Message

From: d'Almeida, Carolyn K. [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=9EC4401AFA1846DD93D52A0DDA973581-CDALMEID]
Sent: 10/12/2016 8:02:05 PM
To: Wayne Miller [Miller.Wayne@azdeq.gov]; Davis, Eva [Davis.Eva@epa.gov]
Subject: RE: 2016-10-12 - WAFB - ADEQ - UXO Comments and Figures - AMEC Field Variance Memo No 5 - Containment - extract and treat system - FVM dated Sept 30 2016 - ST012 SEE to EBR

Thanks Wayne; I'll incorporate your comments into our letter and provide a joint response.

From: Wayne Miller [mailto:Miller.Wayne@azdeq.gov]
Sent: Wednesday, October 12, 2016 11:17 AM
To: d'Almeida, Carolyn K. <dAlmeida.Carolyn@epa.gov>; Davis, Eva <Davis.Eva@epa.gov>
Subject: 2016-10-12 - WAFB - ADEQ - UXO Comments and Figures - AMEC Field Variance Memo No 5 - Containment - extract and treat system - FVM dated Sept 30 2016 - ST012 SEE to EBR

Carolyn - For EPA input.

Carolyn -
My initial intent was to not develop an independent ADEQ response, but to allow EPA to select any and all if EPA chose (both FVM 4 and FVM 5). But please let me know if I need to send ADEQ specific comment letters to USAF for both Memo 4 (characterize) and Memo 5 (containment).

For ADEQ, UXO Pro and Praxis evaluated *ST012 Remedial Action Field Variance Memorandum 5 – Extraction and Treatment System Construction*
– Subject: Proposed Active Containment, former Liquid Fuels Area (ST012), Former Williams AFB - *Mesa Arizona;* (dated Sept. 30, 2016).

The following comments were developed (I just received from UXO and Praxis, and pasted verbatim).

Specific Comments:

1. **Section 2.0 Objectives.** The objectives should also include the recovery of accumulated LNAPL and contaminant mass. An assessment of LNAPL recovery is recommended for comparison of treatment rates and costs to those of EBR. Recovery of more accessible LNAPL could significantly reduce the time of remediation for EBR, if significant recovery can be achieved.
2. **Section 3.0 Scope of Work.** The introductory list of unit processes should be edited to read: "6. Air Stripping and Effluent Vapor Treatment; and"
3. **Section 3.1 Groundwater Extraction Well and Pump Network.**
    a. Please consider operating for an evaluation period in each zone at higher extraction rates (e.g., 10 to 12 gpm from each extraction well) and deeper drawdown to assess the potential for mass recovery via simple physical methods augmented by the residual heat from SEE. If successful, such mass reductions will contribute to a reduction in time of remediation. The average pre-SEE extraction rate of 15-20 gpm was operated under significantly different conditions when biological processes and contaminant transport were in a pseudo-equilibrium at ambient temperatures and such an equilibrium has not been re-established. The total extraction rate closer to that of SEE (or more) is recommended until the mass recovery rate diminishes to a low level and containment is demonstrated via groundwater sampling and analyses.
    b. Containment should not be based solely on monitoring of groundwater levels. Hydraulic control based on groundwater elevation monitoring is complicated by variations in groundwater temperature. A more detailed capture zone analysis is required.

4. **Table 3-1.** Please add a column that lists the design extraction rate for each well (i.e., the estimated initial extraction rate).
5. **Figure 3-1.** Where will the air from the stripper be routed and how will it be treated? The Treatment System Process Flow Diagram should indicate rates of various process flows including both anticipated and maximum rates. The diagram should indicate the production and treatment of air used in the air stripper.
6. **Section 4.0 Performance Monitoring**. Performance monitoring should include volume of LNAPL collected in the oil water separator.
7. **Table 4-1.** Performance monitoring should include air flow rates into the air stripper and sampling of VOCs in the air effluent before its treatment.
8. **Section 6.0 Schedule.** Fine tuning of active containment GWETS operation should include optimizing recovery of mobile LNAPL and contaminant mass.

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2.0 Objectives

The objectives should also include the recovery of accumulated LNAPL and contaminant mass. An assessment of LNAPL recovery is recommended for comparison of treatment rates and costs to those of EBR. Recovery of more accessible LNAPL could significantly reduce the time of remediation for EBR, if significant recovery can be achieved.

3.0 Scope of Work

The introductory list of unit processes should be edited to read,

"6. Air Stripping and Effluent Vapor Treatment; and"

Table 3-1

Please add a column and list the design extraction rate for each well (i.e., the estimated initial extraction rate).

Figure 3-1

The Treatment System Process Flow Diagram should indicate rates of various process flows including both anticipated and maximum rates. The diagram should indicate the production and treatment of air used in the air stripper. Where will the air from the stripper be routed and how will it be treated?

3.1 Groundwater Extraction Well and Pump Network

Please consider operating for an evaluation period in each zone at higher extraction rates (e.g., 10 to 12 gpm from each extraction well) and deeper drawdown to assess the potential for mass recovery via simple physical methods augmented by the residual heat from SEE. If successful, such mass reductions will contribute to a reduction in time of remediation.

The average pre-SEE extraction rate of 15-20 gpm was operated under significantly different conditions when biological processes and contaminant transport were in a pseudo-equilibrium at ambient temperatures and such an equilibrium has not been re-established. The total extraction rate closer to that of SEE (or more) is recommended until the mass recovery rate diminishes to a low level and containment is demonstrated via groundwater sampling and analyses. Containment should not be based solely on monitoring of groundwater levels.

As of the last BCT meeting in September, numerous SEE wells could not be checked for LNAPL accumulations in all three treatment zones because of eductor pumps. The extraction well network for this effort should be re-evaluated based on observations and measurements after the removal of eductor pumps.

Figure 3-2

Please add ST012-CZ01 or ST012-CZ08 to the monitoring well network.

Figure 3-3

Please add ST012-UWBZ28 to the monitoring well network. Consider additional extraction and monitoring wells in the UWBZ thermal treatment zone pending the outcome of observations and measurements in former SEE extraction wells after the removal of 4 eductor pumps.

Figure 3-4
Please add ST012-LSZ43 to the monitoring well network. Consider additional extraction and monitoring wells in the LSZ thermal treatment zone pending the outcome of observations and measurements in former SEE extraction wells after the removal of 11 eductor pumps.

3.2 Groundwater Treatment System Installation
Page 5, paragraph 4 should be edited to read, "All process air produced by the air stripper will be treated by the SVE thermal oxidizer." Please describe how the air stripper effluent air will be integrated with the extracted vapors from the SVE wells. Will the SVE well rate be significantly diminished by the flow from the air stripper? Will the air stripper effluent air serve as dilution air or combustion air in the thermal oxidizer?

Page 5, paragraph 6, the flow capacity of the groundwater treatment system is recommended to be increased to approximately 150 gpm.

4.0 Performance Monitoring
Performance monitoring should include volume of LNAPL collected in the oil water separator.

Table 4-1
Performance monitoring should include air flow rates into the air stripper and sampling of VOCs in the air effluent before its treatment.

6.0 Schedule
Fine tuning of active containment GWETS operation should include an evaluation period for assessing recovery of mobile LNAPL and contaminant mass.

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