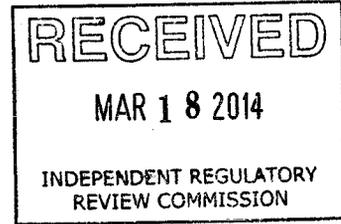


3042

March 14, 2014

**To: Environmental Quality Board  
P. O. Box 8477  
Harrisburg, PA 17105-8477**



**From: Environmental Defense Fund  
Pennsylvania Environmental Council  
The Nature Conservancy, Pennsylvania Chapter**

**Re: Comments on Proposed Rulemaking for Environmental Protection  
Performance Standards at Oil and Gas Well Sites – 25 Pa. Code Chapter  
78**

The Environmental Defense Fund (EDF), Pennsylvania Environmental Council (PEC), and The Nature Conservancy, Pennsylvania Chapter (TNC) submit the following comments on the Department of Environmental Protection's (Department) proposed rulemaking to amend 25 Pa. Code Chapter 78 (Proposed Rulemaking).

**Impact of *Robinson Township, et al v. Commonwealth of Pennsylvania* (December 19, 2013)**

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The decision of the Pennsylvania Supreme Court in *Robinson Township, et al v. Commonwealth of Pennsylvania* has invalidated and enjoined select provisions of the controlling statute (Act 13 of 2012<sup>1</sup>) driving this Proposed Rulemaking. Nonetheless, our organizations believe it is imperative that the Department proceed conscientiously with the Proposed Rulemaking. Based on our analysis of the Supreme Court decision, the substance of this Rulemaking, with alterations as discussed herein, conforms with the spirit, and letter, of the ruling. The timing for these protective new rules is ripe -- we are more than two years removed from passage of Act 13 -- and the Oil & Gas Technical Advisory Board workgroup sessions and nine public hearings suggest a thorough vetting process.

In contemplating the impact of the Supreme Court decision on the Proposed Rulemaking, we urge the Department to take into account the following considerations:

- Protection of Aquatic Resources  
Application or enforcement of §3215(b) of Act 13 has been enjoined by the Supreme

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<sup>1</sup> 58 Pa.C.S. §§ 2301-3504.

Court, based on the unconstitutionality of §3215(b)(4).<sup>2</sup> Protection of aquatic resources from the impacts of well pad and related infrastructure development is of significant concern for the Commonwealth, and should not be abandoned from the Proposed Rulemaking. The Department has sufficient authority pursuant to the Clean Streams Law (P.L. 1987, No. 394) to require that operators proactively avoid or mitigate impacts to aquatic resources. Coupled with the tenor of the Supreme Court's decision,<sup>3</sup> the Clean Streams Law arguably grants the Department independent authority to require pre-drilling analysis, siting restrictions, practices to minimize surface disturbance, and the ability to condition or deny a permit based on potential impacts.

- Protection of Public Resources

Application or enforcement of §3215(c) of Act 13 has similarly been enjoined by the Supreme Court because it was found to be unseverable from other provisions invalidated by the Court. As with aquatic resources, at issue is not the appropriateness of additional protection standards for Public Resources, but rather the sufficiency of authority and deference granted to the Department to condition or deny permits based on analysis of potential impacts. Nevertheless, we note that the purpose of this Chapter in Act 13 is in part to "[p]rotect the natural resources, environmental rights and values secured by the Constitution of Pennsylvania,<sup>4</sup> and that Act 13 further allows that "[t]he department may impose permit terms and conditions necessary to assure compliance with this chapter or other laws administered by the department [emphasis added]."<sup>5</sup> As these provisions of Act 13 withstood judicial scrutiny, the Department should feel secure in retaining and expanding upon the list of identified Public Resources, and should enhance the required analysis and assurance threshold for permit review. These comments address Section 78.15(f) of the Proposed Rulemaking in detail below.

EDF, PEC, and TNC recognize the challenge set before the Department in fulfilling new protections afforded by Act 13 while also heeding the Court's decision. Nonetheless, we hold that the state is far better off with promulgation of the expanded protections contained in this Proposed Rulemaking than to further delay action. We urge the Department, after carefully considering public input, and with due regard to the Supreme

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<sup>2</sup> Note, however, that 58 Pa.C.S. §3215(d.1), concerning additional protective measures for the storage of hazardous chemicals or materials on unconventional drilling sites near streams was neither found unconstitutional nor enjoined by the Court.

<sup>3</sup> See Footnote 59 of the Plurality Opinion: "There is no dispute that regulation of the Commonwealth's waters implicates public natural resources that are a subject of the Article I, Section 27 trust."

<sup>4</sup> 58 Pa.C.S. §3202(4)

<sup>5</sup> 58 Pa.C.S. §3211(e)

Court's decision with respect to the import of Article I, Section 27 (the "Environmental Rights Amendment") of the Pennsylvania Constitution, to finalize this proposal. We also encourage the Department to fully explore opportunities created by the Court's decision to enhance and strengthen the Proposed Rulemaking, as appropriate.

### **General Comments on Proposed Rulemaking**

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- **Associated Guidance**

The Department will be developing new or updated Technical Guidance and Authorization Lists for several elements of the Proposed Rulemaking, including but not limited to Water Management Plans (§78.69), as well as approved modular aboveground containment structures (§78.56(a)(2)), liners (§78.56(a)(8)(ii)), and solidifiers (§78.61(d)). It was our understanding that the Department would be advancing drafts of this new guidance concurrent with the Proposed Rulemaking, but to our knowledge this has not occurred. Given the apparent reliance in the Proposed Rulemaking on this new (but not yet available) guidance, it is imperative that the Department promptly provide opportunity for public review and comment of these documents.

- The Department should ensure that all containment provisions in the Proposed Regulations fully meet the standard set forth in 58 Pa.C.S. §3218.2. For example, Sections 78.57(c) and 78.66(b)(1)(i) only apply to threats of pollution to the waters of the Commonwealth. 58 Pa.C.S. §3218.2(a) expressly states that containment also applies to "the ground surface or spills off the well site ...."

- **Definitions and Clarifications**

- The Department should define and clarify what is meant by terms related to "waste", and "water" and/or "freshwater" in the Proposed Rulemaking. Our review revealed various permutations of those terms used interchangeably, or without specific definitions. For example, the term "residual waste" should be defined in the regulations, even if by reference to another Chapter in the Pennsylvania Code.
- The Department should define "Regulated substances" to make it clear that, throughout the entirety of the Proposed Rulemaking, the definition includes, at a minimum, brines, drill cuttings, drilling muds, oils, stimulation fluids, well treatment and servicing fluid, plugging and drilling fluids as provided in §78.56(a).

- The Department should provide a definition for “Temporary Storage” as used in the Proposed Rulemaking.
- The Department should define the term “responsible party” as used in Section 78.66 (relating to reporting and remediating releases). At the time of a spill, the “responsible” party may be uncertain or in dispute, which could inadvertently delay spill reporting and remediating. Consequently, a clearer designation of who is responsible for reporting and remediating to ensure prompt response is needed.
- The Department should provide a definition for “hydraulic fracturing” that includes all fracturing and well stimulation activities. This more inclusive definition is clearly contemplated in Act 13 (see definition of “Unconventional formation” in 58 Pa.C.S. §3203, which includes the phrase “or other techniques to expose more of the formation to the well bore”). In the alternative, the Department could provide a broad definition for “Fracturing” and use that term throughout the Proposed Rulemaking. We recognize that the Department may have a more limited definition for any rulemaking pursuant to 58 Pa.C.S. §3222.1.
- The definition for “Water source” uses the phrase “Water of this Commonwealth,” which is undefined. An already defined term that should be used in its stead is “Waters of the Commonwealth,” as defined in Section One (1) of The Clean Streams Law.<sup>6</sup> In addition, the definition for “Body of water” does reference the definition in 25 Pa Code Chapter 105, but it is unclear why that term is limited to “a natural or artificial lake, pond reservoir, swamp, marsh or wetland,” and does not include all “Waters of the Commonwealth” as defined in The Clean Streams Law. See 25 Pa. Code §105.1 and 35 P.S. §691.1.
- The Department should define the term “additive” to mean “any substance or combination of substances found in a hydraulic fracturing fluid, including a proppant, that is added to a base fluid in the context of hydraulic fracturing treatment, whether or not the function of any such substance or combination of substances is to create fractures in the formation.” This definition is consistent with the definition adopted by the vast majority of states that have addressed the issue.
- Impoundment Pits  
In all instances, any impoundment or storage pits required to have a liner, whether deemed “temporary” or not, and whether it is located on a well pad site or off a well pad site as part of a secondary or centralized storage area, should be required to be

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<sup>6</sup> 35 P.S. § 691.1

drained and liner inspected on an annual basis. In lieu of annual draining and liner inspection, a leak detection system should be installed between primary and secondary liners.

- Tanks

In all instances, any tank (including modular aboveground storage structures), whether deemed “temporary” or not, and whether located on a well pad site or off a well pad site as part of a secondary or centralized storage area, should be required to be drained and the inside of the tank inspected on an annual basis. In lieu of annual draining and inspection, leak detection system should be installed.

- Closed Loop Systems

We believe that the Department should include technical standards for closed loop systems in guidance or in §78.56, and other places where appropriate. Many operators are already implementing this management practice. The Department should encourage and enforce the use of closed loop systems where conditions merit and where it will result in improved environmental performance and risk reduction. Technical standards will be important to ensuring these systems perform as intended.

- Public Reporting

§3262 of Act 13 requires enhanced public reporting of inspection reports and permit violations. The Department should promptly publish information regarding spills, leaks, exceedences, loss of pressure, and remediation measures, as provided under §78.51(c), §78.59c(e)(4)(x), et cetera in the Proposed Rulemaking.

## **Specific Comments on Proposed Rulemaking Provisions**

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### **§78.15(c) Permit Application Requirements**

- We commend the Department for adding corporate disclosure information on parent and subsidiary entities in the permit application requirements. We believe this requirement should be extended to partnership and joint venture interests.

### **§78.15(f) Public Resources**

- At a minimum, the Department should expand the list contained in Section 78.15(f)(1) of the Proposed Rulemaking to include additional Public Resources that have been designated through agency review and public processes, including but not limited to High Quality or Exceptional Value Waters, Exceptional Value Wetlands, and Wild and Wilderness Trout Streams.

- The 200 foot radius utilized for many of the resources listed in §78.15(f)(1) is a carry-over from the existing regulations, which were not developed in contemplation of unconventional well operations. Given the ruling of the Supreme Court, the Department should consider increasing setback distances where needed to protect functions and uses of public resources to account for the scale of operations at well sites.
- The Department must define and quantify the term “discrete area” as used in §78.15(f)(4). It should be explicit that ultimate determination of “discrete area” rests with the Department or a designated resource protection agency.
- Given the ruling of the Supreme Court, the Department should expressly state in §78.15(g) that it has the authority and responsibility to condition or deny a permit if it makes a determination that there will be “probable harmful impact” to a public resource.
- We support the Department’s inclusion of Species of Special Concern in the consideration of “other critical communities,” and also recommend adding “Rare and Significant Ecological Features” to this review (as referenced in the Department’s Policy for Pennsylvania Natural Diversity Inventory Coordination During Permit Review and Evaluation).
- The Department should consider extending the deadline for public resource agencies to comment on well permit applications under this section to allow for a thorough review of potential impacts and, if applicable, development of recommended avoidance/mitigation measures.

### **§78.51 Protection of Water Supplies**

- §78.51(d)(2) should be clarified to read that replacement for water supplies shall meet the greater of the two applicable standards.

### **§78.52 Predrilling or Prealteration Survey**

- The Department should provide landowners with the option to conduct their own predrilling survey, within a reasonable timeframe and subject to the same constituent parameter and laboratory accreditation requirements applicable to well operators, for submission to the Department. Any such survey, provided it meets the Department’s applicable guidelines and demonstrates that that pollution did not exist prior to

drilling or alteration activity, should maintain the presumption established by 58 Pa.C.S. §3218(c) except if the presumption is rebutted pursuant to 58 Pa.C.S. §3218(d)(1)(ii through (v) and (d)(2)(ii) through (v).

### **§78.52a and §78.73 Pre-Hydraulic Fracturing Assessment**

We applaud the Department for pursuing detailed assessment of potential conduits for fluid migration prior to the commencement of hydraulic fracturing activities. Orphaned and abandoned wells, improperly constructed production wells, natural fissures, and “complex” geology can all represent potential pathways for contamination of protected water, and we are glad to see the Department proposing to require operators to examine the area around proposed wells for such hazards. In an attached Appendix, we offer some suggestions for enhancing the Department’s proposed evaluation.

### **§78.55 Planning and emergency response**

- In §78.55(d.2), PPC plans should be automatically submitted to the Department. Given its emergency response authority, the Department should have all relevant safety information in hand.

### **§78.56 Temporary storage**

- In §78.56(a)(3), the Department should receive immediate notice of any violation.
- In §78.56(a)(9), liners of the same type and quality as prescribed for the respective impoundment must be required to cover freeboards as well. This requirement should be universal to all instances where freeboard is used in containment structures or impoundments.
- Although storage is contemplated to be of a duration of less than 9 month (§78.56(d)), time extensions can be issued with the possibility of temporary storage being in service for longer than one year. Procedures should be in place to routinely monitor the integrity of tanks and lining of pits. The following text is recommended.
  - Pits – The liner of a pit with a single liner shall be inspected when the pit has been in service for one year and annually thereafter. The inspection shall be completed by emptying the pit and visually inspecting the liner. If the operator does not propose to empty the pit and inspect the pit liner on at least an annual basis, the operator shall install a double liner and leak detection system. The leak detection system must meet the requirements of §78.59c(e)(3).

- Tanks – Each aboveground tank (including modular aboveground storage structures) shall be inspected when the tank has been in service for one year and annually thereafter. The inspection shall be completed by emptying the tank and visually inspecting the inside of the tank. If the operator does not propose to empty the tank and inspect the inside on at least the an annual basis, the operator shall install a leak detection system to monitor the integrity of the tank and all interconnected piping on a monthly basis.
- For pits, the Department should require the use of approved equipment or practices to prevent access by wildlife for which fences are not an adequate deterrent (e.g., cover netting for avian species).

### **§78.57 Control, storage and disposal of production fluids**

- The Department indiscriminately alternates between “operation” and “operation, service and plugging” throughout this Section. The Department should standardize this language throughout the Proposed Rulemaking so it is consistent and captures all activities within the new definition provided for “Oil and Gas Operations” in §78.1.
- The Department should impose a time limit, such as 60 days, for on-site storage of production fluids. If storage exceeds one year, the same pit/tank integrity inspection requirements we recommend in our comments for §78.56 should be applied here as well.

### **§78.58 Onsite Processing**

- While we recognize the principle behind §78.58(e), operators should be required to submit, and the Department should review, requests to process drill cuttings at each individual well site. Although operators may use standard processes, the suitability of each site for fluids processing depends on a variety of site-specific facts that must be considered on a case-by-case basis.

### **§78.59b Freshwater Impoundments**

- We believe it is wholly inappropriate to apply freshwater impoundment standards for storage of “mine influenced water” in impoundments without express criteria for pre-treatment. The language provided in §78.59b(g) is currently insufficient as it only requires testing of the mine influenced water prior to storage. Unless there are pre-treatment standards provided in rulemaking, the standard applied for storage of mine

influenced water should be at least as stringent as those used for storage of wastewater.

### **§78.59c Centralized Impoundments**

- The Department should require air monitoring and reporting requirements for any centralized impoundment used for storage of produced, flowback, or wastewater. This is consistent with §3227 of Act 13.
- The Department should consider pre-treatment, or other control standards, of stored wastewater to minimize or eliminate air emissions from centralized impoundments.
- §78.59c(e)(3)(viii)(B) improperly allows operators to direct leak collection from failed impoundment systems back into the same failed containment system.

### **§78.61 Disposal of Drill Cuttings**

- §78.61 distinguishes between drill cuttings from above, and below the casing seat. While we agree that disposal options for drilling wastes may differ for the various types of waste, we suggest regulatory distinctions that accurately reflect the primary issue of concern. For example, water- or air-based mud cuttings vs. oil-based mud cuttings may be a more accurate and durable distinction for regulatory purposes. Additionally, if the Department is concerned about cuttings from a particular formation, the regulations should specifically address disposal of cuttings from those formations. Using the casing seat as a proxy for either of these issues—drilling mud or formation constituents—may be useful in some situations, but it does not necessarily lead to a proper result.
- §78.61(a) and §78.62(a) allow certain drill cuttings and residual wastes to be disposed of in pits at the well site. We recommend that the Department require operators who choose to dispose of drill cuttings and residual wastes in onsite pits first obtain surface owner approval. Approval should be expressed in a written expression of informed consent, and presented to the Department. Surface owner consent should not be presumed to imply or assume liability for the pit and its contents unless specifically stated. Landowner consent shall not absolve the operator from compliance with other Department requirements.
- §78.61(a)(8) requires that a pit holding drill cuttings from above the casing seat be “backfilled to the ground surface” and 78.62(a)(15) provides that a pit containing residual wastes “shall be backfilled to at least 19 inches over the top of the liner.”

Both 78.61 and 78.62 contemplate revegetation of the backfilled pit. A minimum depth of fill should be required between ground surface and drill cuttings or residual waste. This minimum depth should be greater than the rooting zone for expected groundcover. Minimum depth is critical where agriculture is the expected land use.

- §78.61(b)(4) does not allow land application of drill cuttings and residual wastes within 200 feet of a water supply. This protective buffer should explicitly include active water wells for domestic, irrigation and stock uses.
- To the extent the Department continues to allow disposal and land application of any drill cuttings at the well site, it is recommended that sampling and testing of such drill cuttings be required, with results submitted by the operator to the Department for review. Disposal practices should be subject to on-site inspections by the Department.
- The Department is encouraged to conduct a thorough and timely evaluation of the comparative environmental risks associated with available disposal options for drill cuttings. The results of this analysis should be made available for public review and comment.

#### **§78.62 Disposal of residual waste – pits**

- It is recommended that the scope of §78.62 be clarified. It is unclear if or what type of residual waste generated from hydraulic fracturing of unconventional wells might be considered under this section for disposal in on-site pits. Depending on its application, additional safeguards and requirements may be needed.

#### **§78.64a Containment Systems and Practices at Unconventional Well Sites**

- §78.64a improperly allows an operator to install a leak detection system in lieu of inspection or repair, even after regulated substances are known to escape containment. Whether or not leak detection systems are required, both repairs and cleanup should be mandatory after a discovered leak.

#### **§78.65 Site restoration**

- §78.65(1)(ii) denotes that an area is restored if “[r]emaining impervious areas are minimized.” Greater clarification must be given as to what the word “minimized” means in this section. Impervious surface areas should be reduced to the greatest extent practicable. To ensure that this reduction occurs, the Department should establish procedures for decompaction of impervious surface areas. Oil and Gas

Operations and associated activities result in soil compaction which is not conducive to well site restoration, and without proper instruction may be overlooked by operators.

- §78.65(1)(iii) requires that “[a]ll areas of the site not needed to safely operate the well are restored to approximate original conditions, including preconstruction contours, and can support the land uses that existed prior to oil and gas activities to the extent practicable.” To ensure that this occurs, the Department must develop restoration standards.

### **§78.68 Oil and gas gathering lines**

- The Department is encouraged to develop additional management practices to specifically address location, site preparation, and corridor management for oil and gas gathering lines installed in Exceptional Value or High Quality watersheds, in order to minimize forest fragmentation and other surface disturbance and further reduce potential for accelerated erosion and sedimentation.

### **§78.69 Water Management Plans**

- The Department should provide detail on the criteria it will use, including information, monitoring and reporting requirements, to assure operator demonstration of compliance with the standards provided in §78.69(i)(2)-(4) and mandated by Act 13.
- The Department should incorporate recommendations from the Upper Ohio Basin Ecosystem Flow study into its Water Management Plan requirements for the basin. The Susquehanna River Basin Commission’s (SRBC) Low Flow Protection Policy, preceded by a similar study, creates classes of streams based on their sensitivity to water withdrawals and limits withdrawals when they are likely to have ecological impacts. The Department should employ similar factors when managing water in the Ohio River Basin.
- The Department also should consider potential impacts to ecological health in its review of proposed Water Management Plans.
- The Department is encouraged to work with State agencies and river basin commissions to develop protocols for preventing the spread of invasive species during water withdrawal and transport.

### **§78.85(f) Cement Standards**

- The Proposed Rulemaking does not amend §78.85(f). However, the Department should use this opportunity to require that cementing records and cement evaluation records be submitted as documentation of the quality of well construction within 30 days of completion. These records should be maintained by the Department for future review, and will be useful when evaluating Class II well conversions, recompletions, plugbacks, Class II Area of Review evaluations, or future investigations that may occur well beyond the five year retention timeframe allowed by the proposed regulations. This information might be made part of the casing and cement report recommended below with respect to §78.122.

### **§78.122 Well Record and Completion Report**

- The Proposed Rulemaking does not address §3222.1(b)(11) of Act 13 (disclosure of trade secret or confidential proprietary information to health professionals). The Department should utilize this rulemaking process to facilitate, to the greatest extent possible, any request made by a health professional for chemical disclosure. This is a critical issue not only for public health, but also for public confidence in the Department and industry.
- The Proposed Rulemaking improperly alters the timelines for chemical disclosure. §78.122(b) should read:

*Within 30 calendar days after completion of the well, the well operator shall **submit** a completion report to the Department on a form provided by the Department ....*

We do not believe the Department has the authority to deviate from this 30-day deadline, nor do we believe it would be wise to do so.

- In addition to the required information outlined in §78.122(a)(1)-(13), a well operator should include the following in standard form well records:
  - A casing and cement report that includes the determined depth of the top of cement for each casing string, hole size, the amount and location of centralizers and the method used to make the determinations;
  - Inclination and directional surveys; and
  - Applicable depths and thicknesses of the geologic formations penetrated, complete with the relevant well log, mud log and/or other data known about the intervening zone above the zone(s) that received the hydraulic fracturing treatment.

- The Department should ensure that an operator, or its duly authorized agent having personal knowledge of the facts, and representatives of the cementing company performing the cementing job, sign the form attesting to compliance with the cementing requirements.
- In order to be consistent with practices in the majority of leading states, operators should disclose, as part of the completion report required in §78.122(b), the type of base fluid used in the hydraulic fracturing treatment. §78.122(b)(ii) should be rephrased to require disclosure of "the percent by mass **of total volume of hydraulic fracturing fluid used** of each chemical additive in the stimulation fluid."
- In order to be consistent with practices in the majority of leading states, §78.122(b)(iv) should read: "A list of the chemicals intentionally added to the stimulation fluid **or contained in the additives**, by name and chemical abstract service number."
- In order to be consistent with practices in the majority of leading states, §78.122(b)(vi) should require disclosure of "the total volume **and type** of the base fluid."

### **§78.123 Logs and Additional Data**

- The Department should require the following disclosures within 30 days of completion:
  - the estimated fracture height and estimated true vertical depth to the top of the fracture achieved during hydraulic fracturing treatment, as determined by a three dimensional model acceptable to the Department.
  - Initial well test information recording daily gas, oil and water rate, tubing and casing pressure;
  - Initial gas analysis, performed by a lab approved by the Department for such purposes;
  - The results of baseline water testing; and
  - Calculated fracture length and fracture height for the hydraulic fracture treatment.
- Operators should be required to provide the data required under §78.123 (a), (b), and (c) to the Department within 30 days after completion of drilling, without specific request from the Department as is currently contemplated.

## **Other Considerations**

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### Existing Law

In light of the varying impacts on the land, it would be appropriate to clarify that the Proposed Rulemaking does not modify or pre-empt existing state laws on the legal relationships among the landowner, mineral owner and operator. We would encourage a statement be included expressing that the rules are not to be construed as a determination of rights of the mineral estate owner and/or operator, or to establish rights where none may exist or are uncertain. For example, although the Proposed Rulemaking does not expressly require landowner approval for land application of certain drill cuttings, the right to engage in that activity in the first instance would have to exist, such as through separate agreement or lease.

### Temporary Storage

During the Oil & Gas Technical Advisory Board Workgroup meetings last year, industry suggested expanding temporary storage authorizations to facilitate reuse of wastewater for hydraulic fracturing. While this proposal was not incorporated into the Proposed Rulemaking, we understand it still may be included in revisions to the draft or in a subsequent agency policy.

If the Department is considering establishing guidelines for expanded temporary storage, any regulation or policy at a minimum should include the following requirements:

- Storage should be limited to permitted and bonded well sites.
- The Department should receive notice after installation, but prior to use, to allow for inspection if deemed appropriate.
- Storage should be limited to closed loop or modular tank systems with robust containment and leak detection coupled with routine monthly inspection. Tanks should be inspected between uses.
- Storage should truly be temporary – limited to no more than twelve months, including any extensions granted by the Department.
- There should also be a maximum storage volume limit, based on case-by-case analysis of each individual site.

## Differing Protection Standards: "Conventional" versus "Unconventional"

As part of a broader examination of environmental protection standards after the decision of the Supreme Court with respect to Act 13 and Article I, Section 27 of the Pennsylvania Constitution, we question basing the distinction between "conventional" and "unconventional" wells and operations – and the application of differing protection standards – solely on depth of extraction. The fundamental risks associated with the process of hydraulic fracturing are arguably greater in shallow formations; the arbitrary distinction between protection standards in the Oil & Gas Act seem at odds with current scientific understanding and the ruling of the Supreme Court. While the Department may not have liberty at the moment to revisit this distinction in its Proposed Rulemaking, we believe it should stand ready to reassess its protection standards pending resolution – whether legislative or judicial – of the law.

### **Conclusion**

Thank you for your consideration. We would welcome the opportunity to discuss these comments further at your convenience.

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## **Appendix -- Proposal for Revision to draft PA § 78.52a and § 78.73**

### Definitions

"Impacted strata" shall mean (i) the productive horizon that is to be stimulated with a hydraulic fracturing treatment and (ii) all strata that are immediately adjacent to such productive horizon and are within the operator's estimated or calculated effective fracture height for such hydraulic fracturing treatment.

"Intervening zone" shall refer to those geological formations (or part of a formation) located between the top boundary of the productive horizon that is being hydraulically fractured and the base of the deepest stratum or zone that contains protected water.

"Limited intervening zone" shall mean an intervening zone that (i) is less than 1,000 vertical feet thick, or (ii) is more than 1,000 vertical feet thick, but which the Department determines, based on the lithologic, geomechanical or other properties of the formations that comprise the intervening zone, may not contain an adequate confining layer or is in a structurally complex geologic setting with known faults that extend through the intervening zone and are likely to be transmissive. Notwithstanding the foregoing, an intervening zone less than 1,000 vertical feet thick may be excluded from classification as a "limited intervening zone" if the Department determines that such intervening zone contains an adequate confining layer

§ 78.52a. Identification of operating, inactive, abandoned and orphaned wells, and other potential fluid conduits.

- (a) Prior to hydraulically fracturing the well, the operator of a gas or oil well shall identify the location of operating, inactive, orphaned and abandoned wells that penetrate the impacted strata, and geologic faults and natural fracture zones that are known to completely transect the impacted strata, within 1,320 feet measured horizontally from the vertical well bore and 1,320 feet measured from the surface above the perforated section of a horizontal well bore (if applicable) in accordance with subsection (b). The Department may specify a greater or lesser distance upon determination that regional or local conditions justify a larger or smaller area of investigation.

(b) Identification shall be accomplished by conducting the following:

- (1) A review of the Department's operating, inactive, orphaned and abandoned well databases;
- (2) Submitting a questionnaire on forms provided by the Department to landowners whose property is within the area identified in subsection (a) regarding the precise location of orphaned and abandoned wells on their property;
- (3) A review of company records, available records of offset operators, public databases, and other regulatory agency records;
- (4) A review of historical maps (i.e. WPA, USGS, Pennsylvania Geologic Survey, operator "farm sheet" maps), where available;
- (5) A review of historical air photos available on the Pennsylvania State University 'Penn Pilot' website (<http://www.pennpilot.psu.edu/>);
- (6) For wells with a limited intervening zone:
  - (A) An analysis of the site specific hydrology (depth of protected water) and geophysical characteristics of the intervening zone and confining layer(s) contained within the intervening zone. The purpose of the analysis is to demonstrate that the confining layer(s) has sufficient areal extent, impermeability, and absence of transmissive faults or fractures such that the proposed hydraulic fracturing treatment design will not: (i) result in the vertical migration of the fracturing fluids, hydrocarbons, or other contaminants into strata that contains protected water; or (ii) result in a horizontal fracture that intersects with a nearby well that could result in the vertical migration of the fracturing fluids, hydrocarbons, or other contaminants into strata that contains protected water. A confining layer is of sufficient areal extent and thickness if it is capable of preventing or arresting vertical fracture propagation
  - (B) An analysis including information on the geologic structure, stratigraphy and hydrogeologic properties of the proposed producing formation(s) and intervening zone in the area of investigation, including (i) geologic name and description of all formations penetrated, including relevant logs, (ii) structure maps, including any faults, and (iii) any geomechanical analyses, including permeability, relative hardness (using Young's Modulus) and relative elasticity (using Poisson's Ratio).

(C) An analysis that utilizes a 3D model populated with the most current data available and approved by the Department that will estimate the maximum vertical and horizontal fracture propagation length, and which shows that the hydraulic fracturing treatment will not propagate fractures into strata containing protected water. The model input and output shall be submitted as part of the application, and the model shall be based on all relevant geologic and engineering data including but not limited to rock mechanical and geochemical properties of the producing zone and confining layer(s) and anticipated hydraulic fracturing pressures, rates, and volumes;

(c) Prior to hydraulically fracturing a well, the operator shall submit:

(1) a plat to the Department showing the location and GPS coordinates of operating, inactive, orphaned and abandoned wells identified pursuant to subsection (b)

(2) a statement that the operator has met the identification requirements of subsection (b)

(3) a statement that the operator does not expect the hydraulic fracturing treatment to cause fluid movement through any identified wells or geologic features that would pollute waters of the Commonwealth.

(d) For limited intervening zone wells, the analysis called for by subsection (b)(6) may be submitted on a well-by-well basis, or may be approved by Department for an area, and referenced as a pre-approved intervening zone analysis in the well application for wells with a limited intervening zone drilled in such area.

§ 78.73. General provision for well construction and operation.

....

(c) Abandoned or orphaned wells identified pursuant to section 78.52a must be remedied or properly plugged and abandoned prior to hydraulic fracturing activities if the operator determines, based on a review of Department records or the operator's own knowledge, that the hydraulic fracture treatment is likely to communicate with these wells and result in pollution of the waters of the Commonwealth or pose other environmental, health or safety risks. Other orphaned or abandoned wells identified pursuant to section 78.52a that likely penetrate a formation intended to be stimulated shall be visually monitored

during hydraulic fracturing activities. The operator shall immediately notify the Department of any change to the orphaned or abandoned well being monitored and take action to prevent pollution of waters of the Commonwealth or discharges to the surface.

(d) An operator that alters an orphaned or abandoned well by hydraulic fracturing shall plug the orphaned or abandoned well.

....

(x) An operator conducting hydraulic fracturing on any well shall give at least twenty-four hours' notice to any operator of an operating or inactive wells identified pursuant to section 78.52a if the completion intervals are within 1,320 feet of one another, as well as to operators of wells at greater distance if the operator commencing hydraulic fracturing has reason to believe that wells at a greater distance may be impacted.