

HAFB 07

State of New Mexico
ENVIRONMENT DEPARTMENT



BILL RICHARDSON
GOVERNOR

Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Telephone (505) 476-6000

Fax (505) 476-6030
www.nmenv.state.nm.us



RON CURRY
SECRETARY

CINDY PADILLA
DEPUTY SECRETARY

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

July 18, 2007

Ms. Debbie Hartell
Chief
Environmental Flight
49 CES/CEV
550 Tabosa Ave.
Holloman AFB, NM 88330-8458

**SUBJECT: NOTICE OF DEFICIENCY
OPEN DETONATION PERMIT RENEWAL APPLICATION
HOLLOMAN AIR FORCE BASE NM6572124422
HWB-HAFB-04-033**

Dear Ms. Hartell:

The New Mexico Environment Department (NMED) has reviewed the Holloman Air Force Base (HAFB, the Permittee) Open Detonation (OD) Treatment Unit Permit renewal application, received on August 31, 2006. NMED finds the subject application to be administratively and technically incomplete. This notice of deficiency (NOD) lists the issues the Permittee must address, and the additional information the Permittee must submit, before NMED can make a determination on the administrative completeness of the subject permit application.

ADMINISTRATIVE AND TECHNICAL COMMENTS

The quotations **in bold** are taken directly from the Permit Renewal Application. In your response to this NOD, please highlight any and all information added, and ~~strikeout~~ what no longer applies to the text or information that has been replaced.

A. PROCESS DESCRIPTION

1. **Part A - Page 3 of 7, Item # 9 and Part A - Page 5 of 7; Item # 10 and Attachment B, Page 6 of 14, Table B-2:**
 - a. Explain the discrepancy between the “**Process Design Capacity**” of Item 9(B) [i.e., 420,000 pounds], on Page 3 of 7 in Part A, and the estimated annual quantity of waste under column 10(B) [i.e., 100,000 Gallons] on Page 5 of 7. Explain why one of the amounts is expressed in gallons, while the other is in pounds. Alternatively, make the units consistent.
 - b. Provide a breakdown of the 420,000 pounds of the estimated annual quantity of waste destined for treatment at the OD unit. Show the approximate amount of each waste type under Item # 10(B), column B, which is entitled, “**Estimated Annual Quantity of Waste**”. Provide a breakdown of each waste listed in Attachment B, Table B-2 on page 6 of 14 by continuing from row 2 onwards, rows currently blank. Use the Table at the bottom of page 4 of 7 of the EPA Form as an example to indicate the quantities of the wastes in pounds (where **P** [pounds], is the unit of measure). If the amount of waste to be detonated is in gallons, explain why the Permittee plans to detonate liquid explosives, which are prohibited. If they are not liquids, use an appropriate unit of mass (e.g., pounds per hour, kilograms per hour) or volume (e.g., cubic yards, cubic meters).

B. GENERAL DESCRIPTION

2. **Attachment A, Page 1, “Holloman Air Force Base (the Permittee) is located on approximately 50,700 acres of land in Otero County, south-central New Mexico.”**

The current HAFB Container Storage Unit Permit and the application it was based upon states that HAFB occupies approximately 59,827 acres. Please explain the discrepancy in the size of the Base cited in this sentence and the size stated in comment # 2.

3. **Attachment A, Page 1, “The 20,000-Pound Open Detonation (OD) Unit is located adjacent to the northern boundary of HAFB. The area to the north is part of the White Sands Missile Range.”**
 - a. Provide a map of the OD Unit in which the boundary lines were established by global positioning system (GPS) surveys. Indicate how the edges of the OD Unit are marked.
 - b. Provide the following information regarding the location of the OD treatment Unit, and incorporate the requested information into Section A.1 of the revised permit application text:

- i. The distance of the OD unit to the White Sands National Monument.
 - ii. The distance of the unit to the closest recreational portion of the White Sands National Monument.
 - iii. The distance of the OD unit to any archeological and ecological sites and the nearest human receptor(s), including the recreational areas at the White Sands National Monument.
- c. Provide a site location map of Holloman Air Force Base showing all the solid waste management units (SWMUs) and areas of concern (AOCs) that require further corrective action, or which are undergoing corrective action.

C. FLOODPLAIN STANDARD

4. Attachment A, Section A.3.2.: “The FEMA floodplain map included as Figure A-5 shows that the OD Unit is not located within the 100-year floodplain as defined in §264.18(b)(2)(i). Hence, the floodplain requirements are not applicable to the OD Unit at HAFB.”

- a. Define a 100-year Floodplain, and what the implications would be if a permitted unit (such as the OD unit) was located in that plain.
- b. Map A-5, which is on a scale of approximately 1:10,560, is unacceptable for purposes of renewing the current Subpart X operating permit. The hundred-year flood plain is shown on an aerial photograph that has no contours lines, and the map does not meet the requirements of 40 C.F.R. § 270.14(b)(19). The Permittee must provide a topographic map on a scale of 1 inch equal to not more than 200 feet. The Permittee must highlight the 100-year flood plain on the map. The contour lines must be sufficient to clearly show the pattern of surface water flow in the vicinity the OD unit, in order to assist those who might review the draft Permit and the application on which part of the draft Permit will be based.
- c. Map A-5 does not contain enough information to equate it to a FEMA document. Therefore, The Permittee shall submit a stand-alone FEMA Map showing the 100-year flood plain at the Facility, including the OD Unit. The Permittee may consider revising the previously accepted facility location FEMA map titled “Figure B-7” in the current Container Storage operating permit (Permit Attachment B), and submitting that revised map to NMED for review and approval in lieu of Map A-5 of the Permit Renewal Application. In any event, the Flood Plain should be highlighted.

D. TOPOGRAPHIC MAPS

5. Attachment A, Page 7 of 18, Section A.4: “The general requirements of 20.4.1.900 NMAC § 270.14(b)(19) are met in a topographic map of the 20,000-Pound OD Unit and the surrounding area in Figure A-6.”

Figure A-6 does not satisfy any requirements of 40 C.F.R. 270.14(B)(19). The Permittee asserts that the map submitted is compiled on a scale of about 1:300. In order to meet the requirements of 40 C.F.R. § 270.14(b)(19), the Permittee must provide a topographic map of the Open Detonation Treatment Unit at a scale of 1 inch to not more than 200 feet. A distance of 1,000 feet must also be shown around the units on the revised Map.

- 6.** Since **Maps A-5 and A-6** do not clearly indicate the location of the OD unit, the Permittee shall:
- a. Consider revising the previously accepted facility location map titled “Figure B-3” in the current Container Storage operating permit (Permit Attachment B), and submitting that to NMED in the revised permit application in lieu of Map A-5.
 - b. Include a wind rose below the topographic map next to the legend. In addition, include the north arrow, the map title, the date of the map, and the scale of the map. Describe in detail the relevant information conveyed by the Wind Rose.
- 7.** The Permittee shall add the following information on the Facility **“Topographic Map”**:
- a. Buildings, tanks and other structures;
 - b. The correct location of the Open Detonation unit on the Map;
 - c. Paved roads;
 - d. Dirt/Gravel roads
 - e. Location of groundwater monitoring wells;
 - f. Perennial streams;
 - g. Intermittent streams;
 - h. Groundwater flow direction;
 - i. Springs;

- j. The boundary of Holloman Air Force Base;
- k. The scale of the map in miles/kilometers;
- l. The date of the map;
- m. The location of unsaturated zone monitoring wells; and
- n. The location of White Sands National Monument.

E. WASTE ANALYSIS PLAN FOR WASTES TREATED AT THE OD UNIT

8. Attachment B, Page 5 of 14, Second Paragraph, Section B.2., “**In general, the characteristics of the waste that must be known are:**

- **presence of free liquids, ...**
- **Solubility characteristics.”**

Provide a description of the solubility of each of the explosive wastes in water, their mobility in soil and groundwater, physical and molecular properties, and sorption properties of the wastes relative to the environmental media at HAFB.

9. Section B.3, Page 13 of 14: “**Parameters and Rationale (Pre-detonation).**” ... **Additionally, the composition of these materials is well defined on the basis of published literature and tightly controlled manufacturing specifications.”**

The Permittee proposes to use published literature or process knowledge, which is part of acceptable knowledge (AK), but fails to indicate how AK will be assessed for usability, and when sampling and analysis will occur if AK is not of sufficient quality. Provide more information on when AK will be used and the rationale for using it in lieu of sampling and analysis. The Permittee may, for better more information on AK, refer to the EPA 1994 Guidance entitled “*Waste Analysis at facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes.*”

10. Specify in greater detail the waste characterization requirements and procedures required to comply with LDRs under 40 C.F.R. Part 268. NMED recommends that the Permittee use the EPA guidance document “*RCRA Land Disposal Restriction: A Guide to Compliance*”, which explains appropriate waste characterization compliance strategies. Note that the “point of waste generation” must be used to determine if the waste is subject to LDRs.

11. Description and Definition of Explosive Wastes:

- a. Provide definitions of the wastes, their description as a function of energetic classification, and their munitions category. This information should be provided for a representative range of energetics based on historical and planned future OD treatment operations. For example, a definition of propellants should be provided. NMED suggests the Permittee consider *“Propellants are low explosive agents such as explosive powder or fuel that provide the energy for propelling ordnance to the target. Propellants include both rocket and gun propellants.”*
- b. Provide similar definitions for primary or initiating explosives, auxiliary or booster explosives, bursting explosives, pyrotechnics (e.g., *“Pyrotechnics are low explosives used to send signals, illuminate areas of interest”*.), and any nonmilitary explosive materials that will be treated at the OD unit.
- c. Explain whether munitions are also detonated at the OD unit and provide definitions and a brief description of their classification. For example, hand grenades could be defined as *“Hand grenades are small explosives or chemical type munitions that are designed to be thrown at a short range. Various classes of grenades may be encountered as unexploded ordnance (UXOs).”*

12. Attachment B, Page 6 of 14, Table B-2: Provide information on the quantity and the physico-chemical characteristics of the wastes specific to the OD unit. At a minimum, include the following items:

- i. Waste identification (i.e., munitions family characterization by the Munitions Items Disposition Action System (MIDAS) Family program) for example:

MIDAS	Description
FP	Pyrotechnics/Illumination/Non-fragments/Tracers
PB	Bulk Propellants and Black Powder, etc.

- ii. Gross weight per item and the net explosive weight (NEW) per item
 - iii. Chemical composition of the NEW by weight and volume of the wastes.
 - iv. Donor to be used for OD, chemical composition of the donor, donor type and NEW per item treated.
 - v. Provide procedures for treatment of UXOs found outside HAFB boundary and the interim corrective measures taken to treat or handle these items. Indicate in the operating record where the kickout or munitions fragments were found by GPS.
- 13.** Provide more detailed information on waste description than that provided in Attachment B of the Permit Application. Include the halogen content in, and concentrations in the wastes of, silver, lead, mercury, cadmium, chromium, arsenic, selenium and barium,

unless there is documentation or data indicating that these elements are not present in the waste slated for treatment at the OD unit.

14. Attachment B, Page 1 of 14, last sentence, and Table B-2. **“Rocket motors exceeding 300 pounds are regularly treated at the 20,000-Pound OD Unit.”**

Since solid fuel rocket motors and the other explosive wastes that contain ammonium perchlorate oxides will be treated at the OD unit, the Permittee must include perchlorate as one of the target analytes at the OD Unit during soil and groundwater sampling.

F. INSPECTION SCHEDULE

15. Attachment C, Page 1 of 3: **“Inspection Schedule”, In accordance with § 264.15(b)(2), Table C-1 presents an example inspection schedule for inspecting safety and emergency equipment, security devices, structural equipment, communications equipment, mobile equipment, and range areas.”**

40 C.F.R. § 264.15(b)(1) requires that the Permittee must develop and follow a written schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating structural equipment that are important to preventing, detecting, or responding to environmental or human health hazards.” The regulations require real schedule with real equipment, not examples. The Permittee must therefore present in table form a comprehensive inspection checklist for monitoring the OD unit and related health and safety equipment, border fences, security devices, and operating and structural equipment (such as dikes and sump pumps) that are important to preventing, detecting, or responding to environmental or human health hazards. Use the following example to provide the revised checklist under Attachment C.

Item	Description	Yes/No	Frequency of Inspection
1	Is the OD Unit location, trench, or crater chosen for detonation free of standing water, explosives, and reactive waste from previous operations?		
2	Is the selected loading/unloading area free of explosives and reactive waste from previous operations, unnecessary combustibles and dry vegetation, and not subject to spills?		
3	Are first-aid kits available and serviceable?		
4	Are EOD personnel in possession of individually-issued personnel protective equipment (i.e., leather gloves, ANSI-rated eyewear)?		
5	Are hand-held radios available and operational?		
6	Is fire/spill control equipment available (i.e., shovels and hand tools) and serviceable?		

7	Is the OD area in good condition and suitable for conducting an operation (i.e., free of combustibles within 200-feet of the location chosen for detonation; does not require grading or need holes filled)?		
---	--	--	--

16. For the OD treatment Unit, items that shall be included in the inspection schedule, but were not addressed in the OD permit renewal application are as follows:
- i. **Fire Extinguishers:** Include on the checklist whether fire extinguishers are installed on the vehicles for Class B/2 fires, and for accidental Range and/or Class C fires.
 - ii. **Loading/Unloading areas:** State that the Permittee will verify that the loading/unloading areas at the OD unit are clear of combustible materials, weeds, reactive waste, and are not subject to spills, the demolition range in good condition, (i.e., graded, holes filled, and that all large metal fragments have been cleaned up or removed).
 - iii. The Permittee shall include on the inspection checklist verification of whether the OD perimeter gates are closed, if the surrounding fence, range signs and posts and the berms are in good condition, and whether the run-off berms around the OD unit are free of holes and cracks.
 - iv. The public address system, flag pole, and the personnel telephones present shall be checked to see if they are operational.
 - v. The Permittee must include, in the inspection schedule, the frequency at which each of the safety and emergency equipment (at or taken to the OD unit) listed above will be inspected.
17. Describe the procedures the Permittee shall use to inspect each movement of hazardous wastes received at the OD Treatment Unit. Indicate if the Facility receives off-site generated waste.
18. Provide a description of the OD Unit perimeter fence, and explain whether it is in good condition. Indicate the height of the perimeter fence that surrounds the OD Unit, ensuring that it is high enough to keep out wild life and prevent them from scaling the fence.
19. Attachment C, Page 2 of 3, Section C.1.4, First sentence, **“A log will be kept to record inspection findings at the OD Unit as specified in Technical Orders 11A-142. The log includes spaces for the date of the inspection, identity of the inspector, and the specific items to be inspected and provides for records of remedial action.”**

Provide the relevant information that the Permittee will be using from the Technical Orders 11A-142 in conducting inspection. Incorporate excerpts of that information into a revised and more comprehensive Section C.1.4 of the permit renewal application. If the whole log booklet is the part of the explosive ordnance disposal modus operandum, provide the booklet as an appendix to the application. Include the text on the CD that must be provided to the NMED in response to this notice of deficiency.

G. PERSONNEL TRAINING

20. Attachment D, Page D-1, Section D.1, Second sentence, "Training for EOD personnel includes formal classroom instruction, on-the-job training, and written procedures and plans."

Provide a list of employees for each job title, and job descriptions for each job title, hazardous waste management job duties, required skills, qualifications, experience, and educational requirements/background, as required by 40 C.F.R. § 264.16(a). Ensure that annual refresher training is a requirement for each EOD personnel.

21. Provide a description of how training will be designed to meet actual job tasks, and the personnel training for emergency response. Personnel must be made familiar with emergency procedures, emergency equipment, and emergency systems, as required by 40 C.F.R. § 264.16(b) and § 264.16(d). Provide as much information as applicable using the following Table as an example:

Exemplary Personnel Training Schedule for HAFB OD unit

Required Training	JOB TITLES							Frequency
	Training Director	RCRA Project Leader	Emergency Coordinator	Field Technician (Waste Handler)	Special Projects Staff	EOD Personnel	Transport Manager	
RCRA Regulations	X	X	X	X	X	X	X	Initial, & Annual
Contingency Plan and Emergency Procedures, etc.	X	X	X	X	X	X	X	Initial, & Annual

H. CONTINGENCY PLAN

22. Pursuant to 40 C.F.R. § 270.14(b)(7) and 40 C.F.R. § 264.53, submit information that:

- a. identifies where copies of the Contingency Plan will be located;

- b. describes the schedule of remedial action.
- c. exempts the Permittee from health and safety requirements.

23. Attachment E, Page 2 of 12, Section E.1.3: **“Although the capabilities of HAFB exceed those of local emergency response services, HAFB has agreements with various outside facilities pursuant to 20.4.1.500 NMAC §264.37... These facilities include the local volunteer fire departments in Alamo West and the cities of Alamogordo and Cloudcroft.”**

Provide a copy or copies of memoranda of agreement for mutual aid and fire protection that the Permittee has with the outside support agencies listed above and in Attachment E, on Page 10 of 12 in Section 2.4.10 of the Permit renewal application.

24. Attachment E, Page 10 of 12, Section E.2.4.9: **Emergency Equipment** :

- **First aid kit (NSN-654500-116-1410) or suitable substitute;**
- **Ambulance or first aid vehicle;**
- **Fire extinguisher in vehicles carrying class B/C explosives;**
- **Hand-held radio for contact with range control;**
- **Vehicular radio for emergency communication;**

Provide the testing and maintenance schedules and procedures for the equipment listed above.

25. Explain what tools and plans the Emergency Coordinator will be using to identify the character, source, amount and areal extent of any explosion, fire, or release, as required by 40 C.F.R. § 264.56(b). This information is needed because, although emergency response equipment was the title of Section E.1.6 on Page 4 of 12 of the permit renewal application, the tools in comment 24 and plans were never addressed or listed.
26. Provide a comprehensive list of the spill control and decontamination equipment that includes at a minimum: a portable eyewash station, absorbent, spills cleanup items, and miscellaneous personnel protective equipment such as gloves, protective suits, goggles, and shovels. The list provided in Section E.2.4.9 only addressed response equipment, omitting the inclusion of the equipment needed to protect the health of the explosive ordnance disposal personnel (i.e., human health).
27. a. Describe the measures that the Permittee will take in the event that a spill occurs while transporting any of the explosive, reactive wastes or munitions to the OD treatment Unit.

- b. Explain how unloading of the waste will be performed, (i.e., manually or with appropriate heavy equipment, such as forklifts). Include these in the list of equipment.
 - c. Provide a description of how the Permittee identifies possible loading and unloading hazards and how the Facility keeps documentation of the measures taken to minimize or eliminate the possibility of hazards.
28. Describe how the Permittee keeps documentation of procedures to prevent accidental ignition or reaction of wastes destined for treatment at the OD unit.
29. a. Provide a description of the procedures to be followed by the Emergency Coordinator to prevent fires, explosions, or releases from occurring, or spreading to other hazardous waste management areas at HAFB.
- b. Explain why the use of cell phones was not mentioned as a prohibition during operation to prevent static at the OD Unit, or prohibit their use.
30. Explain how the Permittee plans to store, treat, or dispose of any released explosive wastes.
31. Discuss procedures for record keeping and reporting to NMED.
32. Provide an account of the procedures that the Permittee will use for preventing the handling of incompatible wastes until cleanup is complete.
33. Present a discussion of the decontamination procedures following a response to any potential emergency at HAFB.
34. Provide, and incorporate into the revised permit application, a Health and Safety Plan that covers personnel protection procedures, as required by 40 C.F.R. § 270(14(b)(8)v). This may be combined with the response to comment # 81.

I. **20,000-POUND OPEN DETONATION UNIT MANAGEMENT**

35. **Attachment F:** Submit documentation that all the hazardous wastes burned at the OD unit have the potential to detonate, including wastes with low levels of high explosives, (i.e., less than 10 percent). Acceptable evidence should include results from tests listed in EPA Publication SW 846, Test Method for Evaluating Solid Waste, Subsection 6-2, "Definition of Explosive Material", or the Bureau of Mines Gap Test or Deflagration/Detonation Transition Test. This information is required because RCRA prohibits open detonation of hazardous wastes that are not detonable. [40 C.F.R. § 265.382, 52 FR 46946, 46952 (12/10/87)].

36. For highly unstable wastes, provide a certification that the waste can be safely treated. The Permittee must provide supporting data which demonstrate that the hazardous explosive wastes destined for treatment at the OD unit have the potential to detonate or that the wastes are bulk propellants.
37. a. Submit an explanation or rationale for why the wastes treated or disposed of by OD cannot be treated or disposed of by other methods more protective of human health and the environment. Open Detonation should be used for treatment only when no other option is available that is more protective of human health and the environment.
- b. Explain whether the Permittee has explored the use of alternative technologies like the confined detonation chamber proposed for use by Anniston Army Depot. Include a demonstration that the treatment technology is protective of human health and the environmental media, in addition to being safe for the EOD personnel.
38. Attachment F, Page 1 of 9, Section F.1.1, "**Loading/Unloading Operations: "Procedures to prevent accidental detonation of the waste are also applicable to spill prevention during pretreatment operations. EOD procedures to prevent accidental detonation are detailed in the U.S. Air Force Publications: Technical orders (TOs) 11A-1-42 and 11A-1-60."**"

Provide details and applicable excerpts of the procedures from the above-referenced publications that the Permittee applies during explosive waste management. Incorporate the additional information from the Technical Orders into the revised Section F.1.1 of the permit renewal application.

39. Attachment F, Page 4 of 9, Section F.1.4.1, **Explosive Open Detonation Treatment**, "The actual treatment is accomplished by placement of the waste items on the ground within the OD Unit and attachment of C-4 (RDX) donor charges to the waste item."

Provide a schematic drawing, description and the dimensions of the OD Unit and information on whether open detonation operations are conducted on the ground surface, in a pit, or inside a trench excavated for that purpose. This information was not presented anywhere in this chapter of the permit application. Include a description of the berms and any trenches at the OD Unit, and their role in preventing flooding of the OD Unit.

40. Attachment F, Page 4 of 9, Section F.1.4.2, "**Standard Operating Practices: "EOD has SOPs that define uniform standard procedures, instructions, and safety precautions**"

to be employed during EOD operations conducted at the HAFB 20,000-pound OD Unit.”

Provide a full description of the uniform standard operating procedures, instructions, and safety precautions to be employed during OD operations referred to above. Include the sequence of operations at the OD unit, starting from debriefing of explosive ordnance disposal personnel at the beginning of the operation by the OD Team Leader, to loading the OD crater (with waste first, then the donor charge), pouring of the propellant with extreme care to prevent the occurrence of spills, telephone or two-way radio communication during the entire operation, personnel protective cover, raising the flag at the beginning of operations, and notification of other agencies before the detonation time.

41. Attachment F, Page 4 of 9, Section, F.1.4.2, and Third Sentence: **“The SOPs require specific actions at time intervals listed below prior to and after treatment at the OD Unit:**
- **Two Weeks in Advance of Scheduled Detonation,**
 - **One Week in Advance of Scheduled Detonation,**
 - **Day Before Scheduled Detonation,**
 - **Day of Detonation, and**
 - **Within 72 Hours After Detonation Occurs.**

A checklist that lists specific activities to be performed at the intervals listed above is included as Exhibit F-1.”

Present the information in the Table titled “Exhibit F-1” in text form, with each of the above bulleted items in comment 41 being reorganized into five separate sections, as identified in Section F.1.4.2. Tables are more appropriate for inspections, such as those that were presented in Attachment C of the Permit application, and should not be part of the procedures for explosive ordnance disposal.

42. Attachment F, Top of Page 8 of 9, Section F.1.8.10: **“An earthen berm that is at least 2 feet in height surrounds the OD Unit and helps prevent runoff to other areas of the facility or environment. The OD Unit is not located within the 100-year floodplain (Figure A-5); therefore, measures to prevent flooding are not necessary.”**

NMED disagrees with the statement that measures to prevent flooding are not necessary, considering the amount of precipitation that Otero County received during the Summer of 2006. The NMED is concerned about local flooding around the OD unit, irrespective of whether or not the 100-year flood plain is outside the subject Unit. Therefore, the Permittee must demonstrate that the berms and any trenches surrounding the OD Unit are high enough to prevent run-on to, and run-off from the OD unit.

43. Submit the Storm Water Pollution Prevention Plan for the OD unit, including details of any storm water sampling conducted from the OD pit or crater following a precipitation event.
44. Provide a map of explosive waste hauling routes from storage to the OD Treatment Unit, as required by 40 C.F.R. § 270.14(b)(10). Indicate the exact location of the OD Unit on Figure A-3, unless the whole area is the Unit, in which case the title of the Figure must reflect that.
45. **Treatment Effectiveness**: Since the Permittee did not discuss or determine treatment effectiveness following each open detonation event at the OD Unit, the Permittee must address the following items:
 - a. Provide a demonstration of the treatment effectiveness of the explosive wastes at the OD Unit following each open detonation operation. This may be based on laboratory or field data. Treatment effectiveness was not presented in the Permit renewal application.
 - b. Since the destruction and removal efficiency (DRE) for energetics is a measure of the effectiveness of treatment of the OD process, provide the DRE values for OB treatment and OD treatment events using the following formula, which was not stated in the permit application:

$$DRE_{Total} = \sum_{i=1}^n (1.0 - EF_i) (100) ;$$

Where

DRE_{Total} = destruction and removal efficiency (percent) for all energetics (i.e., the sum of the emission factor for each individual energetic based on OD emission tests or other supporting data as available).

EF_i = Emission factor for energetic "i" (dimensionless).

i = Each energetic constituent for which an emission factor is applicable and available.

n = Total number of energetic constituents with emission factors applicable and available.

OD-specific emission factors have been determined based on the Bang Box tests conducted by the U.S. Army and validated by EPA in August 1998. Separate DREs should be calculated for OD treatment. The DRE for OD should also account for the use of donor explosive charge.

J. CLOSURE AND POST-CLOSURE PLANS

46. Attachment G, Page 3 of 10, Section G.4, Second sentence: **“Any structures and equipment that cannot be decontaminated shall be...managed as hazardous waste.”**

Provide a detailed account of where the Permittee plans to store the dismantled structures while managing it as hazardous waste. Explain how decontamination levels will be determined.

47. Attachment G, Page 4 of 10, Section G.4.2, Last sentence: **“The samples will be analyzed for the parameters listed in Table G-1 and disposed of in accordance with regulations.”**

Provide a Table showing the parameters that wash and rinse water and other closure debris will be analyzed for during closure activities at the OD unit. The Table referred to by the Permittee is a closure schedule, and not a table of analytical methods for closure samples.

48. Attachment G, Page 4 of 10, Section G.4.3, **Soil Sampling and Analysis**, 3rd paragraph, 1st, **“Surface soil samples will be collected from the most recent blast depression at a depth between surface and 12 inches, .. at the following locations...:”**

Provide a scaled diagram of the OD Unit showing the proposed closure soil sampling locations for unsaturated zone monitoring that are described in Comment # 46. Indicate also the locations from which background soil samples will be taken. These should be from areas that have not been affected by open detonation treatment activities.

49. Provide information on the OD Unit, which should include the following:
- a. An outline of the procedures for removal of hazardous waste, post-treatment residues or post investigation derived waste, and contaminated soils as well as the location of disturbed soils when removed; and
 - b. The estimated year of closure of the OD unit.

50. Attachment G, Page 6 of 10, Section G.4.8, **Contingent Post-Closure Plan**, **“Because some residues may remain in place, this contingent post-closure plan provides a description of the activities that may be conducted to ensure long-term reliability and effectiveness of the closure.”**

Submit a detailed Contingency Post-Closure Care Plan and Post-Closure Care procedures for the OD Unit, as required by 40 C.F.R. § 264.603, in order to meet the requirements of 40 C.F.R. § 264.601. This information must be provided, since there is no method of

knowing that clean closure of the OD unit will be achieved, given that the depth to groundwater at the OD Unit is only 30 feet below ground surface.

51. Provide the following information:

- a) A description of the location and number of copies of the Closure and Post-Closure care Plan for the OD Unit as required by 40 C.F.R. § 264.118(b)(3);
- b) The names of the personnel responsible for storage, updating of facility copies of the Closure and Post-Closure Plans, and the procedure for updating all other copies of the subject plans.

K. SAMPLING AND ANALYSIS PLAN

52. Provide information, and incorporate into the waste analysis plan (WAP) Attachment B an analysis for all explosives-contaminated soil by explosive compounds treated at the OD unit during closure to include metals, VOCs, SVOCs, and explosives, silver, perchlorate and the following compounds, unless a demonstration can be made that these compounds were not treated at the OD unit: RDX (*Hexahydro-1,3,5-trinitro-1,3,5-triazine*), HMX (*Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine*), TNT (*2,4,6-Trinitrotoluene*), DNT (*2,4- and 2,6-Dinitrotoluene*), DNB (*1,3-Dinitrobenzene*), Tetryl (*Methyl-2,4,6-trinitrophenylnitramine*), TNB (*1,3,5-Trinitrobenzene*), Nitrocellulose, TNG (*Trinitroglycerol [nitroglycerin]*), PETN (*Pentaerythritol tetranitrate*), Nitroglycerin, NQ (*Nitroguanidine*), WP (*White phosphorus*) and EGDN (*Ethylene glycoldinitrate*)."

53. **Attachment H, Sampling and Analytical Procedures, Page 3 of 15, Table H-2, Third Column, First Row, **Test Method**" 8330.**

Although Method 8330 is the standard EPA test method for explosive compounds, the EPA has determined that it has a number of problems associated with it. These include high solvent usage, multiple compound coelutions in sample matrices with complex mixtures, and long runs. In order to address these problems, EPA Method 8095 has been proposed as an alternative analytical method. Method 8095 uses gas chromatography with electron capture detection. It can detect and quantify all of the same compounds as Method 8330. In addition, Method 8095 can also detect and quantify 3, 5-dinitroaliline, nitroglycerine, and pentaerythritol tetranitrate (PETN).

The Permittee must add Method 8095 to Table H-2 in the column "Test Method" under high explosives analysis.

54. Attachment H, Page 4 of 15, Section H.4.1, Sample Locations, "**Samples from the depression (Stratum A) would be representative of soil directly affected by detonation events.**"

Since the sampling method in 40 C.F.R. § 261 Appendix I is not used, the Permittee must provide a detailed description of the proposed method and demonstrate its equivalency to the method under 40 C.F.R. § 261 Appendix I.

55. Attachment H, Page 6 of 15, Section H.4.3.2, **Sample Collection** “**Surface soil samples will be collected in accordance with USAF operational procedures and guidelines, EPA’s SW-846...**”

Provide more information on methods of preventing cross-contamination during soil sampling, including personnel changing gloves before collecting each sample, and use of clean unused containers, and labeling to avoid errors

56. Attachment H, Page 9 of 15, Section H.4.3.9, **Field Sampling and Unit Operation Logbooks**, “**All the methodology, procedures, and events pertaining to sample and data acquisition will be recorded in ...**”

Provide a list of field custody procedures that HAFB sample collection personnel must adhere to, including restriction of the number of people handling the samples, who is responsible for care and custody of the samples during transport to the laboratory, and labeling of each sample container with waterproof ink.

57. Provide a description of the procedures that samples relinquished to the analytical laboratory will be subject to during transfer of custody and shipment.

58. **Attachment H, Page 15 of 15, EXHIBIT H-1, “Historical Soil Sampling Results”.**

Explain what the letters B, BN, J, JB, U, and UN mean in the column under “Flags”. Explain why these were used instead of empirical data.

59. **Quality Control Targets**

Provide quality control targets for accuracy and precision for metals, and high explosives. Explain the laboratory reporting limits for both.

60. Explain what types of field quality control samples will be collected or prepared during each sampling event.

61. **Reporting**: Provide information on what type of reports the Permittee will be submitting the NMED and the frequency. Provide a synopsis of the contents of the report.

L. SOIL AND VADOSE ZONE MONITORING

62. Attachment I, Page 6 of 19, Section I.1.2.4, "**Depth to the Uppermost Saturated Zone**", Second sentence "**The water table depth beneath the OD Unit ranges from approximately 27 to 31 feet BGS**":

Although the current operating Permit requires the Permittee to conduct groundwater monitoring "**only when soil sampling results indicate contamination [Module III, Section M.]**", the Permittee shall be required to conduct groundwater monitoring to ensure that hazardous waste constituents have not impacted the groundwater beneath the OD Unit. NMED requires groundwater monitoring because the detonates a very large amount of explosive waste during any given year, for consistency with the requirement at other facilities with permitted OB and OD Units, and to protect New Mexico's scarce water resources. Therefore, the Permittee must provide a groundwater monitoring plan, and incorporate it into the revised Attachment H. The Permittee may use a topographic map to show the location of the 4 monitoring wells referenced in Figure I-3, and to clearly show the direction of water flow using potentiometric contours. Indicate on the map which are the upgradient monitoring wells, which are the downgradient wells, and the rationale for its choice of both.

63. Provide the following additional information on soil and vadose zone monitoring program at the OD unit, as required by 40 C.F.R. § 264.278; § 264.601 (b) and § 264.13(b):
- a. A description of groundwater sample collection, sample preservation, shipment, sampling and analysis procedures, and chain-of-custody control;
 - b. Provide details of the sampling and analysis plan for monitoring the vadose zone during treatment operations and for the potential of waste constituents to migrate into the ground water, as required by 40 C.F.R. § 264.273.

M. ENVIRONMENTAL PROTECTION

64. Attachment I, Page 1 of 19, "Introduction", second to the last sentence on that page: "**The Waste Analysis Plan included in Attachment B of this renewal application includes information on the volume and physical and chemical characteristics of wastes treated at the OD Unit.**"

Provide chemical properties pertinent to the compounds in the wastes and potential compounds formed during OD activities and their behavior in soil, ground water, or surface water. Present a brief description of the information on the volume of the wastes that is referenced (above) to have been included in Attachment B of the permit renewal application [40 C.F.R. § 264.13(a)]. Include the EPA waste codes.

65. Provide the following information for each explosive or reactive waste or compound treated at the OD unit:
- a. The solubility of the waste in water;
 - b. The specific compound's mobility in soil;
 - c. Physical state and molecular properties of each compound;
 - d. Mobility of each compound in ground water;
 - e. Sorption properties of waste material relative to the environmental media;
 - f. Biodegradability, bio-concentration, and biotransformation of each compound relative to the environmental media; and
 - g. Photo-degradation of the waste.

N. **PROTECTION OF GROUND WATER AND SUBSURFACE ENVIRONMENT**

66. Attachment I, Page 7 of 19, Section I.1.2.6, **Existing Groundwater Quality**, Provide information on the ground water monitoring wells and the concentration of total dissolved solids (TDS) in the ground water under the OD Unit, using the most recent, 2006 (and not the 1993) data presented in Table I-2. List the indicator parameters and hazardous waste constituents that will be analyzed by the Permittee. Include an account of how background values for each proposed monitoring parameter or constituent will be determined, or present the procedures that will be used to calculate such values, as required by 40 C.F.R. § 270.14(c)(6)(iii).
67. Describe how the Permittee determined the direction of ground water flow at the OD unit and the rate of flow. Include a potentiometric surface map and the direction of ground water flow [40 C.F.R. § 264.601 (a) (5)].
68. Provide a description of the precipitation patterns at the OD unit, proximity to and withdrawal rates of current and potential groundwater users from wells located at HAFB, as required by 40 C.F.R. § 264.601(b)(3) and 40 C.F.R. § 601(b)(5). Include an account of the water quality standards, water quality data, and uses. These data will allow NMED to evaluate the impact of the activities at the OD unit on surface aquatic environments in compliance with the requirements of 40 C.F.R. § 264.601 (b) (7), and 40 C.F.R. § 264.601(b) (8).
69. Provide a description of the land use pattern at the OD Unit. Include a description of the potential for deposition or migration of waste constituents into subsurface physical structures, and into the root zone of food chain crops and other vegetation. [40 C.F.R. § 264.601 (a) (7)].
70. Describe the effects of explosive open detonation events on geologic units and ground water flow under the OD unit. Include a discussion of the potential for the treatment activities to

damage the flora, fauna, and physical structures due to exposure to the treatment events. [40 C.F.R. § 270.23 (a) (9), (b)(11), (e), and § 264.601 (a)(1), (b)(2)].

O. SURFACE WATER

71. **Attachment I, Page 12 of 19, Section I.2, EXPOSURE PATHWAYS AND RECEPTORS, “There are no permanent natural surface waters within the HAFB boundary; therefore, surface water is not considered an exposure pathway.**

Explain the discrepancy between the above statement and the third sentence of Section I.1.6.2 on page 11 of 19, “**Fauna**”, which states, “**Available habitats include upland grasslands, xerophytic shrub lands, brackish marshlands, playas, and surface water habitats.**” Third paragraph of Section I.1.6.2 also states that “**No classes of fauna are negatively impacted by operation of the OD Unit.**”

Explain why the pupfish, a threatened species in the surface brackish water of Lost River, was not listed under paragraph 3 of Section I.1.6.2.

72. Although there are no permanent natural surface waters within the HAFB boundary except Lost River, the Permittee should provide a description of the effectiveness and reliability of containing, confining, and collecting systems and structures in preventing migration of waste constituents following intermittent/seasonal thunderstorms.[40 C.F.R. § 264.601].

P. AIR QUALITY DISPERSION MODELING ANALYSIS

73. Attachment I, Page 10 of 19, Section I.1.5, Second paragraph, last sentence, “**Air Quality: The State of New Mexico has developed the New Mexico Ambient Air Quality Standards (NMAAQs) and has also adopted the NAAQS to regulate some pollutant levels in New Mexico. None of the NAAQS or the NMAAQs has consistently been exceeded at HAFB.**”

Provide data that supports the assertion that “none of the NAAQS or the NMAAQs has consistently been exceeded at HAFB.”

74. Attachment J, Page 1 of 6, Section J.2, **DESCRIPTION OF AIR QUALITY MODELS USED**, first sentence: “**The Open Burn/Open Detonation Dispersion Model (OBODM 1.3) was selected to evaluate the potential air quality impacts of open burning and detonation of energetic waste at HAFB.**”

- a. Provide a detailed description of the OBODM Dispersion Model and how it is used to predict peak concentration, time-mean concentration, dosage, and gravitational deposition “for emissions from the open detonation source for either

- a single event or up to one year of sequential hourly sources and meteorological inputs”. Include the history of the model, and where tests, which were conducted, used the model to establish that it was the appropriate method for air modeling at the HAFB OD unit. [40 C.F.R. § 264.601(c) (1) and 40 C.F.R. § 270.23(b)].
- b. Provide an example site model for either dermal, inhalation, or ingestion pathways to justify the conclusion that the OD operations will pose no hazard to human health or the environment at HAFB and the White Sands National Monument located southwest of the Unit. Consider adult and child exposure scenarios to soil, air, surface water and sediment.
75. Attachment J, Page 2 of 6, Section J.4, “MODEL OPTIONS”, “The OBODM options used in the dispersion modeling analysis for HAFB are as follows:
- **Final cloud rise height used for all calculation distances, instantaneous sources can use both stable and adiabatic plume rise;...**
 - **9:00 a.m. detonation time ..”.**
- a) Provide the equations into which the Permittee plugged the parameters listed under section J.4. Explain how emission factors for all suspected air pollutants were determined. Include the use of meteorological data, such as wind speed and direction. Also describe the types of toxicity information considered, including data from human, animal, and biota. [40 C.F.R. § 264.601.
- b) Provide the approximate or typical height above ground surface to which the open detonation cloud or plume rises when 20,000 pounds of explosive waste is detonated at the OD Unit, and the rationale used for choosing 9:00 a.m. as the detonation time.
76. Attachment J, Page 6 of 6, **Table J-2**: Explain why lead (Pb) is the only RCRA metal pollutant listed in Table J-2, while Attachment H, Table H-2 on page 3 of 15 the list includes beryllium, cadmium, mercury (from mercury fulminate?), selenium, chromium, Arsenic and Silver as some of the analytes by virtue of their toxicity.
77. Attachment J, Page 6 of 6, **Table J-2**: Provide an example calculation and the procedures, formulas, data and the equations that the Permittee used to derive Table J-2. Include the information provided in the footnotes (a) through (g) under Table J-2.
78. Provide the distance from which explosive ordnance disposal personnel remotely charge the explosive wastes, and the approximate concentration of Table J-2 constituents there during a typical OD operation. Explain why there is no bunker for EOD personnel protection, or propose a location for one.

79. Provide a description of the effectiveness and reliability of any systems and structures used to reduce or prevent emissions of hazardous constituents to the air. This may be demonstrated by semi-annual or annual sampling and analysis programs following the last waste treatment event.

Q. POTENTIAL PATHWAYS OF EXPOSURE AND EXPOSURE MAGNITUDE

80. Provide a description of the potential for the public and personnel working nearby to be exposed to hazardous wastes. Include information on how long waste will remain in the unit before it is burned, and the length of time after operation of the unit before re-entry of personnel to the detonation site is allowed. Describe what contingency plans the Permittee has in place for those unpredictable times when EOD personnel cannot conduct OD operations or treatment on a given day. [40 C.F.R. § 270.23(c)]

R. HEALTH AND SAFETY PLAN

81. Provide a stand-alone Health and Safety Plan for routine operations at the OD unit. This information may be presented in a section entitled "Health and Safety procedures during management of the explosive wastes at the OD Unit" [40 C.F.R. § 270(14)(b) (8) (v)].

S. NOISE CONSIDERATIONS

82. a. Explain why the groundwater monitoring wells will not be damaged, in light of ground vibration based upon the amount of waste munitions and explosive waste detonated, and the geology of the OD Unit and the proximity of the monitoring wells to the OD Unit. [40 C.F.R. § 270.23(e)].
- b. Describe how noise from the OD events will be controlled, since noise might be carried in the direction of the wind towards the southwest of HAFB where the White Sands National Monument is located.
- c. Provide the approximate distance from the White Sands National Monument to the OD unit, and also the minimum safety distances to the property of others, as required by 40 C.F.R. § 265.382.

T. WASTE MINIMIZATION

83. Provide a plan that addresses the following items which shall be required of the Permittee in writing annually by December 1, for the previous year ending September 30, as required by 40 C.F.R. § 262.41(a)(6-7) and 40 C.F.R. § 264.75(h) and (i). Include in the plan an indication that:

- a). The Permittee has a program in place to reduce the volume and toxicity of all explosive and energetic wastes which are generated by the Facility operations to the degree determined to be economically practicable; and that the proposed method of treatment is the most practicable method currently available to the Permittee, which minimizes the present and future threats to human health and the environment.

This certified plan must address the following items:

- i). Any written policy or statement that outlines goals, objectives, and/or methods for source reduction and recycling of hazardous waste at HAFB.
- ii). Any employee training or incentive programs designed to identify and implement source reduction and recycling opportunities;
- iii). Any source reduction and/or recycling measures implemented in the last five years or planned for the near future;
- iv). An itemized list of the dollar amounts of capital expenditures and operating costs devoted to source reduction and recycling of hazardous waste;
- v). Factors that have prevented implementation of source reduction and/or recycling;
- vi). Sources of information on source reduction and/or recycling received at the Facility (e.g., local government, trade associations, suppliers);
- vii). An investigation of additional waste minimization efforts which could be implemented at the Facility. This investigation shall analyze the potential for reducing the quantity and toxicity of each waste stream through production reformulation, recycling, and all other appropriate means, and an assessment of the technical feasibility, and potential waste reduction for each option.
- viii). A flow chart or matrix detailing all hazardous wastes that the Permittee produces, by quantity and type and by building/area;
- ix). A written determination that demonstrates the need to use those processes which produce a particular explosive waste due to a lack of alternative processes, available technology, or available alternative processes that would produce less volume of hazardous waste.

U. LAND DISPOSAL RESTRICTIONS

84. Provide information on how the Permittee plans to comply with all land disposal restrictions (LDR) at the OD unit, and how the Permittee plans to manage and treat explosive wastes restricted from land disposal, and the treatment requirements listed in 40 C.F.R. § 268.40 for explosives subcategory D003 wastes deactivation and attainment of the treatment standards for all the constituents listed in 40 C.F.R. § 268.48, as required by 40 C.F.R. Part 268, Subpart D.

Please submit the required information in the form of a revised permit application that incorporates all the responses to the NOD in two hard copies indicating added information in

Ms. Debbie Hartell
July 18, 2007
Page 24 of 24

highlights, and deleted information in strikeouts, and on two CDs or 3.5-inch diskettes compatible with Microsoft Word. Further, in order to expedite review of the responses, provide a table showing each of NMED's comments and the Permittee's responses.

The Permittee must submit the requested information within sixty (60) calendar days from the date you receive this letter.

If you have any questions on the attached NOD please contact Cornelius Amindyas of my staff at (505) 222-9543 or at the above letterhead address.

Sincerely,



James P. Bearzi
Chief
Hazardous Waste Bureau

cc: J. Kieling, HWB NMED
C. Amindyas, HWB NMED
L. King, EPA Region VI (6PD-N)
File: HAFB 2007 and Reading
[REDACTED]