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Pennsylvania Department of Environmental Protection
Pipeline Permits
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Regarding HORIZONTAL DIRECTIONAL DRILL ANALYSIS HILDENBRAND ROAD CROSSING PADEP SECTION 105
PERMIT NO.: E65-973 PA-WM1-0023.0000-RD (SPLP HDD# S1B-0190)

Dear PA DEP Environmental Managers,

I am a resident of Westmoreland county and reside near Sewickly Township. I benefit from the access to drinkable well water and healthy surface waters in this region.

I am concerned about the inadequate plans for the horizontal directional drilling (HDD) and private well water testing outlined in the original and subsequent correspondence submitted to the DEP.

I am a scientist with over 25 years of experience teaching and research on water pollution in this area. Some of that research has been conducted and published with collaborations with DEP staff. I know the DEP is dedicated to protecting PA water resources and that we all know how easily our water is harmed and how difficult it is to remove the sources of pollution or provide high quality replacement water. I have been testing well water for years and know that good well water in a current well is highly valuable resource for the property owner and replacement with municipal water does not carry the same value. Also, having the option to have a well installed in the future is a valuable feature of a property.

I believe the HDD process in this plan poses a serious long-term risk for degradation of surface and ground water supplies. Also, the current plan to test current water wells within 450 ft of operations is inadequate in regard to the distance, the schedule of testing and test substances.

Detailed comments are below. Thank you for the opportunity to participate in this process.

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1. **The plans do not adequately protect water resources in this region.**

I do not see any provisions in these plans to monitor or protect ground water aquifers for future use. A revised plan must make arrangements for all aquifers within 1000 feet of the path of the pipeline to be mapped and tested for water quality. If pipeline activities trigger such degradation, there must be penalties for degradation and plans for restoration, even if such work is long-term. Such plans exist for mining and this industry should be no exception.

Clean freshwater resources are among the rarest of all water supplies in the world. PA is unusually rich in these supplies, both on the surface and in ground water aquifers. Maintaining protection for ground water aquifers for future drinking water supplies should be a priority for the PA DEP. The DEP is the only agency with the longevity of mission to do this. In addition, they have the records of land use, soil and mining maps, water test results, etc. All citizens in PA benefit from clean water resources and thus the DEP is protecting our environmental and economic interests now because we all must plan for future water use.

PA geology is highly complex naturally and the often poorly documented history of industrial land use includes many abandoned coal mines accumulating mine drainage, 200,000 unsealed oil wells, many thousands of old vertical gas wells, and thousands of new horizontal gas wells, to name a few examples. Drinking water supplies include at least 1 million current wells that supply over 3 million users while the remaining populations depend on municipal supplies that are fed by a combination of surface and ground water sources. The Sunoco pipeline is transversing this landscape and the corporation must be required to document all current and future useable water sources as well as the risks to cross contamination that may be triggered by pipeline activities.

2. **Current well water supplies should be considered within 1000 ft of operations, not 450 feet.**

The documents do not supply scientific evidence that 450 feet is adequate to protect citizens from harm to current or future drinking water supplies. I suggest the minimum of 1000 ft to be used for these reasons:

- a. The 1000 ft. distance has been accepted for other drilling operations, such as the drilling that occurs prior to fracking. Many studies have established that drilling alone carries substantial risks to well water supplies.
- b. The 1000 ft. distance helps to compensate for the high degree of uncertainty associated with the complex geology and industrial history of this region. The geological analysis provides insights into that uncertainty:
 - (1) "Based on these approximations the water table is 25 feet or more below the revised boring entry/exit points" From: "4.0 SUMMARY AND CONCLUSIONS OF HDD HYDROGEOLOGIC EVALUATION"
The height of only 25 feet is a small margin to predict that water under pressure will not escape from one aquifer into another. For example, mine drainage water under pressure from an old coal mine can easily breach a 25 ft height and carry older polluted water into a clean drinking water aquifer.
 - (2) "Mine subsidence in this region potentially causes differing degrees of fracturing within the overburden due to different zones of compressive and tensile stresses. Compressive stresses cause the strata that is generally horizontally bedded to either shift laterally along the bedding planes or rupture, which increases the lateral movement of groundwater along horizontal bedding plane partings. Additional vertical and high angle fracture planes are created by the tensile stresses. The increased secondary porosity creates additional pathways for the vertical movement of groundwater and groundwater storage (Iannacchione, et. al., 2008)." from "2.3.6 Potential Impact of Mining on Groundwater"

Clearly, the geologists are concerned that drilling could trigger movement of groundwater and cause contamination of well or future aquifer with undesirable chemicals from another aquifer. The DEP should consider this concern by shifting in shifting the precautionary zone to maximum possible, such as 1000 feet.

- c. Although the 1000 ft. distance is arbitrary as was the 450 ft. distance, at least this distance has been used for the last 10 years. Therefore, the PA DEP and other scientists have much more evidence they can use in the event of future problems associated with pipeline drilling. This evidence may help to determine causes of the problems and solutions.
- d. The 1000 ft. distance increases the protection of citizens and drinking water supplies. Protecting the environment for the current and future uses is the core mission of the DEP. Considerations of costs and convenience to corporations is not the primary concern of this public agency.

1. Well water testing was inadequate in the schedule and substances tested.

- a. The testing schedule before, during and after drilling must track water quality and quantity across relevant seasonal changes.
Well water conditions prior to drilling must be established through independent, professional testing paid for by the pipeline company. The citizens along the pipeline route are not expected to have such records on their own. These citizens have been placed at special risk and they deserve time to establish water quality and quantity prior to drilling for at least one year across the range of seasons common to Pennsylvania, e.g., high rainfall in spring and lower rainfall in most late summers. During drilling, water testing should continue with at least two tests to confirm there are no effects. After drilling is completed, water testing should be done at least three times over the course of at least a full year, in all seasons, at high rainfall, low rainfall and normal rainfall. If water was impaired and appeared to be naturally restored, the minimum of water tests across three rainfall seasons should be continued for at least 3 years to prove that water quality and quantity was truly restored.
- b. Substances tested before, during and after should include the full profile listed by the DEP. Table 1 below shows that radiation is among the tests recommended by Penn State and other states. Radiation is among several items not listed the current Hildebrand crossing documents. Municipal water testing requires radiation testing. It is well established that this region includes serious risks ground water contaminated with radioactive substances such as Radium-226, Radium-228, Radon and Uranium. The people impacted in this case deserve the most complete water testing before, during and after pipeline activities.

Table 1. Substances for testing drinking water wells near drilling. Lists compiled from published documents on each state web site. Levels range from 1 for least comprehensive to 3, the most comprehensive.

Parameter	Penn State	PA DEP	NY WRI	NYSDEC	Ohio EPA
Total Dissolved Solids (TDS)	1	1	1	1	1
pH	1	1	1	1	2
Iron/Manganese	1	1	1	1	2
Chloride	1	2	1	1	1
Barium	1	2	1	1	1
Methane	1	1	1	1	3
Ethane	1	1	3	1	
Bromide	1		1		2
Sodium	2	1	2	1	1
Conductivity		2	2	1	1
Hardness	2	2	2		2
Strontium	2	2	2		1
Alkalinity	2	2	2		2
Total suspended solids (TSS)	2	2	2		2
VOC's (including BTEX)	3		2	1	3
Surfactants/Detergents (MBAS)	2		3		
Gross Alpha	3		2	1	
Gross Beta	3		3	1	
Arsenic	2		3		
Total coliform/E. Coli	2	2	3		
Oil and Grease	2	2	3		
Sulfate	2	2	3		1
Nitrate	2				
Calcium	2	2	3		2
Magnesium	2	2			1
Potassium	2	2			1
Selenium	2				
Total organic carbon	2				
Lead	3				
Total petroleum hydrocarbons	3				
Residue (filterable and non-filterable)		2			