UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 9
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November 7, 2016

Catherine Jerrard
Program Manager/BEC
AFCEC/CIBW
706 Hangar Road
Rome, New York 13441

RE: Reply to Responses to Comments on Former Williams Air Force Base ST012 Remedial Action Field Variance Memorandums #4 – Additional Site Characterization, September 29, 2016 and #5 – Hydraulic Containment

Dear Ms. Jerrard:

Thank you for the responses to agency comments on the two field variance memorandums for hydraulic containment and additional characterization at the ST12 Fuels Spill Site at Williams. EPA appreciates the Air Forces "AF's" efforts to expeditiously characterize the site while providing hydraulic containment for contamination remaining after implementation of the Steam Enhanced Extraction System.

As you are aware, the regulatory agencies have invoked informal dispute, not over the elements of the remedy selected in the 2013 Amendment to the Record of Decision (RODA), but over the timing, mass remaining, and criteria for transition between remedies as the most critical determining factor that will define ultimate success or failure of the remedy. At this time, the capability of EBR to meet the RAOs under existing site conditions has been called into question. As informal dispute has been invoked, discussions specifically pertaining to the Enhanced Bioremediation (EBR) work should be directed to the management team for resolution.

The following are our remaining comments on the two Field Variance Memorandums (FVMs); comments from ADEQ are also incorporated into this response.

Comments on Hydraulic Containment FVM#5:

General Comments

1) EPA acknowledges AF's response that contaminant migration has not yet been demonstrated. It will be critical to have monitoring wells in the correct locations to get an accurate picture of what is happening. As of the last BCT call, some perimeter wells

had not been checked for LNAPL migration. Pre SEE boring logs may not reflect current conditions after SEE. Phase I wells were drilled immediately after the extraction system was shut down and water levels had not rebounded to where they are now. The hydraulic conditions have changed at the site, therefore, continual monitoring is necessary to assess contaminant behavior in the subsurface.

2) Regardless of the original intent of the design, the containment system needs to be functional for the purpose of hydraulic containment which may be for an extended period until the management team has determined how to proceed.

3) A hydraulic capture model is a necessary component of any hydraulic containment system and should be developed for this effort. The model should determine drawdown and estimate pumping rate required at various locations to achieve containment.

4) Response to General Comment 3: The response partially addresses the comment. While the response states that the bearings and seal rings and the submersible pump motor will be rated to 175 degrees Fahrenheit (°F), it is unclear whether groundwater temperatures are expected to exceed this rating. Although the response indicates that "some perimeter wells will pull groundwater into the site from outside the former SEE [steam enhanced extraction] TTZs [Thermal Treatment Zones] and lower the well temperatures," this may not be applicable for wells in the core of the former SEE TTZs. Also, it is unclear whether monitoring will occur to ensure temperatures remain below 175°F. Please revise the response to clarify where temperatures are expected to exceed 175°F and describe how temperatures will be monitored to ensure they remain below 175°F.

5) The level controlled pumps (response to General Comment #4) are likely preferable to extraction rate controlled pumps. Please explain how the draw down level required to achieve containment will be determined.

6) Response to General Comment #6. According to TerraTherm's final weekly reports, approximately 150 gpm was the extraction rate last used for hydraulic containment, after the SEE system was shut down. Please provide the technical basis for the proposed pumping rate of 75 gpm in the final FVM.

7) Response to General Comment #7. The response to interim operations prior to installing a heat exchanger is unclear; please clarify how the temperatures will be cooled using "City water". Has this been discussed with the City? Is the City going to be responsible for bringing down temperatures, or will there be mixing tanks used on site for this purpose? The use of potable water for cooling extracted groundwater does not appear to be a sustainable practice consistent with green remediation principles. Please revise the response to explain how discharge temperatures will be monitored to ensure temperatures remain below 150°F and clarify if there will be a cooling system to ensure that discharge water is below 150°F. Please also revise the response to clarify how modifying pumping rates to maintain temperatures will impact the extraction system's ability to contain the contamination. Please incorporate this contingency into the design drawings.

Specific Comments

8) Response to Specific Comment #5. Will the chemicals to be used be specified in the final VFM?

Comments on Additional Characterization FVM #4

General Comments

1) The monitoring system must be robust enough to detect contaminant migration. Large spacings between monitoring well locations will continue to provide data gaps and may allow migration of dissolved phase plume without detection.

2) Response to General Comment 2. How often during previous drilling attempts were dye tests performed on PID readings below 250 ppm? What data from the previous drilling is there to verify this relationship between PID readings and positive dye tests? Additional field observations (i.e., odors, staining) will be considered, however, data gaps are likely to remain following the completion of drilling.

3) Response to General Comment 3. Wells should be installed not only as sentry wells but also as monitoring wells within known areas of contamination that should be monitored for increasing concentrations as indicator of migration.

Specific Comments

4) Response to Specific Comment #1: UWBZ wells depth of 195-ft is appropriate; Phase I results indicate LSZ impact generally around 210 to 220-ft.; LSZ wells should be drilled deeper based on field screening observations.

5) Response to Specific Comment #3: Based upon our review LSZ 51 did have indication of LNAPL, including a positive dye test, PID reading of 1500 ppm at 220-225' and the highest benzene concentration measured in any of the wells thus far. The current status of LNAPL in well LSZ 51 is unknown, as the Weekly Reports do not provide any measurement data for this well. But this location is too far away from SB16 to be pertinent to this comment. There is a concern that wide spacing between wells and boring will lend considerable uncertainty to the extent of contamination. The agencies agree that boring SB16 should extend into the LSZ; while new well LSZ53 may bound

the dissolved phase, we don't know the extent of LNAPL in that area because UWBZ28/LSZ51 has not been measured. Dissolved benzene was either 270,000 ppb or 3600 ppb in well LSZ51, based on preliminary data files. Therefore, the possibility of LNAPL exists at that location.

6) Response to Specific Comment #4: A data gap still remains to the north and west of SB17 in the LSZ and downgradient of LSZ-29, which also contained LNAPL.

7) Response to Specific Comment #5. Boring SB18 should be a well, at least in the LSZ, which has a more eastward groundwater flow direction than the CZ/UWBZ. A well here will fill a data gap of nearly 400-ft. between well LSZ 45 and the proposed well LSZ 55, and ensure monitoring of potential LNAPL migration across Sossaman Rd.

8) Response to Specific Comment #6 requesting an LSZ well at SB 19. LSZ 50 has LNAPL and high dissolved concentrations; the western edge of contamination is not yet defined. We understand that if LNAPL is found in SB19, additional step-out will be warranted, but we also need to bound dissolved phase concentrations The lack of a well here will likely lead to greater uncertainty in contaminant distribution. We recommend this boring be completed as a well.

9) Response to Specific Comment #7 regarding placement of CZ 23; concern is the spacing between wells. What will be the screened interval for this well?

10) Response to Specific Comment #8 requesting step-out to south of LSZ 46. The comment remains; the extent of LNAPL to the south in this area will not be defined without stepping out from this location.

11) Response to Specific Comment #9 requesting step-out to the north and east of UWBZ21. SB17 may be too far away, leaving uncertainty in the distribution of LNAPL and contamination. Response discusses pre-SEE boring results that may not reflect current site conditions.

12) Response to Specific Comment #10. SB16 will only provide characterization of the CZ groundwater plume if it is converted to a well. Current soil data may not to be useful to predict future groundwater migration.

13) Response to Specific Comment 11 requesting a cobble zone monitoring well is at the UWBZ40/LSZ59 location; this comment remains; a CZ well is needed to the north of UWBZ28/LSZ51. Converting boring SB16 to a CZ well may accomplish this and also provide additional information regarding impacts to the CZ north of existing wells CZ07 and CZ08.

14) Response to Specific Comment 12 requesting an additional Cobble Zone (CZ) location to the north of CZ-18; this comment remains.

15) New Comment. Attachment 4 of the FVM states that the purpose of proposed well LSZ60 is to fill a data gap in the bounding of LNAPL. According to the Proposed Monitoring Wells and Soil Borings table sent out on October 28, 2016, for LSZ60 it states, "Sample results from LSZ47 indicate no need to drill this well". PID and dye test results clearly indicate the presence of LNAPL in LSZ47, thus, there is a data gap in this area for the extent of LNAPL.

Once again, EPA appreciates AF's efforts to resolve these remaining issues and expedite this important work. We look forward to receiving the revised work plans. Hopefully with the installation of new wells some of the data gaps will be minimized. Please call me at (415) 972-3150 if have any questions about these comments.

Sincerely,

Carolyn d'Almeida

Carolyn d'Almeida
Remedial Project Manager

cc: Wayne Miller, ADEQ