DEPARTMENT OF THE AIR FORCE
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HOLLOMAN AIR FORCE BASE NEW MEXICO

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29 March 2016

DeAnna Rothhaupt
Chief, Holloman AFB Environmental
49 CES/CEIE
550 Tabosa Avenue
Holloman AFB NM 88330-8458

NMED
Hazardous Waste Bureau

New Mexico Environment Department
Attn: Mr. John E. Kieling, Chief
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe NM 87505-6303

Dear Mr. Kieling,

Holloman Air Force Base (HAFB) is submitting the attached responses to the Notice of Deficiency letter, HWB-HAFB-015-001, concerning our RCRA Permit Renewal Application for the Open Detonation Treatment Unit at Holloman AFB (EPA ID# NM 6572124422.) Attached is a Response to Comments Matrix and supporting documents for Comment numbers 1 through 10.

Holloman AFB is requesting an extension for the Open Detonation Unit Closure Plan, including items in Comments 11 through 14 and the associated documents in Comment 15, in order to develop a way forward including submitting a Work Plan for NMED's approval as discussed in our telecom meeting on 28 January 2016.

If you have any questions, please contact me by phone at (575) 572-3931 or by email at deanna.rothhaupt@us.af.mil.

Sincerely,

DEANNA ROTHHAUPT, GS-12, DAF

Attachment(s): Response to Comments matrix and supporting documents

cc:

(w/Atch)
Mr. Cornelius Amindyas
Hazardous Waste Bureau
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(w/o Atch)
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RYAN FLYNN
Cabinet Secretary
BUTCH TONGATE
Deputy Secretary

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

December 31, 2015

DeAnna Rothhaupt
Chief, Holloman AFB Environmental
550 Tabosa Avenue
Holloman AFB, NM 88330

**SUBJECT: DISAPPROVAL
PERMIT RENEWAL APPLICATION
OPEN DETONATION TREATMENT UNIT
HOLLOMAN AIR FORCE BASE, EPA ID # NM6572124422
HWB-HAFB-015-001**

Dear Ms. Rothhaupt:

The New Mexico Environment Department (NMED) has reviewed the Holloman Air Force Base (HAFB, Applicant) February 26, 2015, permit renewal application (Application) for the Open Detonation Treatment Unit (OD Unit) for technical completeness.

Pursuant to its authority under the New Mexico Hazardous Waste Act, N.M.S.A. 74-4-1 et seq., and promulgated regulations thereof, NMED has determined that the Application is deficient. This Disapproval identifies the deficiencies that the Applicant must address before the Application can be further evaluated by the NMED. The Applicant must respond to this Disapproval in writing by providing replacement pages with, as appropriate, corrected, new, or augmented information that can be incorporated into the Application.

1. **ATTACHMENT A, Section A.1, GENERAL DESCRIPTION, Page 3 of 20, fourth paragraph:**

   a) Provide the total weight of waste munitions (including casings) that were treated at the OD Unit during the lifetime of the unit, which means from the first time wastes were treated through March 2011, when treatment ceased.

b) Attachment (B) is titled "Waste Analysis"; Attachment A provides the description of the OD Unit. All text in Section B.1 (Facility Description), which contains a description of the Facility, must be moved from Attachment B to Attachment A.

c) Explain how loading and unloading of hazardous waste at the OD Unit is conducted, and whether these procedures are performed manually and/or with equipment, such as forklifts.

2. **Attachment A, Page 8 of 20, Section A.3.2, "FLOODPLAIN STANDARD", and Section A.4, "TOPOGRAPHIC MAPS":** ***The FEMA floodplain map included as Figure A-5 shows that the OD Unit is not located within the 100-year floodplain…"***

1. Figure A-5 does not satisfy the regulatory requirements of 20.4.1.900 NMAC incorporating 40 CFR 270.14(b)(19), which specify the features that must be shown on a topographic map of a hazardous waste management facility.

   In order to meet the regulatory requirements, the Applicant must provide a topographic map of the OD Unit showing the features listed below, as applicable, which occur within a distance of 1,000 feet from the OD Unit. The map must be at a scale of 1 inch equal to not more than 200 feet. Topographic contours must also be shown on the map. The contour interval must clearly show the pattern of surface water flow in the vicinity of and from the OD Unit. The map must also clearly show:

   a. Map title, orientation (north arrow), and date;
   b. Surface-waters, including intermittent streams;
   c. Wind rose diagram placed on the topographic map in a manner that does not obscure map details or included as a separate figure in the Application. The wind rose must show prevailing wind-speed and direction;
   d. The boundaries of the OD Unit;
   e. Access control features (such as fences and gates);
   f. Buildings, tanks and other areas and structures (such as recreation areas, runoff control systems, access and internal roads, storm, sanitary, and process sewage systems, loading and unloading areas, fire control facilities);
   g. Barriers for drainage or flood control;
   h. Horizontal bar scale, in addition to a relational scale (e.g., 1inch = 200 feet).

3. Figure A-5 does not contain enough information to equate it to 100-year flood plain map. Further, text on the map and in the legend is not always legible. Thus, the map is unacceptable. Moreover, the hundred-year flood plain is not shown clearly on the map, as required by 20.4.1.900 incorporating 40 CFR 270.14(b)(11)(iii).

Revise Figure A-5 to clearly show the 100-year flood plain. In addition, ensure that all text on the revised Figure A-5 is legible.

4. **Attachment A, Section A.4, Page 12 of 20, "*Surrounding Land Uses*", and Page 19 of 20, Figure A-11**

Figure A-11 does not illustrate the land use information requirements of 20.4.1.900 NMAC incorporating 40 CFR § 270.14(b)(19)(iv). It only shows distances from the OD Unit to public highways and HAFB buildings, which does not adequately convey land use surrounding the OD Unit.

Therefore, the Applicant must provide a revised Figure A-11 that clearly shows the land use features listed under the third bullet of page 12 of 20. Include, as applicable, land uses such as residential, commercial, agricultural, or recreational.

5. **Section A.5, Page 20 of 20, "Holloman AFB RCRA Sites" map, and the next map, "Holloman AFB Monitoring Wells"**

The above referenced maps are not numbered figures. Number the map opposite page 20 of 20 in Attachment A, and for clarity revise the title of the map from "Holloman AFB RCRA Sites" to "Holloman AFB RCRA Corrective Action Sites". Additionally, number all figures in the Application.

6. **"INSPECTION SCHEDULE", Attachment C, Page 2 of 12, Section C.1.1, "*Types of Problems*".**

Although the inspection schedule generally lists some of the items that the Applicant will inspect, it is incomplete. Also the frequency of inspection is not provided. Provide additional information in the Application in Table C-1 to include the frequency of inspection, and inspection criteria regarding potential problems that may be identified during an inspection of, but not limited to, 1) safety and emergency equipment, communication and alarm systems, decontamination equipment; and 2) operational and structural equipment. Provide a table or tables in a format similar to the example below, and meet all applicable requirements at 20.4.1.900 NMAC incorporating 40 CFR § 270.14(b)(5) and 20.4.1.500 NMAC incorporating 40 CFR § 264.602and 40 CFR § 264.15.

Note that not all inspection parameters specific to the OD Unit are listed in the example table below, and some would not apply to the OD Unit (e.g. storage area floor). The example table is provided to show format and examples of some inspection parameters, criteria, and frequencies.

ITEM OR PARAMETER	INSPECTION CRITERIA	INSPECTION FREQUENCY
Safety And Emergency Equipment		
Eye wash / shower	Operational, accessible, in good condition	Monthly
Spill control/cleanup items, (mops, brooms, and/or shovels).	Present, and in good condition	Monthly
Operating And Structural Equipment		
Storage area floor	Clean, no spills, cracks, or excessive wear	Weekly
Security Devices		
Warning signs	Present, legible, and in good condition	Monthly
Fence/gates/locks	Present and in good condition	Monthly

7. **Attachment C, Page 4 of 12 through Page 5 of 12, "Exhibit C-1", *"Inspection Schedule and Checklist"*.**

Explain why the Exhibit is called the "11,900-lb Open Detonation Range Checklist". NMED recommends that "Exhibit C-1" be changed to 'Table C-1'. Similarly, Exhibit C-2 should be changed to read, Table C-2. Also explain why Exhibit C-2 also contains "11,900 NEW". NMED is not aware of any 11,900 pound OD Unit. For consistency with the rest of the Application, replace that amount with 20,000 lb., if the tables in Exhibits C-1 and C-2 are meant for the 20,000 pound OD Unit.

8. **Attachment D, PERSONNEL TRAINING, Page 2 of 11, Table D.1, "Personnel Training Schedule for HAFB OD Unit", and Page 4 of 11, Table D-2, "EOD Personnel."**

a. Define, and also explain, the difference between Skill Level 3, Skill Level 5, Skill Level 7, and Skill Level 9 as used in Tables D-1 and D-2. Also define and explain the difference between Apprentice Level, Journeyman Level 5, and Craftsman Level 7. Provide information on both the introductory and continuing training programs for OD Unit personnel. The job descriptions in Attachment D of the Application did not specify the types of emergency procedures, emergency equipment, and emergency systems that personnel handling hazardous waste must be familiar with, in order to meet the requirements of 20.4.1.500 NMAC incorporating 40 CFR § 264.16(a)(3). Provide this information.

b. Section D.1.4, first paragraph, last sentence, "*[t]he job descriptions include hazardous waste management job duties, required skills, qualifications, experience, and educational requirements.*" Provide the educational requirements that the Applicant considers appropriate for personnel to possess (based on their position classification) before allowing them to participate in hazardous waste management activities at the OD Unit, as required by 20.4.1.500 NMAC incorporating 40 CFR § 264.16(d)(2).

9. Attachment E, Page 3 of 19, Section E.1.4, "EMERGENCY COORDINATORS".

a. Attachment E does not contain a list of Emergency Coordinators, which is required by 20.4.1.500 NMAC incorporating 40 CFR § 264.52(d). The Applicant must provide a list of the names, addresses and office and home telephone numbers of all persons qualified to act as emergency coordinator. Where more than one person is listed, one must be designated as the primary emergency coordinator, and the others must be listed in the order in which they will assume responsibility as alternates.

b. **Attachment E, Page 13 of 19, Section E.2.4.10, "*Coordination Requirements*", first paragraph, last sentence, "*Some of the significant off-base response resources that can be incorporated, as needed, include the following.*"**

The Coordination Agreements with local authorities are required by 20.4.1.500 NMAC incorporating 40 CFR § 264.37, and are not discretionary as suggested in the quote above from Section E.2.4.10.

Describe what type of support agreements it has made with the emergency response authorities listed in Section E.2.4.10. Include a description of how the Applicant plans to familiarize the police, fire department, local hospitals, and White Sands Missile Range emergency response teams with the layout of the OD Unit. Further, describe how the Applicant will familiarize these organizations with the types and properties of hazardous waste managed at the OD Unit, and associated hazards and possible types of injuries or illnesses which could result from fires, explosions, or releases at the Unit.

c. Include also the places where Facility personnel would normally be working, entrances and roads inside the OD Unit, and evacuation routes. These requirements are specified at 20.4.1.500 NMAC incorporating 40 CFR § 264.37(a).

d. Provide a list of names of the specific agencies/organizations with which the Applicant has a memorandum of agreement (MOA) or memorandum of understanding (MOU) for emergency aid and fire protection. Provide a table listing the MOAs or MOU's for emergency response between the Applicant and outside organizations. Include the specific type of service to be provided by each outside organization.

e. **Implementation of Contingency Plan and Control Procedures:**

Section E.2.3 only lists the situations under which the Contingency Plan will be implemented, but does not state the actions to be taken by the Applicant in the event

of an emergency. Therefore, the Applicant must describe the actions Facility personnel will take in response to fires, explosions, or any unplanned or non-sudden release of hazardous waste or hazardous waste constituent to air, soil, or surface water, as required by 20.4.1.500 NMAC incorporating 40 CFR § 264.52(a).

f. **Post-Emergency Equipment Maintenance:** Provide a description of the decontamination procedures and other procedures that will be followed , after a response to an emergency to ensure the equipment listed in the Contingency Plan is fit for its intended use before operations are resumed, as would be required by 20.4.1.500 NMAC, incorporating 40 CFR § 264.56(h)(2). Include excerpts from HAFB Emergency Plan 10-2 that discuss in detail the maintenance process instead of only referring to that document.

g. **Attachment E, "Contingency Plan", Page 2 of 19, through Page 14 of 19.**

In order to avoid having duplicate information in various parts of Attachment E, please, combine the information on "Coordination Agreements" in Section E.1.3 with similar information contained under Section 2.4.10 of Attachment E. Similarly, combine Section E.1.4 with Section E.2.2 (Emergency Coordinators); Section E.1.5.1 with Section E.2.3 (Emergency Response Procedures), Section E.1.6 with Section 2.4.9 (Emergency Response Equipment), and Section E.1.7 with Section 2.4.12 (Post-Emergency Reports).

10. Attachment F, Section F.1.9.2, "BIENNIAL REPORT"

Revise the Application to include all requirements for biennial reports found at 20.4.1.500 NMAC incorporating 40 CFR § 264.75. Include information, which specifies that the Applicant will prepare and submit biennial reports to NMED by March 1 of each even numbered year. Also include information that the reports will cover activities during the previous calendar year and will provide:

a. The EPA identification number, name, and address of the Facility;

b. The calendar year covered by each report;

c. The EPA identification number of each hazardous waste generator from which the Facility received hazardous waste during the year;

d. A description of the quantity of each waste and the waste types the Facility received during the year;

11. **Attachment G, CLOSURE AND POST-CLOSURE PLAN, Section 1.0, "Introduction and Background", Page 1-1, paragraph 4**, "***In addition the 29 August 2011 Notice of Deficiency (NOD) on the Expanded Closure and Post-Closure Care Plan and 22 September 2011 Responses to comments…are included as Attachments 1-4 to this amended Expanded Closure Plan***."

    Attachments 1-4 are not included in Attachment G. Provide the Attachments.

12. **Attachment G, Page 2-3, Section 2.6.3, "Closure Sampling and Analysis", third paragraph from the bottom of the page, second sentence,** "***The amended SAP (Appendix A) details the 2012 methodology used for collecting and analyzing soil and groundwater samples, and the standards to which they were compared.***"

    a. The detailed information on the methods used for collecting and analyzing soil and groundwater samples, and the standards to which they are to be compared, referenced in Appendix A of the Application, are not provided in the Closure Plan attached to the Application. The Applicant was advised at a meeting conducted via teleconference (on January 9, 2015) to include a copy of the entire July 2014 OD Unit Closure Plan in the Application, and not just a summary of the document.

    Provide a revised Application that contains all information from Appendix A (Field Standard Operating Practices No.1 through No. 11).

    b. **Attachment G, Section, G.8.4, page 2-7,** "***If the risk assessment for the perchlorate and/or nitrite in groundwater identifies an unacceptable risk, the clean closure of OD20K cannot be achieved since contamination cannot be remediated during this event; therefore the site will move to a post-closure care permit***."

    Since groundwater sample results from the March 2015 event indicate that the OD Unit cannot be clean closed, a post-closure permit application must be submitted to NMED pursuant to 20.4.1.900 NMAC incorporating 40 CFR § 264.603.

    c. Due to the presence of contaminated groundwater beneath the OD Unit, closure activities must include an investigation to determine the nature and extent of the contamination. HAFB must fully characterize the groundwater contamination and the source(s) of the contamination. To accomplish characterization, submit in writing an amendment to the OD Unit's Closure Plan that describes in detail the work that will be done to complete characterization, and the basis for the proposed work. Furthermore, an amendment of a closure plan must meet 40 CFR 264.112(c), and because an amendment of a closure plan is a permit modification, the regulatory procedures and requirements for permit modifications must be followed, including as necessary the procedures for public notice and participation.

d. **Section 2.6.2, page 2-4, last bullet,** ***"If the DGI groundwater sampling results confirm the 2012 results, then five additional monitoring wells will be installed to a depth of approximately 50 feet the vicinity of MW02…"***

The information provided in Section 2.6.2 is not adequate to make decisions related to the proposed additional wells. For example, there is no information concerning well installation, survey data, water level measurements, sampling methods, lab reports, the depth at which the wells would be screened, or what materials would be used to construct the wells, or how the wells would be developed. Complete information must be provided in the response to this Disapproval, and also be incorporated into the Application.

e. **Incremental Sampling Procedures:** There is a "*Standard Operating Practices*" (SOP) soil sampling method included in the October 2014 Closure Plan under Appendix A, Section 1.5. The SOP states that "[i]ncremental Sampling Procedures" will be used to obtain estimates of the average concentration of analytes in soil samples from the sampling area.

There is no mention of incremental soil sampling in Attachment G (Closure Plan) of the Application. Incorporate Appendix A into the revised Application since it is referenced on most pages of the Closure Plan.

13. a. **Closure Performance Standards** specified at 20.4.1.500 NMAC incorporating 40 CFR § 264.111, must be addressed with respect to how they will be achieved for the OD Unit. Describe how closure will minimize the need for further maintenance, and will control, minimize, or eliminate the post-closure escape of hazardous waste, hazardous constituents, contaminated runoff, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere; and how closure will comply with the applicable closure requirements of 20.4.1.500 NMAC incorporating 40 CFR § 264.111(c).

b. **Amendment of the Closure Plan** must be described, should it become necessary, including the situations where an amendment is required by the regulations at 20.4.1.500 NMAC incorporating 40 CFR § 264.112(c)(2). Include a description in the revised Closure Plan.

c. **Maximum Waste Inventory**

Provide an estimate of the maximum inventory of hazardous wastes treated on-site over the active life of the Facility (see Comment 1(a) of this letter) provide detailed descriptions of the methods to be used during final closure, including, but not limited to, methods for removing, transporting, treating, storing, or disposing of all hazardous wastes, and identification of the types of the off-site waste

management units to be used, as applicable, as required by 20.4.1.500 NMAC incorporating 40 CFR § 264.112(b)(3).

d. **Disposal or Decontamination of Equipment, Structure, and Soil**

Pursuant to 20.4.1.500 NMAC incorporating 40 CFR § 264.112(a)(4), provide a detailed description of the steps needed to remove or decontaminate all hazardous waste residues, containment system components, equipment, structures, and, if necessary, soil during closure, including, but not limited to, procedures for cleaning or disposition of equipment and removing as necessary contaminated soil, methods for sampling and analysis of soil, and criteria for determining the extent of decontamination required to satisfy the closure performance standard specified at 20.4.1.500 NMAC incorporating 40 CFR § 264.111. Provide information on how, during closure of the OD Unit, the Applicant will remove or decontaminate equipment, structures, and soils, rather than merely refer to Attachment F of the current operating permit.

Indicate how it will be demonstrated that any hazardous waste constituents (i.e., the constituents listed in Appendix VIII in 40 CFR Part 261 and Appendix IX in 40 CFR Part 264), which will remain in environmental media when the Unit is closed, will not pose an unacceptable risk to human health or the environment.

e. **Investigation Derived Waste**

This topic was not addressed in the Closure Plan. Provide a description of how the Applicant plans to manage investigation derived waste. Include a description of how waste from drilling activities, soil sampling, groundwater sampling, used personal protective equipment, and wastewater from decontamination efforts will be managed.

14. **Attachment H, SAMPLING AND ANALYSIS PLAN, Page 3-3, Groundwater, Section 3.2.2.2, third sentence**, "***If the data Gap Investigation Groundwater sampling results confirm the 2012 results, then five additional monitoring wells will be installed in the vicinity of monitoring well Holloman AFB-EOD-MW02 (Figure 8, Additional Groundwater Monitoring Wells Locations OD20K).***"

Figure 8 of the Closure Plan shows the monitoring well locations as being outside the OD Unit peripheral fence (i.e., for HAFB/EOD-MW02 through HAFB/EOD-MW03). The wells should all be located inside the fence.

Revise the map showing the correct proposed monitoring well locations.

15. **Final Direction**

The Applicant must submit the information, including a revised Application, required by this Disapproval in the form of two paper copies and two CDs or DVDs containing electronic files compatible with Microsoft Word™, indicating added information in highlighted or underlined text, and deleted information in redline-strike-out text. Furthermore, in order to facilitate review of the responses, provide a table cross-referencing each of NMED's comments with the Applicant's responses and where the appropriate information has been incorporated into the Application. The Applicant must submit the required information no later than **April 1, 2016**.

If you have any questions please contact Mr. Cornelius Amindyas of my staff at (505) 222-9543 or at the address indicated on the letterhead of this correspondence.

Sincerely,

John E. Kieling
Chief
Hazardous Waste Bureau

cc: D. Cobrain, HWB NMED
W. Moats, HWB NMED
C. Amindyas, HWB NMED
L. King, Chief, EPA Region VI (6PD-N)

File: HAFB 2015 and Reading

HOLLOMAN AIR FORCE BASE RESPONSE TO NMED'S NOTICE OF DISAPPROVAL:
PERMIT RENEWAL APPLICATION OPEN DETONATION TREATMENT UNIT HOLLOMAN AIR FORCE BASE
1 April 2016

Comment #	Section/ Page	Paragraph/ Line	NMED Notice of Disapproval	Holloman AFB Response
1a.	Section A.1 General Description, Page 3	Paragraph 4	Provide the total weight of waste munitions (including casings) that were treated at the OD Unit during the lifetime of the unit, which means from the first time wastes were treated through March 2011, when treatment ceased.	The fourth paragraph of Section A.1, General Description, page 3, provides the total actual amount of net explosive weight (NEW) and an estimated amount of casing weight that was treated during the lifetime of the 20,000 OD Unit through March 2011.
1b.	Section A.1 General Description Page 3, Section B.1 and B.1.1 Facility Description, Page 5	General Description and Facility Description	Attachment (B) is titled "Waste Analysis"; Attachment A provides the description of the OD Unit. All text in Section B.1 (Facility Description), which contains a description of the Facility, must be moved from Attachment B to Attachment A.	The facility description of the 20,000-Pound OD Unit on page 5 of Attachment B is almost identical the General Description of Section A.1 on page 3 of Attachment A. To clarify, Subsection A.1.1 Description of the 20,000-Pound OD Unit was added on page 3 of Attachment A to differentiate between the General Description information specific to the 20,000-Pound OD Unit facility. The content of the "Waste Analysis Plan" follows the EPA guidance as described on page one of Attachment B. It is organized to address the six major elements recommended in the guidance. Since this information helps to define the WAP and is already contained in Attachment A, it was not removed from Attachment B.
1c.	Section A.1 Page 3	General Description and Facility Description	Explain how loading and unloading of hazardous waste at the OD Unit is conducted, and whether these procedures are performed manually and/or with equipment, such as forklifts.	Discussion was included in the second paragraph of pages 3 and 4 of Section A.1.1 to explain how loading and unloading of hazardous waste is conducted at the 20,000-Pound OD Unit. Loading and unloading procedures of hazardous waste at the OD Unit are also outlined in Section F.1.1 of Attachment F.
2.1.	Sections A.3.2 & A.4, Pages 8 & 11	Floodplain Standard and Topographic Maps, Figure A-5	Figure A-5 does not satisfy the regulatory requirements of 20.4.1.900 incorporating 40 CFR § 270.14(b) (19), which specify the features that must be shown on a topographic map of a hazardous waste management facility. In order to meet the regulatory requirements, the Applicant must provide a topographic map of the OD Unit showing the features listed below, as applicable, which occur within a distance of 1,000 feet from the OD Unit. The map must be at a scale of 1 inch equal to not more than 200 feet. Topographic contours must also be shown on the map. The contour interval must clearly show the pattern of surface water flow in the vicinity of and from the OD Unit. The map must clearly show: a. Map title, orientation (north arrow), and date;	A topographic map has been prepared for submittal (Figure A-5, page 11) to include the applicable features required for a topographic map of the 20,000-Pound OD Unit facility to satisfy the regulatory requirements of 20.4.1.900 incorporating 40 CFR § 270.14(b) (19). The topographic map shows a distance of 1000 feet around the facility at a scale of 1 inch equal to not more than 200 feet. The contours shown on the map will be at a sufficient interval to clearly show the pattern of surface water flow in the vicinity of and from each operational unit of the facility, and the location of the 20,000-Pound OD Unit. The map shows the applicable features listed: Map title, orientation (north arrow), and date; Surface-waters, including intermittent streams; The boundaries of the OD Unit; Access control features (such as fences and gates);

			b. Surface-waters, including intermittent streams; c. Wind rose diagram placed on the topographic map in a manner that does not obscure map details or included as a separate figure in the Application. The wind rose must show prevailing wind-speed and direction; d. The boundaries of the OD Unit; e. Access control features (such as fences and gates); f. Buildings, tanks and other areas and structures (such as recreation areas, runoff control systems, access and internal roads, storm, sanitary, and process sewage systems, loading and unloading areas, fire control facilities); g. Barriers for drainage or flood control; h. Horizontal bar scale, in addition to a relational scale (e.g., 1inch = 200 feet)	Barriers for drainage or flood control; and Horizontal bar scale, in addition to a relational scale (e.g., 1inch = 200 feet). The Wind Rose diagram was removed from the figure so as not to obscure map details. Wind rose diagrams, included as separate figures (Figures A-6, A-7, A-8, A-9, A-10, pages 14 – 18) show the prevailing wind-speed and direction. To account for the removal of the wind rose on Figure A-5, text was revised in Section A.4 on page 12, bullet item two to remove reference to a combined wind rose. The combined vector and average wind speed from Figures A-6 through A-10 are listed.
3.	Sections A.3.2 & A.4, Pages 8 & 11	Floodplain Standard and Topographic Maps, Figure A-5	Figure A-5 does not contain enough information to equate it to 100-year flood plain map. Further, text on the map and in the legend is not always legible. Thus, the map is unacceptable. Moreover, the hundred-year flood plain is not shown clearly on the map, as required by 20.4.1.900 incorporating 40 CFR § 270.14(b)(11)(iii). Revise Figure A-5 to clearly show the 100-year flood plain. In addition, ensure that all text on the revised Figure A-5 is legible.	100-year floodplain information was updated on Figure A-5, page 11, to clearly show the hundred-year flood plain on the map as required by 20.4.1.900 incorporating 40 CFR § 270.14(b)(11)(iii). All text is legible on the revised Figure A-5.
4.	Section A.4, Pages 12 & 19	Surrounding Land Uses Figure A-11	Figure A-11 does not illustrate the land use information requirements of 20.4.1.900 NMAC incorporating 40 CFR § 270.14(b) (19) (iv). It only shows distances from the OD Unit to public highways and HAFB buildings, which does not adequately convey land use surrounding the OD Unit. Therefore, the Applicant must provide a revised Figure A-11 that clearly shows the land use features listed under the third bullet of page 12 of 20. Include, as applicable, land uses such as residential, commercial, agricultural, or recreational.	Figure A-11 has been revised to illustrate the information requirements of 20.4.1.900 NMAC incorporating 40 CFR § 270.14(b) (19) (iv). It shows land uses such as residential, commercial, agricultural, and other land uses. Since the figure was revised, the description in the third bullet of page 12 has also been updated to remove language describing the old figure. Language describing a storage facility 0.75 miles from the 20,000-Pound OD Unit was removed. It was removed from the third bullet and eighth bullet on page 12 of the application. This facility no longer exists.

Response to Comments (continued)

Comment #	Section/ Page	Paragraph/ Line	NMED Notice of Disapproval	Holloman AFB Response
5.	Section A.5, Pages 21 & 22	Inserts Holloman AFB RCRA Corrective Action Sites and Holloman AFB Monitoring Wells maps	*"Holloman AFB RCRA Sites" map, and the next map, "Holloman AFB Monitoring Wells"* The above referenced maps are not numbered figures. Number the map opposite page 20 of 20 in Attachment A, and for clarity revise the title of the map from "Holloman AFB RCRA Sites" to "Holloman AFB RCRA Corrective Action Sites". Additionally, number all figures in the Application.	For clarity the title of the map *"Holloman AFB RCRA Sites"* was revised to *"Holloman AFB RCRA Corrective Action Sites"* and numbered Figure A-12. The following map, *"Holloman AFB Monitoring Wells"* was numbered Figure A-13. The two maps were added in the List of Figures and the List of Inserts in the Table of Contents of the permit renewal application. The last paragraph of Page 9 of Section A.4 was updated with the figure numbers. All figures within the application are appropriately numbered.
7.	Section C.1, Pages 4 & 5	Exhibit C-1, Inspection Schedule and Checklist	Explain why the Exhibit is called the "11,900-lb Open Detonation Range Checklist". NMED recommends that "Exhibit C-1" be changed to 'Table C-1'. Similarly, Exhibit C-2 should be changed to read, Table C-2. Also explain why Exhibit C-2 also contains "11,900 NEW". NMED is not aware of any 11,900 pound OD Unit. For consistency with the rest of the Application, replace that amount with 20,000 lb., if the tables in Exhibits C-1 and C-2 are meant for the 20,000 pound OD Unit.	The Department of Defense (DoD) Explosives Safety Board (ESB) memorandum shown in Exhibit B of Attachment B, states that the maximum NEW treated at the 20,000-Pound OD Unit is 11,900-lbs. For this reason the Exhibit C-1 and Exhibit C-2 listed 11,900-lb in their schedule and checklist titles. For consistency with the rest of the application the amount has been replaced with 20,000 lb. References in the current documentation can be changed from 11,900-lb to 20,000-lb, however, published documents utilizing the 11,900-lb designation are unable to be changed. As stated in Section C.1, page 2 of Attachment C, Exhibit C-1 and Exhibit C-2 presents the inspection schedules and checklists for inspecting safety and emergency equipment, security devices, treatment zones including loading/unloading areas, clear zone/general areas, firebreak, roads, structural equipment, communications equipment, mobile equipment, and range areas in accordance with 20.4.1.500 NMAC incorporating 40 CFR § §264.15(b)(1) and (2). Exhibits C-1 and C-2 have been changed to Table C-2 and Table C-3 on pages 4 and 6 of Attachment C. References in the text to Exhibits C-1 and C-2 have been updated to Tables C-2 and C-3. The soil sampling point of contact (POC) has changed since the checklists listed in Table C-3 were created; however, since the site is no longer in use, no updated checklists exist. Therefore the POC that was listed has been removed from the checklists in Table C-3.

Response to Comments (continued)

Comment #	Section/ Page	Paragraph/ Line	NMED Notice of Disapproval	Holloman AFB Response
8.a.	Sections D.1 & D.1.4, Pages 2 & 4	Table D.1, Personnel Training Schedule for HAFB OD Unit and Table D-2, EOD Personnel	Define, and also explain, the difference between Skill Level 3, Skill Level 5, Skill Level 7, and Skill Level 9 as used in Tables D-1 and D-2. Also define and explain the difference between Apprentice Level, Journeyman Level 5, and Craftsman Level 7. Provide information on both the introductory and continuing training programs for OD Unit personnel. The job descriptions in Attachment D of the Application did not specify the types of emergency procedures, emergency equipment, and emergency systems that personnel handling hazardous waste must be familiar with, in order to meet the requirements of 20.4.1.500 NMAC incorporating 40 CFR § 264.16(a)(3). Provide this information.	Job titles Apprentice, Journeyman, Craftsman, and Flight Chief/ Supervisor correspond to Skill Level 3, Skill Level 5, Skill Level 7, and Skill Level 9, respectively and are defined in Attachment D, Section D.1, page 2 as used in Tables D-1 and D-2. For consistency the Job Title for "Flight Chief "was changed to "Flight Chief/Supervisor Skill Level 9" in Table D-1, page 2. The descriptions define and explain the differences between Apprentice Level, Journeyman Level 5, and Craftsman Level 7, and Flight Chief/ Supervisor Level 9. The types of activities that each skill level is qualified to perform at the OD Unit are discussed on page 2. Activities are included in Section D.1.2 to satisfy the requirements of 20.4.1.500 NMAC incorporating 40 CFR § 264.16(a)(3).
8.b.	Section D.1.4, Page 4	Last sentence of Paragraph 1	Provide the educational requirements that the Applicant considers appropriate for personnel to possess (based on their position classification) before allowing them to participate in hazardous waste management activities at the OD Unit, as required by 20.4.1.500 NMAC incorporating 40 CFR § 264.16(d)(2).	The educational requirements that are appropriate for personnel to possess (based on their position classification) allowing them to participate in hazardous waste management activities at the OD Unit are listed in the Job and Skill level descriptions that were added to Section D.1, page 2, of Attachment D as required by 20.4.1.500 NMAC incorporating 40 CFR § 264.16(d)(2). Language referencing Section D.1 job descriptions for educational requirements for each EOD job title descriptions is included in the last sentence of Paragraph 1 of Section D.1.4.
9.a.	Section E.1.4, Page 3	EMERGENCY COORDINATORS	Attachment E does not contain a list of Emergency Coordinators, which is required by 20.4.1.500 NMAC incorporating 40 CFR § 264.52(d). The Applicant must provide a list of the names, addresses and office and home telephone numbers of all persons qualified to act as emergency coordinator. Where more than one person is listed, one must be designated as the primary emergency coordinator, and the others must be listed in the order in which they will assume responsibility as alternates.	The 49th Mission Support Commander and the Base Civil Engineer act as the base wide emergency coordinators for Holloman Air Force Base (AFB) as provided in Section E.1.4 on page 4 (incorporating Section E.2.2 per NOD comment 9.g.) Since the Holloman AFB's RCRA permit covers all hazardous waste activities conducted on Base, the primary and alternate emergency coordinators for the 90-Day Hazardous Waste Accumulation Site (HWAS) have also been provided in Table E-1. The list provides the names, addresses, office and home telephone numbers of all persons qualified to act as emergency coordinator as required by 20.4.1.500 NMAC incorporating 40 CFR § 264.52(d) to be added to the Department Records.

Response to Comments (continued)

Comment #	Section/ Page	Paragraph/ Line	NMED Notice of Disapproval	Holloman AFB Response
9.b.	Section E.2.4.10, Page 13	Coordination Requirements, Last sentence of Paragraph 1	The Coordination Agreements with local authorities are required by 20.4.1.500 NMAC incorporating 40 CFR § 264.37, and are not discretionary as suggested in the quote above from Section E.2.4.10. Describe what type of support agreements it has made with the emergency response authorities listed in Section E.2.4.10. Include a description of how the Applicant plans to familiarize the police, fire department, local hospitals, and White Sands Missile Range emergency response teams with the layout of the OD Unit. Further, describe how the Applicant will familiarize these organizations with the types and properties of hazardous waste managed at the OD Unit, and associated hazards and possible types of injuries or illnesses which could result from fires, explosions, or releases at the Unit.	Language suggesting that Coordination Agreements with local authorities is discretionary was removed from last sentence of Paragraph 1 of Section E.2.4.10, page 13. Pursuant to 20.4.1.500 NMAC §264.37, HAFB has agreements with various outside facilities. Section E.1.3, page 2, paragraph 2 discusses Mutual Support Agreements (MSAs) between HAFB and local communities for major accidents, hazardous materials incidents, fire protection and rescue, medical care and security/public safety. (These two sections were combined per NOD Comment 9.g.) The MSAs for the OD Unit are found in Exhibit E-1 on pages 16 through 19 of HAFB's permit application and are titled, "New Mexico & Holloman AFB Memorandum of Understanding For Off-Installation Emergency Actions Involving Explosives and Explosive Devices". Holloman AFB also has base wide agreements that are currently in place for other hazardous waste material activities and the 90-Day HWAS. These agreements are found in Exhibit E-2 of this permit application.
9.c.	Section E.2.4.10, Page 13		Include also the places where Facility personnel would normally be working, entrances and roads inside the OD Unit, and evacuation routes. These requirements are specified at 20.4.1.500 NMAC incorporating 40 CFR § 264.37(a).	Based on NOD Comment 9.g, Section E.2.4.10 was combined with Section E.1.3 to eliminate duplicate information. Text has been added to Section E.1.3.1, page 4 discussing where the facility personnel would normally be working, entrances and roads to the OD Unit, and evacuation routes to satisfy requirements of 20.4.1.500 NMAC incorporating 40 CFR § 264.37(a). Since the OD Unit is closed and remains "under lock and key" a figure (Figure E-1) was created to show where EOD personnel normally work in relation to the OD Unit. The location of Building 855 and it is located in the main base area of Holloman AFB.
9.d.	Section E.2.4.10, Page 13		Provide a list of names of the specific agencies/organizations with which the Applicant has a memorandum of agreement (MOA) or memorandum of understanding (MOU) for emergency aid and fire protection. Provide a table listing the MOAs or MOU's for emergency response between the Applicant and outside organizations. Include the specific type of service to be provided by each outside organization.	A list of names of specific agencies/ organization with which Holloman AFB has a MOA or MOU is listed in Section E.1.3.1. These agreements are also found in the Holloman AFB Comprehensive Emergency Management Plan 10-2 for the 90-Day HWAS Contingency Plan. The 90-Day HWAS Contingency Plan has been included as Exhibit E-2 of the permit application. Holloman AFB is currently working to update this 90-Day HWAS Contingency Plan.

Response to Comments (continued)

Comment #	Section/ Page	Paragraph/ Line	NMED Notice of Disapproval	Holloman AFB Response
9.e.	Section E.2.3, Page 7	Implementation of Contingency Plan and Control Procedures	Section E.2.3 only lists the situations under which the Contingency Plan will be implemented, but does not state the actions to be taken by the Applicant in the event of an emergency. Therefore, the Applicant must describe the actions Facility personnel will take in response to fires, explosions, or any unplanned or non-sudden release of hazardous waste or hazardous waste constituent to air, soil, or surface water, as required by 20.4.1.500 NMAC incorporating 40 CFR § 264.52(a).	Based on NOD comment 9.g, Sections of Attachment E were combined to eliminate duplicate information. Information from Section E.2.3 was combined with Section E.1.5.1. Section E.1.5.1 (page 6) discusses the emergency response procedures personnel will take in response to fires, explosions, or any unplanned or non-sudden release of hazardous waste or hazardous waste constituent to air, soil, or surface water, as required by 20.4.1.500 NMAC incorporating 40 CFR § 264.52(a). Section E.2.2 Emergency Response Procedures (formerly Section E.2.4) on page 14 discusses specific actions to be taken in the event of an emergency.
9.f.	Section E.2.4.7, Pages 10 & 11	Post-Emergency Equipment Maintenance	Provide a description of the decontamination procedures and other procedures that will be followed, after a response to an emergency to ensure the equipment listed in the Contingency Plan is fit for its intended use before operations are resumed, as would be required by 20.4.1.500 NMAC, incorporating 40 CFR § 264.56(h)(2). Include excerpts from HAFB Emergency Plan 10-2 that discuss in detail the maintenance process instead of only referring to that document.	Section E.2.4.7 is renamed to Section E.2.2.7 based on the comment response to comment 9.g. of the NOD. Reference to the HAFB Emergency Plan 10-2 is removed. Decontamination procedures for equipment following an emergency are discussed based on the Occupational Safety & Health Administration (OSHA) Standards.
9.g.	Sections E.1.3 and E.2.4.10; E.1.4 and E.2.2; E.1.5.1 and E.2.3; E.1.6 and E.2.4.9; E.1.7 and E.2.4.12 Pages 2 through 19	Contingency Plan	In order to avoid having duplicate information in various parts of Attachment E, please, combine the information on "Coordination Agreements" in Section E.1.3 with similar information contained under Section 2.4.10 of Attachment E. Similarly, combine Section E.1.4 with Section E.2.2 (Emergency Coordinators); Section E.l.5.1 with Section E.2.3 (Emergency Response Procedures), Section E.1.6 with Section 2.4.9 (Emergency Response Equipment), and Section E.l.7 with Section 2.4.12 (Post-Emergency Reports).	Similar information in Section E.1.3 was combined with similar information contained under Section 2.4.10 of Attachment E. E.1.4 information was combined with Section E.2.2; Section E.l.5.1 with Section E.2.3; Section E.1.6 with Section 2.4.9, and Section E.l.7 with Section 2.4.12.

Response to Comments (continued)

Comment #	Section/ Page	Paragraph/ Line	NMED Notice of Disapproval	Holloman AFB Response
10.	Section F.1.9.2, Page 17	BIENNIAL REPORT	Revise the Application to include all requirements for biennial reports found at 20.4.1.500 NMAC incorporating40CFR § 264.75. Include information, which specifies that the Applicant will prepare and submit biennial reports to NMED by March 1 of each even numbered year. Also include information that the reports will cover activities during the previous calendar year and will provide: a. The EPA identification number, name, and address of the Facility; b. The calendar year covered by each report; c. The EPA identification number of each hazardous waste generator from which the Facility received hazardous waste during the year; d. A description of the quantity of each waste and the waste types the Facility received during the year;	Section F.1.9.2 was updated on page 17 to include all of the requirements for biennial reports found at 20.4.1.500 NMAC incorporating 40CFR § 264.75.
11.			Refer to original Notice of Disapproval dated December 31, 2015 for comments 11 through 14.	FPM is providing this attachment material. Attachments 1-4 of Attachment G
12.				The following is a universal response to Comments 12, 13 and 14 which involve the closure plan for the 20,000 pound Open Detonation Unit (ODU 20K), regarding closure performance standards, closure plan activities and closure sampling and analysis. These comments are interrelated and were discussed during the January 28, 2016 teleconference between NMED and Holloman AFB. The result of the telecom was that Holloman: 1.) would develop and submit for NMED approval a work plan (sampling and analysis plan) for defining the extent of potential contamination at ODU. 2.) Holloman would then execute the work plan and investigation to determine the extent of impact by contaminants of concern (COCs). 3.) NMED would review and approve (i.e. investigation is complete) these data generated from the additional investigation. 4.) Holloman would then use the results to develop revised closure plans, standards for closure and any potential post closure care based upon a more comprehensive understanding of subsurface conditions at the site. No absolute deadlines for submittals were required by NMED for resolution of these comments as long as both parties are moving forward in a reasonable manner.

Response to Comments (continued)

Comment #	Section/ Page	Paragraph/ Line	NMED Notice of Disapproval	Holloman AFB Response
13.				See response to #12
14.				See response to #12
15.		Final Direction	The Applicant must submit the information, including a revised Application, required by this Disapproval in the form of two per copies and two CDs or DVDs containing electronic files compatible with Microsoft Word, indicating added information in highlighted or underlined text, and deleted information in redline-strike-out text. Furthermore, in order to facilitate review of the responses, provide a table cross-referencing each of NMED's comments with the Applicant's responses and where the appropriate information has been incorporated into the Application. The Applicant must submit the required information no later than April, 2016.	Two paper copies with two CDs containing electric files compatible with Microsoft Word of the corrected pages of the permit renewal application, related to the comments of the NOD are being submitted for Comments 1 through 10 of the NOD. Added information is highlighted and deleted information is redline-strike-out text. Holloman AFB is submitting a request for an extension for Comments 11 through 14 of the NOD as discussed in the meeting with Holloman AFB and NMED on 28 January 2016.

February 2015

RCRA PERMIT RENEWAL APPLICATION
PERMIT NO. NM6572124422,
20,000 POUND OPEN DETONATION (OD) TREATMENT UNIT
AND CORRECTIVE ACTION SITES
UNITED STATES DEPARTMENT OF THE AIR FORCE
HOLLOMAN AIR FORCE BASE, NEW MEXICO

Revision 1.0

Prepared for:
49 CES/CEIE
Holloman Air Force Base
New Mexico

Under Contract To:

U.S. Army Corps of Engineers
Albuquerque District
Albuquerque, New Mexico
Contract No. W912PP-13-P-0149
Task Order No. 1

US Army Corps of Engineers

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EXECUTIVE SUMMARY

Holloman Air Force Base (HAFB) is classified as a hazardous waste facility under the New Mexico Hazardous Waste Act (Chapter 74, Article 4 NMSA) and Subtitle C of the Resource Conservation and Recovery Act (RCRA). As required by 20.4.1.900 NMAC incorporating 40 CFR §270.28 and Hazardous Waste Facility Permit No. NM6572124422 Section I.E.3, HAFB is submitting this RCRA Part B permit renewal application for the corrective action activities at HAFB and Solid Waste Management Unit (SWMU) # 168, 20,000 Pound Open Detonation (OD) Treatment Unit. HAFB operates under Hazardous Waste Facility Permit No. NM6572124422 which was initially issued by the New Mexico Environment Department (NMED) in 1991 and was last renewed in 2004; the permit primarily regulated activities at Holloman AFB's Container Storage Unit (CSU) facility. On 5 January 2015, HAFB received notification of approval from the NMED for clean closure of the HAFB CSU under the existing permit's closure plan as required by 20.4.1.500 NMAC, incorporating 40 CFR §264.111-115.

Hazardous Waste Facility Permit No. NM6572124422 Section I.E.3 requires that HAFB submit a renewal application at least one hundred eighty (180) calendar days before the expiration date of the existing permit, due 24 August 2013. On 12 June 2013 HAFB submitted an extension request of one (1) year which was verbally approved by the NMED Hazardous Waste Bureau (HWB), for a due date of 24 August 2014. On 11 June 2014, in a meeting between HAFB and the NMED HWB to discuss the current permitting approach it became apparent that additional information and preparation was required for the submittal process. On 12 June 2014, HAFB requested an additional six (6) month extension for the submittal process of the permit renewal application. On July 18, 2014 the NMED approved the extension request. This application is being submitted in accordance with the due date of 24 February 2014.

On 7 January 2015 the NMED HWB provided further guidance for inclusion of the 20,000 Pound OD Treatment Unit into the RCRA Part B permit renewal application. Therefore, the permit application sections from the 20,000 Pound OD Treatment Unit application submitted in 2009 (incorporating NMED comments and corrections) and the updated amended and expanded Sampling and Analysis Plan (SAP) and Closure Plan submitted to the NMED on 22 October 2014 have been included in this permit application. This application primarily addresses 20,000 Pound OD Treatment Unit, SWMU # 168, and the corrective action activities identified for the active designated SWMU and Area of Concern (AOC) units at HAFB as required by 40 CFR § 264.101.

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LIST OF ACRONYMS

AAF	Army Air Field
AAQS	Ambient Air Quality Standards
ACC	Air Combat Command
ACM	Accelerated Corrective Measures
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AFI	Air Force Instruction
AFMAN	Air Force Manual
AFMC	Air Force Materiel Command
AFSC	Air Force Systems Command
AFSC	Air Force Specialty Code
AGE	Aerospace Ground Equipment
AVGAS	Aviation Gasoline
AISEB	Aerobic In-situ Enhanced Bioremediation
AK	Acceptable Knowledge
AMO	Authorized Military Official
AOC	Area of Concern
AQCR	Air Quality Control Regulations
AST	Aboveground storage tank
ASTM	American Society for Testing and Materials
BGS	Below Ground Surface
BHATE	Bhate Environmental Associates, Inc.
BLU	Bomb Loaded Units
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
BTOC	Below Top of Casing
BX	Base Exchange
CAC	Corrective Action Complete
CADs	Cartridge Actuated Devices
CAIS	Chemical Agent Identification Sets
CBT	Computer Based Training
CCD	Customer Concept Document
CDC	Career Development Course
CDW	Construction-Derived Waste
CES	Civil Engineering Squadron
CES/CEV	Civil Engineering Squadron/Combat Engineer Vehicle

CFR	Code of Federal Regulation
CFETP	Career Field Education Training Program
CMS	Corrective Measures Study
COC	Chain of Custody
COMSEC	Communications Security
COPC	Chemicals of Potential Concern
CRS	Component Repair Squadron
CRZ	Contamination Reduction Zone
CSU	Container Storage Unit
CY	Cubic Yards
DAC	Defense Ammunitions Center
DDA	Designated Disposition Authority
DERA	Defense Environmental Restoration Account
DLADS	Defense Logistics Agency Disposition Services
DoD	Department of Defense
DPE	Duel-Phase Extraction
DPT	Direct Push Technology
DQOs	Data Quality Objectives
DRO	Diesel range organics
DRMO	Defense Reutilization Marketing Office
EBASCO	Electric Bond and Share Company Services, Inc.
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
ERP	Environmental Restoration Program
ESA	Endangered Species Act
FEC	Foothills Engineering Consultants, Inc.
FEMA	Federal Agency Management Agency
FWENC	Foster Wheeler Environmental Corporation
FS	Feasibility Study
FT	Feet
GPD	Gallons per day
GPS	Global Positioning System
GRO	Gasoline Range Organics
GTI	Groundwater Technology, Inc.
HAFB	Holloman Air Force Base
HAZWOPER	Hazardous Waste Operations and Emergency Response
HE	High Explosive
HEI	High Explosive Incendiary
HGL	HydroGeoLogic, Inc.

HQ	Headquarters
HWB	Hazardous Waste Bureau
IAP	Initial Accumulation Point
ICM/CBU	Improve Conventional Munitions/Cluster Bomb Units
IRP	Installation Restoration Program
IWPMP	Industrial Wastewater Pretreatment Management Plan
JP-4	Jet Propulsion fuel, Type 4
KOP	Knowledge of Process
LCS	Laboratory Control Sample
LDR	Land Disposal Restrictions
LUC	Land Use Controls
LTM	Long –term monitoring
MC	Munitions Constituents
MCL	Maximum Contaminant Level
MD	Munitions Debris
MDL	Method Detection Limit
MEC	Munitions and Explosives of Concern
MIDAS	Munitions Items Disposition and Action System
MLRS	Multiple Launch Rocket System
MMR	Military Munitions Rule
MOGAS	Motor Gasoline/ Mobility Gasoline
MS/MSD	Matrix Spike/Matrix Spike Duplicate
MSAs	Mutual Support Agreements
MSDS	Material Safety Data Sheet
MSG	Mission Support Group
MSL	Mean Sea Level
NAAS	National Ambient Air Quality Standard
NAVSCOLEOD	Naval School Explosive Ordnance Disposal
NEW	Net Explosive Weight
NFA	No Further Action
NMAC	New Mexico Administrative Code
NMAQS	New Mexico Ambient Air Quality Standard
NMDGF	New Mexico Department of Game and Fish
NMED	New Mexico Environment Department
NMHHS	New Mexico Human Health Standard
NMWQCCR	New Mexico Water Quality Control Commission Regulations
NOA	Notice of Approval
NOD	Notice of Deficiency
NPS	National Park Service

OB	Open Burn
OBODM	Open Burn/Open Detonation Dispersion Model
OD	Open Detonation
OEL	Occupational Exposure Limits
OI	Operating Instructions
OPSEC	Operations Security
OSC	On-Site Coordinator
OSHA	Occupational Safety and Health Administration
OWS	Oil/Water Separator
PA	Preliminary Assessment
PADs	Propellant Actuated Devices
PAH	Polynuclear Aromatic Hydrocarbons
PARCC	Precision , Accuracy, Representativeness, Completeness, and Comparability
PCB	Polychlorinated Biphenyl
PCS	Petroleum-Contaminated Soils
PDI	Pre-Design Investigation
PK	Process Knowledge
PMR	Permit Modification Request
POL	Petroleum, Oil, and Lubricants
PPE	Personal Protective Equipment
PSH	Phase Separate Hydrocarbons
QA	Quality Assurance
QAPP	Quality Assurance Project Plans
QC	Quality Control
RA	Risk Assessment
RADIAN	Radian Corporation
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RPD	Relative Percent Difference
RSL	Regional Screening Level
RSO	Range Safety Officer
SAP	Sampling and Analysis Plan
SAR	SWMU Assessment Report
SCRAM	Support Center for Regulatory Air Models
SHAW	Shaw Environmental & Infrastructure, Inc.
SI	Site Investigation
SQ FT	Square feet

SOP	Standard Operating Procedures
SSFR	Site Specific Final Report
SSLs	Site Screening Levels
SVE	Soil Vapor Extraction
SVOCs	Semi Volatile Organic Compounds
SW	Solid Waste
SWMU	Solid Waste Management Unit
SWPPP	Storm Water Pollution Prevention Plan
TAL	Target Analyte List
TAPs	Toxic Air Pollutants
TCLP	Toxicity Characteristic Leaching Procedures
TDS	Total Dissolved Solids
TEL	Tetraethyl Lead
TCE	Trichloroethene
TO	Technical Order
TPH	Total Petroleum Hydrocarbons
TRPH	Total Recoverable Petroleum Hydrocarbons
TSD	Treatment, Storage and Disposal
UHCs	Underlying Hazardous Constituents
URS	URS Group Inc.
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USDA	U.S. Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
UTL	Upper Tolerance Limit
UTS	Universal Treatment Standard
UXO	Unexploded Ordnance
VCM	Voluntary Corrective Measures
VOCs	Volatile Organic Compounds
WAP	Waste Analysis Plan
WHA	Walk, Haydel & Associates
WMM	Waste Military Munitions
WOT	Waste Oil Tank
WSMR	White Sands Missile Range
WSNM	White Sands National Monument
WWTP	Waste Water Treatment Plant

PART B

RCRA PERMIT RENEWAL APPLICATION
PERMIT NO. NM6572124422,
20,000 POUND OPEN DETONATION (OD) TREATMENT UNIT
AND CORRECTIVE ACTION SITES
UNITED STATES DEPARTMENT OF THE AIR FORCE
HOLLOMAN AIR FORCE BASE,
OTERO COUNTY, NEW MEXICO

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ATTACHMENT A

FACILITY DESCRIPTION

HOLLOMAN AIR FORCE BASE
OPEN DETONATION (OD) TREATMENT UNIT

Permit No. NM6572124422

ATTACHMENT A
FACILITY DESCRIPTION

INTRODUCTION

The following information is provided in accordance with New Mexico Administrative Code (NMAC), Title 20, Chapter 4, Part 1, Subpart IX (20.4.1.900 NMAC) incorporating Title 40 Code of Federal Regulations (CFR) §270.14 (b)(1). A general description of the location of the subject OD Unit and site characteristics is included. Additions to the text in response to the Notice of Disapproval (NOD) are highlighted in yellow, deleted information is indicated in redline-strike-out text.

A.1 GENERAL DESCRIPTION [20.4.1.900 NMAC §270.14(b) (1)]

Holloman Air Force Base (HAFB) is located on approximately 59,743 acres of land in Otero County, south-central New Mexico, of which 52,411 acres are deemed main base Holloman and 7,332 acres are deemed Boles Wells Water System Annex. HAFB lands are situated in the northern Chihuahuan Desert in the region known as the Tularosa Basin that is bounded on the east and west by the Sacramento and San Andres Mountains respectively. HAFB is located adjacent to White Sands Missile Range (WSMR), and White Sands National Monument (WSNM) is located west of the Base. Regional water supplies are derived from Bonito Lake, located approximately 60 miles north of the base and the Boles, Douglas, and San Andres Well Fields located 14 miles to the southeast.

The nearest population center to HAFB is the city of Alamogordo, located approximately seven miles to the east. Regional metropolitan centers include El Paso, Texas, located 75 miles south-southwest, Las Cruces, New Mexico, located 65 miles to the southwest, and Albuquerque, New Mexico, located 210 miles north of the facility. The primary transportation route for the facility is Highway 70 that traverses the southern boundary of the base in a northeasterly direction. The general location of HAFB is depicted in Figure A-1.

HAFB was initiated as a temporary facility developed to provide gunnery and bomber training to aircrews during the Second World War. The Base mission was altered in the postwar years to the development of pilotless aircraft, guided missiles, and associated equipment. In the late 1950s the base was transferred to the Air Force Systems Command (AFSC) and designated as the Air Force Missile Development Center. On January 1, 1971, the base mission expanded to provide lead-in fighter training for the 479th Tactical Training Wing and its components.

Currently, HAFB hosts the Air Combat Command (ACC) 49th Wing, which includes pilot training, mobility support, and combat support operations. The primary Air Force Materiel Command (AFMC) component located at HAFB is the 46th Test Group, which is responsible for evaluation of propulsion and navigational systems for aircraft, space vehicles, and missiles. A variety of tenant organizations are assigned to HAFB, including the 4th Space Control Squadron and Detachment 4, the 50th Weather Squadron. A general layout of the facility is provided in Figure A-2. As a result of ACC readiness requirements and the 96th Test Group activities, a variety of ordnance, munitions, incendiaries, and propellants become waste because of exceedence of shelf-life, unanticipated deterioration, or failure to attain specifications that render the device non-serviceable. These waste explosives are considered characteristically hazardous under the Resource Conservation and Recovery Act (RCRA) due to reactivity (D003). Rocket motors exceeding 300 pounds are treated at the 20,000-Pound OD Unit that is subject to this permit. These units are regulated under 40 CFR §264.600, Subpart V.

The 20,000-Pound OD Unit is located at the northern boundary of HAFB, approximately 15 miles from the HAFB entrance. The OD Unit consists of a clear zone approximately 400 feet in diameter. It is located adjacent to the northern boundary of HAFB. The area to the north is part of the White Sands Missile Range. The OD Unit is 11.2 miles north of the WSNM and 15.9 miles from the closest recreational areas of WSNM. The eastern boundary of the HAFB/WSMR restricted area is approximately four miles east of the OD Unit. No human receptors are within this four mile area. There are a few rural residences six to seven miles east and seven to eight miles southeast and northeast of the OD Unit. The village of Tularosa is located nine to 10 miles to the northeast. The OD Unit is surrounded by a three-strand barbed wire fence with an overall height of four feet that defines the perimeter of the OD Unit. Warning signs in English, Spanish, German and Mescalero Apache are posted at key locations around the fence, and visible at a distance of 50 feet. The fence restricts unauthorized personnel and wild life from gaining access to the site.

The area surrounding the OD Unit was thoroughly surveyed for cultural resources by the University of New Mexico. The nearest potentially significant archaeological site (Laboratory of Anthropology number LA 67591) was identified approximately 300 meters southwest of the OD Unit. That site was excavated and reported in 1989 (Doleman, et al.) and the recovered materials are curated for future reference, which prevents the OD Unit from having any effect on those potentially significant cultural resources. No archaeological sites are in the area affected by use of the OD Unit.

No areas of specific ecological or natural environmental concern have been identified in the immediate area affected by the OD Unit. Tula pond, a man-modified natural spring, is approximately two miles north, and a population of gypsum adapted cottonwood trees (*Populus deltoides* ssp. *wislizeni*) is several miles to the southwest; neither is affected by the OD Unit. The Malone and Ritas Draws and the Lost River drainage are approximately 10 miles away from the OD Unit. These areas, classified as Essential Pupfish Habitat, are protected under the Cooperative Agreement for the Protection and Maintenance of White Sands Pupfish between the U.S. Army - WSMR, U.S. Air Force - HAFB, National Park Service - WSNM, U.S. Fish and Wildlife Service, and New Mexico Department of Game and Fish, but are not affected by the use of the OD Unit.

A.1.1 DESCRIPTION OF THE 20,000-POUND OD UNIT

The 20,000-Pound OD Unit derives its name from the relevant operating procedures for this treatment activity. The net explosive weight (NEW) of solid propellant rocket motors that are, and will be simultaneously treated in the trench is limited to 20,000 pounds per treatment event. This total does not include the mass of the casings, other associated containment devices, and detonating charges. Although the precise number of treatment occurrences during any year is variable, the maximum amount of NEW treated at the unit per calendar year is 420,000 pounds. The total weight of waste munitions (including casings) that have been treated at the 20,000-Pound OD Unit during the lifetime of the unit through March 2011, when treatment ceased, is 71,000 pounds (62,873 pounds actual NEW and 8,127 pounds estimated casing weight). More specific information on ordnance constituents~~, the OD Unit,~~ and operating procedures is provided in other attachments to this permit application.

Treatment, loading, and unloading of the wastes is accomplished according to the Automated Explosive Ordnance Disposal Publication System, T.O. 11A-1-42, T.O. 11A-1-60, AF Man 91-201 or manufacturer's disposal instructions within a 100-foot diameter area at the center of the clear zone. Loading and unloading activities are performed manually and/or with the appropriate

equipment, such as forklifts or other heavy equipment. AFMAN 91-201, paragraphs 8.27, 8.28 and 8.29, details the methods of loading and unloading and are also contained in Attachment F of this permit application. The waste is then treated by detonation. The force of the explosion often creates a depression in the ground, which is inspected to ensure that the waste has been completely destroyed. Unexploded ordnance (UXO) that may have been ejected from the depression is collected and returned to the depression and exploded again to treat the UXO. Casings and fragments that do not have UXO are collected and containerized. Additional detonations on the same day are performed at locations surrounding the first depression within the 100-foot diameter detonation area. When the detonation area is covered with depressions, a bulldozer or similar heavy equipment smoothes out the site, filling in the depressions if sampling is not required. During soil sampling, the last detonation depression is not filled in, nor is any dirt work conducted, until the soil samples have been collected. A berm, with a minimum height of 2 feet, exists at the south end of the OD Unit to prevent carryover of fragments towards the test track area.

The location of the OD Unit and its surrounding area relative to the main base is provided in Figure A-2. A drawing of the area, showing dimensions of the unit, is shown in Figure A-3.

A.2 TRAFFIC INFORMATION [20.4.1.900 NMAC §270.14(B) (10)]

Access to the 20,000-Pound OD Unit is restricted to explosive ordnance disposal (EOD) personnel and personnel with appropriate security clearance and identification or escorted visitors.

A.2.1 ROUTES OF TRAVEL AND TRAFFIC VOLUME

Access to the 20,000-Pound Unit is provided by a single paved road. A dirt road provides access from the paved road to the edge of the OD Unit. The detonation area is approximately one quarter mile from the paved road. Traffic along this route is restricted to official use by the EOD personnel during explosive operations, but may be accessed by personnel using the adjacent Test Track. As a result of these restrictions, the typical traffic volume and pattern consist of several vehicles that are in transit to or from the Test Track facility each day.

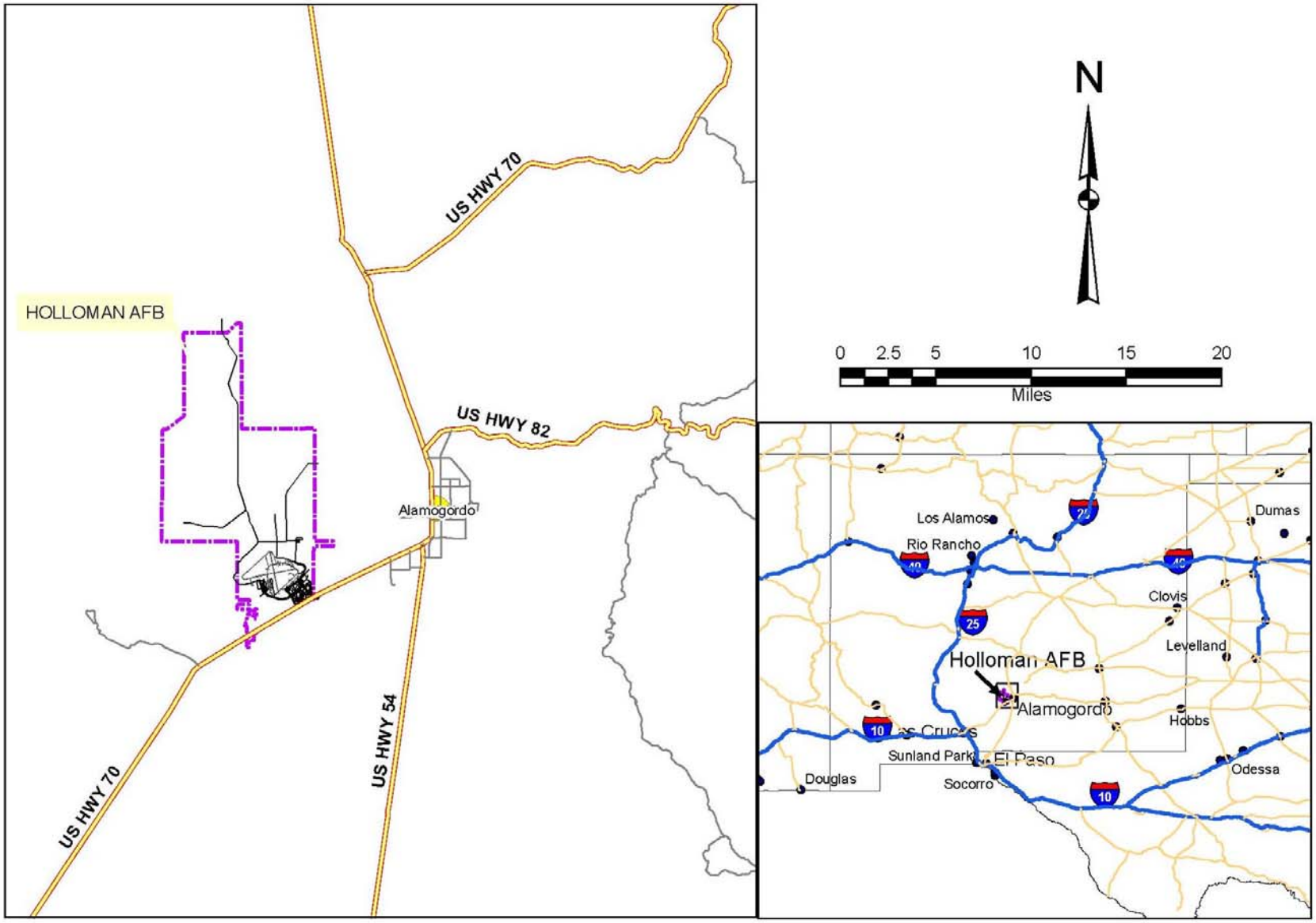
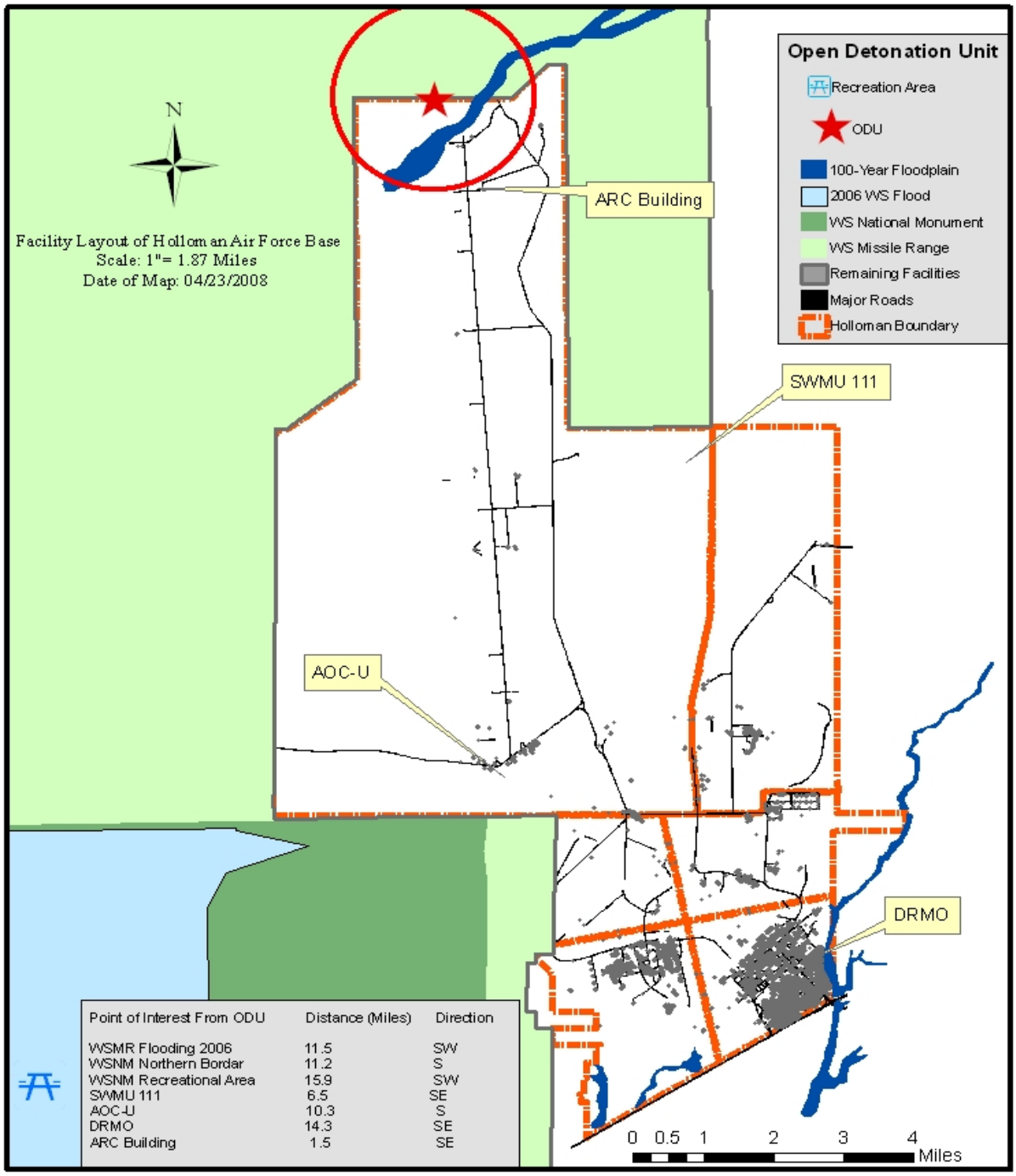


Figure A-1. General Location of Holloman Air Force Base



Point of Interest From ODU	Distance (Miles)	Direction
WSMR Flooding 2006	11.5	SW
WSNM Northern Bordar	11.2	S
WSNM Recreational Area	15.9	SW
SWMU 111	6.5	SE
AOC-U	10.3	S
DRMO	14.3	SE
ARC Building	1.5	SE

Figure A-2. Facility Layout of Holloman Air Force

Legend

- Corner Post
- Monitor Well
- Fence
- Access Road
- Gates

LOCATION	NORTHING	EASTING	ELEVATION (TOC)
Corner A	739220.600	1667601.396	
Corner B	739686.309	1667587.153	
Corner C	739642.699	1666969.582	
Corner D	739212.252	1667005.816	
mw01	739755.628	1667399.133	4116.426
mw02	739403.203	1667059.957	4118.063
mw03	739278.759	1667155.705	4115.428
mw04	739246.079	1667272.462	4114.884

1. GIS Data is NAD 1983 StatePlane New Mexico Central

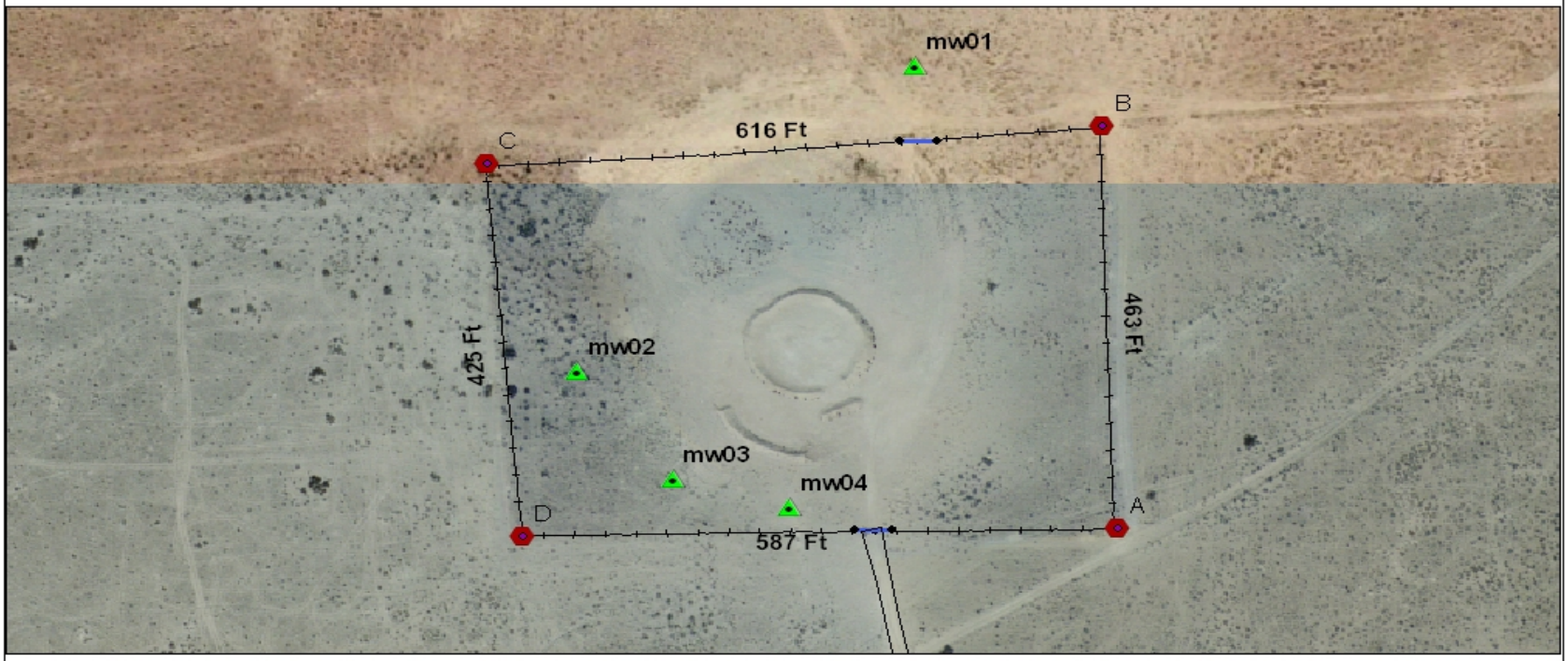


Figure A-3. Detailed Drawing of the 20,000-Pound Open Detonation Unit

A.2.2 ACCESS ROAD SURFACE AND LOAD BEARING CAPACITY

The only access road to the subject OD treatment unit is a paved surface. This surface is periodically maintained to prevent formation of holes, ditches, or other deformation that would increase the possibility of accidental detonation during transport.

The paved service road was graded and compacted to provide capacity for automobiles, trucks, and service vehicles. The maximum amount of waste moved per vehicle movement along the paved surface road is 40,000 pounds. This total weight includes the net explosive weight and the weight from inert casings, canisters, and other materials. See Figure A-4.

A.3 LOCATION INFORMATION [20.4.1.900 NMAC §270.14(b) (11)]

Information addressing the seismic standard and 100-year floodplain standard is presented below.

A.3.1 SEISMIC STANDARD [20.4.1.900 NMAC §§270.14(b) (11) (i and ii) and 20.4.1.500 NMAC §264.18(a)]

HAFB is an “existing” facility and is exempt from this requirement.

A.3.2 FLOODPLAIN STANDARD [20.4.1.900 NMAC §270.14(b) (11) (iii), (iv), and (v); §270.14(b) (19) (ii); and 20.4.1.500 NMAC §264.18(b)]

The FEMA floodplain map included as Figure A-5 shows that the OD Unit is not located within the 100-year floodplain which is defined in §264.18(b)(2)(i) as “any land area which is subject to a one percent or greater chance of flooding in any given year from any source."

The implications would be if the OD Unit was located in that plain, it must be designed, constructed, operated, and maintained to prevent washout of any hazardous waste by a 100-year flood. In 2006, the WSNM was closed to the public due to flooding; however, the OD Unit is located 11.2 miles from the northern boundary of the WSNM. The OD Unit is situated on relatively flat, basin-floor upland, approximately 1000 feet north of and 27 feet in elevation above the Allen Draw channel, is surrounded by a minimum 2 foot high berm, and therefore would not be subject to washout as defined in §264.18(b) (2) (ii) as “the movement of hazardous waste from the active portion of the facility as a result of flooding.” Typically, surface water from precipitation in the area of the OD Unit is either lost to evaporation, transpiration, and infiltration.

A.4 TOPOGRAPHIC MAPS [20.4.1.900 NMAC §270.14(b) (19)]

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-5. The American National Standards Institute size E ANSI E map depicts the OD Unit features, sub-surface flow direction beneath the site, terrain relief, surrounding geographic features, the WSMR and HAFB boundaries, and prevailing wind direction. Elevation contour intervals and scale per guidance are

1 meter (3.28 ft), with an absolute scale of 1:1,130 (1 inch equals 94 ft) respectively. Data indicates that the OD Unit itself and the majority of the surrounding area falls within FEMA flood designation zone X. This area is outside the 1-percent annual chance floodplain, or an area of 1% annual chance sheet flow flooding where average depths are less than 1 foot, or has 1% annual chance stream flooding where the contributing drainage area is less than 1 square mile, or is protected from the 1% annual chance flood by levees. No Base Flood Elevations or depths are shown within this zone (FEMA 2009). The nearest interment stream Allen Draw falls within a FEMA zone A. This area has 1% annual chance of flooding and a 26% chance of flooding over a 30 year time period. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones (FEMA 2009). All within map pertinent features are labeled accordingly, with off map points of interest listed indicating both direction and distance from the ODU.

Included as inserts at the end of Attachment A are two maps showing the locations of the active SWMUs/AOCs (Figure A-12) and monitoring wells (Figure A-13) at HAFB. Both maps also meet the general requirements of 20.4.1.900 NMAC §270.14(b) (19).

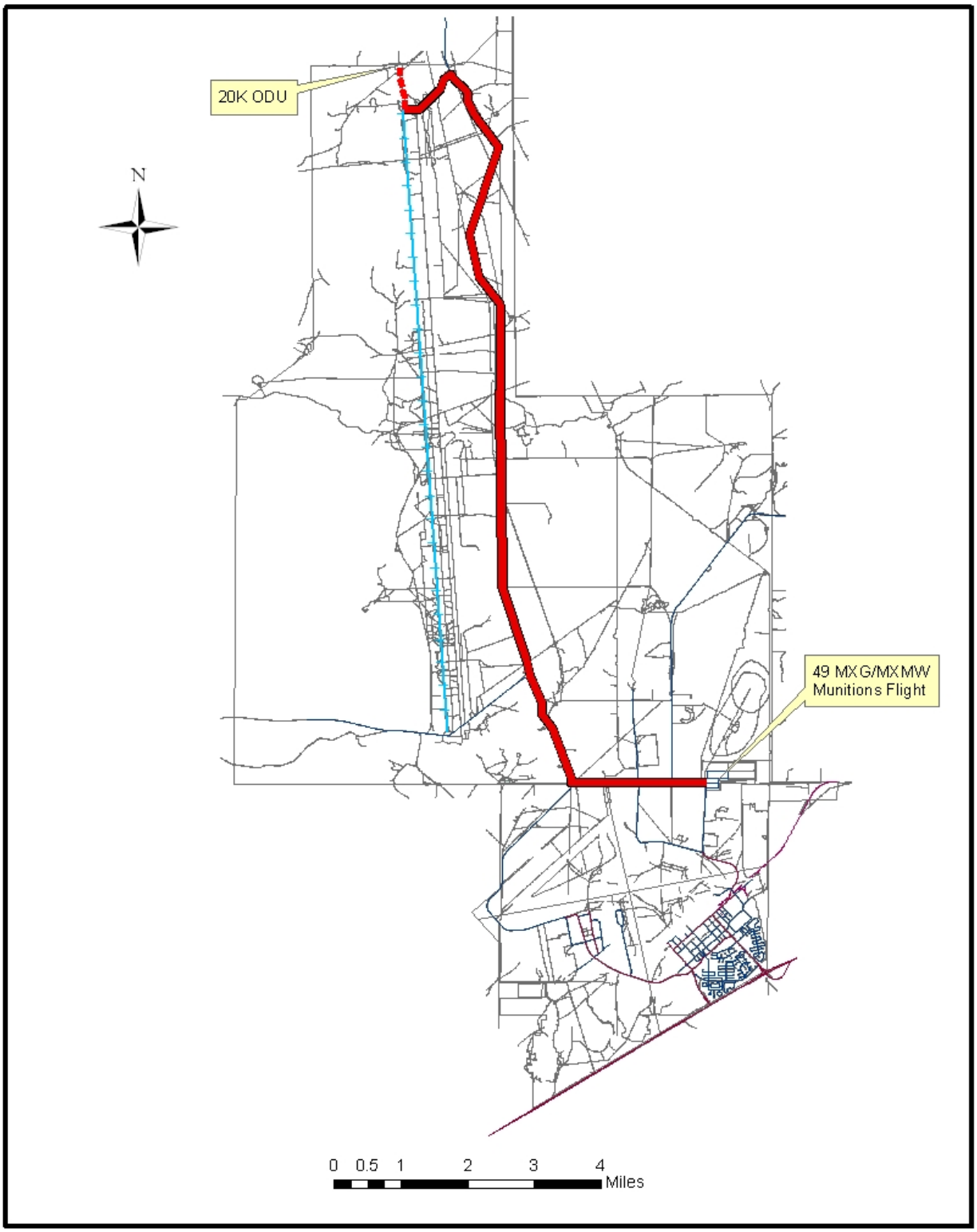


Figure A-4 Explosive Waste Hauling Route

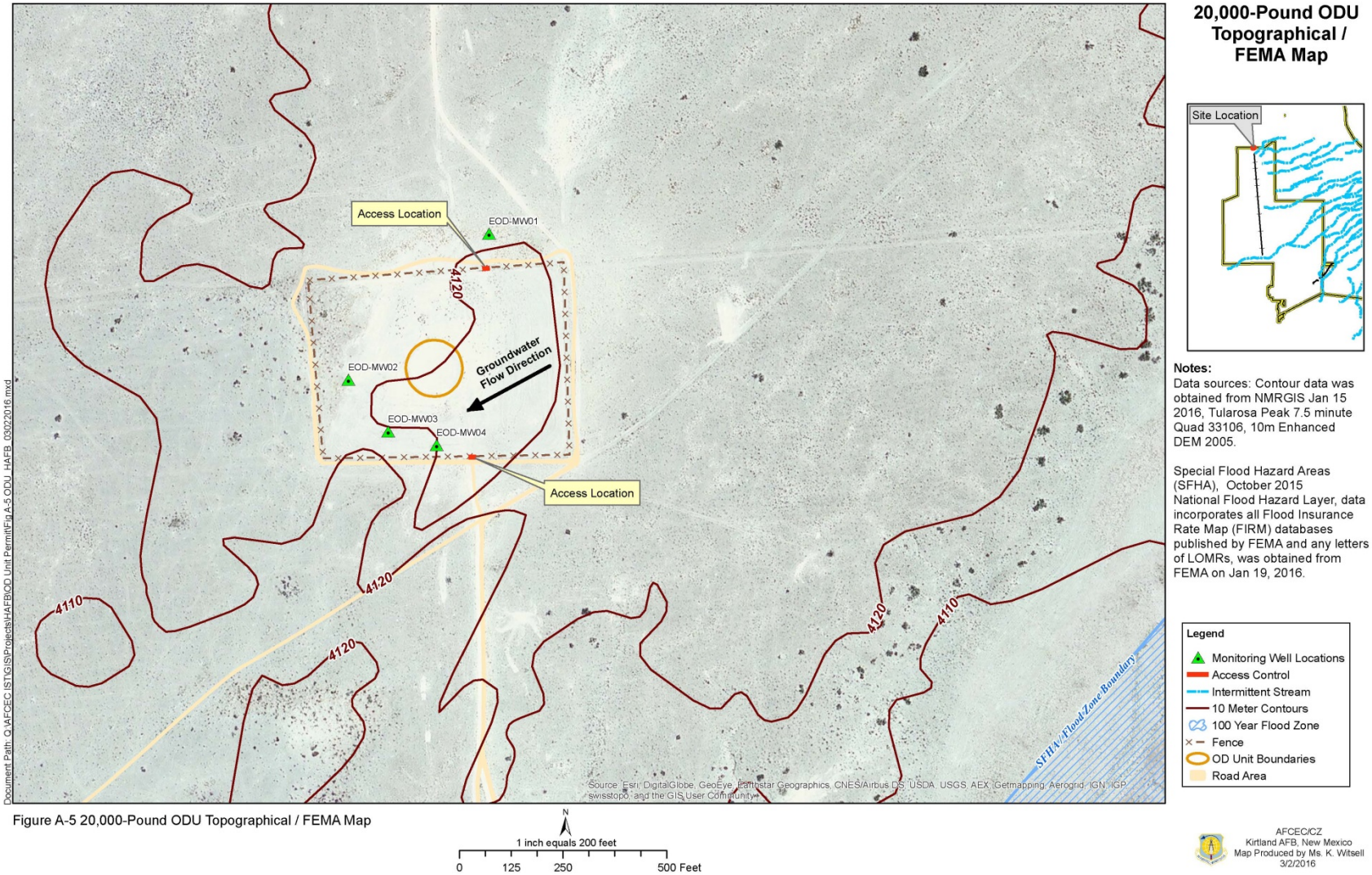


Figure A-5 20,000-Pound ODU Topographical / FEMA Map

Figure A-5 20,000-Pound ODU Topographic/FEMA Map

- Surface waters including intermittent streams (Figure A-5) – No surface water of constant flow conditions is located in the area, although arroyos that contain runoff are located in the vicinity of the unit.

- A wind rose (i.e., prevailing wind-speed and direction) – Wind roses for 2000 through 2005 are shown on Figures A-6 through A-10**.** ~~Figure A-5 shows a five year~~ Combined wind rose data from Figures A-6 through A-10 ~~depicting a resultant~~ would result in a vector from 259 degrees and an average wind speed of ~~18.76~~ 36.47 knots.

- Surrounding land uses (residential, commercial, agricultural, recreational) – ~~Due to the size of the installation, several insets are used to show the required features (Figure A-11)~~. The 20,000-Pound OD Unit is located on the northern boundary of HAFB. White Sands Missile Range lies to the north and west of the adjacent base boundaries. The unit is situated on undeveloped grassland near areas of barren land (dunes) and arroyos and is isolated from commercial and residential land uses. ~~The closest building (storage facility) off the OD Unit is approximately .75 mile from the OD Unit.~~ The distances to the nearest residential buildings is 13.8 miles, to a public roadway is 9.1 miles, and to a passenger railroad is 85 miles. Surrounding residential, commercial, agricultural, and other land uses are shown on Figure A-11.

- Orientation of the map (north arrow) – All maps included in the permit application show the orientation (north arrow).

- Legal boundaries of the Hazardous Waste Management facility site – The legal boundaries of HAFB are shown on Figure A-3**.**

- Access control (fences, gates) – All lands within HAFB boundaries are under the control of the U.S. Air Force. Thus, the unit is surrounded by access-controlled Federal lands for a distance of several miles in all directions.

- Injection and withdrawal wells both on-site and off-site – The location of the monitoring wells around the OD Unit are shown on Figure A-5.

- Buildings; treatment, storage, or disposal operations; or other structures (such as recreation areas, runoff control systems, access and internal roads, storm, sanitary, and process sewerage systems, loading and unloading areas, fire control facilities) – As indicated above, the area around the OD Unit is owned/controlled by the Federal government (Department of Defense). Figure A-2 shows the nearest point of interest, roads and structures. ~~The nearest facility (storage area) is approximately .75 miles from the OD Unit.~~

- Barriers for drainage or flood control – An earthen berm provides a barrier to prevent drainage from the area of the OD Unit. The OD Unit is not located within the 100-year floodplain, and barriers for flood control are not necessary.

- Location of operational units within the hazardous waste management facility site (Solid Waste Management Units [SWMUs] and Installation Restoration Program [IRP] site), where hazardous waste is (or will be) treated, stored, or disposed (include equipment

cleanup areas) – The location of the OD Unit and other operational units are shown on Figure A-2.

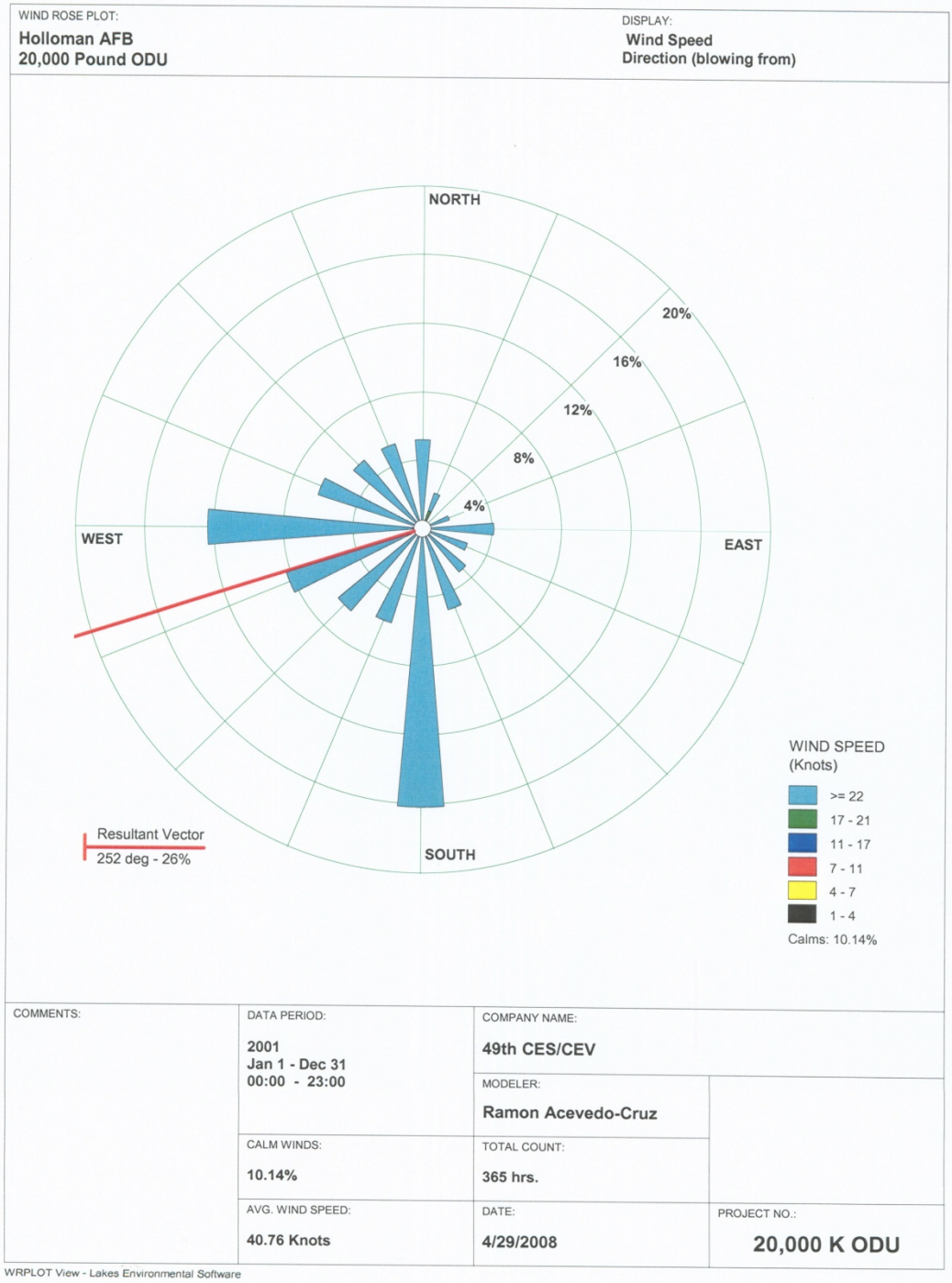


Figure A-6 Frequency (%) of Wind Speed by Direction – 2001

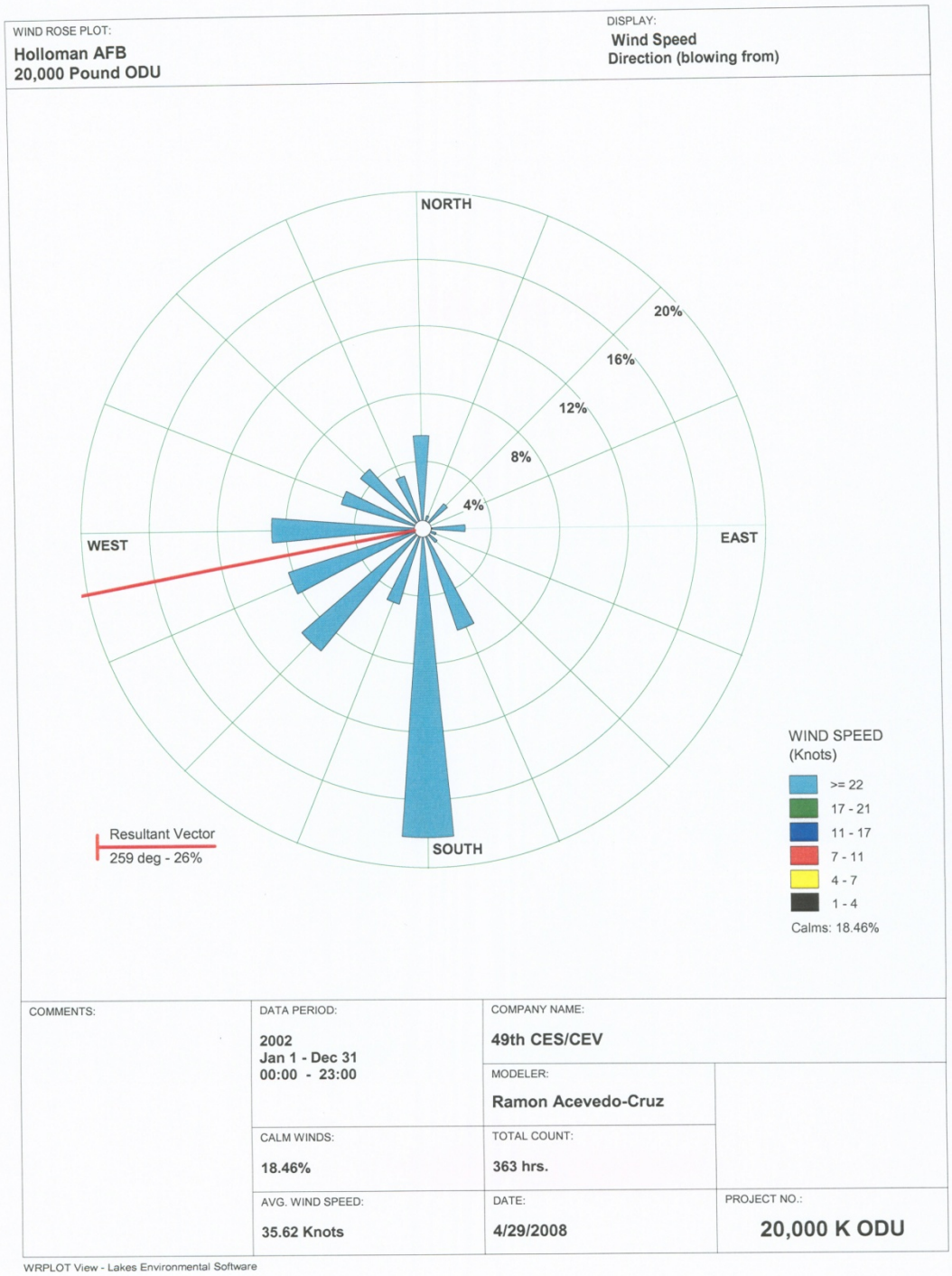


Figure A-7 Frequency (%) of Wind Speed by Direction – 2002

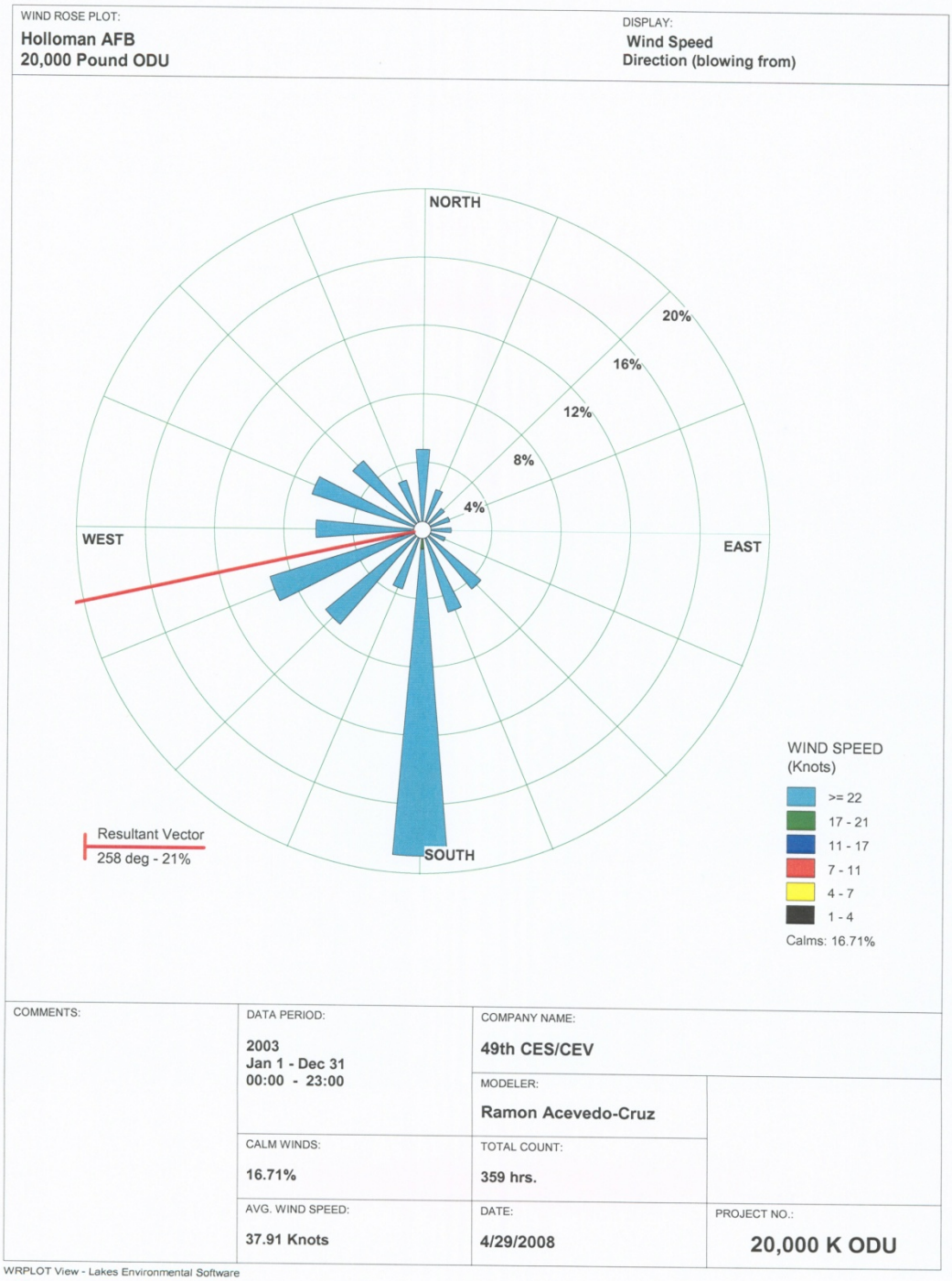


Figure A-8 Frequency (%) of Wind Speed by Direction – 2003

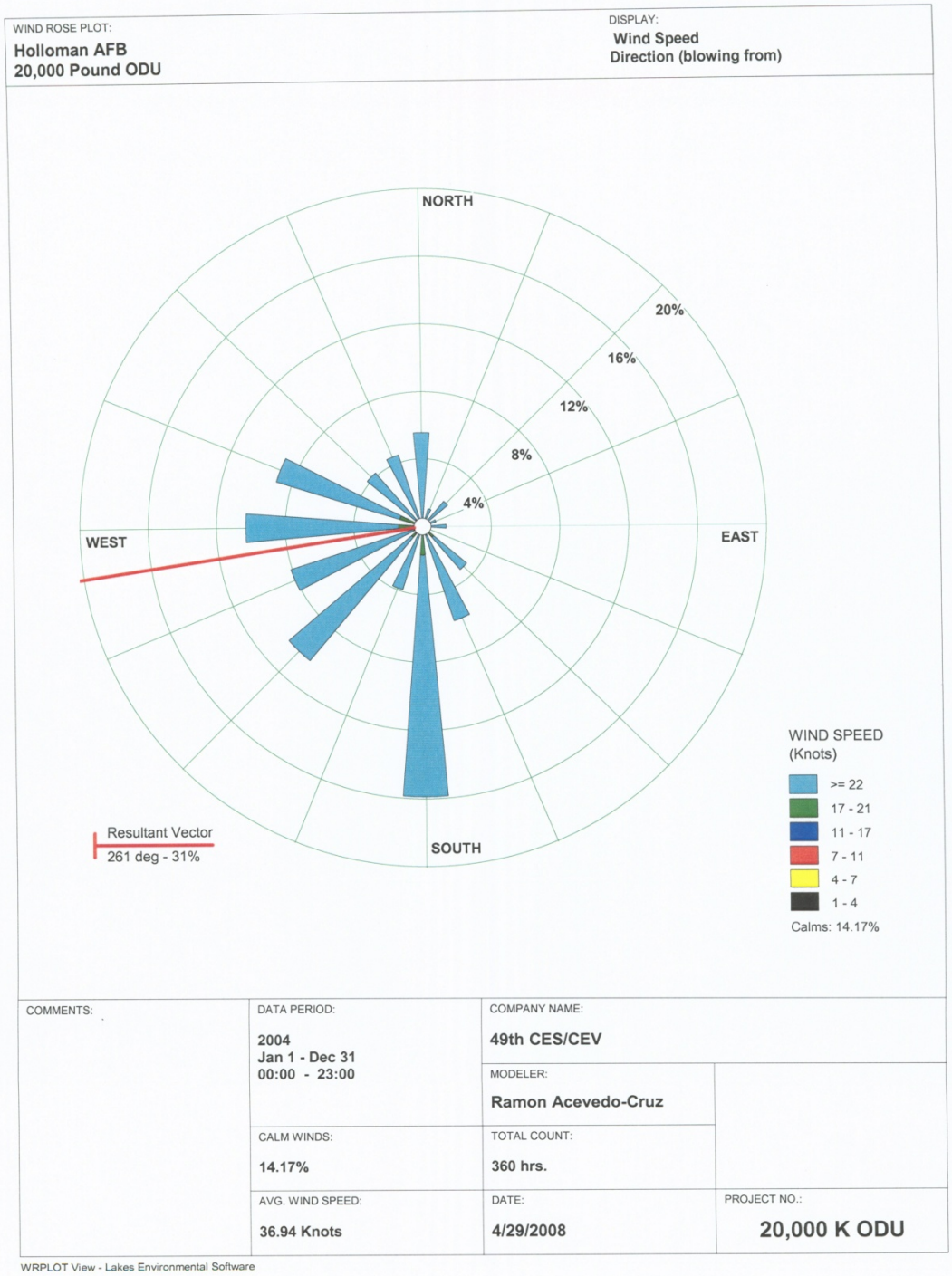


Figure A-9 Frequency (%) of Wind Speed by Direction – 2004

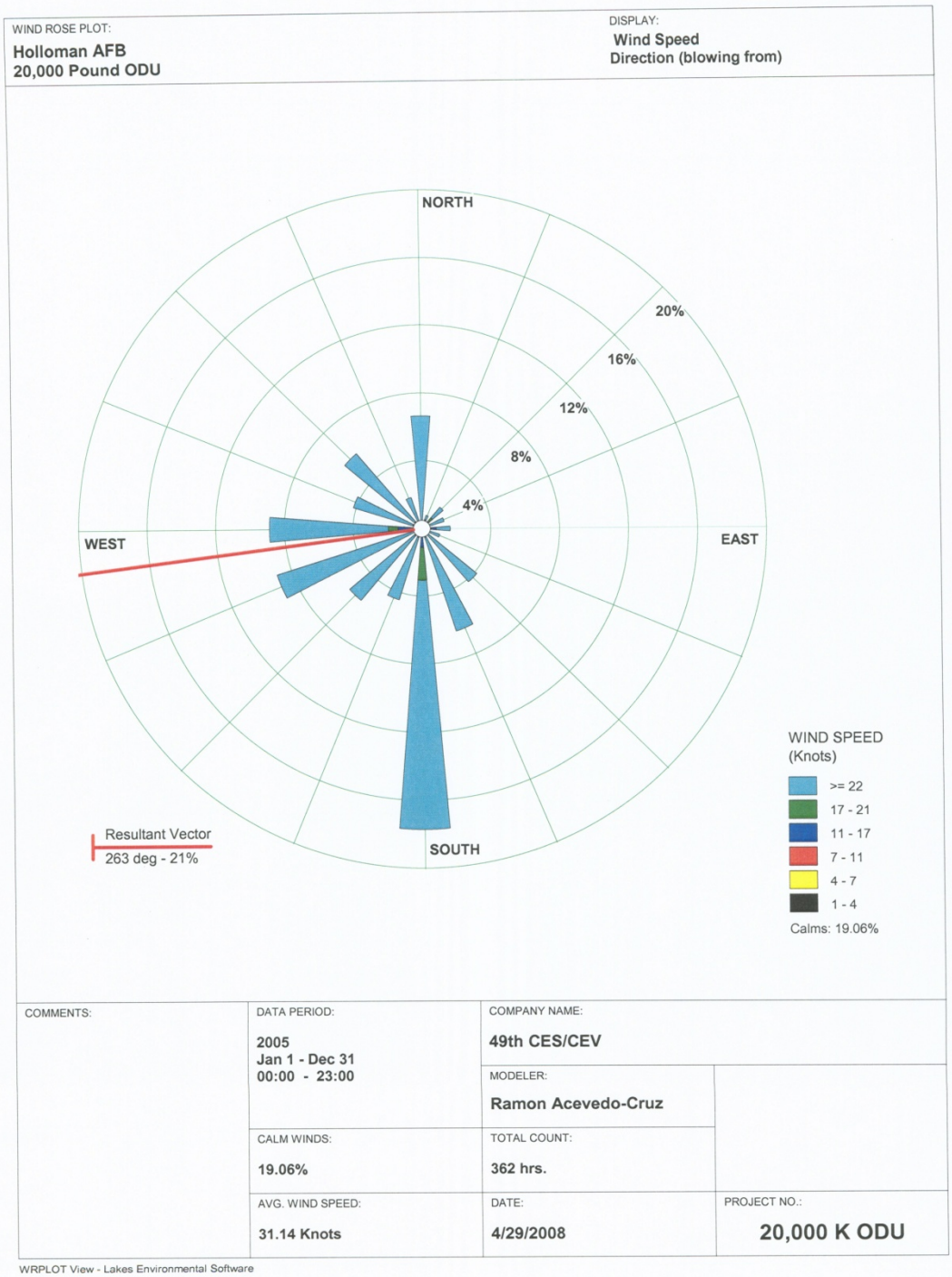


Figure A-10 Frequency (%) of Wind Speed by Direction – 2005

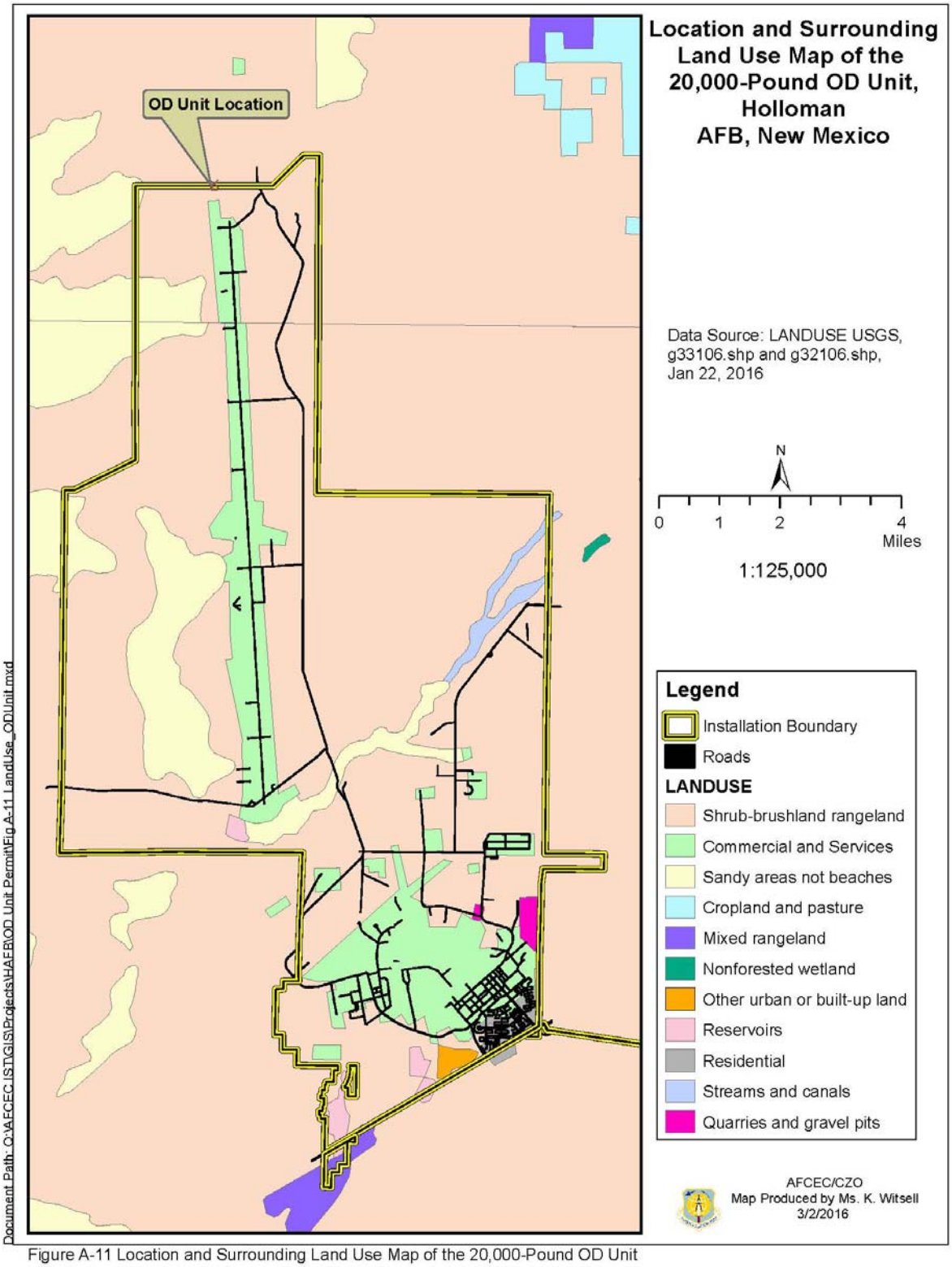


Figure A-11 Location and Surrounding Land Use Map of the 20,000-Pound OD Unit

Figure A-11 Location and Surrounding Land Use Map of the 20,000-Pound OD Unit

A.5 ADDITIONAL INFORMATION REQUIREMENTS [20.4.1.900 NMAC §270.14(c)]

Owners or operators of "regulated units" are required to provide additional information regarding protection of groundwater. Regulated units, as described in 20.4.1.500 NMAC §264.90(a) (2) include surface impoundments, waste piles, land treatment units, or landfills that receive hazardous waste after July 26, 1982. There are no "regulated units" at the HAFB; therefore, the requirements of this regulation are not applicable.

Note: Geology and meteorological information is presented in Attachment I, Environmental Protection.

ATTACHMENT B

WASTE ANALYSIS PLAN

HOLLOMAN AIR FORCE BASE
OPEN DETONATION TREATMENT UNIT

Permit No. NM6572124422

ATTACHMENT B
WASTE ANALYSIS PLAN

INTRODUCTION

This Waste Analysis Plan (WAP) describes the procedures used to characterize wastes that are treated and residues that are generated during treatment at the 20,000-Pound Open Detonation (OD) Unit. The WAP addresses the applicable waste analysis requirements in the Title 20, Chapter 4, Part 1, Section V New Mexico Administrative Code (20.4.1.500 NMAC, incorporating 40 Code of Federal Regulations (CFR) §§264.13, 264.602, and 270.14(b), and 20.4.1.300 NMAC, incorporating 40 CFR Part 268. The content of this WAP follows the guidance provided in "Waste Analysis at Facilities That Generate, Treat, Store, and Dispose of Hazardous Wastes: A Guidance Manual" (U.S. Environmental Protection Agency [EPA], 1994). This WAP is organized to address the six major elements recommended in the guidance, as follows:

Section B.1, Facility Description, references general descriptions of the Holloman AFB Open Detonation Treatment Unit; summarizes processes and activities that generate or are used to manage the waste; describes wastes that are treated, identifies appropriate waste accepted for treatment; and describes the hazardous waste management unit.

Section B.2, Waste Classification and Identification, addresses basic energetic chemistry and definitions; discusses various classifications of the waste military munitions; identifies typical waste treated at the OD Unit; summarizes typical waste constituents and specific physical and chemical parameters important for fate and transport; and describes the process for characterization of the waste using acceptable knowledge prior to treatment in the OD Unit. A glossary of munitions terms is included at the end of this Plan.

Section B.3, Selection of Waste Analysis Parameters, addresses munitions constituents (MC) of concern prior to treatment of the wastes at the OD Unit and post-treatment residues and soils, rationale for selection of MC, selection of analytical parameters and the rationale for the selection of these analytical parameters. The WAP also references the Sampling and Analysis Plan (SAP), included as Attachment H, which describes post-treatment sampling of residues and soil.

Section B.4, Summary of Analytical Methods and Sampling, presents information on the selection of the analytical laboratory and the methods. In addition, this section references the SAP at Appendix H for the analytical parameters for post-treatment soil sampling at the OD Unit.

Section B.5, Waste Re-Evaluation Frequencies, discusses the criteria used to determine the frequencies by which waste characterization information will be reevaluated.

Section B.6, Special Procedural Requirements, identifies the special procedures that will be followed to meet the provisions for complying with land disposal restrictions (LDR) requirements.

Section B.7, Glossary, provides definitions used throughout this document, summarized in one location.

The information collected under this WAP provides Holloman AFB (HAFB) personnel with information that is sufficient to safely manage the wastes treated at the OD Unit.

B.1 FACILITY DESCRIPTION

A ~~general~~ description of the HAFB OD Unit is provided in Attachment A. The facility information provided in this section is specific to processes and activities associated with the OD Unit.

B.1.1 DESCRIPTION OF FACILITY PROCESSES AND ACTIVITIES THAT GENERATE THE WASTE TREATED AT THE OD UNIT

Wastes treated at the OD Unit consist of military energetic materials that have exceeded their shelf life. Energetic materials are chemical compounds or mixtures of chemical compounds that are divided into three classes according to use: explosives, propellants, and pyrotechnics. When munitions are demilitarized because shelf lives have been exceeded, the overall chemical composition and resulting combustion products will not be affected.

The determination of when military munitions become waste military munitions (WMM) has been formalized in the DoD Regulation to the EPA's Military Munitions Rule Implementation Plan (MRIP) issued 1 July 1998. A Designated Disposition Authority (DDA) was established and an evaluation process developed. The DDA evaluation process assigns the authority to designate military munitions as waste to the DDA, thereby introducing only two ways a military munitions becomes a WMM. Based on the MMR, the point of generation of WMM occurs when the military munitions are removed from storage to be transported to the OD Unit for disposal

Open detonation is a thermal treatment process used for the treatment of unserviceable, obsolete, and/or waste munitions whereby an explosive donor charge ignites the munitions to be detonated. Detonation of the energetic materials is a violent chemical reaction within a chemical compound evolving heat and pressure (exothermic redox reaction), which is self-sustaining after the initial activating energy has been applied. The reaction rate is determined by the velocity of the shock wave that moves at supersonic speeds through the explosive causing decomposition of the explosive material (TM9-1300-214, U.S. Army, 1984). The detonation process is quasi-instantaneous with temperatures ranging from 800º K (981º F) to 1000º K (1341º F) (EPA 2002). The detonation reaction renders the explosive wastes non-reactive.

B.1.2 DESCRIPTION OF WASTES TREATED

The wastes that are treated in the 20,000-Pound OD Unit are generally propellant devices and explosives with expired shelf lives. Rocket motors exceeding 300 pounds are regularly treated at the 20,000-Pound OD Unit. Similar constituents are used in the formulation of the different items, but the quantity of specific energetic materials varies. In addition to the energetic material, the waste consists of the unit metallic components associated with these devices such as the casings. The reactive wastes to be treated at the 20,000-Pound OD Unit are solid in nature and

contain no free liquid. The total mass of the energetic material is typically limited to less than 10,000 pounds per device.

Historically, the annual amount of waste treated at the OD Unit is less than the treatment event permit capacity. Explosive Reactivity Waste, D003, treated at the OD Unit and reported on the Biennial Report is listed in Table B-1.

Table B-1 Waste Treated at the OD Unit and Reported on Biennial Report

Reporting Year	Waste Code	Waste Description	Quantity Generated (pounds)
2005	D003	SPENT AND EXPIRED REACTIVE MUNITIONS AND ROCKET MOTORS FROM VARIOUS MILITARY OPERATIONS; TREATED ON SITE	6697
2003	D003	SPENT AND EXPIRED REACTIVE MUNITIONS AND ROCKET MOTORS FROM VARIOUS MILITARY OPERATIONS; TREATED ON SITE.	3751
2001	D003	SPENT AND EXPIRED REACTIVE MUNITIONS AND ROCKET MOTORS FROM VARIOUS MILITARY OPERATIONS; TREATED ON-SITE.	3305

B.1.3 DESCRIPTION OF ACCEPTABLE WASTE CATEGORIES

Wastes appropriate for Open Detonation are limited to hazardous wastes that have the explosive characteristic of reactivity (D003). These wastes meet the explosive reactivity definition specified in 20.4.1 NMAC §§261.23(a) (6 – 8). The energetic wastes must meet one or more of the following conditions:

a. The waste is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.

b. The waste is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.

c. The waste is considered a forbidden explosive as defined by 49 CFR 173.51.

d. The waste is one of the following Class 1 explosives as defined by 49 CFR 173.50.

- Division 1.1 (Class A) - consists of explosives that have a mass explosion hazard. A mass explosion hazard is one that affects almost the entire load instantaneously.
- Division 1.2 (Class A or B) - consists of explosives that have a projection hazard but not a mass explosion hazard.
- Division 1.3 (Class B) - consists of explosives that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.

Explosive ordnance disposal (EOD) Operating Instruction 32-3001-05 identifies the acceptable waste munitions for treatment at the OD Unit as Division 1.1. Categories of waste accepted for treatment at the OD Unit includes, but is not limited to, the propellants, explosives, and pyrotechnics further defined and identified in section B.2.

B.1.4 DESCRIPTION OF THE 20,000-POUND OD UNIT

The OD Unit consists of a cleared area approximately 400 feet in diameter within which waste explosives and propellant devices are detonated. Attachment F contains the operational procedures at the OD Unit. The actual treatment is accomplished according to the Automated Explosive Ordnance Disposal Publication System, T.O. 11A-1-42, T.O. 11A-1-60, AF Manual 91-201, or manufacturer's disposal instructions by placement of the waste items within a 100 foot diameter area at the center of the clear zone. C-4 (RDX) donor charges are attached to the waste item. An "explosive train" is constructed, and remote control detonation is initiated from the designated clear zone. The donor device consists of a series of components that are referred to as an explosive train once the individual devices are placed in combination. An explosive train consists of a primer, an initial detonating agent, and a high explosive. Explosive train detonation is achieved by step-wise detonation of the components. The detonation reaction renders the explosive wastes nonreactive and results in both solid and gaseous by-products. Depending upon combustion conditions, the gaseous by-products will consist of carbon monoxide (CO), carbon dioxide (CO_2), water (H_2O), nitrogen (N_2), and various nitrogen oxides (NO_X). Solid by-products include casings from the waste and possibly trace concentrations of incompletely oxidized reactive material. Reaction by-products that are solid will be retained in the depression created by the explosive force (except for ejected components), but the gaseous reaction by-products vent to the atmosphere. These solid by-products will be gathered and re-detonated or drummed for proper disposal. Due to the difficulties and obvious hazards associated with collection of gas samples in the immediate vicinity of the detonation zone, this plan does not address the gas phase reaction by-products. An assessment of the gaseous constituents released during combustion is provided in Permit Attachment I.

The 20,000-Pound OD Unit (as designed) derives its name from the relevant operating procedures for this thermal treatment activity. The maximum net explosive weight (NEW) that will be simultaneously treated is limited to 11,900 pounds per treatment event, according to a memorandum dated 3 February 2005 from the Department of Defense (DoD) Explosives Safety Board (ESB). The DoD ESB memorandum is shown in Exhibit B-1. This total does not include the mass of the casings, other associated containment devices, and detonating charges. Although the precise number of treatment occurrences during any year is variable, discrete treatment events will occur at typical frequencies of at least one event per month, the total amount of treated hazardous waste will not exceed a total of 420,000 pounds NEW per calendar year.

B.2 WASTE CLASSIFICATION AND IDENTIFICATION

Process knowledge and munitions specifications are used to obtain the necessary chemical and physical data to designate waste prior to treatment of the energetic materials at the OD Unit. This section addresses basic definitions that are critical to understanding the nature of the waste stream and various classifications of military munitions based on energetic materials, munitions categories, and munitions families. Waste military munitions will be defined based on the

Military Munitions Rule (MR). Typical WMM treated at the OD Unit will be identified and basic chemical and physical properties of the constituents in the waste munitions will be briefly discussed. This information is provided as background to support the use of acceptable knowledge for characterization of the WMM prior to treatment at the OD Unit and to support rationale for selection of sampling and analysis parameters identified in Attachments G (Closure Plans), H (SAP for soil), and I (Environmental Protection).

Military Munitions are defined in 40 CFR 260.10 as all ammunition products and components produced or used by or for the DoD or the U.S. Armed Services for national defense and security, including military munitions under the control of DoD, the U.S. Coast Guard, DOE, and National Guard personnel. The definition includes confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries used by DoD Components, including bulk explosives and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components thereof.

B.2.1 CLASSIFICATION OF MILITARY ENERGETIC MATERIALS (US ARMY, 1984)

Energetic materials are chemical compounds, or mixtures of chemical compounds, that are divided into three classes according to use: propellants; explosives; and pyrotechnics (PEP). Explosives and propellants, when initiated, evolve large quantities of gas in a short time. The difference between explosives and propellants is the rate at which the reactions proceed. For explosives, a fast reaction produces a very high pressure in the surrounding medium; this pressure is capable of significant destruction. In propellants, a slower reaction produces lower pressure over a longer period of time. This lower sustained pressure is used to propel objects. Pyrotechnics evolve large amounts of heat but much less gas than propellants or explosives.

Propellants cannot be distinguished from explosives by chemical composition or by chemical reaction rate alone, although propellants characteristically react (burn) at a rate much lower than the detonation rate of explosives. Propellants are characterized by the ability to burn at reproducible, controllable, and predetermined rates.

The properties of explosives are put to practical use in military munitions by an arrangement called an explosive train and an ignition train. The explosive train is used to set off a main charge and is composed of various explosive elements (initiator [primer/detonator], booster, main charge). These elements are arranged from decreasing sensitivity to high potency. The initiator consists of a small amount of primary explosive, and is highly sensitive. The booster contains a larger quantity of less sensitive but more powerful material called a secondary or high explosive. The main charge, also a secondary explosive is the least sensitive material but comprises the bulk of the explosive charge. The ignition train is used to ignite propellants. A primer ignites the igniter which in turn ignites the propellant charge. The primer consists of a mixture of fuels and oxidants.

While there are many kinds of explosive compounds, the number of explosive compounds used in military applications is relatively small. The explosives must meet specific chemical and physical requirements associated with the intended military application. Many explosive items

are designed for a minimum lifespan of ten years. Stringent tests are designed to characterize the explosives as much as possible before deployment to avoid problems during use. Table B-2 summarizes the military explosive compounds used in military munitions. The chemicals are specific, but are arranged in different compositions depending on the use of the energetic materials. The following information addresses energetic materials classified based on use.

B.2.1.1 Propellants

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. Propellants are classified based on composition, not use. Table B-2 lists common military propellant chemical compositions. Table B-3 identifies the specific chemical compositions of single and double base propellants that may be treated at the OD Unit.

- Single-base propellant compositions are used in cannons, small arms, and grenades. These compositions contain the propellant nitrocellulose as their chief ingredient. In addition to containing a stabilizer, they may also contain inorganic nitrates, nitro-compounds, and non-explosive materials such as metallic salts, metals, carbohydrates, and dyes.

- Double-base propellant compositions are used in cannons, small arms, mortars, rockets, and jet propulsion units. This term generally applies to compositions containing both nitrocellulose and nitroglycerine. They can also be defined as propellants containing nitrocellulose and liquid organic nitrates that will gelatinize nitrocellulose. Additives are frequently used in addition to a stabilizer.

- Triple-base propellant compositions are used in cannon units. This term is applied to propellants containing three explosive ingredients, with nitro guanidine as the major ingredient and the other two usually nitroglycerine and nitrocellulose.

- Composite propellants contain neither nitrocellulose nor an organic nitrate. They are usually physical mixtures of a fuel such as metallic aluminum, a binder (normally a synthetic rubber that is also a fuel), and an inorganic oxidizing agent such as ammonium perchlorate. Composite propellants are used primarily in rocket assemblies and jet propellant propulsion units.

B.2.1.2 Explosives

Energetic materials are classified into low and high explosives based on the speed of the explosion. High explosives are characterized by their extremely rapid rate of decomposition. When a high explosive is initiated by a blow or shock, it decomposes almost instantaneously, a process called detonation. High explosives are further divisible by their susceptibility to initiation into primary and secondary high explosives. Table B-2 contains general chemical compositions of primary and secondary high explosives.

- Primary or initiating explosives are high explosives generally used in small quantities to detonate larger quantities of high explosives. Primary explosive compositions are

mixtures of primary explosives, fuels, oxidizers and other ingredients used to initiate detonation in high explosive charges or ignite propellants or pyrotechnics. In general, propellants are ignited by applying a flame (ignition train), while bursting explosives are ignited by a severe shock (explosive train). The initiating device used to set off a propellant is called a primer, and the device used to initiate the reaction of a main charge or bursting explosive is called a detonator.

- Auxiliary or booster explosives are used to increase the flame or shock of the initiating explosive to ensure that the burster charge performs properly. High explosives used as auxiliary explosives are less sensitive than those used in initiators, primers, and detonators, but are more sensitive than those used as filler charges or bursting explosives.

- Bursting explosives, burster charges, or fillers are high explosive charges that are used alone or as part of the explosive charge in mines, bombs, missiles, and projectiles.

B.2.1.3 Pyrotechnics

B.2.1.4 Energetic Materials Treated at the OD Unit. Pyrotechnics are low explosives used to send signals, to illuminate areas of interest, to simulate other weapons during training, and as ignition elements for certain weapons. Pyrotechnic compositions are considered low explosives because of their low rates of combustion. Examples of pyrotechnics are illuminating flares, signaling flares, smoke generators, tracers, incendiary delays, and photo-flash compounds.

Table B-4 contains a listing of typical military items treated at the OD Unit classified by composition and use. The table includes the chemical formula or the chemical composition for the chemical or chemical compound listed. A variety of uses are listed for many of the explosive compounds.

Table B-2: General Chemical Composition of Military Energetic Materials That May be Treated at the OD Unit (US Army, 1984)

PROPELLANTS[1]

Name	Chemical Formula or Composition
Nitrocellulose	$C_{12}H_{16}(ONO_2)_4O_6$
Nitroglycerine	$C_3H_5N_3O_9$
Nitroguanidine	$CH_4N_4O_2$

[1]These three primary constituents can be used singly or in various combinations along with metals, metallic salts, and organic polymer binders.

PRIMARY EXPLOSIVES[2]

Name	Chemical Formula or Composition
Lead Azide	H_6Pb (71% Pb)
Mercury Fulminate	$C_2HgN_2O_2$ (70.5% Hg)
Diazodinitrophenol (DDNP)	$C_6H_2N_4O_5$
Lead Styphnate	$C_6HN_3O_8Pb$ (44.2% Pb)
Tetracene	$C_2H_8N_{10}O$
Potassium Dinitrobenzofuroxane (KDNBF)	$C_6H_2N_4O_6K$
Lead Mononitroresorcinate (LMNR)	$C_6H_5NO_{4X}Pb$ (57.5% Pb)
Ingredients to Rocket Propellant**:**	
Copper Monobasic Salicylate	$C_{14}H_{12}Cu_2O_8$
Lead Salicylate	$C_{14}H_{10}O_6Pb$
Fuels:	
Lead Thiocyanate	$Pb(SCN)_2$ (64% Pb)
Antimony Sulfide	Sb_2S_5
Calcium Silicide	$CaSi_2$
Oxidizers:	
Potassium Chlorate	$KClO_3$
Ammonium Perchlorate	NH_4ClO_4
Barium Nitrate	N_2O_6Ba
Calcium Resinate	$Ca(C_{44}H_{62}O_4)_2$
Strontium Peroxide	SrO2
Barium Peroxide	BaO2
Strontium Nitrate	$Sr(NO_3)_2$
Potassium Perchlorate	$KClO_4$

[2]Primary compositions include a mixture of primary explosives listed above, fuels, oxidizers, and binders (e.g. paraffin wax).

Table B-2: Continued

BOOSTER AND SECONDARY EXPLOSIVES (High Explosives)

Name	Chemical Formula or Composition
Aliphatic Nitrate Esters:	
1,2,4-Butanetriol Trinitrate (BTN)	$C_4H_7N_3O_9$
Diethyleneglycol Dinitrate (DEGN)	$C_4H_8N_2O_7$
Nitroglycerine (NG)	$C_3H_5N_3O_9$
Nitrostarch (NS)	$C_6H_7(OH)_X(ONO2)_Y$ where X - Y = 3
Pentaerythritol Tetranitrate (PETN)	$C_5H_8N_4O_{12}$
Triethylene Glycol Dinitrate (TEGDN)	$C_6H_{12}N_2O_8$
1,1,1-Trimethylethane Trinitrate (TMETN)	$C_5H_9N_3O_9$
Nitrocellulose (NC)	$C_{12}H_{16}(ONO_2)_4O_6$
Nitramines:	
Cyclotetramethylene Tetranitramine (HMX)	$C_4H_8N_8O_8$
Cyclotrimethylene Trinitramine (RDX)	$C_3H_6N_6O_6$
Ethylenedimine Dinitrate (EDDN, Haleite)	$C_2H_6N_4O_4$
Nitroguanidine (NQ)	$CH_4N_4O_2$
2,4,6-Trinitrophenylmethylnitramine (Tetryl)	$C_7H_5N_5O_8$
Ammonium Picrate (Explosive D)	$C_6H_3N_3O_7H_3N$
1,3-Diamino-2,4,6-Trinitrobenzene (DATB)	$C_6H_4N_5O_6$
2,2'4,4’6,6’-Hexanitroazobenzene (HNAB)	$C_{12}H_4N_8O_{12}$
Hexanitrostilbene (HNS)	$C_{14}H_2N_6O_{12}$
1,3,5-Triamino-2,4,6-Trinitrobenzene (TATB)	$C_6H_6N_6O_6$
2,4,6-Trinitrotoluene (TNT)	$C_7H_5N_3O_6$
Ammonium Nitrate	HNO_3H_3N

Table B- 2: Continued

COMPOSITIONS

Name	Chemical Formula or Composition
Binary Mixtures:	
Amatols	[ammonium nitrate + TNT]
Composition A	[RDX + Desensitizer]
Composition B	[RDX + TNT]
Composition C	[RDX + Plasticizer]
Ednatols	[Haleite + TNT]
LX-14	[HMX (95.5%) + Estane 5702-F1]
Octols	[HMX + TNT]
Pentolite	[PETN + TNT]
Picratol	[Ammonium Picrate (52%) + TNT (48%)]
Tetrytols	[TNT + Tetryl]
Tritonal	[TNT (80%) + Flaked Aluminum (20%)]
Ternary Mixtures:	
Amatex 20	[RDX (40%) + TNT (40%) + Ammonium Nitrate (20%)]
Ammonels	[Ammonium Nitrate + Aluminum and TNT, DNT, or RDX]
HBX	High Blast Explosives: [TNT + RDX + AlD2 Wax + Calcium Chloride]
HTA-3	[HMX + TNT + Al Mixture]
Minol-2	[TNT + Ammonium Nitrate + Aluminum]
Torpex	[RDX (41.6%), TNT (39.7%), Al (18.0%) Wax (0.7%)]
Quaternary Mixtures:	
DBX	[TNT (40%), RDX (21%), Ammonium Nitrate (21%), Al (18%)
Plastic Bonded Explosives (PBX)	
Basic Explosive	[RDX, HMX, HNS, or PETN + Polymeric Binder (Polyester, Polyurethane, Nylon, Polystyrene, Rubbers, Nitrocellulose, Teflon)]

PYROTECHNICS

Combination of:

Oxidizer-Oxygen or Fluorine; Fuel - Powdered Aluminum or Magnesium; Binding Agents - Resins, Waxes, Plastics, Oils, Retardants; Waterproofing, Color Intensifier

Table B-3: Standard Compositions (%) for Single - or Double-Base Propellants that May be Treated at the OD Unit

	M-1 (a) Single Base	M-3 Single Base	M-14 Single Base	Double Base Common	Double Base Calibers 20, 30, 50	Double Base Mortar Repellant	Double Base Rocket Propellant M-Series	Double Base Rocket Propellant T-Series
Nitrocellulose	**84.2**	**79**	**89.1**	**77 – 81**	**74 – 84**	**52 – 57**	**55 – 58**	**58**
Nitroglycerin				**15 – 19**	**15 – 20**	**40 – 43**	**30 – 40**	**22 – 40**
Barium/Potassium Nitrate				**2.1**	**0.0 – 1.5**	**1.25 – 1.5**		
Potassium Perchlorate							**0.0 – 7.8**	
Graphite				**0.3**	**0.0 – 0.25**			
Dinitrotoluene	**9.9**	**15**	**7.9**					**0.0 – 2.5**
Trinitrotoluene								
Diphenylamine					**0.75**	**0.75**	**1.0 – 8.0**	**1.75 – 8.0**
Diethylphenylamine				**0.6**		**0.0 – 0.6**		
Potassium Sulfate							**0.0 – 1.5**	**0.0 – 1.5**
Tracetin		**5**	**2.0**					
Dibutylphthalate	**4.9**		**1.0**			**3.0**		
Cryolite	**1.0**	**1.0**						

Table B-4: General Chemical Composition of Military Items Treated at the OD Unit

Name	Chemical Formula	Use	Energetic Material Classification	Potential EPA Hazardous Codes
AMATOL	(ammonia nitrate/TNT)	main charge, armor piercing projectiles	Binary Mixtures	D001, D003
AMMONAL	(ammo nitrate/TNT/Al)	main charge, semi-armor piercing bombs	Ternary Mixtures	D001, D003
AMMONIUM NITRATE	NH_4NO_3	main charge, cratering charge	High Explosive	D003
BALLISTITE	(nitrocellulose /nitroglycerin/ diphenylamine/graphite)	propellant, rocket motors	Ternary Mixtures	D001, D003
BARATOL	(TNT/barium nitrate)	main charge	Binary Mixtures	D001, D003,D005
BLACK POWDER	(potassium nitrate/charcoal/sulfur)	propellant, mixtures	Propellant	D001, D003
COMP A	(RDX/wax)	boosters, fuzes	Binary Mixtures	D001, D003
COMP B	(RDX/TNT/wax)	main charge, projectiles, bombs, warheads	Binary Mixtures	D001, D003
COMP C-4	(RDX/oil/polyisobutylene/ diethylhexylsebacate)	demotion charge	Binary Mixtures	D001, D003
CYCLOTRIMETHYLENE TRINITRAMINE (RDX)	$C_3H_6N_6O_6$	mixture, detonators, demo charges	High Explosive	D001, D003
DBX	(ammo nitrate/RDX/Al)	main charge, depth bombs	Quaternary Mixture	D003
DIAZODIN1TROPHENOL (DDNP); (DINOL)	$HOC_6H_3(NO_2)_2N$	blasting caps, detonators	Primary Explosive	D003
DOUBLE BASE SMOKELESS POWDER	(guncotton/nitroglycerin)	propellant	Propellant	D001, D003

Name	Chemical Formula	Use	Energetic Material Classification	Potential EPA Hazardous Codes
EXPLOSIVE D (AMMONIUM PICRATE)	$NH_4C_6H_2N_3O_7$	bursting charge, armor piercing projectiles	High Explosive	D001, D003
GUNCOTTON	(nitrocellulose)	propellant	Propellant; High Explosive	D001, D003
HEXANITE #26	(TNT/HND/Al)	main charges	Ternary Mixtures	D001, D003
HEXITE (HEXANITRO-DIPHENYLAMINE)	$C_{12}H_5N_7O_{12}$	mixtures	High Explosive	D001, D003
HMX	$C_4H_8N_8O_8$	mixtures, boosters	High Explosive	D001, D003
H-6	(RDX/TNT/A1/CaCl)	main charges, naval bombs, depth charges	Binary Mixtures	D001, D003
HTPB (HYDROXY-TERMINATED POLYBUTADIENE)	HO-(C H) –OH	solid fuel propellant	Composite Propellant	D003
LDNR	$PbC_6H_2N_2O_6$	blasting caps	Primary Explosive	D001, D003, D008
LEAD AZIDE	N_6Pb	initiators	Primary Explosive	D001, D003, D008
LEAD STYPHNATE	$C_6H(NO_2)_3(O_2Pb)$	initiators, primers, detonators	Primary Explosive	D001, D003, D008
MANNITOL HEXANITRATE	$C_6H_8(NO_3)_6$	initiators, blasting caps	Secondary Explosive	D003
MERCURY FULMINATE	$HgC_2N_2O_2$	initiators, blasting caps	Primary Explosive	D001, D003, D009
MINOL	(TNT/ammo nitrate/Al)	main charges, bombs, projectiles	Binary Mixtures	D001, D003
NITROGLYCERIN	$C_3H_5(ONO_2)_3$	propellant compositions	Propellants; High Explosive	D001, D003

Name	Chemical Formula	Use	Energetic Material Classification	Potential EPA Hazardous Codes
PENTOLITE	(TNT/PETN)	bursting charges	Binary Mixtures	D001, D003
PETN	$C(CH_2ONO_2)_4$	mixtures, boosters, detonating cord	High Explosive	D001, D003
PICRATOL	(Explosive D/TNT)	main charges	Binary Mixtures	D001, D003
PICRIC ACID #26	$C_6H_2(NO_2)_3OH$	boosters, bombs	Primary Explosive	D001, D002, D003
PICRITE	$CH_4N_4O_2$	propellant	High Explosive	D001, D003
TETRYL	$(NO_2)_3C_6H_2N(NO_2)CH_3$	mixtures, boosters	High Explosive	D001, D003
TNPH	$C_6H_2(NO_2)_3C_2H_5$	mixtures, boosters, (sub for TNT)	High Explosive	D003
TORPEX	(RDX/TNT/Al)	main charges, mines, torpedoes	Ternary Mixtures	D003
TNT	$C_6H_2CH_3(NO_2)_3$	main charges, demo charges, boosters, mixtures	High Explosive	D001, D003
TRITONAL	(TNT/Al)	main charges, bombs	Binary Mixtures	D001, D003
TYPE 88 #26	(ammonium perchlorate/ferro-silicon/ wood meal/crude petroleum)	main charges	High Explosive	D001, D003
TYPE 91 #26	$C_6H_2OCH_3(NO)_3$	main charges	High Explosive	D003
TYPE 92 #26	(TNT/Al)	burster for Japanese bullets	High Explosive	D001, D003
TYPE 98	(trinitroanisol/hexanitro-diphenylamine)	primer, burster charge	High Explosive	D003
TNA	$C_6H_3N_5O_8$	boosters	High Explosive	D003

Name	Chemical Formula	Use	Energetic Material Classification	Potential EPA Hazardous Codes
OCTOL	(HMX/TNT)	main charge, shape charges	Binary Mixtures	D001, D003
METHYL PICRATE	$C_6H_2OCN_3(NO_2)_3$	main charge, bombs	High Explosive	D003
POTASSIUM PERCHLORATE	$KClO_4$	pyrotechnic, fireworks	Oxidizer	D001, D003
PHOTO FLASH POWDER	(barium nitrate/potassium perchlorate/Al)	ground burst simulators, photo bombs and projectiles	Pyrotechnics	D001, D003
THERMITE	Fe_2O_32Al	grenades, document destroyers	Pyrotechnics	D003
THERMATE	Fe_2O_3 Al + Ba nitrate	document destroyers	Pyrotechnics	D003, D005
HC SMOKE	ZnO_2C_6Cl Al	screening smoke	Pyrotechnics	D003
TITANIUM TETRACHLORIDE	$TiCl_4$	spotting charges	Pyrotechnics	D003
WHITE PHOSPHORUS	P_4	screening/marking smoke	Pyrotechnics	D001
PLASTICIZED WHITE PHOSPHORUS	P_4 + synthetic rubber	marking smoke	Pyrotechnics	D001

B.2.2 CLASSIFICATION BY MILITARY MUNITION TYPE AND MUNITIONS FAMILIES

B 2.2.1 Classification by Military Munitions Type

A complete military munitions item includes several components. Typical components may include a projectile, a propellant charge, and a primer that ignites the propellant. Other components such as a casing, fuzes, and bursting charge are frequently included. The munitions filler of these components, with few exceptions, contains one single energetic compound or a mixture of energetic compounds as well as non-energetic compounds. The energetic compounds consist of propellants, explosives, and pyrotechnics such as those described above. The non-energetic compounds typically serve as binders and stabilizers. Examples of these additives are ethyl cellulose, graphite, carbon black, calcium carbonate, cellulose acetate, and charcoal.

Munitions are typically classified based on five factors: type, use, filler, storage, and compatibility. Applicable munitions types are listed below:

- Hand Grenades – Hand grenades are small explosive- or chemical-type munitions that are designed to be thrown at short range. All grenades have three main parts: (1) a body, (2) a fuze with a pull ring and safety clip assembly, and (3) a filler. Grenades have metal, plastic, cardboard, or rubber bodies and may contain explosives, white phosphorus, or illumination flares, depending on their intended use.

- Mortars – Mortars range from approximately 1 to 11 ins. in diameter and can be filled with explosives, white phosphorus, or illumination flares. The mortar fuze is located in either the nose or the base.

- Projectiles/Artillery Rounds – Projectiles range from approximately 1 to 16 in. in diameter and from 2 in. to 4 ft in length. Like mortars, projectile fuzes are located in either the nose or the base.

- Rockets – Rockets can range from 1½ to more than 15 inches in diameter, and they can vary from 1 foot to over 9 feet in length. Rockets are propellant-type motors fitted with rocket heads containing high-explosive or chemical agents. The residual propellant may burn violently if subjected to sharp impact, heat, flame, or sparks.

- Missiles – Missiles consist of a warhead, a motor section, and a fuze and they are guided to their target by any number of systems, including radar and video. Missiles rely exclusively on proximity fuzes.

- Bombs – Bombs range from 1 to 3,000 lbs in weight and from 3 to 10 ft in length. Bombs consist of a metal container (the bomb body), a fuze, and a stabilizing device. The bomb holds the explosive or chemical filler.

- Demolition materials. Demolition materials consist of explosives and explosive devices designed for use in demolition and in connection with blasting for military construction.

B.2.2.2 Classification by Munitions Families

Munitions Items Disposition and Action System (MIDAS). MIDAS is a database developed and maintained by the Defense Ammunition Center (DAC) that provides chemical constituent information for munitions. Information available from MIDAS provides item-specific specifications that can be used to characterize items treated in the OD Unit. The MIDAS computerized database includes complete composition information (energetic and non-reactive components) for munitions. The MIDAS database provides information for individual munitions items but does not easily facilitate obtaining statistical summaries (e.g., average values) of the chemical compositions by munitions families.

Munitions/explosives can be grouped into MIDAS families. Only applicable families are listed below:

- High Explosive (HE) Components/Devices: HE detonators, boosters, or bursting charges that are not part of an ammunition item. Typically HE components/devices have a hazard class/division (HC/D) of 1.1 or 1.2. MIDAS Family: HA

- HE Bombs: HE-filled bombs. These items are typically air dropped, and the explosives within the HE bombs are usually tritonal, 2,4,6-trinitrotoluene (TNT), hexahydro-1,3,5-trinitro-8-triazine (HBX), or H-6 HE. MIDAS Family: HB

- HE Cartridges: Complete artillery or Navy gun ammunition with an HE projectile and propellant charge. Examples are 90MM, 3 inch/50 cal., 81MM mortar, 30MM fuzed or unfuzed cartridges, and fuzed 20MM cartridges. MIDAS Family: HC.

- Bulk HE: Bulk high explosives such as TNT, composition A, composition B, composition C-4, PBX, and RDX. MIDAS Family: HE.

- HE Grenades; Hand or rifle grenades that contain HE fillers. MIDAS Family: HG

- HE Improved Conventional Munitions/Cluster Bomb Units (ICM/CBU) and Sub Munitions: Variety of improved conventional munitions types containing sub munitions. Items may be air-dropped cluster bomb units, projectiles, or warheads containing sub munitions such as anti-tank mines, anti-personnel/material grenades, or bomb loaded units (BLUs), and Multiple Launch Rocket System (MLRS) rockets. Missiles: Complete rounds of missile ammunition configured with an explosive or practice warhead, rocket motor, and guidance system. MIDAS Family: HI

- HE Projectiles and Warheads: All projectiles, warheads, mortars or similar items that do not have a cartridge case, propellant, or rocket motor and that contain HE filler. MIDAS Family: HP

- HE Rockets: Complete rounds of rocket ammunition containing warhead, fuze, and rocket motor. MIDAS Family: HR

- HE Torpedoes: Underwater torpedoes that contain HE. MIDAS Family: HT

- Demolition Material: Demolition charges such as TNT, C-4, flexible sheet explosives, cratering charges, shaped charges, and detonating cord. MIDAS Family: HXM

- HE Land Mines: HE-filled land mines emplaced by hand or disbursing devices. This family also includes scatterable mines when they are packed separately from the disbursing unit (e.g., a dispenser, projectile body, or other system). MIDAS Family: HZT

- Large Rocket Motor: Solid propellant Inter-Continental Ballistic Missiles (ICBM), Submarine Launch Ballistic Missiles (SLBM), space launch booster motors or tactical motors greater than 20 inches in diameter. MIDAS Family: HR

- Bulk Propellants and Black Powder: Propellants and black powder in bulk form that are not assembled or configured to an ammunition item. Material is normally packaged in drums or metal-lined wooden or fiber containers. MIDAS Family: PB

- Propellant Charges and Increments: Packaged propelling charges and propellant increments. MIDAS Family: PCB

- Propellant Munitions/Components: Rocket motors, cartridge-actuated devices (CADs), propellant actuated devices (PADs), blank ammunition of more than 20MM, and expelling charges. This family also typically includes HC/D 1.3 components or munitions that do not fit into any other family. MIDAS Family: PD

- Small Caliber Ammunition: Small caliber ammunition cartridges up to 20MM with energetic filler(s). Excluded are fuzed HE or high-explosive incendiary (HEI) loaded 20MM cartridges that are assigned to family HC, and DUMMY small caliber ammunition. MIDAS Family: SAL

- Fuzes: All types of fuzes related to munitions. Examples include artillery ammunition/Navy gun fuzes, bomb fuzes, rocket fuzes, or grenade fuzes packaged separately from the munitions. MIDAS Family: SF

B.2.2.3 Wastes Treated at the OD Unit Classified by Military Munitions Type and Munitions Families

Table B-5 contains a listing of typical military munitions treated at the OD Unit classified by munitions families. The table includes NEW of the WMM and identifies typical donor explosives used in the OD Unit treatment process. Table B-6 provides composition information on a typical treatment event of rocket motors and donor charge information.

Table B-5 Typical Munitions, Classified by MIDAS Family, Used or Treated at OD Unit.

Material Classification	MIDAS Family	MIDAS Family Description	Federal Supply Class Description	Quantity	NEW (Pounds) - 2006
WMM	FP	Pyrotechnics/Illumination/Non-Fragments/Tracers	1370 - Pyrotechnics	308	41.02
WMM	HB	HE Bombs	1325 - Bombs and Components	9	5174.01
WMM	HC	HE Cartridges	1305 - Ammunition, through 30mm Includes Components	369	8.44
WMM	HM	HE Guided Missiles	1337 - Guided Missile and Space Vehicle Explosive Propulsion Units, Solid Fuel	106	641.85
WMM	HR	HE Rockets	1340 - Rockets, Rocket Ammunition, and Rocket Components	148	6807.28
WMM	HT	HE Torpedoes	1356 - Torpedoes and Components, Explosive Includes Warheads; Boosters; Detonators	576	13865.80
WMM	HZT	HE Land Mines	1345 - Land Mines	27	40.50
WMM	PD	Propellant Munitions/Components	1377 - Cartridge and Propellant Actuated Devices	2984	55.31
WMM	SF	Fuzes	1390 - Fuzes and Primers	17	0.69
Donor	HXD	Demolition Materials	1375 - Demolition Materials	5362	4373.05
			Totals	**9906**	**31007.94**

Table B-6 Composition of Specific Propellants Thermally Treated at the OD Unit (also included is the RDX detonator)

Component	Constituent*	Mass or Concentration Weight %	WMM/Donor
Rocket motor (5.0 inch)*	**Nitrocellulose Nitroglycerin Diphenylamine Potassium Sulfate**	**11.8 kg 8.2 kg 0.6 kg 0.3 kg**	**WMM**
Rocket motor (2.7 inch)*	**Nitrocellulose Nitroglycerin Diphenylamine Potassium Sulfate**	**2.0 kg 1.5 kg 0.3 kg 50 grams**	**WMM**
Propellant detonator (not always present)	**Barium or Potassium Nitrate Lead Styphnate or DDNP Carbon Calcium Silicide**	**0.45 – 0.60 gram 0.20 – 0.40 gram 0.01 – 0.10 gram 0.10 gram**	**WMM**
C-4 Detonating Charge (a,b) (size varies)	**RDX Wax (polyisobutylenetethlhexyl-sebacate)**		**Donor Charge**
Initial detonator cap (a) (for C-4 charge used in detonation)	**Lead Styphnate Lead Azide Trinitrophenylmethylnitramine Mercury Fulminate Diazodinitrophenol (DDNP) Tetracene**	**0.55 – 2.5 gram 0.05 – 0.26 gram 0.1 – 0.2 gram 0.18 – 0.24 gram 0.12 – 0.28 gram 0.18 – 0.24 gram**	**Donor Charge**
Explosive priming cap (b) (for C-4 charge used in detonation)	**Potassium Chloride Antimony Sulfide or Lead Thiocyanate Lead Azide, PETN, or DDNP**	**0.05 – 0.05 gram**	**Donor Charge**

(a) Primer components (oxidant/fuel) are indicated in Table B-2.
(b) Inerts include diphenylamine, potassium sulfate, and wax, and were not considered.
* May contain up to 2.5% Dinitrotoluene, but does not meet listing criteria and is present only as an appendix VIII hazardous constituent.
NOTE: The C-4 charge and its primary charges used for detonation are not wastes, but are serviceable ordnance used to initiate the reaction.

B.2.3 DESCRIPTION OF WASTE MILITARY MUNITIONS AND POINT OF GENERATION

In 1997, the Military Munitions Rule (MMR), an amendment to the Resource Conservation and Recovery Act (RCRA), was finalized, establishing regulations to identify when conventional and chemical military munitions become hazardous waste subject to RCRA and providing for the safe handling, management, storage, and disposal of WMM. On 1 July 1998 DoD issued its Regulation to the EPA's Munitions Rule Implementation Plan (MRIP). Its purpose is to provide direction and establish an overarching policy for the management of WMM among DoD components. To this end, the policy incorporates requirements of the MMR into well-established DoD business practices to keep intact its proven and uniform munitions management systems. A Designated Disposition Authority (DDA) was established and an evaluation process developed. The DDA evaluation process assigns the authority to designate military munitions as waste to the DDA, thereby introducing only two ways a military munitions becomes a WMM:

- Designation by the DDA or
- By rule (i.e., is a waste by definition under the MR).

A formal process is in place that installations follow to determine disposition of military munitions and is outlined in the DoD Policy (1998). The DDA provides instructions to the requesting installation that will include the date the military munitions will be designated as WMM:

- For munitions that automatically became a waste (e.g., buried unused munitions), the date of the action that made them waste will be used.

- For munitions that become a waste upon removal from storage for treatment or disposal, the disposition instructions will state that the military munitions becomes WMM on the date it is removed from storage for treatment or disposal.

- For damaged or deteriorated munitions, the date the DDA determined the item cannot be put into serviceable condition and cannot be recycled or used for other purposes.

- For all other military munitions, the date the DDA determined them to be WMM.

Based on the MR and MRIP, the point of generation of WMM occurs when the military munitions are removed from storage to be transported to the OD Unit for disposal.

All waste that will be treated at the OD Unit will be transported to the treatment area in the original product container or other appropriate packaging. Propellants are contained within chambers that are generally cylindrical in shape and constructed of aluminum and steel. A primary consideration in the development of propellant, explosive, or pyrotechnic systems is long-term storage stability, which requires compatibility of container and the energetic material.

Receipt of the waste in the product container, combined with the fact that commonly used military propellants are compatible with one another, ensures that incompatible wastes are not

mixed. The reactive wastes to be treated at the OD Unit are solid in nature and contain no free liquid.

B.2.4 WASTE CHARACTERISTICS

This section addresses the characteristics of the waste that must be known for proper management of the waste. This information is derived from published sources. Analysis to support the published data is not required because of the limited deviation allowed within the product specifications that manufacturers of military propellants must follow. The waste that is treated at the OD Unit has essentially the same composition as serviceable propellants, but is being disposed of because of shelf-life exceedence, deterioration during storage, or failure to complete exhaust during testing of motors.

B 2.4.1 Use of Acceptable Knowledge to Designate Waste Military Munitions

Characterization of hazardous waste is typically accomplished using acceptable knowledge (AK), related technical information, and/or other written documentation (e.g., an excess-explosives worksheet, LDR paperwork, Material Safety Data Sheets [MSDS]), and may be confirmed using the MIDAS or other appropriate databases. Knowledge of process (KOP) or process knowledge (PK) is a subset of AK, which can be used to meet waste analysis requirements. KOP is described in 20.4.1 NMAC §264.13(a)(2) as data developed under 20.4.1 NMAC, Subpart II, Part 261, and existing published or documented data on the hazardous waste or on hazardous waste generated from similar processes. Hazardous waste components and characteristics are known based on existing or published data. Because the munitions filler of the wastes treated are generated during known and documented formulation processes or are of the original manufacturer's chemical composition, complete with MSDSs or equivalent technical information (e.g., information from the MIDAS database), use of KOP fulfills 20.4.1 NMAC §264.13(a)(2) requirements for these wastes.

Detailed chemical and physical analyses have been performed by the DoD for all military ordnance material. These analyses have been compiled into ordnance material specifications and "Technical Supply Bulletins." Due to the vast amount of knowledge on the composition of ordnance materials that has been assembled for each particular ordnance material, and the dangers involved in deactivating a bomb or explosive, samples of the waste ordnance materials are not routinely obtained and chemically analyzed. Instead, a well-defined knowledge of the constituents used in making the ordnance materials has been compiled. This understanding of the waste constituents is presented in lieu of extremely dangerous pre-detonation sampling and analysis. A chemical analysis would not yield additional information and could pose a risk to sampling and analysis personnel

B 2.4.2 Waste Constituents, Physical and Chemical Properties.

The types of military explosives have remained relatively unchanged since 1945; what have changed are the combinations of the explosives to meet current or emerging applications. Table B-2 contains the listing of general chemical compositions of military energetic materials. This listing was compiled from TM 9-1300-214 *Military Explosives* (US Army, 1984), which provides detailed information on the physical and chemical properties of the military energetic

materials. These chemicals are present in waste military munitions/explosives typically treated at the OD Unit. To adequately describe the waste, the following information must be known:

- Presence of free liquids
- Basis for hazard designation
- Waste composition
- Ignition or explosion temperature
- Heat of combustion and/or detonation
- Sensitivity to shock or electrical ignition
- Storage stability (tendency to decompose during storage)
- Compatibility with container or other energetic material
- Solubility characteristics

It must be noted that the unique nature of these materials presents difficulties in development of these data in all instances. In some instances, the parameters are not readily measured because of the instability of the material. For many energetic materials, the particle size, degree of subdivision, compressed density of the material in the ordnance, age, and atmospheric conditions affect the value derived for these parameters. The same material may provide different values for certain parameters for no apparent reason. Thus, the published data presented in this section represent the accepted values for those parameters derived from various tests.

Table B-4 identifies all explosive compounds and other substances that will be used or treated at the OD Unit. As shown in Tables B-2, B-3, and B-4, several explosive materials are used in a variety of combinations to manufacture explosives and propellant devices. All of these explosives are solid materials that do not contain liquids.

The composition of specific propellant devices that have been treated at the OD Unit, and that are expected to require continued treatment, is provided in Tables B-4. Additives to the double-base propellant compositions are also identified in Table B-4. Single-base or composite propellants are not thermally treated at the OD Unit. In addition to the specific formulations for the propellants, Table B-4 identifies the components present in primer compositions or the initial detonating agents associated with these energetic items. The primer is not always treated in conjunction with the propellant. Table B-7 presents data on the physical and chemical characteristics of the constituent used in these propellants. These characteristics describe the characteristics of an explosive chemical. Data on the donor explosive train (that is serviceable ordnance, and not wastes) is also presented in these tables.

Single-base propellants contain nitrocellulose (with 12.5 – 13% N) as the primary constituent. In addition to nitrocellulose, single-base propellants contain organic nitro compounds, stabilizers, and metal salts. The organic nitro compounds commonly employed in single-base systems include trinitrotoluene and dinitrotoluene. Organic nitro compounds are utilized to disperse the nitrocellulose as colloidal particles. Stabilizers are required in the composition due to the tendency of nitrocellulose to decompose during storage, particularly as moisture is absorbed. Decomposition of nitrocellulose is an exothermic reaction that is indicated initially by an acid odor or condition that progresses to emission of red fumes and spontaneous ignition as the propellant becomes unstable. Due to this condition, nitrocellulose-based propellants are stored in bulk, are vigorously monitored for pH changes, and are compounded with stabilizers used to

retard decay. Typical stabilizers used to retard this condition include diphenylamine, nitro diphenylamine, diethyl diphenylurea, and petroleum jelly (cordite). As decomposition proceeds, nitrophenylamines, nitroureas, and nitro anilines are formed. This variety of the analogs will be present in waste single-based propellants. However, as the original concentration of the stabilizer seldom exceeds 1.0%, the concentration of those decomposition products will be in the parts per thousand range.

In addition to nitrocellulose fuel, nitro-based dispersion agent, and stabilizer, certain propellants incorporate small quantities of metal compounds and elements. These compounds include potassium sulfate, tin, and graphite that are not characteristically hazardous.

Double-base propellant formulations include both nitrocellulose and nitroglycerin with limited quantities of stabilizers and additives. Nitroglycerin serves as both the gelatinizing agent and a fuel in these compositions. In addition to the nitroglycerin, small quantities of dibutylphthalate, dibutylphthalate, or triacetin are compounded to enhance colloidal suspension of the nitrocellulose. The stabilizing agents for double-base compositions do not differ from the stabilizers common to single-base systems. However, the metallic additives for double-base systems may include barium or potassium nitrate, calcium sulfate, calcium carbonate, or lead stearate in addition to the metallics used in single-base compositions.

The relative concentration of these components in propellants varies depending upon the intended end use. In general, nitrocellulose is the predominant constituent and is present in concentrations of 50 to 70%. Nitroglycerin is the second largest constituent in the propellant composition. These two compounds constitute greater than 95% of the standard military double-base formulations. The addition of inerts and stabilizers provides the balance to greater than 99% of the formulation, with less than 1.0% of the formulation composed of various nitrates or lead stearate.

Composite propellants consist of ammonium nitrate, an inorganic oxidant such as potassium nitrate, and an organic binder. These propellants are heterogeneous solids that may be press formed to the desired shape. Composite formulations are not handled at the 20,000-Pound OD Unit.

Although the term "colloidal suspension" has been applied to propellants, these compositions are completely solid without free liquids. Physically, propellant compositions consist of powders that are incorporated into solid or warlike binders and pressed into strips, cords, and other linear shapes. Although dry nitrocellulose is unstable, incorporation of the binders renders the mixture relatively stable. Propellants, including double-base formulations, are not sensitive to shock and cannot be ignited by ordinary shock or frictional effects. Propellants are sensitive to electric spark only if the material has been finely divided and is present as dust. Thus, propellants present a fire hazard to the degree that a sufficiently strong heat source is available to ignite the composition. Unless finely divided, ignition usually requires either open flame or detonation of a high explosive placed adjacent to the propellant material.

The composition of commonly utilized single-base and double-base propellants is provided in Table B-3. Specific propellants that have been, and will be thermally treated at the 20,000-Pound OD Unit are discussed in a future section. Nitroglycerin has been discussed previously in

conjunction with propellants. In pure form, nitroglycerin is a colorless liquid with a molecular weight of 227 that fuses to the solid state at approximately 13°C. The specific gravity of nitroglycerin is 1.5962, and the liquid viscosity is 36 Centipoises at 20°C. Nitroglycerin decomposes with gas evolution at temperatures of 145°C. The published explosion temperature for nitroglycerin is 222°C, with evolution of approximately 368 Kcal/mol of heat and 715 mL of gas per gram of charge. Nitroglycerin is extremely sensitive to shock, being detonated by a 2 kg weight dropped from a height of 16 cm in the Bureau of Mines reactivity tests. For this reason, nitroglycerin is compounded with other energetics or inerts to facilitate handling. In pure form, it may be absorbed through the skin into the circulatory system and causes increased pulse rate and blood pressure.

Nitrocellulose is a mixture of esters formed by the nitration of cellulose with a mixture of sulfuric and nitric acids. As used in military formulations, nitrocellulose contains a minimum of 12.2% nitrogen. Although nitrocellulose is not truly soluble in any solvent, certain alcohols, ketones, and aromatic nitro compounds will disperse nitrocellulose as a colloidal suspension. Water has no solvent action upon nitrocellulose, but is absorbed to between 2 and 3%, with the resultant deterioration to the unstable form. Cellulose nitrate has a specific gravity of 1.65. The explosive temperature for cellulose nitrate is approximately 230°C with evolution of 661 Kcal/mol of heat upon combustion or 272 Kcal/mol of heat upon detonation that is accompanied by evolution of approximately 700 mL of gas per gram charge. Nitrocellulose is extremely sensitive to spark ignition if handled in dry form. The shock sensitivity of nitrocellulose is greater than that of nitroglycerin and is listed as detonation by a 2 kg weight dropped from a height of 9 cm in the Bureau of Mines test.

Three waste characteristics relevant to proper handling and treatment are not addressed in these tables: (1) the presence of free liquids, (2) compatibility of these wastes with the container, and (3) compatibility with other energetic materials. As previously indicated, the energetic compositions used for these military applications contain no free liquid and consist of finely divided powders or wax-like materials compressed to a variety of shapes. These wastes are managed in the original product container, and the materials of the casing were specifically selected at the time of design to be compatible with the energetic material to ensure longevity during storage. Thus, further consideration of these compatibility concerns is not warranted and is prohibitive because of the dangers inherent in any attempt to re-package these materials. Furthermore, these wastes are not re-packaged or stored at the unit. The energetic formulations that are thermally treated at the OD Unit are mutually compatible as demonstrated by the fact that these materials are often blended together in a single formulation or conjointly packaged in a single device. In addition to their mutual compatibility, the energetic materials are not removed for blending purposes and, therefore, mixing of incompatible wastes does not occur. Although some limited data concerning reactivity toward water and other reagents are provided in this section, the wastes treated at the OD Unit are not mixed with any reagents incidentally or to effect treatment. Such data are provided solely for informational purposes.

B 2.4.3 EPA Waste Codes

Energetic materials are chemical compounds or mixtures of chemical compounds composed primarily of carbon, hydrogen, and nitrogen, and in all cases will be reactive. Various external stimuli, such as a blow, shock, electrostatic, or heat, can cause the release of energy contained in

the energetic materials. The sensitivity of the energetic waste to external stimuli is the explosive characteristic of reactivity and is the basis for assigning the EPA Hazardous Waste Code D003. For LDR requirements and to aid in identification of constituents that may reside in the environment, underlying characteristic codes are identified and listed in Table B-4.

B.2.4.4 Treatment Effectiveness

Based on BangBox and full scale field testing, the effectiveness of OD treatment is dependent on a number of factors: type of method, type of energetic, and soil interaction (EPA, 2002). In general, OD treatment exceeds 99 percent destruction and removal efficiency (DRE) for energetics. This DRE is due in part to a secondary combustion in the fireball resulting from the detonation as well as ejected material. The detonation of trinitrotoluene (TNT) results in a DRE of 99.9996 percent with the residue consisting of 2,4-dinitrotoluene and soot. Approximately 2 percent of the OD residue was recovered within 225 m of the detonation site. Energetic materials with a higher oxygen content resulted in higher DREs. That is, molecules that contained most of the oxygen required for complete combustion have higher conversion efficiencies. In general, propellants have higher oxygen balances and resulting conversion efficiencies than explosives. The presence of soil interferes with the flow of ambient air into the fireball region of the detonation for OD.

Open detonation results in 97 percent of the carbon in the explosives being converted to carbon dioxide. Comparison between BangBox and full-scale field test data indicate that the conversion of TNT carbon to carbon dioxide is more efficient under the controlled conditions of the BangBox than in large-scale detonations in the field. Specifically, more volatile organic compounds (VOCs) are generated under field conditions than in BangBox Testing. However, semi volatile organic compound (SVOC) generation appears to be very similar under either BangBox or full-scale testing conditions.

In general, OD will render energetic materials nonreactive. (The Bureau of Mines reactivity test classifies energetic concentrations of 30,000 mg/kg or less as not reactive) and results in both solid and gaseous by-products.

B.2.4.5 Fate and Transport Parameters.

Although the treatment efficiency by OD is high (>99%), the detonation of energetic materials produces a wide range of air and surface pollutants, including carbon monoxide, nitrogen oxides, VOCs, acid gases, and particulate matter. These emissions, including undecomposed or partially decomposed energetic materials, may lead to atmospheric pollution or groundwater contamination. Table B-8 and Table B-9 identify propellant compounds and common nitrogen-based explosives and their breakdown products, respectively. The speciation and amounts of these emitted pollutants depend on the identity and amount of energetic material detonated, the detonation order, the detonation mode (air burst, surface detonation, buried detonation), and the munitions type (shell, mine, detonation charge, etc.). Solid by-products include casings from the waste and possibly trace concentrations of incompletely oxidized reactive material. Reaction by-products that are solid will be retained in the depression created by the explosive force (except for ejected components), but the gaseous reaction by-products vent to the atmosphere. These solid by-products will be gathered and visually inspected by an EOD expert, who will determine

if re-detonation is necessary. The Permittee shall characterize the debris collected after each detonation in accordance with 40 CFR §261, Subpart C. This will be accomplished by sampling and analysis, MSDS review, or generator knowledge. Based on this characterization, the Permittee shall manage the fragments collected in accordance with 40 CFR §261 as applicable to the waste.

The term "fate and transport" is, in general, referred to as the outcome of a contaminant in the environment as a result of its potential to be transported, transformed (physically, chemically, or biologically), or accumulated in one or more media. The environmental fate and transport of a contaminant is controlled by the compound's physical and chemical properties and the nature of the media through which the compound is migrating. Specific physicochemical parameters of interest include: 1) molecular weight (g/mole), 2) octanol-water partition coefficient (Kow), 3) water solubility, 4) vapor pressure, 5) Henry's law constant, and 6) molecular diffusivity in air and water. ERDC (2005) completed research to identify available information and to calculate missing information. This information is being developed for use in various military munitions modules for determining fate and transport.

Table B-10 contains chemical and physical properties and partitioning factors commonly used to describe mobility of chemicals through the air, water, and soil. Information contained in this table was derived from various research documents focused on the fate and transport of energetic materials (ERDC/CERL, 2002; 2005). The chemical and physical properties are important for understanding how a chemical moves in the environment. The molecular weight of a compound is measured in g/mole. Generally, the higher the molecular weight, the less soluble in water. Molecular weight also affects the density of a compound. Water solubility is the measurement of the maximum concentration of a chemical that will dissolve in pure water at a specific temperature, measured in mg/L. Water solubility plays a large role in movement and distribution of a chemical through soil and groundwater. The water solubility temperature is the temperature corresponding to the water solubility value. Water solubility is usually defined at 25 ºC. The vapor pressure of a chemical is the pressure exerted by its vapor, at a given temperature, in equilibrium with the pure compound (liquid or solid). Vapor pressure represents the tendency of a compound to evaporate. High vapor pressures (mm Hg) mean that the compound is more likely to volatilize out of solution. The vapor pressure temperature is the temperature corresponding to the vapor pressure value.

Partitioning factors help predict the behavior of a chemical in the environment. The Henry's Law constant is a property of a chemical that expresses its partition between the air and water phases. It helps to predict the behavior of an organic compound in the environment and in remediation procedures such as air stripping processes. These values also describe the movement of a chemical from water to air and vice versa. High values mean that the chemical will move more toward the gas phase whereas low values indicate stronger partitioning into the aqueous phase (atm m^3/mole). The octanol-water partitioning coefficient (Kow) is a ratio of the equilibrium concentration of a dissolved substance in a system of two immiscible liquids–water and octanol. After a chemical has been mixed in an octanol and water solution, the system is allowed to reach equilibrium. The two phases will partition and a ratio of the concentration of the chemicals in the octanol and water phases is taken. This ratio provides an indication of chemical accumulation in water. More polar compounds will tend to partition into the aqueous phase, thus have a low Kow. This is also a measurement of the hydrophobicity of an organic. The more hydrophobic,

the more the contaminant will adsorb to soil or organics or biomass and have a low solubility (mL/mL). The organic carbon partition coefficient (Koc) describes the partitioning of a chemical between the aqueous phase and organic material, such as that present in soil. The Koc is used as a measure of the tendency for organics to be adsorbed by soil. It is largely independent of soil properties (mL/g).

Energetic compounds in propellant mixtures and explosives exhibit a range of aqueous solubilities (Table B-10). Oxidizers generally are nitramine compounds or inorganic salts that have high aqueous solubilities measured in the parts-per-thousand range (grams per liter, g/L). Stabilizers are aliphatic nitramines that have low to moderate aqueous solubility, in the parts-per-million range (milligrams per liter, mg/L). Burning-rate modifiers cited here are lead-substituted aromatic and aliphatic compounds which are sparingly soluble. Plasticizer and binder compositions are diverse, including the phthalates (aromatic carboxylic acids), and alcohols that contain nitrogen (EGDN, nitroglycerin). Most plasticizers are moderately water-soluble.

Sorption processes involve the association of a solute with a solid at the solid-solution interface. The specific reaction and the rate at which it occurs depend on the nature of the molecule in solution (hydrophobic or hydrophilic; ionic or neutral) and the nature of the surface (organic, mineral, oxide).

Vapor pressure and the Henry's law constant are two parameters to quantify the volatility of a compound. The pressure of a gas in equilibrium with pure liquid at a known temperature is its vapor pressure. The Henry's law constant for a compound is the ratio of dissolved gas concentration (solution) divided by gas partial pressure (vapor). Greater volatility from dry surfaces is suggested by larger vapor pressure values. More extensive partitioning from water or moist soil to gas is indicated by greater Henry's law constant values. Compounds that are volatile have a greater likelihood of photochemical reactions, which will be discussed in the following section. Literature values for vapor pressure and Henry's law constant are listed in Table B-10.

Volatilization from dry surfaces is an important transport pathway for the following compounds: nitro guanidine, EGDN, and nitroglycerin. Volatility is indicated by large vapor pressures generally greater than 10^{-3} torr (equal to 10^{-3} mm Hg at 0 ºC, or 0.13328 Pascals (SI), or 1.3168 x 10^{-6} atmospheres). Significant partitioning to the atmosphere is indicated by larger Henry's law constants (greater than 10^{-6} atm•m^2/mol). Partitioning from water or moist soil surfaces to air is an important transport pathway for EGDN, and nitroglycerin.

Photochemical transformations may be one of the most important influences on propellant fate in surface and ground water environments. Many energetic compounds are photosensitive, with absorption maxima in the UV-visible range (240 to 290 nm). Products of photochemical transformations of energetic compounds in aqueous solution can be pink or black in color. The US Army has been developing data on the environmental fate and transport of energetic materials (Brannon and Pennington, 2002; Mirecki et.al. 2006)

Microbe-mediated transformation reactions can reduce some energetic compound concentrations in soil and subsurface environments. Microbes facilitate electron transfer reactions between carbon-rich electron donors and electron acceptors such as oxygen, nitrate, sulfate, or ferric iron to obtain energy. Some energetic compounds can serve as carbon-rich substrates, or are co-

metabolized with other carbon molecules in the environment. Microbe-mediated transformation reactions can occur in virtually all environments, though the specific reaction mechanism and microbial population affecting the reactions will vary. Extensive research is currently on-going to better understand the various transformation pathways of military munitions in the environment (Mirecki et.al. 2006).

Table B-7 Characteristics of Constituents in Propellants or Explosives Thermally Treated at the OD Unit

	Explosion Temperature (°C)	Heat of Detonation	Heat of Combustion (Kcal/mol)	Gas Volume on Detonating	Impact Sensitivity (cm)	Spark Sensitivity	Storage Stability	Solubility (mg/L)
Nitrocellulose	230	272	661	700	9	High	Hydrolysis	Insoluble Hygroscopic (3%)
Nitroglycerin	222	337	368	715	16	Moderate	Stable	1600
RDX	260	285	507	908	32	Moderate	Stable	50
PETN	215	439	600	790	17	Sensitive	Stable	Unknown
Lead Azide	340	106	183	0.3308	10	Sensitive	Stable	500
Lead Styphnate	282	15213	585	368	17	Sensitive	Stable	1000
Tetryl	257	324	839	760	26	Sensitive	Stable	75
Mercury Fulminate	210	122	267	243	5	Sensitive	Stable	700
DDNP	195	172	681	865	10	Sensitive	Stable	Insoluble
Barium Nitrate	NA	NA	NA	NA	NA	NA	Stable	8.7×10^4
Potassium Nitrate	NA	NA	NA	NA	NA	NA	Stable	1.3×10^4
Potassium Chlorate	NA	NA	NA	NA	NA	NA	Stable	7.1×10^4
Antimony Sulfide	NA	NA	NA	NA	NA	NA	Stable	1.7
Lead Thiocyanate	NA	NA	NA	NA	NA	NA	Stable	500

Table B- 8: Propellant compounds and their transformation products. (Propellant compounds in bold text, transformation products in normal text) (ERDC/CERL, 2006).

Compound	CAS Registry Number	Acronym
Oxidizers and their Transformation Products		
Nitroguanidine	556-88-7	NQ
Cyanamide	420-04-2	
Guanidine (as hydrochloride)	50-01-1	
Melamine	108-78-1	
n-Nitrosoguanidine	674-81-7	
Ammonium perchlorate	7790-98-9	
Potassium chlorate	3811-04-9	
Potassium perchlorate	7778-74-7	
Stabilizers and their Transformation Products		
Diphenylamine	122-39-4	DPA
N -Nitrosodiphenylamine	86-30-6	NNODPA
2,4-Dinitrodiphenylamine	961-68-2	2,4DNDPA
2-Nitrodiphenylamine	119-75-5	2NDPA
4-Nitrodiphenylamine	836-30-6	4NDPA
Methyl centralite, 1,3-dimethyl-1,3-diphenylurea	611-92-7	
Ethyl centralite 1,3-diethyl-1,3-diphenylurea	85-98-3	
Burning-Rate Modifiers		
Lead salicylate	15748-73-9	
Lead resorcylate	20936-32-7	
Lead stearate	7428-48-0	
Plasticizers		
Dimethyl phthalate	131-11-3	DMP
Diethyl phthalate	84-66-2	DEP
Di-n-butyl phthalate	84-74-2	DNBP
Butylbenzyl phthalate	85-68-7	BBP
Bis(2-ethylhexyl)phthalate	117-81-7	DEHP
Energetic Plasticizers and Binders		
2,4-Dinitrotoluene	121-14-2	2,4DNT
Diethylene glycol dinitrate	693-21-0	DEGDN
Ethylene glycol dinitrate	628-96-6	EGDN
Nitrocellulose	9004-70-0	NC
Nitroglycerin	55-63-0	NG
Note: Shaded cells indicated “no data		.”

Table B- 9: Common Nitrogen-Based Explosives, Co-Contaminants, and Breakdown Products (US Army, 1984).

Compound	Description	Abbreviation	CAS Number
Octahydro-1, 3, 5, 7-tetranitro-1,3,5,7-tetrazocine	Nitramine explosive; also RDX co contaminant	HMX	2691-41-0
Hexahydro-1,3,5-trinitro-1,3,5- triazine	Nitramine explosive; also HMX co contaminant	RDX	121-82-4
1,3,5-Trinitrobenzene	TNT co-contaminant and breakdown product	1,3,5-TNB	99-35-4
1,3-Dinitrobenzene	DNT breakdown product and TNT co contaminant	1,3-DNB	99-65-0
Methyl-2,4,6- trinitrophenylnitramine	Nitramine explosive	Tetryl	479-45-8
Nitrobenzene	DNT co-contaminant	NB	98-95-3
2,4,6-Trinitrotoluene	Nitroaromatic explosive	2,4,6-TNT	118-96-7
4-Amino-2,6-dinitrotoluene	TNT breakdown product	4-Am-DNT	1946-51-0
2-Amino-4,6-dinitrotoluene	TNT breakdown product	2-Am-DNT	355-72-78-2
2,4-Dinitrotoluene	Nitroaromatic explosive/ propellant; also TNT co-contaminant	2,4-DNT	121-14-2
2,6-Dinitrotoluene	Nitroaromatic explosive/ propellant, also TNT co-contaminant	2,6-DNT	606-20-2
2-Nitrotoluene (o-Nitro toluene)	DNT co-contaminant	2-NT	88-72-2
3-Nitrotoluene (m-Nitro toluene)	DNT co-contaminant	3-NT	99-08-1
4-Nitrotoluene (p-Nitro toluene)	DNT co-contaminant	4-NT	99-99-0
Nitroglycerine	Nitrate ester explosive/propellant	NG	55-63-0

Table B- 10: Physical and Chemical Properties of Military Munitions of Concern (ERDC/CERL, 2005)

					Vapor Pressure			Water Solubility			
Constituent	**CAS Number**	**Molecular Weight (g)**	**Melting Point Deg C**	**Boiling Point Deg C**	**mm Hg**	**Temp Deg C**	**Henry's Law Constant (H) atm m^3 /mole**	**mg/L**	**Temp Deg C**	**Log Kow**	**Log Koc**
1,3,5-TNB	99-35-4	213.11	122.5	315	3.20E-06	20	[3.08E-9]	340	20	1.1	[104; 178]
1,3-DNB	99-65-0	168.11	89-90	302.6	2.00E-04	25	4.90E-08	533	25	1.49	[150]
2,4,6-TNT	118-96-7	227.18	80.1	240 (explodes)	1.99E-04	20	4.57E-07	130	20	1.6	1600
2,4-DNT	121-14-2	182.14	71	300	1.47E-04	22	1.30E-07	270	22	1.98	[360]
2,6-DNT	606-20-2	182.14	66	285	5.67E-04	25	9.26E-08	180	20	2.1	19 ; 72
EGDN	628-96-6							5.2 - 5.6	25		
HMX	2691-41-0	296.2	276-287	NR	3.33E-14	25	2.60E-15	6.63	20	0.26 ; .06	0.54
Nitrobenzene	98-95-3	123.11	5.7	210.8	0.245	25	2.40E-05	1.80E +03	25	1.85	30-6 - 370
Nitrocellulose NC	9004-70-0							immiscible			

Constituent	CAS Number	Molecular Weight (g)	Melting Point Deg C	Boiling Point Deg C	Vapor Pressure		Henry's Law Constant (H) atm m^3 /mole	Water Solubility		Log Kow	Log Koc
					mm Hg	Temp Deg C		mg/L	Temp Deg C		
Nitroglycerin NG	55-63-0	227.09	2.8-13.5	218 (explodes)	2.00E-04	20	[4.30E-08]	1800	25	1.62	180
Nitroguanidine NQ	556-88-7				3.00E-02	25	4.50E-12	Slightly soluble		-0.83	
PETN	78-11-5	316.15	140	180	1.04E-10	25	[1.20E-11]	43	25	1.61	179-1720
RDX	121-82-4	222.26	205-206	decomposes	4.10E-09	NR	[6.30E-08]	59.8	25	0.87	42-167
Tetryl	479-45-8	287.5	130-132	187 (explodes)	4.00E-10	20	[1.00E-11]	75	20	2.4	[406]

Value in brackets reported as estimated; NR = Not Reported; shaded block indicates data not available

B.3 SELECTION OF WASTE ANALYSIS PARAMETERS

This section addresses the parameters of concern for WMM that will be treated at the OD Unit. The rationale for the selection of these parameters, sampling methods, analytical protocols, and frequency of analysis are described. Parameters and rationale for characterization of waste are discussed below in sections that cover pre-detonation and post detonation, respectively.

HAFB has never been used for the research and development of nuclear, chemical warfare, or other exotic warfare types of weapons. The OD Unit is used solely for the disposal/treatment of conventional waste-ordnance, munitions, incendiaries, propellants, and rocket motors. The only munitions delivered or disposed of at HAFB have been conventional live and training munitions. Therefore, the chemical components and combustion by-products are consistent with typical materials for military munitions items; thus, the emphasis of sampling and analysis for the 20,000-Pound OD Unit will be to search only for the constituents present in these types of wastes.

Because combustion products may be present as residues in the treatment unit or ejected soils, the collection and analysis of samples are required to characterize contaminants and determine the concentrations of compounds in the OD Unit and surrounding media. The nature of the treatment by-products is dependent upon the category of device from which the waste is derived. Propellant constituents will be converted largely to the gaseous products CO_2, CO, H_2O, N_2, and, to some degree, NO_x. Some extremely limited possibility exists that these materials may fail to entirely decompose. Tables B-8 and B-9 identify these compounds.

The nitrate oxidant from primers or detonators will convert to sodium or potassium nitrite ($NaNO_2$, KNO_2). Other oxidants are converted to the oxide. Fuels such as antimony sulfide or thiocyanate are converted to the oxide or sulfate.

The SAP outlined in Permit Attachment H focuses on solid reaction products because of the hazards associated with plume sampling in the vicinity of the treatment zone.

B.3.1 PARAMETERS AND RATIONALE (PRE-DETONATION)

Only WMM will be treated at the OD Unit. This designation is made by DDA. All waste munitions treated at the OD Unit are standard military end items with well-defined physical and chemical characteristics.

Waste analysis will not be performed prior to the treatment of these wastes due to the nature of the waste stream; rather AK will be used. Section B.2.3.1 provides justification for using AK.

Sampling waste energetic items prior to treatment would greatly increase the potential for accidental detonation, with resultant property damage and personal injury, that such efforts are not warranted. The containers that hold these energetic materials (product or waste) are sealed in accordance with exceedingly specific manufacturing specifications designed to prolong storage stability and reduce the potential for unplanned detonation or ignition from impact. For example, nitrocellulose propellant mixtures are hygroscopic to 3 to 4 weight percent if exposed to moist air. The hydrolysis that accompanies exposure of nitrocellulose to air (even at low relative

humidity values) renders the material unstable, and evolution of NO_2, or auto combustion occurs. Dismantling of the devices (that would be required for sampling) not only increases hazard by exposure of material but also increases the potential for detonation due to the friction and shock sensitivity of the materials.

Additionally, the composition of these materials is well defined on the basis of published literature and tightly controlled manufacturing specifications. Thus, these materials are analogous to pure discarded commercial products for which sampling would only prove redundant. Prior to treatment of any waste not specifically identified in earlier pages, a complete listing of all ingredients common to that energetic item will be obtained to determine its suitability for treatment in the OD Unit.

The use and handling of these materials is tightly controlled and the device is sealed; therefore, the possibility of mixing unspecified items with the energetic materials does not exist. No other wastes are treated in conjunction with these devices in the OD Unit because joint treatment is specifically prohibited by Technical Orders.

B.3.2 PARAMETERS AND RATIONALE (POST DETONATION)

This section will identify sources of typical munitions constituents and identify analytical methods for detection of these constituents. The purpose of this section is to justify the parameters selected for analysis and provide summary tables of EPA methods and analytes. Detailed sampling and analysis procedures are covered in Attachments G (Closure Plans), H (SAP for soil) and I (environmental protection).

Post treatment analysis of residuals presents less risk to sampling and analytical personnel than attempts to perform predetonation sampling because successful treatment renders the waste non-reactive. Thermal treatment of propellants converts the alkoxynitrates to gaseous products. However, because it is technically impractical to sample evolved gas in the treatment zone, the focus of this plan is the solid residuals that may remain in the pit. This sampling will provide information on the nature and extent of chemical contamination. Permit Attachment H contains a detailed SAP that covers all aspects of post-detonation waste sampling at the OD Unit. Specific topics covered in the SAP include sampling approach and rationale, sampling procedures and methodology, health and safety procedures, sample handling and chain of custody (COC), sample documentation, laboratory procedures, quality assurance/quality control (QA/QC), and data evaluation methods.

B.3.3 PARAMETERS RECOMMENDED FOR ANALYSIS (POST DETONATION)

OD is a thermal treatment process used to remove the hazard characteristic of reactivity. This treatment technology, known as Deactivation, removes the reactivity characteristic of the explosive material by decomposition during the exothermic, supersonic reaction. The most conclusive means of measuring the effectiveness of OD thermal treatment is through a periodic sampling program that can be applied to all potentially affected media. A sampling and analysis program is capable of determining whether any media have been adversely impacted by treatment operations. Potential contaminants in the various media may contain energetic materials and their breakdown products of the PEP treated at the OD Unit and listed in Tables B-

8 and B-9. Metals are found in all military munitions and perchlorates are in solid fuel rockets, mines, torpedo warheads, and fuzes. Based on the PEP treated at the OD Unit, the potential contaminants that will be selected for analysis are listed in Table B-11.

Table B – 11: Parameters Selected for Analysis and Rationale

TEST METHOD	PARAMETERS	CONSTITUENTS	CAS	RATIONALE
	METALS			Metals are found in all military munitions. Certain munitions only contain metals (i.e., incendiaries).
SW6010B		Antimony	7440-36-0	constituent in fuels for propellants
SW6010B		Arsenic	7440-38-2	
SW6010B		Barium	7440-39-3	constituent in oxidizer in propellants
SW6010B		Beryllium	7440-41-7	
SW6010B		Cadmium	7440-43-9	
SW6010B		Chromium	7440-47-3	
SW6010B		Copper	7440-50-8	constituent in rocket propellant
SW6010B		Lead	7439-92-1	constituent of primary explosive
SW6010B		Nickel	7440-02-0	
SW6010B		Selenium	7782-49-2	
SW6010B		Silver	7440-22-4	
SW7471A		Mercury	7439-97-6	constituent of primary explosive
SW6860	PERCHLORATES			DoD munitions, munitions components, and training devices that may have contained perchlorate include the following: Solid fuel rockets, mines, torpedo warheads, smoke-generating compounds, signal flares, parachute flares, thermite type incendiaries, incendiary bombs, fuzes, jet-assisted takeoff devices.
		Ammonium Perchlorate	7790-98-9	
		Potassium Perchlorate	7778-74-7	
SW8095	ENERGETICS			Explosives used in Military Munitions
		1,3,5-TNB	99-35-4	
		1,3-DNB	99-65-0	
		2,4,6-TNT	118-96-7	
		2,4-DNT	121-14-2	
		2,6-DNT	606-20-2	
		2-NT	88-72-2	
		3-NT	99-08-1	
		EGDN	628-96-6	
		HMX	2691-41-0	
		Nitrocellulose NC	9004-70-0	
		Nitroglycerin NG	55-63-0	
		Nitroguanidine NQ	556-88-7	
		PETN	78-11-5	
		RDX	121-82-4	

TEST METHOD	PARAMETERS	CONSTITUENTS	CAS	RATIONALE
		Tetryl	479-45-8	
SW7580	PHOSPHOROUS	White Phosphorus WP	7723-14-0	Used in smoke rounds.

B.4 SUMMARY OF ANALYTICAL METHODS AND SAMPLING FREQUENCY

All waste streams treated at the OD Unit are energetic materials that have been manufactured in accordance with military specifications and strict manufacturing requirements. As such, these waste streams consist of PEP materials that are known. Therefore, as discussed above, no pre-treatment analyses will be performed on the energetic waste streams treated at OD Unit. The nature of OD treatment allows for the complete destruction of the energetic materials. The Permittee shall characterize the debris collected after each detonation in accordance with 40 CFR §261, Subpart C. This will be accomplished by sampling and analysis, MSDS review, or generator knowledge. Based on this characterization, the Permittee shall manage the fragments collected in accordance with 40 CFR §261 as applicable to the waste.

Samples of the solid residuals and underlying soils will be prepared and analyzed according to protocols from the current edition of the EPA Publication SW-846, *Test Methods for Evaluating Solid Waste, Physical and Chemical Methods*. Samples will be analyzed for all toxic metals including priority pollutant metals (listed at 20.4.1.500 NMAC Part 264 Appendix IX), explosive residues, and soil moisture. Permit Attachment H, Sampling and Analysis Plan, contains the specific test methods and lists of analytes that will be measured, as well as the rationale for their selection. In addition, details of laboratory protocols and quality assurance/quality control procedures are also discussed in the SAP, Attachment H.

B.4.1 RECOMMENDED ANALYTES AND METHODS

All analytical tests are performed by an EPA certified laboratory and are conducted in accordance with the protocol found in the most recent edition of EPA SW-846. As new methods are developed and become available, they will be used accordingly.

White Phosphorous (WP) (CAS 7723-14-0, P_4) reacts with air and requires special handling for sampling and analysis. Fixed laboratory tests for WP are all based on gas chromatography. The only published method for WP is SW7580, a GC method with a nitrogen-phosphorus detector (NPD). A Gas Chromatography/Mass Spectrometry (GC/MS) method is also available, but is not published. Due to increased regulation of WP by the Drug Enforcement Agency, the standard is currently unavailable. Therefore, analytical capabilities for this compound are very limited. The following tables summarize tests available for the other chemical selected for analysis.

Table B-12. Laboratory Tests for Metals

Method Number	Title
SW6010B	Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)
SW6020	Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
SW7000 series	Individual Metals by GFAA
SW7470A/SW7471A	Mercury by Cold Vapor Atomic Absorption (CVAA)

Table B -13 Perchlorate Laboratory Test

Method (Technique)	Applicability	Reporting Limits
SW6860 (IC/MS or IC/MS/MS)	1) Aqueous samples, to include those with high TDS	0.01 µg/L for water; (by IC/MS/MS)
	2) Soil and sludge samples	0.1µg/kg for soil (by IC/MS/MS)

Table B-14. Fixed Laboratory Tests for Nitrogen-Based Explosives, Co-Contaminants, and Breakdown Products

Method No.	Title
SW8330A	Nitro aromatics and Nitramines by High Performance Liquid Chromatography (HPLC)
SW8332	Nitroglycerine by HPLC
SW8095	Explosives by Gas Chromatography (GC)
SW8321A [1)]	Explosives by HPLC/Mass Spectrometry (MS)
EPA 529	Determination of Explosives and Related Compounds in Drinking Water by Solid Phase Extraction and Capillary Column Gas Chromatography/Mass Spectrometry (GC/MS)
(1) This method is typically cited for HPLC/MS of explosives. However, no published version includes explosives	

B.4.2 SAMPLING METHODS

Samples will be collected using appropriate sampling equipment, as recommended in SW-846 or other approved sampling guidance. Specific sampling requirements are provided in Attachments G (Closure Plans), H (SAP for soil) and I (environmental protection). Disposable field equipment will be used where practical to eliminate the potential for cross-contamination. Therefore, maintaining and decontaminating the field equipment for these activities will not be necessary. The sample size will be determined by the amount required for the analytical method(s). Sample containers are immediately sealed after sample collection. Sample seals are used to preserve the integrity of the samples from the time they are collected until they are opened in the laboratory.

All required information is recorded on the sample bottle and COC record including the preservation method and maximum holding time. All sample labels will be marked with the following information using indelible ink: name of the sampler, date and time of collection,

sample collection location, and sample identifier that uniquely identifies the sample. The COC record, at a minimum, includes the following information:

- Sample collection location
- Date and time of collection
- Sample type (grab or composite)
- Sample description (media type)
- Analyses to be performed
- Signatures of the personnel involved in the custody of the samples

The samples will be collected in clean containers and preserved, as appropriate, to ensure that their integrity remains intact during transport to the analytical laboratory. Container types, preservation techniques, and holding times for the potential analyte of interest are provided in Attachments G (Closure Plans), H (SAP for soil), and I (environmental protection)

Samples will be delivered to the laboratory as soon as practical. The COC record accompanies the samples. Samples are properly packaged to avoid leakage or breakage during shipment. Sampling devices and containers are cleaned before use. All used non-disposable containers and samplers are washed with warm detergent solution, rinsed at least three times with tap water, rinsed with distilled water, and air dried or wiped dry. All clean samplers, containers, etc., are placed in clean plastic bags and sealed. The cleaned and packaged equipment is stored in an appropriate area away from all new sampling equipment.

B.4.3 FREQUENCY OF SAMPLING

Samples of the treatment residuals and underlying soils will be taken annually to demonstrate the effectiveness of the treatment and to ensure that hazardous wastes are not present. This frequency was selected to ensure effectiveness of treatment. The sampling methodology used to collect representative samples, is explained in detail in the sampling methodologies contained in Attachments G (Closure Plans), H (SAP for soil), and I (environmental protection)

All samples will be compared to the Universal Treatment Standards (UTS) (20.4.1 NMAC §268.48) to ensure conformance with the Land Disposal Restrictions (20.4.1 NMAC Part 268). Non-conforming wastes will receive further treatment prior to disposal.

B.5 WASTE RE-EVALUATION

As stated in Section B.3.1, only WMM will be treated at the OD Unit. This designation is made by DDA. All waste munitions treated at the OD Unit are standard military end items with well-defined physical and chemical characteristics. Acceptable waste is detailed in Section B.1.3. A re-evaluation of waste characterization data will be conducted, as necessary, to ensure that the data are current and up to date, in accordance with 20.4.1 NMAC §264.13(a) (3). Updates of waste characterization information are required when:

- A change occurs in the process or operation generating the hazardous waste
- The hazardous waste received from an off-site facility does not match the waste specified on the accompanying manifest or shipping paper

Waste characterization data (e.g., KOP) for the wastes treated at the OD Unit will be reevaluated annually. This information will be used to determine the appropriateness of current waste management practices and characterization methods.

B.6 SPECIAL PROCEDURE REQUIREMENT

Procedures for receiving wastes generated off site and for managing ignitable and reactive wastes are summarized below. In addition, provisions for ensuring compliance with LDR requirements are presented in this section.

B.6.1 PROCEDURES FOR RECEIVING WASTES GENERATED OFF SITE

HAFB does not accept waste from off-site for treatment at the OD Unit.

B.6.2 PROCEDURES FOR IGNITABLE, REACTIVE, AND INCOMPATIBLE WASTES

Hazardous wastes that exhibit the characteristic of reactivity (D003) are treated at the OD Unit. Incompatible wastes are not managed at the Unit.

B.6.3 PROVISIONS FOR COMPLYING WITH LDR REQUIREMENTS

There are special waste analysis requirements under the LDR program for hazardous waste generators and treatment facilities. Generators of hazardous waste must determine if the waste, at the point of generation, must be treated before it can be land disposed; this determination can be made either by testing the waste or using KOP. Generally, hazardous wastes must meet applicable treatment standards prior to land disposal. These treatment standards are expressed in two ways:

- As constituent concentrations in the waste, either as an extract of the waste (as determined by the Toxicity Characteristic Leaching Procedure (TCLP), or as total waste analysis, or
- As specified treatment technologies.

Wastes that have concentration-based treatment standards must be evaluated to determine if applicable constituent concentration levels have been attained. This can be accomplished by testing the waste, or applying knowledge of the process or materials used to produce the waste (generators only). The TCLP method is generally used to evaluate whether treatment standards expressed as concentrations in the waste extract are met, and total waste analysis methods are used to evaluate whether treatment standards based on total waste concentrations are met. Characteristic wastes that have treatment standards expressed as specified technologies in 20.4.1 NMAC §268.40 must also meet the UTS in 20.4.1 NMAC §268.48 prior to land disposal. Special rules regarding wastes that exhibit a characteristic are also presented in 20.4.1 NMAC

§268.9. In 20.4.1 NMAC §268.9(c), it states that no prohibited waste that exhibits a characteristic under 20.4.1 NMAC, Chapter 2, Part 261, Subpart C may be land disposed unless the waste complies with the treatment standards under 20.4.1 NMAC, Chapter 8, Part 268, Subpart D. In addition, for wastes that exhibit a hazardous characteristic, the generator must determine the underlying hazardous constituents (UHCs), as required in 20.4.1 NMAC §268.9(a). The UHC are reported in Table B-4.

For the reactive hazardous wastes treated at the OD Unit, the specified treatment technology in 20.4.1 NMAC §268.40 is DEACT (deactivation). Deactivation is accomplished by treatment in the OD Unit, which removes the hazardous characteristics of reactivity. OD is not considered by EPA as a method constituting land disposal, and they concluded that the LDR program is not applicable to OD (51 *Federal Register* 40580). OD is a treatments that satisfies the LDR treatment standard for DEACT, but the process itself is not land disposal. Only the remaining residue, if any, resulting from treatment by OD is subject to LDR.

B.7 GLOSSARY

Amatol is a mixture of ammonium nitrate and TNT that is commonly used as a substitute for TNT in bursting charges. The most common mixture of amatol is 80/20 (80% ammonium nitrate and 20% TNT). Because of its ammonium nitrate content, Amatol is highly hygroscopic and must be kept in a waterproof container.

Ammonal is an explosive made up of ammonium nitrate, trinitrotoluene, and aluminum powder mixed in a ratio of roughly 22:67:11. The ammonium nitrate functions as an oxidizer and aluminum as a power enhancer. The mixture is highly hygroscopic. Ammonal burns vigorously when open to the air, but detonates when confined inside some form of casing.

Ammonium nitrate is the least sensitive of military explosives and must be initiated by a booster charge to ensure successful detonation. Ammonium nitrate is commonly used in composite explosives where it is combined with a more sensitive explosive. Ammonium nitrate is highly hygroscopic (readily absorbs moisture) and must be kept in a waterproof container.

Ant materiel is designed to cause deterioration of or damage to selected materiel.

Antipersonnel means designed to kill, wound, or obstruct personnel.

Antitank means designed to be used against tanks.

Arming device is a device designed to perform the electrical and/or mechanical alignment necessary to initiate an explosive train.

Auxiliary or booster explosives are used to increase the flame or shock of the initiating explosive to ensure that the burster charge performs properly. High explosives used as auxiliary explosives are less sensitive than those used in initiators, primers, and detonators, but are more sensitive than those used as filler charges or bursting explosives.

Ballistite is a double-base powder used as a rocket propellant. It is composed of two explosive substances, nitrocellulose and nitroglycerin, blended together with diphenylamine, which acts as a stabilizer. It burns with a considerable amount of flash and smoke, and generates a great volume of gas. Ballistite burns progressively, but at a rate dependent upon the composition and physical characteristics of the powder grain, the temperature of the powder grain before ignition and the pressure during reaction. It is produced in various shapes to fit the rocket motor housing.

Baratol is a slow explosive and is composed of barium nitrate and TNT. TNT is typically 25-33% of the mixture with 1% wax as a binder. The high density of barium nitrate gives baratol a density of at least 2.5.

Black powder is the oldest known explosive material. It is a composite material made from saltpeter (potassium nitrate), charcoal, and sulfur. It is a lower powered explosive and is commonly used in time fuses, igniters, and detonators.

Bombs range in weight from 1 to 3,000 pounds and in length from 3 to 10 feet. Generally, all bombs have the same components--a metal container, a fuze, and a stabilizing device. The metal container, or bomb body, holds the explosive or chemical filler and may consist of one piece or multiple pieces. Bombs use either mechanical or electrical fuzes, typically located in the nose or tail section, either internally or externally. Mechanical fuzes are generally armed by some type of arming vane. The arming vane operates like a propeller to line up all the fuze parts and thus arm the fuze. The fuzes may be configured as impact, proximity, or delay fuzes. Bombs are stabilized during flight by fin or parachute assemblies attached to the rear section of the bomb. These assemblies often detach from the bomb after impact.

Brisance is the speed at which the explosive develops its maximum pressure.

Bursting explosives, burster charges, or fillers - Bursting explosives, burster charges, or fillers are high explosive charges that are used alone or as part of the explosive charge in mines, bombs, missiles, and projectiles.

Caliber is the diameter of a projectile or the diameter of the bore of a gun or launching tube. Caliber is usually expressed in millimeters or inches.

Casing is the fabricated outer part of ordnance designed to hold an explosive charge and the mechanism required to fire this charge.

Composition A is a wax-coated, granular explosive consisting of RDX and plasticizing wax. Composition A is used by the military in land mines and 2.75 and 5 inch rockets. Composition A-3 explosives are made from RDX and wax. Composition A-3 is a wax-coated, granular explosive, consisting of 91% RDX and 9% desensitizing wax. Composition A-3 is not melted or cast. It is pressed into projectiles. It is no hygroscopic and possesses satisfactory stowage properties. Composition A-3 may be white or buff, depending upon the color of the wax used to coat the powdered RDX. Composition A-3 is used as a filler in projectiles that contain a small burster cavity, such as antiaircraft projectiles. It can be used as compressed fillers for medium-caliber projectiles.

Composition B is a composite explosive containing 60% RDX and 39% TNT, and is wax. Because of the high RDX content, Composition B is more sensitive than TNT and is primarily used as the main charge in shaped charges.

Composition B-4 is a composite explosive that is very similar to Composition B with 60% RDX, 39.5% TNT, and 0.5% calcium sulfate. This explosive is used in newer shaped charges and bangalore torpedoes.

Composition C-4 is a composite explosive containing 91% RDX and 9% nonexplosive plasticizers. Composition C-4 is very stable over a wide range of temperatures and is only slightly water soluble. This explosive is used mainly as a bursting charge.

Composition C-3 is a composite explosive containing 91% RDX and 9% wax. The wax coats the RDX particles and acts as a desensitizer, as well as a binder material. Composition C-3 is used as a booster charge in newer charges and torpedoes, as well as in high explosive plastic projectiles.

Cyclotrimethylene trinitramine (RDX) is very sensitive and, like PETN, is one of the most powerful of military explosives. It is often used alone as the base charge in M6 (electric) and M7 (non-electric) blasting caps. RDX can also be desensitized and used for sub-boosters, boosters, bursting charges, and demolition charges. RDX is commonly used in the manufacture of Composition A, B, and C explosives.

dBX is a specially formulated, high density, high energy, detonator sensitive seismic explosive designed exclusively to meet the rigid requirements and environmental extremes associated with geophysical exploration.

Designated Disposition Authority (DDA): The only personnel in the DoD authorized to declare unused military munitions as WMM except in the case of an explosives or munitions emergency, abandoned munitions, or a declaration by the Authorized Military Official (AMO). Each Service has at least one DDA and may elect to have more (e.g., a DDA for a particular program or command). The single manager for conventional ammunition (SMCA) is the single DDA at the DoD level. DDAs are responsible for evaluating munitions that are excess to current requirements or otherwise no longer part of the active inventory for safety; other uses; resource, recovery, and recycling (R3) possibilities; and treatment.

Delay fuze is any impact fuze incorporating a means of delaying its action after contact with the target. Delay fuzes are classified by the length of time of the delay.

Diazodinitrophenol (2-Diazo-4,6-dinitrophenol, DDNP, or Dinol) is widely used as an initiating charge in detonators and caps. DDNP is a yellowish brown powder. It is soluble in acetic acid, acetone, strong hydrochloric acid, and most of the solvents but is insoluble in water. DDNP may be desensitized by immersing it in water, as it does not react in water at normal temperature. DDNP is used with other materials to form priming mixtures, particularly where a high sensitivity to flame or heat is desired. DDNP is often used as an initiating explosive in propellant primer devices.

Dispenser is an item designed to be mounted, but not permanently fixed, on aircraft to carry and eject small ordnance.

Explosive D (Ammonium picrate) is used as a bursting charge for armor-piercing shells and in other types of projectiles that must withstand severe shock and stress before detonating.

Explosive is a substance or mixture of substances that can undergo a rapid chemical change generating large quantities of energy generally accompanied by hot gases.

Fragmentation is the term applied to military munitions indicating that it is primarily intended to produce a fragmentation effect. Also, the breaking up of the confining material of a chemical compound or mechanical mixture when an explosion occurs. Fragments may be complete items, subassemblies, or pieces thereof, or pieces of equipment or buildings containing the items.

Fuze has two definitions: 1. A device with explosive components designed to initiate a train of fire or detonation in ordnance. 2. A nonexplosive device designed to initiate an explosion in ordnance.

Gradiometer is a magnetometer for measuring the rate of change of a magnetic field.

Ground penetrating radar (GPR) is a system that uses pulsed radio waves to penetrate the ground and measure the distance and direction of subsurface targets through radio waves that are reflected back to the system.

Guncotton is a nitrocellulose of high nitrogen content that is employed extensively in the manufacture of single-base propellants. It is also used in electric primers and in electrically initiated detonators. In most propellants, guncotton is blended with pyrocellulose where an increase in nitrogen content is desired. It is sometimes referred to by various names, such as pyropowder, pyrocellulose, or nitrocellulose.

Guided missiles are similar to rockets however; they are guided to their target by various systems. Some are wire-guided, and others are guided by internal or external radar or video. Guided missiles are usually stabilized by fins controlled by internal electronics. Internal proximity fuzes are used in guided missiles, which makes approaching them extremely dangerous. Also, fired guided missiles may still contain residual propellant that could ignite and burn violently.

H-6 is a binary explosive that is a mixture of RDX, TNT, powered aluminum, and D-2 wax with calcium chloride added.

Hand grenades are small explosive- or chemical-type munitions that are designed to be thrown at short range. All grenades have three main parts: a body, a fuze with a pull ring and safety clip assembly, and a filler. Various classes of grenades may be encountered as UXO, including fragmentation, smoke, and illumination grenades. Fragmentation grenades are the most common type of grenade used. They have a metal or plastic body filled with an explosive material. When the filler explodes, the body of the grenade or a metal fragmentation sleeve breaks into small, lethal, high velocity fragments. Other grenades may be made of metal, plastic, cardboard, or

rubber and may contain explosives, white phosphorus, chemical agents, or illumination flares, depending on their intended use.

Hexachloroethane (HC) smoke is a mixture of equal amounts of hexachloroethane, zinc oxide, and approximately 7% grained aluminum or aluminum powder. Upon combustion, the mixture produces zinc chloride, which rapidly absorbs moisture from the air to form a grayish white smoke. More humid air results in thicker smoke.

High Melting Explosive (HMX, octogen, cyclotetramethylene-tetranitramine, or 1,3,5,7-tetranitro-1,3,5,7-tetrazocane), is a powerful and relatively insensitive nitro amine high explosive, chemically related to RDX. HMX is the highest-energy solid explosive produced on a large scale in the United States. HMX explodes violently at high temperatures (534°F and above). Because of this property, HMX is used exclusively for military purposes to implode fissionable material in nuclear devices, as a component of plastic-bonded explosives, as a component of rocket propellant, as a high explosive burster charge, in propellants, and in maximum-performance explosives. HMX is a white crystalline solid with a melting point of 281°C. HMX is non-hygroscopic and is practically insoluble in water.

Hydroxyl-terminated polybutadiene (HTPB) is used to bind the fuel and oxidizer into a solid mass for solid rocket motors. It is also used as a hybrid rocket fuel. HTPB is a clear, viscous liquid. The properties cannot be precisely stated, because HTPB is manufactured in various grades to meet specific requirements. HTPB is thus a generic name for a class of compounds.

Illumination is a term applied to ordnance indicating that it is primarily intended to produce light of high intensity. Such ordnance usually contains a flare and may contain a parachute for suspension in the air.

Impact fuze is a fuze in which detonation is initiated by the force of impact and that usually functions instantaneously or after a short delay.

Incendiary is any flammable material that is used as a filler in ordnance intended to destroy a target by fire.

Lead dinitroresorcinate (LDNR) is used in blasting caps. LDNR is capable of detonation or explosive decomposition under ambient conditions.

Lead styphnate (lead 2,4,6-trinitroresorcinate, $C_6HN_3O_8Pb$), whose name is derived from styphnic acid, is a toxic explosive used as a component in primer and detonator mixtures for less sensitive explosives, such as nitroglycerine.

Magnetometer is an instrument for measuring the intensity and direction of magnetic fields.

Mannitol hexanitrite (**nitromannite)** is a powerful explosive. The chemical name is hexanitromannitol, but it is also known by Mannitol hexanitrate (MHN), Nitromannitol, Nitromannite, Nitranitol, or Mannitrin. It is less stable than nitroglycerin, and it is used in detonators. Mannitol hexanitrite is a secondary explosive formed by the nitration of mannitol (Manna Sugar, mannite), a sugar alcohol. The product is used in medicine as a vasodilator, and

as an explosive in blasting caps. Its sensitivity is considerably high, particularly at high temperatures (>75°C) where it is even more sensitive than nitroglycerine.

Materiel are all items necessary for the equipment, maintenance, operation, and support of military activities without distinction as to their application for administrative or combat purposes; excludes ships or naval aircraft.

Munition means ordnance or any and all supplies and equipment required to conduct warfare.

Mortars range from approximately 1 inch to 11 inches in diameter and can be filled with explosives, toxic chemicals, white phosphorus, or illumination flares. Mortars generally have thinner metal casing than projectiles, but use the same types of fuzing and stabilization.

Material Potentially Presenting an Explosive Hazard (MPPEH) is material potentially containing explosives or munitions (e.g., munitions containers and packaging material; munitions debris remaining after munitions use, demilitarization, or disposal; and range-related debris); or material potentially containing a high enough concentration of explosives such that the material presents an explosive hazard (e.g., equipment, drainage systems, holding tanks, piping, or ventilation ducts that were associated with munitions production, demilitarization or disposal operations). Excluded from MPPEH are munitions within DoD's established munitions management system and other hazardous items that may present explosion hazards (e.g., gasoline cans, compressed gas cylinders) that are not munitions and are not intended for use as munitions.

Mercury fulminate ($Hg(ONC)_2$) is a primary explosive. It is highly sensitive to friction and shock. It is mainly used in blasting caps. Mercury(II) cyanate, though its formula is identical ($HgC_2N_2O_2$), is a different compound; cyanate and fulminate are isomers.

Military dynamite is a composite explosive that contains 75% cyclotrimethylene trinitramine (RDX), 15% TNT, and 10% desensitizers and plasticizers. Military dynamite is considerably more stable than commercial dynamites due to the absence of nitroglycerin.

Military munitions means all ammunition products and components produced for or used by the armed forces for national defense and security, including ammunition products or components under the control of the Department of Defense, the U.S. Coast Guard, the U.S. Department of Energy, and the National Guard. The term includes confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries, including bulk explosives, and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components of the above.

The term does not include wholly inert items, improvised explosive devices, and nuclear weapons, nuclear devices, and nuclear components, other than non-nuclear components of nuclear devices that are managed under the nuclear weapons program of the Department of Energy after all required sanitization operations under the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.) have been completed.

Minol is an is an explosive developed late in World War II as a substitute for TNT and RDX, which were in short supply. It is made by mixing roughly 80% amatol and 20% aluminum powder. It is not as powerful as TNT or RDX.

Munitions Constituents (MC) are any materials originating from unexploded ordnance (UXO), discarded military munitions (DMM), or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions.

Munitions debris are remnants of munitions (e.g., fragments, penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization, or disposal.

Net explosive weight (NEW) is the actual weight in pounds of explosive mixtures or compounds, including the trinitrotoluene equivalent of energetic material, which is used in determination of explosive limits and explosive quantity data arcs.

Nitroglycerin is a highly powerful explosive and is comparable to RDX and PETN. It is commonly used as the base material for commercial dynamites. Nitroglycerin is highly sensitive and is affected by extreme temperatures. Due to its sensitivity, nitroglycerin is not typically used as a military explosive.

Octol is a melt-castable, high explosive mixture consisting of HMX and TNT in different weight proportions. Two formulations are commonly used: 70% HMX/30% TNT and 75% HMX/25% TNT.

Open Burn (OB) is an open-air combustion process by which excess, unserviceable, or obsolete munitions are destroyed to eliminate their inherent explosive hazards.

Open Detonation (OD) is an open-air process used for the treatment of excess, unserviceable or obsolete munitions whereby an explosive donor charge initiates the munitions being treated.

Ordnance has two definitions: 1. Military weapons collectively, along with ammunition and the equipment to keep them in good repair. 2. Explosives, chemicals, pyrotechnics, and similar stores, e.g., bombs, guns and ammunition, flares, smoke, napalm.

Pentaerythrite Tetranitrate (PETN) is very sensitive and is one of the most powerful military explosives. PETN is used in boosters, detonating cords, blasting caps, and in composite explosives. PETN is not water soluble.

Pentolite is a mixture of PETN and TNT. The most common mixture of pentolite is 50% PETN and 50% TNT. This explosive is very powerful, has a high detonation rate, and is used in certain shaped charges.

Pictratol is a binary explosive composed of 52% ammonium picrate and 48% TNT; it can be melt-loaded; less sensitive than TNT, it was developed for use in armor-piercing bombs.

Picric acid (2,4,6-trinitrophenol, TNP) is a yellow crystalline solid. Like other highly nitrated compounds (e.g. trinitrotoluene), picric acid is an explosive. Modern safety precautions

recommend storing picric acid wet. When picric acid is dry, it is relatively sensitive to shock and friction, so laboratories that use it store it in bottles under a layer of water, rendering it safe. Glass or plastic bottles are required, as picric acid can form metal picrate salts that are even more sensitive and hazardous than the acid.

Potassium perchlorate ($KClO_4$) is a strong oxidizer. It is a colorless, crystalline substance that melts at about 610 °C. It is one of the most common oxidizers used in fireworks, ammunition percussion caps, explosive primers, and is used variously in propellants, flash compositions, stars, and sparklers.

Photo flash powder is used as a ground burst simulator (used to create battle noises and flash effects during training). It produces a high-pitched whistle that lasts 2 to 4 seconds. The detonation produces a flash and loud report.

Picrite (nitro guanidine, 1-Nitroguanidine, $CH_4N_4O_2$, $H_2NC(NH)NHNO_2$) is a white, crystalline solid. It melts at 255°C, decomposes at 250°C, and is not flammable. Picrite has a low sensitive explosive but detonation velocity is high. Picrite is used as an explosive propellant, notably in mixture as the smokeless powder *triple-base* - the nitro guanidine reduces the propellant's flash and flame temperature.

Projected grenades are grenades which are projected from a specially designed gun platform.

Primary or Initiating Explosives - Primary or initiating explosives are high explosives generally used in small quantities to detonate larger quantities of high explosives. Initiating explosives will not burn, but if ignited, they will detonate. In general, propellants are ignited by applying a flame, while bursting explosives are ignited by a severe shock. The initiating device used to set off a propellant is called a primer, and the device used to initiate the reaction of a bursting explosive is called a detonator. Examples of primary explosives are lead azide and mercury fulminate.

Projectile is an object projected by an applied force and continuing in motion by its own inertia, as a bullet, bomb, shell, or grenade. The term is also applied to rockets and to guided missiles.

Propellants – 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. In general, propellants are ignited by applying a flame.

Proximity fuze is a fuze wherein primary initiation occurs by remotely sensing the presence, distance, and/or direction of the target through the characteristics of the target itself or its environment.

Pyrotechnics are low explosives used to send signals, to illuminate areas of interest, to simulate other weapons during training, and as ignition elements for certain weapons. Pyrotechnic compositions are considered low explosives because of their low rates of combustion. Examples of pyrotechnics are illuminating flares, signaling flares, smoke generators, tracers, incendiary delays, and photo-flash compounds.

RDX – see Cyclotrimethylene trinitramine.

Rifle grenades look like mortars and range from about 9 to 17 inches in length. They may be filled with high explosives, white phosphorus, riot-control agent, illumination flares, or chemicals that produce colored screening smoke. Rifle grenades are fired from standard infantry rifles. They have an opening at the far end of a tube near the fin assembly that allows the rifle grenade to be placed on the barrel of a rifle. Rifle grenades rely on impact fuzing, which is located on the nose or internally behind the warhead.

Rockets use gas pressure from rapidly burning material (propellant) to transport a payload (warhead) to a desired location. Rockets can range from 1½ to more than 15 inches in diameter, and they can vary from 1 foot to over 9 feet in length. All rockets consist of a warhead section, a motor section, and a fuze. They are unguided after launch and are stabilized during flight by canted nozzles at the base of the motor or fins attached to the motor. The warhead section of the rocket is the portion that produces the intended effect; it can be filled with explosives, toxic chemicals, white phosphorus, sub munitions, riot-control agent, or illumination flares. Fuzes may be located in the nose of the rocket or internally between the warhead and motor. The fuzing on rockets can be impact, time-delay, or proximity fuzing.

Secondary explosives are generally less sensitive to initiation than primary explosives and are typically used in booster and main charge applications. A severe shock is usually required to trigger a reaction. Examples are TNT, cyclo-1,3,5-trimethylene-2,4,6-trinitramine (RDX or cyclonite), HMX, and tetryl.

Self-destruct fuze is a fuze designed to burst a projectile before the end of its flight.

Small arms munitions contain projectiles that are 0.5 inches or less in caliber and no longer than approximately 4 inches. They are fired from various sizes of weapons, such as pistols, carbines, rifles, automatic rifles, shotguns, and machine guns. Generally, the shell casings of small arms munitions are made from brass or steel. Although the hazards associated with these UXO are much less than for other munitions, unexploded small arms munitions may explode if thrown into a fire or struck with a sharp object such as a nail.

Smokeless powder consists of nitrocellulose (**single-base powders**), frequently combined with up to 50 percent nitroglycerin (**double-base powders**), and sometimes nitroglycerin and nitro guanidine (**triple-base**), corned into small spherical balls or extruded into cylinders or flakes using solvents such as ether. Other minor ingredients, such as stabilizers and ballistic modifiers, are also added. Double-base propellants are common in handgun and rifle ammunition. Triple-base propellants are more common in artillery guns. The reason that they are smokeless is that the combustion products are mainly gaseous, compared to around 55% solid products for black powder (potassium carbonate, potassium sulfate etc).

Submunitions include bomblets, grenades, and mines filled with explosives or chemical agents. They may be antipersonnel, antimateriel, antitank, dual-purpose, incendiary, or chemical sub munitions. Submunitions are typically spread over a large area by dispensers, missiles, rockets, or projectiles. Each of these delivery systems disperses the sub munitions while still in flight, scattering the sub munitions over an area. Submunitions are activated in a variety of ways, depending on their intended use. Some are activated by pressure, impact, or movement or disturbance. Others are activated in flight or when they come near metallic objects. Some sub

munitions contain a self-destruct fuze as a backup. The self-destruct time can vary from a couple of hours to several days.

Smoke has two meanings: 1. Filling for ordnance such as bombs, projectiles, and grenades. 2. Term applied to ordnance indicating that it is primarily intended to produce smoke of the types or colors specified.

Tetryl is commonly used alone as a booster charge. It can also be used as a bursting or demolition charge and, at times, can be used in composite charges. Tetryl is more powerful and more sensitive than TNT. Tetryl explosives are being replaced with RDX and PETN explosives due to the increased power and shattering effects of these two latter explosives.

Thermate is an incendiary compound used for military applications. Thermate, whose primary component is thermite, also contains sulfur and possibly barium nitrate, both of which increase its thermal effect, create flame in burning, and significantly reduce the ignition temperature.

Thermite grenades are used as incendiary devices to quickly destroy enemy equipment. Additionally, thermite grenades are used by friendly forces to destroy their own items and equipment when there is imminent danger of them being captured. Because of the difficulty in igniting standard iron-thermite, plus the fact that it burns with practically no flame and has a small radius of action, standard thermite is rarely used on its own as an incendiary composition. It is more usually employed with other ingredients added to enhance its incendiary effects.

Titanium tetrachloride (titanium (IV) chloride) is an important intermediate in the production of titanium metal and other titanium compounds. It is an unusual example of a liquid metal halide that is very volatile in air, where it forms opaque clouds of titanium dioxide and hydrogen chloride.

Trinitroaniline (TNA, picramide) is an explosive compound with a detonation velocity of 7,300 m/s.

Trinitrophenol (TNPH) is used in boosters as a substitute for TNT.

Trinitrotoluene (TNT) is the most commonly used military explosive. It is used alone or in conjunction with other explosives for composite explosives. TNT is commonly used for boosters, bursting charges, or demolition charges. TNT is a yellow solid. The explosive yield of TNT is considered the standard measure of strength of bombs and other explosives.

Tritonal is a mixture of 80% TNT and 20% aluminum powder, used in several types of ordnance e.g., air-dropped bombs. The aluminum improves the brisance of the TNT. Tritonal is approximately 18% more powerful than TNT alone.

Unexploded ordnance (UXO) is explosive ordnance that has been primed, fuzed, armed, or otherwise prepared for action, and that has been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard, and that remains unexploded by malfunction, design, or any other cause.

Warhead means that part of a missile, projectile, rocket, or other munition that contains the explosive system, chemical or biological agents, or inert materials intended to inflict damage.

Waste military munitions is an unused munitions that has been abandoned by being disposed of, removed from storage for purposes of disposal or treatment prior to disposal; is deteriorated, leaking, or damaged to the point that it is unserviceable; or has been determined by an authorized military official to be solid waste. Also, a used or fired military munitions that has been removed from its landing spot and then either managed off-range or disposed of on-range.

White phosphorous (WP) is a chemical that when exposed to air, burns spontaneously, producing dense clouds of white smoke. WP bombs and shells are essentially incendiary devices, but can also be used as an offensive anti-personnel flame compound capable of causing serious burns or death. It is used in bombs, artillery shells, and mortar shells which burst into burning flakes of phosphorus upon impact.

B.8 REFERENCES

Brannon, J. M. and J. C. Pennington. 2002. *Environmental Fate and Transport Process Descriptors for Explosives.* ERDC. TR-02-10.May 2002

Clausen J. L. C.L. Scott and R. J. Cramer. 2007. *Development of Environmental Data for Navy, Air Force, and Marine Munitions.* TR-07-7. Cold Regions Research and Engineering Laboratory, US Army Engineer Research and Development Center.

DoD Policy to Implement the EPA's Military Munitions Rule – 1 July 1998 (https://www.denix.osd.mil/denix/Public /Policy/Range/rule.html)

EPA 1993. *Guidance for Planning for Data Collection in Support of Environmental Decision Making Using the Data Quality Objectives Process, EPA QA/G-4.* U.S. EPA, October 1993.

EPA, 1994. *Waste Analysis at Facilities That Generate, Treat, Store, and Dispose of Hazardous Wastes: A Guidance Manual, OSWER 9938.4-03*. U.S. EPA, April 1994**.**

EPA, 2002. *Draft Final Open Burning/Open Detonation Permitting Guidelines*, U.S. EPA, February 2002.

EPA, 2002. *Draft RCRA Miscellaneous Treatment Units Encyclopedia X Technical Resource Document*, U.S. EPA, April 2002

Military Munitions Rule [Federal Register: February 12, 1997 (Volume 62, Number 29: 6622-6657)] (http://www.epa.gov/fedrgstr/EPAWASTE/ 1997/February/Day-12/f3218.htm)

Mirecki, J. E.; B. Porter, and C. A. Weiss, Jr.2002. *Environmental Transport and Fate Process Descriptors for Propellant Compounds.* ERDC. TR-06-07. June 2006

Pennington, J. C., T. F. Jenkins, G. Ampleman, S. Thiboutot, J. M. Brannon, A. D. Hewitt, J. Lewis, S. Brochu, E. Diaz, M. R. Walsh, M. E. Walsh, S. Taylor, J. C. Lynch, J. Clausen, T. A. Ranney, C. A. Ramsey, C. A. Hayes, C. L.Grant, C. M. Collins, S. R. Bigl, S. Yost and K. Dontsova. 2006. *Distribution and Fate of Energetics on DoD Test and Training Ranges: Final Report.* ERDC. TR-06-13. November 2006

SW-846. *Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition,* U.S. EPA, November 1986. Office of Solid Waste and Emergency Response, Washington, D.C.

US Army 1984. TM 9-1300-214. *Military Explosives*. 20 September 1984.

US Army, 1998. FM 5-250. *Explosives and Demolition*. 30 July 1998

von Stackleberg K., C. Amos, and T. Smith. 2005. *Military Munitions-Related Compounds Fate and Effects: A Literature Review Relative to Threatened and Endangered Species.* ERDC TR-05-10. Construction Engineering Research Laboratory, Champaign, IL.

EXHIBIT B-1

DoD Explosives Safety Board Memorandum

DEPARTMENT OF DEFENSE EXPLOSIVES SAFETY BOARD
2461 EISENHOWER AVENUE
ALEXANDRIA, VIRGINIA 22331-0600

DDESB-KO

0 3 FEB 2005

MEMORANDUM FOR HEADQUARTERS AIR FORCE SAFETY CENTER
(ATTENTION: SEW)

SUBJECT: Routine Explosives Site Plan Request, Site Existing EOD Disposal Range, Holloman AFB, NM (ACC-Holloman-02-S40)

References: (a) AFSC/SEW Memorandum, 13 December 2004, Subject as above

(b) DoD 6055.9-STD, DoD Ammunition and Explosives Safety Standards, 5 October 2004

The subject site plan, submitted by reference (a), has been reviewed with respect to explosives safety criteria contained in reference (b). Based on the information furnished, site and final safety approvals are granted for an Explosives Ordnance Disposal (EOD) Disposal Range at the north end of base boundary, Holloman AFB, New Mexico. This approval is based on the following:

a. The EOD Disposal Range will be limited to 11,900 lbs of Hazard Division (HD) 1.1 explosive materials. In accordance with reference (a), non-related personnel will be at K328 distance. Personnel necessary for the operations will be withdrawn to 2,400 feet (K105 separation distance) with the pill boxes used for added overhead and frontal protection from fragmenting items.

b. For multiple munitions detonations, the maximum case fragment size shall not exceed 19.3 inches in diameter with a maximum fragment distance of 7,500 feet in accordance with paragraph C9.8.4.2.2.2.2.5.1 and Table C9.T35 of reference (b). For single munitions detonations, the maximum case size shall not exceed 29.4 inches in diameter in accordance with paragraph C9.8.4.2.2.2.2.5.1 and Table C9.T35 of reference (b).

c. Per reference (a):

(1) Concurrent operations between the Test Facility and EOD operations will not be authorized.

(2) All roads and trails within the clear-zone will be closed prior to testing and operations. Only authorized personnel will be permitted to transit these areas to and from working locations.

(3) There are no future construction projects planned for this area.

(4) No explosives operations will be conducted when lightning is within 5 nautical miles. In the event of unexpected lightning activity, operations will cease and all personnel will be evacuated to a minimum public traffic route distance of 750 feet from the disposal range until lightning has cleared and local weather office has been contacted.

(5) Fragmenting munitions will be buried or covered with a minimum of 4 feet of earth cover in all directions.

(6) Air Force accepts the risk of possible damage to the Magnetic Levitation Test Track, Impact Point and its associated support equipment caused by intentional or unintentional firings, detonations, failure of equipment or unexpected characteristics of the test.

A copy of the complete site plan package and this letter of approval must be retained as a permanent record at the installation. Master planning documents and installation drawings must be updated to show the approved clear zones.

Point of contact is Mr. Ernie Natividad at commercial: 703-428-0439; DSN: 328-0439; or E-mail: Ernest.Natividad@ddesb.osd.mil.

WILLIAM E. WRIGHT
Captain, US Navy
Chairman

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ATTACHMENT C

INSPECTION SCHEDULE

HOLLOMAN AIR FORCE BASE
OPEN DETONATION TREATMENT UNIT

Permit No. NM6572124422

ATTACHMENT C
INSPECTION SCHEDULE

INTRODUCTION

The information in this attachment addresses requirements contained in the New Mexico Administrative Code (NMAC), Title 20, Chapter 4, Part 1, Subpart IX (20.4.1.900 NMAC), incorporating Title 40 Code of Federal Regulations (CFR) §§270.14(b)(5) and 20.4.1.500 NMAC, incorporating 40 CFR §§264.15, and 264.602. In accordance with §264.15(a), the 20,000-Pound Open Detonation (OD) Unit is inspected for malfunctions, deterioration, operator errors, and discharges that may cause or lead to a release of hazardous waste constituents to the environment or a threat to human health. The inspection schedules and checklists presented in this Attachment are used by the EOD Team Chief for conducting inspections to ensure the OD Unit and related safety and emergency equipment, security devices, and treatment zones are monitored and checked to prevent, detect, and respond to environmental or human health hazards.

The complexity and special nature of the activities conducted at Holloman Air Force Base (HAFB) result in delegation of responsibility for general inspection requirements among various groups. Corrective action for deficiencies found during these routine inspections, repair and preventive maintenance of various items of equipment, and maintenance of inspection records are also delegated among these various groups. Among the areas covered by the routine inspection and maintenance activities are:

- Fire Control Equipment: fire extinguishers, pump truck equipment (pumps, hoses, horns and sirens, etc.), fire alarms, and self-contained apparatus. In accordance with AFMAN 91-201, *Explosive Safety Standards*, a minimum of two serviceable fire extinguishers, suitable for the hazards involved, are required for immediate use at any location where explosives are being handled. Each explosives-laden vehicle used for transport must be equipped with at least two portable 2A:10BC rated fire extinguishers.

- Emergency Equipment: safety glasses, gloves, hard hat, chemical respirators, etc. Measures for personnel and equipment safety and emergency response will be conducted at the OD Unit in accordance with AFMAN 91-201, *Explosive Safety Standards,* and TO 11A-1-42, G*eneral Instructions for Disposal of Conventional Munitions*.

- Security Equipment: warning signs, perimeter fence, etc. The OD Unit is within a cleared area and is surrounded by a 4-foot high, three-stranded barbed wire fence that restricts access to the unit. In accordance with TO 11A-1-42, G*eneral Instructions for Disposal of Conventional Munitions*, "Danger - Explosive Disposal Range - Keep Out" signs will be posted at entrances and at 300-foot intervals around the perimeter of the disposal range.

- Structures: road surfaces, vegetation-free zones, firebreaks. In accordance with TO 11A-1-42, *General Instructions for Disposal of Conventional Munitions*, all dry grass, leaves, and other combustible materials within a radius of 61 meters (200 feet) and the site will be free of deep cracks in which unburned explosives or agents may lodge.

- Communication Systems: land mobile radios, vehicle radios, etc. In accordance with TO 11A-1-42, *General Instructions for Disposal of Conventional Munitions*, communications equipment will be in good working order prior to commencing any disposal operation.

- Vehicular Equipment: transport vehicles.

C.1 INSPECTION SCHEDULE AND CHECKLISTS [20.4.1.500 NMAC §264.15 (b)(1) and (2)]

In accordance with §264.15(b)(1), an inspection program has been established to routinely inspect all components of the treatment units for malfunctions, deteriorations, signs of contaminant release that indicate potential for migration of hazardous waste constituents to the environment, or the potential for human endangerment. These inspections are performed prior to treatment, after treatment, and at regular intervals during inactivity to permit the use of corrective measures that will minimize such problems.

Vehicles used to transport demolition materials, explosives, and personnel are inspected daily, and inspections documented on Air Force (AF) Form 1800, *Operator's Inspection Guide and Trouble Report.*

In accordance with §264.15(b)(2), ~~Exhibits C-1 and C-2~~ Tables C-1, C-2, and C-3 present the inspection schedules and checklists for inspecting safety and emergency equipment, security devices, treatment zones including loading/unloading areas, clear zone/general areas, firebreak, roads, structural equipment, communications equipment, mobile equipment, and range areas. Also listed is inspection of the clear zones around these units for vegetation. Clearing operations of the natural vegetation and other deficiencies found are addressed based on these inspections.

C.1.1 TYPES OF PROBLEMS [20.4.1.500 NMAC §264.15 (b)(3)]

The inspections schedule and the checklists identify the types of problems (e.g., malfunctions or deteriorations) that are checked at a minimum during monthly inspections. The specific types of problems applicable to the 20,000-lb OD Unit are listed in Table C-1 and Table C-2.

Table C-1: 20,000-lb Range Monthly Inspection Schedule

Area& Equipment	Specific Item	Types of Problems	Frequency of Inspection
Safety and Emergency Equipment	Face shields and extra protective eyeglasses	Broken and dirty equipment	Monthly
	Disposable respirators	Out of stock, not required, filter types for materials being handled	Monthly
	Fire Extinguishers (Min. of 2)	In need of recharging	Monthly/ After use
Security Devices	Signs	Illegible	Monthly
Treatment Zones	Clear Zone/ General Area	Vegetation, burrowing, corrosion, signs of run-on/runoff	Monthly
	Firebreak	Vegetation, scrap, debris	Monthly
	Roads	Settlement, holes, ditches	Monthly
	Perimeter Fence	Broken poles, broken wires	Monthly
	Detonation Berm	Eroding	Monthly

C.1.2 FREQUENCY OF INSPECTION [20.4.1.500 NMAC §264.15(b)(4)]

Inspection of all materials, security devices, safety equipment, and communication devices will be performed before each explosive ordnance disposal (EOD) operation. This frequency of inspection will determine equipment deteriorations and malfunctions between inspections.

The inspection schedule used for the OD Unit is provided as ~~Exhibit C-1 and Exhibit C-2~~ Table C-2 and Table C-3. This inspection plan addresses unit-specific structures, emergency equipment, operational equipment, safety equipment, communications systems, transport vehicles, and the treatment zone (including the cleared area).

Prior to detonation on the day of detonation, the EOD Team conducts a physical inspection of all munitions brought for treatment to the OD Unit and compares the inventory list with letter of disposal request to ensure all items are accounted for. Only items identified on the letter of request can be treated; all others will be refused and returned to munitions storage for reschedule.

C.1.3 REMEDIAL ACTION [20.4.1.500 NMAC §264.15(c)]

If inspections reveal that nonemergency maintenance is needed, then HAFB personnel will initiate immediate action(s) to preclude further damage and reduce the need for emergency repairs. If a hazard is imminent, or has already occurred during the course of an inspection, or any time between inspections, then remedial action will immediately be taken. Appropriate authorities will be notified according to the 20,000-Pound OD Unit Site Contingency Plan, Permit Attachment E. In the event of an emergency involving the release of hazardous constituents to the environment, efforts will be directed towards containing the hazard, removing it, and subsequently decontaminating the affected area as outlined in the Site Contingency Plan. The general nature of the remedial action to be taken will be noted on the Inspection Checklist.

C.1.4 INSPECTION RECORDS [20.4.1.500 NMAC §264.15(d)]

The EOD Flight maintains all inspection findings at the OD Unit. The EOD Team and Team Chief use the inspection checklists shown in ~~Exhibits C-1 and C-2~~ Tables C-2 and C-3 to document the date and time of inspections, the name of the inspector, and corrective actions taken. The completed checklists are maintained as a summary of OD Unit inspections and are maintained at the EOD Flight office for a period of three years in accordance with §264.15(d).

~~Exhibit C-1~~ Table C-2 Inspection Schedule and Checklist

20,000-lb Range Monthly Inspection Schedule Checklist

Month: _____

Area & Equipment	Specific Item	Types of Problems	Frequency of Inspection	SAT	UN-SAT
Safety and Emergency Equipment	Face shields and extra protective eyeglasses	Broken and dirty equipment	Monthly		
	Disposable respirators	Out of stock, not required, filter types for materials being handled	Monthly		
	Fire Extinguishers (Min. of 2)	In need of recharging	Monthly/ After use		
Security Devices	Signs	Illegible	Monthly		
Treatment Zones	Clear Zone/ General Area	Vegetation, burrowing, corrosion, signs of run-on/runoff	Monthly		
	Firebreak	Vegetation, scrap, debris	Monthly		
	Roads	Settlement, holes, ditches	Monthly		
	Perimeter Fence	Broken poles, broken wires	Monthly		
	Detonation Berm	Eroding	Monthly		

Inspector: _____ Date: _____

Time Completed: _____

~~Exhibit C-1~~ Table C-2 Inspection Schedule and Checklist (continued)

20,000-lb Open Detonation Range Checklist

Event #: _____

Operation Type: _____

Dates: _____

Team Chief: _____

I, _____, certify that all items/actions required by permit for the 20,000-pound open detonation treatment unit have been completed.

_____
(Team Chief Signature)

_____
(Management Signature)

~~Exhibit C-2~~ Table C-3 Pre- and Post-Detonation Schedule and Checklists

Weather Log

Base Weather Service: _____

Name of Person Entering Data: _____

Date and Time Data is entered: _____

Date of Detonation Event: _____

Exact Time of Detonation: _____

Record of Weather Data Collected before Detonation

Qualitative description of the Weather (e.g. sunny, warm, rain)	
Temperature	
Wind Speed	
Wind Direction	
Atmospheric Stability	
Precipitation (e.g., no precipitation, light rain, snowing)	
Other Comments	

Pre- and Post- Detonation Checklists

Two Weeks in Advance of Scheduled Detonation

Checklist Items	Name: Date: Time:	Corrective Action
EOD Team Chief calls Test Track to confirm date will not conflict with Track mission. **679-2181**		
EOD Team Chief selects EOD team		
EOD Team Chief conducts briefing with team (including hazards involved with OD, treatment procedures, T.O.s, safety, and transportation procedures)		
EOD Team: • Conducts a range inspection for free standing liquids, unexploded munitions, vegetation, burrowing, and signs of runon/runoff to OD unit		
• Inspects the road to the OD unit for holes, ditches, and settling that could cause problems during the transportation of munitions		
• Identifies items listed for treatment		
• Identifies proper disposal techniques		
• Calculates the total mass being detonated, ensuring total doesn't exceed 11,900 lbs NEW per event		
• Contacts flight munitions custodian to notify of explosive requirements (how much C-4 needed)		
• Ensure that explosives will be on hand prior to scheduled operation		
EOD Team Inspections: • Emergency response equipment • Safety equipment • Security devices • EOD vehicles • Operating equipment		

Pre- and Post- Detonation Checklists

One Week in Advance of Scheduled Detonation

Checklist Items	Name: Date: Time:	Corrective Action
EOD Team: • Verifies items that will be treated.		
• Makes sure Munitions has a sufficient supply of explosives for the operation.		
• Checks calculations on the amount of necessary explosives and Net Explosive Weight.		
• Verifies with Test Track Control no conflicts with missions **679-2181**		

Pre- and Post- Detonation Checklists

Day Before Scheduled Detonation

Checklist Items	Name: Date: Time:	Corrective Action
EOD Team Chief • Briefs team on pending operations and team assignments		
EOD Team • Contacts Munitions to draw explosive materials and ensure delivery time of munitions and waste will be met **1500 and 1622**		
• Inspects all necessary equipment to ensure operability		
• Notifies Test Track Control **679-2181**		
• Notifies Base Fire Department **7228/7229**		
• Notifies Base Ambulance Response **3260**		
• Notifies Security Police **7171/3784/5810**		
• Notifies Base Operations Staff **5410/5411**		
• Notifies Base Environmental Coordinator **3931**		
• Contacts base meteorology team to obtain a forecast of predicted weather conditions for the following day and notify them of the operation **3924/3925**		
• Ensure that explosives will be on hand prior to scheduled operation		
EOD Team Inspections: • Emergency response equipment • Safety equipment • Security devices • EOD vehicles • Operating equipment		

Pre- and Post- Detonation Checklists

Day of Detonation

Checklist Items	Name: Date: Time:	Corrective Action
EOD Chief: • Conducts a safety briefing will all team members including review of requirements and procedures for safely transporting explosives		
• Provides arms to personnel who will be transporting explosives and conduct a briefing on the use of the firearms		
• Ensures that radio comm. lines are open with the EOD Team during the drawing and transportation of explosive materials		
• Supervises the munitions loading operations		
• Monitors and identifies deficiencies and refuse treatment if discovered		
• Ensures that all Emergency Equipment (first aid kit, shovels, fire extinguishers, etc.) are on hand or on standby ready to respond		
EOD Team: • Contacts base meteorology team to ensure that all weather conditions meet permit terms (i.e., wind speed, direction, temp., precipitation) **3924/3925**		
• Records weather conditions as shown in the weather log		
• Transports munitions and explosives to OD unit		
• Conducts final inspection of the OD unit		
• Makes radio contact with Test Track Control and EOD ops center		
• Ensures mobile two-way radios are placed in appropriate locations (with team members, track control net, team chief, and safety observer)		

Conducts a physical inspection of all munitions brought for treatment		
Compares inventory list with letter of disposal request to ensure all items are accounted for. Only items identified on the letter of request can be treated-all others will be refused and returned to Munitions storage for reschedule		
Places items in the area for treatment		
Segregates initiation explosives		
Sets up dual-primed firing systems to initiate the main charge		
Checks firing systems in primed positions		
Obtains approval for detonation from the Holloman tower via Test Track Control		

Pre- and Post- Detonation Checklists

Within 72 Hours after Detonation Occurs

Checklist Items	Name: Date: Time:	Corrective Action
EOD Team Chief • Signs required documentation (i.e., expenditure report) within 24 hours of the OD event and place a copy in the facility file		
EOD Team: • Collects any UXO and re-detonates it immediately		
• Collects any metals fragments and remnants		
• Places fragments in a container and handles items as hazardous waste		
• Cleans and inspects all EOD vehicles and other equipment		
• Arranges to backfill depressions and grade area (unless OD event is the last event in the quarter)		
• Prepares EOD report including an inventory list of what items were detonated, Net Explosive Weight, and names of participating EOD personnel		

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ATTACHMENT D

PERSONNEL TRAINING

HOLLOMAN AIR FORCE BASE
OPEN DETONATION TREATMENT UNIT

Permit No. NM6572124422

ATTACHMENT D
PERSONNEL TRAINING

INTRODUCTION

This attachment provides information on the training program for Explosive Ordnance Disposal (EOD) personnel at Holloman Air Force Base (HAFB) in accordance with the requirements of New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart V (20.4.1.500 NMAC), incorporating Title 40 Code of Federal Regulations (CFR) §264.16 and 20.4.1.900 NMAC, incorporating 40 CFR §270.14(b)(12).

The objective of the HAFB training program for EOD personnel is to ensure that operations are conducted in a safe manner and to ensure the facility's compliance with the requirements of §264.16. Facility personnel who handle hazardous wastes must successfully complete a program of classroom instruction and on-the-job-training in order to prepare them to operate and maintain the facility/unit in a manner that ensures the facility's compliance with Resource Conservation and Recovery Act (RCRA) training requirements.

D.1 TRAINING PROGRAM [20.4.1.500 NMAC §264.16 (a)(1)]

All HAFB EOD personnel attend the Naval School Explosive Ordnance Disposal (NAVSCOLEOD) located at Eglin Air Force Base, in Florida. NAVSCOLEOD is a Navy-managed command, jointly staffed by Army, Navy, Air Force, and Marine Corps personnel. Its mission is to train officers and enlisted personnel of the Air Force and other branches of the armed services in the most current procedures for the location, identification, render safe, recovery, technical evaluation, and disposal of conventional surface and underwater ordnance and incorporates hazardous waste management training for the specific wastes that are treated in the unit. This is the single training center for all military personnel in the EOD career field. Senior EOD personnel also support this training with on-the job training and close supervision. All EOD personnel must pass the basic course, and supervisory personnel must pass the EOD Operations Supervisory Course (J5AZN3E871)

Training for EOD personnel includes formal classroom instruction, on-the-job training, and training on written procedures and plans. EOD personnel must meet the requirements in the Officer Classification Directory and Enlisted Classification Directory respectively, and must be assigned to a valid EOD position on a Unit Manning Document to perform EOD duties. Personnel must maintain competency in all aspects of the EOD mission. Completion of the minimum training requirements listed in the 3E8X1 Career Field Education Training Program (CFETP), Section G; AF EOD Standard Training Package, is required to maintain proficiency. Table D-1 provides a summary of required training for EOD personnel by job title and frequency.

Table D-1 Personnel Training Schedule for HAFB OD Unit

Job Titles					
Required Training	Apprentice Skill Level 3	Journeyman Skill Level 5	Craftsman Skill Level 7	Flight Chief/ Supervisor Skill Level 9	Frequency
EOD Operations Basic Course (J5ABN3E831) Skill Level 3	X	X	X	X	Initial or as required by AFI32-3001
Hazardous Waste Operations & Emergency Response (HAZWOPER)	X	X	X	X	Initial – 40 hours course Annual – 8 hours course
Skill Level 5 – On the Job Training		X	X	X	Progression Training as required by AFI32-3001
EOD Operations Supervisory Course (J5AZN3E871) Skill Level 7			X	X	Progression Training as required by AFI32-3001
Hazardous Waste Management and RCRA Regulations	X	X	X	X	Initial and Annual

EOD job titles and their corresponding skill levels are based on their level of classroom, on-the-job training, and professional experience. Each position follows a career development course (CDC) progression such that a worker obtaining a higher skill level has completed all requirements of a lower skill level (or their equivalent) before allowing them to participate in hazardous waste management activities at the OD Unit. Completion of High School or GED is a mandatory education requirement for entry into the EOD Air Force Specialty (AFS) program. The following is a brief description of each job title and skill level as presented in Tables D-1 and D-2, the information was obtained from the Air Force Specialty Code (AFSC) 3E8X1 CFETP, Section C; Skill Level Training Requirements.

- **EOD Apprentice – Skill Level 3:** Basic EOD Apprentice requires the completion two career development courses (CDCs), EOD Preliminary Course and NAVSCOLEOD Qualification course. Completion of Level 3 Common Core Computer Based Training (CBT) and the mandatory completion of High School or GED are also required. Mechanics, physics or basic electricity are desirable.

- **Journeyman – Skill Level 5:** Requires completion of the Civil Engineer Common Core 3-level CBT. Knowledge requirements include (1) composition and characteristic of United States and known foreign explosive, incendiary, chemical, biological and nuclear munitions. (2) principles of basic electricity, (3) handling, use and disposal of hazardous wastes and materials. Training requirements include certification of all 5-level core tasks identified of the Specialty Training Standard (STS), CDC 3E851, Explosive Ordnance Disposal Journeyman, and certification of duty position requirements identified by the supervisor. Experience qualification includes and possession of 3-skill level and a minimum 12 months on-the-job training (9 months for re-trainees) before award of 5- skill level. Experience is

mandatory in performing functions such as rendering safe, removing and destroying hazardous or unserviceable United States explosive ordnance. Experience is desirable in performing functions such as rendering safe, removing and destroying hazardous or unserviceable foreign munitions; and in decontamination activities. All 3-level course training, education, and experience qualifications apply to 5-level requirements.

- **EOD Craftsman - Skill Level 7:** Completion of 7-level Common Core CBT is mandatory. Knowledge requirements include (1) composition and characteristic of United States and known foreign explosive, incendiary, chemical, biological and nuclear munitions. (2) principles of basic electricity, (3) handling, use and disposal of hazardous wastes and materials is required. Certification of all 5- and 7-skill level core tasks identified the STS and complete in-residence 7-level Craftsman course are required. Completion of all Air Force Qualification Training Packages (AFQTPs) for assigned core and critical tasks in the STS that identify are required for qualification in the duty position. Completion of 3E871, 7-level Craftsman course, NCOA Course 00009 (paper-based correspondence) training must be completed. Entry into 7-level training is initiated when an individual is selected for SSgt and has fulfilled all 5-level requirements. All 5-level course training, education, and experience qualifications apply to 7-level requirements.

- **Flight Chief/ Supervisor/ Superintendent - Skill Level 9:** Knowledge requirements include (1) composition and characteristic of United States and known foreign explosive, incendiary, chemical, biological and nuclear munitions. (2) principles of basic electricity, (3) handling, use and disposal of hazardous wastes and materials is required, and 4) knowledge of Air Force training programs. Education requirements include completion of in-residence SNCOA prior to award of 9-skill level (active duty only), Training requirements include completion of duty position training requirements and Certification of all 5- and 7-skill level core tasks of the STS. Minimum experience must include minimum rank of SMSgt with experience directing functions such as detecting, identifying, rendering safe, recovering or destroying explosive, incendiary or nuclear ordnance. Entry into 9-level training is initiated when an individual assumes the rank of SMSgt and is a fully qualified 7-Level.

Apprentice and Journeyman are qualified to perform explosive ordnance disposal, work as a specialized member of the Emergency Support, and perform related munitions and weapon functions. In addition to the functions of Apprentice and Journeyman, EOD Craftsman are qualified to advise on EOD related problems, perform and prepare EOD activities, act as a specialized member of the Base Emergency Response Force, and supervise related munitions and weapon functions. In addition to the qualifications of Apprentice, Journeyman and EOD Craftsman, the EOD Flight Chief/ Supervisor is qualified to perform specialized EOD functions, plan and organize, direct, inspect, and evaluate EOD activities.

The EOD Operating Instruction (OI) 32-3001-05, outline that a minimum of two (2) EOD Technicians must be present at an Open Detonation. One of these technicians must be a Level 7, EOD Craftsman. The senior EOD technician is responsible for the conduct of the personnel involved in the operation.

D.1.1 TRAINING PROGRAM DIRECTION [20.4.1.500 NMAC §264.16 (a)(2)]

The HAFB EOD supervisor is responsible for ensuring that assigned personnel receive and successfully complete adequate training in handling potentially hazardous wastes. Training personnel at the NAVSCOLEOD are highly trained career specialists who provide the EOD training for all Department of Defense (DoD) personnel. The EOD and training directors at the EOD school have the training and experience required for their respective positions as required by §264.16(a)(2). In addition, HAFB management requires and ensures all EOD flight members receive initial and annual RCRA training to include a training session dealing with the requirements of the OD Unit Permit to perform operations on the permitted range.

D.1.2 HAZARDOUS WASTE MANAGEMENT AND EMERGENCY PROCEDURES TRAINING [20.4.1.500 NMAC §264.16 (a)(2) and (3)]

All EOD personnel are trained in handling explosive ordnance and potentially hazardous waste and in responding to emergency situations to protect people, resources, and the environment from the effects of hazardous explosive ordnance and improvised explosive devices (IEDs), including weapons of mass destruction (WMD). EOD personnel also instruct base and community members on ordnance recognition skills and improvised explosive device countermeasures; and providing the hazardous materials (HAZMAT) response capability for incidents involving explosive ordnance.

The training is designed to ensure that personnel are familiar and able to respond effectively to emergencies including emergency procedures set forth in Attachment 1 of the EOD ~~Operating Instruction (~~OI~~)~~ 32-3001-05, emergency equipment, hazardous waste management, including Contingency Plan implementation. Also training includes procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment, emergency communications systems, response to fires or explosions, response to groundwater contamination incidents, and shutdown of operations. General safety includes, but is not limited to, using, maintaining, inspecting, and replacing portable radios, a First Aid Kit, two (2) fire extinguishers (2A 10B/C), range flag, specialized EOD tools, personal protective equipment such as gloves, safety glasses (explosive ops), and other special PPE as required by the operation (e.g., laser goggles, helmet, body armor). All EOD personnel are required to complete initial and annual RCRA training according to HAFB EOD OI 32-3001-05.

D.1.3 TRAINING PROGRAM CONTENT AND FREQUENCY [20.4.1.500 NMAC §264.16 (b) and (c)]

The EOD supervisor and Flight Training Program Manager will ensure that all EOD personnel have met the training requirements prior to participating in any detonation operations at the OD Unit. Due to the nature of the operations at the OD Unit, personnel involved in treatment operations are required to have training in the following areas:

- EOD Operations
- Hazardous Waste Management
- Emergency Response

<u>EOD Operations Training</u>

An outline of the NAVSCOLEOD course is provided in Table D-3 at the end of this attachment.

EOD personnel must re-attend the basic EOD course when:

- Assigned 48 months or longer in a non-EOD position (unless advanced EOD training is accomplished during that time).
- There is a 36-month or longer break in service.

Hazardous Waste Management Training

All EOD personnel responsible for management and operations at the OD Unit are required to complete the initial and annual refresher RCRA training program offered at HAFB. Personnel responsible for management and operations at the OD Unit are required to complete the training prior to participating in any detonation operations at the OD Unit. The course outline is provided as follows:

Hazardous Waste (RCRA) Training Outline

A. Introduction to RCRA
B. Definition of Hazardous Waste – Characteristic and Listed wastes
C. Accumulation point managers
D. Container use, marking, labeling, and on-base transportation; and
E. Contingency planning and emergency response

Emergency Response Training

All EOD personnel responsible for operations at the OD Unit are provided training in emergency response as a portion of the Holloman AFB training program. The NAVSCOLEOD training program ensures that personnel receive emergency response training. In addition, EOD Flight unit training and on-the-job training incorporates emergency response training. The emergency response and contingency publications and plans that are included in the EOD training program include:

Emergency Response Training Outline

A. Holloman AFB Emergency Management Plan (Holloman AFB EM Plan 10-2)
B. Civil Engineer Contingency Response Plan (CRP)
C. OD Unit Operating Instruction 32-3001-05
D. AFMAN 10-2503 Emergency Management Operations
E. AFMAN 32-4004 Emergency Response Operations (Being replaced by AFMAN 10-2503)
F. AFMAN 32-4013, Hazardous Material Emergency Planning and Response Guide

Annual reviews and updates are required for EOD, emergency response, and hazardous waste management training portions of the program.

D.1.4 JOB TITLES AND DUTIES [20.4.1.500 NMAC §264.16 (d)(1) and (2)]

In accordance with §§264.16(d)(1) and (2), the EOD office maintains a USAF Career Educational Training Program (CFETP) dated August 2007 depicting job title related to hazardous waste management at the 20,000-Pound Open Detonation (OD) Unit, and a job description for each job title. The job descriptions include hazardous waste management job duties, required skills, qualifications, experience, and educational requirements. Table D-2 provides a list of EOD job title, job descriptions, hazardous waste management duties, required skills, qualifications, and educational and /background requirements outlined in Table D-1. Section D.1 also provides a description for each EOD job title with the skills, qualifications, and education and /background requirements for each position according to §264.16(d)(1) and (2).

Table D-2 EOD Personnel

Job Title	Job Description	Skills, Qualifications, Experience and Education	Hazardous Waste Management Duties
EOD Apprentice/ Journeyman	EOD operations at the OD Unit	Skill Level 3/5 - special training in procedures on explosive ordnance.	EOD operations
Craftsman	Responsible for the conduct of personnel and verifies inventory listing	Skill Level 7	EOD team leader or range safety officer
EOD Supervisor/ Flight Chief	Plans, coordinates, and directs all explosive ordnance events and disposal operations.	Skill Level 7/9	EOD supervision

Functional area responsibilities and authorities for EOD operations by EOD units and personnel are set forth in Air Force Instruction 32-3001, Explosive Ordnance Disposal Program, and EOD Operating Instruction 32-3001-05, EOD Disposal (11.9K) Range Procedures.

D.1.5 RELEVANCE OF TRAINING TO JOB POSITION [20.4.1.500 NMAC §264.16 (a)(3) and §270.14(b)(12)]

The EOD training program is designed to ensure personnel is qualified to meet their actual job tasks. EOD personnel must meet the requirements in AFI 36-2105, Officer Classification and AFI 36-2108, Airmen Classification, respectively and as stated in AFI32-3001.

EOD supervisory personnel at HAFB are directly responsible for the proper handling of explosive ordnance. The duties, responsibilities, and qualifications for various positions are maintained at the EOD office. The position description for the EOD supervisor is presented below:

Air Force EOD Supervisor Responsibilities: Directs the operations at the EOD Flight at HAFB and has overall responsibility for the training of EOD personnel. The EOD supervisor provides assistance and guidance on explosive ordnance disposal and management of the Flight.

Duties: The HAFB EOD Supervisor:

- Plans, coordinates, and directs all EOD operations at HAFB
- Interprets regulations and develops necessary operating procedures as required
- Determines requirements for manpower, space, and equipment and initiates actions as needed
- Determines the need for modifications to existing facilities and initiates action to improve economy, efficacy, safety, and physical security of operations.
- Develops appropriate requirements and initiates requests for work.
- Coordinates with the Environmental Flight any changes or modifications of the OD Unit permit
- Maintains personal contacts with local and state government agencies and military commands.
- Assigns work to subordinate employees based on priorities.
- Makes decisions on work problems referred by subordinate supervisors.
- Ensures that workload and project responsibilities are specifically delegated and assigned to subordinates.

D.1.6 TRAINING PROGRAM RECORDS [20.4.1.500 NMAC §264.16 (d) and (e)]

The HAFB EOD Flight office maintains the following training program records for the OD Unit:

- Job title and a written job description for each position at the OD Unit and a list of personnel assigned to each job title.
- Rank, skill, education, and duties of EOD personnel assigned to each position
- Written description of the type and amount of basic and continuing training required for each position.

The Flight Training Program Manager keeps the training and service records for EOD personnel assigned to the flight. Training records, emergency response, and RCRA/OD Unit Permit portions of the program are maintained at the EOD Flight and Natural Resources Element.

Training records on current personnel will be kept until the OD Unit is closed. Training records for former personnel assigned to the OD Unit are kept for at least three years from the date the person last worked at the facility.

Annual reviews and updates are required for EOD, emergency response, and hazardous waste management portions of the program.

References:

Air Force Instruction (AFI) 32-3001, Explosive Ordnance Disposal Program, 8 October 2004.

EOD Operating Instruction 32-3001-05, EOD Disposal (11.9K) Range Procedures, 49th Civil Engineering Squadron

(TO) 11-1-42, *General Instructions for the Disposal of Conventional Munitions*

AFI 36-2105, Officer Classification

AFI 36-2108, Airmen Classification

Table D-3 Career Field Education and Training Plan

I. Explosive Ordnance Disposal (EOD) Specialist/Technician Career Field:
- A. Progression in career ladder 3E8X0 B. Duties of Air Force Specialty Codes

II. Participate in USAF Graduate Evaluation Program

III. EOD Flight Management
- A. EOD unit management
  - (1) Organizational structure
  - (2) Functions and responsibilities
- B. Inspection system
- C. Material deficiency reporting

IV. Applied Principles of Physics
- A. Properties of matter
- B. Laws of motion
- C. Simple machines
- D. Measurement systems
  - (1) English
  - (2) Metric
  - (3) Conversion from one system to another

V. Fundamentals of Electricity
- A. Demolition circuitry
- B. Perform grounding procedures
- C. Apply electromagnetic radiation precautions

VI. EOD Tools and Equipment
- A. Maintain tools
- B. Common hand tools
  - (1) Select proper tools
  - (2) Use tools properly
- C. Special tools and equipment
  - (1) Select proper tools
  - (2) Use tools properly
- D. EOD Mark (MK)-Series tools
  - (1) Select proper tools
  - (2) Use tools properly

VII. Military Explosives and Propellants
- A. Identification
- B. Effects
- C. Application and use

VIII. Destruction of Explosive Material and Related Hazardous Materials

A. Transportation
B. Firing systems
   (1) Electric
   (2) Non-Electric
C. Disposal procedures
   (1) Routine
   (2) Emergency
D. Munitions residue
   (1) Inspect
   (2) Certify
   (3) Disposition
E. Environmental protection
   (1) Considerations
   (2) Use of U.S. Environmental Protection Agency (EPA) 8700-22 manifest
   (3) EPA permits and applications
   (4) Identify environmental impacts caused by EOD
   (5) Identify EPA regulations and directives pertaining to EOD operations
   (6) Determine EPA documentation requirements
   (7) Identify responsibilities of interfacing agencies

IX. Render Safe Techniques

A. Immobilize fuses
B. Remove fuses
C. Disable electrical components
D. Disrupt firing trains
E. Use shaped charges and demolition techniques

X. Chemical and Biological Warfare Agents

A. Classification
   (1) Types
   (2) Physical state
   (3) Physiological action
   (4) Persistency
B. Use protective clothing and equipment
C. Seal and package leaking munitions
D. Use detection and identification kits
E. Apply first aid/self air procedures
F. Use decontaminants and decontamination equipment

XI. Placed Munitions

A. Land mine and fuses
   (1) Location
   (2) Identification
   (3) Observe safety precautions
   (4) Render safe

(5) Perform disposal procedures

B. Booby traps and fuses

(1) Classification

(2) Identification

XII. Projected Munitions, Rockets, and Grenades

A. Projected munitions and their fuses

(1) Observe safety precautions

(2) Identification

(3) Locate

(4) Render safe

(5) Disposal

B. Projected munitions, rockets, and grenades of foreign countries

(1) Observe safety precautions

(2) Identification

(3) Locate

(4) Render safe

(5) Disposal

XIII. Dropped Munitions

A. Bombs and bomb fuses

(1) Observe safety precautions

(2) Identification

(3) Render safe

(4) Disposal

B. Dispensers and payload

(1) Observe safety precautions

(2) Identification

(3) Render safe

(4) Disposal

XIV. Aircraft Weapons Systems and Explosives

A. Aircraft egress/weapons systems

(1) Aircraft/egress

(2) Gun systems

(3) Release and launching systems

(4) Missile/rocket launching systems

(5) Miscellaneous explosive-actuated devices

B. Aircraft explosive devices

(1) Locate

(2) Identify

(3) Observe safety precautions

(4) Render safe

XV. Pyrotechnics

A. Identify
B. Observe safety precautions
C. Render safe
D. Disposal

XVI. Guided Missiles

A. Classification
B. Identification
C. Propulsion Systems
   (1) Identification
   (2) Characteristics
D. Hazardous missile components and propellants
   (1) Identification
   (2) Render safe
   (3) Removal
   (4) Disposal
E. Guided missiles of foreign countries

XVII. Explosive Ordnance Reconnaissance

A. Recognition of terrain changes due to unexploded ordnance (UXO)
B. Locate, mark, and report UXOs
C. Estimate collateral damage
D. Technical intelligence
   (1) Use photographic equipment
   (2) Reporting

XVIII. Access and Recovery

A. Characteristics of soils
B. Effects of weather on soils
C. Methods of gaining access
D. Performing field rigging and improvised hoisting
E. Tie knots, bends, and hitches

XIX. Ranges

A. Decontaminate ranges
   (1) Active
   (2) Inactive
   (3) Excess
B. Proficiency training and demolition ranges
   (1) Establish
   (2) Maintain

XX. Improvised Devices

A. Locate
B. Gain access

C. Identify
D. Interpret radiographs
E. Observe safety precautions
F. Render safe
G. Perform disposal procedures

XXI. Base Recovery after Attack

A. Concept
B. Responsibilities
C. Pre-attack EOD procedures
D. Post-Attack EOD procedures
E. Munitions clearance vehicle Concept of Operations (CONOPS)

XXII. Peace Time Operations

A. Develop plans for range clearance operations
B. Develop plans for ammunition disposal report operations
C. Use of demolition techniques

XXIII. Communications/Electronics

A. Tactical radios
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ATTACHMENT E

CONTINGENCY PLAN

HOLLOMAN AIR FORCE BASE
OPEN DETONATION TREATMENT UNIT

Permit No. NM6572124422

ATTACHMENT E
CONTINGENCY PLAN
20,000-POUND OPEN DETONATION UNIT

E.1 INTRODUCTION

This 20,000-Pound Open Detonation (OD) Unit Contingency Plan (Contingency Plan) outlines procedures for responding to an emergency involving hazardous waste at the OD Unit. This Contingency Plan was prepared in accordance with the requirements of 20 New Mexico Administrative Code (NMAC) Title 20, Chapter 4, Part 1, Subpart V (20.4.1.500 NMAC) §264.50 to §264.56.

E.1.1 PURPOSE AND IMPLEMENTATION

The purpose of this OD Unit Contingency Plan is to define responsibilities, ensure coordination of response activities, and minimize hazards to human health or the environment from fire, explosions or any unplanned sudden or non-sudden release of hazardous wastes to the environment.

This Contingency Plan is designed to minimize hazards to human health and the environment from emergencies that may occur as a result of managing hazardous wastes (ordnance materials) at the HAFB OD Unit. The ordnance materials are solids that demonstrate the hazardous characteristics of reactivity. Emergency events that could occur would be an uncontrolled explosion, an accidental fire, or a diesel fuel spill from a vehicle.

This Contingency Plan will be reviewed and, if necessary, amended whenever any of the following occurs:

- The facility permit is revised
- The plan fails in an emergency
- Design or operation of the facility changes significantly such that implementation of the Contingency Plan would be affected
- List of emergency coordinators changes
- List of emergency equipment changes

The overall approach for emergency response at HAFB is through a hierarchy of personnel for responding to emergencies throughout the Base as detailed in the Holloman Emergency Management Plan 10-2 and numerous HAFB plans (i.e., emergency response, evacuation, contingency response). These documents are maintained and available for review at HAFB. The procedures outlined in this Contingency Plan are developed to specifically detail the procedures for an emergency involving hazardous waste at the OD Unit.

Copies of this Contingency Plan, as well as updates, are maintained at the explosive ordnance disposal (EOD) office; with primary and secondary emergency coordinators (identified in Section E.1.4); and security forces, fire departments, and medical facilities responsible for responding to emergencies. Additionally, the HAFB 90-Day Hazardous Waste Accumulation Area (HWSA) Contingency Plan is included in Exhibit E-2 of this Attachment.

E.1.2 OD UNIT OPERATIONS

Activities at the OD Unit consist of detonation of ordnance materials that are considered to be hazardous wastes due to their exhibiting the characteristics of reactivity (U.S. Environmental Protection Agency [EPA] Hazardous Waste Code D003). As evidenced by the chemical composition information contained in the Waste Classification and Identification section, Attachment B, the ordnance materials contain relatively few hazardous constituents that would persist after detonation, and the constituents are relatively immobile. Consequently, the only immediate threat to human health or the environment as a result of activities at the OD Unit is an uncontrolled explosion, an accidental fire, or a diesel fuel spill from a vehicle.

The primary mission of the OD Unit is to render safe reactive materials at HAFB that have exceeded their shelf life, deteriorated unexpectedly, are damaged, or failed to attain specifications. In the event that an uncontrolled explosion occurred at the OD Unit, the exploded materials would not present a danger to human health or the environment outside the immediate area of the OD Unit. In that event, additional EOD personnel would be dispatched to the OD Unit to render safe any unexploded ordnance material that may be present following an uncontrolled explosion. In case a treatment event at the OD Unit is aborted, the waste will be removed and sent back to the generator.

There is a fire response station located at HAFB. Fires that occur at HAFB are handled by Civil Engineer Squadron (CES) Fire Protection Flight. Additionally, HAFB maintains a Disaster Control Group that can also respond to fire emergencies. For fire emergencies that are extremely large, HAFB has agreements with Alamo West and the cities of Alamogordo and Cloudcroft to use their volunteer fire departments.

In the event of a diesel fuel spill from a vehicle, fire protection personnel will respond. EOD personnel maintain additional spill response supplies and equipment, and are trained in diesel fuel spill response.

E.1.3 COORDINATION AGREEMENTS

HAFB maintains a full spectrum of emergency response services at the installation including a fully equipped fire response station, emergency medical services, and security forces. As there is now only an on-post clinic, the base has arrangements with the Gerald Champion Regional Medical Center. These organizations have been contacted to familiarize responders with operations and contingency planning for the OD Unit.

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 Mutual Support Agreements (MSAs) have been established between HAFB and local communities for major accidents, hazardous materials incidents, fire protection and rescue,

medical care and security/public safety (Exhibit E-1). The Memorandum of Understanding in Exhibit E-1 was developed to familiarize these organizations with the types and properties of hazardous waste managed at the OD Unit. These agreements are maintained at the HAFB facility (49th CES Explosive Ordnance Disposal Flight) in accordance with 20.4.1.500 NMAC §264.50 through §264.52(c). These facilities include the local volunteer fire departments in Alamo West and the cities of Alamogordo and Cloudcroft.

The Basewide agreements for the 90-Day HWAS which outline the associated hazards and possible types of injuries or illnesses which could result from fires, explosions, or releases from the 90-Day HWAS and has been signed by all concerned parties. The 90-Day Contingency Plan is included in Exhibit E-2.

E.1.3.1 Coordination Requirements

In addition to the Base organizations and personnel assigned to the response effort, provisions have been made for including off-base organizations in the response organization when on-base response resources and expertise are insufficient, and when off-base water, land, or air are adversely affected. Some of the significant off-base response resources ~~that can be~~ incorporated~~, as needed,~~ include the following.

a. ACC/A7V:

Major Command office responsible to ensure environmental protection including spill response matters. This office is located at Langley AFB, Virginia and can be reached at DSN 574-9342 or commercial (757) 764-9342.

b. Air Force Civil Engineer Center (AFCEC) Reach Back Center:

AFCEC is assigned the responsibility to provide technical guidance and assistance to major commands and bases in contingency operations and environmental planning. Technical expertise can be provided to the Air Force On-Site Coordinator (OSC) on hazardous material identification, control, cleanup, and disposal. The AFCEC Reach Back Center is AFCEC's 24-hour, emergency contact line for emergency notifications, as well as its reach-back and referral information provider for all AFCEC activities. The AFCEC Reach Back Center is located at Tyndall AFB, Florida and can be reached at DSN 523-6995 or commercial (850) 283-6995.

c. State of New Mexico Response Team:

NMED has developed an Emergency Response Team to respond to spills occurring within the state boundaries. The state OSC will be briefed fully by the HAFB OSC on the spill response. The state OSC will be familiar with the available sources of spill response equipment and materials within New Mexico. The NMED emergency response team phone number is (505) 827-9329.

d. City of Alamogordo Fire Department:

HAFB has a mutual aid agreement with the city of Alamogordo Fire Department (located about 7 miles east of HAFB to provide assistance in the event it should be needed. The phone number of the Alamogordo Fire Department is (575) 439-4300.

e. White Sands Missile Range:

HAFB has a mutual aid agreement with the White Sands Missile Range Fire Department located approximately 40 miles west.

f. National:

The following information services are also available to assist in the event of an emergency:

- CHEMTREC® (Chemical Transportation Emergency Center)
- Chemical Hazard Response Information System Manual
- ERIS (Emergency Response Information System)
- OHMTAPS (Oil and Hazardous Materials/Technical Assistance Data System)
- U.S. Air Force Occupational and Environmental Health Laboratory.

The Memorandum of Understanding (Exhibit E-1) was developed to familiarize these organizations with the types and properties of hazardous waste managed at the OD Unit. EOD personnel are situated at Building 855 at the main base area where they perform most of their duties. Figure E-1 shows the location of Build 855 in relation to the 20,000-Pound OD Unit. EOD personnel situated at Building 855 follow the general base evacuation plan.

Access to the 20,000-Pound Unit is provided by a single paved road. A dirt road provides access from the paved road to the edge of the OD Unit. The detonation area is approximately one quarter mile from the paved road. The 20,000-Pound OD Unit is surrounded by a fence. There are two gate entrances into the facility. The facility is closed and remains “under lock and key” at all times.

E.1.4 EMERGENCY COORDINATORS

The primary Emergency Coordinator (as required by 20.4.1.500 NMAC §264.55) at HAFB is the Commander of the 49th Mission Support Group. The Commander has a detailed knowledge of hazardous waste operations at HAFB, layout and operations at the OD Unit, and the emergency response procedures of the Contingency Plan. The Emergency Coordinator is authorized to commit all resources necessary for emergency response activities.

The secondary Emergency Coordinator at HAFB is the Base Civil Engineer. EOD personnel are the primary support for an emergency situated at the OD Unit. HAFB fire protection and disaster control groups assist in emergency situations at the OD Unit. The Emergency Coordinator is reached by calling the Command Post at 572-7575.

The emergency coordinators will coordinate and direct control and cleanup efforts at the scene in case of an incident involving the transportation, handling, or detonation of explosive waste items. The emergency coordinators can designate other personnel to assist them in the event of an emergency and have the full authority to obtain fire and medical support service should the need arise.

Prior to operations by EOD personnel, the EOD supervisor contacts the following base offices:

- meteorology
- munitions
- medical services
- security forces
- base operations
- 49 CES/CEAN
- fire chief.

Therefore, these organizations are alerted in the event that potential emergencies occur during EOD treatment operations.

The primary OSC for HAFB is the Commander, 49th Mission Support Group. The title and work phone number of the primary OSC and designated alternates are provided below:

Title		**Base Phone No.**
Commander (MSG) [1]	(Primary)	(575) 572-5541
Base Civil Engineer (CE)	(Alternate)	(575) 572-3071
Fire Chief	(Alternate)	(575) 572-7228
Assistant Fire Chief on Duty	(Alternate)	(575) 572-72~~8~~28

Hazardous waste activities are also conducted at the 90-Day Hazardous Waste Accumulation Site (HWAS) at HAFB. The following Emergency Coordinators listed in Table E-1 are qualified to act as the primary and alternate emergency coordinators at the 90-Day HWAS as required by 20.4.1.500 NMAC §264.52(d):

Table E-1 90-Day Hazardous Waste Accumulation Site Emergency Coordinators

Name	Address*	Office Phone	Personal Phone*
Isamar Nieves Cancel (primary)[1]		575-572-6648	
DeAnna Rothhaupt (alternate)[2]		575-572-3931	

* Note: Personal Information (home addresses and personal phone numbers) have been removed from information copies of this permit.
[1] The Hazardous Waste Manager is the primary RCRA Emergency Coordinator for the 90-Day Hazardous Waste Accumulation Site (HWAS) pursuant to 20.4.1.500 NMAC incorporating 40 CFR § 264.52(d).
[2] The Chief of Environmental is an alternate RCRA Emergency Coordinator HWAS.

E.1.5 IMPLEMENTATION OF THE CONTINGENCY PLAN

The Contingency Plan will be implemented immediately whenever there is an accidental fire, spill, or uncontrolled explosion that could threaten human health or the environment. Such a fire would be defined as one that had spread outside the boundaries of the OD Unit to an extent that HAFB personnel and equipment could not provide adequate containment.

E.1.5.1 Emergency Response Procedures (20.4.1.500 NMAC §264.56)

During an event not requiring implementation of the OD Unit Contingency Plan, EOD personnel will alert Test Track personnel and the fire protection group via portable radio.

The Contingency Plan will be implemented in the following situations:

- An unplanned fire or unplanned explosion occurs at the OD Unit such that:
  - the potential for human injury exists
  - toxic fumes that could endanger human health or the environment are released
  - the fire could spread on-site or off-site and possibly ignite other flammable materials or cause heat-induced explosions
  - the use of water and/or chemical fire suppressants could result in contaminated run-off that could endanger human health or the environment
  - an imminent danger exists that an explosion could ignite other hazardous wastes at the facility and possibly results in the release of toxic material
- A spill or unplanned release of hazardous material occurs at the unit such that:
  - The spill could cause the release of toxic liquids or fumes that could endanger human health or the environment
  - The spill cannot be contained in the immediate area resulting in potential off-site soil contamination and/or ground or surface water pollution that could endanger human health or the environment
  - The spilled material inadvertently detonates or is combustible
  - A fire or explosion occurs during transportation of the waste or residuals to or from the unit
- A planned treatment event results in:
  - An imminent release due to damage to the unit beyond damage that is typical to such treatment event
  - Any structure, road surface, or other item is ignited in the vicinity
  - During rupture of a cylinder, the cylinder is released from its securing device

Notification

The EOD team members discovering a potential emergency incident at the OD Unit will notify the Range Safety Officer (RSO). The RSO will activate the internal alarm system to notify or

evacuate personnel, if appropriate. In addition, the RSO will notify the Base Fire Chief, CES Asset Management Flight, Natural Resources Element and Medical Services as required.

During an emergency situation that requires implementation of this Contingency Plan, the emergency coordinator would implement the following first level response procedures:

- Activate internal communications systems to alert emergency response personnel
- Identify the character, exact source, amount, and areal extent of the released materials
- Assess possible hazards to human health and the environment (both on-installation and off-installation)
- Take steps to mitigate the spread or reoccurrence of the fire
- Notify appropriate state or local agencies, if needed
- Remove/transport any untreated ordnance material if the emergency occurs while ordnance material is still present at the site

If, based on the assessment of possible hazards, the emergency coordinator determines that the fire could threaten human health or the environment on the installation; he/she would immediately notify the security forces. If evacuation is considered necessary, the emergency coordinator would confer with military police on which areas should be evacuated. If, in the unlikely event that the emergency coordinator determines that the fire could threaten human health or the environment off-installation, he would immediately notify local authorities. If evacuation is considered necessary, the emergency coordinator would confer with local authorities and with security forces on which areas should be evacuated. The Natural Resources Element will notify the National Response Center at 1-800-424-8802 and provide the Center with the following information:

- Name and telephone number of the emergency coordinator making the notification
- Name and address of the facility (Holloman Air Force Base, Alamogordo, New Mexico)
- Time and type of incident (fire)
- Name and quantity of materials involved
- The extent of injuries, if any
- The possible hazards to human health or the environment outside the facility

According to HAFB EODOI 32-3001-05, during an emergency, personnel will evacuate the OD Unit through the south gate toward the range flag or other pre-designated location such as the Test Track area or the ARC building (building 1025) that is located 1.5 miles south east of the OD Unit. The team leader will take accountability of all personnel, and the Range Safety Officer (Senior EOD member) will coordinate with HAFB organizations for assistance.

E.1.6 EMERGENCY RESPONSE EQUIPMENT (20.4.1.500 NMAC §264.32)

HAFB maintains a large inventory of equipment that can be used as emergency response equipment. Although this equipment is not dedicated solely for hazardous waste service, it can be used in response to a fire involving hazardous waste. A listing of the available equipment, number of items, and the locations of the equipment is included~~ in Section E.2.4.9~~. After use, all durable emergency response equipment must be cleaned, inspected, and fit for its intended use prior to resuming operations at the OD Unit. All non-durable emergency response equipment that is disposed of must be replaced as soon as practicable.

E.1.6.1 Emergency Equipment

According to HAFB EOD Operating Instruction 32-3001-05, the following equipment will be immediately available during EOD operations:

- First aid kit (NSN-654500-116-1410) or suitable substitute
- Demolition tools and equipment
- Explosives and demolition materials
- Pioneer and hand tools as required
- Fire extinguishers, two 2A 10B/C
- Disposal Range Guide and applicable technical data
- Radio for emergency communications and/or contact with range control – at least two (i.e., hand-held, vehicular, cell phones)
- Range flag
- Specialized EOD tool as required
- Fire extinguisher in vehicles carrying class B/C explosives
- Vehicles with placards

All emergency response and personal protection equipment is routinely inspected and tested to ensure equipment is maintained in good working order. Emergency response equipment is inspected and tested in accordance with the Inspection Schedule and Checklist provided in Attachment C. Inspections are conducted monthly as well as two weeks in advance of scheduled detonation, the day before a scheduled detonation, and the day of detonation. Corrective actions to address deficiencies are immediately implemented and documented on the Inspection Checklist.

Table E-~~1~~2 provides a comprehensive list of emergency response and personal protection equipment available for use at the OD Unit.

Table E-~~1~~2 Emergency Response Equipment Available for Use at the HAFB OD Unit

Response Equipment	**Description/Capabilities**	**Location**
Firefighting Vehicles	Firefighting vehicles equipped for fire suppression, emergency response and personal protection including self-contained breathing apparatuses (SCBAs). Available for immediate response and transport to emergency incidents.	49 CES Fire Protection Flight
Security Vehicles	Equipped with communications equipment and utilized for transportation of personnel and equipment. Available for immediate response and transport to emergency incidents.	49 Security Forces Squadron
Emergency Medical and First Aid Equipment and Supplies	Equipment for movement of injured personnel (e.g., stretchers, Stokes litter) blankets, emergency first-aid supplies, and medical-grade oxygen in compressed cylinders equipped for personnel use.	49 CES Fire Protection Flight, 49 Medical Group
Self Contained Breathing Apparatus (SCBA)	SCBA equipped with positive pressure mode for use by personnel entering hazardous atmospheres and monitoring instruments.	49 CES Fire Protection Flight
Fire extinguishers	Minimum of two 2A 10B/C fire extinguishers on-site at the OD Unit.	EOD Flight
Radio and communications equipment	Hand-held and vehicle-mounted two-way radios for emergency communications.	EOD Flight; 49 CES, 49 CES Fire Protection Flight, 49 Security Forces Squadron
Emergency response and release clean-up equipment and materials	Personal protective equipment (Tyvek coveralls, nitrile gloves, foot coverings, face shields, and protective eyeglasses) for use by emergency response personnel. Decontamination equipment (portable eyewash, shower, brushes) Clean-up equipment and materials (absorbents, booms, shovels, brooms, drums)	49 CES

Procedures for decontamination of personnel, equipment, or areas are conducted according to the HAFB Emergency Management Plan 10-2. These procedures are designed to render persons, equipment, or areas safe by absorbing, destroying, neutralizing, making harmless, or removing chemical or biological agents, or by removing radioactive material. Immediate decontamination is carried out by individuals upon becoming contaminated, to save life and minimize casualties and may include decontamination of some personal clothing or equipment. Operational decontamination may be carried out by an individual or a unit, restricted to specific parts of operationally essential equipment, material, and/or working areas, in order to minimize contact and transfer hazards and to sustain operations. This may include decontamination of the individual beyond the scope of immediate decontamination, as well as decontamination of mission-essential spares and limited terrain decontamination. Thorough decontamination may be carried out by a unit, with or without external support, to reduce contamination on personnel, equipment, material, and/or working areas to the lowest possible levels, to permit the partial or total removal of individual protective equipment and to maintain operations with minimum

degradation. This may include terrain decontamination beyond the scope of operational decontamination.

E.1.7 POST EMERGENCY REPORTS [20.4.1.500 NMAC §264.56(j)]

HAFB will note in their operating record the time, date, and details of any incident that requires implementation of the Contingency Plan. Within 15 days after an event requiring implementation of the Contingency Plan, an incident report will be prepared detailing the event and submitted to the Region VI Regional Administrator of the EPA and the NMED as required by 20.4.1.500 NMAC §264.56(j). The report will include the following information:

- Name, address, and telephone number of HAFB
- Date, time, and type of incident (e.g., fire, explosion)
- Name and quantity of material(s) involved
- The extent of injuries, if any
- An assessment of actual or potential hazards to human health or the environment, where applicable
- Estimated quantity and disposition of recovered material that resulted from the incident

Before operations are resumed at the OD Unit, NMED will be notified that the OD Unit is in compliance with 20.4.1.500 NMAC §264.56(h) and (j). The notification will verify that wastes incompatible with the released material are treated until cleanup procedures are completed and that all emergency equipment is cleaned and ready for its intended use.

E.1.7.1 Reporting and Recordkeeping [20.4.1.500 NMAC §264.56 (i)]

The emergency coordinator will notify the Natural Resources Element, who will report pollution incidents as necessary, as follows:

1. All pollution incidents will be reported as soon as practicable, by telephone during duty hours or by message during off-duty hours, to the following agencies:

   a. HQ ACC/A7V

      Defense Switched Network (DSN) 574-9342; commercial (757) 764-9342

   b. Regional Response Center (RRC)

      Environmental Protection Agency
      Region VI First Interstate Bank Tower
      1445 Ross Avenue, Dallas, TX 75202-2733
      (214) 767-2666/2720, or Telex 910-861-4125

2. New Mexico Environment Department (NMED) (505) 827-9329. Verbal notification will be provided to NMED as soon as possible after learning of a discharge, but in no event more than twenty-four (24) hours thereafter. Notification of releases of any amount of

any material in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property; or may unreasonably interfere with the public welfare or the use of property must be reported to the NMED. This includes chemical, bio-hazardous, petroleum-product, and sewage spills and incidents. In addition to recent spills, the discovery of evidence of previous unauthorized discharges, such as contaminated soil or ground water, will be reported.

3. Major spills or potentially major spills will immediately be reported by telephone and email or facsimile to the RRC (l.b above) and:

   National Response Center
   Environmental Protection Agency
   Nasiff Building
   400 7th Street, SW, Washington, DC 20590
   1-800-424-8802 or Telex 426-0014

4. Medium-sized spills will be reported to the above agencies as soon as practical.

HAFB will note in their operating record the time, date, and details of any incident that requires implementation of this Contingency Plan. Within 15 days after an event requiring implementation of this Contingency Plan, an incident report detailing the event will be prepared and submitted to the EPA Region VI Regional Administrator and the NMED as required by 20.4.1.500 NMAC §264.56(i). The report will include the following information:

- Name, address, and telephone number of HAFB
- Date, time, and type of incident (e.g., fire, explosion)
- Name and quantity of material(s) involved
- The extent of injuries, if any
- An assessment of actual or potential hazards to human health or the environment, where applicable
- Estimated quantity and disposition of recovered material that resulted from the incident

Before operations are resumed at the OD Unit, NMED and the Regional Administrator will be notified that the OD Unit is in compliance with 20.4.1.500 NMAC §264.56(h) and (i). The notification will verify that wastes incompatible with the released material are treated until cleanup procedures are completed and that all emergency equipment is cleaned and ready for its intended use.

E.2 CONTINGENCY RESPONSE PLAN

The information contained in the following paragraphs is adopted from the HAFB Emergency Management Plan 10-2. The Plan is divided into six sections that identify:

- Overall mission

- Designated parties and their responsibilities
- Emergency response, control, and countermeasures
- Contingency plan requirements and actions
- Contingency training
- Plan review and update

E.2.1 GENERAL INFORMATION

This Contingency Plan will be reviewed continually and revised if any of the following occur:

- the facility permit is revised
- the plan is inadequate in an emergency
- the procedures herein can be improved
- facility operations change in a way that alters the plan
- the emergency coordinator changes
- the emergency equipment list changes

Amendments to this Contingency Plan can be initiated by any responsible party. Proposed changes may be submitted to the 49th CES as the office with primary responsibilities to represent both EOD personnel and other contingency response personnel. Adopted changes will be provided to all record holders of this permit.

Copies of the Contingency Plan will be available at the 49th CES and the base EOD office.

The facility name, address, owner/operator ID number and permit number are provided below:

Name:	Holloman Air Force Base
Address:	550 Tabosa Avenue, Building 55, HAFB, New Mexico 88330-8458
Owner:	United States Air Force
Operator:	Holloman AFB
EPA ID No:	NM6572124422
Permit No:	NM6572124422-OD

~~E.2.2 EMERGENCY COORDINATORS~~

~~The emergency coordinators will coordinate and direct control and cleanup efforts at the scene in case of an incident involving the transportation, handling, or detonation of explosive waste items. The emergency coordinators can designate other personnel to assist them in the event of an emergency and have the full authority to obtain fire and medical support service should the need arise.~~

~~Prior to operations by EOD personnel, the EOD supervisor contacts the following base offices:~~

- ~~meteorology~~
- ~~munitions~~
- ~~medical services~~

- security forces
- base operations
- 49 CES/CEAN
- fire chief.

Therefore, these organizations are alerted in the event that potential emergencies occur during EOD treatment operations.

The primary OSC for HAFB is the Commander, 49th Mission Support Group. The title and work phone number of the primary OSC and designated alternates are provided below:

Title	**Base Phone No.**
Commander (MSG)	(575) 572-5541
Base Civil Engineer (CE)	(575) 572-3071
Fire Chief	(575) 572-7228
Assistant Fire Chief on Duty	(575) 572-72828

E.2.3 IMPLEMENTATION

The decision to implement the Contingency Plan for the OD Unit depends upon whether an imminent or actual incident could threaten human health or the environment.

The purpose of this section is to provide guidance to the emergency director in making this decision by providing decision-making criteria.

The Contingency Plan will be implemented in the following situations:

- An unplanned fire or unplanned explosion occurs at the OD Unit such that:
  - the potential for human injury exists
  - toxic fumes that could endanger human health or the environment are released
  - the fire could spread on-site or off-site and possibly ignite other flammable materials or cause heat-induced explosions
  - the use of water and/or chemical fire suppressants could result in contaminated run-off that could endanger human health or the environment
  - an imminent danger exists that an explosion could ignite other hazardous wastes at the facility and possibly results in the release of toxic material
- A spill or unplanned release of hazardous material occurs at the unit such that:

- ~~The spill could cause the release of toxic liquids or fumes that could endanger human health or the environment~~
- ~~The spill cannot be contained in the immediate area resulting in potential off-site soil contamination and/or ground or surface water pollution that could endanger human health or the environment~~
- ~~The spilled material inadvertently detonates or is combustible~~
- ~~A fire or explosion occurs during transportation of the waste or residuals to or from the unit~~

- ~~A planned treatment event results in:~~
  - ~~An imminent release due to damage to the unit beyond damage that is typical to such treatment event~~
  - ~~Any structure, road surface, or other item is ignited in the vicinity~~
  - ~~During rupture of a cylinder, the cylinder is released from its securing device~~

E.2.~~4~~2 EMERGENCY RESPONSE PROCEDURES

E.2.~~4~~2.1 Notification [20.4.1.500 NMAC §264.56(a)(1) and (2)]

The EOD team members discovering a potential emergency incident at the OD Unit will notify Fire Protection and the Range Control Supervisor. The Range Control Supervisor will, in turn, notify the OSC or alternate. The OSC or alternate will immediately activate the internal alarm system to notify or evacuate personnel, if appropriate. In addition, the OSC or alternate will notify the Base Fire Chief, Environmental Coordinator, Base Civil Engineer, Chief of Operations, Readiness Flight, Natural Resources Element, Public Affairs, and Medical Services, as required.

The appropriate local agencies with designated response roles will be notified by the OSC if their help is needed. The appropriate state agencies will be notified if their assistance is needed, or the incident requires reporting at this level.

The evacuation routes to be used in the event of an emergency are the OD Unit entrances, provided that the extent of the incident is limited to the immediate vicinity but temporary evacuation is required. Evacuation from the main base area, if required, is designated in the HAFB Emergency Management Plan 10-2.

E.2.~~4~~2.2 Identification of Hazardous Wastes [20.4.1.500 NMAC §264.56(b)]

The OSC will immediately identify the character, exact source, amount, and extent of the material involved in the unplanned incident. The initial identification method will be by visual inspection of the incident's effects, spilled material, and location of the release. Plan records, including physical inventories, process and waste log sheets, and biennial reports are available at

the EOD Administrative Office to aid in estimating the composition and quantity of released material. EOD personnel at the OD Unit also conduct a physical inventory of all munitions brought for treatment by Munitions Storage Area personnel.

Qualified personnel will sample the released material to verify hazardous material identification, to determine boundaries of contaminated areas and contaminant concentrations, and to verify that proper cleanup activities are completed.

E.2.42.3 Hazard Assessment [20.4.1.500 NMAC §264.56 (c) and (d)]

Possible hazards to the environment and public health will be assessed by the OSC, and the need for local evacuation and notification of local authorities will be determined. In assessing the situation, the OSC will consult with the Natural Resources Element, Bioenvironmental Engineer, and Base Fire Chief. These parties will consider direct and indirect effects of the event on human health, welfare, and natural resources. In assessing the event, the potential for direct and indirect effects will indicate, but not be limited to, fire, explosion, further release occurrence, toxic gases, or injection by run-on and run-off. Action will be taken to control releases and minimize effects during such an emergency if the situation involves the release or potential release of toxic effluent.

The OSC, in conjunction with the noted personnel, will determine whether the OD Unit has had a release that could threaten human health or the environment outside the base. Bioenvironmental Engineering personnel will survey the area and advise the OSC in the establishment of protective boundaries around the contaminated areas.

If a release results in a vapor cloud, several methods are available for assessing the hazards. Portable equipment for direct air monitoring can be used to make a rapid determination of the most volatile organics.

Meteorological data, including wind speed, and direction, temperature, dew point, barometric pressure, and an automatically calculated stability factor are continuously available from HAFB meteorological towers. These data, along with information about the source of an atmospheric release, can be used to predict the direction, extent, and estimated concentration profile of a contaminated release.

If the assessment of the incident indicates that evacuation of areas downwind of the unit may be advisable, the OSC will immediately notify Headquarters Air Combat Command and the appropriate local authorities. The OSC will consult with these officials to help decide whether local areas should be evacuated. The OSC or the Natural Resources Element will immediately notify the National Response Center (using their 24-hour toll free number, 1-800-424-8802).

E.2.42.4 Control Procedures [20.4.1.500 NMAC §264.56(e)]

Potential accidents at the OD Unit can be considered as an unplanned fire/explosion, inadvertent facility damage, or spill material release. Natural disasters such as earthquakes, hurricanes, or tornadoes are not assumed to cause actions that fall into one of these categories. Procedures for responding to these incidents are contained in this Contingency Plan, HAFB Emergency Management Plan 10-2, and Technical Orders 11A-1-60 and 11A-1-42. Prompt action will be

taken to control any hazard. If an immediately dangerous explosive item is encountered, all operations in the immediate vicinity will be shut down, personnel evacuated to a safe location, and EOD personnel called to render assistance in eliminating the hazard. Operations will not be resumed until the hazard has been eliminated. In the event that a spill occurs while transporting any of the explosive, reactive wastes or munitions to the OD Unit, the following actions will be taken:

Ordnance Transportation Vehicles

- Explosion. In the event of an explosion, personnel will immediately withdraw to a safe distance and evaluate the situation. NOTE: This does not apply to detonation during transport, which requires immediate implementation of the Emergency Management Plan 10-2. Heavy-bodied trucks have been specifically chosen for this task due to the inherent risk associated with these materials. Transport limits and requirements are specified in EOD technical orders.

- Fire. In the event of a fire involving a transport vehicle with ordnance onboard, an attempt to control the fire with available extinguishers may be permissible if the fire is initially away from the ordnance. If not, personnel will withdraw to a safe distance and advise appropriate authorities.

E.2.42.5 Prevention of Recurrence or Spread of Fires, Explosions, or Releases [20.4.1.500 NMAC §264.56(e) and (g)]

In the event of a fire, explosion, release or spill, the Emergency Coordinator will ensure that the initial response is executed in accordance with the Holloman AFB Emergency Management Plan 10-2. This includes identification and containment of releases following actions to save lives, reduce injuries, and protect the environment; evacuation of nonessential personnel; cordoning off the danger area; performing fire and rescue operations; stopping the release (if possible); and preventing the spread of spilled substance into the environment (storm drains, sewers, natural drainage areas and groundwater). To prevent the recurrence or spread of fires, explosions, or releases, at a minimum, the follow-up actions are as follows:

- Start actions to collect, treat, and dispose of non-explosive waste or other materials as appropriate. This will be a joint operation involving EOD, Fire Protection, and Bioenvironmental Engineering personnel.

- Ensure that EOD, Fire Protection, and Safety personnel investigate the cause of the emergency and provide a technical report to the Commander, 49th Mission Support Group within 72 hours.

- Ensure that proper restoration actions are started as soon as possible after appropriate decontamination procedures for explosives have been completed. This will be a joint operation between Safety and Civil Engineer personnel for Air Force incidents. All decontamination actions will be documented, and the records will be permanently maintained at Air Force EOD, Safety, and Real Property offices.

- Ensure that equipment repaired or replaced as a result of the incident is recertified, as necessary, prior to being returned to service.

E.2.~~4~~2.6 Storage and Treatment of Released Material [20.4.1.500 NMAC §264.56(g)]

After a detonation event, EOD personnel will collect any released material or debris within 72 hours. No wastes that may be incompatible with the released material is treated, stored, or disposed of until clean-up procedures are completed. OD Unit operations will not resume until hazards are eliminated. The collection, treatment, and disposal of non-explosive waste will be a joint operation involving EOD, Natural Resources Element , Fire Protection, and Bioenvironmental Engineering personnel. The Permittee shall characterize the debris collected after each detonation in accordance with 40 CFR §261, Subpart C. This will be accomplished by sampling and analysis, MSDS review, or generator knowledge. Based on this characterization, the Permittee shall manage the fragments collected in accordance with 40 CFR §261 as applicable to the waste.

E.2.~~4~~2.7 Post-Emergency Equipment Maintenance [20.4.1.500 NMAC §264.56(h)]

Post-emergency equipment maintenance will be performed in accordance with ~~the HAFB Emergency Management Plan 10-2.~~ the United States Department of Labor Occupational Safety & Health Administration (OSHA) Standards. After use, all durable emergency response equipment must be cleaned, inspected, and fit for its intended use prior to resuming operations at the OD Unit. All emergency equipment is cleaned and inspected to ensure it is fit for its intended use before facility operations are resumed. All non-durable emergency response equipment that is disposed of must be replaced as soon as practicable.

OSHA Standards state that a decontamination plan must be developed as part of the Site Safety Plan. Decontamination procedures depend on the type of emergency and hazardous substance. Prior to and after each use, personal protective equipment (PPE) will be inspected to ensure that it contains no cuts or punctures that could expose workers to hazardous wastes. Decontamination of equipment will occur in the designated Contaminant Reduction Zone, in between the Exclusion Zone (detonation area) and the clean Support Zone. A specific sequence of decontamination will be followed such that heavily contaminated PPE and equipment is decontaminated and removed prior to less contaminated PPE and equipment. All equipment used for decontamination will also be decontaminated and/or disposed of properly. Hazardous waste will be properly classified and disposed of through the 90-Day HWSA as specified by the HAFB EODOI 32-3001-05. To minimize risk of exposure to hazardous substances, personnel will also implement procedures to prevent contamination (e.g. minimizing contact with hazardous substances, bagging monitoring equipment and instruments, and/or encasing detonation site with back fill after detonation and waste sampling is complete).

E.2.~~4~~2.8 Container Spills and Leakage

Any container spills or leakage that might occur at the OD Unit will be managed in accordance with the HAFB Emergency Management Plan 10-2.

~~E.2.4.9 Emergency Equipment~~

~~According to HAFB EOD Operating Instruction 32-3001-05, the following equipment will be immediately available during EOD operations:~~

- ~~First aid kit (NSN-654500-116-1410) or suitable substitute~~
- ~~Demolition tools and equipment~~
- ~~Explosives and demolition materials~~
- ~~Pioneer and hand tools as required~~
- ~~Fire extinguishers, two 2A-10B/C~~
- ~~Disposal Range Guide and applicable technical data~~
- ~~Radio for emergency communications and/or contact with range control – at least two (i.e., hand-held, vehicular, cell phones)~~
- ~~Range flag~~
- ~~Specialized EOD tool as required~~
- ~~Fire extinguisher in vehicles carrying class B/C explosives~~
- ~~Vehicles with placards~~

~~All emergency response and personal protection equipment is routinely inspected and tested to ensure equipment is maintained in good working order. Emergency response equipment is inspected and tested in accordance with the Inspection Schedule and Checklist provided in Attachment C. Inspections are conducted monthly as well as two weeks in advance of scheduled detonation, the day before a scheduled detonation, and the day of detonation. Corrective actions to address deficiencies are immediately implemented and documented on the Inspection Checklist.~~

~~Table E-1 provides a comprehensive list of emergency response and personal protection equipment available for use at the OD Unit.~~

~~Table E-1 Emergency Response Equipment Available for Use at the HAFB OD Unit~~

~~Response Equipment~~	~~Description/Capabilities~~	~~Location~~
~~Firefighting Vehicles~~	~~Firefighting vehicles equipped for fire suppression, emergency response and personal protection including self-contained breathing apparatuses (SCBAs). Available for immediate response and transport to emergency incidents.~~	~~49 CES Fire Protection Flight~~
~~Security Vehicles~~	~~Equipped with communications equipment and utilized for transportation of personnel and equipment. Available for immediate response and transport to emergency incidents.~~	~~49 Security Forces Squadron~~
~~Emergency Medical and First Aid Equipment and Supplies~~	~~Equipment for movement of injured personnel (e.g., stretchers, Stokes litter) blankets, emergency first-aid supplies, and medical-grade oxygen in compressed cylinders equipped for personnel use.~~	~~49 CES Fire Protection Flight, 49 Medical Group~~

~~**Response Equipment**~~	~~**Description/Capabilities**~~	~~**Location**~~
~~Self-Contained Breathing Apparatus (SCBA)~~	~~SCBA equipped with positive pressure mode for use by personnel entering hazardous atmospheres and monitoring instruments.~~	~~49 CES Fire Protection Flight~~
~~Fire extinguishers~~	~~Minimum of two 2A-10B/C fire extinguishers on-site at the OD Unit.~~	~~EOD Flight~~
~~Radio and communications equipment~~	~~Hand-held and vehicle-mounted two-way radios for emergency communications.~~	~~EOD Flight; 49 CES, 49 CES Fire Protection Flight, 49 Security Forces Squadron~~
~~Emergency response and release clean-up equipment and materials~~	~~Personal protective equipment (Tyvek coveralls, nitrile gloves, foot coverings, face shields, and protective eyeglasses) for use by emergency response personnel.~~ ~~Decontamination equipment (portable eyewash, shower, brushes)~~ ~~Clean-up equipment and materials (absorbents, booms, shovels, brooms, drums)~~	~~49 CES~~

~~Procedures for decontamination of personnel, equipment, or areas are conducted according to the HAFB Emergency Management Plan 10-2. These procedures are designed to render persons, equipment, or areas safe by absorbing, destroying, neutralizing, making harmless, or removing chemical or biological agents, or by removing radioactive material. Immediate decontamination is carried out by individuals upon becoming contaminated, to save life and minimize casualties and may include decontamination of some personal clothing or equipment. Operational decontamination may be carried out by an individual or a unit, restricted to specific parts of operationally essential equipment, material, and/or working areas, in order to minimize contact and transfer hazards and to sustain operations. This may include decontamination of the individual beyond the scope of immediate decontamination, as well as decontamination of mission-essential spares and limited terrain decontamination. Thorough decontamination may be carried out by a unit, with or without external support, to reduce contamination on personnel, equipment, material, and/or working areas to the lowest possible levels, to permit the partial or total removal of individual protective equipment and to maintain operations with minimum degradation. This may include terrain decontamination beyond the scope of operational decontamination.~~

~~E.2.4.10 Coordination Requirements~~

~~In addition to the Base organizations and personnel assigned to the response effort, provisions have been made for including off-base organizations in the response organization when on-base response resources and expertise are insufficient, and when off-base water, land, or air are adversely affected. Some of the significant off-base response resources that can be incorporated, as needed, include the following.~~

~~a. ACC/A7V:~~

~~Major Command office responsible to ensure environmental protection including spill response matters. This office is located at Langley AFB, Virginia and can be reached at DSN 574-9342 or commercial (757) 764-9342.~~

~~b. Air Force Civil Engineer Center (AFCEC) Reach Back Center:~~

~~AFCEC is assigned the responsibility to provide technical guidance and assistance to major commands and bases in contingency operations and environmental planning. Technical expertise can be provided to the Air Force OSC on hazardous material identification, control, cleanup, and disposal. The AFCEC Reach Back Center is AFCEC's 24-hour, emergency contact line for emergency notifications, as well as its reach-back and referral information provider for all AFCEC activities. The AFCEC Reach Back Center is located at Tyndall AFB, Florida and can be reached at DSN 523-6995 or commercial (850) 283-6995.~~

~~c. State of New Mexico Response Team:~~

~~NMED has developed an Emergency Response Team to respond to spills occurring within the state boundaries. The state OSC will be briefed fully by the HAFB OSC on the spill response. The state OSC will be familiar with the available sources of spill response equipment and materials within New Mexico. The NMED emergency response team phone number is (505) 827-9329.~~

~~d. City of Alamogordo Fire Department:~~

~~HAFB has a mutual aid agreement with the city of Alamogordo Fire Department (located about 7 miles east of HAFB to provide assistance in the event it should be needed. The phone number of the Alamogordo Fire Department is (575) 439-4300.~~

~~g. White Sands Missile Range:~~

~~HAFB has a mutual aid agreement with the White Sands Missile Range Fire Department located approximately 40 miles west.~~

~~h. National:~~

~~The following information services are also available to assist in the event of an emergency:~~

- ~~CHEMTREC® (Chemical Transportation Emergency Center)~~
- ~~Chemical Hazard Response Information System Manual~~
- ~~ERIS (Emergency Response Information System)~~
- ~~OHMTAPS (Oil and Hazardous Materials/Technical Assistance Data System)~~
- ~~U.S. Air Force Occupational and Environmental Health Laboratory.~~

~~MSAs with these off-base response resources and HAFB have been established for major accidents, hazardous materials incidents, fire protection and rescue, medical care and security/public safety pursuant to 20.4.1.500 NMAC §264.37. The Memorandum of Understanding (Exhibit E-1) was developed to familiarize these organizations with the types and~~

~~properties of hazardous waste managed at the OD Unit. The Basewide agreements may also be included for the Department Records for the 90-Day HWAS which outline the associated hazards and possible types of injuries or illnesses which could result from fires, explosions, or releases from the 90-Day HWAS and has been signed by all concerned parties.~~

~~Access to the 20,000-Pound Unit is provided by a single paved road. A dirt road provides access from the paved road to the edge of the OD Unit. The detonation area is approximately one quarter mile from the paved road. The 20,000-Pound OD Unit is surrounded by a fence. There are two gate entrances into the facility. The facility is closed and remains "under lock and key" at all times.~~

~~EOD personnel are situated at Building 855 at the main base area where they perform most of their duties. Figure E-1 shows the location of Build 855 in relation to the 20,000-Pound OD Unit. EOD personnel situated at Building 855 follow the general base evacuation plan.~~

E.2.~~4.11~~2.9 Evacuation Plan

It is extremely unlikely that emergency operations at the OD Unit would require evacuation of other areas at HAFB since the OD Unit is isolated from any other area or office buildings.

The general base evacuation plan is provided in Appendix 2 to Annex B of the HAFB Emergency Management Plan 10-2.

~~E.2.4.12 Reporting and Recordkeeping [20.4.1.500 NMAC §264.56 (i)]~~

~~The emergency coordinator will notify the Natural Resources Element, who will report pollution incidents as necessary, as follows:~~

1. ~~All pollution incidents will be reported as soon as practicable, by telephone during duty hours or by message during off-duty hours, to the following agencies:~~

   a. ~~HQ ACC/A7V~~

      ~~Defense Switched Network (DSN) 574-9342; commercial (757) 764-9342~~

   b. ~~Regional Response Center (RRC)~~

      ~~Environmental Protection Agency~~
      ~~Region VI First Interstate Bank Tower~~
      ~~1445 Ross Avenue, Dallas, TX 75202-2733~~
      ~~(214) 767-2666/2720, or Telex 910-861-4125~~

2. ~~New Mexico Environment Department (NMED) (505) 827-9329. Verbal notification will be provided to NMED as soon as possible after learning of a discharge, but in no event more than twenty-four (24) hours thereafter. Notification of releases of any amount of any material in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property; or may unreasonably interfere with the public welfare or the use of property must be reported to the NMED. This includes chemical, bio-hazardous, petroleum-product, and sewage spills and incidents. In addition~~

~~to recent spills, the discovery of evidence of previous unauthorized discharges, such as contaminated soil or ground water, will be reported.~~

3. ~~Major spills or potentially major spills will immediately be reported by telephone and email or facsimile to the RRC (l.b above) and:~~

   ~~National Response Center~~
   ~~Environmental Protection Agency~~
   ~~Nasiff Building~~
   ~~400 7th Street, SW, Washington, DC 20590~~
   ~~1-800-424-8802 or Telex 426-0014~~

4. ~~Medium-sized spills will be reported to the above agencies as soon as practical.~~

~~HAFB will note in their operating record the time, date, and details of any incident that requires implementation of this Contingency Plan. Within 15 days after an event requiring implementation of this Contingency Plan, an incident report detailing the event will be prepared and submitted to the EPA Region VI Regional Administrator and the NMED as required by 20.4.1.500 NMAC §264.56(i). The report will include the following information:~~

- ~~Name, address, and telephone number of HAFB~~
- ~~Date, time, and type of incident (e.g., fire, explosion)~~
- ~~Name and quantity of material(s) involved~~
- ~~The extent of injuries, if any~~
- ~~An assessment of actual or potential hazards to human health or the environment, where applicable~~
- ~~Estimated quantity and disposition of recovered material that resulted from the incident~~

~~Before operations are resumed at the OD Unit, NMED and the Regional Administrator will be notified that the OD Unit is in compliance with 20.4.1.500 NMAC §264.56(h) and (i). The notification will verify that wastes incompatible with the released material are treated until cleanup procedures are completed and that all emergency equipment is cleaned and ready for its intended use.~~

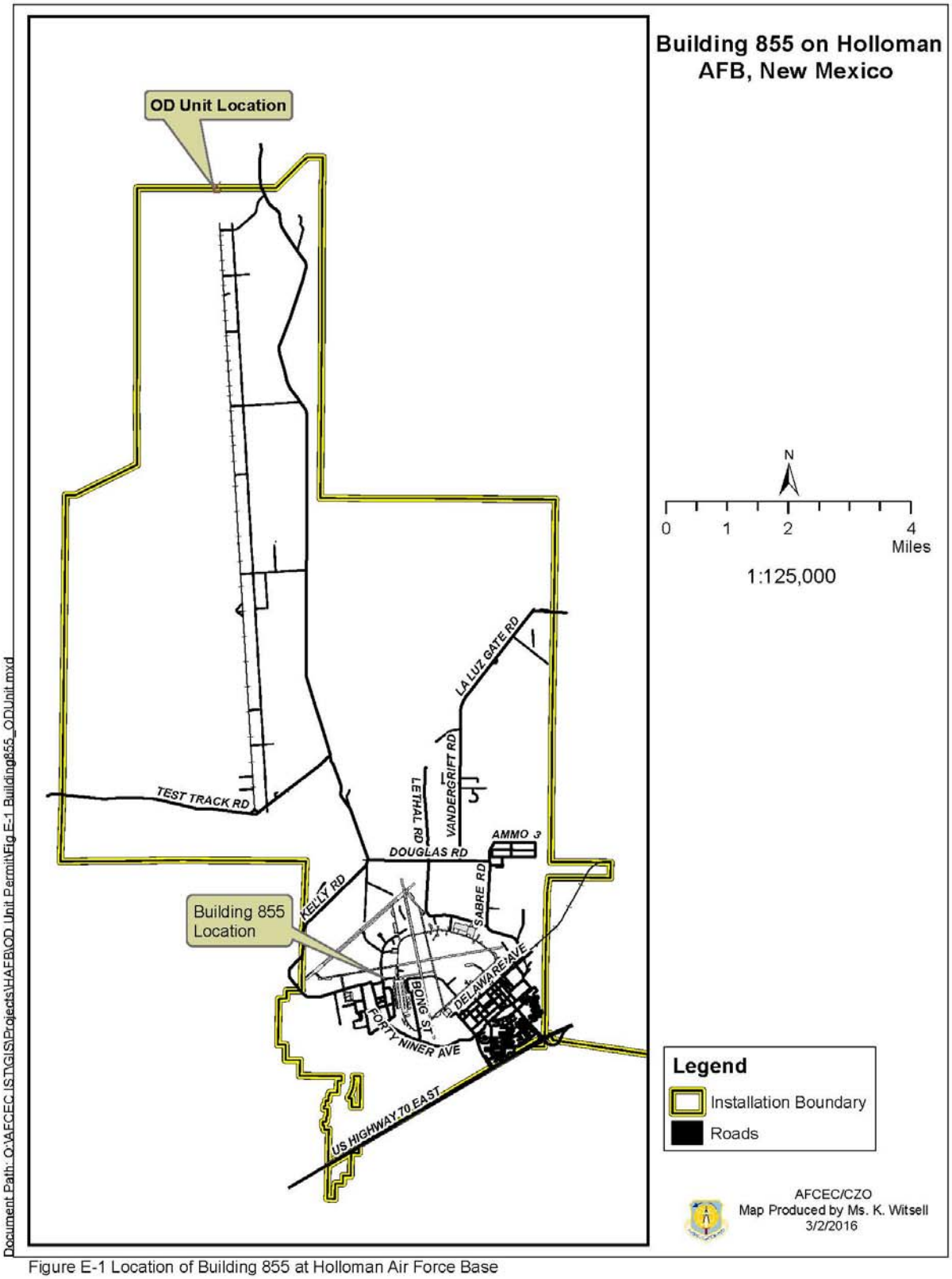

Figure E-1 Location of Building 855 at Holloman Air Force Base

Figure E-1 Location of Building 855 at Holloman Air Force Base

EXHIBIT E-1: Memorandum of Understanding for Off-Installation Emergency Action

NEW MEXICO & HOLLOMAN AFB MEMORANDUM OF UNDERSTANDING FOR OFF-INSTALLATION EMERGENCY ACTIONS INVOLVING EXPLOSIVES AND EXPLOSIVE DEVICES

1. Parties: The parties to this Memorandum of Understanding (MOU) are the Department of Defense (DoD) Explosive Ordnance Disposal (EOD) unit located on Holloman Air Force Base, NM, the Department of Public Safety, Alamogordo, NM, New Mexico State Police, Otero County Sheriff's Office and the New Mexico Environment Department Hazardous and Radioactive Materials Bureau.

2. Background:

a. EOD organizations have personnel specially trained to handle all types of explosives, including improvised explosive devices. Other Federal agencies request assistance from EOD organizations in emergencies involving explosives. These situations call for immediate action to abate the safety threat by treatment in place or removal to a safe location for treatment.

b. US EPA's Military Munitions Rule (MR) (62 FR 6622, Feb. 12, 1997) has made it clear that EOD personnel engaged in an explosives or munitions emergency response are exempt from the generator, transporter, and treatment, storage and disposal unit requirements of the Solid Waste Disposal Act (423 USC Sec 6901, et seq.). The terms of this MOU are governed by the standards established on the MR, whether the MR or the Solid Waste Act is being administered by the federal or state government, in whole or part.

c. Except for providing temporary storage or treatment of explosives in order to provide emergency life-saving assistance to civilian authorities, or to assist law enforcement agencies in accordance with established agreements between DoD and the Federal agency concerned, the DoD is prohibited by law (10 USC 2692) from using DoD installations for the storage or treatment of non-DoD owned hazardous materials.

3. Purpose: This MOU addresses the parties' roles and responsibilities regarding notification responsibilities during emergency response operations, and is intended to:

a. Minimize the risk to public safety from EOD operations.

b. Maximize the efficiency, safety and speed of any explosive treatment or retrieval operation.

c. Establish a framework for mutual assistance and consultation among the parties with respect to EOD explosives or munitions emergency response operations.

4. Scope: This MOU applies to EOD explosive or munitions response operations in the public sector.

5. Definitions:

a. ***Explosives or Munitions Emergency*** - a situation involving the suspected or detected presence of unexploded ordnance, damaged or deteriorated explosives or munitions, an improvised explosive device (IED), other potentially explosive material or device, or other potentially harmful military munitions or devices, that creates an actual or potential imminent threat to human health, including public safety or the environment, including property, as determined by an EOD specialist. Such situations may require immediate and expeditious action as determined by the EOD specialist to control, mitigate or eliminate the threat.

b. ***Explosives or munitions emergency response*** - all immediate response activities by an EOD response specialist to control, mitigate or eliminate the actual or potential threat encountered during an explosive or munitions emergency. An explosives or munitions emergency response may include in place render safe procedures, treatment or destruction of the explosives or munitions and/or transporting those items to another location to be rendered safe, treated or destroyed. Any reasonable delay in the completion of an explosives or munitions emergency response caused by a necessary, unforeseen or uncontrollable circumstance will not terminate the explosives or munitions emergency response. Explosives or munitions emergency response can occur on either private or public lands and are not limited to responses to Resource Conservation and Recovery Act facilities.

c. ***Explosive or munitions emergency response specialist*** - an individual trained in munitions and explosives render safe procedures, handling, transportation and destruction techniques. Explosive and munitions emergency response specialists include DoD EOD and Technical Escort Unit personnel.

d. ***Military munitions*** - all ammunition products and components produced by or used by the US DoD or the US Armed Forces for the National Defense and security, including military munitions under the control of the DoD, Department of Energy (DoE), the National Guard and the US Coast Guard. The term military munitions includes: gaseous, liquid and solid propellants, explosives, pyrotechnics, chemicals and riot control agents, smokes and incendiaries used by DoD components, including bulk explosives and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition devices and components thereof. Military munitions do not include wholly inert items, improvised explosive devices and nuclear weapons, nuclear devices and nuclear components thereof. However, the term does include non-nuclear components of nuclear devices, managed under the DoE's nuclear weapons program after all sanitized operations as required by the Atomic Energy Act of 1954, as amended, have been completed.

e. ***An EOD response*** - in the public sector is a response to an event that occurs outside of a military installation.

6. Roles and Responsibilities;

a. EOD Organization.

(1) Will have all necessary training and literature to meet EOD mission requirements. The EOD organization will be knowledgeable in explosives and explosive effects.

(2) Provide a telephone point of contact for the explosives or munitions emergency response or EOD technical support to civil authorities.

(3) Provide emergency response military munitions or IED-related information necessary for civil authorities to complete post-incident reports, conduct investigations, and other requirements, as well as meeting other information needs.

(4) While performing explosives or munitions emergency responses the EOD organization is not responsible, under any condition, for any environmental remediation action. As a general rule, however, if the object of the emergency response is a military munition, then the DoD EOD Organization retains the responsibility.

b. Agencies Requesting Assistance:

(1) Upon identification of an emergency, contact the cognizant environmental regulatory authority regarding emergency notification requirements.

(2) Complete reports/notifications required by the environmental regulatory authority. Request incident information from the responding EOD organization, as necessary, to complete the required reports.

(3) Responsibility for environmental remediation of any residual contamination. If the object of the explosives or munitions emergency response is a non-military item, then the local requesting authorities are responsible for the site remediation.

(4) Request, in writing, the assistance of the Holloman AFB EOD team. The written request is to be addressed to the Commander, 49th Fighter Wing, 490 First Street, Suite 1700, Holloman AFB, NM 88330. The document should be accomplished at the time of the actual request; however, the next day following the incident is acceptable.

(5) Complete the Explosive Ordnance Disposal Civil Support Release and Reimbursement Agreement, (DD Form 1926) which is provided by the responding team. Signatures of the Department of Public Safety and an authorized representative (i.e., landlord, personal property owner/lease holder, etc.) must be obtained prior to commencing DoD EOD emergency actions.

c. Environmental Regulatory Authorities:

(1) Provide a telephone point of contact for emergency response calls.

(2) Assist in expediting issuance of emergency permits that may be required.

7. Duration/Amendment/Withdrawal: This MOU will remain in force and effect until amended or terminated by mutual agreement of the parties. Any party may withdraw from the MOU upon 60-days written notice to the other parties.

8. Coordination of concerned parties:

49 CES/CED — Date: 28 MAR 01

49 CES/CEV — Date: 28 Mar 01

49 CES/CC — Date: 29 MAR 01

49 FW PA — Date: 9 Jul 01

49 SPTG/CC — Date: 11/7/01

49 FW/CC — Date: 14/7/01

New Mexico Environment Department — Date: 4/4/02

Alamogordo Department of Public Safety — Date: 10-17-01

New Mexico State Police — Date: 6-14-02

Otero County Sheriff's Office — Date: 10-22-01

EXHIBIT E-1: 90-Day Hazardous Waste Accumulation Site Contingency Plan

Holloman Air Force Base

90-Day Hazardous Waste Accumulation Site Contingency Plan
Building 149, 241 Delaware Street
Holloman Air Force Base, New Mexico

49 CES/CEVC
DSN 572-3931

October 2007

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This section describes the site contingency plan and associated emergency procedures for the 90-Day Hazardous Waste Accumulation Site (HWAS). The regulations for a contingency plan and emergency procedures are referenced in 40 CFR Part 265, Subpart C (Preparedness and Prevention) and Subpart D (Contingency Plan and Emergency Procedures). These regulations apply to owners and operators of all hazardous waste facilities, except as 265.1 provides otherwise. This site contingency plan describes the actions that the 90-Day Site HWAS operators must take to comply with 265.51 and 265.56 in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility.

Holloman AFB Emergency Management Plan 10-2 addresses compliance to regulations for a facility contingency plan and includes hazardous material/waste provisions sufficient to comply with requirements of CFR 265.52 (b). This 90-Day HWAS contingency plan references the Plan 10-2, with 90-Day site-specific information intended to supplement, not replace, Plan 10-2.

PREPAREDNESS AND PREVENTION (40 CFR PART 265 SUBPART C)

265.30 Applicability

This site contingency plan applies to the 90-Day HWAS, Building 149, 241 Delaware Street, Holloman Air Force Base, New Mexico. The site is owned by the United States Air Force and operated by a contractor. Attachment 1 is a schematic drawing of the facility.

265.31 Maintenance and Operation of Facility

This facility is maintained and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste, or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment.

Operational procedures for minimizing the possibility of a fire and/or explosion:

All electrical connections are above 18 inches from the floor.
No smoking is allowed within 50 feet of the facility and signs are posted.
All tools are made of explosion proof alloys.
All communication devices are intrinsically safe.
There is no welding or cutting in this facility.
There are no open flames.

Operational procedures for minimizing the possibility of any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents:

Containers are United Nations coded.
Containers remain sealed unless adding or removing waste.
Containers are never stacked more then two high.
Two-person policy is normally in effect while handling containers in the facility.
All containers are checked daily for leaks.

Facility maintenance is completed by 49 CES/CEOL whenever the site operators determine repair is needed. All building areas are regularly inspected (doors, lights, locks, ceilings, water leaks, etc.) All maintenance needed is accomplished by calling 572-5000 and requesting a work order.

265.32 Required Equipment

In compliance with 40CFR 265.32, the facility is equipped with the following equipment specified below (see Attachment 1 for locations of items listed below):

(a) Internal communications exist, providing immediate emergency instruction (voice). When the words **GET OUT** are shouted at least three times, and the internal emergency/fire alarm pull switch has been activated, all personnel will evacuate and meet across the street at the east side of Building 149.

(b) A telephone is immediately available at the scene of operations. A telephone is located inside the office building, another outside next to the front gate, and another outside next to the back gate. These are situated for immediate response when calling for emergency assistance.

(c) There are three (3) portable fire extinguishers and two (2) emergency/fire alarm pull switches. Spill control equipment is located in Building 149. There are four (4) spill response kits as follows:

Spill Kit No. 1 & 2			
2 Ea	Pillows	3 Ea	Garbage Bags
5 Ea	Pads	3 Ea	Dust Masks
1 Ea	¾ cu. Ft. loose Sphag Sorb	2 Ea	Tyvek Suits
1 Ea	8 ft. Sock	1 Pr	Goggles
2 Ea	4 ft. Sock	2 Pr	Nitrile Gloves
2 Ea	25 Gallon DOT-Approved Drum (DAK-PAK)		
Spill Kit No. 3: Aggressive Fluids			
14 Ea	3"x46" Socks	2 Ea	5 lb. Bag Pulp
3 Ea	3"x10' Socks	100 Ea	16 ½"x20" Pig Mat Sheets, Dbl. Wt.
2 Ea	5"x10' Dikes	15 Ea	Temporary Disposal Bags with Ties
7 Ea	HAZ MAT Pig Pillows		
Spilt Kit No. 4: Non-Aggressive Fluids			
16 Ea	3"x4' Socks	20 Ea	Kimtex Wipers
10 Ea	3"x10' Socks	10 Ea	Temporary Disposal Bags with Ties
8 Ea	Pillows	1 Ea	Instruction Book
60 Ea	16 ½"x20" Pig Mat Sheets, Dbl. Wt.	1 Ea	95 Gallon Overpack
Other Tools			
1 Ea	Non-Sparking Shovel	1 Ea	Broom
1 Ea	Ratcheting Drum Plug	1 Ea	Non-Sparking Bung Wrench
1 Ea	Apron	1 Ea	Non-Sparking Tool Kit
1 Ea	Face Shield	1 Ea	Non-Sparking Ratchet/Socket Set
2 Pr	Gloves		Non-Sparking Screwdriver Set

(d) Water at adequate volume and pressure will be supplied by base fire department trucks. There is no automatic sprinkler system or foam producing equipment located in

Building 149, however the accumulation site can easily be accessed by fire-fighting and other emergency vehicles and equipment. The Holloman Fire Department is available 24 hours a day to respond to any emergency (572-7228/9).

265.33 Testing and Maintenance of Equipment

All facility communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, where required, are tested as shown below and maintained as needed to assure proper operation in time of emergency. An inspection log will be maintained showing inspections completed.

Inspection Criteria	Reference	Frequency
Are the emergency showers and eyewash in working order?	40 CFR 265.33	Tuesdays/Thursdays
Are the spill kits still sealed. (if not has the inventory been done)?	40 CFR 265.33	Tuesdays/Thursdays
Are the fire extinguishers in working order	40 CFR 265.33	Tuesdays/Thursdays
Are the internal communication and internal alarm working?	40 CFR 265.33	Tuesdays/Thursdays
FIRE ALARM, CONDUCTED BY 49 CES/CEF 572-7228	40 CFR 265.33	Monthly

265.34 Access to Communications or Alarm System

(a) If at any time hazardous waste is being poured, mixed, spread, or otherwise handled, all personnel involved in the operation have immediate access to the internal emergency/fire alarm. (See Attachment 1 for emergency/alarm systems).

(b) A two-person policy is in effect. If at any time just one employee is on the premises while the facility is in operation, no hazardous waste will be poured, mixed, spread, or otherwise handled.

265.35 Required Aisle Space

Aisles will be maintained to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the facility in an emergency.

265.36 (reserved)

265.37 Arrangements with Local Authorities

(a) The owner has in place, the Holloman AFB Emergency Management Plan 10-2 which includes hazardous material/waste management provisions sufficient to comply with requirements of CFR 265.52 (b). This plan describes activation of arrangements agreed to by local police departments, fire departments, hospitals, contractors, and state and local emergency response teams to coordinate emergency services, pursuant to CFR 265.37. Holloman AFB maintains a mutual aid agreement with the City of Alamogordo for providing fire equipment support in the event of an incident that base emergency equipment needs additional response support. Holloman AFB does not have onsite medical facilities and has an agreement with Gerald Champion Regional Medical Center in Alamogordo to treat casualties. The 10-2 Plan includes the requirement for Holloman to provide information on possible exposure to hazardous

chemicals by hospital and emergency response personnel. Copies of these mutual aid agreements are maintained by 49 CES/CEX and as described in the 10-2 Plan these agreements will be activated as needed.

This 90-Day HWAS contingency plan will be reviewed on an annual basis by the 49CES/CEV Hazardous Waste Program manager. Updates to the plan will be submitted to the organizations listed below:
Base Fire Department
Security Forces Squadron
CE Readiness

(1) Holloman Security Forces and Holloman Fire Department/Emergency Response Team will be supplied with a layout of the site, properties of hazardous waste handled at the facility and associated hazards (see Attachment 2), places where facility personnel would normally be working, entrances to roads inside the facility, and possible evacuation routes (see Attachment 1).

(2) Holloman Air Force Base Emergency Management Plan 10-2 Appendix 1 to Annex A Initial Notification and Response (a): The base fire department will dispatch units to the scene and make all necessary notifications as appropriate. Plan 10-2 identifies any agreements designating primary emergency authority where more than one police and fire department authority might respond to an emergency, agreements with state emergency response teams, contractors, and equipment suppliers; arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the facility.

(3) Agreements with state emergency response teams, emergency response contractors, and equipment suppliers are addressed in (2) above.

(4) Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility are addressed in (2) above.

CONTINGENCY PLAN & EMERGENCY PROCEDURES (40 CFR PART 265 SUBPART D)

265.50 Applicability

This site contingency plan applies to the 90-Day Hazardous Waste Accumulation Site (HWAS), Building 149, 241 Delaware Street, Holloman AFB, New Mexico. The site is owned by the United States Air Force and operated a contractor. Attachment 1 is a schematic drawing of the facility.

265.51 Purpose and Implementation of Site Contingency Plan

a) This site contingency plan is created for the 90-Day HWAS at Holloman AFB and is designed to minimize hazards to human health or the environment from fires, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.

b) The provisions of the plan will be carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment.

265.52 Content of the Site Contingency Plan

a) This plan describes the actions 90-Day HWAS operators must take to comply with 265.51 and 265.56 in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility:

Outlined below are the responses performed by the 90-Day HWAS operators in the case of an emergency event (spill, release, leak, fire, or explosion). All hazardous waste responses are set up following guidance provided in Appendix 1 to Annex A of Holloman Air Force Base Emergency Management Plan 10-2 Hazardous Materials (HAZMAT) Response Checklist

Controllable Event If it is a controllable event, and **can be handled** with the use of emergency spill kit equipment at the scene	1. Stop the leak or spill from spreading. 2. Initiate clean-up actions based on the substance spilled. 3. Ensure disposal of the waste material is in accordance with existing directives. 4. Notify Base Fire Department & Protection Branch at extension 572-7228/9. Information to Report: -The caller's name, building number, phone number -Materials spilled, include type and amount -Hazards that may be associated with the released material -Status of personnel involved (include any injuries if applicable) -Location, nearest street corner or landmark -When the spill occurred -When the spill was discovered -How the spill happened -What caused the spill -Whether any persons may be injured -Status of any clean up actions 5. Evacuate nonessential personnel from the event area to the designated evacuation area (see Attachment 1). 6. If anyone is injured, rescue should be the first objective. However, it is important that the scene be safe to enter. Before entering the scene of a spill, check for anything that might make the scene unsafe. Examples include spilled chemicals, traffic, fire, escaping steam, downed electrical lines, smoke, extreme weather, and poisonous gas. If these or other dangers threaten, do not go near the victim. Stay at a safe distance and call for help. If the scene is still unsafe after you call, stay away from the victim. Do not put yourself in a situation where there is an immediate danger to life. Leave dangerous situations to professionals like firefighters and police who have the training and equipment to deal with them. In such cases where hazardous conditions exist and a rescue is not possible by untrained and/or unprotected persons, the only assistance that can be offered may be verbal assurances to the victim that help is on the way. 7. Report all spills requiring emergency response to the 49th CES Environmental Flight Officer at 572-3931. During non-operational hours, contact the Security Police at 572-7733.

Spills Requiring Emergency Response Any spill that meets the criteria below must be contained, cleaned up, and reported to the 49th CES Environmental Flight Officer at 572-3931. -The spill is outside on gravel, dirt, or any unpaved surface. -The spill has a potential to enter, or has entered, any drain, sewer, ditch, stream, creek, or other water body. -A single spill event discharging more than 42 gallons of oil. -Cleanup or containment of the spill is beyond the capacity of the available personnel in the area.	Upon notification of a suspected or known hazardous waste incident, first responders are expected to deny entry and evacuate personnel from the area, identify the material if possible, and notify the base fire department. Evacuation and warning of personnel in the immediate affected area of a hazardous waste incident shall be conducted by first responder emergency personnel on scene and/or facility employees in the immediate area. 1. Activate the nearest emergency/fire alarm. 2. Evacuate the area and limit access to emergency response personnel only. Ensure evacuating personnel do not enter or proceed through the spill area or inhale fumes, vapors and/or smoke. Ensure evacuated personnel do not go back into the incident area for any reason. 3. Notify the fire department via the emergency fire reporting number(572-7228/9) of the nature of the emergency, give the incident location, type of material involved, quantity, description of what the material is doing (i.e., bubbling, fuming, and any injuries).
Non-Controllable Event If the event is out of control or **is too large to be safely handled** by the personnel and equipment at the scene:	1. Activate the nearest emergency/fire alarm. 2. Evacuate the area and limit access to emergency response personnel only. Ensure evacuating personnel do not enter or proceed through the spill area or inhale fumes, vapors and/or smoke. Ensure evacuated personnel do not go back into the incident area for any reason. 3. Notify Base Fire Department & Protection Branch at extension 572-7228/9. Information to Report: -The caller's name, building number, phone number -Materials spilled, include type and amount -Hazards that may be associated with the released material -Status of personnel involved (include any injuries if applicable). -Location, nearest street corner or landmark -When the spill occurred -When the spill was discovered -How the spill happened -What caused the spill -Whether any persons may be injured

b) The Holloman Air Force Base Emergency Management Plan 10-2 incorporates hazardous waste management provisions that comply with the requirements of this part.

c) The base fire department will dispatch units to the 90-Day site and make all necessary notifications as appropriate. As discussed in the 10-2 Plan, the Incident Commander will be in control of all response operations and will call personnel with knowledge of the facility, operation and hazardous waste characteristics. (See Attachment 3 for Hazardous Waste Storage Personnel with knowledge of the facility, operation and hazardous waste characteristics.) Holloman Air Force Base Emergency Management Plan 10-2 describes arrangements agreed to by local police departments, fire departments, hospitals, contractors, and state and local emergency response teams to coordinate emergency services, pursuant to 265.37.

d) The base fire department will have all initial response, direction, and control responsibilities during any on-base hazardous waste response. See Holloman Air Force Base Emergency Management Plan 10-2.

e) This plan includes a list of all emergency equipment at the 90-Day HWAS (see section 265.32 Required Equipment). In addition, this plan includes the location and physical description of each item on the list (see Attachment 1 for locations of equipment).

f) This plan includes an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. See section 265.32 (a) (see Attachment 1 for evacuation plan).

265.53 Copies of the Site Contingency Plan

A copy of this site contingency plan and all revisions to the plan are:

a) Maintained at the 90-Day HWAS, Building 149, 241 Delaware, Holloman AFB, NM.

b) Submitted to the Base Fire Department
Submitted to Security Forces Squadron
Submitted to CE Readiness

265.54 Amendment of the Site Contingency Plan

This site contingency plan will be reviewed on an annual basis and promptly amended, if necessary, whenever:

a) Applicable regulations are revised.
b) The plan fails in an emergency.
c) The facility changes in its design, construction, operation, maintenance, or other circumstances in a way that increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency.
d) The emergency response personnel changes.
e) The list of emergency equipment changes.

265.55 Emergency Coordinator

In the event of an emergency situation involving hazardous wastes, the discoverer will immediately notify the fire department at 572-7228/9.

The base fire department will have all initial response, direction, and control responsibilities during any on-base hazardous waste response. See the Appendix 1 to Annex A of Holloman Air Force Base Emergency Management Plan 10-2 Hazardous Materials (HAZMAT) Response Checklist.

265.56 Emergency Procedures

(a) Whenever there is an imminent or actual emergency situation, the 90-Day HWAS operator must immediately follow guidelines set in Section 265.52, Content of the Contingency Plan, *Responses performed by the 90-Day HWAS operators in case of an emergency event.*

Attachment 2

Cat ID	Description	Environmental Protection Agency Hazardous Waste Codes
0001	Excess Amalgam	D009, D011
0017 0017	Paints & Solvents Rags Contaminated with Solvents, reducers, paints	D006,D001,D005 F005
0018	Gasoline Fuel Filters and Absorbents	D018
	Spent Paints and Solvents	D001,D005,D08,D035
0024,0025	Rags, Absorbent and Debris	D006
0026	Rags, Absorbent, Debris, Metal Shavings	D007, F001
0027	Jet Wash Water	D006
0028	Rags and Debris Contaminated with MEK	F005
0028	Paint Booth Filters	D007
0028	Waste Paint Related Material	D001,D006,D007
0030	Rags, Absorbent, Debris	D006, D008
0035	Waste Paints, Lubricants	D001,D007,D035,D039
0035	Rags, Absorbent, Paper, Debris	D006
0160	Waste Paint Related Materials	D001,D007,D035,D039
0160	Mixed Used Paint	D001, D007, D035
0160	Rags & Debris	D007
0037	Rags, Absorbent, Coveralls, Debris, PPE	F005
0039	Rags and Debris with Acetone	F003
0047	Waste Liquid from AGE Equipment	D010
0047	JP8 and Gasoline Filters	D018
0158	Waste Paints, Lubricants	D001, D007, D035, D039
0158	Rags, Absorbents and Debris	D006
0158	Used Isopropanol	D001
0049/0038	Rags, Absorbents, Debris	F005, D006
0042	Rags, Paper Towel & Debris	D006
0055	Rags, Absorbents, Debris	D006
0038	Rags and Debris	D006
0075	Rags w/Solvents, Swabs, Gloves, Brushes, Debris	F005
0075	Rags, swabs, debris W/ alodine residue	D007
0079	Paint Booth Filters, Rags and Painting Debris	D007
0079	Paint Related Material	D001, D035
0028,0079	Plastic Bead Media	D006, D007, D008
0084	Rags with Solvent and Debris	F001
0086	Used Antifreeze	D010
0091	Paints and Solvents Mixture	F005, D001, D007, D009
0091	Rags with Paint and Solvents	F005
0093	Rags, PPE, Absorbent, Paint Dust, Debris, Sealants	D006
0093	Sludge from Jet Washer for Tire Rims	D018
0096	Rags, Absorbent, Sealant, Debris	F003, F005
0106	Rags, Coveralls, Absorbents and Debris	D006, D027
0101	Rags, Absorbent, Debris, Sanding Disks, PPE, Cover	D006
0490	Rags, Absorbent, Debris	F001
0161	Rags and debris	D007,D035
0140	Waste Paint Related Material, Liquid	F005, D001
0140	Rags, Paint Booth Filters, Paint Booth Paper, Debris	F005
0131	Waste Paint and Solvent, Liquid	D001, D009, F005
0131	Rags	F005
0132	Rags, Debris with Cleaning Solvent	F001
0136	Spent Brake and Clutch Cleaning Solution	D006
0145,0495	Waste Paint, Liquid	D001,D007,D008,D010, D035,D039
0145	Rags, Swabs, Absorbent, Debris	F001, D007
0146	Waste Paint	D001
0146	Rags, Absorbent, Debris	F005
0147	Waste Paint and Solvent	D001, D007, F005, F005
0147	Rags, Absorbent, Debris	F005

Attachment 3

90-Day Hazardous Waste Accumulation Site Emergency Coordinators

Name	Address*	Office Phone	Personal Phone*
Isamar Nieves Cancel (primary)[1]		575-572-6648	
DeAnna Rothhaupt (alternate)[2]		575-572-3931	

* Note: Personal Information (home addresses and personal phone numbers) have been removed from information copies of this permit.

[1] The Hazardous Waste Manager is the primary RCRA Emergency Coordinator for the 90-Day Hazardous Waste Accumulation Site (HWAS) pursuant to 20.4.1.500 NMAC incorporating 40 CFR § 264.52(d).

[2] The Chief of Environmental is an alternate RCRA Emergency Coordinator HWAS.

Applicable Sections of

DEPARTMENT OF THE AIR FORCE
49th Wing (ACC)
Holloman AFB, NM 88330

HOLLOMAN AFB
COMPREHENSIVE EMERGENCY MANAGEMENT PLAN 10-2
1 Aug 10

49th Civil Engineer Squadron
Holloman AFB, NM 88330
OPR: 49 CES/CEXM

HEADQUARTERS, 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE, NEW MEXICO 88330
1 August 2010

MEMORANDUM FOR: SEE DISTRIBUTION ANNEX-Z

FROM: 49 WG/CC
490 1st Street, Suite 1700
Holloman AFB, NM 88330

SUBJECT: Letter of Transmittal – Holloman AFB Comprehensive Emergency Management Plan (CEMP) 10-2.

1. This is the Holloman AFB Comprehensive Emergency Management Plan (CEMP) 10-2. This plan identifies procedures for response and recovery from major accidents, natural disasters, attacks, and terrorist use of Chemical, Biological, Radiological, Nuclear, or High-Yield Explosive (CBRNE). This plan supersedes Holloman AFB Full Spectrum Threat Response Plan 10-2 or CEMP 10-2, dated 1 Jan 08. Previous editions should be disposed of IAW current directives.

2. This plan supports local incident response operations and is effective for planning on receipt and for implementation when directed by the Commander, Holloman AFB.

3. Elements of this plan were coordinated with HQ ACC/A7XX.

4. The Office of Primary Responsibility (OPR) for this plan is the CE Readiness Flight (49 CES/CEXM). Direct questions/comments to 49 CES Readiness and Emergency Management Flight, extension 572-4426, or e-mail at brian.hartley@holloman.af.mil.

DAVID A. KRUMM
Colonel, USAF
Commander

Attachment:
1. Holloman AFB, CEMP 10-2

HEADQUARTERS, 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE, NEW MEXICO 88330
5 August 2010

CEMP 10-2
BASIC PLAN

1. **SITUATION:** This plan is implemented when an incident occurs that is beyond the control of on-duty responders or is serious enough to warrant an installation response. The Holloman AFB/CC or designated representative will decide whether or not to implement checklists within this plan.

2. **MISSION:**

2.1 Minimize the loss of operational capability caused by wartime contingencies, peacetime disasters/accidents or terrorist-related events.

2.2. Provide maximum protection for installation personnel before, during, and after a major incident.

2.3. Restore essential installation and unit functions as soon as possible.

2.4. Relieve suffering and provide care for survivors after an attack or disaster.

2.5. Provide Defense Support of Civil Authorities (DSCA) to civilian communities IAW AFI 10-802, Military Support to Civil Authorities.

2.6. Recover the Holloman AFB primary mission and return the installation to pre-incident status.

3. **OPERATIONAL CONSTRAINTS:**

3.1. Emergency medical treatment.

3.1.1. No in-patient care capability. Memorandums are in-place with local hospitals.

3.2. Detection and sampling of suspected chemical, biological and radiological agents.

3.2.1. Chemical and radiological samples will be sent for analysis under the guidance of the FBI.

3.3. All off-base responses require close coordination with local authorities. Holloman AFB has no specific authority when responding off base other than as the property owner for the resources involved in the accident/response.

3.3.1. Certain national security material may necessitate the establishment of a National Defense Area (NDA), which federalizes property. **NOTE**: There must be close coordination with the installation commander, incident commander, Staff Judge Advocate and local authorities.

4. **ASSUMPTIONS:**

4.1. Major accidents may occur at anytime without warning, on or off Holloman AFB involving aircraft, nuclear weapons or components, toxic fuels, toxic industrial materials (TIMs), explosives, and/or other hazardous materials.

4.2. Numerous types of natural disasters or domestic emergencies can occur with little or no warning and may degrade the base's ability to execute its mission. Natural disasters that are likely to occur include earthquakes, extreme cold/heat, floods/flash floods, tornadoes, and wild land fires.

4.3. Holloman AFB will respond to disasters (on or off base) that involve installation resources or affect mission capabilities.

4.4. The installation may be called upon to provide immediate aid or assistance to other military installations and civilian agencies.

4.5. Other military or Federal response agencies or civil authorities (with official/approved MAAs in place) will respond to AF requests for assistance when disasters overwhelm installation capabilities.
4.6. Evacuation of key resources will be accomplished to minimize the damage/destruction caused by attacks, natural disasters, major accidents or terrorist activities.
4.7. Assistance from friendly forces may be limited in the event of a widespread disaster.
4.8. Disasters may result in the entire installation or portions of the installation being isolated for extended periods of time.
4.9. AF installations are primary targets in the event of nuclear attacks on the Continental United States (CONUS).
4.10. Nation State attacks will be preceded by increased international tensions and an orderly increase in military readiness. This will allow sufficient time to implement protective actions addressed in Annex C of this plan.
4.11. Facility protection against attacks may not be adequate to sustain wartime operations.
4.12. Terrorist groups may target Holloman AFB or nearby communities to create casualties, inflict damage or destruction, create chaos/panic (threatening calls/letters), or otherwise disrupt mission operations. CBRNE weapons/material could be used directly against the installation or against civil, government, economic, population, or social centers/icons that would impact Air Force operations.
4.13. Attacks (such as biological) may go unrecognized for unspecified periods of time.
5. **EXECUTION:** See individual checklists.
6. **LOGISTICS:**
6.1. Logistics Appraisal.
6.1.1. This plan is logistically feasible and within Holloman AFB capabilities to execute under most circumstances. However, because of the many unknown logistics requirements involved in plan implementation, an accurate appraisal of logistics requirements for each potential event is not possible. Various factors will determine requirements (e.g. the emergency location, magnitude of the situation, size of the deployment force).
6.1.2. Support for extended response/recovery operations may require augmentation (personnel, equipment, vehicles, and supplies) from other installations, through contracting mechanisms from the local community or through support agreements.
6.2. Adequate protective shelter space may not be available on base for dependents and non-essential civilian employees.
6.3. Air Force Communications Agency (AFCA) provides emergency communication support through Hammer Adaptive Communications Element (Hammer ACE).
6.4. Holloman AFB may be tasked as an Initial Response Base (IRB) for a nuclear accident and assistance would be required for extensive response or recovery requirements.
6.5. Headquarters, Air Combat Command (HQ ACC) Response Task Force (RTF) will provide radiological incident or accident assistance for other than Intercontinental Ballistic Missile (ICBM) assets within the CONUS, Puerto Rico, or U.S. Virgin Islands.

6.6. Headquarters Air Force Space Command (HQ AFSPC) ICBM RTF will provide radiological assistance for events affecting Air Force-owned ICBM assets. NOTE: Further assistance for radiological events can be provided by the DOE Accident Response Group (ARG).

7. **ADMINISTRATION:**

7.1. Supporting Documents.

7.1.1. Each tasked unit or staff agency will develop checklists to support this plan. The checklists will be provided to the CES Readiness and Emergency Management Flight **within 30 days of receipt of this plan upon publication**. Forward one final copy to the CES Readiness and Emergency Management Flight after publication.

7.2. Relationship to other Plans. The following plans complement this CEMP Plan. Holloman AFB units will include specific Holloman CEMP 10-2 requirements in their respective plans:

7.2.1. **Medical Contingency Response Plan (MCRP).** The purpose is to establish procedures for: wartime, humanitarian assistance, homeland security/defense, and disaster response contingencies for medical personnel and includes:

- Casualty management.
- Reception and evacuation.
- Emergency medical response.
- HAZMAT/CBRNE surveillance, detection and sample evacuation procedures.
- Plans for deploying, receiving and integrating medical augmentation forces.

7.2.2. **Contingency Response Plan (CRP).** The purpose of the Civil Engineer CRP is to minimize the loss of operational capabilities of units located at Holloman AFB, provide overall direction for base recovery, mobilize forces, and mitigate human suffering.

7.2.3. **Installation Security Plan (ISP).** IAW AFI 31-101, *Installation Security Program,* the ISP is the basis for conducting security operations and resource protection operations at Holloman AFB. The plan defines the basic objectives sought by Security Forces operations and describes the design of these operations. Additionally, it serves as the formal directive for assigning security tasks to specific units, agencies, associate units or tenants and provides the medium for coordinating security inputs of various activities concerned.

7.2.4. **The Installation Antiterrorism (AT) Plan.** The AT Plan is written IAW AFI 10-245, *Air Force Antiterrorism (AT) Standards.* Standard 18 - Terrorist Incident Response and Consequence Management Measures for Holloman AFB are contained within this CEMP 10-2. This plan used in conjunction with the Holloman AFB AT Plan supports emergency response planning, recovery and restoration of the mission and the installation after a terrorist attack

7.2.5. **Mishap Response Plan (MRP).** The mishap response plan complements the Holloman AFB CEMP 10-2 and provides guidance for rapid and positive response to all flight, weapons, and ground mishaps that occur within the geographic area of responsibility for Holloman AFB. It is implemented at the conclusion of emergency response operations on-site as recovery actions take place. This plan ensures timely assembly of the Interim Safety Board (ISB) in order to preserve evidence, compile data, and protect "privileged" and "for official use only" information for the Air Force Safety Investigation and report.

7.2.6. **Base Support or Expeditionary Support Plans.** Base Support and Expeditionary Support Plans integrate wartime actions for a high threat or deployed location. These plans spell

out how what requirements are needed to support that installation and what capabilities are brought to that location if deploying forces are known. These plans are usually classified.

7.2.7. **Otero County Emergency Operations Plan**. Identifies the hazards to which Otero County is vulnerable; sets down responsibilities of all county and volunteer agencies and outlines a means for the County's resources to be used to assist the citizens and political subdivisions of the County. It describes a coordination mechanism for response to and recovery from disasters and incidences.

7.2.8. **New Mexico Emergency Operations Plan**. Facilitates delivery of State assistance to support local governments as they deal with the management of significant disasters. The plan outlines the policies, concepts of operations, organizational structures, and Federal-State-local interfaces. It is designed to supplement and support local response and recovery efforts. The plan is the basis for providing State resources. Local governments have capabilities and the primary responsibility for response to and recovery from disasters and emergencies but when those capabilities are exceeded, State assistance is available.

7.2.9. **National Response Framework (NRF)**. The NRP is the core operational plan for national incident management. It is an all-hazards plan that provides the structure and mechanisms for national level policy and operational coordination for domestic incident management. The NRF can be partially or fully implemented in the context of a threat, anticipation of a significant event, or the response to a significant event. The Base Plan describes the structure and processes comprising a national approach to domestic incident management designed to integrate the efforts and resources of Federal, State, local, tribal, private sector, and nongovernmental organizations. The Base Plan includes planning assumptions, roles and responsibilities, concept of operations, preparedness guidelines, and plan maintenance instructions.

7.2.9.1. The NRF incorporates relevant portions of and supersedes the:

- National Response Plan (NRP)
- Federal Response Plan (FRP)
- U.S. Government Interagency Domestic Terrorism Concept of Operations Plan (CONPLAN)
- Federal Radiological Emergency Response Plan (FRERP).

7.3. Reporting requirements: Identified units will prepare and submit reports in support of CEMP events. See Table 1, Reporting Requirements for typical reports.

REPORTING REQUIREMENTS				
Title/Type	**OPR**	**Sent to**	**Cc**	**Freq/Remarks**
Disaster Events Logs	All agencies	49 WG R&EM Flight	Unit Commander	Will forward copy to Command Post w/i 24 hours of termination
Daily Activity Summary	49 CES/CEXM	49 WG R&EM Flight	49 CES/CC	Will forward copy to Command Post

HEADQUARTERS, 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE, NEW MEXICO 88330
5 August 2010

REPORTING REQUIREMENTS				
Title/Type	**OPR**	**Sent to**	**Cc**	**Freq/Remarks**
				w/i 48 hours of termination
HAZMAT	Varies	HQ ACC/A7XX, USAF/A7CV USAF/A7CX NM Emergency Management Agency; Otero County Emergency Management Agency	49 WG/CC; 49 MSG/CC; 49CES/CEV	Varies per local requirements
Situation Report (SITREP)	CAT	HQ ACC	49 WG/CC; 49 MSG/CC	As required
Operational Report (OPREP-3)	CAT	HQ ACC	49 WG/CC; 49 MSG/CC	As required
OTHERS IAW AFMAN 10-206	49 WG/CP	As Applicable	As required	As required
After-Actions Report (AAR)/Lessons Learned	49 CES/CEXM	HQACC	As required	NLT 30 days after response and recovery
Covered Wagon	SF unit	HQACC	49 WG/CC; MSG/CC	As required
Aircrew/Aircraft Loss Report (LOSREP)	CAT	HQ ACC	49 WG/CC; 49 MSG/CC	As required
Items of Special Interest Report	CAT	HQ ACC	49 WG/CC; 49MSG/CC	As required
Medical Report for Emergencies, Disasters and Contingencies (MEDRED-C)	MDG	HQ ACC	49 WG/CC; 49MSG/CC; 49 MDG/CC	As required
After-Actions Report (AAR)	49 CES/CEXM	SAF/IEE USAF/A7CXR	49 WG/CC; 49 MSG/CC	Within 14 days of termination

HEADQUARTERS, 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE, NEW MEXICO 88330
5 August 2010

REPORTING REQUIREMENTS				
Title/Type	OPR	Sent to	Cc	Freq/Remarks
		USAF/AFOC HQ AFSC/SEW HQ ACC/A7C HQ AFCESA/CEX		
OTHERS IAW AFMAN 10-206	CAT	As Applicable	49 WG/CC; 49 MSG/CC	As required

7.3.1. Disaster Events Log/Activity Summary:
- Chronological listing of events.
- Unit resources committed.
- Peak number of unit personnel utilized.
- Amount and types of equipment/items used.
- Quantity and types of supplies expended.
- Estimated reimbursement.

7.3.2. After-Actions Report (AAR):
- Organization.
- Operation nickname, i.e., "2010 Earthquake: Holloman AFB"
- Time and date event started.
- Time and date event ended.
- Special activities before the disaster occurred. Discuss method to activate response plans.
- Problems encountered during the response. Discuss situations caused by the incident. Address AF casualties or damage to AF facilities resulting from the incident, response or recovery operations. Provide estimates of property damage.
- Summary of post disaster activities. Provide a chronological summary of actions from notification to termination of response and recovery operations. List the types of forces, equipment, and supplies used. Include estimate of expenses incurred. Provide pertinent photographs, highlights of the operation, support rendered, unusual actions or occurrences, or other events of interest.
- Remarks and lessons learned. List specific issues key to the success of the operation. Address deficiencies that should have been, but were not considered before or during the response. Include the need for special equipment or training.

7.4. Activities/units assisting civil agencies will account for all supplies, materials, and services provided. Forward this information to the Holloman AFB Comptroller Squadron (CPTS) after terminating incident support.

8. **COMMAND AND CONTROL**:

8.1. The Holloman AFB Installation Commander has the overall responsibility for the Emergency Management (EM) program.

8.2. The Chief, CE Readiness and Emergency Management Flight are the EM program manager for Holloman AFB.

8.3. 49 CES/CEAN provides the HAZMAT/CBRNE Emergency Program Manager for Holloman AFB.
8.4. The Incident Commander (IC) is the designated representative of the Holloman AFB and 49 WG/CC directs all military response activities at an incident scene until operations conclude or are relieved by higher authority. In instances of multiple ICs, Area Command should be considered.
8.4.1. At any incident where actual or suspected hazardous materials are present, the IC must be "HAZMAT Incident Commander" certified through DoD Fire & Emergency Services Certification Program.
8.5. Area Command oversees the management of multiple incidents that are each being handled by a separate ICS organization or to oversee the management of a very large or complex incident that has multiple incident management teams engaged. The EOC director should assume the role of area command commander in order to prioritize all the competing requirements.
8.6. Off-base responders must observe the jurisdictional rights of civilian authorities and private citizens. Off-base accidents may require the establishment of an NDA, approved by 49 WG/CC, to permit control of civilian property by military forces. Even after establishment of the NDA, close coordination with civil law enforcement agencies is essential to ensure an effective security program.
9. **FORCES EMPLOYED.**
9.1. Disaster response may involve the entire Disaster Response Force (DRF) or portions thereof, depending upon the magnitude and severity of the disaster. Additional support may be called on from local, State and Federal agencies.
9.2. The Disaster Response Force (DRF) is composed of the Incident Commander (IC), First Responders, Emergency Responders, Emergency Control Center (ECC), Crisis Action Team (CAT/ICC), Command Post, Emergency Operations Center (EOC), Emergency Support Functions (included in the EOC), Unit Control Centers (UCC), and specialized teams (MXG Crash Recovery, Search and Recovery, Emergency Management Support Team).
9.2.1. Incident Commanders are the individuals responsible for all incident activities, including the development of strategies and tactics and the ordering and release of resources. The IC has overall authority and responsibility for conducting incident operations and is responsible for the management of all incident operations at the incident site. The IC must be fully qualified to manage the response. Those personnel identified as ICs at Holloman AFB have:

- been identified by the 49 WG/CC as Incident Commanders
- completed the Air Force Incident Managers Course
- completed IS 300, 400
- if HAZMAT, certified as DoD HAZMAT Incident Commanders

9.2.2. First Responders include:

- Members of the DRF elements that deploy immediately to the disaster scene to provide initial C2, to save lives, and to suppress and control hazards.
- Firefighters
- Law Enforcement and security personnel
- Key emergency medical personnel

9.2.3. Emergency Responders include:

- Members of the DRF elements that deploy after the First Responders to expand the C2 and provide additional support.
- Follow-on Fire Fighters
- Law Enforcement and security personnel
- Emergency Medical Technicians
- Emergency Manager personnel
- Explosive Ordinance Disposal personnel
- Physicians and nurses
- Medical treatment providers at medical treatment facilities
- Public health officers
- Bioenvironmental engineering personnel
- Mortuary affairs personnel
- Specialized team members

9.2.4. The Emergency Control Center (ECC) encompasses the independent fire, security forces (SF), and medical dispatch/control centers (Fire only at time of publishing). ECC operations address the initial incident notification and response action responsibilities of those three disciplinary areas. The ECC is the centralized 24 hours, 7 days a week, 365 days a year emergency communications control center responsible for receiving initial incident notification, dispatching prescribed initial tactical response forces, initiating emergency operation plan protocols IAW installation directives, informing leadership of the situation, and maintaining C2 with forces.

9.2.5. The Crisis Action Team (CAT) or Installation Control Center (ICC) is an organization capable of devoting full-time attention to how the crisis affects mission execution and is composed of pre-designated personnel, with possible representation from outside agencies as needed. The CAT is scalable and tailorable at the discretion of the commander based on the situation. It is intended to focus on the mission execution and not the management of the incident.

9.2.6. The CAT/ICC is composed of:

- 49 WG/CC
- 49 MMG/CC
- 49 MSG/CC
- 49 MXG/CC
- 49 OG/CC
- 44 FG/CC (as required)

9.2.7. The Command Post is part of the CAT/ICC, which functions as the essential C2 node.

9.2.8. The Emergency Operations Center (EOC) is the focal point of support operations for the IC and those responders at the incident site. The EOC is the location where the coordination of information and resources in support of the incident takes place. The EOC is located in a permanent facility within the installation; however, the EOC may be a temporary facility used during large or complex incidents that require relocation from the primary location.

9.2.9. The EOC is composed of:

- EOC Director/Area Commander: The EOC director provides oversight for the installation commander to support and control emergency or contingency incidents. The EOC director can support multiple ICs simultaneously, while providing strategic senior officer-level C2 for sustained response and recovery operations. The EOC director is the senior representative designated by the installation commander. The EOC Director is the 49 MSG/CC or alternate.
- EOC Manager: The installation commander appoints the Readiness and EM officer or Superintendent as the EOC manager per AFI 10-2501. The EOC manager works for the EOC director by providing support and functional expertise for emergency C2 of military resources through the ESFs. The EOC manager will stand up the EOC when directed and oversee the EOC operations. Collect information about the incident and provide the EOC director updates. The EOC Managers are from the 49 CES/CEXMS; Readiness & Emergency Management Flight Officer, Readiness & Emergency Management Superintendant, or alternate.
- Emergency Support Functions (ESF): The ESFs provide the structure for coordinating installation strategic interagency support during all phases of incident management for major accidents, natural disasters (to include natural outbreaks of disease such as pandemic influenza), CBRN attacks, and terrorist use of CBRNE materials. The ESF structure includes mechanisms used to provide support to the installation and, if required, to local, State, and Federal agencies/governments. The type and scope of the event will determine the magnitude, and timing of the support provided by each ESF. At Holloman AFB, there are 19 assigned ESFs.
  - ESF 1: Transportation (LRS)
  - ESF 2: Communications (CS)
  - ESF 3: Public Works (CES)
  - ESF 4: Fire Fighting (CES/CEF)
  - ESF 5: Emergency Management (CES/CEXM)
  - ESF 6: Mass Care, Housing/Human Services (FSS/CPTS, if rqd)
  - ESF 7: Resource Support (LRS/CONS)
  - ESF 8: Public Health and Medical Services (MDG)
  - ESF 9: Urban Search and Rescue (CES) -- Note that there are no trained Urban Search and Rescue teams on Holloman
  - ESF 10: Oil and Hazmat Response (CES/CEF)
  - ESF 11: Agriculture & Natural Resources (CES/CEAN)
  - ESF 12: Energy (CES/CEO)
  - ESF 13: Public Safety and Security (Separate physical locations within EOC) (WG/SE and SFS)
  - ESF 14: Long Term Community Recovery/Mitigation (CES/CEAN)
  - ESF 15: External Affairs (WG/PA/JA)
  - Additional reps as necessary:
    - ESF 16: Ops Group (OG)

- ESF 17: Maintenance Group (MXG)
- ESF 18: Material Maintenance Group (MMG)
- ESF 19: Tenant Units (as required)

- The Senior Military Representative is requested by the Installation Commander or EOC Director to dispatch to the incident site (can be the Installation Commander, EOC Director or other appointed member). The SMRs' primary purpose is to liaison with media and outside agencies during high visibility incidents or to support the incident commander. A SMR is not required at a vast majority of incidents. Unless a transfer of Incident Command authority occurs, the existing IC maintains tactical control on-scene.

9.2.10. Unit Control Centers support the EOC and on-scene requirements. See Figure 1 for a listing of all unit control centers on Holloman AFB

Figure 1, Unit Control Centers

UNIT CONTROL CENTERS		
TITLE	**SUPPORT ESF**	**Bldg/Phone**
49 WG Staff UCC: CPTS, HC, JA, EEO, Protocol, Command Post, XP, CONS (MSG), PA	ESF 13 (Wing Safety)	(P) Bldg 29 x7483 (A) Bldg 224 x7381
49 CES UCC	ESF 4,5,9, 10,11,12,14	(P) Bldg 55 x2510, 2511, 2512 (A) Bldg 80 x4041, 4042, 4043, 4044
49 LRS UCC	ESF 1,7	(P) Bldg 310 x3310 (A) Bldg 311 x5529
49 CS UCC	ESF 2	(P) Bldg 121 x2223, 2224, 2225 (A) Bldg 202 x0458, 0246, 1546
49 SFS UCC	ESF 13 Security Forces	(P) Bldg 35 x7171 (A) Bldg 1061 x1589
49 FSS UCC	ESF 6	(P) Bldg 222 x3415 (A) Bldg 29 x3528
49 OG UCC: OSS, Tower, Airfield Management, 7 FS, 8 FS, 6 RS, 29 ATKS, 16 TRS	ESF 16	(P) Bldg 317 x5960 (A) Bldg 296 x7095
49 MOS/MOC UCC: MOS, 49 AMXS, 849 AMXS, MXS	ESF 17	(P) Bldg 811 x3342 (A) Bldg 825
49 MMG GCC: MMS, MMSS	ESF 18	(P) Bldg 933 x5046 (A) Bldg 901 x5417
49 MDG UCC: AMDS, MDOS, MDSS	ESF 8, 11	(P) Bldg 15 x2081, 5583, 1958 (A) Bldg 325 x7476, 1090
Tenant Unit	ESF 19	
46 TG		Bldg 1086 x1368

4 SPCS		Bldg 1062 x1609, 1802
82nd ATS		Bldg 1080 x5382

9.2.11. Specialized Teams: are activated and deployed based on the recommendation of the IC. Tasked organizations ensure teams can provide 24-hour coverage. Specialized Teams include:

- Contamination Control Teams (CCT). Used during Broken Arrow responses, as required.
  - Gross Area Decontamination CES
  - Casualty Decontamination MDG
  - Aircraft/Ground Equipment MXG
  - Vehicle Decontamination LRS
- Shelter Management Teams (SMT). Used for Natural Disaster Reponses (NDR).
- Search and Recovery Team FSS
- MXG Crash Recovery MXG

9.3. Recovery Operations Chiefs (ROC) are appointed during the Recovery phase to develop, coordinate, and execute service and site-restoration plans for impacted areas. The reconstitution of the site(s) will be directed by the ROC. The ROC must be a subject matter expert in the hazards or activities within the incident site. If it is a HAZMAT incident, the organization or individual that assumes control of the site must be knowledgeable of the hazards and recovery procedures. The EOC Director will select the individual that will be in charge of the site restoration.

10. **COMMUNICATIONS.**

10.1. The Installation Notification and Warning System (INWS) is a combination of methods using audible and visual signals, verbal messages or electronic communication (ADHOC). Holloman AFB uses AFVA 10-2510, *US Air Force Emergency Notification Signals*.

10.1.1. Disaster Warning: 3 to 5 minute steady tone on sirens normally followed by a voice announcement.

- An incident affecting the base is imminent or in progress. Be alert; ensure all personnel are warned.
- Follow instructions to take cover, evacuate to a safe location, or shelter in-place.

10.1.2. Attack Warning: 3 to 5 minute wavering tone on sirens, similar warning devices, or voice announcement. An attack/hostile act is imminent or in progress.

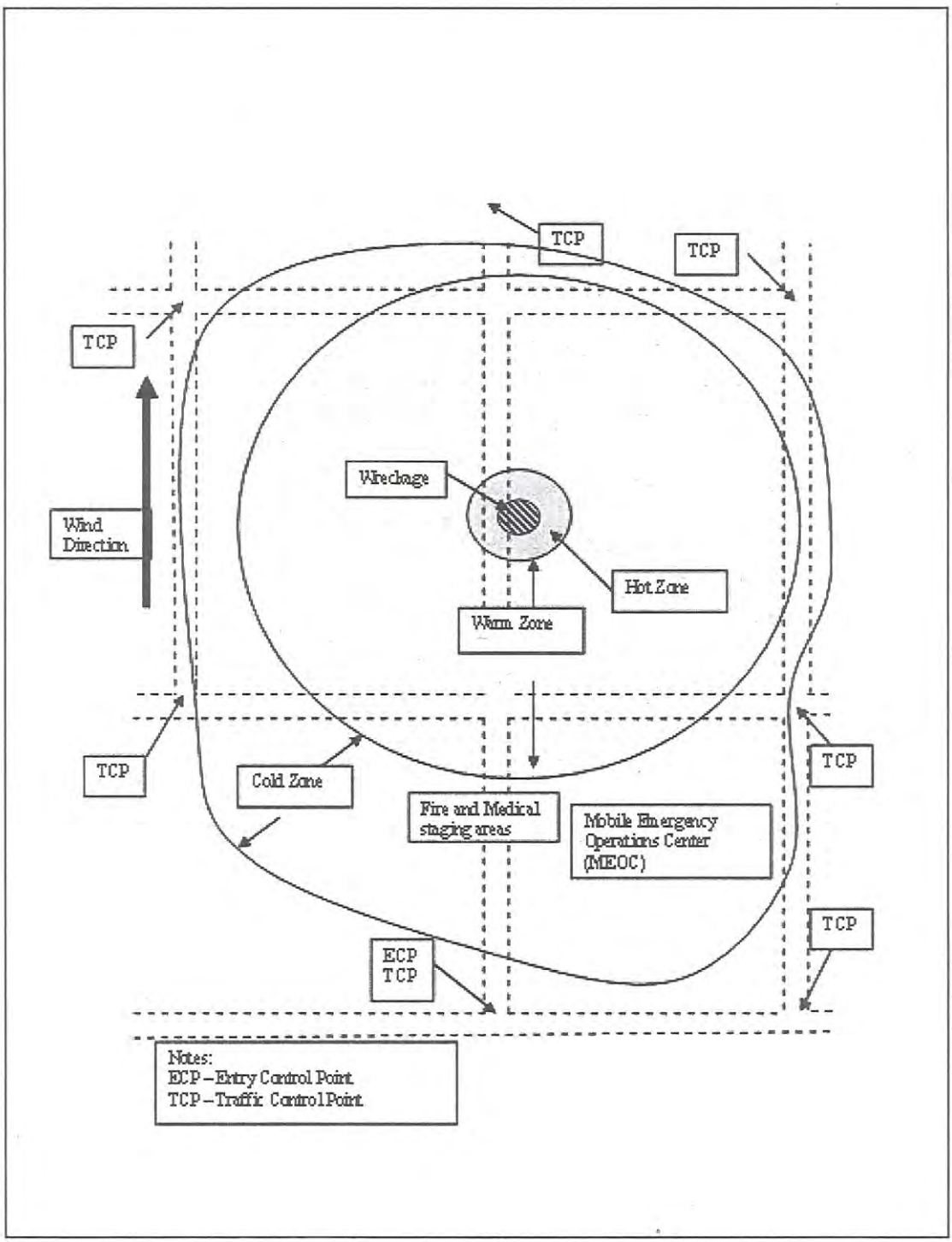
- Be alert; ensure all personnel are warned.
- Implement security measures, as appropriate.
- Follow instructions to take cover, evacuate to a safe location, or shelter in-place.

10.1.3. All clear: Voice announcement will be made verbally over local stations or public address systems.

- The immediate disaster threat has ended or the attack is over.
- Remain alert for secondary hazards.
- Account for all personnel.
- Report fires, injuries, and hazards.

10.2. Communication modes include, but are not limited to; Base Siren/Giant Voice system, Primary/Secondary Crash Net, Intrabase Radio Nets, Centralized Paging System, Computer-based Notification System, ADHOC, Runners, Mobile Public Address Systems, Telephone Pyramid Notification System.

Figure 2, Typical Incident Site Setup



HEADQUARTERS, 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE, NEW MEXICO 88330
5 August 2010

ATTACHMENT 1 TO BASIC PLAN TO HAFB CEMP 10-2
DISASTER RESPONSE FORCE (DRF) NOTIFICATION

1. **SITUATION**: The HOLLOMAN AFB DRF will respond to accidents involving military resources both on and off base and must be available 24 hours a day.
2. **MISSION**:
3. **EXECUTION**:
3.1. Emergency Communications Center (ECC) receives 911 emergency calls and transfers the calls to SFS, MDG or CEF depending upon the nature of the emergency.
3.1.2. Responding agency will notify the CP Controller about the emergency.
3.1.3. Airfield Management (AM) will pass pertinent information over the Secondary Crash Net.
3.1.4. The CP will initiate further DRF notification and recall at the direction of the HOLLOMAN AFB/CC or MSG/CC
3.2. Primary Crash Net.
3.2.1. The air traffic control tower activates the primary crash net and will dispatch First Responders in case of an emergency involving aircraft or the airfield.

Table 1, Primary Crash Net Members

MDG	MDG Ambulance Services
CEF	Fire and Emergency Services
SFS	Security Forces
CP	Command Post

3.3. Secondary Crash Net.
3.3.1. The CP controller will initially direct Airfield Management (AM) to activate the Secondary Crash Net and facilitate the rapid response of key base agencies. Airfield Management personnel will notify the CP of any agencies that did not respond to the Secondary Crash Net. The CP controller will contact 49 WG Office of Emergency Management to confirm EOC response. The CP may also pass data over the Secondary Crash Net.
3.3.2. For an EOC recall during degraded communications (phone/pager out), the CP will send runners to the Security Forces Control Center (SFCC) to dispatch patrols with instructions to contact HOLLOMAN AFB/CC/CV, and group commanders. Once notified, commanders will contact their respective unit EOC members by any means available per installation communications-out procedures.
3.4. Upon recall, the members will respond as directed.
3.4.1. The First Responders will respond immediately to the site.
3.4.2. During an emergency, entry into HOLLOMAN AFB may be blocked or backed up. The HOLLOMAN AFB SFS will designate and allow EOC, CAT, and UCC personnel, as well as first responders from off-base, entry through the following gates:
3.4.2.1. Primary: Main Gate.

3.4.2.2. Alternate: West Gate.
3.4.2.3. Tertiary: La Luz Gate.
3.5. Degraded Communications. During a failure of normal telephonic communication, CP controllers will initiate notifications using COMM-out recall procedures.
3.5.1. The CP will contact SFCC by the best means available (runner, radio, hotline, etc.).
3.5.2. SFS will dispatch a patrol vehicle to notify the appropriate individuals. They, in turn, will notify a pre-identified member of their organization residing on base to begin the recall.
3.5.3. When contacted, individuals will initiate their portion of their unit's communications out recall program, then report to duty.
3.5.4. Unit commanders must identify requirements then budget for, obtain, store, and maintain material needed to accomplish their specific functional EM tasks in support of response plans. Unit emergency response equipment includes items to support unit EM missions such as shelter management, PAR, and CCA team taskings. Unit equipment does not include items issued to individuals, such as IPE. Units will maintain the minimum materials needed for tasked response and support. Supplement or rotate consumable supplies and shelf-life-coded equipment with day-to-day operating stocks.

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HOLLOMAN AIR FORCE BASE, NEW MEXICO 88330
5 August 2010

ANNEX A TO HOLLOMAN AFB CEMP 10-2
MAJOR ACCIDENTS

1. **SITUATION**: This annex defines procedures for major peacetime accidents involving Department of Defense (DOD) material or activities serious enough to warrant response by the Disaster Response Force (DRF). Major accidents differ from the minor day-to-day emergencies and incidents base agencies typically handle.

1.1. HAZARDOUS MATERIAL (HAZMAT) RESPONSE: HAZMAT poses a threat to the installation and public if released.

1.1.1. Holloman AFB has identified the areas and facilities that may be involved in a HAZMAT accident/incident. See Vulnerable Facilities and Pre-Emergency Planning.

1.1.2. Responses are controlled through the HAZMAT Response Force.

1.2 The DRF must be familiar with the ICS to support on-scene responders and integrate with local, State, or Federal agencies. The installation Fire Department will implement the ICS at the incident site.

1.2. AIRCRAFT ACCIDENTS: Accidents may occur at anytime; however; aircraft are most prone to accidents during take-off and landing. They may occur without any indication of a problem or there may be advance warning such as declaration of an in-flight emergency.

1.2.1. Aircraft mishaps may generate harmful vapors, fumes, gases, potential electrical shorting hazards, and airborne fibers due to composite materials.

1.3. NUCLEAR INCIDENTS: The Department of Homeland Security (DHS) is responsible for the overall coordination of incident management activities for all nuclear or radiological Incidents of National Significance, including those involving terrorism. See Table A-1, Coordinating Agencies for Radiological Emergencies for types of radiological emergencies and identified coordinating agencies.

Table A-1, Coordinating Agencies for Radiological Emergencies	
Type of emergency	**Coordinating Agency**
a. Radiological terrorism incidents (e.g., Radiological Dispersal Device (RDD)/Improvised Nuclear Device (IND) or radiological exposure device):	
(1) Material or facilities owned or operated by DOD or DOE.	(1) DOD or DOE
(2) Material or facilities licensed by the Nuclear Regulatory Commission (NRC) or Agreement State.	(2) NRC
(3) All others.	(3) DOE
b. Nuclear facilities:	
(1) Owned or operated by DOD or DOE.	(1) DOD or DOE
(2) Licensed by NRC or Agreement State.	(2) NRC
(3) Not licensed, owned, or operated by a Federal agency or an Agreement State, or currently or formerly licensed facilities for	(3) EPA

Table A-1, Coordinating Agencies for Radiological Emergencies	
Type of emergency	**Coordinating Agency**
which the owner/operator is not financially viable or is otherwise unable to respond.	
c. Transportation of radioactive materials: (1) Materials shipped by or for DOD or DOE. (2) Shipment of NRC or Agreement State-licensed materials. (3) Shipment of materials in certain areas of the coastal zones that are not licensed or owned by a Federal agency or Agreement State. (4) All others.	 (1) DOD or DOE (2) NRC (3) DHS/USCG (4) EPA
d. Space vehicles containing radioactive materials: (1) Managed by NASA or DOD. (2) Not managed by DOD or NASA impacting certain areas of the coastal zone. (3) All others.	 (1) NASA or DOD (2) DHS/USCG (3) EPA
e. Foreign, unknown or unlicensed material: (1) Incidents involving foreign or unknown sources of radioactive material in certain areas of the coastal zone. (2) All others.	 (1) DHS/USCG (2) EPA
f. Nuclear weapon accident/incident (based on custody at time of event).	DOD or DOE
Other types of incidents not otherwise addressed above.	DHS designates
Source: *National Response Plan (NRP)* **NOTE**: The USAF Radioisotope Committee (RIC) oversees and issues permits for radioactive material and is the single point of contact for the Air Force Master Material License issued by the Nuclear Regulatory Commission (NRC).	

1.3.1. NUCLEAR WEAPONS ACCIDENT:

1.3.1.1. The Commander, US Joint Forces Command (USJFCOM), is responsible for DOD nuclear weapons or radioactive materials, response and recovery within the CONUS, Puerto Rico and the Virgin Islands. The National Military Command Center (NMCC) will provide initial national-level command and control for DOD responses. Command and control will be transferred to the Air Force Operations Center (AFOC) in the case of AF nuclear weapon/ material accidents.

1.3.1.2. Holloman AFB will establish procedures IAW the Nuclear Weapons Accident Response Procedures (NARP).

1.3.1.3. Continental United States (CONUS): Holloman AFB will use Air Combat Command (ACC) Plan 10-1, CONUS Radiological Accident/Incident Response and Recovery Plan, for response pending arrival of the RTF.

1.3.1.4. The IC may request specialized teams and equipment through Joint Nuclear Accident Coordinating Center (JNACC) or the AFOC

1.3.1.5. The National Military Command Center (NMCC) will provide initial national-level command and control for DOD responses. Command and control will be transferred to the Air Force Operations Center (AFOC) in the case of AF nuclear weapon/material accidents.

1.3.1.6. Holloman AFB may request specialized teams and equipment through Joint Nuclear Accident Coordinating Center (JNACC) or the AFOC. See Table A-3, Specialized Teams and Equipment.

1.3.1.7. See Figure A-3, Nuclear Weapon Accident On-Scene Setup for a visual representation of the final site setup.

1.4. OTHER MAJOR ACCIDENTS: Incidents overwhelming First Responders and requiring the full resources of Holloman AFB but not falling under other appendices within Annex A of this plan.

1.4.1. Space Shuttle emergencies may require use of White Sand runways. Notification comes through DOD and AF channels from the National Aeronautics and Space Administration (NASA) Mission Control Center in Houston, Texas. Expect about one to two hours prior notification however, bases near primary landing sites may receive little or no prior notification. The orbiter crew has the capability to contact the Air Traffic Control (ATC) Tower.

1.5. DOE SECURE HOLDING: Department of Energy (DOE) and DOD have signed a secure holding agreement authorizing temporary storage and the protection of nuclear materials or non-nuclear classified materials. The installation will provide all support and assistance needed and will coordinate with the JNACC on temporary storage problems.

1.6. MAJOR ISSUES: The installation may have numerous issues needing to be addressed.

1.6.1. NATIONAL DEFENSE AREAS (NDAs): NDAs are established as a result of emergency situations. This authority includes the removal from, or the denial of, access to an installation or site of individuals who threaten the orderly administration of the installation or site. Even after establishing the NDA, close coordination with civil law enforcement agencies is essential to effective security.

1.6.2. RECOVERY OPERATIONS: Recovering from an accident/incident is a complex and time-consuming operation. Extended recovery operations may require the contract of equipment and other support items. A recovery plan is developed by the IC and EOC assisted by technical experts, normally components of the EOC. Once complete, the 49 WG/CC will review and approve the recovery plan.

1.6.3. FAMILY ASSISTANCE: The establishment of an Emergency Family Assistance Control Center (EFACC) is critical after an incident where personnel are injured, dead or displaced. The EFACC serves as a central location for distributing accurate information, forming and briefing family assistance teams, and supporting families of those involved in the incident.

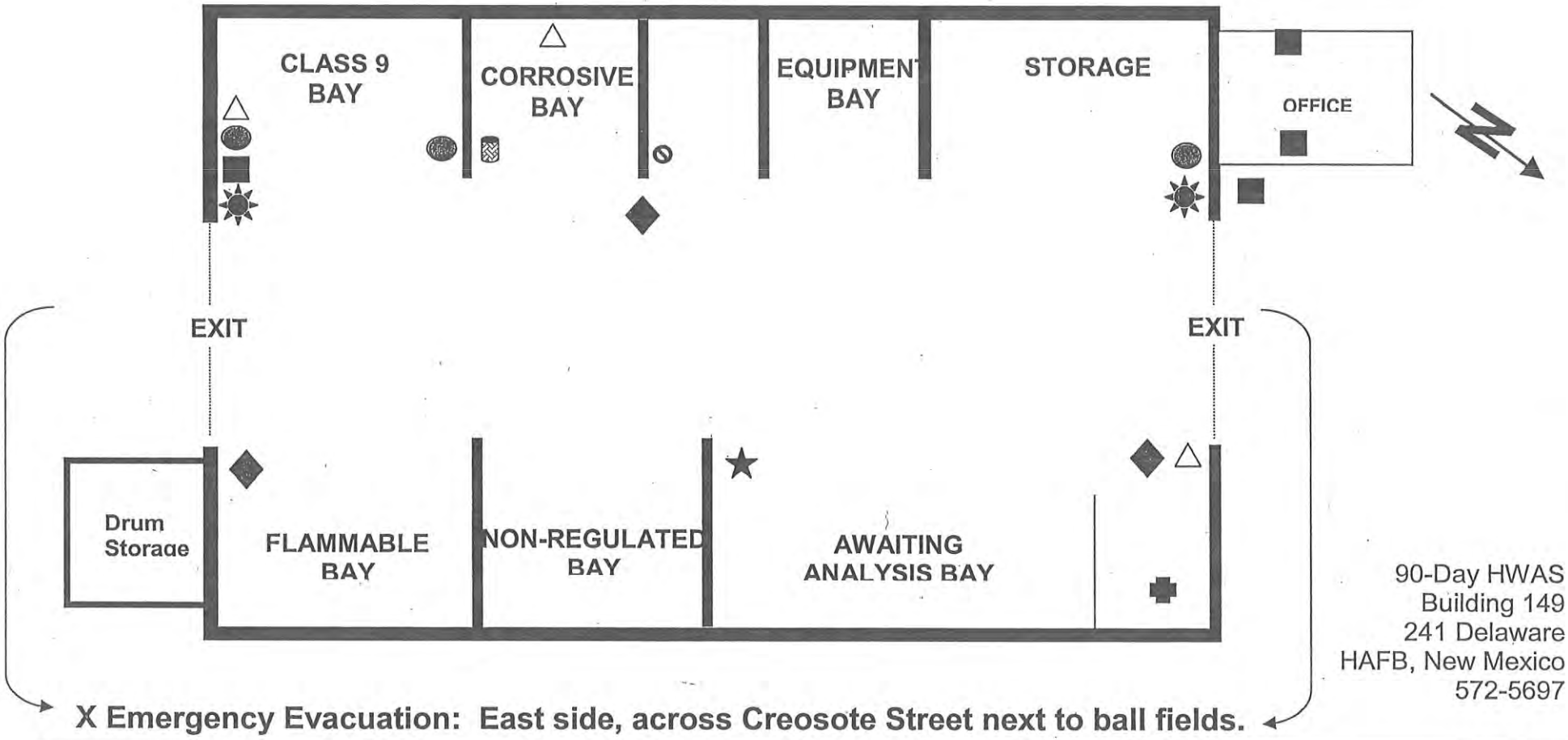
2. **MISSION**:

2.1. The IC commits installation personnel and resources to support the accident response.

3. **EXECUTION**:

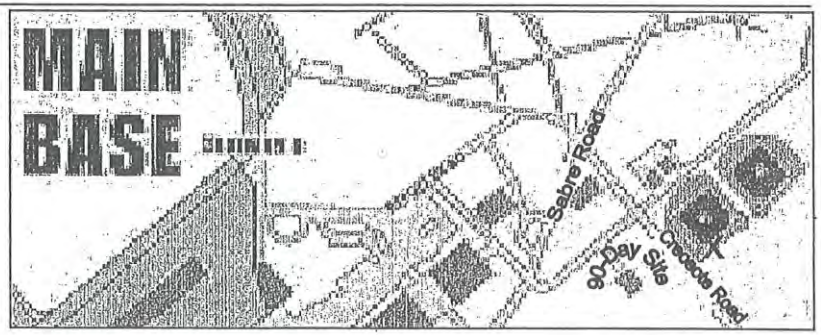
3.1. Refer to individual checklists.

Attachment 1



90-Day HWAS
Building 149
241 Delaware
HAFB, New Mexico
572-5697

- PHONE
- FIRE EXTINGUISHER
- SPILL KIT
- SHOWER/EYE WASH
- ESCAPE ROUTE
- UNIVERSAL WASTE BATTERIES
- UNIVERSAL WASTE
- SCALE
- SPILL
- EMERGENCY/FIRE ALARM



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5 August 2010

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5 August 2010

APPENDIX 1 TO ANNEX A TO CEMP 10-2
HAZMAT RESPONSE CHECKLIST

ITEM #	ACTION	OPR
	NOTIFICATION	
	NOTE: The following are links to the areas within this checklist:	
1.	Activate the Primary Crash Net.	ATC
2.	Activate the Secondary Crash Net.	AM
3.	Notify Installation Commander and MSG/CC.	CP/CEF
4.	Notify local and state authorities IAW Civil Authority Notification for EHS or CERCLA hazardous substances that exceed reportable quantities. • Immediate phone call • Follow with written documentation	CP/CEF/ CEV/CEX
ITEM #	**RESPONSE**	**OPR**
	NOTE: The following are links to the areas within this checklist:	
5.	Assume command. • If certified as HAZMAT IC, assume IC duties to the appropriate level. Establish a HAZMAT ICS structure IAW NFPA Standard 472	SFO
6.	Relay all pertinent information to the Command Post initially until EOC is staffed and operational. The EOC-Director will then assume this responsibility in providing relay to CAT/CP.	SFO
7.	If an aircraft and it has hydrazine aboard, treat the accident as if it is a hydrazine leak until proven otherwise (if the aircraft or item contains hydrazine). Inform pilot to stay on 100% oxygen with canopy down until told otherwise.	First Responders
8.	If an aircraft and it has hydrazine aboard, isolate the aircraft from other airfield activities. Direct the pilot to position either the aircraft's left wing tip or aircraft nose into the wind and establish a 150' cordon (300' for downwind direction) for all non-essential personnel.	CEF/MDG
9.	If an aircraft and it has hydrazine aboard, cease nearby activities until the response is terminated.	CEF
10.	If an aircraft and it has hydrazine aboard, the Incident Commander requests Bioenvironmental support to assist in determining hydrazine levels on all EPU or suspected Hydrazine leaks.	SFO
11.	If an aircraft and it has hydrazine aboard, wear protective clothing and a self-contained breathing apparatus.	SFO
12.	If an aircraft and it has hydrazine aboard, contain the leak.	Hazmat Response Force
13.	If an aircraft and it has hydrazine aboard, ensure the aircraft is shut	SFO

ITEM #	ACTION	OPR
	down and is safe to approach.	
14.	If an aircraft and it has hydrazine aboard, conduct air sampling to determine when it is safe to remove the pilot.	SFO
15.	If an aircraft and it has hydrazine aboard, pin the Emergency Power Unit (EPU) on the runway if the aircraft (with no visible leak) has engaged the barrier.	Hazmat Response Force
16.	If a HAZMAT event has taken place IC must determine whether a hazardous plume is involved that prevents the immediate evacuation of personnel. If there is a plume involve AND personnel do not have time to evacuate the SFO make the call to have facilities affected to shelter in place. Otherwise, the SFO will request those facilities to evacuate upwind/crosswind direction and take immediate cover outside the cordon area.	SFO
17.	If an aircraft and it has hydrazine aboard, perform actions on the runway for aircraft with confirmed leaks or wherever the accident is until the Incident Commander (IC) and BEE determines it's safe to move the aircraft.	SFO
18.	If Depleted Uranium is suspected, identify decontamination requirements. • Brush, wash, or wipe off contamination with a damp cloth. Use a high-efficiency particulate air filter (HEPA) vacuum cleaner if available.	SFO
19.	If Depleted Uranium is suspected, consider covering fixed contamination with tape, paint, paper, plastic, or other disposable material.	SFO
20.	If Depleted Uranium is suspected, consider decontaminating process until levels are reduced to the level as identified by Bioenvironmental Engineer.	SFO
21.	Notify local hospitals of possible contamination hazards.	MDG/CEF
22.	Have MDG set up In-Place Patient Decontamination (IPPD), Laboratory Team, Field Treatment Team/Immediate Medical Response, Pharmacy Team, and Bio Environmental Emergency Surveillance/Home Station Medical Response (HMSR) Packages if requested by the HAZMAT IC	MDG/CC
23.	Construct a detailed Incident Action Plan (IAP) for the situation.	IC
24.	Implement MAAs as needed for assistance.	CEF
25.	Provide weather data as needed to response personnel for software plume models and downwind hazard prediction.	Weather
26.	Calculate and recommend a toxic corridor/downwind hazard area and advice IC.	CEX/ BEE

ITEM #	ACTION	OPR
27.	Provide alert photographer. **NOTE**: The alert photographer provides official documentation of the accident and should be allowed to the scene ASAP when safe.	PA
28.	Prepare initial news release within one hour of accident notification.	PA
29.	Establish a news media center.	PA
30.	Submit OPREP-3 messages when a release meets one or more of the following criteria: • Results in injury or loss of life. • Results in loss of aircraft or facility. • Causes interruption of flying operations. • Causes environmental contamination extending beyond installation boundaries. • Creates financial impact exceeding $50,000. • May result in litigation, publicity, or media coverage. • Other reasons, as specified by local commander.	CP
31.	Ensure OPREPs are approved by the Installation Commander and include the following: • Date and approximate time of release. • Location of release. • Chemical description or common name of released HAZMAT. • Approximate amount released. • Primary, situation-specific reason for notifying MAJCOM or HQ USAF/ILEV/ILEO, e.g., contaminant entered public drinking water supply, or media coverage anticipated.	CP
32.	Provide follow-up reports by telephone, e-mail, or OPREP-3.	CP
33.	Coordinate with Public Affairs (PA) on all news releases. **46 TG personnel will comply as required.**	All
34.	Sample spill for chemical nature, pollutant concentration and documentation.	Entry Team
	WITHDRAWAL/RECOVERY	
35.	Declare emergency withdrawal over radio/public address systems. Sound vehicle mounted sirens.	IC/SFO
36.	Withdraw in an upwind/crosswind direction and take immediate cover outside the cordon in the Safe Refuge Area.	Responders
37.	Inform wing leadership of withdrawal and status of response forces.	IC/EOC Dir
38.	Perform reconnaissance prior to re-entry of personnel.	EOD/ CEF
39.	Authorize re-entry based on reconnaissance.	IC
40.	Terminate the emergency portion of the incident once response personnel have mitigated the HAZMAT incident.	IC
41.	Transfer site for cleanup to a designated Recovery Operations Chief	IC

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ITEM #	ACTION	OPR
	(ROC)	
42.	Clean-up and dispose HAZMAT site and waste for Levels I and II incidents IAW Federal, State, and local requirements.	ROC
43.	Clean-up and dispose HAZMAT site and waste for Level III incidents IAW local, State, and Federal, requirements as determined by the IC	CEV/ROC

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TAB A TO APPENDIX 1 TO ANNEX A TO CEMP 10-2
VULNERABLE FACILITIES AND PRE-EMERGENCY PLANNING

1. This appendix provides hazards identification information on the facility and transportation situations that have the potential for causing injury to life, or damage to property and the environment due to a Hazardous materials spill or release. The risk analysis provides information on the likelihood of a release and the severity of consequences to humans. Due to the constant changes in HAZMAT used and stored on HAFB this information is added, changed and updated on a continuous basis. This information is located in the Environmental flight.

VULNERABLE FACILITIES AND PRE-EMERGENCY PLANNING		
Above Ground Tanks Building Number or Location	Common Name	Max Storage and Total Gallons
Above Ground Tanks Building Number or Location	Common Name	Max Storage and Total Gallons
15, Medical Treatment Facility	Diesel Fuel	3,880
18, BX Service Station	Unleaded	12,000
18, BX Service Station	Unleaded	12,000
18, BX Service Station	Unleaded Premium	12,000
51, Water distribution Station	Diesel	2,000
137-1	Diesel	20,000
137-2	MOGAS	20,000
288	Diesel	1,500
283-1	AVGAS	3,000
500	AVGAS	6,000
639	JP-8	5,000
702	Diesel	750
756	Diesel	4,000
828-1	JP-8	6,000
828-2	JP-8	6,000
828-3	JP-8	6,000
845-1	Diesel	10,000
845-2	Unleaded	10,000
845-3	Unleaded	10,000
863	Diesel	2,000
892-N	Diesel	750
892-S	Diesel	750
906-1	Diesel	1,000
906-2	Diesel	1,000

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VULNERABLE FACILITIES AND PRE-EMERGENCY PLANNING		
Above Ground Tanks Building Number or Location	Common Name	Max Storage and Total Gallons
Above Ground Tanks Building Number or Location	Common Name	Max Storage and Total Gallons
911	Diesel	750
933	JP8	5,250
1103AR	MOGAS	3,050
1166-1	MOGAS	1,034
1166-2	Diesel	1,000
1180-1	MOGAS	2,100
1180-2	Diesel	1,000
1254	Diesel	2,000
1272	Diesel	2,000
5007	Diesel	2,000
702, TK 14	JP8	635,000
702, TK 16	Diesel	11,000
702, TK 18	MOGAS	12,000
702, TK 19	Diesel	12,000
702, TK 20	Diesel	12,000
702, TK 22	JP8	866,000
702, TK 23	Diesel	12,000
TK 24	JP8	25,000
TK 25	JP8	25,000
TK 26	JP8	25,000
TK 27	JP8	25,000
RATSCAT	Gasoline	2,000
RATSCAT	Gasoline	2,000
RATSCAT	Diesel	2,000
ICura	Diesel	1,000
ICura	Diesel	1,000
12303-1	Gasoline	1,600
12303-1	Gasoline	1,600
12303-1	Gasoline	1,600
11646	JP8	2,500
11646	JP8	2,500
15, Medical Treatment Facility	Diesel Fuel	3,880
18, BX Service Station	Unleaded	12,000
18, BX Service Station	Unleaded	12,000

Storage Locations for EHS exceeding the total TQP	Chemical	Quantity in pounds	Probability of occurrence	Consequences to people
Building 51, Water Pump Station	Chlorine	1,350	Medium	Medium
Building 448, Olympic Swimming Pool	Chlorine	1,350	Medium	Medium
Building 757, Waste Water Treatment Plant	Chlorine	8,000	Medium	Medium
Building 757	Sulfur Dioxide	1,350	Medium	Medium

2. Probability of Occurrence.

2.1. Low: Probability of occurrence considered unlikely during the expected lifetime of the facility assuming normal operation and maintenance.

2.2. Medium: Probability of occurrence considered possible during the expected lifetime of the facility.

2.3. High: Probability of occurrence considered sufficiently high to assume event will occur at least once during the expected lifetime of the facility.

3. Consequences to People.

3.1. Low: Chemical is expected to move into the surrounding environment in negligible concentrations. Injuries expected only for exposed over extended periods or when individual personal health conditions create complications.

3.3. Medium: Chemical is expected to move into the surrounding environment in concentrations sufficient to cause serious injuries and/or deaths unless prompt and effective corrective action is taken. Deaths and/or injuries expected only for exposure over extended periods or when individual personal health conditions create complications.

3.4. High: Chemical is expected to move into the surrounding environment in concentrations sufficient to cause serious injuries and/or deaths upon exposure. Large numbers of people expected to be affected.

4. Hazardous materials major storage facilities

4.1. Logistics Readiness Squadron, Flammable storage warehouse, Bldg 806 (HAZMART)

4.2. Open storage area, Bldg. 140 – 145

4.3. Central receiving warehouse, Bldg 310

4.4. Hazardous Materials (HAZMART) center, Bldg 806

4.5. Materiel Maintenance Group storage facilities, Bldg 938

4.6. Civil Engineer Entomology Shop, Bldg 374

4.7. Defense Reutilization Marketing Office (DRMO), Bldg 112

5. RCRA hazardous waste accumulation points.

5.1. Holloman Accumulation Site (HAS): Building 149, 49 CES/CEV.

6. Satellite accumulation points.

6.1. Due to the continual changes in the satellite accumulation points, this information is kept up to date by CEV on a computer database.

7. HAZMAT Transportation Routes.

7.1. US Highway 70 west is the main road transportation route coming into Holloman AFB. This highway borders the base on the south and runs parallel to a military family housing area.

7.2. Vehicles carrying DOT regulated hazardous materials coming onto HAFB from US Highway 70 West enter through the West Gate which passes by a military family housing area. The security police logs in these vehicles and the information is passed on to the fire department. These vehicles deliver their cargo to various organizations and locations throughout Holloman. The following is a list of the main thoroughfares taken:

- West area drive to Mesquite Road
- Mesquite Road to the west area of the base via 49er Ave.
- 49er Ave. to Eagle Keeper Road
- 49er Ave. to Iron Knight Ave.
- 49er Ave. to Gopher Ave.
- 49er Ave. to Kelly Road (this continues out to the north area of the base via West Perimeter Road).
- Mesquite Road to the main base area via W. New Mexico Ave.
- Mesquite Road to the main base flightline area via W. 11th Street.
- West 11th Street to Delaware Ave.
- Tank trucks (8,000 gallons) carrying JP-8 aviation fuel onto HAFB from highway 70 enter through the La Luz gate and proceed to bulk storage in the fuels compound.

7.3 Secondary Transportation Routes

- Main Gate entering the main base via First Street to West New Mexico Ave or to Delaware Ave.
- La Luz Gate entering the north area of the base via La Luz Gate Road.