



West Virginia's
Surface Owners' Rights Organization

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WVSORO'S Position

Regarding the Legislature's Need to Act Due To:

- D.E.P.'s Non-Response to Horizontal Well Act Studies,**
- Other Needs of Surface Owners.**

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INTRODUCTION

The Horizontal Well Act passed in December, 2011. As the bill passed through the Legislature surface owners complained about the limited protections given to surface owners. One of the biggest complaints of surface owners during passage was the limited "setback" from people's homes. The Act only said that the center of the well pad had to be 625 feet from citizens homes. In response to those complaints the Legislature did put provisions in the Act that required three studies or sets of studies.

The first study out, "Pits and Impoundments Final Report" is dated December 17, 2012. It is about pit and impoundment construction.¹

The second study out was also part of the pit study requirements. It is labeled "Final Report Water Quality Literature Review and Field Monitoring . . . Phase I." It is dated February 15, 2013. Phase II came out September 17, 2013.²

The third study out was a combination study on air noise, light, [dust] and volatile organic compounds (VOC). It is dated May 3, 2013.³

The final study due was on "Air Quality impacts . . ." It is dated 6/28/2013.⁴

Based on those studies the D.E.P. was supposed to decide whether to do rulemaking.

Unfortunately, even though Dr. McCawley who was in charge of the air/noise/light/VOC study recommended several things that ought to be done, the D.E.P. did not do rulemaking. Instead it hit the ball back to the Legislature's court.

¹ **§22-6A-23. Impoundment and pit safety study; rulemaking.**

The secretary shall, by January 1, 2013, report to the Legislature on the safety of pits and impoundments utilized pursuant to section nine of this article including an evaluation of whether testing and special regulatory provision is needed for radioactivity or other toxins held in the pits and impoundments.

² **§22-6A-23. Impoundment and pit safety study; rulemaking.**

The secretary shall, by January 1, 2013, report to the Legislature on the safety of pits and impoundments utilized pursuant to section nine of this article including an evaluation of whether testing and special regulatory provision is needed for radioactivity or other toxins held in the pits and impoundments.

³ **§22-6A-12. Well location restrictions.**

(e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section.

⁴ **§22-6A-22. Air quality study and rulemaking.**

The secretary shall, by July 1, 2013, report to the Legislature on the need, if any, for further regulation of air pollution occurring from well sites, including the possible health impacts, the need for air quality inspections during drilling, the need for inspections of compressors, pits and impoundments, and any other potential air quality impacts that could be generated from this type of drilling activity that could harm human health or the environment.

We do appreciate that the D.E.P. recognized that something needed done. See Appendix Page 4. According to D.E.P.'s May 28, 2013, cover letter to the President and the Speaker, “. . . [T]o reduce potential exposures. . . D.E.P. recommends that the legislature reconsider the reference point (i.e., from the center of the well pad) for the location restriction to occupied dwellings. . .” D.E.P. said this was, “because of the potential for different well pad geometries. . .” See Appendix Page 5 The D.E.P. said, “One option to consider would be to establish a location restriction from the Limit Of Disturbance (LOD) of the well pad. . .” D.E.P. said this was, “to provide for a more consistent and protective safeguard for residents in affected areas.”

We are disappointed of course that the D.E.P. did not do regulations in response to the studies. As noted below, we think the D.E.P. should have implemented Dr. McCawley's recommendations by rule. The D.E.P. did not even do a good job of hitting the subject back into the Legislature's court.

although D.E.P. said that the set back distance should be from the edge of the well site rather than the center, the D.E.P. did not recommend the distance that should be enacted for the set back from the edge of the limit of disturbance.

I am going to review studies to show you why we think that D.E.P. was wrong not to issue regulations and tell you what you should do instead.

I am also going to respond to some of the things that D.E.P. said when it made its presentation to the Legislature in August, 2013, and say why those are inappropriate.

RESPONSE TO D.E.P. PRESENTATION

As part of D.E.P.'s presentation to the Legislature at an Interim Committee meeting in August, 2013, D.E.P. pointed out that the activities of drilling a well are “temporary.” D.E.P. was good enough to point out that what is “temporary” might be perceived differently by different parties.

Drilling a conventional shallow, vertical well, from the time the bulldozer shows up to make the access road, until the gas is turned on at the end of the pipe takes thirty(30) to forty five (45) days if all the contractors necessary are available at the right time. And often they are not, but again thirty to forty-five days is all that is necessary.

Horizontal shale wells sites are of course much, much bigger deals and take lots more time. From the time the bulldozer shows up until they have drilled and frac'ed three(3) horizontal wells and they turn them on is probably more like a year and half. It takes 30 days just to frac the horizontal legs – the time it takes for all the steps of construction, drilling and completing a conventional well. That is not temporary in the life someone living nearby. And after the drilling

and frac'ing are complete, and the well goes into production there are various types of ancillary equipment that remains on the site for the lifetime of the well that are usually not there for conventional wells, and are at least different in scale.

The amount of gas produced by these horizontal shale wells is orders of magnitude beyond that produced by conventional wells. As a result, as one example, according to the permit for one EQT well pad with 9 wells, the pad has the potential to emit ninety-two tons per year of volatile organic compounds ("VOCs"), approximately forty tons per year of other pollutants that are that are subject to National Ambient Air Quality Standards, 26,000 tons per year of greenhouse gases, and eight tons per year of hazardous air pollutants (even after the emissions are treated by the equipment required by a State permit.)

The D.E.P. also said, during the presentation and in their cover letters that they are not doing rulemaking because, "there were no indication of a public health emergency or threat." . . .

The existence of a public health emergency was not a condition of their duty. And if it was, D.E.P. should not wait for an emergency to act. We think D.E.P. should prevent emergencies. And in many cases we disagree. We think there is a public health emergency on noise and air and dust.

The D.E.P. also said that it believes its role is to protect the public from environmental damage. They question is whether its role is to prevent nuisance.

Protections are needed below the standards for a public health emergency. We believe that the D.E.P. does have a role to prevent environmental nuisances to the citizens of the state.

One example is odor. If in fact a company is putting out something that is not harmful to health but it stinks to high heaven, the D.E.P. division of air right now can do something about it.

We therefore think that if a well site is making so much noise that, while it won't damage your hearing, it still keeps you awake and limits the activities of living. The D.E.P. should do something about it. And we will have specific examples on that issue.

D.E.P. said it does not yet have a hard scientific standard. Therefore it cannot suggest what the setback from the limit of disturbance should be, as opposed from the center of the well pad.

It would be nice if they had more scientific data. But they have all of the scientific data that is available. And there is enough data available already that shows that something should be done now.

In response to several questions about noise and light and dust the D.E.P. pointed out that it has its inspectors to go out and “work with” the companies and the people.

We appreciate that this is well meaning. We appreciate they may think they are making a difference. But it is way inadequate.

In the first place if an inspector is not around, if there is no state regulation that the driller has to follow, then we the citizens cannot go to Court and make the driller follow it. We have to rely on the inspectors of the D.E.P.

There are not enough inspectors. The most important part of the drilling process is when the driller inserts the cement that surrounds the metal surface casing – and then waits for it to dry. We were told by a supervising inspector that only rarely is there an inspector present when the surface casing is cemented in -- demonstrating that they are still way understaffed. If they think they have enough staff it is because they have set their duties standards way too limited.

The legislature is not giving the inspectors enough tools. When the inspectors issue a violation they have to give the company a chance to mitigate the situation before they can move forward with enforcement, fines etc. If every time you were pulled over for speeding, the cop had to give you a chance to slow down before he gave you a ticket, what effect would that have on speeding.

Oil and gas inspectors still have to have worked in the industry before they get a job. Working in the industry they absorb the culture of boys will be boys and entitlement that exist in the industry before they can be hired as an inspector. It is not that they are in bad faith or have bad intentions, they are just of limited vision.

The video at (<http://www.youtube.com/watch?v=P5PoeA90wQo>) is of a flood plain permit hearing before a county commission. Someone raised an issue about a piece of drillers' equipment that was falling in a creek. I interrupted (because that was not a flood plain issue) and said that the speaker should call the Office of Oil and Gas. The audience at the hearing broke out in laughter.

SUMMARY: WHAT SHOULD BE DONE – BASED ON SCIENCE?

Not just on new sites, but new wells, and in some cases existing wells.

Setback

We are deeply disappointed that the D.E.P. did not recommend the distance that should be enacted for the set back from the Limit Of Disturbance.

At the October, 2013, Interim Committee hearing, one legislator tried to pin down Dr. McCawley to recommend a distance limitation . He declined.

But his report does cite one study that shows what the distance limitation should be. See Appendix Page 8, which is page 184 of the study. Cumulative cancer risks increased from 6 in one million to 10 in one million for people living within ½ mile of a well. An increase of 2/3rds.

That was not what Dr. McCawley recommended. That may not be realistic. It is certainly what some of your constituents want. But it is a science-based study that says the distance limitation should be ½ mile.

In fact Dr. McCawley said that the well pad could be closer than 625 feet if Best Available Control Technology is used, monitoring is in place, and health parameters were followed. His study was only about health. He did not consider the impact on property values. Although no in-state studies have been done to determine what impact Marcellus drilling has on property values, marketability, etc., common sense will tell you that when houses are immediately adjacent to well sites there is likely to be a measurable impact on the value and the home owners' ability to sell. A study conducted for the Town Council of Flower Mound, TX found that negative impacts on property values generally dissipated at a distance of 1,000 to 1,500 feet. In response, Flower Mound adopted an ordinance that makes it "unlawful to drill, re-drill, deepen, re-enter, activate or convert any oil or natural gas well, for which the closest edge of construction or surface disturbance is located ... within one thousand five hundred feet (1,500') of any residence." (See http://library.municode.com/HTML/13329/level3/SPAGEOR_CH34EN_ARTVIIIOINAGAWEDROP.html for the ordinance. The property value study is available at <http://www.flowermound.com/DocumentCenter/View/1456>.) For a visual reference, Page 1 of the Appendix shows the home of a couple who mostly constructed it themselves. Page 2 of the Appendix shows the same house a few years later as a pad next to them is used for drilling Marcellus Shale wells. An arrow superimposed on the picture shows a distance of 625 feet from the center of the well pad. Clearly that home needs more protection.

Also related to setbacks, Dr. Alan Collins, who spoke at the December, 2013, Interim Committee meeting, conducted two distance analyses based on the results of a mailed survey he conducted. Responses were divided by well type - horizontal versus non-horizontal wells. Surface owner respondents were asked to report problems or issues with drilling along with their satisfaction with the outcome and quality of life changes. Those respondents with residences on the property were divided into two groups based on distance from the edge of the well pad: (1) less than 1500 feet, and (2) over ¼ of a mile. Over the entire sample, horizontal wells resulted in more dissatisfaction, lower quality of life, and more problems for surface owners than non-horizontal wells. Despite a slightly lower dissatisfaction rate, horizontal wells less than 1,500 feet resulted in twice as many problems identified by respondents as non-horizontal wells. Environmental and quality of life problems were noticeably higher for horizontal wells. Out of the 24 categories of problems or issues listed in the survey, surface owners with horizontal wells within 1,500 feet reported, on average, 8 problems. This ranged from zero to 20 problems. The most commonly reported problems were spills of fluids and noise pollution (58.3%), decline in property value (50%), and length of time for completion (also 50%). When wells were over ¼ of a mile (about 1,500 feet) away, surface owners with horizontal wells showed less dissatisfaction and were less likely to report a decline in quality of life. An unusual low number of surveys were returned. WVSORO's position is that people have accepted their fate and cannot bring themselves to revisit the issue by doing a survey.

The current set back should be expanded to at least 1500 feet from the LOD unless the industry can show it will avoid exceeding set limits for specified parameters at the home. In addition to measurable emission standards for noise, dust and other air emissions from horizontal drilling sites there should also be real-time, fence-line monitoring for these parameters, as discussed below, as well as short and long-term health impact studies of residents living near Marcellus wells

Air and noise.

In one sentence, generally we support what Dr. McCawley recommended, with only a few differences.

Starting now – for all new horizontal shale wells (not just new pads but new wells) the driller needs to set up a fence-line/impact point trailer at the nearest residence or other point of impact that is closest or most likely to be impacted. The driller needs to monitor the air and noise and dust in real time, and if what's being emitted exceeds parameters, alter their operations to deal with the problem. The wireless data needs to be available in real time to those living nearby, and those living nearby should receive alerts if parameters are exceeded.

Noise level needs to not be the level which causes hearing loss, but the level which disturbs human activity.

In addition the long term epidemiological study suggested by Dr. McCawley should be done.

The D.E.P. has already demonstrated that it will not follow Dr. McCawley's recommendations. So the Legislature needs to make them happen by passing legislation.

Light

No direct light should shine on residences and sensitive agriculture and livestock.

Dust

Dust should be controlled so it does not show up on people's cars and porches, and it should be part of monitoring.

Water and waste

Radiation standards need set for depositing Marcellus Shale cuttings in landfills, and for the leachate coming out of those landfills, and enforcement by the Division of Water Quality needs to take that task. However, we defer to those more knowledgeable that have worked on this issue since the passage of the Horizontal Well Act.

WHAT IN THE STUDIES SHOWS WE NEED REGULATIONS

Pit Construction/Safety Study

The important point about the pit study is that it most clearly illustrates that 1) the industry cannot be trusted, and 2) the citizens cannot rely on the current system of regulation and enforcement. Since the study was done (and perhaps of the terrible results of the study) most companies now do not use pits and impoundments, but pipelines and portable metal tanks. And the DEP has trained its staff better as recommended. The pit study will be reviewed none the less in order to make a point. The cartoon character Charlie Brown once said that he loved mankind, its people he can't stand. With us it is the reverse. Most people working in the industry are good citizens, and likeable. But as an industry, oil and gas drilling will ruin our surface citizens lives. So this is not personal. It is the business of protecting out citizen surface owner citizens.

Some of the pits studied were created before Article 6A went into effect. Article 6A required pits to be constructed according to plans drawn by registered professional engineers, and those were somewhat better. Even with that there were problems.

The WVU engineers that the D.E.P. used studied fifteen(15) sites. Six(6) were chosen for *In situ* field compaction density and moisture content testing. See Appendix Page 10. On that same page the study noted that 8 of the 15 impoundments were not built to the specification in the plans! That included larger volumes, smaller crest brim widths and steeper upstream and downstream slopes than permitted design specified.

The study looked at compaction/soils: It said the soil properties in the permits were characteristic of top layers of the excavation but not necessary the bottom. On Appendix page 11, paragraph in the middle. None of the 6A sites had soil conforming to the soil type specified by the D.E.P. Of the remaining twelve(12) pre 6A sites, only one(1) site meets the soil standards.

Having different soils might have been OK if compaction was achieved. However, on Appendix Page 12, the study states that seventy samples were taken at six sites that were studied in depth. Only 8.5% met the compaction standards!

And at Appendix Page 12, "Overall, these deficiencies reflect a lack of adherence to the best management practices set forth in the West Virginia Soil Erosion and Sediment Control Field Manual as well as poor construction knowledge."

At the bottom of Appendix page 12 the study found D.E.P. inspectors have no formal training when related to pits, impoundments and inspections. Also the inspectors only targeted the readily-apparent problems such as slips and slides, while not recognizing or fully understanding, the smaller problem indicators. These are the warning signs that should prevent an emergency.

Again these are guys that worked in the industry with no particular environmental experience or engineering training.

It does appear that D.E.P. has remedied this, at least to some extent, and trained their inspectors and we appreciate it. But again the pit study shows that the industry cannot be trusted. The State cannot rely on the current system of regulation and enforcement.

Here are examples:

Appendix Page 13. Page 27 (of the report) shows settlement cracks in an anchor trench.

Appendix Page 14. Page 28 shows both movements on the downhill side of the impoundment.

Appendix Page 15. Page 29 shows a slope sliding into an impoundment. That not only fills the impoundment, it can tear the liner and allow the stuff to leak into the ground.

Appendix Page 16. Page 34 shows bulges and grade stakes being knocked over by movement.

Appendix Page 17 Page 37 shows the erosion of the surface which was “One problem observed at all sites.”

Appendix Page 18 Page 38 is more slope movement and states 2 sites had moderate movement, and 6 sites had severe slope movement.

Appendix Page 19 Page 40 is a picture of seepage through the embankment.

Appendix Page 20. Page 41 is more liner bulges from movement.

And at the end, page 65 Appendix Page 21 the study’s conclusion is that “none of the deficiencies indicated imminent pit or impoundment failure potential at the time of the site visit. The problems identified do constitute a real hazard and present risk if allowed to progress, but all problems that were observed in the field could be corrected.”

Dust

Please turn to Appendix Page 23, page 20 of the Air, Noise and Light Monitoring Results report. Recommendation 3.2.2. says, “Workers noted that the only use of wetting agents that they had seen were when the sampler was being placed on site. While this may be an exaggeration, the amount of fine dust collected at the sites . . . were visible proof that some increased wetting agents use was needed.”

The report says regulation is needed. It is a simple enforceable test. If there is dust on people’s porches and cars (and perhaps crops), the standard is being violated. Wetting agents and slower speed limits are needed. Yet D.E.P. says no new regulations are needed.

Light

The report only measured something called “skyglow”. We presume that is indirect light. It seems very simple that when these operations are going 24 hours a day, that all lights should be shaded so they do not shine on residences (or livestock). And flares should be located where their effects will be shaded from lighting up people’s homes.

Noise

There is one area of noise with which we disagree with Dr. McCawley said. But our disagreement is based on his report. The executive summary prepared by Dr. McCawley and reviewed by D.E.P. said that the average noise levels were below the EPA level established for long term hearing loss -- 70 dBA. The equivalent of a kitchen exhaust fan on high. That is a standard derived from OSHA where noise exposure is 8 hours a day.

We do not think that the D.E.P.'s standard for noise should be workplace hearing loss. We think it is whether it disturbs peoples sleep and whether it raises their blood pressure or otherwise affects their health.

Noise does have health effects. Look at Appendix Page 26, page 184 of the report. According to the World Health Organization studies, at 30 to 40 dBA, "A number of effects on sleep are observed from this range: Body movements, awakening, self-reported sleep disturbance, and arousals. On Appendix Page 27, above 55 dBA, "The situation is considered increasingly dangerous for public health. Adverse health effects occur frequently, a sizeable proportion of the population is highly annoyed and sleep disturbed." High blood pressure is another effect of noise.

The study noted on its Page 9 (Appendix Page 24) that EPA said that average noise at 55 dBA interferes with outdoor human activity, and 45dBA indoors does so.

Many of the charts from the WVU studies for the various well sites show noise averages higher than that. They will be reviewed below. But first we need to point out a flaw in the studies. This flaw was recognized by Dr. McCawley in the power point he showed the Legislature. According to Dr. McCawley, those charts are charts of hourly averages. So the charts do not indicate how high intermittent noise levels were that gave rise to the average for that hour. So there were lots of spikes of sound higher that lasted for seconds or a few seconds that caused the averages. An irregular slamming sound way above 55 would be very disturbing of sleep. EPA also has a standard for road noise that talks about instantaneous noise level limits. It is 83 to 87 dBA. See page 14. (Dr. McCawley was not sure what EPA instantaneous sound levels were based on – whether health or sleep disturbance or what. I suppose it could even have been a political call like our 625 feet.) McCawley tells us that the center of the pad the level is above 120 dBA.

Here are the noise levels that WVU found:

Appendix Page 28, Page 40. On the Donna pad (Frac job ongoing) several sampling points (C and A) had daily averages above 55. I put in a red line where 55 DBA would be. Site B would have been most interesting because it was near a house, but there was an equipment failure due to the storm etc.

Appendix Pages 29 and 30, report pages 68 and 69. Mills #2 pad (inactive/construction) charts show noise was constantly above 55 dBA average. It seemed to peak during daylight hours. Lots of hourly averages spikes up to 80. Dr. McCawley said this is likely to have been bulldozers etc. And he points out that they work on the full limit of the disturbance, not from the center.

Appendix Pages 31 AND 32. Report pages 73 and 74. Mills #3 pad (site preparation) (construction). Never below 55 dBA average per hour.

Appendix Page 33. Page 93 Maurey pad (flowback), with instruments exactly at 650 feet, constantly above 55.

Appendix Page 34. Page 111. Lemons pad (vertical drilling phase). Right around 55 dBA average.

WVDNR pad (horizontal drilling) the noise equipment was broken. He says that horizontal drilling was not as loud as frac'ing.

So we support Dr. McCawley's recommendation for the fence-line/impact point monitoring for noise, and for changes in operations if the noise level exceeds 55 decibels at people's homes,

but believe it should instead be 30 dBA for people's homes using the World Health Organization standard.

Air Quality.

This is perhaps the most widespread concern among our members and others. We think that an increased setback distance is not the best or only answer because of temperature inversions, topography (people who live downhill from well pads), and the way the wind blows – and because of the cumulative impact of having many of these huge pads across the area. According to a count we made two years ago, Wetzel County has more than 325 wells on 108 pads permitted, and that is certainly out of date. Well pads should be further away, but there are other things that can be done.

We support Dr. McCawley's suggestion of the need for epidemiological studies like the one in Colorado that showed increased cancer risks within ½ mile.

We support that after some delay DEP has started permitting these sites. But it is equipment based and does not have emission limits. And its regulation of air is not concerned with the accumulation of airborne chemicals in the entire area.

Pit Contents (including radiation in cuttings and flowback) & Impacts on Water Quality.

Again we defer to those more active and knowledgeable that have worked on this issue since the passage of the Horizontal Well Act.

CONCLUSION

We agree with Dr. McCawley that the people of West Virginia should not be Guinea pigs. We should NOT wait for a long term epidemiological study to act. We support his recommendation that monitors should be placed at fence line/impact points closest or most likely to be impacted by the activity, and if levels arise above the levels CDC recommends, the industry must alter its operations to meet the standards. He said it is something the industry can do. He said it will cost something like \$150,000.00 for the equipment that can be used over and over again. If that sounds like a lot, remember that each well costs \$6 to \$10 Million dollars. There are usually 6 wells on a pad. That is 1/4 of 1% of the cost of drilling the wells on a pad, and it can be used again on other well pads.

If the industry is concerned about the cost of having to curtail its operations to meet these standards, then they are sacrificing the health and the life savings of West Virginians to do so.