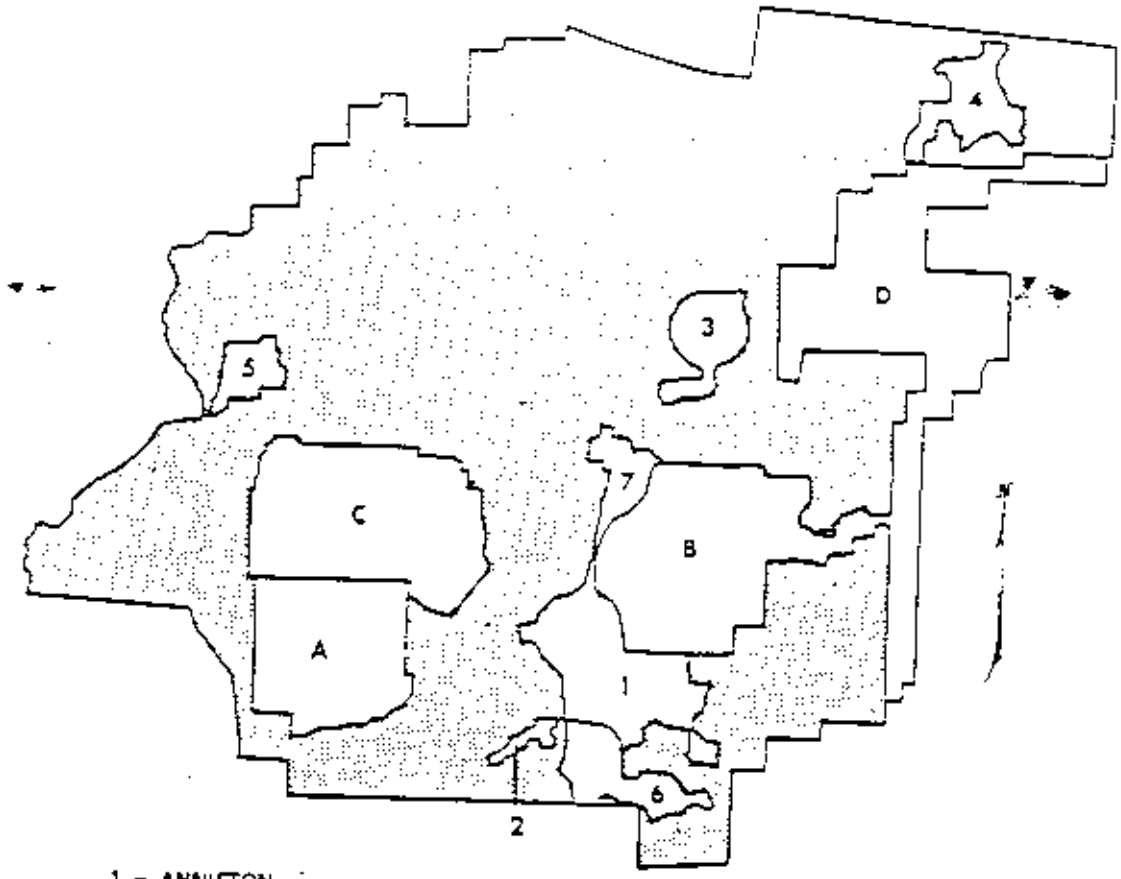
APPENDIX A

DESCRIPTION OF SOLID WASTE MANAGEMENT UNITS

GENERAL SITE MAPS OF FORT McCLELLAN
AND
FORT McCLELLAN PELHAM RANGE
FIGURES 1-4



1 – ANNISTON
2 – HOBSON CITY
3 – JACKSONVILLE
4 – PIEDMONT
5 – OHATCHEE
6 – OXFORD
7 – WEAVER

A – ANNISTON ARMY DEPOT
B – FORT McCLELLAN MILITARY RESERVATION (MAIN POST) & CHOCCOLOCCO CORRIDOR
C – FORT McCLELLAN MILITARY RESERVATION PELHAM RANGE
D – TALLADEGA NATIONAL FOREST

SOURCE: USATHAMA, 1977.

FIGURE A-1:
LOCATION MAP -- FORT McCLELLAN

Prepared for:
U.S. Army Toxic and Hazardous Materials Agency
Aberdeen Proving Ground, Maryland

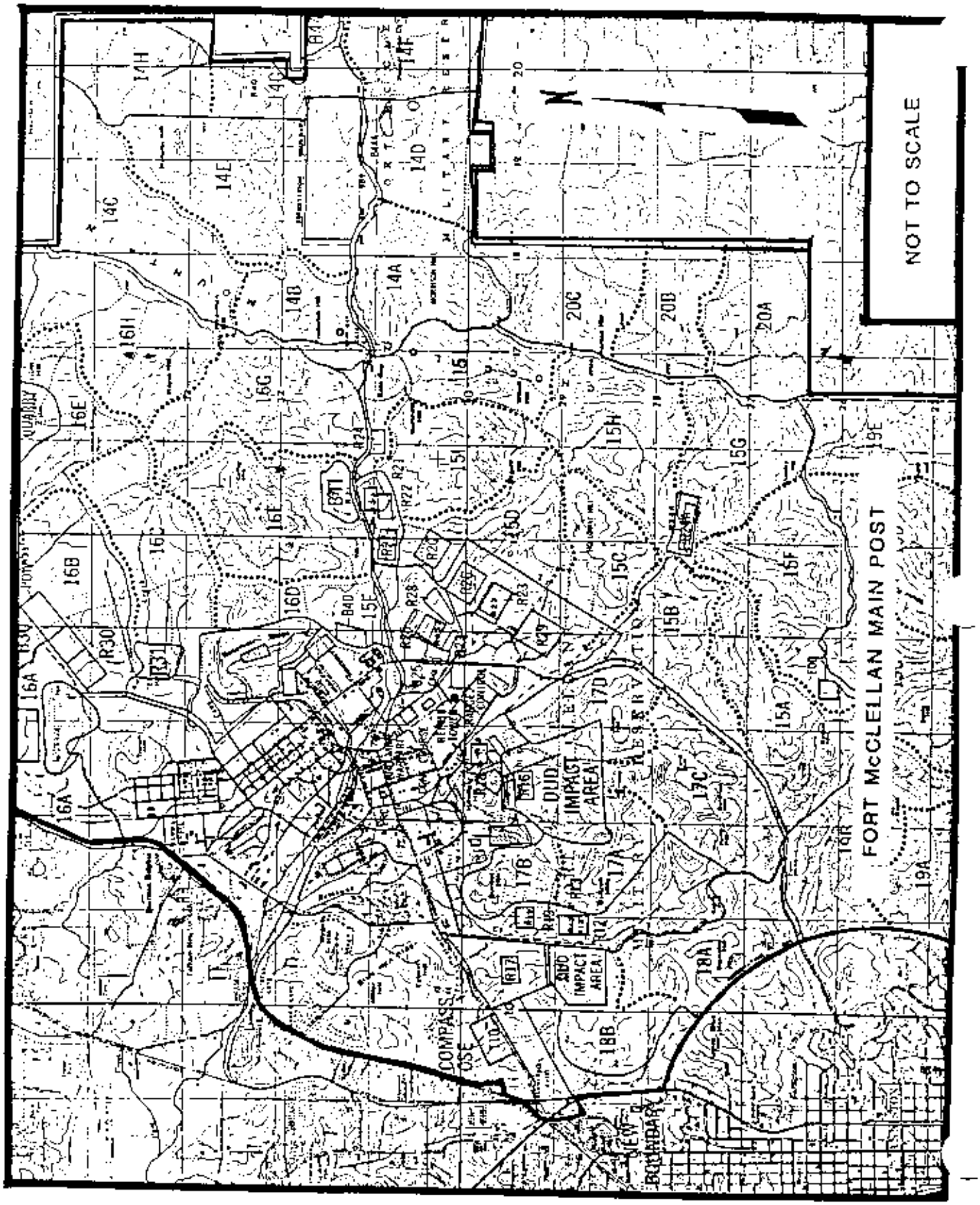


FIGURE A-2: FT. McCELLAN MAIN POST

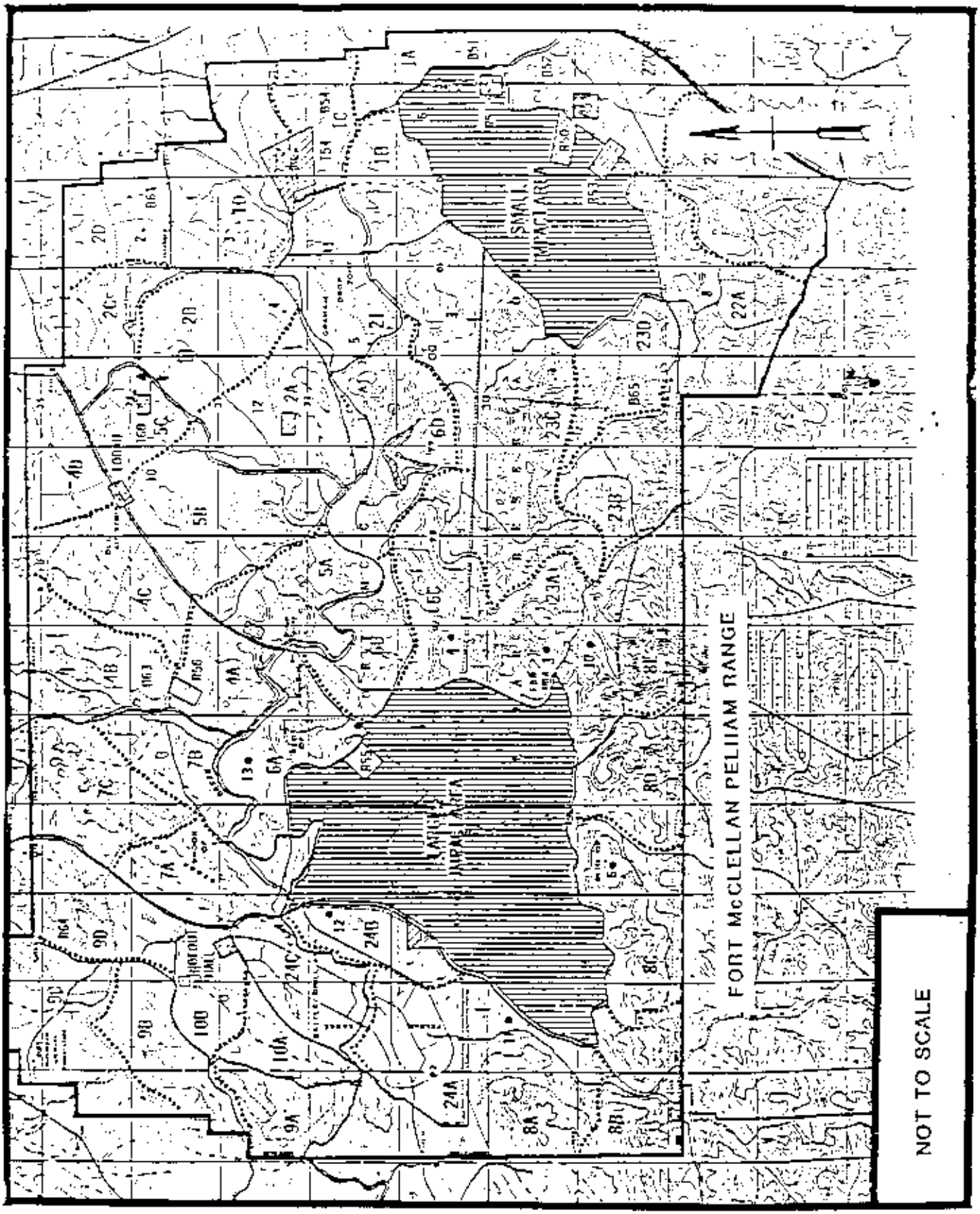


FIGURE A-3: FT. McCLELLAN PELHAM RANGE

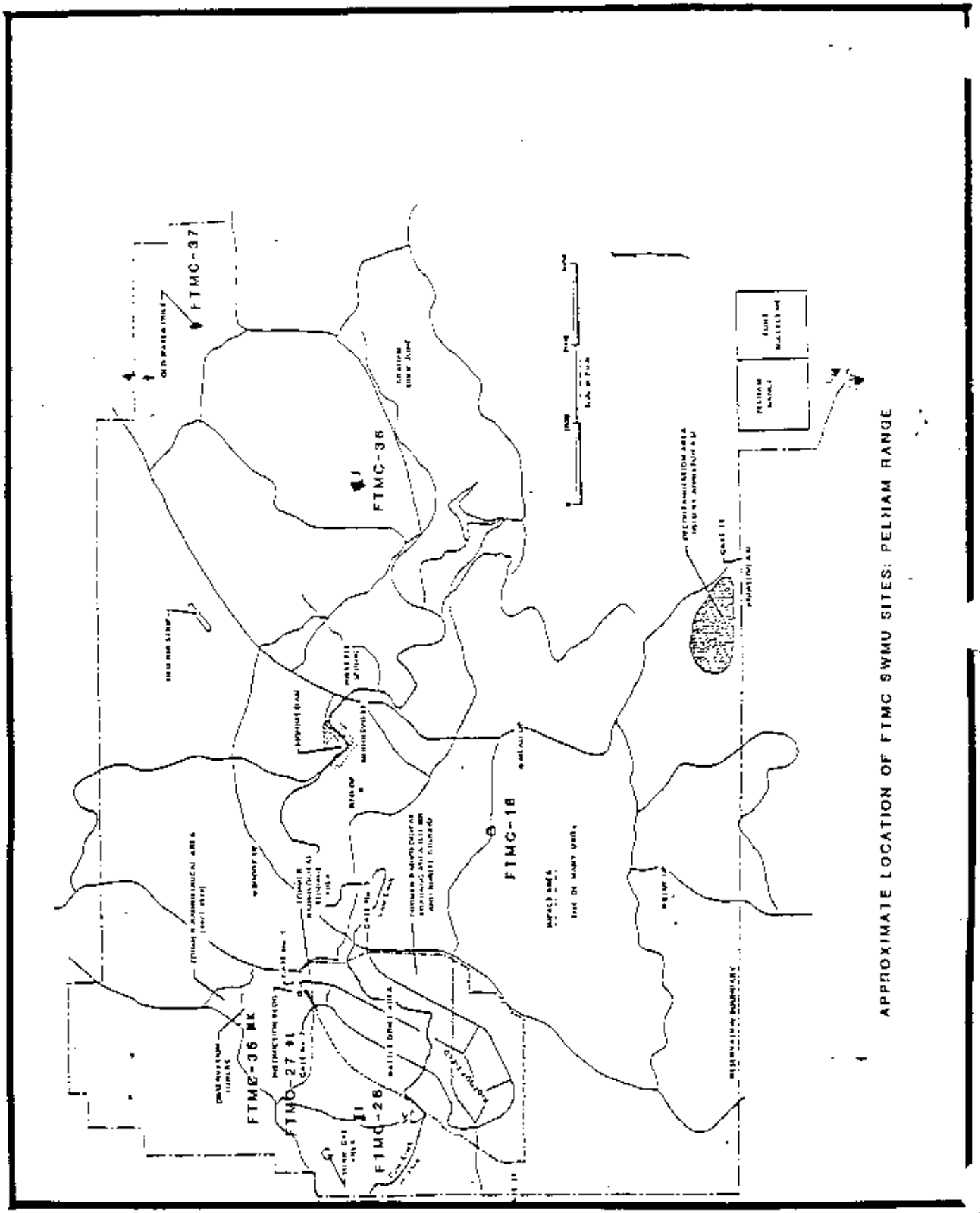


FIGURE A-4: APPROX. LOCATION OF FTMC SWMU SITES: PELHAM RANGE

1. SWMU No. FTMC-1. WASTE OIL UNDERGROUND STORAGE TANKS.

a. Waste Oil Underground Tank No. 3148.

(1) Location of Activity/Unit. Building 3148, Main Post.

(2) General Dimensions. Capacity 1,000 gallons.

(3) Time of Operation. 1982 - present.

(4) Description of Activities/Wastes. Storage of used oil generated from motor pool/vehicular maintenance operations; type tank - steel; internal protection or cathodic protection - none; external protection - paint; piping - bare steel.

(5) Description of Sampling Already Accomplished. No sampling or testing has been accomplished.

(6) Recommendations. Test for tank integrity, as required; if not leaking, no action required; if leaking, remove and replace tank, and test and remove any contaminated soil. Tank integrity testing is scheduled for 1987.

b. Waste Oil Underground Tank No. 888.

(1) Location of Activity/Unit. Building 888, Main Post.

(2) General Dimensions. Capacity 2,000 gallons.

(3) Time of Operation. 1982 to present.

(4) Description of Activities/Wastes. Storage of used oil generated from motor pool/vehicular maintenance operations; type tank - steel; internal protection or cathodic protection - none; external protection - paint; piping - bare steel.

(5) Description of Sampling Already Accomplished. No sampling or testing has been accomplished.

(6) Recommendations. Test for tank integrity, as required; if not leaking, no action required; if leaking, remove and replace tank, and test and remove any contaminated soil. Tank integrity testing is scheduled for 1987.

c. Waste Oil Underground Tank No. 337.

(1) Location of Activity/Unit. Building 337, Main Post.

(2) General Dimensions. Capacity 2,000 gallons.

(3) Time of Operation. 1982 to present.

(4) Description of Activities/Wastes. Storage of used oil generated from motor pool/vehicular maintenance operations; type tank - steel; internal protection or cathodic protection - none; external protection - paint; piping - bare steel.

(5) Description of Sampling Already Accomplished. No sampling or testing has been accomplished.

(6) Recommendations. Test for tank integrity, as required; if not leaking, no action required; if leaking, remove and replace tank, and test and remove any contaminated soil. Tank integrity testing is scheduled for 1987.

d. Waste Oil, Underground Tank No. 238.

(1) Location of Activity/Unit. Building 238, Main Post.

(2) General Dimensions. Capacity 2,000 gallons.

(3) Time of Operation. 1982 to present.

(4) Description of Activities/Wastes. Storage of used oil generated from motor pool/vehicular maintenance operations; type tank - steel; internal protection or cathodic protection - none; external protection - paint; piping - bare steel.

(5) Description of Sampling Already Accomplished. No sampling or testing has been accomplished.

(6) Recommendations. Test for tank integrity, as required; if not leaking, no action required; if leaking, remove and replace tank, and test and remove any contaminated soil. Tank integrity testing is scheduled for 1987.

e. Waste Oil Underground Tank No. 3138.

(1) Location of Activity/Unit. Building 3138, Main Post.

(2) General Dimensions. Capacity 3,000 gallons.

(3) Time of Operation. 1982 to present.

(4) Description of Activities/Wastes. Storage of used oil generated from motor pool/vehicular maintenance operations; type tank - steel; internal protection or cathodic protection - none; external protection - paint; piping - bare steel.

(5) Description of Sampling Already Accomplished. No sampling or testing has been accomplished.

(6) Recommendations. Test for tank integrity, as required; if not leaking, no action required; if leaking, remove and replace tank, and test and remove any contaminated soil. Tank integrity testing is scheduled for 1987.

f. Waste Oil Underground Tank No. 1800.

(1) Location of Activity/Unit. Building 1800, Main Post.

(2) General Dimensions. Capacity 600 gallons.

(3) Time of Operation. 1982 to present.

(4) Description of Activities/Wastes. Storage of used oil generated from motor pool/vehicular maintenance operations; type tank - steel; internal protection or cathodic protection - none; external protection - paint; piping - bare steel.

(6) Description of Sampling Already Accomplished. No sampling or testing has been accomplished.

(6) Recommendations. Test for tank integrity, as required; if not leaking, no action required; if leaking, remove and replace tank, and test and remove any contaminated soil. Tank integrity testing is scheduled for 1987.

g. Waste Oil Underground Tank No. 1696.

(1) Location of Activity/Unit. Building 1696, Main Post.

(2) General Dimensions. Capacity 2,000 gallons.

(3) Time of Operation. 1982 to present.

(4) Description of Activities/Wastes. Storage of used oil generated from motor pool/vehicular maintenance operations; type tank - steel; internal protection or cathodic protection - none; external protection - paint; piping - bare steel.

(5) Description of Sampling Already Accomplished. No sampling or testing has been accomplished.

(6) Recommendations. Test for tank integrity, as required; if not leaking, no action required; if leaking, remove and replace tank, and test and remove any contaminated soil. Tank integrity testing is scheduled for 1987.

h. Waste Oil Underground Tank No. 215.

(1) Location of Activity/Unit. Building 215, Main Post.

(2) General Dimensions. Capacity 2,000 gallons.

(3) Time of Operation. 1982 to present.

(4) Description of Activities/Wastes. Storage of used oil generated from motor pool/vehicular maintenance operations; type tank - steel; internal protection or cathodic protection - none; external protection - paint; piping - bare steel.

(5) Description of Sampling Already Accomplished. No sampling or testing has been accomplished.

(6) Recommendations. Test for tank integrity, as required; if not leaking, no action required; if leaking, remove and replace tank, and test and remove any contaminated soil. Tank integrity testing is scheduled for 1987.

2. SWMU No. FTMC-2.

a. Type of Activity/Unit. Pesticide mixing and storage facility.

b. Location of Activity/Unit. Building 211, DEH maintenance yard (Figure A-5).

c. General Dimensions. Not applicable.

d. Time of Operation. Undetermined to present.

e. Description of Activities/Wastes. This facility stores and mixes pesticides for pest control operations on Fort McClellan. The areas immediately surrounding the facility are macadam covered. The pesticide mixing pad is attached to the storage facility and is constructed of concrete. The pad is sloped to the center to provide containment should a spill occur. The pad is equipped with a sump for the collection of vehicle rinse waters for subsequent carbon filtration. The filtration system was not operational, and the sump had been blocked. No record of any pesticide spills had been recorded at the facility.

f. Description of Sampling Already Accomplished. Soil sampling for pesticides and herbicides was conducted in 1985, in areas adjacent to the macadam (reference 1). Analytical results showed that some insecticide residues (chlordane metabolites, methoxychlor, hexachlorobenzene (HCB), p,p'-DDT, and dieldrin) were present in the soil samples. Analysis for herbicides was not possible due to the buffering capacity of the soil. Detected levels of insecticides ranged from 0.03 parts per million (ppm) for HCB to 19.15 ppm for the metabolized chlordane/total constituents. (See Table A-1 for pesticides analyzed for and detected levels.) The detected levels of pesticides are not considered to be high enough to be of human health or environmental concern. The somewhat high concentration of total chlordane metabolites found at the site should not be considered alarming, considering the frequency of chlordane use in this region of the U.S. Additionally, chlordane is very persistent in the environment, and the fact that the detected chlordane was found in a metabolized state indicates that the detected chlordane was from past activities such as limited equipment cleaning or an application. Had a large spill occurred, much higher levels of chlordane in an nonmetabolized state would have been detected.

g. Recommendations. No further action is required at this site.

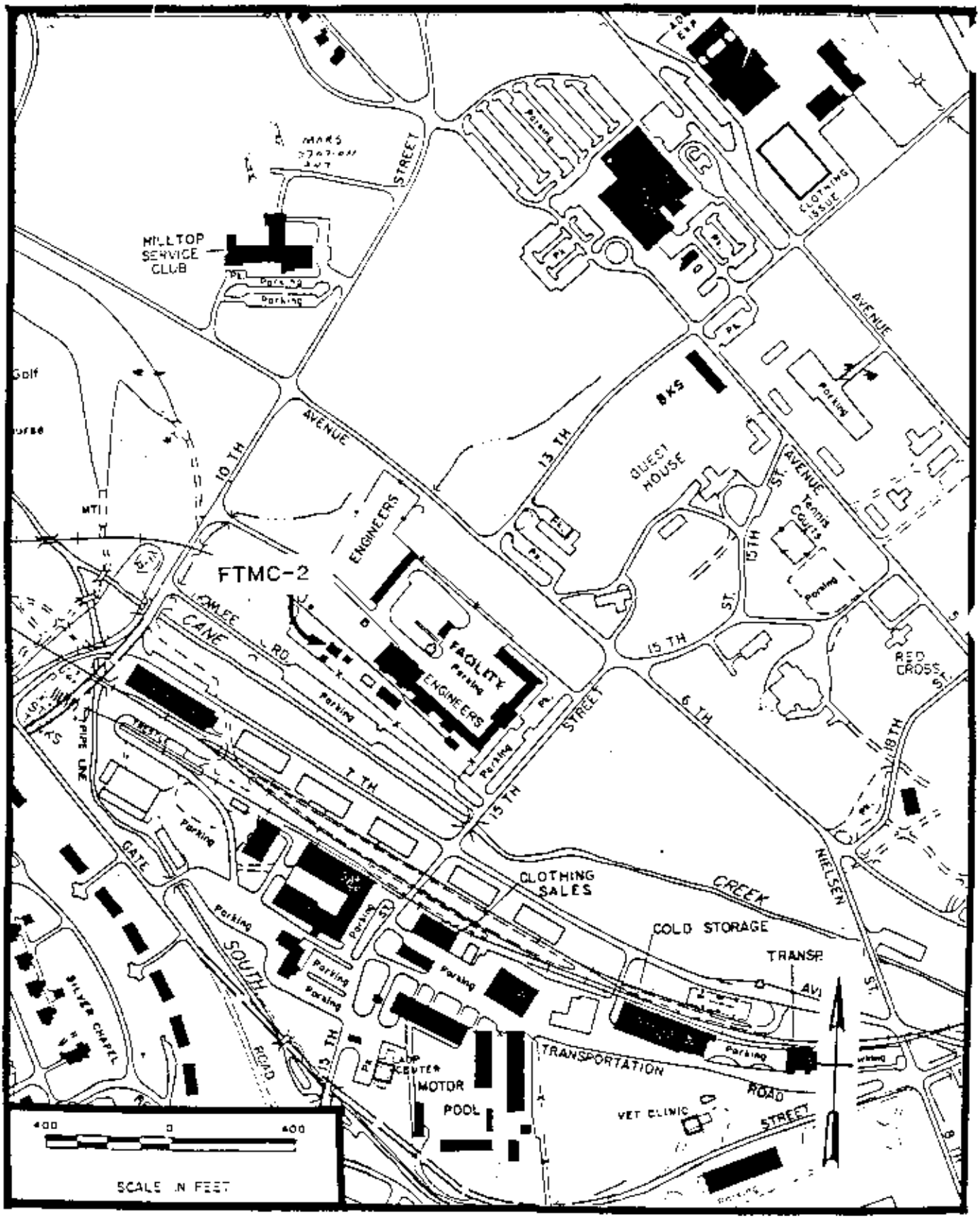


FIGURE A-5: PESTICIDE MIXING AND STORAGE FACILITY (FTMC-2)

TABLE A-7. ANALYTICAL RESULTS OF SAMPLES FROM HERBICIDE/PESTICIDE MIXING AREA

Constituent	Detection Level(ppm)	Sample Number 008(ppm)	009(ppm)
alpha-BHC	0.003	ND	ND
beta-BHC	0.010	*	*
delta-BHC	0.010	*	*
lindane	0.004	ND	ND
O,P'-DDD	0.020	*	*
P,P'-DDD	0.016	*	*
P,P'-DDE	0.016	*	*
O,P'-DDE	0.020	*	*
O,P'-DDT	0.020	*	*
P,P'-DDT	0.030	1.75	1.02
aldrin	0.021	*	*
dieldrin	0.012	0.32	0.13
endrin	0.021	ND	ND
chlordane	0.060	ND	ND
metabolized chlordane/ total constituents	0.050	19.15	5.02
heptachlor	0.003	†	ND
heptachlor epoxide	0.008	*	*
cis-chlordane	0.008	†	†
trans-chlordane	0.008	†	†
oxychlordane	0.008	*	*
methoxychlor	0.080	0.096	1.16
Mirex ®	0.020	ND	ND
toxaphene	0.800	ND	ND
PCB-1242	0.200	*	*
PCB-1248	0.200	*	*
PCB-1254	0.200	*	*
PCB-1260	0.200	ND	ND
chlorpyrifos	0.200	ND	ND
ronnel	0.010	ND	ND
diazinon	0.052	ND	ND
methyl parathlor	0.030	ND	ND
parathion	0.020	ND	ND
malathion	0.010	ND	ND
2,4-D (as methyl ester)	0.010	‡	‡
2,4,5-T (as methyl ester)	0.004	‡	‡
silvex (as methyl ester)	0.004	‡	‡
HCB	0.003	ND	0.03

NOTES: Samples analyzed by USAEHA laboratories, or approved contract laboratories, in accordance with procedures outlined in EPA Manual SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 2d edition, July 1982.

* Unable to effect separation of any low levels of this compound due to the high levels of chlordane constituents.
† Included in metabolized chlordane/total constituents.
‡ Not screened for in this sample, unable to overcome high buffering capacity of the soil using present methods.

ND - Not Detected

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3. SWMU No. FTMC-3.

a. Type of Activity/Unit. Herbicide Storage Facility.

b. Location of Activity/Unit. Building 208, DEH Maintenance Yard, Main Post (Figure A-6).

c. General Dimensions. Not applicable.

d. Time of Operation. Undetermined (estimated at 20 years) to present.

e. Description of Activities/Wastes. This facility is used for the storage of limited amounts of herbicides. The facility is surrounded by a macadam surface. No reported spills have occurred at this site.

f. Description of Sampling Already Accomplished. No sampling has been accomplished at this site.

g. Recommendations. No further action is recommended at this site.

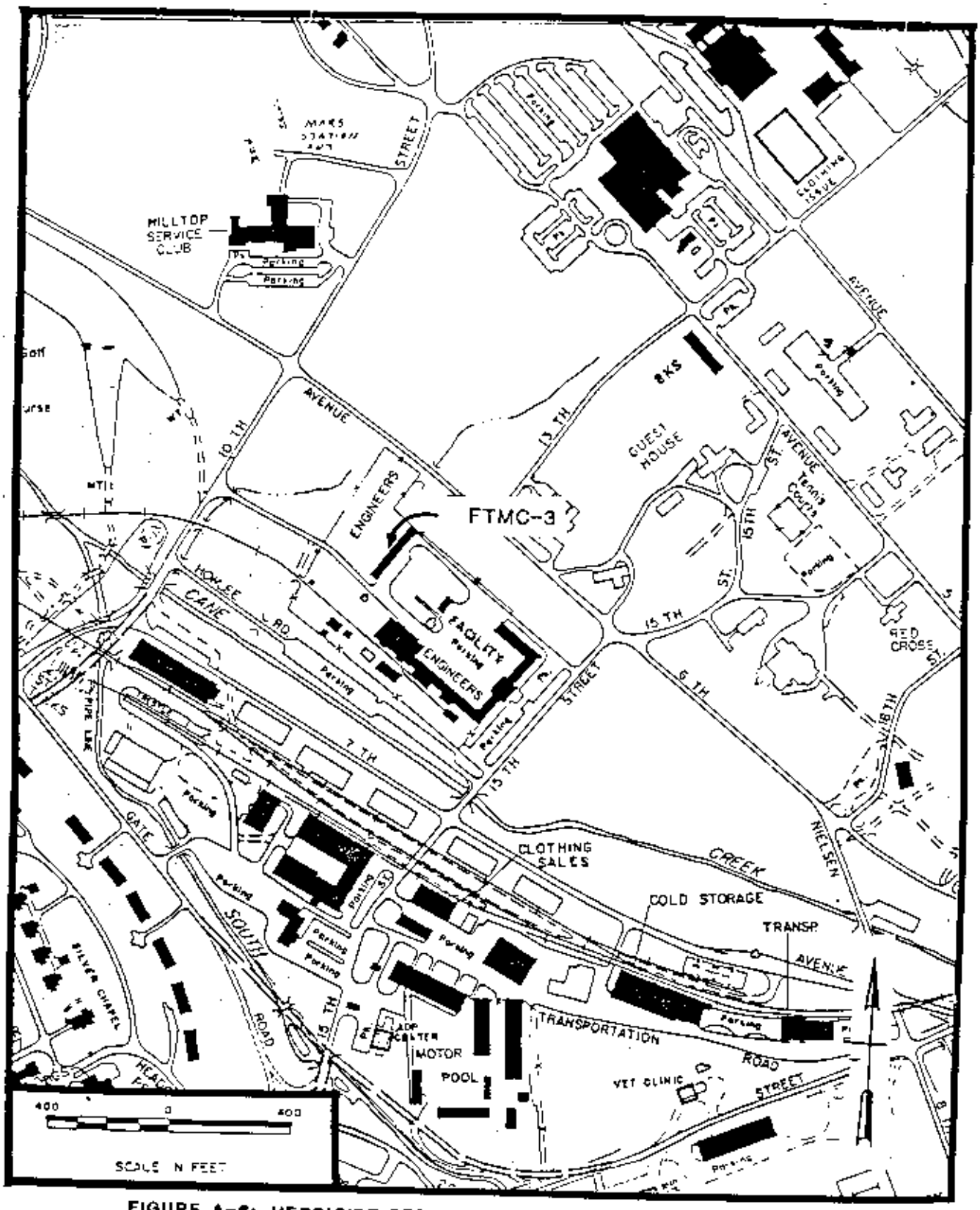

FIGURE A-6: HERBICIDE STORAGE FACILITY (FTMC-3)

4. SWMU No. FTMC-4.

a. Type of Activity/Unit. Golf Course Pesticide Mixing and Storage Facility.

b. Location of Activity/Unit. Building S 2252, Golf Course, Main Post (Figure A-7).

c. General Dimensions. Not applicable.

d. Time of Operation. 1985 to present.

e. Description of Activities/Wastes. This facility is used for the storage and mixing of pesticides intended for application on the installation golf course. No spills have been reported at this site.

f. Description of Sampling Already Accomplished. No sampling has been conducted at this site.

g. Recommendations. No further action is recommended for this site.

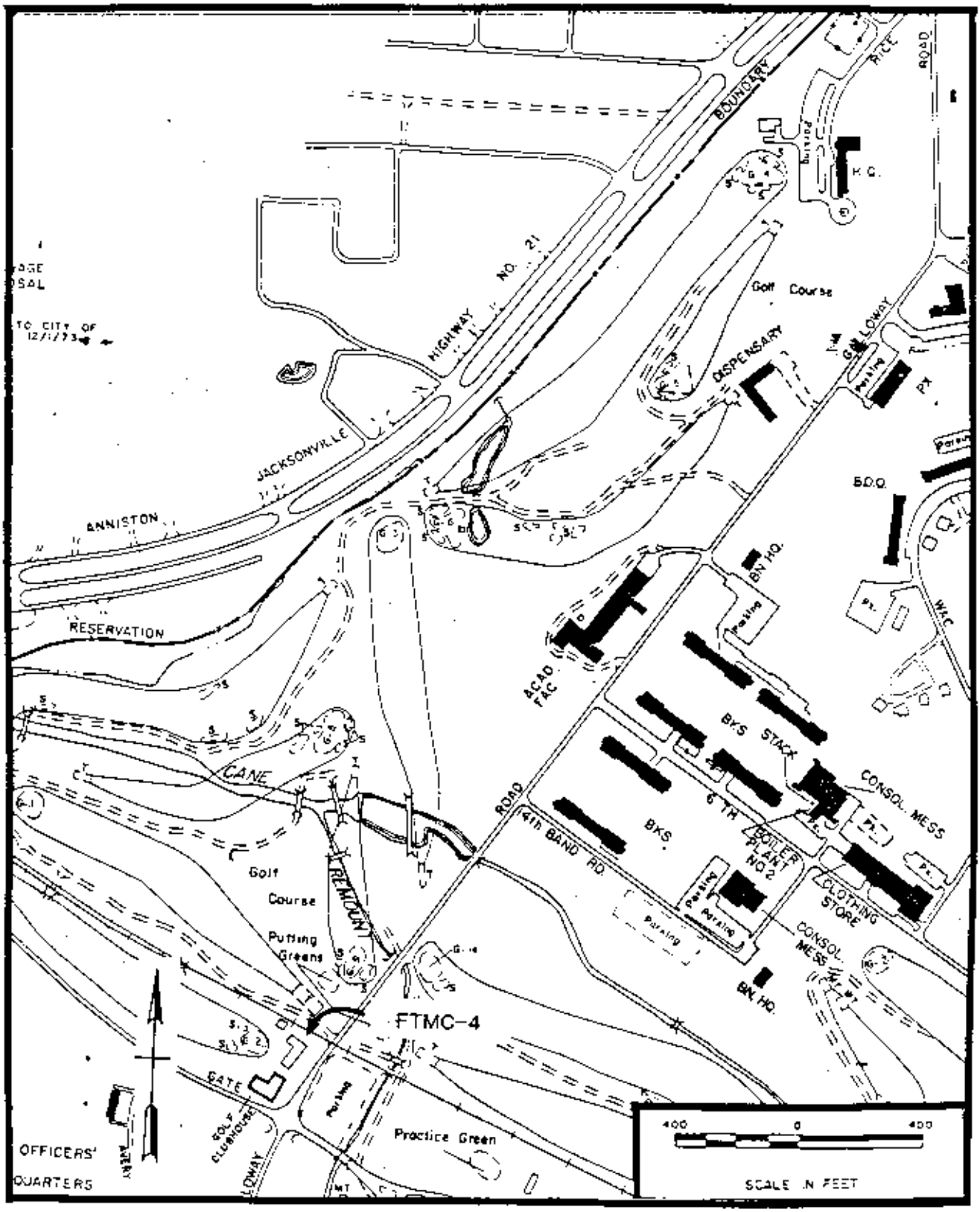

FIGURE A-7: GOLF COURSE PESTICIDE MIXING AND STORAGE FACILITY (FTMC-4)

5. SWMU No. FTMC-5.

a. Type of Activity/Unit. Wastewater Treatment Plant.

b. Location of Activity/Unit. Off route 21, northeast of the Main Post (Figure A-8).

c. General Dimensions. Not applicable.

d. Time of Operation. Undetermined to present.

e. Description of Activities/Wastes. This facility is owned by Fort McClellan and located on Fort McClellan property. The facility has been leased to the city of Anniston, Alabama since January 1974. The facility receives wastewater from the northern portion of Anniston and from the Main Post of Fort McClellan. No discharges of environmental concern have been noted from this facility. The facility maintains a National Pollutant Discharge Elimination System (NPDES) permit.

f. Description of Sampling Already Accomplished. No sampling has been conducted at the site other than that required by the NPDES permit or for sludge disposal.

g. Recommendations. No further action is recommended for this site.

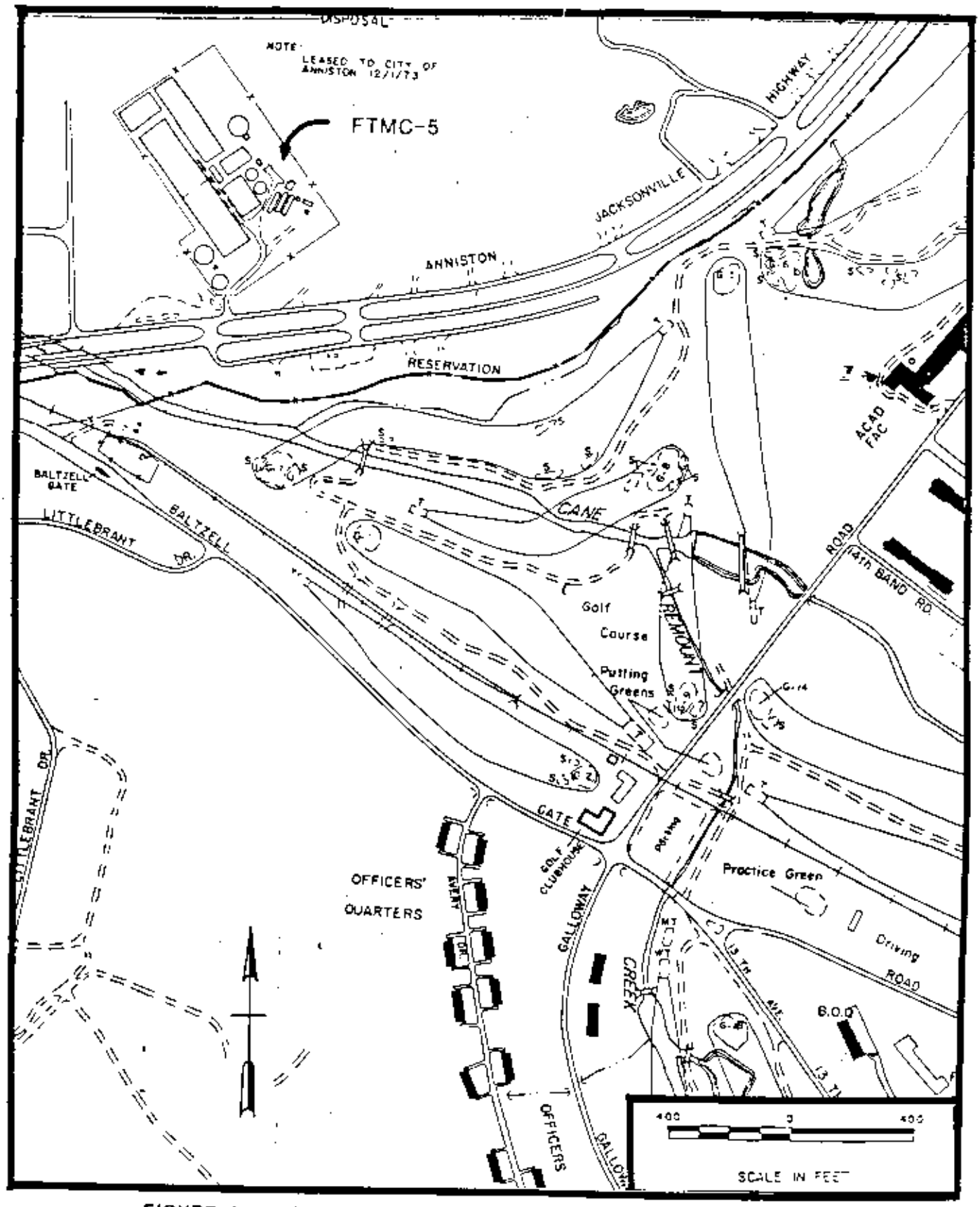

FIGURE A-8: WASTEWATER TREATMENT PLANT (FTMC-6)

6. SWMU No. FTMC-6.

a. Type of Activity/Unit. Sanitary landfill.

b. Location of Activity/Unit. Main Post, Northeast sector (Figure A-9).

c. General Dimensions. 41.42 acres (16.57 hectares), 22 acres of which have been filled.

d. Time of Operation. 1967 to present.

e. Description of Activities/Wastes. The current use of this landfill is for general refuse disposal. Reportedly the disposal of trichloroethylene sludge, waste petroleum, oil and lubricants (POL), and decontaminated materials resulting from agent training has occurred at this landfill. Fifty percent (50 percent) of this landfill has been closed.

f. Description of Sampling Already Accomplished. Ground-water monitoring wells have been established up and downgradient from the landfill. A map depicting the locations of all inplace monitoring wells is attached (Figure A-9). A quarterly ground-water monitoring program is currently in place. Initial sampling and analyses conducted by a contracted firm (reference 11) indicated that some ground-water contamination exists. The data indicates the presence of toluene. However, the levels of toluene were below the proposed EPA maximum contaminant level goal (MCLG) of 2 milligrams per liter (mg/L) and does not presently pose a risk to human health. Detected phenol levels also pose no human health risk as the levels fall below the 3.5 mg/L standard of the EPA Quality Criteria for Water 1986. The chemical oxygen demand (COD) levels are elevated due to the presence of the phenol and do not presently pose a concern. Detected chloride was also within the acceptable National Secondary Drinking Water Regulations (NSDWR) criterion of 250 mg/L. Detected manganese was below the 0.05 mg/L NSDWR criterion in all wells with the exception of well number W-5 which was reported at 0.06 mg/L.

g. Recommendation. Due to the presence of toluene and phenol, it is recommended that the established ground-water monitoring program be continued for this landfill. The installation should ensure that this monitoring program includes analyses for volatile organic compounds.

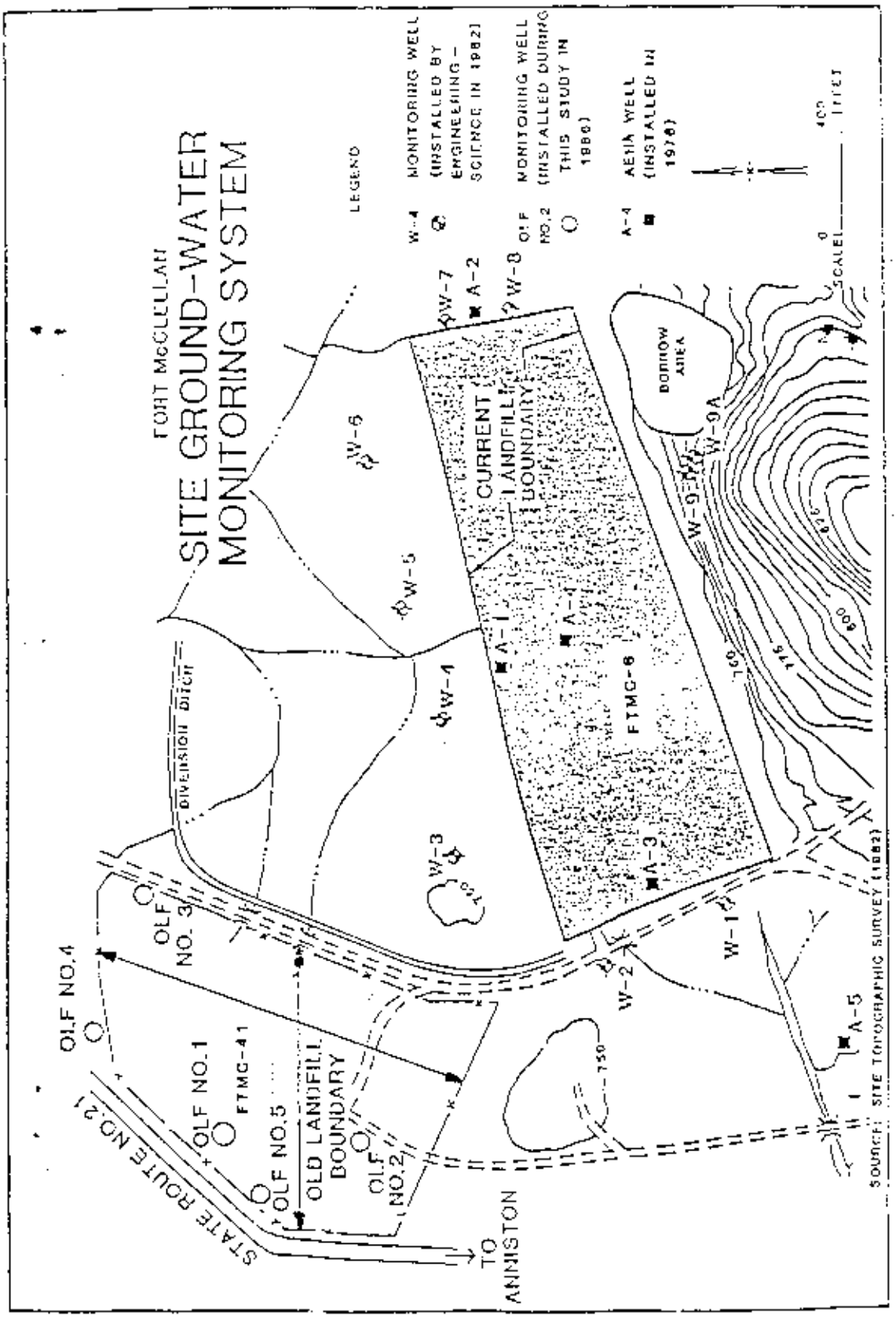

FIGURE A-8: SANITARY LANDFILL (FTMC-6)

7. SWMU No. FTMC-7.

a. Type of Activity/Unit. PCP Dip Tank wood preservative treatment facility.

b. Location of Activity/Unit. DEH maintenance yard (Figure A-10).

c. General Dimensions. Tank dimensions: 4-feet wide by 4-feet deep by 16-feet long.

d. Time of Operation. Unknown (estimated at 1956) closed in 1981. Pumped out in 1986.

e. Description of Activities/Wastes. This facility was used for the treatment of lumber with the wood preservative PCP. The operation involved the use of a sheltered, in-ground, open metal tank with a loose fitting, thin gauge metal cover. No wastes were generated during operation of the facility. However, once the facility was closed, residual PCP and sludge remaining in the tank were removed, containerized and tested for dioxin content. Inspection of the tank has revealed that it has probably leaked in the past, discharging PCP to the soil beneath the tank.

f. Description of Sampling Already Accomplished. Sampling of the tank contents has indicated the presence of PCP as expected. Samples of liquid and solid obtained from the tank were found to be free of dioxin [detection limits 1.5 ppb 2,3,7,8-tetrachlorodibenzofuran (TCDF) and 3 ppb 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)] (reference 1).

g. Recommendations. Resample liquid from drums and analyze for dioxin using a lower detection limit. If results are positive, sample side walls of in-ground tank for dioxin concentration. Remove tank and dispose of properly or store until disposal can be accomplished. Sample soil beneath the tank for PCP and dioxin content. If analysis is positive, initiate soil removal to achieve an acceptable predetermined PCP/dioxin concentration. Initiate ground-water monitoring if possible migration may have occurred.

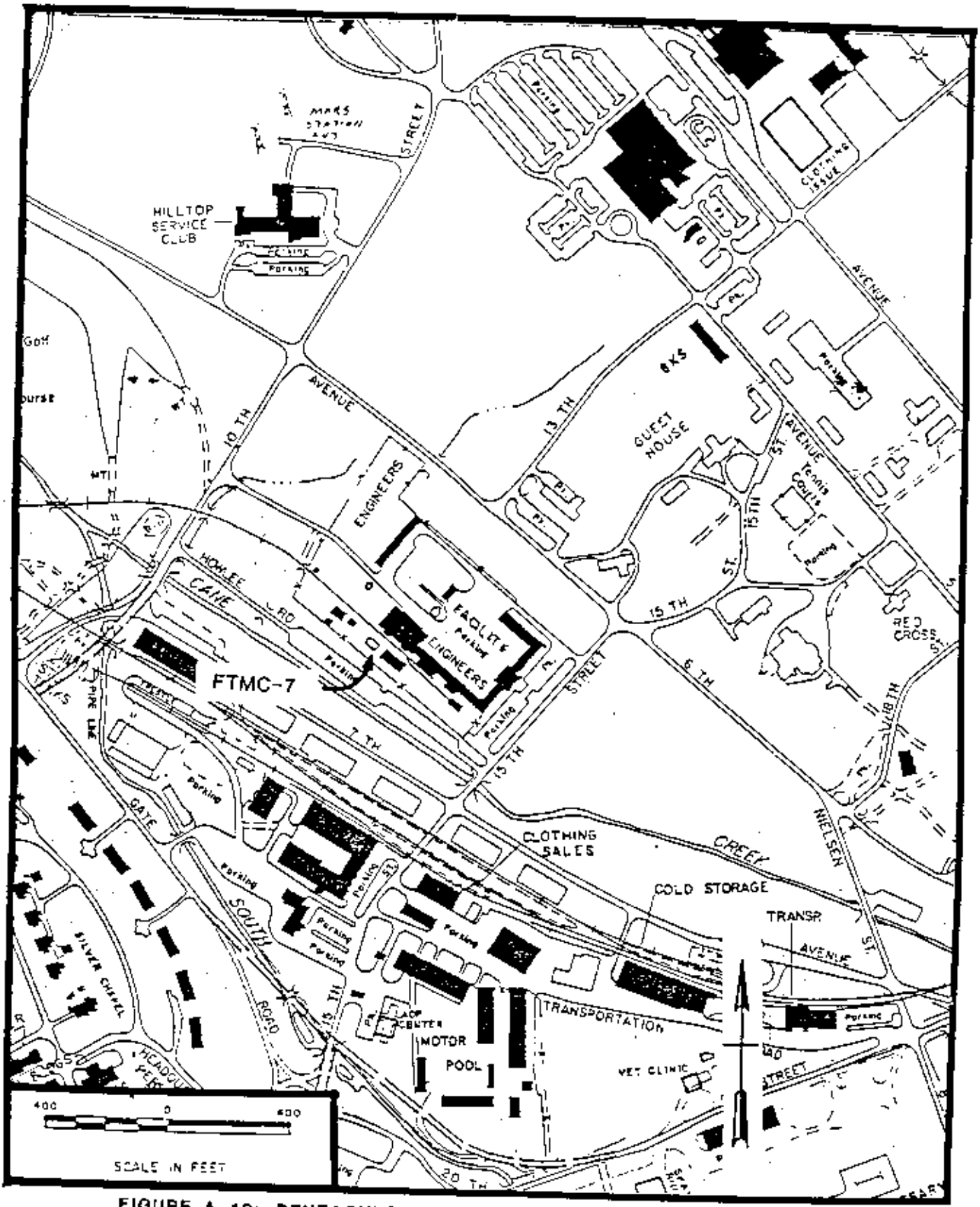

FIGURE A-10: PENTACHLOROPHENOL DIP TANK (FTMC-7)

8. SWMU No. FTMC-8.

a. Type of Activity/Unit. Directorate of Logistics (DOL) Small Weapons Repair Shop.

b. Location of Activity/Unit. Building 335, Main Post (Figure A-11).

c. General Dimensions. Not applicable.

d. Time of Operation. Undetermined to present.

e. Description of Activities/Wastes. Operations conducted at this site consisted of weapons degreasing in a vapor degreaser with 1,1,1-trichloroethane and subsequent caustic stripping. Blueing/parkerizing operations were also conducted at the shop. Some wastes generated from these operations may have discharged to the storm water drain. Discharged wastes may have included phosphoric acid, chromic acid, preservative oils, alkaline solutions, black oxide and rinse waters. A holding tank located outside of the building was installed to contain any material which might have overflow from the tanks. Inspection of the tank found that it was full of liquid and that it had not been connected to the weapons maintenance dip tanks, and therefore, had not received any wastes. The liquid is believed to be water based on a priority pollutant analysis (reference 1).

f. Description of Sampling Already Accomplished. No sampling has occurred at the storm water drain. A water sample was collected from the underground tank. Analysis for priority pollutants on this sample was negative and the material is assumed to be rain water (reference 1).

g. Recommendations. Recommend that drainage ditch sediment be tested for heavy metal contaminants.

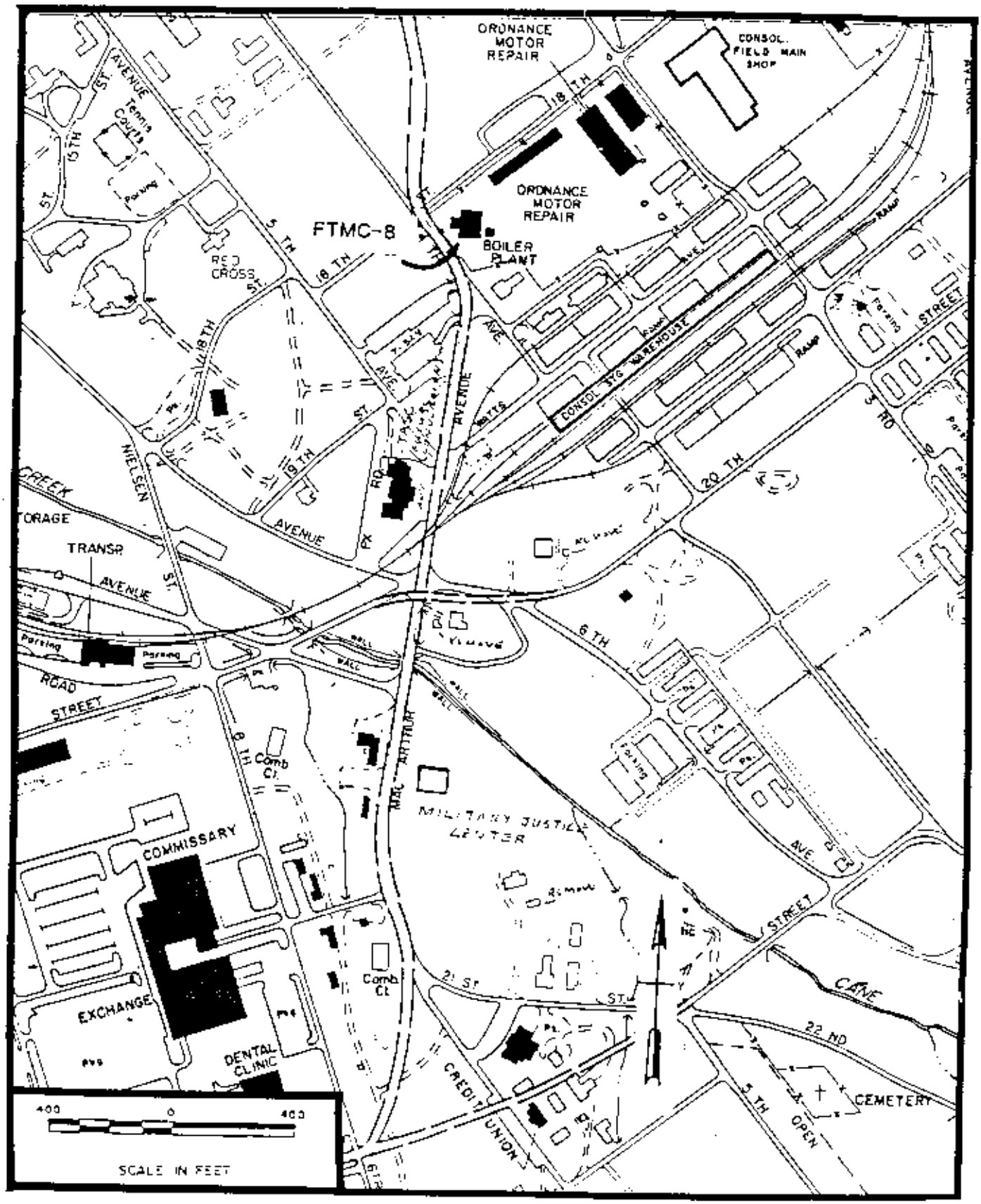

FIGURE A-11: SMALL WEAPONS REPAIR SHOP (FTMC-8)

9. SWMU No. FTMC-9.

a. Type of Activity/Unit. DOL Radiator Repair.

b. Location of Activity/Unit. Building T338, Main Post (Figure A-12).

c. General Dimensions. Not applicable.

d. Time of Operation. Undetermined to present.

e. Description of Activities/Wastes. This operation conducts radiator repair which involves the descaling of radiators by soaking them in an aqueous solution of sodium hydroxide. Waste sodium hydroxide solutions used in this operation are often contaminated with heavy metals, especially lead. This waste may have been discharged to the open floor drain located in the shop bay. The drain is believed to discharge to the sanitary sewer; however, this could not be verified.

f. Description of Sampling Already Accomplished. No sampling has been accomplished at this site.

g. Recommendations. Determine discharge point of the shop bay floor drain from engineer drawings or through dye testing. If discharge is to a storm water drain, test soil/sediment at the effluent site for possible heavy metal contamination.

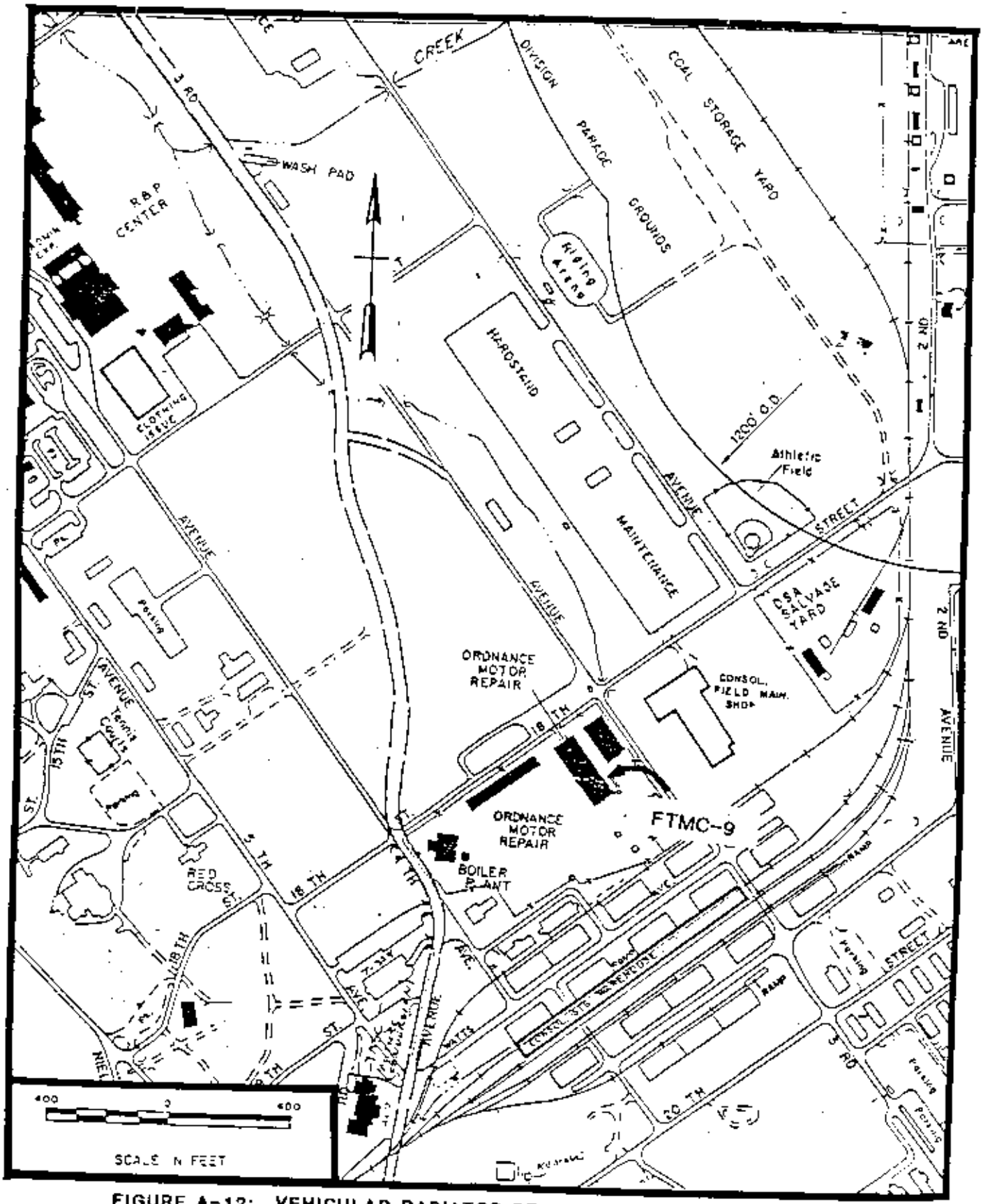

FIGURE A-12: VEHICULAR RADIATOR REPAIR SHOP (FTMC-9)

10. SWMU No. FTMC-10.

a. Type of Activity/Unit. DOL Lead-Acid Battery Maintenance.

b. Location of Activity/Unit. Building T-338, Main Post (Figure A-13).

c. General Dimensions. Not applicable.

d. Time of Operation. Unknown to present.

e. Description of Activities/Wastes. Past operational procedures at this activity may have involved neutralization of battery electrolyte and possible discharge of electrolyte to a floor drain. The exact discharge point of this drain has not been determined. In general, used lead acid battery electrolyte is noted for being contaminated with heavy metals, especially lead.

f. Description of Sampling Already Accomplished. No sampling has been conducted at this site.

g. Recommendations. Determine the discharge point of the shop bay floor drain from engineer drawings or through dye testing. If discharge is to a storm water drain, test soil/sediment at the effluent site for possible heavy metal contamination.

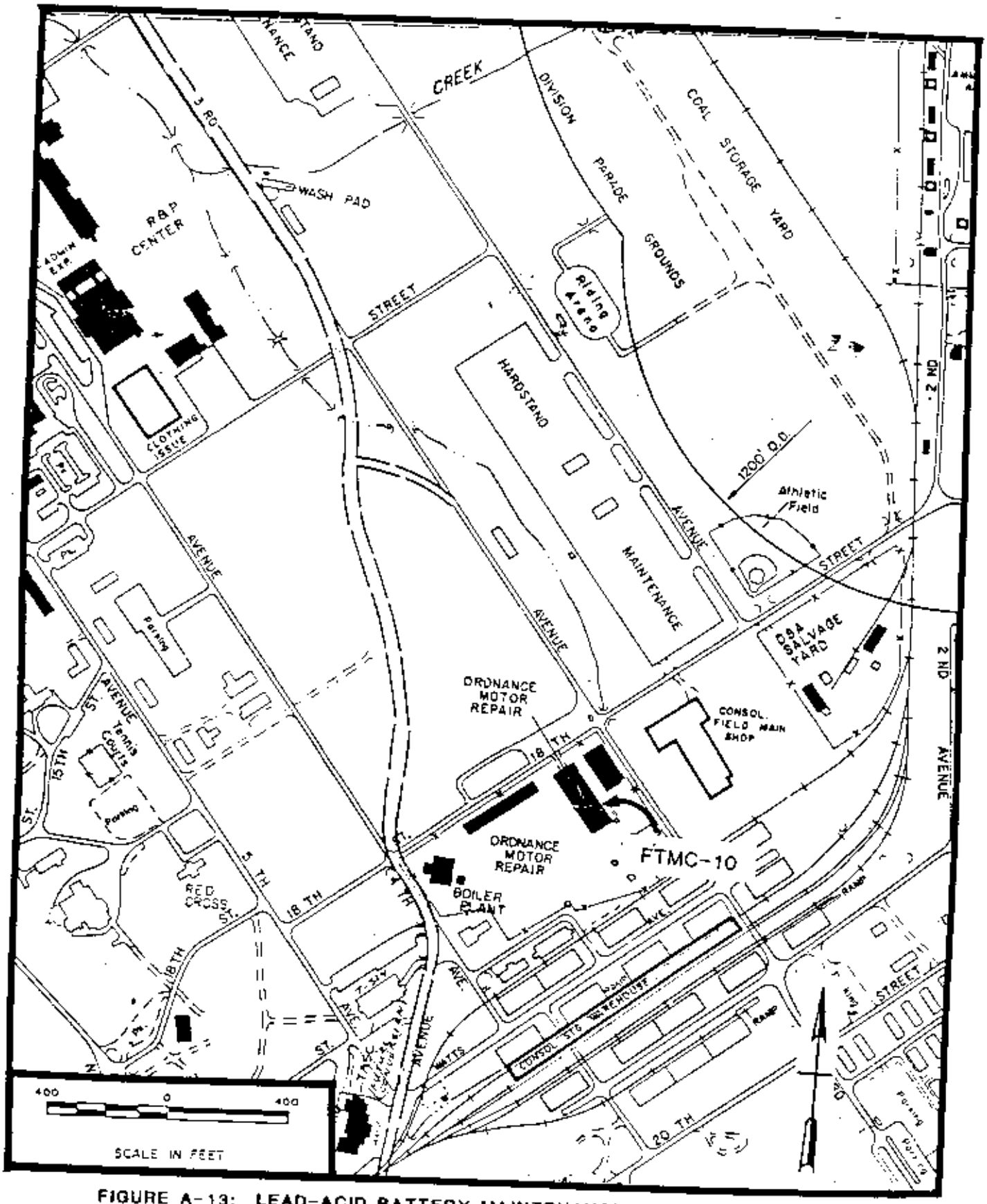

FIGURE A-13: LEAD-ACID BATTERY MAINTENANCE SHOP (FTMC-10)

11. SWMU No. FTMC-11.

a. Type of Activity/Unit. Boiler Plant 1.

b. Location of Activity/Unit. Building 3176, Main Post (Figure A-14).

c. General Dimensions. Not applicable.

d. Time of Operation. Undetermined to present.

e. Description of Activities/Wastes. Steam generating facility. Wastes generated are from blowdown operations from the descaling of the boilers. These wastes are generally of a caustic nature. After generation and use, they are discharged to the sanitary sewer. No spills have been reported at this site. The facility operates under an Alabama Department of Environmental Management (ADEM) permit (permit No. 3-01-0017-X001).

f. Description of Sampling Already Accomplished. No sampling has been conducted on this waste stream or at the site.

g. Recommendations. No further action is recommended for this site.

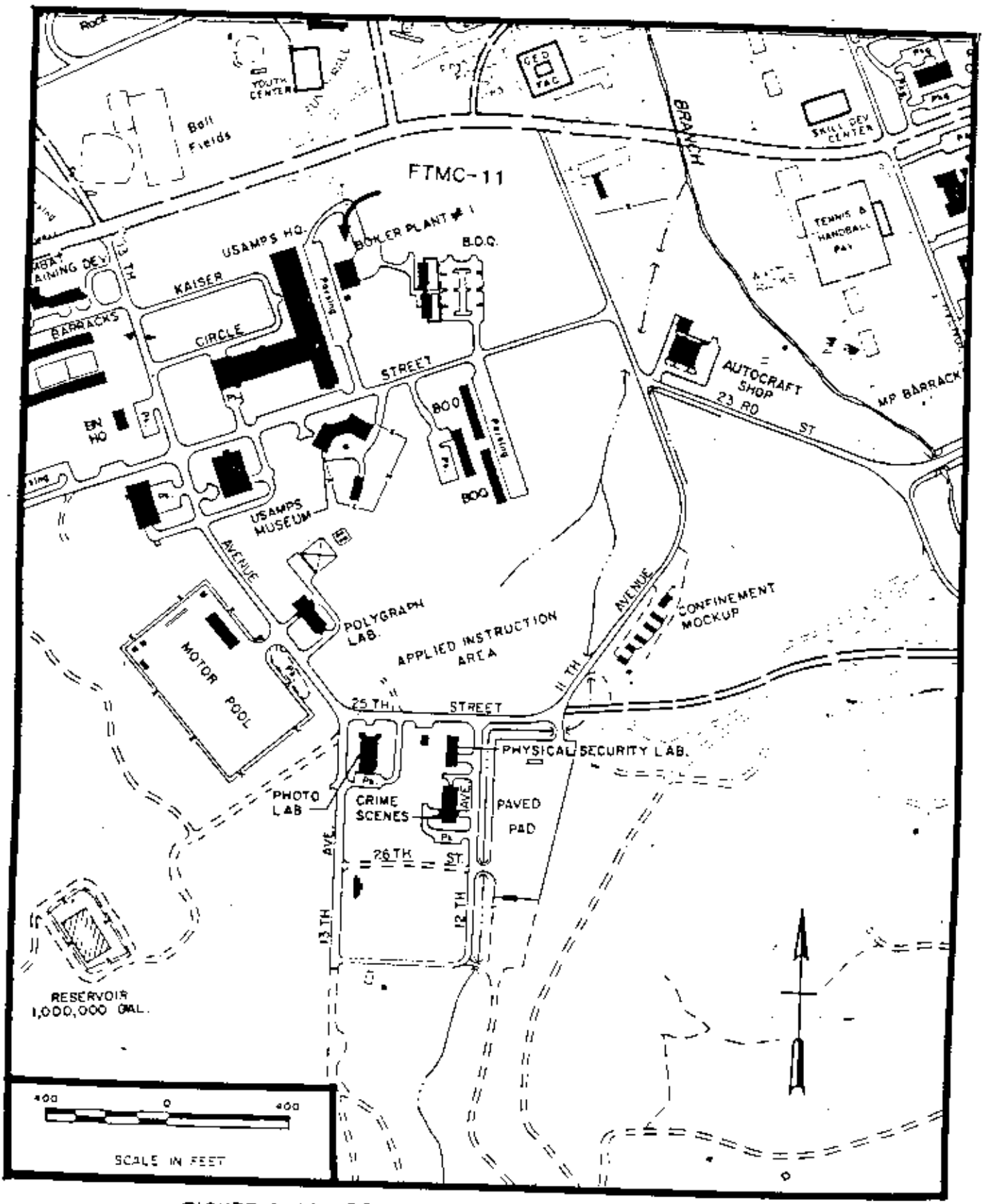

FIGURE A-14: BOILER PLANT NO. 1 (FTMC-11)

12. SWMU No. FTMC-12.

a. Type of Activity/Unit. Boiler Plant 2.

b. Location of Activity/Unit. Building 2278, Main Post (Figure A-15).

c. General Dimensions. Not applicable.

d. Time of Operation. Undetermined to present.

e. Description of Activities/Wastes. Steam generating facility. Wastes generated are from blowdown operations from the descaling of the boilers. These wastes are generally of a caustic nature. After generation and use, they are discharged to the sanitary sewer. No spills have been reported at this site. The facility operates under an ADEM permit (permit No. 3-01-0017-Z002).

f. Description of Sampling Already Accomplished. No sampling has been conducted on this waste stream or at the site.

g. Recommendations. No further action is recommended for this site.

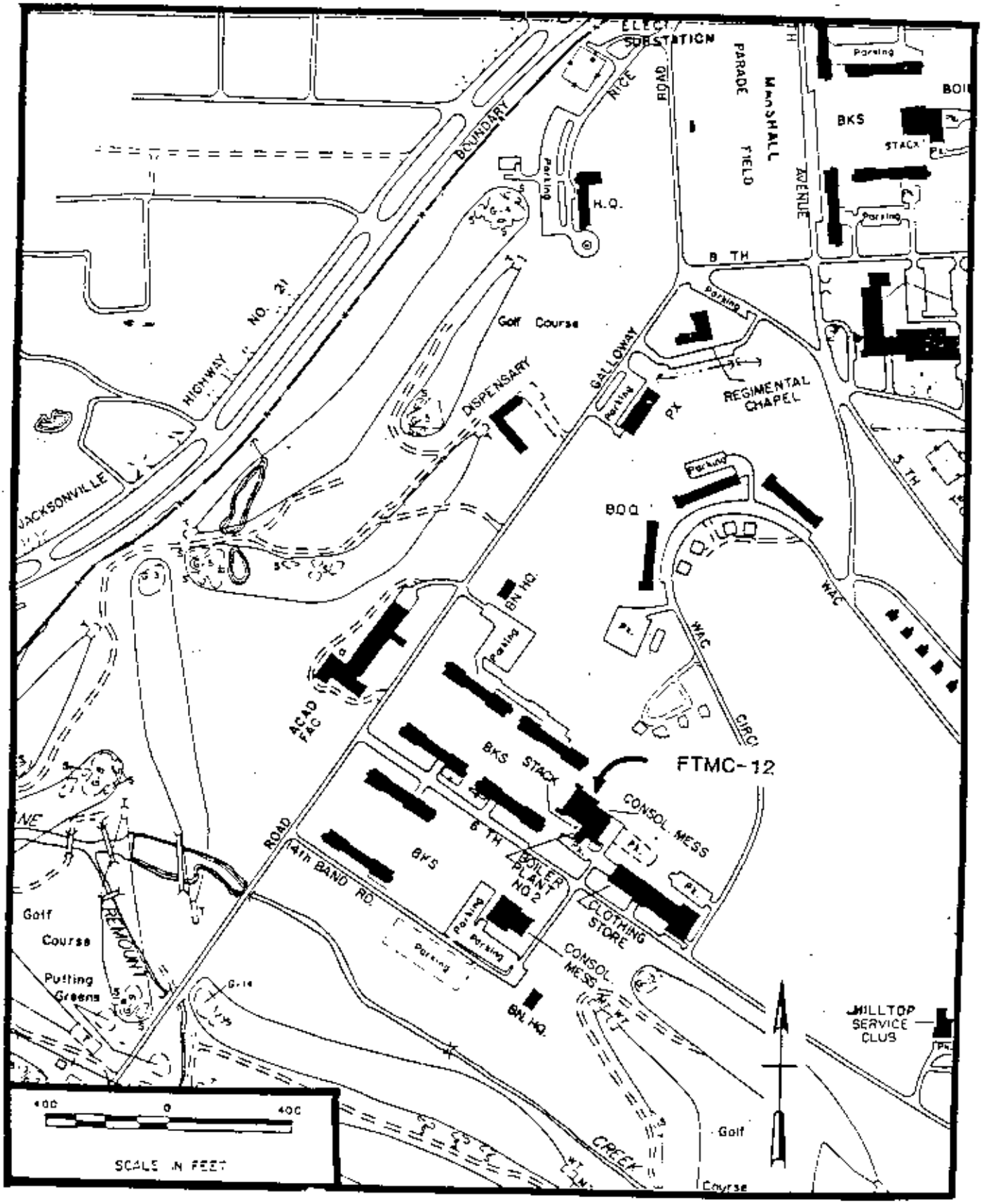

FIGURE A-16: BOILER PLANT NO. 2 (FTMC-12)

13. SWMU No. FTMC-13.

a. Type of Activity/Unit. Boiler Plant 3.

b. Location of Activity/Unit. Building 1076, Main Post (Figure A-16).

c. General Dimensions. Not applicable.

d. Time of Operation. Undetermined to present.

e. Description of Activities/Wastes. Steam generating facility. Wastes generated are from blowdown operations from the descaling of the boilers. These wastes are generally of a caustic nature. After generation and use, they are discharged to the sanitary sewer. No spills have been reported at this site. The facility operates under an ADEM permit (permit No. 3-01-0017-Z001).

f. Description of Sampling Already Accomplished. No sampling has been conducted on this waste stream or at the site.

g. Recommendations. No further action is recommended for this site.

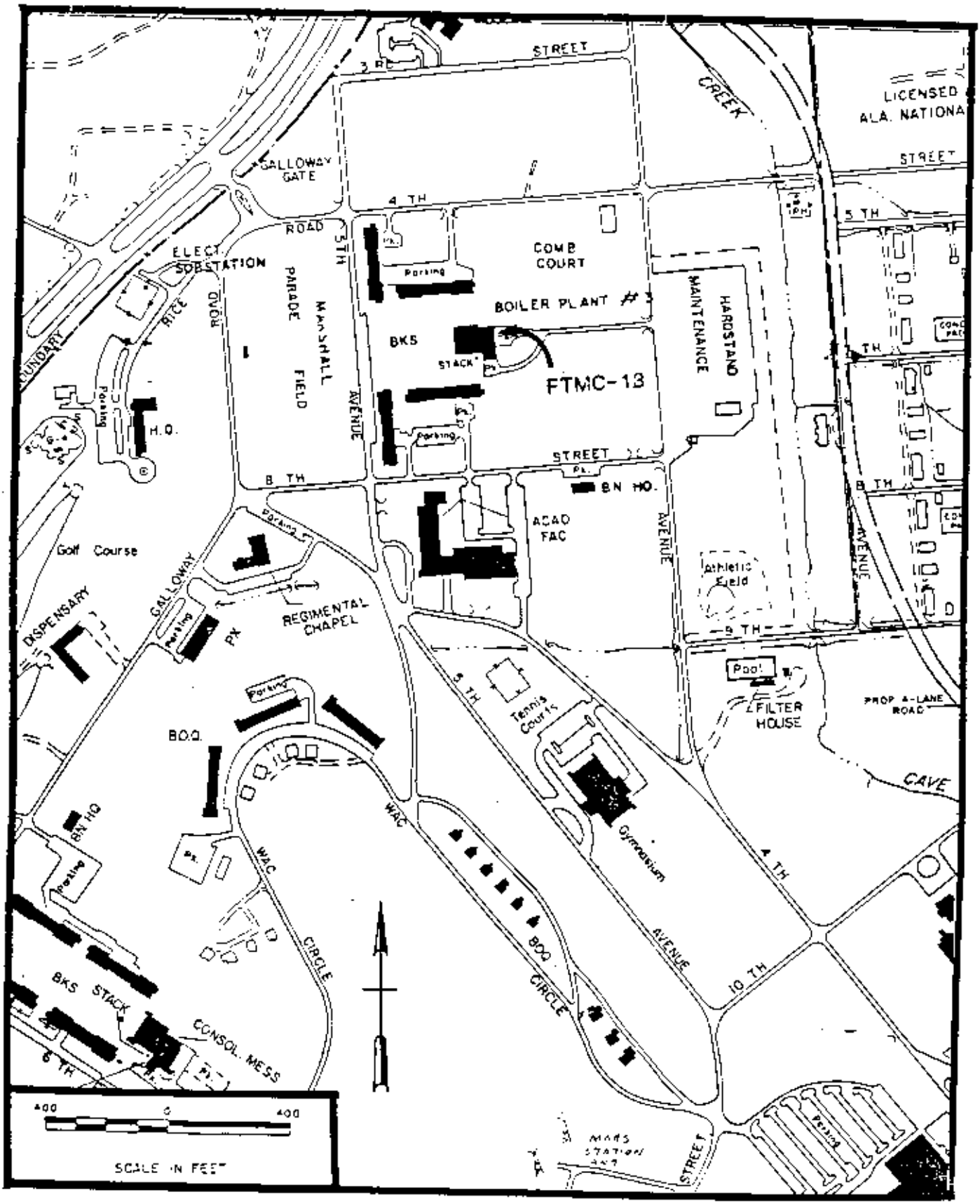

FIGURE A-16: BOILER PLANT NO. 8 (FTMC-13)

14. SWMU No. FTMC-14.

a. Type of Activity/Unit. Boiler Plant 4.

b. Location of Activity/Unit. Building 1876, Main Post (Figure A-17).

c. General Dimensions. Not applicable.

d. Time of Operation. Undetermined to present.

e. Description of Activities/Wastes. Steam generating facility. Wastes generated are from blowdown operations from the descaling of the boilers. These wastes are generally of a caustic nature. After generation and use they are discharged to the sanitary sewer. No spills have been reported at this site. The facility does not have a specific permit number but operates as a grandfathered structure.

f. Description of Sampling Already Accomplished. No sampling has been conducted on this waste stream or at the site.

g. Recommendations. No further action is recommended for this site.

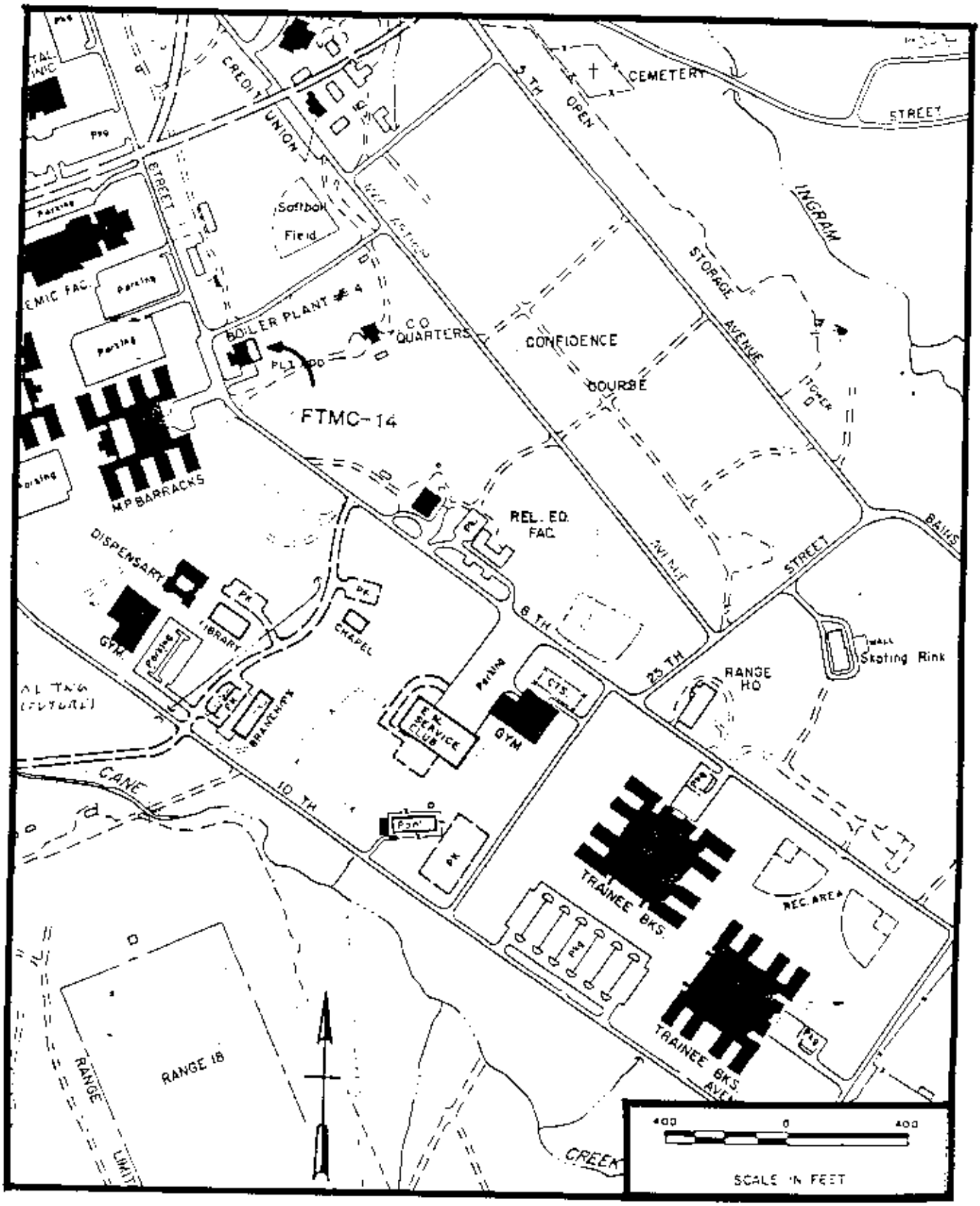

FIGURE A-17: BOILER PLANT NO. 4 (FTMC-14)

15. SWMU No. FTMC-15. Wash Racks With Associated Oil Water Separators.

a. Type of Activity/Unit. Vehicular wash rack.

b. Location of Activity/Unit.

(1) Bldg T-215, DEH motor pool.

(2) Bldg 866, 613th BN and 4th Combat Support Hospital.

(3) Bldg 1643, Equipment Concentration Site.

(4) Bldg 3146/3147, 365th battalion.

(5) Bldg 3142/3143, Sub-transportation motor pool.

(6) Bldg 239, Transportation motor pool.

(7) Bldgs 3262/3263, 546th Combat Engineer Battalion.

(8) Bldg 338, Automotive Mechanical Repair Branch.

(9) Bldg 3283, component not identified.

(10) Bldg 1298, Refuse dumpster and dump truck cleaning facility.

c. General Dimensions. Not applicable.

d. Time of Operation. Undetermined.

e. Description of Activities/Wastes. These operations consist of vehicular wash areas which discharge to oil water separators. The oil water separators are equipped with diversion boxes. Ultimate discharge of the oil water separators is to the sanitary sewer. When the racks are not in use, they discharge to storm water drains. The wash rack/oil water separator located at Bldg 1298 is also used for the cleaning of refuse dumpsters and discharges only to the sanitary sewer. No solvents have reportedly been used at these sites.

f. Description of Sampling Already Accomplished. No sampling has been accomplished at these sites.

g. Recommendations. No further action is recommended for these sites since operations at the sites did not involve the use of solvents or other HM/HW.

16. SWMU No. FTMC-16.

a. Type of Activity/Unit. OB/OD Site.

b. Location of Activity/Unit. Pelham Range impact area (Figure A-18).

c. General Dimensions. Not determined.

d. Time of Operation. 1979 to present.

e. Description of Activities/Wastes. This area is used for demolition training and demolition of grenades, small arms ammunition, artillery rounds, land mines and pyrotechnics. The area is listed on the installation part A permit as a thermal treatment facility. Access to the site is controlled by the 142d Ordnance Disposal Detachment. An escort is needed since access routes may contain unexploded ordnance.

f. Description of Sampling Already Accomplished. No sampling has been conducted at the site.

g. Recommendations. The thermal treatment of explosive ordnance may deposit explosive and heavy metal contaminants to surrounding soil. Ash and soil at this site should be sampled and analyzed to determine the impact of disposal operations at this site.

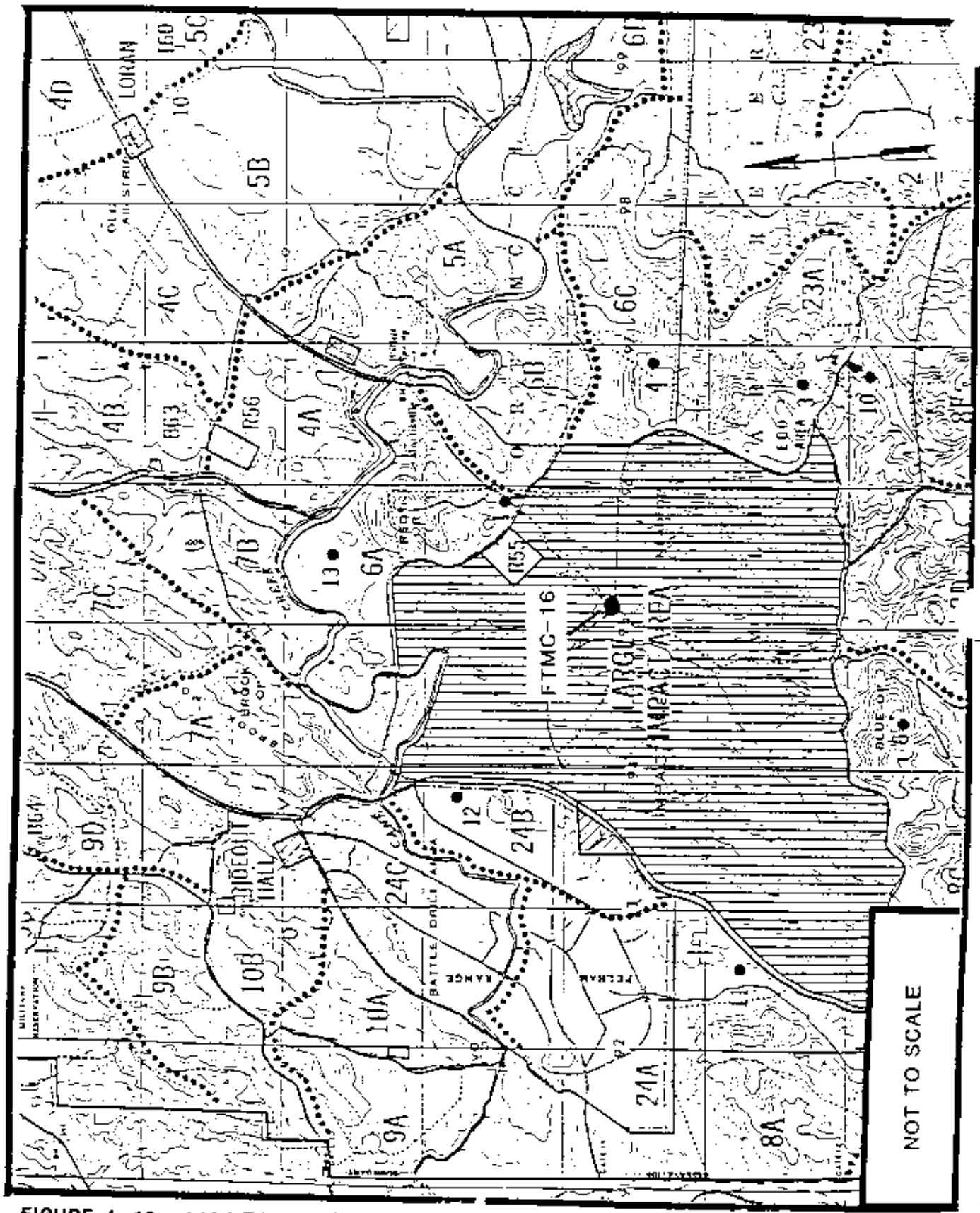

FIGURE A-16: 142d EOD OB/OD AREA (FTMC-16)

17. SWMU No. FTMC-17.

a. Type of Activity/Unit. U.S. Army Chemical School Laboratory Sump.

b. Location of Activity/Unit. Building 2281, Main Post (Figure A-19).

c. General Dimensions. 2-feet x 4-feet x 5-feet deep.

d. Time of Operation. Undetermined to 1985.

e. Description of Activities/Wastes. The chemical school provided classroom and laboratory training in basic analytical and laboratory techniques. Chemicals generated from laboratory exercises included small quantities of various acids, bases, solvents and inorganic chemicals. A listing of those chemicals routinely generated from laboratory exercises may be found in Table A-2. These wastes were routinely discharged to laboratory sink drains which were tied into an in-ground sump. The ultimate discharge point of this sump was never determined. Upon closure of the school, many of the schools chemicals were poured down the laboratory drains causing a chemical reaction at the sump site. The sump was pumped out, and subsequently, backfilled and sealed.

f. Description of Sampling Already Accomplished. Prior to the school closure and the dumping of excess chemicals, the sump contents were tested and determined to be nonhazardous (reference 12).

g. Recommendations. Though the sump contents were determined to be nonhazardous, at one point in time, the disposal of lab chemicals to the sump during closure may have resulted in a discharge to the environment. Since the ultimate discharge of this sump was never determined, it is recommended that further evaluation of the site be conducted to determine if any discharges to the environment have occurred.

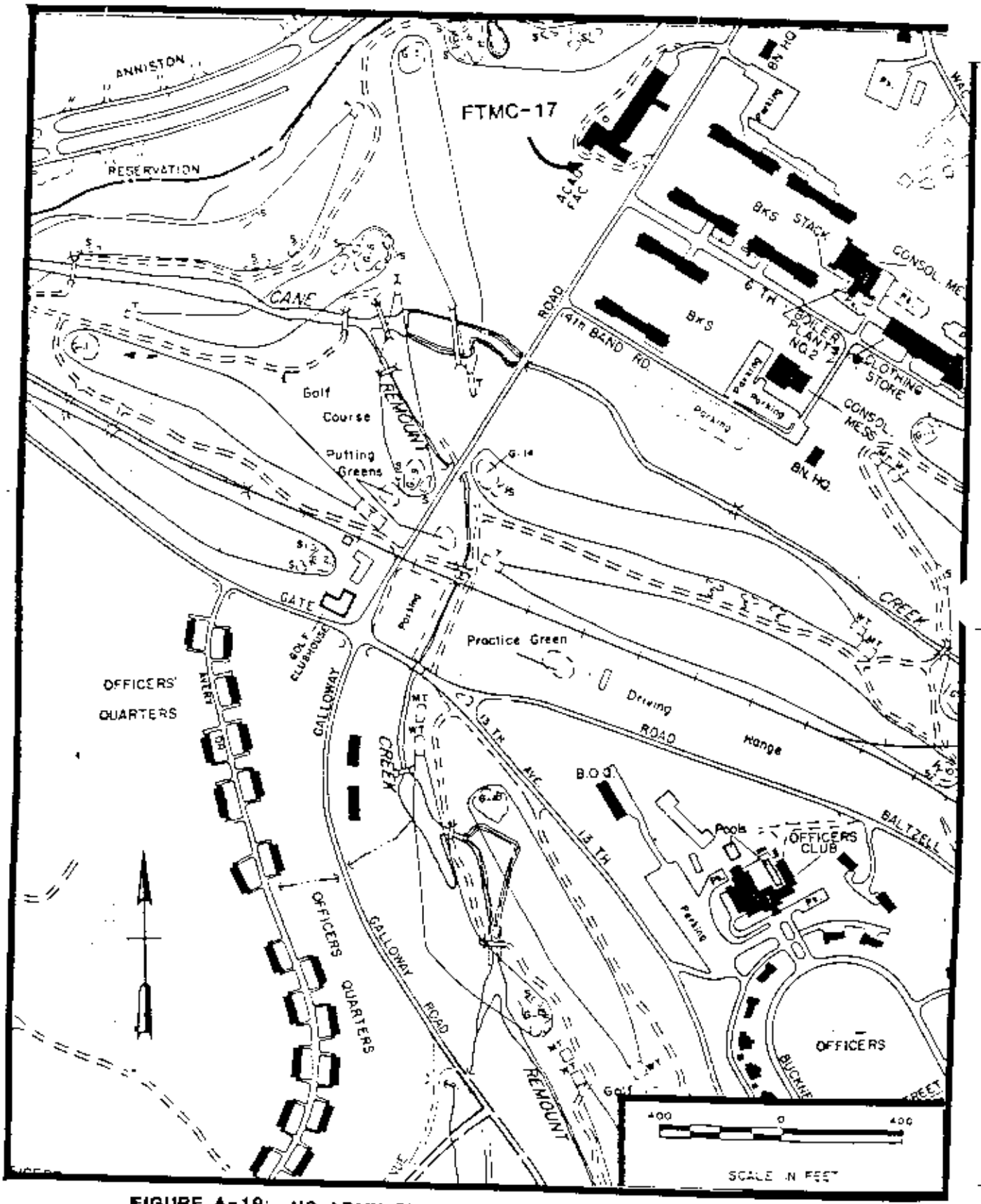

FIGURE A-10: US ARMY CHEMICAL SCHOOL (FTMC-17)

TABLE A-2. LIST OF CHEMICALS ROUTINELY DISPOSED OF BY THE CHEMICAL SCHOOL LABORATORY (all quantities listed are per class per student)

Chemical	Quantity
ferrous chloride	30 mL
sodium hydroxide	200 mL and 30 grams
calcium chloride	90 mL
ammonium chromate	90 mL
sodium sulfate	90 mL
hydrochloric acid	500 mL
phenophtalein	30 mL
potassium phosphate	9 grams
ethanol	150 mL
potassium manganate	2 grams
potassium dichromate	2 grams
phosphoric acid	30 mL
potassium chromate	80 mL
aqueous ammonia	250 mL
nitric acid	300 mL
thioacetamide	100 mL
ammonium nitrate	80 mL
sulfuric acid	250 mL
ammonium acetate	100 mL
acidic acid	100 mL
potassium ferro cyanide	80 mL
potassium cyanide	10 grams
sodium hypochlorite	100 mL
tin chloride	100 mL
sodium fluoride	100 mL
potassium nitrate	100 mL
ammonium cyanide	100 mL
hydrogen peroxide	100 mL
ammonium chromate	200 mL
ammonium sulfide	200 mL
sodium chloride	25 grams
silver nitrate	30 grams
dichloroflourescien	10 mL
dextrin	5 grams
benzene	40 mL
ether	50 mL
phosphoric acid	40 mL
sodium hypocarbonate	40 mL
paraffin oil	200 mL
picolinic acid	5 grams
benzoic acid	20 grams
4,4-bis (dimethylamine)benzo-phenone	10 grams
benzene sulfonyl chloride	10 mL
2,4-dinitrophenol	10 grams
sodium citrate	5 grams

Chemical	Quantity
copper sulfate	10 grams
dioxane	50 mL
potassium iodide	10 grams
aqueous zinic chloride	10 grams
N-Bromosucinimide	3 grams
sodium metal	3 grams
potassium bromide	10 grams
acetanilide	80 grams
ethyl acetate	60 mL
n-butyl acetate	80 mL
acetic anhydride	

18. SWMU No. FTMC-18.

a. Type of Activity/Unit. PCB Storage facility.

b. Location of Activity/Unit. Northeastern portion of the Main Post within the old coal storage yard (Figure A-20).

c. General Dimensions. 60-feet x 30-feet.

d. Time of Operation. 1984 to present.

e. Description of Activities/Wastes. Storage of PCB and PCB-contaminated transformers. The facility consists of a covered, bermed concrete slab, which is enclosed by a cyclone fence. Transformers are stored within this structure until disposal can be accomplished. Some transformers have been stored outside of the structure and within the fenced area. No reported leaks or spill have occurred at the facility. Additionally, the facility was used for the temporary storage of lab chemicals removed from the Chemical School laboratory.

f. Description of Sampling Already Accomplished. Soil sampling and subsequent analysis for PCB content was conducted within the fenced area in December of 1985 (reference 1). No PCBs were detected at a 1 ppm detection level.

g. Recommendations. Based on the performed sampling and anaiysis, no further action is recommended for this site.

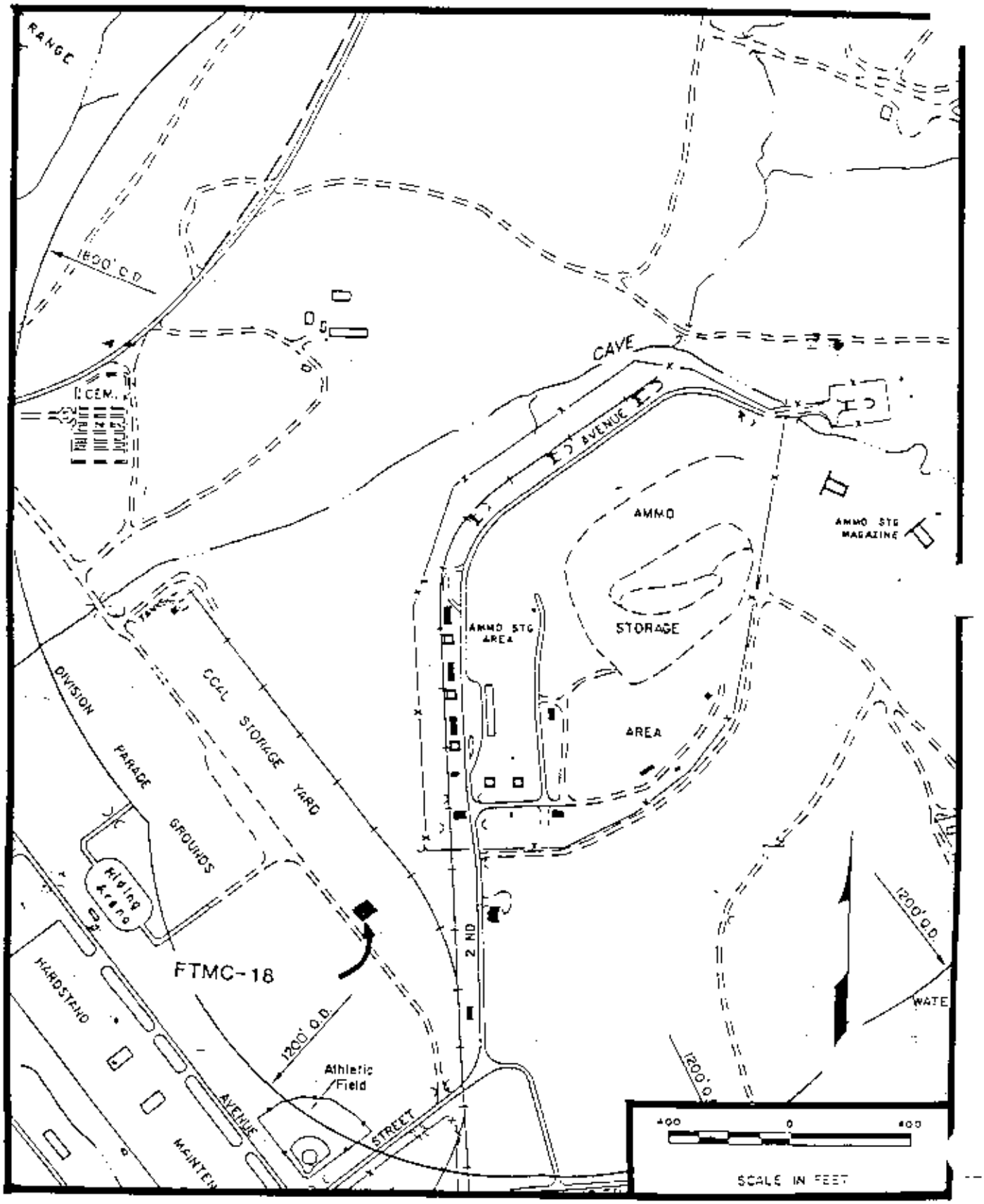

FIGURE A-20: PCB TRANSFORMER STORAGE FACILITY (FTMC-18)

19. SWMU No. FTMC-19.

a. Type of Activity/Unit. Temporary transformer storage/staging area.

b. Location of Activity/Unit. Northeastern portion of the Main Post within the old coal storage yard and adjacent to Building S-4437 (Figure A-21).

c. General Dimensions. 40-feet x 100-feet.

d. Time of Operation. Undetermined to present.

e. Description of Activities/Wastes. This area has been used for the temporary storage or staging of transformers removed from service. The area consists of a fenced secure area. Transformers are held in this facility until testing for PCB concentration is accomplished. Those transformers found to have greater than 50 ppm are moved to the PCB transformer storage facility for storage until disposal can be accomplished.

f. Description of Sampling Already Accomplished. Soil samples were obtained from this site for PCB analysis. All analyses were negative for PCBs at a 1 ppm detection limit.

g. Recommendations. Based on the performed sampling and analysis, no further action is recommended for this site.

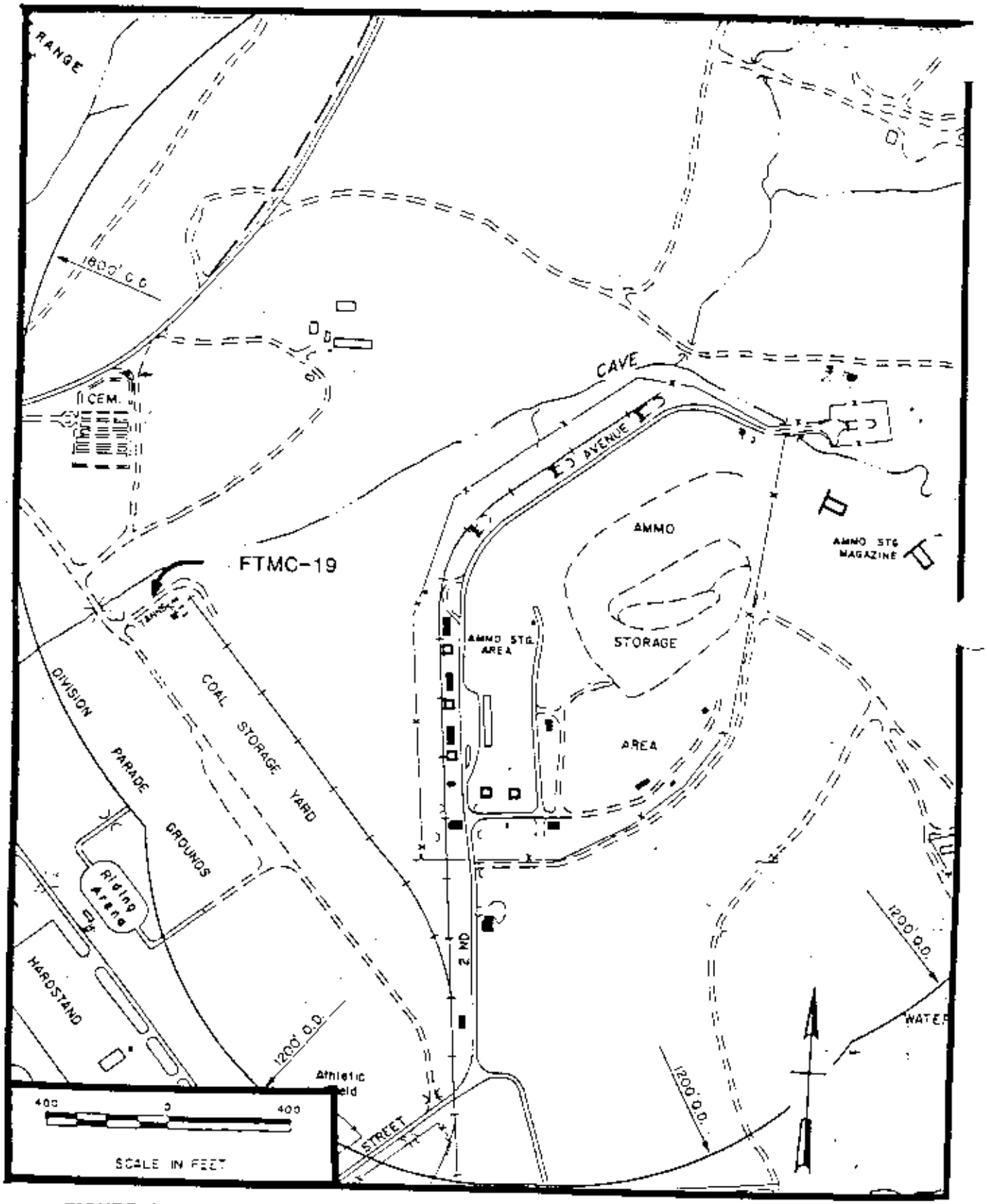

FIGURE A-21: TEMPORARY TRANSFORMER STORAGE AREA (FTMC-19)

20. SWMU No. FTMC-20.

a. Type of Activity/Unit. Chemical Decontamination Training Facility Incinerator.

b. Location of Activity/Unit. Northeast portion of main post (Figure A-22).

c. General Dimensions. Not applicable.

d. Time of Operation. This is a new facility and is currently undergoing test and evaluation prior to its official use.

e. Description of Activities/Wastes. This facility will be used for the training of military personnel in techniques of detection and decontamination of nerve agents. The facility will utilize incineration as its method for the disposal for all generated wastes. No spills or other releases to the environment have occurred onsite other than trial burns of the incinerator. The incinerator was operating under a temporary authorization to operate which expired on 31 May 1987.

f. Description of Sampling Already Accomplished. No sampling other than that of the incinerator ash has been conducted at this site.

g. Recommendations. Based on the available information, no further action is recommended for this site.

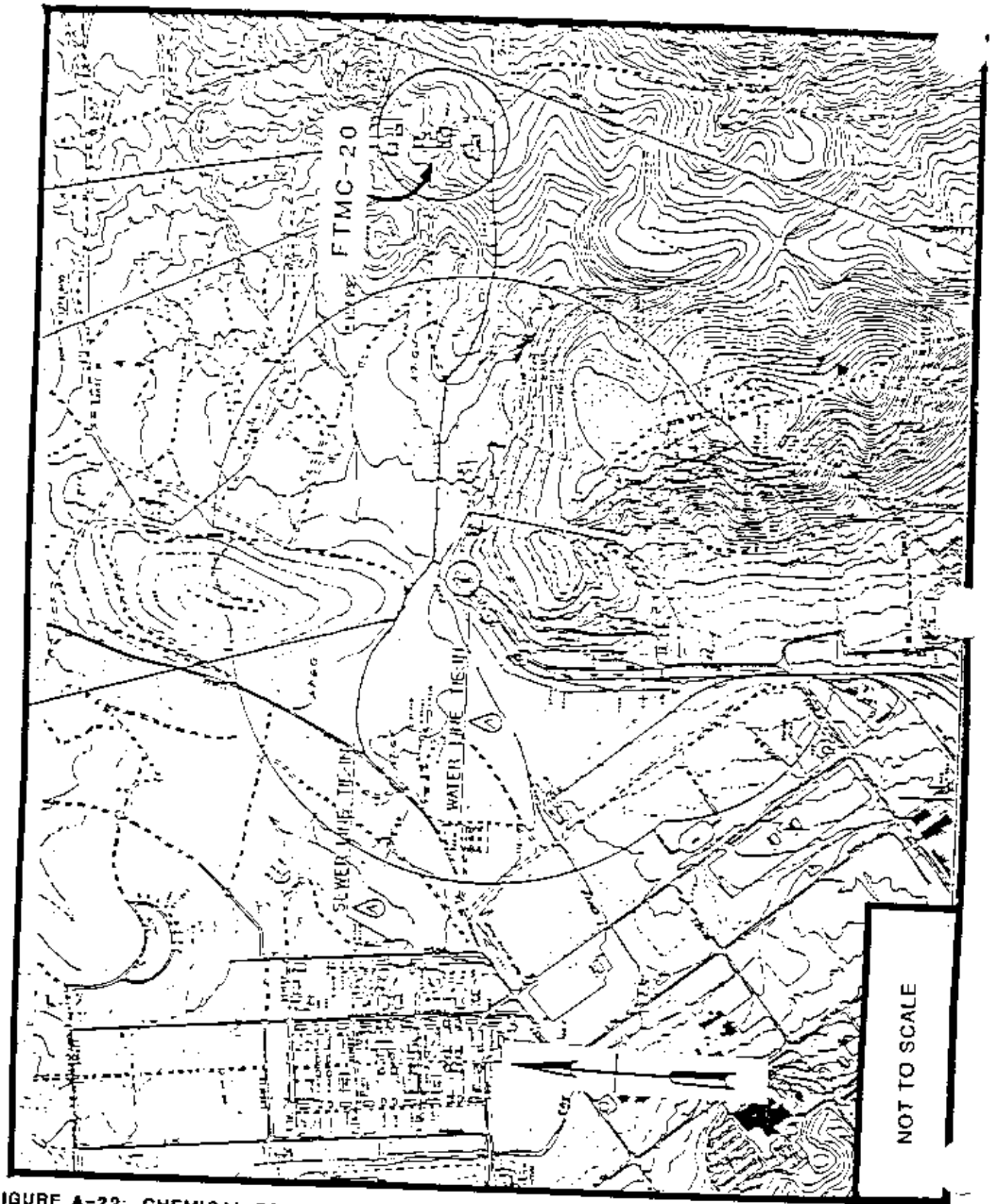

FIGURE A-22: CHEMICAL DECONTAMINATION TRAINING FACILITY INCINERATOR (FTMC-20)

21. SWMU No. FTMC-21.

a. Type of Activity/Unit. Infectious/pathological waste incinerator.

b. Location of Activity/Unit. Noble U.S. Army Community Hospital, Main Post (Figure A-23).

c. General Dimensions. Exterior dimensions 48-inches x 90-inches.

d. Time of Operation. 1972 to present.

e. Description of Activities/Wastes. This incinerator is used for the destruction of infectious and potentially infectious wastes as well as pathological wastes. Ash generated from the incinerator is disposed of in the installation sanitary landfill. The unit is a gas-fired Consumat Systems, Inc. Model C-32-P incinerator. No releases are known to have occurred at this site. This incinerator is operating under a letter of authorization by the State of Alabama.

f. Description of Sampling Already Accomplished. No sampling has been accomplished at this facility.

g. Recommendations. No action is recommended for this site.

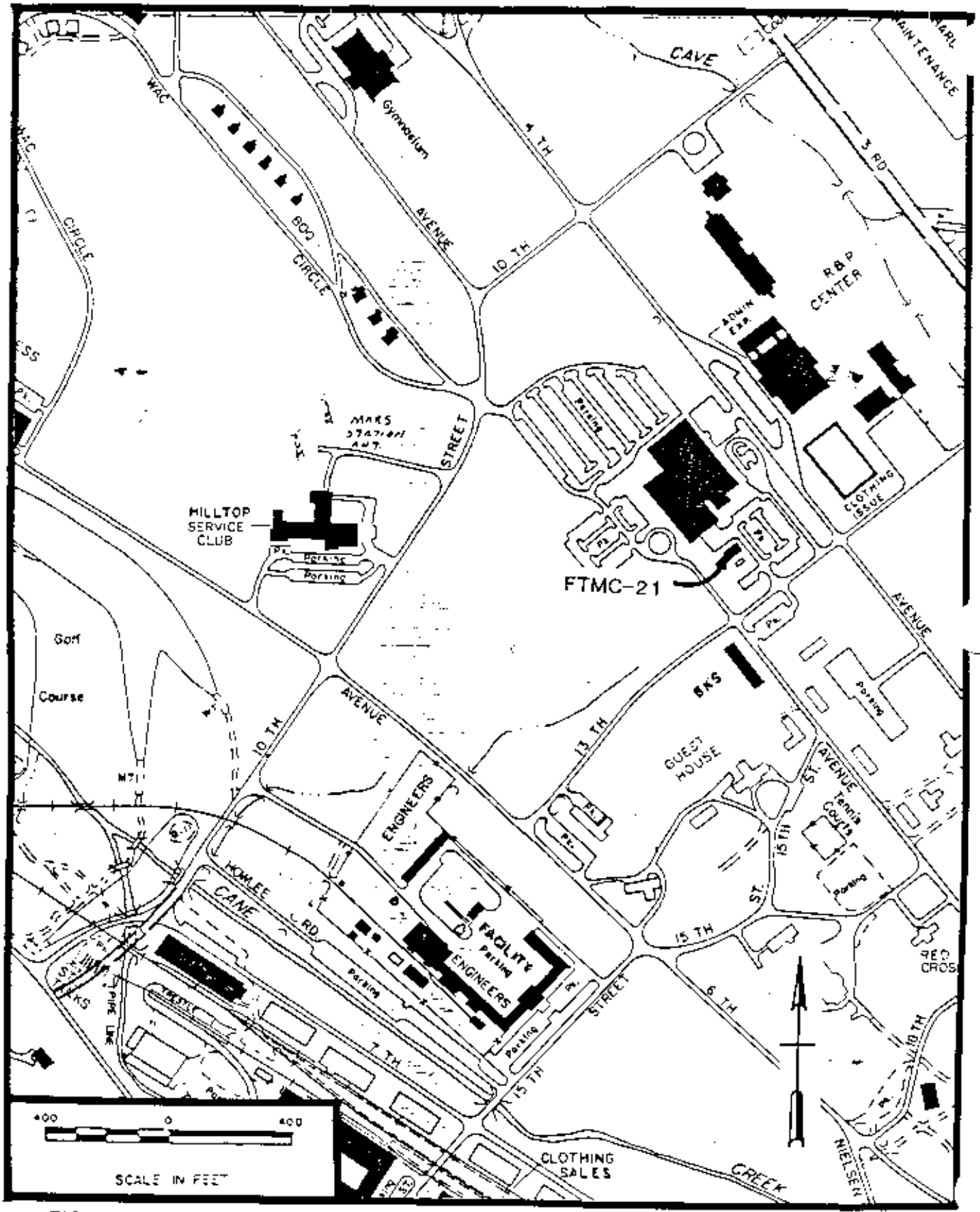

FIGURE A-23: INFECTIOUS/PATHOLOGICAL WASTE INCINERATOR (FTMC-21)

22. SWMU No. FTMC-22.

a. Type of Activity/Unit. Fire training pit.

b. Location of Activity/Unit. Main Post off 18th street near Building 339 (Figure A-24).

c. General Dimensions. Circular - 30 to 40-feet in diameter.

d. Time of Operation. Not determined.

e. Description of Activities/Wastes. This unit is a concrete-lined training area for fire fighting exercises. Use of the unit has been discontinued. The facility had been used once a year for fire fighting purposes. Exercises reportedly involved the use of waste oils and contaminated fuels. The unit was designed with an overflow which allowed for the discharge of rainwater to a nearby storm water drain. The discharge of unburned oils and fuels may also have occurred during rainwater discharge. The onsite storage of drums containing waste oil, contaminated fuels and possibly other solvents was a common practice.

f. Description of Sampling Already Accomplished. No sampling has been conducted onsite.

g. Recommendations. It is unlikely that any solvents, oils, or contaminated fuels will be found at the training pit discharge point. No further action is recommended at the discharge point. Soil sampling and analysis is recommended for the areas at which drums were stored, as leakage may have occurred. Further action will be dependent on the results of these analyses.

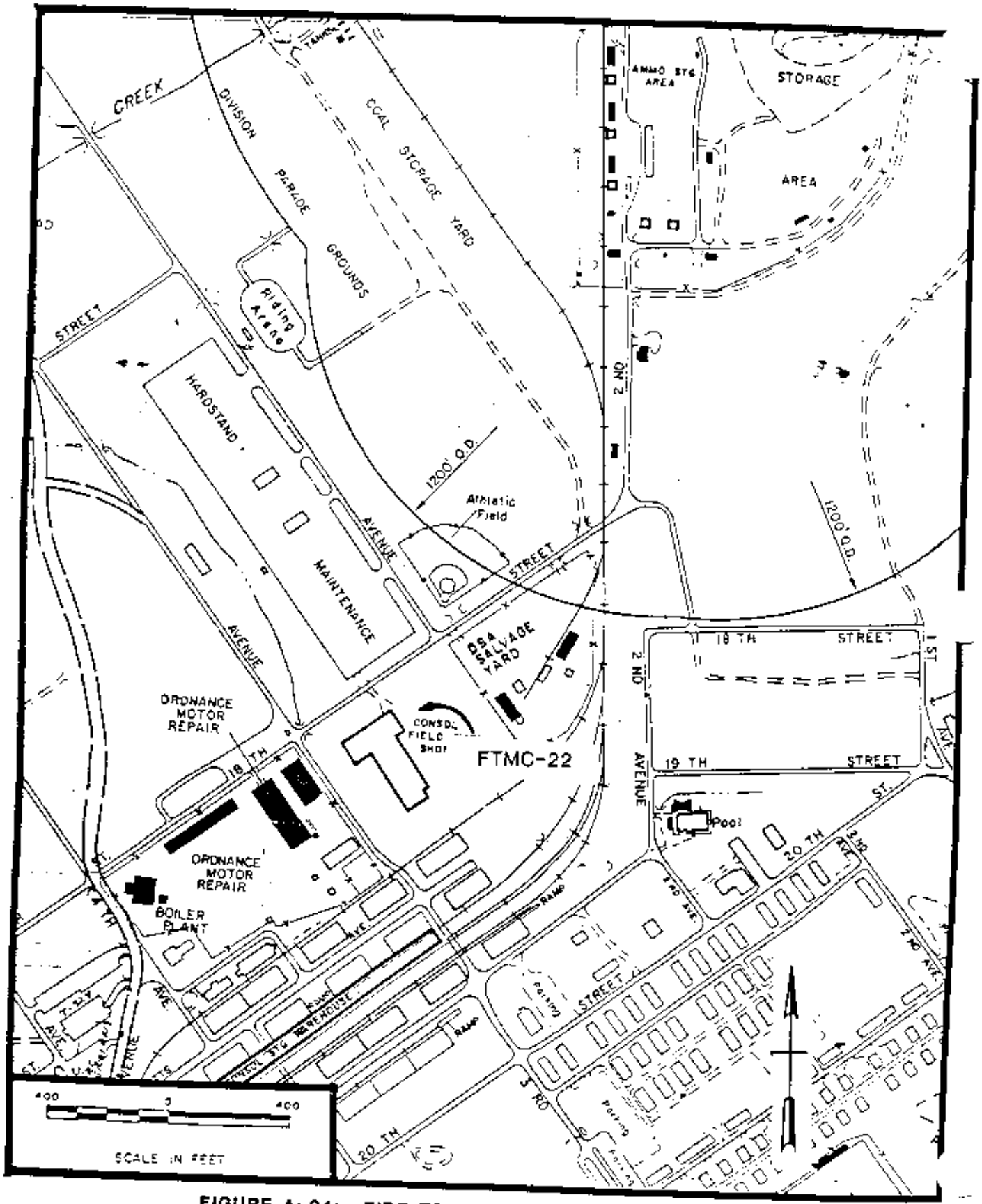

FIGURE A-24: FIRE TRAINING PIT (FTMC-22)

23. SWMU No. FTMC-23.

a. Type of Activity/Unit. Transportation Motor Pool Lead-Acid Battery Maintenance Shop.

b. Location of Activity/Unit. Building 234, Main Post (Figure A-25).

c. General Dimensions. Not applicable.

d. Time of Operation. Undetermined to 1981.

e. Description of Activities/Wastes. Approximately 300 batteries/year were drained and the electrolyte neutralized. Neutralized electrolyte was flushed to a floor drain which ultimately discharges to Cane creek.

f. Description of Sampling Already Accomplished. No sampling has been conducted at this site.

g. Recommendations. Lead-Acid battery electrolyte has been found to contain extraction procedure (EP) toxic levels of both lead and cadmium. Therefore, the possibility exists that heavy metals may be present in the sediment of Cane Creek, especially at the discharge point. It is, therefore, recommended that sediment at the drain discharge point be sampled and analyzed for EP toxicity metals.

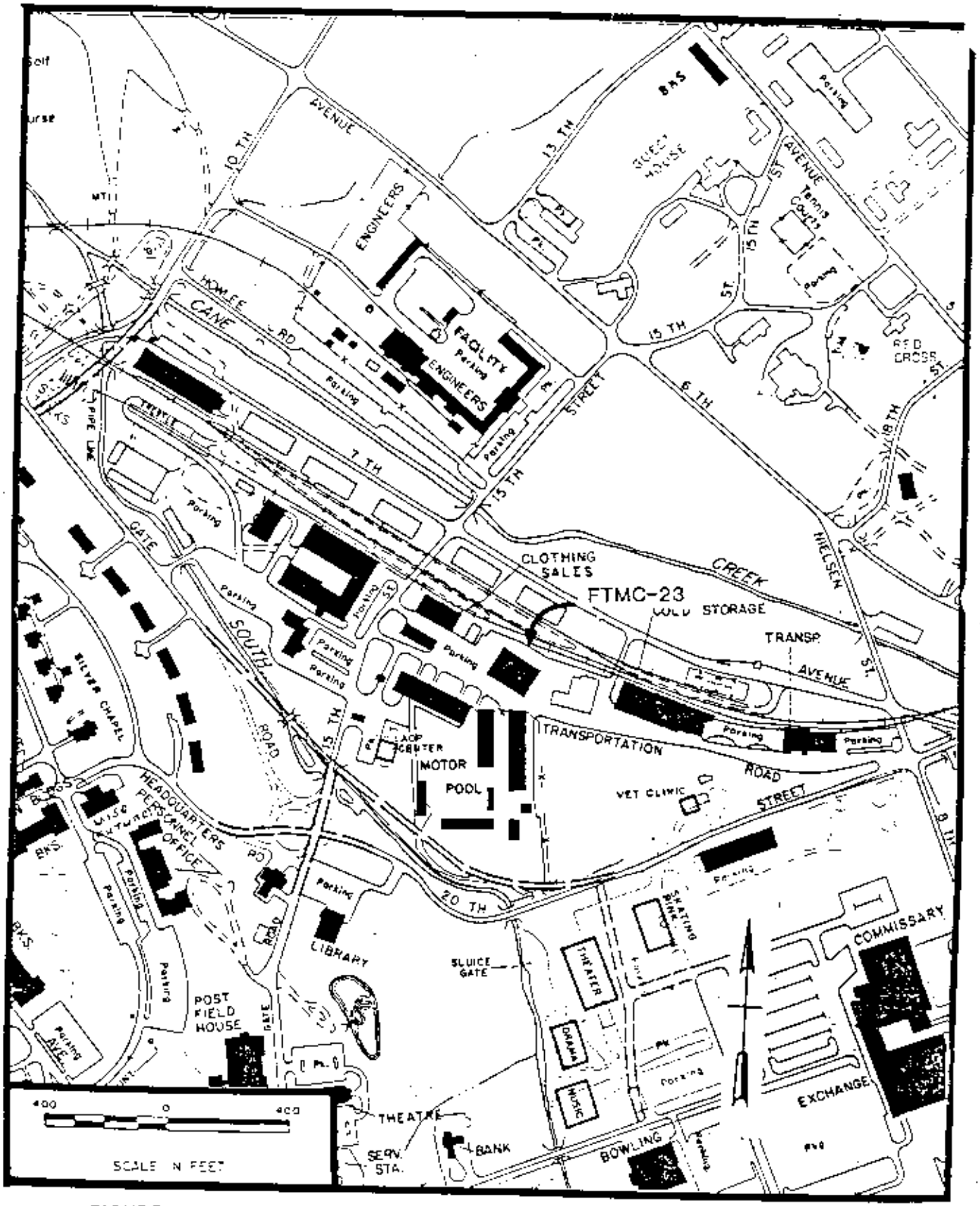

FIGURE A-25: LEAD-ACID BATTERY MAINTENANCE SHOP (FTMC-23)

24. SWMU No. FTMC-24.

a. Type of Activity/Unit. DRMO Storage Facility.

b. Location of Activity/Urit. Near Building T-344, Main Post (Figure A-26).

c. General Dimensions. 20-feet x 20-feet.

d. Time of Operation. Undetermined to present.

e. Description of Activities/Wastes. This area is a satellite storage operation of the DRMO activity located at Anniston Army Depot. It is used for the temporary storage (90 days or less) of HW/HM prior to disposal. The storage area is limited to a small section of the DRMO facility and consists of two conexes situated on top of interlocking aluminum panels.

f. Description of Sampling Already Accomplished. Sampling of soil adjacent to the aluminum panels was accomplished in December 1985 (reference 1). Collected samples were analyzed for priority pollutants listed in the Table A-3. Results of the analyses indicated the presence of PCP, 2,4,6-tri-chlorophenol, naphtalene and phenanthrene at ppm levels (see Table A-4). Sampling was not accomplished beneath the aluminum panels. Based on these results, it is apparent that some type of discharge has occurred at this site. This discharge may have occurred either during or prior to the use of this area as a satellite waste storage area.

g. Recommendations. Recommend further sampling to establish the extent of lateral and vertical migration of detected compounds.

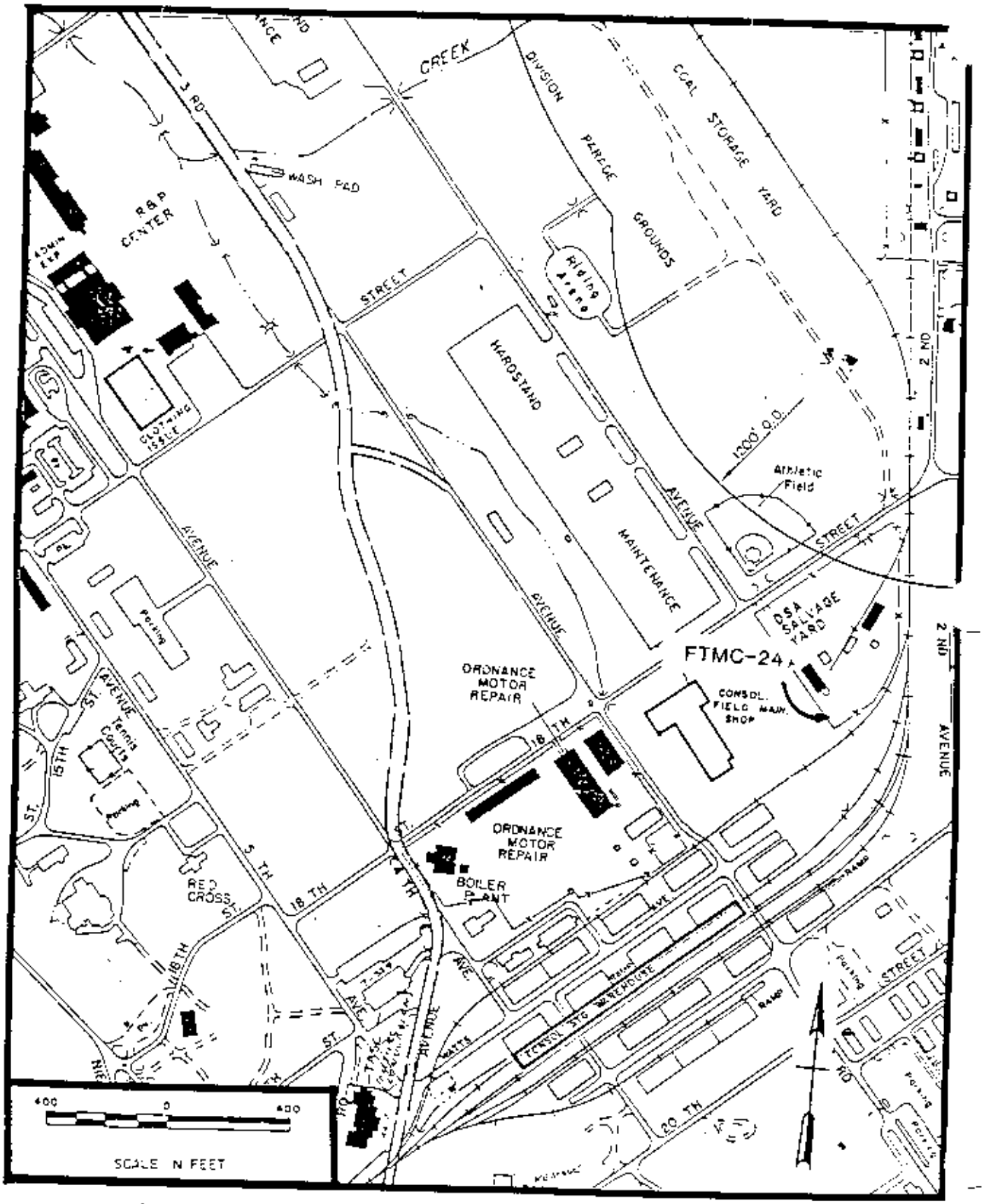

FIGURE A-26: ORMO HW/HM STORAGE (FTMC-24)

TABLE A-3. DETECTION LIMITS FOR PRIORITY POLLUTANT ANALYSIS FOR SOIL

Constituent	Detection Limit(µg/g)	Constituent	Detection Limit(µg/g)
2,4-dichlorophenol	2.5	benzo (A) anthracene	1
2,4-dimentylphenol	2.5	benzo (A) pyrene	1
4,6-dinitro-o-cresol	25	benzo (B) flouranthene	1
2,4-dinitrophenol	25	benzo (GHI) pyrene	2.5
2-nitrophenol	2.5	benzo (K) flouranthene	1
4-nitrophenol	2.5	bis (2-chloroehoxy) methane	1
p-chloro-m-cresol	2.5	bis (2-chlorothyl) ether	1
pentachlorophenol	2.5	bis (2-chloroisopropyl) ether	1
phenol	2.5	bis (2-ethylhexyl) phthalate	1
2,4,6-trichlorophenol	2.5	4-bromophenyl phenyl ether	1
aldrin	1	butyl benzyl phthalate	1
alpha-BHC	1	2-chloronaphthalene	1
beta-BHC	1	4-chlorophenyl phenyl ether	1
gamma-BHC	1	chrysene	1
delta-BHC	1	dibenzo anthracene	2.5
chlorodane	1	1,2-dichlorobenzene	1
4,4'-DDT	1	1,3-dichlorobenzene	1
4,4'-DDE	1	1,4-dichlorobenzene	1
4,4'-DDD	1	3,3'-dichlorobenzidine	1
dieldrin	1	diethyl phthalate	1
alpha-endosulfan	1	2,4-dinitrotoluene	1
beta-endosulfan	1	2,6-dinitrotoluene	1
indosulfan sulphate	1	1,2-diphenylhydarzine	1
endrin	1	flourathene	1
endrin aldehyde	1	flourene	1
heptachlor	1	hexachlorobenzene	1
heptachlor epoxide	1	hexachlorobutadiene	1
PCB-1242	5	hexachlorocyclopentadiene	1
PCB-1254	5	hexachloroethane	1
PCB-1221	5	indeno (1,2,3-CD) pyrene	2.5
PCB-1232	5	isophorone	1
PCB-1248	5	naphthalene	1
PCB-1260	5	nitrobenzene	1
PCB-1016	5	n-nitrosodimethylamine	1
toxaphene	50	n-nitrosodi-n-propylamine	1
acenophthene	1	n-nitrosodiphenylamine	1
acenophthylene	1	phenanthrene	1
anthracene	1	pyrene	1
benzidine	1	1,2,4-trichlorobenzene	1
2-chlorophenol	1	di-n-octyl phthalate	1

TABLE A-4. ORGANIC CONSTITUENTS DETECTED IN SOIL SAMPLES FROM DRMO YARD

Constituent	Sample Number (units of µg/g) 005	006	007
pentachlorophenol	BDL	3	14
2,4,6-trichlorophenol	BDL	5	72
benzo (B) flouranthene	TRC	4	BDL
benzo (GHI) pyrene	TRC	1	TRC
benzo (K) flouranthene	TRC	4	BDL
chrysene	TRC	BDL	TRC
diethyl phthalate	1	TRC	BDL
flouranthene	TRC	2	BDL
naphthalene	TRC	TRC	2
phenanthrene	TRC	1	2
pyrene	TRC	2	BDL

BDL - Below Detection Limit
TRC - Constituent detected, but below quantifiable limits.

GENERAL INFORMATION CONCERNING THE CHEMICAL TRAINING SITES FTMC 25-38

The chemical training sites in question were used for the training of personnel in various facets of chemical warfare decontamination, detection and munitions/agent disposal. Operations occurring on these sites involved various agents, some of which may or may not have been used on the individual sites. These agents included Mustard (HD), the nerve agents VX and GB, and the biological simulants BG and SM. The predominant agent thought to have been used at Fort McClellan was HD. One important property of HD is that it readily undergoes hydrolysis to form thiodiglycol a fairly nontoxic compound. The HD may also polymerize on its surface in aqueous situations to form a protective insoluble coat, thus, inhibiting further hydrolysis. This factor can lead to isolated pockets of HD in subsurface soil.

The persistence of subsurface contamination in soils and in ground water for these agents, agent degradation byproducts, decontaminants DS-2 (70-percent diethlenetriamine, 2-percent sodium hydroxide and 28-percent ethylene glycol monomethyl ether) and supertropical bleach (STB) constituents, and byproducts from the reactions of agents with decontaminants have been evaluated (reference 10). Based on the solubility, volatility, toxicity and formation potential of the compounds evaluated, it was concluded that the only toxic compounds likely to persist in the subsurface soils at Fort McClellan are HD and bis(2-diisopropylaminoethyl) disulfide, also known $(DES)_2$. The latter compound is the principle byproduct formed from the decontamination of VX with DS-2. The limited quantities of VX used on these sites essentially eliminates the potential for large enough quantities of $(DES)_2$ to be of significance in terms of environmental contaminants.

Based on similar considerations, it was concluded that the only toxic compounds likely to persist in the ground water are divinyl sulfide (DVS), mustard sulfoxide (HO), $(DES)_2$, and S-(diisopropylaminoethyl) methylphosphonothioate (DESMP). Divinyl sulfide is formed from the alkaline hydrolysis of HD with DS-2, and HO is formed from the oxidation of HD with STB. The DESMP is formed from the hydrolysis of VX. Though the potential exists for these compounds to exist in ground water, it is unlikely that they will be detected due to the limited quantities of agents used and decontaminated during training exercises. Additionally, testing for the decontaminants, DS-2 and STB is secondary to the agents themselves and the probability of detecting either of these compounds in significant quantities is remote.

Soil sampling recommendations for the chemical training sites discussed will provide information on whether or not the specific site sampled may contain agent but will not confirm the site to be free of agent. Therefore, the value of sampling at any of the sites may be questionable. Additionally, if agents are detected, the options for cleanup are limited. The sampling recommendations presented within this report for the agent training sites are based on a discussion with the USATHAMA and are preliminary. Final sampling recommendations by USATHAMA may differ from those stated below. A general site map for those sites located on Fort McClellan Main Post is included as Figure A-27.

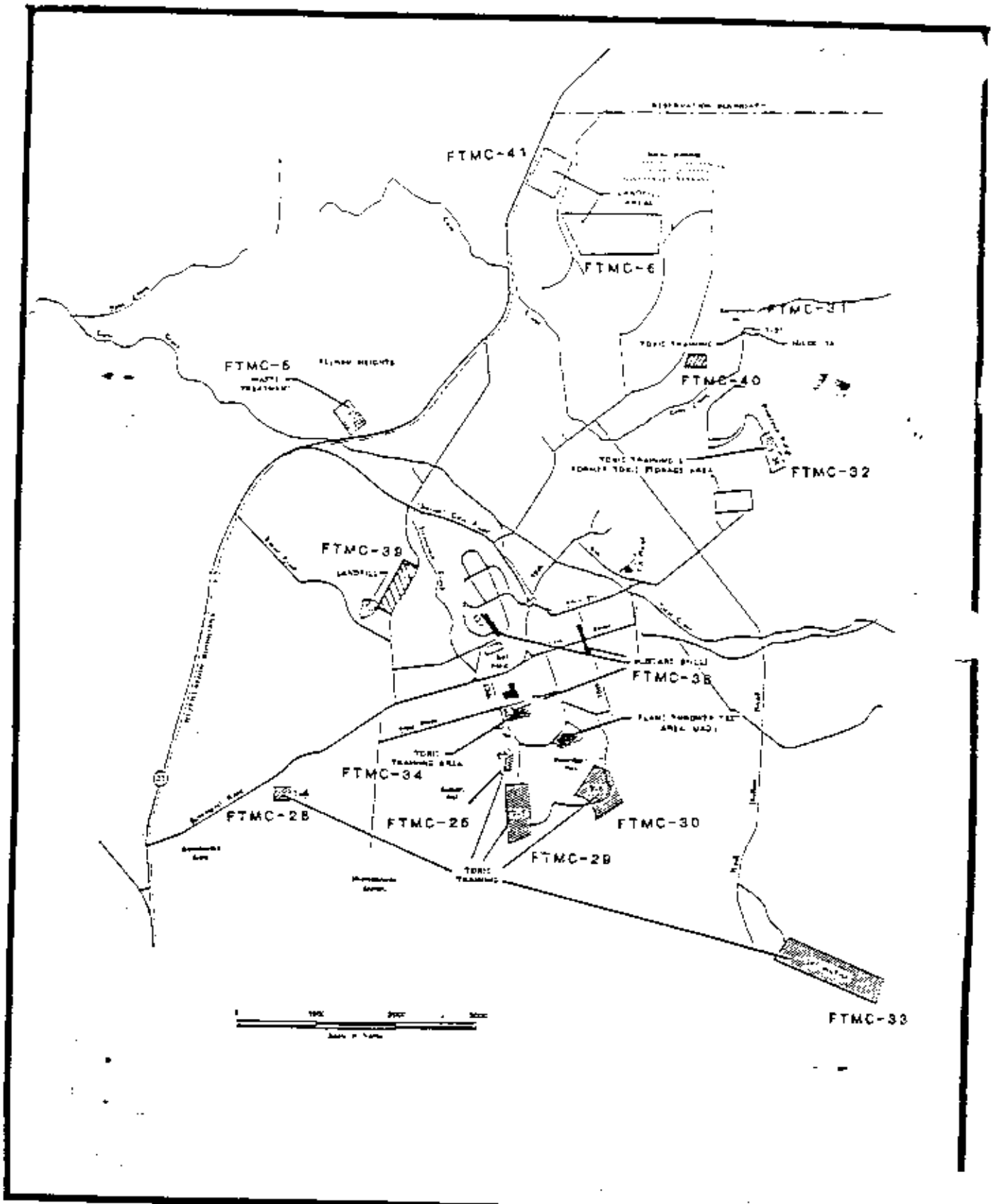

FIGURE A-27: APPROX. LOCATION OF AGENT TRAINING SITES AND LANDFILLS (FTMC-MAIN POST)

25. SWMU No. FTMC-25.

a. Type of Activity/Unit. D and I (Detection and Identification) Area.

b. Location of Activity/Unit. Northeast of Sunset Hill (Figure A-28).

c. General Dimensions. 0.4 ha/1.1 acres.

d. Time of Operation. Date opened unknown; date closed 1972.

e. Description of Activities/Wastes. This area was used for GB testing. Some use of HD may have occurred in the late 50's by the Navy. It has also been reported that simulants CK, GC, CX, and AC were also used in the training area. A pit was dug on the site in which all training aids from this site and the building from area T-4 were burned twice and buried. The remains are still located in the pit.

f. Description of Sampling Already Accomplished. No sampling has been conducted on the site. However, the site was declared clear in 1973 (reference 10).

g. Recommendation. Limit site to surface use in the event that pockets of live agent still exist in subsurface areas. Perform geophysical survey to detect burial pit. Perform subsurface soil sampling within the pit area to determine presence of agents.

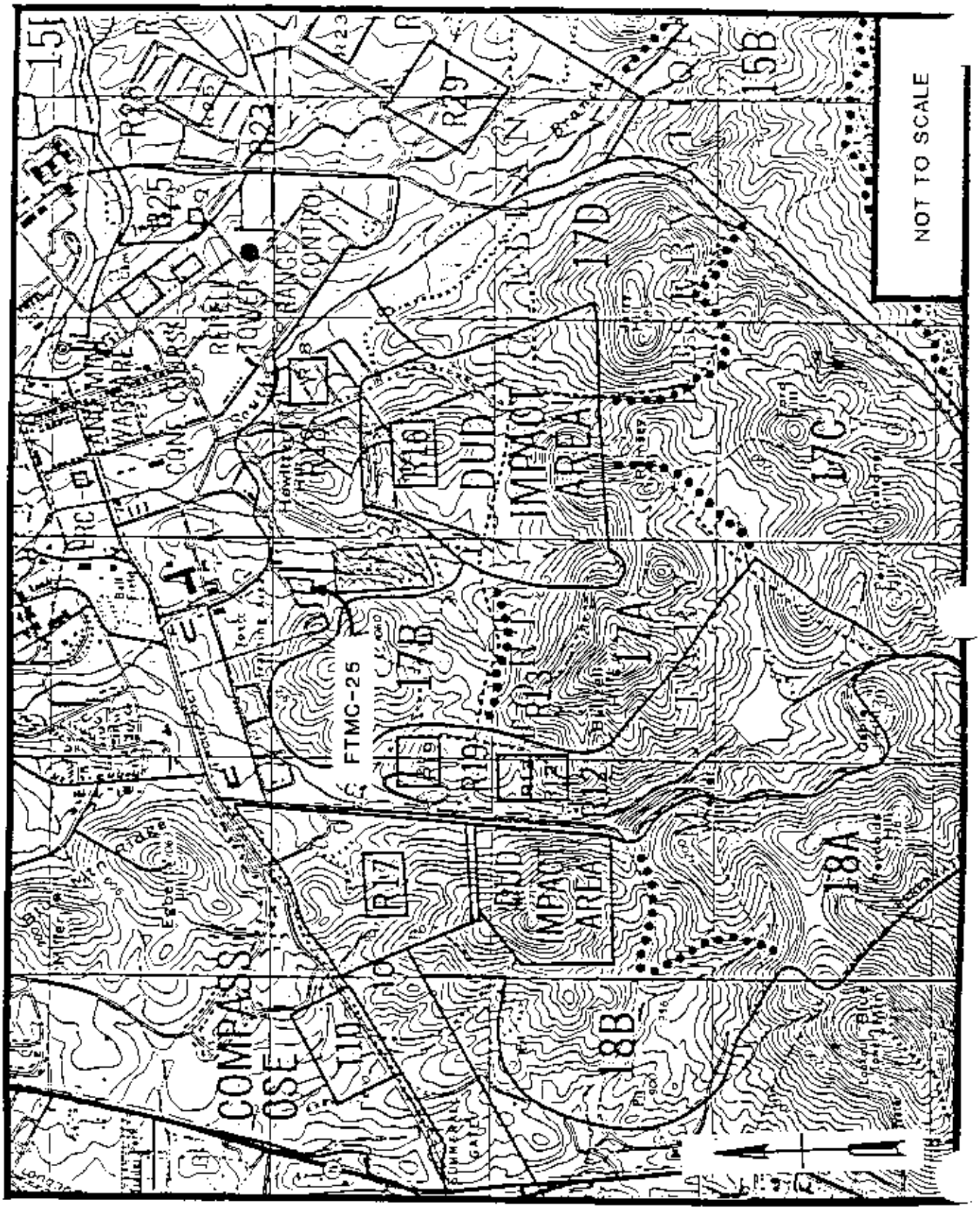

FIGURE A-28: D & I (DETECTION & IDENTIFICATION AREA) (FTMC-25)

26. SWMU No. FTMC-26.

a. Type of Activity/Unit. Range I - Toxic Agent Shell Tapping.

b. Location of Activity/Unit. West Central portion Pelham Range (Figure A-29).

c. General Dimensions. 0.2 ha/0.5 acres.

d. Time of Operation. 1963 - 1964.

e. Description of Activities/Wastes. Limited information is available on the use of the site. The agents used onsite are assumed to have been HD. The area has been physically rearranged with top 2 feet of soil having been removed.

f. Description of Sampling Already Accomplished. Field tests conducted in 1979 showed no evidence of surface contamination. No subsurface soil testing has been performed onsite.

g. Recommendations. Site rearrangement and decontamination procedures and monitoring results indicate no apparent problems for surface activity. Subsurface use should not be permitted due to possible persistence of isolated pockets of live agent. Collect five random surface samples from the site for the detection of agents.

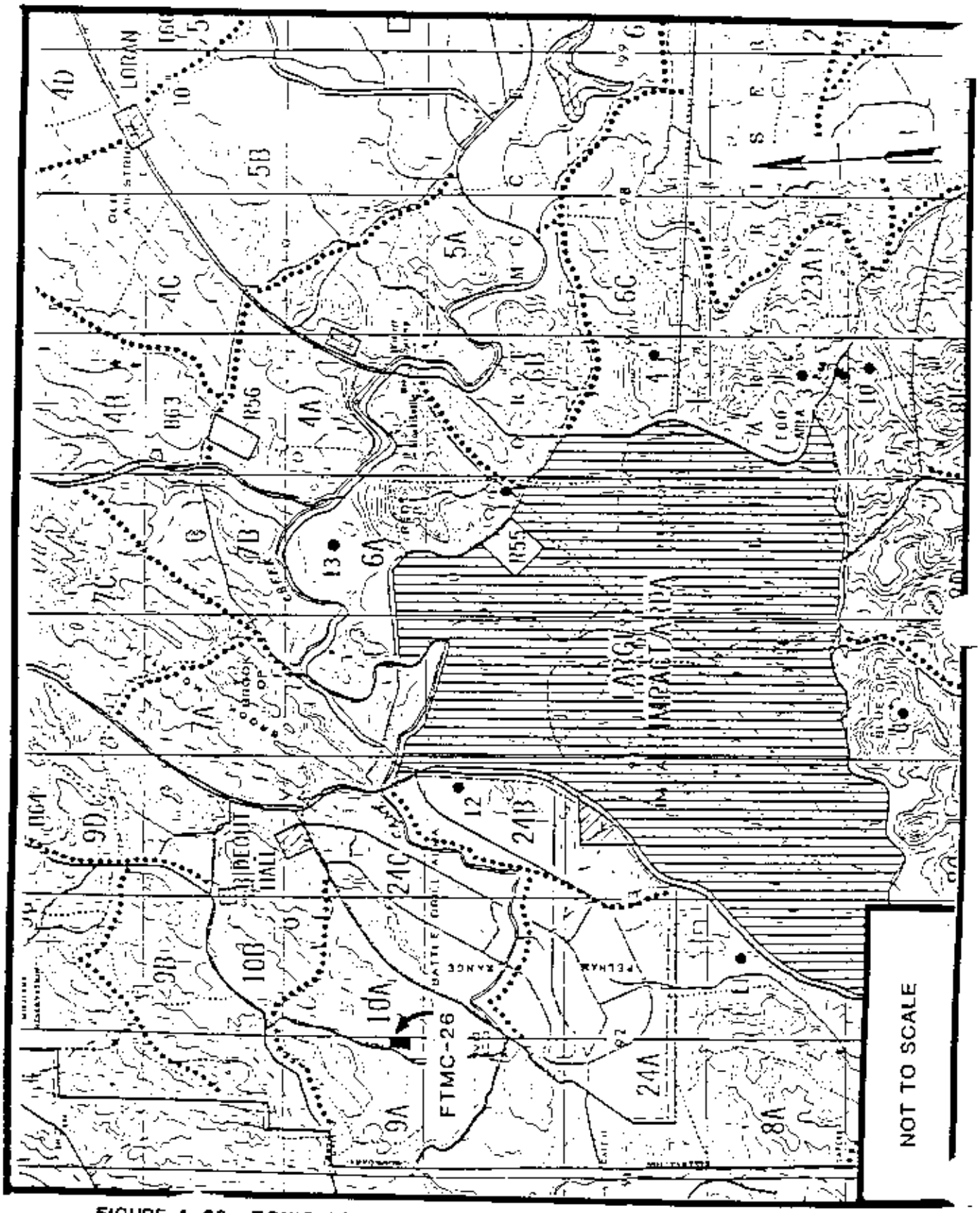

FIGURE A-29: TOXIC AGENT SHELL TAPPING AREA (FTMC-26)

27. SWMU No. FTMC-27.

a. Type of Activity/Unit. Range L - Lima Pond. Chemical munitions disposal.

b. Location of Activity/Unit. Pelham Range (Figure A-30).

c. General Dimensions. 0.2 ha/0.5 acres.

d. Time of Operation. Unknown.

e. Description of Activities/Wastes. This site was reportedly used for the disposal of captured World War II mustard munitions, including chemical munitions. Munitions were reportedly disposed of in drums in a manmade pond. The site is surrounded by a chain-link fence.

f. Description of Sampling Already Accomplished. Surface soil and water sampling conducted in 1980 and 1982 indicated no detectable surface contamination at the site. Samples were analyzed for HD, GB, and VX; none of these agents were detected.

g. Recommendations. Further evaluation of the site may be necessary to determine whether or not drums of munitions are present in the pond. Perform geophysical survey for the detection of munitions. Obtain sediment samples from the pond for agent analysis.

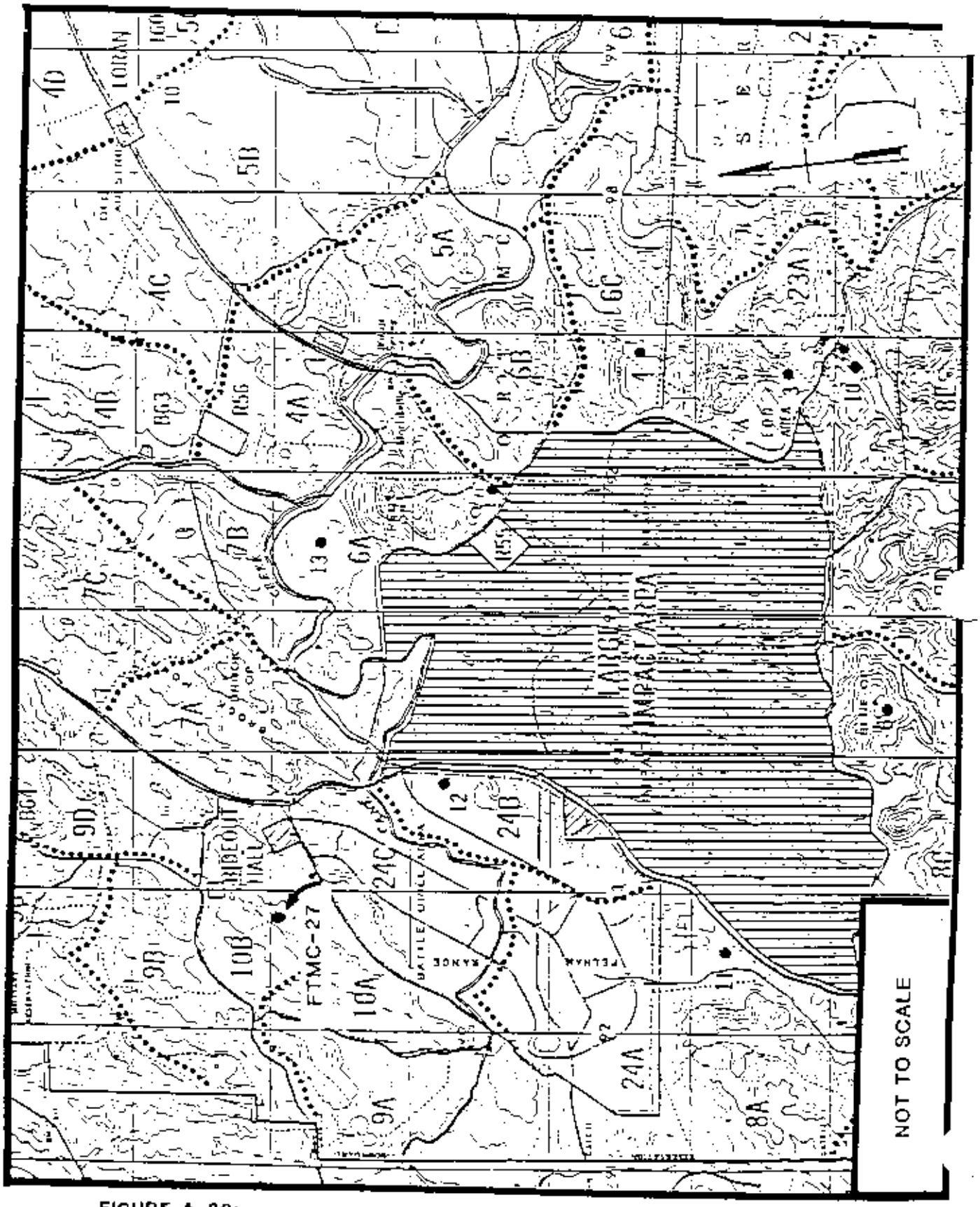

FIGURE A-30: AGENT DISPOSAL AREA, LIMA POND (FTMC-27)

28. SWMU No. FTMC-28.

a. Type of Activity/Unit. Area T-4 Biological Simulant Test Area.

b. Location of Activity/Unit. Main Post near the base of the north face of Iron Mountain (Figure A-31).

c. General Dimensions. 0.1 Ha/0.25 acres.

d. Time of Operation: 1965 - 1971.

e. Description of Activities/Wastes. Records indicate that this site was used only for biological simulants (BG, and SM) training (reference 9 and 10). A reported spill of approximately 110 gallons of Mustard (HD) occurred at either sites T-4 or T-5 in 1955. However, it is assumed that this spill probably occurred at Area T-5 (FTMC-29) discussed below since their is no record of HD use at T-4.

f. Description of Sampling Already Accomplished. No sampling has been accomplished at this site.

g. Recommendations. Since this site was reportedly used only for biological simulant training, and reports of an HD spill are unlikely and unconfirmed; it is recommended that no further investigative or corrective action be implemented at the site. Future use of the site should, however, be limited to surface activity in the unlikely event that some HD may have been used on the site, and therefore, subsurface contamination may exist.

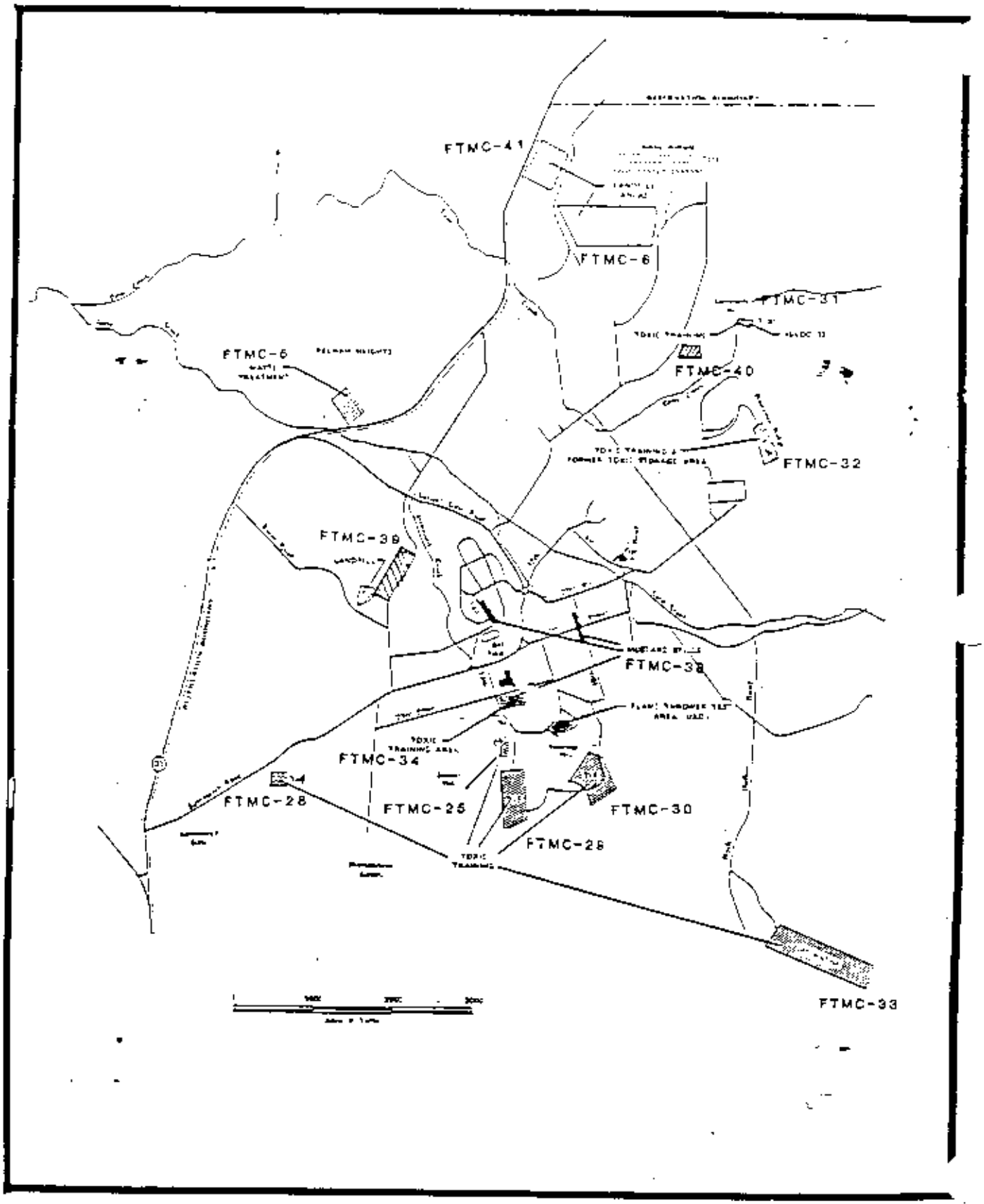

FIGURE A-31: BIOLOGICAL SIMULANT TEST AREA T-4 (FTMC-28)

29. SWMU No. FTMC-29.

a. Type of Activity/Unit. Area T-5 Toxic Hazards Detection and Decontamination Training Area; Land Area.

b. Location of Activity/Unit. Situated between Sunset Hill and Howitzer Hill on the southern perimeter of the Main Post (Figure A-32).

c. General Dimensions. 4.6 ha/11.4 acres.

d. Time of Operation: 1961 - 1973.

e. Description of Activities/Wastes. This site was used to train students in methods of detecting and decontaminating toxic agents (HD and VX). Training sites were decontaminated and checked at the end of each exercise. A 110-gallon HD spill reportedly occurred on this site. Available evidence indicated that the contaminated soil was chemically decontaminated, removed, and ultimately disposed of at Range J on Pelham Range, thus, eliminating residual contamination problems. The area has been cleared for surface area use; however, subsurface use is not permitted due to possible persistence of isolated pockets of live agent from the reported spill.

f. Description of Sampling Already Accomplished. Surface soil samples were taken and analyzed from this site during December 1972, April 1973, and July 1973. Results indicated that no residual contamination with agents HD, GB, or VX.

g. Recommendations. Future use of the site should be limited to surface activity. Subsurface use should not be permitted due to possible persistence of isolated pockets of live agent. Since activities and spills occurring onsite were reportedly decontaminated and past sampling has shown no evidence of agents, no further sampling onsite is needed.

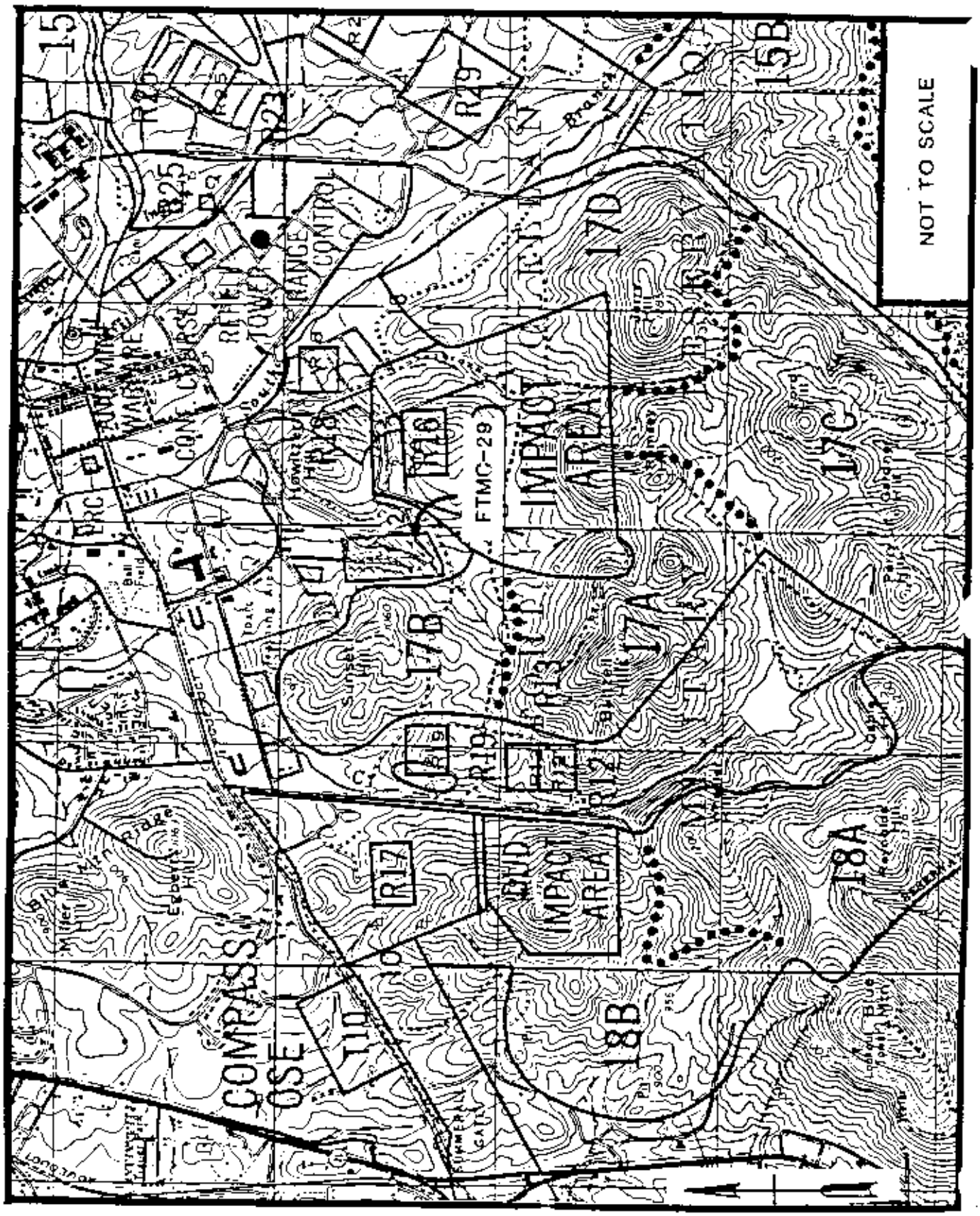

FIGURE A-32: AGENT TRAINING AREA T-5 (FTMC-29)

30. SWMU No. FTMC-30.

AGENT DECONTAMINATION AREA.

a. Type of Activity/Unit. Area T-6 Agent decontamination training.

b. Location of Activity/Unit. This site is also referred to as Naylor Field and is located near the base of the east slope of Howitzer Hill (Figure A-33).

c. General Dimensions. 3 ha/7.5 acres.

d. Time of Operation. Unknown start date; closed 1973.

e. Description of Activities/Wastes. This area was used for training in techniques of decontaminating chemical agents including HD. Training quantities of HD (40 mL per exercise) were used at this site. The area contained eight training sites, each with a concrete pad on which equipment was parked. The equipment was contaminated with not more than 40 mL of HD during each exercise. After the equipment was decontaminated, it was checked for residual contamination.

f. Description of Sampling Already Accomplished. The six specific training sites within this area are undocumented so that discrete sampling of the sites was not conducted. However, random soil surveys and surface analysis in March 1973 revealed no agent contamination, and the area was cleared for surface activity. Subsurface use of the area has not been permitted due to the possible persistence of isolated pockets of live agent.

g. Recommendations. Future use of the site should be limited to surface activity. Subsurface use should not be permitted due to possible persistence of isolated pockets of live agent. No further action is recommended for the site, as no subsurface activity has been documented; and chemical analysis of surface samples at the site have proven to be negative for chemical agents.

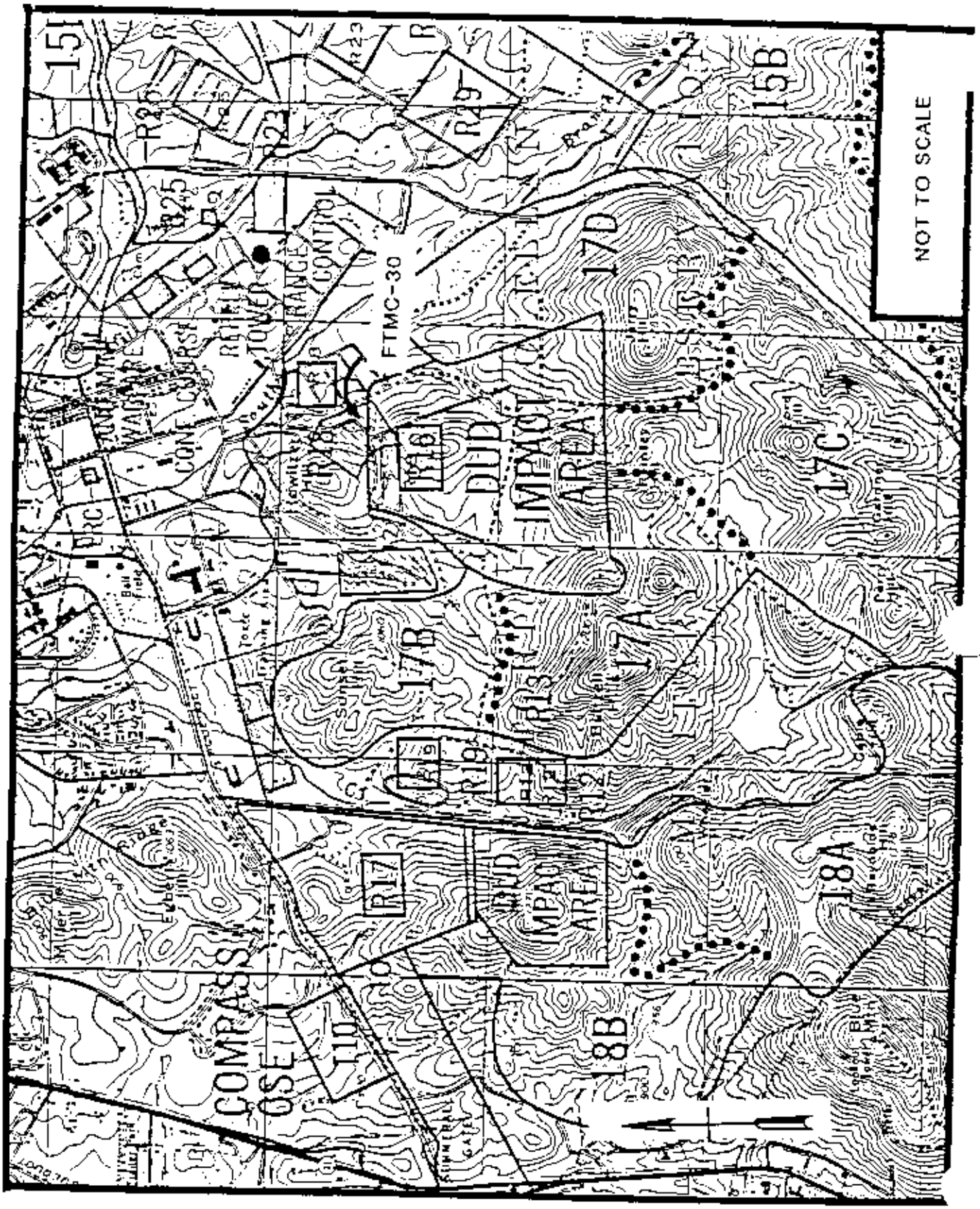

FIGURE A-33: AGENT TRAINING AREA T-6 (FTMC-30)

31. SWMU No. FTMC-31.

a. Type of Activity/Unit. Area T-31 - Technical Escort Reaction Area. Training area for GB and HD agents. Site was also reportedly used for the storage of undetermined types of agents.

b. Location of Activity/Unit. Main Post in a valley surrounded by Cemetery Hill to the west, Reservoir Ridge to the south and Caffey Hill to the southwest (Figure A-34).

c. General Dimensions. 1.4 ha/3.4 acres.

d. Time of Operation. 1957 - 1969.

e. Description of Activities/Wastes. The site was used for training with GB and HD in 20 mL and 40 mL quantities. Six different sites within T-31 were used for the training exercises. Training aids which were used at this site were moved to site T-38. The site was also used for the storage of undetermined types of chemical agents. Several spills were reported to have occurred onsite from these stored materials. No information is available on quantities of material spilled. Standing operating procedures (SOP's) for site operation required the decontamination of spills.

f. Description of Sampling Already Accomplished. No sampling has been conducted on this site.

g. Recommendations. Since the quantities of spilled material have not been determined it is recommended that surface soil sampling be conducted to determine the possible presence of agent.

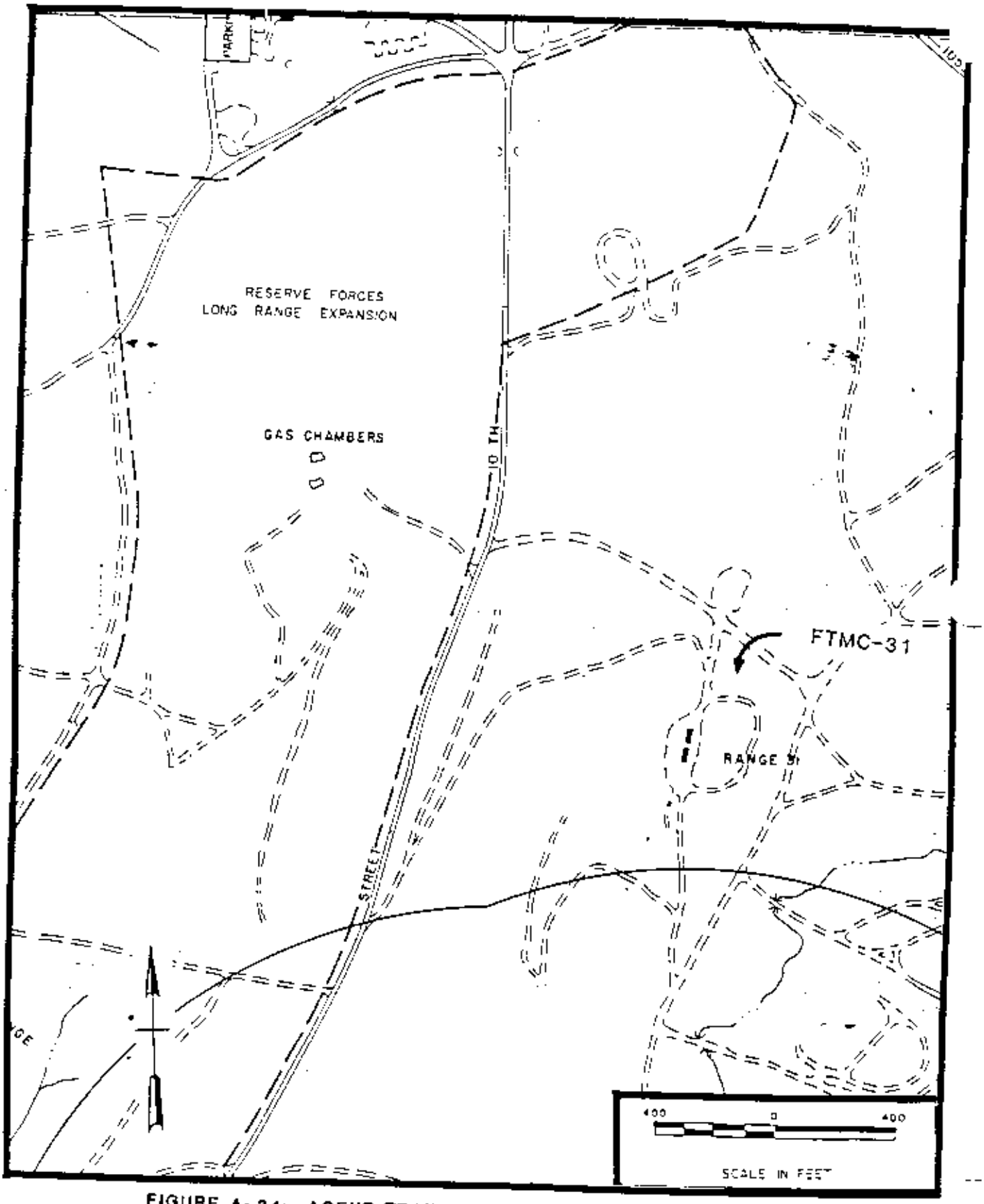

FIGURE A-34: AGENT TRAINING AREA T-31 (FTMC-31)

32. SWMU No. FTMC-32.

a. Type of Activity/Unit. Area T-38 - Technical Escort Reaction Area. Chemical agent training and storage area for toxic agents and munitions including GB, VX, and HD.

b. Location of Activity/Unit. Main Post west of Reservoir Hill (Figure A-35).

c. General Dimensions. 2.4 ha/6 acres.

d. Time of Operation. 1961 - 1972.

e. Description of Activities/Wastes. This area was used for training escort personnel in techniques of eliminating toxic hazards caused by mishap to chemical munitions during transport. The reassessment of Fort McClellan (reference 10) indicates that the area was also used for storage of toxic agents and munitions including GB, VX, and HD. Storage included four 1-ton HD containers. In addition, unspecified decontaminants were stored on at least two sites and were used for demonstration purposes. Extensive decontamination was conducted on this site for reported spills and for contaminated training aids, including a railroad flat car. The reassessment report of January 1984 states that residual HD surface contamination was reported in January 1973. Surface contamination may have permitted vertical leaching to occur. This implies that subsurface contamination with agents may have occurred. However, HD is fairly immobile and hydrolyzes rapidly. Therefore, the probability of infiltration prior to break down is unlikely. The majority of this area is currently used for training purposes. The northeast corner of the site is no longer in use and is surrounded by a chain-link fence.

f. Description of Sampling Already Accomplished. Residual surface contamination with HD onsite was reported in January 1973. Subsequent sampling in March of 1973 indicated that T-38 was free from surface contamination. No subsurface sampling or water quality monitoring has occurred at the site.

g. Recommendations. Considering the activities occurring at the site, additional surface soil sampling should be conducted for agent analysis. Though the installation assessment indicates that subsurface contamination may be present onsite due to infiltration, this is considered unlikely since HD is fairly immobile and hydrolyzes rapidly.

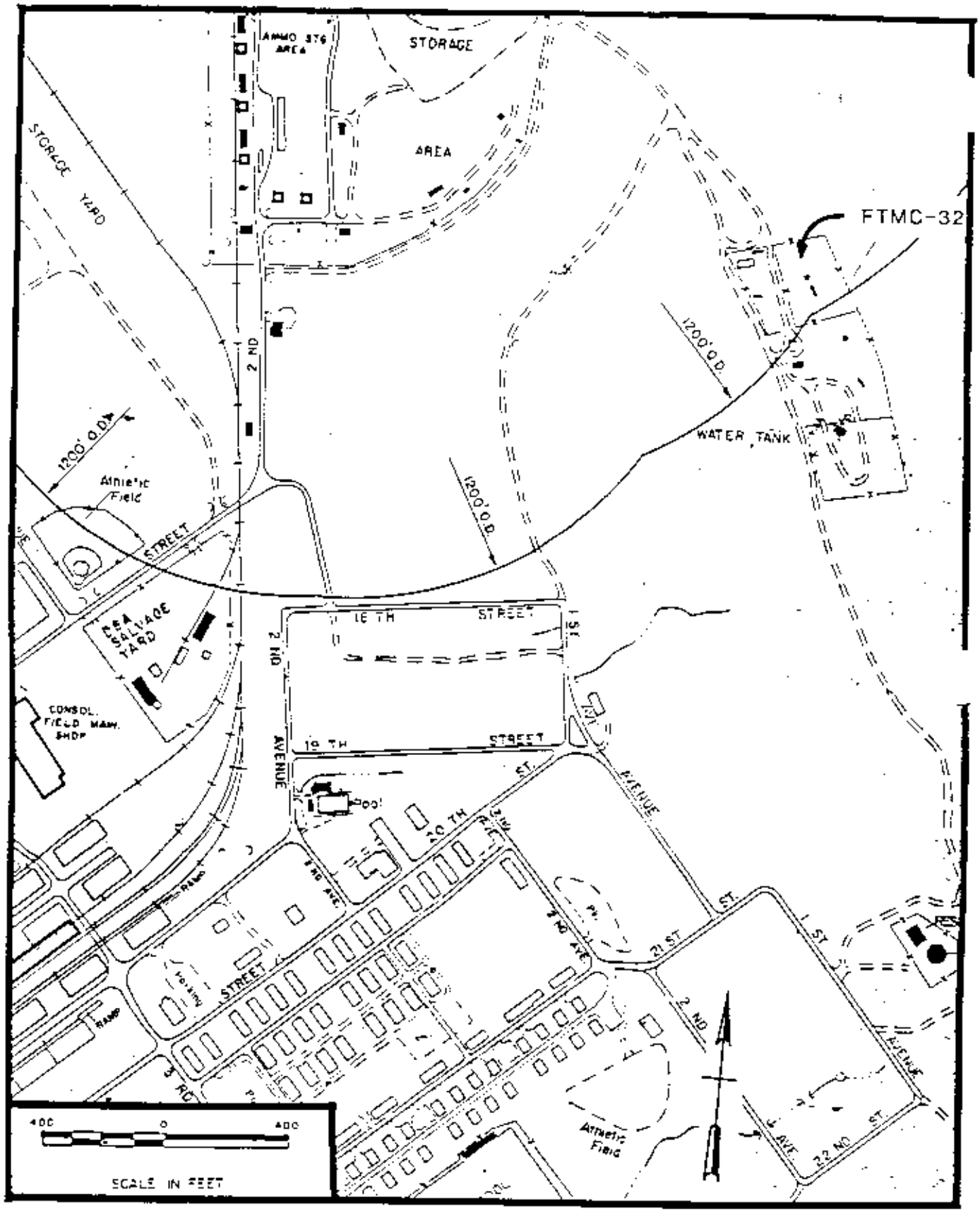

FIGURE A-35: AGENT TRAINING AREA T-38 (FTMC-32)

33. SWMU No. FTMC-33.

a. Type of Activity/Unit. Area T-24A EOD Area. Chemical munitions disposal training area.

b. Location of Activity/Unit. Southeast portion of the Main post and south of Holloway Hill (Figure A-36).

c. General Dimensions. 0.6 ha/1.5 acres.

d. Time of Operation. Date opened unknown; closed 1973.

e. Description of Activities/Wastes. This area was used for chemical munitions disposal training. Agents used in the area included CG (phosgene), BZ (incapacitating agents, central nervous system depressant), GB, and HD. Quantities used per exercise were larger than for other training sites. The quantity of HD used during each exercise was 4.6 kilograms (kg). Quantities used per exercise for CG, BZ, and GB were 40 mL, one M-6 canister, and 740 grams (g) respectively. Two burning pits enclosed by a fenced area measuring 40 m x 80 m were used for decontamination. Each pit encompassed an area 5 m x 5 m. The depth of each pit is not known. However, the SOP recommended a depth of 6 feet. At closure, the pits were filled with soil. The entire site is now enclosed by a chain-link fence.

f. Description of Sampling Already Accomplished. Surface sampling conducted in April and July 1973 in the proximity of the pits were negative for the agents in question. Sample depths raged form 3 to 10 cm, and therefore, did not represent agents which may have been in the training pits.

g. Recommendations. Since subsurface activity, via the pits, was known to occur, subsurface soil sampling in the pits with subsequent analysis for agents is recommended.

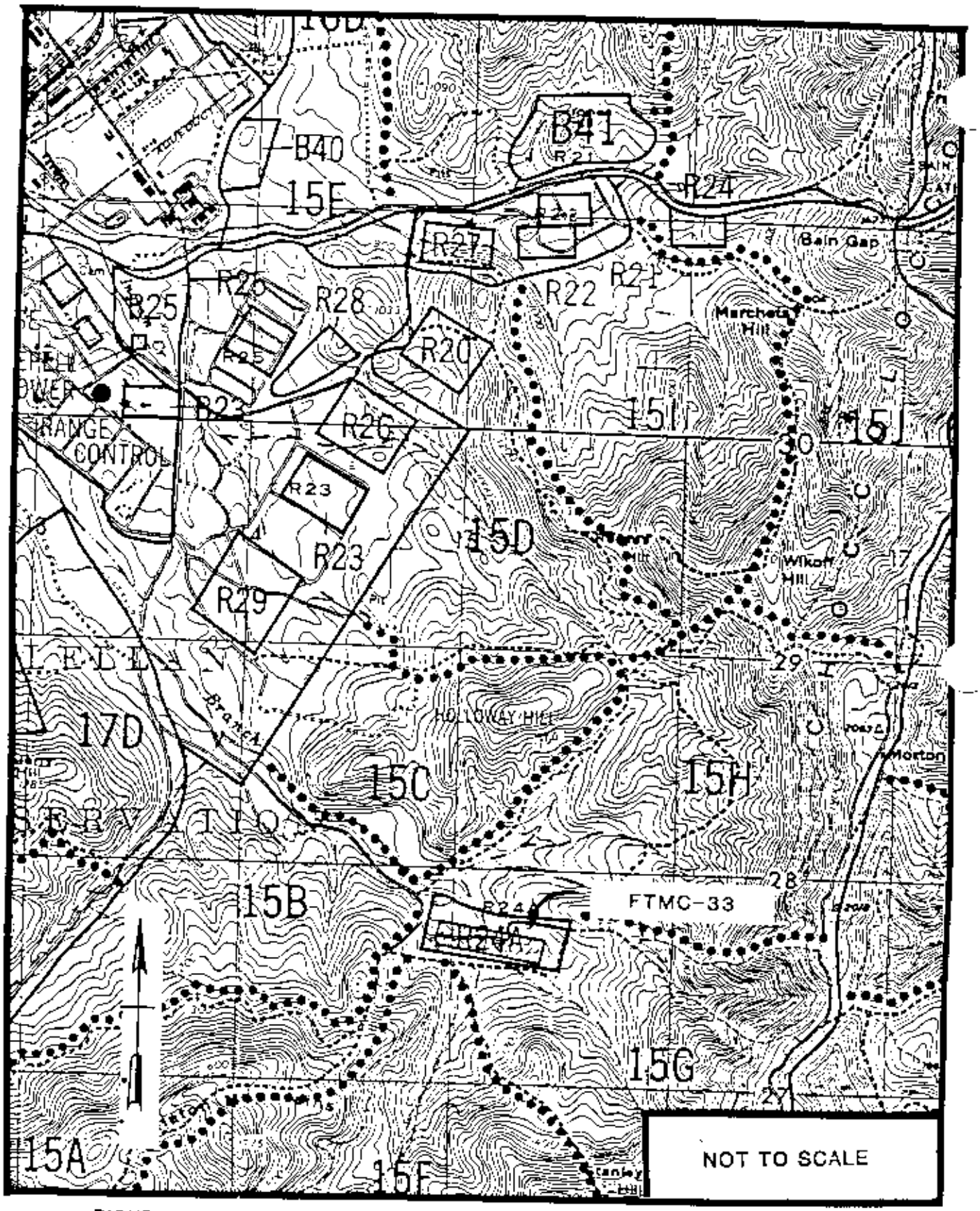

FIGURE A-36: AGENT DISPOSAL TRAINING AREA T-24A (FTMC-33)

34. SWMU No. FTMC-34.

a. Type of Activity/Unit. Old Toxic Training Area (OTA). Training in the detection and identification of HD (other agents may also have been used in this area).

b. Location of Activity/Unit. Behind Building 3183, Main Post (Figure A-37).

c. General Dimensions. 480 square feet ditch.

d. Time of Operation. Opened early 1950's; date closed unknown.

e. Description of Activities/Wastes. This area was used for training exercises in the identification and detection of HD. No spills have been documented at this site. Limited quantities of agent were used onsite according to available SOP's. The SOP's also indicated that decontamination procedures were used after all training exercises.

f. Description of Sampling Already Accomplished. No sampling has occurred at the site.

g. Recommendation. Since no surface sampling has been conducted onsite, it is recommended that random surface samples within the ditch be obtained for agent analysis.

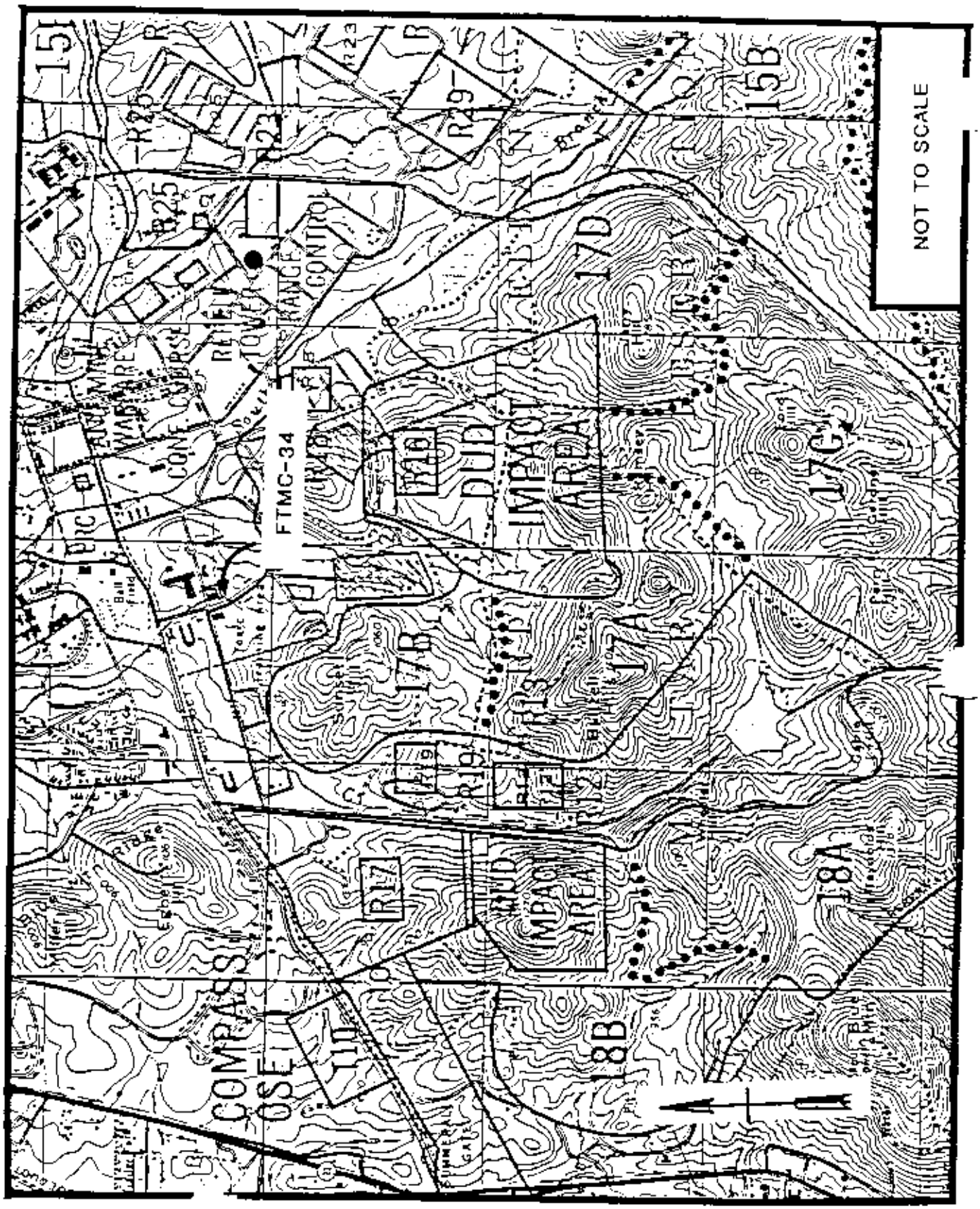

FIGURE A-37: OLD TOXIC TRAINING AREA (FTMC-34)

35. SWMU No. FTMC-35.

a. Type of Activity/Unit. Range K. Chemical training.

b. Location of Activity/Unit. Pelham Range (Figure A-38).

c. General Dimensions. 0.8 ha/2 acres.

d. Time of Operation. Unknown.

e. Description of Activities/Wastes. Limited information is available for this site, including the agents used. The site has been physically rearranged (bulldozed). Records indicated the site was cleared in 1967.

f. Description of Sampling Already Accomplished. Surface monitoring was conducted in 1980; no surface contamination was detected. No subsurface testing has been conducted.

g. Recommendations. Though surface sampling has been conducted, additional soil surface sampling should be conducted for subsequent agent analysis to confirm previous testing.

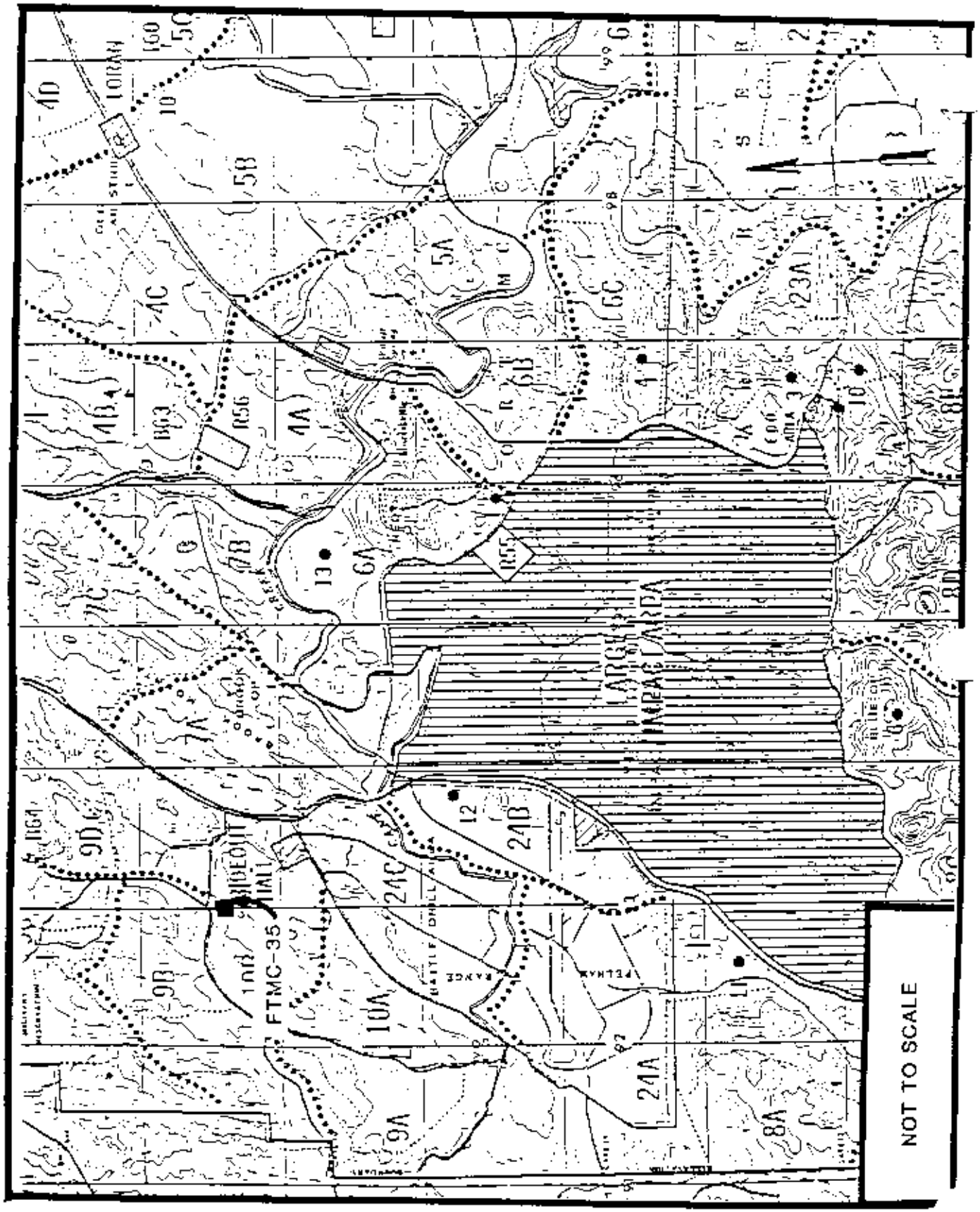

FIGURE A-38: AGENT TRAINING AREA RANGE K (FTMC 35)

36. SWMU No. FTMC-36.

a. Type of Activity/Unit. Range J. Agent training and disposal of decontaminated HD spill residue.

b. Location of Activity/Unit. Pelnam Range (Figure A-39).

c. General Dimensions. 0.4 ha/0.1 acres.

d. Time of Operation. Date opened; unknown, date closed 1963.

e. Description of Activities/Wastes. There is very little information available on the activities which occurred at this site. The agents used for training purposes at this site are unknown but believed to have involved HD. The site was also reportedly used for the disposal of decontaminated soil recovered from an HD spill which occurred on the Main Post in 1955. The exact depth at which this material was buried is unknown. The site is surrounded by a chain-link fence and is restricted from further surface use.

f. Description of Sampling Already Accomplished. Limited monitoring has been conducted onsite. This data indicates that no surface contamination exists.

g. Recommendations. Considering that decontaminated HD spill debris have been disposed of onsite, it is recommended that further surface and subsurface soil samples be obtained for agent analysis.

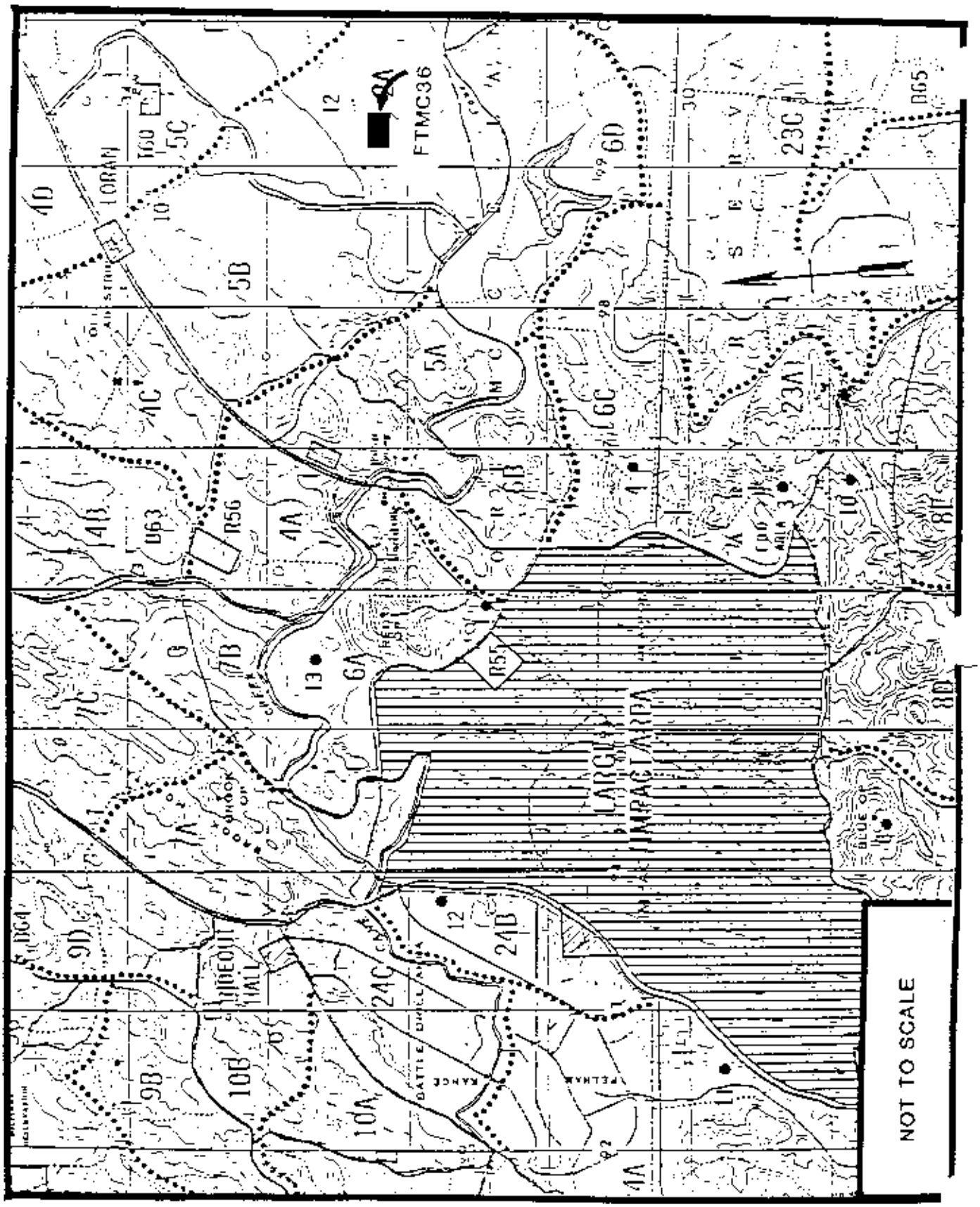

FIGURE A-39: AGENT TRAINING AND DISPOSAL AREA - RANGE J (FTMC-36)

37. SWMU No. FTMC-37.

a. Type of Activity/Unit. Old Water Hole Possible site of chemical munitions disposal.

b. Location of Activity/Unit. Pelham Range exact site location never determined.

c. General Dimensions. Unknown.

d. Time of Operation. Unknown.

e. Description of Activities/Wastes. Possible chemical munitions disposal - unconfirmed.

f. Description of Sampling Already Accomplished. None; site not identified.

g. Recommendations. Extensive efforts to locate the site have proven to be unsuccessful. Since the site has not been located no action is recommended for this site.

38. SWMU No. FTMC-38.

a. Type of Activity/Unit. HD spills Main Post. HD spill sites.

b. Location of Activity/Unit. Three possible sites exist (Figure A-40).

c. General Dimensions. Unknown.

d. Time of Operation. Unknown.

e. Description of Activities/Wastes. Three HD spills reportedly occurred on the Main Post. However, no documented information exists on these spills. At least one of the reported sites has been paved over. The USATHAMA installation assessment recommends that these areas be used for surface use with restricted subsurface use.

f. Description of Sampling Already Accomplished. No sampling has been conducted at these sites.

g. Recommendations. The absence of documentation suggests that these spills were minor. Assuming that SOP was followed carefully, it is probable that the sites were decontaminated as part of the cleanup process. No further action is recommended for these sites.

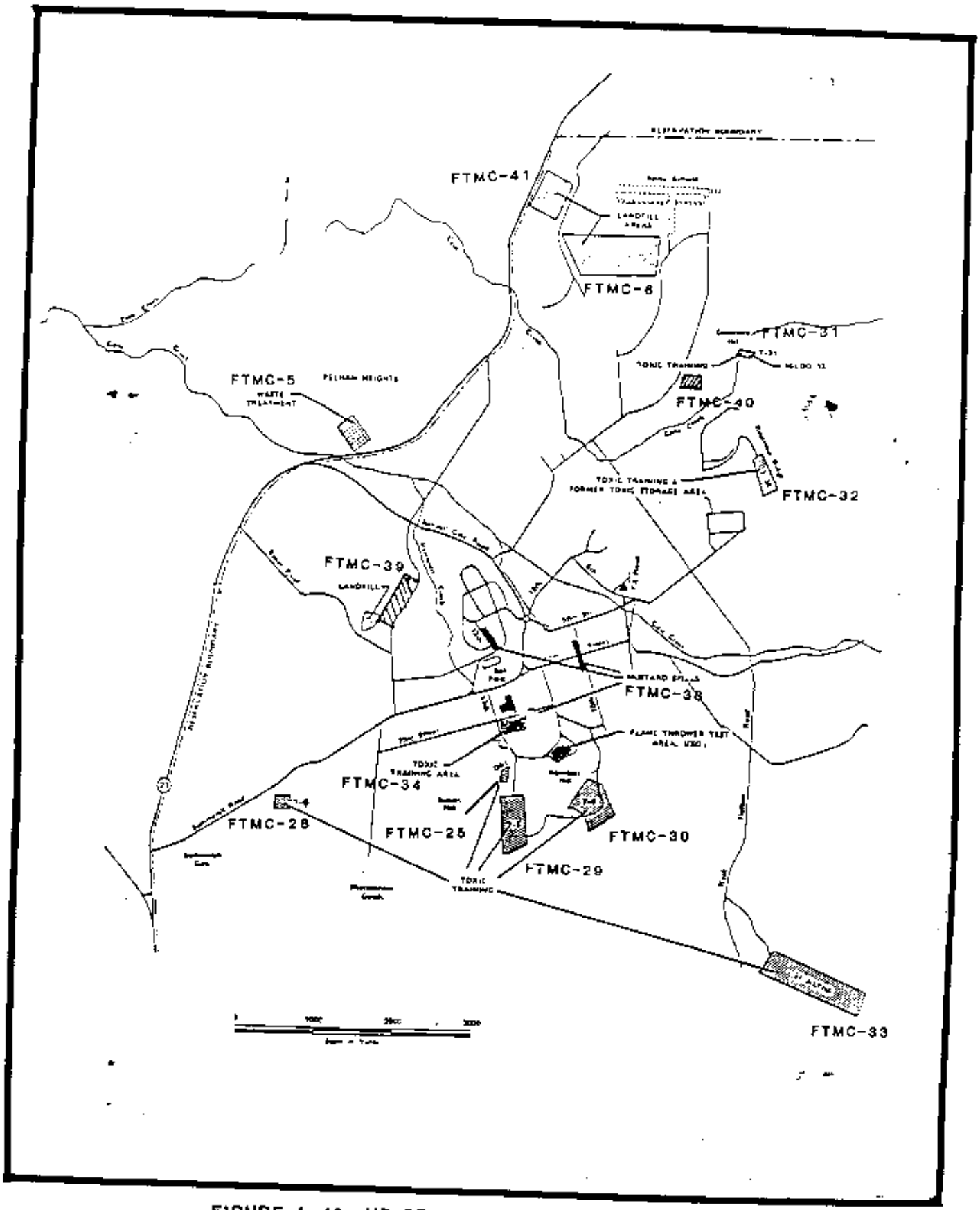

FIGURE A-40: HD SPILL SITES (FTMC-38)

39. SWMU No. FTMC-39.

a. Type of Activity/Unit. Old Landfill 1. Base sanitary landfill.

b. Location of Activity/Unit. Located on 16th Avenue (Figure A-41) of the Main Post. The exact location has not been well defined.

c. General Dimensions. Believed to be approximately 2 acres.

d. Time of Operation. World War II.

e. Description of Activities/Wastes. No information exists concerning operation or content of the landfill.

f. Description of Sampling Already Accomplished. No sampling has been conducted.

g. Recommendations. Since the exact location of the landfill has not been determined, it is recommended that a geophysical survey be conducted to better define the landfills location. Based on these findings, the installation of upgradient and downgradient wells should be performed to monitor background water quality and potential contaminants (priority pollutants) originating from the landfill.

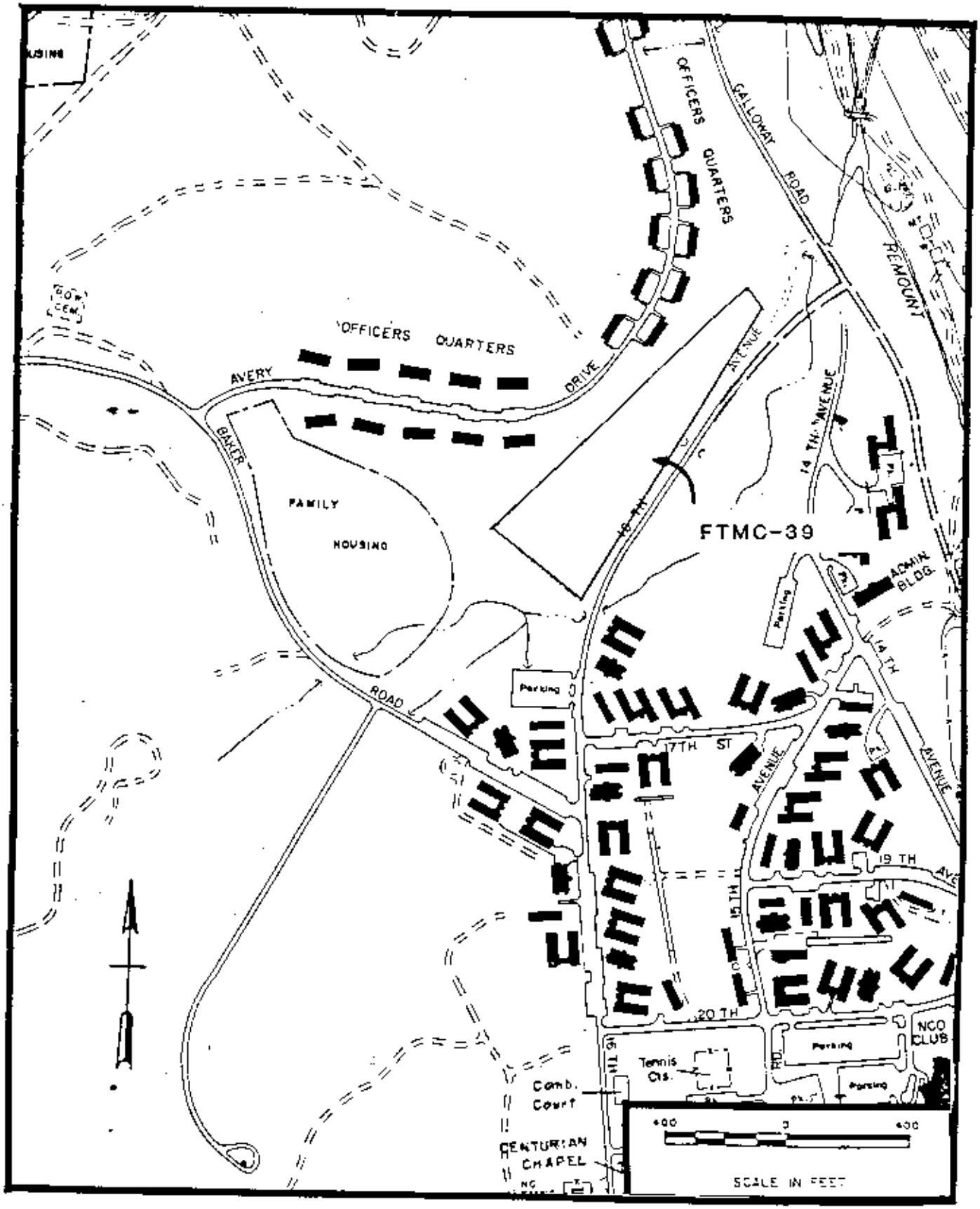

FIGURE A-41: OLD LANDFILL NO. 1 (FTMC-39)

40. SWMU No. FTMC-40.

a. Type of Activity/Unit. Old Landfill 2. Sanitary landfill.

b. Location of Activity/Unit. Main Post near former stables area (Figure A-42).

c. General Dimensions. Unknown.

d. Time of Operation. Opening date unknown, used until 1947 following use of Landfill 1.

e. Description of Activities/Wastes. Reportedly used for disposal of waste during deactivation of the installation.

f. Description of Sampling Already Accomplished. No sampling has been conducted.

g. Recommendations. Since the exact location of the landfill has not been determined it is recommended that a geophysical survey be conducted to better define the landfills location. Based on these findings, the installation of upgradient and downgradient wells should be performed to monitor background water quality and to monitor potential contaminants (priority pollutants) originating from the landfill.

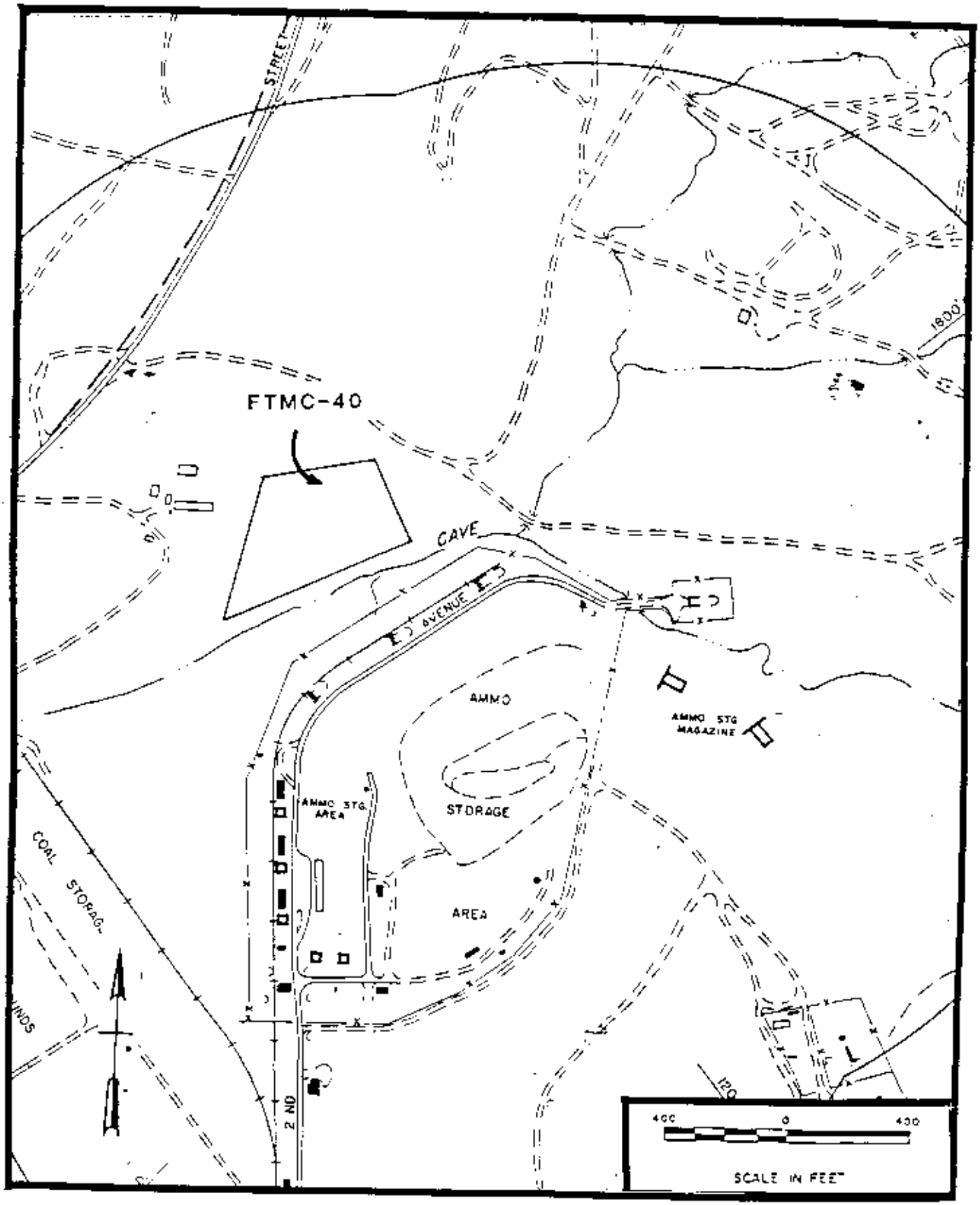

FIGURE A-42: OLD LANDFILL NO. 2 (FTMC-40)

41. SWMU No. FTMC-41.

a. Type of Activity/Unit. Old landfill 3. Sanitary landfill.

b. Location of Activity/Unit. This landfill is located in the northern section of Main Post and to the east of the current operational landfill (Figure A-43).

c. General Dimensions. 22 acres (8.8 hectares).

d. Time of Operation. 1946 to 1967.

e. Description of Activities/Wastes. Exact wastes disposed of are not known. The landfill was operated by the trench method. Trenches trend in a northwest to southeast direction. A trace of the trenches is still visible due to settling of the landfill cells. This could lead to ponding of water.

f. Description of Sampling Already Accomplished. Initial sampling has been conducted on in place wells. Analytical results from the initial sampling may be found in Tables A-5 and A-6. Several organic compounds were detected.

g. Recommendations. Monitoring wells were installed in August of 1986. Sample in place wells to confirm the presence of compounds initially detected. Fill trenches of the landfill to prevent further ponding of water and potential for accelerated leachate generation.

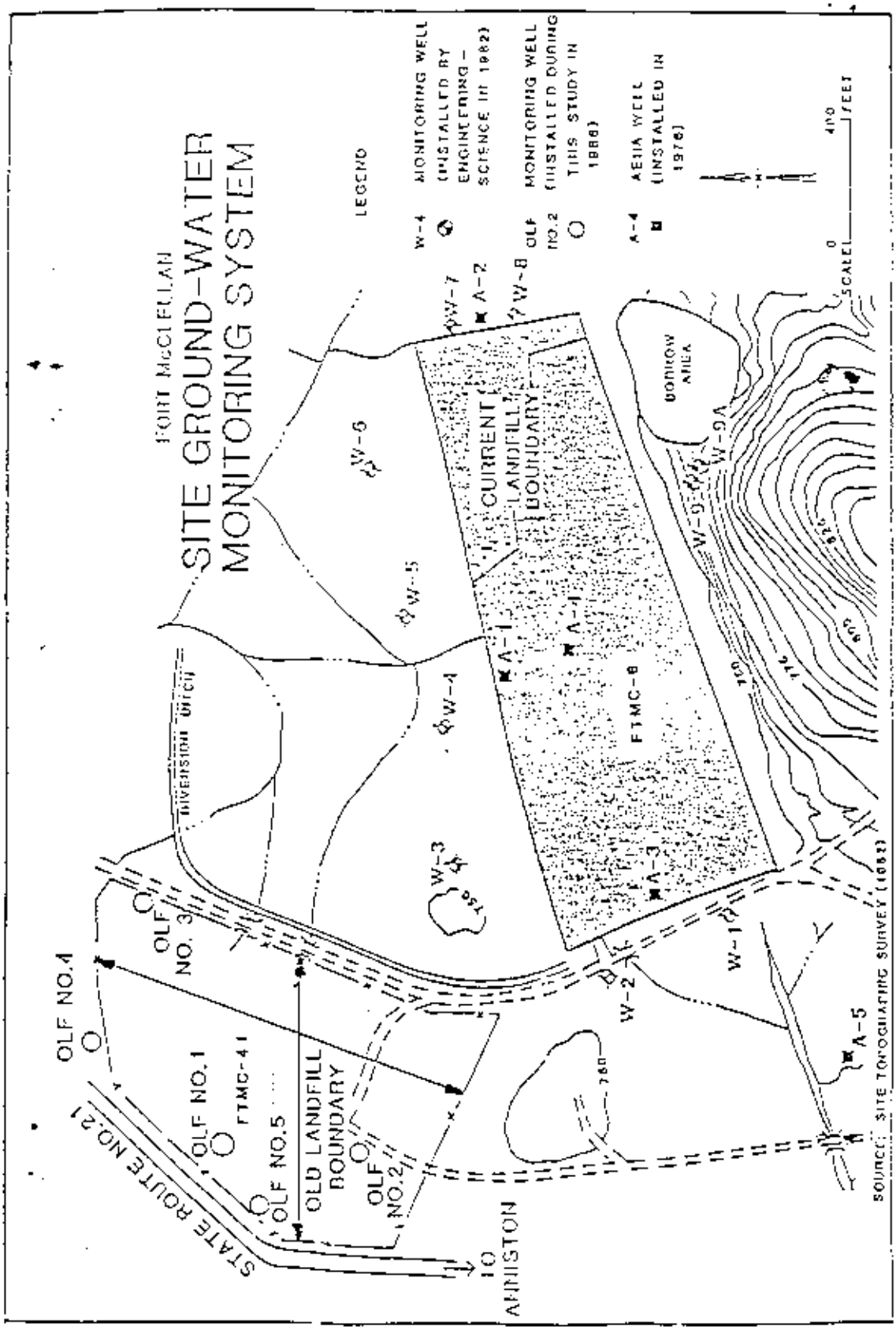

FIGURE A-43: OLD LANDFILL NO. 3 (FTMC-41)

TABLE A-5. POSITIVE RESULTS OF ANALYSES FOR PURGEABLE ORGANIC COMPOUNDS AT FORT McCLELLAN

Organic Compound	Micrograms Per Liter (µg/L)	Well Number
tetrachloroethene	50	OLF No. 3
"	12	OLF No. 4
"	110	OLF No. 5
methylene chloride	9	OLF No. 4
1,1-dichloroethane	18	"
trans-1,2-dichloroethene	24	"
benzene	4	"

TABLE A-6. POSITIVE RESULTS OF ANALYSES FOR BASE/NEUTRAL EXTRACTABLE ORGANIC COMPOUNDS AT FORT McCLELLAN

Organic Compound	Micrograms Per Liter (ug/L)	Well Number
bis (2-ethylhexyl) phthalate *	20	OLF No. 1
"	40	OLF No. 2
"	10	OLF No. 3

* Phthalates commonly occur in laboratory analyses, and this particular compound should not cause concern.