



### 3. Responsiveness Summary

The Responsiveness Summary serves three purposes. First, it provides the U.S. Army, USEPA, and TCEQ with information about community concerns with the preferred alternative at LHAAP-18/24 as presented in the PP. Second, it shows how the public's comments were considered in the decision-making process for selection of the remedy. Third, it provides a formal mechanism for the U.S. Army to respond to public comments. One public comment period and public meeting were held for the LHAAP-18/24 PP. Responsiveness summaries for the meeting are provided below.

The U.S. Army, USEPA, and TCEQ provide information regarding LHAAP-18/24 through a public meeting, the Administrative Record for the facility, and an announcement published in the Shreveport Times and Marshall News Messenger newspapers. **Section 2.3** discusses community participation on LHAAP-18/24, including the dates for the public comment period, the date, location, and time of the public meeting, and the location of the Administrative Record. The following documents related to community involvement were added to the Administrative Record for the comment period and public meeting:

- Transcript of the public meeting held on April 25, 2019;
- Presentation slides from the April 25, 2019 public meeting;
- Written questions and comments from the public during the public comment period, and the U.S. Army response to those comments, presented in this ROD; and

### Stakeholder Issues and Lead Agency Responses

This section responds to significant issues raised by stakeholders including comments received from the public and community groups in written and verbal form. Verbal comments and questions were discussed and addressed during the public meeting on April 25, 2019 and are summarized below. Responses to written comments are presented following the verbal comments.

#### 2019 Proposed Plan Verbal Comments

**Question/Comment:** Looking at the figure against the wall that shows the plumes in the Shallow Zone it also shows an area for monitored natural attenuation. But all the plumes are not covered by that MNA area. Could you explain why?

**Response:** *The reason that all of the wells within the plumes aren't part of the MNA area is because they are upgradient of where the contamination is. So, historically, those concentrations haven't been increasing because the primary flow direction is towards the bayou. The gray area represents the area where we will be monitoring for concentrations to be dropping over time demonstrating that natural attenuation is occurring. But some of those upgradient wells may be part of the sampling program and be monitored for natural attenuation parameters also. A lot of this is decided in the remedial design phase, so this is the '10,000-foot look' at what the remediation alternative is, and then you really get into the details during the remedial design phase.*



**Question/Comment:** I have a question about where you intend to use EISB. You said that was inside and outside the containment area, but on your maps it seems to me the locations are all inside the containment area.

**Response:** *There are lines shown outside the containment area that represent linear ISB injection locations. Again, this is the conceptual design, so the actual locations may shift during the remedial design to better address the contamination.*

**Question/Comment:** When I evaluate these kind of plans, there are three questions I try to answer. First is, have all the contaminants been identified; the second is, has the extent of contamination been determined--that's both horizontally and vertically--and, finally, if the proposed plan is implemented, is it likely to clean up contaminants in a reasonable amount of time. And my initial answers to all three of those questions is yes. I think that you've identified all the contaminants; you've identified the extent; and as far as the cleanup plan working, I am concerned mostly with DNAPL, because we all -- for those of you who have been involved, you know that DNAPLs are probably the most difficult thing to clean up that we deal with. And this technology that you plan to use is new to me; but I've done a little research on it, and I went looking for examples where the technology didn't work, but I was unable to find an example where it didn't work. It might be out there; but in all the cases I've looked at, have worked, so I think it's quite promising. I do have one criticism, though, and that has to do with metals. You've mentioned the fact that metals are present in groundwater, including arsenic and chromium; but nowhere in any of the documents I've looked at does the Army explicitly say "This is how we're going to clean up the metals", or do they say, alternatively, "We don't need to clean up the metals". I think that we need more explanation of what you intend to do, if anything, about the metals. Other than that it's a good and reasonable plan.

**Response:** *Thank you. The metals will be addressed through monitoring over time and will be evaluated at five year reviews. If any further action is required to demonstrate protectiveness, that also will be addressed during the five year review.*

#### 2019 Proposed Plan Written Comments

**Question/Comment:** DNAPLs are the most difficult contaminants to remove from an aquifer. The thermal technology that the Army is proposing to use is probably the most effective means of cleaning up DNAPL that is available.

**Response:** *No response required.*

**Question/Comment:** Groundwater at the site is contaminated with metals (see tables 1 and 2). However, the Army has not clearly stated what, if anything, it intends to do about the metals. The Army should either 1) develop a plan that clearly states how it intends to clean up metals, or 2) explain why the cleanup is unnecessary.

**Response:** *Isolated detections of metals in the shallow zone at concentrations exceeding the MCLs/PCLs occur across the site, but without the clear plume patterns exhibited by VOCs. The major metals in the Shallow Zone are arsenic, barium, and chromium. The other metals (cobalt and nickel) are not detected consistently. In the Wilcox Formation, sporadic detections of arsenic above the MCL were reported in three wells. Groundwater monitoring will be conducted to evaluate metals and the need to continue monitoring for metals will be evaluated at five year intervals. In addition,*

*the LUCs that will be put in place will prevent human exposure to unacceptable metals concentrations.*

**Question/Comment:** There are three areas in the Wilcox Formation where the vertical extent of groundwater contamination has not been determined. The first is in the north central portion of the site, at well 18CPTMW01DW. Methylene chloride concentrations at this well exceed the drinking water standard. The second is along the northern boundary of the site, at well 18CPTMW08DW. Perchlorate concentrations at this well exceed the drinking water standard. The third is in the western corner of the site, at well M-14. Perchlorate, solvents (e.g., methylene chloride, TCE), and 1,4-dioxane concentrations exceed the drinking water standards.

The Army should install additional wells in these areas to determine the vertical extent of contamination.

**Response:** To clarify, the vertical extent of all wells outside the contained area has been determined. However, the three wells identified are inside the contained area. Well 18CPTMW01DW has been below MCL for methylene chloride in 2016 and 2018 sampling events and will continue to be monitored to ensure vertical extent is defined. While 18CPWMW08DW has remained above the PCL for perchlorate and MW-14 has remained above the cleanup standards for perchlorate, MC and TCE and 1,4-dioxane during 2016 and 2018 sampling events, it is anticipated that the RD will include ISB treatment for these two sections of the site. The Army intends to implement the active remediation in these areas prior to considering installing any deeper wells to avoid creating a potential conduit for downward migration.

**Question/Comment:** With regard to 18/24, we heard the contractor, HDR, state that the vertical extent was known. Can they please tell us which wells were used to determine the vertical extent and the accompanying analysis of those wells over time?

**Response:** *The statement made during the presentation should have been limited to the areas outside the contained area. The vertical extent is not defined at two of the locations cited in the previous comment. See previous response.*

**Question/Comment:** The Army claims that the In-situ Thermal Treatment system will remove 99.9% of the DNAPL at site 18/24. However, the Army does not provide a reference to information that supports this claim. The Army should state where the information can be found.

**Response:** *The estimate for removal efficiency was obtained from Vendor-supplied information for thermal treatment technologies. Additional information regarding performance of thermal technologies is available at: <https://www.serdp-estcp.org/Program-Areas/Environmental-Restoration/Contaminated-Groundwater/Persistent-Contamination/ER-200314/ER-200314-TR>.*

**Question/Comment:** The Army estimates that cleanup will be completed in 20 years. However, the Army does not provide a reference to the calculations that support this estimate. The Army should state where the calculations can be found.

**Response:** *The cleanup duration is described in the January 2017 Revised Feasibility Study Report – LHAAP-18/24. The cleanup duration is based on the Natural Attenuation Evaluation included in Appendix A of the FS.*

## 4. References

- AECOM, 2013. *Final Post-Screening Investigation Report for LHAAP-18/24, Burning Ground No. 3 and Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas*, December.
- AECOM, 2015. *Final LHAAP-18/24 Supplemental Post-Screening Investigation Work Plan, Longhorn Ammunition Plant, Karnack, Texas*. December.
- AECOM, 2016a. *Final Updated Post-Screening Investigation Report – LHAAP-18/24 Longhorn Army Ammunition Plant, Karnack, Texas*, February.
- AECOM, 2016b. *Draft Final Supplemental to the Updated Post-Screening Investigation Report, LHAAP-18/24, Longhorn Ammunition Plant, Karnack, Texas*, December.
- AECOM, 2017. *Final Revised Feasibility Study for LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas*, January.
- AGEISS, Inc., 2014. *Final Baseline Ecological Risk Assessment Addendum, Longhorn Army Ammunition Plant, Karnack, Texas. Longhorn Ammunition Plant, Karnack, Texas*, July.
- Camp, Dresser, and McKee (CDM), 1986. *Addendum to Groundwater Quality Assessment, Groundwater Contamination Related to Seepage from Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Marshall, Texas*, May.
- Environmental Protection Systems, Inc. (EPS), Inc., (1984). *Longhorn Army Ammunition Plant Contamination Survey*. Prepared for Thiokol Corporation/Longhorn Division, and Commander Longhorn Army Ammunition Plant, U.S. Army Toxic and Hazardous Materials Agency. June 1984.
- EPS, 1988. *Final Remedial Investigation Report for the Longhorn Army Ammunition Plant, Karnack, Texas*. Prepared for Morton Thiokol, Inc. May.
- Jacobs Engineering Corporation (Jacobs), 2001. *Remedial Investigation Report for the Group 2 Sites Remedial Investigation (Sites 12, 17, 18/24, 29, and 32) at the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas, Final*, St. Louis, Missouri, April.
- Jacobs Engineering Corporation (Jacobs), 2002. *Baseline Human Health and Screening Ecological Risk Assessment for the Group 2 Sites (Sites 12, 17, 18/24, 29, and 32) at the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas, Final*, St. Louis, Missouri, August.
- Shaw, 2007. *Final Installation-Wide Baseline Ecological Risk Assessment, Longhorn Army Ammunition Plant, Karnack, Texas, Houston, Texas*, Volume I: Step 3 Report, January, and *Volume II: Steps 4 through 8*, November.
- Solutions To Environmental Problems, Inc. (STEP), 2005. *Final Plant-Wide Perchlorate Investigation for the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas*. Prepared for the U.S. Army Corps of Engineers, Tulsa District. April.

- Sverdrup Environmental, Inc., 1993. *Sampling and Data Results Report for the Phase I Remedial Investigation at Longhorn Army Ammunition Plant, Karnack, Texas*. Prepared for the U.S. Army Corps of Engineers, Tulsa District. December.
- Sverdrup Environmental, Inc., 1996a. *Sampling and Data Results Report for the Phase II, Group 2 Sites Remedial Investigation, at Longhorn Army Ammunition Plant, Karnack, Texas*. Prepared for the U.S. Army Corps of Engineers, Tulsa District. February.
- Sverdrup Environmental, Inc., 1996b. *Field Summary Report for the Phase II Group 2 Sites Remedial Investigation, at Longhorn Army Ammunition Plant, Karnack, Texas*. Prepared for the U.S. Army Corps of Engineers, Tulsa District. July 1996.
- Sverdrup Environmental, Inc., 1999. *Sampling and Data Results Report for the Group 2 Sites Phase III Remedial Investigation/ Feasibility Study, at Longhorn Army Ammunition Plant, Karnack, Texas*. Prepared for the U.S. Army Corps of Engineers, Tulsa District. April.
- Texas Commission on Environmental Quality (TCEQ), 2006, *Updated Examples of Standard No. 2, Appendix II, Medium-Specific Concentrations*. March.
- U.S. Army, 2004, *Memorandum of Agreement Between the Department of the Army and the Department of the Interior for the Interagency Transfer of Lands at the Longhorn Army Ammunition Plant for the Caddo Lake National Wildlife Refuge, Harrison County, Texas*, Signed by the Department of the Interior on April 27, 2004 and the U.S. Army on April 29, 2004.
- U.S. Army, 2019, *Proposed Plan for LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas, Final*, February.
- U.S. Army Corps of Engineers, 1993, *Data Summary Report of Investigation Results for Burning Ground 3 and the Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Texas*. May.
- United States Army Environmental Hygiene Agency (USAEHA), 1980, *Land Disposal Study No. 38-26-0104-81 Longhorn Army Ammunition Plant, Texas*, February.
- USEPA, 1999, *Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites, OSWER Directive 9200.4.-17P*, April.
- USEPA, 2004, *Performance Monitoring of MNA Remedies for VOCs in Ground Water, EPA/600/R-04/027*, April.