

APPENDIX F
RESPONSE TO AGENCY COMMENTS

**Response to Agency Comments
Draft Basewide Remedial Investigation/Feasibility Study
Volume II - Site 3 Remedial Investigation
Fort Ord, California**

The following are the Army's responses to the comments of the regulatory agencies on the Draft Basewide Remedial Investigation/Feasibility Study. All comments and the associated responses pertaining to Volume II, Site 3, of the Basewide Remedial Investigation/Feasibility Study are provided below.

I. U.S. ENVIRONMENTAL PROTECTION AGENCY TECHNICAL REVIEW COMMENTS

Analysis of Conclusions and Recommendations

Comment 1: The conclusion and recommendation concerning groundwater contamination by lead are not well supported. First, the data on leachability of lead at Site 3 is interpreted in this report to suggest that the potential for groundwater contamination by lead is low; however, this data could equally well suggest that infiltration of rainfall could well contribute to groundwater contamination. Second, the recommendation for no groundwater monitoring is based on little or no actual groundwater data as presented in this report. See Specific Comment 10 for details.

Response: The response to this comment is covered in detail under the response to EPA Specific Comment 10.

General Comments

Comment 1: The assessment of data quality is not complete and should include a discussion of whether the data quality objectives, bulleted in Section 4.4, were met. Moreover, field quality control sample results should be included when assessing data quality.

Response: The data quality objectives of the Site 3 investigation bulleted in Section 4.4 were met. Soil chemical data were collected and evaluated. These data indicated that a release of heavy metals, primarily lead, has occurred as a result of the weathering of spent ammunition present at the site (Section 4.1). Visual mapping of spent ammunition correlated with soil chemical data were used to assess the horizontal and vertical extent of contamination (Section 6.0). In addition to these data, air samples were collected and additional soil and plant samples were collected to perform a site-specific Human Health Risk Assessment (Volume III of this report) and Ecological Risk Assessment (Volume IV of this report). The Human Health Risk Assessment included a list of, and the process for selecting, primary chemicals of concern at Site 3. In addition, physical soil data including cation exchange capacity, TOC, and pH were collected to assess fate and transport properties of site soils (Section 6.2). Additional language has been added to the text in Section 4.4 to address this comment.

Comment 2: This RI report lacks a discussion of the fate and transport of contaminants. A fate and transport section should discuss the potential routes of contaminant migration, contaminant persistence in the environment, and contaminant migration for the chemicals detected in the remedial investigation.

Response: A fate and transport section has been added to the report, Section 6.2.

Comment 3: This RI report lacks an assessment of whether there are additional data needs, or data gaps, as a result of the planned RI activities. Have all of the data required for the risk assessment and the feasibility study been collected? Has the horizontal and vertical extent of contamination been

adequately defined? Have the impacts to groundwater been adequately determined? The answers to these and other questions should be presented in a discussion of data gaps.

Response: The text has been revised to include a separate discussion of conclusions of the Site 3 RI. Additional data needs or data gaps associated with this investigation have not been identified. Sufficient data have been collected to assess the horizontal and vertical extent of contamination and perform the Risk Assessment and Feasibility Study. Potential impacts to groundwater have also been evaluated. The conclusions are presented in Section 6.0.

Specific Comments

Comment 1: Section 1.3, Page 1, first paragraph: When will the proposed reuse for Site 3 take effect? Will investigation and remedial activities be completed prior to this date?

Response: Section 1.3 has been revised to address this comment.

Comment 2: Section 1.4, Page 2, second paragraph: This discussion should identify the maximum contaminant levels (MCLs), federal or state, to which compounds detected at the site are being compared.

Response: Federal and state MCLs were reviewed and the groundwater chemical analytical data were compared to the lower of the two MCLs. The text has been revised for clarification and a table of current federal and state MCLs has been added as Table F1 of this appendix.

Comment 3: Section 2.2, Page 4, first paragraph: A figure would be helpful in identifying and locating the biological communities discussed in this section.

Response: Plates 3, 4, and 5 have been added as suggested.

Comment 4: Section 4.2.2, Page 15, second paragraph: The rationale should be provided for the leachate tests performed for lead at Site 3. Why was the American Society of Testing and Materials (ASTM) Method D4793 (88) selected rather than the waste extraction test (WET) or the toxicity characteristic leaching procedure (TCLP)? The description in Appendix E does not support the use of the ASTM test method. Appendix E states that this test method is not intended to provide extracts that are representative of the actual leachate produced from a waste in the field. It is also not intended to simulate site specific leaching conditions and it has not been demonstrated to simulate actual disposal site leachate conditions.

Response: ASTM D4793-88 was selected as the leach test method and presented in HLA's Draft Final Work Plan for the RI at Site 3 (*HLA, 1993f*); this was approved by the regulatory agencies prior to initiating field work. Additional language has been added to Section 4.2.2 for clarification regarding selection of this test method.

Comment 5: Section 4.2.3, Page 15, first paragraph: The background values for detected compounds should be provided in Tables 9 and 10 and in the discussions provided in this report so that the magnitude of contamination above background can be determined.

Response: Tables 9 and 10 have been revised and a discussion included in the text, Section 4.2.3, to address this comment.

Comment 6: Section 4.2.3, Page 15, fourth paragraph: How does the background value used for lead compare to the screening level presented?

Response: The screening level for lead at Site 3 has been revised to 51.8 mg/kg, which is the maximum background concentration for lead. See Section 4.2.3 of the text.

Comment 7: Section 4.2.3.4, Page 17, third bullet: Lead results of the leachate analyses conducted cannot be compared to the MCL for lead (Also please clarify which MCL is being used here. Provide a reference.) As indicated in comment number 4, the ASTM test method used does not simulate site specific conditions. Moreover, the MCL for lead of 0.05 mg/L is applicable if either the WET or the TCLP test was used.

Response: Text has been revised, and references comparing the MCL and the leachate results have been removed to address this comment.

Comment 8: Section 4.4, Page 18: The data validation assessment section should include a discussion of whether each of the data quality objectives listed were met. For example, a refined list of chemicals of concern should be included and discussed. Did the leach tests performed adequately assess fate and transport characteristics? As mentioned in the general comments, a fate and transport section was not included in this report. Were precision and accuracy objectives met?

Response: The text has been revised to state that the data quality objectives of the RI were met. These are specifically discussed in the response to EPA General Comment 3. Specific data validation procedures and goals (including precision and accuracy goals) are discussed thoroughly in Appendix D of the Site 3 RI. The list of chemicals of concern, and their selection, is presented in the Human Health Risk Assessment, Volume III of this report. The leach tests performed did not adequately address fate and transport characteristics. A fate and transport section has been added (Section 6.2).

Comment 9: Section 4.4, Page 18, last paragraph: Were field quality control sample data (field blanks, field duplicates, decontamination rinsates) collected during the investigation? If so, why were these data not included in the assessment of data quality?

Response: Field quality control samples were not collected during the Site 3 RI. The text has been revised to state this.

Comment 10: Section 5.4, Page 21, first paragraph: The conclusion that the potential for groundwater contamination by lead is low is not well supported by the arguments that are presented for the following reasons:

- a) This report states that concentrations of lead in soil greater than the 1000 mg/kg screening level were not detected below depths of two feet. However, no information was provided with how lead distribution by depth compared to the background lead level.
- b) The report states that leachate results indicated that concentrations were below the MCL of 0.5 mg/L. As mentioned in Comments 4 and 7 above, the leachate results are not representative of actual site conditions and are not directly comparable to the MCL.
- c) The results of leachate analysis are reported to indicate that metals could be leached by rainwater. There is no information provided that would indicate that rainwater infiltrating through high lead concentrations at the surface will not recharge groundwater.
- d) The report states that priority pollutant metals were not detected above MCLs in the well installed in Range 11, which is within 20 feet of a heavily bulletted dune. This reasoning is not sound because it is not known whether the well is upgradient or downgradient of the

source area and it is not known whether groundwater extracted from this well can be considered representative of groundwater conditions at the site.

- Response:
- a) The screening level has been revised to 51.8 mg/kg, the maximum background concentration for lead. Additional information was added to Section 4.2.3 comparing the vertical distribution of lead to maximum background lead concentrations at Site 3.
 - b) Text has been revised, and references comparing the leachate results with MCLs have been removed.
 - c) Extensive leaching of lead from soil has not occurred, as evidenced by the vertical distribution of lead in the soil. In addition, an evaluation of the fate and transport properties of lead indicates that soil conditions (TOC, CEC, pH, and the presence of iron oxides) favor retention of lead in site soils. Based on these data, the results for the leach tests do not appear to be representative of actual field conditions at Site 3.
 - d) Monitoring Well MW-02-10-180 is within 20 feet in a crossgradient direction of a heavily bulleted dune face, and groundwater data indicate that gradients in this area are relatively flat. Because rainwater would infiltrate through high concentrations of spent ammunition located on the dune face and because groundwater is shallowest in this area (given the topography), this well is considered to represent a worse case scenario. Neither lead nor priority pollutant metals were detected in samples collected from Monitoring Wells MW-02-02-180 and MW-02-08-180 approximately 500 feet downgradient of a heavily bulleted area in Range 9. These results suggest that groundwater has not been impacted by lead to date.

**Table F1. Federal and State Groundwater Standards
Volume II - Remedial Investigation, Basewide RI/FS
Ford Ord, California**

Chemical	CA MCL ^c (primary) (µg/l)	CA MCL ^c (secondary) (µg/l)	FED MCL ^d (primary) (µg/l)	FED MCL ^d (secondary) (µg/l)	FED MCL ^d (primary) (µg/l)
<u>Inorganics</u>					
Antimony	NA	NA	6	NA	6
Arsenic	50	NA	50	NA	NA
Beryllium	NA	NA	4	NA	4
Cadmium	10	NA	5	NA	5
Chloride	NA	250,000	NA	250,000	NA
Chromium (total)	50	NA	100	NA	100
Copper	NA	1,000	NA(1,300) ^e	1,000	1,300
Fluoride	f	NA	4,000	2,000 ^g	4,000
Iron	NA	300	NA	300	NA
Lead	50	NA	NA(15) ^h	NA	0.0
Mercury	2	NA	2	NA	2
Nickel	NA	NA	100	NA	100
Nitrate (as N)	45,000 ^h	NA	10,000	NA	10,000
Nitrite (as N)	NA	NA	1,000	NA	1,000
Selenium	10	NA	50	NA	50
Silver	50	NA	NA	100	NA
Sulfate	NA	250,000	NA	250,000	NA
Thallium	NA	NA	2	NA	0.5
Total dissolved solids	NA	500,000	NA	500,000	NA
Zinc (total)	NA	5,000	NA	5,000	NA
pH	NA	6.5-8.3 ⁱ	NA	6.5-8.5	NA
<u>Organics</u>					
Benzene	1	NA	5	NA	0.0
Bromodichloromethane ^j	NA	NA	100	NA	NA
Bromoform ^j	NA	NA	100	NA	NA

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Bromomethane	NA	NA	NA	NA	NA
Carbon tetrachloride	0.5	NA	5	NA	0.0
Chlorobenzene	30	NA	100	NA	100
Chloroethane	NA	NA	NA	NA	NA
2-Chloroethylvinylether	NA	NA	NA	NA	NA
Chloroform ^l	NA	NA	100	NA	NA
Chloromethane	NA	NA	NA	NA	NA
Dibromochloromethane ^l	NA	NA	100	NA	NA
1,2-Dichlorobenzene	NA	NA	600	10 ^g	600
1,3-Dichlorobenzene	NA	NA	600	NA	600
1,4-Dichlorobenzene	5	NA	75	5 ^g	75
1,1-Dichloroethane	5	NA	NA	NA	NA
1,2-Dichloroethane	0.5	NA	5	NA	0.0
1,1-Dichloroethene	6	NA	7	NA	7
1,2-Dichloroethene ^k	6	NA	70	NA	70
1,2-Dichloropropane	5	NA	5	NA	0.0
1,3-Dichloropropene	0.5	NA	NA	NA	NA
Ethylbenzene	680	NA	700	30 ^g	700
Ethylene dibromide	0.02	NA	0.05	NA	0.0
Methylene chloride	NA	NA	5	NA	0.0
Oil & Grease	NA	NA	NA	NA	NA
Pentachlorophenol	NA	NA	1	NA	NA
TPH as Diesel	NA	NA	NA	NA	NA
TPH as Gasoline	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	1	NA	NA	NA	NA
Tetrachloroethene	5	NA	5	NA	0.0
Toluene	NA	NA	1,000	40 ^g	1,000
1,2,4-Trichlorobenzene	NA	NA	70	NA	70

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1,1,1-Trichloroethane	200	NA	200	NA	200
1,1,2-Trichloroethane	32	NA	5	NA	3
Trichloroethene	5	NA	5	NA	0.0
Trichlorofluoromethane	150	NA	NA	NA	NA
Vinyl chloride	0.5	NA	2	NA	0.0
Xylenes (total)	1,750	NA	10,000	20 ^e	10,000

CA MCL California Maximum Contaminant Level.

FED MCL Federal Maximum Contaminant Level.

FED MCLG Federal Maximum Contaminant Level Goal.

µg/l Micrograms per liter.

NA Not available.

a Cal/EPA, 1991.

b Marshack, 1991.

c Title 22 California code of Regulations, Sections 64435, 64444.5, and 64473, June 21, 1991.

d EPA, 1992g.

e For copper and lead, a treatment techniques triggered at an action level of 1,300 µg/l for copper and 15 µg/l for lead became effective 1/93 in lieu of an MCL.

f The CA MCL for fluoride is determined by the annual average of the maximum daily air temperature. For temperatures ≤53.7°F, MCL = 2,400 µg/l; for 53.8-58.3°F, MCL = 2,200 µg/l; for 58.4-63.8°F, MCL = 2,000 µg/l; for 63.9-70.6°F, MCL = 1,800 µg/l; for 70.7-79.2°F, MCL = 1,600 µg/l; for 79.3-90.5°F, MCL = 1,400 µg/l

g This is a proposed secondary federal MCL.

h The CA MCL is for nitrate as NO₃.

i Cal/EPA, 1989.

j Federal MCLs and MCLGs are for trihalomethanes (i.e., bromodichloromethane, bromoform, chloroform, and dichlorobromomethane).

k Standards are based on cis-1,2-dichloroethene.