

Memo To: Chris Gluck, Rich Wilson, Keith Hoddinott, Kira Lynch, John Wakeman, Kym Takasaki, Lisa Scott

From: Gwyn Puckett

cc: William Graney, Lisa Adamo, Sheri Moore, Emile Pitre, Carol Dona, Wylie Harper, Mike Brown

Subject: Fort Lewis Agreed Order Technical Project Planning Meeting for AOC 4.0 Lead in Soil

Objective: Develop Project Strategy

This memorandum serves to present a summary of lead related AOCs outlined in the Draft Remedial Investigation Work Plan (RIWP) for the Fort Lewis Agreed Order (Corps, 2002). These AOCs are Lead In Soil (lead-based paint; AOC 4-0) and Inactive Ranges in cantonment (AOC 4-1, 4-2, and 4-8 to 4-19). This summary is presented in accordance with the Technical Project Planning (TPP) Process (Corps, 1998, EM 200-1-2) to facilitate team discussions to develop a project strategy for these sites.

1.0 Team Information (Phase I)

1.1 Team Members

Rich Wilson – Project Manager, Fort Lewis Public Works
Chris Gluck/ Bill Graney – USACE Project Manager
Gwyn Puckett – USACE Task Lead
Kira Lynch – Independent Technical Review
John Wakeman – Senior Risk Assessment Support
Keith Hoddinott, USACHPPM – Risk Assessment Support
Kym Takasaki – Agreed Order Technical Team Lead
Trey Bussey – Environmental Engineer, Fort Lewis Public Works

1.2 Existing Data

Details of the existing site information for both AOCs are presented below. The principal study question for both sites is: Does the contamination at these sites cause a risk to human health and/or the environment and require remedial action under Washington state MTCA?

1.2.1 Lead-based Paint

Historical use of lead-based paint on residential and non-residential structures may have resulted in contamination on the Fort Lewis cantonment. Lead based paint is believed to have been used prior to 1978. Several types of residential and non-residential structures have been identified and include:

- Demolished structures;
- Existing Wooden structures;
- Existing Non-wooden structures with painted trims; and
- Other structures including water towers.

USACHPPM conducted a baseline study for the RCI contract, which indicated some contamination in the soil in several residential communities (potentially 6 out of 11). Additional studies include the draft report *Lead Based Paint Contaminated Soils at Fort Lewis, WA: Site Survey and Implication for Remediation* (Larson and Fetters 2002), which studied the impact of site features (presence of gutters, trees, age of building). Conclusion: Buildings without protection from environment weathered the worst and impacted soils to approximately one-foot in depth. Several lead and asbestos surveys have also been conducted on Fort Lewis structures in support of demolition activities.

Lisa Adamo is working with Theresa Hansen to map the demolished structures. Theresa informed Lisa that they have no information regarding “demoed” sites prior to 1994 –1996; identification will require searching aerial photos.

1.2.2 Inactive Firing Ranges

Several ranges have been identified and included in the RIWP. Active training areas, ranges, impact areas, indoor ranges, and former ranges in active areas

are not considered to require investigation under the Agreed Order. Sites requiring additional investigations include:

- Engineer Bluff (AOC 4-1);
- Miller Hill (AOC 4-2);
- McCall Woods (AOC 4-8);
- Former Skeet Range (AOC 4-9);
- GAAF Ranges (AOC 4-10 thru 13);
- Evergreen Ave Thomas Machine Ranges (AOC 4-14 and 15);
- Evergreen Rifle Ranges (AOC 4-16);
- Regensburg Machine Gun Range (AOC 4-17); and
- Miller Hill Pistol Ranges (AOC 4-18).

Engineer Bluff and Miller Hill (4-2 only) have already been sampled using a magnetometer and grid soil sampling approach. Samples were collected up to a depth of 2 feet and analyzed for lead based on bullet composition. Results indicate that site activities have impacted the surface soils at both range areas at depth of up to 2 feet below ground surface. USACHPPM has conducted a draft risk assessment for Engineer Bluff and Miller Hill, which concluded that (1) lead concentrations existing at the ranges may result in unacceptable blood lead levels in a hypothetical residential child; (2) human activity and the existing habitat on and adjacent to the subject ranges leads to the unlikelihood of significant use of the land by ecological receptors; (3) soil lead concentration of 400 ppm would be protective of human health and the environment.

Recent information indicates that two of the ranges at Engineer Bluff may have also been used as rocket ranges. COCs would include TNT, RDX, tetryl, nitrocellulose, Cr, Cu, Ni, Sn, Ti, Vn, Zn. Additional sampling may be required to assess these COCs.

Recent site visit to several of these (AOCs 4-8, 4-14, 4-15, 4-16) indicate that additional map work is necessary to pinpoint approximate location of ranges. All of these ranges are overgrown with trees and heavy brush. Only one range at 4-16 was located (berm still present). The circular range in this area appears to have been leveled. The Corps is in process of obtaining permission to enter Gray Army Airfield for site visit to AOCs 4-10 thru 4-13.

Rodney Taie has contractors identifying other potential inactive ranges by reviewing old base maps. According to Lisa Scott, who has been reviewing aerial photographs, historical maps do not show all ranges visible in aerial photographs. Additional ranges are not currently included in the AO.

1.2.3 Questions for discussion

- What steps should be taken to identify the full list of range sites that will be included for evaluation under the AO?
- How are we defining boundaries for the lead-based paint evaluation?
- When does a site enter our consideration, and how do we determine that included sites may be closed out?

1.3 Customer Goals

Questions for discussion:

- What is the Army's goal in the context of the problem regarding lead in soil?
- What are the existing Army/DOD policy directives?
- What is the customer concept of site closure (institutional controls, site use restrictions)?
- What is the desired time frame and budget?

1.4 Applicable Regulatory Programs

The sites are currently included in the RIWP, which was developed under Agreed Order DE 00HWTRSR-1122 with Washington State Department of Ecology (Ecology). This AO is part of the state approved remedial action that will meet Fort Lewis's RCRA corrective action requirements. Under this AO, Fort Lewis agreed to conduct an RI/FS in accordance with Chapter 173-340 WAC (MTCA) to satisfy the corrective action requirements (RCRA facility assessment and corrective measures study).

From his initial comments, Leon Wilhelm (Ecology) is more concerned with lead in soil from lead based paint than with former firing ranges. In particular he is concerned with wooden structures that already have been demolished or will be demolished to make way for future housing areas. He has stated in this

comments “the objective of the SAP addendum will be to determine the magnitude and horizontal and vertical distribution of lead in soils surrounding these structures. The results will then need to be evaluated to identify and subsequently prioritize those sites with the greatest risk of human exposure”.

However, it may be that EPA is the governing force for some of the sites. Case in point for EPA: non-housing areas that should meet HUD standards, not MTCA. Ecology may be mixing several regulatory programs’ authorities and some new State initiatives to list areas that don’t need to be cleaned up—we may need a better citation of his regulatory sources, for instance.

Questions for discussion:

- What is it we are trying to do with regard to regulatory compliance? Does it make sense to include lead in soil in the Agreed Order? There may be different views between the Army and Ecology.
- Regulatory issues for sampling? We decided that a site-specific risk assessment approach (as opposed to a one-size-fits-all application of MTCA A) is appropriate for some of the sites at Fort Lewis that do not fall under the EPA/HUD cover. (It may be that site screening occurs using MTCA A as a first tier of analysis, as has been done on selected sites by USACHPPM, but this will be supplemented.)

1.5 Future Use of Site

The 20-year Fort Lewis Real Property Master Plan currently governs Land use at Fort Lewis. Land use is separated into twelve categories, which can in turn be assigned residential or industrial land use designations, in accordance with MTCA. This land use designation is under negotiation with Ecology.

Questions for discussion:

- Will Land Use restrictions be agreed upon with Ecology?
- Should residential use sites be given priority?

1.6 Scope and Meaning of Closeout

Definition of closeout – no further action letter from Ecology would follow review of RI/RA.

Questions for discussion:

- Any interim site closeout needs?
- Risk management and uncertainty decision-making
- Can we define an approach for site that could be closed out by taking an early remedial action?

1.7 Probable Remedies

Risk based cleanup levels should be used to determine need for further action. Madigan Army Medical Center (MAMC) conducts routine monitoring of blood-lead in children. Not a single case of a blood level at or above the screening level of 10 µg/dl (micrograms lead per deciliter of blood) has been detected in over 4000 samples of the on-post population to date (USACHPPM 2002). Fort Lewis' ongoing monitoring of children's blood lead levels and medical intervention program is an effective means of assuring that we are not dealing with an immediate danger to life or health.

There are two risk models, namely the Child IEUBK model and the TRV Pregnant Mother/Fetus model, for predicting risks. Both predict the exceedance by 5% of the population distribution of children (child IEUBK model) or of fetuses (TRV model) by 10 µg/dL. We could develop a plan for the application of these models based upon site usage, current or future.

Another issue identified was to develop an approach for child exposure in the areas. This amounts to parsing the areas by characteristic or anticipated use. (This will likely be an important discussion, because Leon has a different "management unit" idea based on earlier discussions, amounting to any patch of soil above MTCA A.) Initial site categories have been identified as:

- ¹Wooden residential structures built:
 - before 1940
 - between 1940 –1959
 - between 1960 –1979

- ¹Non-wooden residential structures with painted trim built:
 - before 1940
 - between 1940 –1959
 - between 1960 –1979
- Schools and daycare centers
- Playgrounds
- Demolished structures
 - Residential future land use
 - Non-residential future land use
- Existing non-residential structures
 - wooden structures built
 - before 1940
 - between 1940 –1959
 - between 1960 –1979
 - non-wooden structures with painted trim built
 - before 1940
 - between 1940 –1959
 - between 1960 –1979
- Other structures such as water towers
- Inactive ranges

¹Residential structures could possibly be subdivided into additional categories of whether or not children are currently present in the residences.

Ecological risk screening for terrestrial species (TEE in MTCA terms) will be used as well. Comments forwarded to Keith Hodinott at USACHPPM by John Wakeman included a listing (now out of date by 6–7 years) of species of concern for ecological health for the Refuse Incinerator Plant ERA. As understood at this time, TEE must be used to “off-ramp” ecological concerns. According to 173–340–7491, exclusion from TEE can be obtained if site meets any of the below criteria. The site cannot obtain exclusion if used by a threatened or endangered species unless:

- 1) Soil contamination all located below 15 feet
- 2) Soil contamination covered by buildings or pavement
- 3) Less than 1.5 acres of contiguous (not divided by roads) undeveloped land (not covered by buildings or roads) on site or within 500 feet
- 4) Concentrations below background

If the site cannot obtain exclusion, a simplified terrestrial ecological evaluation can be performed. This evaluation can be avoided if:

- 1) Soil contamination less than 350 sq feet
- 2) Land use in the cantonment makes wildlife exposure unlikely (use table 749-1)
- 3) If no potential exposure pathways. Industrial site need only wildlife pathway. Only need to evaluate compound on Table 749-2.
- 4) Concentrations are lower than listed on Table 749-2 at point of compliance (15 feet or biologically active zone)
- 5) No concentrations present within six feet of surface likely to be toxic or bioaccumulative.

A preliminary FS is being conducted for Engineer Bluff/Miller Hill. Remedial action at sites could include one or more of the following:

- No further action
- Containment
- Removal
- Treatment

1.8 Phases to Achieve Site Closeout

Determine Data Needs (Phase II)

- i. What is the intended use of the data?
- ii. Define the spatial and temporal boundaries of decision or management units.
- iii. Define how sampling and data acquisition will support the decisions.

Develop Data Collection Options (Phase III)

- i. Select a sampling strategy. E.g., do we want a multiple or single site mobilization with on-site decision analysis. The answer will turn on cost effectiveness. Fort Lewis is currently planning to purchase an XRF for these projects.
- ii. Is there a method for prioritizing sites for characterization and remediation?
- iii. How will we (Corps, PW, USACHPPM, Ecology, EPA) manage uncertainty?

- iv. Determine if intermediate cleanup actions should be performed to avoid cost of phased approach.

Finalize Data Collection Program (Phase IV)

- i. Prepare SAP and develop costs
- ii. Iterate as needed to optimize the program
- iii. Obtain State/EPA approval

Implement Data Collection Program

Present Results in RI/RA

Develop Remedies in FS