Report to the Restoration Advisory Board on the Work Plan for 4825 Glenbrook Road, Spring Valley FUDS.

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September 18, 2012

The Work Plan explains the manner in which the remediation will be conducted after the house on the property is removed according to procedures that are used to demolish residential structures. The demolition is explained in more detail in another document. This report reviews the work plan to assess the steps that are planned to insure that human health and the environment are protected during the remediation. The focus of the work plan and this report is human health.

This next phase of work at Glenbrook Rd follows previous work at the property to investigate and removal materials, including chemical weapons material, buried on the property. The burial was originally believed to be the third of three (or possibly more) pits used for disposal in the 1918 era. Previous work on this property was conducted under an engineered containment system designed and operated to protect against both explosive and chemical threats from buried munitions and explosives of concern (MEC) or chemical weapons (CWM). The last phase of investigation and removal stopped in April 2010 when arsenic trichloride was encountered. No problems, releases or other threats to human health have occurred during work at this property or during work at Lot 18 where an engineered control structure was used to contain possible vapor releases from CWM at that location.

The house to be demolished at 4825 Glenbrook Rd is approximately 45 feet from the near edge of Glenbrook Road, the road is about 30 feet wide, for a total distance of about 75 feet from the house to the property boundary across the street. The nearest residence is 4835 Glenbrook Rd and is approximately 10 feet from the site. Removal work will be conducted in front of, behind and on the site of the residential structure. Thus, work at the front of the property will be closer than the work on the back of the property, but the difference in distance is not significant in this case. In order to estimate and protect against an accidental release, the Corps makes assumptions about the worst that might happen, termed the Maximum Credible Event- what might occur if the containment failed with a chemical release, in this case a liter of arsenic trichloride. The Corps estimate that a person needs to be more than 194 feet from such a release in order to experience only minor discomfort from the release. For distance less than 194 feet from a release, a person needs to take precautions to remain safe in the event of a release.

The different terms and categories of estimating harm and safety are summarized in an appendix at the end of this report. Federal agencies have somewhat different systems for estimating safe distances from chemical vapor releases, presented in the appendix.

Four residential properties fall largely or entirely within the hazard distance of 161 feet: 4820, 4830, 4835 and 4840 Glenbrook Road. The hazard distance is the distance that is predicted to encompass how far the identified gas/vapor (arsenic trichloride) might travel in the event of an uncontrolled release. This situation is the maximum credible event (MCE) and estimates what might happen if the control structure fails and a liter of Arsenic Trichloride is released at the same time.

The estimates of protecting the public from chemical vapor releases are based on protecting the public in the vicinity, including children. The appendix explains the bases for the estimates of harm to human health (injury from chemical exposures); all of the systems to estimate protective levels account for sensitive individuals including children.

Following the demolition, the property will be remediated under two different operational scenarios: either assuming there is a low probability of encountering materials or assuming there is a high probability of encountering materials from the former American University Experimental Station (AUES). The several steps involved in site remediation each have their own risk associated with them – finding the AUES-related items and debris; extracting it from the ground; packing it; moving it out of the safety structures; storing it off-site; and finally, destroying it. During all removal actions at this property, air monitoring equipment will be operated to measure particulate matter (PM), organic chemicals and chemical agent materials. Monitors will be located at the property border. These monitors are intended to add an additional safety assessment. The website also provides daily monitoring that indicates the current levels of particulate matter in the air.

As with previous work, any abnormalities in intrusive work at the site will result in an immediate evaluation and possible or probable work stoppage. The original Work Plan calls for stopping work if several specific conditions arise: finding MEC, CWM, etc. during low probability removal; extreme weather; encountering a MEC, CWM or chemical that has not been included in the risk analysis and safety planning.

High Probability removals

The high probability removals are based on information that leads the Corps to conclude that the intrusive work is likely to encounter CWM, in this case. The information base includes reports, maps, photographs and, at this location, previous intrusive work. The low and high probability removal actions differ basically in the use of structures designed and operated to control and treat any vapors that result from the removal operations. The control structure will be used during removal actions in high probability areas. The structure is designed to withstand snow, rain, and wind, within the design limits of the structure.

Control structures

Two major elements of the safe and effective operation of the vapor containment structures are the tent itself and the air filtration (and handling) systems. The effectiveness of the filtration systems was questioned when the intrusive operations encountered arsenic trichloride in April. At the time, both AU and the TAPP raised concerns over the effectiveness of the filters which had been designed to function with

other chemical agents. The effectiveness with AsCl3 was an unknown at the time and has since been demonstrated.

During the 2004 intrusive investigation at Lot 18, the workers encountered a container with a liquid that had Lewisite. Following the decision to complete the intrusive work under a control structure, the Corps engaged an outside consulting group (SAIC, Inc.) to complete an estimate of the reliability of the structure (Assessment of the Lot 18 Maximum Credible Event Probability Following Implementation of Engineering Controls; 2004). The report indicated that the chance of the control structure failing is 0.2 in a million and the chance of the maximum credible event chemical release was 9 %. The chance of the two events happening at the same time was estimated at 1 in fifty million.

Low probability removals

The low probability removal will be conducted in three areas: the back of the property, the yard between 4825 and 4835 Glenbrook Road, and the very front of the property immediately adjacent to Glenbrook Road. No engineering control structures will be used during removal in low probability areas; however, specialists trained to recognize AUES debris and CWM will be on hand and will observe all excavations. Air monitors for chemical agent will be used at the perimeter and at the digging location to immediately detect any release of CWM and workers will be trained to swiftly mitigate the release and cease work.

As opposed to the situation with high probability work under an engineered control structure, no quantitative estimate is available for encountering an unexpected item, either chemical or explosive. Instead, the Corps has qualitatively estimated that the chances of such an encounter are low – and has prepared a Probability Assessment. A Probability Assessment is a written document, signed by the Baltimore District Commander that formally states that the chance of encountering CWM material in low probability areas is “Seldom” or “unlikely but possible to occur.” An initial encounter of such an item will result in a halt to operations and re-evaluation, depending on the nature of the encounter. Comparing the estimated probability of 1 in 50 million of a release from the high probability control structure to the probability of encountering a chemical or explosive item in the low probability areas, one could speculate (given the qualitative assessment in the Corps document) that the chances of the latter occurring are greater than the former. It should be stated that simply encountering a chemical item or explosive item in a low probability area does not equate to a release from that item occurring. Such an incident occurring during low probability work is far less likely than the simple encountering of an item; and the previous comparison of relative risk becomes much more difficult to speculate on.

Other risks

Even with low probability scenarios, there is added psychosocial stress that can increase residents’ overall vulnerability. EPA has been addressing the matter of psychosocial stress and how to include these factors in risk assessment procedures. The significance of psychosocial factors in raising vulnerability has been described by various authors and was reviewed as applied to cumulative risk assessment (deFur et

al., 2007. Environmental Health Perspectives vol. 115(5):817-824). Various activities already in place have a mitigating effect on stress, including providing information, in-person meetings, public meetings, and posting information on the web site and in newspapers.

Comments

Specific

page 2-4, section 2.4 Please include the fact that the Partner Group meetings are open to the RAB and usually include the TAPP consultant and often an ANC or RAB member.

page 2-7 et seq. describes communications, reporting and public relations (section 2.11). The Corps already has an active web site with a separate section/page for this effort, the 4825 Glenbrook Rd demolition and remediation. The Corps could, and would be well advised to add a daily environmental monitoring section to this page. The daily monitoring section would provide information each day on the following conditions that the Corps is monitoring as part of the work: air quality (PM; VOC, agent/ABP), noise and operational condition with relevant descriptions.

page 3-25 section 3.8.8.1 The text states that the distance for TEEL-1 for a 1 liter container of $AsCl_3$ is 191 feet and the legend for figure 3-3 indicates the same distance is 161 feet. Please correct the typo.

** More citizen summaries on 4825 Glenbrook Road documents are located on our extranet site. For access to the extranet site, please email Andrea Takash, andrea.m.takash@usace.army.mil