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SUBJECT: Technical Review of Historical Documents in Appendix C of the RCRA Facility Investigation Workplan for the Area I Burn Pit, Santa Susana Field Laboratory, Ventura County

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The Boeing Company (Boeing) submitted to the Department of Toxic Substances Control (DTSC) a Resource Conservation Recovery Act Facility Investigation (RFI) Workplan (Workplan) for the Area I Burn Pit (AIBP) cover letter dated November 14, 2006. Four compact discs containing more than 13,000 pages of historical information (historical documents) are in Appendix C of the Workplan. In a letter dated August 30, 2006, DTSC required Boeing to submit the Workplan and associated historical documents. Boeing had previously submitted some of the historical document in August 2007.

We have reviewed the historical documents submitted August 2007 and November 2007 and the associated administrative record located at the DTSC Glendale Office for the Santa Susana Field Laboratory Areas I and III (CAD093365435) concerning the Area I Burn Pit (a.k.a. Thermal Treatment Facility). This memo provides comments and conclusions based on that review.

Background

The AIBP covers approximately 5.8 acres in the southern portion of Area I at the Santa Susana Field Laboratory. The AIBP was used for the destruction of explosive, flammable, and chemical wastes by open burning between 1958 and 1990. Parts of the facility were also used for neutralization of liquid wastes in open pits and the venting of pressure canisters containing hazardous gasses. The facility received wastes from rocket testing and other operations located on- and off-site. Currently the site is identified at Solid Waste Management Unit 4.8 and is void of any structures. A smaller portion within SWMU 4.8 was identified as the Thermal Treatment Facility, which DTSC granted "Interim Status" in January 1990 and Boeing announced closure in August 1991.

Objectives

The key objectives of our review of the historical documents were to find information that suggested handling of radiological materials at the AIBP; information which clearly identified off-site sources; and information which was unusual or significant which may have an effect on the investigative goals of the Workplan. The time available to review this large number of documents was minimal. The review consisted of visually scanning pages for the subject information. The Permitting and Corrective Branch thought it prudent to conduct a review in a short term so that significant findings could be shared with the community sooner, rather than later.

Comments

The following comments were prepared based on the objectives identified above.

1. Historical file C-2_51.pdf contains a letter to Mr. Dickens of Groundwater Resources Corporation Inc. from Mr. M. E. Jensen of Rocketdyne dated March 30, 1993. The letter is about a facility closure task assignment for the AIBP and proposed sampling schedule modifications. The second paragraph in the letter states the following

   > "Recent discussions with ETEC [Energy Technology Engineering Center], in which an uncertainty to be able to support this project was established, made

> it necessary to develop a contingency for performance of ETEC tasks. At this time I am assuming that ETEC shall perform those tasks I discussed with you over the phone. However if for what ever reason, they can't, I want to be able to subcontract with you for these tasks."

This letter is significant because it implies that a task is to be completed, yet the task is not identified making it appear secretive. This observation combined with the involvement of ETEC creates one to speculate about the task and whether radioactive screening may have been involved for the 1993 proposed closure activities. Boeing needs to explain why staff at ETEC, a facility that deals with radioactive testing, is involved in discussions about the AIBP. In addition, Boeing needs to clarify the tasks ETEC proposed and whether the tasks were related in any way to radioactivity. If so, then DTSC will need the history of the activities that lead to the necessity of this task.

2. Document BNA03134583.tif dated 1966 identifies a "leaking dam" for an acid pit in the AIBP area. Boeing needs to identify where this former pit was located, where the contents potentially flowed, and whether the Workplan adequately address the characterization of the former leak.
3. A topographic map generated by a land surveyor in 1961 (file MW-39#2.pdf) shows three pits in the southeastern portion of the AIBP. It appears that these features are not recognized on existing drawings in the Workplan. These pits need to be addressed in the Workplan.
4. Historic file P-3#2.pdf shows hand written notes on a figure dated June 30, 1993. Limits of a 1982 excavation are identified, as per "W. Francis 6/4/93" The limits of the excavation appear to be larger than what is identified in the Workplan.

Conclusions and Recommendations

The task of reviewing such a large number of documents without a comprehensive index was difficult. We recommend that Boeing provide a comprehensive index with links so that the reviewer could focus more on significant items. The index should contain the document type, date, and file name in searchable text. In addition the file names should be linked to the corresponding files.

Another method of organizing the files would involve placing the date of the document in the file name with the format YYYYMMDD (YYYY for 4-digit year, MM for 2-digit month and DD for 2-digit day). This would allow the files to be ordered chronologically by their document date. Following the date, a short description could be used (e.g. _letter, _memo, _internal memo, _report, _work plan, etc.). This would allow the reviewers to

skip documents that were very recent (for instance skipping documents dated 2006), and identifying documents that were duplicates.

Based on a cursory review of the historical documents, no items were identified that could significantly affect the proposed activities in the Workplan to adequately characterize the AIBP. Item 1, listed above, should be further investigated to judge its potential impact to the Workplan.

Our review did not find any documentation that indicates and/or suggests that radioactive material or material contaminated with radioactive material was treated at the Area I Burn Pit. Various documents showed concern over the safe handling of highly reactive (explosive) material and the safe handling of chemically toxic material. Concerns were shown on wind directions to protect workers when burning or venting chemicals. Concerns were also shown on wind magnitude to prevent starting fires at the nearby brush. (Proper conditions were sometimes referred to as “burn days”). No documents were found that indicated concern over radiation and radioactive materials being handled at the Area I Burn Pit.

Along with the lack of documented concern over radiation and radioactive materials, our review did not discover any documentation that showed precautions being used to ensure that radioactive material or radioactive contaminated material was not inadvertently handled at the Area I Burn Pit. Without such procedures in-place during the active portions of the facility, DTSC cannot reasonably assume that material coming from SSFL Area IV, the Canoga Park Facility or the De Soto Facility did not inadvertently contain radioactive material. Although no documents showed or suggested radioactive material was intentionally sent to the Area I Burn Pit, DTSC may find it prudent to continue with radiological screening during the characterization phase and potential cleanup phase of the Area I Burn Pit.

The historical and file documents show that the vast majority of the material being sent to the Area I Burn Pit was associated with rocket fuel research and development, or miscellaneous laboratory stock-chemicals, or to a lesser extent paint and paint solvent waste. The largest volumes are from kerosene/gasoline-based fuels, oxidizers and hypergolic rocket fuels. Although there are many entries in the documentation containing “unknown” material, the packaging and volume of these unknown materials are consistent with rocket research, laboratory chemicals or paint waste.

There were a couple of entries in the documents where “cesium” was burned at the Area I Burn Pit. The relatively large amounts that were reported sent to the Area I Burn Pit, such as the 2-pounds from the Canoga Park Facility in 1961, is consistent with using non-radioactive cesium-133 for exotic fuel development or other industrial uses.

By contrast, radioactive cesium-137 is a man-made element that is extracted from spent nuclear fuel (or spread through nuclear weapon fallout). Concentrated amounts of radioactive Cs-137 require special handling. The “cesium” entries did not specify what type of cesium was sent to the Area I Burn Pit, which is consistent with personnel’s apparent belief that radioactive materials were not being sent to the Area I Burn Pit.

Some of the chemicals burned at the Area I Burn Pit contained lead and/or mercury. The chemicals would have reacted but any lead or mercury would have stayed behind in the ash and/or may have been spread through the smoke. Although the amount of chemicals containing lead or mercury was a fraction of the volume burned at the Area I Burn Pit, these heavy metals are persistent in the environment and bioaccumulate. When characterizing the site, we recommend DTSC ensure that these two metals are adequately represented in the analysis.

The historical information shows that the entire Area I Burn Pit has been highly disturbed throughout its active use. The top few feet of soils have been mixed from such activities as cleaning the residues from the pits, reforming the pits, grading the area and clearing vegetation. Although the pit areas themselves would be expected to have the highest levels of contamination, the areas in between the pits should be adequately sampled due to the spread of the contamination.