DEPARTMENT OF THE ARMY
FORT ORD OFFICE, ARMY BASE REALIGNMENT AND CLOSURE
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MONTEREY, CA 93944-5008

REPLY TO
ATTENTION OF:

MAY 13 2009

Fort Ord BRAC Office

U.S. Environmental Protection Agency
Superfund Federal Facilities Cleanup
ATTN: Lewis Mitani
75 Hawthorne Street, Mail Code SFD-8-3
San Francisco, CA 94105

Approval Memorandum
Proposed No Action
Site HA-79 – 22 Caliber Small Arms Range
Former Fort Ord, California

Dear Mr. Mitani:

This letter presents the approval memorandum for No Action (NoA) Site HA-79 – 22 Caliber Small Arms Range, East Garrison, former Fort Ord, California. Copies of this letter have been sent to the United States Environmental Protection Agency (EPA), and departments of the California Environmental Protection Agency (Cal/EPA), including the Central Coast Regional Water Quality Control Board (RWQCB) and the Department of Toxic Substances Control (DTSC).

No further action for chemical contamination in soil is proposed for site HA-79. Site HA-79 meets the criteria specified in the approved *No Action Plug-In Record of Decision, Fort Ord. California* (NoA ROD) dated February 1995. The NoA ROD outlined a process and established necessary criteria for identifying and approving sites for NoA. NoA sites at Fort Ord are either Category 1 sites that are already in a protective state and pose no current or potential threat to human health or the environment, or Category 2 sites where CERCLA does not provide authority to take any remedial action. This approval memorandum provides a description of the site and completed investigations, and demonstrates the site's conformance with the NoA criteria for Category 1 sites established in the NoA ROD. This memo evaluates the risk of the chemicals present in soil, and does not address possible physical hazards related to munitions and explosives of concern (MEC). The property was reviewed for potential physical risks related to MEC as part of the *Track 1 ROD (MRS-5)* dated March 10, 2005, and the *Track 0 East Garrison Plug-in Approval Memorandum* dated December 2003.

CHARACTERIZATION REPORT SUMMARY

The Army has documented the results of the HA-79 characterization in the *Comprehensive Basewide Range Assessment Report Revision 1C* dated November 2006. The results of the characterization are summarized below.

Site HA-79 is located within the East Garrison. HA-79 (Plate 1) was used as a 22 Caliber Small Arms Firing Range. Site reconnaissance of this range was conducted in May

2001, at which time no spent small arms ammunition or targets were mapped. There is dense poison oak on this range making the ground surface difficult to map. Because possible range features were identified in this area and the ground surface was difficult to see, soil sampling was recommended for this range.

Field Program

Six soil samples were collected at four locations in August 2001. Sample locations were based on features observed during the site reconnaissance. Five samples were collected outside the range boundaries portrayed on the 1940s training map based on range features mapped during site reconnaissance. Based on the results of the August 2001 sampling, six more samples were collected from five locations in December 2002. Surface soil samples were collected from all locations and samples from one and two feet below ground surface (bgs) were collected at location H79SI0008. Sample locations and concentrations of detected analytes are shown on Plate 2. Antimony, copper, and lead were analyzed for all twelve samples.

Subsurface Conditions

In general, subsurface soil at HA-79 consists predominately of brown silty sand to a depth of 2.0 feet bgs (the maximum depth explored). Most of the sand was classified as loose, dry, and fine- to medium-grained. No groundwater was encountered during soil sampling procedures. Depth to groundwater at the site is approximately 230 feet bgs.

Analytical Results

A comparison of maximum detected chemical concentrations in soil at HA-79 with preliminary remediation goals (PRGs) is provided on Table 1. PRGs are chemical concentrations in soil expected to result in acceptable cancer risks (i.e., one-in-one-million) and noncancer health effects. Based on historical use of the site as a 22-caliber small arms range, the only chemicals analyzed for were: antimony, copper, and lead. Samples were analyzed by EPA Method 6010B. Antimony was detected in 10 of the 12 samples collected with a maximum detected concentration of 2.4 mg/kg in the two foot sample from location H79SI0008, which is one order of magnitude lower than the PRG of 27 mg/kg. Copper and lead were detected above the reporting limit in all of the samples with maximum detected concentrations of 14.4 mg/kg (two foot sample at location H79SI0008) and 130 mg/kg (surface sample at location H79SC0004) respectively, which are below their respective PRGs. The copper maximum concentration is over two orders of magnitude lower than the PRG of 2,500 mg/kg, and the lead maximum concentration is nearly half the PRG of 240 mg/kg. The maximum concentration for these three metals was also compared to background concentrations that were established for Fort Ord as provided in the *Basewide Remedial Investigation/Feasibility Study, Fort Ord, California,* dated October 1995 and presented on Table 2. Antimony and copper were below their background concentrations of 8.2 mg/kg and 18.2 mg/kg, respectively. Lead was above the background concentration of 51.8 mg/kg. Lead was retained as the only site-related chemical (SRC).

Screening Risk Evaluation

MACTEC conducted a screening risk evaluation (SRE) based on the site characterization data presented in Table 1. The SRE consisted of the following:

- Comparing concentrations of chemicals detected in soil at HA-79 with chemical-specific PRGs to evaluate the need for further action at the site;
- Evaluating potential impacts to groundwater; and
- Providing a qualitative discussion of ecological receptors.

The NoA ROD identified Category 1 sites as sites where the level of contamination is below the levels required for protection of human health (e.g., PRGs) and the environment. PRGs were developed specifically for Fort Ord and represent soil concentrations considered to result in estimated daily doses (1) associated with an estimated one-in-one-million probability that an exposed individual would develop cancer (i.e., 10^{-6} cancer risk), or (2) expected to be without appreciable risk of deleterious noncancer health effects (i.e., hazard quotient less than 1). The methodology and assumptions used to develop PRGs were presented in the *Draft Final Technical Memorandum, Preliminary Remediation Goals,* dated June 24, 1994. Following review of soil sample analytical results from HA-79, detected chemicals were divided into two categories: (1) chemicals that may be present as a result of Army activities at the site (i.e., site-related), and (2) chemicals considered naturally occurring and not related to Army activities (i.e., background). The same chemical can have both background- and site-related components where there are contributions from site activities as well as from natural occurrences. Lead was the only chemical addressed as a SRC at HA-79 because the maximum detected concentration was above the maximum measured background concentration. Antimony and copper were considered to be present at concentrations representative of natural background and were therefore evaluated as background-related chemicals.

Comparison of Site Soil Data with PRGs

PRGs for chemicals detected in the soil at HA-79 were compared with site-specific data by calculating ratios of chemical concentrations to PRGs (Table 2). The chemical concentrations used in these ratios include:

- Maximum detected site concentration (MSC);
- Calculated component concentration representing the portion attributed to site activities (MSRC); and
- Calculated component concentration representing the portion attributed to background (MBC).

A chemical-specific ratio of 1 or less indicates that the maximum detected or calculated concentration is less than or equal to the PRG, and therefore, substantial health risks are not likely to be associated with that chemical. A ratio greater than 1 indicates that the concentration of the chemical exceeds the health-based PRG. To evaluate possible exposure to multiple chemicals, the effects of multiple chemicals were assumed to be additive and the ratios

were added together to calculate a ratio sum (RS). A RS less than 1 indicates that substantial health risks are not likely to be associated with exposure to the multiple chemicals evaluated; a RS greater than 1 indicates further action may be necessary.

Table 2 is divided into a top panel for chemicals considered to be site-related and a bottom panel for chemicals considered to be background-related. For SRCs, the background component is assumed to be equivalent to the MBC for that chemical as identified in the *Basewide Remedial Investigation/Feasibility Study, Fort Ord, California, Volume II – Remedial Investigation, Basewide Background Soil Investigation, Final* dated October 1995. The site-related component (MSRC) is then calculated by subtracting this background component from the MSC. For SRCs, the total, background-related, and site-related concentrations were compared with the chemical-specific PRG using the ratios and RS calculations mentioned above. For background-related chemicals, the site-related component was considered to be 0, and the MSC has only a background component. As a result, for background-related chemicals, the MSC/PRG ratio is equivalent to the MBC/PRG ratio.

Site-Related Chemicals

The SRCs evaluated at HA-79 were compared to PRGs (MSRC/PRG ratios, Table 2). The chemical-specific MSRCs for lead evaluated at HA-79 is below the PRG, as indicated by the MSRC/PRG ratios of less than 1.0 (Table 2, top panel). The site-related RS subtotal for the SRC is 0.33 (Table 2, top panel).

The site- and background-related components of SRCs were summed for use by risk managers (Table 2, top panel). The MSCs for chemicals evaluated at HA-79 are all less than the PRGs, as indicated by MSC/PRG ratios of less than 1.0 and the MSC/PRG RS subtotal for the SRCs of 0.54. This analysis indicates that health risks from possible exposure to the site-related components of the SRCs evaluated at HA-79 are acceptably low.

Background-Related Chemicals

The maximum detected concentrations of other metals at HA-79 were also compared with corresponding PRGs using background-related ratios (MSC/PRGs) and RS (Table 2, bottom panel). The measured concentrations of these metals, as well as the background component of the SRCs evaluated above, were considered to be naturally occurring and not related to activities at the site. Accordingly, possible health effects of these metals were considered to be part of the risks inherent in day-to-day living in the region. MSC/PRG ratios and RSs are presented herein to provide a context for risk management decisions at Fort Ord sites.

Potential Groundwater Impacts

Results from the *Basewide Remedial Investigation/Feasibility Study* (RI/FS), dated October 1995, indicate that leaching of metals to subsurface soil or groundwater at small arms ranges at the former Fort Ord is not significant due to the depth of groundwater (generally greater than 80 feet) and soil conditions. Depth to groundwater at HA-79 is estimated at over 200 feet based on a nearby monitoring well. Based on the results of the 1995 RI/FS and the depth to groundwater at HA-79, impacts to groundwater from metals at the site are not expected.

Ecological Receptors

A qualitative ecological SRE was conducted for lead at HA-79 using the findings from the *Basewide RI/FS Ecological Risk Assessment* (BERA) dated October 1995, and the *Ecological Risk Assessment for Site 39 Ranges, Habitat Areas, Impact Area, Former Fort Ord, California* (ERA) dated October 1995. The BERA and the ERA included a thorough evaluation of chemicals of potential ecological concern (COPECs) and the risks to ecological receptors associated with COPECs.

In the ERA, baseline (no action) risks were estimated for the receptors and exposure areas, and risk estimates were then calculated for a range of remedial exposure scenarios to evaluate both the level of risk reduction gained and amount of habitat destroyed under various potential remediation scenarios based on lead in surface soil. The baseline ecological risks ranges from a Hazard Quotient of 1 to 13. A hazard quotient of less than 1 means harmful effects are not likely. The results of the ERA were used to develop cleanup levels for lead for habitat areas within the Impact Area as part of the *Draft Final Feasibility Study Addendum, Site 39 Ranges, Former Fort Ord, California* dated November 21, 2007. The FS determined that a range wide average cleanup level for lead of 225 mg/kg results in a Hazard Quotient of less than 1. Based on the results of the ERA and the intended reuse of the site as development no additional action is needed to address ecological receptors at HA-79.

RECOMMENDED ACTION

On the basis of investigations completed and summarized above, no further action at HA-79 is recommended.

Please feel free to contact me at (831) 242-7918 with any questions you may have regarding the proposed No Action. Notification of the proposed No Action will be placed in a major local newspaper within 2 weeks of approval of this memorandum.

Your prompt attention to this proposed No Action approval Memorandum is sincerely appreciated.

Sincerely,

Gail Youngblood
BRAC Environmental Coordinator

Enclosures:

Table 1	Soil Analytical Results for HA-79
Table 2	Comparison of Maximum Detected HA-79 Soil Chemical Concentrations with Background Concentrations and Preliminary Remediation Goals
Plate 1	Site Location Map
Plate 2	Investigation Results HA-79

Table 1. Soil Analytical Results for HA-79

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Sample Location	Sample Date	Sample Depth (feet bgs)	Antimony mg/kg		Copper mg/kg		Lead mg/kg	
H79SC0001	12/12/2002	0	0.63	B / A	7.5	/ A	55	/ A
H79SC0002	12/12/2002	0	0.44	B / A	8.2	/ A	41	/ A
H79SC0003	12/12/2002	0	0.27	B / A	8	/ A	29	/ A
H79SC0004	12/12/2002	0	2	B / A	13	/ A	130	/ A
H79SC0005	12/12/2002	0	1.2	B / A	8.2	/ A	60	/ A
Duplicate	12/12/2002	0	1.5	B / A	13	/ A	92	/ A
H79SI0005	8/1/2001	0.08	ND(2)	U / A	4.8	/ A	16.8	/ J
H79SI0006	8/1/2001	0.08	ND(2)	U / A	5.5	/ A	17.8	/ J
H79SI0007	8/2/2001	0.08	0.43	B / A	4.1	J / A	18.4	/ A
H79SI0008	8/2/2001	0.08	1.4	B / A	11.6	J / A	101	/ A
	8/2/2001	1.08	1.7	B / A	12.1	/ A	111	/ A
	8/2/2001	2.08	2.4	/ A	14.4	/ A	79.8	/ J+
Preliminary Remediation Goals [a]			27		2,500		240	

Abbreviations:

feet bgs = Feet below ground surface.

mg/kg = Milligram per kilogram.

ND = Not detected.

B / A = Laboratory qualifier / validation qualifier.

Laboratory Qualifiers:

B = Estimated result; result is less than the reporting limit.

J = Method blank contamination; the associated method blank contains the target analyte at a reportable level.

U = Compound was analyzed for but not detected.

Validation Qualifiers:

A = Data were subjected to routine data validation.

J+ = Data are qualified as estimated with a high bias likely to occur; false positives or false negatives are unlikely to have been reported.

J = Data are qualified as estimated; it is not possible to assess the direction of the potential bias; false positives or false negatives are unlikely to have been reported.

= Maximum detected concentration.

Footnotes:

[a] The Preliminary Remediation Goals (PRGs) are from the *No Action Plug-In Record of Decision, Fort Ord, California* (*Army, 1995*).

Table 2. Comparison of Maximum Detected HA-79 Soil Chemical Concentrations with Background Concentrations and Preliminary Remediation Goals

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Chemical	Maximum Detected Site Concentration (MSC) (mg/kg)	Maximum Background Concentration in Soil (MBC) [a] (mg/kg)	Maximum Site-Related Concentration (MSRC) [b] (mg/kg)	Preliminary Remediation Goal (PRG) [c] (mg/kg)	Chemical Total MSC/PRG [d] Ratio	Background-Related MBC/PRG [e,f] Ratio	Site-Related MSRC/PRG [g] Ratio
Site-Related Chemicals							
Lead	130	51.8	78.2	240	0.542	0.216	0.326
Ratio Sum Subtotal (site-related)					0.54	0.22	0.33
Background-Related Chemicals							
Antimony	2.4	8.2	NA	27	0.089	0.089	NA
Copper	14.4	18.2	NA	2,500	0.006	0.006	NA
Ratio Sum Subtotal (background-related)					0.09	0.09	NA
Ratio Sum Total (site- and background-related)					0.64	0.31	0.33

Abbreviations:

MSC = Maximum detected site concentration.
mg/kg = Milligram per kilogram.
MBC = Maximum background concentration in soil.
MSRC = Maximum site-related concentration.
PRG = Preliminary Remediation Goal.
NA = Not applicable.

Footnotes:

[a] Background concentrations in soil are from *Basewide Remedial Investigation/Feasibility Study, Fort Ord, California, Volume II - Remedial Investigation, Basewide Background Soil Investigation, Final* (HLA, 1995).

[b] MSRC = MSC - MBC

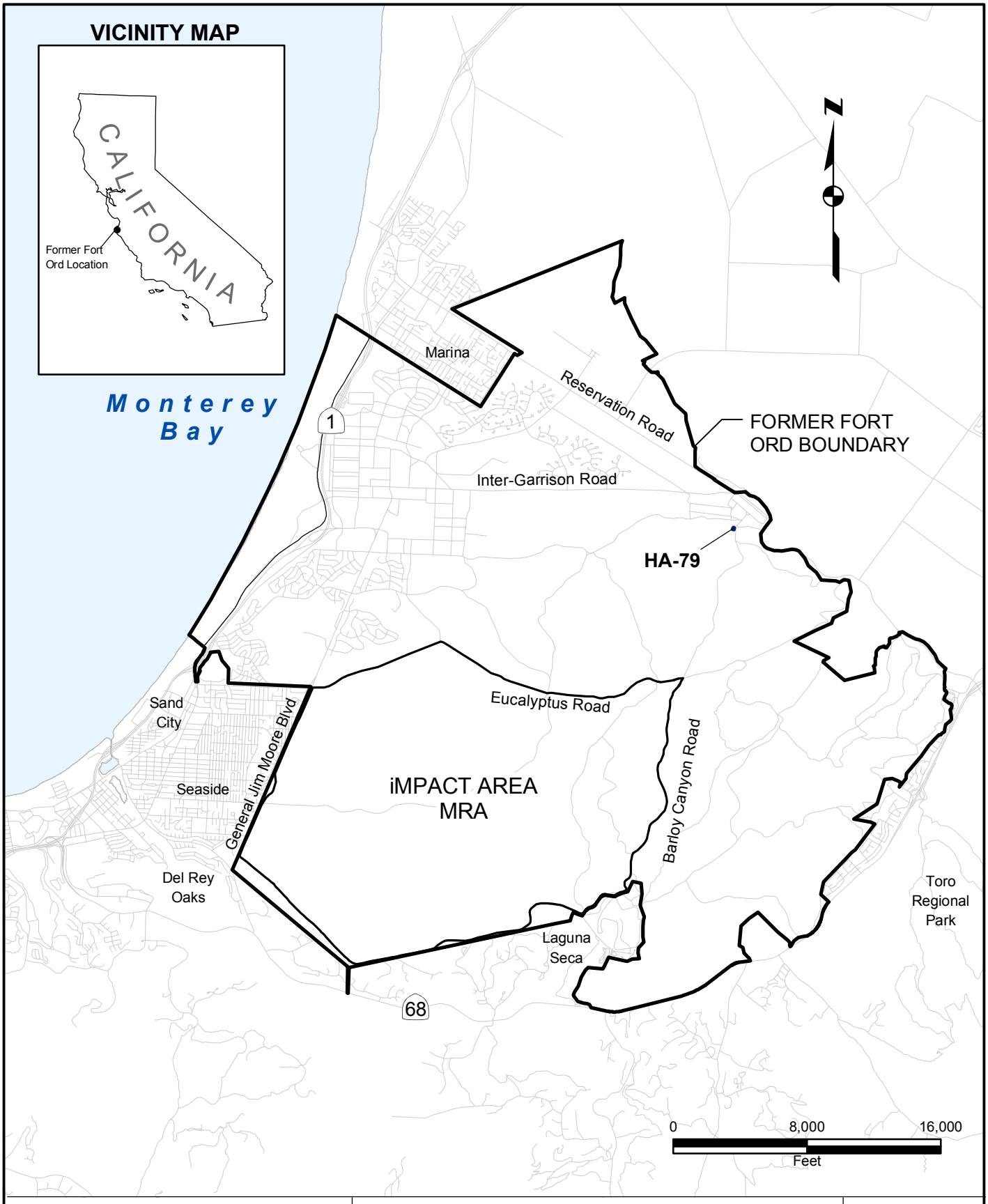
[c] The Preliminary Remediation Goals (PRGs) are from the *No Action Plug-In Record of Decision, Fort Ord, California* (*Army, 1995*).

[d] Chemical Total = MSC ÷ PRG.

[e] Background-Related = MBC ÷ PRG.

[f] For background-related chemicals (antimony and copper) this value is the same as the chemical-related ratio because the site related component is assumed to be zero.

[g] Site-Related = MSRC ÷ PRG.



MACTEC

Site Location Map
Approval Memorandum
Site HA-79 - 22-Caliber Range
Former Fort Ord, California

PLATE 1

DRAWN	JOB NUMBER	CHECKED	CHECKED DATE	APPROVED	APPROVED DATE
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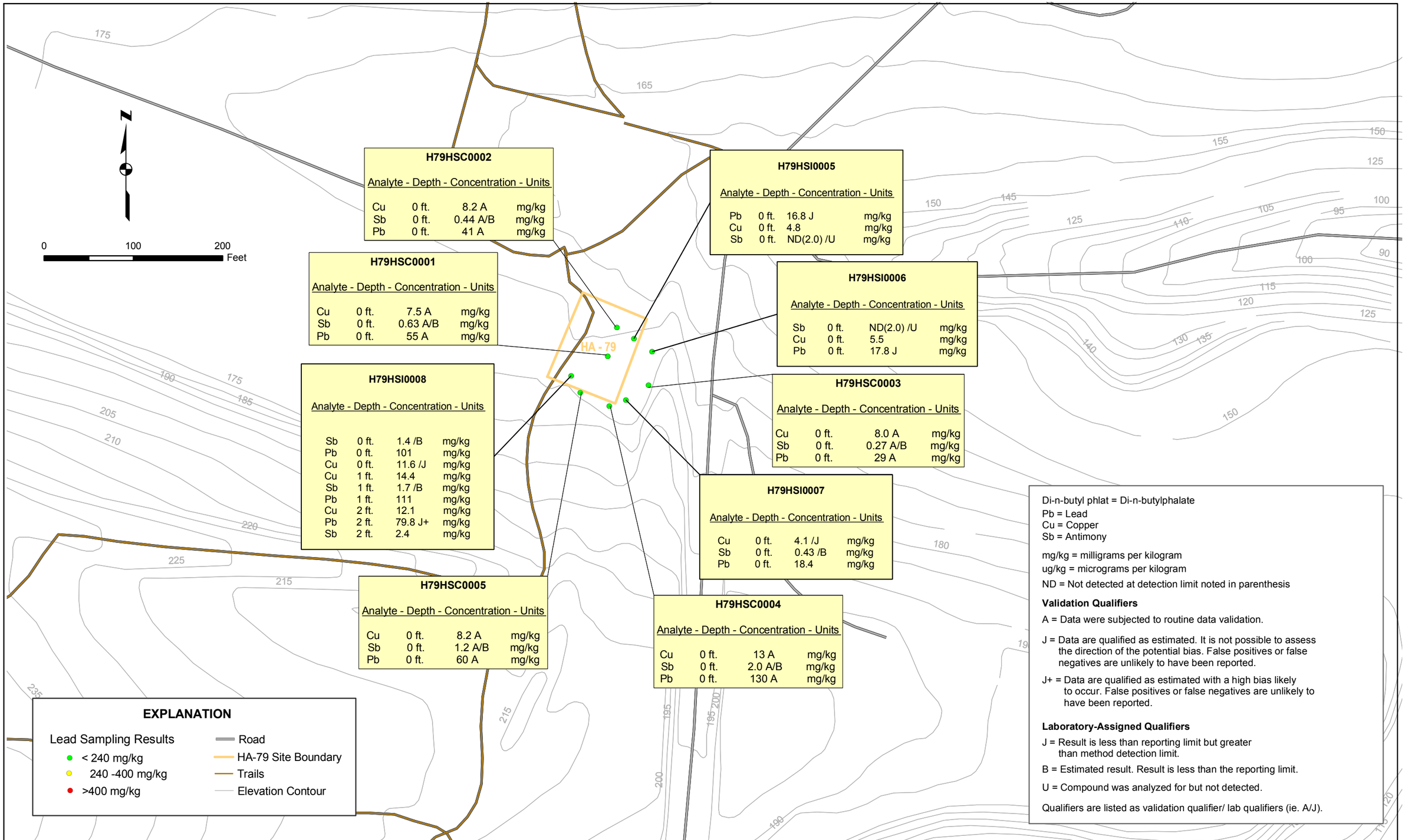

DRAWN: TJH	PROJECT NO: 4084075127 01	MACTEC	Approval Memorandum Site HA-79 - 22-Caliber Range Former Fort Ord, California	**Investigation Results HA-79**	PLATE **2**
ENGINEER:	SCALE: AS SHOWN				
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DATE: 1/2008	DATE:				

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