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By Email

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**Re: Comments on Geophysical Survey Results for HDD PA-BR-0181.0000-RD-16 (HDD# S3-0250-16)**

To whom it may concern:

On February 13, 2019, Sunoco submitted a reevaluation ("Report") of HDD Site PA-BR-0181.0000-RD-16, its second reevaluation of that site. Pursuant to the Corrected Stipulated Order entered on EHB Docket No. 2017-009-L on August 10, 2017 ("Order"), Clean Air Council, Mountain Watershed Association, Inc., and the Delaware Riverkeeper Network ("Appellants") timely submitted comments on the Report on February 27, 2019. On March 7, 2019, Sunoco submitted to the Department results of geophysical surveying that had been completed several months previous, in August 2018 ("Geophysical Report"). Appellants now submit the following comments in response to the Geophysical Report.

**1. Sunoco must redo its Report to incorporate the findings of the Geophysical Report.**

Geophysical survey results are of little value if they are not used to inform Sunoco's pipeline design. Here, they plainly were not. In fact, the Report goes so far as to flatly deny that geophysical surveys were ever performed: "At this HDD location the use of geophysical assessments was not considered since SPLP possesses a complete geologic profile from the horizontal drilling and installation of the 20-inch pipeline." This lie, in a signed document to the Department, may amount to an unsworn falsification or other criminal liability and needs to be taken seriously by the Department. At the very least, it shows that the findings of the Geophysical Report were not used in the reevaluation process. This might help explain the utter inadequacy of Sunoco's proposal for the Site, as detailed in Appellants' February 27, 2019 comment. The Department should require Sunoco to update the Report to include a full discussion of the relationship between its proposed revision of the 16-inch profile, the results of the Report, and additional geophysical surveying, as discussed below.

**2. The Geophysical Report covers far too small an area.**

The proposed horizontal length of the revised profile for the 16-inch pipe is 2,160 ft. The Geophysical Report covered less than 200 feet of that length, less than a tenth of the profile. Sunoco's history of failed drilling at this Site, the fact that Sunoco's first reevaluation of the Site

proved inadequate, and the troubling results from even the limited survey in the Geophysical Report all necessitate additional geophysical surveying. The surveys should be conducted in a grid that is long enough to include the entire length of the profile, and wide enough to encompass any land on either side of the profile that might be vulnerable to subsidence.

In addition to covering more area, Sunoco should utilize a full panel of geophysical survey methods. The Geophysical Report is limited to only a very small microgravity study. Seismic testing and electrical resistivity are complimentary methods and can be used in conjunction with microgravity to help create a more complete picture of the underlying geology at the HDD Site. The three-method approach has been used by Sunoco at a number of other sites and provided helpful information, even if Sunoco has ultimately decided to ignore most of it.

### **3. The conclusion of the Geophysical Report glosses over dangerous findings.**

The Geophysical Report concludes that the low gravity anomalies do not indicate an existing void and suggest that if there had been a void previously, it was filled and unlikely to result in additional subsidence. This is not necessarily the case and also misses the greater significance of the results.

First, while the results do not prove voids are present, the finding of low gravity pockets suggests there could be voids and that possibility cannot be ruled out based on the testing that was done. More testing is needed to determine whether there are voids present, or if the low gravity areas identified in the Geophysical Report are pockets filled with lower density material. Either way, the result is concerning. A pocket of low density material could serve as a preferential pathway for drilling fluids to migrate. It could also result in additional subsidence. According to the Geophysical Report, the extensive subsidence that emerged during drilling for the 20-inch line was likely caused by sediment, unconsolidated materials, or other such low density fill, moving into a man-made void. That void was most likely associated with the 20-inch borehole itself, or perhaps the effluent pipe via a breach that would have likely been caused by Sunoco. This should really be the main take-away from the Geophysical Report: Sunoco's construction likely created a void that ultimately resulted in significant subsidence.

Second, the Geophysical Report appears to have been focused only on the subsidence Sunoco already created, and does not contemplate the consequences of creating another manmade void in the same geology. As Sunoco proceeds to create a new void (i.e, the bore hole for the 16-inch pipe), the pockets of low density material identified in the Geophysical Report could migrate into the new man-made void, just like before. Circulating pressurized drilling fluid almost certainly contributed to this problem when drilling the 20-inch line. Without a proper plan in place, there is no reason to believe the same thing will not happen again. Additional testing along the profile can help identify other vulnerable locations. The weathered diabase where the initial subsidence occurred extends far beyond the area that was tested and is sure to reveal additional low gravity anomalies that, when disrupted by Sunoco's drilling, could also result in subsidence. Sunoco also needs to have a specific, comprehensive plan in place for identifying and mitigating subsidence sooner so it can be stopped before creating another 770 cubic foot sinkhole.

Thank you for considering these comments. Please keep us apprised of your next steps on the HDD Site.

Sincerely,

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