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 DALLAS, TX 75202-2733

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CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Ms. Kathleen M. Sisneros, Director
 Water and Waste Management Division
 New Mexico Environment Department
 P. O. Box 26110
 Santa Fe, NM 87502

Dear Ms. Sisneros:

I have enclosed the Hazardous and Solid Waste Amendments (HWA) permit for Kirtland Air Force Base as revised following a Class III permit modification.

If you have any questions, please contact Mr. David Neleigh of my staff at (214) 655-6785. After August 1, 1994, you may contact him at (214) 665-6785.

Sincerely yours,

Allyn M. Davis

Allyn M. Davis, Director
 Hazardous Waste Management Division

Enclosure (1)

KAFB1465



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MODULE IV
SPECIAL CONDITIONS PURSUANT TO THE 1984 HAZARDOUS AND SOLID WASTE
AMENDMENTS TO RCRA FOR U.S. KIRTLAND AIR FORCE BASE
EPA I.D. No: NMD9570024423

A. DEFINITIONS

For purposes of this Module, 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.

B. SPECIFIC CONDITIONS

1. Waste Minimization

The Permittee shall submit a certified plan in writing annually by December 1, for the previous year ending September 30, 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 operation to the degree determined to be economically practicable; and 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. This certified plan must address the items listed below:
 - i). Any written policy or statement that outlines goals, objectives, and/or methods for source reduction and recycling of hazardous waste at the facility;
 - ii). Any employee training or incentive programs designed to identify and implement source reduction and recycling opportunities;
 - iii). Any source reduction and/or recycling measures implemented in the last five years or planned for the near future;
 - iv). An itemized list of the dollar amounts of capital expenditures (plant and equipment) and operating costs devoted to source reduction and recycling of hazardous waste;
 - v). Factors that have prevented implementation of source reduction and/or recycling;
 - vi). Sources of information on source reduction and/or recycling received at the facility (e.g., local government, trade associations, suppliers, etc.);
 - vii). An investigation of additional waste minimization efforts which could be implemented

at the facility. This investigation shall analyze the potential for reducing the quantity and toxicity of each waste stream through production, reformulation, recycling, and all other appropriate means. The analysis shall include an assessment of the technical feasibility, cost and potential waste reduction for each option;

- viii). The Permittee shall submit a flow chart or matrix detailing all hazardous wastes it produces, by quantity and type and by building/area;
- ix). The Permittee shall demonstrate the need to use those processes which produce a particular hazardous waste due to a lack of alternative processes, available technology, or available alternative processes that would produce less volume of toxic waste;
- x). The Permittee shall demonstrate the applicability/inapplicability of the following waste minimization techniques:
 - a. When removing coating from parts (Stripping Wastes) before applying a new coat, avoid the use of:
 - 1. Excess thinner,
 - 2. Abrasive media stripping,
 - 3. Bead-blasting for paint stripping, and
 - 4. Clean coating equipment after each use.
 - b. When using solvents (Spent Solvent Wastes) for parts cleaning operations:
 - 1. The use of water-soluble cutting fluids instead of oil-based fluids,
 - 2. Use of bead blasting for paint-stripping,
 - 3. The prevention of cross-contaminations,
 - 4. Use of peel coatings in place of protective oils, and
 - 5. Reduce the number of different solvents.
- xi). The Permittee shall demonstrate the applicability/inapplicability of a 50% reduction of hazardous waste streams on the Base (including tenants) within 5 years of the effective date of the Permit.

The Permittee shall include this certified plan 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. 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.

4. 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 the 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.

5. 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 Environment Department.

6. 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.

7. 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. SPECIAL PERMIT CONDITIONS

1. Ground Water Sampling of Existing Wells

- a). Within thirty (30) days of the effective date of the permit, the Permittee shall sample ground water monitoring wells DM-01, DM-02, the newly-installed ground water monitoring well on the west end of the facility, and the NMED monitoring well just outside the west boundary of Kirtland. These wells shall be sampled for Appendix IX constituents, nitroglycerine, RDX, nitrates and Ph. The sampling and analysis program of the above mentioned wells shall follow/be equivalent to the requirements of the RCRA Ground-Water Technical Enforcement Guidance Document, September 1986. For those non-Appendix IX constituents (nitroglycerine, RDX, and nitrates), the Permittee shall use the below methods to analyze ground water samples:

Nitrate - Method 9200 in SW-846;

RDX - USATHAMA method 97.1;

2,4-Dinitrotoluene, 2,6-Dinitrotoluene -
USATHAMA Method 87.2

Nitroglycerin - USATHAMA method "Determination of PETN and Nitroglycerin in Water by High Pressure Liquid Chromatography." The laboratory must be experienced in analysis of samples using this or similar USATHAMA methods.

- b). Within 120 days of the effective date of the permit, the Permittee shall submit to the Administrative Authority analytical results from the sampling of those wells required in Permit Condition C.1(a). The Permittee shall also include with those analytical results the static water level referenced to mean sea level.

2. Installation of Ground Water Monitoring Wells

- a). Within ninety (90) days of the effective date of this permit, the Permittee shall submit to the Administrative Authority a ground water monitoring well installation plan for the installation of ground water wells around Landfill 1, Landfill 2, and the McCormick Range/Ranch area. This required plan shall at a minimum include the following:

- i). A minimum of four (4) hydraulically downgradient wells around each landfill/area (as required by

the above condition);

- ii). Wells be screened in the uppermost aquifer;
 - iii). Screen lengths no longer than 20 to 25 feet;
 - iv). Upgradient and background well designations;
 - v). Monitoring well locations, design and construction, and schedules for installation and sampling;
 - vi). Monitoring well sampling procedures and analyses; and
 - vii). Statistical Analysis method.
- b). Within ninety (90) days of the effective date of this permit, the Permittee shall submit a soil sampling plan/investigation addressing runoff areas/drainages from Landfills 1 and 2, and the areas within the Tijeras Arroyo floodplain and channel. This plan shall, at a minimum, address the following:
- i). Locations of all proposed borings;
 - ii). Sampling intervals, depths, and constituents to be analyzed;
 - iii). Field sampling procedures, collection, preservation, chain of custody, and handling;
 - iv). Statistical Analysis of those samples;
 - v). Analytical procedures and detection limits;
 - vi). Field and laboratory Quality Assurance/Quality Control;
 - vii). Background soil samples discussion; and
 - viii). Soil sampling schedule.

After the Permittee submits the above required Work Plans, the Administrative Authority will either approve, disapprove, or modify the Work Plans in writing.

If the Administrative Authority disapproves a Work Plan, the Administrative Authority will notify the Permittee, in writing, of the Work Plan's deficiencies and specify a due date for submittal of a revised Plan. If this revised Work Plan is not approved, the Administrative Authority may

revise the Work Plan and notify the Permittee of the revisions. This modified Work Plan becomes the approved Workplan. All approved Work Plans become a part of this Permit. Submission of inadequate or insufficient information, or submission of grossly deficient Work Plans (required under special permit conditions) will be considered a permit violation and may subject the Permittee to enforcement action under Section 3008 of RCRA.

D. 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 Module, 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 Module 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:

Mr. William K. Honker
Chief, RCRA Permits Branch
U.S. EPA, Region 6
Hazardous Waste Division
1445 Ross Avenue
Dallas, Texas 75202-2733

Ms. Kathleen Sisneros, Director
Water and Waste Management Division
New Mexico 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 Module 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 or .42.

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 Module, or changes to that which is stated herein, are warranted, the Administrative Authority may modify the Module either according to procedures in Section P 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 Module shall be maintained at the facility during the term of this Permit, including any reissued Permits.

E. 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 Module, 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
 - d). 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 Administrative Authority upon request.
3. As specified under Permit Conditions F, G, or K, the Administrative Authority 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.

F. 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 may 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 Work Plan under Permit Condition IV.H. of this Module.

G. 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 by the Administrative Authority for approval as part of the RFI Work Plan.

H. RCRA FACILITY INVESTIGATION (RFI) WORK PLAN

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 Work Plan 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 Work Plan 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 Work Plan 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 Work Plan 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 Work Plans shall describe the objectives of the investigations and the overall technical and analytical approach to completing all actions necessary to characterize the nature, 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 Work Plans 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 R.
 - b). In addition, the Work Plans 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 Work Plans, the Administrative Authority will either approve or disapprove the Work Plans in writing.

If the Administrative Authority disapproves a Work Plan, the Administrative Authority will notify the Permittee, in writing, of the work plan deficiencies and specify a due date for submittal of a revised Plan. If this Work Plan is not approved, the Administrative Authority may revise the Work Plan and notify the Permittee of the revisions. This modified Work Plan becomes the Approved RFI Work Plan. All approved Work Plans become a part of this permit.

4. The Administrative Authority will review for approval as part of the RFI Work Plan any plans developed pursuant to Permit Condition H, addressing further investigations of newly-identified SWMUs, or Section G, addressing new releases from previously-identified units. The Regional Administrator will modify this Module according to procedures in the Permit, or according to procedures under 40 CFR 270.41, to incorporate these units and releases into the RFI Work Plan.

I. RCRA FACILITY INVESTIGATION WORKPLAN IMPLEMENTATION

Upon receipt of written approval from the Administrative Authority for the RFI Work Plan, the Permittee shall begin implementation of the RCRA Facility Investigation according to the Schedules specified in the RFI Work Plan. The RFI shall be conducted in accordance with the approved RFI Work Plan. The Permittee shall prepare the RFI Work Plan and undertake the facility investigation in accordance with the following:

1. Development of the RFI Work Plan 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 NMED reserve the right to split samples. The Permittee shall notify EPA and NMED 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 Work Plan 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.

J. RCRA FACILITY INVESTIGATION FINAL REPORT AND SUMMARY REPORT

1. Within ninety (90) calendar days after the completion of the RFI field work, or as specified by the Administrative Authority in the RFI Work Plan approval, 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 Work Plan. 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 will either approve or disapprove the Reports in writing.

If the Administrative Authority approves 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)(ix), 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 disapproves the Reports, the Administrative Authority will notify the Permittee in writing of the Reports' deficiencies and specify a due date for submittal of a revised Final and Summary Report, and once approved, shall be mailed to all individuals on the facility mailing list.

K. INTERIM MEASURES

1. If during the course of any activity initiated under this Module, 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 will determine the specific measure, including potential permit modifications and the schedule for implementing the required measures. The Administrative Authority will notify the Permittee in writing of the requirement to perform such interim measures. The Administrative Authority will modify the Module either according to procedures in 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.

L. 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 this Module. 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 this Module according to procedures in Section P. 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.

M. 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 S.

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 plan is not approved, the Administrative Authority may revise the Plan and notify the Permittee of the revisions. This Administrative Authority revised Plan becomes the approved Plan.

N. 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. The CMS shall be conducted in accordance with the approved Plan.

O. CORRECTIVE MEASURES STUDY FINAL REPORT

1. Within sixty (60) calendar days after the completion of the CMS, or as specified by the Administrative Authority, 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.
2. If the Administrative Authority determines that the CMS Final Report does not fully satisfy the information requirements specified under Permit condition IV.O.1., the Administrative Authority may disapprove the CMS Final Report. If the Administrative Authority disapproves the Final Report, the Administrative Authority will 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.

P. MODIFICATION OF THIS MODULE

1. If at any time the Administrative Authority determines that modification of this Module is necessary, he or she may initiate a modification to this Module according to the

procedures of this Section. If the Administrative Authority initiates a modification, he or she will:

- 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)(ix), 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.
 - i). 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.
 - ii). If the Administrative Authority receives written comment on the proposed modification, the Administrative Authority will make a final determination concerning the modification after the end of the comment period.
 - c). Notify the Permittee in writing of the final decision.
 - i). 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 Module in the information repository, if a repository is required for the facility.
 - ii). If written comment was received, the Administrative Authority will provide notice of the final modification decision in a locally distributed newspaper and place a copy of the modified Module 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 this Module do not constitute a reissuance of the Permit.

Q. FACILITY SUBMISSION SUMMARY

Below is a summary of the planned reporting requirements pursuant to this Module.

<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) days after effective date of permit
Preliminary Report, Description of Current Conditions	One hundred eighty (180) calendar days from effective date of permit
SWMU Assessment Plan for newly-identified SWMUs	Ninety (90) calendar days after completion of implementation of SWMU Assessment Plan
Revised SWMU Assessment Plan	As determined
SWMU Assessment Report	Sixty (60) calendar days after completion of implementation of SWMU Assessment Plan
RFI Work Plan for SWMU(s) identified at time of permit issuance	One hundred eighty (180) calendar days after the effective date of the permit
Revised RFI Work Plan	As determined by the Administrative Authority (usually within 30 days of receipt of NOD)
Draft RFI Report and Summary Report	Ninety (90) calendar days after completion of RFI field work (includes receipt of QA/QC data), or as specified by the Administrative Authority

Revised RFI Report and Summary Report	As specified by the Administrative Authority
Sampling of existing groundwater wells	Within thirty (30) calendar days of the effective date of the permit
Groundwater Installation and Soil Sampling Plans	Within ninety (90) calendar days of the effective date of the permit
Submit analytical results from sampling of existing wells	Within one hundred twenty (120) calendar days of the effective date of the permit
Interim Measures Plan for interim measures required after permit issuance	As specified by the Administrative Authority
Revised Interim Measures Plan	As specified by the Administrative Authority
CMS Plan	Ninety (90) calendar days after notification of requirement to perform a CMS, or as specified by the Administrative Authority
Revised CMS Plan	As specified by the Administrative Authority
CMS Report	Sixty (60) calendar days after completion of CMS
Revised CMS Report	As specified by the Administrative Authority

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

1. Purpose

The purpose of the RCRA Facility Investigation is to determine the nature and extent of releases of hazardous wastes 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.

2. Scope

The RFI consists of five tasks:

a). Task I - Description of Current Conditions

- i). Facility Background
- ii). Nature and Extent of Contamination

b). Task II - RFI Work Plan

- i). Data Collection Quality Assurance Plan
- ii). Data Management Plan
- iii). Health and Safety Plan
- iv). Community Relations Plan

c). Task III - Facility Investigation

- i). Environmental Setting
- ii). Source Characterization
- iii). Contamination Characterization
- iv). Potential Receptor Identification

d). Task IV.- Investigative Analysis

- i). Data Analysis
- ii). Protection Standards

e). Task V - Reports

- i). Preliminary and Work Plan
- ii). Progress
- iii). Draft and Final

3. 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 ongoing 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:

- i). 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, and drainage patterns;
 - d. all solid waste management units;
 - e. all known past solid or hazardous waste treatment, storage and disposal areas or units regardless of whether they were active on November 19, 1980;
 - f. surrounding land uses (residential, commercial, agricultural, recreational);
 - g. the location of all production and ground water monitoring wells. These wells shall be clearly labeled and ground and top of casing elevations included (these elevations may be included as an attachment); and

- h. all available/applicable aerial photography locating the new SWMUs.

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.

- ii). A history and description of ownership and operation, solid and hazardous waste generation, treatment, storage and disposal activities at the facility.

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.

Documentation of all interim measures which were or are being undertaken at the facility other than those specified in this permit.

A reference to all environmental, geologic, and hydrogeologic studies performed by at and/or by the facility, with a short summary of the purpose, scope, and significant findings thereof.

A reference to 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.

- i). The Permittee's report shall summarize all possible source areas of contamination. This, at a minimum, should include all SWMUs. For each area, the Permittee shall identify the following:
 - a. location of unit/area 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.
- ii). 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:

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

4. Task II: RFI Work Plan Requirements

The Permittee shall prepare a RCRA Facility Investigation (RFI) Work Plan. This RFI Work Plan shall include the development of several plans, which shall be prepared concurrently. During the RFI, it may be necessary to

revise the RFI Work Plan to increase or decrease the detail of information collected to accommodate the facility-specific situation. This RFI Work Plan 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.

i). 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 those intended uses; and
- b. description of methods and procedures to be used to assess the precision, accuracy and completeness of the measurement data;

ii). Sampling and Field Measurements

The Sampling and 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 shall 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 measurement 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.
- iii). The Sample Analysis shall include:
- 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 system 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. This plan shall also provide the format to be used to present the raw data and conclusions of the investigation, such as;

- i). Data record;
- ii). Tabular displays; and
- iii). Graphical displays.

c). Health and Safety Plan

- i). The Permittee shall prepare a facility Health and Safety Plan, which shall include:
 - a. A facility description including availability of resources such as roads, water supply, electricity and telephone service;
 - b. A description of the known hazards and evaluation of the risks associated with each activity conducted;
 - c. A list of key personnel and alternatives responsible for site safety, response operations, and for protection of public health;
 - d. A delineation of the work area;
 - e. A description of levels of protection to be worn by personnel in the work area;
 - f. Established procedures to control site access;
 - g. A description of decontamination procedures for personnel and equipment;
 - h. Established site emergency procedures;
 - i. Emergency medical care for injuries and toxicological problems;
 - j. A description of the requirements for an environmental field monitoring program;
 - k. Specifications for any routine and special training requirements for responders; and
 - l. Established procedures for protecting workers from weather-related problems.
- ii). 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 29 CFR 1910 and 1926;
- g. State and local regulations; and
- h. Other EPA guidance as provided.

d). Community Relations Plan

Permittee shall prepare a Community Relations Plan (CRP) as part of the RFI which allows for public participation in the RFI process. The CRP shall include:

- i). The establishment of the Greater Albuquerque/Kirtland Environmental Working Group as part of the CRP;
- ii). Establishing an active mailing list of interested parties (to be updated annually), including those on the official facility mailing list who wish to be on Kirtland's list;
- iii). Informal meetings, including briefings and workshops as appropriate, with the public and local officials before and during the RFI process, which include activities associated with the RFI Work Plan and RFI Report;
- iv). News releases, fact sheets, approved RFI Work Plans, RFI final reports, Permit Special Conditions Reports and publicly available quarterly progress reports that explain the progress and conclusions of the RFI;
- v). Creation of a public information repository and reading room;
- vi). Updates of materials in the information repository and public reading rooms; and
- vii). Public tours and briefings to inform and listen informally to public concerns and answer individual questions.

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.

5. 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:

i). 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 ground water 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 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 a part of the migration pathways identifying; and
 - 1. unconsolidated sand and gravel deposits;
 - 2. zones of fracturing or channeling in consolidated or unconsolidated deposits; and
 - 3. zones of high permeability or low permeability that might direct and restrict the flow of contaminants.
- e. Based on data obtained from ground water monitoring wells and piezometers installed upgradient and downgradient of the potential contaminant source, a representative description of water level or fluid pressure monitoring.
- f. A description of man-made influences that may affect the hydrogeology of the site.

ii). 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 and USCS classifications of soils;
- c. Transects of soil stratigraphy;
- d. Saturated hydraulic conductivity;
- e. Porosity;
- f. Cation exchange capacity (CEC);
- g. Soil Ph;
- h. particle size distribution;
- i. Depth of water table;
- j. Moisture content;
- k. Effect of stratification on unsaturated flow;
- l. Infiltration;
- m. Evapotranspiration;
- n. Residual concentration of contaminants in soil; and
- o. 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 releases (e.g., facility security and engineered barriers). This shall include quantification of the following specific characteristics, at each source area:

- i). 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;
 - h. Method used to close the unit/disposal area;
and
 - i. Thorough evaluation of all available aerial photography and other records from the 1945 to 1990 period to aid in unit locations/characteristics.
- ii). 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 ground water, soils, surface water, sediment, and subsurface gas contamination when necessary to characterize contamination from a SWMU. The 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 media could not be affected by a release from a specific unit, a detailed justification for not investigating those media must be provided. The Permittee shall address the following types of contamination at the facility:

i). Ground Water Contamination

The Permittee shall conduct a ground water 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.).

ii). Soil Contamination

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

iii). 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;
- e. A description of the chemistry and radiochemistry of the contaminated surface waters and sediments. This includes determining Ph, total dissolved solids, specific contaminant concentrations, etc; and
- f. Identification of all major rainfall and runoff events during the 1941 to 1990 period which had the potential to transport runoff of hazardous constituents/waste downstream off the facility property.

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

iv). Air Contamination

The Permittee shall conduct an investigation to characterize 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.

v). Subsurface Gas

The Permittee shall provide information characterizing the nature, rate and extent of releases of reactive gases from the units. Such a program 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 the 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 required.

6. Task IV: Investigative Analysis

The Permittee shall prepare an analysis 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, ground water protection standards, etc.).

7. Task V: Reports

a). Preliminary and Work Plan

The Permittee shall submit to the Administrative Authority the Preliminary Report (Task I) and the RCRA Facility Investigation Work Plan (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:

- i). A description and estimate of the percentage of the RFI completed;
- ii). 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;
- iii). Summaries of problems or potential problems encountered during the reporting period;
- iv). Actions being taken to rectify problems;
- v). Changes in key project personnel during the reporting period;
- vi). Projected work for the next reporting period;
- vii). Summaries of all findings to date; and
- viii). 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 Work Plan (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)	180 days*
RFI Work Plan (Task II)	180 days
Draft RFI Report	Ninety (90) calendar days after completion of RFI field work (includes receipt of QA/QC data), or as specified by the Administrative Authority
Final (revised) RFI Report (Task III and IV)	As specified by the Administrative Authority
Progress reports on Tasks I- IV IV and interim measures	Quarterly

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

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

1. Purpose

The purpose of this Corrective Measures Study is to develop and evaluate corrective measures 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.

2. Scope

The Corrective Measure Study consists of four tasks:

- a). Task VI - Identification and Development of the Corrective Measure Alternative or Alternatives
 - i). Description of Current Situation
 - ii). Establishment of Corrective Action Objectives
 - iii). Laboratory and Bench-Scale Study
 - iv). Screening of Corrective Measures Technologies
 - v). Identification of the Corrective Measure Alternative or Alternatives
- b). Task VII - Evaluation of Corrective Measure Alternative(s)
 - i). Technical / Environmental / Human Health/Institutional
 - ii). Cost Estimate
- c). Task VIII - Justification and Recommendation of the Corrective Measure or Measures
 - i). Technical
 - ii). Human Health
 - iii). Environmental
- d). Task IX - Reports
 - i). Progress
 - ii). Draft
 - iii). Final

3. 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 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 the 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 ground water 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 similar 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 the testing, the Permittee shall evaluate the testing results to assess the technology or technologies with respect to 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 not feasible 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:

i). 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;

ii). 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 method, and land disposal (on/off site).

iii). 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 and 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.

4. 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 VI 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

i). 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:

1. 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

2. 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 operation and maintenance requirements and their demonstrated reliability:

1. Operation and maintenance requirements include the frequency and complexity of 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

2. Demonstrated and expected reliability is a way of measuring risk and effect of failure. The Permittee should evaluate whether 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 relative ease of installation (constructibility) and total time required to achieve a given level of response:
1. Constructibility is determined by conditions both internal and external to facility conditions and includes such items as location of underground utilities, depth to water table, heterogeneity of subsurface materials, and location of facility (i.e., remote location vs. congested urban area). The Permittee shall evaluate what measures can be taken to facilitate construction under site specific 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; and
 2. Time has two components to be addressed: the time it takes to implement a corrective measure and the time it takes to 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 measures 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.

ii). Environmental

The Permittee shall perform an Environmental Assessment for each alternative. The 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, evaluation of any adverse effects on environmentally sensitive areas, and an analysis of measures to mitigate adverse impacts.

iii). Human Health

The Permittee shall assess each alternative in terms of the extent to 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.

iv). 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 measures alternative and for each phase or segment of the alternative. The cost estimate shall include capital, and operation and maintenance costs.

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

a. Direct capital costs include:

1. Construction costs: Cost of materials, labor (including fringe benefits and worker's compensation), and equipment required to install the corrective measures alternative;
2. Equipment costs: Costs of treatment, containment, disposal and/or servicing of equipment used to implement the action; these materials remain until the corrective action is completed;
3. Land and site development costs: Expenses associated with purchase of land and development of existing property; and
4. Building and services costs: Costs of process and non-process buildings, utility connections, purchased services, and disposal costs.

b. Indirect capital costs include:

1. Engineering expenses: Costs of administration, design, construction, supervision, drafting, and testing of corrective measures alternatives;
2. Legal fees and license or permit costs: Administrative and technical costs necessary to obtain licenses and permits for installation and operation;
3. Start-up and shakedown costs: Costs incurred during corrective measure start-up; and

4. Contingency allowances: Funds to cover costs resulting from unforeseen circumstances such as adverse weather conditions, strikes, and inadequate facility characterization.
- ii). 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 measures 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.

5. 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 Task VIII and IX. At a minimum, the following criteria will be used to justify the final corrective measure or measures.

a). Technical

- i). Performance - Corrective measure or measures which are most effective at performing their intended functions and maintaining performance over extended periods of time will be given preference;
- ii). 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;
- iii). 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
- iv). 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 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 imposing the least adverse impact (or greatest improvement) on the environment over the shortest period of time will be preferred.

6. Task IX: Reports

The Permittee shall prepare a CMS Final Report and Summary 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 Administrative Authority by the Permittee.

a). Progress

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

- i). A description and estimate of the percentage of the CMS completed;
- ii). Summaries of contacts relevant to corrective action with representatives of local community, public interest groups or State government during the reporting period;
- iii). Summaries of problems or potential problems relevant to corrective action encountered during the reporting period;
- iv). Actions being taken to rectify problems;
- v). Changes in key project personnel during the reporting period;
- vi). Projected work for the next reporting period; and
- vii). Summaries of changes made in the CMS during the reporting period.

b). Draft

The Report shall at a minimum include:

- i). 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; and
 - e. Long-term monitoring requirements
 - ii). 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.
 - iii). Cost Estimates and Schedules:
 - a. Capital cost estimates;
 - b. Operation and maintenance cost estimate; and
 - c. Project schedule (design, construction, operation).
- c). Final

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

APPENDIX I

<u>SWMU #</u>	<u>UNIT</u>
6-1	Landfill 1
6-2	Landfill 2
6-3	Landfill 3
6-4	Landfills 4, 5, 6
6-7	Landfill A
6-8	Landfill B
6-10	Abandoned Landfill
6-16	Kirtland Fire Training Area (includes Kirtland Fire Control Training Area, FT-13; Jet Engine Burn Area Near Fire Control Training Area; and 2 Drains at Kirtland Fire Control Training Area)
6-19	Detonation Pit EOD Range
6-24	Manzano Sewage Treatment Facility (includes Manzano Sludge Drying Beds and Imhoff Tank; Manzano Sewage Overflow Lagoon 1; Manzano Sewage Overflow Lagoon 2; Manzano Sewage Overflow Lagoon 3; and Manzano Sewage Overflow Lagoon 4)
6-29	Manzano Dump
6-31	McCormick Range/Ranch
8-35	Waste Oil Storage Tank
10-3	Building 20215 - Tank T - 20215, the AAFES Service Station

APPENDIX II

<u>SWMU #</u>	<u>UNIT</u>
6-11	Fill Area Southeast of Kirtland Sewer Lagoons
6-15	Unnamed Dump
6-32	Manzano Fire Training Area
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	Building 20338 - Oil/Water Separator
8-29	Building 20344 - Oil/Water Separator
8-31	Building 20348 - Oil/Water Separator
8-47	Building 20423 - Oil/Water Separator
8-55	Building 20687 - CE Wash Rack Drain Field/French Drain (buried gravel trench)
9-14	Building 617 - Piping Trench
9-15	Building 617 - Dilution Pit
9-16	Building 617 - Dilution Pond
10-7	10-20 - Oil/Water Separators

APPENDIX III

<u>SWMU#</u>	<u>UNIT</u>
6-14	Treated Sewage Effluent Transmission Line
8-41	Building 20423 - Waste Battery Storage Area
8-49	Building 20427 - Fuel Shop Battery Storage Area
8-58	Building 57007 - Battery Storage Area
9-4	Building 617 - Waste Accumulation Area
9-20	Building 909 - Inactive Waste Accumulation Area
10-1	Sanitary Sewer System
10-2	Storm Sewer System
	A. Corrosion-Control Shop, Bldg. 842 (sand trap to drain field)
	B. Paint Shop, Bldg. 1001, Storm Drain
	C. Plating and Anodizing, Bldg. 1001, Storm Drain
	D. Propulsion Branch, Bldg. 336, Grease Trap to Storm Sewer
	E. Jet-Engine Test Cell, Bldg. 702, Washdown to Drainage Ditch
	F. H-3/H-53, Phase Dock, Bldg. 1000, Storm Sewer
	G. C-130, Maintenance Shop, Bldg. 1009, Storm Sewer
	H. Paint Shop, Bldg. 20681, Sanitary Sewer
	I. Line Division, Bldg. 1002, Oil/Water Separator to Storm Sewer
10-21	10-53 - Septic Tank System
8-53	Building 20681 (Paint Shop) rockbed next to the shop
ST-273	Septic Tank, Bldg. 618 (north)
ST-337	US Corps of Engineers Vehicle Maintenance Yard, Bldg. 20212
ST-338	Horizontal Dipole Drum Rack
WP-339	Contract Yard West of Building 57011
ST-340	Septic Tank Bldg. 57011
ST-341	Condensate Tank, Bldg. 1032

APPENDIX IV

SWMU#UNIT

6-30

Radioactive Burial Site #11 (RB-11)

6-A

Radioactive Burial Sites RB-4 through RB-9