

REPORT CETHA-IR-SR-91013

**US Army Corps
of Engineers**

Toxic and Hazardous
Materials Agency

**DRAFT FINAL
POTENTIAL AREAS OF CONCERN
SUPPLEMENT**

IOWA ARMY AMMUNITION PLANT

MAY 1991

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COMMANDER**

**U.S. ARMY TOXIC AND HAZARDOUS MATERIALS AGENCY
ABERDEEN PROVING GROUND, MD 21010-5401**

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POTENTIAL AREAS OF CONCERN SUPPLEMENT
Special Report CETHA-IR-SR-91013

1. PURPOSE.

The purpose of this special report is to identify, describe, and evaluate potential areas of concern on Iowa Army Ammunition Plant (IAAP), in addition to the thirty (30) previously-established solid waste management sites (SWMUs) delineated in Appendix 2 of Federal Facility Agreement VII-F-90-0029. This report also forwards the "candidate" SWMU sites to the U.S. Environmental Protection Agency for review and area-by-area approval or disapproval, prior to formal designation as a SWMU site.

2. GENERAL.

2.1. Contributing Personnel. Appendix A contains a list of personnel responsible for the evaluation of potential areas of concern described in this special report.

2.2. Background. During the summer of 1990 and prior to formulation of the final federal facilities Agreement (FFA), the Army initiated a special study to identify areas on IAAP not previously considered during prior environmental studies. Personnel from the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA), the U.S. Army Environmental Hygiene Agency (USAEHA), IAAP, and the IAAP operating contractor, Mason & Hanger, participated in the study. A multi-agency visual site inspection was conducted during the week of August 13, 1990, to visually evaluate all areas for contamination potential. This special report presents information obtained during the visual site inspection and a subsequent evaluations conducted in September 1990 by Mason & Hanger.

3. DISCUSSIONS. After conducting interviews with current and former IAAP employees during the spring and summer of 1990, a list of areas requiring further evaluation was prepared by Mason & Hanger. Technical assistance for evaluating the areas was provided by USATHAMA and USAEHA at the request of IAAP. Criteria for evaluating the areas was based upon the definition for a SWMU site; in particular, the area must be (1) readily discernible and (2) contaminated by routine, systematic, and/or deliberate discharges.

4. CONCLUSIONS. As a result of the visual site inspection, subsequent evaluations, and the SWMU site definition criteria, thirteen (13) areas were identified (see Appendix B) as potential areas of concern. Descriptions of the areas are provided in Appendix C. Until the area is formally recognized as a SWMU site, the designation "potential area of concern" will be utilized.

5. RECOMMENDATIONS. The thirteen (13) potential areas of concern presented in this special report are "candidate" SWMU sites to supplement the current list of thirty (30) formally-recognized SWMU sites. A review and area-by-area approval or disapproval of this special report by the U.S. Environmental Protection Agency, Region VII, is necessary to determine which potential areas of concern will receive formal SWMU site designation. All potential areas of concern that become SWMU sites will be incorporated into the future remedial investigation/feasibility study (RI/FS) effort.

6. REFERENCES. Appendix D contains a list of documents applicable for the preparation of this special report.

7. REQUESTS. Requests for additional copies of this special report, CETHA-IR-SR-91013, should be initiated through the Commander, Iowa Army Ammunition Plant (IAAP), ATTN: SMCIO-EN, Middletown, IA 52638-5000 and referred to the Commander, U.S. Army Toxic and Hazardous Materials Agency (USATHAMA), ATTN: CETHA-IR-A, Aberdeen Proving Ground, MD 21010-5401. Technical assistance may be obtained from Mr. Peter Rissell, USATHAMA (previous address) or Mr. Wayne Fox, U.S. Army Environmental Hygiene Agency (USAEHA), ATTN: HSHB-ME-SG, Aberdeen Proving Ground, MD 21010-5422.

APPENDIX A

CONTRIBUTING PERSONNEL
POTENTIAL AREAS OF CONCERN SUPPLEMENT
IOWA ARMY AMMUNITION PLANT (IAAP)

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CONTRIBUTORS TO THE POTENTIAL AREAS OF CONCERN SUPPLEMENT

A. GOVERNMENT PERSONNEL

1. Mr. Leon Baxter, Engineer/Environmental Coordinator, Iowa Army Ammunition Plant.
2. Mr. Wayne Fox, Geologist, U.S. Army Environmental Hygiene Agency.
3. Mr. Cyril Onwokae, Environmental Engineer, U.S. Army Armament, Munitions, and Chemical Command.
4. Mr. Peter Rissell, Environmental Scientist/Project Officer, U.S. Army Toxic and Hazardous Materials Agency.

B. CONTRACTOR PERSONNEL

1. Mr. Jeff Denz, Engineering Assistant, Mason & Hanger.
2. Mr. Floyd Laue, Senior Project Engineer/Environmental Coordinator, Mason & Hanger.
3. Mr. Keith Miller, Scientist, Mason & Hanger.
4. Mr. Jack Polson, Chief Scientist, Mason & Hanger.
5. Mr. Peter Richardson, Facilities Manager, Mason & Hanger.
6. Mr. Joe Shannan, Environmental Safety and Health Manager, Mason & Hanger.

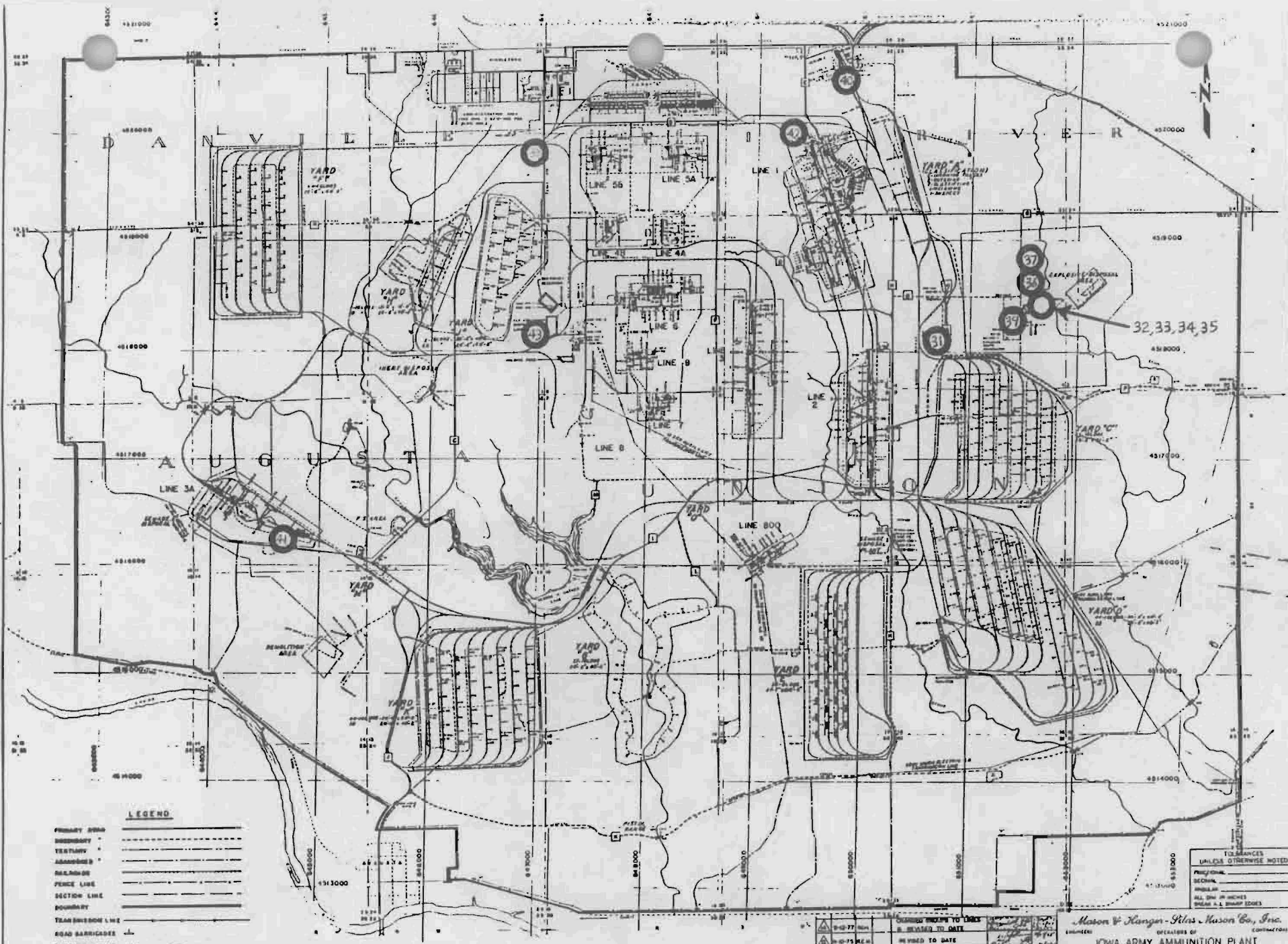
APPENDIX B

AREA LISTING AND LOCATION MAP
POTENTIAL AREAS OF CONCERN SUPPLEMENT
IOWA ARMY AMMUNITION PLANT (IAAP)

POTENTIAL AREAS OF CONCERN

<u>NUMBER</u>	<u>NAME</u>
IAAP-31	YARD B AMMUNITION BOX CHIPPER DISPOSAL PIT
IAAP-32	BURN CAGES
IAAP-33	BURN CAGE ASH DISPOSAL LANDFILL
IAAP-34	WEST BURN PADS
IAAP-35	WEST BURN PADS LANDFILL
IAAP-36	NORTH BURN PADS
IAAP-37	NORTH BURN PADS LANDFILL
IAAP-38	BUILDING 800-86 SEPTIC SYSTEM
IAAP-39	FIRE TRAINING PIT
IAAP-40	ROUNDHOUSE TRANSFORMER STORAGE AREA
IAAP-41	LINE 3A POND
IAAP-42	ABANDONED COAL STORAGE YARD
IAAP-43	FLY ASH DISPOSAL AREA

B-3



○ Potential Area of Concern

Figure B-1
Location Map

LEGEND

PRIMARY BOUNDARY	—
SECONDARY BOUNDARY	- - - - -
TEXTURE	
ADJACENT	— · — · — · — · —
RAILROAD	—+—+—+—+—+—+—+—+—+—
FENCE LINE	—x—x—x—x—x—x—x—x—x—
SECTION LINE	—+—+—+—+—+—+—+—+—+—
BOUNDARY	— · — · — · — · — · — · — · — · —
TRANSITION LINE	— · — · — · — · — · — · — · — · —
ROAD BARRICADE	—x—x—x—x—x—x—x—x—x—
ROAD HIGHWAY	—+—+—+—+—+—+—+—+—+—
BRIDGE (RAILROAD)	—+—+—+—+—+—+—+—+—+—
CLITCHES	— · — · — · — · — · — · — · — · —



UTM GRID ZONE-15T

4-10-77	REVISED TO DATE	4-10-77	REVISED TO DATE
4-10-75	REVISED TO DATE	4-10-75	REVISED TO DATE
4-10-74	REVISED TO DATE	4-10-74	REVISED TO DATE
4-8-71	REVISED TO DATE	4-8-71	REVISED TO DATE
7-14-70	REVISED TO DATE	7-14-70	REVISED TO DATE

Mason & Hanger-Ross Mason Co., Inc.
ENGINEERS OPERATORS OF CONTRACTORS

IOWA ARMY AMMUNITION PLANT
MOULTON, IOWA 51525

GENERAL LAYOUT

TO: [] FROM: []
DATE: [] BY: []

4-10-77	REVISED TO DATE	4-10-77	REVISED TO DATE
4-10-75	REVISED TO DATE	4-10-75	REVISED TO DATE
4-10-74	REVISED TO DATE	4-10-74	REVISED TO DATE
4-8-71	REVISED TO DATE	4-8-71	REVISED TO DATE
7-14-70	REVISED TO DATE	7-14-70	REVISED TO DATE

APPENDIX C

AREA DESCRIPTIONS
POTENTIAL AREAS OF CONCERN SUPPLEMENT
IOWA ARMY AMMUNITION PLANT (IAAP)

1. MAP LOCATION/SITE NUMBER: IAAP-31

a. Unit Name: Yard B Ammunition Box Chipper Disposal Pit.

b. Unit Characteristics:

(1) Unit Type: Disposal Pit.

(2) General Dimensions: Approximately 120 x 40 x 8 feet (L x W x D) (Figure C-1, Sketch C-1).

(3) Approximate Dates of Usage: Unit usage covered a 3-month continuous increment within the 1972 - 1975 time span.

(4) Operating Practices: Residue from wooden ammunition boxes, primarily 90-millimeter cartridge boxes, was placed in the disposal pit after shredding occurred through the box chipper.

(5) Present Condition and Status: Remains of the former disposal pit could not be located during the 14 Aug 90 visual site inspection; however, weathered remains of approximately two dozen ammunition boxes were observed on the ground in the vicinity of the site.

c. Waste Characteristics:

(1) Specific Wastes Disposed: Shredded ammunition boxes were treated with the wood preservative and fungicide, pentachlorophenol (PCP).

(2) Migration and Dispersal Characteristics: PCP is insoluble in water, but readily absorbed by the soil.

d. Migration Pathways: Soil and groundwater.

e. Evidence of Release: None.

f. Exposure Potential: Low.

g. Recommendations for Sampling: Shallow soil sample(s) should be collected at locations where historical information or geophysical studies reveal suspected area(s) of disturbed ground and/or buried materials. Analysis parameters should include semivolatiles.

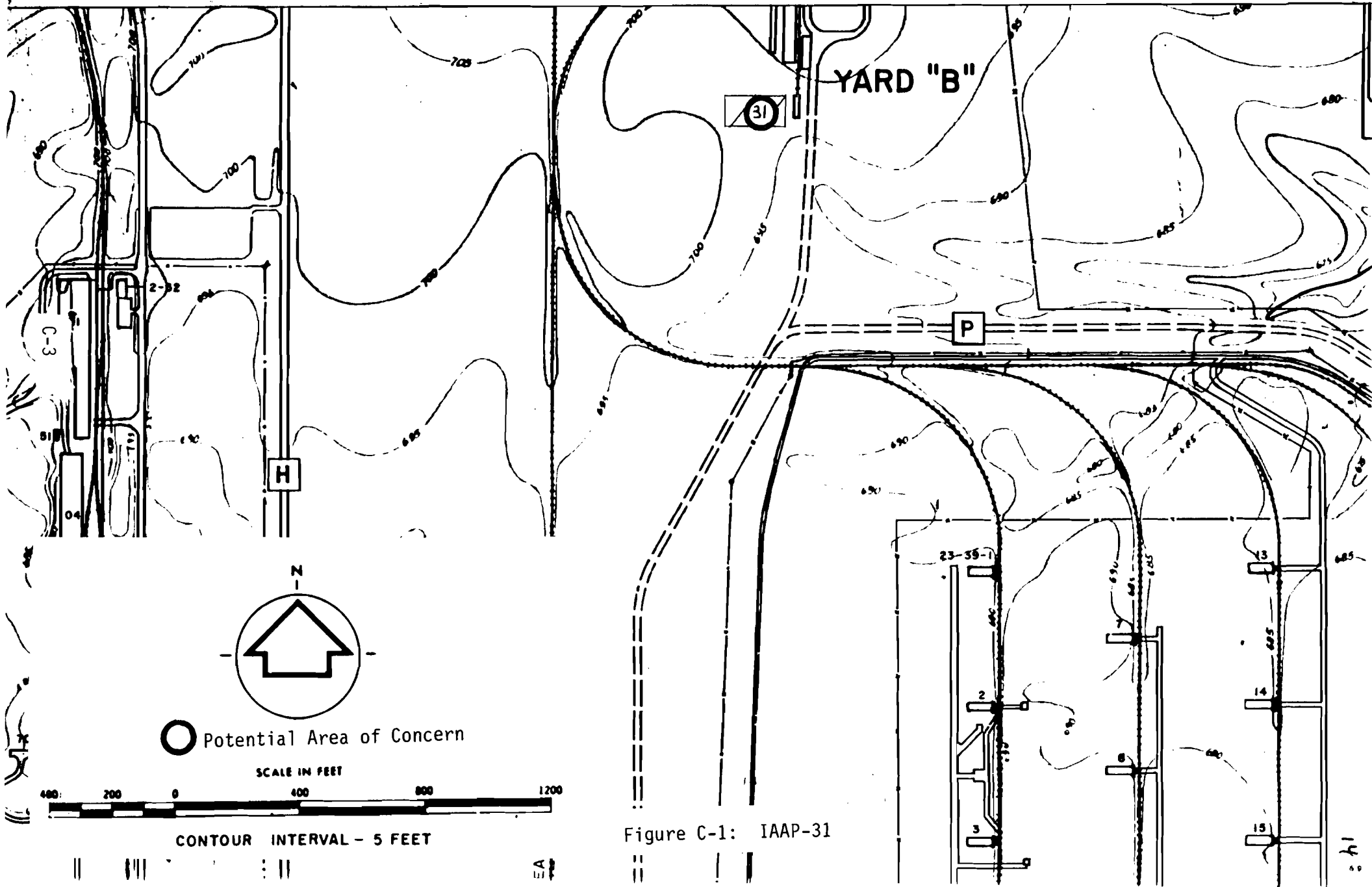
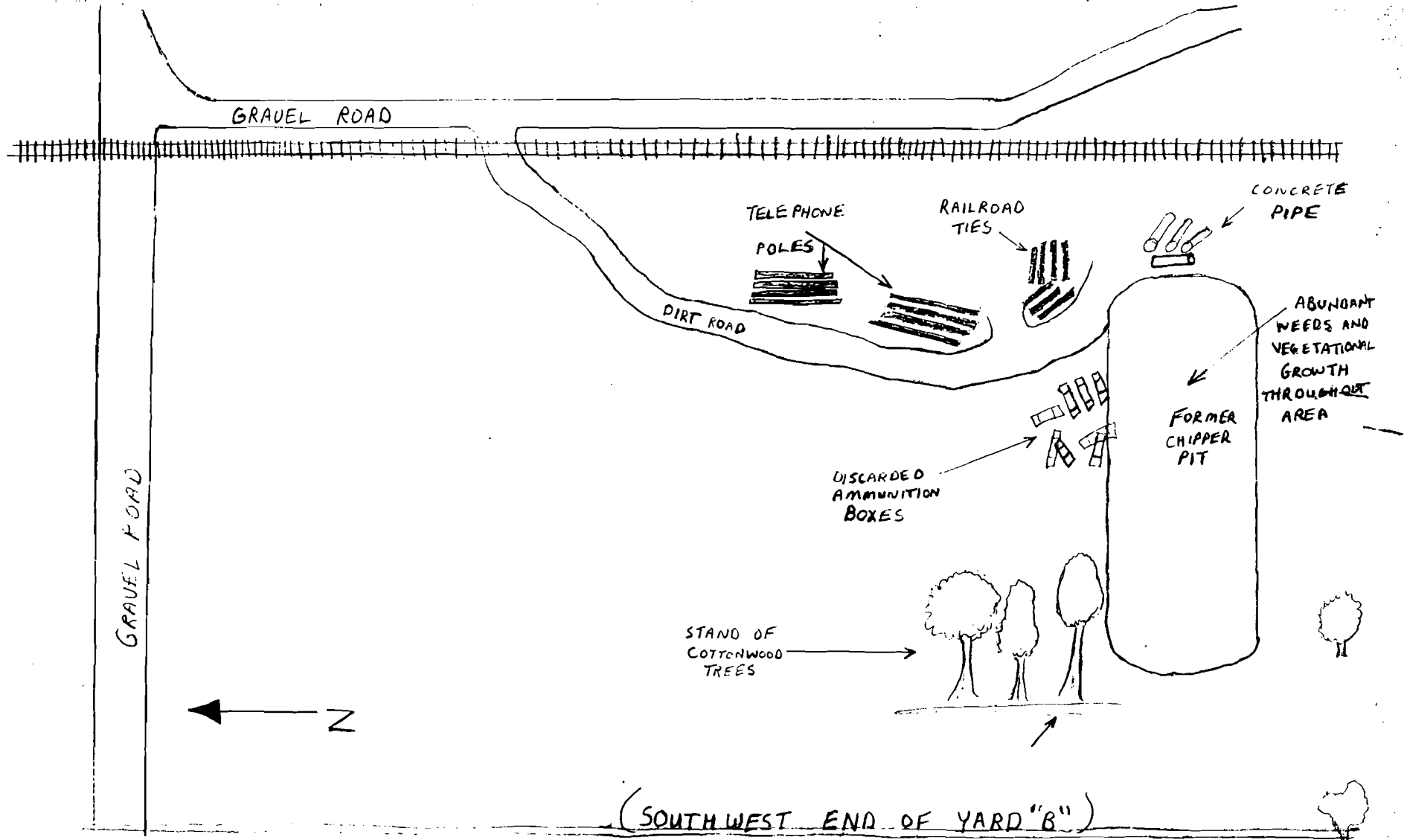


Figure C-1: IAAP-31

C-4



Sketch C-1: IAAP-31

LOCATION/SITE NUMBER IAAP-31



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2. MAP LOCATION/SITE NUMBER: IAAP-32

a. Unit Name: Burn Cages.

b. Unit Characteristics:

(1) Unit Type: Burn Cage.

(2) General Dimensions: Three (3) burn cages with approximate individual dimensions of 60 x 30 feet (L x W) (Figure C-2, Sketch C-2).

(3) Approximate Dates of Usage: 1949 to 1982.

(4) Operating Practices: Inert and explosives-contaminated packaging waste was burned. Metal parts flashing was also performed. Flammable solvents such as kerosene, diesel fuel, or fuel oil may have been used to initiate the flashing of metal parts.

(5) Present Condition and Status: The cages have been removed. Storage of metal parts flashed at the Contaminated Waste Processor (CWP)(IAAP-24) and the Explosive Disposal Area (EDA)(IAAP-12) was observed during the 14 Aug 90 visual site inspection.

c. Waste Characteristics:

(1) Specific Wastes Disposed: Inert and explosives-contaminated combustible packaging materials, e.g. paper, cardboard, and wood, was burned and the residual ash disposed in the adjacent Burn Cage Ash Landfill (IAAP-33). Metal parts were flashed; however, most metal parts were salvaged.

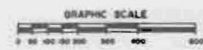
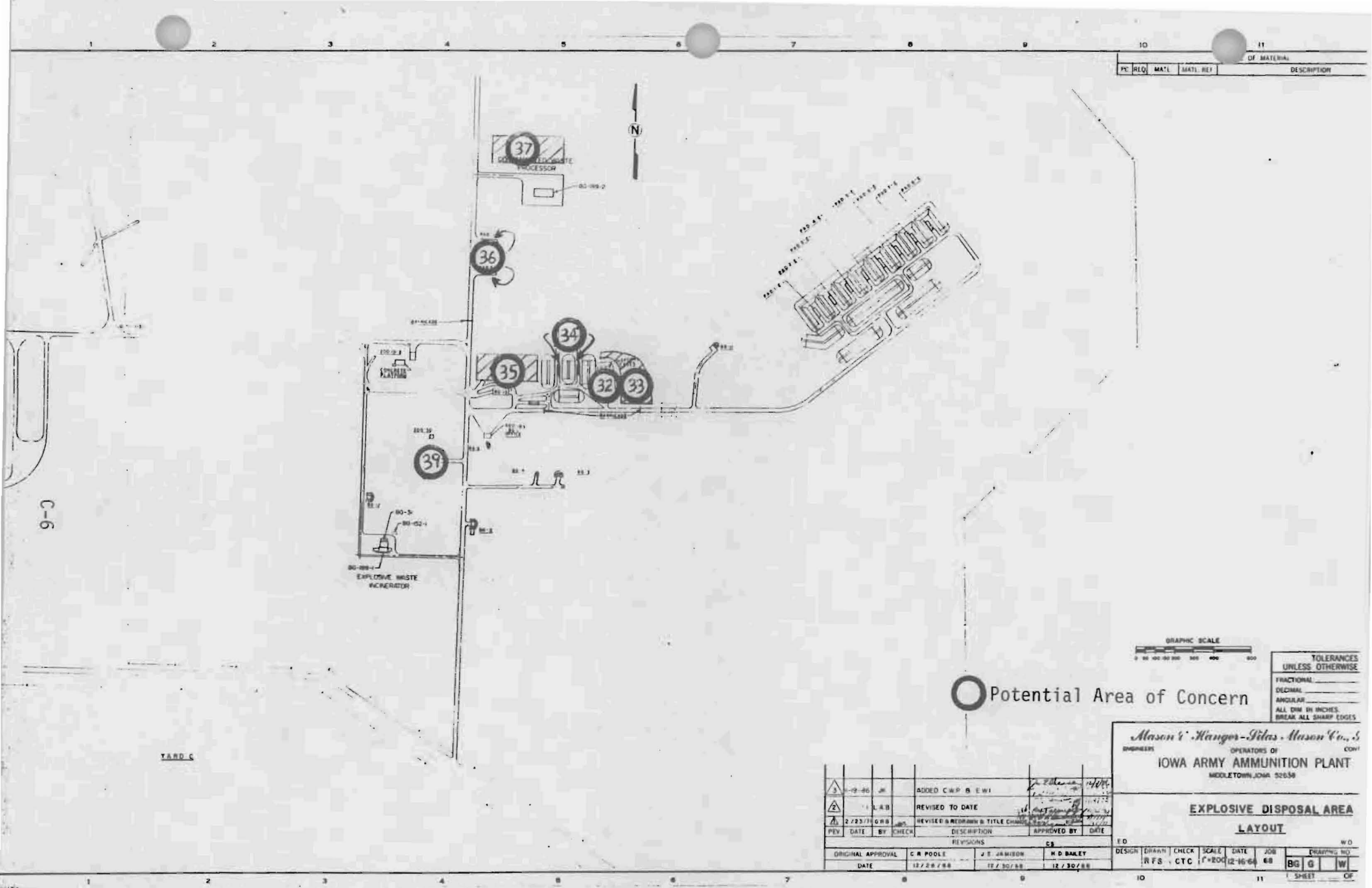
(2) Migration and Dispersal Characteristics: Explosives residue is not likely as a result of thermal destruction. Initiating fuel and heavy metal residue that may be present would be absorbed by the soil.

d. Migration Pathways: Soil, groundwater, and surface water.

e. Evidence of Release: None.

f. Exposure Potential: Low.

g. Recommendations for Sampling: Shallow soil sample(s) should be collected at locations where ground staining or stressed vegetation is evident. Analysis parameters should include explosives, volatiles, and heavy metals. Sampling of downgradient Spring Creek surface water (W-61) and groundwater (Well G-30) was conducted in October 1985. Explosives and halocarbons were not detected in the samples; however, chromium, copper, and silver were detected in surface water at 10, 5, and 1 parts per billion (ppb) and copper detected in groundwater at 2 ppb.



TOLERANCES UNLESS OTHERWISE SPECIFIED:
 FRACTIONAL: _____
 DECIMAL: _____
 ANGULAR: _____
 ALL DIM IN INCHES.
 BREAK ALL SHARP EDGES

○ Potential Area of Concern

Mason & Hanger-Pilas - Mason Co., Inc.
 ENGINEERS OPERATORS OF
IOWA ARMY AMMUNITION PLANT
 MIDDLETOWN, IOWA 52658

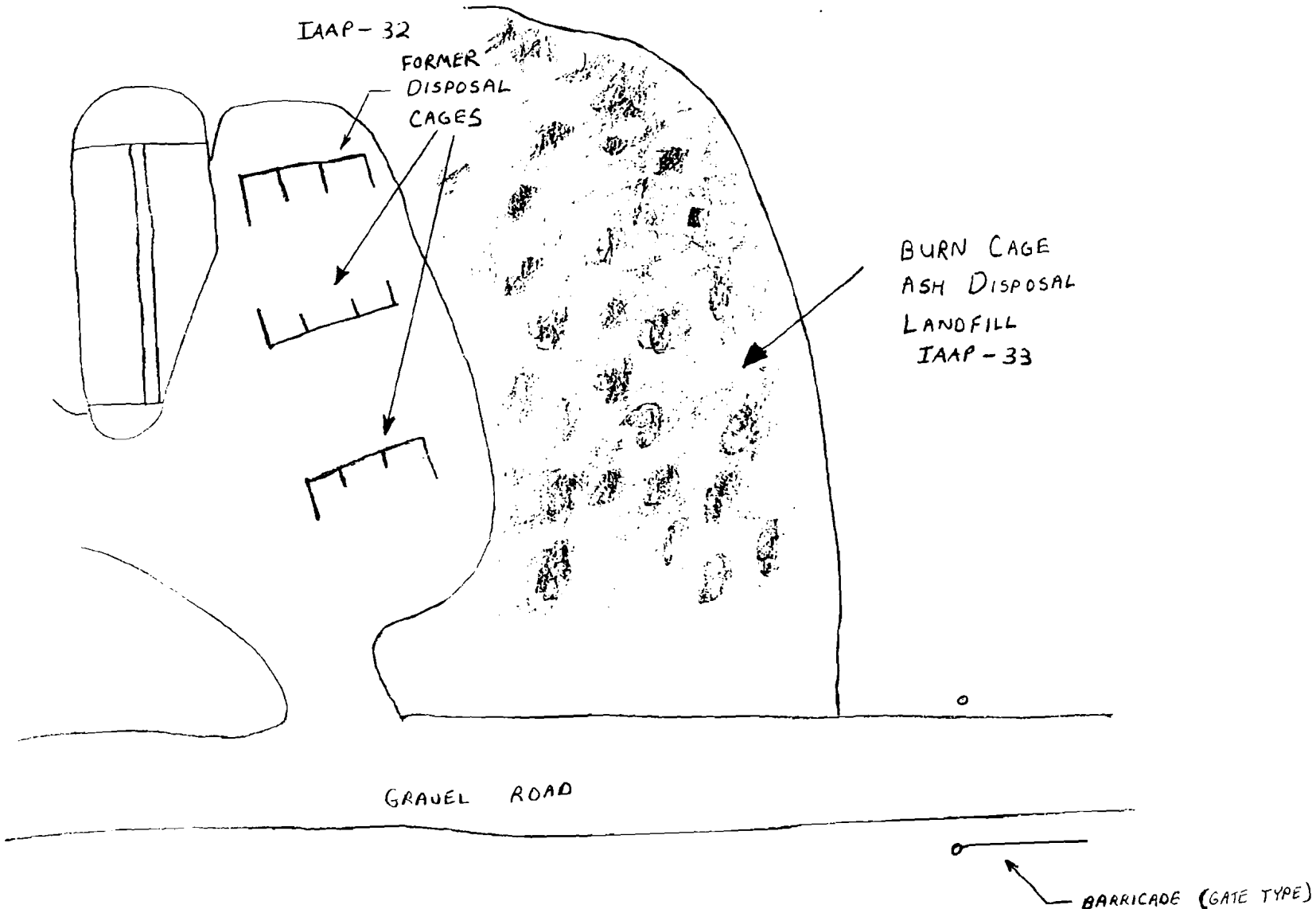
REV	DATE	BY	CHECK	DESCRIPTION	APPROVED BY	DATE
1	1-19-86	JR		ADDED CWP & EWI	<i>[Signature]</i>	1/19/86
2	1-1-88	LAB		REVISED TO DATE	<i>[Signature]</i>	1/1/88
3	2/23/88	GHS		REVISED & REDRAWN & TITLE CHANGE	<i>[Signature]</i>	2/23/88

EXPLOSIVE DISPOSAL AREA LAYOUT

DESIGN	DRAWN	CHECK	SCALE	DATE	JOB	DRAWING NO.
	RFS	CTC	1"=80'	12-16-88	68	BG G W

Figure C-2: IAAP-32,33,34,35,36,37,39

C-7



Sketch C-2: IAAP-32,33 LOCATION/SITE NUMBER: IAAP-32,33

3. MAP LOCATION/SITE NUMBER: IAAP-33

a. Unit Name: Burn Cage Ash Disposal Landfill.

b. Unit Characteristics:

(1) Unit Type: Landfill.

(2) General Dimensions: Approximately 350 x 125 feet (L x W) (Figure C-2, Sketch C-2).

(3) Approximate Dates of Usage: 1949 to 1982.

(4) Operating Practices: Residual ash generated from the Burn Cages (IAAP-32) operations was pushed onto the side of the ravine and covered with soil.

(5) Present Condition and Status: The site was covered with soil. Vegetative stress was not observed during the 14 Aug 90 visual site inspection.

c. Waste Characteristics:

(1) Specific Wastes Disposed: The residual ash generated from the burn cage operations may contain trace amounts of heavy metals; however, explosives should not be present due to thermal destruction.

(2) Migration and Dispersal Characteristics: Heavy metals present will be absorbed into the soil.

d. Migration Pathways: Soil and groundwater.

e. Evidence of Release: None.

f. Exposure Potential: Low.

g. Recommendations for Sampling: Shallow soil sample(s) should be collected at the landfill to assess the potential for contamination migration from the site. Analysis parameters should include explosives and heavy metals. Sampling of downgradient Spring Creek surface water (W-61) and groundwater (Well G-30) was conducted in October 1985. Explosives and halocarbons were not detected in the samples; however, chromium, copper, and silver were detected in surface water at 10, 5, and 1 parts per billion (ppb) and copper detected in groundwater at 2 ppb.

4. MAP LOCATION/SITE NUMBER: IAAP-34

a. Unit Name: West Burn Pads (adjacent to IAAP-32).

b. Unit Characteristics:

(1) Unit Type: Burn Pad.

(2) General Dimensions: Two (2) burn pads with approximate individual dimensions of 50 x 15 feet (L x W) (Figure C-2, Sketch C-3).

(3) Approximate Dates of Usage: 1949 to 1982.

(4) Operating Practices: Explosives-contaminated metal parts were flashed to achieve a "XXXXX" decontamination status. Flammable solvents such as kerosene, diesel fuel, or fuel oil may have been used to initiate the flashing of metal parts.

(5) Present Condition and Status: Site has been abandoned, although some metal parts, munition casings, and residual explosives staining on the ground surface was observed during the 14 Aug 90 during the visual site inspection.

c. Waste Characteristics:

(1) Specific Wastes Disposed: Explosives residue from metal parts were thermally destroyed by flashing.

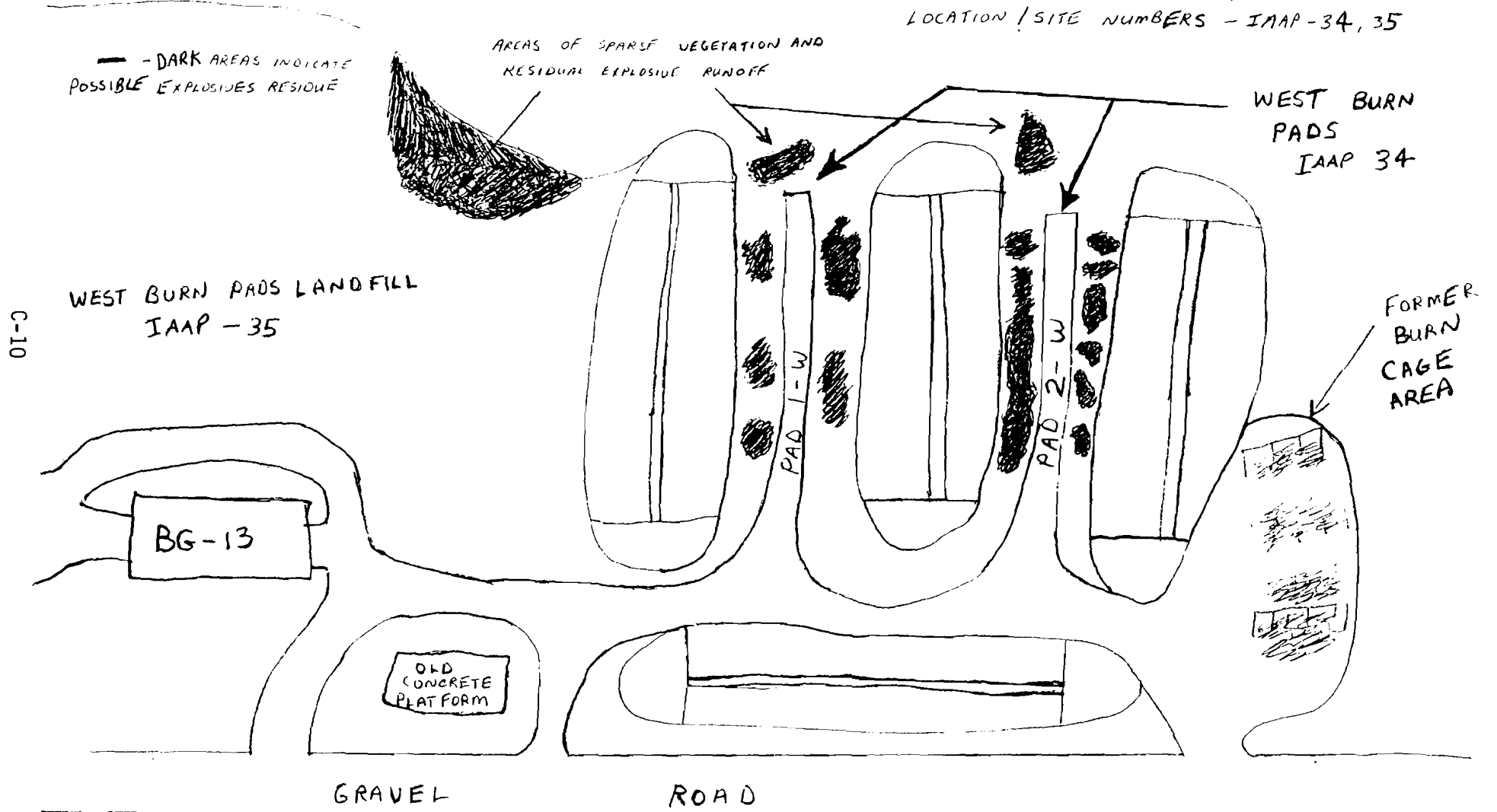
(2) Migration and Dispersal Characteristics: Explosives, display varying degrees of mobility depending on the type of explosive compound.

d. Migration Pathways: Soil, groundwater, and surface water.

e. Evidence of Release: Localized pockets of reddish-brown ground staining, indicative of explosives residue, was observed at several locations.

f. Exposure Potential: Low, no potential receptors near the site.

g. Recommendations for Sampling: Shallow soil sample(s) should be collected at locations where ground staining or stressed vegetation is visible. Analysis parameters should include explosives, volatiles, and heavy metals.



NOTE: THERE ARE SOME LOCALIZED POCKETS OF REDDISH-BROWN GROUND STAINING, POSSIBLY EXPLOSIVES RESIDUE, OBSERVED AT SEVERAL LOCATIONS THROUGHOUT THE AREA OF BURN PADS.

Sketch C-3: IAAP-34,35

5. MAP LOCATION/SITE NUMBER: IAAP-35

a. Unit Name: West Burn Pads Landfill.

b. Unit Characteristics:

(1) Unit Type: Landfill.

(2) General Dimensions: Approximately 300 x 200 feet (L x W) (Figure C-2, Sketch C-3).

(3) Approximate Dates of Usage: 1950 to 1975.

(4) Operating Practices: Residue from the West Burn Pads (IAAP-34) was disposed in the landfill.

(5) Present Condition and Status: Closed and covered; however, exposed bricks at east side were observed during the 14 Aug 90 visual site inspection.

c. Waste Characteristics:

(1) Specific Wastes Disposed: Sanitary and industrial refuse comprised of cafeteria waste, paper, wood, metal cans, and aerosol cans, including residue from burning operations at the West Burn Pads (IAAP-34), was disposed in the landfill. In addition, spent carbon and diatomaceous earth from the explosives waste water treatment process, previously burned at the Explosives Disposal Area (EDA) (IAAP-12) to thermally destroy explosives residue, was also disposed in the landfill.

(2) Migration and Dispersal Characteristics: Leachate generated by the landfill may migrate into the groundwater and nearby stream.

d. Migration Pathways: Soil, groundwater, surface water.

e. Evidence of Release: None.

f. Exposure Potential: Low.

g. Recommendations for Sampling: Shallow soil sample(s) should be collected at the landfill to assess the potential for contamination migration from the site. Analysis parameters should include explosives and heavy metals. Sampling of downgradient Spring Creek surface water (W-61) and groundwater (Well G-30) was conducted in October 1985. Explosives and halocarbons were not detected in the samples; however, chromium, copper, and silver were detected in surface water at 10, 5, and 1 parts per billion (ppb) and copper detected in groundwater at 2 ppb.

6. MAP LOCATION/SITE NUMBER: IAAP-36

a. Unit Name: North Burn Pads (adjacent to IAAP 24).

b. Unit Characteristics:

(1) Unit Type: Burn Pad.

(2) General Dimensions: Two (2) burn pads with approximate individual dimensions of 50 x 20 feet (L x W) (Figure C-2, Sketch C-4).

(3) Approximate Dates of Usage: 1968 to 1972.

(4) Operating Practices: Lead Azide and Black Powder from Line 9 was burned on the same day the material was placed on the pads.

(5) Present Condition and Status: During the 14 Aug 90 visual site inspection, the pads were observed to be covered with soil, except for a 20-foot portion nearest the road. The southern pad is used as a refueling station with an above ground 275-gallon diesel fuel tank.

c. Waste Characteristics:

(1) Specific Wastes Disposed: Small amounts of residual lead may be present at the site. Explosive materials were thermally destroyed.

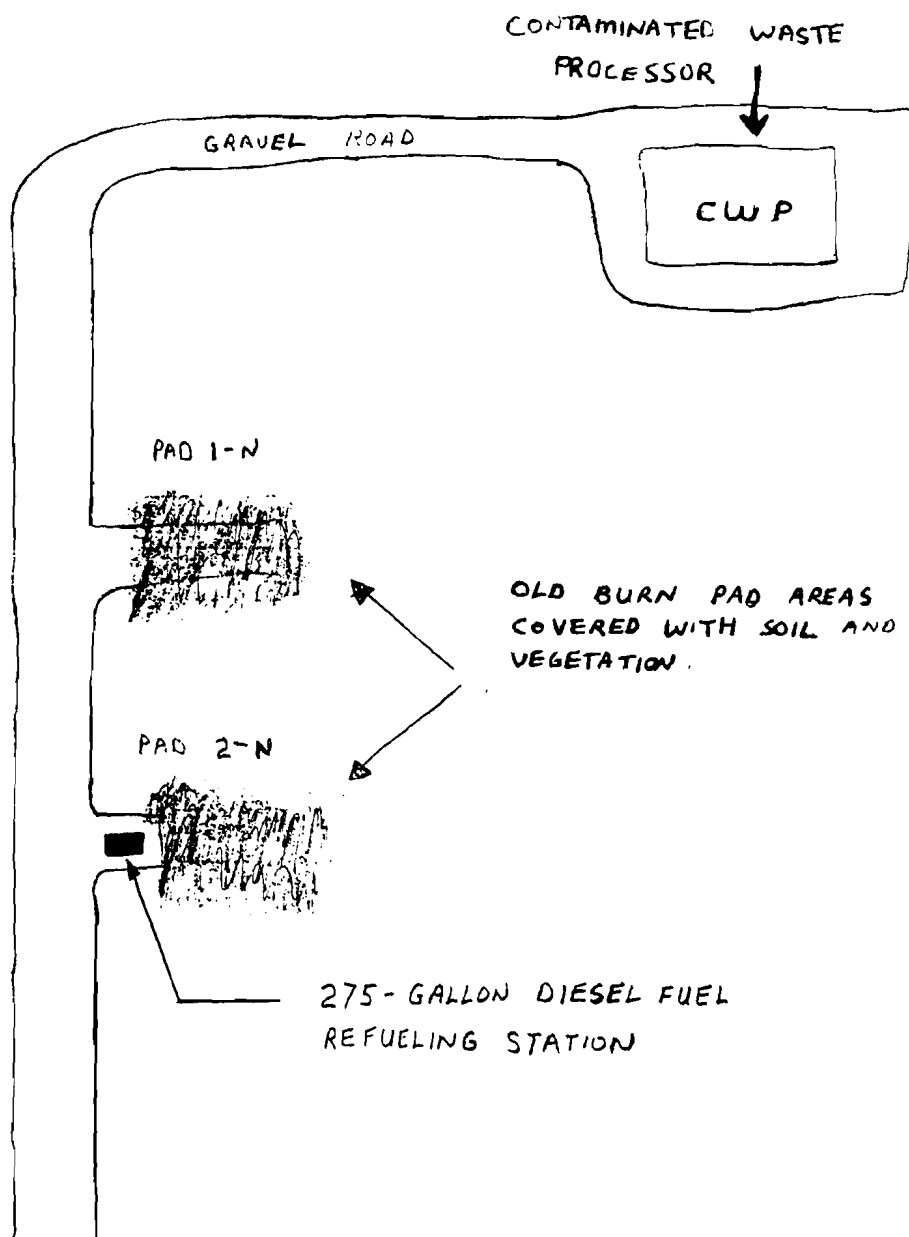
(2) Migration and Dispersal Characteristics: Lead will be absorbed by the soil.

d. Migration Pathways: Soil.

e. Evidence of Release: None.

f. Exposure Potential: Low.

g. Recommendations for Sampling: Shallow soil sample(s) should be collected at locations where ground staining or stressed vegetation is visible. Analysis parameters should include explosives, volatiles, and heavy metals.



Sketch C-4: IAAP-36

NORTH BURN PADS

LOCATION/SITE NUMBER: IAAP-36

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7. MAP LOCATION/SITE NUMBER: IAAP-37

a. Unit Name: North Burn Pads Landfill.

b. Unit Characteristics:

(1) Unit Type: Landfill.

(2) General Dimensions: Approximately 250 x 125 feet (L x W) (Figure C-2, Sketch C-5).

(3) Approximate Dates of Usage: 1968 to 1972.

(4) Operating Practices: Residue from the North Burn Pads (IAAP-36) was disposed in the landfill.

(5) Present Condition and Status: The site is closed and revegetated; however, small areas and strips of sparse vegetation were observed during the 14 Aug 90 visual site inspection.

c. Waste Characteristics:

(1) Specific Wastes Disposed: Detonator cups, paper or wood ash which was flashed at the North Burn Pads (IAAP-36).

(2) Migration and Dispersal Characteristics: Leachate generated by the landfill may migrate to the groundwater.

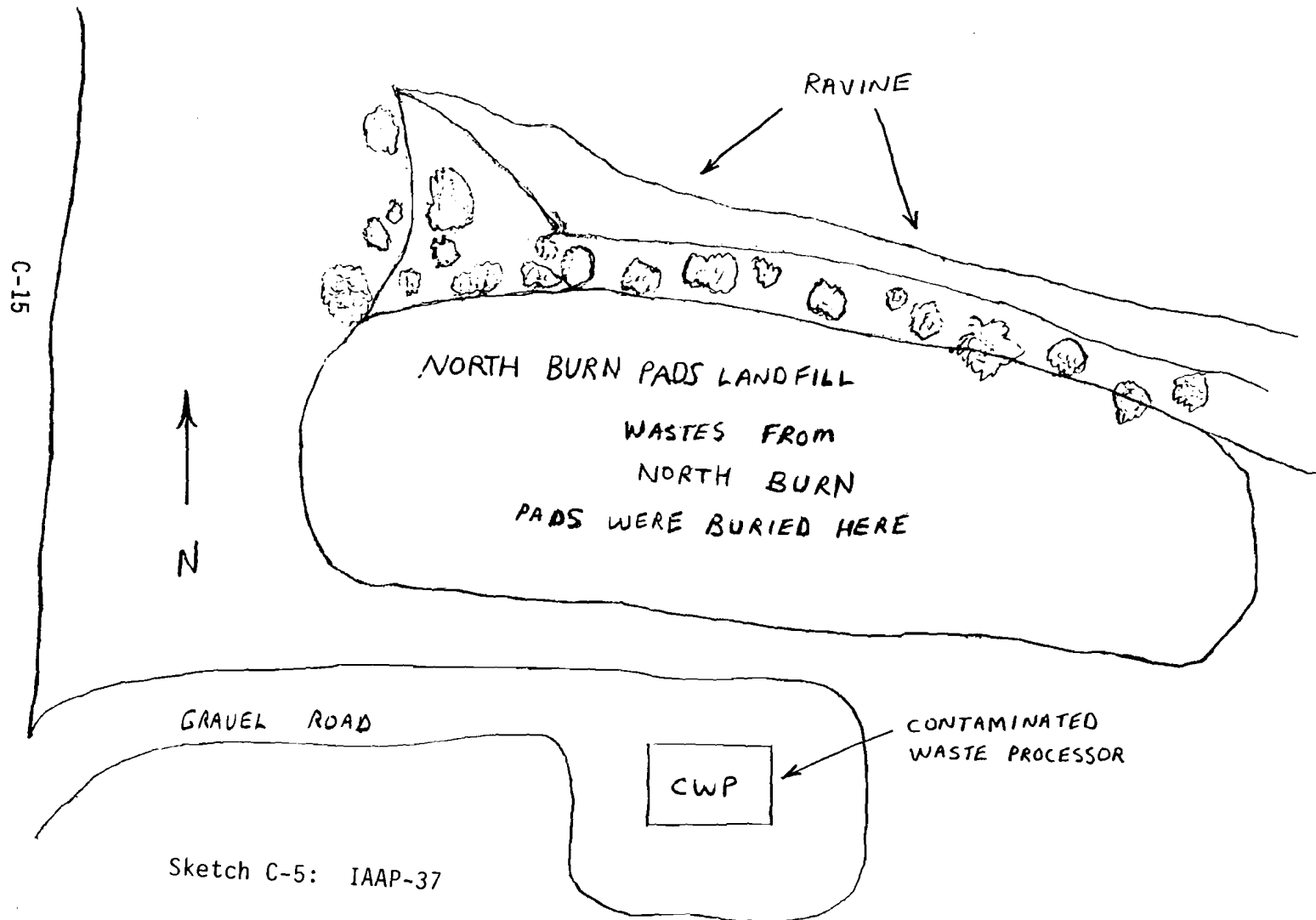
d. Migration Pathways: Soil, groundwater.

e. Evidence of Release: None.

f. Exposure Potential: Low.

g. Recommendations for Sampling: Shallow soil sample(s) should be collected at the landfill to assess the potential for contamination migration from the site. Analysis parameters should include explosives and heavy metals.

LOCATION / SITE NUMBER: IAAP-37



Sketch C-5: IAAP-37

8. MAP LOCATION/SITE NUMBER: IAAP-38

a. Unit Name: Building 600-86 Septic System.

b. Unit Characteristics:

- (1) Unit Type: Septic Tank and Drainfield.
- (2) General Dimensions: Unknown (Figures C-3 and C-4, Sketch C-6).
- (3) Approximate Dates of Usage: 1941 to 1953.
- (4) Operating Practices: Standard drinking water and wastewater analyses were done. Primer mixes of lead azide in quantities of 10 to 20 milligrams were tested by titration and then killed with ceric ammonium nitrate. Waste titration solutions were transferred to the Explosive Disposal Area (EDA)(IAAP-12).
- (5) Present Condition and Status: Based on the interviews with Mason & Hanger employees the septic tank sludge has been removed and the tank filled with sand; however, the septic tank could not be located during the 14 Aug 90 visual site inspection.

c. Waste Characteristics:

- (1) Specific Wastes Disposed: Primarily sanitary wastewater went to the septic tank. Titrated primer mixes were killed with ceric ammonium nitrate and taken to the Explosive Disposal Area (EDA) (IAAP-12) for thermal destruction.
- (2) Migration and Dispersal Characteristics: Effluent from the septic tank was discharged to a subsurface drain field.

d. Migration Pathways: Soil and groundwater.

e. Evidence of Release: None, results from EP Toxicity test results for the septic tank sludge samples collected on 18 Nov 83, were within the limits allowed for sewage. The Building 600-86 Environmental Assessment is further described in Appendix E.

f. Exposure Potential: Low.

g. Recommendations for Sampling: None.

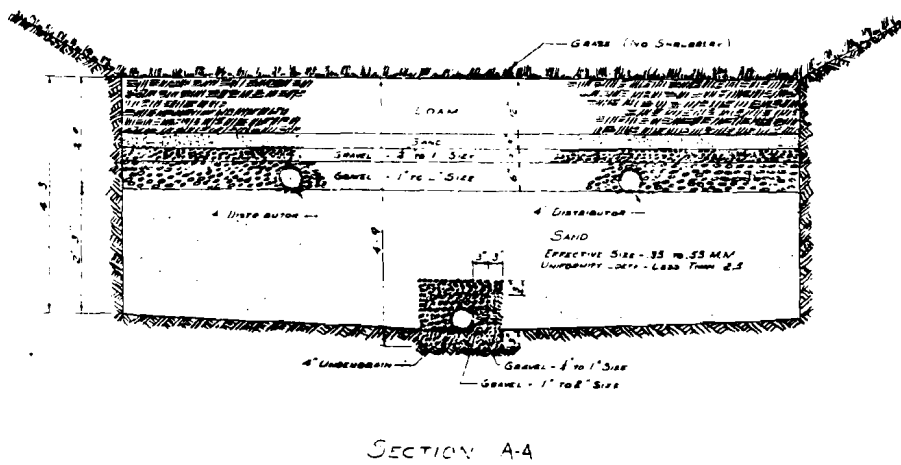
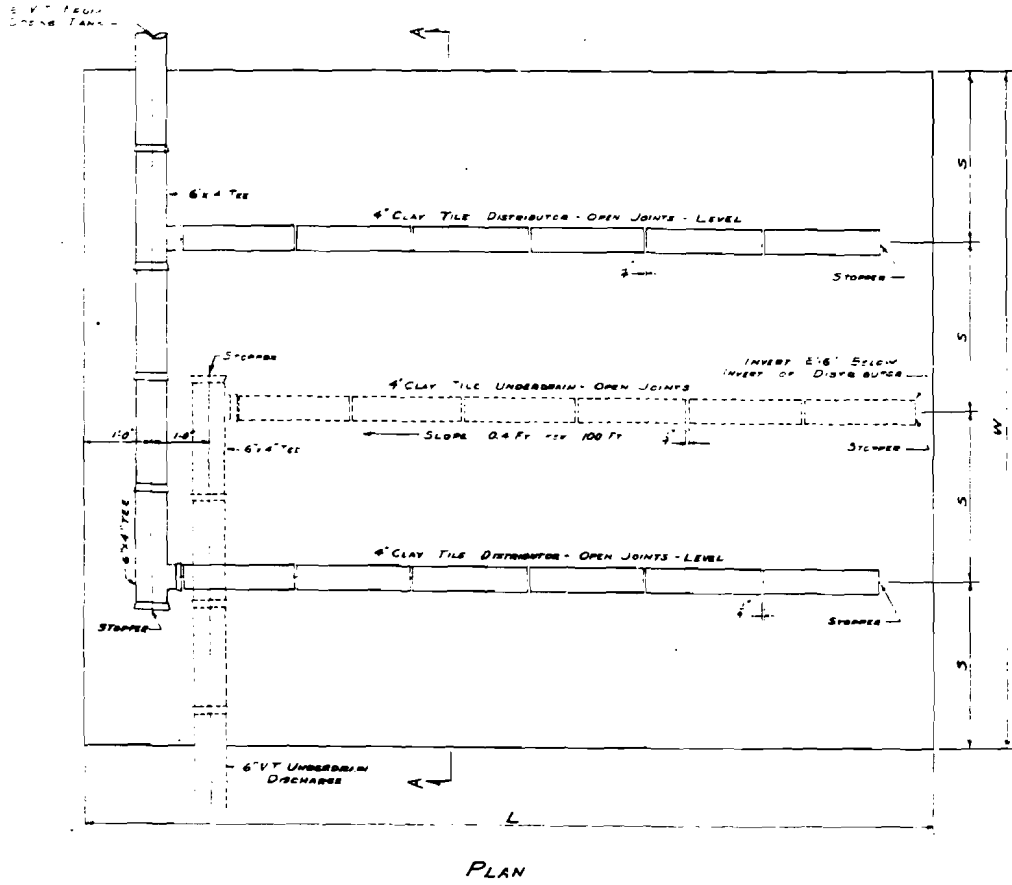
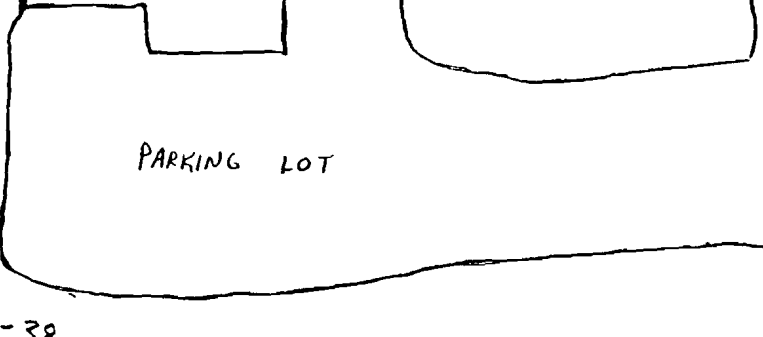
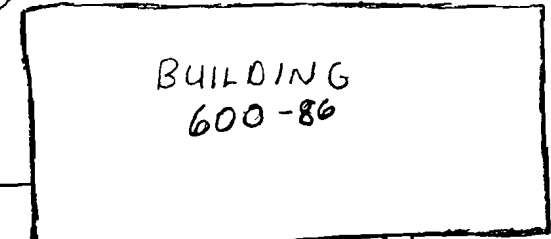
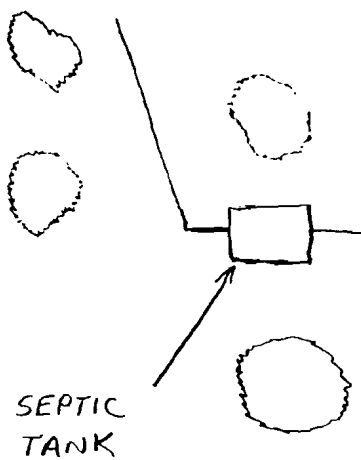


Figure C-4: IAAP-38 Drainfield

C-19



Sketch C-6: IAAP-38 LOCATION/SITE NUMBER:

IAAP-38

9. MAP LOCATION/SITE NUMBER: IAAP-39

a. Unit Name: Fire Training Pit.

b. Unit Characteristics:

(1) Unit Type: Burn Pit.

(2) General Dimensions: Approximately 40 x 16 x 2 feet (L x W x D) (Figure C-2, Sketch C-7).

(3) Approximate Dates of Usage: 1982 to 1987.

(4) Operating Practices: 55-gallon drums of solvent and/or fuel were placed in pit, set ablaze, and then extinguished by fire fighters.

(5) Present Condition and Status: Dark brown stained bare areas and a petroleum odor was observed at the unlined pit during the 14 Aug 90 visual site inspection.

c. Waste Characteristics:

(1) Specific Wastes Disposed: Waste solvents were used until 1984 and fuels used until 1987.

(2) Migration and Dispersal Characteristics: Solvent compounds and petroleum hydrocarbons/aromatics could rapidly migrate in the subsurface soil.

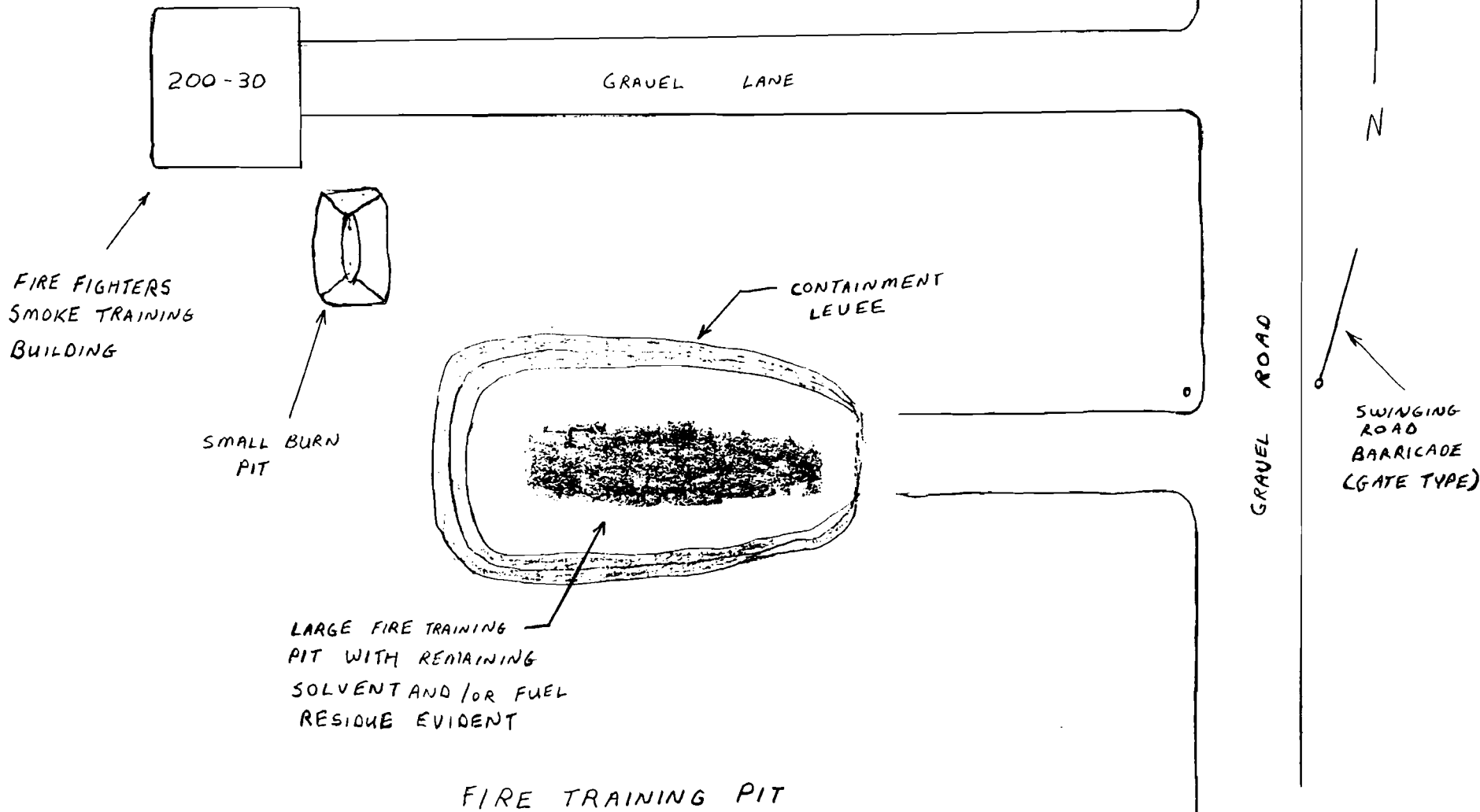
d. Migration Pathways: Soil and groundwater.

e. Evidence of Release: Stained soil and petroleum odor.

f. Exposure Potential: Moderate.

g. Recommendations for Sampling: Conduct a soil and groundwater quality study at this site. Analysis parameters should include explosives, semivolatiles, and volatiles.

C-21



Sketch C-7: IAAP-39

FIRE TRAINING PIT

IAAP LOCATION / SITE NUMBER: IAAP-39

10. MAP LOCATION/SITE NUMBER: IAAP-40

a. Unit Name: Roundhouse Transformer Storage Area.

b. Unit Characteristics:

(1) Unit Type: Transformer Storage Area.

(2) General Dimensions: During the early years of use the transformers were stored at the west side of the yard area approximately 200 x 40 feet (L x W). The site is presently at the center of the yard with a size of 60 x 40 feet (L x W) (Figure C-5, Sketch C-8).

(3) Approximate Dates of Usage: 1940's to present. Current storage area utilized for approximately the past 25 years.

(4) Operating Practices: Transformers containing Polychlorobiphenyls (PCBs) are stored at the site awaiting reuse or disposal.

(5) Present Condition and Status: About 47 transformers were stored at the site during the 14 Aug 90 visual site inspection. Two very minor spills, totalling less than 1/4 pint, were noted. All transformers stored in the area were labeled with green tags identifying dielectric fluid as containing less than 50 parts-per-million (ppm) of PCBs.

c. Waste Characteristics:

(1) Specific Wastes Disposed: None, storage only.

(2) Migration and Dispersal Characteristics: PCBs are readily absorbed by the soil.

d. Migration Pathways: Soil.

e. Evidence of Release: None.

f. Exposure Potential: Low.

g. Recommendations for Sampling: Shallow soil sample(s) should be collected at locations where suspected PCB spills occurred. Analysis parameters should include PCBs.

REFERENCE DRAWINGS

BILL OF MATERIAL			
PC. REQ.	MATL.	MATL. REF.	DESCRIPTION

DAY B ZIMMERMANN

YARD 'A' LOCATION SERVICE GENERAL LAYOUT LOCATION OF ADJACENT HIGHWAY 1747

MASON & HANGER

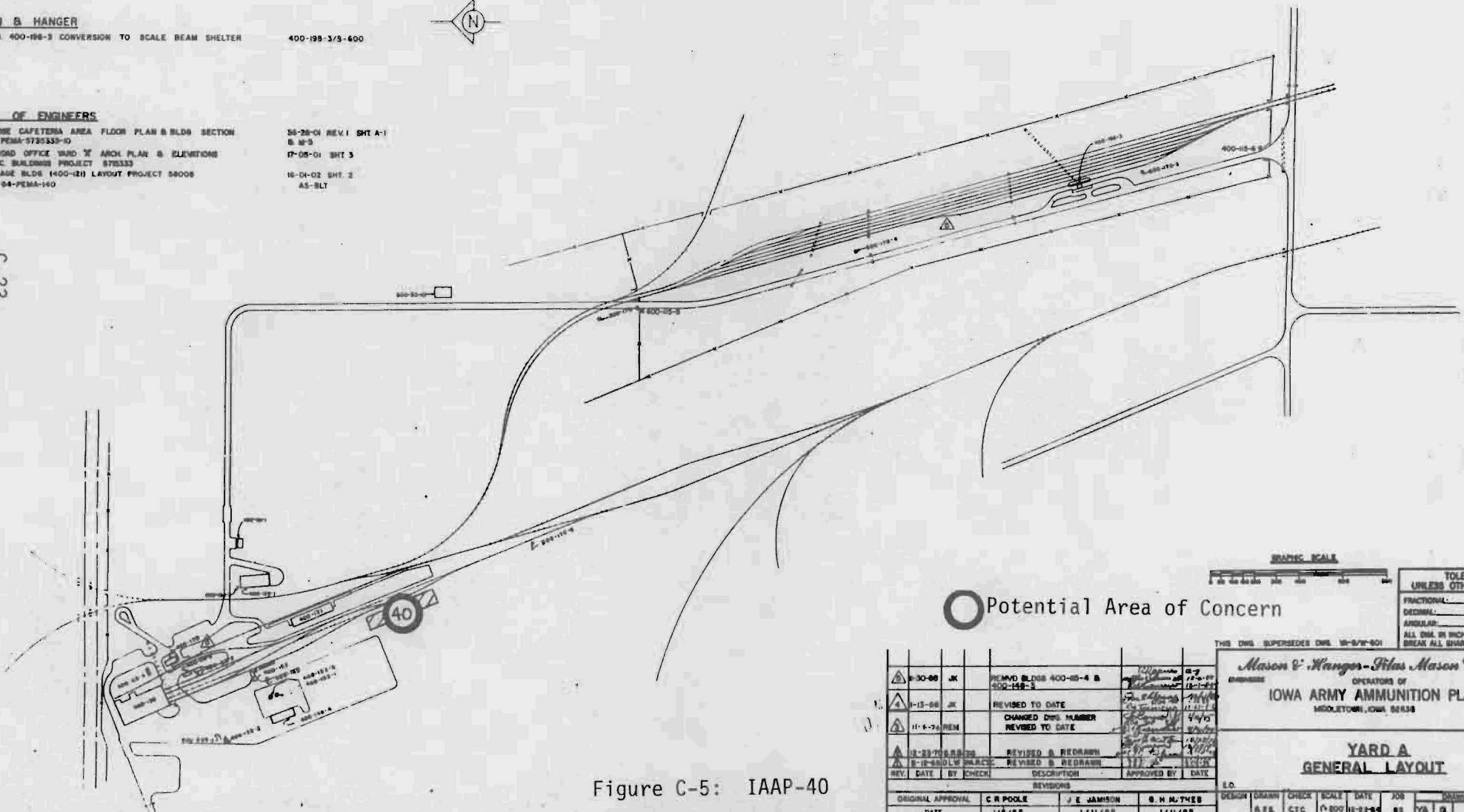
BLDG 400-196-3 CONVERSION TO SCALE BEAM SHELTER 400-199-3/3-600

CORPS OF ENGINEERS

ENCLOSE CAFETERIA AREA FLOOR PLAN & BLDG SECTION 36-28-01 REV.1 SHT. A-1
 73-PEMA-5735339-10 S. M-5
 RAILROAD OFFICE YARD 'X' ARCH. PLAN & ELEVATIONS 17-05-01 SHT. 3
 MISCELL. BUILDINGS PROJECT 875333 16-01-02 SHT. 2
 DUMPAGE BLDG (400-121) LAYOUT PROJECT 58008 AS-BLT
 77-04-PEMA-160



C-23



○ Potential Area of Concern

TOLERANCES UNLESS OTHERWISE SPECIFIED	
FRACTIONAL:	
DECIMAL:	
ANGULAR:	
ALL DIMS. IN INCHES. BREAK ALL SHARP EDGES.	

THIS DWG. SUPERSEDES DWG. 10-870-901

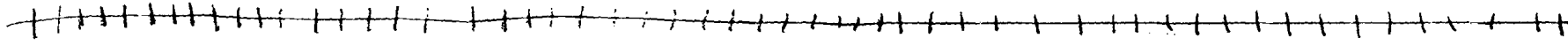
REV.	DATE	BY	CHECK	DESCRIPTION	APPROVED BY	DATE
1	8-30-88	JK		REMOVED BLDGS 400-185-4 & 400-188-3		
2	9-15-88	JK		REVISED TO DATE		
3	11-6-79	REN		CHANGED DWG. NUMBER REVISED TO DATE		
4	12-23-79	WASB		REVISED & REDRAWN		
5	2-18-80	WASB		REVISED & REDRAWN		

Mason & Hanger - Filas Mason Co., Inc.
 OPERATORS OF
IOWA ARMY AMMUNITION PLANT
 MIDDLETON, IOWA 52558

**YARD A
 GENERAL LAYOUT**

Figure C-5: IAAP-40

DESIGN	DRAWN	CHECK	SCALE	DATE	JOB	W. BOX	OF
A.E.F.	C.T.C.		1"=800'	12-23-84	03	YA 3	W BOX
ORIGINAL APPROVAL C.R. POOLE J.E. JAMISON B.H.M. THYS DATE 1/8/88 1/11/88 1/11/88						SHEET _____ OF _____	



RAIL ROAD RAIL AND TIE STORAGE



C-24

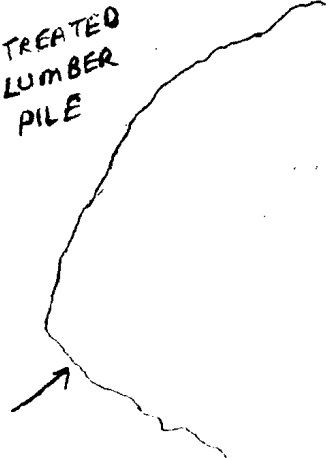
CURRENT
TRANSFORMER
STORAGE
AREA



"TREATED"
LUMBER
PILE



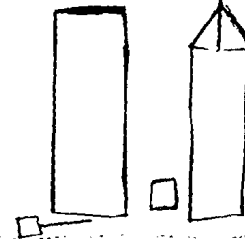
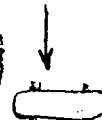
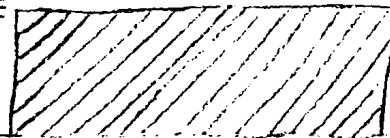
GRAVEL
PILE



FORMER TRANSFORMER
STORAGE
AREA

TRANSFORMER
OIL
STORAGE

FACILITY MAINTENANCE
EQUIPMENT AND SUPPLIES
STORAGE AREA



CONSTRUCTION
TRAILERS

Sketch C-8: IAAP-40

ROUNDHOUSE TRANSFORMER STORAGE AREA

LOCATION / SITE NUMBER: IAAP-40

11. MAP LOCATION/SITE NUMBER: IAAP-41

a. Unit Name: Line 3A Pond.

b. Unit Characteristics:

(1) Unit Type: Lagoon.

(2) General Dimensions: A man-made, partially above-ground structure approximately 60 x 30 x 8 feet (L x W x D) (Figure C-6).

(3) Approximate Dates of Usage: Used for continuous 6-month increment during the early 1950's.

(4) Operating Practices: Casings for 500 pound bombs were processed by submersion into a sulfuric/hydrochloric acid bath. A chromic acid bath was used as a final rinse.

(5) Present Condition and Status: Remains or evidence of the lagoon could not be located during the 14 Aug 90 visual site inspection. The suspected lagoon location is covered with natural vegetation.

c. Waste Characteristics:

(1) Specific Wastes Disposed: Approximately 15,000 gallons of spent sulfuric and hydrochloric acid was disposed in the pond and treated with sodium hydroxide. The chromic acid rinse lasted through the whole operation and was removed from the site when the operation was completed.

(2) Migration and Dispersal Characteristics: Neutralized salts, containing sulfates and chlorides are very mobile in the subsurface soil.

d. Migration Pathways: Soil and groundwater.

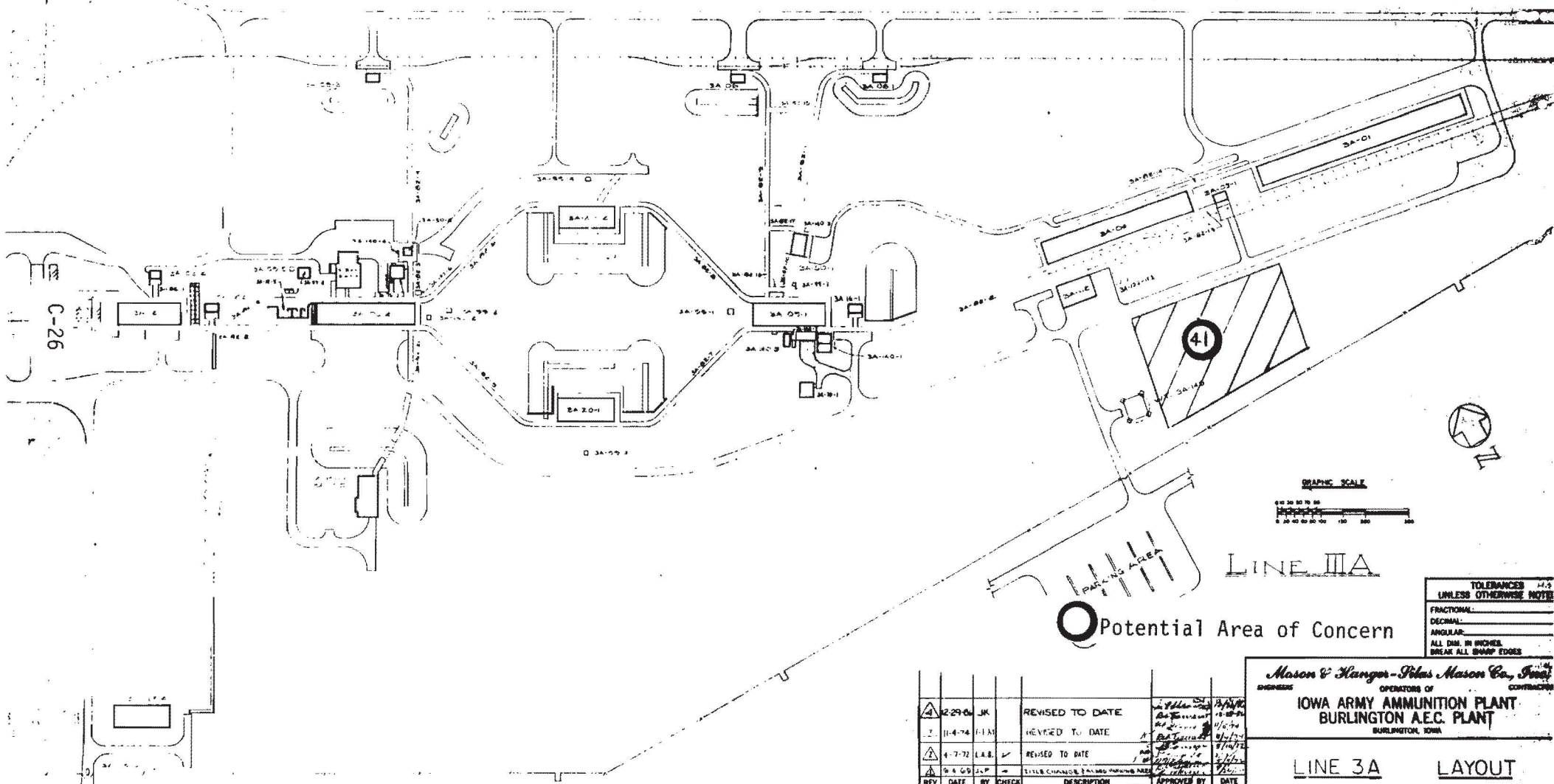
e. Evidence of Release: None.

f. Exposure Potential: Low.

g. Recommendations for Sampling: Shallow soil sample(s) should be collected at locations where historical information or geophysical studies reveal suspected area(s) of disturbed ground and/or spilled materials. Analysis parameters should include heavy metals.

1 2 3 4 5 6 7 8 9 10 11

BILL OF MATERIAL		
PC REQ	MATL	DESCRIPTION



C-26



○ Potential Area of Concern

TOLERANCES UNLESS OTHERWISE NOTED	
FRACTIONAL:	
DECIMAL:	
ANGULAR:	
ALL DIM. IN INCHES. BREAK ALL SHARP EDGES.	

REV	DATE	BY	CHECK	DESCRIPTION	APPROVED BY	DATE
1	2-29-64	JK		REVISED TO DATE		
2	11-4-74	JJA		REVISED TO DATE		
3	4-7-72	L.A.B.		REVISED TO DATE		
4	8-8-65	J.A.P.		TITLE CHANGE, PARKING AREA		

Mason & Hanger-Peterson
ENGINEERS OPERATORS OF CONTRACTORS
IOWA ARMY AMMUNITION PLANT
BURLINGTON A.E.C. PLANT
BURLINGTON, IOWA

LINE 3A LAYOUT

Figure C-6: IAAP-41

ORIGINAL APPROVAL		REVISIONS		DESIGN		DRAWN		CHECK		SCALE		DATE		JOB		DRAWING NO.	
DATE		DATE		T.G.		DATE		DATE		DATE		DATE		DATE		DATE	

12. MAP LOCATION/SITE NUMBER: IAAP-42

a. Unit Name: Abandoned Coal Storage Yard.

b. Unit Characteristics:

(1) Unit Type: Coal Pile

(2) General Dimensions: Approximately 3 acres (Figure C-7, Sketch C-9).

(3) Approximate Dates of Usage: From 1950 to 1968 the site was actively used to store coal for the Line 1 heating plant. In 1968 when coal was no longer used, the remaining coal in storage was abandoned in place.

(4) Operating Practices: Coal was stored at the site, but the abandoned coal has become unusable.

(5) Present Condition and Status: The site is abandoned. Vegetative stress adjacent to the yard was observed during the 14 Aug 90 visual site inspection.

c. Waste Characteristics.

(1) Specific Wastes Disposed: Weathered coal.

(2) Migration and Dispersal Characteristics: Iron, sulfate, and acids may be released to the environment.

d. Migration Pathways: Soil, groundwater, and surface water.

e. Evidence of Release: Vegetative stress was observed.

f. Exposure Potential: Low.

g. Recommendations for Sampling: Removal and cleanup of the site is suggested. Confirmatory shallow soil sample(s) should be collected after the site cleanup is completed. Analysis parameters should include heavy metals.

GATE 3

YARD "A"

B

E

LINE 1

42

100
01
120
03

62

1-55

211

148

52

77

11

84

172

103-7

03A

67-3

67-2

67-E1

80

67-1

64-5

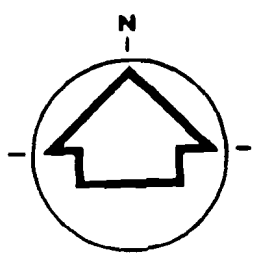
145

61

82-69

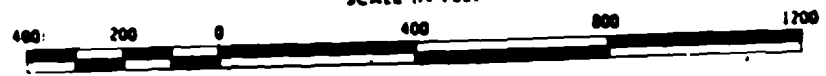
55-5

40E



○ Potential Area of Concern

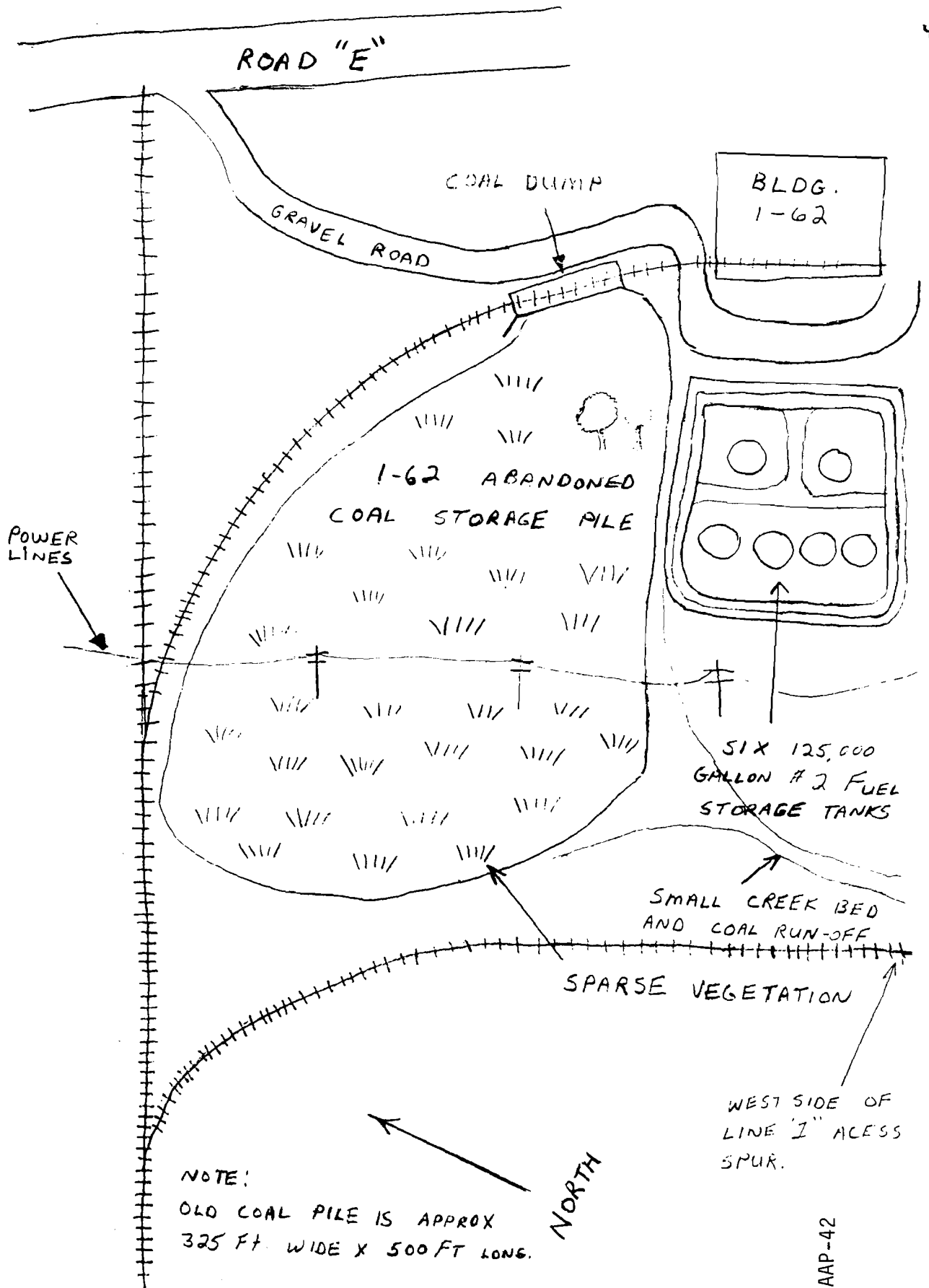
SCALE IN FEET



CONTOUR INTERVAL - 5 FEET

Figure C-7: IAAP-42

C-28



NOTE:
 OLD COAL PILE IS APPROX
 325 FT. WIDE X 500 FT LONG.

NORTH

1-62 COAL PILE
 LOCATION/SITE NUMBER - 42

Sketch C-9: IAAP-42

13. MAP LOCATION/SITE NUMBER: IAAP-43

- a. Unit Name: Fly Ash Disposal Area.
- b. Unit Characteristics:
 - (1) Unit Type: Waste Pile.
 - (2) General Dimensions: Approximately 5 acres (Figure C-8, Sketch C-10).
 - (3) Approximate Dates of Usage: 1940's to early 1950's.
 - (4) Operating Practices: Waste fly ash disposal.
 - (5) Present Condition and Status: The abandoned waste site is presently covered by natural vegetation. Vegetative stress was not observed during the 14 Aug 90 visual site inspection.
- c. Waste Characteristics:
 - (1) Specific Wastes Disposed: Fly ash from coal-fired power plant was disposed in the site.
 - (2) Migration and Dispersal Characteristics: Material should be stable, with little potential for migration of contaminants.
- d. Migration Pathways: Soil and groundwater.
- e. Evidence of Release: None.
- f. Exposure Potential: Low.
- g. Recommendations for Sampling: Ash sample(s) should be collected to assess the potential for contamination leaching into the environment. Analysis parameters should include heavy metals.

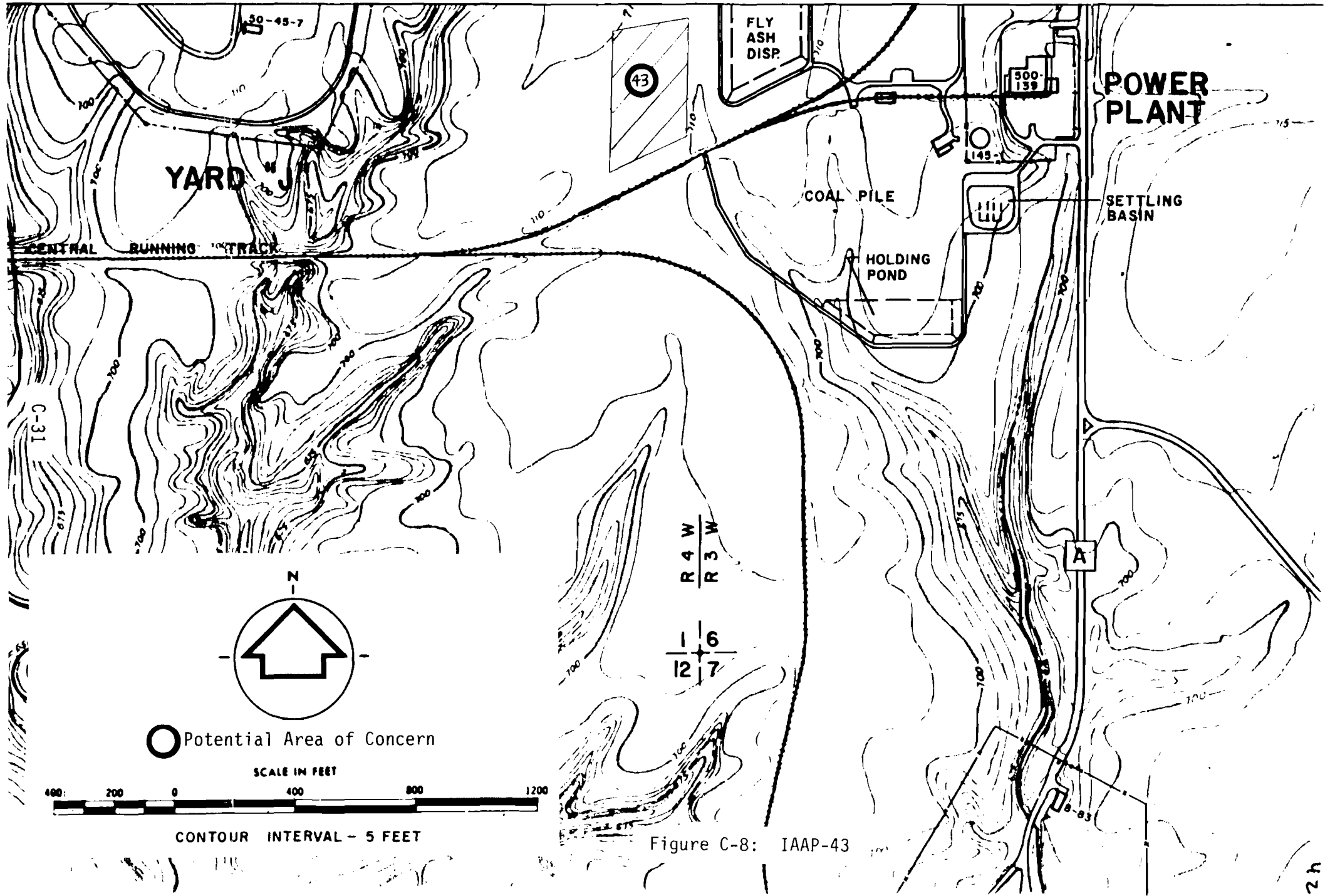
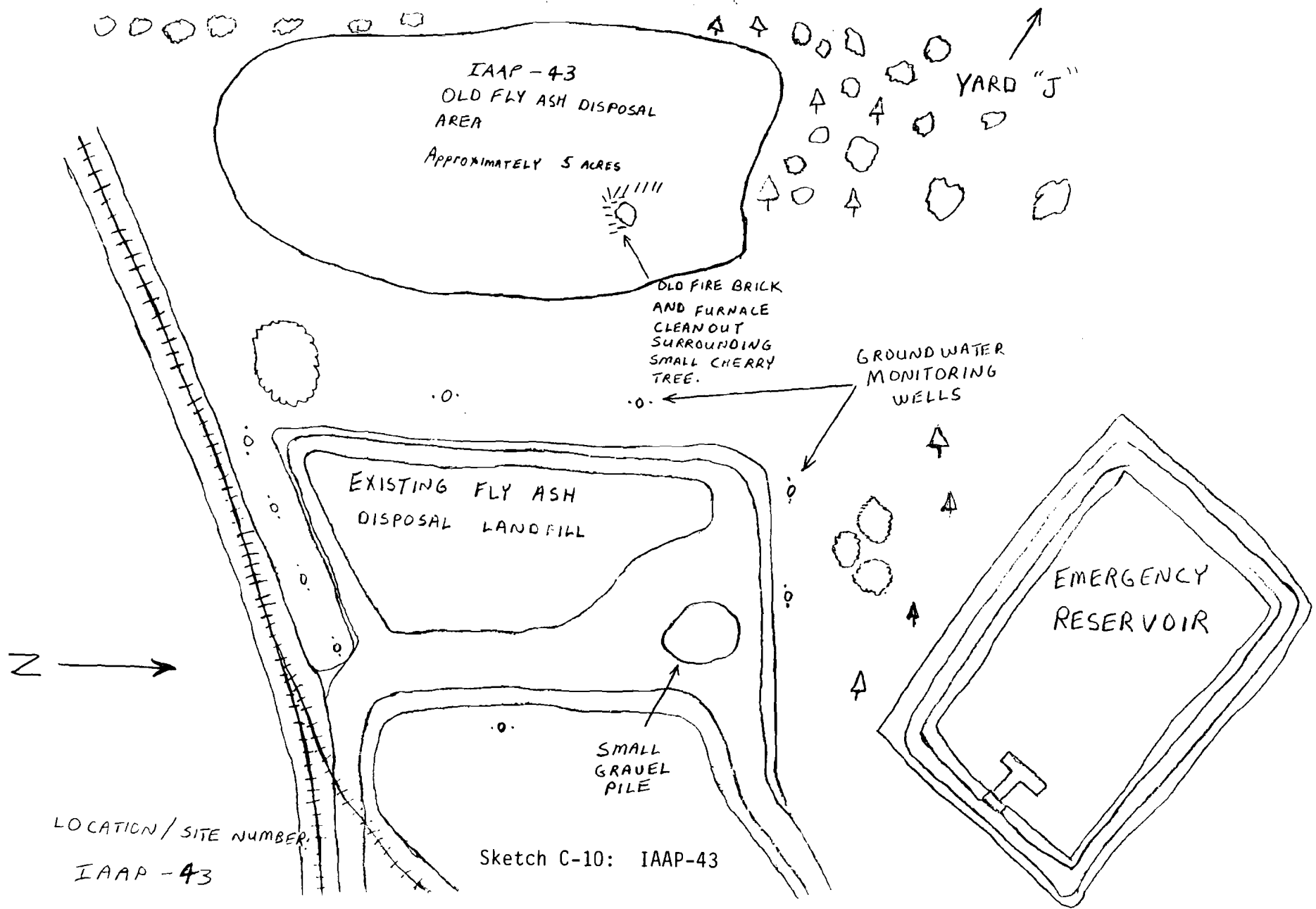


Figure C-8: IAAP-43

C-32



LOCATION/SITE NUMBER:
IAAP-43

Sketch C-10: IAAP-43

APPENDIX D

REFERENCES

POTENTIAL AREAS OF CONCERN SUPPLEMENT

IOWA ARMY AMMUNITION PLANT (IAAP)

REFERENCE DOCUMENTS

1. Federal Facility Agreement between the U.S. Environmental Protection Agency, Region VII, and the U.S. Army in the matter of the Iowa Army Ammunition Plant; Administrative Docket Number: VII-F-90-0029, effective December 1990.
2. RCRA Facility Assessment Guidance; Permits and State Programs Division, Office of Solid Waste, U.S. Environmental Protection Agency; October 1986.
3. Installation Assessment of Iowa Army Ammunition Plant, U.S. Army Toxic and Hazardous Materials Agency, Report No. 127, January 1980.

APPENDIX E

ENVIRONMENTAL ASSESSMENT

BUILDING 600-86

DEPARTMENT OF THE ARMY

(U. S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND)
(AMCCOM)

ENVIRONMENTAL ASSESSMENT

DISPOSAL OF SEPTIC TANK NO. 500-158-2 AND LEACH BED

23 February 1984

Prepared by:

K. R. Miller

K. R. Miller
Engineering Assistant
M&H-SM Co., Inc.

Reviewed by:

R. A. Herman

R. A. Herman
Security Officer
COR Staff

Reviewed by:

J. E. Shannan

J. E. Shannan
Safety Department Manager
M&H-SM Co., Inc.

Reviewed by:

R. O. Haines

R. O. Haines
Safety Manager
COR Staff

F. C. Laue

F. C. Laue
Environmental Coordinator
M&H-SM Co., Inc.

S. H. Mathes

S. H. Mathes
Chief Engineer
COR Staff

Approved by:

R. L. Holmberg

R. L. Holmberg
Vice President & Plant Manager
M&H-SM Co., Inc.

Kernan M. Nucci

Kernan M. Nucci
LTC, OrdC
Commanding

M

MASON & HANGER-SILAS MASON CO., INC.
IOWA ARMY AMMUNITION PLANT
MIDDLETOWN, IOWA

ENVIRONMENTAL ASSESSMENT

DISPOSAL OF SEPTIC TANK NO. 500-158-2 AND LEACH BED

1. PURPOSE, NEED, AND DESCRIPTION OF PROPOSED ACTION:

This action proposes to dispose of septic tank no. 500-158-2 and leach bed by in place disposal. Since the septic tank served Building No. 600-86, a chemical laboratory, the possibility was thought to exist that hazardous chemicals or materials may be present in the tank. The septic tank sludge was analyzed for toxic metals in accordance with the EPA EP toxicity test procedure and for the presence of explosives. The presence of toxic metals and explosives has been determined to be within the limits allowed for sewage. As a result, the sludge will be removed from the septic tank and placed in the installation's sewage collection system for final treatment. The empty septic tank and leach bed will then be disposed in place by completely filling the tank with sand or gravel. In addition, the sewer line to the septic tank will be plugged at its origin inside of Building No. 600-86 to prevent future discharge to the filled septic tank and leach bed. The septic tank and leach bed have been determined to be excess to the future needs of the installation.

2. ALTERNATIVES TO THE PROPOSED ACTION:

The only alternative to the proposed action is to retain an unneeded septic tank and leach bed.

3. ENVIRONMENTAL IMPACTS:

- a. AIR - None
- b. WATER - The final treatment of the septic tank sludge in the installation's sewage collection system will not adversely affect water quality.
- c. SOIL - None

4. LISTING OF AGENCIES OR PERSONS CONSULTED:

- Mr. Leon Shahan, Senior Scientist, Mason & Hanger-Silas Mason Co., Inc., Iowa Army Ammunition Plant.
- Mr. Robert Corrick, Property Manager, Mason & Hanger-Silas Mason Co., Inc., Iowa Army Ammunition Plant.

5. CONCLUSION:

The in place disposal of septic tank no. 500-158-2 and leach bed and the final treatment of the septic tank sludge in the installation's sewage collection system is not expected to adversely affect the environment. Therefore, an Environmental Impact Statement is not required and a Finding of No Significant Impact will be prepared.

23 February 1984

J. M. Farren

Operations Division

P. A. Richardson

Mechanical Division

Subject: Excess of Septic Tank No. 500-158-2 and Leach Bed

- Reference:
1. Interoffice Memo dated 6 June 1983 from J. C. Lestage to R. D. Corrick
 2. Note dated 27 May 1983 from John Mayberry, Materials Management Dept. to P. C. Laue, Environmental Coordinator
 3. Interoffice Memo dated 12 May 1983 from P. A. Richardson to R. S. Ramsey

The septic tank sludge has been analyzed for toxic metals in accordance with the EPA EP Toxicity test procedure and for the presence of explosives. The presence of toxic metals and explosives has been determined to be within the limits allowed for sewage. As a result, the sludge may be removed from the septic tank and placed in the installation's sewage collection system for final treatment. The empty septic tank and the leach bed may be excessed in place by filling the septic tank with sand or gravel. In addition, the sewer line to the septic tank must be plugged at its origin inside of Building No. 600-86 to prevent future discharge to the filled septic tank and leach bed.

J. M. Farren
 J. M. Farren
 Division Manager
 Operations

JMF/ECL/KRM/lh

- cc: J. M. Farren
 J. L. Garnobst/R. D. Corrick (2)
 (RC) A. L. Larson/P. C. Laue (2)
 J. C. Lestage

MASON & HANGER-SILAS MASON CO., INC.

12

IOWA ARMY AMMUNITION PLANT
DEVELOPMENT DEPARTMENT

REPORT OF LABORATORY ANALYSIS

LABORATORY NO.
W-83-1856

AMPLE DESCRIPTION: SEPTIC TANK SLUDGE FROM SEPTIC TANK No. 500-158-2

AMPLE NUMBER(S)/LOT	MIL SPEC/PROCEDURE	DATE SAMPLED
		<u>Nov. 18, 83</u>
SUBMITTED BY	DEPT.	PHONE NO.
<u>F. C. LAUE</u>	<u>620</u>	<u>7538</u>
		DATE RECEIVED
		<u>Nov. 18, 83</u>
		DATE COMPLETED
		<u>Feb. 16, 84</u>

ANALYSIS REQUESTED → EP TOXICITY CONTAMINANTS PLUS TNT AND RDX

PECIFICATION RANGE → Report in mg/l

RESULTS	<u>Results</u> <u>mg/l</u>	<u>Spec Limit</u> <u>mg/l</u>
ARSENIC	<u>0.0</u>	<u>5.0</u>
BARIUM	<u>0.4</u>	<u>100.0</u>
CADMIUM	<u>0.06</u>	<u>1.0</u>
CHROMIUM	<u>0.01</u>	<u>5.0</u>
LEAD	<u>0.14</u>	<u>5.0</u>
MERCURY	<u>0.0</u>	<u>0.2</u>
SELENIUM	<u>0.0</u>	<u>1.0</u>
SILVER	<u>0.0</u>	<u>5.0</u>
TNT	<u>0.02</u>	
RDX	<u>0.10</u>	

134, 20042, 4571
ANALYST(S)

REMARKS:
Rec'd request for analysis on Dec. 5, 83.

- DISTRIBUTION: (CHECK AS APPROPRIATE)
- DEVELOPMENT FILE
 - QUALITY
 - PRODUCTION
 - PRODUCTION ENGINEERING
 - OTHER (SPECIFY) _____

E. J. Bollpeter
LABORATORY APPROVAL

DISPOSITION OF SAMPLE AFTER ANALYSIS

DESTROY RETURN TO _____