FW 89-1

Administrative Record

FORT WINGATE DEPOT ACTIVITY, GALLUP, NEW MEXICO

Document No. 80-9

Fort Wingate DA, Gallup, New Mexico, Investigation and Evaluation of Underground Storage Tanks

U.S. Army Corps of Engineers, Omaha District

September 1989

INQUIRIES REGARDING THIS DOCUMENT AND/OR THE ADMINISTRATIVE RECORD FOR FORT WINGATE DEPOT ACTIVITY SHOULD BE MADE TO:
COMMANDER, TOOELE ARMY DEPOT, TOOELE, UTAH 84074

US Army Corps
of Engineers
Huntsville Division

FORT WINGATE DA

Gallup, New Mexico

Investigation and Evaluation of Underground Storage Tanks

September 1989

Prepared for:

Department of the Army
Corps of Engineers
Huntsville Division
106 Wynn Drive
Huntsville, Alabama 35807

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Omaha District
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Contents

INTRODUCTION

INTRODUCTION

On September 23, 1988, the Environmental Protection Agency published Title 40, Code of Federal Regulations, Part 280 (40 CFR 280). This regulation established specific requirements for the design, performance, and monitoring of both new and existing underground storage tanks (UST's). In order to comply with 40 CFR 280, the Army Material Command (AMC) tasked the U. S. Army Corps of Engineers, Huntsville Division (CEHND) with investigating all known UST'S at all installations under the U. S. Army Depot Systems Command (DESCOM) and the U. S. Army Armament Munitions and Chemical Command (AMCCOM). CEHND subsequently contracted with the U. S. Army Corps of Engineers, Omaha District, to conduct all field investigations and develop a program to bring these tanks into compliance with 40 CFR 280. As per the Scope of Work (SOW), the investigations and compliance plans focus primarily on UST's which qualify for funding under the Defense Environmental Restoration Account (DERA).

SCOPE OF STUDY

SCOPE OF STUDY

All known existing UST's, as defined by 40 CFR 280, were investigated. In addition, all heating oil tanks were investigated. Each investigation consisted of a site visit to each tank, compilation of tank data, collection of EPA Form 7530 or state registration form for each UST, and collection of installation data such as underground water tables, installation soils data, and tank location upon the installation. Based on the findings of the investigation, a compliance plan was developed for each installation., This plan addresses the actions required, the costs involved, and the compliance dates required to bring each DERA eligible UST into compliance with the applicable provisions of the regulation. Remedial actions will be based on source control only, not groundwater remediation.

UNDERGROUND STORAGE TANK

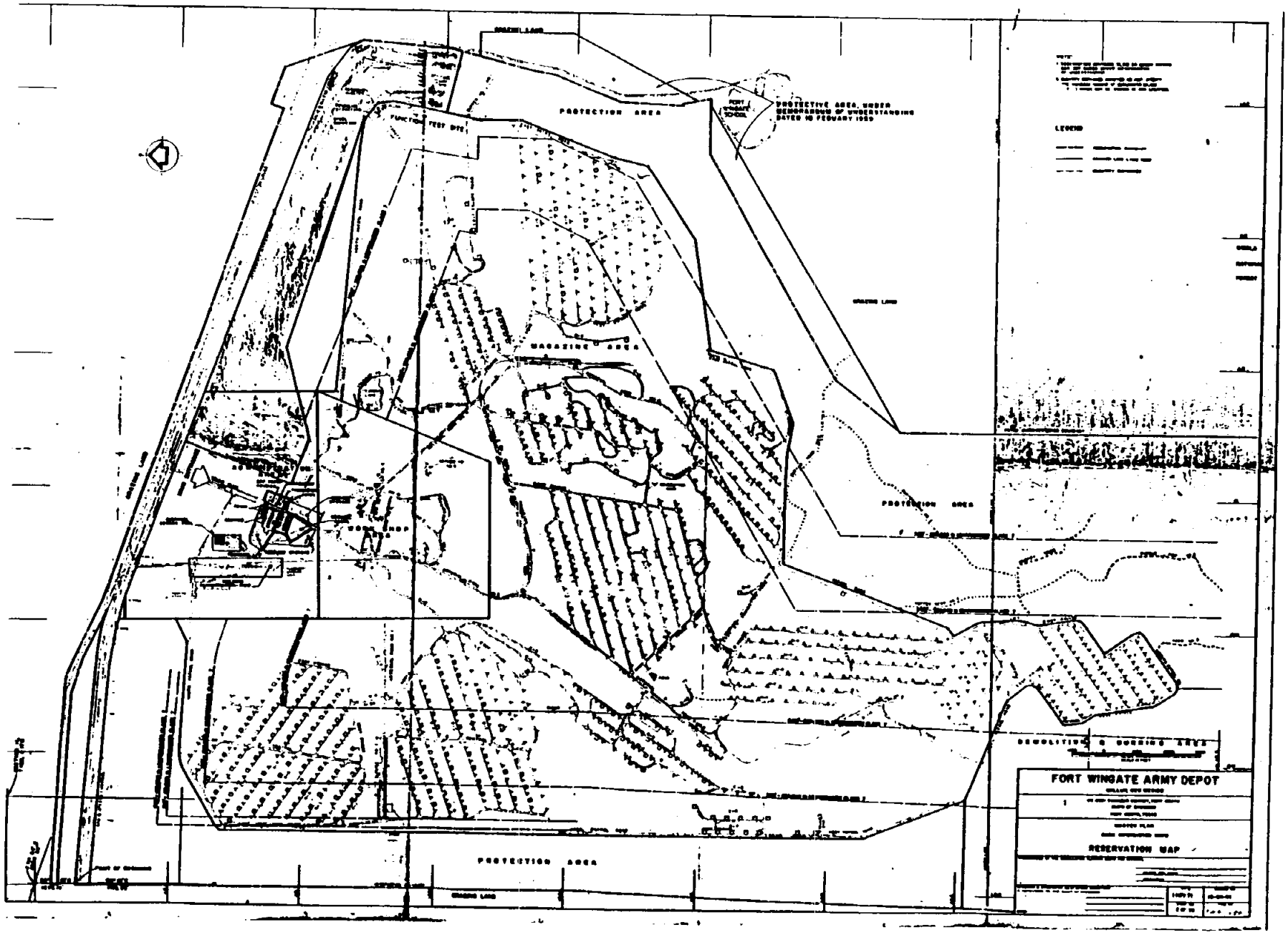
INVESTIGATION AND EVALUATION INVENTORY

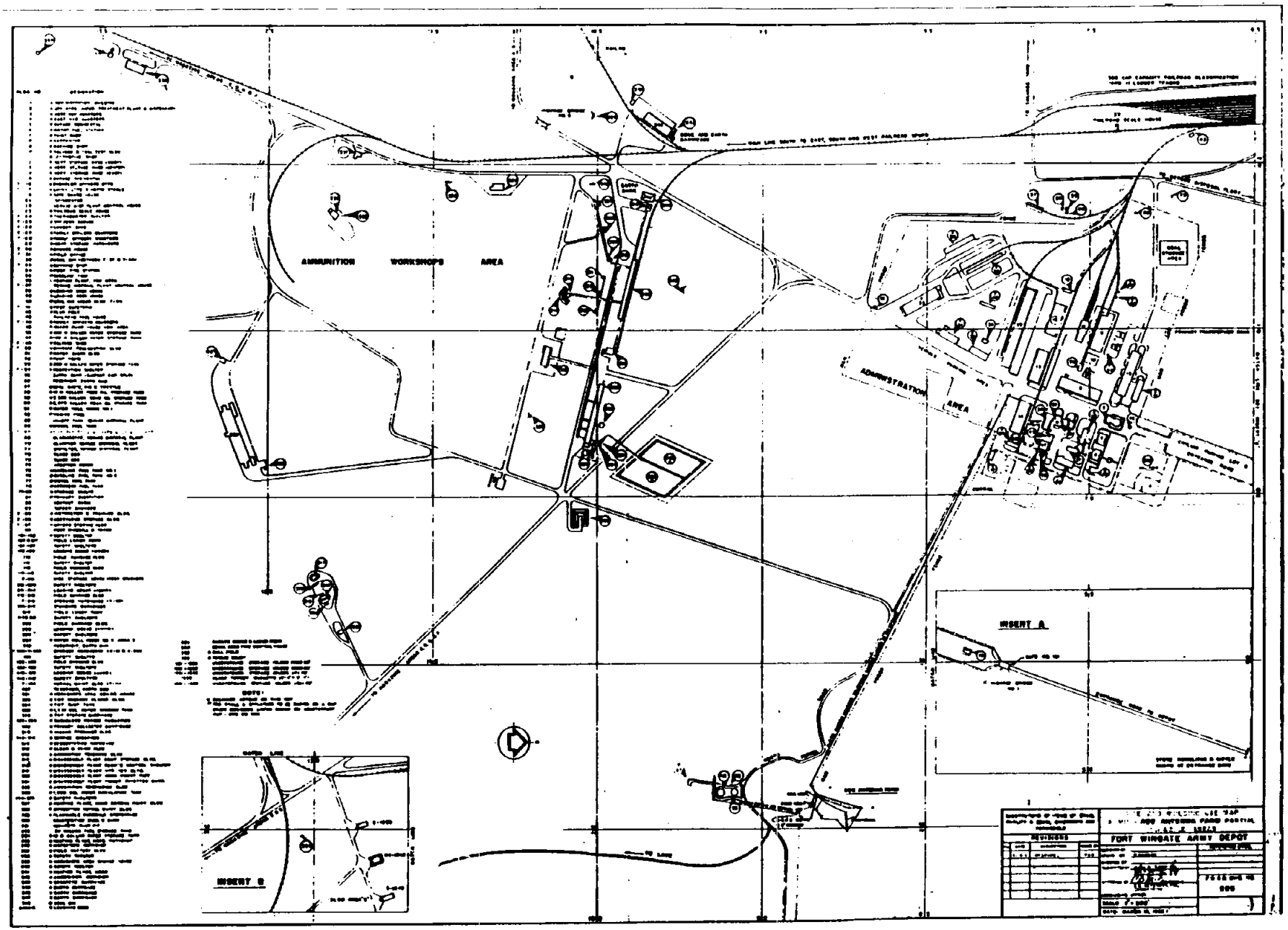
FORT WINGATE

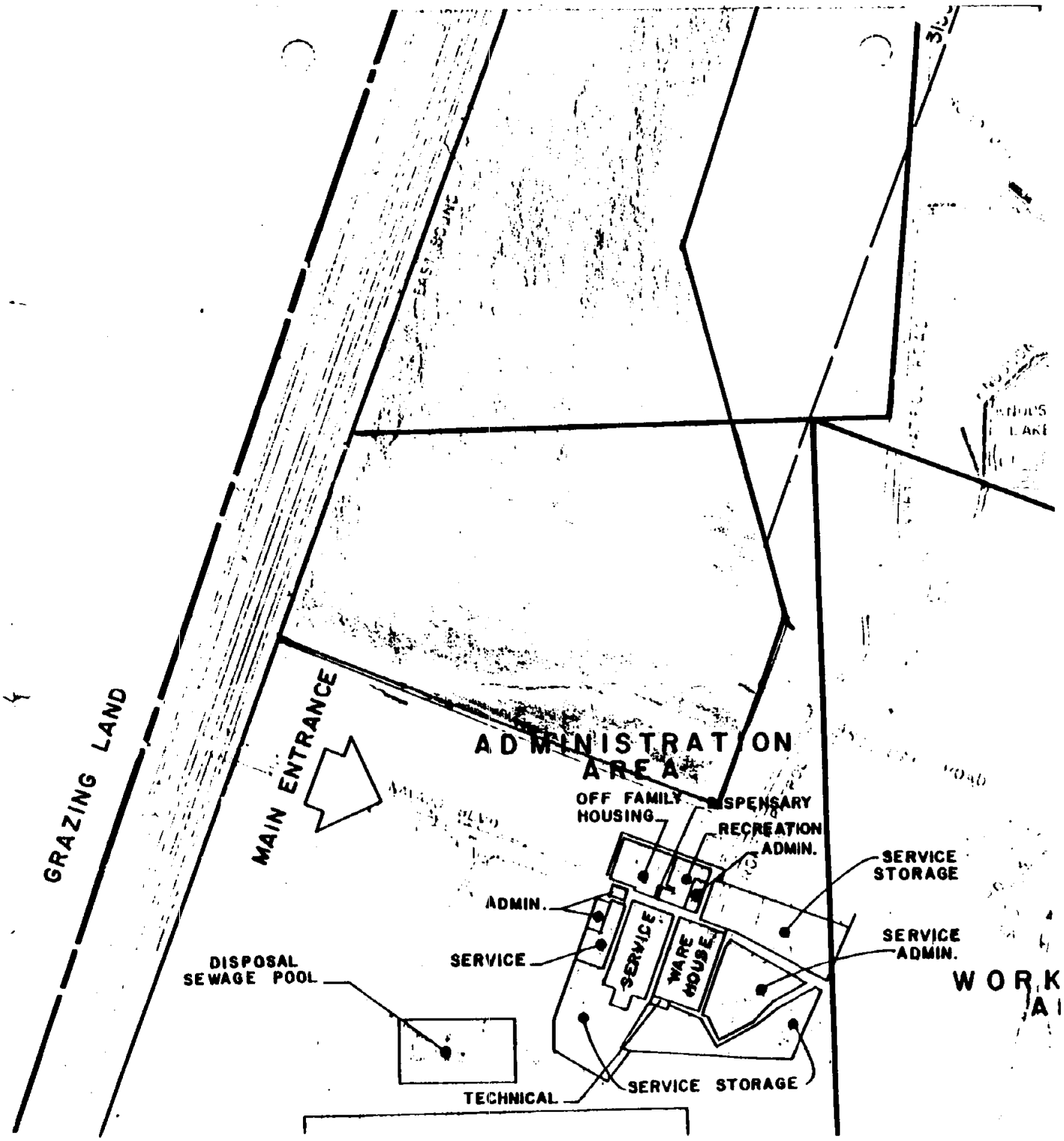
GALLUP, NEW MEXICO

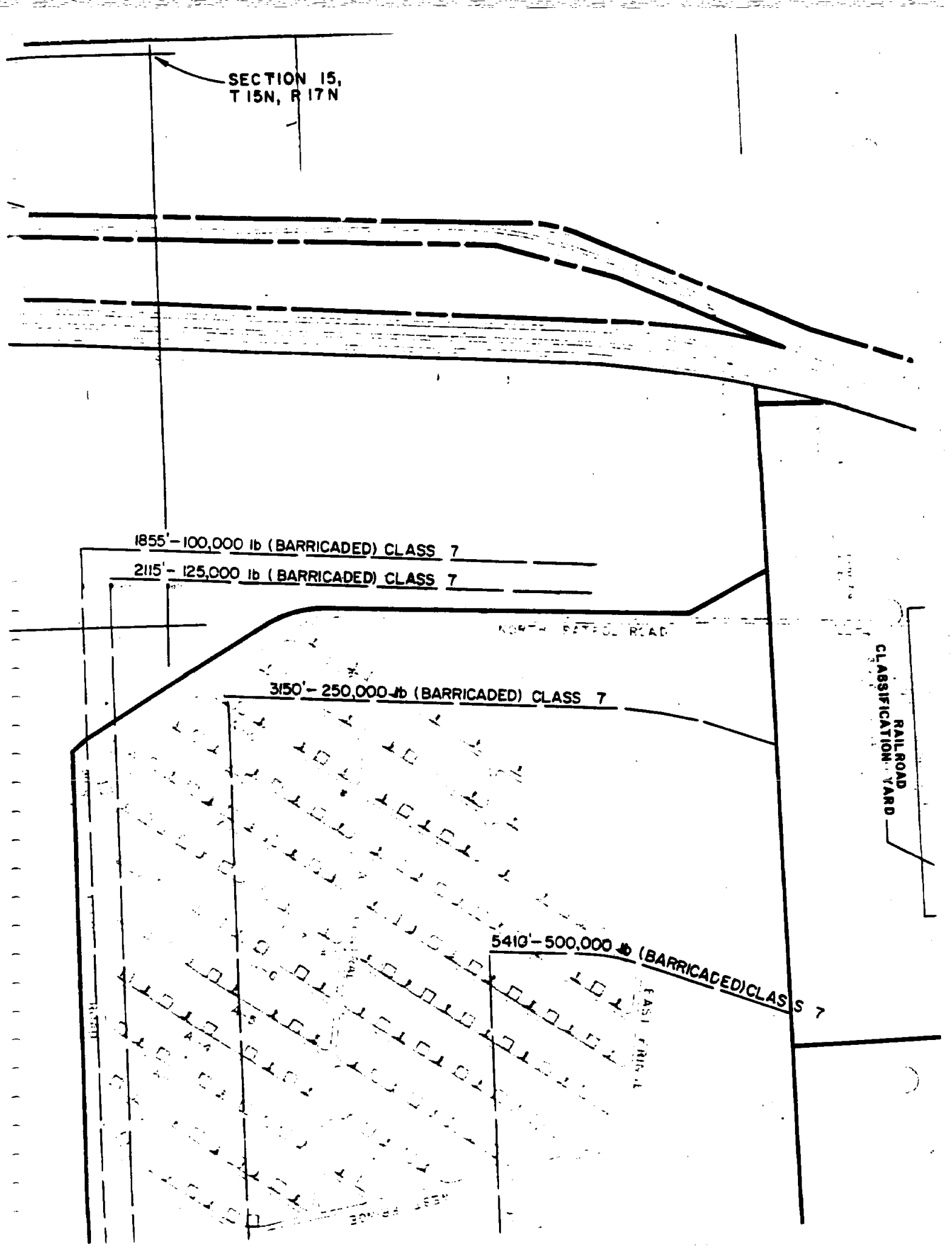
SEPTEMBER 1989

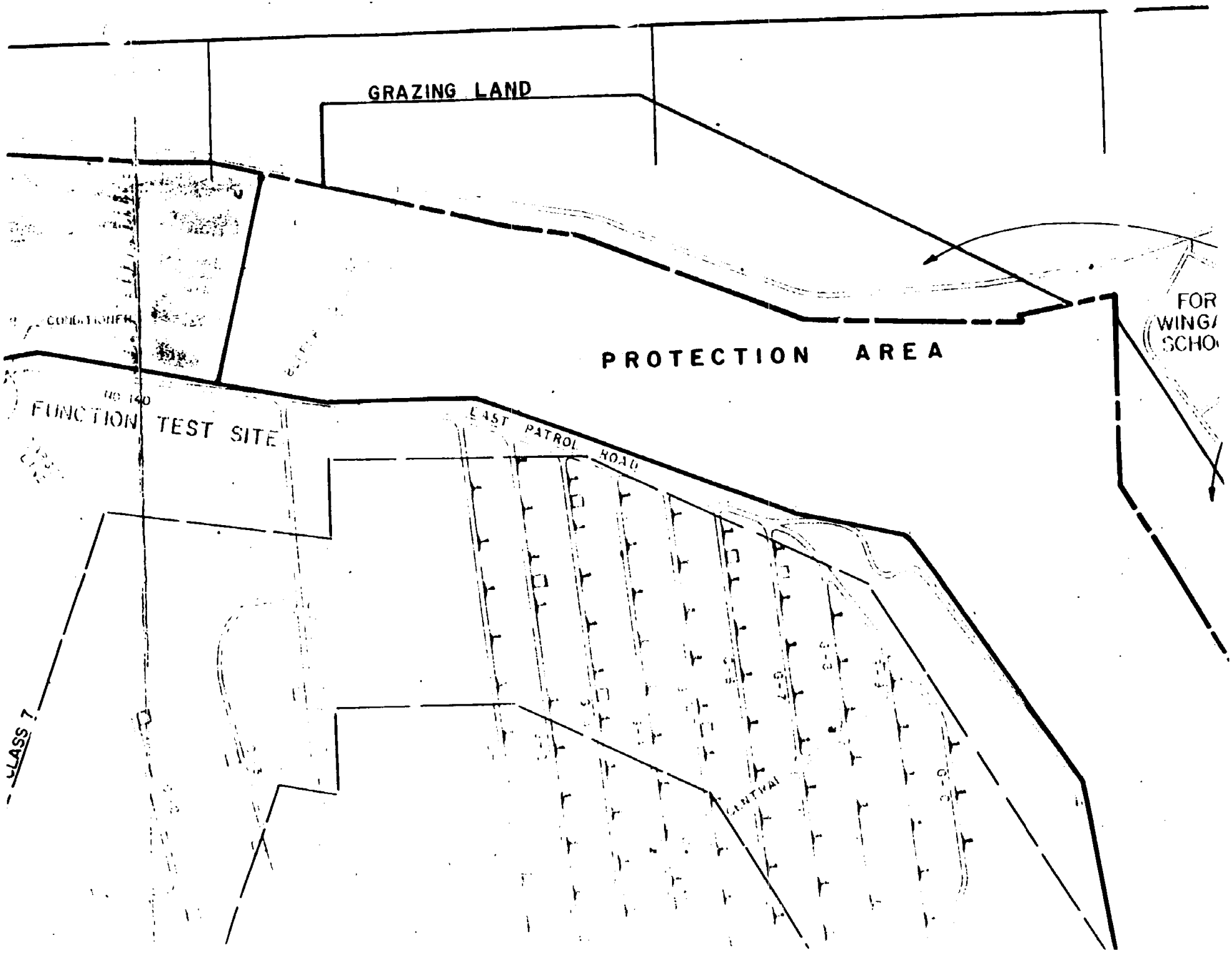
INSTALLATION MAPS

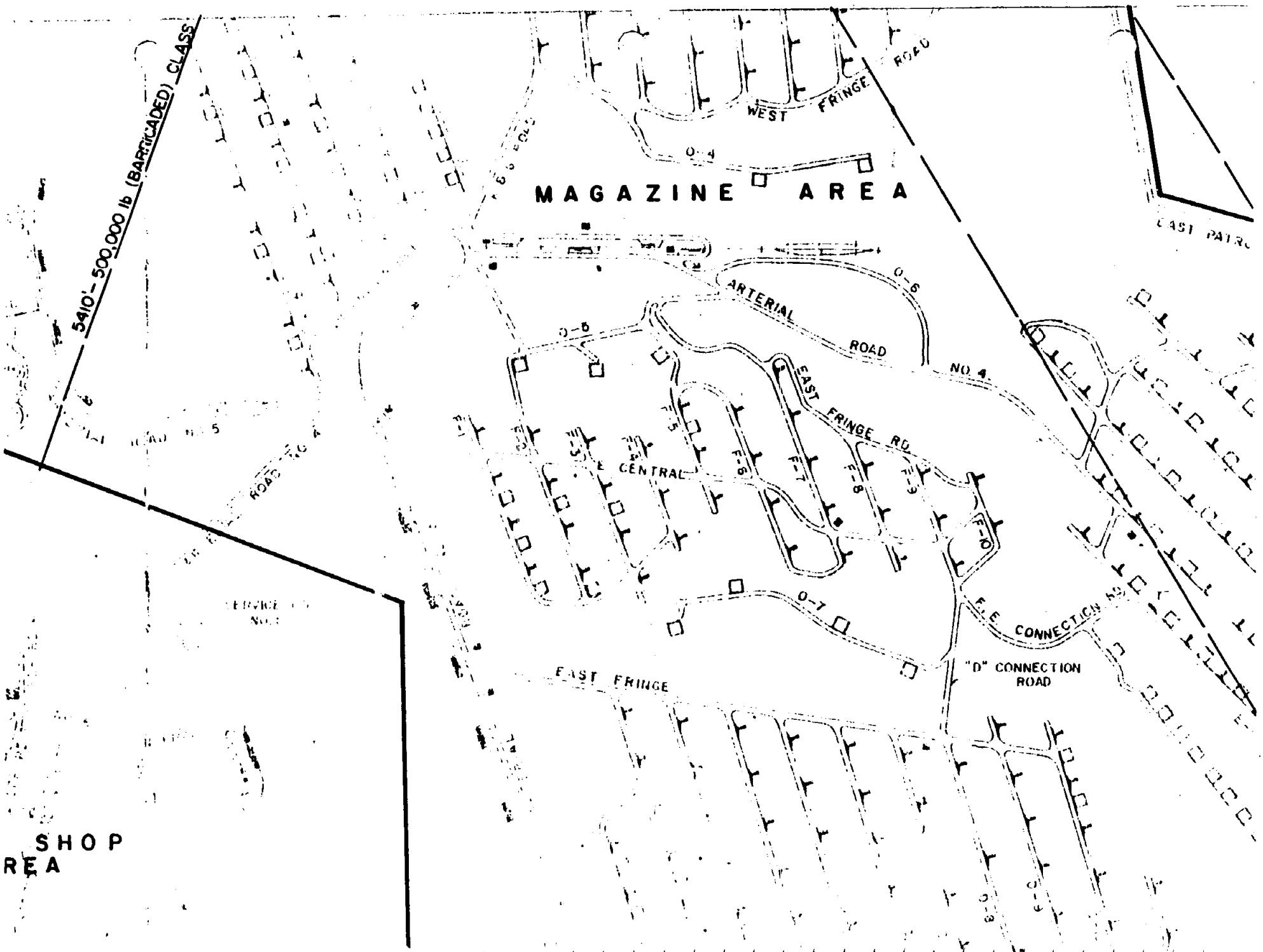

PROTECTION AREA
PROTECTIVE AREA UNDER MEMORANDUM OF UNDERSTANDING DATED 10 FEBUARY 1959
MAGAZINE AREA
PROTECTION AREA
PROTECTION AREA
FORT WINGATE ARMY DEPOT
RESERVATION MAP

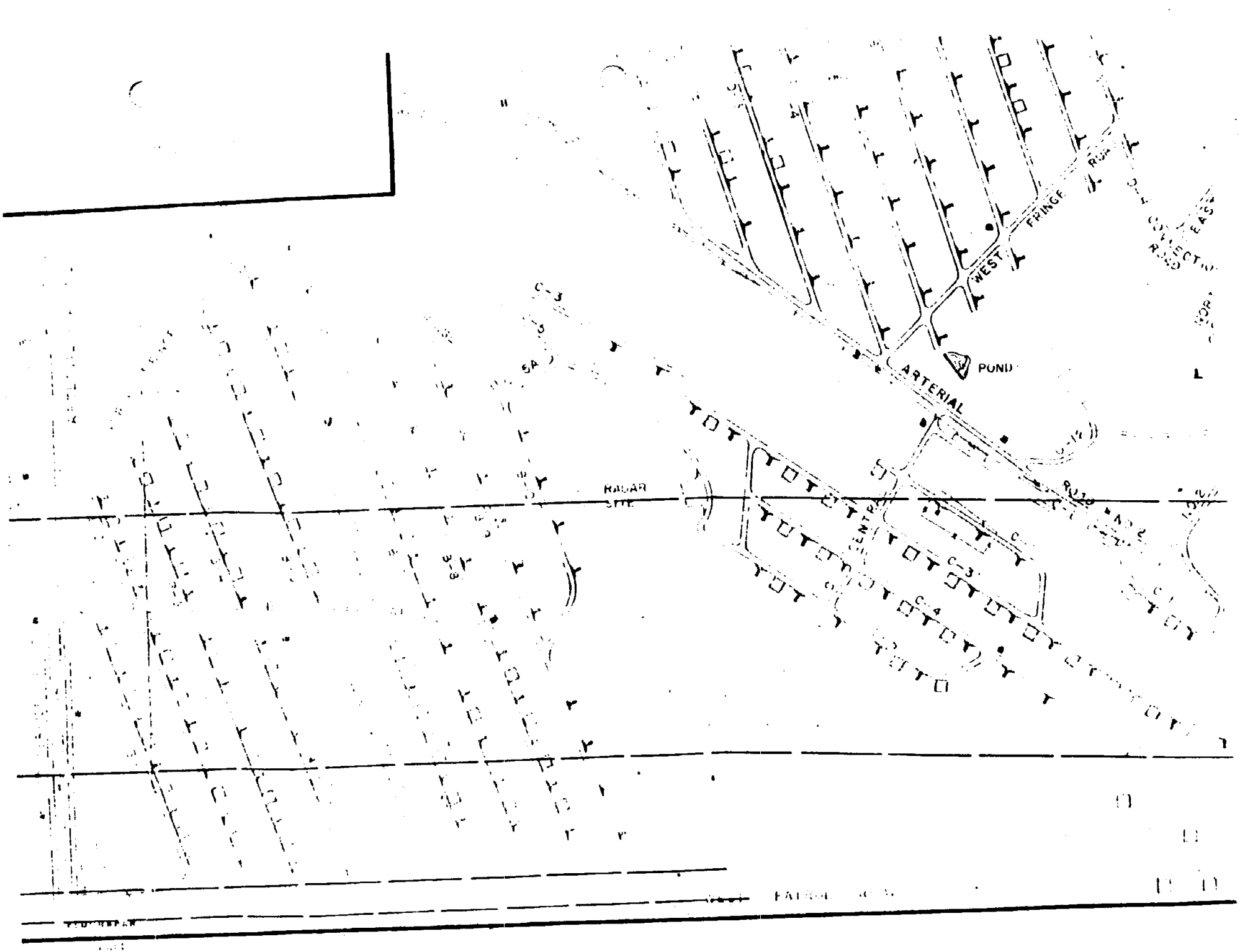

AMMUNITION
WORKSHOPS
AREA
ADMINISTRATION
AREA
INSERT A
INSERT B
FORT WINGATE ARMY DEPOT

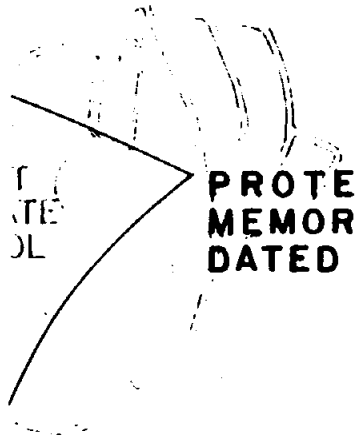

GRAZING LAND
MAIN ENTRANCE
ADMINISTRATION AREA
OFF FAMILY HOUSING
DISPENSARY
RECREATION ADMIN.
SERVICE STORAGE
ADMIN.
SERVICE
SERVICE
WARE HOUSE
SERVICE ADMIN.
DISPOSAL SEWAGE POOL
TECHNICAL
SERVICE STORAGE
WORK


SECTION 15,
T 15N, R 17N
1855'-100,000 lb (BARRICADED) CLASS 7
2115'-125,000 lb (BARRICADED) CLASS 7
3150'-250,000 lb (BARRICADED) CLASS 7
5410'-500,000 lb (BARRICADED) CLASS 7
RAILROAD CLASSIFICATION YARD


GRAZING LAND
PROTECTION AREA
FUNCTION TEST SITE
EAST PATROL ROAD
CENTRAL


MAGAZINE AREA
5410'-500,000 lb (BARRICADED) CLASS
WEST FRINGE
ROAD
ARTERIAL ROAD NO 4
EAST FRINGE RD
CENTRAL
"D" CONNECTION ROAD
EAST FRINGE
SHOP
REA


WEST
FRINGE
POND
ARTERIAL
RADAR
SITE



PROTECTIVE AREA, UNDER
MEMORANDUM OF UNDERSTANDING
DATED 10 FEBUARY 1959

MATCH LINE

NOTE:

1. RESERVATION CON
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OF UNDERSTANDI

2. QUANTITY DISTANCE:
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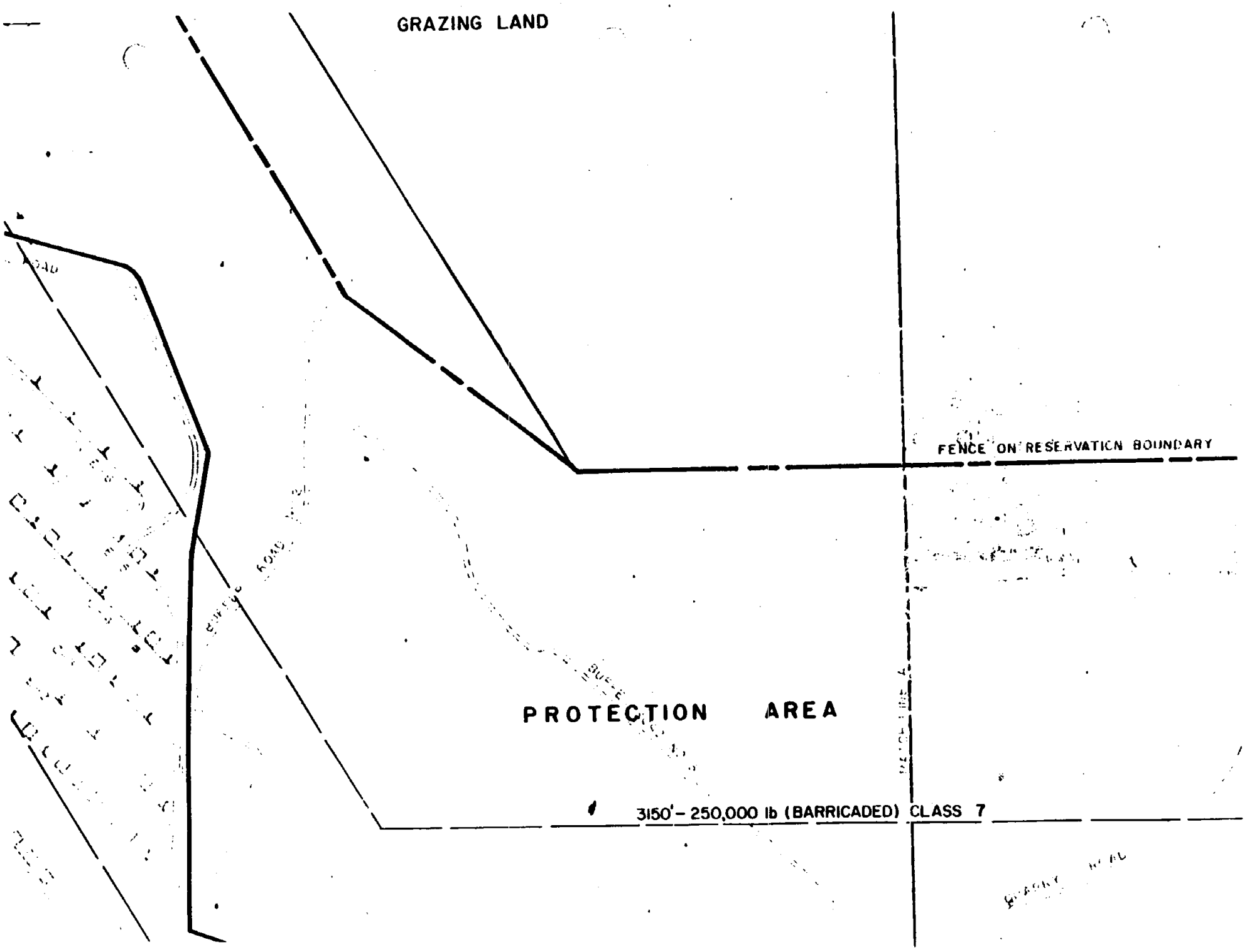
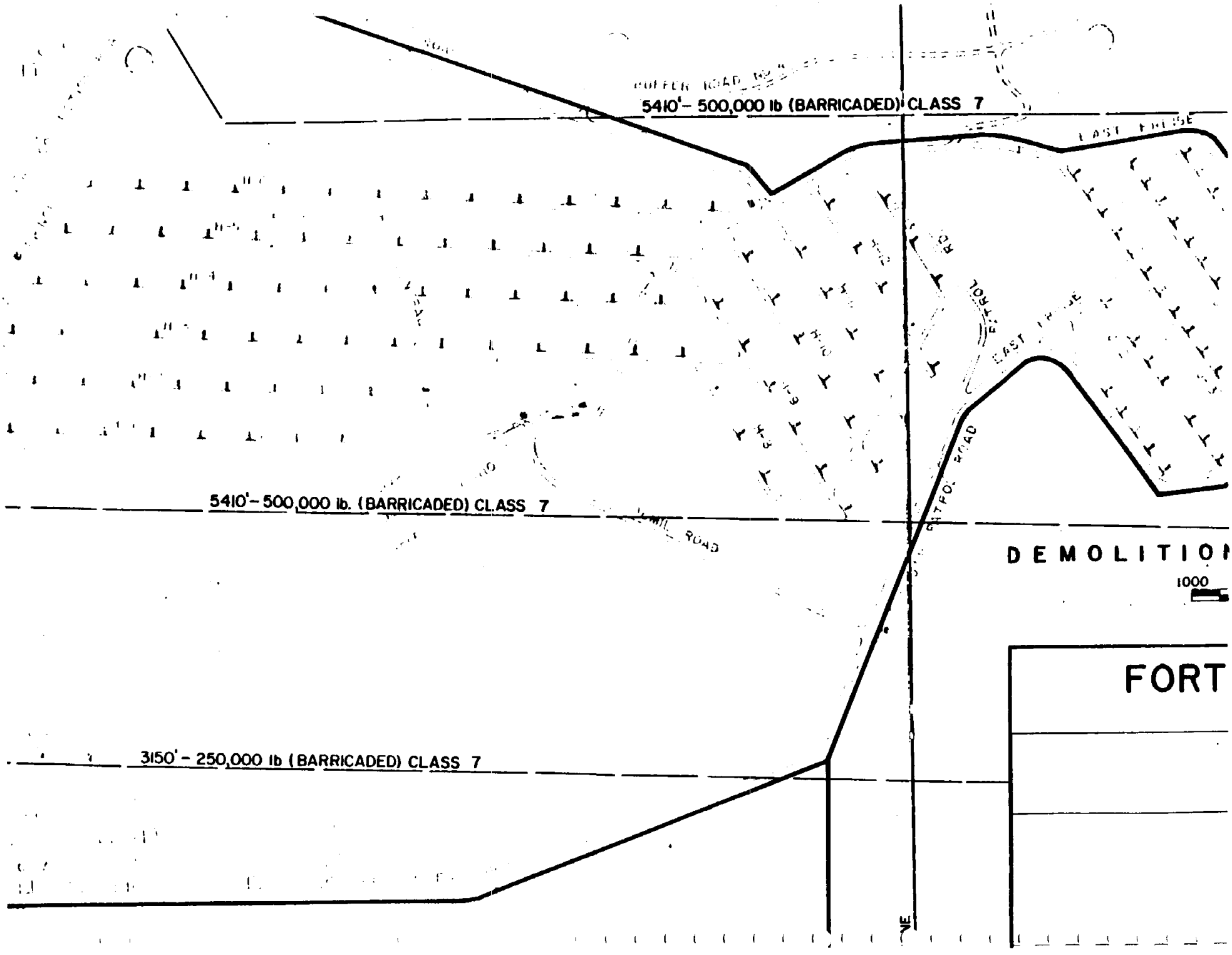
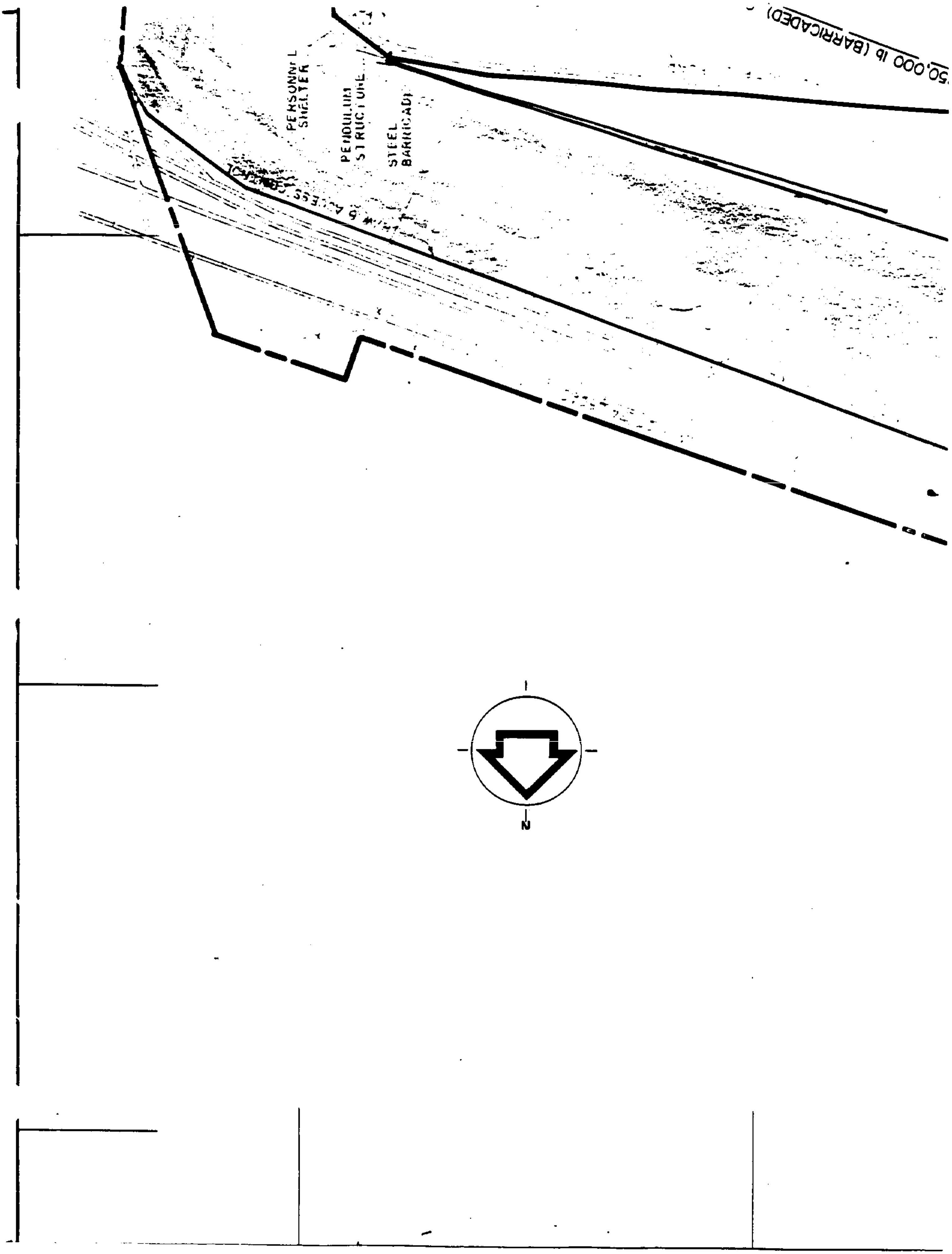

GRAZING LAND
FENCE ON RESERVATION BOUNDARY
PROTECTION AREA
3150' – 250,000 lb (BARRICADED) CLASS 7


5410'– 500,000 lb (BARRICADED) CLASS 7
5410'– 500,000 lb. (BARRICADED) CLASS 7
3150' – 250,000 lb (BARRICADED) CLASS 7
EAST FENCE
EAST FENCE
DEMOLITION
1000
FORT



PERSONNEL SHELTER
PENDULUM STRUCTURE
STEEL BARRICADE
50,000 lb (BARRICADED)
N

SOIL MAPS

AH-79

AH-80

AUGER HOLE LOCATION PLAN

SCALE: 1" = 50'

LEGEND

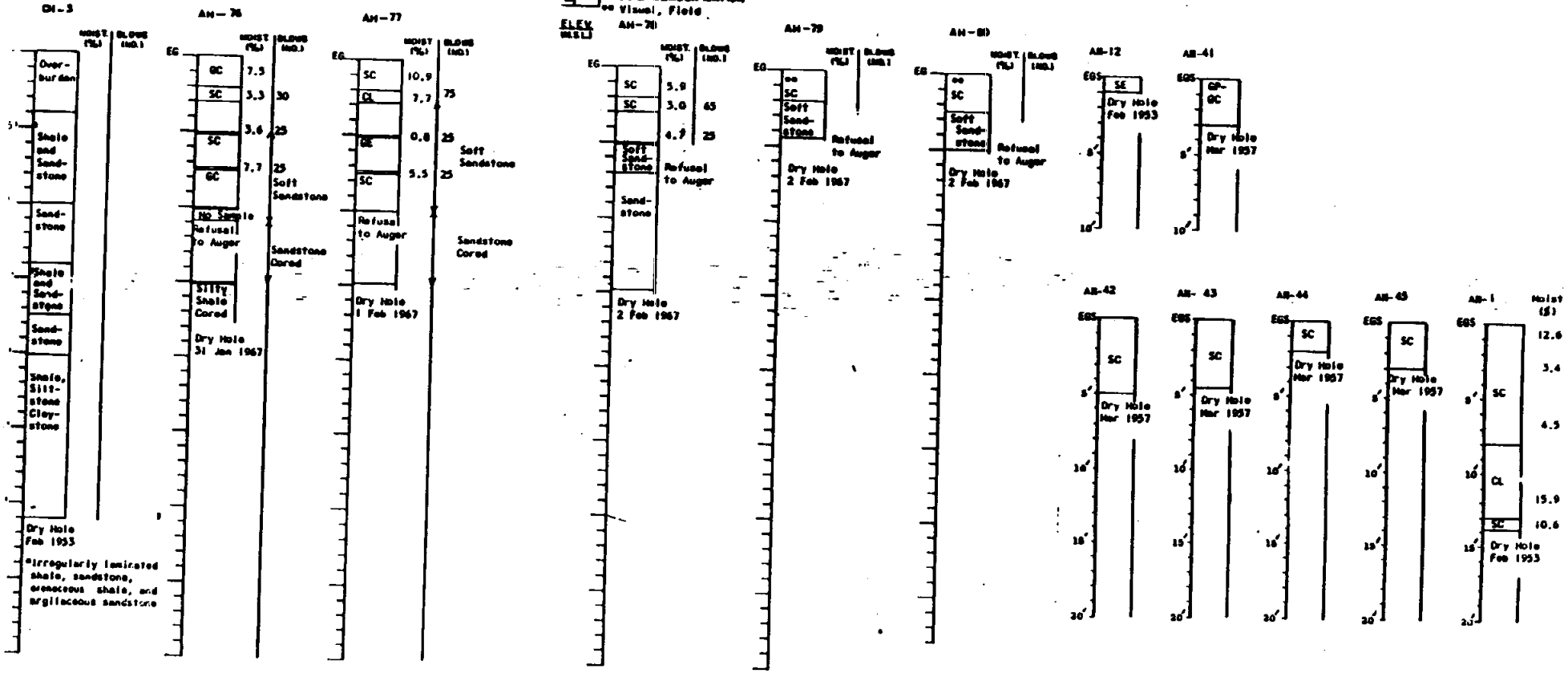
- AUGER HOLES
- CORE HOLES

BORING LOGS

AMMUNITION MAINTENANCE FACILITIES
Item C2L10
Wingate Ordnance Depot, New Mexico

LEGEND

EG — EXISTING GRADE
GWS — GROUND WATER SURFACE
CL — SOIL CLASSIFICATION
Visual, Field
ELEV (MSL)



INCLOSURE NO. 1

EPA FORM 7530a

INVENTORY DATA SHEETS

tanks 1-4 DATE: 8 / 10 / 89

INVENTORY OF UNDERGROUND STORAGE TANKS FOR DERA ELIGIBILITY

INSTALLATION: Fort Wingate LOCATION: Gallup NM

POC @ INSTALLATION: (name & no/.) Adrian Bond

TEAM LEADER : Terry Samson TEAM ASSIST. Scott Kool

TANK ID NO. : (assigned no/) NMFW01 (other) Kerosene

A. OFFICE DATA (Obtain prior to field work) NOTES

1. **Status of tank:**
   - a. Currently in use — X
   - b. Temporarily out of use
   - c. Permanently out of use
   - d. Brought into use after 5/8/86
   - e. Not been used since Jan. 1984
   - f. Leakage prior to March 1, 1986 (The Installation must have evidence)

2. **Support Function of Tank (relationship to building or support use of tank):** U

3. **Estimated Age (in years)** U **Date installed** ___/___/___

4. **Tank Manufacturer (if known)** U

5. **Estimated Total Capacity** U gallons

6. **Material of Tank Construction:** (Mark one only)
   - a. Steel
   - b. Concrete
   - c. Fiberglass
   - d. Unknown — X
   - e. Other

7. **Internal Protection:** (Mark all that apply)
   - a. Cathodic Protection
   - b. Interior Lining (epoxy, etc)
   - c. None
   - d. Unknown — X
   - e. Other

8. **External Protection:** (Mark all that apply)
   - a. Cathodic Protection
   - b. Painted
   - c. Asphaltic coating, etc.
   - d. Fiberglass/Plastic Coated
   - e. None
   - f. Unknown — X
   - g. Other

9. **Piping:** (Mark all that apply)

a. Bare Steel	_____
b. Galvanized Steel	_____
c. Fiberglass Reinforced Plastic	_____
d. Cathodically Protected	_____
e. Unknown	X
f. Other	_____

10. **Changes/improvements to tank after installation (description and dates):**

_____

11. **Substance Currently or Last Stored in Greatest Quantity by Volume:** (Mark all that apply)

a. Empty	_____
b. Diesel Fuel	_____
c. Kerosene	_____
d. Gasoline	_____
e. Heating Oil	_____
f. Used Oil	_____
e. Name of principal CERCLA Substance	_____
or..f. Chemical Abstract Service (CAS) No.	_____
g. Indicate if a mixture of substances are/were stored	_____
h. Unknown	X

12. **Substance stored in past, if different from the current contents:** (Mark all that apply)

a. Diesel Fuel	_____
b. Kerosene	_____
c. Gasoline	_____
d. Heating Oil	_____
e. Used Oil	_____
f. Name of principal CERCLA Substance	_____
or..g. Chemical Abstract Service (CAS) No.	_____
h. Indicate if a mixture of substances are/were stored	_____
i. Unknown _____	
j. Dates stored (if known) ___/___/_____ to ___/___/_____	

13. **Additional Information for Tanks Permanently Taken Out of Service:**

a. Estimated date last used	___/___/___	
b. Estimated quantity remaining	_____	(gal.)
c. Tank filled with inert material	_____ _____	(sand etc)

14. **Estimated depth to the top of Tank (fill over tank)** 2 ft

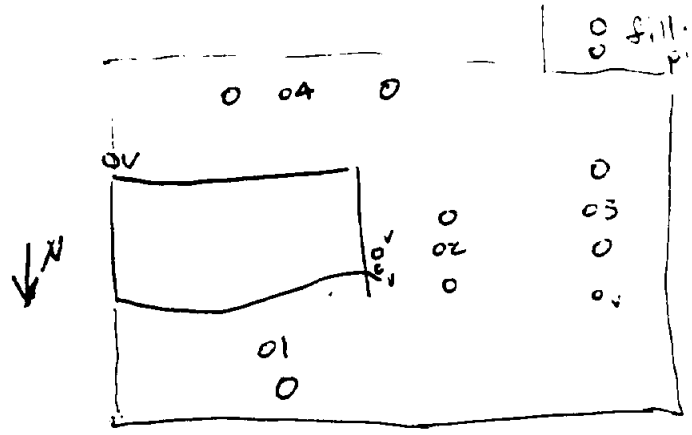
15. **Tank testing for tightness and potential leakage** (yes/no) _____

a. Method & Date : _____ ___/___/___

b. Results : _____

B. **FIELD DATA**

1. **Sketch of area/layout of tanks:**



2. **Containment Devices:**
   a. Spill Control (yes/no, etc): no _____

   b. Overflow Control (yes/no, etc) no _____

   other description _____

3. **Evidence of spills during transfer operations:** yes ____ no X

   a. Description/location spill(s) _____

   b. Photograph area and material (if evident) (yes/no) _____

   c. Quantity of material spilled (if known) _____ gallons

4. **Evidence of past/current leakage (pipe system leaks too):** yes/no no
   If no, do not continue with this section.
   a. Type of substance (from #11,12 above) _____

   b. Cause of leak or spill _____

   c. Type of leak (tank, pipe, etc) _____

   d. Quantity of material leaked or spilled _____ gallons

   e. Dates related to leaks or spills _____

   f. Sources of records for leaks or spills _____

   g. Corrective actions taken _____

   h. Photograph area around tank and material (if evident: yes/no)

5. **Evidence of soil, groundwater, or surface water contamination caused by UST:** yes ____ no X
   a. Describe contamination _____

   b. Quantity of material leaked/spilled _____ gallons

6. **Compatability of tank with local conditions** (examples include: overburden loads from traffic, encroachment of installation functions, etc. List anything that poses as a threat for damage or continued leaking of tank):

   crushed rock/asphalt. Possible overburden due to traffic.

7. **Overburden conditions** (concrete paving, thickness,etc.) 2' soil / crushed rock.

8. **Depth to highest seasonal groundwater (average/each year):** _____ ft

a. Source of information: _____

b. Copy/documentation of source obtained (yes/no) _____

9. **Type of soil(s) in area around tank (from local SCS maps):**

(Mark one)
a. Available from Base _____
b. Obtained from Base X
c. Obtained from SCS _____
d. Need to be obtained from SCS _____

10. **Take photographs of unique features related to the tank, piping, fill locations, any evidence of settlement, and the surrounding area (access difficulties):** (yes/no) yes

11. **Evidence of Installation correspondance with regulators (NOV's, etc.) on problem/leaking tanks:**

a. Documentation of correspondance (yes/no) _____
(If no, do not continue with this section.)

b. Agency contacted _____

c. POC at Agency (& phone) _____

d. Requirements to rectify problem(s) (yes/no) _____

e. Documentation of correspondance obtained (yes/no) _____

12. **Obtained copies of any Installation information on tank:** (yes/no) no

13. **Indicate whether additional information is being sent and when its arrival is expected:**

a. Date of/time until anticipated arrival _____

b. POC for information transmittal (phone) _____

no apprent annodes


NMFW 1

DATE: 8 / 10 / 89

TORY OF UNDERGROUND STORAGE TANKS FOR DERA ELIGIBILITY

TALLATION: _____ LOCATION: _____

C @ INSTALLATION: (name & no/.) _____

TEAM LEADER : _____ TEAM ASSIST. _____

TANK ID NO. : (assigned no/) NMFW02 (other) _____

A. **OFFICE DATA** (Obtain prior to field work) NOTES

1. **Status of tank:**
   a. Currently in use — X
   b. Temporarily out of use
   c. Permanently out of use
   d. Brought into use after 5/8/86
   e. Not been used since Jan. 1984
   f. Leakage prior to March 1, 1986
   (The Installation must have evidence)

2. **Support Function of Tank (relationship to building or support use of tank):**

   _____

3. **Estimated Age (in years)** U **Date installed** ___/___/___

4. **Tank Manufacturer (if known)** U

5. **Estimated Total Capacity** U gallons

6. **Material of Tank Construction:** (Mark one only)
   a. Steel
   b. Concrete
   c. Fiberglass
   d. Unknown — X
   e. Other _____

7. **Internal Protection:** (Mark all that apply)
   a. Cathodic Protection
   b. Interior Lining (epoxy, etc)
   c. None
   d. Unknown — X
   e. Other _____

8. **External Protection:** (Mark all that apply)
   a. Cathodic Protection
   b. Painted
   c. Asphaltic coating, etc.
   d. Fiberglass/Plastic Coated
   e. None
   f. Unknown — X
   g. Other _____

9. **Piping:** (Mark all that apply)

a. Bare Steel ____
b. Galvanized Steel ____
c. Fiberglass Reinforced Plastic ____
d. Cathodically Protected ____
e. Unknown X
f. Other ____

10. **Changes/improvements to tank after installation (description and dates):**

____

11. **Substance Currently or Last Stored in Greatest Quantity by Volume:** (Mark all that apply)

a. Empty ____
b. Diesel Fuel ____
c. Kerosene ____
d. Gasoline ____
e. Heating Oil ____
f. Used Oil ____

e. Name of principal CERCLA Substance ____
or..f. Chemical Abstract Service (CAS) No. ____
g. Indicate if a mixture of substances are/were stored ____
h. Unknown X

12. **Substance stored in past, if different from the current contents:** (Mark all that apply)

a. Diesel Fuel ____
b. Kerosene ____
c. Gasoline ____
d. Heating Oil ____
e. Used Oil ____

f. Name of principal CERCLA Substance ____
or..g. Chemical Abstract Service (CAS) No. ____
h. Indicate if a mixture of substances are/were stored ____
i. Unknown ____
j. Dates stored (if known) ___/___/____ to ___/___/____

13. **Additional Information for Tanks Permanently Taken Out of Service:**

a. Estimated date last used ___/___/___
b. Estimated quantity remaining ____ (gal.)
c. Tank filled with inert material ____ ____ (sand etc)

14. **Estimated depth to the top of Tank (fill over tank)** 2 ft

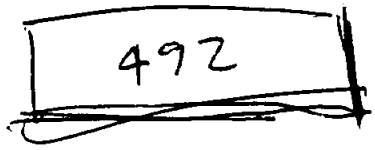
15. **Tank testing for tightness and potential leakage** (yes/no) ____

a. Method & Date : ____ ___/___/___

b. Results : ____

B. **FIELD DATA**

1. **Sketch of area/layout of tanks:**



2. **Containment Devices:**
   a. Spill Control (yes/no, etc): no _____
   b. Overflow Control (yes/no, etc) no _____
   other description _____

3. **Evidence of spills during transfer operations:** yes ____ no X
   a. Description/location spill(s) _____
   b. Photograph area and material (if evident) (yes/no) _____
   c. Quantity of material spilled (if known) _____ gallons

4. **Evidence of past/current leakage (pipe system leaks too):** yes/no no
   If no, do not continue with this section.
   a. Type of substance (from #11,12 above) _____
   b. Cause of leak or spill _____
   c. Type of leak (tank, pipe, etc) _____
   d. Quantity of material leaked or spilled _____ gallons
   e. Dates related to leaks or spills _____
   f. Sources of records for leaks or spills _____
   g. Corrective actions taken _____
   h. Photograph area around tank and material (if evident: yes/no)

5. **Evidence of soil, groundwater, or surface water contamination caused by UST:** yes ____ no X
   a. Describe contamination _____
   b. Quantity of material leaked/spilled _____ gallons

6. **Compatability of tank with local conditions** (examples include: overburden loads from traffic, encroachment of installation functions, etc. List anything that poses as a threat for damage or continued leaking of tank):
   Possible overburden due to traffic

7. **Overburden conditions** (concrete paving, thickness,etc.)_____

_____

8. **Depth to highest seasonal groundwater (average/each year):** _____ ft

a. Source of information: _____

b. Copy/documentation of source obtained (yes/no) _____

9. **Type of soil(s) in area around tank (from local SCS maps):**

(Mark one)
a. Available from Base _____
b. Obtained from Base X
c. Obtained from SCS _____
d. Need to be obtained from SCS _____

10. **Take photographs of unique features related to the tank, piping, fill locations, any evidence of settlement, and the surrounding area (access difficulties):** (yes/no) yes

11. **Evidence of Installation correspondance with regulators (NOV's, etc.) on problem/leaking tanks:**

a. Documentation of correspondance (yes/no) _____
(If no, do not continue with this section.)

b. Agency contacted _____

c. POC at Agency (& phone) _____

d. Requirements to rectify problem(s) (yes/no) _____

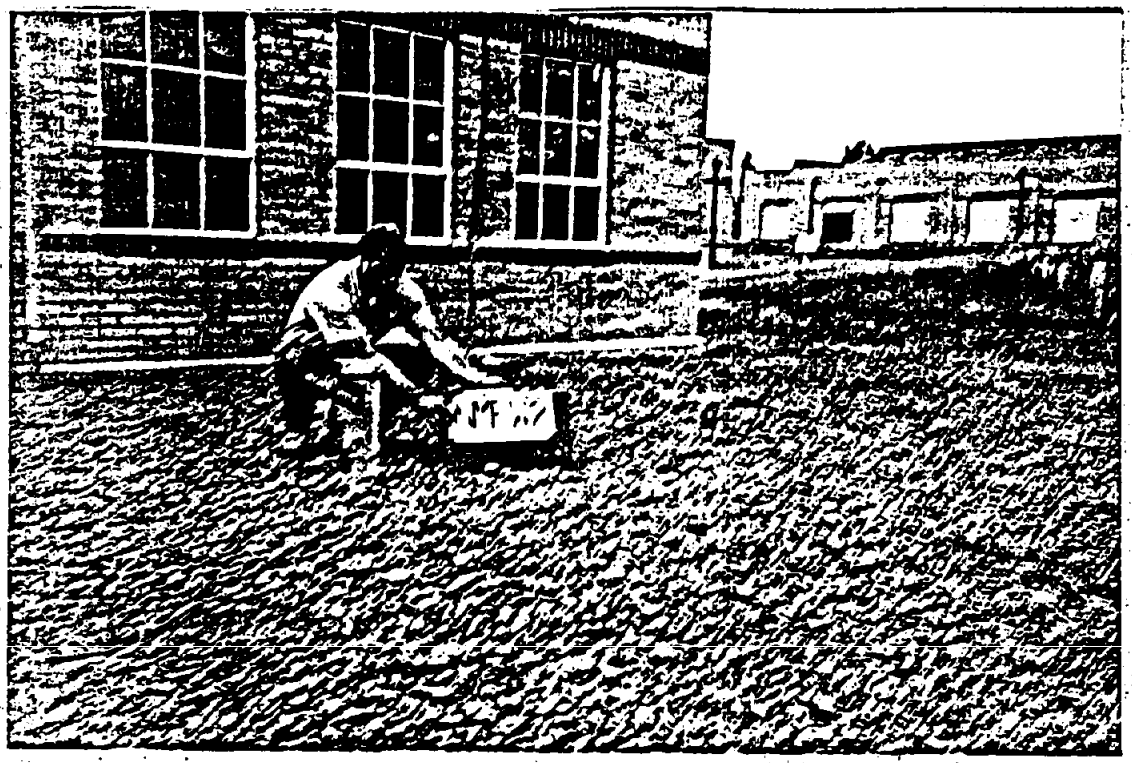
e. Documentation of correspondance obtained (yes/no) _____

12. **Obtained copies of any Installation information on tank:** (yes/no) no

13. **Indicate whether additional information is being sent and when its arrival is expected:**

a. Date of/time until anticipated arrival _____

b. POC for information transmittal (phone) _____



DATE: 8 / 10 / 89

INVENTORY OF UNDERGROUND STORAGE TANKS FOR DERA ELIGIBILITY

INSTALLATION: _____ LOCATION: _____

POC @ INSTALLATION: (name & no/.) _____

TEAM LEADER : _____ TEAM ASSIST. _____

TANK ID NO. : (assigned no/) NMFW 3 (other) _____

A. **OFFICE DATA** (Obtain prior to field work) NOTES

1. Status of tank:
   a. Currently in use X
   b. Temporarily out of use _____
   c. Permanently out of use _____
   d. Brought into use after 5/8/86 _____
   e. Not been used since Jan. 1984 _____
   f. Leakage prior to March 1, 1986 _____
   (The Installation must have evidence)

2. Support Function of Tank (relationship to building or support use of tank):

   _____

3. Estimated Age (in years) U Date installed ___/___/___

4. Tank Manufacturer (if known) U

5. Estimated Total Capacity U gallons

6. Material of Tank Construction: (Mark one only)
   a. Steel _____
   b. Concrete _____
   c. Fiberglass _____
   d. Unknown X
   e. Other _____

7. Internal Protection: (Mark all that apply)
   a. Cathodic Protection _____
   b. Interior Lining (epoxy, etc) _____
   c. None _____
   d. Unknown X
   e. Other _____

8. External Protection: (Mark all that apply)
   a. Cathodic Protection _____
   b. Painted _____
   c. Asphaltic coating, etc. _____
   d. Fiberglass/Plastic Coated _____
   e. None _____
   f. Unknown X
   g. Other _____

9. **Piping:** (Mark all that apply)
   a. Bare Steel _____
   b. Galvanized Steel _____
   c. Fiberglass Reinforced Plastic _____
   d. Cathodically Protected _____
   e. Unknown X
   f. Other _____

10. **Changes/improvements to tank after installation (description and dates):**

_____

11. **Substance Currently or Last Stored in Greatest Quantity by Volume:** (Mark all that apply)
   a. Empty _____
   b. Diesel Fuel _____
   c. Kerosene _____
   d. Gasoline _____
   e. Heating Oil _____
   f. Used Oil _____
   e. Name of principal CERCLA Substance _____
   or..f. Chemical Abstract Service (CAS) No. _____
   g. Indicate if a mixture of substances are/were stored _____
   h. Unknown X

12. **Substance stored in past, if different from the current contents:** (Mark all that apply)
   a. Diesel Fuel _____
   b. Kerosene _____
   c. Gasoline _____
   d. Heating Oil _____
   e. Used Oil _____
   f. Name of principal CERCLA Substance _____
   or..g. Chemical Abstract Service (CAS) No. _____
   h. Indicate if a mixture of substances are/were stored _____
   i. Unknown _____
   j. Dates stored (if known) ___/___/_____ to ___/___/_____

13. **Additional Information for Tanks Permanently Taken Out of Service:**
   a. Estimated date last used ___/___/___
   b. Estimated quantity remaining _____ (gal.)
   c. Tank filled with inert material _____ (sand etc)

14. **Estimated depth to the top of Tank (fill over tank)** 2 ft

15. **Tank testing for tightness and potential leakage (yes/no)** _____

   a. Method & Date : _____ ___/___/___

   b. Results : _____

B. **FIELD DATA**

1. **Sketch of area/layout of tanks:**

2. **Containment Devices:**
   a. Spill Control (yes/no, etc): no _____
   b. Overflow Control (yes/no, etc) no _____
   other description _____

3. **Evidence of spills during transfer operations:** yes ____ no X
   a. Description/location spill(s) _____
   b. Photograph area and material (if evident) (yes/no) _____
   c. Quantity of material spilled (if known) _____ gallons

4. **Evidence of past/current leakage (pipe system leaks too):** yes/no no
   If no, do not continue with this section.
   a. Type of substance (from #11,12 above) _____
   b. Cause of leak or spill _____
   c. Type of leak (tank, pipe, etc) _____
   d. Quantity of material leaked or spilled _____ gallons
   e. Dates related to leaks or spills _____
   f. Sources of records for leaks or spills _____
   g. Corrective actions taken _____
   h. Photograph area around tank and material (if evident: yes/no)

5. **Evidence of soil, groundwater, or surface water contamination caused by UST:** yes ____ no X
   a. Describe contamination _____
   b. Quantity of material leaked/spilled _____ gallons

6. **Compatability of tank with local conditions** (examples include: overburden loads from traffic, encroachment of installation functions, etc. List anything that poses as a threat for damage or continued leaking of tank):
   Possible overburden due to traffic

7. **Overburden conditions** (concrete paving, thickness,etc.)_____

_____

8. **Depth to highest seasonal groundwater (average/each year):** __ ft

a. Source of information: _____

b. Copy/documentation of source obtained (yes/no) _____

9. **Type of soil(s) in area around tank (from local SCS maps):**

(Mark one)
a. Available from Base _____
b. Obtained from Base X
c. Obtained from SCS _____
d. Need to be obtained from SCS _____

10. **Take photographs of unique features related to the tank, piping, fill locations, any evidence of settlement, and the surrounding area (access difficulties):** (yes/no) yes

11. **Evidence of Installation correspondance with regulators (NOV's, etc.) on problem/leaking tanks:**

a. Documentation of correspondance (yes/no) _____
(If no, do not continue with this section.)

b. Agency contacted _____

c. POC at Agency (& phone) _____

d. Requirements to rectify problem(s) (yes/no) _____

e. Documentation of correspondance obtained (yes/no) _____

12. **Obtained copies of any Installation information on tank:** (yes/no) no

13. **Indicate whether additional information is being sent and when its arrival is expected:**

a. Date of/time until anticipated arrival _____

b. POC for information transmittal (phone) _____


NFW3

DATE: 8 / 10 / 89

INVENTORY OF UNDERGROUND STORAGE TANKS FOR DERA ELIGIBILITY

INSTALLATION: _____ LOCATION: _____

POC @ INSTALLATION: (name & no/.) _____

TEAM LEADER : _____ TEAM ASSIST. _____

TANK ID NO. : (assigned no/) NMFW 4 (other) _____

A. **OFFICE DATA** (Obtain prior to field work) NOTES

1. **Status of tank:**
   - a. Currently in use — X
   - b. Temporarily out of use
   - c. Permanently out of use
   - d. Brought into use after 5/8/86
   - e. Not been used since Jan. 1984
   - f. Leakage prior to March 1, 1986 (The Installation must have evidence)

2. **Support Function of Tank (relationship to building or support use of tank):**

   _____

3. **Estimated Age (in years)** U **Date installed** ___/___/___

4. **Tank Manufacturer (if known)** U

5. **Estimated Total Capacity** U **gallons**

6. **Material of Tank Construction:** (Mark one only)
   - a. Steel
   - b. Concrete
   - c. Fiberglass
   - d. Unknown — X
   - e. Other _____

7. **Internal Protection:** (Mark all that apply)
   - a. Cathodic Protection
   - b. Interior Lining (epoxy, etc)
   - c. None
   - d. Unknown — X
   - e. Other _____

8. **External Protection:** (Mark all that apply)
   - a. Cathodic Protection
   - b. Painted
   - c. Asphaltic coating, etc.
   - d. Fiberglass/Plastic Coated
   - e. None
   - f. Unknown — X
   - g. Other _____

9. Piping:

(Mark all that apply)

a. Bare Steel ____
b. Galvanized Steel ____
c. Fiberglass Reinforced Plastic ____
d. Cathodically Protected ____
e. Unknown X
f. Other ____

10. Changes/improvements to tank after installation (description and dates):

____

11. Substance Currently or Last Stored in Greatest Quantity by Volume:

(Mark all that apply)

a. Empty ____
b. Diesel Fuel ____
c. Kerosene ____
d. Gasoline ____
e. Heating Oil ____
f. Used Oil ____

e. Name of principal CERCLA Substance ____
or..f. Chemical Abstract Service (CAS) No. ____
g. Indicate if a mixture of substances are/were stored ____
h. Unknown X

12. Substance stored in past, if different from the current contents:

(Mark all that apply)

a. Diesel Fuel ____
b. Kerosene ____
c. Gasoline ____
d. Heating Oil ____
e. Used Oil ____

f. Name of principal CERCLA Substance ____
or..g. Chemical Abstract Service (CAS) No. ____
h. Indicate if a mixture of substances are/were stored ____
i. Unknown ____
j. Dates stored (if known) ___/___/____ to ___/___/____

13. Additional Information for Tanks Permanently Taken Out of Service:

a. Estimated date last used ___/___/___
b. Estimated quantity remaining ____ (gal.)
c. Tank filled with inert material ____ (sand etc)

14. Estimated depth to the top of Tank (fill over tank) 2 ft

15. Tank testing for tightness and potential leakage (yes/no) ____

a. Method & Date : ____ ___/___/___

b. Results : ____

B. **FIELD DATA**

1. **Sketch of area/layout of tanks:**

2. **Containment Devices:**
   a. Spill Control (yes/no, etc): no _____
   b. Overflow Control (yes/no, etc) no _____
   other description _____

3. **Evidence of spills during transfer operations:** yes ____ no X
   a. Description/location spill(s) _____
   b. Photograph area and material (if evident) (yes/no) _____
   c. Quantity of material spilled (if known) _____ gallons

4. **Evidence of past/current leakage (pipe system leaks too):** yes/no no
   If no, do not continue with this section.
   a. Type of substance (from #11,12 above) _____
   b. Cause of leak or spill _____
   c. Type of leak (tank, pipe, etc) _____
   d. Quantity of material leaked or spilled _____ gallons
   e. Dates related to leaks or spills _____
   f. Sources of records for leaks or spills _____
   g. Corrective actions taken _____
   h. Photograph area around tank and material (if evident: yes/no)

5. **Evidence of soil, groundwater, or surface water contamination caused by UST:** yes ____ no X
   a. Describe contamination _____
   b. Quantity of material leaked/spilled _____ gallons

6. **Compatability of tank with local conditions** (examples include: overburden loads from traffic, encroachment of installation functions, etc. List anything that poses as a threat for damage or continued leaking of tank):

   Possible overburden due to traffic

7. **Overburden conditions** (concrete paving, thickness,etc.)_____

_____

8. **Depth to highest seasonal groundwater (average/each year):** __ ft

a. Source of information: _____

b. Copy/documentation of source obtained (yes/no) _____

9. **Type of soil(s) in area around tank (from local SCS maps):**

(Mark one)
a. Available from Base _____
b. Obtained from Base X
c. Obtained from SCS _____
d. Need to be obtained from SCS _____

10. **Take photographs of unique features related to the tank, piping, fill locations, any evidence of settlement, and the surrounding area (access difficulties):** (yes/no) yes

11. **Evidence of Installation correspondance with regulators (NOV's, etc.) on problem/leaking tanks:**

a. Documentation of correspondance (yes/no) _____
(If no, do not continue with this section.)

b. Agency contacted _____

c. POC at Agency (& phone) _____

d. Requirements to rectify problem(s) (yes/no) _____

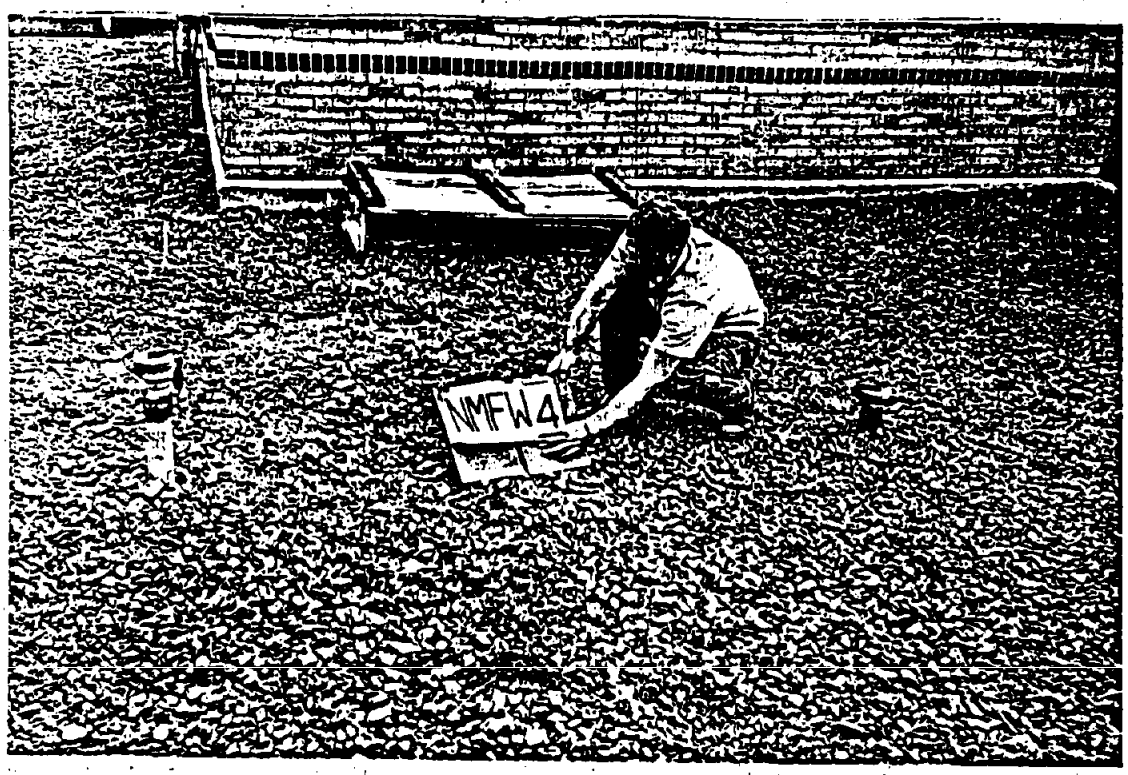
e. Documentation of correspondance obtained (yes/no) _____

12. **Obtained copies of any Installation information on tank:** (yes/no) no

13. **Indicate whether additional information is being sent and when its arrival is expected:**

a. Date of/time until anticipated arrival _____

b. POC for information transmittal (phone) _____


NMFW4

DATE: 8 / 10 / 89

INVENTORY OF UNDERGROUND STORAGE TANKS FOR DERA ELIGIBILITY

INSTALLATION: Fort Wingate LOCATION: Gallup, NM

POC @ INSTALLATION: (name & no/.) Adrian Bond

TEAM LEADER : Terry Samson TEAM ASSIST. Scott Kool

TANK ID NO. : (assigned no/) UMFW05 (other) _____

A. OFFICE DATA (Obtain prior to field work) NOTES

1. **Status of tank:**
   - a. Currently in use — X
   - b. Temporarily out of use
   - c. Permanently out of use
   - d. Brought into use after 5/8/86
   - e. Not been used since Jan. 1984
   - f. Leakage prior to March 1, 1986 (The Installation must have evidence)

2. **Support Function of Tank** (relationship to building or support use of tank): _____

3. **Estimated Age (in years)** U **Date installed** ___/___/___

4. **Tank Manufacturer (if known)** U

5. **Estimated Total Capacity** U gallons

6. **Material of Tank Construction:** (Mark one only)
   - a. Steel
   - b. Concrete
   - c. Fiberglass
   - d. Unknown — X
   - e. Other

7. **Internal Protection:** (Mark all that apply)
   - a. Cathodic Protection
   - b. Interior Lining (epoxy, etc)
   - c. None
   - d. Unknown — X
   - e. Other

8. **External Protection:** (Mark all that apply)
   - a. Cathodic Protection
   - b. Painted
   - c. Asphaltic coating, etc.
   - d. Fiberglass/Plastic Coated
   - e. None
   - f. Unknown — X
   - g. Other

9. **Piping:** (Mark all that apply)

a. Bare Steel _____
b. Galvanized Steel _____
c. Fiberglass Reinforced Plastic _____
d. Cathodically Protected _____
e. Unknown X
f. Other _____

10. **Changes/improvements to tank after installation (description and dates):**

_____

11. **Substance Currently or Last Stored in Greatest Quantity by Volume:** (Mark all that apply)

a. Empty _____
b. Diesel Fuel _____
c. Kerosene _____
d. Gasoline _____
e. Heating Oil _____
f. Used Oil _____
e. Name of principal CERCLA Substance _____
or..f. Chemical Abstract Service (CAS) No. _____
g. Indicate if a mixture of substances are/were stored _____
h. Unknown X

12. **Substance stored in past, if different from the current contents:** (Mark all that apply)

a. Diesel Fuel _____
b. Kerosene _____
c. Gasoline _____
d. Heating Oil _____
e. Used Oil _____
f. Name of principal CERCLA Substance _____
or..g. Chemical Abstract Service (CAS) No. _____
h. Indicate if a mixture of substances are/were stored _____
i. Unknown _____
j. Dates stored (if known) ___/___/_____ to ___/___/_____

13. **Additional Information for Tanks Permanently Taken Out of Service:**

a. Estimated date last used ___/___/___
b. Estimated quantity remaining _____ (gal.)
c. Tank filled with inert material _____ _____ (sand etc)

14. **Estimated depth to the top of Tank (fill over tank)** _____ ft

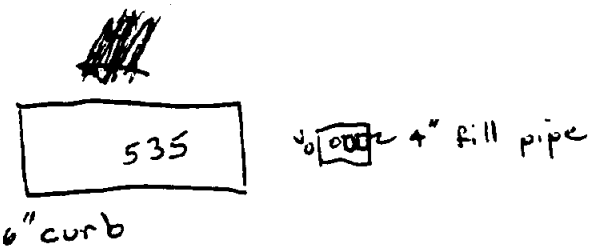
15. **Tank testing for tightness and potential leakage** (yes/no) _____

a. Method & Date : _____ ___/___/___

b. Results : _____

B. **FIELD DATA**

1. **Sketch of area/layout of tanks:**



2. **Containment Devices:**
   a. Spill Control (yes/no, etc): yes 6" curb

   b. Overflow Control (yes/no, etc) no

   other description

3. **Evidence of spills during transfer operations:** yes ____ no X

   a. Description/location spill(s)

   b. Photograph area and material (if evident) (yes/no)

   c. Quantity of material spilled (if known) _____ gallons

4. **Evidence of past/current leakage (pipe system leaks too):** yes/no no
   If no, do not continue with this section.
   a. Type of substance (from #11,12 above)

   b. Cause of leak or spill

   c. Type of leak (tank, pipe, etc)

   d. Quantity of material leaked or spilled _____ gallons

   e. Dates related to leaks or spills

   f. Sources of records for leaks or spills

   g. Corrective actions taken

   h. Photograph area around tank and material (if evident: yes/no)

5. **Evidence of soil, groundwater, or surface water contamination caused by UST:** yes ____ no X
   a. Describe contamination

   b. Quantity of material leaked/spilled _____ gallons

6. **Compatability of tank with local conditions** (examples include: overburden loads from traffic, encroachment of installation functions, etc. List anything that poses as a threat for damage or continued leaking of tank):

   ~~dirt cover~~ None, Compatible

7. **Overburden conditions** (concrete paving, thickness, etc.) dirt/crushed rock cover. Concrete fill containment w/ 6" curb.

8. **Depth to highest seasonal groundwater (average/each year):** _____ ft

   a. Source of information: _____

   b. Copy/documentation of source obtained (yes/no) _____

9. **Type of soil(s) in area around tank (from local SCS maps):**

   (Mark one)
   a. Available from Base _____
   b. Obtained from Base X
   c. Obtained from SCS _____
   d. Need to be obtained from SCS _____

10. **Take photographs of unique features related to the tank, piping, fill locations, any evidence of settlement, and the surrounding area (access difficulties):** (yes/no) yes

11. **Evidence of Installation correspondance with regulators (NOV's, etc.) on problem/leaking tanks:**

   a. Documentation of correspondance (yes/no) _____
   (If no, do not continue with this section.)

   b. Agency contacted _____

   c. POC at Agency (& phone) _____

   d. Requirements to rectify problem(s) (yes/no) _____

   e. Documentation of correspondance obtained (yes/no) _____

12. **Obtained copies of any Installation information on tank:** (yes/no) NO

13. **Indicate whether additional information is being sent and when its arrival is expected:**

   a. Date of/time until anticipated arrival _____

   b. POC for information transmittal (phone) _____


NMFW5

DATE: 8 / 10 / 89

INVENTORY OF UNDERGROUND STORAGE TANKS FOR DERA ELIGIBILITY

INSTALLATION: Fort Wingate LOCATION: Gallup, NM

POC @ INSTALLATION: (name & no/.) Adrian Bond

TEAM LEADER : Terry Samson TEAM ASSIST. Scott Kool

TANK ID NO. : (assigned no/) NMFW06 (other) Bldg 36

A. OFFICE DATA (Obtain prior to field work) NOTES

1. **Status of tank:**
   - a. Currently in use — x
   - b. Temporarily out of use
   - c. Permanently out of use
   - d. Brought into use after 5/8/86
   - e. Not been used since Jan. 1984
   - f. Leakage prior to March 1, 1986 (The Installation must have evidence)

2. **Support Function of Tank (relationship to building or support use of tank):**

3. **Estimated Age (in years)** U **Date installed** ___/___/_

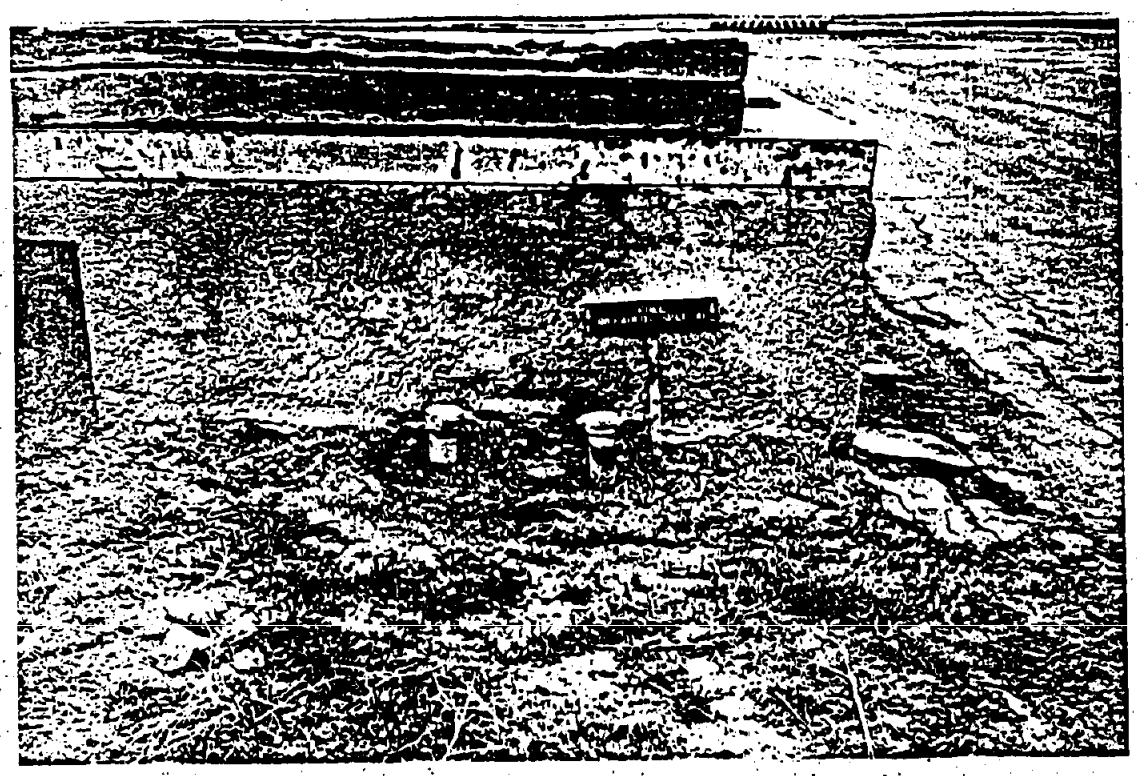
4. **Tank Manufacturer (if known)** U

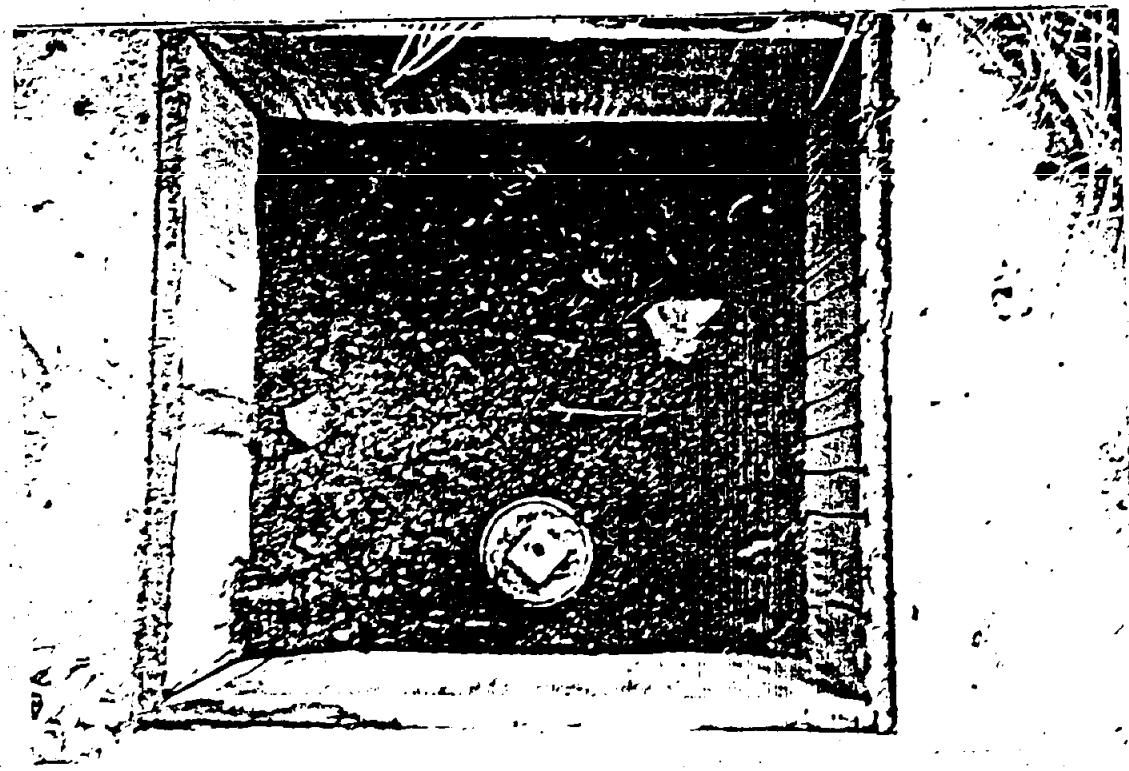
5. **Estimated Total Capacity** U gallons

6. **Material of Tank Construction:** (Mark one only)
   - a. Steel
   - b. Concrete
   - c. Fiberglass
   - d. Unknown — x
   - e. Other

7. **Internal Protection:** (Mark all that apply)
   - a. Cathodic Protection
   - b. Interior Lining (epoxy, etc)
   - c. None
   - d. Unknown — x
   - e. Other

8. **External Protection:** (Mark all that apply)
   - a. Cathodic Protection
   - b. Painted
   - c. Asphaltic coating, etc.
   - d. Fiberglass/Plastic Coated
   - e. None
   - f. Unknown — x
   - g. Other





9. **Piping:** (Mark all that apply)

a. Bare Steel _____
b. Galvanized Steel _____
c. Fiberglass Reinforced Plastic _____
d. Cathodically Protected _____
e. Unknown X
f. Other _____

10. **Changes/improvements to tank after installation (description and dates):**

_____

11. **Substance Currently or Last Stored in Greatest Quantity by Volume:** (Mark all that apply)

a. Empty _____
b. Diesel Fuel _____
c. Kerosene _____
d. Gasoline _____
e. Heating Oil _____
f. Used Oil _____
e. Name of principal CERCLA Substance _____
or..f. Chemical Abstract Service (CAS) No. _____
g. Indicate if a mixture of substances are/were stored _____
h. Unknown X

12. **Substance stored in past, if different from the current contents:** (Mark all that apply)

a. Diesel Fuel _____
b. Kerosene _____
c. Gasoline _____
d. Heating Oil _____
e. Used Oil _____
f. Name of principal CERCLA Substance _____
or..g. Chemical Abstract Service (CAS) No. _____
h. Indicate if a mixture of substances are/were stored _____
i. Unknown _____
j. Dates stored (if known) ___/___/_____ to ___/___/_____

13. **Additional Information for Tanks Permanently Taken Out of Service:**

a. Estimated date last used ___/___/___
b. Estimated quantity remaining _____ (gal.)
c. Tank filled with inert material _____ (sand etc)

14. **Estimated depth to the top of Tank (fill over tank)** 1 ft

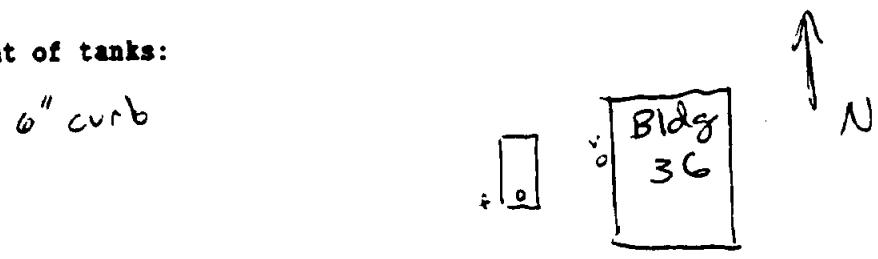
15. **Tank testing for tightness and potential leakage** (yes/no) _____

a. Method & Date : _____ ___/___/___

b. Results : _____

B. **FIELD DATA**

1. **Sketch of area/layout of tanks:**



2. **Containment Devices:**
   a. Spill Control (yes/no, etc): yes concrete curb

   b. Overflow Control (yes/no, etc) no

   other description _____

3. **Evidence of spills during transfer operations:** yes ____ no X

   a. Description/location spill(s) _____

   b. Photograph area and material (if evident) (yes/no) ____

   c. Quantity of material spilled (if known) _____ gallons

4. **Evidence of past/current leakage (pipe system leaks too):** yes/no no
   If no, do not continue with this section.
   a. Type of substance (from #11,12 above) _____

   b. Cause of leak or spill _____

   c. Type of leak (tank, pipe, etc) _____

   d. Quantity of material leaked or spilled _____ gallons

   e. Dates related to leaks or spills _____

   f. Sources of records for leaks or spills _____

   g. Corrective actions taken _____

   h. Photograph area around tank and material (if evident: yes/no)

5. **Evidence of soil, groundwater, or surface water contamination caused by UST:** yes ____ no X
   a. Describe contamination _____

   b. Quantity of material leaked/spilled _____ gallons

6. **Compatability of tank with local conditions** (examples include: overburden loads from traffic, encroachment of installation functions, etc. List anything that poses as a threat for damage or continued leaking of tank):
   6" asphalt pavement, overburden load from traffic.

7. **Overburden conditions** (concrete paving, thickness,etc.) 1' to top of tank. 6" of asphalt pavement. concrete spill containment w/ 6" curb.

8. **Depth to highest seasonal groundwater (average/each year):** _____ ft

a. Source of information: _____

b. Copy/documentation of source obtained (yes/no) _____

9. **Type of soil(s) in area around tank (from local SCS maps):**

(Mark one)
- a. Available from Base _____
- b. Obtained from Base X
- c. Obtained from SCS _____
- d. Need to be obtained from SCS _____

10. **Take photographs of unique features related to the tank, piping, fill locations, any evidence of settlement, and the surrounding area (access difficulties):** (yes/no) yes

11. **Evidence of Installation correspondance with regulators (NOV's, etc.) on problem/leaking tanks:**

a. Documentation of correspondance (yes/no) _____
(If no, do not continue with this section.)

b. Agency contacted _____

c. POC at Agency (& phone) _____

d. Requirements to rectify problem(s) (yes/no) _____

e. Documentation of correspondance obtained (yes/no) _____

12. **Obtained copies of any Installation information on tank:** (yes/no) no

13. **Indicate whether additional information is being sent and when its arrival is expected:**

a. Date of/time until anticipated arrival _____

b. POC for information transmittal (phone) _____

INVENTORY SUMMARY SHEETS

UST SURVEY TANK #	INSTALLATION TANK #	CURRENT STATUS	YEAR INSTALLED	VOLUME GALLON	CURRENT CONTENTS
NMFW1		IN	U	U	U
NMFW2		IN	U	U	U
NMFW3		IN	U	U	U
NMFW4		IN	U	U	U
NMFW5		IN	U	U	U
NMFW6		IN	U	U	U

UST SURVEY TANK #	TANK MATERIAL	INTERNAL PROTECTION	EXTERNAL PROTECTIO	TYPE OF PIPING	DEPTH OF TANK
NMFW1	U	U	U	U	2
NMFW2	U	U	U	U	2
NMFW3	U	U	U	U	2
NMFW4	U	U	U	U	2
NMFW5	U	U	U	U	U
NMFW6	U	U	U	U	1

UST SURVE TANK #	YEAR OF LAST TEST	SPILL CONTROL	OVERFLOW CONTROL	EVIDENCE OF SPILLS	EVIDENCE OF LEAKS
NMFW1	U	NO	NO	NO	NO
NMFW2	U	NO	NO	NO	NO
NMFW3	U	NO	NO	NO	NO
NMFW4	U	NO	NO	NO	NO
NMFW5	U	YES	NO	NO	NO
NMFW6	U	YES	NO	NO	NO

UST TANK #	SUGROUNDWATER CONTAMINATI	DEPTH OF GROUNDWATER	SOIL TYPE	PRIMARY REGULATOR	DERA ELIGIBILE
NMFW1	NO	U	U	U	NO
NMFW2	NO	U	U	U	NO
NMFW3	NO	U	U	U	NO
NMFW4	NO	U	U	U	NO
NMFW5	NO	U	U	U	NO
NMFW6	NO	U	U	U	NO

LEGEND:

A - ASPHALT COATING
AN - ACID NEUTRALIZATION
C - CONCRETE
CF - CONTAMINATED FUEL
FO - FUEL OIL
HO - HEATING OIL
DS - DIESEL
U - UNKNOWN

COMPLIANCE REQUIREMENTS

AND

COST ESTIMATE

APPENDICES

APPENDIX A

SCOPE OF WORK

INVESTIGATION AND EVALUATION OF UNDERGROUND STORAGE TANKS AT U.S. ARMY ARMAMENT MUNITIONS AND CHEMICAL COMMAND (AMCCOM) FACILITIES

1.0 GENERAL STATEMENT OF SERVICES

1.1 Background. The Army Materiel Command (AMC) is presently investigating the status of underground storage tanks (UST) at individual installations under its various subcommands. USTs are defined in 40 CFR 280 as the tank and associated piping. Compliance with recently finalized U.S. Environmental Protection Agency (EPA) and existing State regulations governing USTs is required. In an effort to reach this goal, all known existing USTs at each installation are to be investigated, evaluated, and a compliance program drawn up. The investigations will focus primarily on identifying USTs requiring remedial work which qualifies for funding under the Defense Environmental Restoration Account (DERA). The U.S. Army Corps of Engineers, Huntsville Division (CEHND), on behalf of AMC, is contracting for the required work.

1.2 Location. The focus of this scope of work (SOW) is several installations under the U.S. Army Armament Munitions and Chemical Command (AMCCOM). These sites are Joliet Army Ammunition Plant (AAP), Joliet, Illinois; Alabama AAP, Childersburg, Alabama; Pine Bluff Arsenal, Pine Bluff, Arkansas; Riverbank AAP, Riverbank, California; Hays AAP, Pittsburgh, Pennsylvania; Iowa AAP, Middletown, Iowa; Ravenna AAP, Ravenna, Ohio; St. Louis AAP, St. Louis, Missouri; Ethan Allen Firing Range, Burlington, Vermont; US Army Chemical Research, Development & Engineering Center (CRDEC), Aberdeen, Maryland; Picatinny Arsenal, Dover, New Jersey; Kansas AAP, Parsons, Kansas; Sunflower AAP, DeSoto, Kansas; Louisiana AAP, Shreveport, Louisiana; Lake City AAP, Independence, Missouri; Mississippi AAP, Picayune Mississippi; Watervliet Arsenal, Watervliet, New York; McAlester AAP, McAlester, Oklahoma; Scranton AAP, Scranton, Pennsylvania; Holston AAP, Kingston, Tennessee; Milan AAP, Milan, Tennessee; Lone Star AAP, Texarkana, Texas; Radford AAP, Radford, Virginia; Indiana AAP, Charleston, Indiana; Newport AAP, Newport, Indiana; Twin Cities AP, New Brighton, Minnesota; Cornhusker AAP, Grand Island, Nebraska; Hawthorne AAP, Hawthorne, Nevada; Volunteer AAP, Chattanooga, Tennessee; Rock Island Arsenal, Rock Island, Illinois; Longhorn AAP, Marshall, Texas; and Badger AAP, Baraboo, Wisconsin.

1.3 Current Status. USTs exist under varying conditions of age, construction material, capacity, material stored, and tank quality at these sites. Tables 1 through 3 present general information on USTs previously

TABLE 1
LEAK POTENTIAL INDEX**

INSTALLATION	STATE	NUMBER UST	VERY HIGH	HIGH	MEDIUM	LOW	VERY LOW	NO DATA
Alabama AAP	AL	1	0	1	0	0	0	0
Badger AAP	WI	56	0	0	0	0	0	56
Cornhusker AAP	NE	11	10	0	1	0	0	0
CRDEC	MD	*	0	0	0	0	0	*
Ethan Allen FR	VT	*	0	0	0	0	0	*
Hawthorne AAP	NV	52	0	1	41	7	3	0
Hays AAP	PA	*	0	0	0	0	0	*
Holston AAP	TN	26	8	8	7	0	0	3
Indiana AAP	IN	35	25	0	7	3	0	0
Iowa AAP	IA	*	0	0	0	0	0	*
Joliet AAP	IL	40	0	0	0	0	0	40
Kansas AAP	KN	25	0	0	0	0	0	25
Lake City AAP	MO	16	9	3	4	0	0	0
Lone Star AAP	TX	26	24	2	0	0	0	0
Longhorn AAP	TX	32	0	0	0	0	0	32
Louisiana AAP	LA	15	0	0	0	0	0	15
McAlester AAP	OK	2	1	1	0	0	0	0
Milan AAP	TN	31	0	0	0	0	0	31
Mississippi AAP	MI	4	0	0	4	0	0	0
Newport AAP	IN	12	6	4	2	0	0	0
Picatinny ARS	NJ	*	0	0	0	0	0	*
Pine Bluff ARS	AK	75	40	12	23	0	0	0
Ravenna AAP	OH	*	0	0	0	0	0	*
Riverbank AAP	CA	24	0	0	0	0	0	24
Radford AAP	VA	31	22	3	6	0	0	0
Rock Island ARS	IL	16	0	0	0	0	0	16
Scranton AAP	PA	1	1	0	0	0	0	0
St. Louis AAP	MO	*	0	0	0	0	0	*
Sunflower AAP	KN	24	19	5	0	0	0	0
Twin Cities AAP	MN	10	3	6	1	0	0	0
Volunteer AAP	TN	12	6	1	4	0	0	1
Watervliet ARS	NY	28	0	0	0	0	0	28
Totals		605	174	47	100	10	3	214

* number of USTs is unknown.
** Leak Potential Index based on following factors: UST age, condition, proximity to surface and groundwater.

TABLE 3
AGE AND CAPACITY

INSTALLATION	AGE (YEARS) 0-10	10-30	>30	CAPACITY (GALLONS) <1100	<10000	>10000
Alabama AAP	0	0	1	0	0	1
Badger AAP	8	8	40	31	14	11
Cornhusker AAP	0	8	3	10	0	1
CRDEC	*	*	*	*	*	*
Ethan Allen FR	*	*	*	*	*	*
Hawthorne AAP	9	7	36	3	11	38
Hays AAP	*	*	*	*	*	*
Holston AAP	5	13	8	17	4	5
Indiana AAP	26	1	8	20	2	13
Iowa AAP	*	*	*	*	*	*
Joliet AAP	2	16	22	6	13	21
Kansas AAP	5	8	12	1	6	18
Lake City AAP	4	0	12	1	7	8
Lone Star AAP	2	0	24	19	1	6
Longhorn AAP	5	7	20	19	2	11
Louisiana AAP	15	0	0	3	3	9
McAlester AAP	0	2	0	2	0	0
Milan AAP	18	0	13	3	6	22
Mississippi AAP	4	0	0	0	0	4
Newport AAP	1	2	9	7	1	4
Picatinny ARS	*	*	*	*	*	*
Pine Bluff ARS	20	22	33	11	10	54
Riverbank AAP	3	7	14	12	1	11
Radford AAP	7	12	12	8	14	9
Ravenna AAP	*	*	*	*	*	*
Rock Island ARS	9	1	6	4	1	11
Scranton AAP	0	0	1	1	0	0
St. Louis AAP	*	*	*	*	*	*
Sunflower AAP	3	13	8	17	3	4
Twin Cities AAP	3	1	6	1	3	6
Volunteer AAP	2	7	3	4	5	3
Watervliet ARS	4	18	6	13	10	5
Totals	155	153	297	213	117	275

* number, age, and capacity of USTs is unknown.

inventoried at each installation. The tables were obtained from the Construction Engineering Research Laboratory database from information generated several years ago. Therefore, the data may not be entirely accurate.

2.0 OBJECTIVE

The primary objective of this project is to identify USTs in need of remedial action. The USTs and remedial action will be evaluated and qualified as eligible or not eligible for DERA funding. This will be accomplished by investigating individual USTs at each installation listed in Table 1 with respect to the guidelines set forth in 40 CFR 280 and the existing state regulations. Investigation results will be compared against DERA eligibility requirements established in Section 5 of this SOW. Based on the findings of the investigation and evaluation of Remedial Action, a Compliance Plan will be developed for each installation. This plan will address the actions required or recommended and the timetables involved in bringing each DERA eligible UST into compliance with the applicable provisions of the regulations. Remedial Actions will be based on source control only, not groundwater remediation.

3.0 DETAILED DESCRIPTION OF SERVICES

The AE shall be responsible for performance of the work described in the Tasks in Section 3.0. Prior to performing site visits, the AE shall obtain any available UST information from the US Army Toxic & Hazardous Materials Agency, US Army Environmental Hygiene Agency, and Construction Engineering Research Laboratory. The AE shall submit to AMCCOM (Mr. Cyril Onewokae, 309-782-1350) and CEHND (Mr. Walt Perro, 205-895-5142) 7 days in advance of any site visits, a proposed schedule for all site visits. All work shall be performed under the supervision of a registered professional engineer and in accordance with this SOW as follows:

3.1 (Task A-1) Site Visit to Rock Island Arsenal, Illinois. The AE shall perform a site visit to Rock Island Arsenal to obtain AMCCOM guidance on UST investigations, review AMCCOM records pertaining to USTs at all the subject sites in general, and to review records and other pertinent information available on the existing USTs at Rock Island Arsenal, in particular. In addition, the AE shall perform a visual inspection (items affecting preparation of a remedial action cost estimate) of the UST sites at the installation. This visual inspection shall not involve examining the contents

of the USTs. Septic tanks, shall be excluded from the investigations. While at Rock Island Arsenal, the AE shall also visit the AMC Installations and Services Activity (AMXEN-IC) to obtain any additional relevant UST information.

3.2 (Task A-2) Site Visits. The AE shall perform a site visit to each of the thirty-two installations identified in Paragraph 1.2 to review records and other pertinent information available on the existing USTs. In addition, the AE shall perform a visual inspection (items affecting preparation of a remedial action cost estimate) of the UST sites at each installation. This visual inspection shall not involve examining the contents of the USTs. Septic tanks, shall be excluded from the investigations.

3.3 (Task A-3) Location and Soil Maps. The AE shall prepare a location map of each installation, of a scale sufficient enough to show the general location of all USTs. Each UST shall be identified using a uniform numbering system as directed by AMCCOM. The base map can be obtained from the appropriate installations. A soil map of the installation shall be obtained from the local Soil Conservation Service (SCS) office.

3.4 (Task A-4) EPA Form 7530-1. The AE shall compile all EPA Forms 7530-1, Notification for Underground Storage Tanks, for installations visited in Tasks A-1 and A-2.

3.5 (Task A-5) Inventory. To supplement EPA Form 7530-1, the AE shall prepare, in tabular form, an inventory of each UST providing the following information:

- Tank manufacturer, if known
- Year installed
- Substance stored in the past, if different from the current contents, and dates stored
- Estimated depth to top of tank
- Type of tank (e.g. STI-P3)
- Improvements after installation (description and dates)
- Spill and overflow controls
- Previous reports, if applicable (titles, dates and sources)
- Evidence of past or current leakage, including substance, cause, quantity, dates, source of records and corrective actions taken (including piping system leaks)

- Evidence of soil, groundwater or surface water contamination caused by UST.
- Evidence of spills during transfer operations
- Compatibility of tank with local conditions (such as overburden loads from traffic)
- Depth to highest seasonal groundwater
- Current photographs of a unique nature
- Correspondence with regulators (NOVs, etc.) on problem tanks and requirements to rectify the problem(s).
- Type of soil in area from local SCS maps.

3.6 (Task A-6) Prepare Inventories and Compliance Plans. The AE shall prepare a report, by installation, incorporating the results of Tasks A-3 through A-5. The format of this report shall follow the guidelines contained in Section 4.2.

3.7 (Task A-7) Presentations. For the purposes of negotiation, the AE shall assume that two people from the AE firm shall attend the meeting and that the meeting shall last no longer than one day. The meeting shall consist of an informal presentation of the work accomplished and anticipated, followed by an open discussion among those present.

3.7.1 A review meeting will be held at AMCCOM prior to preparation of the Draft submittal for the first installation visited to address any concerns they may have with the work being performed and the final product.

3.7.2 Following the Draft submittal, a review meeting will be held at the AE's office.

4.0 SUBMITTALS

4.1 Format. The Inventories and Compliance Plans presenting all data, analysis, and findings shall be prepared in the AE's standard format for engineering reports and in accordance with the Table of contents in Paragraph 4.2, where applicable. All drawings shall be of engineering quality in drafted form with sufficient detail to show interrelations of major features on the installation site map. When drawings are required, data may be combined to reduce the number of drawings. The report shall consist of 8-1/2" x 11" pages with drawings folded, if necessary, to this size. A decimal paragraphing system shall be used. The report covers shall consist of durable three-hole type binders and shall hold pages firmly while allowing easy

removal, addition, or replacement of pages. A report title page shall identify the AE, the Corps of Engineers, Huntsville Division, and the date. The AE identification shall not dominate the title page. Each page of the draft report shall be stamped "DRAFT." This Scope of Work shall be incorporated as an appendix in the draft report only. Submittals shall include incorporation of all previous review comments accepted by the AE as well as a section describing the disposition of each comment. Disposition of comments submitted with the final report shall be separate from the report document. All final submittals shall be sealed by the registered Professional Engineer who is responsible for project supervision.

4.2 Inventories and Compliance Plans Contents. The contents of the reports required in Task A-6 shall be arranged in accordance with the following outline, as applicable. A separate report shall be submitted for each installation. It is intended that the reports be structured such that the portions which apply to all installations can be duplicated with as little modification as possible.

EXECUTIVE SUMMARY

1.0 Introduction and Purpose

2.0 Scope of Study with Location Map

3.0 Inventory (submit together for each installation)

3.1 Installation Title Sheet

3.2 Installation Map (from Task A-3)

3.3 Soil Map (from Task A-3)

3.4 EPA Form 7530-1 (from Task A-4). Indicate when a Form 7530-1 is not available for a particular UST.

3.5 Inventory (from Task A-5)

3.6 Compliance Requirements and Cost Estimate. For each UST that is deemed DERA eligible, the AE shall provide: the requirements for remedial action or compliance action in accordance with 40 CFR Part 280; a timetable for compliance; a cost estimate for the required action (including applicable 29 CFR 1910.120 requirements); status of regulator requirements and any specific problems; and DERA funding eligibility in accordance with guidelines set forth in Section 5.0.

4.0 Appendices

4.1 Scope of Work

4.2 Previous Comments and Responses

4.3 Written Correspondence

4.4 Regulatory correspondence between installations and regulators.

4.5 Trip Reports

4.6 Records of Meetings

4.7 Phone Conversation Records

4.3 Conference Notes. The AE will be responsible for taking notes and preparing the reports of all conferences, presentations, and review meetings. Conference notes will be prepared in typed form and the original furnished to the Contracting Officer (within five (5) working days after date of conference) for concurrence and distribution to all attendees. This report shall include the following items as a minimum:

a. The date and place the conference was held with a list of attendees. The roster of attendees shall include name, organization, and telephone number.

b. Written comments presented by attendees shall be attached to each report with the conference action noted. Conference action as determined by CEHND'S Project Manager shall be "A" for an approved comment, "D" for a disapproved comment, "W" for a comment that has been withdrawn, and "E" for a comment that has an exception noted.

c. Comments made during the conference and decisions affecting criteria changes, must be recorded in the basic conference notes. Any augmentation of written comments should be documented by the conference notes.

4.4 Confirmation Notices. The AE will be required to provide a record of all discussions, verbal directions, telephone conversations, etc., participated in by the AE and/or representatives on matters relative to this contract and the work. These records, entitled "Confirmation Notices," will be numbered sequentially and shall fully identify participating personnel, subject discussed, and any conclusions reached. The AE shall forward to the Contracting Officer as soon as possible (not more than five (5) work days), a reproducible copy of said confirmation notices. Distribution of said confirmation notices will be made by the Government.

4.5 Progress Reports and Charts. The AE shall submit progress reports to the Contracting Officer monthly. The progress reports shall indicate work performed, and problems incurred during the preceding period. Upon award of contract, the AE shall, within 15 days, prepare a progress chart to show the

proposed schedule for completion of the project. The progress chart shall be prepared in reproducible form and submitted for approval. The actual progress shall be updated and submitted by the 15th of each month.

4.6 Completion Dates.

Work Item	Completion Date
Draft Submittal	1 Sep 89
Draft review meeting at CEMRO	15 Sep 89
Final Submittal	30 Sep 89

4.7 Submittals.

4.7.1 General Submittal Requirements.

4.7.1.1 Distribution. The AE is responsible for reproduction and distribution of all documents. The AE shall furnish copies of submittals to each addressee listed in paragraph 4.7.3 in the quantities listed in the document submittal list. Submittals are due at each of the addressees not later than the close of business on the dates shown in paragraph 4.6.

4.7.1.2 Partial Submittals. Partial submittals will not be accepted unless prior approval is given.

4.7.1.3 Cover Letters. A cover letter shall accompany each document and indicate the project, project phase, the date comments are due, to whom comments are submitted, the date and location of the review conference, etc., as appropriate. (Note that, depending on the recipient, not all letters will contain the same information.) The contents of the cover letters should be coordinated with CEHND-ED-PM prior to the submittal date. The cover letter shall not be bound into the document.

4.7.1.4 Supporting Data and Calculations. The tabulation of criteria, data, circulations, and etc., which are performed but not included in detail in the report shall be assembled as appendices. Criteria information provided by CEHND need not be reiterated, although it should be referenced as appropriate. Persons performing and checking calculations are required to put their full names on the first sheet of all supporting calculations, and etc., and initial the following sheets. These may not be the same individual. Each sheet should be dated.

4.7.1.5 Reproducibles. One camera-ready, unbound copy of each submittal shall be provided to the Contracting Officer in addition to the submit-

tals required in the document and submittal list. All final submittals shall also be provided to the Contracting Officer on floppy disks compatible with the Intel 310/80286 computer in ASCII format and in Word Star 2000 Release 2.0 format.

4.7.2 Specific Submittal Requirements. Inventories and Compliance Plans (Task A-6) (Draft and Final).

4.7.3 Addressees.

Commander
U.S. Army Corps of Engineers
Huntsville Division
ATTN: CEHND-ED-PM (Mr. Walt Perro)
PO Box 1600
Huntsville, AL 35807-4301

Commander
U.S. Army Armament Munitions
and Chemical Command (AMCCOM)
ATTN: AMSMC-ISE
(Mr. Cyril Onewokae)
Rock Island Arsenal, IL 61299-6000

Commander
U.S. Army Material Command (USAMC)
ATTN: AMCEN-A (Lydia Sanchez)
5001 Eisenhower Ave.
Alexandria, VA 22333-0001

Commander
U.S. Army Corps of Engineers
Toxic and Hazardous Materials
Agency, ATTN: CETHA-IR-D (Mr. Alavi)
Aberdeen Proving Ground, MD 21010-5401

4.7.4 Document and Submittal List.

	Inventories and Compliance Plans For Each Installation	
	Draft	Final
CEHND-ED-PM	6	6
USAMC	1	1
AMCCOM	4	4
Installation	2	2
CETHA-IR-D	2	2
TOTAL	15	15

5.0 DERA ELIGIBILITY REQUIREMENTS.

For a UST to be eligible for DERA funding for remediation, one of the following conditions must be met:

a. Cleanup of contamination believed to be harming human health and the environment resulting from USTs not used since January 1984, unless such cleanup is incidental to UST replacement.

b. Cleanup of contamination believed to be harming human health and the

environment resulting from UST leaks which occurred prior to March 1, 1986, unless the cleanup is incidental to UST replacement. The Installation must have evidence that USTs were leaking prior to March 1, 1986.

c. Costs for replacement of USTs is not DERA eligible.

6.0 PUBLIC AFFAIRS.

The AE shall not publicly disclose any data generated or reviewed under this contract. The AE shall refer all requests for information to CEHND. Reports and data generated under this contract shall become the property of the Department of Defense and distribution to any other source by the AE, unless authorized by the Contracting Officer, is prohibited.

7.0 SECURITY REQUIREMENTS

Security requirements for entry on to the various installations must be followed. In some cases, requests for entry may be required 7 days in advance of arrival on-site.

8.0 REFERENCE DOCUMENTS

8.1 "Code of Federal Regulations, Volume 40, Part 280," September 23, 1988.

8.2 Computer Printout of AMCCOM Underground Storage Tank Inventory.

APPENDIX B

PREVIOUS COMMENTS AND RESPONSES

APPENDIX C

WRITTEN CORRESPONDENCE

INVESTIGATION AND EVALUATION OF UNDERGROUND STORAGE TANKS
AT U.S. ARMY DEPOT SYSTEMS COMMAND FACILITIES

1. The investigation team will arrive at 1:00PM August 10, 1989 and request the infomation in paragraph 2. We will conduct an inbriefing with the installation point of contact. The underground storage tanks will then be inspected and an outbriefing conducted.

2. Information required to be supplied by the Installation Point of Contact:

a. Installation map, showing all underground storage tank locations (including all heating oil tanks).

b. The completed EPA Form 7530 for each underground storage tank.

c. An installations soils map. This is a general soils map for the area and may be obtained through the county seat office if not available at the installation.

d. As-built drawings of each tank installation, if available.

3. The investigation team will consist of Terry Samson and Scott Kool from the Omaha District Corps of Engineers. We will require the use of a camera during our inspection. The following security information is provided as required:

a. Terry Samson, Date of Birth 10/13/58, Social Security No. 507-90-6871, Security Clearance "Secret".

b. Scott Kool, Date of Birth 10/22/56, Social Security No. 484-70-0515, Security Clearance "Secret".

4. If information is required please contact Terry Samson at 402-221-4737.

Terry Samson
Project Manager

APPENDIX D

REGULATORY CORRESPONDENCE

APPENDIX E

TRIP REPORTS

TRIP REPORT

PROJECT: Investigation and Evaluation of Underground Storage Tanks(UST)

LOCATION: Fort Wingate, Gallup, New Mexico

DATE: 10 August 1989

PURPOSE: Perform record review and visual inspection of UST sites

ATTENDEES:

Terry Samson
Scott Kool
Adrian Bond
Fred Hale

SUMMARY:

1. On 10 August 1989 the above attendees met briely to discuss the scope of the investigaion, the method of data collection, and the support which the installation personnel were expected to furnish.

2. After the meeting we proceeded with Fred Hale to perform the site inspection of the UST. The location of the USTs were found by Fred Hale's memory only as we did not have a map.

3. After the inspection we returned to Adrian Bond's office. He was unable to provide the EPA 7530 Forms and indicated he would send them within two weeks. We told Mr. Bond that no tanks appeared to be leaking. We then went with Fred Hale to look for additional drawings and maps of the installation. Soils and installation maps were found and that concluded our investigation at Fort Wingate Depot.

APPENDIX F

RECORDS OF MEETINGS

Do to the briefness of the meetings with the installation personnel, all minutes of the meetings are provided in the trip report.

APPENDIX G

PHONE CONVERSATION RECORDS

APPENDIX H

COST ESTIMATE DATA AND CALCULATIONS

APPENDIX J

API PUBLICATION 1604

Removal and Disposal of Used Underground Petroleum Storage Tanks

Marketing Department

API RECOMMENDED PRACTICE 1604
SECOND EDITION, DECEMBER 1987

American
Petroleum
Institute

March 6, 1989

SUPPLEMENT TO RECOMMENDED PRACTICE 1604 ON REMOVAL AND DISPOSAL OF USED UNDERGROUND PETROLEUM STORAGE TANKS (Second Edition, December 1987)

On September 23, 1988, the United States Environmental Protection Agency issued its Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST). These standards, which will be Part 280 of Volume 40 of the Code of Federal Regulations, were published in Volume 53 of the Federal Register at pages 37194-212.

The EPA Technical Standards deal with removal and disposal of used USTs, among other topics. Consequently, some changes in Recommended Practice 1604 are called for. This Supplement contains revisions that will be included in the next edition.

SPECIFIC REVISIONS TO RECOMMENDED PRACTICE 1604

Unnumbered Page -- Foreword

Delete the third paragraph in the Foreword and substitute the following material:

> On September 23, 1988, the United States Environmental Protection Agency issued its Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST). These standards, which will be Part 280 of Volume 40 of the Code of Federal Regulations, were published in Volume 53 of the Federal Register at pages 37194-212. Furthermore, legislation and regulations on all aspects of UST management are under active development at state and local levels. These levels may have requirements other than those specified in the EPA Technical Standards, and the appropriate government agencies should be consulted about regulations that apply in the geographic area of interest before any action suggested by this Recommended Practice is taken. When used in this document, the term "implementing agency". means EPA or the designated state or local agency responsible for carrying out an approved UST program.
>
> This Recommended Practice is based upon the experience of knowledgeable members of the petroleum industry. In some respects it may be more stringent than the requirements imposed by the Technical Standards. However, the Recommended Practice does not attempt to cover all of the subjects covered by the EPA Technical Standards. Furthermore, while substantial effort has been made to ensure that none of the recommendations contravene the requirements of the Technical Standards, API is not undertaking to interpret the Standards and cannot guarantee that its recommendations are completely in accord. Nor is any representation made that these recommendations conform with any requirements imposed by state and local agencies.
>
> This edition of API Recommended Practice 1604 supersedes API Recommended Practice 1604, Second Edition, December 1987. The EPA Technical Standards provide that Recommended Practice 1604 can be used as a guide to compliance with EPA's requirements governing closure of USTs. According to EPA, an owner or operator conforms with this provision of the Standards if it uses the 1987 edition, which was in force when the Standards became final. However, an owner or operator who uses this

amended version will also be meeting the requirements of the 1987 edition, and EPA encourages the use of the most recent version.

Table of Contents

Change SECTIONS 3 and 4 to read as follows:

SECTION 3 - PERMANENT CLOSURE AND CHANGE OF SERVICE
3.1 General Requirements
3.2 Disposal in Place
3.3 Removal of Underground Tanks
3.4 Change of Service

Renumber SECTIONS 5, 6, and 7 to SECTIONS 4, 5, and 6.

Page 2

In subsection 1.3.1.1 Benzene, delete all material starting with the fourth sentence in the paragraph ("The American Conference . . . ") to the end of the paragraph and substitute the following:

The Occupational Safety and Health Administration (OSHA) imposes limits on occupational exposure. See 29 C.F.R. 1910.1000, Table Z-2, and 1910.1028.

Page 3

Delete the material under Section 2.1 Applicability and substitute the following:

An UST is considered temporarily out of service if it is:
a. Idle but will be returned to service;
b. Awaiting abandonment in place; or
c. Awaiting removal.
An UST that meets EPA's standards for new tanks or that has been upgraded in accord with EPA requirements can remain in the status of "temporarily out of service" indefinitely. An UST that does not meet EPA standards must be permanently removed from service after 12 months unless the implementing agency grants an extension. A site assessment must be completed before an extension can be applied for.

Add the following sentence to Section 2.2 Securing Tank Systems, subsection b.2.:

(If more than 2.5 centimeters (1 inch) of residue or more than 0.3 percent of the capacity of the system remain in

the tank, then release detection measures must be continued.)

Add a new major title SECTION 3 -- PERMANENT CLOSURE AND CHANGE OF SERVICE, and insert the following sections:

3.1 General Requirements

3.1.1 Applicability

Permanent closure of an UST can take place through abandonment in place or removal from the ground. A change of service (that is, conversion of the UST to storage of a non-regulated substance) should also be subject to many of the safeguards that apply to permanent closure.

3.1.2 Notification

The implementing agency must be notified at least 30 days before permanent closure or change of service is begun.

3.1.3 Site Assessment

Following notification, but before closure or change of service is completed, a site assessment must measure for the presence of a release at those places where contamination is most likely to be found. If the UST has been subject to release detection in the form of vapor monitoring, ground water monitoring, interstitial monitoring (in the form of monitoring between the walls of double wall tanks or observation wells), and if no release is indicated, then further site assessment is not necessary.

3.1.4 Corrective Action

If the site assessment indicates that a release(s) has occurred, then appropriate further evaluation and corrective action must be undertaken. See API Publication 1628.

3.1.5 Recordkeeping

Records demonstrating compliance with closure requirements must be maintained. The results of any site assessment of the excavation must be maintained for at least three years. These records can be kept by the owners and operators who took the tank out of service, by the current owners of the site, or by mailing the records to the implementing agency.

Change "SECTION 3 -- DISPOSAL IN PLACE" to "Section 3.2 Disposal in Place," and renumber the subsections accordingly.

Page 4

Insert the following material after the first sentence of present subsection 3.2.4 [renumbered to be 3.2.2.4]:

> During removal of liquids or residues from a tank it is likely that air will enter the tank, and may bring the tank atmosphere into the flammable range. Extra care should be taken during removal operations. For a complete description of safety precautions, refer to API Publication 2015.

Page 5

Change "SECTION 4 -- REMOVAL OF UNDERGROUND TANKS" to "Section 3.3 Removal of Underground Tanks," and renumber the subsections accordingly.

Page 7

Delete the present section 4.4.3 [renumbered to be 3.3.4.3] and substitute the following:

> Present 4.4.3 [Renumbered to be 3.3.4.3] When an existing USTS is partially or totally removed, a small amount of contaminated backfill may be encountered. Backfill can be contaminated by minor spills and drips during previous operation of the facility or by minor spills and drips during removal of equipment, despite efforts to drain and pump product from the equipment before removal. If severe contamination has occurred, local environmental officials and/or fire officials should be notified. Local officials may require isolation and special handling and/or disposal of contaminated backfill materials (see API Publication 1628). The implementing agency should be consulted about any requirements concerning notification, site assessment, or corrective action.

Page 8

Insert a new "Section 3.4 Change of Service" and add the following material:

> 3.4.1 Before a change of service, the UST must be emptied and cleaned.

3.4.2 Any new service should be compatible with the former service. The precautions described in sections [old numbers] 4.4.4 and 4.4.5, above, should be observed.

Pages 8-9

Renumber SECTIONS 5, 6, and 7 as SECTIONS 4, 5, and 6, and renumber subsections accordingly.

Removal and Disposal of Used Underground Petroleum Storage Tanks

API RECOMMENDED PRACTICE 1604
SECOND EDITION, DECEMBER 1987

American Petroleum Institute
1220 L Street, Northwest
Washington, D.C. 20005

FOREWORD

Underground storage tank systems that have held flammable or combustible liquids should be handled with extreme care during disposal in place, removal, storage, or disposal off site. This is particularly true of underground storage tanks at motor vehicle refueling facilities which are most frequently used for storage of motor fuel or other petroleum products.

The purpose of this recommended practice is to provide procedures for the disposal in place, removal, storage, and the off-site disposal or sale of used underground tanks that have contained flammable or combustible liquids. Although this guide specifically addresses underground storage tank systems at service station facilities, the principles outlined may be applied to similar systems used at other petroleum facilities.

At the time this recommended practice was written, legislation and regulations related to the operation, maintenance, disposal, and removal of underground petroleum storage systems were under development at the federal, state, and municipal levels. The appropriate government agencies should therefore be consulted about regulations that apply to the geographic area of interest before any action suggested in this recommended practice is taken. API will revise this recommended practice from time to time in an effort to ensure consistency with all applicable federal regulations. This edition of API Recommended Practice 1604 supersedes API Publication 1604, *Recommended Practice for the Abandonment and Removal of Used Underground Service Station Systems* (First Edition, 1981) in its entirety.

Suggested revisions are invited and should be submitted to the Director of the Marketing Department, American Petroleum Institute, 1220 L Street, N.W., Washington, D.C. 20005.

CONTENTS

Removal and Disposal of Used Underground Petroleum Storage Tanks

SECTION 1—GENERAL

1.1 Introduction

Underground petroleum storage systems that are no longer needed or suitable for product storage must be properly disposed in place or removed in order to avoid future safety or environmental hazards. Because of the nature of the flammable or combustible liquids that are stored in these tanks, hazardous conditions may arise in the work area during disposal in place or removal and subsequent handling of tanks. For this reason, all personnel involved in the procedures outlined in this recommended practice should be familiar with the potential hazards, and be knowledgeable in the appropriate health and safety measures needed to ensure a safe working environment.

1.2 Scope and Purpose

1.2.1 This publication recommends procedures for the disposal in place, removal, storage, and off-site disposal of underground storage tank systems that have contained flammable or combustible fluids. In general, it outlines requirements, procedures, and operating conditions to be followed by contractors, engineers, or other individuals who may be involved in these practices. While this recommended practice specifically addresses underground petroleum storage tank systems at service station facilities, the principles outlined may be applied to similar systems used at other petroleum storage facilities. All such work must be accomplished in accordance with federal, state, and local requirements as well as accepted safety standards. Before initiating work, the appropriate government agencies should be consulted concerning applicable regulatory and permit requirements.

1.2.2 All applicable permits must be obtained prior to beginning any work. Where required, contractors must be approved by local authorities. Contractors, subcontractors, and their employees responsible for tank abandonment or removal should be familiar with: (a) all applicable safety rules and regulations, (b) the use of equipment and procedures for testing and vapor-freeing tanks, (c) the handling and disposal of the types of wastes likely to be encountered, and (d) the applicable sections of the publications referenced in 1.4.

1.2.3 The procedures outlined in this recommended practice can be carried out without the need to enter the tank. Should tank entry be desired, the procedures outlined in API Publications 2015, 2015A, and 2217 and Recommended Practice 1631 should be followed.

1.3 Special Precautions

During the course of underground storage tank removal or in place disposal, workers may be exposed to petroleum hydrocarbon liquids, vapors, or wastes. The precautions in 1.3.1 and 1.3.2 should be observed by all individuals engaged in the procedures discussed in this recommended practice.

1.3.1 TOXICITY CONSIDERATIONS: PETROLEUM SUBSTANCES

Users should be aware of appropriate health precautions. When high concentrations of petroleum hydrocarbon vapors are inhaled, symptoms of intoxication may result. These symptoms, ranging from simple dizziness to excitement or unconsciousness, are similar to those produced by alcohol or anesthetic gases. If such effects occur, the individual should be removed to fresh air. For minor effects of exposure, breathing fresh air or oxygen results in rapid recovery. If breathing has stopped, artificial respiration should be applied promptly. Medical attention should be obtained as soon as possible. Paragraphs 1.3.1.1 and 1.3.1.2 contain special toxicity considerations for benzene and tetraethyl lead, which may be present in petroleum products or wastes found in underground storage tanks. Care should be exercised to minimize exposure to these substances when they are present during the handling of used underground petroleum storage tanks.

WARNING: Tests have shown that prolonged or repeated exposure to some petroleum substances, in liquid or vapor form, may cause serious illness, including cancer, in laboratory animals. Although the significance of these test results to human health is not fully understood, exposure to petroleum substances should be minimized. The following health precautions are suggested:

a. Avoid skin contact and inhaling vapors.

b. Keep petroleum liquids away from eyes, skin, and mouth; they can be harmful or fatal if inhaled, absorbed through the skin, or ingested.
c. Use soap and water or waterless hand cleaner to remove any petroleum product that contacts skin. Do not use gasoline or similar solvents to remove oil and grease from skin.
d. Promptly wash petroleum-soaked clothes and avoid using soaked leather goods. Properly dispose of rags.
e. Keep work areas clean and well ventilated.
f. Clean up spills promptly.

1.3.1.1 Benzene

High occupational exposures to benzene have been associated with various human blood disorders, including an increased risk of leukemia. Very high levels have also been known to affect the central nervous system. Benzene administered by mouth has induced cancer in laboratory animals in long-term tests. Benzene is rapidly absorbed through the skin. The American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit value (TLV) for benzene is 1-part-per-million time-weighted average, with a short term exposure limit of 25 parts-per-million (the latter is designated for deletion in 1986 or 1987). The Occupational Safety and Health Administration (OSHA) 8-hour time-weighted average for benzene is 10 parts-per-million with an acceptable ceiling concentration of 25 parts-per-million and an acceptable peak of 50 parts-per-million for 10 minutes (29 CFR 1910.1000, Table Z-2). OSHA conducted a rulemaking in 1986 with the intent to revise this standard. The latest OSHA *Occupational Safety and Health Standards* should be consulted to determine the current TLV.

1.3.1.2 Tetraethyl Lead

This organic form of lead can cause diseases of the central and peripheral nervous system, the kidney and the blood. Skin absorption of this compound is a major route of entry into the body. The ACGIH time-weighted average is 0.1 milligrams per cubic meter for general room air. The TLV in OSHA's *Occupational Safety and Health Standards* (29 CFR 1910.1000, Table Z-1) is 0.075 milligrams per cubic meter.

1.3.2 FLAMMABILITY AND COMBUSTIBILITY CONSIDERATIONS

1.3.2.1 Flammable or combustible vapors are likely to be present in the work area. The concentration of vapors in the tank, the excavation, or the work area may reach the flammable (explosive) range before venting is completed and a safe atmosphere is reached. Therefore, precautions must be taken to: (a) eliminate all potential sources of ignition from the area (for example, smoking materials, nonexplosion-proof electrical and internal combustion equipment), (b) prevent the discharge of static electricity during venting of flammable vapors, and (c) prevent the accumulation of vapors at ground level. Refer to API Publication 2015 and Recommended Practice 2003 for general precautionary measures to follow during the vapor-freeing procedure.

1.3.2.2 A combustible gas indicator (CGI) should be used to check for hazardous vapor concentrations (see 4.3). All open flame and spark-producing equipment within the vapor hazard area should be shut down. Electrical equipment (for example, pumps and portable hand tools) used in the area must be explosion-proof in accordance with NFPA 70B Class I, Division I, Group D or otherwise approved for use in potentially explosive atmospheres.

1.4 Referenced Publications

Portions of the following documents contain information regarding various engineering and safety procedures that may be applicable to underground storage tank removal or disposal.

API	
Bull 1628	*Underground Spill Cleanup Manual*
RP 1631	*Interior Lining of Underground Storage Tanks*
RP 2003	*Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents*
Publ 2015	*Cleaning Petroleum Storage Tanks*
Publ 2015A	*A Guide for Controlling the Lead Hazard Associated with Tank Entry and Cleaning* (Supplement to API Publ 2015)
Publ 2217	*Guidelines for Confined Space Work in the Petroleum Industry*
Publ 2219	*Safe Operating Guidelines for Vacuum Trucks in Petroleum Service*
NFPA[1]	
327	*Standard Procedure for Cleaning or Safeguarding Small Tanks and Containers*
70B	*Electrical Equipment Maintenance*

[1]National Fire Protection Association, Batterymarch Park, Quincy, Massachusetts 02269.

OSHA[2]

Occupational Safety and Health Standards (29 CFR 1910.1000)

EPA[3]

General Regulations for Hazardous Waste Management (40 CFR 260)

Regulations for Identifying Hazardous Waste (40 CFR 261)

Regulations for Hazardous Waste Generators (40 CFR 262)

Underground Storage Tanks Regulations (40 CFR 280.11, 280.22)

SECTION 2—TEMPORARILY OUT OF SERVICE

2.1 Applicability

Underground petroleum storage tank systems are considered temporarily out of service if they are: (a) idle but will be returned to service within one year, (b) are awaiting abandonment in place, or (c) are awaiting removal.

2.2 Securing Tank Systems

Tanks temporarily out of service must be properly secured for the period they will be out of service. Tanks may be considered properly secured if processed as follows:

a. Observe all special precautions described in 1.3 through 1.3.2.2.

b. Remove stored product from the tank using one of the following methods:

1. Drain all product lines into the tank, then remove all liquids from the tank.
2. Remove all flammable or combustible liquids with the exception of a sufficient quantity (approximately four inches) to assure a saturated vapor space.
3. When high water table or flooding conditions exist, remove all stored liquid and ballast the tank by filling with water.

c. Cap the fill pipe, gauge pipe, tank truck vapor recovery fitting, and vapor return. Secure the tank against tampering.

d. Cap the product lines at the service station island, or elsewhere if the pumps are removed, or leave the pumps connected and locked. Disconnect electric power to the pumps.

e. Leave the vent line open.

f. Consult the appropriate local, state, or federal agencies concerning regulatory notification requirements.

SECTION 3—DISPOSAL IN PLACE

3.1 Criteria for Disposal in Place

3.1.1 This section describes a safe method for the in place disposal of underground tanks. Removal of the tank is preferred (see Section 4). Disposal of the tank in place should be considered in the following circumstances: (a) because of the tank location adjacent equipment or structures may be damaged or weakened if the tank is removed, (b) removal may be physically impossible, or (c) removal may incur excessive costs. A determination of whether to dispose of a tank in place or to remove it will depend upon: (a) local regulations which may prohibit abandonment in place, (b) the location of the facility and tank, (c) the availability of equipment, and (d) cost. Additional considerations include the length of service the equipment has provided and its reuse or salvage value.

3.1.2 The federal *Resource Conservation and Recovery Act* (RCRA) (40 CFR 260-265) places restrictions on disposal of certain residues that may be present in some underground storage tanks. Residues from tanks that have held leaded gasoline should be treated with extreme caution. Lead compounds and other residues in the tank may be classified as hazardous wastes. All liquids and residues removed from the tank should be handled in accordance with appropriate federal, state, and local regulations. Product removed from the tank can usually be reused or recycled.

3.2 Procedures for Disposal in Place

3.2.1 Tanks may be effectively and safely disposed in place by using the procedures in 3.2.2 through 3.2.11.

[2]Occupational Safety and Health Administration, U.S. Department of Labor, Washington, D.C. 20402.
[3]U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460.

3.2.2 Observe the special precautions described in 1.3 through 1.3.2.2.

3.2.3 Drain product piping into the tank, being careful to avoid any spillage to the excavation area. Disconnect product piping from the tank, and cap or remove the piping.

3.2.4 Remove liquids and residues from the tank by using explosion-proof or air-driven pumps. Pump motors and suction hoses must be bonded to the tank or otherwise grounded to prevent electrostatic ignition hazards. It may be necessary to use a hand pump to remove the last few inches of liquid from the bottom of the tank. If a vacuum truck is used for removal of liquids or residues, the area of operation for the vacuum truck must be vapor-free. The truck should be located upwind from the tank and outside the path of probable vapor travel. The vacuum pump exhaust gases should be discharged through a hose of adequate size and length downwind of the truck and tank area. See API Publication 2219 for vacuum truck operating and safety practices.

3.2.5 Excavate to the top of the tank.

3.2.6 Remove the drop tube, fill pipe, gauge pipe, vapor recovery truck connection, submersible pumps, and other tank fixtures. Cap or remove all non-product lines, such as vapor recovery lines, except for the vent line. The vent line should remain connected until the tank is purged (see 4.2.2 through 4.2.7). Temporarily plug all other tank openings.

3.2.7 Purge the tank of flammable vapors. This may be accomplished using methods outlined in 4.2.2 through 4.2.7. Vent all vapors a minimum of 12 feet above grade and 3 feet above any adjacent roof lines. Monitor the tank for flammable vapor with a combustible gas indicator until the tank atmosphere has been brought to less than 20 percent of the lower flammable limit (see 4.3).

3.2.8 One or more holes may be cut in the tank top if existing tank openings are not adequate for introduction of the inert material to be used to fill the tank.

3.2.9 Proceed to introduce a suitable solid inert material through openings in the top of the tank. It is important to fill the tank as full as possible with the sand or other inert material. The procedures in 3.2.9.1 through 3.2.9.3 are intended to minimize any surface settling subsequent to disposal of the tank in place.

3.2.9.1 Sand will flow readily and is generally available. Any kind of sand is suitable if it is free of rocks, which might limit leveling-out in the tank. The sand may be introduced dry as long as it flows in freely. When the sand cone nears the top of the tank, the sand can be washed into the tank with a nominal amount of water and puddled to cause it to flow to the ends. The use of larger amounts of water should be avoided since the tank might be filled with water before it is filled with sand.

3.2.9.2 Almost complete filling of the tank can be achieved by using a combination of sand and earth. Fill the tank with sand to approximately 80 percent of calculated capacity. Mix soil and water to make a free-flowing mud and pour the mixture into the tank opening. Puddle the mixture until the tank is full and overflows the fill opening.

3.2.9.3 Other types of inert materials, slurries, or expandable materials such as polyurethane-type foams may be used when approved by regulatory officials.

3.2.10 After the tank is filled with an inert material, all tank openings should be plugged or capped unless it was necessary to cut open the tank top (see 3.2.8).

3.2.11 Disconnect and cap or remove the vent line.

3.3 Recordkeeping

3.3.1 When underground tanks are disposed in place, the owner of the tank should keep a permanent record of the tank location, the date of disposal in place, and the method of conditioning the tank for disposal. All local, state, and federal regulatory requirements for tank disposal/closure and notification must be observed.

3.3.2 It is recommended that the tank owner inform a potential buyer of the presence of abandoned underground tanks when properties are sold. A property owner should also be informed at the termination of the property lease. In some areas this may be a regulatory requirement. It may be desirable to obtain an acknowledgement or a release from the property owner.

SECTION 4—REMOVAL OF UNDERGROUND TANKS

4.1 Preparation

4.1.1 Observe the special safety precautions in 1.3 through 1.3.2.2.

4.1.2 Drain product piping into the tank, being careful to avoid any spillage. Cap or remove product piping.

4.1.3 Remove residues and liquids from the tank as described in 3.2.4. Also observe the restrictions in 3.1.2.

4.1.4 Excavate to the top of tank.

4.1.5 Remove the fill pipe, gauge pipe, vapor recovery truck connection, submersible pumps, and other tank fixtures. Remove the drop tube, except when it is planned to vapor-free the tank by using an eductor as in 4.2.5. Cap or remove all non-product lines, such as vapor recovery lines, except the vent line. The vent line should remain connected until the tank is purged. Temporarily plug all other tank openings so that all vapors will exit through the vent line during the vapor-freeing process.

4.2 Purging

4.2.1 Remove flammable vapors by one of the methods described in 4.2.2 through 4.2.7, or as required by local codes. These methods provide a means for temporary vapor-freeing of the tank atmosphere. However, it is important to recognize that the tank may continue to be a source of flammable vapors even after following the vapor-freeing procedures described in 4.2.2 through 4.2.7. For this reason, caution must always be exercised when handling or working around tanks that have stored flammable or combustible liquids. Before initiating work in the tank area or on the tank, a combustible gas indicator should be used to assess vapor concentrations in the tank and work area.

4.2.2 Vent all vapors from the tank at a minimum height of 12 feet above grade and 3 feet above any adjacent roof lines until the tank is purged of flammable vapors. The work area should be free from sources of ignition (see 1.3.2).

4.2.3 Flammable and combustible vapors may be purged with an inert gas such as carbon dioxide (CO_2) or nitrogen (N_2). This method should not be utilized if the tank is to be entered for any reason, as the tank atmosphere will be oxygen deficient. The inert gas should be introduced through a single tank opening at a point near the bottom of the tank at the end of the tank opposite the vent. When inert gases are used, they should be introduced under low pressure to avoid the generation of static electricity. When using CO_2 or N_2, pressures in the tank should not exceed 5 pounds per square inch gauge.

CAUTION: The process of introducing compressed gases into the tank may create a potential ignition hazard as the result of the development of static electrical charges. The discharging device must therefore be grounded. Explosions have resulted from the discharging of CO_2 fire extinguishers into tanks containing a flammable vapor-air mixture. CO_2 extinguishers should not be used for inerting flammable atmospheres.

4.2.4 If the method described in 4.2.3 is not practical, the vapors in the tank may be displaced by adding solid carbon dioxide (dry ice) to the tank in the amount of at least 1.5 pounds per 100 gallons of tank capacity. The dry ice should be crushed and distributed evenly over the greatest possible area in the tank to promote rapid evaporation. As the dry ice vaporizes, flammable vapors will flow out of the tank and may surround the area. Therefore, where practical, plug all tank openings except the vent after introducing the solid CO_2 and continue to observe all normal safety precautions regarding flammable or combustible vapors. Make sure that all of the dry ice has evaporated before proceeding.

CAUTION: Skin contact with dry ice may produce burns.

4.2.5 Flammable vapors may be exhausted from the tank by one of two methods of tank ventilation listed below:

a. Ventilation using an eductor-type air mover usually driven by compressed air is illustrated in Figure 1. The eductor-type air mover must be properly bonded to prevent the generation and discharge of static electricity. When using this method, the fill (drop) tube should remain in place to ensure ventilation at the bottom of the tank. Tanks equipped with fill (drop) tubes that are not removable should be purged by this method. An eductor extension shall be used to discharge vapors a minimum of 12 feet above grade.

b. Ventilation with a diffused air blower is illustrated in Figure 2. When using this purging method, it is imperative that the air-diffusing pipe is properly bonded to prevent the discharge of a spark. Fill (drop) tubes must be removed to allow proper diffusion of the air in the tank. Air supply should be from a compressor that has been checked to ensure a clean air supply and is free

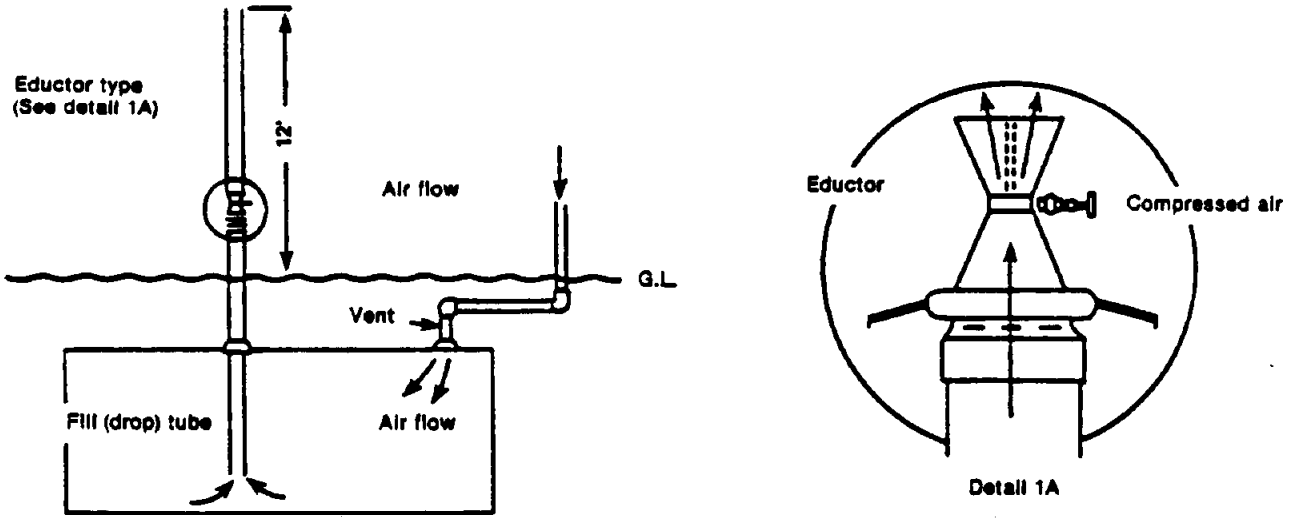
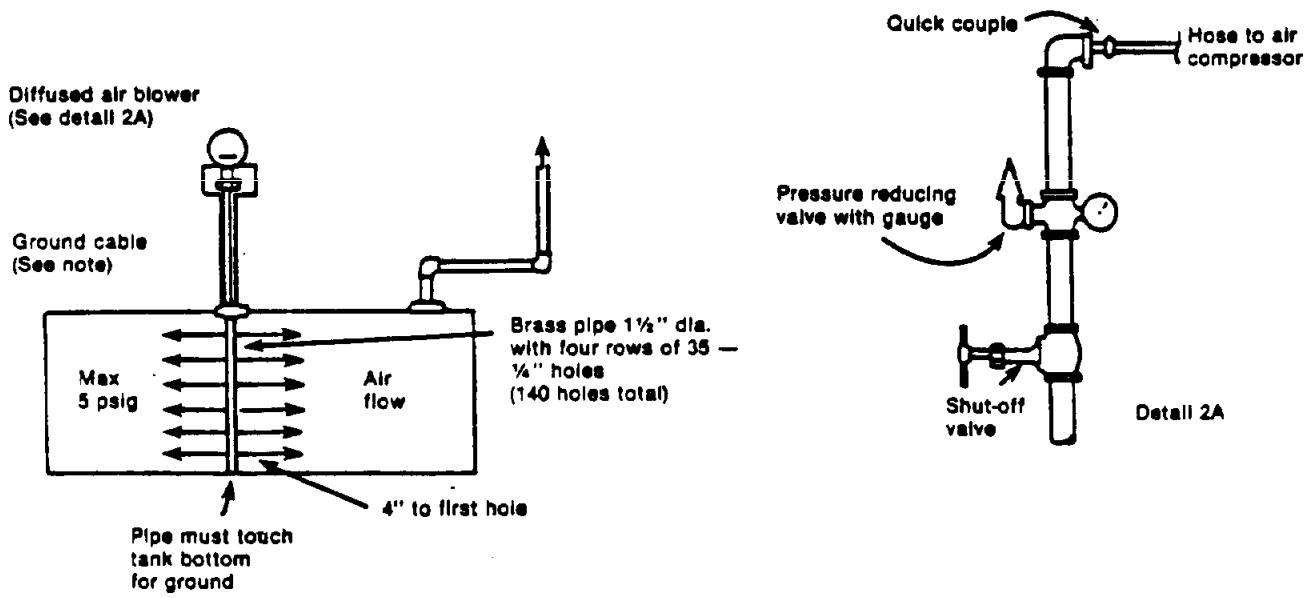


Figure 1—Eductor-Type Air Mover



Note: Ground cable brazed to pipe must be clamped to fill pipe. Use 12 gauge ground wire from fill pipe to water pipe or ground rod.

Figure 2—Diffused Air Blower

from volatile vapors. Air pressure in the tank must not exceed 5 pounds per square inch gauge.

4.2.6 One of the safest and simplest methods for vapor-freeing a tank is to fill the tank with water. However, in certain areas, regulatory requirements for treatment/disposal of water used in the vapor-freeing process may make this method cost-prohibitive. Before employing the method described in 4.2.6.1 through 4.2.6.3, consult local regulations.

4.2.6.1 Fill the tank with water until the floating product nears the fill opening. Remove the floating product and place it in a suitable container for proper disposal. Care should be exercised to ensure that neither product nor water is spilled into the tank excavation.

4.2.6.2 In the process of filling the tank with water, flammable vapors will be expelled through both the vent and fill openings, but primarily at the fill opening. Normal safety precautions should be observed. To minimize this escape of vapor through the fill opening, the opening may be temporarily capped.

4.2.6.3 When the tank is free of vapor, pump out the water and dispose of it in accordance with local regulations.

4.2.7 Steam can be used to clean and vapor-free a tank. However, a large static charge can build up on the nozzle of the steam jet. Insulated objects on which the steam impinges can also become charged. If steam is to be used for either purging or cleaning a tank or other equipment, the steam discharge nozzle and all conductive insulated objects subject to impingement or condensation should be bonded to the tank or be grounded. Steam purging of tanks should be avoided when suitable alternatives are available. Further reference to steam cleaning of tanks is found in NFPA 327.

4.3 Testing

4.3.1 The tank atmosphere and the excavation area should be regularly tested for flammable or combustible vapor concentrations until the tank is removed from both the excavation and the site. Such tests are to be made with a combustible gas indicator which is properly calibrated according to the manufacturer's instructions (typically on pentane or hexane in air), and which is thoroughly checked and maintained in accordance with the manufacturer's instructions. Persons responsible for testing must be completely familiar with the use of the instrument and the interpretation of the instrument's readings.

4.3.2 The tank vapor space is to be tested by placing the combustible gas indicator probe into the fill opening with the drop tube removed. Readings should be taken at the bottom, middle, and upper portions of the tank, and the instrument should be cleared after each reading. If the tank is equipped with a non-removable fill tube, readings should be taken through another opening. Liquid product must not enter the probe. Readings of 20 percent or less of the lower flammable limit must be obtained before the tank is considered safe for removal from the ground.

4.3.3 Combustible gas indicator readings may be misleading where the tank atmosphere contains less than 5 percent by volume oxygen, as in a tank vapor-freed with CO_2, N_2, or another inert gas. In general, readings in oxygen-deficient atmospheres will be on the high, or safe, side. It may be desirable to use an oxygen indicator to assess the oxygen concentration.

4.4 Removal

4.4.1 After the tank has been freed of vapors and before it is removed from the excavation, plug or cap all accessible holes. One plug should have a 1/8-inch vent hole to prevent the tank from being subjected to excessive differential pressure caused by temperature changes. The tank should always be positioned with this vent plug on top of the tank during subsequent transport and storage.

4.4.2 Excavate around the tank to uncover it for removal. Remove the tank from the excavation and place it on a level surface. Use wood blocks to prevent movement of the tank after removal and prior to loading on a truck for transportation. Use screwed (boiler) plugs to plug any corrosion holes in the tank shell.

4.4.3 When partially or totally removing an existing underground storage system, a small amount of contaminated backfill may be encountered. The contamination can be due to minor spills and drips during previous operation of the facility or from drips and minor spills that may occur during removal. Contaminated backfill may be a potential safety and environmental hazard. Spills or drips should be contained to minimize contamination during removal. If contamination is severe, consult local environmental officials, the fire marshal, or the USEPA for assistance and requirements. See API Bulletin 1628 for further information.

4.4.4 Tanks should be labeled after removal from the ground but prior to removal from the site. Regardless of the condition of the tank, the label should contain a

warning against certain types of reuse. The former contents and present vapor state of each tank, including vapor-freeing treatment and date should also be indicated. The label should be similar to the following in legible letters at least 2 inches high:

TANK HAS CONTAINED LEADED GASOLINE*

NOT VAPOR FREE

NOT SUITABLE FOR STORAGE OF FOOD OR LIQUIDS INTENDED FOR HUMAN OR ANIMAL CONSUMPTION

DATE OF REMOVAL: MONTH/DAY/YEAR

*Or other flammable/combustible liquid. Use the applicable designation, for example, DIESEL.

4.4.5 Tanks that have held leaded motor fuels (or whose service history is unknown) should also be clearly labeled with the following information (see API Publication 2015A for additional guidelines):

TANK HAS CONTAINED LEADED GASOLINE
LEAD VAPORS MAY BE RELEASED IF HEAT IS APPLIED TO THE TANK SHELL

4.4.6 Tanks should be removed from the site as promptly as possible after vapor-freeing procedures have been completed, preferably on the day of tank removal from the excavation. If a tank remains at the site overnight or longer, additional vapor may be released from any liquid absorbed in the tank walls or residues remaining in the tank.

4.4.6.1 Before the tank is removed from the site, the tank atmosphere should be checked with a combustible gas indicator as specified in 4.3 to ensure that it does not exceed 20 percent of the lower flammable limit.

4.4.6.2 The tank should be secured on a truck for transportation to the storage or disposal site with the 1/8-inch vent hole located at the uppermost point on the tank. Tanks should be transported in accordance with all applicable local, state, and federal regulations.

SECTION 5—STORAGE OF USED TANKS

5.1 Storage Considerations

Even though used tanks that have contained flammable or combustible liquids have been vapor-freed at one time, they cannot be guaranteed to remain vapor-free. Hydrocarbons may be retained in crevices and under scale and may be released when disturbed or over a period of time. It is important, therefore, that appropriate safety precautions be observed at all times.

5.2 Storage Procedures

5.2.1 Tanks should be vapor-freed before being placed in storage (see 4.2). Tanks should also be free of all liquids and residues. All tank openings should be tightly plugged or capped, with one plug having a 1/8-inch vent hole to prevent the tank from being subjected to excessive differential pressure caused by temperature changes. Tanks should be stored with the vented plug at the highest point on the tank. All tanks should be labeled as described in 4.4.4 and 4.4.5.

5.2.2 Used tanks should be stored in secure areas on the premises of persons familiar with any attendant hazards and where the general public will not have access. A fenced yard, apart from other facilities, is desirable.

SECTION 6—SALE FOR REUSE

6.1 Considerations for Reuse

Careful consideration should be given to the reuse of tanks that have been in petroleum storage service. If a tank is sold for reuse, the purchaser should be given a very clear understanding of the former use and present condition of the tank. The seller of a tank to be returned to service in an underground petroleum storage system must inform the purchaser of the tank of the owner's notification requirements under applicable federal regulations (40 CFR 280.11 and 40 CFR 280.22). There may also be similar state or local regulations. Buyers of such tanks should check with the original manufacturer of the tank to determine its suitability for reuse. It is advisable to test the tanks for flammable vapors (see 4.3) before they are transported.

CAUTION: Tanks that previously contained gasoline must not be used for the subsequent storage of food or liquids intended for animal or human consumption.

6.2 Conditions of Sale

A bill of sale should be used to transfer tank ownership. The bill of sale should include the purchaser's acknowledgement that he assumes all liability related to the tank. Bills of sale should indicate the former use of the tank and carry the following warning regardless of the former contents of the tank:

TANK HAS CONTAINED LEADED GASOLINE*

NOT VAPOR FREE

NOT SUITABLE FOR STORAGE OF FOOD OR LIQUIDS INTENDED FOR HUMAN OR ANIMAL CONSUMPTION

*Or other flammable/combustible liquid. Use the applicable designation, for example, DIESEL.

SECTION 7—DISPOSAL

7.1 Disposal Criteria

7.1.1 Tanks should be disposed of when they are no longer fit for the storage of flammable or combustible liquids or any other appropriate use. Whether sold to a scrap dealer or disposed of at an acceptable facility, sufficient holes should be made in the tanks to render them unfit for further use.

7.1.2 Tanks that have been lined internally or coated externally with epoxy-based or similar materials may not be accepted by scrap processors. Prior inquiries should be made as to the requirements of the processor accepting the tank for scrap.

7.2 Disposal Procedures

7.2.1 After a tank has been vapor-freed, it should be rendered unsuitable for future use as a storage tank by puncturing, cutting, or drilling numerous holes in all sections of the tank.

7.2.2 All tanks should be labeled as described in 4.4.4 and 4.4.5.

7.2.3 A bill of sale should be used to transfer tank ownership (see 6.2).

7.2.4 Prior to disposal of used tanks, current federal, state, and local regulations should be checked to determine if special procedures or preparations are required.

APPENDIX K

STATE AGENCIES FOR

REGULATORY NOTIFICATIONS