FLOW
FOR LOVE OF WATER

ADVANCING PUBLIC TRUST SOLUTIONS
TO SAVE THE GREAT LAKES

September 11, 2012

Mr. Tim Nichols, Chair
Natural Resource Commission
P.O. Box 30452
Lansing, Michigan 48909-7952

Dear Chairperson Nichols and Honorable Members of the Commission:

FLOW ("For Love of Water") is submitting the following Comment to the Michigan Department of Natural Resources ("DNR" or "Department") to consider in its state-owned oil and gas rights to be offered for lease auction on October 24, 2012. FLOW is a 501(c)(3) non-profit organization whose mission is to educate the public about the Public Trust Doctrine and principles as a unifying framework to address the systemic threats to water, public lands, and the environment throughout the Great Lakes basin.

FLOW's Comment specifically examines the existing legal duties of DNR in leasing state lands for oil and gas purposes, including the Public Trust doctrine and Michigan Environmental and Constitutional Laws, all of which mandate the Department to protect and conserve state natural resources. Pointing to DNR's existing legal authorities, FLOW respectfully requests that DNR cancel all state land leases in special areas and/or delay the remaining state lease lands identified for auction until DNR has conducted a comprehensive environmental impact assessment of the cumulative impacts of unconventional hydraulic fracturing or fracking on the state's air, water, and other natural resources.

I. INTRODUCTION

On October 24, 2012, DNR will offer, at an oral-bid public auction, approximately 196,000 acres of state-owned oil and gas lease rights in the following 22 Michigan counties: Allegan, Arenac, Barry, Bay, Emmet, Grand Traverse, Ionia, Iosco, Kalkaska, Kent, Lake, Manistee, Midland, Montmorency, Oakland, Ogemaw, Oscoda, Ottawa, Presque Isle, Saginaw, Tuscola, and Wexford.

This represents DNR's 6th auction of state land leases for oil and gas exploration of the Collingwood/Utica and other potential formations since 2010, totaling about 750,000 acres. The State continues to auction off drilling leases on state-owned lands, including sensitive recreation and game areas, and state parks. The May 2012 sale, for example, sold off approximately 23,000 acres of game and recreation area in Barry County alone, and the planned October 2012 sale includes 15,000 acres of mostly state game areas in Allegan County, as well as portions of the White Pine Trail and Cannonsburg and Rouge River recreation areas. The sale of 118,000 acres of state forest leases for $178 million

($1500/acre) in the spring of 2010 appears to have been a one-time event. The fall 2010 sale was the mirror opposite. The DNR sold 450,000 acres of leases for only $10 million ($22/acre), and the remaining sales in 2011 and spring 2012 leased 168,000 acres for $6.2 million ($33/acre).

Some fifteen thousand acres out of the 196,000 acres proposed for state land leases next month include state parks, game and recreation areas, and recreational trails. The leases on these specially protected lands are typically designated "non-development," meaning without surface rights. Lease owners, however, can exploit and produce below the surface of "non-development" state parks, game and recreation, and other special areas. The justification for allowing development and production under these special state lands is to prevent the drainage of oil and gas beneath those state lands from nearby private or development lease property. Deeper formation "fracking" requires highly pressurized chemical water mixtures to explode the rock in order to capture and produce gas or oil, so there is no significant drainage. Thus, the justification or premise underlying leasing state forest lands as "non-development" should be reevaluated, especially for parks, recreation and game, natural, and special areas.

To understand the impacts on state leased lands, it is critical for DNR to analyze the cumulative effects of oil and gas exploration in Michigan on the air, water, and land natural resources, especially for the irreversible commitment of state forest and park, water, wetland, habitat, and recreational values when these lands are leased. However, DNR currently does not conduct this type of assessment, reasoning that the Michigan Department of Environmental Quality ("DEQ") will later conduct all impact evaluations at the drilling permit stage when leases have already been auctioned off to the highest bidder. This delayed approach in evaluating the impacts of oil and gas exploration *after* DNR has sold its state land leases fundamentally fails to assess the cumulative impacts on air, water, natural resources, all held in public trust for the citizens of Michigan.

As noted by law professor Nicholas Robinson, "Most environmental degradation occurs incrementally and cumulatively."[1] So, while the impacts of auctioning off just one isolated state land parcel for unconventional natural gas hydraulic fracturing may not seem profound on say water resources, it is the cumulative effect of injecting 5-8 million gallons of water and chemicals per well to extract the natural gas two-miles below the surface followed by the transport, disposal, and treatment of this toxic wastewater that should be fully evaluated. This is what is at stake with Michigan water, air, and natural resources as state land leases are being auctioned off without proper consideration of the cumulative environmental impacts of unconventional gas exploration, which use 100 times the amount of water per well than traditional vertical drilling.

[1] Robinson, Nicholas A., "SEQRA's Siblings: Precedents from Little NEPA's in the Sister States" (1982). Pace Law Faculty Publications. Paper 386.
http://digitalcommons.pace.edu/lawfaculty/386

This Comment examines:

> (1) the impacts of unconventional oil and gas drilling, commonly referred to as hydraulic fracturing or fracking, on Michigan's natural resources;
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> (2) the duty of DNR to protect water and other natural resources held in the public trust on state lands *before* leasing and transferring critical state property interests; and
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> (3) the duty of DNR to consider and determine the likely effects to water and natural resources under Michigan's Constitution and the Michigan Environmental Protection Act ("MEPA").

This Comment then concludes that the public trust, Michigan's Constitution, and MEPA all compel DNR to exercise its legal duty to cancel and/or delay the proposed state land leases for auction this October 24, 2012.

This request is not unprecedented; in 1970 Governor William G. Milliken issued a moratorium on the issuance of drilling permits for state land because of his "great concern about potential environmental intrusion and encroachment from oil and gas drilling in this important scenic forest area [of the Pigeon River Forest]." *Michigan Oil v. Natural Resources Commission*, 406 Mich. 1, 276 NW2d 141 (1979). During this moratorium, the Natural Resources Commission ("NRC") then directed the Department of Natural Resources to develop a comprehensive management plan for this area with field studies that identified areas of special wildlife significance and unusual natural value. Accordingly, FLOW respectfully requests the same level of due diligence and analysis of DNR's proposed 196,000 acres that are slated to be leased next month for natural gas exploration.

II. HYDRAULIC FRACTURING OR FRACKING FOR OIL AND GAS DEVELOPMENT IN MICHIGAN

The Great Lakes contains 18-20 percent of the world's fresh water. What feeds the most abundant source of clean freshwater on the planet is groundwater:[2] 48 to 79 percent of the water in the Great Lakes tributaries comes from groundwater.[3] The Great Lakes Science Advisory Board estimates that "there is as much groundwater in the Great Lakes Basin as there is surface water in Lake Michigan."[4] Groundwater is a vital source of drinking water in the Great Lakes Basin. Eighty-two percent of the rural population or 8.2 million people rely on groundwater for their drinking water.[5] Groundwater also supplies 43% of

[2] Kellman, Steve, "Congress, Michigan Legislature Asked to Fix Leaks in Great Lakes Compact," Circle of Blue (Nov. 29, 2009).
[3] Great Lakes Science Advisory Board to the International Joint Commission, *Groundwater in the Great Lakes Basin* 1 (Feb. 2010), *available at* http://www.ijc.org/php/publications/pdf/ID1637.pdf
[4] *Id.*
[5] *Id.*

agricultural water and 14% of industrial water in the basin.[6] It is also the lifeblood of state forest game, recreation, natural and wildlife areas. Surprisingly, the hydrologic cycle only replenishes only 1 percent of the water in the Great Lakes annually.[7] Compounded by the uncertain but inevitable impacts of climate change on the hydrologic cycle, Michigan must carefully manage its water and potential diversions from its state lands.

Groundwater is also critical for oil and gas exploration and development. Under Michigan's oil and gas law, when a landowner (in this case the state) leases the right to drill, produce, and exploit the hydrocarbons and rock formations, the landowner also grants a paramount right to use the surface of the land, including rights to use water, to the oil and gas lease owner and producer. Vast quantities of water are required for unconventional or horizontal fracking (5 million gallons per well in the first phase of drilling and completion), and thus, the potential effects on state forest wetlands, habitats, springs, tributary groundwater and streams, ponds, and lakes are significant. This section examines the process of conventional and unconventional hydraulic fracturing or fracking in Michigan and the associated risks with unconventional horizontal fracking to the state's water, air, and land resources.

A. Overview of Unconventional Hydraulic Fracturing Process

Unconventional or horizontal fracking began in the United States in 1997-1998 in the Barnett Shale play of Texas.[8] This relatively new technology differs from conventional hydraulic fracturing in that the vertical well is drilled much deeper (some 3,000 to 10,000 feet) and then a connecting horizontal well (ranging from 1,000 to 6,000 feet in length) is drilled across the geological shale source rock to release the trapped natural gas.[9] In order to fracture and release the natural gas embedded in these deep sedimentary rocks, gas producers pump very large volumes of fresh water combined with a mixture of proppants (e.g., sand), a friction reducer, gelling agents, biocides, scale inhibitor, and surfactants into the well. A single fracture treatment in deeper, "unconventional" shales, such as the Marcellus Shale, can require about 10 times more water, or 500,000 gallons—nearly as much water as is contained in an Olympic-size swimming pool.[10] Because these deep wells often require multiple injections, this type of operation can consume up

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[6] *Id.*

[7] International Joint Commission, *Protection of the Waters of the Great Lakes: Final Report to the Government of Canada and the United States* 1 (Feb. 22, 2000), *available at* http://www.cglg.org/projects/water/docs/IJC2000Report.pdf

[8] Railroad Commission of Texas, "Water Use in the Barnett Shale." (Jan. 24, 2011) http://www.rrc.state.tx.us/barnettshale/wateruse_barnettshale.php

[9] Awdish, Randy. "Wolverine Gold Rush? The Utica/Collingwood Shale Gas Play: Michigan's Answer to the Marcellus Shale" Pepper Hamilton, LLP (Mar. 25, 2011). http://www.pepperlaw.com/publications_update.aspx?ArticleKey=2057

[10] Congressional Research Service, Unconventional Gas Shales: Development, Technology, and Policy Issues, at 24, Oct. 30, 2009, www.fas.org/sgp/crs/misc/R40894.pdf.

to 5 million gallons of water, the amount used by eight to ten acres of corn during a growing season.[11]

The fracking fluid, which many gas producers argue is proprietary and thus not subject to public disclosure, relies on the sand as a proppant agent to keep the fractures open, which in turn maximizes the horizontal length of the fracture. The opened fractures serve to lower the pressure in the rock formation, increase the gas' desorption from the shale and increase the overall mobility of the gas. The result of this technology is a more efficient recovery of natural gas, which was previously too expensive to extract.

After the fracturing process is completed, the pumping pressure of the well is released and some fracturing fluid, combined with naturally occurring substances in the rock, rises back to the surface through the wellbore. Between 25 to 75 percent of this mixture – commonly referred to as "flowback" – returns to the surface following the fracturing process.[12] The remaining water called "produced water" stays in-situ or is recovered during gas production. Produced water combines with salts, heavy metals, and other naturally occurring minerals like benzene or radium. Both flowback and produced water often contain very high total dissolved solids (TDS) levels, in some cases exceeding 200,000 mg/l, nearly three times higher than seawater.[13] Disposal of this highly saline and often toxic/radioactive wastewater includes a number of methods, including: (1) recycling for additional hydraulic fracturing; (2) treatment and discharge to surface waters; (3) underground injection; (4) storage in impoundments and tanks; and (5) land application (road spreading).[14]

B. Shallow or Antrim Gas Well Hydraulic Fracturing

Michigan is no newcomer to natural gas exploration; Michigan's experience, however, is limited to *vertical* or conventional hydraulic fracturing technology during its first natural gas boom in the late 1980s and through the 1990s. Hydraulic fracturing or fracking is a technology that requires injecting a cocktail of water and chemicals under high pressure into wells in order to fracture shallow to deep shale formations and release natural gas. Located in the northern lower peninsula of Michigan, the Antrim shale deposit was profitable because of its shallow depth (ranging between 600 and 2,000 feet below the surface) coupled with this emerging extraction technology. Natural gas producers used

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[11] Office of Geological Survey, Dep't of Environmental Quality, Hydraulic Fracturing of Natural Gas Wells in Michigan, May 31, 2011, www.michigan.gov/documents/deq/Hydrofrac-2010-08-13_331787_7.pdf.

[12] Michigan Department of Environmental Quality http://www.michigan.gov/documents/deq/Hydrofrac-2010-08-13_331787_7.pdf

[13] By contrast, seawater typically has a TDS concentration of 35,000mg/l. See Cooley, Heather and Kristina Donnelly. "Hydraulic Fracturing and Water Resources: Separating the Frack from the Fiction." Pacific Institute, 23 (June 2012) http://www.pacinst.org/reports/fracking/full_report.pdf

[14] Hammer, Rebecca and Jeanne VanBrieson. "In Fracking's Water: New Rules are Needed to Protect Our Health and Environment from Contaminated Wastewater." National Resource Defense Council (May 2012) http://www.nrdc.org/energy/files/Fracking-Wastewater-FullReport.pdf

on average 50,000 gallons of water per well to extract these isolated natural gas pockets or reservoirs, and drilled over 12,000 wells in the Antrim Shale formation.[15] Even in 2010, this shale formation boasted the nation's 13th largest source of natural gas.[16]

C. Deep Shale or Unconventional Hydraulic Fracturing in the Collingwood/Utica Formation

Spanning across 10 counties in Michigan's northern lower peninsula, the Collingwood/Utica deep shale formation located nearly two miles beneath the surface is notably different than the Antrim formation. For one, this geologic formation is some 3,000 to 10,000 feet deep, and requires horizontal drilling to capture the gas trapped across the geological strata as opposed to isolated gas reservoirs. The deeper Collingwood Shale requires about 5 million gallons of water, or 100 times more than used in a typical Antrim well.[17] The first deep well drilled in this formation in 2010 by a subsidiary of the Encana Corporation, Canada's largest natural gas producer, pumped 5.5 million gallons of water to produce an average of 2.5 million cubic feet of natural gas a day for 30 days.[18] This active well caught the attention of natural gas producers and spurred a huge land grab in 2010.[19] Despite these clear and important differences between the Antrim and Collingwood formations, DNR has not responded with any new regulations. DEQ revised its regulations in 2011, requiring Material Safety and Data Sheets ("MSDS"); however, they unfortunately do not substantively address the impacts of statewide natural gas operations on the state's water, air, and other natural resources.

D. Risks Associated with Unconventional Hydraulic Fracturing

The nationwide controversy stirring over fracking – a natural gas extraction process that is less than two decades old – is complex.[20] Because it is clear that the U.S.'s current and future energy needs are tremendous, shifting away from imported fossil fuels makes good geopolitical sense. What natural gas offers to this energy debate is interesting because relative to coal it is reducing our overall greenhouse gas emissions; however, as compared to other renewable energy options like wind, natural gas is primarily viewed as

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[15] Tip of the Mitt Watershed Council and National Wildlife Federation, "Hydraulic Fracturing and Water Use." (Oct., 2, 2011) http://www.watershedcouncil.org/learn/hydraulic-fracturing/files/hydraulic%20fraturing%20information%20sheets/hydraulic%20fracturing%20and%20water%20use.pdf

[16] Kellman, Steve. "Michigan Says It's Ready For Next Drilling Boom," Circle of Blue (Aug. 3, 2010). http://www.circleofblue.org/waternews/2010/world/michigan-says-it's-ready-for-next-drilling-boom/

[17] Awdish, Randy. "Wolverine Gold Rush? The Utica/Collingwood Shale Gas Play: Michigan's Answer to the Marcellus Shale" Pepper Hamilton, LLP (Mar. 25, 2011). http://www.pepperlaw.com/publications_update.aspx?ArticleKey=2057

[18] Kellman, Steve. "Michigan Says It's Ready For Next Drilling Boom," Circle of Blue (Aug. 3, 2010). http://www.circleofblue.org/waternews/2010/world/michigan-says-it's-ready-for-next-drilling-boom/

[19] See footnotes 45-47 for the controversy behind these land grabs.

[20] Gleick, Peter. "The Real Story Behind the Fracking Debate." Huffington Post (Jul. 30, 2012). http://www.huffingtonpost.com/peter-h-gleick/the-real-story-behind-the_1_b_1719554.html

a transitional energy source or "bridge fuel" in the U.S.[21] Unlike most industries, however, the natural gas industry is exempt from key federal laws, such as the Safe Water Drinking Act and the Clean Water Act, which leaves the states in charge of protecting the air, water, and land resources. Daily media reports on this subject across the country either praise the promises of new jobs and greater energy independence or point to both potential and actual threats to local water resources and call for either a temporary moratorium or a complete ban on fracking. Polemics aside, the real issue we confront is this: "we don't know enough about these threats to make wise decisions [since] monitoring and regulatory oversight are inconsistent from state to state, and weak and inadequate."[22] Given this situation, there is an urgent and pressing need for better regulatory oversight coupled with mandatory public disclosure in the natural gas and oil industry across this nation.

A review of the literature on fracking and its associated risks reveals several common themes or concerns: (1) water withdrawals; (2) groundwater contamination associated with well drilling and production; (3) surface spills and leaks; (4) wastewater management; (5) truck traffic and its impacts on water quality; and (6) lack of public disclosure.[23]

As to the first concern, the sheer volume of water mixed with chemicals required for hydrofracking is staggering compared to the conventional vertical well. As mentioned above, a Collingwood shale well requires 100 times more water (5 million gallons of water) than an Antrim shallow vertical well. Moreover, because this water becomes wastewater, it represents a "consumptive" use, such that it is taken out of the water basin and is no longer available for other water uses. Not surprisingly, these thirsty water requirements for hydrofracking are already creating conflict among water users. Just this past spring, oil and gas companies in Colorado put tremendous strain on farmers, when the companies outbid them, for the first time, at the annual water surplus sale.[24] Despite this new era of hydrocarbon development, there is currently no system in place for the Michigan natural resources agencies to evaluate the cumulative impacts of such high water volumes required by fracking.

As to the second and third concerns, releases, spills, and other accidents are documented around the country, following the trail of hydrocarbon development using unconventional fracking of deep shale reserves from Pennsylvania to Wyoming. For example, in the Marcellus region, one recent report tallied the number of violations related to surface spills and leaks, identifying 155 industrial waste discharges, 162 violations of wastewater

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[21] See generally, Keith Schneider at www.modeshift.org
[22] *Id.*
[23] Cooley, Heather and Kristina Donnelly. "Hydraulic Fracturing and Water Resources: Separating the Frack from the Fiction." Pacific Institute. (June 2012) http://www.pacinst.org/reports/fracking/full_report.pdf
[24] Healy, Jack. "For Farms in the West, Oil Wells Are Thirsty Rivals," New York Times (Sept., 5, 2012) http://www.nytimes.com/2012/09/06/us/struggle-for-water-in-colorado-with-rise-in-fracking.html?_r=1&emc=eta1

impoundment construction regulations, and 212 faulty pollution prevention practices from January 2008 to August 2010.[25] As for air emissions, a recent University of Colorado Denver School of Public Health analysis found residents living as far a half-a-mile away from hydrofracking wells, were exposed to toxic air contaminants five times above a federal hazard standard.[26]

One of the more publicized contamination/explosion examples is from Dimock, Pennsylvania in February 2009, where DEP found Cabot Oil & Gas responsible for methane contamination of nine water wells, causing an explosion at the concrete foundation of the well house.[27] Blaming "defective casing and cementing," DEP fined Cabot $240,000 for violating the November agreement and suspended their drilling operations in the state of Pennsylvania until they resolved the Dimock contamination. The following year, in 2010, the DEP and Cabot reached a settlement, whereby Cabot would pay $4.1 million to the residents of Dimock and $500,000 to the state to offset the costs associated with investigating this incident.[28] Also in Pennsylvania, on August 17, 2010, the DEP fined Atlas Resources $97,350 for permitting used fracking fluid to overflow a waste water pit and contaminate the high quality tributary of Dunkle Run.[29] Atlas simply had failed to report the spill to DEP. Colorado also has had its share of fracking accidents, including Encana Oil and Gas' operations contaminating West Divide Creek with benzene, toluene, and other toxic chemicals. In April 2004, the state of Colorado fined the company over $300,000.[30]

The fourth concern is how natural gas producers and regulators together can safely manage the wastewater (flowback and produced water) that comes from hydraulic fracturing both on-site and off-site. To date, the principle method of disposing wastewater from natural gas production is by underground injection into a Class II disposal wells.[31] The issue here is the hydraulic connectivity between injection wells and

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[25] Pennsylvania Land Trust Association. "Marcellus Shale Drillers in Pennsylvania Amass 1614 Violations since 2008:1056 Identified as Most Likely to Harm the Environment." (Oct. 2010). http://s3.amazonaws.com/conserveland/s3_files/585/report_draft10oct01_final.pdf?AWSAccessKeyId=1NXAG53SXSSG82H0V902&Expires=1347379153&Signature=MqG4XrUwcbBsYDz2BFJ5uHW6DQA%3D

[26] Jaffe, Mark. "CU Denver study links fracking to higher concentration of air pollutants" Denver Post (Mar. 20, 2012) http://www.denverpost.com/breakingnews/ci_20210720/cu-denver-study-links-fracking-higher-concentration-air

[27] Robert Myers, Environmental Dangers of Hydro-Fracturing the Marcellus Shale, Lock Haven Univ. (Feb. 22, 2011) http://www.lhup.edu/rmyers3/marcellus.htm; see this footnote for a litany of spills, releases, and contamination related problems nation-wide.

[28] *Id.*

[29] *Id.*

[30] Dobbins, Matthew T. "Fracking The Great Lakes: Is Michigan a Model Shale State?" Michigan Environmental Law Journal Vol. 30, No. 3, Spring 2012, Issue 87 http://www.michbar.org/environmental/pdfs/spring2012.pdf

[31] Hammer, Rebecca and Jeanne VanBrieson. "In Fracking's Water: New Rules are Needed to Protect Our Health and Environment from Contaminated Wastewater." National Resource Defense Council (May 2012) http://www.nrdc.org/energy/files/Fracking-Wastewater-FullReport.pdf

aquifers and the potential for groundwater contamination. New York Times and Circle of Blue writer, Keith Schneider, argues that one of the most significant concerns associated with hydrofracking is the actual disposal of fracking fluid, citing a 2009 study by Argonne National Laboratory that found drilling and preparing wells for production generated 9.5 million cubic meters (2.5 billion gallons) of wastewater daily across the nation.[32]

As to the fifth issue, hydraulic fracturing operations rely on extensive truck traffic to supply all the materials and equipment for the drilling process itself, and most notably, all the water and chemicals injected and then removed from the site as wastewater. Relying on data from the natural gas industry, the New York State Department of Environmental Conservation estimates that high-pressure hydraulic fracturing in a horizontal well would require 3,950 truck trips per well during early development of the well field (NYSDEC 2011), two-to-three-times greater than is required for conventional vertical wells.[33] For every million gallons of wastewater or flowback, two hundred tanker trucks arrive at the drilling well site, often located in rural and remote areas.[34]

And finally, the sixth issue centers on the public's mistrust of the natural gas industry in large part because of limited federal regulations and lack of disclosure about fracking fluid and other central practices. One commentator observed: "The chemicals being used vary from company to company and they're proprietary…There are as many as 900 out there that we know of and some 600 chemicals are allegedly in each of these products. It's a soup, and there's a lot of variations between companies in their own mixtures and they don't have to disclose what they're using so they don't."[35] Without full disclosure, the discourse between industry and advocacy groups will remain adversarial, and ultimately fail to minimize the potential and actual health and environmental risks of fracking. Comprehensive state oversight of the industry can help level this playing field, and also satisfy the State's duty as public trustee.

III. DNR'S LEGAL AUTHORITY MANDATES THE PROTECTION OF STATE NATURAL RESOURCES

Just like the Marcellus Shale deposit located primarily in Pennsylvania, New York, Ohio and West Virginia, the Collingwood/Utica formation in Michigan offers significant

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[32] Schneider, Keith and Codi Yeager. "Fossil Fuel Boom Shakes Ohio, Spurring Torrent of Investment and Worry Over Water." Circle of Blue (March 12, 2012) http://www.circleofblue.org/waternews/2012/world/fossil-fuel-boom-shakes-ohio-spurring-torrent-of-investment-and-worry-over-water/

[33] Cooley, Heather and Kristina Donnelly. "Hydraulic Fracturing and Water Resources: Separating the Frack from the Fiction." Pacific Institute. (June 2012) http://www.pacinst.org/reports/fracking/full_report.pdf

[34] Vidic, Sustainable Water Management for Marcellus Shale Development, Univ. of Pittsburgh, 5 (2010).

[35] Kellman, Steve and Molly Ramsey. "Fracking Regulations Vary Widely From State to State." Circle of Blue (Aug. 30, 2010) http://www.circleofblue.org/waternews/2010/world/fracking-regulations-vary-widely-from-state-to-state/

economic opportunities for the State; in the spring of 2010 alone, the State received $178 million for its state leased land, nearly as much as the state had earned in the past 82 years of lease sales combined. As noted at the outset, this 2010 spring sale was an anomaly; revenues in terms of price per acre have dropped from $1,500 per acre to an average of $35 per acre. In the fall of 2010, the state sold off 450,000 acres of leases on state land for an average of only $22 per acre.[36] Given the risks, the continued uncertainties surrounding horizontal hydrofracking in the deeper formations, the low cost of natural gas, and low price per acre for state land leases, the entire process and state lease sale policy should be seriously reconsidered and evaluated.

First and foremost, however, it is the legal duty of the state agencies of Michigan, NRC, DNR, and DEQ, to assess and determine the cumulative environmental impacts of unconventional oil and gas exploration and to ensure these actions do not cause pollution, impairment, or destruction of our air, water, and natural resources held in public trust for citizens. DNR's legal mandate to protect the state's natural resources from pollution, impairment, or destruction is derived from a rich combination of constitutional, statutory, and judicial sources, including the common law doctrine of the public trust. This section highlights these sources of existing legal authority that compel DNR to carefully analyze any potential actions related to the sale of state land leases that might impair state natural resources held in public trust.

A. DNR's Has a Legal Duty to Protect the Public Trust

DNR's legal duty to protect the state natural resources held in public trust stems from a number of sources, including the 1917 Organic Act, the 1939 Oil Conservation Act, and the common law as set forth in *Michigan Oil Company v Natural Resources Comm'n*, 406 Mich 1; 276 NW2d 141 (1979).

1. Overview of the Public Trust Doctrine

The public trust doctrine is deeply rooted in our history dating back to the Roman times of Justinian. Water then like water now was so valuable that under Roman law, the air, the rivers, the sea, and the seashore were dedicated to public use and could not be placed under private ownership. Not long after the Magna Carta in 1215, British Courts ruled that the sea, its fish and habitat were also held in trust, and that the Crown could not interfere with or alienate (transfer) the public's right to fish, boat, and swim. Fast forward to 1892, and since then, the United States Supreme Court, and virtually every Great Lakes state, including Michigan, have ruled that the Great Lakes are a perpetual trust in favor of citizens, and that neither government nor others can diminish, impair or dispose of these treasured waters. Public trust resources are not limited to water, but include air and the natural resources on state and federal lands. Thus, it is the

[36] It is recognized that this may have been due to manipulations regarding the bidding process, but this in and of itself should be reviewed before any more lease sales are approved. For more information, see footnotes 45-47 for Reuter's articles describing the Justice Department's current antitrust investigations involving Encana and Chesapeake Energy.

government's duty to protect these resources, exactly like that of a trustee protecting the trust for a beneficiary.

The public trust serves a noble purpose as articulated by the California Supreme Court in *National Audubon Society v. Superior Court*, 33 Cal.3d 419, 441 (1983). "Thus, the public trust is more than an affirmation of state power to use public property for public purposes. It is an affirmation of the duty of the state to protect the people's common heritage of streams, lakes, marshlands and tidelands, surrendering that right of protection only in rare cases when the abandonment of that right is consistent with the purposes of the trust." *Id.* As Michigan state agencies, NRC, DNR, and DEQ all have an affirmative duty under the common law to protect state natural resources held in public trust.

2. The 1917 Organic Act

The 1917 Organic Act, as amended, Natural Resources and Environmental Protection Act ("NREPA"), MCL 324.503(1), and its rules, set forth a clear natural resource protection mandate, codifying DNR's obligation to protect the air, water, natural resources and the public trust.

> (1) The department shall protect and conserve the natural resources of this state; provide and develop facilities for outdoor recreation; prevent the destruction of timber and other forest growth by fire or otherwise; promote the reforesting of forestlands belonging to this state; prevent and guard against the pollution of lakes and streams within this state and enforce all laws provided for that purpose with all authority granted by law; and foster and encourage the protection and propagation of game and fish.

3. The 1939 Oil Conservation Act

Recognizing the inherent value of Michigan's natural resources and the abuses of past forest practices in the nineteenth and early twentieth centuries, the Legislature declared in the 1939 Oil Conservation Act[37] that its state resources would be protected from uncontrolled and rampant oil and gas exploration. Implicitly, the Legislature impressed the state's forests with the duty of the public trust to guide careful exploration of oil and gas resources. MCL 324.61502 states:

> It has long been the declared policy of this state to foster conservation of natural resources so that our citizens may continue to enjoy the fruits and profits of those resources. Failure to adopt such a policy in the pioneer days of the state permitted the unwarranted slaughter and removal of magnificent timber abounding in the state, which resulted in an immeasurable loss and waste. In an effort to replace some of this loss, millions of dollars have been spent in reforestation, which could

[37] Act 61, Public Acts of 1939, as amended MCL 319.1 et. seq.; MSA 13.139(1) et. seq, as amended, part 615 of Michigan's Natural Resources and Environmental Protection Act ("NREPA"), 1994 PA 451, MCL 324.61501 et seq.,

> have been saved had the original timber been removed under proper conditions. In past years extensive deposits of oil and gas have been discovered that have added greatly to the natural wealth of the state and if properly conserved can bring added prosperity for many years in the future to our farmers and landowners, as well as to those engaged in the exploration and development of this great natural resource. The interests of the people demand that exploitation and waste of oil and gas be prevented so that the history of the loss of timber may not be repeated. It is accordingly the declared policy of the state to protect the interests of its citizens and landowners from unwarranted waste of gas and oil and to foster the development of the industry along the most favorable conditions and with a view to the ultimate recovery of the maximum production of these natural products. To that end, this part is to be construed liberally to give effect to sound policies of conservation and the prevention of waste and exploitation.

MCL 324.61502.

4. Michigan Oil Case: State's Failure to Evaluate Natural Resources During 1970s Oil and Gas Exploration Was a Major "Policy Blunder," Threatening the Public Trust on State Lands

Facing increasing pressure to develop sensitive state lands for oil and gas in the 1970s, the Michigan state agencies created hydrocarbon development plan. Citizens watched carefully and ultimately fought to ensure that "exploitation and waste of oil and gas be prevented [such] that the history of the loss of timber may not be repeated." *Id.*

In *Michigan Oil Company v Natural Resources Comm'n*, 406 Mich 1; 276 NW2d 141 (1979), and its companion lawsuit, *West Michigan Environmental Action Council v Natural Resources Comm'n*, 405 Mich 741, 275 NW2d 538 (1979) both involving a 1968 sale of oil and gas leases in a large area of unique state lands, including Pigeon River Country State Forest, the Court of Appeals chastised the Department and the NRC, labeling their attempt to lease these unique state lands a "policy blunder." *Michigan Oil Company v. Natural Resources Comm'n*, 71 Mich App 667, 674-75, 249 NW2d 135 (1976). "The term 'blunder' is not too strong a word to describe the DNR's 1968 decision to offer, at public auction, oil and gas leases…." *Id.* The Court of Appeals observed that the NRC simply had conducted too "little investigation or consideration of the effects of possible drilling on state lands and other natural resources entrusted by law to the care of the commission." *Id.* DNR was given only 9 days to make recommendations on some 500,000 acres made available for state land leases.

The Court of Appeals, however, found that there was "ample statutory justification" for the Department's reasons to deny the drilling permit. *Id. at* 686. In fact, "[i]f the Department had not opposed the application for permit it would have failed in performance of this duty." *Id.* The Court explicitly recognized the agencies' public trust duties, stating that "[t]he commission expressly retained its statutory authority to fulfill its duty to the people of the State of Michigan by regulating the use of the state lands and resources placed in its control and held by it as a *public trust*." *Id.* at 688-89 (emphasis

added). To cure this situation, the Court directed the NRC to conduct a comprehensive management plan of Pigeon River and its sensitive ecological and wildlife features *before* issuing any oil and gas drilling permits to Michigan Oil. *Id.* at 694.

In affirming the Court of Appeals, the Supreme Court of Michigan held that the 1939 Oil Conservation Act's definition of "waste,"[38] not only referred to waste of oil and gas, but also included any harm to wildlife and public uses, pollution, or the environment. *Michigan Oil v Natural Resources Commission*, 406 Mich 1 (1979). The Court rejected "a construction of the oil conservation act which would permit oil and gas drilling unnecessarily detrimental to the other natural resources of this state." 406 Mich at 23. In addition, the Court held that the NRC had statutory authority to deny Michigan Oil's request for a drilling permit in a sensitive area that supported bear, bobcat, and the last sizeable wild elk herd east of the Mississippi river. Moreover, the NRC had an affirmative statutory duty to prevent waste, which the Court defined to include serious or unnecessary damage to or destruction of wildlife.

This dispute lasted for almost 10 years, culminating in *West Michigan Environmental Action Council v Natural Resources Comm'n*, 405 Mich 741, 275 NW2d 538 (1979), which provided guidance to the agencies on the threshold of harm to the environment before issuing drilling permits. As in all real world situations, however, compromise prevailed with an extraordinary agreement between state government, the oil industry, and environmental groups that confined drilling development to the southern one-third of the forest under strict conditions.[39] As part of this agreement, the Pigeon River Advisory Council was formed to keep a watchful eye over the tightly regulated drilling.

5. DNR's Oil and Gas Leasing Policy and Procedures Include Protection of Natural Resources under the Public Trust Doctrine

Under statutory and common law of the public trust, DNR must ensure that the state's natural resources (including air, water, wildlife, commerce, navigation, fishing, etc.) are not diverted to private use or ownership. In addition, DNR must ensure the protection of the air, water, and other natural resources and the public trust in these resources from pollution, impairment, or destruction. Practically speaking, this means DNR must ensure that its activities, such as leasing state lands for private gas exploration, do not rise to the level of impairment or destruction of these natural resources held in trust for the citizens of the State of Michigan. DNR's Oil and Gas Leasing Policy and Procedures, DNR 27.23-15, recognize the importance of the public trust doctrine:

> "It shall be the policy of the Natural Resources Commission (NRC) to manage State-owned minerals in a manner that protects and enhances the ***public trust***. Surface and mineral ownership may be consolidated when it is in the best interests of the State. Minerals shall be developed in an orderly manner to

[38] MCL 324.61504, and 324.61501(q)(i)-(ii).
[39] MCL 324.61901 *et seq*.

> optimize revenue consistent with other public interest and natural resource values." [40] (emphasis added).

Policy and Procedures, DNR 27.23-14, further reference the public trust duty of the Department.

> "Under the provisions of P. A. 451 of 1994, Part 5, Section 502, the NRC and Director of the Department of Natural Resources (DNR) are responsible for managing these lands and mineral resources to ensure protection and enhancement of the ***public trust***."[41] (emphasis added).

B. DNR's Has a Legal Duty to Conserve Natural Resources Under Michigan's 1963 Constitution and the Michigan Environmental Protection Act ("MEPA")

Under Michigan's 1963 Constitution, all state agencies, including NRC, DNR, and DEQ, have an express duty to protect the state's natural resources. Article 4 § 52 of the Constitution declares:

> The conservation and development of the natural resources of the state are hereby declared to be of paramount public concern in the interest of the health, safety and general welfare of the people. The legislature shall provide for the protection of the air, water and other natural resources of the state from pollution, impairment and destruction.

Article 4, § 52 creates a mandatory duty for the legislature to enact legislation to protect the state's natural resources. *State Hwy Comm'n v Vanderkloot*, 392 Mich 159, 182; 220 NW2d 416 (1974) (holding that the legislature is not required "to make specific inclusion of environmental protection provisions in *every* piece of relevant legislation," including the highway condemnation act); see also *Genesco, Inc v Michigan Dep't of Environmental Quality*, 250 Mich App 45, 53; 645 NW2d 319 (2002) (same analysis).

The Michigan Environmental Protection Act of 1970 ("MEPA"), MCL 324.1701 et seq., in turn, "marks the Legislature's response to our constitutional commitment to the 'conservation and development of the natural resources of the state.'" *Ray v. Mason Co Drain Comm'r*, 393 Mich 294, 304; 224 NW2d 883 (1975); W. Rodgers, *Environmental Law* §2.16 at 184 (1977). Specifically, MEPA imposes a mandatory duty on individuals and organizations both in the public *and* private sectors to prevent environmental degradation, which is caused or is likely to be caused by their activities. MEPA expressly prohibits pollution, impairment, or destruction of the environment unless it can be shown that "there is no feasible and prudent alternative" and that defendant's conduct "is consistent with the promotion of public health, safety and welfare in light of the state's paramount concern for the protection of its natural resources." See *Ray*, 393 Mich at 304; *State Hwy Comm'n*, 392 Mich at 187-88.

[40] http://www.midnr.com/Publications/pdfs/InsideDNR/publications/DNRPolProc/27.23.15.htm
[41] http://www.midnr.com/Publications/pdfs/InsideDNR/publications/DNRPolProc/27.23.14.htm

Enacted in 1970, this hallmark environmental statute also provides for a citizen suit provision, which authorizes any person to bring a cause of action "for the protection of the air, water, and other natural resources and the public trust in these resources from pollution, impairment, or destruction." MCL 324.1701(1). As such, MEPA is not just a mere procedural cause of action, but it is a substantive source of environmental protection. *State Hwy Comm'n*, 392 Mich at 184; Haynes, Jeffrey, *Michigan Environmental Protection Act*, Michigan Environmental Law Deskbook, 2nd ed. (State Bar of Michigan, 2012).

Accordingly, NRC, DNR, DEQ and all other relevant state agencies must ensure that they protect natural resources from pollution, impairment, or destruction pursuant to MEPA. Case law makes clear that MEPA applies to oil and gas orders, permits, and proposed projects. *West Michigan Environmental Action Council v Natural Resources Comm'n*, 405 Mich 741, 275 NW2d 538 (1979) (denying DNR's decision to grant permit for ten exploratory wells based on likely adverse impacts to pollute, impair, and destroy wildlife). MEPA applies to agency actions approving, licensing, or permitting conduct that is likely to harm or impair, pollute or destroy the "air, water, natural resources, or public trust" in those resources. *Anglers of the AuSable v MDEQ*, 283 Mich App 115; 485 Mich 1067, 488 Mich 69 (opinion vacated on rehearing) (the decisions upheld the trial and appellate court holdings that MEPA applies to state department, commission, and other proceedings); *State Highway Comm'n*, 392 Mich at 187-88. Agency actions, however, that approve conduct that is "likely to pollute, impair, or destroy" is prohibited by MEPA, unless there exists no feasible and prudent alternative. *Ray*, 393 Mich at 304. Moreover, under this statute, the state agencies have an affirmative duty to consider and determine the likely effects of conduct approved or authorized by them, as well as the alternatives to such conduct. *State Hwy Comm'n*, *supra*; *Ray*, 393 Mich 294; 224 NW2d 883 (1975).

In sum, Michigan's Constitution and MEPA both direct Michigan's natural resource agencies to protect and prevent the pollution, impairment, or destruction of all state's resources.

IV. DELAY PROPOSED LEASING OF STATE LANDS *AND* CANCEL CERTAIN LEASES OF STATE LANDS FOR DEEP SHALE UNCONVENTIONAL HYDROFRACKING

A. DNR Has a Duty to Protect the Public Trust in Water and State Lands and Natural Resources *Before* Leasing and Transferring Critical and Material State Property Interests.

As mentioned above, an extensive legal framework already exists to protect state natural resources from harmful impacts. The Department's governing mandate, regulations, and policies recognize the existence of the public trust under which the State holds state forestlands for the protection of the public, the local community, and residents, who use and enjoy the public lands and areas. As such, the Department must exercise its affirmative duty to consider and determine, based on adequate and sufficient information,

the direct, indirect, and cumulative effects on the air, water, natural resources held in public trust, as well as the public and private uses of these resources.

Since the early controversies involving oil drilling on state leased lands, the Department has made good strides in its rules and guidelines to prevent another breach of the public trust like the leasing of lands in Pigeon River from reoccurring. For example, in the agency's regulations governing oil and gas leases, the Department has clear authority to decline any bid in order to uphold its duty to prevent the impairment of public trust resources. R299.8104(6) states that:

> (6) The Department reserves the right to reject any bid and may, in its discretion, stop the sale of any sale unit at anytime and for any stated reason.

Such express authority enables the Department to fully assess the cumulative impacts associated with oil and gas exploration on sensitive state lands with protected natural resources held in public trust.

To date, however, it appears that the Department has given little or no consideration to the likely or expected effects from unconventional hydraulic fracturing on state leased lands, especially those located in natural, game, recreation, wilderness, park or special areas. DNR's normal and customary agency review for conventional oil and gas leases simply fails to address the generic and material questions of effects involved in this unconventional resource extraction process. In fact, DNR's current proposed course of action is reminiscent of *Michigan Oil* where the Court held the agency had not carried out its public trust duties and adequately considered "the effects of possible drilling on state lands and other natural resources entrusted by law to the care of the [agency]." *Michigan Oil Company v. Natural Resources Comm'n*, 71 Mich App at 674-75.

Understanding the impacts of unconventional horizontal drilling on Michigan natural resources *before* the state relinquishes water rights along with the leased lands is critical given the complexities at stake. The technology of unconventional horizontal drilling has ushered in a new era of hydrocarbon development with massive impacts to state water, air, and land resources. [42] In sum, it is of paramount public interest that DNR, as the trustee and steward of Michigan's state forestlands, exercise its existing public trust duty to evaluate the cumulative impacts of fracking development on the public's natural resources *before* it leases another 200,000 acres of state lands. Public trust considerations call for an examination of statewide impacts of unconventional horizontal drilling on state lands.

B. DNR Has a Duty to Consider and Determine the Likely Effects to Water and Natural Resources under MEPA.

[42] What is different about leases for unconventional drilling is that they involve, among other complexities: a massive commitment of water, land surface, risks from water withdrawals, vagrant pressurized chemical fluids, flowback, trucking of water, flowback, brine, and produced water, and disposal and discharge or release of the waste fluids.

Before DNR leases nearly 200,000 acres of state forestlands for hydrofracking exploration next month, it also has a legal duty to consider and determine the likely effects to water and natural resources under MEPA and its own statutory mandate. The Supreme Court of Michigan in *West Michigan Environmental Action Council v Natural Resources Comm'n*, 405 Mich 741, 275 NW2d 538 (1979) understood that "virtually all human activities can be found to adversely impact natural resources in some way or other." *Id.* at 760. And so, it asked the hard question about the threshold of harm to the environment: "when does such impact rise to the level of impairment or destruction?" *Id*. In that case, DNR had prepared an environmental impact statement that simply predicted the decline of wildlife populations as a result of the oil drilling, without weighing the severity and lasting damage of the wells on the elk herd population. Accordingly, the Court enjoined the drilling because it found that the impairment was not temporary and therefore significant. *Id*.

Applying this analysis to the current state land lease situation, DNR has a legal duty to determine the impacts of leasing state land on air, water, and other natural resources (particularly located in ecologically sensitive park, recreation and game areas). Pursuant to MEPA's feasible and prudent alternative analysis, DNR's evaluation must consider and determine the likely effects and alternatives *before* approving state conduct or actions that may cause pollution, impairment, or destruction of the air, water, wetlands, wildlife habitat, and other natural resources on state public lands.

To date, however, DNR has not conducted any study documenting the cumulative impacts of natural gas exploration on air and water resources *before* the sale of its state leased lands. Normal DNR review procedures again are insufficient to address the likely effects and alternative conduct, actions, or measures that are involved in the extraordinary and unconventional development of hydrofracking gas reserves in the Collingwood formation. For example, as DNR prepares to sell nearly 200,000 acres of state lands, the agency has not determined, estimated, or identified: (1) the quantity of estimated wells; (2) the quantity of water needed for exploration, drilling, and production; or (3) the mixtures of drilling fluids and their chemical properties or toxic risks.

All of these issues illustrate that a comprehensive management plan and study is urgently needed; just like in the WMEAC case, the impacts of hydrofracking on state leased lands are not trivial or temporary. Rather these unevaluated and unknown impacts present serious and lasting damage and potential risks to the state natural resources.

C. DNR Has a Duty to Cancel and/or Delay These Proposed Lease Sales Based on Existing Legal Authority

In light of DNR's conservation mandate, these proposed state land oil and gas lease units should be, at the very least, withdrawn or stopped from sale, until DNR considers and determines the entire relationship of the effects of drilling and development on the natural resources, people, and communities at risk.

1. Dire Need for DNR to Conduct Baseline Hydrogeological Impact Study

Michigan has failed to conduct any such generic baseline impact or hydrogeological studies. As a result, the state has no idea on the total quantities of water withdrawals and/or water used for fracking, with flowback, handling, discharge or disposal. All of this, coupled with the fact that Congress has basically exempted hydrofracking from federal drinking water, clean water, and air laws and regulations, places an enormous responsibility directly on the states. Under these circumstances, Michigan NRC, DNR, DEQ, and other agencies should and must first conduct adequate generic, and as needed, site specific considerations, studies, and determinations of impacts and alternatives as required by MEPA, the DNR Organic Act, and public trust principles.

2. Benefits to Waiting to Sell State Land Leases

The state loses nothing, and has everything to gain, by waiting, and carefully considering and determining impacts, values, and harms before it commits citizens and taxpayers to the risks and costs of massive unconventional hydraulic fracking or hydrocarbon development in Michigan. In fact, the state and its citizens can only gain by doing it right. The gas is not going anywhere.

New York State is an example of an oil- and gas-rich state that has followed this path. In contrast to its neighbor, Pennsylvania, New York has taken a firm position against fracking since 2008 to uphold framework of existing legal framework, placing a moratorium on all permits for gas drilling in the state's portion of the Marcellus Shale formation while the state's environmental agency, the Department of Environmental Conservation (DEC), has completed an environmental review and impact analysis. Additionally, New York's Governor Cuomo has issued an executive order halting all permitting for hydraulic fracturing for gas and oil in the state until a similar generic environmental impact statement, including cumulative effects and disclosure of potential toxic chemicals used in the fracking process. Rather than retreating from environmental laws and regulations, New York is carefully applying them to assess the full implications of this water intensive natural resource extraction process. Similarly, Secretary of Interior Ken Salazar halted leasing of federal lands for oil and gas "hydrofracking" until new 2014 proposed regulations are noticed, adopted, and in place.

3. Non-development Leases Deserve Special Consideration and Should Be Removed from Leasing Portfolio

Within DNR's portfolio of state land leases, non-development leases in state parks, recreation and game areas, and other special areas are also of the utmost concern. To date, DNR has justified the sale of non-development leases based on drainage of oil and gas from beneath state lands. This rationale, however, is resulting in the transfer of crucial interests, such as water and other natural resources special and unique to state lands and uses. With deep shale or other unconventional hydrofracking development of oil and gas, there is no material drainage, no threat, and no justification for non-

development leasing, at least at this stage and where no meaningful information, planning, and impacts and alternatives have been considered and determined.

4. Natural Gas Surplus, Low Prices and Admonition Against "Market Waste"

Currently, natural gas supplies are high and the market is at a record decade low as a direct result of oversupply, a supply that only will increase.[43] Since 2011, CNN reported that hydraulic fracturing has triggered a natural gas production boom that has driven down the price of the fuel by 45%.[44] Hydrofracking from deeper shale formations like the Collingwood makes up a small percentage (2%) of this large surplus of natural gas. The Legislature contemplated for this type of contingency. Michigan's oil and gas statute expressly prohibits against waste, including "market waste," which "includes the production of oil or gas in any field or pool in excess of the market demand as defined in this part."[45] Given current market prices, DNR should follow the Legislature's directive and avoid market waste.

Moreover, it appears the market may have been skewed or materially tainted by private voluntary or tacit bidding arrangements, further lowering or interfering with a stable or valid market information to justify any sale or leasing; between the Michigan state lease sale in the spring of 2010 and the sale in the fall of 2010, the price per acre for state land leases fell from an average of $1500 per acre to only $22 per acre.[46] The U.S. Justice Department is now investigating both Encana and Chesapeake for criminal antitrust violations and collusion efforts to drive down state land lease prices in Michigan.[47] Chesapeake spent at least at least $400 million to acquire 450,000 acres of prospective shale acreage located in the northern part of the state. According to Reuters, before the antitrust probe, one analyst had estimated the land could fetch $500 million in a sale.[48]

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[43] Robert Campbell, "Shale Frenzy Creates New Glut," Reuters, May 7, 2012; Edward McAllister, "Widely eyed U.S. energy data seen providing false readings," Reuters, August 29, 2012.

[44] Smith, Matt and Thom Patterson. "Debate over fracking, quakes gets louder." CNN (June 15, 2012). http://www.cnn.com/2012/06/15/us/fracking-earthquakes/index.html

[45] MCL 324.61501(q)(iii).

[46] Driver, Anna and Joshua Schneyer. "Legal Woes May Spoil Chesapeake's Michigan Sale," Reuters (Aug. 10, 2012) http://www.reuters.com/article/2012/08/11/us-chesapeake-michigan-idUSBRE87914420120811;

[47] Grow, Brian and Joshua Schneyer. "Exclusive: Encana tipped off Chesapeake to land plans in Michigan – Emails" Reuters (Jul. 11, 2012) http://www.reuters.com/article/2012/07/11/us-chesapeake-encana-land-idUSBRE86A0G620120711

[48] Grow, Brian and Joshua Schneyer. "Michigan lawmakers call for action in Chesapeake-Encana probe." Reuters (Jul. 24, 2012) http://www.reuters.com/article/2012/07/24/us-chesapeake-michigan-idUSBRE86N0JO20120724

V. RECOMMENDATIONS: STATE TRUSTEES CAN AND SHOULD TAKE CHARGE

Now is the time for the Natural Resources Commission and the Michigan Department of Natural Resources to step in and take charge as trustee of our air, water, land, natural resources, and public trust, before it is leased. Otherwise, if the State continues on its traditional business-as-usual course, the Natural Resources Commission and State's hands will suddenly tied behind its back, and citizens can do nothing to prevent the degradation of these values so essential to quality of life in Michigan.

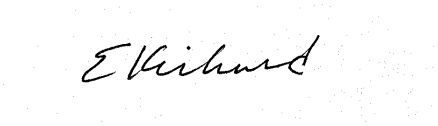
To protect the public trust, we submit that the State adopt the following recommendations:

- Delay the proposed leasing of state lands scheduled for auction on October 24, 2012;
- Cancel non-development leases, as well as certain leases on lands that the DNR determines to be ecologically critical;
- Conduct a hydrological study on state leased lands to assess the cumulative impacts of water used, applied, and disposed of in hydrofracking;
- Address wastewater disposal and transport away from deep wastewater injections wells on oil and gas fields;
- Apply upgraded standards for building oil and gas wells to prevent leaks into underground water supplies;
- Require disclosure of the chemicals oil and gas companies use at every stage of production;
- Require testing of water supplies before and after on drilling sites; and
- Establish a Commission, Department, and Citizen task force to review procedures, law, policy, and leases to comprehensively address "horizontal hydrofracking" or unconventional oil and gas drilling in or near Michigan's state lands and forests.

VI. CONCLUSION

For these reasons, we request the Department of Natural Resources to cancel and/or delay its oil and gas lease auction sale on October 24, 2012 until it has conducted a comprehensive environmental impact assessment and to cancel *all* state land leases proposed on park, game, recreation, water rich, wildlife abundant, and other special areas.

Sincerely,



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