

**State of Michigan
Ingham County Circuit Court**

Paul Brady,

Plaintiff,

v

Case No: 13-648-AA

Hon: Clinton Canady III

Filed: 6/13/13

Michigan Department of Environmental
Quality and Encana Oil & Gas (USA) Inc,

Defendants,

_____ /

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Affidavit of Paul Brady

1. I live and own land at 735 Lake Valley Road, about 2½ miles from wellpads A and B in the attached exhibit 16, and about 3½ miles from wellpad C.

2. The first page of exhibit 16 shows Encana's overall plan in the area, including 4 horizontal wells already completed, and 13 more which the DEQ permitted this year and are contested in this case (total of 17). The permitting dates were May 23, June 21, and September 18, 2013

3. The plan is part of Encana's "Utica-Collingwood development." The wellpads are on north-south Sunset Trail, a popular wooded snowmobile route through the Pere Marquette State Forest, near where the Trail crosses east-west M-72 between Kalkaska and Grayling. (M-72 is not shown on exhibit 16.)

4. As seen on the second page of exhibit 16, wellpad A would add 5 wells on almost 6 acres to an existing pad a mile north of M-72 which has one completed well already on it. The expanded pad would abut Sunset Trail from the west. The Trail roadbed would be about 300 feet from the actual wellheads. The horizontal endpoint of the middle well on wellpad A¹ would be about a half-mile from Grass Lake and the main buildings of the Boy Scouts' 1200-acre Camp Tapico.

5. Wellpad B on the exhibit, also a mile north of M-72, is to the east of Sunset Trail. The near (western) edge of the pad is about 550 feet from the Trail. An east-west access road and pipeline would extend between the pad and the Trail; they would cross a separate north-south snowmobile trail, about 450 feet from the edge of the wellpad. A second north-south snowmobile trail passes about 75 feet from the pad edge on the

1 State Excelsior 1-11 HD1.

opposite side from Sunset Trail; this trail is about 230 feet from the wellheads, of which there would be 3.

6. The 8 horizontal bores on wellpads A and B would pass under the north branch of the Manistee River.

7. Wellpad C, two miles south of M-72, would expand an existing pad which has 3 completed and producing wells already on it. It would almost double the previous pad size to 9+ acres, and add 5 wells. It is immediately adjacent to Sunset Trail, and the wellheads would be about 350 feet from the Trail. Cranberry Lake is a half-mile away, on which is a public boat launch.

8. DEQ records show Encana recently applied for new Utica-Collingwood wells in my Bear Lake Township. DEQ has not yet acted on the applications. I have visited the sites, one of which is slightly over a mile from my house.

9. In daily activities my family members and I drive on M-72, and I recreate closer than that.

10. I am an active snowmobiler. A pathway leads from my land into the woods and state forest around my property. Since my young children were born, I have been averaging about 500 miles a winter. Before that I averaged in the 1000's. I hope to return to high mileage when the children are older.

11. In 500-mile years, typically I drive by the sites of wellpads A and B 10 or 15 times a winter. I drive by wellpad C more frequently.

12. All the pads are in beautiful dense state forest which snowmobilers enjoy. The area was last logged massively in the early 20th century.

13. I have no professional background in oil or gas. But with various friends and collaborators I have done quite a bit of research and exploration about the Utica-Collingwood since first learning of it about three years ago.

14. Utica-Collingwood is a deep shale layer, nearly two miles down in this part of the state. In the 17 completed or permitted wells, Encana drilled or proposed to drill almost two miles down vertically and then nearly two miles horizontally. Together the vertical plus horizontal length is called the “measured depth.” Attached exhibit 29 is the cover page of a recent academic report on hydraulic fracturing – or “fracking” – in the state, showing a not-to-scale schematic of the vertical and horizontal wellbores. The fractures, seen on the bottom right, can be longer than shown on the page.

15. After a Utica-Collingwood well is drilled to its measured depth, it is stimulated by a process which includes fracking. Fracking involves injecting millions of gallons of water, sand, and frack fluids downhole at thousands of pounds per square inch, to create channels or expand existing channels, which radiate through the shale rock from the wellbore.

16. Wells are named for the landowner followed by a series of numbers. Where the state is the owner, the well name includes the name of the township in which the “bottom hole” is planned. The 4 completed and 13 contested wells are all in Excelsior

or Oliver Township in Kalkaska County.

17. DEQ records show the longest measured depth of the 4 completed wells is 19,972 feet,² and the longest of the 13 contested wells would be 22,322 feet, which is over 4 miles.³

18. DEQ records show the largest water usage of the 4 completed wells was 21,112,194 gallons,⁴ and the largest of the 13 contested wells would be 31,500,000 gallons.⁵

19. There may be gas wells in the world that used more water than the 31,500,000-gallon Oliver wells, but I have researched and not found any except as follows.

20. The measured depths of the applied-for Bear Lake wells, according to DEQ records, would be even longer than any of the previous 17 wells. Records show their expected water usage would be a little over 35 million gallons, setting another world record. I fear we will find in these larger wells that they are located similarly too close under the 660-foot rule, and that DEQ is again not examining interference data.

21. According to DEQ records, Encana applied for spacing exceptions for the 13 contested wells on January 28 and March 13 of this year. The applications claimed in identical language:

2 State Excelsior 3-25 HD1, on wellpad C.

3 State Excelsior 3-12 HD1, on wellpad B.

4 State Excelsior 3-25 HD1, on wellpad C.

5 State Oliver 1-13, 2-13, and 3-13 HD1, on wellpad C.

Lateral portions of the wellbores have all been spaced at least 900' apart. Based on data from the State Pioneer 1-3 HD1, State Excelsior 1-13 HD1, State Excelsior 1-25 HD1, 900' is more than a sufficient distance to prevent interference.

The following data about the 3 comparator wells are from public DEQ records. In both measured depth and water volume, it can be seen the comparators are significantly older and smaller than the 13 contested wells. None of them had nearby wellbores on the dates they were fracked at high pressure. I am not an expert in this but it seems like Encana picked poor comparators, even assuming the contested wells would be fracked at the same pressure as the comparators:

Well	Measured Depth	Water Volume	Date of high-pressure fracking	Adjacent wellbores present on frack date?
State Pioneer 1-3 HD1	15,001 feet	6,720,000 gallons	February 2010	No.
State Excelsior 1-13 HD1	14,442 feet	5,860,777 gallons	October-November 2011	No.
State Excelsior 1-25 HD1	16,890 feet	8,461,635 gallons	November 2011	No.

22. Regarding the three permits on wellpad B,⁶ on August 7 I received email forwards from Ellis Boal, of FOIA responses he had received from DEQ concerning Encana's application for a spacing exception for the wells on wellpad B. The responses

⁶ Permit ## 60765-60767, State Excelsior 3-12, 4-12, and 5-12 HD1.

are now labeled as exhibits 25-28. I have reviewed them in detail. Nowhere in the documents did Encana and DEQ discuss the possibility of “interference” or “communication” among the wellbores. Nowhere is there any record that DEQ asked to see Encana's data about the 3 comparator wells. Nowhere is there any record that DEQ compared the pressure to be applied in fracking the contested wells to the pressure actually applied in the comparators. Nowhere is there any record of DEQ examination of data it already had about the 3 wells. Nowhere is there discussion of data from monitoring tools for “streaming pressures” utilized by Encana's sometime contractor Michael Beck to detect interference, or similar data utilized by any other contractor (see ¶¶ 27-29 below).

23. I take it from the complete silence that DEQ did no examination of the interference issue on wellpad B, and made no independent judgment on the subject.

24. Encana and DEQ have urged that this litigation be dismissed partly because my only recourse is (according to them) to seek an evidentiary hearing under part 12 of the DEQ rules. One of the procedural requirements for hearings under those rules when a spacing order is to be considered, is that I have to present evidence of “well production, testing history, and other applicable reservoir and geological data.” I have none of this data for wellpads A, B, or C, no right to enter the drilling unit to collect it, and no economic incentive to get it, particularly if it cost anything. I am not an owner or producer who would have a right to appeal to the second level of that process after a loss

at the first level.

25. I am not a member of the Michigan Oil and Gas Association. I do not subscribe to its newspaper, Michigan Oil and Gas News, a trade publication in which I would have to advertise, if I were to request a hearing under part 12.

26. The reason I am bringing this case is I am concerned about possible harm to the environment, snowmobilers (including myself and my family), and ordinary motorists, tourists, or Scouts should there be a spill or a blowout attributable to DEQ failure to examine Encana's data, or to too-close spacing of the wells, in violation of DEQ's obligation to protect the environment.

27. In my researches I have found several references about threats to the environment or public safety from underground interference or communication between adjacent wellbores.

28. Exhibit 18 is an 8/5/13 EnergyWire article by Gayathri Vaidyanathan, "Hydraulic Fracturing: When 2 Wells Meet, Spills Can Often Follow." It recounts an incident near Innisfail Alberta, due to underground communication, when 20,000 gallons of oil and frack fluid spilled out of a well onto a farmer's field, coating 100 trees with a fine mist. The article notes several other instances of frack hits, in cases where the wells were as far apart as 1.8 miles. One in New Mexico is noted where the wells communicated across a distance of 2000 feet, resulting in a 9000-gallon spill. The article notes one fracture in Pennsylvania extending 1800 feet. These distances are way

longer than the distances between the contested wells in this case. Incidents generally go unreported to state regulators, the article says. It continues:

Frack hits will be more common in the future as companies drill multiple wells in close proximity on each well pad.... To the lay observer, it appears to be a surface spill. But in reality, such spills are caused by fracking hundreds or even thousands of feet away.... In Canada, the industry has put together a set of best practices to deal with the problem before it gets more prevalent.

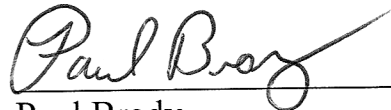
The article quotes Michael Beck, president of Surface Solutions, a company which has done work for Encana, saying “Cement is not 100 percent perfect, it cracks.” Beck adds that in one Alberta formation about 30 percent of the well bores that are up to 1,500 feet apart experience frack hits.

29. Attached exhibit 19 is a transcript of a 2/21/13 interview with Michael Beck, conducted by Michael Higgins on Alberta Primetime. I watched it at <http://www.albertaprimetime.com/Stories.aspx?pd=484> . Beck identifies “uncontrolled” underground releases of fluids on nearby wells, caused by “frack communication” in horizontal wells, as an environmental concern, creating “inherently dangerous” situations for farmers. His company has tools to monitor streaming pressures from one site to another, Beck says. He notes the Innisfail incident, which motivated Energy Resources Conservation Board (the regulatory agency there) to establish legislation for fracture planning zones and notification alerts. DEQ has no regulations on fracture planning zones.

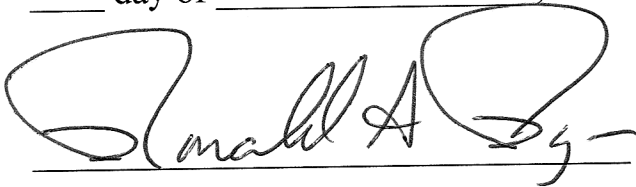
30. More recently I read of an incident in New Mexico, reported at

<http://www.kasa.com/news/local/fracking-fluid-blows-out-nearby-well> , where a half-mile stream of 200 barrels of frack fluid, oil, and water blew out of an old oil well last month and contaminated the soil, due to fractures reaching it from Encana operations a half-mile away. A quoted commentator says “all wellbores and their cement eventually degrade and leak; it's just a matter of time.”

31. Were incidents like these to occur at the contested wellpads, my recreational enjoyment (among many other things) would be diminished.


Paul Brady

Subscribed and sworn to before me this
23rd day of October, 2013



Notary public, _____ County
My commission expires:

RONALD A. PUZON
Notary Public, Otsego County MI
My Commission Expires: January 12, 2014