessment Information System (RAIS), Toxicity Profiles, http://rais.ornl.gov/tox/rap_toxp.shtml

US Department of Labor, Occupational Safety and Health Administration Guidelines, http://www.osha.gov/sltc/healthguidelines.html

Fracing Chemicals

Information about the nature and substance of fracing chemicals is sparse and in some situations nonexistent. Because of inadequate disclosure regulations the nature of these chemical soups is proprietary in nature.

Most of the literature pertaining to fracing fluids relates to the fluid's operational efficiency rather than their potential environmental or human health impacts. There is very little documented research on the environmental impacts that result from the injection and migration of these fluids into subsurface formations, soils, and USDWs[15] A recent analysis of products and ingredients used in natural gas development in Western Colorado by TDEX,Inc., shows that there are toxic chemicals used throughout the development process. Fifty four percent of the 192 known chemicals on the list cause respiratory problems, 53% are toxic to the skin and sense organs, 48% cause gastrointestinal and liver damage, 43%

[15] Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of coal bed methane reservoirs - Chapter 4 Hydraulic Fracturing Fluids EPA (Environmental Protection Agency) document # 816-R-04-003

are neurotoxins. [16] The analysis from the TDEX study reveals specific concerns about the following chemicals that are used in the fracing process. These chemicals include; **2-BE** (2-butoxyethanol; ethylene glycol monobutyl ether) linked to liver cancer, reproductive problems and blood disorders, **2MTB** (2-mercaptobenzothiazole) which is linked to adrenal cancer, pituitary cancer, tumors and mutations, **2-(**2-methoxyethoxy) ethanol, dithylene glycol monomethyl ether suspected carcinogen known to fetal deformities and organ malformations, **Nonylphenols** (ethoxylated nonylphenol) which has estrogenic-like characids interfering with brain development, reproductively, and atrophy of the thymus.[17]

Product	Chemical Composition of Existing Products	Concentration of Interest (µg/L)	
	Chemical Compound	Point-of-Injection	MCL, RBC or *MCP*
Linear gel delivery system	guar gum derivative		
	diesel, which contains the following:		
	benzene	313.20	5.00
	toluene	522.00	1,000.00
	ethylbenzene	522.00	700.00
	xylene	522.00	10,000.00
	naphthalene	14,094.00	20.00
	1-methylnapthalene	71,340.00	*20 / 6,000*
	2-methylnapthalene	34,974.00	121.67
	dimethylnapthalenes	270,570.00	na
	trimethylnapthalenes	160,080.00	na
	fluorenes	31,320.00	2190.00
	phenanthrenes	7,830.00	*300 / 50*
	aromatics	574,200.00	*200 / 30,000*
Water Gelling Agent	guar gum		
	water	495,049.50	na
	fumaric acid	132,337.87	na
Linear Gel Polymer	fumaric acid	529,351.49	na
	adipic acid	366,257.43	na
Gelling Agents (BLM Lists)	benzene		5.00
	ethylbenzene		700.00
	methyl tert-butyl ether		2.64
	naphthalene		20.00
	polynuclear aromatic hydrocarbons (pahs)		na
	polycyclic organic matter (pom)		na
	sodium hydroxide		na
	toluene		1,000.00
	xylene		10,000.00
Crosslinker	boric acid	170,998.00	na
	ethylene glycol	265,788.42	73,000.00
	monoethanolamine	na	na
Crosslinker	sodium tetraborate decahydrate		na
Crosslinker (BLM Lists)	ammonium chloride		na
	potassium hydroxide		na
	zirconium nitrate		na
	zirconium sulfate		na
Foaming Agent	isopropanol	234,945.16	na
	salt of alkyl amines	na	na
	diethanolamine	na	na
Foaming Agent	ethanol	236,081.75	na
	2-butoxyethanol	269,641.08	na
	ester salt	na	na
	polyglycol ether	na	na
	water		na
Foamers (BLM)	glycol ethers	na	na
Acid Treatment	hydrochloric acid	na	na
Acid Treatment	formic acid	na	73,000.00
Breaker Fluid	diammonium peroxidisulfate	na	na
Breaker Fluids (BLM Lists)	ammonium persulfate		na
	ammonium sulfate		na
	copper compounds		1,460.00
	ethylene glycol		na
	glycol ethers		na
Microbiocide	2-bromo-2nitrol,3-propanediol		na
Biocide	2,2-dibromo-3-nitrilopropionamide		na
	2-bromo-3-nirtrilopropionamide		na
Bactericides	polycyclic organic matter (pom)		na
	polynuclear aromatic hydrocarbons (pahs)		na
Acid Corrosion Inhibitor	methanol	236,070,000.00	18,250.00
	propargyl alcohol	47,425,000.00	na
Acid Corrosion Inhibitor	pyridinium, 1-(phenylmethyl)-,ethyl methyl deriv.	na	na
	thiourea	210,750,000.00	na
	propan-2-ol	39,275,000.00	na
	poly(oxy-1,2-ethanediyl)-nonylphenyl-hydroxy	na	na

= Exceeds regulatory standard
MCL = Maximum Contaminant Level - The highest level of a contaminant that is allowed in drinking water.
RBC = EPA's Risk Based Concentration Tables. (http://www.epa.gov/reg3hwmd/risk/index.html, developed by Region 3, serving: Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia)
MCP = Massachusetts Contingency Plan - Risk-based ground water standards for drinking water protection chosen because Massachusetts has developed standards for many constituents in diesel fuel. Two numbers are given (the first is drinking water standard, the second is standard for groundwater discharging to surface water).

Figure 6 Source: Environmental Protection Agency. August, 2002. ***Draft version of EPA's study Evaluation of Impacts of Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs.***

[16] Ibid

[17] Oil and Gas Accountability Project Letter to Colorado Government officials from Bruce Baisel staff attorney June 14, 2006 http://ogap.org

Fracing liquids – their Life Span

Fracing material may be pumped into a well several times during the course of bringing the well up to production standards. Industry claims that 70% of the material injected into the ground is retrieved. While the fate of the remaining 30% is unknown, the recovered product is placed in holding pits on the surface and allowed to evaporate. This results in highly toxic chemicals being released into the air, as well as being disbursed into local surface waters. The condensed residues remaining in the pits are taken off site and re-injected in the ground posing concerns for aquifers.[18] The remaining 30% of these toxic chemicals remain under the ground where they can travel and migrate among various aquifers with the flow of water.

So What – The Regulatory Road.

In Colorado the state oil and gas commission has traditionally been made up of industry experts who have sought regulatory favor for the oil and gas industry. As a result of this favor the OGCC (Oil and Gas Conservation Commission) rules do not explicitly require any disclosure of chemicals. Nor does the OGCC require monitoring when toxic chemicals are used during oil and gas operations. [19] Currently there is the potential for legislative changes in how this commission operates but that is all currently ongoing at the state capital in Denver.

One also might look to the Federal government for regulatory assistance but they offer scant protection. Though the Safe Drinking Water Act requires regulation of "underground injections" to ensure the protection of "underground sources of drinking water" Environmental Protection Agency officials have argued the hydraulic fracturing does not qualify as a type of underground injection. Former EPA head Carol Browner stated in a 1995 letter that since underground injection was not the "primary purpose" of coal bed methane wells, hydraulic fracturing should get a pass from the Safe Drinking Water Act. [20]
But the wizardry of hydraulic fracturing delivers natural gas to the nation, and it has powerful friends -- notably in the White House. The 2001 report from Vice President Dick Cheney's energy task force specifically cited the value of hydraulic fracturing. The *Los Angeles Times* reported in October 2004 that Halliburton, Cheney's former company, which earns about $1.5 billion each year from hydraulic fracturing and is one of the country's three dominant fracturing-services companies, had lobbied against federal regulation. Industry groups, such as the Domestic Petroleum Council and the Independent Petroleum Association of America, supported a provision in the Energy Policy Act of 2005 that exempted fracturing from regulation under the Safe Drinking Water Act.[21]

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[18] Chemicals used in Natural Gas Development by TDEX The Endocrine Disruption Exchange Inc., P.O. Box 1407 Paionia Colorado 81428

The latest copy of the TDEX report can be found at this web site.
http://www.earthworksaction.org/pubs/colorado_analysis_1-15-08.pdf

[19] Oil and Gas Accountability Project Letter to Colorado Government officials from Bruce Baisel staff attorney June 14, 2006 http://ogap.org

[20] How Halliburton's Technology is Wrecking the Rockies by Michelle Nijhuis issue #30 On Earth summer 2006. page 37 http://www.nrdc.org/onearth/06sum/rockies4.asp

[21] Ibid

In the spring of 2005, Laura Amos who has personally experienced the affects of chemicals in her drinking water spent several days in Washington, D.C., as part of a group of Rocky Mountain activists lobbying against the proposed fracturing exemption in the federal energy bill. When Jim Jeffords, the Independent senator from Vermont, later introduced the Hydraulic Fracturing Safety Act of 2005, which would have limited the ingredients in fracturing fluids to nontoxic products, he recounted her story on the Senate floor. "It is unconscionable to allow the oil and gas industry to pump toxic fluids into the ground," Jeffords told his colleagues. But the Jeffords bill went nowhere, and when the federal energy bill passed last July, it included the hydraulic fracturing exemption, explicitly prohibiting only the use of diesel fuels. "Basically, there's a handful of people who have been seriously threatened by this practice standing up against a multi-hundred-billion-dollar industry," says NRDC's Olson. [22]

Next Steps

While it is true that the public comment period is our chance as citizens to speak out it should also be an opportunity to engage in dialogue and discussion. It is not a time to give up and say I can do nothing. It's the opportunity to become engaged in the process. While it may be the dream of Dyad petroleum to be drilling by this summer I would hope that we could request enough time to thoroughly explore all of our concerns and issues. This paper has been written as a first step in gathering information and knowledge. I would consider it to be a working draft. Given enough time I could have written a small book with what I have been learning. There are a number of citizens, groups, water districts, municipalities and governments that should be interested and concerned about this project. Having the potential to contaminate the drinking water for a large portion of Douglas and El Paso County should get a lot of attention. Water is so important to life and health; we should treasure it like gold.

[22] Ibid