

February 1, 2018

Mr. Matthew Gordon  
Sunoco Pipeline, L.P.  
535 Fritztown Road  
Sinking Spring, Pennsylvania 19608

Re: Hydrogeological Re-Evaluation Report  
Piney Creek Crossing Horizontal Directional Drill Location (S2-0142)  
Permit No. E07-459  
Woodbury Township, Blair County

Dear Mr. Gordon:

The Department of Environmental Protection (DEP) is requesting Sunoco Pipeline, L.P. (Sunoco) to provide information to address the following comments related to the Horizontal Directional Drill (HDD) Analysis for the Piney Creek Crossing Horizontal Directional Drill Location (S2-0142), E07-459, posted on the DEP's Mariner East II pipeline portal webpage on December 28, 2017.

1. Sunoco's report states that the HDD "could affect individual well use during active drilling." In order to resolve this issue, Sunoco needs to enter into written agreements with all private water supply owners whose water supplies may be impacted by this drill as part of this reevaluation and in advance of commencing the HDD. Under the agreements, Sunoco must provide temporary and if necessary, permanent, replacement potable water supplies adequate in quantity and quality for the purposes served, to the satisfaction of all potentially affected water supply owners. Sunoco shall provide proof of these agreements to the DEP with a response to this letter. The agreements should provide for Sunoco to conduct water quality and quantity testing of each potentially affected water supply prior to, during, and after the HDD activities.
2. Additionally, DEP requests the following information related to the project's potential effect on well production zones and water supplies:
  - An analysis of private water supply well production zones and how the proposed HDD activities will interact with them (listing the depths of wells and pumps is insufficient).
  - A map showing all the private water supplies in the correct, surveyed locations.
  - A description of the following: if there is short tripping of the tooling during the HDD, what are the chances of a plunger-effect occurring during either the drilling or reaming phases or during pipe pullback, and could this affect private water supplies?
  - Water quality sample results of the private water supplies that may be affected.
  - Water quantity test results (pump yield tests) of the private water supplies that may be affected.

3. Given the concerns related to the HDD's potential impact on water supplies, provide a more detailed discussion regarding the feasibility of conducting this crossing by open cut methodology.
4. More information is needed to provide an adequate site-specific re-examination of the bedrock geology in addition to the information provided from county geologic reports and from a core boring at either end of a drill path that arcs through highly dissolution-prone dipping bedrock.
5. Additional evaluation of the overburden strength needs to be provided, including grain size analyses, a narrative discussion of all data related to the overburden, and how this data was used in the overall reevaluation. Provide a detailed description of the processes and procedures that will be implemented if void spaces are encountered during drilling activity.
6. Provide an evaluation of the geologic strength at profile depth (beyond the boring descriptions, rock quality descriptions (RQDs), and unconfined compressive strength test results) and how the data collected was used to arrive at the revised drill paths.
7. Please provide the annular pressure and formation pressure capacity curves, along with a narrative discussion of how the geotechnical information was used to produce those curves and arrive at the revised drill paths. Please also address the role of groundwater occurrence in the derivation of these curves.
8. Provide an analysis of the pipe stress angle and how that information was used to arrive at the revised drill paths.
9. The initial 8-page narrative of this HDD analysis makes interpretations which are not included in any of the attached professional geologist-signed/sealed reports. This section of the report must be signed and sealed by the PA-licensed professional geologist who wrote it and made these interpretations. The following items are in the 8-page narrative but are not included in any of the attached professional geologist-signed/sealed reports:
  - A discussion of indications of a high degree of fracturing in the near subsurface geology from immediately west of Piney Creek to within 200 of the west end of the HDD in the Hydrogeology Report.
  - The discussion of the results of the any geotechnical drilling.
  - The interpretations of the rock quality parameters gleaned from the core borings.
  - The determination of the of the distance of the wells that could be affected.
10. The Inadvertent Return (IR) event at this site was attributed to the shallow depth of the original design profile. Why is the same entry angle being used? How is this going to prevent another IR?
11. The plan/profile maps should be revised as follows:
  - All geotechnical borings should be shown on these drawings, as well as their depth of penetration on the profiles.
  - The private water supplies should be shown on these maps, as well as their depth of penetration on the profiles.

- Top-of-bedrock should be shown on the profiles.
  - The plan and profile are not at the same scale. The revised plan and profile maps have profiles that do not directly match-up with the adjacent plan view. The original drawings were OK in this respect but the revised plan/profile maps should be fixed.
  - The seismic and electrical resistivity profiles should be shown on a separate profile along with the drill path, surface features, homes and wells/springs, including the depth of private water supply wells.
12. The appendix that Terracon refers to as an explanation of the various water level observations on its two core boring logs symbols and abbreviations is not attached to the report. The water level data from the two core borings are not referenced anywhere in the reevaluation except the boring description. Are the water level data considered in revising the drill paths?
13. The table labeled "Regional Geology Summary" lists all three soil boring locations (the SB borings) as occurring in the Coburn Formation. Elsewhere in the reevaluation, SB-03 is shown to occur in the Bellefonte/Axemann Formations. Please clarify.
14. The table labeled "Rock Core Description Summary" mentions dip angles of fractures. Provide the direction in which these dip angles are oriented.
15. Rettew states that Lower Piney Creek discharges to the Juniata River, which forms a structurally controlled regional groundwater discharge boundary in Blair and Mifflin Counties. This HDD location is nowhere near Mifflin County. Please revise or clarify this statement.
16. Rettew states that a "non-evasive" geophysical survey was performed. What is a "non-evasive" geophysical survey? Please explain.
17. The legend of Rettew's Figure 2 lists the geologic formations in alphabetical order. Standard practice is to list them in descending stratigraphic order. Please revise.

If you have additional questions, please call me at 717.705.4765 or email at [emuzic@pa.gov](mailto:emuzic@pa.gov).

Sincerely,



Edward J. Muzic, P.E.  
Civil Engineer Manager, Hydraulic  
Dam Safety, Waterways & Wetlands Section

cc: Matthew T. Bruckner, P.G., RETTEW  
Douglass J. Hess, P.G., Skelly and Loy  
Larry Gremminger, DPS (via email)