



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6

1445 ROSS AVENUE, SUITE 1200

DALLAS, TEXAS 75202-2733

October 10, 1990

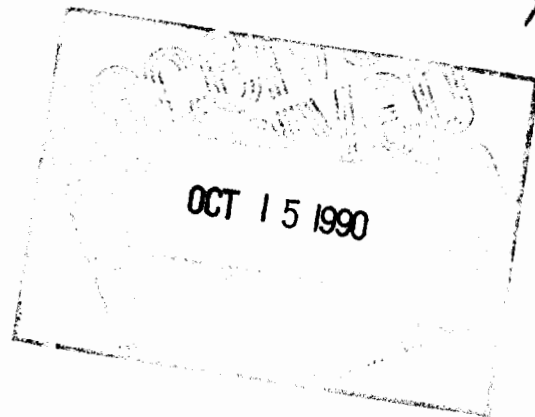
*KAFB 4ed 1190  
2/20/70 MR*

*Elizabeth*

*SS*

**CERTIFIED MAIL: RETURN RECEIPT REQUESTED**

Ms. Kathy Sisneros, Chief  
Hazardous Waste Bureau  
Environmental Improvement Division  
The Health and Environment Department  
1190 St. Francis Drive  
Santa Fe, New Mexico 87503



Dear Ms. Sisneros:

I have enclosed the "Special Conditions Pursuant to the 1984 Hazardous and Solid Waste Amendments of RCRA" as they apply to the permit for Kirtland Air Force Base (NM9570024423). If you need further information on this permit, please contact me or Richard Mayer of my staff at (214) 655-6775.

*T*

Sincerely yours,

*W.K. Honker*

William K. Honker  
Chief  
RCRA Permits Branch

Enclosure

*Manuscript in magazine file.*

KAFB1056



## NOTICE OF PERMIT DECISION

### KIRTLAND AIR FORCE BASE

Pursuant to the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 (RCRA), as amended (42 USC 6901 et seq., commonly known as RCRA) and regulations promulgated thereunder by the U.S. Environmental Protection Agency (EPA) (codified in Title 40 of the Code of Federal Regulations), a permit is issued to the United States Department of Defense and the Kirtland Air Force Base (KAFB), who operate a hazardous waste facility located in Albuquerque, New Mexico.

This Permit, in conjunction with the Hazardous Waste Permit issued by the State of New Mexico, constitutes the full RCRA permit for this facility. Any person who commented on this permit during the comment period may petition the Administrator to review any condition of this permit, within 30 days of issuance, pursuant to 40 CFR 124.19.

The Federal Law that has required permits for hazardous waste facilities is RCRA. The State of New Mexico has been authorized by EPA to carry out regulatory activities which were required by RCRA prior to November of 1984.

In November of 1984, Congress passed extensive changes to RCRA, known as the Hazardous and Solid Waste Amendments (HSWA), which resulted in additional permit requirements. The State has not yet been authorized to act in lieu of EPA for this portion of the program, and EPA has retained the authority for this portion of the permit.

This permit has been finalized under a joint effort between the State and EPA. The New Mexico Environmental Improvement Division (NMEID) developed the majority of the permit; however, EPA developed Module IV, which contains provisions to satisfy the HSWA. EPA will enforce this portion of the permit until the State is authorized to run this portion of the program.

This Module of the joint permit deals primarily with the investigation of Solid Waste Management Units (SWMU's) dating from the 1940's to 1980. This HSWA Module of the permit requires the Permittee to determine whether there have been any releases for hazardous waste or hazardous constituents from any SWMU regardless of the time at which waste was placed in such unit and to take appropriate corrective action for any such releases. Other provisions in this Module deal with soil sampling, an expanded community relations plan, ground water monitoring, installation of additional monitoring wells, and a waste minimization provision.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, REGION 6  
HAZARDOUS WASTE PERMIT (HAZARDOUS AND SOLID WASTE AMENDMENTS, 1984)

PERMITTEE: Kirtland Air Force Base  
OWNER: United States Air Force  
OPERATOR: Kirtland Air Force Base  
ADDRESS: 1606 Air Base Wing (MAC)  
Kirtland Air Force Base  
New Mexico 87117-5000  
I. D. NUMBER: NM9570024423  
EFFECTIVE DATE: November 14, 1990  
TERMINATION DATE: November 14, 2000

Pursuant to the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA), as amended by the RCRA statute (42 U.S.C. 6901, et seq.), as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA), a permit is issued to Kirtland Air Force Base (hereafter called the Permittee) to operate a hazardous waste facility at the location stated above.

The Permittee must comply with all the terms and conditions of this permit. This permit consists of the conditions contained herein (including the attachments). Said conditions are needed to insure that the Permittee's hazardous waste management activities comply with all applicable Federal, statutory and regulatory requirements. Applicable requirements are those which are found in, referenced in or incorporated into that version of RCRA or the regulations promulgated to RCRA that are in effect on the date this permit is issued (see 40 CFR 270.32 (c)).

This permit is issued in part pursuant to the provisions of Sections 201, 202, 203, 206, 207, 212, 215 and 224 of HSWA which modified Sections 3004 and 3005 of RCRA. These require corrective action for all releases of hazardous waste or hazardous constituents from any solid waste management unit at a treatment, storage, or disposal facility seeking a permit, regardless of the time at which the waste was placed in such unit and provides the authority to review and modify the permit at any time. The decision to issue this permit is based on the assumption that all information contained in the permit application is accurate and that the facility will be operated as specified in the permit application. Any inaccuracies found in the application may be grounds for termination or modification of this permit (see 40 CFR 270.41, 270.42 and 270.43) and potential enforcement action.

Under Federal Law, this permit is effective on the date specified above unless a petition to the Administrator of the U.S. Environmental Protection Agency is filed in accordance with the requirements of 40 CFR 124.19.

Issued this 10th day of October, 1990

by Allyn M. Davis  
Allyn M. Davis, Director  
Hazardous Waste Management Division

LIBRARY COPY

KAFB - HSWA

12/10/90

MODULE IV.

SPECIAL CONDITIONS PURSUANT TO THE 1984 HAZARDOUS AND SOLID WASTE AMENDMENTS TO RCRA FOR U.S. KIRTLAND AIR FORCE BASE  
CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS  
SCHEDULE OF COMPLIANCE

A. DEFINITIONS

For purposes of this Corrective Action Schedule of Compliance the following definitions shall apply:

"Facility" means all contiguous property under the control of the owner or operator seeking a permit under Subtitle C of RCRA.

"Release" means any spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping, or disposing of hazardous wastes (including hazardous constituents) into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing hazardous wastes or hazardous constituents).

"Solid waste management unit" means any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at or around a facility at which solid wastes have been routinely and systematically released.

"Hazardous waste" means a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. The term hazardous waste includes hazardous constituent as defined below.

"Hazardous constituent" means any constituent identified in Appendix VIII of 40 CFR Part 261, or any constituent identified in Appendix IX of 40 CFR Part 264.

"Administrative Authority" means the Director of the New Mexico Environmental Improvement Division, or his/her designee or, in case of HSWA provisions (Module IV.) for which the State is not authorized, the U.S. Environmental Protection Agency shall be the Administrative Authority.

If subsequent to the issuance of this permit, these terms are redefined in promulgated regulations, the Administrative Authority may, at its discretion, apply the new definition to this permit.

KAFR ASWA

B. SPECIFIC CONDITIONS

1. Waste Minimization

The Permittee shall certify in writing annually by October 1, for the previous year ending August 31, that:

- (a) the Permittee has a program in place to reduce the volume and toxicity of all hazardous wastes which are generated by the Permittee's facility's operation to the degree determined to be economically practicable; and
- (b) the proposed method of treatment, storage, or disposal is that practicable method currently available to the Permittee which minimizes the present and future threat to human health and the environment.

The Permittee shall include the certification in the operating record.

2. Dust Suppression

Pursuant to 40 CFR 266.23(b), the Permittee shall not use waste or used oil or any other material, which is contaminated with dioxin, PCB, or any other hazardous waste (other than a waste identified solely on the basis of ignitability), for dust suppression or road treatment.

3. Permit Review

This permit will be reviewed by the Administrative Authority five years after the date of permit issuance and will be modified as necessary as provided for in 40 CFR 270.41.

- (a) within 15 calendar days notify the Administrative Authority, and
- (b) within forty-five (45) days of having knowledge of a solid waste management unit, the Permittee shall submit a preliminary assessment of information in writing (Requirements in 40 CFR 270.14 (d) 50 FR 45788, December 1, 1987) regarding the SWMU to determine if there has been or is currently a release from the unit. The Permittee shall contact the Administrative Authority for guidance regarding the required information to be submitted. Based upon this information, the Administrative Authority may modify this permit as necessary.

4. Compliance with Permit

Compliance with this permit during its term constitutes compliance, for the purposes of enforcement, with

40 CFR Parts 264 and 266 only for those management practices specifically authorized by this permit. The Permittee is also required to comply with Parts 260, 261, 262, and 263 to the extent the requirements of those Parts are applicable.

5. Specific Waste Ban

- (a) The Permittee shall not place in any land disposal unit the wastes specified in RCRA Section 3004 after the effective date of the prohibition unless the Administrator has established disposal or treatment standards for the hazardous waste and the Permittee meets such standards and other applicable conditions of this permit.
- (b) The Permittee may store wastes restricted under 40 CFR 268 solely for the purpose of accumulating quantities necessary to facilitate proper recovery, treatment, or disposal provided that it meets the requirements of 40 CFR 268.50 (a) (2) including, but not limited to, clearly marking each tank or container.
- (c) The Permittee is required to comply with all the requirements of 40 CFR 268.7 as amended. Changes to the waste analysis plan will be processed as minor modifications, pursuant to 40 CFR 270.42.
- (d) The Permittee shall perform a waste analysis at least annually or when a process changes, to determine whether the waste meets applicable treatment standards. Results shall be maintained in the operating record.
- (e) Compliance with a RCRA permit during its term constitutes compliance, for the purpose of enforcement, with Subtitle C of RCRA except for those requirements not included in the permit which become effective by statute, or which are promulgated under Part 268 of this chapter restricting the placement of hazardous wastes in or on the land.

6. Closure

Pursuant to Section 3005 (j)(1) of the Hazardous and Solid Waste Amendments of 1984, the Permittee shall close surface impoundment(s) in existence on November 8, 1984 and qualifying for interim status (see Federal Register 24717-24720, 6/30/88) in accordance with the following provisions:

- (a) The Permittee shall not place hazardous waste in the surface impoundment(s); and

- (b) The Permittee shall close the surface impoundment(s) in accordance with the closure plan(s) approved by the New Mexico Environmental Improvement Division.

7. Operation of Land Disposal

The Permittee shall not place hazardous waste in any surface impoundment or landfill unless such unit has a permit meeting the Minimum Technological Requirements outlined in Section 3004(o) of the Resource Conservation and Recovery Act. The Administrative Authority must approve the plans and specifications for retrofitting prior to commencement of construction.

8. Additional Waste Ban Requirements

The Permittee shall not land dispose any hazardous waste restricted by 40 CFR 268 unless:

- (a) the waste meets treatment standards specified in 40 CFR 268.40, .41, .42, or .43;
- (b) a variance from the treatment standards has been granted pursuant to 40 CFR 268.44;
- (c) a petition has been granted on a case-by-case extension to the effective date, pursuant to 40 CFR 268.5;
- (d) a "no-migration" petition has been granted pursuant to 40 CFR 268.6; or
- (e) the surface impoundment is exempt under 40 CFR 268.4.

C. STANDARD CONDITIONS

1. Section 3004(u) of RCRA, as amended by HSWA, and 40 CFR 264.101 require that permits issued after November 8, 1984, address corrective action for releases of hazardous waste including hazardous constituents from any solid waste management unit (SWMU) at the facility, regardless of when the waste was placed in the unit.

Section 3004(V) of RCRA (Section 207 of the Hazardous and Solid Waste Amendments of 1984) and federal regulations promulgated as 40 CFR 264.101, require corrective action beyond the facility boundary, where necessary to protect human health and the environment, unless the owner or operator was unable to obtain the necessary permission to undertake such actions. The Permittee is not relieved of all responsibility to clean up a release that has migrated beyond the facility boundary where offsite access is denied.

2. Failure to submit the information required in this Corrective Action Schedule of Compliance, or falsification of any submitted information, is grounds for termination of this Permit (40 CFR 270.43). The Permittee shall ensure that all plans, reports, notifications, and other submissions to the Administrative Authority required in this Corrective Action Schedule of Compliance are signed and certified in accordance with 40 CFR 270.11. Three (3) copies of these plans, reports, notifications or other submissions shall be submitted to the Administrative Authority and sent by Certified mail or hand delivered to both:

U.S. EPA, Region 6  
Hazardous Waste Division  
1445 Ross Avenue  
Dallas, Texas 75202-2733

& Mr. Richard Mitzelfelt, Director  
Environmental Improvement Division  
The Health and Environment Department  
1190 St. Francis Drive  
Harold Runnels Building  
Santa Fe, New Mexico 87503

3. All plans and schedules required by the conditions of this Corrective Action Schedule of Compliance are, upon approval of the Administrative Authority, incorporated into this Schedule of Compliance by reference and become an enforceable part of this Permit. Any noncompliance with such approved plans and schedules shall be termed noncompliance with this Permit. Extensions of the due dates for submittals may be granted by the Administrative Authority in accordance with the permit modification process under 40 CFR 270.41.

The required information shall include each item specified under RFI tasks I-V and CMS tasks VI-IX. Since these required items are essential elements of this permit, failure to submit any of these elements or submission of inadequate or insufficient information may subject the Permittee to enforcement action under Section 3008 of RCRA which may include fines, suspension, or revocation of the permit.



If the Administrative Authority determines that further actions beyond those provided in this Corrective Action Schedule of Compliance, or changes to that which is stated herein, are warranted, the Regional Administrator shall modify the Schedule of Compliance either according to procedures in Section Q of this Permit, or according to the permit modification processes under 40 CFR 270.41.

4. All raw data, such as laboratory reports, drilling logs, bench-scale or pilot-scale data, and other supporting information gathered or generated during activities undertaken pursuant to this Corrective Action Schedule of Compliance shall be maintained at the facility during the term of this Permit, including any reissued Permits.

D. REPORTING REQUIREMENTS

1. The Permittee shall submit to the Administrative Authority signed quarterly progress reports of all activities (i.e., SWMU Assessment, Interim Measures, RCRA Facility Investigation, Corrective measures Study) conducted pursuant to the provisions of this Corrective Action Schedule of Compliance, beginning no later than sixty (60) calendar days after the Permittee is first required to begin implementation of any requirement herein. These reports shall contain:
  - a. A description of the work completed;
  - b. Summaries of all findings, including summaries of laboratory data;
  - c. Summaries of all problems or potential problems encountered during the reporting period and actions taken to rectify problems; and B.le; Projected work for the next reporting period.
2. Copies of other reports (e.g., inspection reports), drilling logs and laboratory data shall be made available to the Director upon request.
3. As specified under Permit Condition, the Director may require the Permittee to conduct new or more extensive assessments, investigations, or studies, as needed, based on information provided in these progress reports or other supporting information.

E. NOTIFICATION REQUIREMENTS FOR AND ASSESSMENT OF NEWLY-IDENTIFIED SOLID WASTE MANAGEMENT UNIT(S)

1. The Permittee shall notify the Administrative Authority, in writing, of any newly-identified SWMU(s) (i.e., a unit not specifically identified during the RFA, discovered during the course of ground water monitoring, field investigations, environmental audits, or other means, no later than fifteen (15) calendar days after discovery.

2. The Permittee shall submit a SWMU Assessment Report to the Administrative Authority no later than ninety (90) calendar days from notification. The SWMU Assessment Report shall describe all results obtained from the SWMU investigation. At a minimum, the Report shall provide the following information for each newly-identified SWMU:
  - a. The location of the newly-identified SWMU in relation to other SWMUs;
  - b. The type and function of the unit;
  - c. The general dimensions, capacities, and structural description of the unit (supply any available drawings);
  - d. The period during which the unit was operated;
  - e. The specifics on all wastes that have been or are being managed at the SWMU, to the extent available; and
  - f. The results of any sampling and analysis required for the purpose of determining whether releases of hazardous wastes including hazardous constituents have occurred, are occurring, or are likely to occur from the unit.
3. Based on the results of this Report, the Administrative Authority shall determine the need for further investigations or corrective measures at specific unit(s) covered in the SWMU Assessment. If the Administrative Authority determines that such investigations are needed, the Administrative Authority may require the Permittee to prepare a plan for such investigations. This plan will be reviewed for approval as part of the RFI Workplan under Permit Condition IV.G. of this Corrective Action Schedule of Compliance.

F. NOTIFICATION REQUIREMENTS FOR NEWLY-DISCOVERED RELEASES AT SWMU(s)

The Permittee shall notify the Administrative Authority, in writing, of any release(s) of hazardous waste including hazardous constituents discovered during the course of ground water monitoring, field investigation, environmental auditing, or other activities undertaken after the commencement of the RFI, no later than fifteen (15) calendar days after discovery. Such newly-discovered releases may be from newly-identified units, from units for which, based on the findings of the RFA, the Administrative Authority has previously determined that no further investigation was necessary, or from units investigated as part of the RFI. The Administrative Authority may require further investigation of the newly-identified release(s). A plan for such investigation will be reviewed for approval as part of the RFI Workplan under Permit Condition.

G. RCRA FACILITY INVESTIGATION (RFI) WORKPLAN

1. On or before one hundred eighty (180) days of the effective date of this permit, the Permittee shall submit to the Administrative Authority a Preliminary Report describing the current conditions at the facility as outlined in the RFI scope of work, Task I. The Preliminary Report is limited to SWMUs not identified in the Part B or to recent information not addressed in the RCRA Facility Assessment. The Preliminary Report shall address the background information pertinent to the facility and the nature and extent of contamination.
2. The RFI workplan shall be submitted in three (3) parts. The first part shall be submitted to the Administrative Authority within one hundred eighty (180) days of the effective date of this permit. This workplan shall address releases of hazardous waste, including hazardous constituents to all media for those units listed in Appendix 1, attached. The SWMU numbers are from the RFA.

The second RFI workplan shall be submitted to the Administrative Authority within 18 months from the effective date of this permit, and shall address those units listed in Appendix II, attached.

The third RFI workplan shall be submitted to the Administrative Authority within 30 months from the effective date of this permit, and shall address those units listed in Appendix III, attached.

- a. The Workplans shall describe the objectives of the investigations and the overall technical and analytical approach to completing all actions necessary to characterize the venture, direction, rate, movement, and concentration of releases of hazardous waste including hazardous constituents from specific units or groups of units, and their actual or potential receptors. The Workplans shall detail all proposed activities and procedures to be conducted at the facility, the schedule for implementing and completing such investigations, the qualifications of personnel performing or directing the investigations, including contractor personnel, and the overall management of the RFI. The Scope of Work for a RCRA Facility Investigation (RFI) is in Section S.
  - b. In addition, the workplans shall discuss sampling and data collection quality assurance and data management procedures, including formats for documenting and tracking data and other results of investigations, and health and safety procedures.
3. After the Permittee submits the workplans, the Administrative Authority will either approve or disapprove the Workplans in writing.

If the Administrative Authority disapproves a Workplan, the Administrative Authority shall notify the Permittee, in writing, of the Workplan's deficiencies and specify a due date for submittal of

a revised Plan. If this Workplan is not approved, the Administrative Authority will revise the Workplan and notify the Permittee of the revisions. This modified Workplan becomes the Approved RFI Workplan. All approved Workplans become a part of this permit.

4. The Administrative Authority shall review for approval as part of the RFI Workplan any plans developed pursuant to Permit Condition addressing further investigations of newly-identified SWMUs, or Section addressing new releases from previously-identified units. The Regional Administrator shall modify the Schedule of Compliance either according to procedures in Section of this Permit, or according to the permit modification procedures under 40 CFR 270.41, to incorporate these units and releases into the RFI Workplan.

#### H. RCRA FACILITY INVESTIGATION WORKPLAN IMPLEMENTATION

No later than fifteen (15) calendar days after the Permittee has received written approval from the Administrative Authority for the RFI Workplan, the Permittee shall begin implementation of the RCRA Facility Investigation according to the Schedules specified in the RFI Workplan. Pursuant to Permit Condition the RFI shall be conducted in accordance with the approved RFI Workplan. The Permittee shall prepare the RFI Workplan and undertake the facility investigation in accordance with the following:

1. Development of the RFI Workplan and reporting of data shall be consistent with the RCRA Facility Investigation Guidance Document (OSWER Directive 9502.00-6c) or the equivalent thereof;
2. EPA and NMEID reserve the right to split samples. The Permittee shall notify EPA and NMEID at least 10 days prior to any sampling activity;
3. When developing ground water related investigations, the Permittee shall be consistent with the RCRA Ground water Monitoring Technical Enforcement Guidance Document (EPA OSWER Directive 9950-1, September 1986) or the equivalent thereof to determine methods and materials that are acceptable to EPA;
4. Any deviations from the approved RFI Workplan which are necessary during implementation of the facility investigation must be approved by the Administrative Authority and fully documented and described in the progress reports and in the draft RFI report.

#### I. RCRA FACILITY INVESTIGATION FINAL REPORT AND SUMMARY REPORT

1. Within sixty (60) calendar days after the completion of the RFI, the Permittee shall submit an RFI Final Report and Summary Report. The RFI Report shall describe the procedures, methods, and results of all facility investigations of SWMUs and their releases, including information on the type and extent of contamination at

the facility, sources and migration pathways, and actual or potential receptors. The RFI Final Report shall present all information gathered under the approved RFI Workplan. The Final Report must contain adequate information to support further corrective action decisions at the facility. The Summary Report shall describe more briefly the procedures, methods, and results from the facility investigation described in Scope of Work, Task III.

2. After the Permittee submits the RFI Final report and Summary Report, the Administrative Authority shall either approve or disapprove the Reports in writing.

If the Administrative Authority approved the RFI Report and Summary Report, the Permittee shall mail the approved Summary Report to all individuals on the facility mailing list established pursuant to 40 CFR 124.10(c)(1)(viii), within fifteen (15) calendar days of receipt of approval.

If the Administrative Authority determines the RFI Final Report and Summary Report do not fully detail the objectives stated under Permit Condition IV.I.1., the Administrative Authority may disapprove the RFI Final Report and Summary Report. If the Administrative Authority disapproved the Reports, the Administrative Authority shall notify the Permittee in writing of the Reports' deficiencies and specify a due date for submittal of a revised Final and Summary Report, once approved, shall be mailed to all individuals on the facility mailing list.

#### J. INTERIM MEASURES

1. If during the course of any activity initiated under this Corrective Action Schedule of Compliance, the Administrative Authority determines that a release or potential release of hazardous constituents from a SWMU poses a threat to human health and the environment, the Administrative Authority may specify interim measures. The Administrative Authority shall determine the specific measure, including potential permit modifications and the schedule for implementing the required measures. The Administrative Authority shall notify the Permittee in writing of the requirement to perform such interim measures. The Administrative Authority shall modify the Corrective Action Schedule of Compliance either according to procedures in Section of this Permit, or according to the permit modification procedures under 40 CFR 270.41, to incorporate such interim measures into the Permit.
2. The following factors may be considered by the Administrative Authority in determining the need for interim measures:
  - a. Time required to develop and implement a final remedy;
  - b. Actual and potential exposure to human and environmental receptors;

- c. Actual and potential contamination of drinking water supplies and sensitive ecosystems;
- d. The potential for further degradation of the medium absent interim measures;
- e. Presence of hazardous waste in containers that may pose a threat of release;
- f. Presence and concentration of hazardous waste including hazardous constituents in soil that have the potential to migrate to ground water or surface water;
- g. Weather conditions that may affect the current levels of contamination;
- h. Risks of fire, explosion, or accident; and
- i. Other situations that may pose threats to human health and the environment.

K. DETERMINATION OF NO FURTHER ACTION

1. Based on the results of the RFI and other relevant information, the Permittee may submit an application to the Administrative Authority for a Class III permit modification under 40 CFR 270.42(c) to terminate the Corrective Action Schedule of Compliance. This permit modification application must contain information demonstrating that there are no releases of hazardous wastes including hazardous constituents from SWMUs at the facility that pose a threat to human health and the environment, as well as information required in 40 CFR 270.42.(c), which incorporates by reference 40 CFR 270.13 through 270.21, 270.62, and 260.63.

If, based upon review of the Permittee's request for a permit modification, the results of the RFI, and other information, including comments received during the sixty (60) day public comment period required for Class III permit modifications, the Administrative Authority determines that releases or suspected releases which were investigated either are non-existent or do not pose a threat to human health and the environment, the Administrative Authority will grant the requested modification.

2. A determination of no further action shall not preclude the Administrative Authority from requiring continued or periodic monitoring of air, soil, ground water, or surface water, when site-specific circumstances indicate that release of hazardous wastes including hazardous constituents are likely to occur, if necessary to protect human health and the environment.
3. A determination of no further action shall not preclude the Administrative Authority from requiring further investigations, studies, or remediation at a later date, if new information or

subsequent analysis indicates a release or likelihood of a release from a SWMU at the facility that is likely to pose a threat to human health or the environment. In such a case, the Administrative Authority shall initiate either a modification to the Corrective Action Schedule of compliance according to procedures in Section of this Permit, or a major permit modification according to 40 CFR 270.41, to rescind the determination made in accordance with Permit Condition.

L. CORRECTIVE ACTION MEASURES STUDY PLAN

1. If the Administrative Authority has reason to believe that a SWMU has released concentrations of hazardous constituents, or if the Administrative Authority determines that contaminants present a threat to human health and the environment given site-specific exposure conditions, the Administrative Authority may require a Corrective Measures Study (CMS) and shall notify the Permittee in writing. The notification may also specify remedial alternatives to be evaluated by the Permittee during the CMS.
2. The Permittee shall submit a draft CMS Plan to the Administrative Authority within ninety (90) calendar days from notification of the requirement to conduct a CMS. The Scope of Work for a Corrective Measure Study (CMS) is in Section T.

The CMS Plan shall provide the following information:

- a. A description of the general approach to investigation and potential remedies;
  - b. A definition of the overall objectives of the study;
  - c. The specific plans for evaluating remedies to ensure compliance with remedy standards;
  - d. The schedules for conducting the study; and
  - e. The proposed format for the presentation of information.
3. After the Permittee submits the draft CMS plan, the Administrative Authority will either approve or disapprove the plan. If the plan is not approved, the Administrative Authority will notify the Permittee in writing of the plan's deficiencies and specify a due date for submittal of the revised plan. If this report is not approved, the Administrative Authority will revise the Plan and notify the Permittee of the revisions. This Administrative Authority revised Plan becomes the approved Plan.

M. CORRECTIVE MEASURES STUDY IMPLEMENTATION

No later than fifteen (15) calendar days after the Permittee has received written approval from the Administrative Authority for the CMS Plan, the Permittee shall begin to implement the Corrective Measures Study according to the schedules specified in the CMS Plan. Pursuant to Permit Condition the CMS shall be conducted in accordance with the approved Plan.

N. CORRECTIVE MEASURES STUDY FINAL REPORT

1. Within sixty (60) calendar days after the completion of the CMS, the Permittee shall submit a CMS Final Report. The CMS Final Report shall summarize the results of the investigations for each remedy studied and of any bench-scale or pilot tests conducted. The CMS Report must include an evaluation of each remedial alternative. The CMS Report shall present all information gathered under the approved CMS Plan. The final report must contain adequate information to support the Administrative Authority in the remedy selection decision making process, described under Section IV.0.1. of the Corrective Action Schedule of Compliance.
2. If the Administrative Authority determines that the CMS Final Report does not fully satisfy the information requirements specified under Permit condition IV.N.1., the Administrative Authority may disapprove the CMS Final Report. If the Administrative Authority disapproves the Final Report, the Administrative Authority shall notify the Permittee in writing of deficiencies in the Report and specify a due date for submittal of a revised Final Report [e.g., thirty (30) days after notification].
3. As specified under Permit Condition based on preliminary results and the final CMS report, the Administrative Authority may require the Permittee to evaluate additional remedies or particular elements of one or more proposed remedies.

O. REMEDY SELECTION

1. Based on the results of the CMS and any further evaluations of additional remedies under this study, the Administrative Authority shall select a remedy from the remedial alternatives evaluated in the CMS that will (1) be protective of human health and the environment; (2) meet the concentration levels of hazardous constituents in each medium that the remedy must achieve to be protective of human health and the environment; (3) control the source(s) of release(s) so as to reduce or eliminate, to the maximum extent practicable, further releases that might pose a threat to human health and the environment; and (4) meet all applicable waste management requirements.



2. In selecting the remedy which meets the standards for remedies established under Permit Condition IV.0.1., the Administrative Authority shall consider the following evaluation factors, as appropriate:
  - a. Long-term reliability and effectiveness. Any potential remedy(s) may be assessed for the long-term reliability and effectiveness it affords, along with the degree of certainty that the remedy will prove successful. Factors that shall be considered in this evaluation include:
    1. Magnitude of residual risks in terms of amounts and concentrations of waste remaining following implementation of a remedy, considering the persistence, toxicity, mobility and propensity to bioaccumulate of such hazardous wastes including hazardous constituents;
    2. The type and degree of long-term management required, including monitoring and operation and maintenance;
    3. Potential for exposure of humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment associated with excavation, transportation, redispal or containment;
    4. Long-term reliability of the engineering and institutional controls, including uncertainties associated with land disposal of untreated wastes and residuals; and
    5. Potential need for replacement of the remedy.
  - b. Reduction of toxicity, mobility, and volume. A potential remedy(s) may be assessed as to the degree to which it employs treatment that reduces toxicity, mobility or volume of hazardous wastes including hazardous constituents. Factors that shall be considered in such assessments include:
    1. The treatment processes the remedy(s) employs and materials it would treat;
    2. The amount of hazardous wastes including hazardous constituents that would be destroyed or treated;
    3. The degree to which the treatment is irreversible; and
    4. The residuals that will remain following treatment, considering the persistence, toxicity, mobility and propensity to bioaccumulate of such hazardous wastes including hazardous constituents.
  - c. The short-term effectiveness of a potential remedy(s) may be assessed considering the following:

1. Magnitude of reduction of existing risks;
  2. Short-term risks that might be posed to the community, workers, or the environment during implementation of such a remedy, including potential threats to human health and the environmental associated with excavation, transportation, and redisposal or containment; and
  3. Time until full protection is achieved.
- d. Implementability. The ease or difficulty of implementing a potential remedy(s) may be assessed by considering the following types of factors:
1. Degree of difficulty associated with constructing the technology;
  2. Expected operational reliability of the technologies;
  3. Need to coordinate with and obtain necessary approvals and permits from other agencies;
  4. Availability of necessary equipment and specialists; and
  5. Available capacity and location of needed treatment, storage and disposal services.
- e. Cost. The types of costs that may be assessed include the following:
1. Capital costs;
  2. Operation and maintenance costs;
  3. Net present value of capital and operation and maintenance costs; and
  4. Potential future remedial action costs.

P. PERMIT MODIFICATION FOR REMEDY

1. Based on information the Permittee submits in the RFI Final and Summary Reports, the CMS Final Report, and other information, the Administrative Authority will select a remedy and initiate a major permit modification to this Permit, pursuant to 40 CFR 270.41.

The modification shall specify the selected remedy and include, at a minimum, the following:

- a. Description of all technical features of the remedy that are necessary for achieving the standards for remedies established under Permit Condition IV.0.1., including length of time for which compliance must be demonstrated at specified points of compliance.
  - b. All concentration levels of hazardous constituents in each medium that the remedy must achieve to be protective of human health and the environment;
  - c. All requirements for achieving compliance with these concentration levels;
  - d. All requirements for complying with the standards for management of wastes;
  - e. Requirements for removal, decontamination, closure, or post-closure of units, equipment, devices or structures that will be used to implement the remedy;
  - f. A schedule for initiating and completing all major technical features and milestones of the remedy; and
  - g. Requirements for submission of reports and other information.
2. Within one hundred and twenty (120) calendar days after this Permit has been modified, the Permittee shall demonstrate financial assurance for completing the approved remedy.

Q. MODIFICATION OF THE CORRECTIVE ACTION SCHEDULE OF COMPLIANCE

1. If at any time the Administrative Authority determines that modification of the Corrective Action Schedule of Compliance is necessary, he or she may initiate a modification to the Schedule of Compliance according to the procedures of this Section. If the Administrative Authority initiates a modification, he or she shall:
  - a. Notify the Permittee in writing of the proposed modification and the date by which comments on the proposed modification must be received; and
  - b. Publish a notice of the proposed modification in a locally distributed newspaper, mail a notice to all persons on the facility mailing list maintained according to 40 CFR 124.10 (c)(1)(viii), and place a notice in the facility's information repository (i.e., a central source of all pertinent documents concerning the remedial action, usually maintained at the facility or some other public place, such as a public library, that is accessible to the public) if one is required.

1. If the Administrative Authority receives no written comment on the proposed modification, the modification shall become effective five (5) calendar days after the close of the comment period.
  2. If the Administrative Authority receives written comment on the proposed modification, the Administrative Authority shall make a final determination concerning the modification after the end of the comment period.
- c. Notify the Permittee in writing of the final decision.
1. If no written comment was received, the Administrative Authority shall notify individuals on the facility mailing list in writing that the modification has become effective and shall place a copy of the modified Corrective Action Schedule of Compliance in the information repository, if a repository is required for the facility.
  2. If written comment was received, the Administrative Authority shall provide notice of the final modification decision in a locally distributed newspaper and place a copy of the modified Corrective Action Schedule of Compliance in the information repository, if a repository is required for the facility.
2. Modifications that are initiated and finalized by the Administrative Authority according to this process shall not be subject to administrative appeal.
  3. Modifications to the Corrective Action Schedule of Compliance do not constitute a reissuance of the Permit.

R.

FACILITY SUBMISSION SUMMARY

Below is a summary of the planned reporting requirements pursuant to this Schedule to Compliance;

<u>Facility Submission Requirements</u>	<u>Due Date</u>
Notification of newly-identified SWMUs	fifteen (15) calendar days after discovery
Notification of newly-discovered releases	fifteen (15) calendar days after discovery
Progress reports on all activities	quarterly no later than ninety (90) calendar days after effective date of permit
Preliminary Report Description of Current Conditions	90 days from effective date of permit
SWMU Assessment Plan for newly-identified SWMUs	ninety (90) calendar days after receipt of request
Revised SWMU Assessment Plan	as determined
SWMU Assessment Report	sixty (60) calendar days after completion of implementation of SWMU Assessment Plan
RFI Workplan for SWMU(s) identified at time of permit issuance	one hundred eighty (180) calendar days after the effective date of the permit
RFI Preliminary Report	as specified in approved RFI Workplan
Revised RFI Workplan	as determined by Administrative Authority usually within 30 days of receipt of NOD
RFI Report and Summary Report	sixty (60) calendar days after completion of RFI
Revised RFI Report and Summary Report	thirty (30) calendar days after notification of deficiency

Interim Measures Plan for interim measures required after permit issuance	thirty calendar days after notification
Revised Interim Measure Plan	as determined
CMS Plan	ninety (90) calendar days after notification of requirement to perform CMS
Revised CMS Plan	as determined
CMS Report	sixty (60) calendar days after completion of CMS
Revised CMS Report	thirty (30) calendar days after notification of deficiency

S. SCOPE OF WORK FOR A RCRA FACILITY INVESTIGATION (RFI)  
AT  
U.S. KIRTLAND AIR FORCE BASE

PURPOSE

The purpose of this RCRA Facility Investigation is to determine the nature and extent of releases of hazardous waste or hazardous constituents from solid waste management units. The Permittee shall furnish all personnel, materials, and services necessary for, or incidental to, performing the RCRA Facility Investigation at U.S. Kirtland Air Force Base.

If the Permittee believes that certain requirements of the scope of work are not applicable, the specific requirements shall be identified and the rationale for inapplicability shall be provided.

SCOPE

The RCRA Facility Investigation consists of five tasks:

- Task I: Description of Current Conditions
  - A. Facility Background
  - B. Nature and Extent of Contamination
- Task II: RFI Workplan
  - A. Data Collection Quality Assurance Plan
  - B. Data Management Plan
  - C. Health and Safety Plan
  - D. Community Relations Plan
- Task III: Facility Investigation
  - A. Environmental Setting
  - B. Source Characterization
  - C. Contamination Characterization
  - D. Potential Receptor Identification
- Task IV: Investigative Analysis
  - A. Data Analysis
  - B. Protection Standards
- Task V: Reports
  - A. Preliminary and Workplan
  - B. Progress
  - C. Draft and Final

TASK I: PRELIMINARY REPORT: DESCRIPTION OF CURRENT CONDITIONS

The Permittee shall submit to the Administrative Authority a Preliminary Report providing the background information pertinent to the facility, contamination and any type of on-going corrective action as set forth below. This report is limited to SWMUs not identified in the Part B permit application or to recent information not addressed in the RCRA Facility Assessment.

A. Facility Background

The report shall summarize the regional location, pertinent boundary features, general facility physiography, hydrogeology, and historical use of the facility for the treatment, storage or disposal of solid and hazardous waste. Information from existing reports and studies is acceptable for any requirement in this permit, as long as the source of this information is documented and it is pertinent and reflective of current conditions, and meets the format for the RFI investigations. The report shall include:

1. Map(s) depicting the following:
  - a. General geographic location;
  - b. Property lines, with the owners of all adjacent property clearly indicated;
  - c. Topography (with a contour interval of five (5) or ten (10) feet and a scale of 1 inch - 100 feet), waterways, all wetlands, floodplains, water features, drainage patterns;
  - d. All solid waste management units;
  - e. All known past solid or hazardous waste treatment, storage or disposal areas regardless of whether they were active on November 19, 1980;
  - f. Surrounding land uses (residential, commercial, agricultural, recreational); and
  - g. The location of all production and groundwater monitoring wells. These wells shall be clearly labeled and ground and top of casing elevations included (these elevations may be included as an attachment);

All maps shall be consistent with the requirements set forth in 40 CFR §270.14 and be of sufficient detail and accuracy to locate and report all current and future work performed at the site;



2. A history and description of ownership and operation, solid and hazardous waste generation, treatment, storage and disposal activities at the facility;
3. Approximate dates or periods of past waste spills, identification of the materials spilled, the amount spilled, the location where spilled, and a description of the response actions conducted (local, state, or federal response units or private parties), including any inspection reports or technical reports generated as a result of the response.
4. Documentation of all interim measures which were or are being undertaken at the facility other than those specified in this permit.
5. A reference of all environmental, geologic, and hydrogeologic studies performed at and/or by the facility, with a short summary of purpose scope and significant findings thereof.
6. A reference of all environmental permits, applied for and/or received, the purpose thereof, and a short summary of requirements.

B. Nature and Extent of Contamination

The Permittee shall include in the Preliminary Report the existing information on the nature and extent of contamination.

1. The Permittee's report shall summarize all possible source areas of contamination. This, at a minimum, should include all solid waste management units. For each area, the Permittee shall identify the following:
  - a. Location of unit/area (which shall be depicted on a facility map);
  - b. Quantities of solid and hazardous wastes;
  - c. Hazardous waste, radiochemical and hazardous constituents, to the extent known; and
  - d. Identification of areas where additional information is necessary.
2. The Permittee shall prepare an assessment and description of the existing degree and extent of contamination. This should include:
  - a. Available monitoring data and qualitative information on locations and levels of contamination at the facility;
  - b. All potential migration pathways including information on geology, pedology, hydrogeology, physiography, hydrology, water quality, meteorology, and air quality; and

- c. The potential impact(s) on human health and the environment, including demography, ground water and surface water use, and land use.

C. Implementation of Interim Measures

The Permittee shall document and report on all interim measures which were or are being undertaken at the facility other than those specified in the permit. This shall include:

1. Objectives of the interim measures: how the measure is mitigating a potential threat to human health and the environment and/or is consistent with and integrated into any long term solution at the facility;
2. Design, construction, operation, and maintenance requirements;
3. Schedules for design, construction and monitoring; and
4. Schedule for progress reports.

TASK II: RFI WORKPLAN REQUIREMENTS

The Permittee shall prepare a RCRA Facility Investigation (RFI) Workplan. This RFI Workplan shall include the development of several plans, which shall be prepared concurrently. During the RCRA Facility Investigation, it may be necessary to revise the RFI Workplan to increase or decrease the detail of information collected to accommodate the facility specific situation. The RFI Workplan shall include the following:

A. Data Collection Quality Assurance Plan

The Permittee shall prepare a plan to document all monitoring procedures: sampling, field measurements and sample analysis performed at the facility during the investigation to characterize the environmental setting, source, and contamination, so as to ensure that all information, data, and resulting decisions are technically sound, statistically valid, and properly documented.

1. Data Collection Strategy

The strategy section of the Data Collection Quality Assurance Plan shall include but not be limited to the following:

- a. Description of the intended uses for the data, and the necessary level of precision and accuracy for these intended uses;
- b. Description of methods and procedures to be used to assess the precision, accuracy and completeness of the measurement data;

2. Sampling and Field Measurements

The Sampling Field Measurements Section of the Data Collection Quality Assurance Plan shall at least discuss:

- a. Selecting appropriate sampling and field measurements locations, depths, etc.;
- b. Providing a statistically sufficient number of sampling and field measurement sites;
- c. Determining conditions under which sampling or field measurements should be conducted;
- d. Determining which parameters are to be measured and where;
- e. Selecting the frequency of sampling and length of sampling period;
- f. Selecting the types of sample (e.g., composites vs. grabs) and number of samples to be collected;
- g. Measures to be taken to prevent contamination of sampling or field measurements equipment and cross contamination between sampling points;

- h. Documenting field sampling operations and procedures;
- i. Selecting appropriate sample containers;
- j. Sample preservation; and
- k. Chain-of-custody.

3. Sample Analysis

- a. Chain-of-custody procedures;
- b. Sample storage procedures and holding times;
- c. Sample preparation methods;
- d. Analytical procedures;
- e. Calibration procedures and frequency;
- f. Data reduction, validation and reporting; and
- g. Internal quality control checks, laboratory performance and systems audits and frequency.

B. Data Management Plan

The Permittee shall develop and initiate a Data Management Plan to document and track investigation data and results. This plan shall identify and set up data documentation materials and procedures, project file requirements, and project-related progress reporting procedures and documents. The plan shall also provide the format to be used to present the raw data and conclusions of the investigation, such as:

- 1. Data Record
- 2. Tabular Displays
- 3. Graphical Displays

C. Health and Safety Plan

The Permittee shall prepare a facility Health and Safety Plan.

- 1. Major elements of the Health and Safety Plan shall include:
  - a. Facility description including availability of resources such as roads, water supply, electricity and telephone service;
  - b. Describe the known hazards and evaluate the risks associated with the incident and with each activity conducted;

- c. List key personnel and alternatives responsible for site safety, responses operations, and for protection of public health;
  - d. Delineate work area;
  - e. Describe levels of protection to be worn by personnel in work area;
  - f. Establish procedures to control site access;
  - g. Describe decontamination procedures for personnel and equipment;
  - h. Establish site emergency procedures;
  - i. Address emergency medical care for injuries and toxicological problems;
  - j. Describe requirements for an environmental field monitoring program;
  - k. Specify any routine and special training required for responders; and
  - l. Establish procedures for protecting workers from weather-related problems.
2. The Facility Health and Safety Plan shall be consistent with:
- a. NIOSH Occupation Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985);
  - b. EPA Order 1440.1 - Respiratory Protection;
  - c. EPA Order 1440.3 - Health and Safety Requirements for Employees engaged in Field Activities;
  - d. Approved Facility Contingency Plan;
  - e. EPA Operating Safety Guide (1984);
  - f. OSHA regulations particularly in 29 CFR 1910 and 1926;
  - g. State and local regulations; and
  - h. Other EPA guidance as provided.

D. Community Relations Plan

The Permittee shall prepare a plan, for the dissemination of information to the public regarding investigation activities and results.

E. Project Management Plan

The Permittee shall prepare a Project Management Plan which will include a discussion of the technical approach, schedules, budget, and key project personnel. The project management plan will also include a description of qualifications of key project personnel performing or directing the RFI, including contractor personnel. This plan shall also document the overall management approach to the RFI.

### TASK III: FACILITY INVESTIGATION

The Permittee shall conduct those investigations of SWMUs previously identified with known or suspected releases of contamination as necessary to protect human health and the environment to: characterize the facility (Environmental Setting); define the source (Source Characterization); define the degree and extent of contamination (Contamination Characterization); and identify actual or potential receptors.

Investigations should result in data of adequate technical quality to support the development and evaluation of the corrective measure alternative or alternatives during the Corrective Measures Study, when necessary.

The facility investigation activities shall when conducted follow the plans set forth in Task II. All sampling and analyses shall be conducted in accordance with the Data Collection Quality Assurance Plan. All sampling locations shall be documented in a log and identified on a detailed site map.

#### A. Environmental Setting

The Permittee shall collect information to supplement and verify existing information on the environmental setting at the facility. The Permittee shall characterize the following:

##### 1. Hydrogeology

The Permittee shall conduct a program to evaluate hydrogeologic conditions at the facility. This program shall provide the following information:

- a. A description of the regional and facility specific geologic and hydrogeologic characteristics affecting ground-water flow beneath the facility.
- b. An analysis of any topographic features that might influence the groundwater flow system. (Note: Stereographic analysis of aerial photographs may aid in this analysis).
- c. Based on field data, tests, (gamma and neutron logging of existing and new wells, piezometers and borings) and cores, a representative and accurate classification and description of the hydrogeologic units which may be part of the migration pathways at the facility (i.e., the aquifers and any intervening saturated and unsaturated units).
- d. Based on field studies and cores, structural geology and hydrogeologic cross sections showing the extent (depth, thickness, lateral extent) of hydrogeologic units which may be part of the migration pathways identifying:
  - i) Unconsolidated sand and gravel deposits;

- ii) Zones of fracturing or channeling in consolidated or unconsolidated deposits; and
  - iii) Zones of high permeability or low permeability that might direct and restrict the flow of contaminants.
- f. Based on data obtained from groundwater monitoring wells and piezometers installed upgradient and downgradient of the potential contaminant source, a representative description of water level or fluid pressure monitoring.
- g. A description of manmade influences that may affect the hydrogeology of the site.

## 2. Soils

The Permittee shall conduct a program to characterize the soil and rock units above the water table in the vicinity of the contaminant release(s). Such characterization shall include, but not be limited to, the following information:

- a. Surface soil distribution;
- b. Soil profile, including ASTM classification of soils;
- c. Transects of soil stratigraphy;
- d. Saturated hydraulic conductivity;
- e. Porosity;
- f. Cation exchange capacity (CEC);
- g. Soil pH;
- i. Particle size distribution;
- j. Depth of water table;
- k. Moisture content;
- l. Effect of stratification on unsaturated flow;
- m. Infiltration
- n. Evapotranspiration;
- o. Residual concentration of contaminants in soil; and
- p. Mineral and metal content.



B. Source Characterization

The Permittee shall collect analytical data to completely characterize the wastes and the areas where wastes have been placed, including: type; quantity; physical form; disposition (containment or nature of deposits); and the facility characteristics affecting release (e.g., facility security, and engineered barriers). This shall include quantification of the following specific characteristics, at each source area:

1. Unit/Disposal Area Characteristics

- a. Location of unit/disposal area;
- b. Type of unit/disposal area;
- c. Design features;
- d. Operating practices (past and present);
- e. Period of operation;
- f. Age of unit/disposal area;
- g. General physical conditions; and
- h. Method used to close the unit/disposal area.

2. Waste Characteristics

- a. Type of waste placed in unit;
- b. Physical and chemical characteristics; and
- c. Migration and dispersal characteristics of the waste.

The Permittee shall document the procedures used in making the above determinations.

C. Contamination Characteristics

The Permittee shall collect analytical data on groundwater, soils, surface water, sediment, and subsurface gas contamination when necessary to characterize contamination from a SWMU. This data shall be sufficient to define the extent, origin, direction, and rate of movement of contaminant plumes. Data shall include time and location of sampling, media sampled, concentrations found, conditions during sampling, and the identity of the individual(s) performing the sampling and analysis. Each media must be investigated, if the permittee believes certain could not be affected by a release from a specific unit, a detailed justification for not investigating that media must be provided. The Permittee shall address the following types of contamination at the facility:

1. Groundwater Contamination

The Permittee shall conduct a Groundwater Investigation to characterize any plumes of contamination at the facility. This investigation shall at a minimum provide the following information:

- a. A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the facility;
- b. The horizontal and vertical direction of contamination movement;
- c. The velocity of contaminant movement;
- d. The horizontal and vertical concentration profiles of any Appendix IX constituents and radiochemical constituents in the plume(s);
- e. An evaluation of factors influencing the plume movement; and
- f. An extrapolation of future contaminant movement.

The Permittee shall document the procedures used in making the above determinations (e.g., well design, well construction, geophysics, modeling, etc.).

2. Soil Contamination

The Permittee shall conduct an investigation to characterize the contamination of the soil and rock units above the water table in the vicinity of the contaminant release. The investigation shall include the following information:

- a. A description of the vertical and horizontal extent of contamination;
- b. A description of contaminant and soil chemical properties within the contaminant source area and plume migration and transformation;

- c. Specific contaminant concentrations;
- d. The velocity and direction of contaminant movement; and
- e. An extrapolation of future contaminant movement.

The Permittee shall document the procedures used in making the above determinations.

### 3. Surface Water Contamination

The Permittee shall conduct a surface water investigation to characterize contamination in surface water bodies resulting from contaminant releases at the facility. The investigation shall include the following:

- a. A description of the horizontal and vertical extent of any immiscible or dissolved plumes originating from the facility, and the extent of contamination in the underlying sediments;
- b. The horizontal and vertical direction and velocity of contaminant movement;
- c. An evaluation of the physical, biological, chemical, and radiochemical factors influencing contaminant movement;
- d. An extrapolation of future contaminant movement; and
- e. A description of the chemistry and radiochemistry of the contaminated surface waters and sediments. This includes determining the pH, total dissolved solids, specific contaminant concentrations, etc.

The Permittee shall document the procedures used in making the above determinations.

### 4. Air Contamination

The Permittee shall conduct an investigation to characterize the particulate and gaseous contaminants released into the atmosphere.

This investigation shall provide the following information:

- a. A description of the horizontal and vertical direction and velocity of contaminant movement;
- b. The rate and amount of the release; and
- c. The chemical, radiochemical, and physical composition of the contaminants released, including horizontal and vertical concentration profiles.

5. Subsurface Gas

The Permittee shall provide information characterizing the nature, rate and extent of releases of reactive gases from the units. Such information shall include, but not be limited to: provisions for monitoring subsurface gases released from the unit; and an assessment of the potential for these releases to have a threat to human health and environment.

The Permittee shall document the procedures used in making the above determination.

D. Potential Receptors

The Permittee shall collect data describing the human populations and environmental systems that are susceptible to contaminant exposure from the facility. Chemical and radiochemical analysis of biological samples may be needed. Data on observable effects in ecosystems may also be obtained.

TASK IV: INVESTIGATIVE ANALYSIS

The Permittee shall prepare an analysis and summary of all facility investigations and their results. The objective of this task shall be to ensure that the investigation data are sufficient in quality (e.g., quality assurance procedures have been followed) and quantity to describe the nature and extent of contamination, potential threat to human health and/or the environment, and to support the Corrective Measures Study, if one is required.

The Permittee shall analyze all facility investigation data outlined in Task III and prepare a report on the type and extent of contamination at the facility including sources and migration pathways. The report shall describe the extent of contamination (qualitative/quantitative) in relation to the background levels indicative for the area.

The Permittee shall identify all relevant and applicable standards for the protection of human health and the environment (e.g. National Ambient Air Quality Standards, Federally-approved state water quality standards, Groundwater protection standards, etc.)

TASK V: REPORTS

A. Preliminary and Workplan

The Permittee shall submit to the Administrative Authority the Preliminary Report (Task I) and the RCRA Facility Investigation Workplan (Task II) as described in the Permit.

B. Progress

Within 90 days of the effective date of this permit, the Permittee shall provide the Administrative Authority with signed, quarterly progress reports containing:

1. A description and estimate of the percentage of the RFI completed;
2. Summaries of contacts pertaining to corrective action or environmental matters with representatives of the local community, public interest groups or State government during the reporting period;
3. Summaries of problems or potential problems encountered during the reporting period;
4. Actions being taken to rectify problems;
5. Changes in key project personnel during the reporting period;
6. Projected work for the next reporting period;
7. Summaries of all findings to date; and
8. Summaries of all changes made in the RFI during the reporting period.

C. Draft and Final

The RFI Report shall be developed in draft form for the Administrative Authority's review. The RFI Report shall be developed in final format incorporating comments received on the Draft RFI Report.

Two hard copies and one compatible disk copy of all reports, including the Task I report (OTET), Task II workplan (OTET) and both the Draft and Final RFI Reports (Task III-IV) (OTET) shall be provided by the Permittee to the Administrative Authority.

Facility Submission Summary

A summary of the information reporting requirements contained in the RCRA Facility Investigation Scope of Work is presented below:

<u>Facility Submission</u>	<u>Due Date</u>
Description of Current Conditions (Task I)	90 days*
RFI Workplan (Task II)	180 days
Draft RFI Report	60 days after completion of RFI
Final RFI Report (Tasks III and IV)	
Progress reports on Tasks I through V and interim measures	Quarterly

\* Dates are calculated from the effective date of this permit unless otherwise specified.

T. SCOPE OF WORK FOR A RCRA CORRECTIVE MEASURE STUDY (CMS)  
AT  
U.S. KIRTLAND AIR FORCE BASE

PURPOSE

The purpose of this Corrective Measure Study (CMS) is to develop and evaluate the corrective action alternative or alternatives and to recommend the corrective measure or measures to be taken at U.S. Kirtland Air Force Base. The Permittee will furnish the personnel, materials, and services necessary to prepare the CMS, except as otherwise specified.

If the Permittee believes that certain requirements of the scope of work are not applicable, the specific requirements shall be identified and the rationale for inapplicability shall be provided.

SCOPE

The Corrective Measure Study consists of four tasks:

Task VI: Identification and Development of the Corrective Measure Alternative or Alternatives

- A. Description of Current Situation
- B. Establishment of Corrective Action Objectives
- C. Laboratory and Bench-Scale Study
- D. Screening of Corrective Measures Technologies
- E. Identification of the Corrective Measure Alternative or Alternatives

Task VII: Evaluation of the Corrective Measure Alternative(s)

- A. Technical/Environmental/Human Health/Institutional
- B. Cost Estimate

Task VIII: Justification and REcommendation of the Corrective Measure or Measures

- A. Technical
- B. Human Health
- C. Environmental

Task IX: Reports

- A. Progress
- B. Draft
- C. Final

TASK VI: IDENTIFICATION AND DEVELOPMENT OF THE CORRECTIVE ACTION ALTERNATIVE OR ALTERNATIVES

Based on the results of the RCRA Facility Investigation (RFI) and consideration of the identified Preliminary Corrective Measure Technologies (Task I) the Permittee shall identify, screen, and develop the alternative(s) for removal, containment, treatment and/or other remediation of the contamination based on the objectives established for the corrective action.

A. Description of Current Situation

The Permittee shall submit an update to the information describing the current situation at the facility and the known nature and extent of the contamination as documented by the RFI report. The Permittee shall provide an update to information presented in Task I of the RFI to the Administrative Authority regarding previous response activities and any interim measures which have or are being implemented at the facility. The Permittee shall also make a facility-specific statement of the purpose for the response, based on the results of the RFI. The statement of purpose should identify the actual or potential exposure pathways that should be addressed by corrective measures.

B. Establishment of Corrective Action Objectives

The Permittee, in conjunction with the Administrative Authority, shall establish site specific objectives for the corrective action. These objectives shall be based on public health and environmental criteria, information gathered during the RCRA Facility Investigation, EPA guidance and the requirements of any applicable Federal statutes. At a minimum, all corrective actions concerning groundwater releases from solid waste management units must be consistent with, and as stringent as, those required under 40 CFR 264.100.

C. Laboratory and Bench-Scale Study

When a new technology is being proposed or similiar waste streams have not routinely been treated or disposed using the technology the Permittee shall conduct laboratory and/or bench-scale studies to determine the applicability of a corrective measure technology or technologies to the facility conditions. The Permittee shall analyze the technologies, based on literature review, vendor contracts, and past experience to determine the testing requirements.

The Permittee shall develop a testing plan identifying the type(s) and goal(s) of the study(ies), the level of effort needed, and the procedures to be used for data management and interpretation.

Upon completion of testing, the Permittee shall evaluate the testing results to assess the technology or technologies with respect to the site-specific questions identified in the test plan.

The Permittee shall prepare a report summarizing the testing program and its results, both positive and negative.



D. Screening of Corrective Measure Technologies

The Permittee shall review the results of the RFI and reassess the technologies specified in Task II and identify any additional technologies which are applicable to the facility. The Permittee shall screen the preliminary corrective measure technologies identified in Task II of the RFI and any supplemental technologies to eliminate those that may prove infeasible to implement, that rely on technologies unlikely to perform satisfactorily or reliably, or that do not achieve the corrective measure objective within a reasonable time period. This screening process focuses on eliminating those technologies which have severe limitations for a given set of waste and site-specific conditions. The screening step may also eliminate technologies based on inherent technology limitations.

Site, waste, and technology characteristics which are used to screen inapplicable technologies are described in more detail below:

1. Site Characteristics

Site data should be reviewed to identify conditions that may limit or promote the use of certain technologies. Technologies whose use is clearly precluded by site characteristics should be eliminated from further consideration;

2. Waste Characteristics

Identification of waste characteristics that limit the effectiveness or feasibility of technologies is an important part of the screening process. Technologies clearly limited by these waste characteristics should be eliminated from consideration. Waste characteristics particularly affect the feasibility of in-situ methods, direct treatment methods, and land disposal (on/off-site); and

3. Technology Limitations

The level of technology development, performance record, and inherent construction, operation and maintenance problems shall be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process. For example, certain treatment methods have been developed to a point where they can be implemented in the field without extensive technology transfer or development.

E. Identification of the Corrective Measure Alternatives

The Permittee shall develop the corrective measure alternatives based on the corrective measure objectives and analysis of Preliminary Corrective Measure Technologies, as presented in Task I of the RFI as supplemented following the preparation of the RFI report. The Permittee shall rely on engineering practice to determine which of the previously identified technologies appear most suitable for the site. Technologies can be combined to form the overall corrective action alternatives. The alternatives developed should represent a workable number of options that each appear to adequately address all site problems and corrective action objectives. Each alternative may consist of an individual technology or a combination of technologies. The Permittee shall document the reasons for excluding technologies, identified in Task I, as supplemented in the development of the alternative.

TASK VII: EVALUATION OF THE CORRECTIVE MEASURE ALTERNATIVE OR ALTERNATIVES

The Permittee shall describe each corrective measure alternative that passed the Initial Screening in Task VII and evaluate each corrective measure alternative and its components. The evaluation shall be based on technical, environmental, human health and institutional concerns. The Permittee shall also develop cost estimates for each corrective measure.

A. Technical/Environmental/Human Health/Institutional

The Permittee shall provide a description of each corrective measure alternative which includes but is not limited to the following- preliminary process flow sheets; preliminary sizing and type of construction for buildings and structures; and rough quantities of utilities required. The Permittee shall evaluate each alternative in the four following areas:

1. Technical

The Permittee shall evaluate each corrective measure alternative based on performance, reliability, implementability and safety.

a. The Permittee shall evaluate performance based on the effectiveness and useful life of the corrective measure:

- i) Effectiveness shall be evaluated in terms of the ability to perform intended functions such as containment, diversion, removal, destruction, or treatment. The effectiveness of each corrective measure shall be determined either through design specifications or by performance evaluation. Any specific waste or site characteristics which could potentially impede effectiveness shall be considered. The evaluation should also consider the effectiveness of combinations of technologies; and
- ii) Useful life is defined as the length of time the level of effectiveness can be maintained. Most corrective measure technologies, with the exception of destruction, deteriorate with time. Often, deterioration can be slowed through proper system operation and maintenance, but the technology eventually may require replacement. Each corrective measure shall be evaluated in terms of the projected service lives of its component technologies. Resource availability in the future life of the technology, as well as appropriateness of the technologies, must be considered in estimating the useful life of the project.

- b. The Permittee shall provide information on the reliability of each corrective measure including their operation and maintenance requirements and their demonstrated reliability:
  - i) Operation and maintenance requirements include the frequency and complexity of necessary operation and maintenance. Technologies requiring frequent or complex operation and maintenance activities should be regarded as less reliable than technologies requiring little or straightforward operation and maintenance. The availability of labor and materials to meet these requirements shall also be considered; and
  - ii) Demonstrated and expected reliability is a way of measuring the risk and effect of failure. The Permittee should evaluate whether the technologies have been used effectively under analogous conditions; whether the combination of technologies have been used together effectively; whether failure of any one technology has an immediate impact on receptors; and whether the corrective measure has the flexibility to deal with uncontrollable changes at the site.
- c. The Permittee shall describe the implementability of each corrective measure including the relative ease of installation (constructibility) and the total time required to achieve a given level of response:
  - i) Constructibility is determined by conditions both internal and external to the facility conditions and includes such items as location of underground utilities, depth to water table, heterogeneity of subsurface materials, and location of the facility (i.e., remote location vs. a congested urban area). The Permittee shall evaluate what measures can be taken to facilitate construction under these conditions. External factors which affect implementation include the need for special permits or agreements, equipment availability, and the location of suitable off-site treatment or disposal facilities;
  - ii) Time has two components that shall be addressed: the time it takes to implement a corrective measure and the time it takes to actually see beneficial results. Beneficial results are defined as the reduction of contaminants to some acceptable, pre-established level.
- d. The Permittee shall evaluate each corrective measure alternative with regard to safety. This evaluation shall include threats to the safety of nearby communities and environments as well as those to workers during implementation. Factors to consider include fire, explosion, and exposure to hazardous substances.

2. Environmental

The Permittee shall perform an Environmental Assessment for each alternative. The Environmental Assessment shall focus on facility conditions and pathways of contamination actually addressed by each alternative. The Environmental Assessment for each alternative will include, at a minimum, an evaluation of: the short- and long-term beneficial and adverse effects of the response alternative; any adverse effects on environmentally sensitive areas; and an analysis of measures to mitigate adverse impacts.

3. Human Health

The Permittee shall assess each alternative in terms of the extent which it mitigates short- and long-term potential exposure to any residual contamination and protects human health both during and after implementation of the corrective measure. The assessment will describe the levels and characterizations of contaminants on-site, potential exposure routes, and potentially affected populations. Each alternative will be evaluated to determine the level of exposure to contaminants and the reduction over time. For management of mitigation measures, the relative reduction of impact will be determined by comparing residual levels of each alternative with existing criteria, standards, or regulations acceptable to the Administrative Authority.

4. Institutional

The Permittee shall assess relevant institutional needs for each alternative. Specifically, the effects of Federal, State, and local environmental and public health standards, regulations, guidance, advisories, ordinances, or community relations on the design, operation, and timing of each alternative.

B. Cost Estimate

The Permittee shall develop an estimate of the cost of each corrective measure alternative (and for each phase or segment of the alternative). The cost estimate shall include capital, and operation and maintenance costs.

1. Capital costs consist of direct (construction) and indirect (nonconstruction and overhead) costs.

a. Direct capital costs include:

- i) Construction costs: Cost of materials, labor (including fringe benefits and worker's compensation), and equipment required to install the corrective measure alternative.
- ii) Equipment costs: Costs of treatment, containment, disposal and/or service equipment necessary to implement the action; these materials remain until the corrective action is completed;

- iii) Land and site development costs: Expenses associated with purchase of land and development of existing property; and
- iv) Building and services costs: Costs of process and nonprocess buildings, utility connections, purchased services, and disposal costs.

b. Indirect capital costs include:

- i) Engineering expenses: Costs of administration, design construction supervision, drafting, and testing of corrective measure alternatives;
- ii) Legal fees and license or permit costs: Administrative and technical costs necessary to obtain licenses and permits for installation and operation;
- iii) Start-up and shakedown costs: Costs incurred during corrective measure start-up; and
- iv) Contingency allowances: Funds to cover costs resulting from unforeseen circumstances, such as adverse weather conditions, strikes, and inadequate facility characterization.

2. Operation and maintenance costs are post-construction costs necessary to ensure continued effectiveness of a corrective measure. The Permittee shall consider the following operation and maintenance cost components:

- a. Operating labor costs: Wages, salaries, training, overhead, and fringe benefits associated with the labor needed for post-construction operation;
- b. Maintenance materials and labor costs: Costs for labor, parts, and other resources required for routine maintenance of facilities and equipment;
- c. Auxiliary materials and energy: Costs of such items as chemicals and electricity for treatment plant operations, water and sewer service, and fuel;
- d. Purchased services: Sampling costs, laboratory fees, and professional fees for which the need can be predicted;
- e. Disposal and treatment: Costs of transporting, treating, and disposing of waste materials, such as treatment plant residues generated during operation;
- f. Administrative costs: Costs associated with administration of corrective measure operation and maintenance not included under other categories;

- g. Insurance, taxes, and licensing costs: Costs of such items as liability and sudden accidental insurance; real estate taxes on purchased land or rights-of-way; licensing fees for certain technologies; and permit renewal and reporting costs;
- h. Maintenance reserve and contingency funds: Annual payments into escrow funds to cover (1) costs of anticipated replacement or rebuilding of equipment and (2) any large unanticipated operation and maintenance costs; and
- i. Other costs: Items that do not fit any of the above categories.

TASK VIII. JUSTIFICATION AND RECOMMENDATION OF THE CORRECTIVE MEASURE OR MEASURES

The Permittee shall justify and recommend a corrective measure alternative using technical, human health, and environmental criteria. This recommendation shall include summary tables which allow the alternative or alternatives to be understood easily. Trade-offs among health risks, environmental effects, and other pertinent factors shall be highlighted. The Administrative Authority will select the corrective measure alternative or alternatives to be implemented based on the results of Tasks VIII and IX. At a minimum, the following criteria will be used to justify the final corrective measure or measures.

A. Technical

1. Performance - corrective measure or measures which are most effective at performing their intended functions and maintaining the performance over extended periods of time will be given preference;
2. Reliability - corrective measure or measures which do not require frequent or complex operation and maintenance activities and have proven effective under waste and facility conditions similar to those anticipated will be given preference;
3. Implementability - corrective measure or measures which can be constructed and operated to reduce levels of contamination to attain or exceed applicable standards in the shortest period of time will be preferred; and
4. Safety - corrective measure or measures which pose the least threat to the safety of nearby residents and environments as well as workers during implementation will be preferred.

B. Human Health

The corrective measure or measures must comply with existing U.S. EPA criteria, standards, or regulations for the protection of human health. Corrective measures which provide the minimum level of exposure to contaminants and the maximum reduction in exposure with time are preferred.

C. Environmental

The corrective measure or measures posing the least adverse impact (or greatest improvement) on the environment over the shortest period of time will be favored.



TASK IX: REPORTS

The Permittee shall prepare a Corrective Measure Study Report presenting the results of Tasks VII through IX recommending a corrective measure alternative. Two (2) copies and one compatible disk copy of the draft and final reports shall be provided to the the Administrative Authority by the Permittee.

A. Progress

The Permittee shall at a minimum provide the Administrative Authority with signed quarterly progress reports containing:

1. A description and estimate of the percentage of the CMS completed;
2. Summaries of contacts relevant to corrective action with representatives of the local community, public interest groups or State government during the reporting period;
3. Summaries of problems or potential problems relevant to corrective action encountered during the reporting period;
4. Actions being taken to rectify problems;
5. Changes in key project personnel during the reporting period;
6. Projected work for the next reporting period; and
7. Summaries of changes made in the CMS during the reporting period.

B. Draft

The Report shall at a minimum include:

1. A summary of the corrective measure or measures and rationale
  - a. Description of the corrective measure or measures and rationale for selection;
  - b. Performance expectations;
  - c. Preliminary design criteria and rationale;
  - d. General operation and maintenance requirements;
  - e. Long-term monitoring requirements

2. Design and Implementation Precautions:
  - a. Special technical problems;
  - b. Additional engineering data required;
  - c. Permits and regulatory requirements;
  - d. Access, easements, right-of-way;
  - e. Health and safety requirements; and
  - f. Community relations activities.
3. Cost Estimates and Schedules:
  - a. Capital cost estimate;
  - b. Operation and maintenance cost estimate; and
  - c. Project schedule (design, construction, operation).

C. Final

The Permittee shall finalize the Corrective Measure Study Report incorporating comments received from the Administrative Authority on the Draft Corrective Measure Study Report.

## Appendix I

<u>SWMU #</u>	<u>Unit</u>
6-1	Landfill 1
6-2	Landfill 2
6-3	Landfill 3
6-4	Landfill 4
6-5	Landfill 6
6-6	Landfill A
6-7	Landfill B
6-8	Landfill C
6-10	Abandoned Landfill
6-16	Kirtland Fire Control Training Area
6-17	2 Drains at Kirtland Fire Control Training Area
6-19	Detonation Pit EOD Range
6-24	Manzano Sludge Drying Beds
6-25	" Sewage Overflow Lagoon 1
6-26	" " " " 2
6-27	" " " " 3
6-28	" " " " 4
6-29	Manzano Dump
6-30	Radioactive Burial Site #11
8-35	Waste Oil Storage Tank
10-3	Building 20215- Tank T- 20214
10-4	Building 1016- Tank T- 02413
10-5	Building 1061- Tank T- 02412

Appendix II

<u>SWMU #</u>	<u>Unit</u>
6-11	Fill Area Southeast of Kirtland Sewer Lagoons
6-15	Unnamed Dump
6-22	Lake Christian
8-5	Oil/Water Separator
8-6	Silver Recovery Unit
8-13	Building 1001 and 1002 - Oil/Water Separator
8-26	Building 1063- Oil/Water Separator
8-28	" 20338- " " "
8-29	" 20344- " " "
8-31	" 20348- " " "
8-47	" 20423- " " "
8-55	" 20687 - CE Wash Rack Drain Field
9-14	" 617 - Piping Trench
9-15	" " - Dilution Pit
9-16	" " - Dilution Pond
10-7	10-20 - Oil/Water Separators

<u>AOC</u>	<u>Unit</u>
6-A	Radioactive Burial Sites
6-C	Mine Shafts

Appendix III

<u>SWMU #</u>	<u>Unit</u>
6-14	Treated Sewage Effluent Transmission Line
6-18	Jet Engine Burn Area Near Fire Control Training Area
8-41	Building 20423 - Waste Battery Storage Area
8-49	" 20427 - Fuel Shop Battery Storage Area
8-58	" 57007 - Battery Storage Area
9-4	" 617 - Waste Accumulation Area
9-20	" 909 - Inactive Waste Accumulation Area
10-1	Sanitary Sewer System
10-2	Storm Sewer System
10-21	10-53 - Septic Tank System

<u>AOC</u>	<u>Unit</u>
6.B	Dirt Mounds
6.E.	Rocket Impact Zone