file HAFB 20,000 lb. OD unit

MEMO

To: Charles Lundstrom, RCRA Permitting Program
From: Kim T. Hill, Environmental Engineer
Thru: Ron Kern, RCRA Technical Compliance Program
Subject: Technical Review of the "Base-Wide Background Study/Sewage Lagoons and Lakes Investigation/Holloman Air Force Base, NM/Draft Final" and the "Draft Final/20,000 lb. Open Detonation Unit/RCRA Part B Permit Application/December 1995"
Date: January 16, 1996

As requested by the RCRA Permitting Program, technical reviews of the "Base-Wide Background Study/Sewage Lagoons and Lakes Investigation/Holloman Air Force Base, NM/Draft Final" dated December 1993 and the "Draft Final/20,000 lb. Open Detonation Unit/RCRA Part B Permit Application/December 1995"were performed. More specifically, the review of the Permit Application focused on the Sampling and Analysis Plan (Attachment C-1) and Groundwater Waiver (Attachment D-1). As a result of this review, the attached technical comments are provided.

cc: Barbara Hoditschek, RCRA Permits Program Manager
FILE: HAFB/Red/96

TECHNICAL COMMENTS
"20,000 LB. OPEN DETONATION UNIT
RCRA PART B PERMIT APPLICATION
DECEMBER 1995
DRAFT FINAL"

GENERAL

Reference materials and calculations for the information provided in the Permit Application is deficient. Some secondary references, such as other Base deliverables, are cited within the text and placed in a bibliography. However, neither the pertinent information nor the primary reference material are provided. The referencing and inclusion of primary reference material, rather than secondary reference material, is desirable.

ATTACHMENT C-1 (Sampling and Analysis Plan)

- The Sampling and Analysis Plan (SAP) indicates that the frequency of detonation events will be on a monthly basis and that sampling events will be on an annual basis. It is recommended that the frequency of the sampling events be increased to correspond with the volume or tonnage of material detonated.

- Section 4.4.3 of the SAP states that once Strata A, B, and C have been determined, a minimum of three samples will be obtained from each stratum for analyses. Additional information should be provided such that the number of samples obtained per stratum can be determined to be appropriate. It is recommended that the number of samples per stratum be correlated to the concentrations of contaminants anticipated and the area located within each stratum.

- The SAP utilizes a stratified random sampling approach to separate sample populations into non-overlapping groups called strata. As used in this SAP, the term "strata" refers to discrete horizontal zones of surface soil, not vertical geologic strata (Section 4.2). For sampling purposes, the SAP divides the Open Detonation (OD) Unit into three discrete strata: A, B, and C. The "most recent" detonation event is used to determine the location of Stratum A (Section 4.2.1). However, individual detonation events preceding the most recent event may vary widely in plume characteristics (eg. wind direction, explosive violence, etc.). Therefore, it is recommended that, for any one sampling event, a larger Stratum A be determined by aggregating the individual Stratum A from each preceding detonation event. And using the larger, composited Stratum A, to determine the locations and extent of Strata B and C.

- The SAP indicates that backfilling or grading of detonation areas may occur in between subsequent sampling events. Backfilling and grading should be restricted or, at least, minimized to avoid sampling backfilled material and to minimize the spread of potential contamination. Once sampling has been conducted and data has been obtained, evaluated and determined to be sufficient, backfilling and grading may be permissible.

- Section 4.2.3 of the SAP states that if visual fallout exceeds the OD Unit boundaries, that additional samples would be obtained. If visual fallout should exceed the OD Unit boundaries, it is recommended that Stratum C be extended to include the visual fallout and the number of samples for that stratum be increased proportionally.

- In order for the SAP to meet the requirements of Level III data, it must include field blank samples which are not evident in Table C.1-2.

- Level III data requirements omitted from the SAP include the following:
  - performance evaluation samples,
  - error determinations with 8 replicates
  - sample volume,
  - initial and continuing calibration data,
  - documented confirmation of analyte identification,
  - sample quantitations
  - method, trip, and rinsate blanks

- Duplicates should be obtained at a minimum rate of 10% of all field samples, and possibly, one duplicate per stratum. Table C.1-2 indicates that one duplicate per sampling event will be obtained.

- Six background samples will be obtained for use as background for this study (Section 4.4.2). The SAP also states that data obtained during the Base-wide Background Study may be used to increase the sample population (Section 7.3.5). However, the comparability of the Base-wide Background Study to the future sampling events is uncertain (see comments on Base-Wide Background Study). A discussion of the following factors must be provided in order to evaluate the usefulness of the existing Background Study data:
  - the age of the data sets and their comparability,
  - the precision and accuracy of the data,
  - the sampling design used to collect the samples,
  - the methods used to collect, preserve, handle, and transport the samples,
  - the detection limits for the methods,
  - the quality control measures used by the laboratory and field team, and
  - the location of the samples with respect to the OD Unit

- The same laboratory analyses should be conducted on all samples, including background samples, for consistency and comparability.

  Nitroglycerin and diphenylamine are hazardous wastes found in propellants treated at the OD Unit. However, the analyses that includes these two compounds, EPA Method 8332) and 8270 are excluded from Table C.1-1. Also excluded from Table C.1-1 are 4-Am-DNT and 2-Am-DNT which are components of EPA Method 8330.

- Section 4.4.3 of the SAP does not demonstrate the methodology behind determining the "appropriate number of samples", the Upper Tolerance Limits, or the risk-based concentrations.

- The SAP is not clear concerning the number of soil horizons and the discrete stratigraphic units extending from ground surface to the saturated zone (approximately 40 feet) . From the information provided, it is uncertain if more than one soil horizon underlies the 20,000 lb. open detonation unit.

- The proposed samples in this SAP (Section 4.4.1) are composited over a 0 to 12 inch interval. Since most of the contamination is anticipated to be surficial, it is recommended that soil samples be collected over a larger, but shallower area. Shallower samples will also eliminate the concern of possibly encountering different soil horizons or varying soil characteristics and the need for additional samples.

- At a minimum, the data arising from the first sampling event should be evaluated against the Data Quality Objectives. This evaluation should provide a determination of the effectiveness of the sampling event as a whole and the number of samples selected.

- There are four instances when a sample is considered to be under custody: 1) if it is in your possession, 2) if it is in your view after being in your possession, 3) if it was in your possession when you placed it in a secured (locked) location, and 4) if it is in a designated secure area.

- The SAP does not adequately explain how previous detonation events will be utilized to "situate" samples (Section 6.3).

- Section 7.3.3 of the SAP does not adequately describe the methodology behind determining representativeness of the sampling locations.

- Section 8.1 discusses the comparison of background metals analyses. As mentioned in a previous bullet, all samples should be analyzed for the same analytes and constituents of concern (including explosives and soil moisture).

- Section 8.1 also indicates that statistical analyses such as that found in the EPA document "Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities: Addendum to Interim Guidance" (1992) and semivariograms (Section 4.4.4) will be conducted on the soil sample analyses. A discussion of the analyses and their applicability to these sampling events and the pertinent portions of the original documents should be included or provided as primary reference materials.

- The paragraphs in Section 8.3 of the SAP need revision in order to provide consistency of thought. For instance, it is unclear what "potential solutions" are being referred to in the last paragraph.

ATTACHMENT D-1 (GROUNDWATER MONITORING WAIVER)

- The lack of proper referencing is most evident in this Attachment. See General comment.

- There are several instances within this Attachment where faulty logic is used. It is recommended that the language, relating to risk and groundwater as a resource, either be stricken or restated. For instance, the application states "There is no risk associated with the groundwater in the vicinity of the OD Unit since the resource is not used as a domestic, industrial, or agricultural water supply and in all likelihood will never be used as a resource (D.1-12)." NMED's position as stated in a May 15, 1995 letter from Mr. Ed Kelley, Director of the Water and Waste Management Division, to Mr. Harold E. Moffitt, Holloman Air Force Base Deputy Base Civil Engineer, is that "...direct ingestion of water by humans [at HAFB] is not a plausible exposure scenario. However, additional or continuing contamination of groundwater is not and will not be acceptable to NMED...".

- Since measured levels of presumably higher concentrations will be compared to background levels derived from this Study, a Quality Assurance/ Quality Control (QA/QC) procedural "umbrella" must cover the selection of appropriate geographical areas; the selection of sampling sites within the geographical areas; sampling, sample storage and/or preparation; sample analyses, data reduction, and interpretation of study results.

  As the Study indicates, 10 soil and 14 groundwater samples were collected in "carefully selected", non-contaminated or, in the case of groundwater, in upgradient areas. However, the Study fails to provide adequate documentation that the areas selected are "unaffected by historical waste analyses" and that they are located upgradient or within a single soil complex. In addition, the Study does not provide the rationale for the number of samples collected; the QA/QC procedures for the sampling activities, sample storage, and sample preservation; or the original data, data validation reports, data reduction calculations, and specific data interpretation methods.

- The Study cites attachments (such as Attachment 1 containing records of sampling activities, boring logs, and other pertinent information for the monitoring wells installed for the Study) which are not present/provided or indicated in the Table of Contents.

- The columns found in all of the tables do not reference the original data, do not provide the specific calculations by which the values were derived, or do not have otherwise adequate definition.

- The Study does not discuss its adherence to and accomplishment of its data quality objectives (precision, accuracy, representativeness, completeness, and comparability).

It is recommended that the following additional information be obtained for a more comprehensive understanding of the applicability and appropriateness of the Study as a baseline characterization of the 20,000 lb. Open Detonation Unit and other future Base sampling events:

  - historical waste management area map
  - soil complex discussion and associated map
  - sampling and analysis plan for the Study
  - comprehensive data summary
  - revision to the Tables of the Study to allow for further definition

- appropriate laboratory analyses reporting documents, including but not limited to the laboratory analyses reporting sheets, data validation reports; and
- discussion of the Study's Data Quality Objectives and determinations