



pennsylvania

DEPARTMENT OF ENVIRONMENTAL
PROTECTION

REPORT COMMENTS

C. David Brown
18 Apr 2017

Commonwealth of Pennsylvania
Department of Environmental Protection
Southeast Regional Office
Environmental Cleanup and Brownfields

Site: Philadelphia Refinery AOI 9 Mingo Avenue Philadelphia, PA 19153		eFACTS Facility ID: 778379	Tank Facility ID: 51-11557
		Incident ID: <i>multiple</i>	NIR Date: 14 Dec 2016
Municipality: Philadelphia	County: Philadelphia	Location: 39.8997°N, 75.2216°W	

PA DEP and U.S. EPA comments on AOI 9 “Remedial Investigation Report Addendum” dated 8 Feb 2017, prepared by Langan Engineering and Environmental Services, Inc. on behalf of Evergreen Resources Group, LLC, for the former Sunoco Philadelphia Refinery, currently the Philadelphia Energy Solutions Refining and Marketing LLC facility.

Soil

1. Page 2: Screening Rationale: Subsurface soil sample results were screened against PADEP non-residential soil direct contact MSCs. The original AOI 9 RIR was a multi-step screen including comparison to PADEP soil-to-groundwater MSCs. Why was the screening rationale changed?
2. In the 2015 sampling, Evergreen identified exceedences of direct contact MSCs for 1,2,4-TMB at 3–4' depth in the T-100 area. Langan’s 2/8/2017 SCR/RACR indicates that no remedial action is necessary for these exceedences because PES’s excavation permitting and PPE procedures would protect workers from exposures. However, the TMB direct contact standards are based on inhalation exposures for outdoor receptors (even without an excavation). A risk assessment or remedial action is required to attain the site-specific standard. A risk calculation or determination of a site-specific numerical value using EPA’s current TMB RfC value ([IRIS database, Sep 2016](#)) may demonstrate acceptable risks for these concentrations.

Groundwater

3. On 3/28/2016 DEP disapproved the 12/31/2015 RIR. The key deficiency was the lack of groundwater characterization beyond the western property boundary. Evergreen apparently attempted to install wells in the Essington Avenue right-of-way, but they were unsuccessful at obtaining access to do so. Without data on offsite groundwater elevations and plume delineation, the characterization remains incomplete. [§250.408(a), (b), and (e)]

4. Quantitative modeling of the benzene plume (by Stantec, Appendix D) indicates a potential plume length of up to ~1700', which is substantially farther than the distance between the available source and calibration wells. The model may be conservative, but it implies a large and very uncertain extrapolation. In addition, no modeling was presented for MTBE, which likely extends offsite as well.
5. Langan intends to review DEP's files for other cleanup sites on Essington Avenue, such as the Enterprise Leasing property. We suggest that these file reviews should have been performed as part of the remedial investigation. We are aware of three sites in DEP's records that may have useful information, listed below. Some selected data from the sites is being sent separately. Groundwater flow west of Essington may differ from that assumed in Stantec's modeling.

Site	Address	Facility ID	Records ID
Flying Carport	7780 Essington Ave.	619338	191676
Eastwick Industrial Park	7001–7801 Essington Ave.	—	22111
Enterprise Leasing Co.	7001 Essington Ave.	719112	8321

6. New monitoring wells installed near the southwestern property boundary (S-142 and S-143) show MTBE exceedences (up to 250 µg/L). Horizontal delineation of this plume is necessary. No MTBE model was presented, and current groundwater data does not appear to be sufficient to model this plume. [§250.408(a), (b), and (e)]
7. Langan suggested in the report that the MTBE contamination in the southwest may have originated offsite. However, groundwater flow in the unconfined aquifer and the lower aquifer is inferred to the south in this area. Contouring of lower aquifer MTBE in Figure I-6, based only on three widely separated wells, is not a reliable interpretation. No justification was provided to support the suggestion that the MTBE plume was more likely to originate offsite rather than within the SRTF.
8. Pages 13–14: Langan states that MW-74D, MW-76D, and MW-106D had downhole video performed due to missing logs. EPA did not locate any further discussion of this in the RIR addendum. Is there useful information to expand upon this statement?
9. It's suggested in the report that increased concentrations in S-112 and the appearance of LNAPL in S-114 and S-122 may reflect unstable conditions or new releases. However, groundwater elevations were lower than typical in the Oct 2016 gauging event, and this may have had an effect. (See #28 below.)
10. Please provide available construction information on the Philadelphia Schuylkill West Side Interceptor combined sewer line and the Essington Avenue / Mingo storm water line, including sizes and depths. (See #24 below.)

Inhalation Pathway

11. Please document conditions at the time of air sampling, including indoor and outdoor temperatures, weather conditions (e.g., wind, precipitation, barometric pressure changes), and building characteristics (HVAC operation, ventilation, etc.).
12. As noted in the report, some reporting levels in the indoor air sample analyses exceeded applicable screening values. If Evergreen will be using risk-based screening values rather than occupation criteria (PELs), then those exceedences will need to be addressed.
13. The results of the outdoor air testing were presented in Section 4.5 and Table 8. However, there was no discussion of those results. They were not compared to occupational criteria in the table. Evergreen should interpret the results and discuss if they will be screened, used in a risk assessment, or addressed through compliance with occupational criteria.

CSM and Pathways

14. Pages 22–24: The Geology and Hydrogeology section of the CSM does not include information on the lower aquifer. The updated CSM should include this information.
15. Page 26: bullet 1: Langan states both qualitative and quantitative assessments were completed to refine the current CSM for AOI 9. This information is not included in the updated CSM in Section 6. The updated CSM should include this information.
16. Pages 26 and 29: AOI plumes: Confusing terminology – There appears to be differences between the use of plume and source in the RIR itself and then between the RIR and the Appendix I Qualitative Fate and Transport Assessment. Bullet 3 of page 26 says three areas have been identified as source areas for groundwater petroleum impacts. Then the second bullet of this section says Plume 2 is a historically undefined source. The next sentence then says there appears to be separate source areas associated with Plume 2. Then for comparison with the Appendix I F&T Assessment, page I-13 discusses a concentration versus time plot indicating a benzene source centered on S-112 is potentially increasing, followed next by a separate source area at S-115 with an increasing plume.
17. Page 26: Plume 3 bullet: Page I-14 of the Appendix I F&T Assessment states the MTBE plume in the lower aquifer is potentially increasing. The updated CSM should include this information.
18. Page 27: Potential Migration Pathways and Site Receptors does not include direct contact exposures to off-site groundwater during excavation activities, off-site groundwater users, off-site vapor intrusion, or ecological receptors in the Schuylkill River. EPA believes these should be included as potential receptors. Could VI or DC from GW in storm sewer lines be a potential pathway also?
19. Page 28: Soil bullet 3: The text “with regard to...the soil-to-groundwater pathway” is not followed by a conclusion or recommendation pertaining to that pathway.

Tables, Figures, and Appendices

20. There are discrepancies in Table 2. For some monitoring wells the screen length equals the well completion depth. (This was pointed out in DEP's 3/10/2016 comments, corrected by Langan in the 3/22/2016 supplementary information submittal, but then repeated in the 2/8/2017 addendum.)
21. In Table 7, $26 \mu\text{g}/\text{m}^3$ is presented as the "RSL" for trimethylbenzenes. However, this is not EPA's published RSL, but rather a calculated value using the 2016 RfC value. EPA will presumably post a new RSL in the near future. Exceedences of vapor intrusion screening values should generally be addressed through a risk assessment.
22. Several screening values in Table 7 are incorrect. For example, the benzene screening value based on EPA's RSLs is $13 \mu\text{g}/\text{m}^3$, not $16 \mu\text{g}/\text{m}^3$. Screening values must be the lower of the cancer and non-cancer values. (See DEP's vapor intrusion [training materials](#).)
23. Figure 4 is titled "Interpreted Extent of Middle/Lower Clay." However, based on Langan's current interpretation and the figure legend, this map depicts the extent of the clay unit found in the Holocene alluvium, not the PRM Lower/Middle Clay.
24. I ask that cross section B-B' (Figure 6b) include the PWD Schuylkill West Side Interceptor combined sewer line (near S-122) and the western extent be extended slightly to also show the Essington Avenue line.
25. There are discrepancies with the modified well logs for S-110 and S-123 (Appendix C) and the information in Table 2. S-110: The log text says 5' of bentonite was added, but the diagram indicates 2' of bentonite in the originally 12' deep well. Table 2 says the screen is now 2-7'. S-123: The log indicates a 5-10' screen, but Table 2 says 2-10'.
26. Filling the bottom of the S-110 and S-123 screens may have only a limited effect on the hydrostratigraphic interval sampled in the well because water will continue to move through the sand packs around the screens.
27. In Appendix D it's stated that the S-117 well screen is fouled and may have poor hydraulic communication. Has Evergreen re-developed the well or considered replacing it? It is a point of compliance well, and I recommend correcting the problem so that Evergreen collects representative data from it.
28. With the trend plots of groundwater concentration data in Appendix I (Figures I-7-12) it would also be helpful to plot hydrographs to show possible relationships with groundwater elevation changes.

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