CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: June 8, 2017 FILE REF:

TO: Tower Standard File (BRRTS #03-64-127899)

FROM: Chris Saari – Ashland

SUBJECT: Review Comments for April 26, 2017 Monitoring Well Proposal from EPA and Lac du Flambeau Tribal Natural Resources

General Comment: In discussing this proposal with my DNR RR Program management team, it was suggested that we evaluate the potential use of multilevel piezometers as an alternative for individually drilled wells. One example of a technology that might allow us to expand the monitoring network in a potentially more cost-effective manner is the Solinst Multilevel Groundwater Monitoring System (https://www.solinst.com/products/multilevel-systems-and-remediation/). I think it would be worthwhile to at least explore this option prior to moving ahead with additional monitoring well installations. While I would be happy to initiate contact with the company for this project, it would make more sense for REI to perform that task.

Specific Well Location Comments:

- Location #1 – We should further evaluate using the results from the old MW13 well nest as a surrogate for information to be gained from this proposed well nest. The MW13 nest appears to have been installed in essentially the same location as proposed Location #1. As Dave Larsen pointed out in an email message on November 29, 2016, the MW13 nest consisted of MW13s (33 ft. deep with a 5-ft. screen) and MW13d (50 ft. deep with a 5-ft. screen). MW13s detected benzene at 5.92 ppb and MTBE at 2.13 ppb in August 2000, but was below detection limits in samples collected in July 2002, July 2003 and July 2004. MW13d samples were below detection limits in August 2000, July 2002, July 2003 and July 2004 (see attached results to cover email). Groundwater quality during that monitoring period was likely at least equivalent to if not more degraded than current conditions.
- Location #2 – DNR concurs with the intermediate and deep sampling depths. However, based on existing sample results from MW16, a water table well at this location is not necessary to monitor groundwater quality. Also, as pointed out in the proposal, there will be access issues in this area, so in all likelihood, we will have to accept a compromise location somewhere between this location and Location #4.
- Location #3 – This location does not appear to be integral to the site investigation or to post-remedial monitoring. Well nests MW18 and MW19 are approximately 75 feet apart; plume delineation down to the scale proposed goes beyond the scope of PECFA funding. Contaminant migration can be evaluated downgradient via the MW13/Location #1, MW16 and combined Location #2/#4 well nests. Data collected from the MW19 well nest and MIP7 indicate that plume migration is downward, suggesting that contaminant discharge to the pond is unlikely.
- Location #4 – See Location #2 comments above.
- Location #5 – This location does not appear to be integral to the site investigation or to post-remedial monitoring. Based on accumulated investigation data, this proposed location would be outside of the residual source area. Also, the location is within 35 feet of the MW21 well nest; plume delineation down to the scale proposed goes beyond the scope of PECFA funding.
- Location #6 – DNR believes that this location should be moved west to serve as a more direct sentinel nest for the Kozak and Haskell Lake Lodge drinking water wells.

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- Location #7 – This location as proposed does not appear to be integral to the site investigation. DNR believes that this well nest should be moved to somewhere within the area bounded by MIP8-MIP12-MIP3-MIP13, similar to what was proposed by EPA on November 29, 2016 (then identified as proposed Location #3). As the monitoring network is currently configured, we do not have a well nest to delineate the eastern margin of the plume. Depending on the interim/remedial action(s) selected, a well nest downgradient from the source area could be installed to monitor effectiveness.

Miscellaneous Comments:

- Based on an evaluation of soil boring, groundwater sampling, MIP and LIF data, the source contamination remains at its highest concentrations in an area parallel to State Highway 70, apparently oriented perpendicular to the observed southerly groundwater flow direction.
    - The source area can be described as including borings LIF-03, LIF-04A, LIF-12, LIF-13, LIF-14, LIF-15 and LIF-08, which represents LIF reference emitter readings greater than 50%. This likely represents an area of residual NAPL within the smear zone.
    - A similar layout of dissolved phase contamination is depicted with MIP PID responses greater than 1×10^6 μV, including borings MIP10, MIP6, MIP16, MIP1, MIP17 and MIP9. The MIP comparison is somewhat incomplete on the eastern margin of the source area due to a lack of a MIP boring near LIF-15.
    - The dissolved phase comparison is confirmed by the high concentrations observed in the MW20 well nest, the water table and intermediate wells in the MW21 nest, and the concentrations observed at VAS08 (25'). Also of note: The water grab sample from BH17 (10-15 ft. bgs) reported 24,000+ ppb volatiles, but results from MW22 samples (screened 5-15 ft. bgs) are < 250 ppb volatiles. These sampling points were installed in essentially the same location.
- A suggestion was made during the May 25, 2017 technical group call that the previous remedial pumping efforts drew contaminants down into the smear zone, but the orientation of the residual source area would suggest that this is not the case. Higher results were observed on the eastern end of the source area, away from the former pumping wells.
- Lead has been measured above the ch. NR 140 enforcement standard in the MW20 nest, and in the VAS08 samples from 40 and 55 ft. bgs, and in VAS11 sample from 55 ft. bgs (lead was also observed in the blanks associated with the VAS samples). The lead scavenger 1,2-dibromoethane was measured above the ch. NR 140 enforcement standard (ES) in MW20D and in the VAS08 sample from 25 ft. bgs. Other detections of lead in groundwater consist of estimated concentrations between the ch. NR 140 preventive action limit (PAL) and ES in samples scattered across the site.
- Cadmium was mentioned on the May 25 call as another contaminant of concern. Cadmium detections appear to consist of estimated concentrations between the ch. NR 140 PAL and ES in samples scattered across the site. These concentrations do not appear to warrant further PECFA-funded investigation or remedial efforts.
- Sampling results suggest that surface runoff from the semi-impervious asphalt overlying the residual source area might be contributing to the existing distribution of groundwater contamination at depth downgradient from the residual source area. The combination of downward vertical gradients (based on water level elevations measured from nested monitoring wells) and periodic influxes of surface water infiltration south of the paved area would appear to have caused the plume to sink as it migrates to the south.