LPC #1630000000 -- St. Clair County
Sterling Steel Foundry
ILD006286520

5E0301-A0101

Idigh - GGW
12/16/88

EPA Region 5 Records Ctr.
354533

State Lead

CERCLA

Preliminary Assessment Report

Illinois Environmental Protection Agency
P.O. Box 19276,
Springfield, IL 62794-9276

LPC #1630000000 -- St. Clair County
Sterling Steel Foundry
ILD006286520

September 9, 1988

Executive Summary

Sterling Steel Foundry is one of eighteen suspected hazardous waste sites in the St. Clair County area investigated by Ecology and Environment, Inc. (E & E) under contract by the Illinois EPA. The purpose of the Dead Creek Project was to gather sufficient data to apply the HRS model and characterize site conditions.

The Sterling Steel Foundry site is located in the Village of Sauget and is bordered on the north by the Alton and Southern Railroad; on the west by Monsanto Road; on the south by Little Avenue, and on the east by a Mobil Oil Tank Farm. The facility was initially operated by R. O. Shive and Claude Harrell during 1922. In 1982, St. Louis Steel Company purchased the facility, and the name was changed from Sterling Steel Casting Company to it's present name. According to E & E, the disposal area at the site consist of two main pits, an abandoned incinerator, and several small less evident surface depressions. Historical aerial photographs indicate the initial excavations of the disposal pits occurred sometime during the 1950's. Although a documented inventory of the waste types disposed of in the pits is not available, the site operator claims the pit located southeast of the plant building received scrap metal, demolition debris, and casting sand. The other unlined pit, located north of the plant building, received baghouse dust from furnace operations in the foundry. Prior to implementing a site sampling plan, E & E conducted a geophysical and soil gas survey across the property in attempt to identify more strategic sampling points and buried drum locations.

The geophysical work included a magnetometry and electromagnetic survey. Several small anomalies were detected with both the magnetometry and EM instrumentation. However, on-site observations by E & E suggests that these small anomalies may be a result of buried slag or interference from steel castings and scrap metals which were found at the surface throughout the survey. Results from the soil gas survey indicated four sampling points (SG-79, SG-80, SG-88, SG-89) potentially contained volatile organic gases in concentrations ranging from 65 mg/l to greater than 1000 mg/l. A review of the analytical data generated from surface soil samples taken November 13, 1986, revealed elevated levels of nickel (377 mg/kg) and chromium (500 mg/kg).

Subsurface soil samples collected on December 17, 1986 revealed the presence of organic contaminants in two samples. Ethylbenzene, xylene, 1,4-dichlorobenzene, dibenzofuran, phenanthrene, and Aroclor 1260 were each detected in one sample. The highest total organic concentration detected in subsurface soils was 110 mg/kg in boring J2, located near the southeast corner of the disposal area. Sample J2 was composited from a depth of 15 to 25 feet. No monitoring wells were installed or sampled during the site investigation at Sterling Steel.

The geology in the area consist of unconsolidated alluvium and glacial outwash material. This section is underlain by Mississippian age bedrock and older age bedrock formations. The alluvium consist of two layers, the Cahokia alluvium and the MacKinaw Member of the Henry Formation. These two formations are hydraulically interconnected with a composite thickness ranging from 70 to 120 feet thick. Sand and gravel deposits within this section supply water to several local industries and to private residents who are unable to obtain water from public supplies due to distribution restrictions. The primary source of public drinking water is supplied from the Mississippi River at a water intake 3 miles upstream from the site. The closest downstream intake is 28 miles south of the site and supplies drinking water to the Village of Crystal, Missouri.

On August 31, 1988, IEPA personnel conducted an off-site reconnaissance inspection at the Sterling Steel Foundry site. The facility was operational at the time of the inspection and the property was surrounded by a fence with an unlocked open gate. The disposal pit located on the southeast portion of the property was visible from the perimeter of the site and appeared to be in-active. The surrounding area includes a residential area to the south, the Mississippi River about 1 1/4 miles to the west, and the remaining area is heavily industrialized.

Sterling Steel Foundry has been assigned a high priority for a site inspection. This decision is based on the large population potentially affected by a combination of health hazards associated with the site.

JM:jab/2735j/80-81

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION
01 STATE: ILD | 02 SITE NUMBER: 006286520

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site): STERLING STEEL FOUNDRY

02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER: 2300 FALLING SPRINGS Rd.

03 CITY: SAUGET

04 STATE: IL. | 05 ZIP CODE: 62206 | 06 COUNTY: ST. CLAIR | 07 COUNTY CODE: 163 | 08 CONG DIST: 22

09 COORDINATES LATITUDE: 383542.0 | LONGITUDE: 090 10 00.0

10 DIRECTIONS TO SITE (Starting from nearest public road): I55 SOUTH, TO ROUTE 3 SOUTH, TAKE ROUTE 3 TO MONSANTO AVE (LEFT), TAKE MONSANTO AVE. to FallingSprings Rd (RIGHT), Go ABOUT ¼ mile, ON THE LEFT

III. RESPONSIBLE PARTIES

01 OWNER (If known): ST. LOUIS STEEL Co. (STERLING STEEL Foundry)

02 STREET (Business, mailing, residential): 2300 FALLING SPRINGS Rd

03 CITY: SAUGET

04 STATE: IL | 05 ZIP CODE: 62206 | 06 TELEPHONE NUMBER: 618 337-6123

07 OPERATOR (If known and different from owner): STERLING STEEL FOUNDRY

08 STREET (Business, mailing, residential): 2300 FALLING SPRINGS Rd.

09 CITY: Sauget

10 STATE: IL. | 11 ZIP CODE: 62206 | 12 TELEPHONE NUMBER: 618 337-6123

13 TYPE OF OWNERSHIP (Check one)
☒ A. PRIVATE ☐ B. FEDERAL: _____ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER: _____ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)
☐ A. RCRA 3001 DATE RECEIVED: / / (MONTH DAY YEAR) ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: / / (MONTH DAY YEAR) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
☒ YES DATE 8 30 88 (MONTH DAY YEAR)
☐ NO

BY (Check all that apply)
☐ A. EPA ☐ B. EPA CONTRACTOR ☒ C. STATE ☐ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: _____ (Specify)

CONTRACTOR NAME(S): _____

02 SITE STATUS (Check one)
☐ A. ACTIVE ☒ B. INACTIVE ☐ C. UNKNOWN

03 YEARS OF OPERATION
1922 (BEGINNING YEAR) | Present (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
ORGANIC: (PERSISTANT, TOXIC)
INORGANIC: (PERSISTANT, TOXIC)

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
Groundwater (population, ENVIRONMENT), DIRECT CONTACT (population)
SURFACE WATER (ENVIRONMENT)
ATmosphere (Population, ENVIRONMENT)

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)
☒ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☐ C. LOW (Inspect on time available basis) ☐ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NUMBER
JEFF LARSON	IEPA / RPMS	(217) 782-6760

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
John MORGAN	IEPA	RPMS	(217) 782-6760	9 14 88 (MONTH DAY YEAR)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
ILD	006286520

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. GROUNDWATER CONTAMINATION — 02 [ ] OBSERVED (DATE ____) — POTENTIAL [X] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ____ — 04 NARRATIVE DESCRIPTION

December 17, 1986, E&E drilled 3 subsurface borings ranging from 20 - 25 feet deep. Groundwater was encountered in each boring at an average depth of 13 feet. Analytical results from subsurface soil samples indicate organic contamination to a maximum depth of 25 feet. Therefore, it is alleged that groundwater contamination has occurred.

01 [X] B. SURFACE WATER CONTAMINATION — 02 [ ] OBSERVED (DATE: ____) — [ ] POTENTIAL [X] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ____ — 04 NARRATIVE DESCRIPTION

Based on groundwater modeling conducted by E&E, groundwater from the Dead Creek Project area is discharging into the Mississippi River at maximum rates of 69.93 lb./day and 219 lb./day. Due to the widespread subsurface contamination at Sterling, it is alleged that contaminants from the site is contributing to surface water degradation.

01 [X] C. CONTAMINATION OF AIR — 02 [ ] OBSERVED (DATE ____) — [X] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ____ — 04 NARRATIVE DESCRIPTION

Results from a soil gas survey conducted by E&E, indicate four sampling points (SG-79, SG-80, SG-88, SG-89) potentially contained volatile organic gases in concentrations ranging from 65 mg/L to greater than 1000 mg/L.

01 [ ] D. FIRE/EXPLOSIVE CONDITIONS — 02 [ ] OBSERVED (DATE: ____) — [ ] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ____ — 04 NARRATIVE DESCRIPTION

unknown

01 [X] E. DIRECT CONTACT — 02 [ ] OBSERVED (DATE: ____) — [X] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ____ — 04 NARRATIVE DESCRIPTION

Contamination has been detected in the surface soil and the pits have not received proper closure and final cover. The propery is surrounded by a fence with a open unlocked gate.

01 [X] F. CONTAMINATION OF SOIL — 02 [X] OBSERVED (DATE 12/7/86) — [ ] POTENTIAL [ ] ALLEGED
03 AREA POTENTIALLY AFFECTED: ____ (Acres) — 04 NARRATIVE DESCRIPTION

Subsurface soil samples collected at the above observed date indicate subsurface soil contamination to depth of 25 feet. (SEE PART 2, Sec III of this form for specific chemicals detected.

01 [X] G. DRINKING WATER CONTAMINATION — 02 [X] OBSERVED (DATE 3/26/87) — [ ] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ____ — 04 NARRATIVE DESCRIPTION

Although the primary source of public drinking water is supplied from the Mississippi River at a water intake 3 miles upstream from the site, private residents who are unable to obtain water from public supplies due to distribution restrictions still rely on groundwater as their source of drinking water. Four private wells tested by E&E indicated low-level organic contamination.

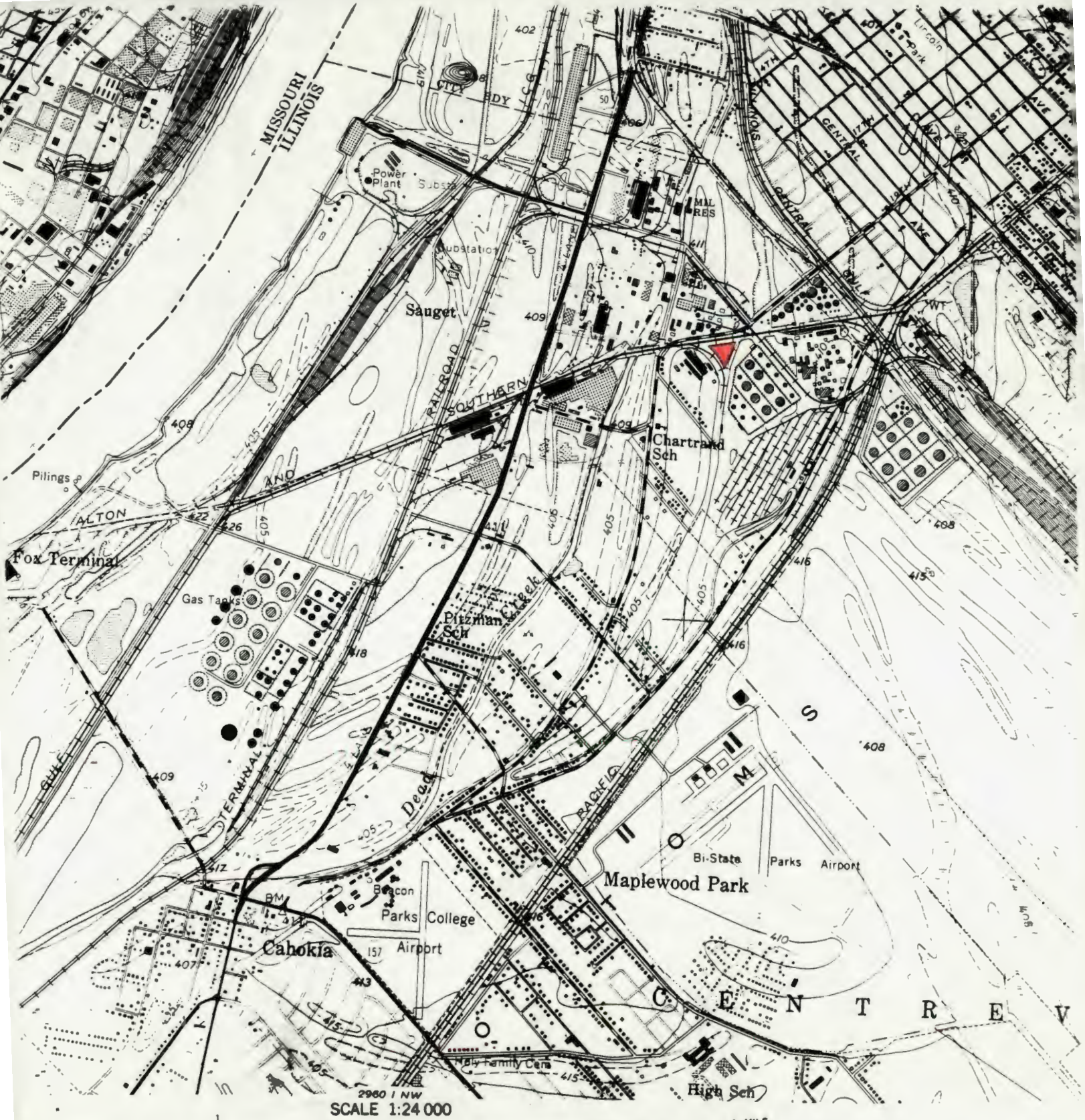
01 [ ] H. WORKER EXPOSURE/INJURY — 02 [ ] OBSERVED (DATE ____) — [ ] POTENTIAL [ ] ALLEGED
03 WORKERS POTENTIALLY AFFECTED: ____ — 04 NARRATIVE DESCRIPTION

unknown

01 [ ] I. POPULATION EXPOSURE/INJURY — 02 [ ] OBSERVED (DATE: ____) — [ ] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ____ — 04 NARRATIVE DESCRIPTION

unknown.

JO DAVIESS
STEPHENSON
WINNEBAGO
BOONE
MCHENRY
LAKE
CARROLL
OGLE
DEKALB
KANE
COOK
DU PAGE
WHITESIDE
LEE
KENDALL
WILL
LASALLE
HENRY
BUREAU
GRUNDY
ROCK ISLAND
MERCER
KANKAKEE
STARK
PUTNAM
KNOX
MARSHALL
LIVINGSTON
WARREN
HENDERSON
IROQUOIS
PEORIA
WOODFORD
McLEAN
FULTON
HANCOCK
McDONOUGH
FORD
VERMILION
TAZEWELL
CHAMPAIGN
SCHUYLER
LOGAN
DEWITT
ADAMS
MASON
MENARD
CASS
MACON
BROWN
MORGAN
SANGAMON
PIATT
DOUGLAS
EDGAR
PIKE
MOULTRIE
COLES
SCOTT
GREENE
MACOUPIN
CHRISTIAN
CLARK
CALHOUN
MONTGOMERY
SHELBY
CUMBERLAND
JERSEY
FAYETTE
JASPER
MADISON
BOND
EFFINGHAM
CRAWFORD
CLAY
RICHLAND
LAWRENCE
MARION
CLINTON
ST CLAIR
WAYNE
WABASH
EDWARDS
JEFFERSON
MONROE
WASHINGTON
RANDOLPH
PERRY
WHITE
HAMILTON
FRANKLIN
JACKSON
SALINE
GALLATIN
WILLIAMSON
UNION
JOHNSON
POPE
HARDIN
ALEXANDER
PULASKI
MASSAC
STERLING STEEL FOUNDRY, SAUGET, IL.
SITE LOCATION



SCALE 1:24 000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

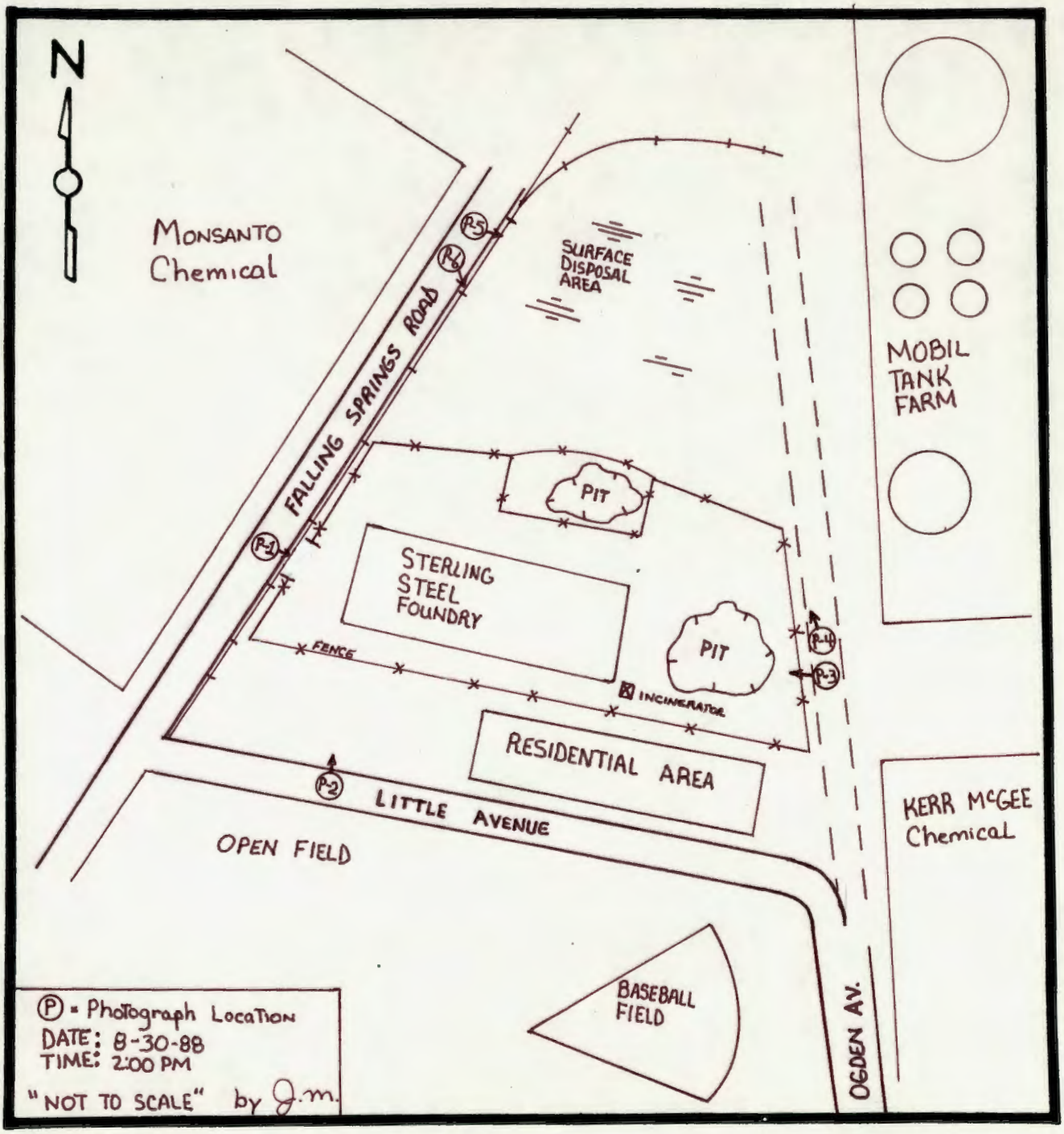
CONTOUR INTERVAL 10 FEET
DOTTED LINES REPRESENT 5-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
STATE GEOLOGICAL SURVEY, URBANA, ILLINOIS 61801,
AND BY THE DIVISION OF RESEARCH AND TECHNICAL INFORMATION
MISSOURI DEPARTMENT OF NATURAL RESOURCES, ROLLA, MISSOURI 65401
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

Revisions shown in purple compiled by the Geolc
Survey from aerial photographs taken 1968 and
This information not field checked

SITE MAP


N
MONSANTO Chemical
FALLING SPRINGS ROAD
P-5
P-6
SURFACE DISPOSAL AREA
MOBIL TANK FARM
PIT
P-1
STERLING STEEL FOUNDRY
FENCE
PIT
P-4
P-3
INCINERATOR
RESIDENTIAL AREA
P-2
LITTLE AVENUE
OPEN FIELD
KERR McGEE Chemical
BASEBALL FIELD
OGDEN AV.
P = Photograph Location
DATE: 8-30-88
TIME: 2:00 PM
"NOT TO SCALE" by J.m.

Illinois Environmental Protection Agency	N	SITE NAME ..... SITE ILD # .....
USGS TOPOGRAPHIC MAPS		
NAME GRANITE CITY DATE 1954 REVISED 1982	NAME MONK MOUND DATE 1954 REVISED 1982	QUADRANGLE LOCATION
NAME CAHOKIA DATE 1954 REVISED 1982	NAME FRENCH VILLAGE DATE 1954 REVISED 1982	

MAP SCALE: 1 0 1 mile

DATE: 8-30-88

TIME: 2:00 PM

Photograph by:

JOHN MORGAN

Location:

STERLING STEEL, SAUGET, ILLINOIS

Comments: Picture taken toward EAST:

#P-1

DATE: 8-30-88

TIME: 2:05 PM

Photograph by:

JOHN MORGAN

Location: STERLING STEEL

Comments: Picture taken toward NORTH:

#P-2

DATE: 8-30-88

TIME: 2:00 PM

Photograph by:

JOHN MORGAN

Location:

STERLING STEEL, SAUGET, ILLINOIS

Comments: Picture taken toward EAST:

#P-1

DATE: 8-30-88

TIME: 2:05 PM

Photograph by:

JOHN MORGAN

Location: STERLING STEEL

Comments: Picture taken toward NORTH:

#P-2

DATE: 8-30-88

TIME: 2:20 PM

Photograph by:

JOHN MORGAN

Location:

STERLING STEEL, SAUGET, ILL.

Comments: Picture taken toward

EAST

#P-5 (SURFACE DISPOSAL AREA)

DATE: 8-30-88

TIME: 2:20 PM

Photograph by:

JOHN MORGAN

Location: STERLING STEEL, SAUGET.

Comments: Picture taken toward

SE.

#P-6 (SMALL DISPOSAL PIT)

DATE: 8-30-88

TIME: 2:10 PM

Photograph by:

JOHN MORGAN

Location:

STERLING STEEL, SAUGET, IL.

Comments: Picture taken toward

WEST

#P-3 (ABANDON PIT)

DATE: 8-30-88

TIME: 2:10 PM

Photograph by:

JOHN MORGAN

Location: STERLING STEEL FOUNDRY.

Comments: Picture taken toward

NORTH

#P-4 (EAST PERIMETER OF Property LINE)

Supporting

Documentation

Reference Sheet

"Document 1" (Lab results and sample location maps) Division of Land, IEPA

Note: All information taken from the Dead Creek Project (Sauget Sites) report, compiled by Ecology and Environment, Inc., Division of Land, IEPA

Explanation For Analytical Data Summary Tables

All ground water results in ug/l.
All soil/sediment organic results in ug/kg
All soil/ sediment inorganic results in mg/kg

For sample location headings, the following qualifiers are used :

+	Denotes blank samples.
*	Denotes duplicate samples.
^	Denotes that sample was not analyzed for the compounds listed.

For chemical results, the folling qualifiers are used :

B	Compound detected in blank samples.
J	Estimated value . Result is less than the specified detection limit, but greater than zero.
E	Estimated value. Concentration detected exceeds the calibrated range.
C	Result confirmed by GC/MS.
*	Duplicate analysis not with in control limits.
R	Spike sample recovery not with in control limits.

Table 4-16

SUMMARY OF SUBSURFACE SOIL SAMPLING RESULTS FOR SITE J

Chemical Name	Number of Times Detected*	Highest Concentration Detected (mg/kg)	Sample Containing Highest Concentration
Volatile Organics			
ethylbenzene	1	2	J2-12
xylene	1	8	J2-12
Semivolatile Organics			
1,4-dichlorobenzene	1	0.21J	J3-13
1,2-dichlorobenzene	1	0.1J	J3-13
naphthalene	1	18	J2-12
2-methylnaphthalene	1	61	J2-16
dibenzofuran	1	1J	J2-12
fluorene	1	3.5J	J2-12
phenanthrene	1	14	J2-12
anthracene	1	0.91J	J2-12
Pesticides/PCBs			
Aroclor 1260	1	0.18	J3-13

* A total of 3 subsurface soil samples were collected from Site J. The numbers listed represent the number of samples, of the total of 3, in which each compound was detected.

J Estimated value. Result is greater than zero, but less than the specified detection limit.

Source: Ecology and Environment, Inc. 1988.

Subsurface Soil Inorganics

	SITE	SITE I	SITE I	SITE I	BLANK	SITE I	SITE I	SITE I	SITE I	SITE I	SITE I	SITE I	SITE I	SITE I	SITE I	SITE J
	SAMPLE NUMBER	DC-15-41	DC-15-42	DC-16-43	DC-18-44	DC-17-45	DC-17-46	DC-17-47	DC-19-48	DC-19-49	DC-110-50	DC-111-51	DC-111-52	DC-112-57	DC-112-58	DC-31-11
	SAMPLE DEPTH	5'-27.5'	28'-38'	10'-25'		3.5'-12.5'	13'-23'	13'-23'	6'-23'	24'-30'	15'-30'	6'-20'	26'-39'	3.5'-12.5'	18.5'-27.5'	10'-20'
	DATE SAMPLED	1-30-87	1-30-87	2-2-87	2-3-87	2-3-87	2-3-87	2-3-87	2-4-87	2-4-87	2-4-87	2-5-87	2-5-87	2-13-87	2-13-87	12-17-86
1	Aluminum	2063	1060	1252	8103	7195	2863	2747	8897	1556	1687	6650	1011	1449	1205	6904
2	Antimony		14	18	15							6663				
3	Arsenic	3		14	7	5	3	2	14		1			2 R		3 B
4	Barium	3544		400	347	338	83	82	519			8				156
5	Beryllium											1530				
6	Boron															
7	Cadmium	2		2	2	2			13							
8	Chromium, trivalent	35		731	12	23	5	5	96	4	6	7		4	4	9
9	Cobalt	22		22					34		13	140				4
10	Copper	157		149	28	258			575			23				9
11	Iron	11418	3553	23231	14744	14935	7300	7468	27647	4667	4687	543	2867	4899	4297	[illegible]
12	Lead	232 B	6 B	292 B			10 B	10 B	5647 B	704	9 B	23333	29 B	7 B	3 B	7 B
13	Manganese	115 R	35 R	143 R	395 R	248 R	124 R	125 R	240 R	35 R	61 R	5483 B	43 R	98 B	63 B	238
14	Mercury	1.1		1.5					3.2			240 R				
15	Nickel	2405	31	51	15	35		11	206		145	0.9	11			11
16	Selenium											1320				
17	Silver															
18	Thallium															
19	Tin			14	4	12	4	3	24	5	2					
20	Vanadium	20		69	21	18			40							15
21	Zinc	201	13	652	203	939	29	27	1156	125	89	43	18	21 B	20 B	36
22	Cyanide	3							2			3183				

Subsurface Soil Inorganics

	SITE	SITE J	SITE J	SITE K	SITE K	SITE K	BLANK	SITE L	SITE L	SITE L	SITE L	SITE L	SITE N	SITE N	BLANK	SITE P
	SAMPLE NUMBER	DC-J2-12	DC-J3-13	DC-K1-08	DC-K2-25	DC-K3-32	DC-LB-01 +	DC-L1-02	DC-L2-03	DC-L3-04	DC-L4-09	DC-L4-10 *	DC-N1-05	DC-N2-06	DC-NB-07 +	DC-P1-53
	SAMPLE DEPTH	15'-25'	0-10'	0-10'	0-10'	10'-20'		5'-10'	5'-15'	5'-15'	10'-20'	10'-20'	0-10'	5'-15'		0-10'
	DATE SAMPLED	12-17-86	12-17-86	12-16-87	1-12-87	1-22-87	12-12-86	12-12-86	12-12-86	12-12-86	12-17-86	12-17-86	12-15-86	12-15-86	12-16-86	2-11-87
1	Aluminum	5026	2522	4788	9073	10076	9397	10697	5205	7380	1120	1378	4763	1924	9385	5013
2	Antimony								32							
3	Arsenic	2 *	6 *	9 *	8 R	9 R	6 *	5 *		172	55 *	68 *	3 *	2 *	6 *	
4	Barium	106	44	112	202	192	418	197	192	192	114	142	130	46	358	126
5	Beryllium															
6	Boron															
7	Cadmium		4	2	1	4			6						2	4
8	Chromium, trivalent	7	55	351	22	15		16	15	10		3	8	5	13	16
9	Cobalt	4	5	11				6	9	9			4	3	7	
10	Copper	6	83	44	39	129		12	105	141	82	101	10	5	33	50
11	Iron	7320	5489	17765	22439	20000	13846	16053	5564	11899	1500	1446	820	6253	16026	12750
12	Lead	5 *	10 *	107 *	132 R	238 R	43 *	9 *	106	41	5 *	5 *	24	34 *	78 *	
13	Manganese	113	827	499	388	606	345	235	44	149	10	10	164	82	429	201 *
14	Mercury			2.2	0.4	0.2				0.1				9		3.9
15	Nickel	8	72	20	20	21	14	21	408	2392	83	93	11		18	25 *
16	Selenium															
17	Silver															
18	Thallium															
19	Tin					13										
20	Vanadium			16	29	27	22	25	10	19					21	19
21	Zinc	24	70	235	245	503	178	59	144	166	11	10	42	65	182	463 *
22	Cyanide			9												

Subsurface Soils Pest/PCBs

SITE	SITE J	SITE J	SITE K	SITE K	SITE K	BLANK	SITE L	SITE L	SITE L	SITE L	SITE L	SITE N	SITE N	BLANK	SITE P
SAMPLE NUMBER	DC-J2-12	DC-J3-13	DC-K1-08	DC-K2-25	DC-K3-32	DC-LB-01 +	DC-LI-02	DC-L2-03	DC-L3-04	DC-L4-09	DC-L4-10 &	DC-N1-05	DC-N2-06	DC-NB-07 +	DC-P1-53
SAMPLE DEPTH	15'-25'	0-10'	0-10'	0-10'	10'-20'		5'-10'	5'-15'	5'-15'	10'-20'	10'-20'	0-10'	5'-15'		0-10'
DATE SAMPLED	12-17-86	12-17-86	12-16-87	1-12-87	1-22-87	12-12-86	12-12-86	12-12-86	12-12-86	12-17-86	12-17-86	12-15-86	12-15-86	12-16-86	2-11-87
1 Alpha-BHC															
2 Beta-BHC															
3 Delta-BHC															
4 Gamma-BHC (Lindane)															
5 Heptachlor															
6 Aldrin															
7 Heptachlor Epoxide															
8 Edosulfan I															
9 Dieldrin															
10 4,4'-DDE															
11 Endrin															
12 Edosulfan II															
13 4,4'-DDD															
14 Endosulfan Sulfate															
15 4,4'-DDT															
16 Methoxychlor															
17 Endrin Ketone															
18 Chlordane															
19 Toxaphene															
20 AROCLOR-1016															
21 AROCLOR-1221															
22 AROCLOR-1232															
23 AROCLOR-1242					19000										
24 AROCLOR-1248			117647 C	4890											
25 AROCLOR-1254															
26 AROCLOR-1260		179		6344											

Subsurface Soils Volatiles

SITE	SITE J	SITE J	SITE K	SITE K	SITE K	BLANK	SITE L	SITE L	SITE L	SITE L	SITE L	SITE N	SITE N	BLANK	SITE P
SAMPLE NUMBER	DC-J2-12	DC-J3-13	DC-K1-08	DC-K2-25	DC-K3-32	DC-LB-01 +	DC-L1-02	DC-L2-03	DC-L3-04	DC-L4-09	DC-L4-10 *	DC-N1-05	DC-N2-06	DC-NB-07 +	DC-P1-53
SAMPLE DEPTH	15'-25'	0-10'	0-10'	0-10'	10'-20'		5'-10'	5'-15'	5'-15'	10'-20'	10'-20'	0-10'	5'-15'		0-10'
DATE SAMPLED	12-17-86	12-17-86	12-16-87	1-12-87	1-22-87	12-12-86	12-12-86	12-12-86	12-12-86	12-17-86	12-17-86	12-15-86	12-15-86	12-16-86	2-11-87
1 Chloroethane															
2 Bromoethane															
3 Vinyl Chloride															
4 Chloroethane															
5 Methylene Chloride	372 BJ	3 BJ	6 B	13 B	9 B	17 B	14 B	141 B	2278 B	B	5 J	4 BJ	6 J	4 BJ	18 B
6 Acetone	4487 B	467 BE	212 B	44 B	1003 EB	32 B	907 B	449 B	4557 B	32 B	81 B	45 B	11 BJ	23 B	1025 BE
7 Carbon Disulfide															
8 1,1-Dichloroethene															
9 1,1-Dichloroethane															
10 trans-1,2-Dichloroethene															
11 Chloroform									20253	96	49				13
12 1-2-Dichloroethane															
13 2-Butanone (MEK)	6026 B		25 B	29 B	29 B		16		10000 B	16 B			14 J		188 B
14 1,1,1-Trichloroethane															
15 Carbon Tetrachloride															
16 Vinyl Acetate															
17 Bromodichloroethane															
18 1,2-Dichloropropane															
19 trans-1,3-Dichloropropene															
20 Trichloroethene															
21 Dibromochloroethane															
22 1,1,2-Trichloroethane															
23 Benzene								141	4177	7 J	4 J				49
24 cis-1,3-Dichloropropene															
25 2-Chloroethyl Vinyl Ether															
26 Bromoform															
27 4-Methyl-2-pentanone		4 J	11 J				8 J	167		68 B	49 B	4 J			49
28 2-Hexanone															38
29 Tetrachloroethene															
30 1,1,2,2-Tetrachloroethane															
31 Toluene			15					2179	26582	93	30				413
32 Chlorobenzene															138
33 Ethylbenzene	2051							40 J							119
34 Styrene															
35 Total Xylenes	7949							179	670 J						450

Subsurface Soils Semivolatiles

SITE	SITE I	SITE I	SITE J	SITE J	SITE J	SITE K	SITE K	SITE K	BLANK	SITE L	SITE L	SITE L	SITE L	SITE L
SAMPLE NUMBER	DC-112-57	DC-112-58	DC-J1-11	DC-J2-12	DC-J3-13	DC-K1-08	DC-K2-25	DC-K3-32	DC-LB-01 +	DC-L1-02	DC-L2-03	DC-L3-04	DC-L4-09	DC-L4-10 1
SAMPLE DEPTH	3.5'-12.5'	18.5'-27.5'	10'-20'	15'-25'	0-10'	0-10'	0-10'	10'-20'		5'-10'	5'-15'	5'-15'	10'-20'	10'-20'
DATE SAMPLED	2-13-87	2-13-87	12-17-86	12-17-86	12-17-86	12-16-87	1-12-87	1-22-87	12-12-86	12-12-86	12-12-86	12-12-86	12-17-86	12-17-86
1 Dimethyl Phthalate														
2 Acenaphtylene							220 J							
3 3-Nitroaniline														
4 Acenaphthene				2179 J		150 J					44 J			
5 2,4-Dinitrophenol														
6 4-Nitrophenol														
7 Dibenzofuran				1013 J		129 J	104 J							
8 2,4-Dinitrotoluene														
9 2,6-Dinitrotoluene														
10 Diethylphthalate														310 J
11 4-Chlorophenyl-Phenylether														
12 Fluorene				3462 J			195 J							
13 4-Nitroaniline														
14 4,6-Dinitro-2-methylphenol														
15 N-Nitrosodiphenylamine														
16 4-Bromophenyl-phenylether														
17 Hexachlorobenzene														
18 Pentachlorophenol											11538	58226		
19 Phenanthrene				14103		1529 J	1708	559	45 J		602	1772 J		
20 Anthracene				910 J		294 J	415							
21 Di-n-butyl phthalate		134 J					378 BJ	1329 B		171 J	372 J	2784		
22 Fluoranthene						1765 J	2196	1208			448			
23 Pyrene				462 J		1765 J	1342	634			282 J			
24 Butyl Benzyl phthalate														
25 3,3'-Dichlorobenzidine														
26 Benzo(a)Anthracene						941 J	878	332 J				911 J		
27 bis(2-ethylhexyl) phthalate			1027	2949 J	1100	21176 E	1074	4681 B			1217		750	1297
28 Chrysene						1035 J	891	544			205 J			
29 Di-n-octyl phthalate						2941	146 J	302 J						
30 Benzo(b)Fluoranthene						1035	1220	619						
31 Benzo(k)Fluoranthene														
32 Benzo(a)Pyrene						929 J	939	378 J						
33 Indeno(1,2,3-cd)Pyrene							610							
34 Benzo(g,h,i)Perylene							598							
35 Dibenz(a,h)Anthracene														

Subsurface Soils Semivolatiles

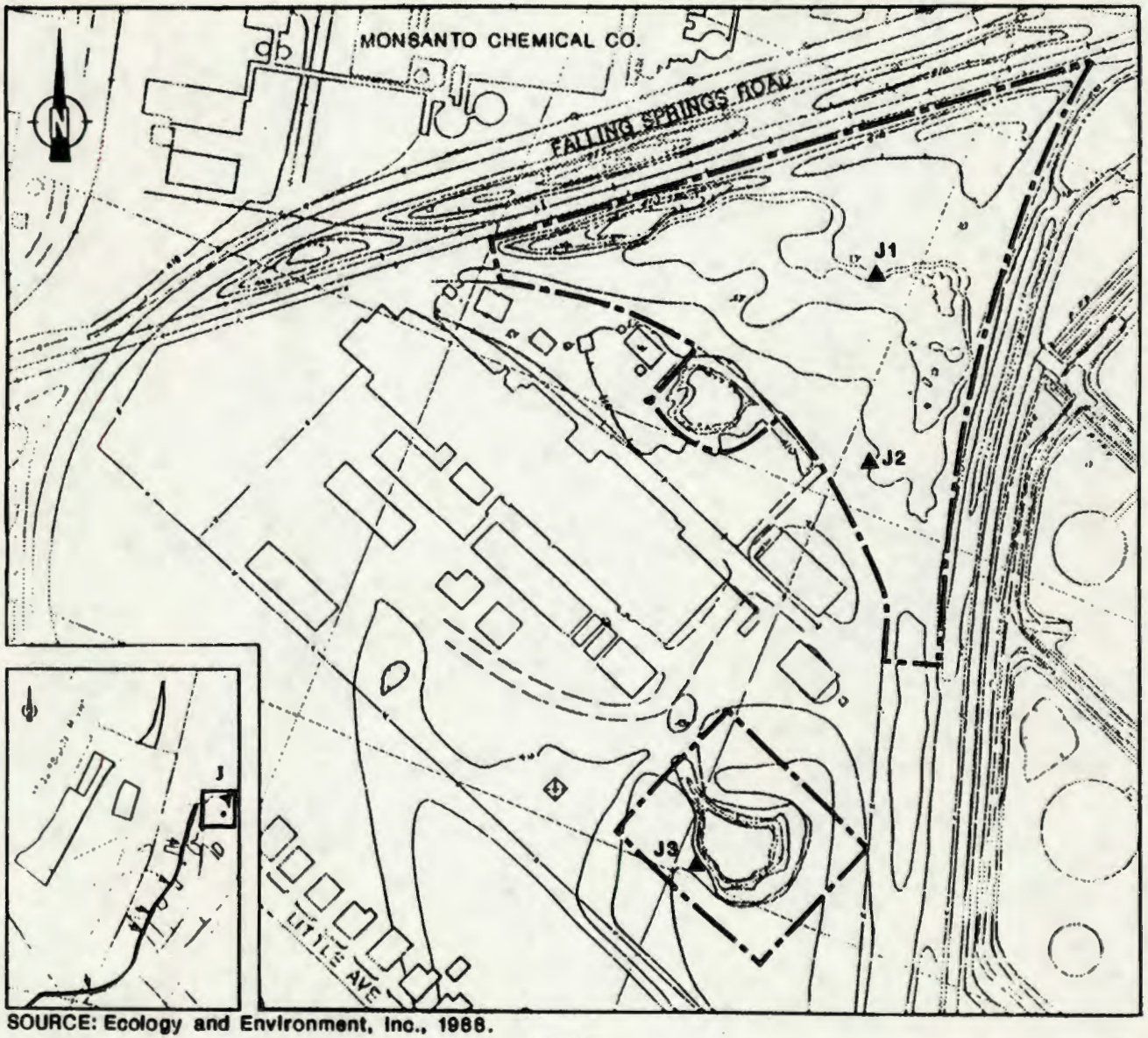
	SITE	SITE I	SITE I	SITE J	SITE J	SITE J	SITE K	SITE K	SITE K	BLANK	SITE L	SITE L	SITE L	SITE L	SITE L
	SAMPLE NUMBER	BC-I12-57	BC-I12-58	BC-J1-11	BC-J2-12	BC-J3-13	BC-K1-08	BC-K2-25	BC-K3-32	BC-LB-01 +	BC-L1-02	BC-L2-03	BC-L3-04	BC-L4-09	BC-L4-10 +
	SAMPLE DEPTH	3.5'-12.5'	18.5'-27.5'	10'-20'	15'-25'	0-10'	0-10'	0-10'	10'-20'		5'-10'	5'-15'	5'-15'	10'-20'	10'-20'
	DATE SAMPLED	2-13-87	2-13-87	12-17-86	12-17-86	12-17-86	12-16-87	1-12-87	1-22-87	12-12-86	12-12-86	12-12-86	12-12-86	12-17-86	12-17-86
1	Diethyl Phthalate														
2	Acenaphtylene							220 J							
3	3-Nitroaniline														
4	Acenaphthene				2179 J		190 J					44 J			
5	2,4-Dinitrophenol														
6	4-Nitrophenol														
7	Dibenzofuran				1013 J		129 J	104 J							
8	2,4-Dinitrotoluene														
9	2,6-Dinitrotoluene														
10	Diethylphthalate														310 J
11	4-Chlorophenyl-Phenylether														
12	Fluorene				3462 J			195 J							
13	4-Nitroaniline														
14	4,6-Dinitro-2-methylphenol														
15	N-Nitrosodiphenylamine														
16	4-Bromophenyl-phenylether														
17	Hexachlorobenzene														
18	Pentachlorophenol											11530	50220		
19	Phenanthrene				14105		1329 J	1708	599	45 J		602	1772 J		
20	Anthracene				910 J		294 J	415							
21	Di-n-butyl phthalate		134 J					378 BJ	1329 B		171 J	372 J	2784		
22	Fluoranthene						1765 J	2196	1208			448			
23	Pyrene				462 J		1765 J	1342	634			282 J			
24	Butyl Benzyl phthalate														
25	3,3'-Dichlorobenzidine														
26	Benzo(a)Anthracene						941 J	878	332 J				911 J		
27	bis(2-ethylhexyl) phthalate			1027	2949 J	1100	21176 E	1074	4681 B			1217		750	1297
28	Chrysene						1035 J	891	544			205 J			
29	Di-n-octyl phthalate						2941	146 J	302 J						
30	Benzo(b)Fluoranthene						1035	1220	619						
31	Benzo(k)Fluoranthene														
32	Benzo(a)Pyrene						929 J	939	378 J						
33	Indeno(1,2,3-cd)Pyrene							610							
34	Benzo(g,h,i)Perylene							598							
35	Dibenz(a,h)Anthracene														

Subsurface Soils Semivolatiles

SITE	SITE I	SITE I	SITE J	SITE J	SITE J	SITE K	SITE K	SITE K	BLANK	SITE L	SITE L	SITE L	SITE L	SITE L
SAMPLE NUMBER	DC-I12-57	DC-I12-58	DC-J1-11	DC-J2-12	DC-J3-13	DC-K1-08	DC-K2-25	DC-K3-32	DC-LB-01	DC-L1-02	DC-L2-03	DC-L3-04	DC-L4-09	DC-L4-10
SAMPLE DEPTH	3.5'-12.5'	18.5'-27.5'	10'-20'	15'-25'	0-10'	0-10'	0-10'	10'-20'		5'-10'	5'-15'	5'-15'	10'-20'	10'-20'
DATE SAMPLED	2-13-87	2-13-87	12-17-86	12-17-86	12-17-86	12-16-87	1-12-87	1-22-87	12-12-86	12-12-86	12-12-86	12-12-86	12-17-86	12-17-86
1 Phenol											346 J	1519 J		
2 bis(2-Chloroethyl)ether														
3 2-Chlorophenol												2152		
4 1,3-Dichlorobenzene														
5 1,4-Dichlorobenzene					211 J							215 J		
6 Benzyl Alcohol														
7 1,2-Dichlorobenzene					100 J									
8 2-Methylphenol														
9 bis(2-Chloroisopropyl) ether														
10 4-Methylphenol											88 J	1089 J		
11 N-Nitroso-n-Dipropylamine														
12 Hexachloroethane														
13 Nitrobenzene														49 J
14 Isophorone														
15 2-Nitrophenol														
16 2,4-Dimethylphenol														
17 Benzoic Acid														
18 bis-(2-Chloroethoxy)methane														
19 2,4-Dichlorophenol														
20 1,2,4-Trichlorobenzene						96 J								
21 Naphthalene				17949		153 J		48 J			154 J	532 J		
22 4-Chloroaniline														
23 Hexachlorobutadiene														
24 4-Chloro-3-methylphenol														
25 2-Methylnaphthalene				61538		118 J					333 J	1000 J		
26 Hexachlorocyclopentadiene														
27 2,4,6-Trichlorophenol														
28 2,4,5-Trichlorophenol														
29 2-Chloronaphthalene														
30 2-Nitroaniline														

Subsurface Soils Volatiles

SITE	SITE I	SITE I	SITE I	BLANK	SITE I	SITE I	SITE I	SITE I	SITE I	SITE I	SITE I	SITE I	SITE I	SITE I	SITE J
SAMPLE NUMBER	DC-15-41	DC-15-42	DC-16-43	DC-18-44	DC-17-45	DC-17-46	DC-17-47 B	DC-19-48	DC-19-49	DC-110-50	DC-111-51	DC-111-52	DC-112-57	DC-112-58	DC-J1-11
SAMPLE DEPTH	5'-27.5'	20'-38'	10'-25'		3.5'-12.5'	13'-23'	13'-23'	6'-23'	24'-30'	15'-30'	6'-20'	26'-39'	3.5'-12.5'	18.5'-27.5'	10'-20'
DATE SAMPLED	1-30-87	1-30-87	2-2-87	2-3-87	2-3-87	2-3-87	2-3-87	2-4-87	2-4-87	2-4-87	2-5-87	2-5-87	2-13-87	2-13-87	12-17-86
1 Chloroethane															
2 Bromoethane															
3 Vinyl Chloride															
4 Chloroethane															
5 Methylene Chloride	5207 B	5310 B	1047 BJ	6 B	7 B	15 B	13 B	1117 BJ	418 BJ	636 BJ	852 BJ	46 B	17 B	17 B	5 BJ
6 Acetone	10541 B	6726 B	13398 B	10 JB	1950 EB	850 EB	914 EB	13377 B	5289 B	6480 B	13861 B	708 B	1461 BE	549 BE	562 BE
7 Carbon Disulfide															
8 1,1-Dichloroethene															
9 1,1-Dichloroethane															
10 trans-1,2-Dichloroethene					3 J										
11 Chloroform															
12 1-2-Dichloroethane															
13 2-Butanone (MEK)	13970 B	9794 B	9702 B	18	30		23	10731 B	4059 B	8640 B	14696 B	168 B	12 B	27 B	22 B
14 1,1,1-Trichloroethane										432 J					
15 Carbon Tetrachloride															
16 Vinyl Acetate															
17 Bromodichloromethane															
18 1,2-Dichloropropane															
19 trans-1,3-Dichloropropene															
20 Trichloroethene	3810									648 J					
21 Dibromochloromethane															
22 1,1,2-Trichloroethane															
23 Benzene	24130	637 J	2156					1000 J	107 J	1008 J	3340	23 J			
24 cis-1,3-Dichloropropene															
25 2-Chloroethyl Vinyl Ether															
26 Bromoform															
27 4-Methyl-2-pentanone			4158											1 BJ	
28 2-Hexanone															
29 Tetrachloroethene	2667	2950								612 J					
30 1,1,2,2-Tetrachloroethane															
31 Toluene	24130 B	1652 JB	5087					77910	1353 B	3170	1837	49			
32 Chlorobenzene	45720	14160	7854		10			3234	935	2640	108550	2040			
33 Ethylbenzene	9779	3068	5082					588 J	283 J	8160	1035 J	96			
34 Styrene															
35 Total Xylenes	11049	1652 J	4158					867 J	102 J	2760	1620 J	80			



SOURCE: Ecology and Environment, Inc., 1988.

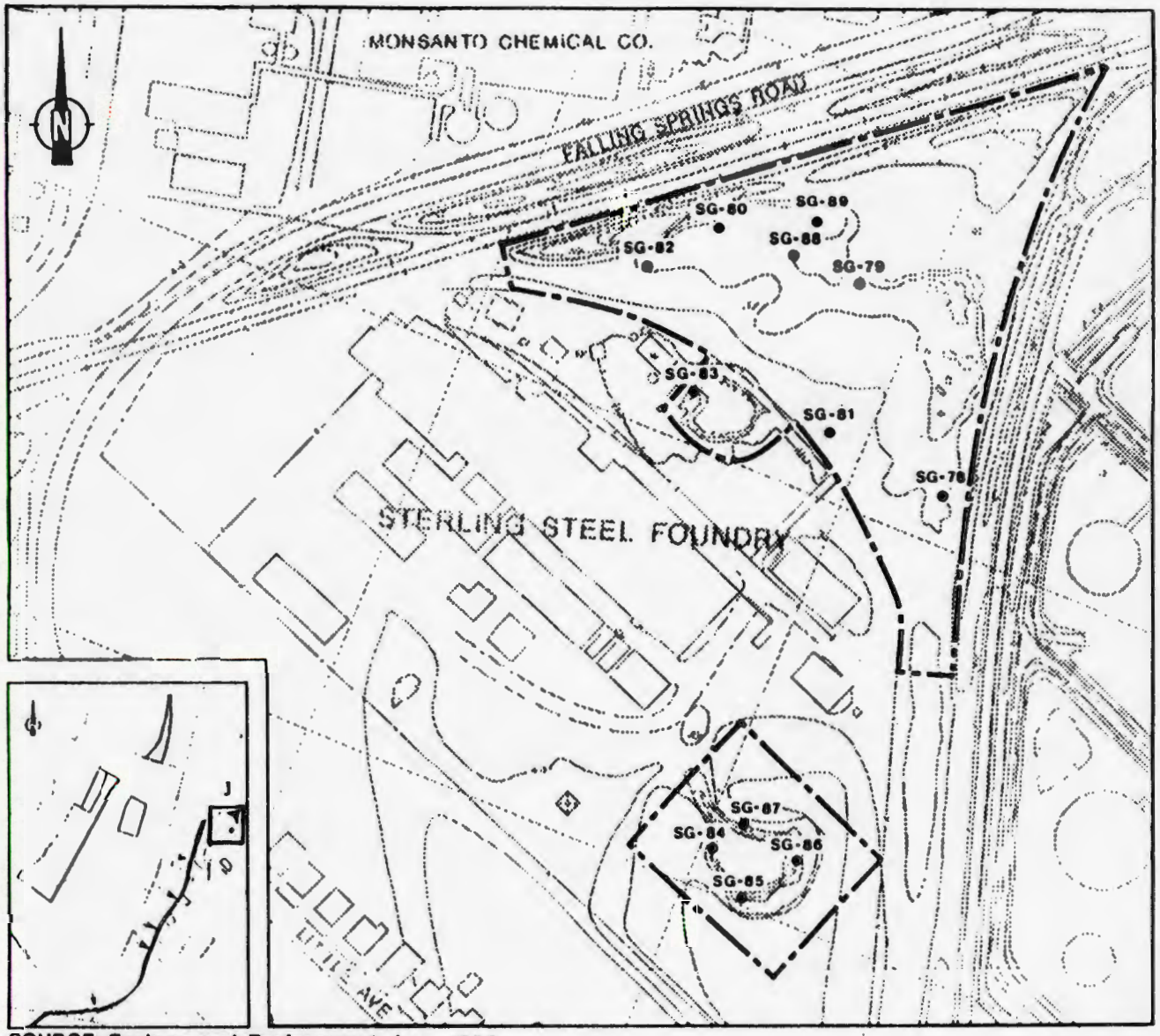
SCALE

0 200 400 600 800 1000 FEET

FIGURE 3-9 BORING LOCATIONS AT SITE J

Surface Soil Inorganic

SITE	BLANK	BLANK	SITE J	SITE J	SITE J
SAMPLE NUMBER	DC-SS-44+	DC-SS-45+	DC-SS-46	DC-SS-47	DC-SS-48
LOCATION/GRID			SE	NE	NE
DATE SAMPLED	11-13-86	11-11-86	11-13-86	11-13-86	11-13-86
1 Aluminum	7520	9260	4810	630	651
2 Antimony					
3 Arsenic		7 R	5.3 *	9.1 *	6.4 *
4 Barium	441	326	346	25	24
5 Beryllium					
6 Boron					
7 Cadmium	1.5 R*	1.4	2.3 R*	13 R*	9.9 R*
8 Chromium, trivalent	11 R*	13	123 R*	690 R*	500 R*
9 Cobalt	[4.1]	4.9		[19]	[13]
10 Copper	33	31	135	614	[615]
11 Iron	13400 *	16200	52500 *	243000 *	201000
12 Lead	60 *	68 *	34 *	23 *	30 *
13 Manganese	336 R*	381	627 R*	2100 R*	1430 R*
14 Mercury			0.41		
15 Nickel	15 *	16	59 *	350 *	377 *
16 Selenium					
17 Silver					
18 Thallium					
19 Tin					
20 Vanadium	19	22			
21 Zinc	170	162	65	46	34
22 Cyanide					



SOURCE: Ecology and Environment, Inc., 1988.

SCALE

0 200 400 600 800 1000 FEET

FIGURE 3-2 SOIL GAS SAMPLING LOCATIONS AT SITE J