Kevin McKeever

From: Brown, C David <cdbrown@pa.gov>
Sent: Thursday, March 10, 2016 1:28 PM
To: Tiffani Doerr; Kevin McKeever
Cc: OPPENHEIM, JIM; Kevin Bilash (bilash.kevin@epa.gov); Kennedy, Susan
Subject: comments on Philadelphia Refinery AOI 9 remedial investigation report

Tiffani and Kevin,

I have reviewed the AOI 9 RIR dated 12/31/2015 and my comments follow. The primary concern is with the delineation of groundwater contamination at the western property boundary, and I discuss this first below. Some of the other comments also include regulatory deficiencies and they are enumerated after.

1. Site characterization data indicates that benzene and other substances exceed Statewide health standard MSCs at the western property boundary, along Essington Avenue. Exceedences were found at monitoring wells S-113, S-115, S-135, and S-115D. There are no offsite wells west of the property line. The report acknowledges that the plume is not delineated in this area (Appendix I), and this is exemplified by the open concentration contour lines in Figures I-16 and I-18. Concerns with adequate characterization of groundwater contamination at this boundary were previously communicated in DEP's 4/28/2011 comments on the Oct 2009 AOI 9 RIR, in the 9/12/2013 comments on the Jun 2013 AOI 11 final report, and at the 4/17/2015 meeting to discuss the AOI 9 work plan. Delineating the horizontal extent of groundwater contamination is required by Title 25 Pa. Code Section 250.408(a), (b), and (e). (Other comments relevant to this deficiency follow.)

2. The RIR refers to the May 2009 work plan for site characterization and the Oct 2009 site characterization report. Please incorporate these documents with the RIR by providing them as a supplemental appendix on CD-ROM. (In general, previous characterization reports being utilized to satisfy the RIR requirements should be included as electronic appendices.) [§250.408(c)]

3. Groundwater elevation data was provided only for Aug and Nov 2015 (Table 3). Certain wells were sampled in Jan 2009, Aug 2009, Jan 2015, and Mar 2015. If available, provide well gauging and groundwater elevation data for those events. [§250.408(c)]

4. Several wells were installed circa 1986. Is there no analytical data for them before 2009? All available data should be provided. Likewise for pre-2009 soil data. (This requirement was noted in previous comments on the AOIs 4, 6, and 7 RIRs.) [§250.408(c)]

5. There are seven open storage tank corrective action incidents for six tanks in AOI 9 (Facility ID 51-11557).

Release Date	Incident ID	Sunoco Tank	DEP Tank	Material
2/14/1991	46760	SR-33	025A	No. 6 fuel oil
10/29/1994	46764	SR-59	041A	heavy platformate
5/30/2001	4407	SR-59	041A	gasoline
7/7/2003	31881	SR-90	055A	No. 6 fuel oil
1/21/2004	33031	SR-7	007A	gasoline

3/20/2012	43616	SR-16	011A	gasoline
4/18/2012	45951	SR-26	021A	gasoline

Based on the contents of the RIR, Evergreen has characterized soil and groundwater at these tanks. However, the reporting requirements of Section 245.310(a) have not been satisfied. For instance, information was not provided on interim remedial actions, free product recovery, soil excavation and disposal, descriptions of the contamination or releases, the rationale of soil boring and sampling locations, conceptual site models for individual tank cases, an explanation of the disposition of site characterization wastes, worker health and safety plans, investigation derived waste plans, and QA/QC plans. Evergreen should provide a schedule for submission of SCRs for the tank incidents.

6. Why weren't cumene and naphthalene analyzed for the indoor air samples? Method TO-15 is capable of analyzing both substances, they are contaminants of concern, and they have OSHA PELs. It's unclear that VI has been addressed for these chemicals without analytical data. (This point was raised previously in comments on the 2013 AOI 6 and 7 RIRs.)

7. I recommend that you compare the indoor air data also to other recommended limits, such as NIOSH RELs and ACGIH TLVs, in addition to PELs.

8. If Evergreen intends to rely on OSHA regulations to address the vapor intrusion pathway, then certain requirements will apply. All workers in the buildings must be subject to the OSHA rules that pertain to exposures of the chemicals of concern at the facility. The OSHA rules must be properly implemented. An environmental covenant restriction will be required to maintain the OSHA program for all building occupants.

9. Sections 7 and 9 of the RIR do not address the outdoor worker inhalation exposure pathway. This is a potentially complete pathway in areas with LNAPL, soil direct contact standard exceedences, and groundwater MSC exceedences. (The need to address this pathway was noted previously in the 7/23/2014 meeting on the AOI 1 work plan.) [§250.404]

10. The report doesn't provide or reference information on potential groundwater use offsite to the west. (A possible historic well in the area was noted in DEP's Sep 2013 comments on the AOI 11 final report.) In addition, the potential offsite vapor intrusion exposure pathway is not discussed. [§250.404]

11. Please provide more detailed information on the blending area recovery system. When was it installed? What quantity of LNAPL was recovered? What volume of groundwater? What were the estimated masses of recovered contaminants?

12. A 2015 PNDI review is described in Section 9 of the RIR. All associated documents should be provided. [§250.402(d)]

13. There are some discrepancies in Table 2. For many of the 2015 monitoring wells the screen length is given as equal to the well completion depth.

14. There are errors with some figures.
    - Figure 3 indicates MW-1 is damaged or abandoned, but it was gauged and sampled in 2015.
    - Labels for the wells were left out in Figures 7 and 9.
    - In Figures I-16 and I-20 S-135 is classified as an alluvium well. This well was screened to 20', which was below the clay unit.

- The label and map in the hardcopy Figure I-18 depict the alluvium MTBE concentrations for Aug 2015 rather than the Lower Sand benzene concentrations.

15. A sampling and analysis plan and a QA/QC plan are required for the RIR. The report may reference previously submitted documents for this purpose. [§250.408(c)]

16. In Appendix C I was unable to find boring logs for S-27, S-76D, and S-106D.

17. There are contradictory classifications of wells S-111, 112, and 116 as screened either in alluvium or the Lower Sand. In terms of contamination they are alluvium wells (Figure I-16), but in terms of groundwater flow they are Lower Sand wells (Figure I-6).

18. Langan has interpreted the Potomac-Raritan-Magothy Lower/Middle Clay member to be present across much of AOI 9, with the exception of a "hole" in the west-central area. I'm uncertain if this interpretation is correct, and further discussion would be beneficial.
    - Where the L/M Clay exists, the Trenton Gravel should be present above it. This doesn't usually seem to be the case.
    - The clay unit is shallow and relatively thin. It seems possible that it is the Holocene clay/silt layer common to the Coastal Plain, not part of the PRM.
    - Interpretations are made more difficult by pre-clearing of many borings to 10', resulting in no stratigraphic information.
    - Wells S-111, 112, 116, and 122 were considered to be in the L/M Clay hole. However, they had no recovery through depths of 2–8'. Other wells that were logged in this area with shallower recovery showed clay to be present only in the upper 10' (e.g., S-110D, 115D, and 135). The presence or absence of clay at S-111, 112, 116, and 122 seems to be indeterminate.
    - I agree that the clay unit is absent in some locations, based on the information in the boring logs (e.g., S-76, 77, 77D, 78,79).
    - S-74D stands apart from other wells with a thick section of clay (10–36'). In this area the PRM L/M Clay might be present.

19. The groundwater potentiometric surface and flow are not well determined at the western boundary. Understanding flow there is important for the fate-and-transport analysis and delineating contamination. [§250.408(e)]
    - Closed groundwater elevation contours are plotted for the alluvium aquifer (Figures 8, 10, and I-5), but there are no alluvium wells in the vicinity of S-135 to know if that is true.
    - The long-term average groundwater elevation data indicate a gradient from S-113 toward S-81 (to the east) (Figure I-6). But several recent measurements (in Mar 2013, May 2014, May, Aug, and Nov 2015) indicate the opposite gradient. Benzene concentrations have typically been lower in S-81 than in S-113. There is no well to the west of S-113.
    - There have been only two gauging events at the S-114 and 135 well pair (Aug, Nov 2015). They indicate contrary gradient directions. Benzene is higher in S-114 than in S-135. There is no well to the west of S-135.
    - Groundwater flow is inferred to the southwest at S-115. Benzene is elevated at this well. There is no well downgradient of S-115.

- I recommend quarterly gauging of the monitoring wells on the western side of AOI 9 for at least a year. Better mapping of the potentiometric surface and interpretation of flow may require additional offsite wells.

20. The sporadic groundwater sampling collected to date is inadequate to reliably infer contaminant trends (Appendix I). It will be important to demonstrate stable or decreasing trends to attain the site-specific standard [§250.702(b)(2)]. An attainment monitoring plan can be described in the cleanup plan.

The RIR is not approvable as submitted. I request that we have a conference call next week to discuss the deficiencies; I should be available any day but March 16th. Our review deadline is 3/31/2016.

-David

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