

**INSTALLATION RESTORATION
PROGRAM (IRP)**

PHASE II STAGE 2 INVESTIGATION

**VOLUME IV
APPENDICES K-Q**

**127th FIGHTER WING
MICHIGAN AIR NATIONAL GUARD
SELFRIEGE AIR NATIONAL GUARD BASE
MT. CLEMENS, MICHIGAN**

DECEMBER 1996



19970303 015

Prepared For
**ANGRC/CEVR
ANDREWS AFB, MARYLAND**

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED		
	December 1990	Phase II Stage 2 Investigation		
4. TITLE AND SUBTITLE		5. FUNDING NUMBERS		
Installation Restoration Program Phase II Stage 2 Investigation, Vol. IV 127 th Fighter Wing, Selfridge ANGB, Mt. Clemens, Michigan		DAHA90-91-D-0002/13		
6. AUTHOR(S)		7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)		
N/A		Operational Technologies Corporation 4100 N.W. Loop 410 Suite 230 San Antonio, Texas 78229-4253		
8. PERFORMING ORGANIZATION REPORT NUMBER		9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		
		Air National Guard Readiness Center/CEVR 3500 Fetchet Avenue Andrews AFB MD 20762-5157		
10. SPONSORING/MONITORING AGENCY REPORT NUMBER		11. SUPPLEMENTARY NOTES		
12a. DISTRIBUTION / AVAILABILITY STATEMENT		12b. DISTRIBUTION CODE		
Approved for public release; distribution is unlimited		A		
13. ABSTRACT (Maximum 200 words)				
An investigation was performed on eight sites at Selfridge Air National Guard Base: Site 1 - Southwest Landfill, Site 2 - Fire Training Area 2, Site 3 - Fire Training Area 1, Site 4 - West Ramp, Site 5 - Tucker Creek Landfill, Site 6 - Northwest Landfill, Site 7 - East Ramp, and Site 8 - Base Coal Storage Pile. Volume IV contains the following Appendices; K - Sampling Chain - of - Custody Documentation, L - Data Validation Tables, M - Domestic Well Logs, N - Histograms of Analyses for Soil Samples, O - Histograms of Analyses for Groundwater and Surface Water Samples, P - Defense Priority Model, and Q - Correspondence.				
14. SUBJECT TERMS		15. NUMBER OF PAGES		
Installation Restoration Program; Air National Guard; Phase II Stage 2 Investigation Volume I, Selfridge Air National Guard Base, Mt. Clemens, Michigan		200		
16. ABSTRACT CODE		17. SECURITY CLASSIFICATION OF REPORT		
		Unclassified		
18. SECURITY CLASSIFICATION OF THIS PAGE		19. SECURITY CLASSIFICATION OF ABSTRACT		
Unclassified		Unclassified		
20. LIMITATION OF ABSTRACT				
none				

GENERAL INSTRUCTIONS FOR COMPLETING SF 298

The Report Documentation Page (RDP) is used in announcing and cataloging reports. It is important that this information be consistent with the rest of the report, particularly the cover and title page. Instructions for filling in each block of the form follow. It is important to *stay within the lines* to meet optical scanning requirements.

Block 1. Agency Use Only (Leave blank).

Block 2. Report Date. Full publication date including day, month, and year, if available (e.g. 1 Jan 88). Must cite at least the year.

Block 3. Type of Report and Dates Covered. State whether report is interim, final, etc. If applicable, enter inclusive report dates (e.g. 10 Jun 87 - 30 Jun 88).

Block 4. Title and Subtitle. A title is taken from the part of the report that provides the most meaningful and complete information. When a report is prepared in more than one volume, repeat the primary title, add volume number, and include subtitle for the specific volume. On classified documents enter the title classification in parentheses.

Block 5. Funding Numbers. To include contract and grant numbers; may include program element number(s), project number(s), task number(s), and work unit number(s). Use the following labels:

C - Contract	PR - Project
G - Grant	TA - Task
PE - Program Element	WU - Work Unit Accession No.

Block 6. Author(s). Name(s) of person(s) responsible for writing the report, performing the research, or credited with the content of the report. If editor or compiler, this should follow the name(s).

Block 7. Performing Organization Name(s) and Address(es). Self-explanatory.

Block 8. Performing Organization Report Number. Enter the unique alphanumeric report number(s) assigned by the organization performing the report.

Block 9. Sponsoring/Monitoring Agency Name(s) and Address(es). Self-explanatory.

Block 10. Sponsoring/Monitoring Agency Report Number. (If known)

Block 11. Supplementary Notes. Enter information not included elsewhere such as: Prepared in cooperation with...; Trans. of...; To be published in.... When a report is revised, include a statement whether the new report supersedes or supplements the older report.

Block 12a. Distribution/Availability Statement. Denotes public availability or limitations. Cite any availability to the public. Enter additional limitations or special markings in all capitals (e.g. NOFORN, REL, ITAR).

DOD - See DoDD 5230.24, "Distribution Statements on Technical Documents."

DOE - See authorities.

NASA - See Handbook NHB 2200.2.

NTIS - Leave blank.

Block 12b. Distribution Code.

DOD - Leave blank.

DOE - Enter DOE distribution categories from the Standard Distribution for Unclassified Scientific and Technical Reports.

NASA - Leave blank.

NTIS - Leave blank.

Block 13. Abstract. Include a brief (*Maximum 200 words*) factual summary of the most significant information contained in the report.

Block 14. Subject Terms. Keywords or phrases identifying major subjects in the report.

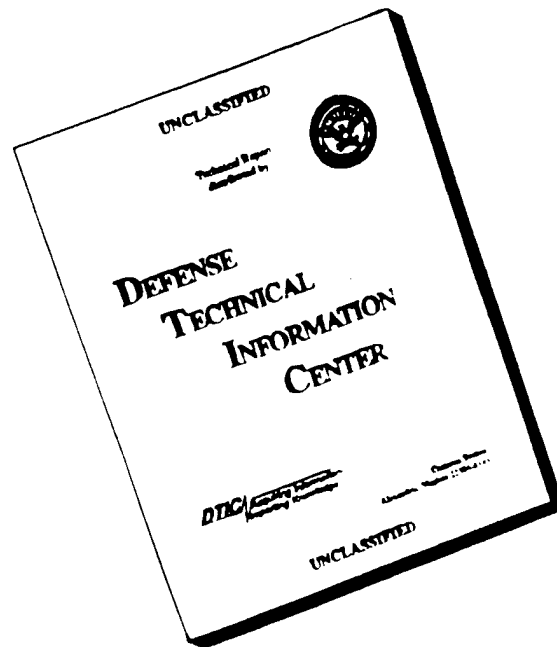
Block 15. Number of Pages. Enter the total number of pages.

Block 16. Price Code. Enter appropriate price code (*NTIS only*).

Blocks 17. - 19. Security Classifications. Self-explanatory. Enter U.S. Security Classification in accordance with U.S. Security Regulations (i.e., UNCLASSIFIED). If form contains classified information, stamp classification on the top and bottom of the page.

Block 20. Limitation of Abstract. This block must be completed to assign a limitation to the abstract. Enter either UL (unlimited) or SAR (same as report). An entry in this block is necessary if the abstract is to be limited. If blank, the abstract is assumed to be unlimited.

DISCLAIMER NOTICE



**THIS DOCUMENT IS BEST
QUALITY AVAILABLE. THE
COPY FURNISHED TO DTIC
CONTAINED A SIGNIFICANT
NUMBER OF PAGES WHICH DO
NOT REPRODUCE LEGIBLY.**

**INSTALLATION RESTORATION
PROGRAM (IRP)**

PHASE II STAGE 2 INVESTIGATION

**VOLUME IV
APPENDICES K-Q**

**127th FIGHTER WING
MICHIGAN AIR NATIONAL GUARD
SELFREDGE AIR NATIONAL GUARD BASE
MT. CLEMENS, MICHIGAN**

DECEMBER 1996

Prepared For

**ANGRC/CEVR
ANDREWS AFB, MARYLAND**

Prepared By

**Operational Technologies Corporation
4100 N.W. Loop 410, Suite 230
San Antonio, Texas 78229-4253
(210) 731-0000**

INSTALLATION RESTORATION PROGRAM (IRP)

PHASE II STAGE 2 INVESTIGATION

VOLUME IV APPENDICES K-Q

**127th FIGHTER WING
MICHIGAN AIR NATIONAL GUARD
SELFRIIDGE AIR NATIONAL GUARD BASE
MT. CLEMENS, MICHIGAN**

DECEMBER 1996

Operational Technologies Corporation Prepared

- Executive Summary
- Summary and Conclusions

Roy F. Weston, Inc. Prepared

- Introduction
- Results and Significance of Findings
- Field Investigation Program
- Environmental Setting
- Preliminary Feasibility Study
- Appendices A through Q



TABLE OF CONTENTS

Appendix

Title

Volume II

- A DEFINITIONS, ACRONYMS, AND UNITS OF MEASURE
- B STATEMENT OF WORK
- C CLAYTON ENVIRONMENTAL CONSULTANTS' REPORT
- D PROFESSIONAL PROFILES OF KEY WESTON PERSONNEL
- E NATIONAL AMBIENT AIR QUALITY STANDARDS
- F QUALITY ASSURANCE PROJECT PLAN

Volume III

- G SOIL BORING AND WELL COMPLETION LOGS
- H CONTINUOUS WATER LEVEL RECORDER DATA
- I HYDRAULIC CONDUCTIVITY CALCULATIONS
- J GROUNDWATER AND SURFACE WATER SAMPLING DOCUMENTATION

Volume IV

- K SAMPLING CHAIN-OF-CUSTODY DOCUMENTATION
- L DATA VALIDATION TABLES
- M DOMESTIC WELL LOGS
- N HISTOGRAMS OF ANALYSES FOR SOIL SAMPLES
- O HISTOGRAMS OF ANALYSES FOR GROUNDWATER AND SURFACE WATER SAMPLES
- P DEFENSE PRIORITY MODEL
- Q CORRESPONDENCE

APPENDIX K

SAMPLE CHAIN-OF-CUSTODY DOCUMENTATION

Custody Transfer Record/Lab Work Request

Received By _____
Date 12, _____
Assigned to _____

Received By _____
Date 12/17/87
Assigned to _____

Client UNIT O EHL/TS
Client Contact Cons LO
Phone 800-821-4588

RFW Contact _____
Date Due _____
Project Number _____

RFW Contact Christophers
Date Due As Per Contract
Project Number 0628-1403

SAMPLE IDENTIFICATION

SAMPLE IDENTIFICATION				ANALYSES REQUESTED									
Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	VCA	Prep by dec	AS	Hg	SC	BAJA	% inc	
05-HC2-8001	Selfridge	Seal Battery Sample	Seal	12/17/87	500 ml jar	X	X	X	X	X	X	X	
05-HC1-8001			Seal		2 HC ml vials	X		X	X	X	X	X	
05-HC1-8001			Seal		500 ml jar	X		X	X	X	X	X	
05-HC1-8001			Seal		2 HC ml vials	X		X	X	X	X	X	
05-HC1-8003			Seal		500 ml jar	X		X	X	X	X	X	
05-HC1-8003			Seal		2 HC ml vials	X		X	X	X	X	X	
05-HC2-8001	Selfridge	Seal Battery Sample	Seal		500 ml jar	X	X	X	X	X	X	X	
05-HC2-8001					2 HC ml vials	X		X	X	X	X	X	
05-HC2-8002					500 ml jar	X		X	X	X	X	X	
05-HC2-8002					2 HC ml vials	X		X	X	X	X	X	
05-HC2-8002					500 ml jar	X		X	X	X	X	X	
05-HC2-8002					2 HC ml vials	X		X	X	X	X	X	
05-HC2-8002	Selfridge	True Blank	W	N/A	1 HC ml vials	X	awk						
05-HC2-8002	Selfridge	True Blank	W	N/A	1 HC ml vial	X							
										</			

Matrix:

Special Instructions:

S- Soil	DS- Drum Solids
W- Water	DL- Drum Liquids
O- Oil	X- Other

[illegible]

RFW Contact Christopher W. Krumm
Date Due 12/25/87 (Holding Time, Limit)
Project Number 0628-1402

Received By _____
Date _____
Assigned to _____

Client USAFOEHL/TS
Client Contact Augustus Lo
Phone 800-821-4528

RFW Contact _____
Date Due _____
Project Number _____

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	VOA	Pet Hydro	Metals Screen	As	Hg	Se	BNA	Soil metals
05-402-B003	Selfridge AKA	Soil Boring Sample	Soil	12/18/87	500 ml jar	X	X	X	X	X	X	X	X
05-402-B003					2 40 ml vials	X							
05-403-B001					500 ml jar	X	X	X	X	X	X	X	X
05-403-B001					2 40 ml vials	X							
05-403-B101					500 ml jar	X	X	X	X	X	X	X	X
05-403-B101					2 40 ml vials	X							
05-403-B002					500 ml jar	X	X	X	X	X	X	X	X
05-403-B002					2 40 ml vials	X							
05-403-B003					500 ml jar	X	X	X	X	X	X	X	X
05-403-B003					2 40 ml vials	X							
05-404-B001				12/19/87	500 ml jar	X	X	X	X	X	X	X	X
05-404-B001					2 40 ml vials	X							
05-404-B002					500 ml jar	X	X	X	X	X	X	X	X
05-404-B002					2 40 ml vials	X							
05-404-B003					500 ml jar	X	X	X	X	X	X	X	X
05-404-B003					2 40 ml vials	X							
05-404-B301		Trip Blank	W	12/19/87	1 40 ml vial	X							
05-405-B001		Soil Boring Sample	Soil		500 ml jar	X	X	X	X	X	X	X	X
05-405-B001					2 40 ml vials	X							

Matrix:

S- Soil	DS- Drum Solids
W- Water	DL- Drum Liquids
O- Oil	X- Other

Special Instructions:

120305-17

[illegible]

Assigned to



Custody Transfer Record/Lab Work Request

Received By _____ Date _____ Assigned to _____
Client USA FOEHL/TS RFW Contact Christopher W. Krumm
Client Contact Gus Lo Date Due 12-27-87 (Holding Time)
Phone 1-800-821-4528 Project Number 0628-1402

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	VOA	Pet Hydro	% Moils		
04-406-B001	Selfridge ANG6B	soil boring sample	soil	12-20-87	500 ml jar		X	X		
04-406-B001	Selfridge ANG6B	↓			2 40 ml vial	X				
04-406-B002		soil boring sample			500 ml jar		X	X		
04-406-B002		↓			2 40 ml vial	X				
04-406-B003					500 ml jar		X	X		
04-406-B003					2 40 ml vial	X				
04-407-B001					500 ml jar		X	X		
04-407-B001					2 40 ml vial	X				
04-407-B002					500 ml jar		X	X		
04-407-B002					2 40 ml vial	X				
04-407-B003					500 ml jar		X	X		
04-407-B003					2 40 ml vial	X				
04-408-B001					500 ml jar		X	X		
04-408-B001					2 40 ml vial	X				
04-408-B001					500 ml jar		X	X		
04-408-B001					2 40 ml vial	X				
04-408-B101					500 ml jar		X	X		
04-408-B101					2 40 ml vial	X				



Custody Transfer Receipt/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAF/AFM/75
Client Contact Gus LO
Phone 1-800-821-4528

RFW Contact Jon D. Olander
Date Due 12-28-1987 (Holding Time)
Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	VOA	Pct Hydro	% Moisture	ANALYSES REQUESTED
04-408-B002	Selfridge ANG B	Soil boring	Soil	12-21-87	500 ml jar		X	X	
04-408-B002	Selfridge ANG B	Soil boring sample	Soil	12-21-87	2-40 ml vial	X			
04-409-B001					500 ml jar	X			
04-409-B001					2-40 ml vial	X			
04-409-B002					500 ml jar	X			
04-409-B002					2-40 ml vial	X			
04-409-B002 MS					500 ml vial	X			
04-409-B002 MS					2-40 ml vial	X			
04-410-B001					500 ml jar	X			
04-410-B001					2-40 ml vial	X			
04-410-B002					500 ml jar	X			
04-410-B002					2-40 ml jar	X			
04-410-B002					500 ml jar	X			
04-410-B002					2-40 ml vial	X			
04-410-B003					500 ml jar	X			
04-410-B003					2-40 ml vial	X			
04-410-B301		Trip Blank	W		1 40 ml vial	X			

Matrix:

S- Soil
W- Water
O- Oil

DS- Drum Solids
DL- Drum Liquids
X- Other

Special Instructions: MS - Matrix Spike

120350-66

Items/Reason	Relinquished By	Received By	Date	Time	Relinquished By	Received By	Date	Time
cooler	C.W. Krumm	Fed Ex	12/26/87	7:30 PM		Mario Scott	12/28/87	11:50



Custody Transfer Request

Received By _____
Date _____
Assigned to _____

Client USAF OEHL/TS
Client Contact Augustus Lo
Phone 1-800-821-4528

RFW Contact Christopher W. Krumm
Date Due 12/29/87 (Holding Time)
Project Number 0628-1402

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	VCA	Pet Hydro	To Moils
04-408-B003	Selfridge ANG B	Soil Boring Sample	soil	12/22/87	500 ml jar	X	X	X
04-408-B003	Selfridge ANG B	Soil Boring Sample	soil	12/22/87	2 40 ml vials	X	X	X
04-409-B003					500 ml jar	X	X	X
04-409-B003					2 40 ml vials	X	X	X
04-411-B001					500 ml jar	X	X	X
04-411-B001					2 40 ml vials	X	X	X
04-411-B001MS					500 ml jar	X	X	X
04-411-B001MS					2 40 ml vials	X	X	X
04-411-B002					500 ml jar	X	X	X
04-411-B002					2 40 ml vials	X	X	X
04-411-B003					500 ml jar	X	X	X
04-411-B003					2 40 ml vials	X	X	X
04-412-B001					500 ml jar	X	X	X
04-412-B001					2 40 ml vials	X	X	X
04-412-B002					500 ml jar	X	X	X
04-412-B002					2 40 ml vials	X	X	X
04-412-B003					500 ml jar	X	X	X
04-412-B003					2 40 ml vials	X	X	X
04-412-B003					1 40 ml vial	X		
04-412-B003		Trip Blank	W					

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1 cooler	C. W. Krumm	Federal Express	12/23/87	18:00			Therminator	12/27/87	10:30



Custody Transfer Request/Lab Work Request

121082

Received By _____
Date _____
Assigned to _____
Client Selfridge ANG/02EH/TS RFW Contact Chris Crumm
Date Due Jan. 11, 1988 (Limited Hold Time)
Phone 1-800-821-4528 Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	VOA	Pct Hydro	% Moisture
04-413	B001	0-5 ft interval	Soil	Jan 4, 1988	2-40ml vial	X		
04-413	B001	0-5 ft interval	↓	↓	1-500ml jar	X	X	
04-413	B002	11-12 ft interval	↓	↓	2-40ml vial	X		
04-413	B002	11-12 ft interval	↓	↓	1-500ml jar	X	X	

ANALYSES REQUESTED

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time
cooler/Storage over night	Mr. Clendon Fed Ex	Shirley D. Bell	1-6-88	12:00



Custody Transfer Record/Lab Work Request

121084-003

Received By _____
Date _____
Assigned to _____

Client 254E OEH/TS
Client Contact CUS 60
Phone 800-881-4528

RFW Contact Christopher W. Krumm
Date Due As Per Contract
Project Number 0628-14-02

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	VOA	Pct Hydro	% Moist	EP Tox
04-4131003	Selfridge	25-30"	S	1-5-87	2-40ml Cool	X			
04-4131103		↓			2-40ml Cool	X			
04-4131303		↓			1-500ml Cool		X	X	
04-4131503		↓			1-500ml Cool		X	X	
04-4141001		2-3"			2-40ml Cool	X			
04-4141301		↓			1-500ml Cool		X	X	
04-4141502		2-5"			2-500ml Cool				X
04-4151001		dur 5-10" MS			2-40ml Cool	X			
04-4151301		↓			1-500ml Cool		X	X	
04-4151501		5-10"			2-40ml Cool	X			
04-4151701		↓			1-500ml Cool		X	X	
04-4151902		15-20"			2-40ml Cool	X			
04-4152102		↓			1-500ml Cool		X	X	
04-4152303		25-30"			2-40ml Cool	X			
04-4152502		↓			1-500ml Cool		X	X	
04-41413003		13-18"			2-40ml Cool	X			
04-41415003		↓			1-500ml Cool		X	X	
04-41417004		23-28"			2-40ml Cool	X			
04-4141904		↓			1-500ml Cool				

Special Instructions:

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1-Cooler	C.W. Krumm	Fed Ex	12/5/88	18.00			Handwritten	1-6-88	12:00

RFW Contact Christopher Krumm
Date Due As per Contract
Project Number 0628-14-02

127269-88

RFW Contact Christopher Krumm
Date Due As per Contract
Project Number 0628-14-02

SAMPLE IDENTIFICATION

SAMPLE IDENTIFICATION						ANALYSES REQUESTED							
Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	VOA	Pet Hydro	BNA	As	Hg	Se	Metal Screen	% Moist
03-418-B001	Gelfridge	Soil boring samples 5-10'	S	1-7-88	1-500ml Cool		X	X	X	X	X	X	X
03-418-B101		5-10'			1-500ml Cool		X	X	X	X	X	X	X
03-419-B001		0-5'			1-500ml Cool		X	X	X	X	X	X	X
03-419-B001		MS 0-5'			1-500ml Cool		X	X	X	X	X	X	X
03-419-B002					1-500ml Cool		X	X	X	X	X	X	X
03-418-B001		5-10'			2-40ml Cool	X			X	X	X	X	X
03-418-B101		5-10'			2-40ml Cool	X							
03-419-B001		0-5'			2-40ml Cool	X							
03-419-B101	MS	0-5'			2-40ml Cool	X							
03-419-B002		5-10'			2-40ml Cool	X							
03-418-B002		15-20'			2-70ml Cool	X							
03-418-B003		25-30'			2-40ml Cool	X							
03-419-B003		25-30'			2-40ml Cool	X							
03-420-B001		3-4'			2-40ml Cool	X							
03-420-B002		5-8'			2-40ml Cool	X							
03-420-B003		20-25'			2-40ml Cool	X							
03-418-B002		15-20'			1-500ml Cool		X	X	X	X	X	X	X
03-418-B003		25-30'			1-500ml Cool		X	X	X	X	X	X	X
03-419-B003		25-30'			1-500ml Cool		X	X	X	X	X	X	X

Special Instructions:

* C.O.C ID appears to be in error (03-419-B101 MS)

Bottles indicate that 10 should be (03-419 8001 MS) 2-2-88

[illegible]



Custody Transfer Record/Lab Work Request

121269 88

Received By _____
Date _____
Assigned to _____

Client 234F OETH/IS
Client Contact Gus Lo
Phone 800-821-4528

RFW Contact Christopher W. Trumm
Date Due As Per Contract
Project Number Q628-14-QZ

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	VOA	BNA	Pct Hydrom	Metal Screen	As	Hg	Se	%Mois
05-416-13001	Selfridge	Soil boring sample 5-7' 15-26"	S	1-6-87	1-500ml Cool		X	X	X	X	X	X	X
05-416-13002		Replicate 15-20"					X	X	X	X	X	X	X
05-416-13003		25-30"					X	X	X	X	X	X	X
05-416-13001		5-7"			2-40ml Cool	X							
05-416-13002		15-20"				X							
05-416-13102		Replicate 15-20"				X							
05-416-13003		25-30"				X							
05-417-13001		8-9"			1-500ml Cool		X	X	X	X	X	X	X
05-417-13002		14-19"					X	X	X	X	X	X	X
05-417-13002	MS	14-19"					X	X	X	X	X	X	X
05-417-13003		24-25"					X	X	X	X	X	X	X
05-417-13001		8-9"			2-40ml Cool	X							
05-417-13002		14-19"				X							
05-417-13002	MS	14-19"				X							
05-417-13003		24-25"				X							
05-417-13301		Trip Blank	W		1-40ml Cool	X							

Special Instructions:

Matrix:
S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
Samples	C. W. Trumm	Fed Ex	1/9/88	19:00		Fed Ex	Paul J. J. J.	1-8-88	14:20



Received By

Date_

Assigned to:

Client SAFE CELL/TS

Client Contact Gus Lo

Phone 800-821-4528

Request

RFW Contact *Christopher Kamm*

Date Due As per contract

Project Number 0628-14-07

12/26/88

SAMPLE IDENTIFICATION

[illegible]

Matrix:

S. Soil

W- Water

Q. Oil

1

Special Instructions:

DS- Drum Solids

DJ- Drum Solids
DL- Drum Liquids

X- Other

1110 - v-

[illegible]

RFW 21-21-001/A-3/86



Custody Transfer Record/Lab Work Request

Received By _____

Date _____

Assigned to _____

Client USAF OEH L / TS

Client Contact Augustus Lo

Phone 1-800-821-4528

RFW Contact Christopher W. Krumm

Date Due 1/15/88 (Holding Time)

Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description / Time	Matrix	Date Collected	Container/Preservative	VOC	Pet Hydro	Metal Screen	As	Hg	Se	Soil Moils	BNA
05-421-8001	Selfridge	0-5' / 10:55	S	1-8-88	500ml jar / cool		X	X	X	X	X	X	X
05-421-8001		0-5' / 10:55			(2) 40 ml vials / cool	X							
05-421-8002		10-15' / 11:18			500 ml jar / cool		X	X	X	X	X	X	X
05-421-8002		10-15' / 11:18			(2) 40 ml vials / cool	X							
05-421-8003		25-30' / 11:57			500 ml jar / cool		X	X	X	X	X	X	X
05-421-8003		25-30' / 11:57			(2) 40 ml vials / cool	X							
02-422-8001		0-5' / 11:30			500 ml jar / cool		X	X	X	X	X	X	X
02-422-8001		0-5' / 11:30			(2) 40 ml vials / cool	X							
02-422-8002		5-10' / 12:03			500 ml jar / cool		X	X	X	X	X	X	X
02-422-8002		5-10' / 12:03			(2) 40 ml vials / cool	X							
02-422-8003		25-30' / 14:35			500 ml jar / cool		X	X	X	X	X	X	X
02-422-8003		25-30' / 14:35			(2) 40 ml vials / cool	X							
02-423-8001		0-5' / 15:50			500 ml jar / cool		X	X	X	X	X	X	X
02-423-8001		0-5' / 15:50			(2) 40 ml vials / cool	X							
02-423-8101		0-5' / 15:50			500 ml jar / cool		X	X	X	X	X	X	X
02-423-8101		0-5' / 15:50			(2) 40 ml vials / cool	X							
02-423-8102		15-20' / 16:00			500 ml jar / cool		X	X	X	X	X	X	X
02-423-8102		15-20' / 16:00			(2) 40 ml vials / cool	X							
02-423-8003		20-25' / 16:08			500 ml jar / cool		X	X	X	X	X	X	X
02-423-8003		20-25' / 16:08			(2) 40 ml vials / cool	X							

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1-cooler	Jon D. Dombke	Federal Express	1/9/88	17:00			Shawn Scott	1-11-88	11:45



Custody Transfer Record/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAF OEH/TS
Client Contact Augustus Lo
Phone 1-800-821-4528

RFW Contact Christopher W. Krumm
Date Due 1/15/88 (Holding Time)
Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description / Time	Matrix	Date Collected	Container/Preservative	VOC	Pet. Hyd.	Met. Screen	As	Hg	Se	Soil Mois.	BOA
02-424-B001	Selfridge	0-5 / 9:40	S	1-9-88	500 ml jar/cool		X	X	X	X	X	X	
02-424-B001		0-5 / 9:40			(2) 4 ml vials/cool	X							
02-424-B002		10-15 / 10:10			500 ml jar/cool		X	X	X	X	X	X	
02-424-B002		10-15 / 10:10			(2) 4 ml vials/cool	X							
02-424-B003		20-25 / 10:28			500 ml jar/cool		X	X	X	X	X	X	
02-424-B003		20-25 / 10:28			(2) 4 ml vials/cool	X							
08-425-B001		5-10' / 9:30			500 ml jar/cool								
08-425-B002		10-15' / 9:45											
08-425-B003		20-25' / 10:15											
08-426-B001		5-10' / 14:23			500 ml jar/cool								
08-426-B003		10-15' / 14:40											
08-426-B003		25-30' / 15:05											
02-424-B003		Trip Blank	S	1-9-88	1-40 ml vial/cool	X							

ANALYSES REQUESTED

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1-Cooler	Don D. Lander	Federal Express	1/9/88	1700			Shawn Scott	1-11-88	11:45



Custody Transfer Record/Lab Work Request

Received By _____

Date _____

Assigned to _____

Client USAF/EOH/ITS

Client Contact Augustus Lo

Phone 1-800-821-4528

RFW Contact Christopher W. Krumm

Date Due 1/17/88 (Holding Time)

Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	VOC	Pet Hydro	Metal Screen	As	Hg	Se	Soil Moist	BNA	EP To X
08-427-B001	Selfridge	5-10' / 09:00	S	1-10-88	500 ml jar/cool				X	X	X		X	
08-427-B002		10-15' / 09:16							X	X	X		X	
08-427-B003		15-20' / 09:36							X	X	X		X	
07-428-B001		5-10' / 09:56					X					X		
07-428-B001		5-10' / 09:56					X					X		
07-428-B002		10-15' / 10:13			2 (40) ml vials/cool	X	X					X		
07-428-B002		10-15' / 10:13			500 ml jar/cool	X	X					X		
07-428-B102		10-15' / 10:13			2 (40) ml vials/cool	X	X					X		
07-428-B102		10-15' / 10:13			500 ml jar/cool	X	X					X		
07-428-B003		20-25' / 10:33			2 (40) ml vials/cool	X	X					X		
07-428-B003		20-25' / 10:33			500 ml jar/cool	X	X					X		
07-428-B004		5-10' / 09:56			2 (40) ml vials/cool	X	X					X		
07-428-B001		5-10' / 13:36			500 ml jar/cool	X	X					X		
07-428-B001		5-10' / 13:36			2 (40) ml vials/cool	X	X					X		
07-428-B002		10-15' / 13:47			500 ml jar/cool	X	X					X		
07-428-B002		10-15' / 13:47			2 (40) ml vials/cool	X	X					X		
07-428-B003		25-30' / 14:25			500 ml jar/cool	X	X					X		
07-428-B003		25-30' / 14:25			2 (40) ml vials/cool	X	X					X		
07-428-B303		Trip Blank			(1) 40 ml vial/cool	X								

Matrix:

S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1 cooler	CW Krumm	Fed Exp.	1/11/88	17:00					



Custody Transfer Record/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAFOEHL/TS
Client Contact Augustus Lo
Phone 1-800-821-4528

RFW Contact Chris Krumm
Date Due 1/31/88 (Holding Time)
Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	VOA	Pet Hydro	Metal Screen	As	Hg	Se	BNA	Soil Moisture
01-363-B001 Selfridge	15-201/1400	S	JAN. 24, 88	2-40 ml VOA/cool	X								
01-363-B001 Selfridge	15-201/1400	S	JAN. 24, 88	500 ml jar/cool			X	X	X	X	X	X	X
01-363-B001 Selfridge	Trip Blank	W	JAN. 24, 88	1-40 ml VOA/cool	X								

ANALYSES REQUESTED

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
cooler	Don D. Olander	Fed. Express	1/25/88	1800			K. Se. Clair	1/26/88	11:10



Client USAFOEHL/TS
Client Contact Augustus Lo
Phone 800-821-4528

RFW Contact Chris Topper W. Arumm
Date Due 2/8/88
Project Number 0628-1402

ANALYSES REQUESTED

Special Instructions:

Matrix:	S- Soil	W- Water	O- Oil	DS- Drum Solids	DL- Drum Liquids	X- Other

[illegible]



Custody Transfer Record/Lab Work Request

Received By

Date_

Assigned to:

Client USAFORTH

Client Contact Angustus Lo

Phone 1-800-821-4528

RFW Contact

Date Due 2/10/88

Project Number 0628-1402,

SAMPLE IDENTIFICATION

[illegible]

Matrix:

S- Soil	DS- Drum Solids
W- Water	DL- Drum Liquids
O- Oil	X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1 Cooler	Christopher Williams	Federal Ex	2/4/88	6:54					
		Samantha Hayes	2/5/88	9:55					

NEW 21-21-001/A-3/86



Custody Transfer Receipt/Lab Work Request

127645 Page 1 of 2
127651

Received By _____
Date _____
Assigned to _____

Client USAFOEHL / TS
Client Contact Augustus Lo
Phone 1-800-821-4528

RFW Contact C.W. Krumm
Date Due 4/12/88 (Holding Time)
Project Number 0628-1402

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	ALK TDS	COMMON ANIONS	COD NH ₃	TDC	NO ₂ NO ₃	Metal Screen	As/Pb	Hg/Se
01-122-M101	Selfridge AM68	Groundwater / 11:45 C work	W	4-6-88	1 liter plastic / cold	X	X	X	X	X	X	X	X
					1 liter plastic / H ₂ SO ₄								
					250 ml amber / H ₂ SO ₄								
					500 ml plastic / H ₂ SO ₄								
					1 liter plastic / HNO ₃								
01-122-M001	Selfridge AM68	Groundwater / 11:15	W	4-6-88	1 liter plastic / cold	X	X	X	X	X	X	X	X
					1 liter plastic / H ₂ SO ₄								
					250 ml amber / H ₂ SO ₄								
					500 ml plastic / H ₂ SO ₄								
					1 liter plastic / cold								

ANALYSES REQUESTED

Special Instructions:

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1 cooler	Don D. Chandler	—	4/6/88	1900			Sheanne Spivey	4/7/88	1140



Custody Transfer Receipt/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAF OEH/TS
Client Contact Augustus L.O.
Phone 1-800-821-4528

RFW Contact C.W. Krumm
Date Due 4/12/88 (Holding Time)
Project Number 0628-1402

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Pet Halemborg Area	Pump Halemborg Area	Pet Hydro	ANALYSES REQUESTED
01-122-M101	Selfridge ANG B	Groundwater / 11:45	W	4-6-88	(2) 40 ml vials/HCl	X	X	X	NO
		↓	↓	↓	950 ml amber/H ₂ SO ₄	X	X	X	OK 4/10/88
		↓	↓	↓	1/2 gal amber/cold	X	X	X	
01-122-M101	Selfridge ANG B	Groundwater / 11:15	W	4-6-88	(2) 40 ml vials/HCl	X	X	X	
		↓	↓	↓	950 ml amber/H ₂ SO ₄	X	X	X	
		↓	↓	↓	1/2 gal amber/cold	X	X	X	

OK 4/6/88

Special Instructions:

Matrix:
S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Items/Reason	Relinquished By	Received By	Date	Time	Relinquished By	Received By	Date	Time
1 cooler	Jon DeLomb	—	4/6/88	1900		Paula Spive	4/7/88	1140



Custody Transfer Receipt

u/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAF OEH/ITS
Client Contact Augustus Lo
Phone 1-800-821-4528

RFW Contact C.W. Krumm
Date Due 4-12-88 (Holding Time)
Project Number 0628-1402

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	ALK TDS	COMMON Anions	COD NH ₃	TOC	NO ₂ NO ₃	Metal Scan	As Pb	Hg Se
01-156-M001	Selfridge AVEB	Groundwater/08:30	W	4-6-88	1 liter plastic/cold	X	X	X					
01-156-M001	Selfridge AVEB	Groundwater/08:30	W	4-6-88	1 liter plastic/H ₂ SO ₄				X				
					250 ml amber/H ₂ SO ₄					X			
					500 ml plastic/H ₂ SO ₄								
					1 liter plastic/HNO ₃						X	X	X
01-125-M001	Selfridge AVEB	Groundwater/08:00	W	4-6-88	1 liter plastic/cold	X	X						
					1 liter plastic/H ₂ SO ₄			X					
					250 ml amber/H ₂ SO ₄				X				
					500 ml plastic/H ₂ SO ₄					X			
					1 liter plastic/HNO ₃						X	X	X
~~WORK 4-6-88~~													

Matrix:

S- Soil
W- Water
O- Oil

Special Instructions:

DS-- Drum Solids
DL- Drum Liquids
X- Other

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
cooler	C.W. Krumm	Fed Express	4/6	19:00			Per Ann Spino	4/18	1140

#000-359



Custody Transfer Receipt/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAF OEHL/ITS
Client Contact Augustus Lo
Phone 1-800-821-4528

RFW Contact C.W. Krumm
Date Due 4-12-88 (Holding Time)
Project Number 0628-1402

1010471 101048

Page 407

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Pet Halobacter	Purge Acetic	Pet Hydro	BNA
01-156-M001	Selfridge ANG B	Groundwater / 08:30	W	4-6-88	(2) 40 ml vials / HCL	X	X		
					950 ml amber / H ₂ SO ₄			X	
					1/2 gal amber / cold				X
01-125-M001	Selfridge ANG B	Groundwater / 08:00	W	4-6-88	(2) 40 ml vials / HCL	X	X		
					950 ml amber / H ₂ SO ₄			X	
					1/2 gal amber / cold				X

ANALYSES REQUESTED

Special Instructions:

Matrix: DS- Drum Solids
S- Soil
W- Water
O- Oil
DL- Drum Liquids
X- Other

Items/Reason	Relinquished By	Received By	Date	Time	Relinquished By	Received By	Date	Time
1 cooler	C.W. Krumm	Fed Express	4/6	19:00		Ken Krumm	4/7/88	1140



Custody Transfer Receipt/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAFOEHL/TS
Client Contact Augustus LO
Phone 800-821-4528

RFW Contact J.D. Olander
Date Due 4/12/88 (Holding Time)
Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	AIK TDS	COMMON ANION	COD NH3	TUC	NO2/ NO3	Metals SCREEN	As/ Pb	Hy/ Se
01-124-M201	Selfridge ANG B	Groundwater / 1625	W	4-6-88	1 liter plastic / cold	X	X						
					1 liter plastic / H2SO4			X					
					250 ml amber / H2SO4				X				
					500 ml plastic / H2SO4					X			
					1 liter plastic / HNO3						X		X
01-162-M001	Selfridge ANG B	Groundwater / 1200	W	4-6-88	1 liter plastic / cold	X	X						
					1 liter plastic / H2SO4			X					
					250 ml amber / H2SO4				X				
					500 ml plastic / H2SO4					X			
					1 liter plastic / HNO3						X		X

4-6-88
JDO

Special Instructions:

Matrix:
S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
/cooler	Jan D. Olander	—	4/6/88	1900			Spencer Davis	4/7/88	1140

0000 801
0009 62

127652 Page 3 of 2

127650

Custody Transfer Record/Lab Work Request



Received By _____
Date _____
Assigned to _____

Client USAFOEHL/TS
Client Contact Augustus Lo
Phone 800-821-4528

RFW Contact JD Olander
Date Due 4-12-88 (Holding Time)
Project Number 0628-14-DZ

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Pet Hydrocarbon	Purge Agent	Pet Hydrocarbon	ANALYSES REQUESTED
01-124-m201	Selfridge ANG8	Groundwater / 16Z5	W	4-6-88	(2) 40ml VOA/HCL	X	X	X	BNP
01-162-m201	Selfridge ANG8	Groundwater / 1200	W	4-6-88	950ml amber/1650y 1/2 gal amber/cold	X	X	X	BNP
01-162-m201	Selfridge ANG8	Groundwater / 1200	W	4-6-88	950ml amber/1650y 1/2 gal amber/cold	X	X	X	BNP

Special Instructions:

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1 cooler	Jan D. Olander	—	4/6/88	1900			Jan D. Olander	4/7/88	1140

Custody Transfer () **Program/Lab Work Request**

Received By _____
Date _____
Assigned to _____

Client USAF OEHL / TS
Client Contact Augustus Lo
Phone 1-800-821-4528

RFW Contact C.W. Krumin
Date Due 4/12/88 / Hold in
Project Number 0628-1402

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Pet. Halometh	Purge Anom	Pet. Hydro	BNA	ANALYSES REQUESTED
01-123-M001	Selfridge ANGB	Groundwater / 0900	W	4-6-88	(2) 40 ml vials / HCl	X	X	X	X	
↓	↓	↓	↓	↓	950 ml amber / H ₂ SO ₄					
↓	↓	↓	↓	↓	1/2 gal amber / cold					
01-124-M001	Selfridge ANGB	Groundwater / 0850	W	4-6-88	(2) 40 ml vials / HCl	X	X	X	X	
↓	↓	↓	↓	↓	950 ml amber / H ₂ SO ₄					
↓	↓	↓	↓	↓	1/2 gal amber / cold					
01-124-M401	Selfridge ANGB	Groundwater / 0850	W	4-6-88	(2) 40 ml vials / HCl	X	X	X	X	
01-124-M301	Selfridge ANGB	Groundwater / 0850	W	4-6-88	(2) 40 ml vials / HCl	X	X	X	X	
					cool					

Special Instructions:

Matrix:	S- Soil	DS- Drum Solids
	W- Water	DL- Drum Liquids
	O- Oil	X- Other

[illegible]

127644
127647

12.1653
12.7654

Page 2 of 2



Custody Transfer

Received By _____
Date _____
Assigned to _____

Client USHFOEHL/TS
Client Contact Augustus Lo
phone 1-800-821-4528

Cor/Lab Work Request

RFW Contact C.W. Krum
Date Due 4/2/88 Held
Project Number 0628-1402

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Pet Halocarbons	Purge Acroon	Pet Hydro	BNA
01-123-M001	Selfridge ANGB	Groundwater / 0900	W	4-6-88	(2) 40 ml vials/HCl	X	X	X	
					950 ml amber/H ₂ SO ₄				
					1/2 gal amber/cold				
01-124-M001	Selfridge ANGB	Groundwater / 0850	W	4-6-88	(2) 40 ml vials/HCl	X	X	X	
					950 ml amber/H ₂ SO ₄				
					1/2 gal amber/cold				
01-124-M401	Selfridge ANGB	Groundwater / 0850	W	4-6-88	(2) 40 ml vials/HCl	X	X	X	
01-124-M301	Selfridge ANGB	Groundwater / 0850	W	4-6-88	(2) 40 ml vials/HCl	X	X	X	
					cold				

Matrix:

S- W- O-	Soil Water Oil	DS- DL- X-	Drum Solids Drum Liquids Other

Special Instructions:

[illegible]



Custody Transfer Record/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USHFOE 14L/TS
Client Contact Augustus L.O.
Phone 800-821-4528

RFW Contact JD Olander
Date Due 4-12-88 (Holding Time)
Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Pot Hydro	Pung Pot / Aromatic Hydrocarbon	ANALYSES REQUESTED
01-158-1001	Selfridge Area	Groundwater / 0930	W	4-6-88	2) 40ml vials / HCl		X	BNP
					950 ml amber / 1650g	X		X-ODO
					1/2 gal amber / cold			X
01-160-1001	Selfridge Area	Groundwater / 1045	W	4-6-88	2) 40ml vials / HCl		X	
					950 ml amber / 1650g	X		X
					1/2 gal amber / cold			

Special Instructions:

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1 cooler	Don D. Olander	Federal Express	4/9/88	1700			He Anne Spino	4/18/88	1045

Wardley Exp 0000865
0000866



Custody Transfer Record/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAFEOH/HL/TS
Client Contact Augustus Lo
Phone 1-800-821-4528

RFW Contact C.W. Arumay
Date Due 4/13/88 (Holding Time)
Project Number 0628-1402

127693-95

127697-98

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	AIK	Comm. Pkg.	Ppt.	Ppt. Metal
02-164-M001	SLFRD	GW. / 1020	W	4/17/88	1L plastic/cold	✓	✓		
02-164-M001	SLFRD	GW. / 1020	W	4/17/88	1L plastic / HNO ₃				✓
					(2) 40ml vials / HCL		✓	✓	
					950ml / H ₂ SO ₄			✓	
02-165-M001	SLFRD	GW. / 0950	W	4/17/88	1L plastic / cold	✓	✓		
					1L plastic / HNO ₃			✓	
					(2) 40ml vials / HCL		✓	✓	
					950ml / H ₂ SO ₄			✓	
02-165-M001	SLFRD	GW. / 1000	W	4/17/88	1L plastic / cold	✓	✓		
					1L plastic / HNO ₃			✓	
					(2) 40ml vials / HCL		✓	✓	
					950ml / H ₂ SO ₄			✓	
02-165-M001	SLFRD	GW. / 1000	W	4/17/88	(2) 40ml vials / HCL	✓	✓		
02-166-M001	SLFRD	GW. / 1020	W	4/17/88	1L plastic / cold	✓	✓		
					1L plastic / HNO ₃			✓	
					(2) 40ml vials / HCL		✓	✓	
					950ml / H ₂ SO ₄			✓	
					65K 4/17/88				

Special Instructions:

S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
See label	Gregory Stinson	See label	4/17/88	1000			See label	4/18/88	1115

Custody Transfer Record/Lab Work Request

Received By _____
Date _____
Assigned to _____

RFW Contact J.D. Olander
Date Due April 14, 1988
Project Number 0678-14-07

SAMPLE IDENTIFICATION

SAMPLE IDENTIFICATION				ANALYSES REQUESTED									
Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Purge From	Pet Hydro	Pet Hulfab	AIK TDS	Comm anions	Metal Screen	Pb, Hg As, Se	
02-165-M201	Selfridge	Groundwater/1405	W	4-7-1988	(2) 40ml VOA/HCl	X	X200	X					
					950ml amber/H2SO4		X						
					1 liter plastic/cold				X				
					1 liter plastic/HNO3				X		X		
03-117-M001	Selfridge	Groundwater/1640	W	4-7-1988	(2) 40ml VOA/HCl	X		X					
					950ml amber/H2SO4		X2						
					1 liter plastic/cold				X		X		
					1 liter plastic/HNO3				X		X		
4-7-1988 8861-1988													

Special Instructions:

S- W- O-	Soil Water Oil	DS- DL- X-	Drum Solids Drum Liquids Other

[illegible]

000000
864



Custody Transfer Receipt/Lab Work Request

127704 12/1/03 Page 1 of 2
127699 127700 127701
RFW Contact J.D. Olander
Date Due April 14, 1988 (Holding Time)
Project Number 0628-14-02

Received By _____
Date _____
Assigned to _____
Client USIA/DOE HL/TS
Client Contact Augustus Lo
Phone 800-821-4528

SAMPLE IDENTIFICATION

ANALYSES REQUESTED												
Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Purge Aromat	Pet Hulocub	Pet Hydro	AIK TDS	Comm. Analysis	Metals Screen	Pb,As Hg/sec
03-118-M301	Selfridge AWC	Groundwater / 1725	W	4-7-1988	(2) 40ml VOA / HCl	X						
03-116-M001		1700			950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					1 liter plastic / HNO ₃					X		X
03-118-M301		1725	W		(2) 40ml VOA / HCl	X						
03-118-M001		1725	W	4-7-1988	(2) 40ml VOA / HCl	X						
		Groundwater / 1725			950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					1 liter plastic / HNO ₃					X		X
03-116-M501	Selfridge AWC	Groundwater / 1705	W	4-7-1988	(2) 40ml VOA / HCl	X						
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold					X		
					1 liter plastic / HNO ₃					X		X
03-116-M601	Selfridge AWC	Groundwater / 1710	W	4-7-1988	(2) 40ml VOA / HCl	X						
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold					X		
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X
					950ml amber / H ₂ SO ₄			X				
					1 liter plastic / cold				X			
					2) 40ml VOA / HCl	X						
					1 liter plastic / HNO ₃					X		X



Custody Transfer Receipt/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USA F&E HL / TS
Client Contact Gus Lo
Phone 1-800-821-4578

RFW Contact G.W. Krumm
Date Due 4/18/88 (holding time)
Project Number 06288-4-07

1278043 1806

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	AIR TDS	Comm	Toc	NH ₄ /NO ₃	Metals	Pb	COD	Petro
06-108-M001	G.W. / 1600		W	4/8/88	16 plastic / cold	✓	✓						
					16 plastic / H ₂ SO ₄							✓	
					250 ml plastic / H ₂ SO ₄			✓					
					500 ml plastic / H ₂ SO ₄				✓				
					16 plastic / HNO ₃					✓			
					950 ml / H ₂ SO ₄								✓
06-110-M001	G.W. / 1645		W	4/8/88	16 plastic / cold	✓	✓						
					16 plastic / H ₂ SO ₄							✓	
					250 ml plastic / H ₂ SO ₄			✓					
					500 ml plastic / H ₂ SO ₄				✓				
					16 plastic / HNO ₃					✓			
					950 ml / H ₂ SO ₄								✓

ANALYSES REQUESTED

GSK 4/8/88

Matrix:
S- Soil
W- Water
O- Oil

Special Instructions:

M501 is a Matrix spike
M601 is a Matrix spike Dup

Items/Reason	Relinquished By	Received By	Date	Time	Relinquished By	Received By	Date	Time
Under/signed Gregory S. Russell	Gregory S. Russell	Paul Ex	4/8/88	1900		Thom Nieth	4/9/88	10:30



Custody Transfer Record/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAFOE HL/TS
Client Contact Gus Lo
Phone 1-800-821-4528

RFW Contact C.W. Krumm
Date Due 4/15/88 (Hollington)
Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	ALK TDS	Crin. Lead	TOC	Na/ Mg	Metal/Ag, Pb, Cu, Zn, Ni, Se	Cod	Ret.
06-110-M501		G.W. / 1645	W	4/8/88	1L plastic / cold	✓	✓					
					1L plastic / H ₂ SO ₄			✓			✓	
					250 ml amber / H ₂ SO ₄				✓			
					500 ml plastic / H ₂ SO ₄							
					1L plastic / HNO ₃				✓			
					950 ml / H ₂ SO ₄							✓
06-110-M601		G.W. / 1645	W	4/8/88	1L plastic / cold	✓	✓					
					1L plastic / H ₂ SO ₄						✓	
					250 ml amber / H ₂ SO ₄			✓				
					500 ml plastic / H ₂ SO ₄				✓			
					1L plastic / HNO ₃				✓			
					950 ml / H ₂ SO ₄							✓

ANALYSES REQUESTED

Matrix:

S- Soil
W- Water
O- Oil

Special Instructions:

M 501 = Matrix spike
M 605 = Matrix spike Dup

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
Under Agreement	Raymond S. Trivett	Paul Ex.	4/8/88	1900			Marie Scott	4/9/88	10:30



Custody Transfer Receipt/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAF DEHL/TS
Client Contact 645 Lg
Phone 1-800-821-4529

RFW Contact C.W. Krumm
Date Due 4/15/88 (Chillingham)
Project Number 06288-14-02

127804 127808
Jdc-808

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Pet. Hg. Arsenic	Purge Arsenic	ANALYSES REQUESTED
06-108-M001	↓	GW. / 1600	W	4/8/88	2 40ml VOA-5/HCL	✓	✓	BNK
06-110-M001	↓	GW. / 1645	W		1/2 gal amber / cold	✓	✓	65
06-110-M501	↓		W		(2) 40ml VOA-5/HCL	✓	✓	65
06-110-M601	↓		W		1/2 gal amber / cold	✓	✓	
06-110-M601	↓		W		(2) 40ml VOA-5/HCL	✓	✓	
06-110-M601	↓		W		1/2 gal amber / cold	✓	✓	
06-110-M601	↓		W		(2) 40ml VOA-5/HCL	✓	✓	
06-110-M601	↓		W		1/2 gal amber / cold	✓	✓	
65 4/8/88								

Matrix:

S- Soil
W- Water
O- Oil

DS- Drum Solids
DL- Drum Liquids
X- Other

Special Instructions:

M501 matrix spike
M601 matrix spike P.D.

Items/Reason	Relinquished By	Received By	Date	Time
Under shipment	Gregory S. Thairall	Shane Smith	4/15/88	10:30



Custody Transfer Request

Client USA FDEHL/TS

Client Contact Gus Lo

Phone 1-800-821-4528

Received By _____
Date _____
Assigned to _____

RFW Contact Gus Lo
Date Due 4/15/88 (holding time)
Project Number 0638-14-02

127805, 109/12/81

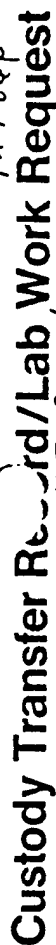
SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Pct. H ₂ O	Purge Amount	BNA
06-107-M001	↓	G.W. / 1415	W	4/8/88	(2) 40ml VOA ³ /HCl	✓	✓	✓
06-247-M001	↓	G.W. / 1440	W	4/8/88	1/2 gal amber / cell	✓	✓	✓
06-247-M001	↓	G.W. / 1440	W	4/8/88	(2) 40ml VOA ³ /HCl	✓	✓	✓

Special Instructions:

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
Under shipment	Gregory S. Randall	Fed Ex	4/8/88	1900			Pharm Lab	4-9-88	10:30



Client USAF06HL/TS

Client Contact: *Austus* 1/20

phone 800-821-4528

127859
127860
127862

Custody Transfer Record/Lab Work Request

Client USAF06HL/TS

Client Contact: *Austus* 1/20

phone 800-821-4528

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

[illegible]

Matrix:

Material	S- Soil	DS- Drum Solids
Water	W- Water <td>DL- Drum Liquids </td>	DL- Drum Liquids
Oil	O- Oil <td>X- Other </td>	X- Other

Special Instructions:

Seals # 0003JDO and #0004JDO

04-251-M001	3	delta purgable
04-253-M001	1	halocarbons
04-154-M001	1	Metal

[illegible]





Custody Transfer Receipt/Lab Work Request

Received By _____

Date _____

Assigned to _____

Client USAF/VEH/L/T5

Client Contact Augustus L

Phone 800-821-8528

RFW Contact J.D. Olander

Date Due April 16, 1988 (Holding Time)

Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Run Acromet	Pe+ Hydrox	Per Hydrox	BNA	TCC	COD	NH ₃	NO ₂ /NO ₃
127863	06-144-M24	Groundwater / 1510	W	4-9-88	(2) 40 ml VOA / HCl	X	X						
					950ml amber / H ₂ SO ₄		X						
					950ml amber / cold				X				
					250ml amber / H ₂ SO ₄					X			
					10 plastic / H ₂ SO ₄							X	
					500ml plastic / H ₂ SO ₄								X
127858	04-154-M341	Trip Blank / 1440	W	4-9-88	(2) 40ml VOA / HCl	X	X	~~X~~	~~delete~~				
127864	06-144-M441	Groundwater / 1340	W	4-9-88	(2) 40ml VOA / HCl	X	X						
127861	06-144-M001	Groundwater / 1340	W	4-9-88	(2) 40ml VOA / HCl	X	X						
					950ml amber / H ₂ SO ₄		X						
					1/2 gal / amber / cold				X				
					250ml amber / H ₂ SO ₄					X			
					10 plastic / H ₂ SO ₄							X	
					500ml plastic / H ₂ SO ₄								X
127857	04-154-M001	Groundwater / 1440	W	4-9-88	(2) 40ml VOA / HCl	X	X	~~X~~	~~delete~~				
					950ml amber / H ₂ SO ₄		X						
					1/2 gal / amber / cold								
					250ml amber / H ₂ SO ₄					X			
					10 plastic / H ₂ SO ₄							X	
					500ml plastic / H ₂ SO ₄								X
127862	06-144-M101	Groundwater / 1340	W	4-9-88	(2) 40ml VOA / HCl	X	X						
					950ml amber / H ₂ SO ₄		X						
					1/2 gal / amber / cold								
					10 plastic / H ₂ SO ₄								

Matrix:

S- Soil
W- Water
O- Oil

DS- Drum Solids
DL- Drum Liquids
X- Other

Special Instructions:

Seals # 0001JDO and # 0002JDO } 04-154-M301 } delete purgable
04-154-M001 } 04-154-M001 } halocarbon

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1 cooler	J.D. Olander	Federal Express	4/9/88	1700			See name signing	4/11/88	1120



Custody Transfer Receipt/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAFOEHL/TS
Client Contact Augustus LO
Phone 800-821-4528

RFW Contact JD Olander
Date Due April 17, 1988 (Holding Time)
Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Purge Amount	Det Hologram	Det Hydro	Alkal	TDs	Comm. Analysis	Pb Sr
127985	04-255-M001	Groundwater/1530	W	4-10-88	2) 40ml VOA/HCl	X	X					
	04-255-M001	Groundwater/1530			2) 40ml VOA/HCl	X	X					
					250ml amber/H2SO4			X				
					1 liter plastic/cold				X			
					1 liter plastic/HNO3					X		
127953	06-245-M001	Groundwater/1453	W	4-10-88	2) 40ml VOA/HCl	X	X					
					250ml amber/H2SO4			X				
					1 liter plastic/cold				X			
					1 liter plastic/HNO3					X		
127954	06-146-M001	Groundwater/1015	W	4-11-88	(2) 40 ml VOA/HCl	X	X					
					250 ml amber/H2SO4			X				
					1 liter plastic/cold				X			
					1 liter plastic/HNO3					X		
~~5500~~												

Matrix:

S- Soil
W- Water
O- Oil

DS- Drum Solids
DL- Drum Liquids
X- Other

Special Instructions:

Seals # 0000867 and # 000868

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1 cooler	Don D. Olander	Federal Express	4/1/88	1800			Mem. South	4/1/88	11:15



Custody Transfer Request/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAF OEHU/TS
Client Contact Augustus L O
Phone 800-821-4528

RFW Contact JD Olander
Date Due April 17, 1988 (Holding Time)
Project Number 0628-1402

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	COD	NH ₃	NO ₂ /NO ₃	TOC	BNA
127953	06-245-M001	Groundwater/1453	W	4-10-88	12 plastic/H ₂ SO ₄	X	X	X		
					500 ml plastic/H ₂ SO ₄					
					250 ml amber/H ₂ SO ₄					
					1/2 gal amber/cold					
127954	06-146-M001	Groundwater/1015	W	4-10-88	12 plastic/H ₂ SO ₄	X	X	X		
					500 ml plastic/H ₂ SO ₄					
					250 ml amber/H ₂ SO ₄					
					1/2 gal amber/cold					

Matrix:

S- Soil
W- Water
O- Oil

Special Instructions:

Seals # 0000 867 and # 0000 868

Items/Reason	Relinquished By	Received By	Date	Time	Relinquished By	Received By	Date	Time
1 cooler	Jon D. Olander	Federal Express	4/11/88	1800		Monic Scott	4/28/88	11:15

Custody Transfer Receipt/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAFOEHL/TS
Client Contact Augustus Lo
phone 1-800-'821-4528

RFW Contact

Client Contact Augustus Lo

Date Due 4

Phone 1-800-821-4528

Project Number

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Alk TDS	COMET Anions	Purge Aromatics	Ref Hydro
127956	04-115-M001	Groundwater/1440	W	4-11-88	1 liter plastic/cool	X	X		
	↓	↓	↓	↓	(2) 40 ml vials/HCl			X	
					950 ml amber/H ₂ SO ₄				
127957	04-115-M101	Groundwater/1440	W	4-11-88	1 liter plastic/cool	X	X		X
	↓	↓	↓	↓	(2) 40 ml vials/HCl			X	
					950 ml amber/H ₂ SO ₄				
127955	04-111-M001	Groundwater/1500	W	4-11-88	1 liter plastic/cool	X	X		X
	↓	↓	↓	↓	(2) 40 ml vials/HCl			X	
					950 ml amber/H ₂ SO ₄				
127960	04-249-M001	Groundwater/1520	W	4-11-88	1 liter plastic/cool	X	X		X
	↓	↓	↓	↓	(2) 40 ml vials/HCl			X	
					950 ml amber/H ₂ SO ₄				
127959	04-115-M401	Groundwater/1430	W	4-11-88	(2) 40 ml vials/HCl			X	
127958	04-115-M201	Groundwater/0910	W	4-11-88	1 liter plastic/cool	X	X		
127958	04-115-M201	↓	↓	↓	(2) 40 ml vials/HCl			X	
	↓	↓	↓	↓	950 ml amber/H ₂ SO ₄				
127961	04-255-M001	Groundwater/1530	W	4-10-88	1 liter plastic/cool	X	X		X
					(2) 40 ml vials/HCl			X	
					950 ml amber/H ₂ SO ₄				

Matrix:

S-	Soil	DS-	Drum Solids
W-	Water	DL-	Drum Liquids
O-	Oil	X-	Other

Special Instructions:

[illegible]



Custody Transfer Record/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAFOEHL/TS
Client Contact Augustus Lo
Phone 1-800-821-4528

request

RFW Contact Christophe W. Arum
Date Due 4-17-88 (Holding Time)
Project Number 0628-1402

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	A/k TDS	Common Anions	Purge Artesia	Pet Hydro
127962	04-150-M001	Groundwater / 1045	W	4-11-88	1 liter plastic / cool	X	X	X	
	↓	↓	↓	↓	(2) 40 ml vials / HCL				
127963	04-112-M001	Groundwater / 0920	W	4-11-88	950 ml amber / H ₂ SO ₄	X	X	X	
	↓	↓	↓	↓	1 liter plastic / cool				
	↓	↓	↓	↓	(2) 40 ml vials / HCL				
127964	04-112-M501	Groundwater / 0920	W	4-11-88	950 ml amber / H ₂ SO ₄	X	X	X	
	↓	↓	↓	↓	1 liter plastic / cool				
	↓	↓	↓	↓	(2) 40 ml vials / HCL				
127965	04-112-M601	Groundwater / 0920	W	4-11-88	950 ml amber / H ₂ SO ₄	X	X	X	
	↓	↓	↓	↓	1 liter plastic / cool				
	↓	↓	↓	↓	(2) 40 ml vials / HCL				
					950 ml amber / H ₂ SO ₄				

Matrix:

S-	Soil	DS-	Drum Solids
W-	Water	DL-	Drum Liquids
O-	Oil	X-	Other

Special Instructions:

[illegible]



Custody Transfer Record/Lab Work Request

Received By _____ RFW Contact C.W. Krumm
Date _____ Date Due 4/19/88 (Holding Time)
Assigned to _____ Project Number 0628-1402

Client USAF OEH/TS
Client Contact Augustus L. O
Phone 1-800-821-4528

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	ALK TDS	CCMMP COD AUXILIARY NH ₃	TOC	NO ₃ NO ₂	Metal SARCO	As Pb	Hg SE
128054	05-105-M001	Groundwater/0840	W	4-12-88	1 liter plastic/cold	X	X					
					1 liter plastic/H ₂ SO ₄							
					250 ml amber/H ₂ SO ₄							
					500 ml plastic/H ₂ SO ₄							
					1 liter plastic/HNO ₃							
128049	01-259-M001	Groundwater/1035	W	4-12-88	1 liter plastic/cold	X	X					
					1 liter plastic/H ₂ SO ₄							
					250 ml amber/H ₂ SO ₄							
					500 ml plastic/H ₂ SO ₄							
					1 liter plastic/HNO ₃							
128050	01-261-M001	Groundwater/1125	W	4-12-88	1 liter plastic/cold	X	X					
					1 liter plastic/H ₂ SO ₄							
					250 ml amber/H ₂ SO ₄							
					500 ml plastic/H ₂ SO ₄							
					1 liter plastic/HNO ₃							

Matrix:

S- Soil
W- Water
O- Oil

Special Instructions:

Seals # 0009JDO and #0010JDO

Items/Reason	Relinquished By	Received By	Date	Time	Relinquished By	Received By	Date	Time
1 cooler	Christopher Krumm	Federal Express	4/12/88	1800		Philip Seab	4/13/88	1100



Custody Transfer Record/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAF OEHLS/TS
Client Contact Augustus Lo
Phone 1-800-821-4528

RFW Contact C.W. Krumm
Date Due 4/19/88 (Holding Time)
Project Number 0228-1402

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Petro Helocor	Purge Arsenic	Pet Hydro	BNA
128054	05-105-M001	Groundwater / 0840	W	4-12-88	(2) 40 ml vials / HCL	X	X	X	
	↓	↓	↓	↓	950 ml amber / H ₂ SO ₄				
	↓	↓	↓	↓	1/2 gal amber / cold				
128049	01-259-M001	Groundwater / 1035	W	4-12-88	(2) 40 ml vials / HCL	X	X	X	
	↓	↓	↓	↓	950 ml amber / H ₂ SO ₄				
	↓	↓	↓	↓	1/2 gal amber / cold				
128050	01-261-M001	Groundwater / 1125	W	4-12-88	(2) 40 ml vials / HCL	X	X	X	
	↓	↓	↓	↓	950 ml amber / H ₂ SO ₄				
	↓	↓	↓	↓	1/2 gal amber / cold				

ANALYSES REQUESTED

Matrix:

S- Soil
W- Water
O- Oil

Special Instructions:

Seals #0009 JDO and #0010 JDO

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1 cooler	C.W. Krumm	Federal Express	4/12/88	1800					

Custody Transfer Record/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAF OEH/TS
Client Contact Augustus L.O
Phone 800-821-4528

RFW Contact J D Olander
Date Due April 19, 1988 (H)
Project Number 0628-14-02

SAMPLE IDENTIFICATION

[illegible]

Matrix:	S- Soil	DS- Drum Solids
W- Water	DL- Drum Liquids	
O- Oil	X- Other	

Special Instructions:

Seals # 00007JDO and #00008JDO

[illegible]



Custody Transfer Receipt/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAF/OEHL/TS
Client Contact Augustus Lo
Phone 800-821-4528

RFW Contact JD Olander
Date Due April 19, 1988 (Holding Time)
Project Number 0628-14-02

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Petro Hydrocarbons	Range Promote	Pet Hydro	BNA
128051	01-263-m001	Groundwater/1420	W	4-12-88	(2) 40ml VOA/HCl	X	X		
		↓	↓	↓	950ml amber/H ₂ SO ₄			X	
		↓	↓	↓	1/2 gal amber/cold				X
128055	05-235-m001	Groundwater/1510	W	4-12-88	(2) 40ml VOA/HCl	X	X		
		↓	↓	↓	950ml amber/H ₂ SO ₄			X	
		↓	↓	↓	1/2 gal amber/cold				X
128048	01-257-m001	Groundwater/1350	W	4-12-88	(2) 40ml VOA/HCl	X	X		
		↓	↓	↓	950ml amber/H ₂ SO ₄			X	
		↓	↓	↓	1/2 gal amber/cold				X
128053	04-148-m001	Groundwater/0845	W	4-12-88	(2) 40ml VOA/HCl	X	X		
128052	04-113-m001	Groundwater/1005	W	4-12-88	(2) 40ml VOA/HCl	X	X		
128053	04-148-m001	Groundwater/0845	W	4-12-88	950ml amber/H ₂ SO ₄			X	
128052	04-113-m001	Groundwater/1005	W	4-12-88	950ml amber/H ₂ SO ₄			X	
128056	05-235-m001	Groundwater/1510	W	4-12-88	(2) 40ml VOA/HCl	X	X		
~~SDO~~					~~4-12-88~~	<del></del>			

Matrix:

S- Soil
W- Water
O- Oil

DS- Drum Solids
DL- Drum Liquids
X- Other

Special Instructions:

Seals #00007-SDO and #0008JDO

Items/Reason	Relinquished By	Received By	Date	Time	Relinquished By	Received By	Date	Time
Transfer	SDO	JD Olander	4/12/88	1800		Shenandoah	4/15/88	11:00
1 cooler	JD Olander	Federal Express						



Custody Transfer Record/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USA FUEL/TS
Client Contact Augustus Lo
Phone 800-821-4528

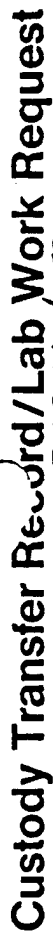
RFW Contact Jo D. Olander
Date Due April 20, 1988 (Holding Time)
Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Purge Atm.	Petro Hyd	IDS	Comm Gases	Petro Hydrocarb	BNA	TCC
128174	04-152-mal	Groundwater/0915	W	4-13-88	(2) 40ml VOA/HCl	X	X	X	X			
128175	05-134-mal	Groundwater/0840	W	4-13-88	950ml Amber/150g 1 liter plastic/cold	X	X	X	X			
					(2) 40ml VOA/HCl	X	X	X	X			
					950ml amber/150g 1/2 gal amber/cold							
					1 liter plastic/cold							
					250ml amber/150g							

Matrix: S- Soil DS- Drum Solids W- Water DL- Drum Liquids O- Oil X- Other
Special Instructions: Seals # 0001508 and # 0005911

Items/Reason	Relinquished By	Received By	Date	Time
1 cooler	Jo D. Olander	Theresa Smith	4/13/88	11:00



Received By _____
Date _____
Assigned to _____

Client USAF O&TL/TS
Client Contact Augustus L
Phone 800-821-4528

Request

RFW Contacts *Ag*
Date Due
Project Number

Assigned to:

Phone 800-821-4528

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	COD	NH ₃	metals selected	Pb/ H ₂ O	Se/ As	N ₂ / NO ₃	Purge Amount	Detro H ₂ O
128175	05-134-m001	Groundwater/0840	W	4-13-88	1 liter plastic/As ₂ S ₃	X	X	X	X	X	X	X	X
					1 liter plastic/H ₂ O								
					500 ml plastic/As ₂ S ₃								
128176	05-134-m001	Groundwater/0840	W	4-13-88	2) 40 ml WAT/H ₂ O								

~~4-13-88~~

~~JDO~~

Matrix:

S- Soil
W- Water
O- Oil
DS- Drum Solids
DL- Drum Liquids
X- Other

Special Instructions:

Seals # 000508 and # 0005911

[illegible]



Custody Transfer Record/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAF OEHLC/T5
Client Contact Augustus Lo
Phone 800-821-4528

RFW Contact JD Okender
Date Due April 24, 1988 (Holding Time)
Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Alkal	Comm	Acidity	Metals Pb, Hg Screen As, Se	BNH
128522	08-127-M201	Groundwater/1440	W	4-19-88	1 liter poly/cool	X	X	X	X	X
					1 liter poly/HNO3					
					(2) 950 ml amber/cool					
128520	08-127-M201	Groundwater/1500	W	4-19-88	1 liter poly/cool	X	X	X	X	X
					1 liter poly/HNO3					
					(2) 950 ml amber/cool					
128521	08-127-M101	Groundwater/1500	W	4-19-88	1 liter poly/cool	X	X	X	X	X
					1 liter poly/HNO3					
					(2) 950 ml amber/cool					
128521	08-127-M101	Groundwater/1500	W	4-19-88	1/2 gal amber/cool					

Matrix:

S- Soil
W- Water
O- Oil
DL- Drum Solids
X- Drum Liquids
Other

Special Instructions:

Seal #0005954 Water sample 08-127-M201 has two 950ml BNH
08-127-M001 has two 950ml BNH bottles
c150

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1 cooler	Jon D. Okender	Federal Express	4/19/88	1800			Shenandoah	4/29/88	11:00



Custody Transfer R

Lab Work Request

Received By _____
Date _____
Assigned to _____

Client LEAF OF HL/TS
Client Contact Gus
Phone 800-821-4588

RFW Contact C.W. Krumm
Date Due 4/25/88 (check by time)
Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Alkalinity	Common	TD	Purge	Pct	BNA	Metals	Acidity
128519	07-141-M001 G.W.	1405	W	4-18-88	1L plastic / cold	✓	✓	✓	✓	✓	✓	✓	✓
128518	07-139-M001 G.W.	1440	W	4-18-88	250ml amber / HCL	✓	✓	✓	✓	✓	✓	✓	✓
128516	07-138-M001 G.W.	1450	W	4-18-88	950ml amber / HCL	✓	✓	✓	✓	✓	✓	✓	✓
128523	08-129-M001 Groundwater	1115	W	4-19-88	1L plastic / cold	✓	✓	✓	✓	✓	✓	✓	✓
128517	08-138-M001 Groundwater	1450	W	4-18-88	1L plastic / cold	✓	✓	✓	✓	✓	✓	✓	✓

Matrix:

S- Soil
W- Water
O- Oil

Special Instructions:

Seal # 0005925-JDO
0005922

Items/Reason	Relinquished By	Received By	Time	Date	Time
10000	Don D. Olenchak	Federal Express	4/19/88	1800	1100



Custody Transfer Re

1/Lab Work Request

Received By

Date

Assigned to

Client

Client Contact

Phone

USAF DEHL / TS

603 40

800-821-4528

RFW Contact

Date Due

Project Number

C.W. Krumm

4-27-88 (pulling time)

0628-14-02

SAMPLE IDENTIFICATION

SAMPLE IDENTIFICATION				ANALYSES REQUESTED										
Sample No.	Client ID No.	Description / Time	Matrix	Date Collected	Container/Preservative	Pct. Halo	Purge amount	ALK	Conc. nitrate	TD5	Tax	Way	Pct. Hydro	
128911	05-516-W001	S.W. / 1105	W	4-20-88	(2) 40ml VOA ⁵ /HCL	✓	✓	✓	✓	✓				
					1L poly / cell									
					250ml each / H ₂ SO ₄									
					500ml each / H ₂ SO ₄									
					750ml each / H ₂ SO ₄									
128912	05-516-W001				(2) 40ml VOA ⁵ /HCL	✓	✓	✓	✓	✓			✓	
					1L poly / cell									
					250ml each / H ₂ SO ₄									
					500ml each / H ₂ SO ₄									
					750ml each / H ₂ SO ₄									
128913	05-516-W001				(2) 40ml VOA ⁵ /HCL	✓	✓	✓	✓	✓			✓	
					1L poly / cell									
					250ml each / H ₂ SO ₄									
					500ml each / H ₂ SO ₄									
					750ml each / H ₂ SO ₄									
					(2) 40ml VOA ⁵ /HCL	✓	✓	✓	✓	✓			✓	
					1L poly / cell									
					250ml each / H ₂ SO ₄									
					500ml each / H ₂ SO ₄									
					750ml each / H ₂ SO ₄									
					GSK 4-21-88									

Matrix:



Custody Transfer Request / Lab Work Request

Received By

Date_

Assigned to:

Client USA F O E H L A S

Client Contact Bus 12

Phone 800-821-4578

REW Contact C-111. Krumm

Date Due 1100

Project Number 1635-111-00

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

[illegible]

Matrix:

S-	Soil	DS-	Drum Solids
W-	Water	DL-	Drum Liquids
O-	Oil	X-	Other

Special Instructions:

501 = motor spike
601 = motor zero point

Serial # 0012 65K
0013 65K

[illegible]

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Matrix Screen	ANALYSES REQUESTED				
128916	01-503-M001	S.W. / 1400	W	4-20-88	1L poly / HCl	✓	Az	Ph	Hg	Se	NH3
128917	01-503-M001	S.W. / 1400			(2) 950mlamber/cell						
128918	01-503-M001	S.W. / 1400			1L poly / H2SO4	✓					
					1L poly / HCl	✓					
					(2) 950mlamber/cell						
					1L poly / H2SO4	✓					
					1L poly / HCl	✓					
					(2) 950mlamber/cell						
					1L poly / H2SO4	✓					
					1L poly / HCl	✓					
					(2) 950mlamber/cell						
					1L poly / H2SO4	✓					

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Relinquished By	Received By	Date	Time
128916	Erny Starnell	Ed Ex	4/24/88	1900		Monwicks	4/27/88	11:00
128917								
128918								

Custody Transfer Request/Lab Work Request

Received By _____
Date _____
Assigned to _____

RFW Contact G.W. Krumm
Date Due 4-27-85 (Roll)
Project Number 0828-16-07

SAMPLE IDENTIFICATION

[illegible]

Matrix:

S-	Soil	DS-	Drum Solids
W-	Water	DL-	Drum Liquids
O-	Oil	X-	Other

Special Instructions:

[illegible]



Custody Transfer Receipt / Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAF AEHL / TS
Client Contact Gus FO
Phone 800-821-4528

RFW Contact CKrumm
Date Due 4-27-88 (Bellingham)
Project Number 0828-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description / Time	Matrix	Date Collected	Container/Preservative	Pat. Halo.	Purge Acromat	AK	Comm. Arions	TDS	Tax	No. of H ₂ O	Pct. H ₂ O
128914	01-501-0001	S.W. / 1420	W	4-20-88	(2) 40ml VOA5/HCl	✓	✓	✓	✓	✓	✓	✓	✓
					1L poly / cold								
					250ml amber / H ₂ SO ₄								
					500ml poly / H ₂ SO ₄								
					950ml amber / H ₂ SO ₄								
128915	01-501-0001	S.W. / 1450	W	4-20-88	(2) 40ml VOA5/HCl	✓	✓	✓	✓	✓	✓	✓	✓
					1L poly / cold								
					250ml amber / H ₂ SO ₄								
					500ml poly / H ₂ SO ₄								
					950ml amber / H ₂ SO ₄								
128920	01-501-0001	S.W. / 1755	W	4-20-88	(2) 40ml VOA5/HCl	✓	✓	✓	✓	✓	✓	✓	✓
					1L poly / cold								
					250ml amber / H ₂ SO ₄								
					500ml poly / H ₂ SO ₄								
					950ml amber / H ₂ SO ₄								
					6SK 4-21-88								

ANALYSES REQUESTED

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions: Seal # 0010 GSK
0011 GSK

Items/Reason	Relinquished By	Received By	Relinquished By	Received By	Date	Time
1 cooler	Shirley S. Fink	Ed Ex		Mari Scott	4/27/88	11:00



Custody Transfer Request / Lab Work Request

Received By _____ Date _____ Assigned to _____
Client USAF DEHL / TS RFW Contact C.W. Keeney
Client Contact 603 40 Date Due 4-27-88 (Challenger)
Phone 800-821-4528 Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description / Time	Matrix	Date Collected	Container/Preservative	Metals Screen	Asph Hg	BNA	COD	NHs
128914	01-501-W001	S.W. / 1420	W	4-20-88	1L poly / HCl	✓	✓	✓	✓	✓
128915	01-502-W001	S.W. / 1450	W	4-20-88	1L poly / H2SO4	✓	✓	✓	✓	✓
128920	01-504-W001	S.W. / 1755	W	4-20-88	1L poly / HCl	✓	✓	✓	✓	✓
CSK 4-21-88										

ANALYSES REQUESTED

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions: Seal #s 0010 6SK 0011 6SK

Items/Reason	Relinquished By	Received By	Time	Date	Time
1 cooler	Thyng S. Tennill	Ed. Ego	4/24/88 1900	4/28/88 11:00	



Custody Transfer Receipt/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAF OEHLC/TS
Client Contact Augustus Lo
Phone 800-821-4528

RFW Contact J.D. Olander
Date Due April 27, 1988 (Holding Time)
Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Time	Matrix	Date Collected	Container/Preservative	COD	NH3	NO2	NO3	Metal Screen	Pb/kg	Se/As
128921	01-505-4001	Surface water	1130	W	4-20-88	1 liter poly / 16 SQ	X	X					
						500ml poly / 16 SQ			X	X			
						1 liter poly / HNO3					X	X	X
~~Q.D.~~													
~~4-21-88~~													
~~4-21-88~~													

Special Instructions: Seal #0005909

Matrix:
S- Soil
W- Water
O- Oil
DS- Drum Solids
DL- Drum Liquids
X- Other

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1 cooler	Don D. Olander	Federal Express	4/21/88	1900			Shawn Smith	4/22/88	11:00



Custody Transfer Request

Received By _____
Date _____
Assigned to _____

Client USHF OE HL / TS
Client Contact Augustus LO
Phone 800-821-4528

RFW Contact J.D. Olander
Date Due April 27, 1988 (Holding Time)
Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Purg Adjunct	Purg H/dolowh	Alkal Alkal	Comm onions	TDS	Mech Screen	Hg Pb As Se	Petro Hydro
128925	02-508-0001	Surface water/1500	W	4-20-88	23 40ml VOA/HCl	X	X	X	X	X	X	X	X
		↓			1 liter poly/coul								
		↓			1 liter poly/HNO ₃								
		↓			950ml amber/H ₂ SO ₄								X
128924	02-508-0001	Surface water/1200	W	4-20-88	23 40ml VOA/HCl	X	X	X	X	X	X	X	X
		↓			1 liter poly/coul								
		↓			1 liter poly/HNO ₃								
		↓			950ml amber/H ₂ SO ₄								X
128923	02-507-0001	Surface water/1820	W	4-20-88	23 40ml VOA/HCl	X	X	X	X	X	X	X	X
		↓			1 liter poly/coul								
		↓			1 liter poly/HNO ₃								
		↓			950ml amber/H ₂ SO ₄								X
128922	02-506-0001	Surface water/1015	W	4-20-88	23 40ml VOA/HCl	X	X	X	X	X	X	X	X
		↓			1 liter poly/coul								
		↓			1 liter poly/HNO ₃								
		↓			950ml amber/H ₂ SO ₄								X
~~Q-100. 4-21-88~~													

Matrix:

S- Soil
W- Water
O- Oil

DS- Drum Solids
DL- Drum Liquids
X- Other

Special Instructions:

Seal #0005956

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1 cooler	Jon D. Olander	Federal Express	4/21/88	1900			Meri Scott	4/22/88	11:00



Custody Transfer Receipt / Lab Work Request

Received By _____ Date _____ Assigned to _____
Client: USAFOEHL/TS RFW Contact: C.W. Krumm
Client Contact: CWS Lo Date Due: 4/27/88
Phone: 1-800-821-4523 Project Number: 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description / Time	Matrix	Date Collected	Container/Preservative	Argo-Around	ALK	COMM	TDS	Pct. Hydro.
128928	04-512-Mat	Surface Water (SW) / 1630	W	4-20-88	12 40ml VOA ⁵ /HCl	✓	✓	✓	✓	✓
128929	04-512-Mat	SW / 1630			12 40ml VOA ⁵ /HCl	✓	✓	✓	✓	✓
128930	04-512-Mat	SW / 1615			12 40ml VOA ⁵ /HCl	✓	✓	✓	✓	✓
128931	04-512-Mat	SW / 1630			12 40ml VOA ⁵ /HCl	✓	✓	✓	✓	✓
128926	04-512-Mat	SW / 1730			12 40ml VOA ⁵ /HCl	✓	✓	✓	✓	✓
128927	04-511-Mat	SW / 1650			12 40ml VOA ⁵ /HCl	✓	✓	✓	✓	✓
128932	04-512-Mat	SW / 1800			12 40ml VOA ⁵ /HCl	✓	✓	✓	✓	✓

Matrix:

S- Soil
W- Water
O- Oil
DS- Drum Solids
DL- Drum Liquids
X- Other

Special Instructions:

Seal #0005910

ANALYSES REQUESTED

Items / Reason	Relinquished By	Received By	Date	Time	Items / Reason	Relinquished By	Received By	Date	Time
128928	Gregory Starnes	Marie Scott	4/27/88	1700					

Custody Transfer Request

Received By _____
Date _____
Assigned to _____

Client USAF OEH/TS
Client Contact August 10
Phone 800-821-4578

RFW Contact J. Olander
Date Due 4/27/88 (Mckel)
Project Number 0628-14-0

SAMPLE IDENTIFICATION

[illegible]

Matrix:

	S- Soil	W- Water	O- Oil	DS- Drum Solids	DL- Drum Liquids	X- Other

Special Instructions:

cc: ~~Ty #~~'s 00555 KTF and 00556 KTF

[illegible]

REF

001%



Received By _____
Date _____
Assigned to _____

Received By _____
Date _____
Assigned to _____

Client USAF DEH/TS
Client Contact August 05 Lo
Phone 800-881-4628

RFW Contact J. Olander
Date Due 4/27/88 (160 Hrs)
Project Number 2138-14

Date Due 4/27/88 (Holding time)
Project Number 0628-14-02

SAMPLE IDENTIFICATION

SAMPLE IDENTIFICATION				ANALYSES REQUESTED						
Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Counted in Tallies	BVA	ALK.	TDS	Dur.
128935	05-130-1101	Grandwidth / 1330	W	4/21/88	1 L Plastic / sealed	X				
128934	05-130-1101	Grandwidth / 1330			(2) 250ml Amber / sealed	X	X			
128933	05-130-1101	Grandwidth / 1330			1 kg Amber / sealed	X	X	X		
128936	05-130-11401	Grandwidth / 1330			1 L Plastic / sealed	X	X	X		
					1 kg Amber / sealed					X
					(2) 250ml vials / HCl					
Handwritten signature										
Matrix:										

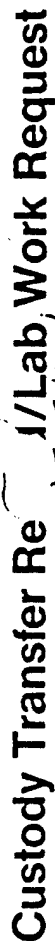
Matrix:

S- W- O-	Soil Water Oil	DS- DL- X-	Drum Solids Drum Liquids Other

Special Instructions:

FOR 25500, FOR 55500 5th Dec 2022

[illegible]



Assigned to _____

Phone 800-821-4528

Project Number 0628-14-02

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

[illegible]**Matrix:**

S-	Soil	DS-	Drum Solids
W-	Water	DL-	Drum Liquids
O-	Oil	X-	Other

Special Instructions:

Seal # 0005952

[illegible]



Custody Transfer Re. J/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAF OEH/TS
Client Contact Gus Lo
Phone 800-821-4528

RFW Contact C.W. Krump
Date Due 4-27-88 (Billing time)
Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Metals Screened	As	Pb	Hg	Se	BNA	CDD	NH ₃
128937	05-54-W001	S.W. / 1030	W	4-20-88	1L poly / HCl	✓	✓	✓	✓	✓	✓	✓	✓
128938	05-515-W001	S.W. / 1000	W	4-20-88	1L poly / H ₂ SO ₄	✓	✓	✓	✓	✓	✓	✓	✓
~~65K 4-21-88~~													

ANALYSES REQUESTED

Special Instructions: Seal #5 0005952

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Items/Reason	Relinquished By	Received By	Date	Time
1 container	Gregory S. Randall	Marie Beeth	4/27/88	11:00



Custody Transfer Receipt/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAF OEHL/TS
Client Contact Augustus LO
Phone 800-821-4528

RFW Contact J.D. Olander
Date Due April 27, 1988 (Holding Time)
Project Number 0628-14-02

Page 1 of 2

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Purg Accumulated	Purg Hydrolyzed	Alkal	Comm	TDS	COD	NH ₃	TOC
128939	05-517-W001	Surface water/1155	W	4-20-88	2140ml VOA/HCl	X	X	X	X	X	X	X	X
		↓			1 liter poly/cool								
		↓			1 liter poly/H ₂ SO ₄								
		↓			250ml amber/H ₂ SO ₄								
128940	05-518-W001	Surface water/1340	W	4-20-88	2140ml VOA/HCl	X	X	X	X	X	X	X	X
		↓			1 liter poly/cool								
		↓			1 liter poly/H ₂ SO ₄								
		↓			250ml amber/H ₂ SO ₄								
128941	05-518-W301	Surface water/1340	W	4-20-88	2140ml VOA/HCl	X	X	X	X	X	X	X	X
Q.D. Olander 4-21-88													

Matrix: S- Soil DL- Drum Solids W- Water DL- Drum Liquids O- Oil X- Other

Special Instructions:

Seal #0005948

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1 cooler	Jon D. Olander	Federal Express	4/21/88	1900			Marie Smith	4/22/88	11:00



Custody Transfer Re

1/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USHT OF EL/TS
Client Contact Augustus Lo
Phone 800-821-4528

RFW Contact JD Olander
Date Due April 27, 1988 (Holding Time)
Project Number 0628-44-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	NO ₂	NO ₃	met Screen	Pb Hg Se As	Hydro	BNA
128939	05-517-W001	Surface water/1155	W	4-20-88	500ml poly/H ₂ SO ₄	X	X	X	X		
					1 liter poly/HNO ₃						
					950 ml amber/H ₂ SO ₄						
128940	05-518-W001	Surface water/1340	W	4-20-88	(a) 950 ml amber/cob	X	X	X	X		
					600 ml poly/H ₂ SO ₄						
					1 liter poly/HNO ₃						
					950 ml amber/H ₂ SO ₄						
					(a) 950 ml amber/cob						

ANALYSES REQUESTED

Special Instructions: Seal #0005948

Matrix: DS- Drum Solids
S- Soil DL- Drum Liquids
W- Water O- Oil X- Other

Items/Reason	Relinquished By	Received By	Time	Date	Relinquished By	Received By	Time	Date
1 cooler	Jan D. Olander	Federal Express	4/21/88	1900		Menu Scott		4/22/88 11:00

Custody Transfer Rec

Received By _____
Date _____
Assigned to _____

Transfer Request/Lab Work Request

Client USAFOEHL/TS
Client Contact Augustus Lo
Phone 800-837-4528

RFW Contact J.D. Olander

Date Due April 27, 1988 (Holding Time)
Project Number 0628-14-02

Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description / Time	Matrix	Date Collected	Container/Preservative	COD	NH ₃	Alkal	Comm anions	TDS
128943	06-520-0001	Surface water / 1645	W	4-20-88	1 liter poly / H ₂ SO ₄	X	X	X	X	X
128942	06-519-0001	Surface water / 1620	W	4-20-88	1 liter poly / H ₂ SO ₄	X	X	X	X	X

Matrix:

S- W- O-	Soil Water Oil	DS- DL- X-	Drum Solids Drum Liquids Other

Special Instructions:

Seal # 6005950

[illegible]

Custody Transfer Receipt/Lab Work Request

Received By

Date:

Assigned to:

Client USAF OF HLT/TS

RFW Contact 3. Oktober

Client Contact Augustus LD

Date Due April 27, 1988

Phone 800-821-4528

Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Purge Technique	Alkal	Comm Antiox	TDS	Ret. Hydroc
128944	07-103-M001	Groundwater / 0830	W	4-20-88	(2) 40ml WAT/HCL	X	X	X	X	X
128945	07-106-M001	G.W. / 0830	W	4-21-88	1 liter poly/cold (2) 40ml WAT/HCL	X	X	X	X	X
128947	07-136-M101	G.W. / 1515	W	4/21/88	1L plastic/cold (2) 40ml WAT/HCL	X	X	X	X	X
128946	07-136-M001	G.W. / 1515	W	4/21/88	1L plastic/cold (2) 40ml WAT/HCL	X	X	X	X	X
128948	07-136-M001	G.W. / 1515	W	4/21/88	1L plastic/cold (2) 40ml WAT/HCL	X	X	X	X	X
128949	07-136-M401	G.W. / 1515	W	4/21/88	1L plastic/cold (2) 40ml WAT/HCL	X	X	X	X	X

Matrix:

	S- Soil	DS- Drum Solids
	W- Water	DL- Drum Liquids
	O- Oil	X- Other

Special Instructions:

1265000 # 201 707

[illegible]

Received By

Date: _____

Assigned to

Client USAF OEH/TS

Client Contact Augustus Ltd

8C5A-1E8-008 phone

DEW COST-A

Date Due *Feb*

Project Number 0628-14-03

April 27, 1988 (Holding Time)

SAMPLE IDENTIFICATION

SAMPLE IDENTIFICATION					ANALYSES REQUESTED									
Sample No.	Client ID No.	Description	Time	Matrix	Date Collected	Container/Preservative	Pur. Atmos.	Alkal	Crmm anion	TDS	Petro Hydro	Purg Halocarb	TOC	BNA
128950	07-621-W001	Surface water	1459	W	4-20-88	(2) 40ml VOA/HCl	X							
	↓	↓		↓	↓	1 liter poly / cool		X	X	X				
						950ml amber / 1/2 Soy					X			
128951	07-522-W001	Surface water	1520	W	4-20-88	(2) 40ml VOA/HCl	X							
	↓	↓		↓	↓	1 liter poly / cool		X	X	X				
						950ml amber / 1/2 Soy					X			
128952	07-523-W001	Surface water	1405	W	4-20-88	(2) 40ml VOA/HCl	X							
	↓	↓		↓	↓	1 liter poly / cool		X	X	X				
						950ml amber / 1/2 Soy					X			
128953	07-524-W001	Surface water	1425	W	4-20-88	(2) 40ml VOA/HCl	X							
	↓	↓		↓	↓	1 liter poly / cool		X	X	X				
						950ml amber / 1/2 Soy					X			
128954	01-505-W001	Surface water	1130	W	4-20-88	(2) 40ml VOA/HCl	X					X		
	↓	↓		↓	↓	1 liter poly / cool		X	X	X				
						950ml amber / 1/2 Soy					X			
						250ml amber / 1/2 Soy							X	
						(2) 950ml amber / cool								X
					Q.D.O.		4-21-88							

Matrix:

	S- Soil	DS- Drum Solids
	W- Water	DL- Drum Liquids
	O- Oil	X- Other

Special Instructions:

Seal # 0005909

[illegible]



Custody Transfer Receipt / Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USHT OEHL/TS
Client Contact Augustus Lo
Phone 800-821-4528

RFW Contact J.D. Olander
Date Due April 29, 1988 (Holding Time)
Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description / Time	Matrix	Date Collected	Container/Preservative	Purge Amount	Pot Holds	Alkal	Comm anions	TDS	COD	NH ₃	TOC
129019	05-233-M001	Groundwater/1350	W	4-22-88	2) 40 ml VOA/HCl	X	X	X	X	X	X	X	X
139017	05-132-M001	Groundwater/1140	W	4-22-88	1 liter poly/cool 1 liter poly/H ₂ SO ₄ 250 ml amber/H ₂ SO ₄	X	X	X	X	X	X	X	X
129018	05-132-M301	Groundwater TB/1140	W	4-22-88	1 liter poly/cool 1 liter poly/H ₂ SO ₄ 250 ml amber/H ₂ SO ₄ 2) 40 ml VOA/HCl	X	X	X	X	X	X	X	X

Matrix:

S- Soil
W- Water
O- Oil

Special Instructions:

Seal # 0004623

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1 cooler	Jan D. Olander	Federal Express	4/22/88	1900			4/25/88	0850	

RFW

-001-

16



Custody Transfer Re

Received By _____
Date _____
Assigned to _____

Client USA # 06147/75
Client Contact Augustus Lo
Phone 801-827-1152

Lab Work Request

RFW Contact

Date Due April 29, 1988 (H)

Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description / Time	Matrix	Date Collected	Container/Preservative	NO ₂	NO ₃	Metal Screen	Pb/Hg	As/Se	Petro Hydro	ANALYSES REQUESTED
129019	05-233-M001	Groundwater/1350	W	4-22-88	500 ml poly/H ₂ SO ₄	X	X	X	X	X	X	BNA
		↓	↓	↓	1 liter poly/HNO ₃							
		↓	↓	↓	950 ml amber/H ₂ SO ₄							
		↓	↓	↓	1/2 gal amber/cool							
129017	05-133-M001	Groundwater/1140	W	4-22-88	500 ml poly/H ₂ SO ₄	X	X	X	X	X	X	Q20
		↓	↓	↓	1 liter poly/HNO ₃							
		↓	↓	↓	950 ml amber/H ₂ SO ₄							
		↓	↓	↓	1/2 gal amber/cool							

~~Q.D. 4-22-88~~

Matrix: S- Soil NS- Drums Solids Special Instructions:

Matrix:

S-	Soil	DS-	Drum Solids
W-	Water	DL-	Drum Liquids
D-	Oil	X-	Other

Special Instructions:

Seal # 0004623

[illegible]



Custody Transfer Receipt

Client USAT OEHL/TS

Client Contact Augustus LO

Phone 800-821-4528

Received By _____

Date _____

Assigned to _____

Project Number 062814-02

RFW Contact J.D. Olander

Date Due April 29, 1988

Holding Time _____

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description / Time	Matrix	Date Collected	Container/Preservative	Range	Alkal.	Comm.	TDS	Petro
129022	07-140-M001	Groundwater/1420	W	4-22-88	2) 40ml VOA/HCl	X	X	X	X	X
		↓	↓	↓	1 liter poly/cool					
129023	07-142-M001	Groundwater/1515	W	4-22-88	2) 40ml VOA/HCl	X	X	X	X	X
		↓	↓	↓	1 liter poly/cool					
129025	07-243-M001	Groundwater/1530	W	4-22-88	2) 40ml VOA/HCl	X	X	X	X	X
		↓	↓	↓	1 liter poly/cool					
129020	07-103-M001	Groundwater/1555	W	4-22-88	2) 40ml VOA/HCl	X	X	X	X	X
		↓	↓	↓	1 liter poly/cool					
129024	07-237-M001	Groundwater/1610	W	4-22-88	2) 40ml VOA/HCl	X	X	X	X	X
		↓	↓	↓	1 liter poly/cool					
129021	07-103-M401	Groundwater/1555	W	4-22-88	2) 40ml VOA/HCl	X	X	X	X	X
		↓	↓	↓	1 liter poly/cool					
<u>Q.D. O.</u>										

Matrix:

S- Soil
W- Water
O- Oil

Special Instructions:

Seal # 0004622

Items/Reason	Relinquished By	Received By	Date	Time	Relinquished By	Received By	Date	Time
1 cooler	<u>Jim D. Olander</u>	<u>See above</u>	<u>4/22/88</u>	<u>1900</u>	<u>See above</u>	<u>See above</u>	<u>4/23/88</u>	<u>0850</u>

Custody Transfer Re

Received By _____
Date _____
Assigned to _____

Client USAFOEHL/TS
Client Contact Augustus Lo
Phone 800-824-4528

u/Lab Work Request

Requester: JD Olander
 RFW Contact: April 30, 1988
 Date Due: 0628-14-02
 Project Number: 0628-14-02

SAMPLE IDENTIFICATION

[illegible]

Matrix:

S- Soil	DS- Drum Solids
W- Water	DL- Drum Liquids
O- Oil	X- Other

Special Instructions:

COC Tag # 0005923

[illegible]



Custody Transfer Request

Received By _____ Date _____ Assigned to _____
Client USAF OEHM/TS RFW Contact J. Olander
Client Contact Augustus LO Date Due 4/30/88
Phone 800-881-4528 Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Pet. NO ₂ Hydro NO ₃	ANALYSES REQUESTED
129061	05-231-M01	Groundwater/1010	W	4/23/88	450ml Plastic/16504	✓	
	↓	↓	↓	↓	500ml Plastic/16504	✓	
129060	05-K7-M01	Groundwater/1100	W	4/23/88	450ml Plastic/16504	✓	
	↓	↓	↓	↓	500ml Plastic/16504	✓	
Matrix: S- Soil DS- Drum Solids W- Water DL- Drum Liquids O- Oil X- Other Special Instructions: <u>CDC. Tag # 0004620</u>							

Items/Reason	Relinquished By	Received By	Date	Time	Relinquished By	Received By	Date	Time
<u>1 cooler</u>	<u>K. Frick</u>	<u>Fedex</u>	<u>4/23/88</u>	<u>1700</u>		<u>See Anne Spive</u>	<u>4/25/88</u>	<u>1110</u>



Custody Transfer Request

Received By J.D. Olander
Date April 30, 1988
Assigned to Project Number 0628-14-02

Client USHR DEHL/TS
Client Contact Augustus Lo
Phone 800-821-4528

RFW Contact J.D. Olander
Date Due April 30, 1988
Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Any Rem.	Alk.	Comm.	TDS	Cond.	NH ₃	Metals	BVA	TOC	Acid
129064	08-128-1101	Groundwater/09100	W	4/23/88	10 Plastic/cool		✓	✓	✓						✓
					10 Plastic/HNO ₃							✓			
					10 Plastic/cool								✓		
129059	05-107-1101	Groundwater/09145	W	4/23/88	10 Plastic/cool										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										
					10 Plastic/cool										
					10 Plastic/HNO ₃										



Custody Transfer Receipt / Lab Work Request

Received By _____ Client USAF BEH/TS RFW Contact T. Olander
Date _____ Client Contact Augustos LO Date Due 4/30/88
Assigned to _____ Phone 800-828-4528 Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Pres. Method	Alk. Cont.	Ca. Cont.	TDS	COD	Mon. Spec.	BVA	TAC
129061	05-231-1001	Groundwater / 1015	W	4/23/88	100ml / cool	✓						✓	
					250ml / cool	✓							✓
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
129062	05-231-1001	Groundwater / 1015	W	4/23/88	(2) 40ml / cool	✓							
129060	05-167-1001	Groundwater / 1100	W	4/23/88	100ml / cool	✓							
					250ml / cool	✓							✓
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓							
					100ml / cool	✓							
					(2) 40ml / cool	✓							
					100ml / cool	✓		</					

Custody Transfer Receipt/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAF DEATH
Client Contact Quinto
Phone 800-804-4528

RFW Contact J. Oyander
Date Due 4/30/88
Project Number 0628--14

SAMPLE IDENTIFICATION

[illegible]

Special Instructions: Seal #'s 6669, 70

Matrix:	S- Soil	W- Water	O- Oil	DS- Drum Solids	DL- Drum Liquids	X- Other

[illegible]



RFW Contact JD Oberdor

Client Contact Bus

Date Due 5/17/88

Phone 800-821-4578

Project Number 0628-14-02

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

[illegible]

Matrix:

DS- Drum Solids	S- Soil
DL- Drum Liquids	W- Water
X- Other	O- Oil

Special Instructions:

Serial# = 0004550

S.W. = surface water

[illegible]



Custody Transfer Record/Lab Work Request

Received By _____ RFW Contact JD Oberlin
Date _____ Date Due 5/17/88
Assigned to _____ Project Number AB285-16-02
Client USAF DEHLA HS
Client Contact 603 60
Phone 800-821-6575

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	RECEIVED BY	DATE	ANALYSES REQUESTED	RECEIVED BY	DATE	TIME
130186	01-505-4002	SW / 1615	W	5/10/88	12 pint / HCl	✓					
					11 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
130187	01-505-4002	SW / 1955	W	5/10/88	12 pint / HCl	✓					
					11 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					
					250 ml / H ₂ SO ₄	✓					
					12 pint / HNO ₃	✓					
					500 pint / H ₂ SO ₄	✓					
					950 pint / H ₂ SO ₄	✓					
					12 pint / H ₂ SO ₄	✓					



REW Contact
SD Charles

Date Due 5/17/88

Project Number 6625-46-07

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	AIK	common anion	TDS	Purity Pct.
130192	04-510-W002	S.W. / 1830	W	5/10/88	12 plot / coll	✓	✓	✓	✓
130193	04-510-W002	S.W. / 1800	W	5/10/88	2 (40) ml VOA ⁵ / HCl 950 amber / H ₂ SO ₄	✓	✓	✓	✓
130194	04-512-W002	S.W. / 1730	W	5/10/88	12 plot / coll	✓	✓	✓	✓
130195	04-512-W002	S.W. / 1730	W	5/10/88	12 plot / coll	✓	✓	✓	✓
130196	04-512-W002	S.W. / 1730	W	5/10/88	12 plot / coll	✓	✓	✓	✓
Should be 04-512-W0202	04-512-W0202	S.W. / 1730	W	5/10/88	12 plot / coll	✓	✓	✓	✓
130198	04-512-W002	S.W. / 1820	W	5/10/88	12 plot / coll	✓	✓	✓	✓
130197	04-512-W002	S.W. / 1740	W	5/10/88	12 plot / coll	✓	✓	✓	✓
Should be 04-512-W0202	04-512-W0202	S.W. / 1740	W	5/10/88	12 plot / coll	✓	✓	✓	✓

Matrix:

Special Instructions:

S- Soil	DS- Drum Solids
W- Water	DL- Drum Liquids
O- Oil	X- Other

S.W. = surface water

[illegible]



Custody Transfer Receipt/Lab Work Request

Received By _____ RFW Contact JD Olander
Date _____ Date Due May 17, 1988 (Holding Time)
Assigned to _____ Phone 800-821-4528 Project Number 0628-14-02

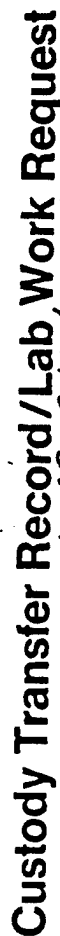
SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Pet. Halocarb. From	At. TDS	Comm. anions	COD Nit3	TOC	NO ₂ /NO ₃	Metals As requested
130199	05-514-W002	Surface water/1725	W	5-10-88	2140ml vials/HCl	X	X	X	X	X	X	X
		↓	↓	↓	1 liter poly/cool							
		↓	↓	↓	1 liter poly/H ₂ SO ₄							
		↓	↓	↓	250ml amber/H ₂ SO ₄							
		↓	↓	↓	500ml poly/H ₂ SO ₄							
		↓	↓	↓	1 liter poly/HNO ₃							
		↓	↓	↓	950ml amber/H ₂ SO ₄							
		↓	↓	↓	1/2 gal amber/cool							
130200	05-515-W002	Surface water/1630	W	5-10-88	2140ml vials/HCl	X	X	X	X	X	X	X
		↓	↓	↓	1 liter poly/cool							
		↓	↓	↓	1 liter poly/H ₂ SO ₄							
		↓	↓	↓	250ml amber/H ₂ SO ₄							
		↓	↓	↓	500ml poly/H ₂ SO ₄							
		↓	↓	↓	1 liter poly/HNO ₃							
		↓	↓	↓	950ml amber/H ₂ SO ₄							
		↓	↓	↓	1/2 gal amber/cool							
~~_____~~												
~~_____~~												
~~_____~~												

Special Instructions:

Seal # 0004619

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
	<u>Jon D. Olander</u>	<u>Federal Express</u>	<u>5/11/88</u>	<u>1500</u>			<u>Mervin Scott</u>	<u>5/12/88</u>	<u>11:00</u>



Client USAF AETL/TS

Client Contact *Augustus Lo*

Phone 800-821-4528

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Part Holo carb	Plug Alum	TOC	NO ₂	NO ₃	Akal	Comm anions	TDS
130197	04-512-W402	Surface water/730	W	5-10-88	2340ml vials/HCl		X						
130182	01-503-W202	Surface water/1415	W	5-10-88	2340ml vials/HCl	X	X						
					250ml amber/16.50g			X					
					500ml poly/16.50g				X				
					1 liter poly/cool					X			
130201	05-516-W002	Surface water/1835	W	5-10-88	2340ml vials/HCl	X	X						
					250ml amber/16.50g			X					
					500ml poly/16.50g				X				
					1 liter poly/cool					X			
~~130202~~													
~~130203~~													
~~130204~~													
~~130205~~													
~~130206~~													
~~130207~~													
~~130208~~													
~~130209~~													
~~130210~~													
~~130211~~													
~~130212~~													
~~130213~~													
~~130214~~													
~~130215~~													
~~130216~~													
~~130217~~													
~~130218~~													
~~130219~~													
~~130220~~													
~~130221~~													
~~130222~~													
~~130223~~													
~~130224~~													
~~130225~~													

Matrix:

S-	Soil	DS-	Drum Solids
W-	Water	DL-	Drum Liquids
O-	Oil	X-	Other

Special Instructions:

Seal # 0005926

[illegible]



Custody Transfer Receipt/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAF EDH/TS
Client Contact Augustus LO
Phone 800-821-4528

RFW Contact JDOlander
Date Due May 17, 1988 (Holding Time)
Project Number 0628-14-02

Page 2 of 2

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	COD	NH3	Metals Screen	Pb	Hg	Se	As	Petro Hydro.	BVA
130182	Should be 01-503-W002	Surface water/1415	W	5-10-88	1 liter poly/H2SO4	X	X	X	X	X	X	X	X	X
01-503-W002					1 liter poly/HNO3									
					950ml amber/H2SO4									
					42 gal amber/cool									
130201	05-516-W002	Surface water/1835	W	5-10-88	1 liter poly/H2SO4	X	X	X	X	X	X	X	X	X
130201	05-516-W002				1 liter poly/HNO3									
					950ml amber/H2SO4									
					42 gal amber/cool									
Q.D.O. 5-11-88 88														

Matrix:

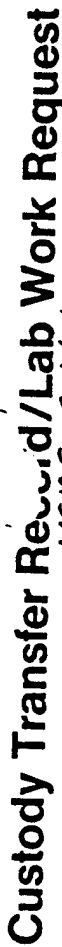
S- Soil
W- Water
O- Oil

DS- Drum Solids
DL- Drum Liquids
X- Other

Special Instructions:

Seal # 0005926

Items/Reason	Relinquished By	Received By	Items/Reason	Date	Time
	Don D. Olander	Thom D. Loeb		5/11/88	1500



Client USAF-OE-HL/TS
Client Contact Augustus Lo
Phone 800-821-4528

Request
RFW Contact: JDO lander pag

Client Contact Augustus L0
Phone 800-821-4528

Date Due May 17, 1988 (H0)
Project Number 0628-14-02

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

SAMPLE IDENTIFICATION				ANALYSES REQUESTED									
Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Pst. H ₂ O each	Pur. H ₂ O total	TOC	NO ₂	NO ₃	Alkal	Comm anions	TDS
130202	05-516-W502	Surface water/1835	W	5-10-88	(2) 40 ml vials/HCl	X	X						
		↓	↓	↓	250 ml amber/H ₂ SO ₄			X					
		↓	↓	↓	500 ml poly/H ₂ SO ₄				X	X			
		↓	↓	↓	1 liter poly/Cool						X	X	X
130203	05-516-W602	Surface water/1835	W	5-10-88	(2) 40 ml vials/HCl	X	X						
		↓	↓	↓	250 ml amber/H ₂ SO ₄			X		X			
		↓	↓	↓	500 ml poly/H ₂ SO ₄				X	X		X	X
		↓	↓	↓	1 liter poly/Cool						X	X	X
Matrix: 5-11-88 QC													

Matrix:

S- Soil	DS- Drum Solids
W- Water	DL- Drum Liquids
O- Oil	X- Other

Special Instructions:

Seal # 0004618

[illegible]

Custody Transfer Record/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAF/HL-75

Client Contact Augustus LO

Phone 800-821-4528

RFW Contact

Date Due 12

Project Number

J. Dolander

May 17, 1988

per 0628-14-0

Page 2

der

888 (Holding Time)

-14-02 ✓

SAMPLE IDENTIFICATION

SAMPLE IDENTIFICATION				ANALYSES REQUESTED									
Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	COD	NH ₃	metals Screen	Pb/ Hg	As/ Se	Ratio Hydro	BNA	
130202	05-516-W502	Surface water/1835	W	5-10-88	1 liter poly/H ₂ SO ₄	X	X						
		↓	↓	↓	1 liter poly/HNO ₃			X	X	X			
		↓	↓	↓	950 ml amber/H ₂ SO ₄								
		↓	↓	↓	1/2 gal amber/cool								
130203	05-516-W602	Surface water/1835	W	5-10-88	1 liter poly/H ₂ SO ₄	X	X					X	
		↓	↓	↓	1 liter poly/HNO ₃			X	X	X		X	
		↓	↓	↓	950 ml amber/H ₂ SO ₄								
		↓	↓	↓	1/2 gal amber/cool								
QDC 5-11-88 88-11-5 000													
Matrix:													

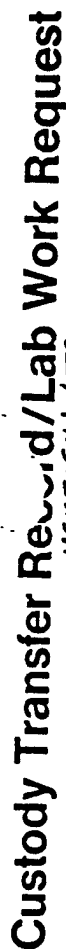
Matrix:

S- Soil	DS- Drum Solids
W- Water	DL- Drum Liquids
O- Oil	X- Other

Special Instructions:

Seal # 0004618

[illegible]



RFW Contact JD Olander

Date Due 5-17-88 (Holding Time)

Phone 800-821-4528

ANALYSES REQUESTED

[illegible]

Special Instructions:

S- W- O-	Soil Water Oil	DS- DL- X-	Drum Solids Drum Liquids Other

Seal # 0004612

[illegible]



Custody Transfer Receipt/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAF/AFM - TS
Client Contact Augustus LO
Phone 800-821-4528

RFW Contact JD Olander
Date Due May 17, 1988 (Holding Time)
Project Number 0628-74-02

Page 1 of 2

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	P-4 HCL	P-4 HCL	TOC	N02	N03	Alkal	Comin Cinins	IDS
130206	06-519-W002	Surface water/2115	W	5-10-88	2) 40ml vials/HCL	X	X						
					250ml amber/H2SO4			X					
					500ml poly/H2SO4				X				
					1 liter poly/cool					X			X
130207	06-520-W002	Surface water/1845	W	5-10-88	2) 40ml vials/HCL	X	X						
					250ml amber/H2SO4			X					
					500ml poly/H2SO4				X				
					1 liter poly/cool					X			X

Matrix:

S- Soil
W- Water
O- Oil

DS- Drum Solids
DL- Drum Liquids
X- Other

Special Instructions:

Seal # 0004617

5-11-88

Items/Reason	Relinquished By	Received By	Date	Time	Relinquished By	Received By	Date	Time
	Jim D. Olander	Federal Express	5/11/88	1500		Shawn Smith	5/12/88	11:10

Custody Transfer Request

Received By

Date: _____

Assigned to:

Client USAFEOELTS

Client Contact Augustus Lo

Phone 800-821-4528

RFW Contact JD Olander

Date Due May 17, 1988 C1401

Project Number 0628-14-02

SAMPLE IDENTIFICATION

[illegible]

Matrix:

	S- Soil	DS- Drum Solids
	W- Water	DL- Drum Liquids
	O- Oil	X- Other

Special Instructions:

Seal # 0004549

[illegible]



Custody Transfer Receipt/Lab Work Request

Received By _____ Date _____
Client USAFVEHL/TS Client Contact 603 60 RFW Contact JP Okander
Assigned to _____ Phone 800-801-4578 Date Due 5/17/88
Project Number 428-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	TOC	Metals	As	Ph	Hg	Se	Nox/ Nbx	Pt
130178	01-501-W002	S.W. / 1510	W	5/10/88	250ml amb / H ₂ SO ₄	✓	✓	✓	✓	✓	✓	✓	✓
		↓			16 plst / HNO ₃								
		↓			500ml plst / H ₂ SO ₄								
130179	01-502-W002	S.W. / 1700			950ml amb / H ₂ SO ₄	✓							✓
		↓			250ml amb / H ₂ SO ₄								
		↓			16 plst / HNO ₃		✓	✓	✓	✓	✓	✓	
		↓			500ml plst / H ₂ SO ₄								
130210	01-523-W002	S.W. / 1445	W	↓	950ml amb / H ₂ SO ₄								✓
		↓			250ml amb / H ₂ SO ₄								✓

ANALYSES REQUESTED

Special Instructions: Seal # 0005363

Matrix: S- Soil
W- Water
O- Oil
DS- Drum Solids
DL- Drum Liquids
X- Other

Items/Reason	Relinquished By	Received By	Date	Time
	<u>Gregory Stained</u>	<u>Shannon Scott</u>	<u>5/17/88</u>	<u>11:00</u>



RFW Contact ID 010012

Date Due 5/17/88

Project Number 0628-14-02

SAMPLE IDENTIFICATION

ANALYSES REQUESTEDSec/# 0005343

Matrix:

S-	Soil	DS-	Drum Solids
W-	Water	DL-	Drum Liquids
O-	Oil	X-	Other

Special Instructions:

S.W. = surface water

[illegible]



Custody Transfer Record/Lab Work Request

Received By _____ RFW Contact JD Oland
Date _____ Date Due 5/17/88
Assigned to _____ Project Number 0628-18-02

Client USAF OEHHS
Client Contact Gus
Phone 800-521-4578

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Part	Perms	ANALYSES REQUESTED	ENA	Toc	ASST	No.	NA
130184	01-504-41002	SW. / 1615	W	5/10/88	100ml / HCl	✓	✓	✓	✓	✓	✓	✓	✓
					12 plst / cold								
					12 plst / H ₂ SO ₄								
					1/2 gal / cold								
					250 ml / H ₂ SO ₄								
					12 plst / HNO ₃								
					500 plst / H ₂ SO ₄								
					950 ml / H ₂ SO ₄								
130185	01-504-502	SW. / 1615	W	5/10/88	12 plst / H ₂ SO ₄	✓	✓	✓	✓	✓	✓	✓	✓
					12 plst / cold								
					12 plst / H ₂ SO ₄								
					12 plst / cold								
					250 ml / H ₂ SO ₄								
					12 plst / HNO ₃								
					500 plst / H ₂ SO ₄								
					250 ml / H ₂ SO ₄								
130211	01-504-41002	SW. / 1515	W	5/10/88	12 plst / H ₂ SO ₄	✓	✓	✓	✓	✓	✓	✓	✓
					12 plst / cold								
					950 ml / H ₂ SO ₄								
					12 plst / cold								
					950 ml / H ₂ SO ₄								

Matrix:

S- Soil
W- Water
O- Oil

Special Instructions:

SW = surface water

DS- Drum Solids
DL- Drum Liquids
X- Other

Items/Reason	Relinquished By	Received By	Date	Time	Relinquished By	Received By	Date	Time
	Bryan Starnell	Fil Ex	5/16/88	1500		Shirley	5/16/88	11:00

Custody Transfer Request/Lab Work Request

Received By

Date: _____

Assigned to -

Client USAF/OFAA

Client Contact Gus 60

Phone 800

RFW Contact J. Olandse

Date Due 5/12/88

Project Number 0628-14-02

SAMPLE IDENTIFICATION

442 ANALYSES REQUESTED

Sample No.	Client ID No.	Description / Time	Matrix	Date Collected	Container/Preservative	COD	NO ₃ / NO ₂	TDS
136818	01-505-W002	SW / 1420	W	8/3/88	11 / H ₂ SO ₄	✓		
136819	02-507-W002	SW / 1445	W		500ml / H ₂ SO ₄		✓	
136820	02-508-W002	SW / 1440	W		500ml / H ₂ SO ₄		✓	
136821	02-509-W002	SW / 1445	W		500ml / H ₂ SO ₄		✓	
136822	02-509-W002	SW / 1445	↓		500ml / H ₂ SO ₄		✓	
136823	02-509-W002	MSD	↓		500ml / H ₂ SO ₄		✓	
136824	02-509-W002	MSD	↓		500ml / H ₂ SO ₄		✓	
136825	02-509-W002	MSD	↓		500ml / H ₂ SO ₄		✓	
136826	04-510-W002	SW / 1620	W		500ml / H ₂ SO ₄		✓	
136827	04-511-W002	SW / 1610	W		500ml / H ₂ SO ₄		✓	
136828	04-512-W002	SW / 1620	W		500ml / H ₂ SO ₄		✓	
136829	04-513-W002	SW / 1540	W		500ml / H ₂ SO ₄		✓	
136830	05-514-W002	SW / 1710	W		1L / H ₂ SO ₄	✓		
136831	05-516-W002	SW / 1800	W		1L / H ₂ SO ₄	✓		
136831	05-516-W002	↓	↓		1L / H ₂ SO ₄			✓
136832	05-516-W002	SW / 1800	W		1L / H ₂ SO ₄	✓		
136832	05-516-W002	↓	↓		1L / none			✓
136833	05-516-W002	SW / 1800	W		1L / H ₂ SO ₄	✓		
136833	05-516-W002	↓	↓		1L / none			✓
136834	05-516-W002	MSW / 1800	W		1L / H ₂ SO ₄	✓		

Matrix:

S- Soil
W- Water
O- Oil
DS- Drum Solids
DL- Drum Liquids
X- Other

Special Instructions:

[illegible]



Assigned to

Client USAF/OEHL
Client Contact Gus Lo
Phone 800-524

RFW Contact J. Chandler
Date Due 8/12/88
Project Number 6628-14-02

ANALYSES REQUESTED

SAMPLE IDENTIFICATION				ANALYSES REQUESTED					
Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	COD	Neg/Pos	TDS	P/T
136834	05-516-W532	MS3 surface water / 1800	W	8/3/88	1L / none			✓	✓
136835	05-516-W533	MS3 SW / 1800			1L / H ₂ SO ₄	✓			
136835	05-516-W533	MS3 SW / 1800			1L / none			✓	
136836	05-516-W022	SW / 1800			1Lamber / H ₂ SO ₄				✓
~~2000 Sept. 12, 1988~~									
~~65K 8/14/88~~									

Matrix:

Special Instructions:

S- W- O-	Soil Water Oil	DS- DL- X-	Drum Solids Drum Liquids Other

[illegible]

Custody Transfer Record/Lab Work Request

Received By _____
Date _____
Assigned to _____

Client USAF/OEHL
Client Contact Gus Lo
Phone 980

RFW Contact J Olander
Date Due 8/13/88
Project Number 0625-14-02

136837-844

SAMPLE IDENTIFICATION

[illegible]

Matrix:

S-	Soil	DS-	Drum Solids
W-	Water	DL-	Drum Liquids
O-	Oil	X-	Other

Special Instructions:

Sample 06-519-W022 1 L amber for Petroleum Hydrocarbons
was broken upon receipt. KAM 8/5/88

[illegible]



Custody Transfer Request

Received By _____ Date _____ Assigned to _____
Client USAF/WEH RFW Contact J. Olander
Client Contact Gus Go Date Due 8-15-88
Phone _____ Project Number 0628-16-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	TDS	Notes
136991	07-103-M001	Handwritten	W	8-5-88	500ml / H ₂ SO ₄	✓	
136992	07-103-M001	↓	W	8-5-88	1L poly / None	✓	
136993	07-103-M001	1355	↓	8-5-88	1L poly / None	✓	
136994	07-103-M001	↓	W	8-5-88	500ml / H ₂ SO ₄	✓	
136995	07-103-M001	↓	W	8-5-88	500ml / H ₂ SO ₄	✓	
136996	07-103-M001	↓	W	8-5-88	500ml / H ₂ SO ₄	✓	
136997	07-103-M001	↓	W	8-5-88	500ml / H ₂ SO ₄	✓	
136998	07-103-M001	1210	↓	8-4-88	1L poly / None	✓	
136999	07-103-M001	↓	W	8-4-88	500ml / H ₂ SO ₄	✓	
137000	08-128-M001	0920	↓	8-4-88	500ml / H ₂ SO ₄	✓	
137001	08-128-M001	↓	W	8-4-88	1L poly / None	✓	
137002	08-128-M001	↓	W	8-4-88	500ml / H ₂ SO ₄	✓	
137003	08-128-M001	↓	W	8-4-88	500ml / H ₂ SO ₄	✓	
137004	08-128-M001	↓	W	8-4-88	1L poly / None	✓	
137005	08-128-M001	↓	W	8-4-88	500ml / H ₂ SO ₄	✓	
137006	08-128-M001	1425	↓	8-5-88	500ml / H ₂ SO ₄	✓	
137007	08-128-M001	↓	W	8-5-88	1L poly / None	✓	
137008	07-140-M001	1440	↓	8-5-88	500ml / H ₂ SO ₄	✓	
137009	07-140-M001	↓	W	8-5-88	1L poly / None	✓	

Matrix:
S- Soil
W- Water
O- Oil
DS- Drum Solids
DL- Drum Liquids
X- Other

Special Instructions: Seal # = 0004482

- MS21 MS
MS21 MS

Items/Reason	Relinquished By	Received By	Date	Time
136991-137009	Dwight S. Thiel	Cathy Sanders	8/8/88	8:30



Custody Transfer Record/Lab Work Request

Received By _____ Date _____ Assigned to _____
Client USAF/OEHL RFW Contact J. Olander
"Client Contact GUS La Date Due 8/13/88
Phone _____ Project Number 0628-14-03

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description / Time	Matrix	Date Collected	Container/Preservative	TDS	W-Trop NO ₂ P.T.
137009	05-130-M021	Ground Water / 1705	W	8-4-88	16 poly / none	✓	✓
137010	05-132-M021	/ 1705				✓	
137011	05-133-M021	/ 1630				✓	
137012	05-135-M021	/ 1310		8-5-88	16 poly / H ₂ SO ₄	✓	✓
137013	05-105-M021	/ 1320				✓	✓
137014	05-105-M021	/				✓	✓
137015	05-105-M021	/				✓	✓
137016	07-237-M021	/ 1438		8-4-88	500ml / H ₂ SO ₄	✓	✓
137017	07-237-M021	/			16 / None	✓	✓
137018	07-138-M021	/ 1110			500ml / H ₂ SO ₄	✓	✓
137019	07-233-M021	/ 1500			16 / None	✓	✓
137020	07-239-M021	/ 1500			500ml / H ₂ SO ₄	✓	✓
137021	07-104-M021	/ 0920			500ml / H ₂ SO ₄	✓	✓
137022	07-104-M021	/ 0920			16 poly / None	✓	✓
137023	07-136-M021	/ 1015			500ml / H ₂ SO ₄	✓	✓
137024	07-136-M021	/ 1015			16 poly / None	✓	✓
137025	07-142-M021	/ 1200			500ml / H ₂ SO ₄	✓	✓
137026	07-142-M021	✓ / 1200			16 poly / None	✓	✓
				6SK 8/5/88			

ANALYSES REQUESTED

Special Instructions: Seal # 0004920

Matrix:
S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Items/Reason	Relinquished By	Received By	Date	Time	Relinquished By	Received By	Date	Time
137009-137026	Gregory S. Smith	F. O. E.	8/5	1800		Cathy S. Smith	8/8/88	8:30

RFW Contact J. Olander
Date Due 8-15/88
Project Number 0638-A-03

Received By _____
Date _____
Assigned to _____

Client USAF WEHL/TS
Client Contact Guz Lo
phone _____

RFW Contact J Okamoto
Date Due 8-15/88
Project Number 0638-A-0

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	COD	Nitrogen/NO ₃ Ammonia NO ₃	TDS	pH
137202	01-259-M001	Shimadzu 1500	W	8-7-88	14 poly/H ₂ SO ₄		✓		Hydro
137203	01-158-M001	1500			✓		✓		
137204	03-117-M001	1425			500ml/H ₂ SO ₄		✓		
137205	05-118-M001	1415					✓		
137206	05-116-M001	1430					✓		
137207	03-116-M101						✓		
137208	03-116-M120						✓		
137209	03-116-M150						✓		
137210	03-116-M160						✓		
137211	04-148-M001	1415		8-6-88			✓		
137212	04-150-M001	1345					✓		
137213	04-251-M001	1350					✓		
137214	04-113-M001	1430					✓		
137215	08-126-M001	1210		8-3-88	500ml/H ₂ SO ₄		✓		
137216	08-126-M021	1210			14 poly/Amol		✓		
137217	08-129-M001	1140			500ml/H ₂ SO ₄		✓		
137218	06-519-M022	Surface Water	✓	8-6-88	14 amber/H ₂ SO ₄				✓

Special Instructions: Seal # 0004757.

Matrix:		DS- Drum Solids	DL- Drum Liquids	X- Other
S- Soil	W- Water			
O- Oil				

[illegible]

WESTON

Custody Transfer Record/Lab Work Request

Received By W. H. [Signature]
Date 8-8-88
Assigned By [Signature]
Client USAF 05EHL/II
Client Contact Gusko
Phone
Date Due
Project Number 0628-14 03

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	TDS	NO ₃	NO ₂	ANALYSES REQUESTED
137311	02-509-W001	Surface water	W	8-8-88	16 poly/none	✓	✓	✓	
137312	02-509-W001		W		500 ml/H ₂ SO ₄		✓	✓	
137313	02-509-W001		W				✓	✓	
137314	02-509-W001		W				✓	✓	
137315	02-509-W001		W				✓	✓	
137316	02-509-W001		W				✓	✓	
~~55-8-8-88~~									

Special Instructions: Seal # 0004486

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Items/Reason	Relinquished By	Received By	Date	Time
1 cooler	Gregory K. [Signature]	Michael [Signature]	8/9/88	09:35
		W. H. [Signature]	8/9/88	17:00



Custody Transfer Record/Lab Work Request

Received By _____ Date _____ Assigned to _____
Client USAF OEHL/75 RFW Contact 50th
Client Contact Gas Date Due _____
Phone _____ Project Number 2635-1402

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	TPS	NO ₂	NO ₃	NO ₂ Hydro	ANALYSES REQUESTED
137317	04-510-1001	Surfwater / 1430	W	8-8-88	500ml / H ₂ SO ₄	✓	✓			
137318	04-510-1001	↓			1L poly / H ₂ SO ₄	✓				
137319	04-511-1001	1445			500ml / H ₂ SO ₄	✓				
137320	04-511-1001	↓			1L poly / H ₂ SO ₄	✓				
137321	04-512-1001	1455			500ml / H ₂ SO ₄	✓				
137322	04-512-1001	↓			1L poly / H ₂ SO ₄	✓				
137323	04-513-1001	1420			500ml / H ₂ SO ₄	✓				
137324	04-515-1001	↓			1L poly / H ₂ SO ₄	✓				
137325	06-519-1001	1520			1L poly / H ₂ SO ₄	✓				
137326	06-520-1001	1500			1L poly / H ₂ SO ₄	✓				
137327	07-259-1001	↓			1L poly / H ₂ SO ₄	✓				
QSA 8-8-88										

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions: 07-237-1001 is for broken sample

Serial # 000490

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
cooler	Gregory Smith	Michael Gray	8/8/88	09:44					



Custody Transfer Record/Lab Work Request

Received By _____ Date _____ Assigned to _____
Client USAF OEHHS RFW Contact J. Olands Date Due 8/15/88
Client Contact Gus La Project Number 06228-14-07
Phone _____

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description / Time	Matrix	Date Collected	Container/Preservative	TDS	No. Rep	ANALYSES REQUESTED
137328	07-522-W001	Surface Water / 11:50	W	8-8-88	500ml / H ₂ SO ₄	✓	✓	
137329	07-522-W001	↓			16 poly / H ₂ SO ₄	✓		
137330	"	↓			11 amber / H ₂ SO ₄	✓		
137331	07-521-W001	↓			500ml / H ₂ SO ₄	✓		
137332	07-521-W001	11:10			16 poly / H ₂ SO ₄	✓		
137333	07-521-W001	↓			11 amber / H ₂ SO ₄	✓		
137334	07-521-W001	↓			500ml / H ₂ SO ₄	✓		
137335	07-521-W001	↓			16 poly / H ₂ SO ₄	✓		
137336	07-523-W001	11:20			500ml / H ₂ SO ₄	✓		
137337	07-523-W001	↓			16 poly / H ₂ SO ₄	✓		
137338	07-523-W001	↓			11 amber / H ₂ SO ₄	✓		
137339	07-523-W001	↓			500ml / H ₂ SO ₄	✓		
137340	07-523-W001	↓			16 poly / H ₂ SO ₄	✓		
137341	07-523-W001	↓			11 amber / H ₂ SO ₄	✓		
137342	"	↓			500ml / H ₂ SO ₄	✓		
137343	07-526-W001	11:00			16 poly / H ₂ SO ₄	✓		
137344	"	↓			11 amber / H ₂ SO ₄	✓		

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions: Seal off 0001758

* Receive Bottle with this ID. For Ref. Hydro. also. CAS 8/9/88

Items/Reason	Relinquished By	Received By	Date	Time
137328	Gregory Smith	Michael J. Marshall	8/15/88	09:42
137329				
137330				
137331				
137332				
137333				
137334				
137335				
137336				
137337				
137338				
137339				
137340				
137341				
137342				
137343				
137344				

2

2



Custody Transfer Record/Lab Work Request

Received By _____ Date _____ Assigned to _____
Client CSAF/UEHL Client Contact Gus Lo Phone _____
RFW Contact J. Olander Date Due 12-14-88
Project Number 0528-1A-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	No. TDS	ANALYSES REQUESTED
137219	04-111-M001	Ground Water / 1030	W	8-6-88	500ml / H ₂ SO ₄	✓	✓
137220	04-111-M101	✓				✓	
137221	04-111-M101	✓				✓	
137222	04-111-M101	✓				✓	
137223	04-111-M101	✓				✓	
137224	04-111-M101	✓				✓	
137225	04-111-M101	✓				✓	
137226	04-152-M001	✓				✓	
137227	04-253-M001	✓				✓	
137228	04-154-M001	✓				✓	
137229	04-255-M001	✓				✓	
137230	04-240-M001	✓				✓	
137231	07-241-M001	✓				✓	
137232	07-241-M011	✓				✓	
137233	07-241-M021	✓				✓	
137234	07-241-M121	✓				✓	
137235	07-241-M131	✓				✓	
137236	07-241-M21	✓				✓	

Special Instructions: See # 0004760

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1 cooler	Gregory Stines	Felix	8/8/2000				Jodie Brooker	8/8/88	1030



Custody Transfer Record/Lab Work Request

Received By John Olander RFW Contact John Olander
Date 6/22/88 Client USAF HQ HL/TS Date Due Limited Walking Time 6/27/88
Assigned to 6/22/88 Client Contact Augustus LO Project Number 0628-14-02
Phone 1-800-821-4528

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Symm C/F- Matrix	C/F- Matrix	Analyses Requested
08-126-M021		Ground water/1920	W	6-20-88	1 liter poly/cool	X	X	
08-128-M021		11702				X	X	
05-231-M021		11600				X	X	
05-107-M021		11610				X	X	
05-103-M021		11618				X	X	
05-167-M021		11626				X	X	
05-167-M021		11626				X	X	
05-233-M021		Ground water/1215	W	6-21-88	1 liter poly/cool	X	X	
05-132-M021		11210				X	X	
07-142-M021		10915				X	X	
07-140-M021		10802				X	X	
07-140-M121		10802				X	X	
07-243-M021		11130				X	X	
07-243-M521		11130				X	X	
07-243-M621		11130				X	X	
07-102-M021		11300				X	X	
07-237-M021		11315				X	X	

Matrix:

S- Soil
W- Water
O- Oil

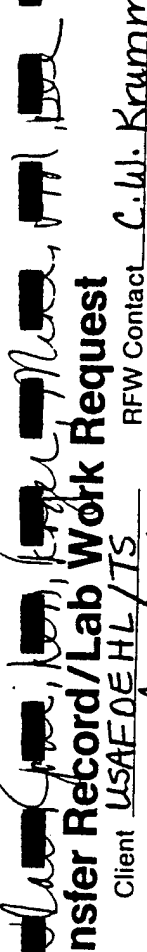
DS- Drum Solids
DL- Drum Liquids
X- Other

Special Instructions:

Seals # 0004870
0004871

original for 8806-759
760

Items/Reason	Relinquished By	Received By	Date	Time
1 cooler	John Olander	Augustus LO	6/21/88	1400
	John Olander	Augustus LO	6/22/88	1400



Request
RFW Contact C.W. Krumm
Date Due 4/12/88 (Holding Time)
Project Number 0628-14-02

Client USAF OEH/TS
Client Contact Augustus Lo
Phone 1-800-381-4518

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

800
700
600
500
400
300
200
100

Special Instructions:

Original for 8804-009

[illegible]

Received By P. Perez
Date 4/8/88

8804-009

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	CL	504	604
001	127645	01-122-M001	W	4-6-88				
2	127646	01-123-M001						
3	127647	01-124-M001						
4	127648	01-125-M001						
5	127649	01-156-M001						
6	127650	01-162-M001						
7	127651	01-122-M101						
8	127652	01-124-M201						

127653
127654
127655
127656
127657
127658
127659
127660
127661
127662
127663
127664
127665
127666
127667
127668
127669
127670
127671
127672
127673
127674
127675
127676
127677
127678
127679
127680
127681
127682
127683
127684
127685
127686
127687
127688
127689
127690
127691
127692
127693
127694
127695
127696
127697
127698
127699
127700

127653
127654
127655
127656
127657
127658
127659
127660
127661
127662
127663
127664
127665
127666
127667
127668
127669
127670
127671
127672
127673
127674
127675
127676
127677
127678
127679
127680
127681
127682
127683
127684
127685
127686
127687
127688
127689
127690
127691
127692
127693
127694
127695
127696
127697
127698
127699
127700

127653
127654
127655
127656
127657
127658
127659
127660
127661
127662
127663
127664
127665
127666
127667
127668
127669
127670
127671
127672
127673
127674
127675
127676
127677
127678
127679
127680
127681
127682
127683
127684
127685
127686
127687
127688
127689
127690
127691
127692
127693
127694
127695
127696
127697
127698
127699
127700

127653
127654
127655
127656
127657
127658
127659
127660
127661
127662
127663
127664
127665
127666
127667
127668
127669
127670
127671
127672
127673
127674
127675
127676
127677
127678
127679
127680
127681
127682
127683
127684
127685
127686
127687
127688
127689
127690
127691
127692
127693
127694
127695
127696
127697
127698
127699
127700

127653
127654
127655
127656
127657
127658
127659
127660
127661
127662
127663
127664
127665
127666
127667
127668
127669
127670
127671
127672
127673
127674
127675
127676
127677
127678
127679
127680
127681
127682
127683
127684
127685
127686
127687
127688
127689
127690
127691
127692
127693
127694
127695
127696
127697
127698
127699
127700

127653
127654
127655
127656
127657
127658
127659
127660
127661
127662
127663
127664
127665
127666
127667
127668
127669
127670
127671
127672
127673
127674
127675
127676
127677
127678
127679
127680
127681
127682
127683
127684
127685
127686
127687
127688
127689
127690
127691
127692
127693
127694
127695
127696
127697
127698
127699
127700

127653
127654
127655
127656
127657
127658
127659
127660
127661
127662
127663
127664
127665
127666
127667
127668
127669
127670
127671
127672
127673
127674
127675
127676
127677
127678
127679
127680
127681
127682
127683
127684
127685
127686
127687
127688
127689
127690
127691
127692
127693
127694
127695
127696
127697
127698
127699
127700

127653
127654
127655
127656
127657
127658
127659
127660
127661
127662
127663
127664
127665
127666
127667
127668
127669
127670
127671
127672
127673
127674
127675
127676
127677
127678
127679
127680
127681
127682
127683
127684
127685
127686
127687
127688
127689
127690
127691
127692
127693
127694
127695
127696
127697
127698
127699
127700

127653
127654
127655
127656
127657

Special Instructions:

S- Soil	DS- Drum Solids
W- Water	DL- Drum Liquids
O- Oil	X- Other

Detection limits CL- 2.5 mg/l
 SQ- 2.5
 PQ- 2.5 ✓

[illegible]



Custody Transfer Record/Lab Work Request

Received By 4/9/88
Date 4/9/88
Assigned to 8804-033

Client USAF 08TH FS Sub
Client Contact Augustus Lo
Phone 1-800-881-4528
AFW Contact C.W. Krumm
Date Due 4-13-88
Project Number D628-14-02-5/7/88

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Common Analytes
001 137691	01-158-M001	Groundwater 0930	W	4-6-88		X
002 137692	01-160-M001	1045		↓		X
003 137693	02-164-M001	1020		4-7-88		X
004 137694	03-165-M001	0950				X
005 137695	03-165-M101	1000				X
006 137696	03-165-M201	1405				X
007 137698	03-166-M001	1020				X
008 137699	03-116-M001	1700				X
009 137700	03-116-M501	1705				X
010 137701	03-116-M601	1710				X
011 137702	03-117-M001	1640				X
012 137703	03-118-M001	1735		↓		X

ANALYSES REQUESTED

ms/msd

Retention 4/13/88
009-010 data
008 - ms/msd

Retention 4/12/88
Water CL-2.5 mg/l
Sediment CL-2.5 mg/l
PO4-2.5 mg/l

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions: * ICCCL, IC504, IC604

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1 cooler	By Amundson	By Amundson	4/9/88	1530					
all	By Amundson	By Amundson	4/9/88	9:30					
storage	By Amundson	By Amundson	4/9/88	9:10					
	By Amundson	By Amundson	4/13/88	8:15					



Custody Transfer Record/Lab Work Request

Received By Phlegel Date 4/12/88
Assigned to 8804-053
Client USA FERTILISERS Client Contact Augustus LO Phone 1-800-381-4538
Contact C.W. Krumm Date Due 5/10/88 (Holding Time)
Project Number 0628-14-D2

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Conc./Analog	ANALYSES REQUESTED
127804	06-103-M001	Groundwater 1600	W	4-8-88		X	
127805	06-109-M001	1415				X	
127806	06-110-M001	1645				X	
127807	06-110-M501	1645				X	
127808	06-110-M601	1645				X	
127809	06-247-M001	1440	V			X	
127857	04-154-M001	Groundwater 1440	W	4-9-88		X	
127859	04-251-M001	1340				X	
127860	04-253-M001	1407				X	
127861	06-444-M001	1340				X	
127862	06-144-M001	1340				X	
127863	06-144-M201	1510	V			X	

3 { Ammonia 4/13/88
004 + 005 detected
003 = ms/msd.

For 11/5/88 B.C.D.
For 10/5/88 C.D.

Detection Limits CL - 2.5 mg/L
SO4 - 2.5 mg/L
PO4 - 2.5 mg/L

Specimen Instructions:

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Ammonia - CL, SO4, PO4 By IC

Items/Reason	Relinquished By	Received By	Date	Time	Relinquished By	Received By	Date	Time
1 Coolen	<u>Lee Anne Spino</u>	<u>Phlegel</u>	<u>4/11/88</u>	<u>1600</u>				
all storage	<u>Phlegel</u>	<u>Phlegel</u>	<u>4/12/88</u>	<u>9:30</u>				
	<u>Phlegel</u>	<u>Phlegel</u>	<u>4/12/88</u>	<u>9:10</u>				
	<u>Phlegel</u>	<u>Phlegel</u>	<u>4/12/88</u>	<u>9:20</u>				



Custody Transfer Record/Lab Work Request

Received By: Debra
Date: 4/13/88
Assigned to: 8804-069
Client: USAF #175 Supply Contact: C. W. Krumm
Client Contact: Augustus L. O. AFB Date Due: 4-22-88 (Holding Time) 5/1/88
Phone: 1-800-821-4528 Project Number: 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Signatures	ANALYSES REQUESTED
127953	06-245-M001	Groundwater 1453	W	4-10-88		X	
127954	06-146-M001	1015		4-11-88		X	
127955	04-111-M001	1500				X	
127956	04-115-M001	1440				X	
127957	04-115-M101	1440				X	
127958	04-115-M201	0910				X	
127960	04-249-M001	1520				X	
127961	04-255-M001	1530		4-10-88		X	
127962	04-150-M001	1045		4-11-88		X	
127963	04-112-M001	0920				X	
127964	04-112-M501	0920				X	
127965	04-112-M601	0920	↓	↓		X	
Detection Limits CL-2.5-mg/L S04-2.5-mg/L P04-2.5-mg/L							

Special Instructions:

Ammonia - CL, S04, P04 - By IC

Matrix:
S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Items/Reason	Relinquished By	Received By	Date	Time	Relinquished By	Received By	Date	Time
1 cooler	Debra	P. J. Gerin	4/12/88	1505				
all storage	Debra	P. J. Gerin	4/13/88	1045				
	Debra	P. J. Gerin	5/10/88	9:00				
	Debra	P. J. Gerin	5/11/88	4:00				



Custody Transfer Record / Lab Work Request

Received By [Signature]
Date 4/14/88
Assigned to 8804-092

Client USA FORT ITS FFW Contact C. W. Krumm 5/12/88
Client Contact Augustus Date Due April 15, 1988
Phone 1-800-821-4528 Project Number 0628-14-02

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Common Analysis
128048	01-257-M001	Groundwater 1350	W	4-12-88		X
128049	01-259-M001	1035				X
128050	01-261-M001	1125				X
128051	01-263-M001	1420				X
128052	04-113-M001	1005				X
128053	04-148-M001	0945				X
128054	05-105-M001	0840				X
128055	05-235-M001	1510				X

Handwritten: 1005, 0945, 0840, 1510
QC/DL
4/15/88
Augustus

Handwritten: Detectron Limited - CL-2.5 mg/L
So4-2.5 mg/L
P04-2.5 mg/L

Special Instructions:

Handwritten: Araris - CL, 304, P04 By IC.

Matrix:
S- Soil
W- Water
O- Oil
DS- Drum Solids
DL- Drum Liquids
X- Other

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1 container	[Signature]	[Signature]	4/13/88	1415					
oil	[Signature]	[Signature]	4/11/88	9:30					
	[Signature]	[Signature]	5/10/88	9:00					
	[Signature]	[Signature]	5/11/88	9:00					



Custody Transfer Record/Lab Work Request

Received By

Date:

Assigned to

8804-113.

Client

Client

Phone

Proof

25

2

2

11/17/2004

111 00

2/2/00

00/01/15

(

SAMPLE IDENTIFICATION

[illegible]

Matrix:

S-	Soil	DS-	Drum Solids
W-	Water	DL-	Drum Liquids
O-	Oil	X-	Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1 comb	Lee Anne Spivey	Phyger	4/14/88	1340					
	Ed Ex.	Phyger	4/15/88	9:32					
all	Phyger	Phyger	5/10/88	9:00					
storage	Phyger	Phyger	5/14/88	9:00					

Amur-cl, P₀₁, 504.



What Jodi Nickie Salbridge AFB Mike PM Dec 88
Custody Transfer Record/Lab Work Request
Received By 2/23/88
Date 2/23/88
Assigned to _____
Client USAF OETC JTS
Client Contact Augustus Lo
Phone 1-800-821-4528
RFW Contact C.W. Krumm 5/21/88
Date Due 4-25-88 ~~4-27-88~~ (Holding Time)
Project Number DA28-14-02

8804-183

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Common Analysis	ANALYSES REQUESTED
128516	07-138-M001	Groundwater / 1460	W	4-18-88		X	
128518	07-239-M001	1440				X	
128519	07-241-M001	1405				X	
128520	08-127-M001	1500		4-19-88		X	
128521	08-127-M101	1500				X	
128522	08-127-M001	1500				X	
128523	08-129-M001	1115				X	
128911	05-516-W001	S.W. / 1115	W	4-20-88		X	Bottle heads 08-127-M001
128912	05-516-W001					X	
128913	05-516-W001					X	
128916	01-503-W001	S.W. / 1400				X	
128917	01-503-W101					X	
128918	01-503-W201					X	
128914	01-501-W001	S.W. / 1420				X	
128915	01-502-W001	S.W. / 1450				X	
128920	01-504-W001	S.W. / 1755				X	
128922	02-506-W001	S.W. / 1015				X	
128923	02-507-W001	S.W. / 1820				X	
128924	02-508-W001	S.W. / 1200				X	
128925	02-509-W001	S.W. / 1500				X	

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

* CL 104, 504 Airforce Special OC & del
by LC

Items/Reason	Relinquished By	Received By	Date	Time	Relinquished By	Received By	Date	Time
1 cooler	Lyn Anne Spino		4/20/88	1700				
all	Blondie	Blondie	4/23/88					
storage	Blondie	Blondie	4/23/88	10:30				
	Blondie	Blondie	4/23/88	10:30				
	Blondie	Blondie	4/23/88	10:30				



Custody Transfer Record/Lab Work Request

Received By 157/88 RFW Contact C.W. Krumm 5/21/88
Date 4/23/88 Date Due 4-28-88 (Holding Time)
Assigned to 8804-183 Project Number 0628-14-02

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Common Analytes
021 128926	04-510-W001	S.W. / 1730	W	4-20-88		X
022 128927	04-511-W001	1650				X
023 128928	04-512-W001	1630				X
024 128929	04-512-W101	1630				X
025 128930	04-512-W201	1615				X
026 128932	04-513-W001	1800				X
027 128933	05-130-M001	Groundwater / 1330		4-21-88		X
028 128934	05-130-M001	1330				X
029 128935	05-130-M201	1330				X
030 128937	05-514-W001	S.W. / 1030		4-20-88	MS/MSD	X
031 128938	05-515-W001	1000				X
032 128939	05-517-W001	1155				X
033 128940	05-518-W001	1340				X
034 128942	06-519-W001	1620				X
035 128943	06-520-W001	1645				X
036 128944	07-103-M001	Groundwater 0830				X
037 128945	07-104-M001	0830		4-21-88		X
038 128946	07-136-M001	1515				X
039 128947	07-136-M101	1515				X
040 128948	07-136-M201	1515				X

ANALYSES REQUESTED

Special Instructions:

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Items/Reason	Relinquished By	Received By	Date	Time	Relinquished By	Received By	Date	Time
1 Cond.	See Analytical	See Analytical	4/22/88	1700				
	See Analytical	See Analytical	4/23/88	9:30				



Custody Transfer Record/Lab Work Request

Received By: 10/23/88
Date: 4/23/88
Assigned to: _____

Client USAF DETL/TS
Client Contact Augustus Lo
Phone 1-800-821-4528

RFW Contact C.W. Krumm
Date Due 4-29-88 (Holding T)
Project Number D628-14-02

8804-183

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

[illegible]

Matrix:

Special Instructions:

S-	Soil	DS-	Drum Solids
W-	Water	DL-	Drum Liquids
O-	Oil	X-	Other

[illegible]



Custody Transfer Record/Lab Work Request

Received By: [Signature] Date: 4/24/88
Assigned to: 8804-210
Client: Self Judge AFB RFW Contact: C.W. Krumm
Client Contact: Augustus Lo Date Due: 4-29-88 and 4-30-88 (Holding Time)
Phone: 1-800-821-4528 Project Number: 0628-14-02 5/25/88

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Common Analyses	ANALYSES REQUESTED
129017	05-132-M001	Groundwater/1140	W	4-22-88	MS/msd	X	
129019	05-233-M001	1350				X	
129020	07-102-M001	1535				X	
129022	07-140-M001	1420				X	
129023	07-142-M001	1515				X	
129024	07-239-M001	1610				X	
129025	07-243-M001	1530				X	
129059	05-107-M001	0945		4-23-88		X	
129060	05-167-M001	1100				X	
129061	05-231-M001	1015				X	
129063	08-126-M001	0915				X	
129064	08-128-M001		W			X	
Detection Limits							CL-2.5 mg/l P04-2.5 mg/l 504-2.5 mg/l

Special Instructions:

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1 code	Lee Ann Spivey	Allegier	4/26/88	1615					
all	Self Judge	Allegier	4/26/88	930					
storage	Allegier	Allegier	4/26/88	930					
	Allegier	Allegier	4/26/88	930					



What Nicki Jodi Mike PM Dee

Custody Transfer Record/Lab Work Request

Received By 5/17/88 Date 5/17/88 Assigned to 8805-386
Client USAF 6TH FS Self Contact C.W. Krumm Project Number 0638-14-02
Client Contact Augustus Lo Date Due 5-17-88 (Holding Time) 6-11-88
Phone 1-800-821-4578

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Concentration
130180	01-503-4002	Surface Water/1540	W	5-10-88		X
130181	01-503-4102	1540				X
130183						
130186	01-504-4002	1615				X
130187	01-505-4002	1955				X
130192	04-510-4002	1830				X
130193	04-511-4002	1800				X
130194	04-512-4002	1730				X
130195	04-512-4102	1730				X
130196	04-512-4002	1730				X
130198	04-513-4002	1820				X
130199	05-514-4002	1725				X
130200	05-515-4002	1630				X
130182	01-503-4002	1415				X
130201	05-516-4002	1835				X
130202	05-516-4002	7835				X
130203	05-516-4002	1835				X
130204	05-517-4002	1805				X
130205	05-518-4002	2145				X
130206	06-519-4002	3115	V			X

Special Instructions: * CL by IC (1000) 304 - IC (10504) 204 - IC (10004) Airforce Special QC + del

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
1 cooler	William Spive		5/13/88	1530					
200	Reddy	Bojagos	5/14/88	9:30					
200	Bojagos	Bojagos	5/16/88	9:00					
Storage	M. Goughy	W. H. Appala	5/18/88	2:30					



Custody Transfer Record/Lab Work Request

Received By B. J. [Signature] RFW Contact C. W. Krueger
Date 5/14/88 Date Due 5-19-88 (Holding Time) 6-11-88
Assigned to 8805-386 Project Number 0628-14-02
Client USAF DEHL/TS
Client Contact Augustus Lo
Phone 1-800-821-4578

SAMPLE IDENTIFICATION

Sample No.	Client ID No.	Description	Matrix	Date Collected	Container/Preservative	Original Analysis
20	06-520-0002	Surface Water/1845	W	5-10-88		X
21	02-507-0002	2035				X
22	02-508-0002	2035				X
23	02-509-0002	2055				X
24	07-521-0002	1610				X
25	07-522-0002	1540				X
26	01-501-0002	1510				X
27	01-502-0002	1700				X
28	07-523-0002	1445				X
29	01-504-0002	1615				X
30	01-504-0002	1615				X
31	07-524-0002	1515				X

ANALYSES REQUESTED

Special Instructions:

Matrix: S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Items/Reason	Relinquished By	Received By	Date	Time	Relinquished By	Received By	Date	Time
1 cooler	Reedley Spino	B. J. [Signature]	5/13/88	1530				
	Reedley Spino	B. J. [Signature]	5/14/88	9:30				

Miki, Wlab, Jodi, Mike, PM, Dee, Lat
Custody Transfer Record/Lab Work Request

WESTON Analytics Use Only

Client _____
Work Order _____
Date Rec'd. 6-22-88 Date Due 7-20-88
RFW Contact _____
Client Contact/Phone _____

AWA Use Only Lab ID	Client ID/Description
007	08-126-MO21
008	08-128-MO21
	C.O.C. humitter
	To accommodate
	different sites

Matrix:	W - Water	DS - Drum Solids
S - Soil	O - Oil	DL - Drum Liquids
SE - Sediment	A - Air	F - Fish
SO - Solid		X - Other

Special Instructions:

[illegible][illegible]

WESTON Analytics Use Only	
Samples Were: 1 Shipped or Hand-Delivered NOTES: 2 Ambient or Chilled NOTES: 3 Received Broken/Leaking (Improperly Sealed) Y ☐ N ☒ NOTES: 4 Properly Preserved Y ☐ N ☐ NOTES: 5 Received Within Holding Times Y ☐ N ☐ NOTES:	COC Tape Was: 1 Present on Outer Package Y ☐ N ☐ 2 Unbroken on Outer Package Y ☐ N ☐ 3 Present on Sample Y ☐ N ☐ 4 Unbroken on Sample Y ☐ N ☐ NOTES:
COC Record Was: 1 Present Upon Receipt of Samples Y ☐ N ☐ Discrepancies Between Sample Labels and COC Record? Y ☐ N ☒ NOTES:	



APPENDIX L

DATA VALIDATION TABLES

TABLE L-1
SOIL VOLATILE ORGANICS VALIDATION
IRP STAGE 2
SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	ANALYTES (mg/kg)			VALIDITY
BATCH: 120193-120198			12/17/87	MTHCHLOR	ACETONE	TOLUENE	ALL VALID EXCEPT AS LISTED
05-402-B301	120193	TB	12/22/87	0.014	<.004	<.002	
999MB1	LQC120193	MB	12/22/87		<.006		
999MB1	LQC120194	MB	12/22/87		<.006		
				0.07	0.03	0.01	VALID VALUES
05-401-B001	120194	I	12/22/87	0.009	0.012		NOT VALID
05-401-B001	120194	SP	12/22/87		0.017		NOT VALID
05-401-B001	120194	SP DUP	12/22/87	0.007	0.013		NOT VALID
05-401-B002	120195	I	12/22/87	0.01	0.014		NOT VALID
05-401-B003	120196	I	12/22/87	<.005	0.022		NOT VALID
05-402-B001	120197	I	12/22/87	<.006	0.015		NOT VALID
05-402-B002	120198	I	12/22/87	<.005	0.024		NOT VALID
BATCH: 120305-1230317			12/17/87	MTHCHLOR	ACETONE	TCA111	ALL VALID EXCEPT AS LISTED
05-404-B301	120317	TB	12/31/87	0.012	0.032	0.01	
999MB1	LQC120305	MB	12/29/87		<.005		
999MB1	LQC120309	MB	12/30/87		<.006		
999MB1	LQC120312	MB	12/31/87		<.006		VALID VALUES
				0.06	0.16	0.05	
05-402-B003	120305	I	12/29/87	0.015	0.012		
05-403-B001	120306	I	12/29/87	0.006	<.010		
05-403-B002	120307	I	12/30/87	0.009	0.029	<.003	NOT VALID
05-403-B003	120308	I	12/30/87	0.015	0.034	<.004	NOT VALID
05-404-B001	120309	I	12/31/87	0.007	0.039		NOT VALID
05-404-B002	120310	I	12/31/87	0.007	0.057		NOT VALID
05-404-B003	120311	I	12/31/87	0.007	0.032	0.007	NOT VALID
05-405-B001	120313	I	12/31/87	0.01		0.049	NOT VALID
05-405-B002	120314	I	12/31/87	0.006	0.094	0.038	NOT VALID
05-405-B003	120315	I	12/31/87	0.011	0.054	0.034	NOT VALID
05-405-B103	120316	DUP	12/31/87	0.018	0.066	0.014	NOT VALID
05-403-B101	120317	DUP	12/31/87	0.024	0.019	<.004	NOT VALID

MTHCHLOR - METHYLENE CHLORIDE
MEK - 2-BUTANONE
MIBK - 4-METHYL-2-PENTANONE
MB - METHOD BLANK
TB - TRIP BLANK
DUP - DUPLICATE
SP - SPIKE
SP DUP - SPIKE DUPLICATE
I - INVESTIGATIVE

TABLE L-1 (Continued)
SOIL VOLATILE ORGANICS VALIDATION
IRP STAGE 2
SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	ANALYTES (mg/kg)		VALIDITY
BATCH: 120350-120366			12/21/87	MTHCHLOR	ACETONE	ALL VALID EXCEPT AS LISTED
04-410-B301	120366	TB	1/2/88	0.005		
999MB1	LQC120350	MB	1/2/88	<.003	<.002	
999MB1	LQC120361	MB	1/4/88	<.001	<.002	
				0.025	0.01	VALID VALUES
04-406-B001	120350	I	1/2/88	<.005	<.002	NOT VALID
04-406-B002	120351	I	1/2/88	<.005	<.004	NOT VALID
04-406-B003	120352	I	1/2/88	<.003	<.004	NOT VALID
04-407-B001	120353	I	1/2/88	<.004	0.015	NOT VALID
04-407-B002	120354	I	1/2/88	<.005	<.008	NOT VALID
04-407-B003	120355	I	1/2/88	0.013	<.005	NOT VALID
04-408-B001	120356	I	1/2/88	0.009	0.003	NOT VALID
04-408-B101	120357	DUP	1/2/88	0.009	<.007	NOT VALID
04-408-B101	120357	SP	1/2/88	0.007	<.004	NOT VALID
04-408-B101	120357	SP DUP	1/2/88	<.004	<.004	NOT VALID
04-408-B002	120358	I	1/2/88		<.010	NOT VALID
04-408-B003	120434	I	1/2/88	0.019		NOT VALID
04-409-B001	120359	I	1/2/88		<.005	NOT VALID
04-409-B002	120360	I	1/2/88		<.011	NOT VALID
04-409-B002	120361	I	1/4/88	0.008		NOT VALID
04-410-B001	120362	I	1/4/88	0.011		NOT VALID
04-410-B002	120363	I	1/2/88	<.002	<.008	NOT VALID
04-410-B102	120364	DUP	1/2/88	<.002	<.007	NOT VALID
04-410-B003	120365	DUP	1/2/88	0.012	<.003	NOT VALID
BATCH: 120434-120443			12/22/87	MTHCHLOR	ACETONE TCA111	ALL VALID EXCEPT AS LISTED
04-412-B303	120443	TB	1/4/88	0.008	<.005	
999MB1	LQC120440	MB	1/4/88		0.005	
999MB1	LQC120443	MB	1/4/88		<.0046	
				0.04	0.025	VALID VALUES
04-408-B003	120434	I	1/4/88	0.019	0.013	<.004
04-409-B003	120435	I	1/4/88	0.039	<.009	<.004
04-411-B001	120436	I	1/4/88	0.009	0.014	
04-411-B001	120437	I	1/4/88	<.004	<.010	0.006
04-411-B002	120438	I	1/4/88	0.018	0.01	0.008
04-411-B003	120439	I	1/4/88	<.003	<.009	0.007
04-411-B003	120439	SP	1/4/88	<.003	<.005	0.007
04-411-B003	120439	SP DUP	1/4/88	<.003	<.006	0.012
04-412-B001	120440	I	1/4/88		0.009	
04-412-B002	120441	I	1/4/88	<.003	0.014	
04-412-B003	120442	I	1/4/88		0.016	

MTHCHLOR - METHYLENE CHLORIDE
MEK - 2-BUTANONE
MIBK - 4-METHYL-2-PENTANONE
MB - METHOD BLANK
TB - TRIP BLANK
DUP - DUPLICATE
SP - SPIKE
SP-DUP - SPIKE DUPLICATE
I - INVESTIGATIVE

TABLE L-1 (Continued)
SOIL VOLATILE ORGANICS VALIDATION
IRP STAGE 2
SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	ANALYTES (mg/kg)		VALIDITY
BATCH: 121082-121093			1/5/88	MTHCHLOR	ACETONE	ALL VALID EXCEPT AS LISTED
999MB1	LQC121082	MB	1/7/88			
999MB1	LQC121085	MB	1/8/88	<.002	<.008	
				0.01	0.04	VALID VALUES
04-413-B001	121082	I	1/8/88	0.009		NOT VALID
04-413-B001	121082	SP	1/8/88	0.006		NOT VALID
04-413-B001	121082	SP DUP	1/8/88	0.01		NOT VALID
04-413-B002	121083	I	1/8/88	0.009		NOT VALID
04-414-B001	121086	I	1/8/88		0.016	NOT VALID
04-415-B002	121090	I	1/8/88	<.006		NOT VALID
BATCH: 121269-121288			1/7/88	MTHCHLOR	ACETONE	ALL VALID EXCEPT AS LISTED
05-417-B301	121269	TB	1/8/88	0.017		
999MB1	LQC121269	MB	1/8/88	<.002	<.008	
999MB1	LQC121085	MB	1/8/88	<.002	<.008	
				0.085	0.04	VALID VALUES
05-416-B001	121270	I	1/8/88	<.005		NOT VALID
05-416-B002	121271	I	1/8/88	<.004		NOT VALID
999MB1	LQC121272	MB	1/9/88		<.004	
				0.085	0.02	VALID VALUES
05-416-B102	121272	DUP	1/9/88		0.016	NOT VALID
05-416-B003	121273	I	1/9/88		0.014	NOT VALID
05-417-B001	121274	I	1/9/88		<.012	NOT VALID
05-417-B002	121276	I	1/9/88		0.015	NOT VALID
999MB1	LQC121279	MB	1/11/88		<.009	
				0.085	0.045	VALID VALUES
03-418-B001	121278	I	1/11/88		0.023	NOT VALID
03-418-B101	121279	DUP	1/11/88		0.033	NOT VALID
03-419-B001	121280	I	1/11/88	<.005		NOT VALID
03-419-B002	121282	I	1/11/88	0.008		NOT VALID
03-418-B002	121283	I	1/11/88	<.006	0.027	NOT VALID
03-418-B003	121284	I	1/11/88		0.025	NOT VALID
03-419-B003	121285	I	1/11/88	0.009	0.018	NOT VALID
999MB1	LQC121286	MB	1/12/88		<.005	
				0.085	0.025	VALID VALUES
03-420-B002	121287	I	1/12/88		0.06	NOT VALID
BATCH: 121378-121397			1/9/88	MTHCHLOR	ACETONE	ALL VALID EXCEPT AS LISTED
02-424-B303	121397	TB	1/14/88	0.009	<.006	
999MB1	LQC121382	MB	1/12/88	<.004	<.008	
999MB1	LQC121397	MB	1/13/88		<.004	
				0.045	0.04	VALID VALUES
05-421-B001	121378	I	1/12/88		<.008	NOT VALID
05-421-B002	121379	I	1/12/88		0.02	NOT VALID
02-422-B003	121383	I	1/12/88	<.006	0.027	NOT VALID
02-423-B002	121386	I	1/12/88	<.006	0.024	NOT VALID
02-423-B003	121387	I	1/12/88	<.003	0.026	NOT VALID
02-424-B002	121389	I	1/12/88		0.022	NOT VALID
02-424-B003	121390	I	1/12/88	<.006	0.032	NOT VALID

MTHCHLOR - METHYLENE CHLORIDE
MEK - 2-BUTANONE
MIBK - 4-METHYL-2-PENTANONE
MB - METHOD BLANK
TB - TRIP BLANK
DUP - DUPLICATE
SP - SPIKE
SP DUP - SPIKE DUPLICATE
I - INVESTIGATIVE

TABLE L-1 (Continued)
SOIL VOLATILE ORGANICS VALIDATION
IRP STAGE 2
SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	ANALYTES (mg/kg)				VALIDITY	
BATCH: 121468-121479				MTHCHLOR	ACETONE	TCLME	MEK	MIBK	ALL VALID EXCEPT AS LISTED
07-429-B303	121479	TB	1/18/88	0.015	0.012	<.003			
999MB1	LQC121471	MB	1/18/88	<.001	0.012		<.006	<.002	
999MB1	LQC121479	MB	1/18/88	<.001	0.012		<.006	<.002	
				0.075	0.06	0.015	0.03	0.01	VALID VALUES
07-428-B001	121471		1/18/88	<.003	0.015				NOT VALID
07-428-B002	121472		1/18/88	<.002	0.02		<.007		NOT VALID
07-428-B102	121473		1/18/88	<.002	0.027				NOT VALID
07-428-B003	121474		1/18/88		0.046		<.011		NOT VALID
07-429-B001	121476		1/19/88		<.009				NOT VALID
07-429-B001	121476	SP	1/19/88		<.007				NOT VALID
07-429-B001	121476	SP DUP	1/19/88		<.007				NOT VALID
07-429-B002	121477		1/19/88		0.027				NOT VALID
07-429-B003	121478		1/19/88		0.02				NOT VALID
BATCH: 122410-122411				MTHCHLOR	ACETONE				ALL VALID EXCEPT AS LISTED
01-363-B301	122411	TB	1/27/88	0.011	0.011				
999MB1	LQC122410	MB	1/27/88	<.005					
999MB1	LQC122411	MB	1/27/88	<.005					
				0.055	0.055				VALID VALUES
01-363-B001	122410	SP	1/27/88		0.026				NOT VALID
BATCH: 123086-123089				MTHCHLOR	ACETONE	MEK	TOLUENE		ALL VALID EXCEPT AS LISTED
06-347-B301	123087	TB	2/4/88	0.011	<.006		0.015		
999MB1	LQC123086	MB	2/3/88	<.002		<.004	<.004		
999MB1	LQC123087	MB	2/3/88		<.002	<.004	<.004		
				0.055	0.03	0.02	0.075		VALID VALUES
06-347-B001	123086	I	2/3/88		0.018		0.008		NOT VALID
999MB1	LQC123088	MB	2/4/88						
				0.055	0.03		0.075		VALID VALUES
01-259-M001	123088	I	2/4/88				0.065		NOT VALID
06-345-M001	123089	I	2/4/88				<.004		NOT VALID
06-345-M001	123089	I	2/4/88	0.007					NOT VALID
06-345-M001	123089	I	2/4/88		<.010				NOT VALID
BATCH: 123369-123370				MTHCHLOR	ACETONE	TCLME	MEK	TOLUENE	ALL VALID EXCEPT AS LISTED
01-261-M301	123370	TB	2/10/88	0.01	<.004	<.001		<.004	
999MB1	LQC123370	MB	2/10/88		<.003				
				0.05	0.02	0.005	0.14	0.02	VALID VALUES
01-261-M001	123369	I	2/10/88				0.019		NOT VALID
01-261-M001	123369	SP	2/10/88	0.025					NOT VALID
01-261-M001	123369	SP DUP	2/10/88	0.037					NOT VALID

MTHCHLOR - METHYLENE CHLORIDE
MEK - 2-BUTANONE
MIBK - 4-METHYL-2-PENTANONE
MB - METHOD BLANK
TB - TRIP BLANK
DUP - DUPLICATE
SP - SPIKE
SP DUP - SPIKE DUPLICATE
I - INVESTIGATIVE

TABLE L-1 (Continued)
SOIL VOLATILE ORGANICS VALIDATION
IRP STAGE 2
SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	ANALYTES (mg/kg)		VALIDITY
BATCH: 126649-126650			3/22/88	MTHCHLOR	ACETONE	ALL VALID EXCEPT AS LISTED
01/357-B301	126650	TB	3/24/88	0.015	<.006	
999MB1	LQC126649	MB	3/24/88	<.005		
				0.075	0.03	VALID VALUES
01-357-B001	126649	I	3/24/88		0.015	NOT VALID

MTHCHLOR - METHYLENE CHLORIDE
MEK - 2-BUTANONE
MIBK - 4-METHYL-2-PENTANONE
MB - METHOD BLANK
TB - TRIP BLANK
DUP - DUPLICATE
SP - SPIKE
SP DUP - SPIKE DUPLICATE
I - INVESTIGATIVE

TABLE L-2
SOIL SEMIVOLATILE ORGANICS VALIDATION
IRP STAGE 2
SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	ANALYTES (mg/kg)	VALIDITY

BATCH: 120194-120198			12/17/87	BIS(2-ETHYLHEXYL)PHTHALATE	ALL VALID EXCEPT AS LISTED
999MB1	120194	MB	1/6/88	<.08	
				0.4	VALID VALUE
05-401-B001	120194	I	1/6/88	<.14	NOT VALID
05-401-B002	120195	I	1/6/88	<.12	NOT VALID
05-401-B002	120195	SP	1/6/88	<.13	NOT VALID
05-401-B002	120195	SP DUP	1/6/88	<.09	NOT VALID
05-401-B003	120196	I	1/6/88	<.18	NOT VALID
05-402-B001	120197	I	1/6/88	<.12	NOT VALID
05-402-B002	120198	I	1/6/88	<.13	NOT VALID

BATCH: 120305-120317			12/17/87	BIS(2-ETHYLHEXYL)PHTHALATE	ALL VALID EXCEPT AS LISTED
999MB1	LQC120305	MB		<.08	
				0.4	VALID VALUE
05-402-B003	120305	I	1/7/88	<.16	NOT VALID
05-402-B003	120305	SP	1/7/88	<.14	NOT VALID
05-402-B003	120305	SP DUP	1/7/88	<.11	NOT VALID
05-403-B001	120306	I	1/7/88	<.14	NOT VALID
05-403-B002	120307	I	1/7/88	<.11	NOT VALID
05-403-B003	120308	I	1/7/88	<.11	NOT VALID
05-404-B001	120309	I	1/7/88	<.08	NOT VALID
05-404-B002	120310	I	1/7/88	<.09	NOT VALID
05-404-B003	120311	I	1/7/88	<.1	NOT VALID
05-405-B001	120313	I	1/7/88	<.16	NOT VALID
05-405-B002	120314	I	1/7/88	<.11	NOT VALID
05-405-B003	120315	I	1/7/88	<.15	NOT VALID
05-405-B103	120316	I	1/7/88	<.09	NOT VALID
05-403-B101	120317	I	1/7/88	<.11	NOT VALID

BATCH: 121270-121288			1/7/88		ALL VALID

BATCH: 121378-121397			1/9/88		ALL VALID

BATCH: 121468-121479			1/11/88		ALL VALID

BATCH: 122410-122411			1/25/88		ALL VALID

BATCH: 123086-123089			2/2/88		ALL VALID

BATCH: 123369-123370			2/9/88		ALL VALID

BATCH: 126649-126650			3/22/88	BIS(2-ETHYLHEXYL)PHTHALATE	ALL VALID
999MB1	126649	MB	4/8/88	0.03	
				0.15	VALID VALUE

MB - METHOD BLANK			SP - SPIKE		
TB - TRIP BLANK			SP DUP - SPIKE DUPLICATE		
DUP - DUPLICATE			I - INVESTIGATIVE		
DATES REFER TO DATES BATCHES WERE SHIPPED AND SAMPLES ANALYZED					

TABLE L-3
SOIL METAL VALIDATION
IRP STAGE 2
SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	ANALYTES (mg/kg)		VALIDITY
BATCH: 120193-120198			12/17/87			ALL VALID
BATCH: 120305-120317			12/17/87			ALL VALID
BATCH: 121270-121288			1/7/88			ALL VALID
BATCH: 121378-121397			1/9/88	COPPER	IRON	ALL VALID EXCEPT AS LISTED
999PB1	LQI121378	MB	1/15/88			
999MB1	LQI121390	MB	1/19/88	4.2	4.4	
999PB1	LQI121390	MB	1/19/88	4.2	4.4	
				21	22	VALID VALUES
05-421-B003	121380	I	1/18/88	8.7		NOT VALID
02-422-B001	121381	I	1/18/88	12		NOT VALID
02-423-B001	121384	I	1/18/88	5		NOT VALID
02-423-B101	121385	D	1/18/88	8.5		NOT VALID
02-424-B001	121386	I	1/19/88	8.8		NOT VALID
02-424-B002	121389	I	1/19/88	19.4		NOT VALID
08-425-B001	121391	I	1/19/88	6.9		NOT VALID
08-425-B002	121392	I	1/19/88	20.5		NOT VALID
08-425-B003	121393	I	1/19/88	17.7		NOT VALID
08-426-B001	121394	I	1/19/88	12.3		NOT VALID
08-426-B002	121395	I	1/19/88	19.5		NOT VALID
08-426-B003	121396	I	1/19/88	20.6		NOT VALID
BATCH: 121468-121479			1/11/88	COPPER	IRON	ALL VALID EXCEPT AS LISTED
999MB1	LQI121390	MB	1/19/88	4.2	4.4	
999PB1	LQI121390	MB	1/19/88	4.2	4.4	
				21	22	VALID VALUES
08-427-B001	121468	I	1/19/88	3.7		NOT VALID
08-427-B002	121469	I	1/19/88	18.7		NOT VALID
08-427-B003	121470	I	1/19/88	16		NOT VALID
BATCH: 122410			1/25/88	CALCIUM	SILICON	ALL VALID
999MB1	LQI122410	MB	2/12/88	11.1	22.9	
				55.5	114.5	VALID VALUES
BATCH: 123086-123089			2/2/88	COBALT	ZINC	ALL VALID EXCEPT AS LISTED
999MB1	LQC122879		2/17/88	12.9	1.6	
				64.5	8	VALID VALUES
06-347-B001	123086	I	2/17/88	16		NOT VALID
06-347-B001	123086	SP	2/17/88	16.8		NOT VALID
01-359-M001	123088	I	2/17/88	11.9		NOT VALID
06-345-M001	123089	I	2/17/88	12.6		NOT VALID
BATCH: 126649			3/22/88	ZINC		
999MB1	126649	MB	4/8/88	1		ALL VALID
				5		VALID VALUE

MB - METHOD BLANK

DUP - DUPLICATE

I - INVESTIGATIVE

SP - SPIKE

SP SUP - SPIKE DUPLICATE

DATES REFER TO DATES BATCHES WERE SHIPPED AND SAMPLES ANALYZED

TABLE L-4
WATER VOLATILE ORGANICS VALIDATION
IRP STAGE 2
SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	ANALYTES (ug/L)			VALIDITY
BATCH: 127645-127652			4/6/88	MTHCHLOR	TCLME	TOLUENE	ALL VALID EXCEPT AS LISTED
01-124-M201	127652	EB	4/13/88	2	6.5		
01-124-M301	127653	TB	4/13/88	8		3	
01-124-M401	127654	AB	4/13/88		7.4		
999SB1	LQC127645	MB SP	4/13/88	2			
999SB1	LQC127647	MB SP	4/20/88	2			
				40	37	15	VALID VALUES
01-124-M001	127647	I	4/12/88	14			NOT VALID
01-125-M001	127648	I	4/12/88	2			NOT VALID
BATCH: 127691-127704			4/6/88	MTHCHLOR	TCLME		ALL VALID EXCEPT AS LISTED
02-165-M201	127696	EB	4/14/88	5	4.9		
02-165-M401	127697	AB	4/14/88		5.8		
03-118-M301	127704	TB	4/14/88				
999MB1	LQC127647	MB	4/20/88				
999SB1	LCC127647	MB SP	4/20/88	2			
999MB1	LQC127692	MB	4/13/88	3			
999SB1	LQC127692	MB SP	4/14/88	4			
999MB1	LQC127697	MB	4/13/88	2			
				25	29		VALID VALUES
02-165-M001	127694	I	4/13/88	6			NOT VALID
02-165-M101	127695	DUP	4/13/88	2			NOT VALID
03-116-M501	127700	SP	4/14/88	3			NOT VALID
BATCH: 127804-127810				MTHCHLOR			ALL VALID EXCEPT AS LISTED
06-247-M301	127810	TB	4/18/88				
999SB1	LCC127804	MB SP	4/20/88	2			
				10			VALID VALUE
06-108-M001	127804	I	4/20/88	4			NOT VALID
06-247-M001	127809	I	4/20/88	3			NOT VALID
BATCH: 127857-127864			4/9/88	MTHCHLOR	TCLME		ALL VALID
04-154-M301	127858	TB	4/17/88				
06-144-M201	127863	EB	4/18/88		4.9		
06-144-M401	127864	EB	4/18/88	4	3.1		
				20	24.5		VALID VALUES
I - INVESTIGATIVE			DUP - DUPLICATE				
TB - TRIP BLANK			MB - METHOD BLANK				
AB - AMBIENT BLANK			SP MP - METHOD SPIKE				
EB - EQUIPMENT BLANK			MTHCHLOR - METHYLENE CHLORIDE				
SP - SPIKE			TCLME - CHLOROFORM				
SP DUP - SPIKE DUPLICATE			BDCME - BROMODICHLOROMETHANE				
DATES REFER TO DATES BATCHES SHIPPED AND SAMPLES ANALYZED.							

TABLE L-4 (Continued)
WATER VOLATILE ORGANICS VALIDATION
IRP STAGE 2
SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	ANALYTES (ug/L)		VALIDITY
BATCH: 128911-128953			4/21/88	TCLME	BDCME	ALL VALID EXCEPT AS LISTED
05-518-W301	128941	TB	5/02/88			
05-130-W201	128935	EB	5/02/88	3.6	0.5	
05-130-W401	128936	AB	5/02/88	3.4		
07-136-W201	128948	EB	4/28/88			
07-136-W401	128949	AB	4/28/88			
				18	2.5	VALID VALUES
05-518-W301	128941	TB	5/02/88			
01-503-W201	128918	EB	5/1/88	3.8		
01-503-W401	128919	AB	5/1/88	3.1		
04-512-W201	128930	EB	4/27/88			
04-512-W401	128930	AB	4/27/88			
				19		VALID VALUES
02-508-W001	128924	I	5/01/88	4		NOT VALID
02-509-W001	128925	I	5/02/88	2		NOT VALID
01-514-W001	128937	I	4/27/88	0.6		NOT VALID
06-520-W001	128943	I	5/02/88	0.3		NOT VALID
BATCH: 129017-129025			4/21/88	TCLME		ALL VALID
05-132-M301	129018	TB	5/03/88	0.4		
07-102-M401	129021	AB	4/28/88			
				2		VALID VALUE
BATCH: 129059-129062						ALL VALID
05-231-M301	129062	TB	5/03/88			
BATCH: 130178-130211			5/11/88	TCLME	BDCME	ALL VALID EXCEPT AS LISTED
02-507-W302	130189	TB	5/17/88			
01-503-W202	130182	EB	5/17/88	3.6		
01-503-W402	130183	AB	5/17/88	6	0.7	
04-512-W202	130196	EB	5/16/88			
04-512-W402	130197	AB	5/16/88			
				30	3.5	VALID VALUES
01-503-W002	130180	I	5/17/88	4.5		NOT VALID
05-516-W002	130201	I	5/18/88	0.9		NOT VALID
05-516-W502	130202	SP	5/18/88	2		NOT VALID
05-516-W602	130203	SP DUP	5/18/88	1.8		NOT VALID
05-517-W002	130204	I	5/18/88	2.7		NOT VALID
05-518-W002	130205	I	5/18/88	3		NOT VALID
I - INVESTIGATIVE			DUP - DUPLICATE			
TB - TRIP BLANK			MB - METHOD BLANK			
AB - AMBIENT BLANK			SP MP - METHOD SPIKE			
EB - EQUIPMENT BLANK			MTHCHLOR - METHYLENE CHLORIDE			
SP - SPIKE			TCLME - CHLOROFORM			
SP DUP - SPIKE DUPLICATE			BDCME - BROMODICHLOROMETHANE			
DATES REFER TO DATES BATCHES SHIPPED AND SAMPLES ANALYZED.						

TABLE L-4 (Continued)
WATER VOLATILE ORGANICS VALIDATION
IRP STAGE 2
SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	ANALYTES (ug/L)	VALIDITY
BATCH: 127953-127959			4/10/88	MTHCHLOR	ALL VALID
04-255-M301	127985	TB	4/20/88	4	
04-115-M201	127958	EB	4/20/88		
04-115-M401	127959	AM	4/20/88	20	VALID VALUE
Batch: 127960-127962			4/11/88		ALL VALID
04-255-M301	127985	TB	4/20/88	4	
				20	VALID VALUE
Batch: 127963-127985			4/11/88		ALL VALID
04-255-M301	127985	TB	4/20/88	4	
				20	VALID VALUE
04-112-M001	127963	I	4/18/88	3	NOT VALID
04-112-M601	127965	SP DUP	4/18/88	3	NOT VALID
BATCH: 128048-128056			4/12/88		ALL VALID
05-235-M301	128056	TB	4/19/88		
BATCH: 128174-128175			4/12/88		ALL VALID
05-134-M301	128176	TB	4/19/88		
BATCH: 128520-128519			4/19/88		ALL VALID
07-138-M310	128517	TB	4/20/88		
I - INVESTIGATIVE DUP - DUPLICATE TB - TRIP BLANK MB - METHOD BLANK AB - AMBIENT BLANK SP MP - METHOD SPIKE EB - EQUIPMENT BLANK MTHCHLOR - METHYLENE CHLORIDE SP - SPIKE TCLME - CHLOROFORM SP DUP - SPIKE DUPLICATE BDCME - BROMODICHLOROMETHANE DATES REFER TO DATES BATCHES SHIPPED AND SAMPLES ANALYZED.					

TABLE L-5
WATER SEMIVOLATILE ORGANICS VALIDATION
IRP STAGE 2
SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	ANALYTES (mg/L)			VALIDITY

BATCH: 127645-127652			4/6/88	BZEHP		ALL VALID EXCEPT AS LISTED	
01-124-M201	127652	EB	4/11/88	<2			
999MB1	LQC127646	MB	4/08/88	<1			
				10		VALID VALUE	
01-122-M001	127645	I	4/13/88	<2		NOT VALID	
01-124-M001	127647	I	4/11/88	<1		NOT VALID	
01-162-M001	127650	I	4/08/88	<1		NOT VALID	
01-162-M001	127650	SP	4/08/88	<4		NOT VALID	
01-162-M001	127650	SP DUP	4/08/88	<2		NOT VALID	

BATCH: 127691-127809			4/6/88	DEHP		ALL VALID EXCEPT AS LISTED	
999MB1	LQC127691	MB	4/14/88	<2			
				10		VALID VALUE	
01-160-M001	127692	I	4/14/88	<1		NOT VALID	
06-108-M001	127804	I	4/14/88	<1		NOT VALID	
06-109-M001	127805	I	4/14/88	<1		NOT VALID	

BATCH: 127861-127863			4/9/88	DEHP	BZEHP	DNPB	ALL VALID EXCEPT AS LISTED
999MB1	LQC127691	MB	4/14/88	<2			
06-144-M201	127863	EB	4/15/88	<2	48	<2	
				10	240	10	VALID VALUE
06-144-M001	127861	I	4/15/88	<5	<2		NOT VALID
06-144-M101	127862	I	4/15/88	<1	<3		NOT VALID

BATCH: 127953-127954			4/7/88	DNPB		ALL VALID EXCEPT AS LISTED	
999MB1	LQC127953	MB	4/19/88	<1			
				5		VALID VALUE	
06-245-M001	127953	I	4/19/88	<1		NOT VALID	

BATCH: 128048-128055			4/12/88	DNPB		ALL VALID EXCEPT AS LISTED	
999MB1	LQC128048	I	4/19/88	<1			
				5		VALID VALUE	
01-257-M001	128048	I	4/19/88	<1		NOT VALID	
01-263-M001	128051	I	4/19/88	<1		NOT VALID	
05-235-M001	128055	I	4/20/88	<1		NOT VALID	

I - INVESTIGATIVE DUP - DUPLICATE
 EB - EQUIPMENT BLANK SP - SPIKE
 MB - METHOD BLANK BZEHP - BIS(2-ETHYLHEXYL)PHthalATE
 SP MP - METHOD SPIKE DEHP - DIETHYLPHthalATE
 SP DUP - SPIKE DUPLICATE DNPB - DI-N-BUTYLPHthalATE
 DATES REFER TO DATES BATCHES SHIPPED AND SAMPLES ANALYZED.

TABLE L-5 (Continued)
WATER SEMIVOLATILE ORGANICS VALIDATION
IRP STAGE 2
SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	ANALYTES (mg/L)	VALIDITY

BATCH: 128175-128175			4/12/88	DNPB	ALL VALID
999MB1	LQC128175	I	4/14/88	<1	
				5	VALID VALUE

BATCH: 128520-128523			4/19/88	BZEHP	ALL VALID EXCEPT AS LISTED
08-127-M201	128522	EB	4/21/88	<3	
				15	VALID VALUES
08-127-M101	128521	DUP	4/21/88	<4	NOT VALID
08-129-M001	128523	I	4/21/88	<4	NOT VALID

BATCH: 128911-128953			4/21/88	BZEHP	ALL VALID EXCEPT AS LISTED
05-130-M201	128935	EB	4/27/88	<7	
				35	VALID VALUES
05-130-M101	128934	I	4/27/88	<1	NOT VALID
01-503-W201	128918	EB	4/27/88	12	
				60	VALID VALUES
05-516-W001	128911	I	4/25/88	22	NOT VALID
05-516-W501	128912	SP	4/25/88	25	NOT VALID
05-516-W601	128913	SP DUP	4/25/88	<6	NOT VALID
01-501-W001	128914	I	4/26/88	<2	NOT VALID
01-502-W001	128915	I	4/26/88	<2	NOT VALID
01-503-W001	128916	I	4/25/88	<2	NOT VALID
01-504-W001	128920	I	4/27/88	34	NOT VALID
01-505-W001	128921	I	4/27/88	25	NOT VALID
05-514-W001	128937	I	4/27/88	<2	NOT VALID
05-515-W001	128938	I	4/27/88	<2	NOT VALID
05-517-W001	128939	I	4/27/88	<7	NOT VALID
05-518-W001	128940	I	4/27/88	13	NOT VALID
06-519-W001	128942	I	4/27/88	25	NOT VALID

BATCH: 129017-129060			4/21/88		ALL VALID

BATCH: 129063-129064			4/23/88		ALL VALID

I - INVESTIGATIVE DUP - DUPLICATE
 EB - EQUIPMENT BLANK SP - SPIKE
 MB - METHOD BLANK BZEHP - BIS(2-ETHYLHEXYL)PHTHALATE
 SP MP - METHOD SPIKE DEHP - DIETHYLPHTHALATE
 SP DUP - SPIKE DUPLICATE DNPB - DI-N-BUTYLPHTHALATE
 DATES REFER TO DATES BATCHES SHIPPED AND SAMPLES ANALYZED.

TABLE L-5 (Continued)
WATER SEMIVOLATILE ORGANICS VALIDATION
IRP STAGE 2
SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	ANALYTES (mg/L)	VALIDITY
BATCH: 130178-130199			5/11/88	BZEHP	ALL VALID EXCEPT AS LISTED
01-503-W002	130182	EB	5/17/88	17	
999MB1	LQC130178	MB	5/17/88	25	
				125	VALID VALUES
01-501-W002	130178	I	5/17/88	58	NOT VALID
01-502-W002	130179	I	5/17/88	40	NOT VALID
01-503-W002	130180	I	5/17/88	22	NOT VALID
01-503-W102	130181	DUP	5/17/88	45	NOT VALID
01-504-W002	130184	I	5/17/88	18	NOT VALID
01-504-W502	130185	SP	5/17/88	20	NOT VALID
01-504-W602	130186	SP DUP	5/17/88	22	NOT VALID
01-505-W002	130187	I	5/17/88	28	NOT VALID
05-514-W002	130199	I	5/17/88	32	NOT VALID
BATCH: 130200-130207			5/11/88	BZEHP	ALL VALID EXCEPT AS LISTED
01-503-W002	130182	EB	5/17/88	17	
999MB1	LQC130200	MB	5/19/88	18	
999SB1	LQC130200	MB SP	5/19/88	15	
				90	VALID VALUE
05-515-W002	130200	I	5/19/88	15	NOT VALID
05-516-W002	130201	I	5/19/88	16	NOT VALID
05-516-W502	130202	SP	5/19/88	19	NOT VALID
05-516-W602	130203	SP DUP	5/19/88	19	NOT VALID
05-517-W002	130204	I	5/19/88	25	NOT VALID
05-518-W002	130205	I	5/19/88	19	NOT VALID
06-519-W002	130206	I	5/19/88	30	NOT VALID
06-520-W002	130207	I	5/19/88	21	NOT VALID

I - INVESTIGATIVE DUP - DUPLICATE
 EB - EQUIPMENT BLANK SP - SPIKE
 MB - METHOD BLANK BZEHP - BIS(2-ETHYLHEXYL)PHTHALATE
 SP MP - METHOD SPIKE DEHP - DIETHYLPHTHALATE
 SP DUP - SPIKE DUPLICATE DNPB - DI-N-BUTYLPHTHALATE
 DATES REFER TO DATES BATCHES SHIPPED AND SAMPLES ANALYZED.

TABLE L-6
WATER INORGANIC VALIDATION
IRP STAGE 2
SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	ANALYTES (mg/L)				VALIDITY	
BATCH: 127645-127702			4/06/88	COD	FLUORIDE	AMMONIA	TDS	ALL VALID EXCEPT AS LISTED	
01-124-M201	127652	EB	4/06/88	32	0.1	0.4	11		
02-165-M201	127696	EB	4/07/88		0.5				
				160	2.5	2	55	VALID VALUES	
01-122-M001	127645	I	4/06/88	88*	0.3	0.6*		NOT VALID	
01-123-M001	127646	I	4/06/88	64*	0.4	0.6*		NOT VALID	
01-124-M001	127647	I	4/06/88		0.3	0.3*		NOT VALID	
01-125-M001	127648	I	4/06/88	51*	0.3	2.1*		NOT VALID	
01-156-M001	127649	I	4/06/88		0.2	0.6*		NOT VALID	
01-162-M001	127650	I	4/06/88	30*	0.2			NOT VALID	
01-122-M101	127651	DUP	4/06/88	100*	0.2	0.9*		NOT VALID	
01-160-M001	127692	I	4/06/88	30*	0.2	0.8*		NOT VALID	
02-164-M001	127693	I	4/07/88		0.2			NOT VALID	
02-165-M001	127694	I	4/07/88		0.2			NOT VALID	
02-165-M101	127695	DUP	4/07/88		0.2			NOT VALID	
02-166-M001	127698	I	4/07/88		0.2			NOT VALID	
03-116-M001	127699	I	4/07/88		0.2			NOT VALID	
03-116-M601	127701	SP DUP	4/07/88		0.2			NOT VALID	
03-117-M001	127702	I	4/07/88		0.2			NOT VALID	
BATCH: 127703-127957			4/08/88	FLUORIDE	AMMONIA	TOC	TDS	PHC	ALL VALID EXCEPT AS LISTED
06-144-M201	127863	EB	4/09/88	0.5	0.3	1.8	10	2	
				2.5	1.5	9	50	10	VALID VALUES
03-118-M001	127703	I	4/07/88	0.2					NOT VALID
06-108-M001	127804	I	4/08/88	0.2	0.3				NOT VALID
06-109-M001	127805	I	4/08/88	0.4					NOT VALID
06-110-M001	127806	I	4/08/88	0.4	0.6	3.6			NOT VALID
06-110-M601	127808	SP DUP	4/08/88	0.4	0.6	3.4			NOT VALID
06-247-M001	127809	I	4/08/88	0.6	0.9	3.8		2	NOT VALID
04-154-M001	127857	I	4/09/88	0.2				1	NOT VALID
04-251-M001	127859	I	4/09/88	0.9					NOT VALID
04-253-M001	127860	I	4/09/88	0.8					NOT VALID
06-144-M001	127861	I	4/09/88	0.2					NOT VALID
06-144-M101	127862	DUP	4/09/88	0.2					NOT VALID
06-245-M001	127953	I	4/10/88	1	1.5				NOT VALID
06-146-M001	127954	I	4/11/88	0.3	0.5	4.6			NOT VALID
04-111-M001	127955	I	4/11/88	1.4					NOT VALID
04-115-M001	127956	I	4/11/88	0.9					NOT VALID
04-115-M101	127957	I	4/11/88	0.9					NOT VALID

I - INVESTIGATIVE

ALK - ALKALINITY

EB - EQUIPMENT BLANK

COD - CHEMICAL OXYGEN DEMAND

MB - METHOD BLANK

TOC - TOTAL OXYGEN CARBON

SP MP - METHOD SPIKE

TDS - TOTAL DISSOLVED SOLIDS

SP DUP - SPIKE DUPLICATE

PHC - PETROLEUM HYDROCARBONS

DUP - DUPLICATE

SP - SPIKE

DATES REFER TO WHEN BATCH WAS SHIPPED AND WHEN SAMPLE WAS TAKEN.

* INDICATES ANALYTE IS FOR INFORMATION PURPOSES ONLY

TABLE L-6 (Continued)
WATER INORGANIC VALIDATION
IRP STAGE 2
SELFIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	ANALYTES (mg/L)			VALIDITY
BATCH: 127958-128516				FLUORIDE			ALL VALID EXCEPT AS LISTED
04-115-M201	127958	EB	4/11/88	0.5			
				2.5			VALID VALUE
04-249-M001	127960	I	4/11/88	0.4			NOT VALID
04-255-M001	127961	I	4/10/88	0.5			NOT VALID
04-150-M001	127962	I	4/11/88	0.2			NOT VALID
04-112-M001	127963	I	4/11/88	0.3			NOT VALID
04-112-M601	127965	SP DUP	4/11/88	0.3			NOT VALID
01-257-M001	128048	I	4/12/88	0.3			NOT VALID
01-259-M001	128049	I	4/12/88	0.3			NOT VALID
01-261-M001	128050	I	4/12/88	0.2			NOT VALID
01-263-M001	128051	I	4/12/88	0.3			NOT VALID
04-113-M001	128052	I	4/12/88	0.5			NOT VALID
04-148-M001	128053	I	4/12/88	0.3			NOT VALID
05-105-M001	128054	I	4/12/88	0.3			NOT VALID
05-235-M001	128055	I	4/12/88	0.6			NOT VALID
04-152-M001	128174	I	4/13/88	0.2			NOT VALID
05-134-M001	128175	I	4/13/88	0.2			NOT VALID
07-138-M001	128516	I	4/13/88	0.2			NOT VALID
BATCH: 128518-128925				COD	FLUORIDE	TDS	ALL VALID
08-127-M201	128522	EB	4/19/88		0.7	26	
					3.5	130	VALID VALUES
07-239-M001	128518	I	4/18/88		0.6		NOT VALID
07-241-M001	128519	I	4/18/88		0.4		NOT VALID
08-127-M001	128520	I	4/19/88		0.1		NOT VALID
08-127-M101	128521	DUP	4/19/88		0.1		NOT VALID
08-129-M001	128523	I	4/19/88		0.1		NOT VALID
01-503-W201	128918	EB	4/20/88		0.6		
				7			
				35	3		VALID VALUES
05-516-W001	128911	I	4/20/88	26	0.2		NOT VALID
05-516-W601	128913	SP DUP	4/20/88	25	0.2		NOT VALID
01-501-W001	128914	I	4/20/88		0.2		NOT VALID
01-502-W001	128915	I	4/20/88		0.2		NOT VALID
01-503-W001	128916	I	4/20/88		0.2		NOT VALID
01-503-W101	128917	DUP	4/20/88		0.2		NOT VALID
01-504-W001	128920	I	4/20/88	22	0.1		NOT VALID
01-505-W001	128921	I	4/20/88	10	0.2		NOT VALID
02-506-W001	128922	I	4/20/88		0.1		NOT VALID
02-507-W001	128923	I	4/20/88		0.5		NOT VALID
02-508-W001	128924	I	4/20/88		0.1		NOT VALID
02-509-W001	128925	I	4/20/88		0.1		NOT VALID

I - INVESTIGATIVE ALK - ALKALINITY
EB - EQUIPMENT BLANK COD - CHEMICAL OXYGEN DEMAND
MB - METHOD BLANK TOC - TOTAL OXYGEN CARBON
SP MP - METHOD SPIKE TDS - TOTAL DISSOLVED SOLIDS
SP DUP - SPIKE DUPLICATE PHC - PETROLEUM HYDROCARBONS
DUP - DUPLICATE
SP - SPIKE

DATES REFER TO WHEN BATCH WAS SHIPPED AND WHEN SAMPLE WAS TAKEN.
* INDICATES ANALYTE IS FOR INFORMATION PURPOSES ONLY

TABLE L-6 (Continued)
WATER INORGANIC VALIDATION
IRP STAGE 2
SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	ANALYTES (mg/L)						VALIDITY
BATCH: 128926-128953			4/21/88	COD	FLUORIDE	AMMONIA	TOC	TDS	PHC	ALL VALID EXCEPT AS LISTED
05-130-M201	128935	EB	4/21/88	7	0.7	0.1	1.5	18	1.2	
07-136-M201	128948	EB			0.7				1.5	
				35	3.5	0.5	7.5	90	7.5	VALID VALUES
05-130-M001	128933	I	4/21/88		0.1				2.2	NOT VALID
05-130-M101	128934	I	4/21/88		0.1				1.8	NOT VALID
07-103-M001	128944	I	4/20/88		0.3				1.1	NOT VALID
07-104-M001	128945	I	4/21/88		0.6					NOT VALID
07-136-M001	128946	I	4/21/88		0.7				4.3	NOT VALID
07-136-M101	128947	I	4/21/88		0.7				2	NOT VALID
01-503-W201			4/20/88	7	0.6					
				35	3					VALID VALUES
04-510-W001	128926	I	4/20/88		0.1					NOT VALID
04-511-W001	128927	I	4/20/88		0.1					NOT VALID
04-512-W001	128928	I	4/20/88		0.3					NOT VALID
04-512-W101	128929	I	4/20/88		0.2					NOT VALID
04-513-W001	128932	I	4/20/88		0.3					NOT VALID
05-514-W001	128937	I	4/20/88	24	0.2					NOT VALID
05-514-W001	128937	SP DUP	4/20/88	24	0.2					NOT VALID
05-515-W001	128938	I	4/20/88		0.2					NOT VALID
05-517-W001	128939	I	4/20/88	19	0.1					NOT VALID
05-518-W001	128940	I	4/20/88	19	0.2					NOT VALID
06-519-W001	128942	I	4/20/88		0.3					NOT VALID
06-520-W001	128943	I	4/20/88		0.1					NOT VALID
07-521-W001	128950	I	4/20/88		1.5					NOT VALID
07-522-W001	128951	I	4/20/88		0.3					NOT VALID
07-523-W001	128952	I	4/20/88		0.2					NOT VALID
07-524-W001	128953	I	4/20/88		0.1					NOT VALID

BATCH: 129017-129061 4/22/88 ALL VALID

BATCH: 129063-129064 4/23/88 ALL VALID

I - INVESTIGATIVE ALK - ALKALINITY
EB - EQUIPMENT BLANK COD - CHEMICAL OXYGEN DEMAND
MB - METHOD BLANK TOC - TOTAL OXYGEN CARBON
SP MP - METHOD SPIKE TDS - TOTAL DISSOLVED SOLIDS
SP DUP - SPIKE DUPLICATE PHC - PETROLEUM HYDROCARBONS
DUP - DUPLICATE
SP - SPIKE

DATES REFER TO WHEN BATCH WAS SHIPPED AND WHEN SAMPLE WAS TAKEN.

* INDICATES ANALYTE IS FOR INFORMATION PURPOSES ONLY

TABLE L-6 (Continued)
WATER INORGANIC VALIDATION
IRP STAGE 2
SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	ANALYTES (mg/L)				VALIDITY
BATCH: 130178-130211			5/11/88	ALK	COD	FLUORIDE	PHC	ALL VALID EXCEPT AS LISTED
01-503-W202	130182	EB	5/10/88		18	0.6	1.7	
04-512-W202	130196	EB	5/10/88	300		0.5	1.1	
				1500	90	3	8.5	VALID VALUES
01-501-W002	130178	I	5/10/88	680		0.3	1.6	NOT VALID
01-502-W002	130179	I	5/10/88	390	60	0.2		NOT VALID
01-503-W002	130180	I	5/10/88	290		0.2	1.5	NOT VALID
01-503-W102	130181	DUP	5/10/88	310		0.2	1.3	NOT VALID
01-504-W002	130184	I	5/10/88	300	31	0.2	1.4	NOT VALID
01-504-W602	130186	SP DUP	5/10/88	300	29	0.2	1.6	NOT VALID
01-505-W002	130187	I	5/10/88	260	32*	0.3	1.5	NOT VALID
02-507-W002	130188	I	5/10/88			1.6	1.9	NOT VALID
02-508-W002	130190	I	5/10/88			0.2	1.6	NOT VALID
02-509-W002	130191	I	5/10/88			0.1	1.3	NOT VALID
04-510-W002	130192	I	5/10/88			0.2	1.2	NOT VALID
04-511-W002	130193	I	5/10/88			0.2	1.1	NOT VALID
04-512-W002	130194	I	5/10/88			0.3	1.3	NOT VALID
04-512-W102	130195	DUP	5/10/88			0.2	1.4	NOT VALID
04-513-W002	130198	I	5/10/88			0.3	2.1	NOT VALID
05-514-W002	130199	I	5/10/88	480		0.1	1.5	NOT VALID
05-515-W002	130200	I	5/10/88	360		0.5	1.3*	NOT VALID
05-516-W002	130201	I	5/10/88	130	72*	0.9	1.3*	NOT VALID
05-516-W602	130203	SP DUP	5/10/88	120	64*	0.9	2.0*	NOT VALID
05-517-W002	130204	I	5/10/88	280	39	0.4	1.9*	NOT VALID
05-518-W002	130205	I	5/10/88	170	37	1	1.5*	NOT VALID
06-519-W002	130206	I	5/10/88	310	80	0.5	1.8*	NOT VALID
06-520-W002	130207	I	5/10/88	210		0.3	1.9*	NOT VALID
07-521-W002	130208	I	5/10/88			0.7	1.4*	NOT VALID
07-522-W002	130209	I	5/10/88			0.8	1.6*	NOT VALID
07-523-W002	130210	I	5/10/88			0.3	2.0*	NOT VALID
07-524-W002	130211	I	5/10/88			0.3	2.0*	NOT VALID

I - INVESTIGATIVE ALK - ALKALINITY
EB - EQUIPMENT BLANK COD - CHEMICAL OXYGEN DEMAND
MB - METHOD BLANK TOC - TOTAL OXYGEN CARBON
SP MP - METHOD SPIKE TDS - TOTAL DISSOLVED SOLIDS
SP DUP - SPIKE DUPLICATE PHC - PETROLEUM HYDROCARBONS
DUP - DUPLICATE
SP - SPIKE

DATES REFER TO WHEN BATCH WAS SHIPPED AND WHEN SAMPLE WAS TAKEN.
* INDICATES ANALYTE IS FOR INFORMATION PURPOSES ONLY

TABLE L-7
WATER CHLORIDE, PHOSPHATE, SULFATE VALIDATION
IRP STAGE 2
SELFRIEDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	CHLORIDE	ANALYTES (mg/L) PHOSPHATE	SULFATE	VALIDITY
BATCH: 8804-009			4/6/88				ALL VALID
BATCH: 8804-033			4/6/88				ALL VALID
BATCH: 8804-053			4/9/88				ALL VALID EXCEPT AS LISTED
06-144-M201	8804-053-012	EB	4/21/88			22.9	
						114.5	VALID VALUE
06-247-M001	8804-053-006	I	4/21/88			108	NOT VALID
04-154-M001	8804-053-007	I	4/21/88			46.8	NOT VALID
04-251-M001	8804-053-008	I	4/21/88			4	NOT VALID
BATCH: 8804-069			4/10/88				ALL VALID
BATCH: 8804-092			4/12/88				ALL VALID
BATCH: 8804-113			4/13/88				ALL VALID
BATCH: 8804-183			4/19/88				ALL VALID
BATCH: 8805-386			5/10/88				ALL VALID
BATCH: 8806-759 TO 8806-761			6/20/88				ALL VALID
05-167-M221	8806-760-004	TB	6/20/88			2.5	
						12.5	VALID VALUE

I - INVESTIGATIVE
EB - EQUIPMENT BLANK
MB - METHOD BLANK

SP MP - METHOD SPIKE
SP DUP - SPIKE DUPLICATE
DUP - DUPLICATE
SP - SPIKE

DATES REFER TO DATES BATCHES SHIPPED AND SAMPLES ANALYZED.

TABLE L-8
WATER METAL VALIDATION
IRP STAGE 2
SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	ANALYTES (mg/L)				VALIDITY
BATCH: 127645-127702			4/6/88	CALCIUM	IRON	SILICON	ZINC	ALL VALID EXCEPT AS LISTED
01-124-M201	127652	EB		0.354	0.043	0.426	0.014	
02-165-M201	127696	EB		0.464	0.089	0.346		
				2.32	0.445	2.13	0.07	VALID VALUES
01-122-M001	127645	I	4/29/88				0.018	NOT VALID
01-123-M001	127646	I	4/29/88		0.066		0.015	NOT VALID
01-125-M001	127648	I	4/29/88		0.131		0.023	NOT VALID
01-156-M001	127649	I	4/29/88		0.308		0.011	NOT VALID
01-162-M001	127650	I	4/29/88		0.083		0.021	NOT VALID
01-122-M101	127651	DUP	4/29/88				0.014	NOT VALID
01-160-M001	127692	I	4/29/88		0.178		0.04	NOT VALID
02-164-M001	127693	I	4/29/88		0.149		0.021	NOT VALID
02-165-M001	127694	I	4/29/88		0.088		0.021	NOT VALID
02-165-M101	127695	I	4/29/88		0.079		0.014	NOT VALID
02-166-M001	127698	I	4/29/88		0.066		0.027	NOT VALID
03-116-M001	127699	I	4/29/88				0.013	NOT VALID
03-116-M601	127701	SP DUP	4/29/88				0.016	NOT VALID
03-117-M001	127702	I	4/29/88		0.048		0.013	NOT VALID
BATCH: 127703-127954			4/7/88	CALCIUM	IRON	SILICON	ZINC	ALL VALID EXCEPT AS LISTED
06-144-M201	127863	EB	4/29/88	0.337	0.053	1.16	0.013	
				1.68	0.265	5.8	0.065	VALID VALUES
03-118-M001	127703	I	4/29/88		0.044		0.021	NOT VALID
06-108-M001	127804	I	4/29/88		0.184		0.018	NOT VALID
06-109-M001	127805	I	4/29/88		0.069		0.011	NOT VALID
06-110-M001	127806	I	4/29/88		0.235		0.011	NOT VALID
06-110-M601	127808	SP DUP	4/29/88		0.211			NOT VALID
06-247-M001	127809	I	4/29/88				0.011	NOT VALID
06-144-M001	127861	I	4/29/88				0.014	NOT VALID
06-144-M101	127862	DUP	4/29/88				0.014	NOT VALID
06-245-M001	127953	I	4/29/88				0.011	NOT VALID
BATCH: 128048-128175			4/12/88	SILICON				ALL VALID
999MB1	LQ1127958			0.615				
				3.075				VALID VALUE

I - INVESTIGATIVE SP DUP - SPIKE DUPLICATE
EB - EQUIPMENT BLANK DUP - DUPLICATE
MB - METHOD BLANK SP - SPIKE
DATES REFER TO DATES BATCHES SHIPPED AND SAMPLES ANALYZED.

TABLE L-8 (Continued)
WATER METAL VALIDATION
IRP STAGE 2
SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	ANALYTES (mg/L)			VALIDITY		
BATCH: 128520-128925			4/19/88	CALCIUM	IRON	ZINC	ALL VALID EXCEPT AS LISTED		
08-127-M201	128522	EB	6/01/88	0.753		0.099			
				3.765		0.495	VALID VALUES		
08-127-M001	128520	I	6/01/88			0.042	NOT VALID		
08-127-M101	128521	DUP	6/01/88			0.077	NOT VALID		
08-129-M001	128523	I	6/01/88			0.024	NOT VALID		
01-503-W201			4/29/88	0.354	0.055	0.011			
	128918	EB		1.77	0.275	0.055	VALID VALUES		
01-502-W001	128915	I	4/29/88			0.046	NOT VALID		
01-503-W001	128916	I	4/29/88			0.02	NOT VALID		
01-503-W101	128917	DUP	4/29/88			0.011	NOT VALID		
01-504-W001	128920	I	4/29/88			0.011	NOT VALID		
01-505-W001	128921	I	4/29/88		0.045		NOT VALID		
02-508-2001	128924	I	4/29/88			0.013	NOT VALID		
BATCH: 128933-128943			4/21/88	CALCIUM	COPPER	IRON	SILICON	ZINC	ALL VALID EXCEPT AS LISTED
05-130-M201	128935	EB	5/25/88	0.421	0.026		0.404		
				2.105	0.13		2.02		VALID VALUES
01-503-W201			4/29/88	0.354		0.055		0.011	NOT VALID
	128918	EB		1.77		0.275		0.055	NOT VALID
05-514-W001	128937	I	5/25/88					0.015	NOT VALID
05-514-W001	128937	I	5/25/88					0.015	NOT VALID
05-514-W001	128937	DUP	5/25/88					0.012	NOT VALID
05-515-W001	128938	I	5/25/88					0.036	NOT VALID
05-517-W001	128939	I	5/25/88					0.012	NOT VALID
05-518-W001	128940	I	5/25/88					0.021	NOT VALID
06-519-W001	128942	I	5/25/88					0.042	NOT VALID
BATCH: 129017-129061			4/21/88						ALL VALID
BATCH: 129063-129064			4/23/88						ALL VALID

I - INVESTIGATIVE SP DUP - SPIKE DUPLICATE
EB - EQUIPMENT BLANK DUP - DUPLICATE
MB - METHOD BLANK SP - SPIKE
DATES REFER TO DATES BATCHES SHIPPED AND SAMPLES ANALYZED.

TABLE L-8 (Continued)
WATER METAL VALIDATION
IRP STAGE 2
SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	ANALYTES (mg/L)			VALIDITY
BATCH: 130178-130199			5/11/88	CALCIUM	COPPER	ZINC	ALL VALID EXCEPT AS LISTED
01-503-W002	130182	EB	6/1/88	0.319		0.012	
999MB1	LQC130178	MB	6/1/88		0.029	0.01	
				1.59	0.145	0.06	VALID VALUES
01-503-W002	130180	I	6/1/88		0.028		NOT VALID
01-503-W102	130181	DUP	6/1/88			0.056	NOT VALID
01-504-W002	130184	I	6/1/88			0.014	NOT VALID
01-504-W602	130186	DUP	6/1/88			0.016	NOT VALID
01-505-W002	130187	I	6/1/88			0.012	NOT VALID
02-507-W002	130188	I	6/1/88		0.043		NOT VALID
02-508-W002	130190	I	6/1/88			0.034	NOT VALID
02-509-W002	130191	I	6/1/88		0.028	0.013	NOT VALID
05-514-W002	130199	I	6/1/88			0.017	NOT VALID
BATCH: 130200-130207			5/11/88	CALCIUM	ZINC		ALL VALID EXCEPT AS LISTED
01-503-W202	130182	EB	6/1/88	0.319	0.012		
999MB1	LQC130178	MB	6/1/88		0.012		
				1.59	0.06		VALID VALUES
05-517-W002	130204	I	6/1/88		0.039		NOT VALID
05-518-W002	130205	I	6/1/88		0.041		NOT VALID
06-519-W002	130206	I	6/1/88		0.044		NOT VALID

I - INVESTIGATIVE SP DUP - SPIKE DUPLICATE
EB - EQUIPMENT BLANK DUP - DUPLICATE
MB - METHOD BLANK SP - SPIKE
DATES REFER TO DATES BATCHES SHIPPED AND SAMPLES ANALYZED.

TABLE L-9
WATER RESAMPLE VALIDATION
IRP STAGE 2
SELFRIDGE ANGB, MI

FIELD NUMBER	RFW NUMBER	SAMPLE TYPE	DATE	ANALYTES (mg/L)		VALIDITY
BATCH: 136800-136844			8/03/88	PHC		ALL VALID EXCEPT AS LISTED
07-523-W222	136813	EB	8/10/88	2.2		
				11		VALID VALUE
07-523-W022	136811	I	8/10/88	2.9		NOT VALID
07-523-W122	136812	DUP	8/10/88	2.3		NOT VALID
07-523-W622	136815	SP DUP	8/10/88	2.2		NOT VALID
07-524-W022	136817	I	8/10/88	1.4		NOT VALID
05-516-W022	136831	I	8/10/88	1.8		NOT VALID
05-517-W022	136837	I	8/10/88	2.6		NOT VALID
05-518-W022	136838	I	8/10/88	1.9		NOT VALID
06-520-W022	136840	I	8/10/88	1.9		NOT VALID
BATCH: 136991-137026			8/05/88	TDS	NH4	ALL VALID EXCEPT AS LISTED
08-128-M221	137002	EB	8/09/88	13		
05-105-M221	137015	EB	8/17/88		0.7	
				65	3.5	VALID VALUES
05-235-M021	137012	I	8/17/88		0.5	NOT VALID
05-105-M021	137013	I	8/17/88		1.3	NOT VALID
05-105-M121	137014	DUP	8/17/88		0.7	NOT VALID
01-125-M121	137183	DUP	8/17/88		0.7	NOT VALID
01-125-M621	137186	SP DUP	8/17/88		0.6	NOT VALID
01-122-M021	137187	I	8/17/88		0.8	NOT VALID
01-257-M021	137188	I	8/17/88		0.5	NOT VALID
BATCH: 137182-137236			8/07/88	PHC	NH4	ALL VALID EXCEPT AS LISTED
01-125-M221	137184	EB	8/17/88		0.4	
07-241-M221	137234	EB	8/17/88	2.2		
				11		VALID VALUES
01-125-M021	137182	I	8/17/88		0.6	NOT VALID
01-261-M021	137190	I	8/17/88		1.4	NOT VALID
01-123-M021	137191	I	8/17/88		1	NOT VALID
01-162-M021	137192	I	8/17/88		0.7	NOT VALID
01-263-M021	137193	I	8/17/88		0.7	NOT VALID
01-124-M021	137194	I	8/17/88		0.4	NOT VALID
07-241-M621	137236	SP DUP	8/10/88	2.1		NOT VALID
01-259-M021	137202	I	8/17/88		0.7	NOT VALID
01-158-M021	137203	I	8/17/88		1.7	NOT VALID
06-519-W022	137218	I	8/10/88	3.6		NOT VALID
07-241-M021	137232	I	8/10/88	2.2		NOT VALID
07-241-M121	137233	I	8/10/88	2.1		NOT VALID
BATCH: 137292-137343			8/08/88			ALL VALID

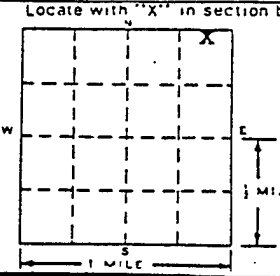
I - INVESTIGATIVE SP MP - METHOD SPIKE
 EB - EQUIPMENT BLANK SP DUP - SPIKE DUPLICATE
 MB - METHOD BLANK PHC - PETROLEUM HYDROCARBONS
 DUP - DUPLICATE TDS - TOTAL DISSOLVED SOLIDS
 SP - SPIKE NH4 - AMMONIA
 DATES REFER TO DATES BATCHES SHIPPED AND SAMPLES ANALYZED.

APPENDIX M

DOMESTIC WELL LOGS

SEP 18 1975

WATER WELL RECORD
ACT 294 PA 1965MICHIGAN DEPARTMENT
OF
PUBLIC HEALTH

1 LOCATION OF WELL																			
County Macomb		Township Name Harrison		Fraction NE 1/4		Section Number 207		Town Number 2N		Range Number 14E		N/S.		E/W.					
Distance And Direction from Road Intersections 145 ft. NE from center of street @ 39706 Cove St. Dr.										3 OWNER OF WELL: Joseph & Kathleen Simmons Address 39706 Cove Street Dr. Mt. Clemens									
Street address & City of Well Location Locate with "X" in section below  Sketch Map:										4 WELL DEPTH: (completed) Date of Completion 60 ft. 6 - 13 - 75.									
5 ☒ Cable tool ☐ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored										6 USE: ☒ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well									
7 CASING: Threaded ☒ Welded ☐ Diam. _____ Height: Above _____ Surface _____ ft.										Weight 11 lbs./ft. Drive Shoe? Yes ☒ No ☐									
2 FORMATION		THICKNESS OF STRATUM		DEPTH TO BOTTOM OF STRATUM		8 SCREEN: Type: Stainless Sl. Dia.: 3" ID Slot Gauge 15 Length 3ft Set between 58 ft. and 60 ft. Fittings:													
Yellow Clay & Sand Mixed		3		3															
Gray Clay		55		58															
Gray Coarse Sand Water Bg.		2		60															
										9 STATIC WATER LEVEL 10 ft. below land surface									
										10 PUMPING LEVEL below land surface _____ ft. after _____ hrs. pumping 1 1/2 g.p.m. _____ ft. after _____ hrs. pumping _____ g.p.m.									
										11 WATER QUALITY in Parts Per Million: Iron (Fe) _____ Chlorides (Cl) _____ Hardness _____ Other _____									
										12 WELL HEAD COMPLETION: ☐ In Approved Pit ☒ Pitless Adapter ☐ 12" Above Grade									
										13 Well Grouted? ☐ Yes ☐ No ☐ Neat Cement ☐ Bentonite Depth: From _____ ft. to _____ ft.									
										14 Nearest Source of possible contamination 100 feet S Direction Septic & Fd. Type Well disinfected upon completion ☒ Yes ☐ No									
										15 PUMP: ☐ Not installed Manufacturer's Name Red Jacket Model Number R33NO-6BC HP 1/2 Volts 115 Length of Drop Pipe _____ ft. capacity _____ G.P.M. Type: ☒ Submersible ☐ Jet ☐ Reciprocating									
USE A 2ND SHEET IF NEEDED																			
16 Remarks, elevation, source of data, etc. ADDED INFO BY DRILLER, ITEM NO. *CORRECTED BY **ADDITION BY ELEVATION DEPTH TO ROCK										17 WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. Scheer Well Drilling 0463 REGISTERED BUSINESS NAME REGISTRATION NO. Address 33071 Garfield Rd. Fraser Signed <i>[Signature]</i> Date 1975 TITLE: REPRESENTATIVE									

D67d

100M (Rev. 12-68)

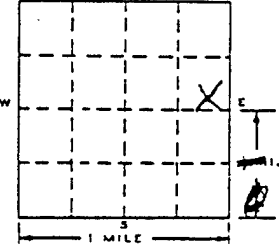
GEOLOGICAL SURVEY COPY

WATER WELL RECORD

ACT 294 PA 1965

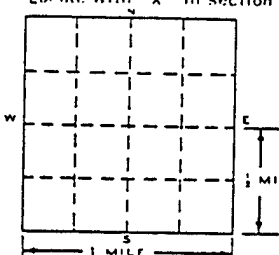
MICHIGAN DEPARTMENT

OF
PUBLIC HEALTH

1 LOCATION OF WELL County <u>MACOMB</u> Township Name <u>HARRISON</u> Fraction <u>NE 1/4 SE 1/4</u> Section Number <u>58</u> Town Number <u>2 N.B.</u> Range Number <u>14 E 1/2</u>		3 OWNER OF WELL: Address <u>JOHN CONNOR</u> <u>39816 SYLVIA</u> <u>MT. CLEMENS.</u>	
Distance And Direction from Road Intersections <u>EAST OF DULUTH 0.5 MI</u> <u>39816 SYLVIA</u> Street Address & City of Well Location <u>MT. CLEMENS.</u>		4 WELL DEPTH: (completed) <u>50</u> ft. Date of Completion <u>6-27-69</u>	
Locals with "X" in section below 		5 ☒ Cable tool ☐ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored ☐ _____ 6 USE: ☒ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐ _____	
2 FORMATION		7 CASING: Threaded ☒ Welded ☐ Height: Above/Below Diam. <u>4</u> in. to <u>50</u> ft. Depth <u>11</u> lbs./ft. _____ in. to _____ ft. Depth Drive Shoe? Yes ☒ No ☐	
<u>SAND</u> <u>12</u> <u>12</u> <u>CLAY</u> <u>28</u> <u>40</u> <u>HARD</u> <u>6</u> <u>46</u> <u>SAND & GRAVEL</u> <u>4</u> <u>50</u>		8 SCREEN: Type: <u>COOK</u> Dia.: <u>3 IN.</u> Slot: <u>12</u> Length <u>4 FT.</u> Set between <u>45</u> ft. and <u>50</u> ft. Fittings: _____	
<u>WELL FINISHED</u> <u>AT 50 FT.</u>		9 STATIC WATER LEVEL <u>6</u> ft. below land surface 10 PUMPING LEVEL below land surface <u>20</u> ft. after <u>2</u> hrs. pumping <u>8</u> g.p.m. _____ ft. after _____ hrs. pumping _____ g.p.m.	
11 WATER QUALITY in Parts Per Million: Iron (Fe) _____ Chlorides (Cl) _____ Hardness _____ Other _____		12 WELL HEAD COMPLETION: ☐ In Approved Pit ☐ Pitless Adapter ☒ 12" Above Grade	
13 Well Grouted? ☒ Yes ☐ No ☐ Neat Cement ☐ Bentonite ☐ _____ Depth: From _____ ft. to _____ ft.		14 Nearest Source of possible contamination <u>60</u> feet Direction <u>WEST OF WELL</u> Type _____ Well disinfected upon completion ☒ Yes ☐ No	
15 PUMP: ☒ Not installed Manufacturer's Name _____ Model Number _____ HP _____ Volts _____ Length of Drop Pipe _____ ft. capacity _____ G.P.M. Type: ☐ Submersible ☐ Jet ☐ Reciprocating		16 Remarks, elevation, source of data, etc. <u>USE A 2ND SHEET IF NEEDED</u>	
17 WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief <u>WS Belt</u> <u>0521</u> REGISTERED BUSINESS NAME REGISTRATION NO. Address <u>30277 CARL ST N.H.</u> Signed <u>Warren Belt</u> Date <u>6/27/69</u> AUTHORIZED REPRESENTATIVE		16	

SEP 25 1973

WATER WELL RECORD
ACT 294 PA 1965MICHIGAN DEPARTMENT
OF
PUBLIC HEALTH

1 LOCATION OF WELL			3 OWNER OF WELL:		
Country Macomb	Township Name Harrison	Fraction NE. NE. 1/4	Section Number 633	Town Number 2N	Range Number 14E
Distance And Direction from Road Intersections 35 ft. n. of center of road @ 26655 Ashland St.			Address Carl Johnson 26655 Ashland St Mt. Clem. 48043		
Street address & City of Well Location Locate with "X" in section below			4 WELL DEPTH: (completed) Date of Completion 75 ft. 9 - 11 - 73.		
Sketch Map: 			5 ☒ Cable tool ☐ Rotary ☐ Driven ☐ Aug ☐ Hollow rod ☐ Jetted ☐ Bored ☐		
			6 USE: ☒ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐		
			7 CASING: Threaded ☒ Welded ☐ Height: Above/BXXX Diam. 4 in. to 1 ft. Depth 11 lbs./ft. Drive Shoe? Yes ☒ No ☐		
2 FORMATION			8 SCREEN:		
			Type: Johnson S. Steel 4" Size/GXXX 18 Long th 3 ft. Set between 72 ft. and 75 ft. Fittings:		
Thickness of STRATUM			9 STATIC WATER LEVEL		
DEPTH TO BOTTOM OF STRATUM			16 ft. below land surface		
Yellow Fine Sand 5 5			10 PUMPING LEVEL below land surface		
Gray Clay 37 42			ft. after hrs. pumping 21 g.p.m.		
Gray Dry Clay & Stoney 25 67			ft. after hrs. pumping g.p.m.		
Gray Mixed Stones W. Brg. 8 75			11 WATER QUALITY in Parts Per Million:		
Gray Clay 7 9			Iron (Fe) Chlorides (Cl) Hardness Other		
			12 WELL HEAD COMPLETION: ☐ In Approved Pit ☒ Pitless Adapter ☐ 12" Above Grade		
			13 Well Grouted? ☐ Yes ☐ No ☐ Neat Cement ☐ Bentonite ☐ Depth: From ft. to ft.		
			14 Nearest Source of possible contamination		
			55 feet N Direction Septic & Rd. Type Well disinfected upon completion ☒ Yes ☐ No		
			15 PUMP: ☐ Not installed		
			Manufacturer's Name Red Jacket		
			Model Number R33NO-6BC HP 1/3 volts 115		
			Length of Drop Pipe ft. capacity G.P.M.		
			Type: ☒ Submersible ☐ Jet ☐ Reciprocating		
USE A 2ND SHEET IF NEEDED			17 WATER WELL CONTRACTOR'S CERTIFICATION:		
16 Remarks, elevation, source of data, etc.			This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.		
ADDED INFO BY DRILLER, ITEM NO. 61			Scheer Well Drilling 0463		
ELEVATION			REGISTERED BUSINESS NAME REGISTRATION NO.		
DEPTH TO ROCK			Address 33071 Garfield Rd. Fraser		
			Signed Red Scheer Date 1973		

D67d

10041 R-4. 12-68.

GEOLOGICAL SURVEY COPY

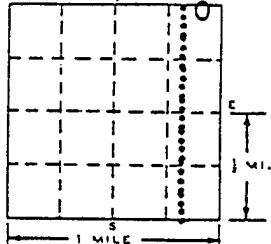
MICHIGAN DEPARTMENT
OF
PUBLIC HEALTH

GEOLOGICAL SURVEY COPY

SEP 16 1975

WATER WELL RECORD
ACT 294 PA 1965MICHIGAN DEPARTMENT
OF
PUBLIC HEALTH

130

1 LOCATION OF WELL			County Macomb			Township Name Harrison			Fraction NE 1/4			Section Number 207			Town Number 2N			Range Number 14E					
Distance And Direction from Road Intersections 85 ft. NE from center of Road @ 39706 Cove Drive.												3 OWNER OF WELL: Joseph W. Simmons Address 39706 Cove Drive Mt. Clemens, Mich											
Street address & City of Well Location Locate with "X" in section below 												Sketch Map: DRY-HOLE						4 WELL DEPTH: (completed) Date of Completion 129 ft. 4 - 1 - 75					
5 ☒ Cable tool ☐ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored ☐												6 USE: ☒ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐											
7 CASING: Threaded ☐ Welded ☐ Height: Above/Below Diam. _____ Surface _____ ft. _____ in. to _____ ft. Depth Weight _____ lbs./ft. _____ in. to _____ ft. Depth Drive Shoe? Yes ☐ No ☐												8 SCREEN: Type: _____ Dia.: _____ Slot/Gauze _____ Length _____ Set between _____ ft. and _____ ft. Fittings: _____											
2 FORMATION												9 STATIC WATER LEVEL _____ ft. below land surface											
Yellow Clay & Sand Mix.				THICKNESS OF STRATUM 3		DEPTH TO BOTTOM OF STRATUM 3		10 PUMPING LEVEL below land surface _____ ft. after _____ hrs. pumping _____ g.p.m. _____ ft. after _____ hrs. pumping _____ g.p.m.															
Gray Clay				89		92		11 WATER QUALITY in Parts Per Million: Iron (Fe) _____ Chlorides (Cl) _____ Hardness _____ Other _____															
Black Slate				?		129		12 WELL HEAD COMPLETION: ☐ In Approved Pit ☐ Pitless Adapter ☐ 12" Above Grade															
(DRY-HOLE)												13 Well Grouted? ☐ Yes ☐ No ☐ Neat Cement ☐ Bentonite ☐ Depth: From _____ ft. to _____ ft.											
												14 Nearest Source of possible contamination _____ feet _____ Direction _____ Type Well disinfected upon completion ☐ Yes ☐ No											
												15 PUMP: ☐ Not installed Manufacturer's Name _____ Model Number _____ HP _____ Volts _____ Length of Drop Pipe _____ ft. capacity _____ G.P.M. Type: ☐ Submersible ☐ Jet ☐ Reciprocating											
16 Remarks, elevation, source of data, etc. OBTAINED INFO BY DRILLER, ITEM NO. _____ CORRECTED BY _____ ADDITION BY _____ ELEVATION _____ DEPTH TO ROCK _____												17 WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. Scheer Well Drilling 0463 REGISTERED BUSINESS NAME REGISTRATION NO. Address 33071 Garfield Rd. Fraser Signed <i>[Signature]</i> Date 1975 AUTHORIZED REPRESENTATIVE											

D67d

100M (Rev. 12-68)

GEOLOGICAL SURVEY COPY

1 LOCATION OF WELL		144	
County MACOMB	Twp. HARRISON	Fraction 11 1/2	Section No. 14
Distance And Direction from Road Intersections 40525 MAPWOOD HARRISON TWP		Town 2 NW	Range 14 E
Street address & City of Well Location		3 OWNER OF WELL: COLEMAN FLYNN Address 40525 MAPWOOD MT. CLEMENS, MICH.	
2 FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM	4 WELL DEPTH: (completed) 130' 6" ft. Date of Completion 10-19-66
CLAY	46'	46'	5 ☒ Cable tool ☐ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored ☐
HARD CLAY & STONES	10'	56'	6 USE: ☒ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐
LEAKY HARD PAN	40'	96'	7 CASING: ☒ Threaded ☐ Welded ☐ Height: Above/Below surface 1 ft. Diam. 4 in. to 98' ft. Depth Weight 11 lbs./ft. Drive Shoe? Yes ☒ No ☐
BLACK CLAY & PIECES OF SLATE	2' 6"	98' 6"	8 SCREEN: Type: NONE Dia.: _____ Slot/Gauze: _____ Length: _____ Set between _____ ft. and _____ ft. Fittings: _____
BLACK SLATE ROCK	32'	130' 6"	9 STATIC WATER LEVEL 10 ft. below land surface
			10 PUMPING LEVEL below land surface 100 ft. after _____ hrs. pumping 1 1/2 g.p.m. _____ ft. after _____ hrs. pumping _____ g.p.m.
			11 WATER QUALITY in Parts Per Million: Iron (Fe) _____ Chlorides (Cl) _____ Hardness _____
			12 WELL HEAD COMPLETION: ☐ In Approved Pit ☐ Pitless Adapter ☐ 12" Above Grade
			13 GROUTING: Well Grouted? ☐ Yes ☐ No Material: ☐ Neat Cement ☐ _____ Depth: From _____ ft. to _____ ft.
			14 SANITARY: Nearest Source of possible contamination 65 feet W Direction W Type Well disinfected upon completion ☒ Yes ☐ No
			15 PUMP: Manufacturer's Name RED JACKET Model Number R33-55 HP 1/2 Length of Drop Pipe 165 ft. capacity _____ G.P.M. Type: ☐ Submersible ☐ _____ ☐ Jet ☐ Reciprocating
16 Remarks, elevation, source of data, etc.		17 WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. Ray A. Sigurd 0020 REGISTERED BUSINESS NAME REGISTRATION NO. Address 28540 Palomino WARREN, MICH Signed Ray A. Sigurd Date 10-19-66 AUTHORIZED REPRESENTATIVE	

D67D 100M 6-66

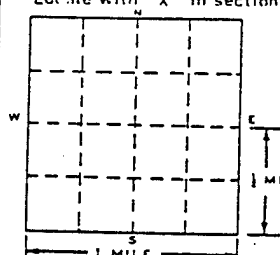
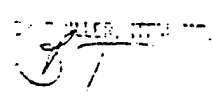
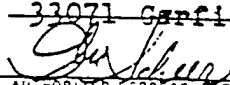
GEOLOGICAL SURVEY COPY

WATER WELL RECORD

ACT 294 PA 1965

MICHIGAN DEPARTMENT

OF
PUBLIC HEALTH

1 LOCATION OF WELL County Macomb		Township Name Harrison		Section Number 14E	Town Number 2N	Range Number 14E
Distance And Direction from Road Intersections 110ft. S. of center of street @ 27020 N. River Rd. 150ft. W. of Maplewood St.						
Street Address & City of Well Location Locate with "X" in section below Sketch Map: 						
2 FORMATION		THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM	3 OWNER OF WELL:		
Yellow Clay	3	3	Richard Zitka Address 27020 N. River Rd. Mt. Clemens, 48043			
Yellow Fine Sand & Clay	7	10	4 WELL DEPTH: (completed) Date of Completion 102 ft. 7-29-74			
Gray Clay	33	43	5 ☒ Cable tool ☐ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored ☐			
Gray Clay & Mix. Stones.	57	100	6 USE: ☒ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐			
Gray Coarse Sand W. Brg.	2	102	7 CASING: Threaded ☒ Welded ☐ Height: Above/Below Surface 1 ft. Weight 11 lbs./ft. Drive Shoe? Yes ☒ No ☐			
Gray Clay	?	?	8 SCREEN: Type: Stainless Std. 3" ID Slot/Cage 25 Length 3ft Set between 100. and 102 ft. Fittings:			
			9 STATIC WATER LEVEL 20 ft. below land surface			
			10 PUMPING LEVEL below land surface _____ ft. after _____ hrs. pumping 1 g.p.m. _____ ft. after _____ hrs. pumping _____ g.p.m.			
			11 WATER QUALITY in Parts Per Million: Iron (Fe) _____ Chlorides (Cl) _____ Hardness _____ Other _____			
			12 WELL HEAD COMPLETION: ☐ In Approved Pit ☐ Pitless Adapter ☒ 12" Above Grade			
			13 Well Grouted? ☐ Yes ☐ No ☐ Neat Cement ☐ Bentonite ☐ _____ Depth: From _____ ft. to _____ ft.			
			14 Nearest Source of possible contamination 52 feet N. Direction San. Sewer Type _____ Well disinfected upon completion ☒ Yes ☐ No			
			15 PUMP: ☒ Not installed Manufacturer's Name _____ Model Number _____ HP _____ Volts _____ Length of Drop Pipe _____ ft. capacity _____ G.P.M. Type: ☐ Submersible ☐ Jet ☐ Reciprocating			
16 Remarks, elevation, source of data, etc. 			17 WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. Scheer Well Drilling 0462 REGISTERED BUSINESS NAME REGISTRATION NO. Address 33071 Garfield Rd. Fraser Signed  AUTHORIZED REPRESENTATIVE (P) Date 1974			

D67d

100M (Rev. 12-68)

GEOLOGICAL SURVEY COPY

JUN 19 1972

WATER WELL RECORD

ACT 294 PA 1965

MICHIGAN DEPARTMENT
OF
PUBLIC HEALTH

1 LOCATION OF WELL		TOWNSHIP NAME		FRACTION		SECTION NUMBER		TOWN NUMBER		RANGE NUMBER	
County Macomb		TOWNSHIP NAME CHESTERFIELD		FRACTION SW SW SW 1/4		SECTION NUMBER 31		TOWN NUMBER 2N		RANGE NUMBER 14E	
Distance And Direction from Road Intersections 168 ft N. of center of road @ 25475 Rosso Hwy.											
Street address & City of Well Location Locate with "X" in section below											
Sketch Map:						3 OWNER OF WELL:					
						Ray Shoe 25475 Rosso Hwy. Mt. Clemens,					
2 FORMATION						4 WELL DEPTH: (completed) Date of Completion					
THICKNESS OF STRATUM						28 ft. 3 - 27 - 72					
DEPTH TO BOTTOM OF STRATUM						5 ☒ Cable tool ☐ Rotary ☐ Driven ☐ Dug					
Gray Clay 18 18						☐ Hollow rod ☐ Jetted ☐ Bored ☐					
Gray Med. Sand, Water Brg. 10 28						6 USE: ☒ Domestic ☐ Public Supply ☐ Industry					
Gray Clay & Mixed Stones ?						☐ Irrigation ☐ Air Conditioning ☐ Commercial					
						7 CASING: Threaded ☒ Welded ☐ Height: Above/Surface 1 ft.					
						4 in. to 25 ft. Depth 11 lbs./ft.					
						Drive Shoe? Yes ☒ No ☐					
						8 SCREEN:					
						Type: Stainless Steel Dia.: 3"					
						Slot: 15 Length 3ft.					
						Set between 25 ft. and 28 ft.					
						Fittings:					
						9 STATIC WATER LEVEL					
						3 ft. below land surface					
						10 PUMPING LEVEL below land surface					
						ft. after hrs. pumping 6 g.p.m.					
						ft. after hrs. pumping g.p.m.					
						11 WATER QUALITY in Parts Per Million:					
						Iron (Fe) Chlorides (Cl)					
						Hardness Other					
						12 WELL HEAD COMPLETION: ☐ In Approved Pit					
						☐ Pitless Adapter ☒ 12" Above Grade					
						13 Well Grouted? ☐ Yes ☐ No					
						☐ Neat Cement ☐ Bentonite ☐					
						Depth: From ft. to ft.					
						14 Nearest Source of possible contamination					
						100 feet S Direction Septic & T. Rd. Type					
						Well disinfected upon completion ☒ Yes ☐ No					
						15 PUMP: ☒ Not installed					
						Manufacturer's Name					
						Model Number HP Volts					
						Length of Drop Pipe ft. capacity G.P.M.					
						Type: ☐ Submersible ☐ Jet ☐ Reciprocating					
16 Remarks, elevation, source of data, etc.						17 WATER WELL CONTRACTOR'S CERTIFICATION:					
To be used for lawn springling.						This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.					
						Scheer Well Drilling 0463 REGISTERED BUSINESS NAME REGISTRATION NO.					
						Address 33071 Gapfield Rd. Fraser					
						Signed [Signature] Date 1972 AUTHORIZED REPRESENTATIVE					

D67d 100M (Rev. 12-68)

GEOLOGICAL SURVEY COPY

APPENDIX N

HISTOGRAMS OF ANALYSES FOR SOIL SAMPLES

TABLE N-1
SORTED METAL SCREEN SOIL SAMPLE ANALYTICAL DATA
IRP STAGE 2
SELFRIEGE ANGB, MICHIGAN

Sample	ALUMINUM mg/kg	Sample	ARSENIC mg/kg	Sample	BORON mg/kg	Sample	BARIUM mg/kg	Sample	BERYLLIUM mg/kg
8 427B001	2260	2 423B001		3 420B002		8 427B001	12.9	5 401B003	
1 357M001	2690	5 416B003		8 425B001		5 402B003	22.6	5 402B003	
3 419B001	2930	5 416B002		2 423B001		5 401B003	22.6	1 357M001	
5 402B003	3530	8 425B003		2 423B101		1 357M001	23.9	8 427B001	
5 401B003	3670	6 345M001		8 426B001		5 417B003	24	3 419B001	
5 417B003	4080	5 421B001		5 402B003		5 404B003	30.8	5 417B003	0.21
5 404B003	4440	3 419B003		5 421B003		5 405B003	30.9	5 416B003	0.28
5 405B003	5010	8 427B001		5 405B103		5 421B003	31.4	5 404B003	0.32
5 405B103	5350	5 405B003		5 421B001		5 416B003	33	5 405B003	0.33
5 416B003	5450	5 417B002		8 425B002		5 405B103	33.4	5 421B003	0.33
8 425B001	5490	3 419B002		2 424B001		5 405B002	36.2	5 405B103	0.34
5 421B003	5540	1 359M001		5 417B003		8 425B001	38.3	5 403B001	0.35
5 405B002	5950	5 404B003		5 402B001		5 403B003	48.2	8 425B001	0.36
5 403B003	6830	5 417B001		5 405B003		3 420B001	55.5	5 405B002	0.38
8 426B001	8310	5 403B003		5 401B003		2 423B001	59.6	2 423B001	0.42
2 423B001	8330	3 419B001		5 403B001		2 423B101	62	5 403B003	0.42
5 403B001	8380	5 403B002		3 418B001		8 426B001	62.4	2 423B101	0.44
5 403B101	8630	5 417B003		3 420B001		5 403B002	63	3 420B001	0.47
3 420B001	8710	3 418B001		5 405B002		5 403B101	71	8 426B001	0.56
2 423B101	9230	8 427B002		8 427B001		2 424B001	73.8	5 403B101	0.57
2 424B001	9400	1 361M001		5 403B101		3 419B003	73.9	3 418B001	0.61
8 425B002	10500	2 422B001		5 403B003		2 422B001	75	2 422B002	0.65
5 403B002	10600	3 420B003		5 401B001		3 420B002	80.3	1 359M001	0.66
8 427B002	10800	3 418B003		5 416B003		5 405B001	83	2 422B001	0.66
2 422B001	10900	5 401B002		3 419B001		5 404B002	84.1	5 416B102	0.72
3 419B003	11000	1 357M001	4.65	1 357M001		8 426B002	85.2	3 419B003	0.73
2 424B002	11500	3 420B001	5.3	5 404B003		8 425B002	87	2 423B002	0.74
3 418B001	11600	8 425B001	5.9	5 402B001		5 403B001	88.8	8 425B002	0.74
2 424B003	11700	5 405B002	9	3 419B002		3 418B001	89	2 424B001	0.74
5 401B001	11800	5 405B103	9.1	5 404B001	20.3	8 427B003	89.5	3 420B002	0.75
8 426B002	11800	5 421B003	9.5	3 418B101	20.9	2 424B002	90.4	5 403B002	0.75
3 420B002	12300	3 420B002	9.8	2 422B002	21.1	3 418B101	95.5	5 404B002	0.75
5 416B102	12300	5 402B002	10.3	8 427B002	21.1	5 402B002	96.3	2 424B003	0.76
2 422B002	12300	8 425B002	10.5	5 416B001	21.8	8 426B003	96.7	3 418B101	0.76
5 404B002	12400	2 423B101	10.5	8 426B002	22	8 427B002	96.8	5 421B001	0.76
8 426B003	12600	5 402B003	10.7	5 416B002	22.7	5 416B102	97.8	5 416B002	0.77
3 418B101	12900	8 427B003	11.7	5 404B002	23	1 359M001	98.8	1 361M001	0.79
3 419B002	13000	5 421B002	12.2	5 417B001	24.3	2 424B003	99.4	8 426B002	0.79
5 404B001	13100	6 347M001	12.5	2 423B002	24.3	2 423B002	100	3 419B002	0.79
2 423B002	13200	2 422B003	12.6	3 419B003	24.7	6 347M001	103	2 424B002	0.8
5 421B001	13300	5 404B001	12.9	2 424B003	25.4	1 361M001	104	8 427B002	0.8
8 425B003	13600	5 404B002	13	1 361M001	25.4	3 419B001	106	3 418B002	0.81
8 427B003	13700	8 426B001	13.3	2 424B002	25.5	5 417B001	107	6 345M001	0.82
1 361M001	14300	2 423B003	13.4	3 418B002	25.6	5 416B002	109	2 423B003	0.83
3 418B002	14300	5 403B001	14.1	5 416B102	25.6	5 421B001	110	2 422B003	0.84
5 416B002	14500	2 424B003	15.4	5 405B001	26.4	8 425B003	111	6 347M001	0.84
5 402B002	14500	2 424B001	15.7	3 420B003	26.5	3 420B003	112	5 421B002	0.85
2 422B003	15000	8 426B003	15.7	8 426B003	26.6	5 404B001	114	3 420B003	0.85
5 405B001	15200	8 426B002	15.9	5 403B002	26.6	3 418B003	117	3 418B003	0.87
5 421B002	15200	5 401B001	17	5 402B002	26.7	3 418B002	119	8 426B003	0.88
3 420B003	15300	1 363M001	17.1	8 425B003	27	6 345M001	120	5 417B002	0.9
2 423B003	15800	5 416B001	17.2	5 417B002	27.4	1 363M001	122	5 417B001	0.92
5 402B001	15800	5 401B003	17.9	5 421B002	27.7	3 419B002	122	5 402B002	0.92
3 418B003	15900	5 402B001	18.9	8 427B003	28.1	5 417B002	124	8 425B003	0.93
5 417B001	16100	5 405B001	19.5	3 418B003	28.5	2 422B003	125	5 405B001	0.97
5 401B002	16100	3 418B101	20.3	5 401B002	28.7	5 421B002	129	5 401B002	0.98
5 417B002	16200	2 423B002	22.6	1 363M001	29.3	2 423B003	130	5 404B001	0.98
1 363M001	16400	5 416B102	24	2 423B003	29.9	5 401B002	137	5 416B001	1
5 416B001	16400	3 418B002	24.4	2 422B003	30.1	5 416B001	137	8 427B003	1
1 359M001	17000	2 422B002	28.2	1 359M001	33.3	5 401B001	140	1 363M001	1
6 345M001	18200	2 424B002	41.1	6 345M001	35.8	2 422B002	144	5 401B001	1.2
6 347M001	19700	5 403B101	43.2	6 347M001	52.9	5 402B001	159	5 402B001	1.2
11177.58		15.81216		26.82424		86.19354		0.717368	
4370.344		8.185645		5.741028		36.15372		0.231967	
19099915		67.00478		32.95941		1307.091		0.053808	

AVG - Average of detected concentrations.
STD - Standard deviation of detected concentrations.
VAR - Variance of detected concentrations.
Listed values and sample sites used to create associated histograms.

TABLE N-1 (Continued)
SORTED METAL SCREEN SOIL SAMPLE ANALYTICAL DATA
IRP STAGE 2
SELFRIEDGE ANGB, MICHIGAN

CALCIUM		CADMIUM		COBALT		CHROMIUM		COPPER	
Sample	mg/kg	Sample	mg/kg	Sample	mg/kg	Sample	mg/kg	Sample	mg/kg
3 4198001	948	5 4038101		3 4198001		5 4028003	5.47	8 4278001	3.7
2 4238101	2400	5 4048002		1 357M001		8 4278001	5.5	3 4198001	4.43
2 4238001	2570	3 4188001		5 4028003		3 4198001	5.68	2 4238001	5
2 4248001	3190	8 4258003		5 4018003		1 357M001	6.06	5 4058003	6.2
2 4228001	3300	3 4188101		8 4278001		5 4178003	7.9	5 4048003	6.9
5 4218001	5240	5 4218002		5 4178003	4.1	5 4018003	8.2	5 4058103	6.9
3 4188001	8950	2 4248001		5 4048003	4.3	5 4058003	8.3	8 4258001	6.9
5 4018001	9000	5 4018001		8 4258001	4.4	5 4048003	8.42	5 4028003	7.1
5 4028001	10800	5 4168002		3 4058003	4.8	5 4218003	8.6	5 4058002	7.5
8 4268001	11900	5 4028002		5 4208001	4.9	8 4258001	9.3	5 4178003	7.7
5 4038001	19200	8 4278002		5 4058103	4.9	5 4168003	9.5	5 4168003	7.7
8 4278001	20300	5 4178002		5 4168003	5.1	5 4058002	10.4	2 4238101	8.5
1 357M001	21600	1 357M001		5 4218003	5.2	5 4058103	10.5	5 4218003	8.7
3 4208002	24200	2 4208003		5 4058002	5.2	5 4038003	11.6	2 4248001	8.8
3 4208001	26100	8 4258001		2 4238001	5.5	5 4038101	13.9	5 4018003	8.8
2 4228002	30500	5 4168003		5 4038001	6.2	3 4208001	13.9	1 357M001	10.7
8 4278003	31800	8 4268001		5 4038003	6.3	2 4238001	15	5 4038003	11.2
8 4258001	32100	2 4238001		2 4238101	6.4	5 4038001	15.3	2 4228001	12
3 4188101	32800	5 4218001		2 4228001	7.1	8 4268001	15.5	3 4208001	12.3
1 359M001	32900	5 4028003		5 4038101	7.2	2 4248001	16.8	8 4268001	12.3
8 4258002	33200	8 4278001		8 4268001	7.31	5 4038002	16.9	8 4278003	16
3 4198002	33500	5 4178001		5 4018001	8.3	2 4238101	17	3 4188001	16.9
1 361M001	35400	5 4018003		5 4028001	8.5	8 4278002	17.4	1 361M001	17.6
5 4038101	35500	5 4038001		3 4188001	9	3 4198003	17.6	8 4258003	17.7
8 4278002	36900	3 4198001		3 4208002	10.3	8 4258002	18.2	5 4168002	17.8
6 347M001	37300	5 4058002		5 4218001	11.3	3 4208002	18.5	5 4048002	17.8
5 4028002	37400	2 4238101		5 4048002	11.5	2 4228001	18.6	5 4038101	17.9
2 4248002	37700	2 4228001		5 4168102	11.5	3 4188001	18.7	5 4178002	18.1
3 4188002	38300	5 4058001		8 4258002	11.7	8 4268002	18.7	3 4188003	18.5
5 4178001	40700	8 4278003	1	5 4168002	11.8	2 4248002	18.8	5 4038001	18.6
6 345M001	41000	3 4198002	1	3 4198003	11.9	2 4228002	18.9	8 4278002	18.7
8 4268003	41700	6 347M001	1	1 359M001	11.9	2 4248003	19.3	3 4208003	18.8
2 4238002	41700	5 4038003	1	2 4248003	12.1	3 4198002	19.3	6 345M001	19.1
5 4168001	42200	5 4058103	1.1	8 4268002	12.1	3 4188101	19.9	2 4248002	19.4
5 4038002	42400	5 4168102	1.1	3 4208003	12.2	5 4168102	20	8 4268002	19.5
2 4248003	43000	5 4018002	1.1	2 4248001	12.3	2 4238002	20.8	5 4058001	19.5
8 4268002	43500	5 4048003	1.1	8 4278002	12.4	5 4048001	20.9	5 4048001	19.7
5 4218002	43700	5 4028001	1.1	8 4268003	12.4	5 4018001	20.9	6 347M001	19.9
5 4168102	44900	1 363M001	1.1	2 4248002	12.5	8 4268003	20.9	1 363M001	20.1
5 4058001	47300	2 4238002	1.1	6 345M001	12.6	5 4048002	21.1	3 4198002	20.3
3 4198003	47600	5 4048001	1.1	5 4178002	12.6	5 4218001	22	8 4258002	20.5
5 4048001	49100	2 4238003	1.2	2 4238002	12.7	5 4028002	22.1	8 4268003	20.6
2 4238003	50800	3 4188003	1.2	5 4038002	12.7	3 4188002	22.3	5 4178001	20.7
1 363M001	55900	3 4208002	1.3	5 4028002	12.7	8 4278003	22.4	3 4188002	20.7
5 4048002	57700	2 4248002	1.3	3 4188003	12.7	8 4258003	22.8	3 4208002	21.2
2 4228003	60300	2 4228003	1.3	1 361M001	12.8	5 4168002	23.2	5 4168001	21.2
8 4258003	60900	8 4258002	1.3	5 4218002	12.9	3 4208003	23.8	5 4028002	21.4
5 4018002	61000	5 4038002	1.3	8 4278003	12.9	1 361M001	23.9	2 4228003	21.4
5 4018003	61500	5 4058003	1.3	8 4258003	13	5 4058001	23.9	2 4238002	21.6
5 4048003	61500	8 4268002	1.3	2 4238003	13.3	5 4218002	23.9	5 4018002	21.6
5 4038003	62200	3 4188002	1.4	2 4228003	13.4	2 4238003	24.1	5 4168102	21.7
5 4028003	64100	5 4178003	1.4	5 4018002	13.5	5 4168001	24.4	2 4248003	22.1
5 4058002	65400	8 4268003	1.4	1 363M001	13.6	2 4228003	24.5	3 4188101	22.5
5 4178003	67700	2 4248003	1.5	5 4058001	13.7	5 4178001	24.7	2 4228002	22.5
5 4168003	68400	5 4168001	1.5	3 4188002	13.9	5 4028001	24.8	2 4238003	22.8
3 4208003	68500	3 4198003	1.5	2 4228002	13.9	3 4188003	25	5 4218002	23
5 4178002	71500	1 361M001	1.6	3 4188101	13.9	5 4178002	25.3	1 359M001	23.1
5 4168002	72100	5 4218003	1.7	5 4178001	14	1 363M001	25.4	3 4198003	23.4
5 4058103	72900	2 4228002	1.8	5 4168001	14.1	5 4018002	25.5	5 4218001	24.3
3 4188003	74000	1 359M001	1.8	5 4048001	14.2	1 359M001	26.3	5 4038002	24.7
5 4218003	78200	6 345M001	2	6 347M001	16	6 345M001	27.5	5 4028001	34.2
5 4058003	83200	3 4208001	32.5	3 4198002	21.7	6 347M001	31.1	5 4018001	44.1
40993.51		2.254545		10.69140		18.17951		17.00854	
21515.71		5.352602		3.686242		6.365576		7.322138	
4.6E+08		28.65035		13.58838		40.52056		53.61371	

AVG - Average of detected concentrations.
STD - Standard deviation of detected concentrations.
VAR - Variance of detected concentrations.
Listed values and sample sites used to create associated histograms.

TABLE N-1 (Continued)
SORTED METAL SCREEN SOIL SAMPLE ANALYTICAL DATA
IRP STAGE 2
SELFRIAGE ANGB, MICHIGAN

IRON mg/kg		MERCURY mg/kg		POTASSIUM mg/kg		MAGNESIUM mg/kg		MANGANESE mg/kg	
Sample		Sample		Sample		Sample		Sample	
3 419B001	3650	8 425B001		2 423B101		3 419B001	709	3 419B001	28.9
8 427B001	3800	8 425B002		5 401B003		2 423B001	2490	8 427B001	82.8
1 357M001	5350	8 425B003		1 357M001		2 424B001	2870	1 357M001	92.2
5 402B003	8880	8 426B001		8 425B001		2 423B101	2980	5 401B001	142
5 401B003	9050	8 426B002		8 426B001		2 422B001	3320	2 423B101	148
8 425B001	9430	8 426B003		5 417B003		8 425B001	3590	8 425B001	151
5 404B003	9970	8 427B001		5 402B003		5 401B001	3720	2 423B001	171
5 405B003	10400	8 427B002		2 423B001		5 402B001	4710	5 402B001	174
5 417B003	10700	8 427B003		5 403B101		8 426B001	4740	2 422B001	200
5 405B103	10800	1 357M001		5 404B003		1 357M001	5230	5 402B003	216
5 421B003	11600	1 359M001	0.9597	5 401B001		5 421B001	5470	5 401B003	223
5 416B003	11700	1 361M001		3 420B001		5 403B001	6010	3 420B001	233
5 405B002	12400	1 363M001		8 427B001		3 420B001	6640	5 417B003	238
3 420B001	12400	2 422B001		3 419B001		3 418B001	7560	5 421B001	241
2 423B001	12600	2 422B002		2 424B001	991	8 427B001	8230	5 404B003	244
5 401B001	12600	2 422B003		5 405B003	1050	8 427B003	9740	5 405B003	247
5 403B001	13000	2 423B001		3 418B001	1060	5 404B001	9920	5 416B003	253
5 403B003	13800	2 423B101		5 405B103	1090	8 425B003	11300	5 405B103	261
5 403B101	15300	2 423B002		5 416B003	1110	8 426B003	11500	5 421B003	261
2 422B001	15600	2 423B003		2 422B001	1160	5 405B001	11500	5 405B002	274
5 402B001	15700	2 424B001		5 421B003	1170	5 417B001	12600	5 403B003	284
2 423B101	15900	2 424B002		5 405B002	1210	5 403B002	12700	5 403B001	313
8 426B001	17300	2 424B003		5 402B001	1310	2 424B003	12800	3 418B001	314
2 424B001	19300	3 418B001		5 403B003	1370	5 402B002	12800	8 427B003	322
8 425B002	19800	3 418B101		5 421B001	1530	1 361M001	12900	8 426B001	336
5 421B001	20400	3 418B002		5 403B001	1540	5 403B101	13000	3 418B002	340
8 427B002	21000	3 418B003		3 420B002	1620	5 401B002	13500	1 359M001	349
3 418B001	21100	3 419B001		8 425B002	1740	3 419B003	13700	5 402B002	352
2 424B002	22300	3 419B002		3 418B101	1750	2 424B002	13700	2 424B003	362
2 424B003	22500	3 419B003		8 426B002	1880	2 422B003	14000	8 426B003	363
3 419B003	22600	3 420B001		5 404B001	1900	8 426B002	14000	5 416B102	367
5 416B102	22800	3 420B002		8 427B002	1980	1 363M001	14000	5 421B002	372
2 423B002	23000	3 420B003		3 419B002	2020	3 420B003	14000	5 403B101	386
5 416B002	23100	5 401B001		2 422B002	2040	6 347M001	14400	2 423B003	400
5 403B002	23200	5 401B002		5 403B002	2140	3 418B003	14500	1 361M001	402
8 426B002	23200	5 401B003		2 424B002	2180	5 417B002	14800	5 416B001	405
5 404B002	23300	5 402B001		3 419B003	2260	8 425B002	14900	2 424B002	412
8 426B003	23400	5 402B002		5 416B102	2470	5 416B002	15000	2 423B002	418
8 425B003	23700	5 402B003		5 404B002	2560	2 423B003	15200	2 422B003	426
5 402B002	23900	5 403B001		2 424B003	2590	5 404B002	15500	5 416B002	430
3 418B002	24000	5 403B002		2 423B002	2590	8 427B002	15500	8 425B003	433
3 420B002	24100	5 403B003		8 425B003	2620	3 419B002	15700	3 420B003	434
1 361M001	24200	5 404B001		8 426B003	2630	5 421B002	15900	5 405B001	444
5 421B002	24400	5 404B002		8 427B003	2660	3 418B101	15900	5 417B002	447
3 420B003	24500	5 404B003		3 418B002	2840	2 422B002	16000	6 345M001	449
2 422B003	24900	5 405B001		5 405B001	3060	3 420B002	16100	3 419B003	453
3 418B003	24900	5 405B002		5 416B001	3090	5 416B001	16200	5 417B001	456
6 345M001	25300	5 405B003		5 416B002	3100	6 345M001	16200	8 427B002	464
8 427B003	25300	5 405B103		2 422B003	3210	3 418B002	16200	6 347M001	476
2 423B003	25400	5 403B101		5 421B002	3220	2 423B002	16500	8 425B002	479
1 359M001	25500	5 416B001		3 418B003	3230	1 359M001	16900	3 418B003	480
5 417B002	25600	5 416B002		1 361M001	3240	5 416B102	18200	5 403B002	483
3 418B101	25700	5 416B102		5 402B002	3270	5 405B002	18800	5 401B002	484
3 419B002	26000	5 416B003		5 417B001	3290	5 402B003	19000	5 404B002	493
5 405B001	26000	5 417B001		3 420B003	3310	5 404B003	19200	1 363M001	501
6 347M001	26300	5 417B002		5 417B002	3410	5 401B003	19200	5 404B001	605
5 417B001	26400	5 417B003		5 401B002	3430	5 403B003	19600	2 422B002	665
1 363M001	26500	5 421B001		2 423B003	3450	5 416B003	20900	8 426B002	802
5 401B002	26600	5 421B002		1 363M001	3600	5 405B103	21400	3 418B101	838
5 404B001	26800	5 421B003		1 359M001	3740	5 417B003	23400	3 419B002	945
5 416B001	27400	6 347M001		6 345M001	4360	5 421B003	24300	3 420B002	1240
2 422B002	27600	6 345M001		6 347M001	4790	5 405B003	25500	2 424B001	1360
19418.22		0.9597		2413.770		13013.37		397.8209	
6735.513				943.1692		5732.124		235.9217	
45367146				889568.3		32857251		55659.07	

AVG - Average of detected concentrations.
STD - Standard deviation of detected concentrations.
VAR - Variance of detected concentrations.
Listed values and sample sites used to create associated histograms.

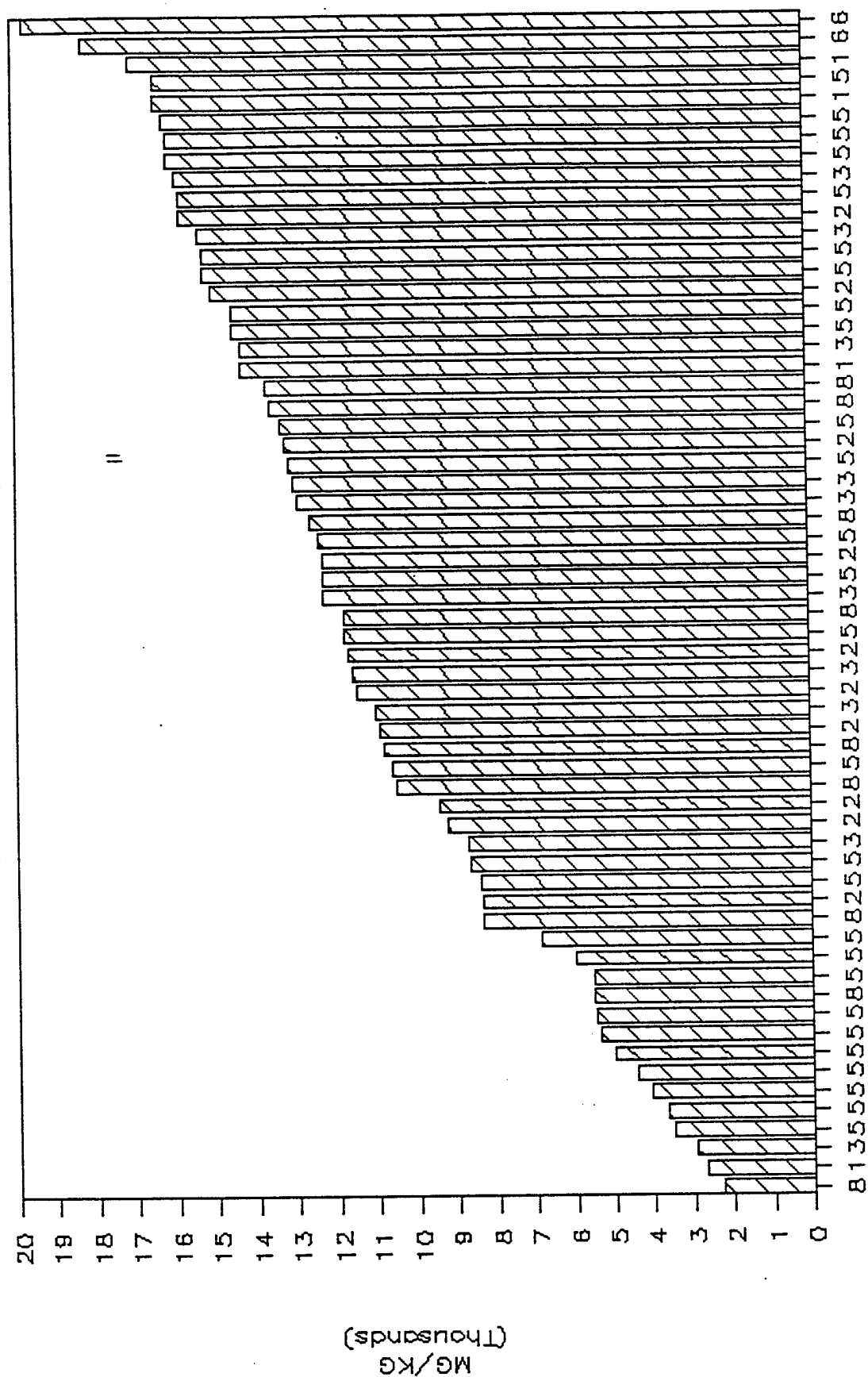
TABLE N-1 (Continued)
SORTED METAL SCREEN SOIL SAMPLE ANALYTICAL DATA
IRP STAGE 2
SELFRIDGE ANG8, MICHIGAN

SODIUM		NICKEL		LEAD		SILICON		VANADIUM		ZINC	
Sample	mg/kg	Sample	mg/kg	Sample	mg/kg	Sample	mg/kg	Sample	mg/kg	Sample	mg/kg
1 357M001		3 419B001		8 425B001		6 347M001		8 427B001	6.59	1 357M001	
5 401B001		8 427B001	5.6	8 425B002		5 417B001	34.5	3 419B001	7	3 419B001	10.
3 419B001		1 357M001	6.45	8 425B003		3 418B003	38.7	1 357M001	7.35	8 427B001	12.4
5 403B101	90.8	5 402B003	8.8	8 426B001		5 417B002	41.2	5 401B003	8.6	5 405B003	23.9
5 403B001	93.5	5 401B003	9	8 426B002		6 345M001	41.3	5 402B003	8.68	8 425B001	24.
3 420B001	127	8 425B001	9.2	8 426B003		5 416B003	44.9	5 417B003	10.9	5 402B003	25.
5 402B001	145	5 405B003	10.1	8 427B001		3 420B003	62.6	5 404B003	10.9	5 405B103	27.
5 402B003	148	5 404B003	10.4	8 427B002		1 359M001	64.6	5 405B003	11.2	5 417B003	28
5 404B001	150	5 417B003	10.6	8 427B003		5 416B002	70.4	5 405B103	12.2	5 404B003	28.6
3 418B001	164	5 405B103	11.2	1 357M001		3 418B002	79.4	5 416B003	13.3	5 416B003	29.
3 420B002	171	5 421B003	12.3	1 359M001		5 417B003	84.3	5 421B003	14.2	5 405B002	30.
5 404B003	171	5 405B002	12.7	1 361M001		1 357M001	86.6	5 405B002	14.5	5 401B003	33.
3 418B101	171	5 416B003	12.7	1 363M001		3 419B002	89.8	5 403B003	15.4	5 403B003	35.2
5 401B003	183	2 423B001	13.9	2 422B001		3 420B002	97.4	3 420B001	17.5	5 421B003	36.5
5 417B003	195	3 420B001	14	2 422B002		5 421B001	102	2 423B001	18.2	2 423B001	42.7
3 419B002	215	5 403B003	16	2 422B003		5 404B002	104	5 403B001	18.9	8 426B001	43.
5 403B003	247	2 423B101	16.8	2 423B001		2 423B101	111	5 403B101	19.1	2 423B101	44.
5 405B003	250	5 403B001	17.1	2 423B101		5 405B103	123	5 403B002	20.7	5 401B001	46.1
5 417B001	259	2 422B001	17.9	2 423B002		3 418B101	124	8 426B001	22.1	2 424B001	48.3
5 405B103	268	8 426B001	18.6	2 423B003		5 405B003	124	5 404B002	22.5	3 418B001	51.7
6 347M001	270	5 403B101	18.8	2 424B001		5 401B002	127	2 424B002	22.5	5 402B001	53.
5 402B002	276	2 424B001	19.3	2 424B002		5 402B001	127	8 427B002	22.6	2 422B001	56.
5 404B002	279	3 418B001	26.4	2 424B003		5 402B002	131	8 425B002	22.7	5 403B101	56.6
5 405B002	286	8 425B002	28.1	3 418B001		1 363M001	134	8 426B002	22.8	8 427B003	56.6
5 403B002	293	8 427B002	28.1	3 418B101		8 426B003	140	3 419B003	22.9	5 416B102	56.8
3 419B003	294	8 426B002	29.2	3 418B002		8 426B002	150	8 425B003	23.2	5 421B001	58.
6 345M001	306	3 420B002	30	3 418B003		5 405B002	154	2 424B001	23.4	8 426B002	58.4
5 405B001	318	1 359M001	30.8	3 419B001		8 427B001	165	2 424B003	23.7	8 425B002	58.8
5 401B002	319	5 416B002	31.2	3 419B002		5 404B003	169	2 422B001	24.1	2 424B002	59.4
5 416B001	325	5 416B102	31.5	3 419B003		5 416B102	183	5 416B002	24.5	1 361M001	59.5
5 416B003	337	5 421B001	31.5	3 420B001		2 424B001	190	8 426B003	25.4	8 427B002	59.9
3 418B002	347	2 424B002	31.8	3 420B002		5 401B003	194	2 423B101	25.4	5 404B002	59.9
3 420B003	381	2 422B002	32.9	3 420B003		2 424B003	194	3 418B001	25.7	5 416B002	59.9
3 418B003	410	3 418B101	32.9	5 401B001		2 423B002	195	5 416B102	25.8	3 420B002	60.3
5 417B002	423	8 425B003	33.7	5 401B002		8 427B003	199	3 418B003	26.4	3 420B001	60.7
1 363M001	457	3 418B003	34	5 401B003		2 423B001	202	3 420B003	26.4	5 404B001	60.9
1 359M001	465	5 421B002	34	5 402B001		8 427B002	204	2 422B002	26.5	8 425B003	62.4
1 361M001	471	2 423B002	34.1	5 402B002		3 420B001	205	2 423B002	26.6	2 424B003	63.4
5 416B102	734	3 418B002	34.4	5 402B003		2 422B003	215	5 417B002	26.9	3 418B002	63.4
8 427B001	752	2 424B003	34.4	5 403B001	82.2	5 402B003	223	3 419B002	27.3	5 421B002	63.6
5 416B002	764	6 345M001	34.7	5 403B002		5 421B003	225	3 418B002	27.4	5 402B002	63.7
8 426B001	924	5 417B002	35.1	5 403B003		5 421B002	228	5 404B001	27.8	5 417B002	64.
2 424B001	986	2 423B003	35.1	5 404B001		8 426B001	228	2 422B003	27.9	3 418B101	64.5
8 425B001	990	8 426B003	35.4	5 404B002		2 423B003	242	5 401B002	28.3	8 426B003	64.7
2 423B001	1050	2 422B003	35.5	5 404B003		3 419B001	244	3 420B002	28.5	1 363M001	64.7
8 426B002	1060	5 404B002	35.5	5 405B001		8 425B001	268	5 421B002	28.6	3 418B003	65.3
2 423B101	1070	8 427B003	35.8	5 405B002		3 418B001	278	5 405B001	28.9	5 417B001	65.3
8 425B002	1080	3 419B002	35.8	5 405B003		5 405B001	283	3 418B101	29.2	3 419B002	65.3
2 422B001	1110	5 404B001	35.9	5 405B103		5 416B001	284	5 402B002	29.2	3 420B003	65.5
5 421B003	1240	5 401B002	36.2	5 403B101	22.5	2 422B001	299	1 361M001	29.3	5 405B001	65.6
2 422B002	1260	1 361M001	37.1	5 416B001		8 425B002	300	5 421B001	29.6	5 401B002	65.6
5 421B001	1260	5 416B001	37.8	5 416B002		2 424B002	312	2 423B003	29.7	6 347M001	65.7
5 421B002	1330	5 402B002	37.9	5 416B102		8 425B003	320	8 427B003	30.2	5 403B002	66.2
8 427B002	1340	5 401B001	38.1	5 416B003		5 403B003	340	5 416B001	31.3	6 345M001	66.3
2 424B002	1390	3 419B003	38.1	5 417B001		5 403B101	383	1 359M001	31.9	2 423B002	67.3
8 426B003	1440	5 405B001	38.7	5 417B002		2 422B002	417	5 417B001	32.6	2 423B003	68.1
2 423B002	1440	5 403B002	39.5	5 417B003		1 361M001	477	6 345M001	33.1	2 422B003	68.2
8 427B003	1720	5 402B001	40.3	5 421B001		5 404B001	484	1 363M001	33.6	3 419B003	69.3
8 425B003	1830	5 417B001	40.5	5 421B002		3 419B003	495	6 347M001	34.7	2 422B002	69.8
2 424B003	1900	6 347M001	41.8	5 421B003		5 403B002	601	5 402B001	40.5	5 416B001	74.9
2 423B003	2050	3 420B003	337	6 347M001		5 401B001	625	8 425B001	41.1	1 359M001	78.3
2 422B003	2150	1 363M001	382	6 345M001		5 403B001	730	5 401B001	42.1	5 403B001	95.6
680.9372		37.77459		52.35		214.5524		23.71161		54.34262	
565.3124		60.35527				148.8925		8.274023		16.77199	
319578.1		3642.759				22168.98		68.45946		281.2998	

AVG - Average of detected concentrations.
STD - Standard deviation of detected concentrations.
VAR - Variance of detected concentrations.
Listed values and sample sites used to create associated histograms.

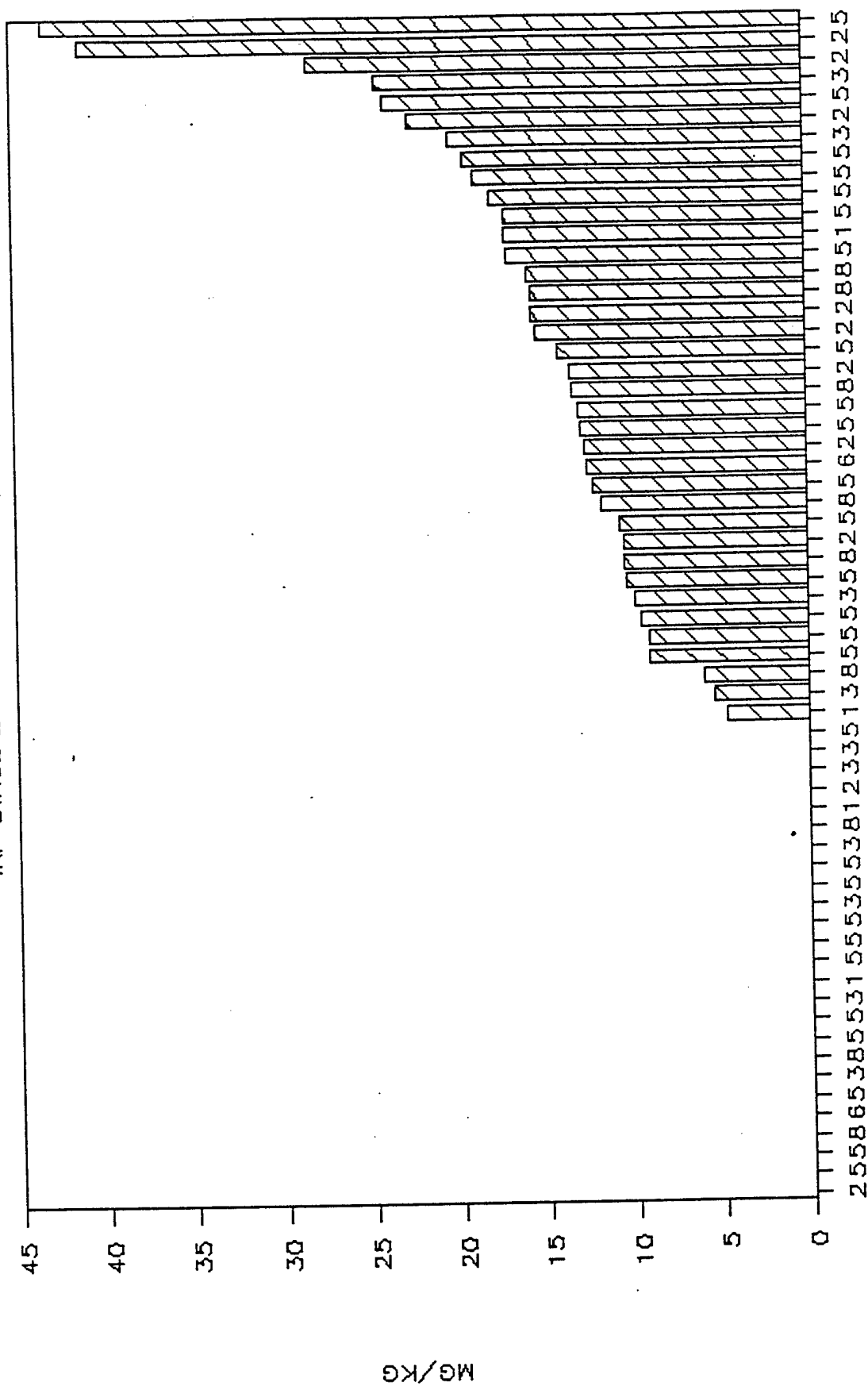
ALUMINUM CONCENTRATION IN SOIL

IRP STAGE 2 SELF-RIDGE ANGB, MI



ARSENIC CONCENTRATION IN SOIL

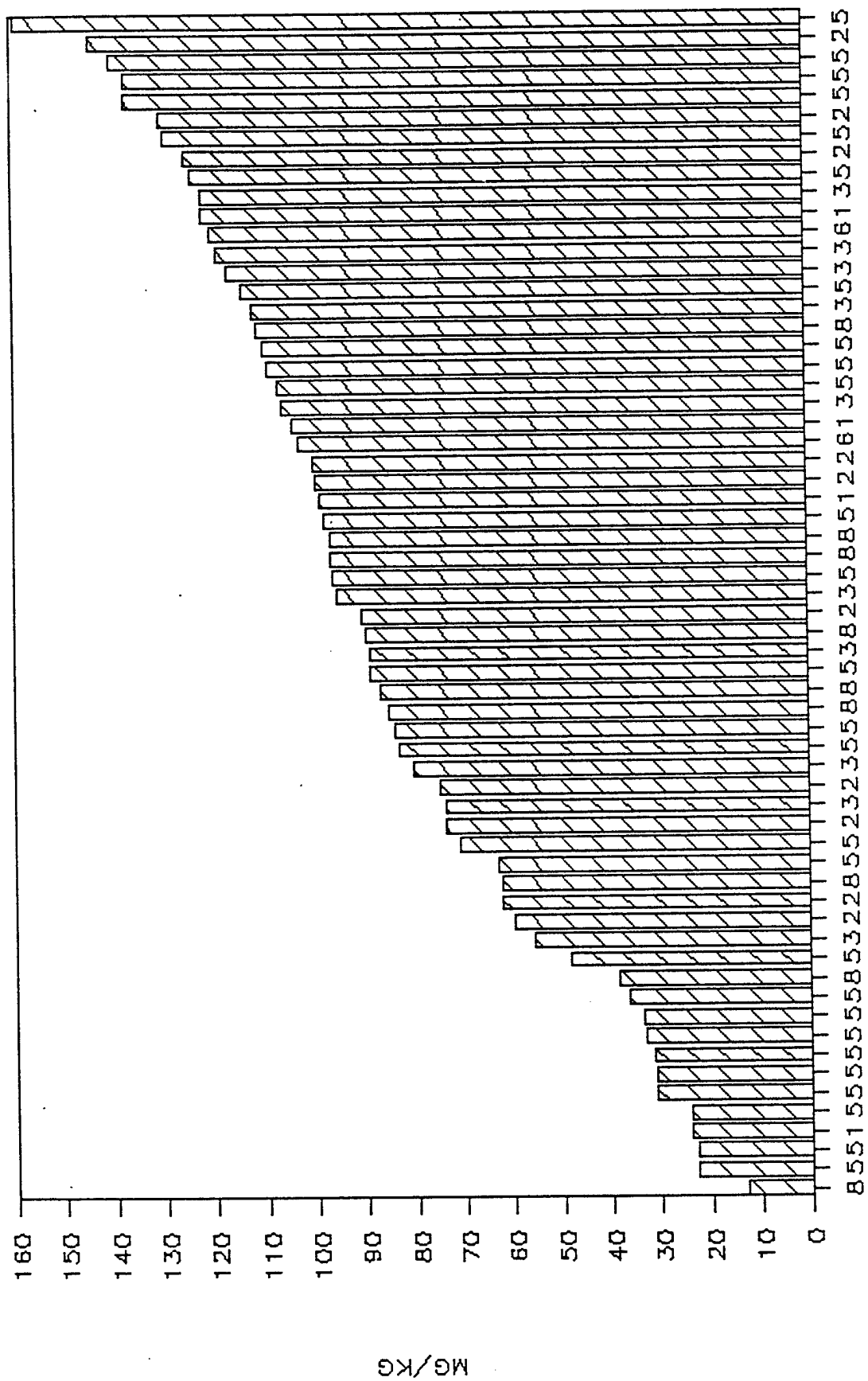
IRP STAGE 2 SELFIDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

BARIUM CONCENTRATION IN SOIL

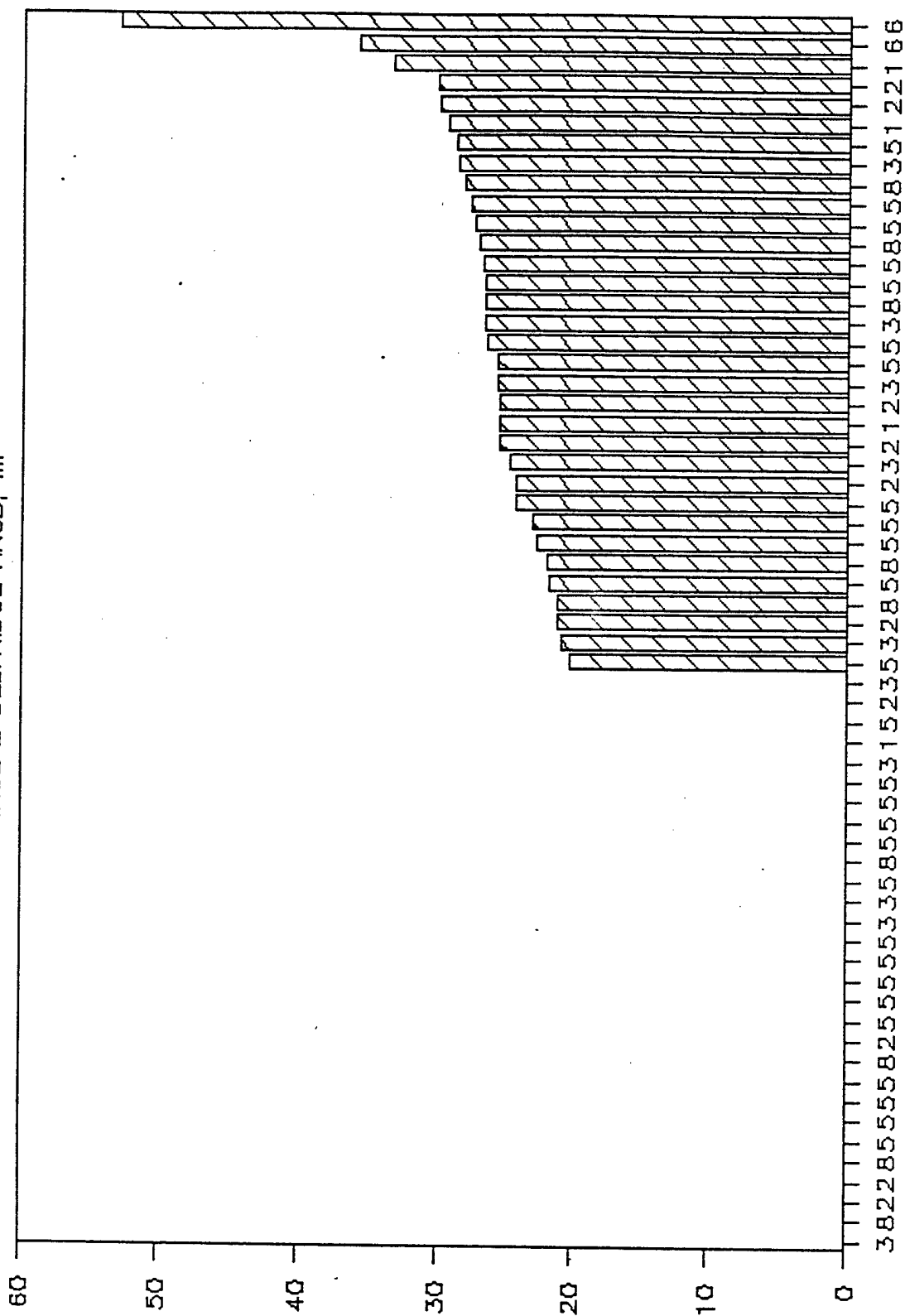
IRP STAGE 2 SELFRIIDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

BORON CONCENTRATION IN SOIL

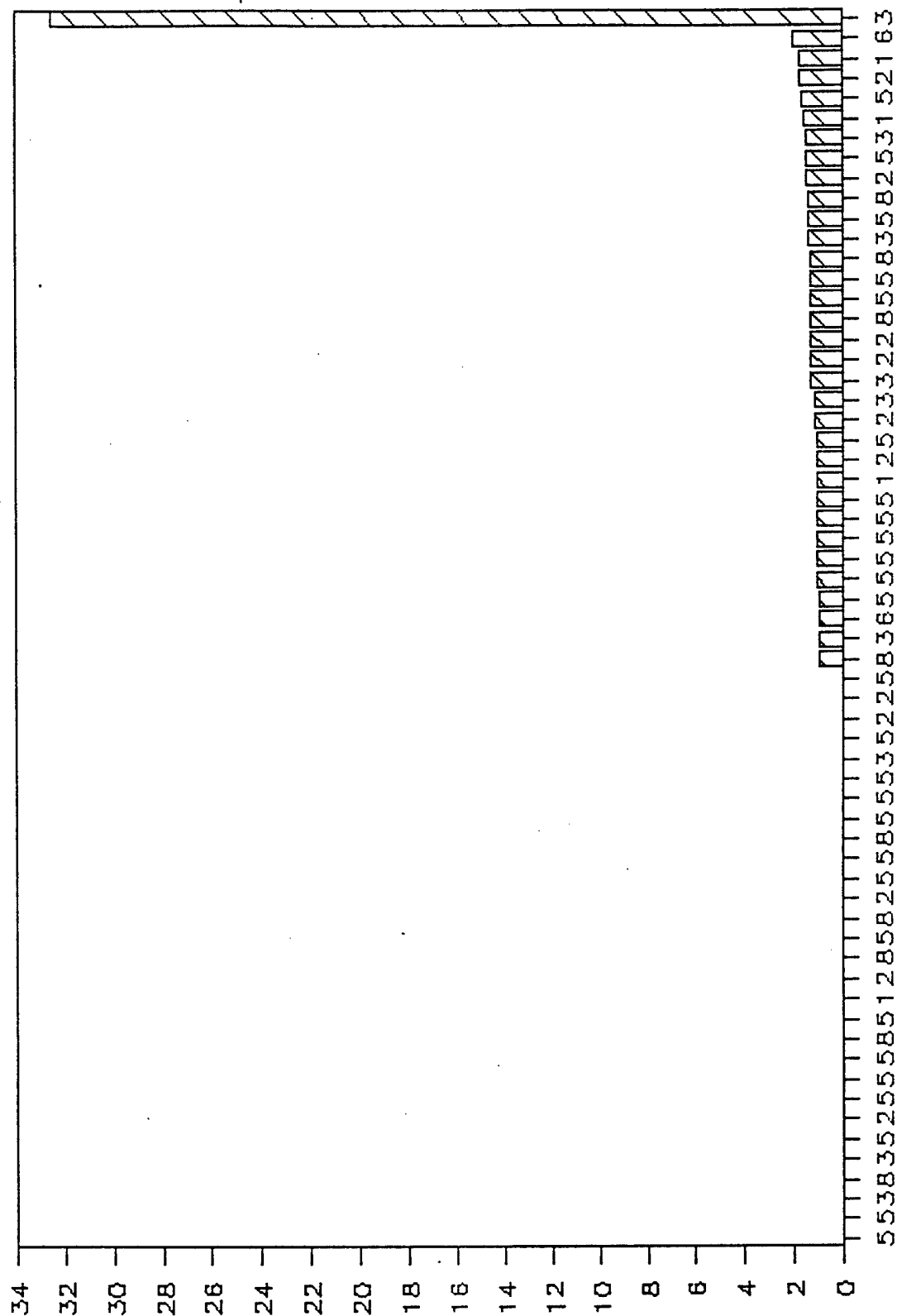
IRP STAGE 2 SELFREDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

CADMIUM CONCENTRATION IN SOIL

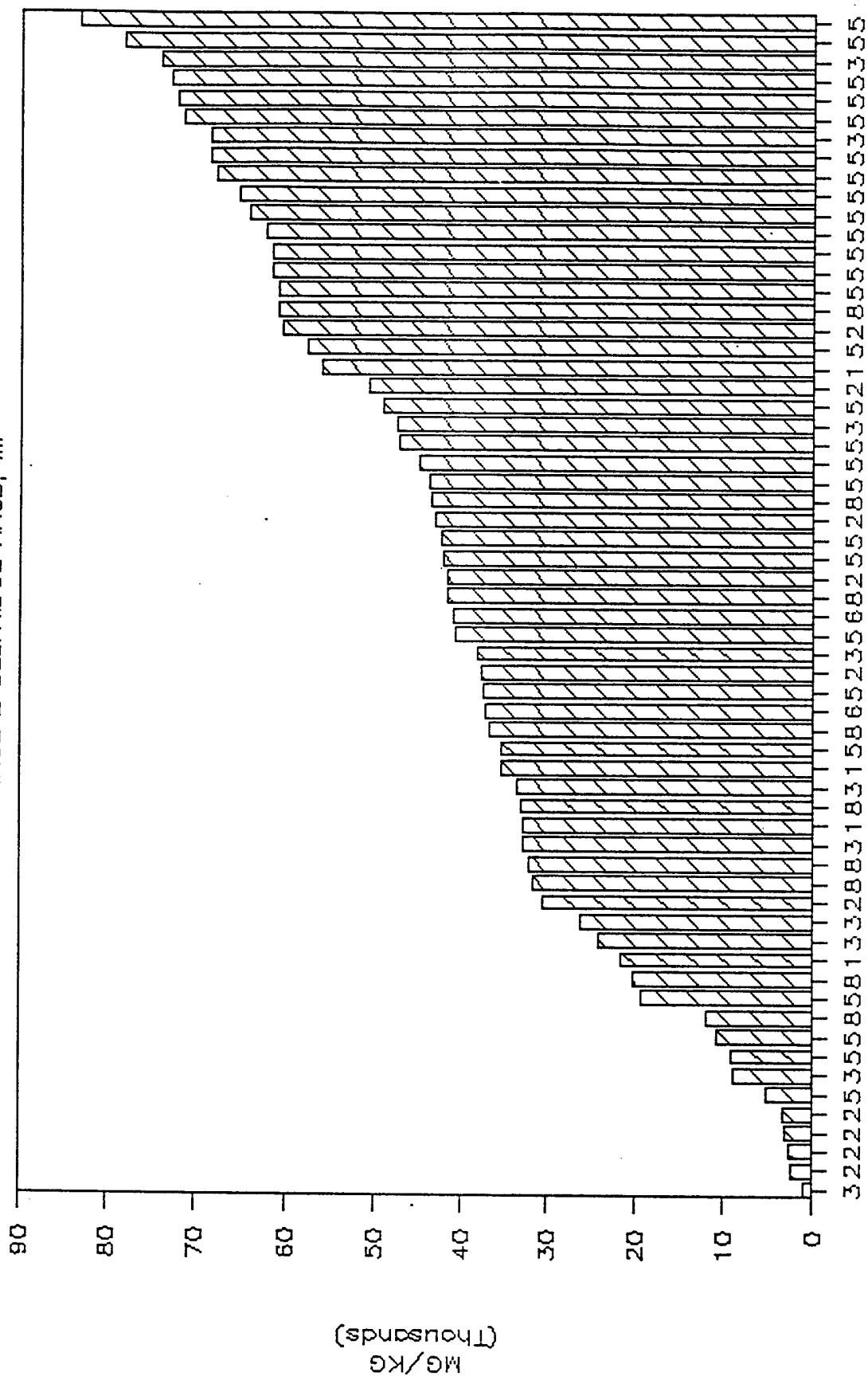
IRP STAGE 2 SELF-RIDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

CALCIUM CONCENTRATION IN SOIL

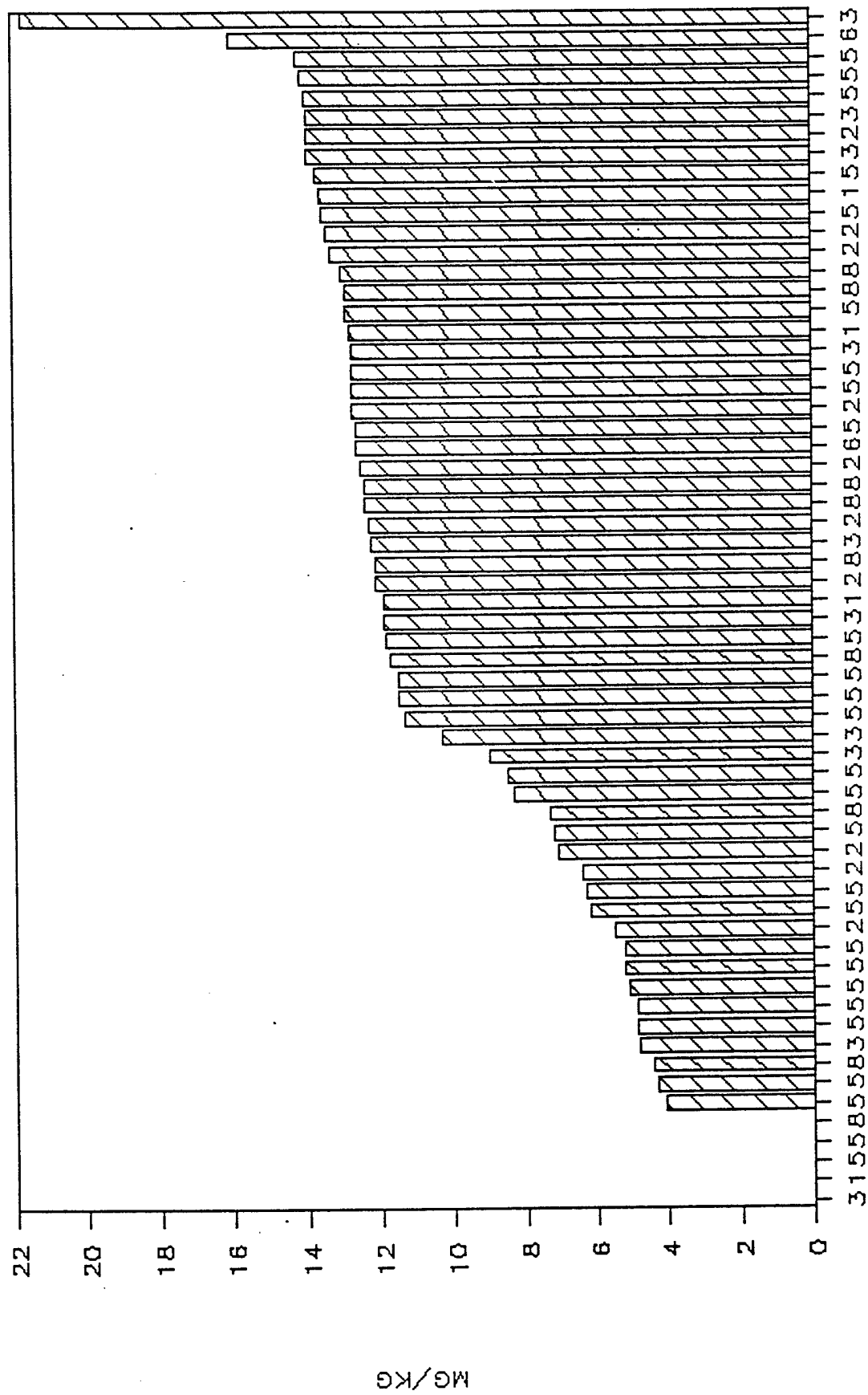
IRP STAGE 2 SELFRIIDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

COBALT CONCENTRATION IN SOIL

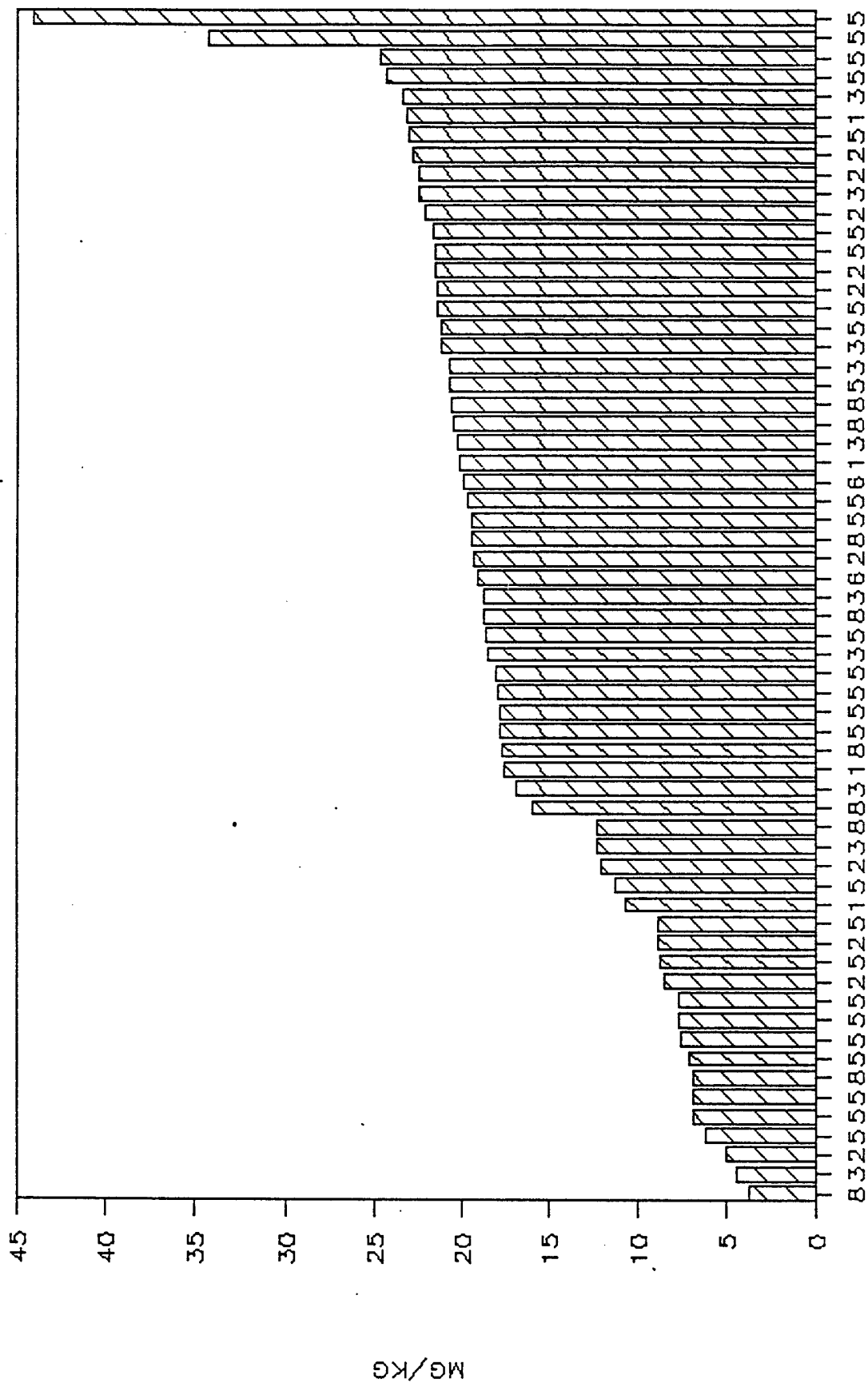
IRP STAGE 2 SELFDRIDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

COPPER CONCENTRATION IN SOIL

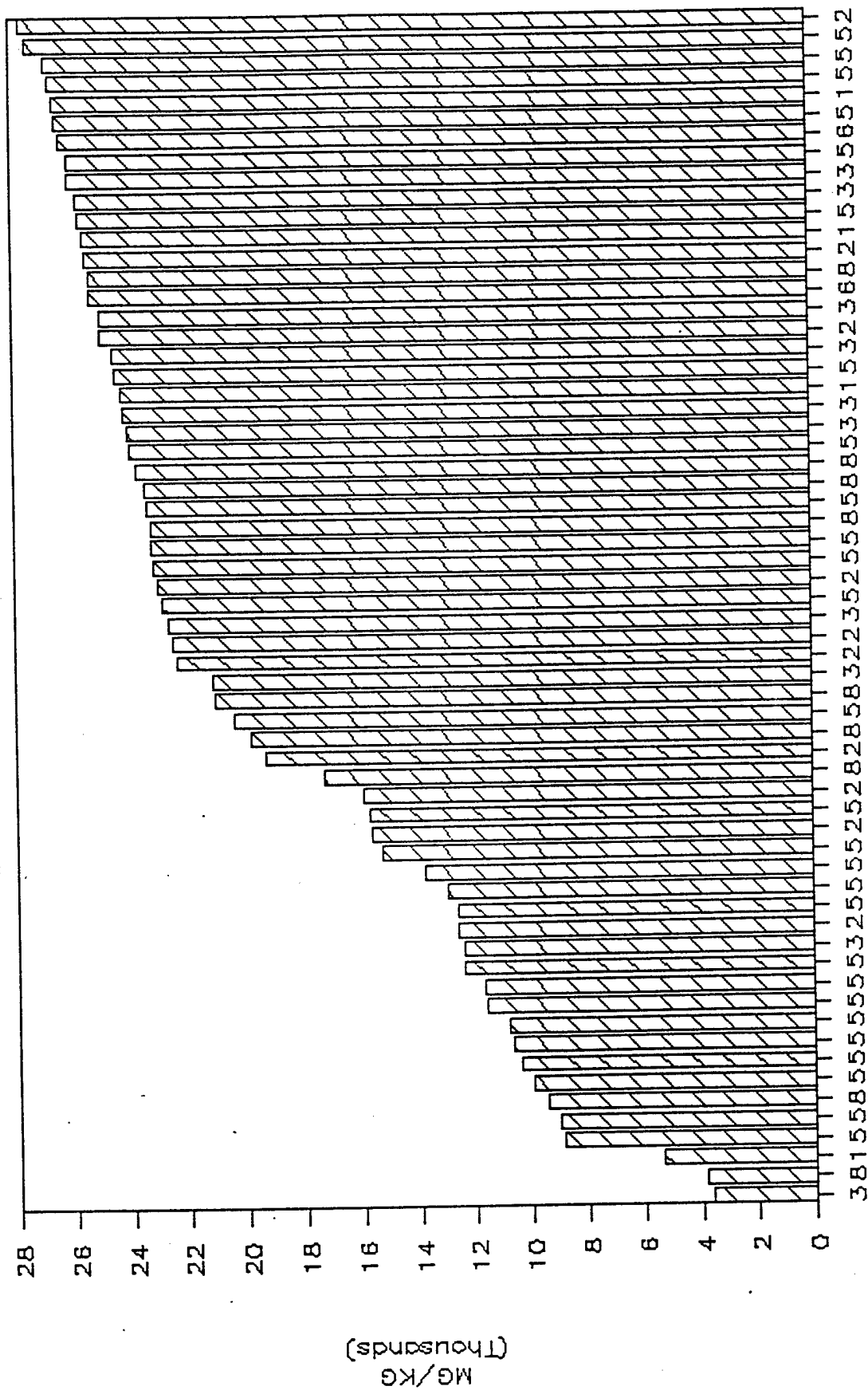
IRP STAGE 2 SELFRIIDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

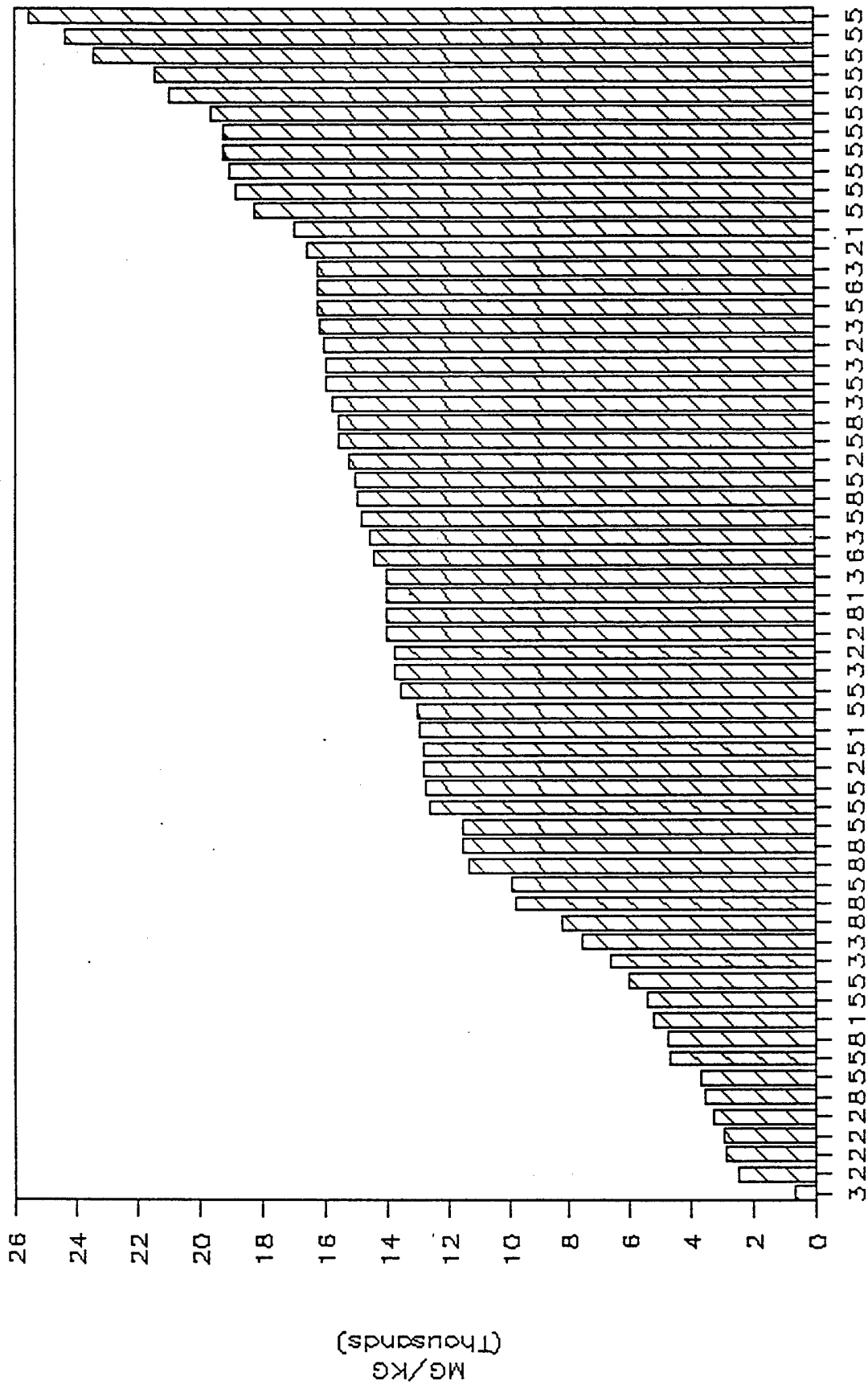
IRON CONCENTRATION IN SOIL

IRP STAGE 2 SELFRIIDGE ANGB, MI



MAGNESIUM CONCENTRATION IN SOIL

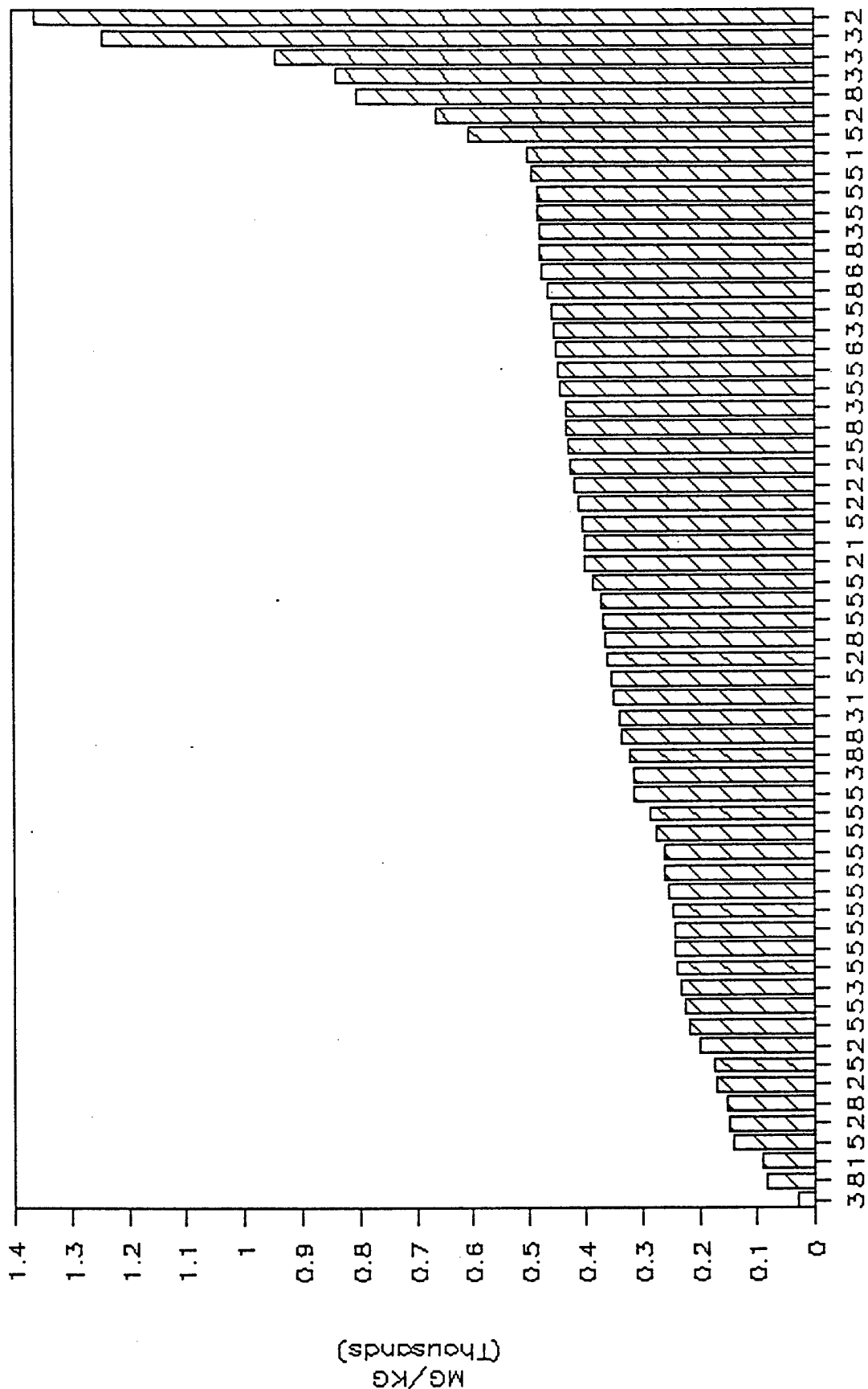
IRP STAGE 2 SELFREDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

MANGANESE CONCENTRATION IN SOIL

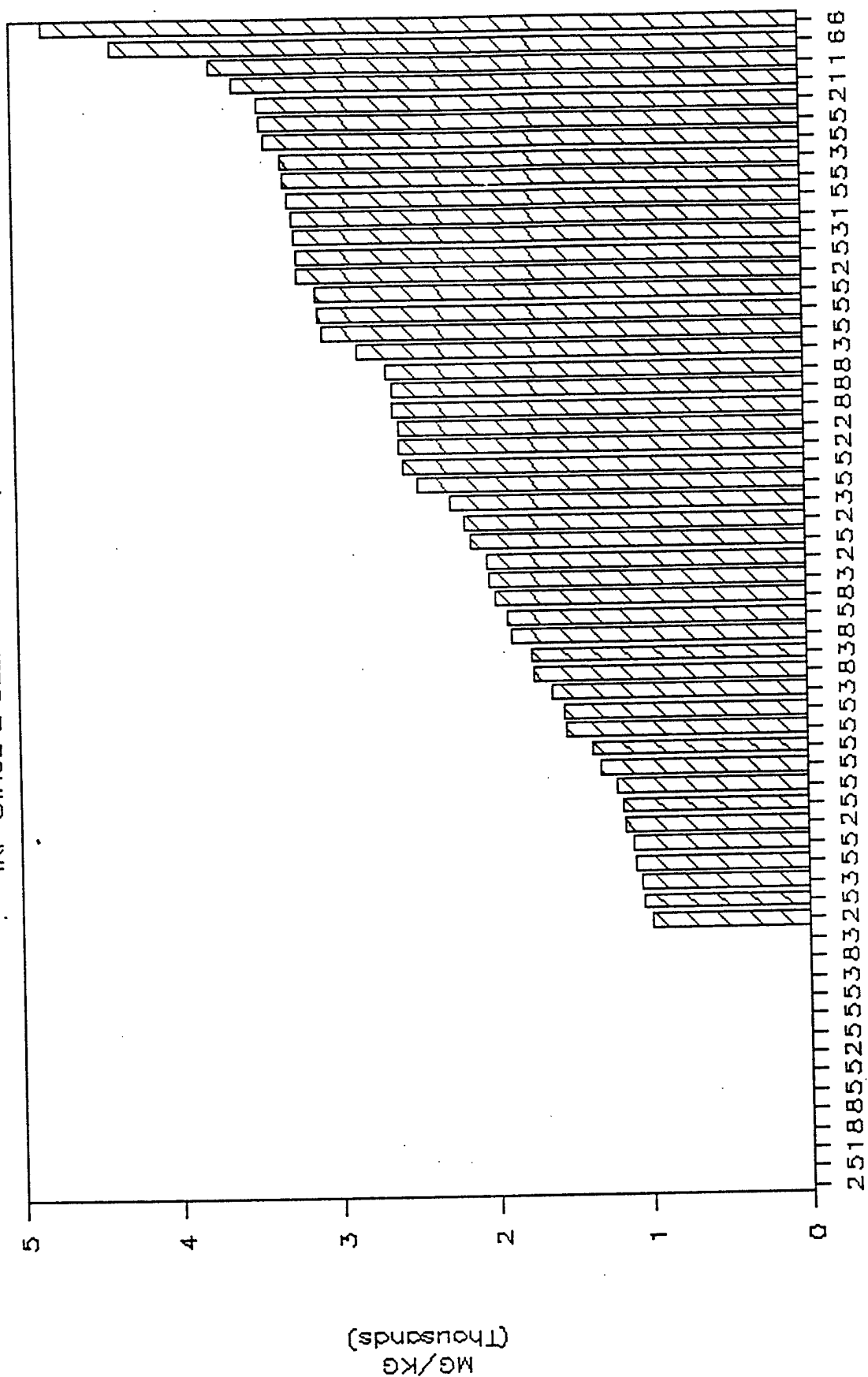
IRP STAGE 2 SELFREDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

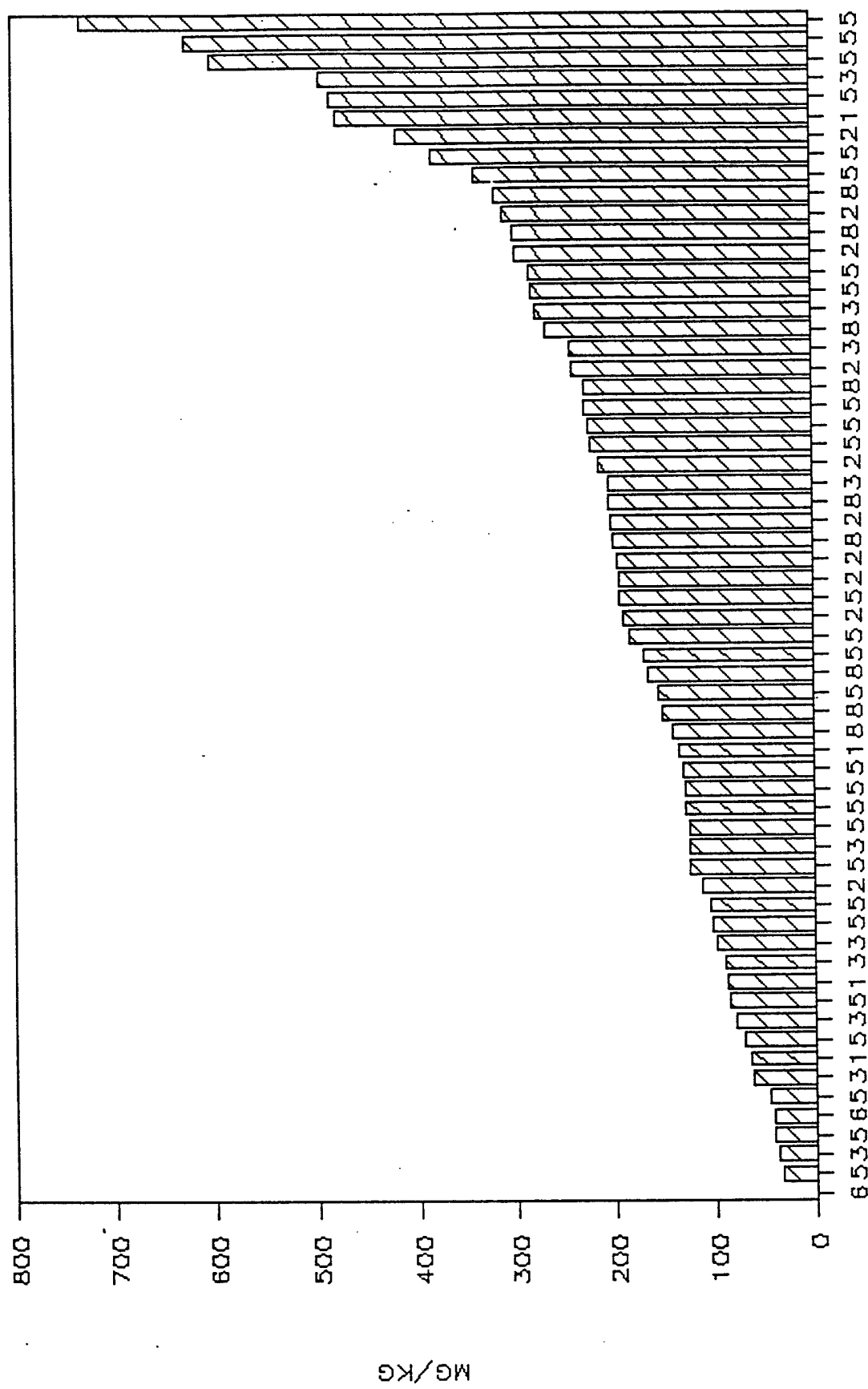
POTASSIUM CONCENTRATION IN SOIL

IRP STAGE 2 SELF-RIDGE ANGB, MI



SILICON CONCENTRATION IN SOIL

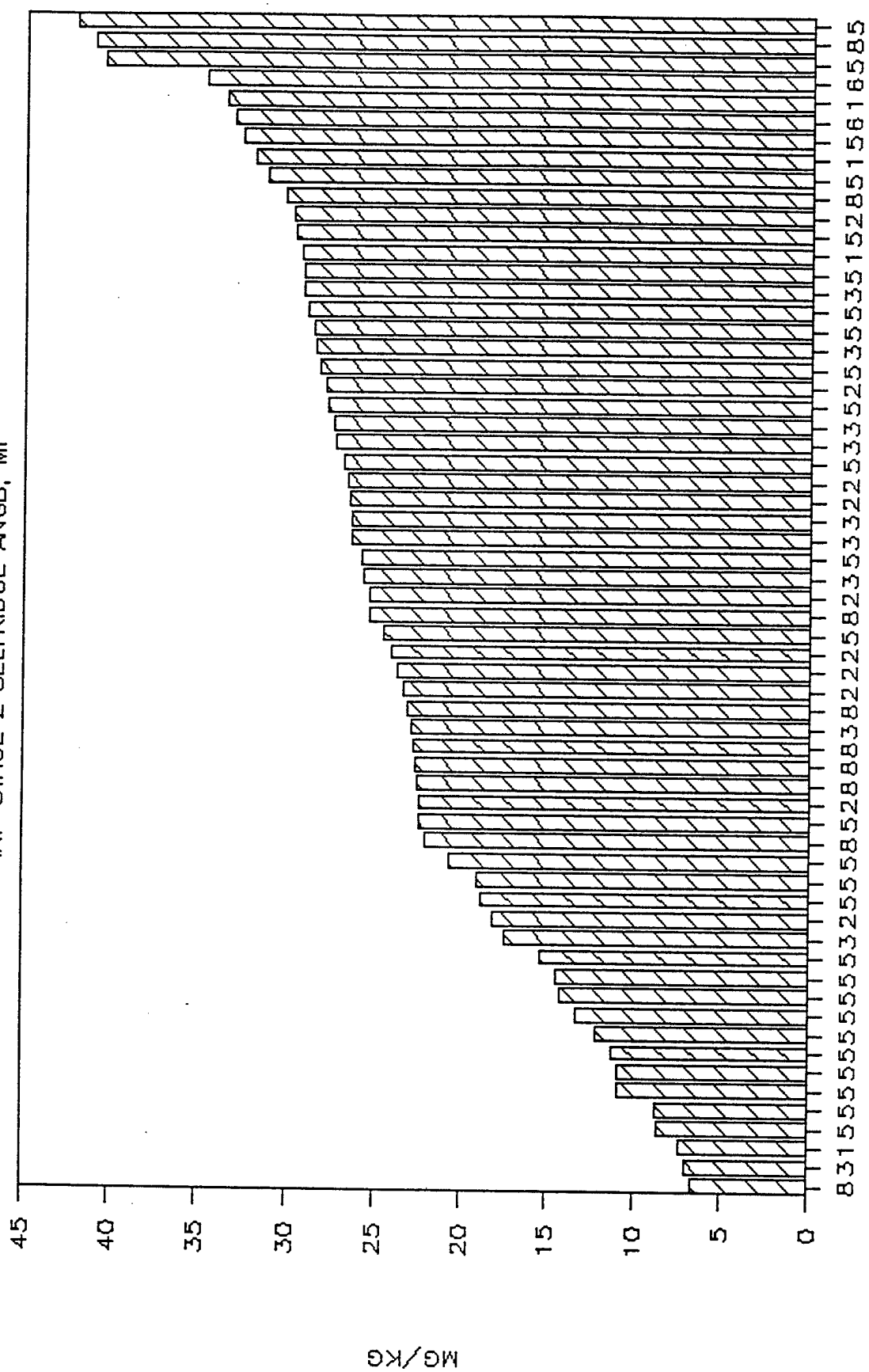
IRP STAGE 2 SELFRIIDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

VANADIUM CONCENTRATION IN SOIL

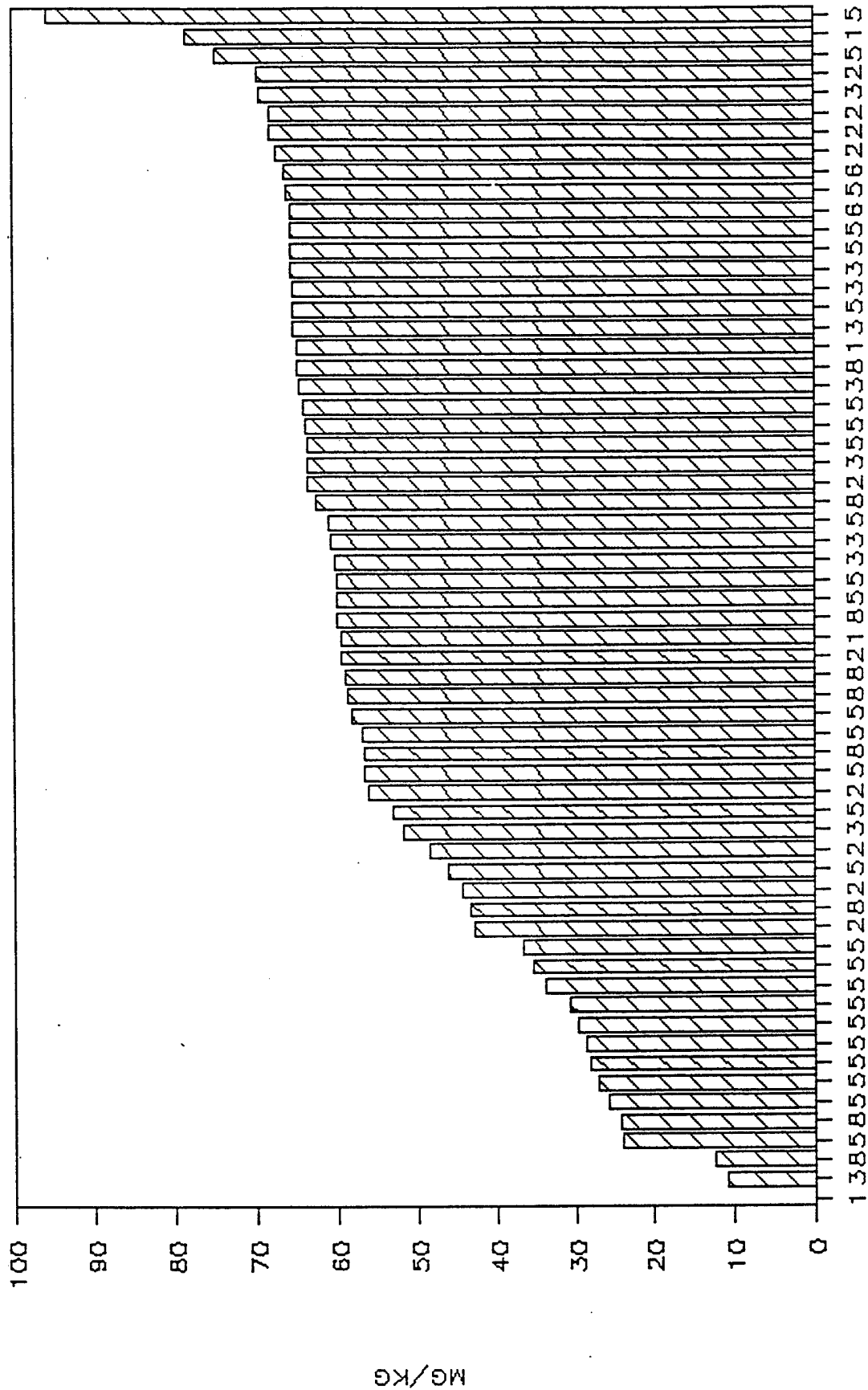
IRP STAGE 2 SELFRIIDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

ZINC CONCENTRATION IN SOIL

IRP STAGE 2 SELFRIIDGE ANGB, MI





APPENDIX O

HISTOGRAMS OF ANALYSES FOR GROUNDWATER AND SURFACE WATER SAMPLES

TABLE O-1
SORTED GROUNDWATER SAMPLE ANALYTICAL DATA
IRP STAGE 2
SELFRIDGE ANGB, MICHIGAN

Chloride		Sulfate		Alk		TDS		PET HYD	
Sample	mg/l	Sample	mg/l	Sample	mg/l	Sample	mg/l	Sample	mg/l
1 158 M001	1.74	7 237 M021		5 235 M001	100			1 122 M101	
6 144 M001	6.1	7 136 M101		7 241 M001	130	7 241 M021		1 122 M001	
6 144 M001	7.1	8 129 M001		4 251 M001	180	7 239 M001	350	1 123 M001	
6 146 M001	8	7 243 M021		4 113 M001	180	4 113 M001	380	1 124 M001	
6 108 M001	10.9	1 124 M001		5 105 M001	180	4 251 M001	380	1 125 M001	
3 118 M001	16	7 241 M001		1 156 M001	190	4 111 M001	440	1 156 M001	
6 247 M001	17.8	6 144 M001		4 111 M001	190	6 146 M001	460	1 158 M001	
3 117 M001	18.3	4 253 M001		5 233 M001	200	7 102 M021	550	1 160 M001	
5 130 M101	22.1	7 239 M001		1 263 M001	210	1 160 M001	560	1 162 M001	
5 130 M001	22.9	5 233 M021		4 255 M001	210	4 155 M001	560	1 257 M001	
4 154 M001	22.9	6 144 M001		7 239 M001	210	4 115 M001	580	1 259 M001	
7 142 M021	25	7 136 M001	2.7	6 245 M001	210	6 247 M001	590	1 261 M001	
6 109 M001	30.9	5 235 M001	2.9	4 253 M001	220	3 117 M001	600	1 263 M001	
7 104 M001	32.3	4 255 M001	3.6	1 261 M001	230	3 118 M001	610	2 166 M001	
4 150 M001	33.3	4 251 M001	4	4 249 M001	230	3 116 M001	610	3 118 M001	
6 245 M001	34.4	1 263 M001	6.2	1 257 M001	240	4 152 M001	620	4 111 M001	
6 110 M001	40	4 111 M001	6.7	8 126 M001	240	7 243 M021	630	4 113 M001	
1 122 M101	44	1 261 M001	9.8	1 259 M001	250	6 245 M001	640	4 115 M001	
3 116 M001	46	1 158 M001	13.1	1 162 M001	280	4 255 M001	640	4 148 M001	
7 138 M001	52.2	5 105 M001	13.5	4 150 M001	300	7 104 M021	640	4 150 M001	
4 113 M001	55.3	1 156 M001	14.2	7 243 M001	320	6 110 M001	680	4 155 M001	
4 148 M001	60.4	1 259 M001	15	5 231 M001	330	6 144 M001	690	4 249 M001	
7 140 M021	62	7 104 M001	20.6	7 140 M001	330	2 164 M001	700	4 251 M001	
7 237 M021	63	7 103 M001	22.5	1 160 M001	340	7 140 M021	700	4 253 M001	
4 112 M001	65.4	3 118 M001	22.9	8 128 M001	340	6 144 M001	710	4 255 M001	
4 155 M001	67.6	7 102 M021	26	7 104 M001	360	4 148 M001	710	5 134 M001	
4 115 M001	68.7	1 160 M001	36	8 127 M001	390	6 109 M001	710	5 167 M021	
7 140 M121	73	4 115 M001	36.2	6 146 M001	390	7 138 M001	740	5 235 M001	
8 127 M001	74.3	4 155 M001	36.3	5 167 M001	390	4 253 M001	750	6 108 M001	
8 127 M001	79.1	3 116 M001	36.5	4 148 M001	400	4 249 M001	810	6 109 M001	
2 166 M001	83	1 162 M001	36.5	7 136 M001	410	7 136 M021	820	6 110 M001	
1 122 M001	87	4 152 M001	36.8	7 136 M101	420	4 154 M001	880	6 144 M001	
7 136 M101	94.6	4 154 M001	46.8	8 127 M001	420	1 125 M001	880	6 146 M001	
5 134 M001	96.4	7 142 M021	60	6 109 M001	430	2 166 M001	930	6 245 M001	
7 239 M001	103	1 123 M001	62	6 247 M001	440	1 123 M001	990	7 104 M001	
7 136 M001	105	3 117 M001	63	6 144 M001	450	4 112 M001	1000	7 140 M001	
1 125 M001	110	7 140 M021	63	4 152 M001	460	5 235 M001	1100	7 239 M021	
2 164 M001	111	7 140 M121	69	6 144 M001	460	5 134 M001	1100	2 165 M001	1
4 152 M001	114	8 128 M021	74	1 123 M001	470	6 108 M001	1200	2 165 M101	1
1 160 M001	115	4 249 M001	76.4	5 132 M001	470	7 103 M021	1200	2 164 M001	1
7 243 M021	126	6 146 M001	82.6	7 102 M001	470	2 165 M001	1300	3 116 M001	1
4 251 M001	127	7 138 M001	83.9	5 107 M001	480	1 259 M001	1300	3 117 M001	1
7 103 M001	129	6 245 M001	85.2	7 142 M001	480	2 165 M101	1300	4 154 M001	1
2 165 M101	145	2 164 M001	89	8 129 M001	480	4 150 M001	1400	5 105 M001	1
2 165 M001	152	4 113 M001	95.1	2 164 M001	480	1 263 M001	1400	7 243 M001	1.1
1 123 M001	297	4 148 M001	107	2 166 M001	480	1 156 M001	1400	7 103 M001	1.1
4 253 M001	328	6 247 M001	108	4 112 M001	500	5 130 M021	1700	5 231 M001	1.2
1 156 M001	342	1 125 M001	112	6 110 M001	530	8 128 M021	1700	7 102 M001	1.3
4 255 M001	385	1 257 M001	115	4 115 M001	540	1 122 M001	1800	5 233 M001	1.4
4 249 M001	415	8 126 M021	116	4 155 M001	540	5 167 M021	1800	5 107 M021	1.4
1 263 M001	428	8 127 M001	117	3 116 M001	550	1 122 M101	1800	7 237 M001	1.4
5 132 M021	450	6 110 M001	137	3 118 M001	560	5 130 M101	1800	7 142 M001	1.6
7 241 M001	500	8 127 M001	143	3 117 M001	570	1 162 M001	1800	5 130 M101	1.8
5 235 M001	525	5 130 M001	149	5 130 M101	570	8 128 M121	1800	4 112 M001	2
7 102 M021	553	5 130 M101	161	7 138 M001	580	5 107 M121	1900	4 152 M001	2
1 259 M001	598	5 231 M021	165	7 103 M001	590	1 257 M001	2000	6 247 M001	2
5 167 M021	605	5 107 M021	165	4 154 M001	610	5 132 M021	2000	7 136 M101	2
1 261 M001	745	5 134 M001	205	6 108 M001	630	1 261 M001	2200	7 138 M001	2
5 107 M021	870	6 109 M001	209	2 165 M001	660	5 105 M001	2500	7 241 M021	2.1
5 105 M001	1080	5 167 M021	225	1 122 M101	670	5 231 M021	2600	5 130 M001	2.2
8 128 M021	1170	1 122 M101	233	2 165 M101	670	1 158 M001	2600	5 132 M001	4.1
5 231 M021	1320	2 166 M001	247	5 134 M001	790	8 127 M021	2900	7 136 M001	4.3
1 124 M001	1810	5 132 M021	260	1 122 M001	900	5 233 M021	4500		
1 257 M001	1820	2 165 M001	282	1 124 M001	1300	8 126 M021	5000		
8 126 M021	2090	2 165 M101	292	1 158 M001	1300	1 124 M001	5900		
5 233 M021	2360	4 112 M001	298	1 125 M001	2500	8 129 M001	12000		
8 129 M001	6800	6 108 M001	432	7 237 M001	5700	7 237 M021	13000		
		1 122 M001	475						
		4 150 M001	962						
AVG 423.1304		AVG 121.8448		AVG 543.2352		AVG 1655.454		AVG 1.68	
STD 939.9356		STD 152.5679		STD 713.0721		STD 2183.310		STD 0.853697	
VAR 883479.0		VAR 23276.96		VAR 508471.8		VAR 4766842.		VAR 0.7288	

AVG - Average of detected concentrations.
STD - Standard deviation of detected concentrations.
VAR - Variance of detected concentrations.
Listed values and sample sites used to create associated histograms

TABLE O-1 (Continued)
SORTED GROUNDWATER SAMPLE ANALYTICAL DATA
IRP STAGE 2
SELFRIDGE ANGB, MICHIGAN

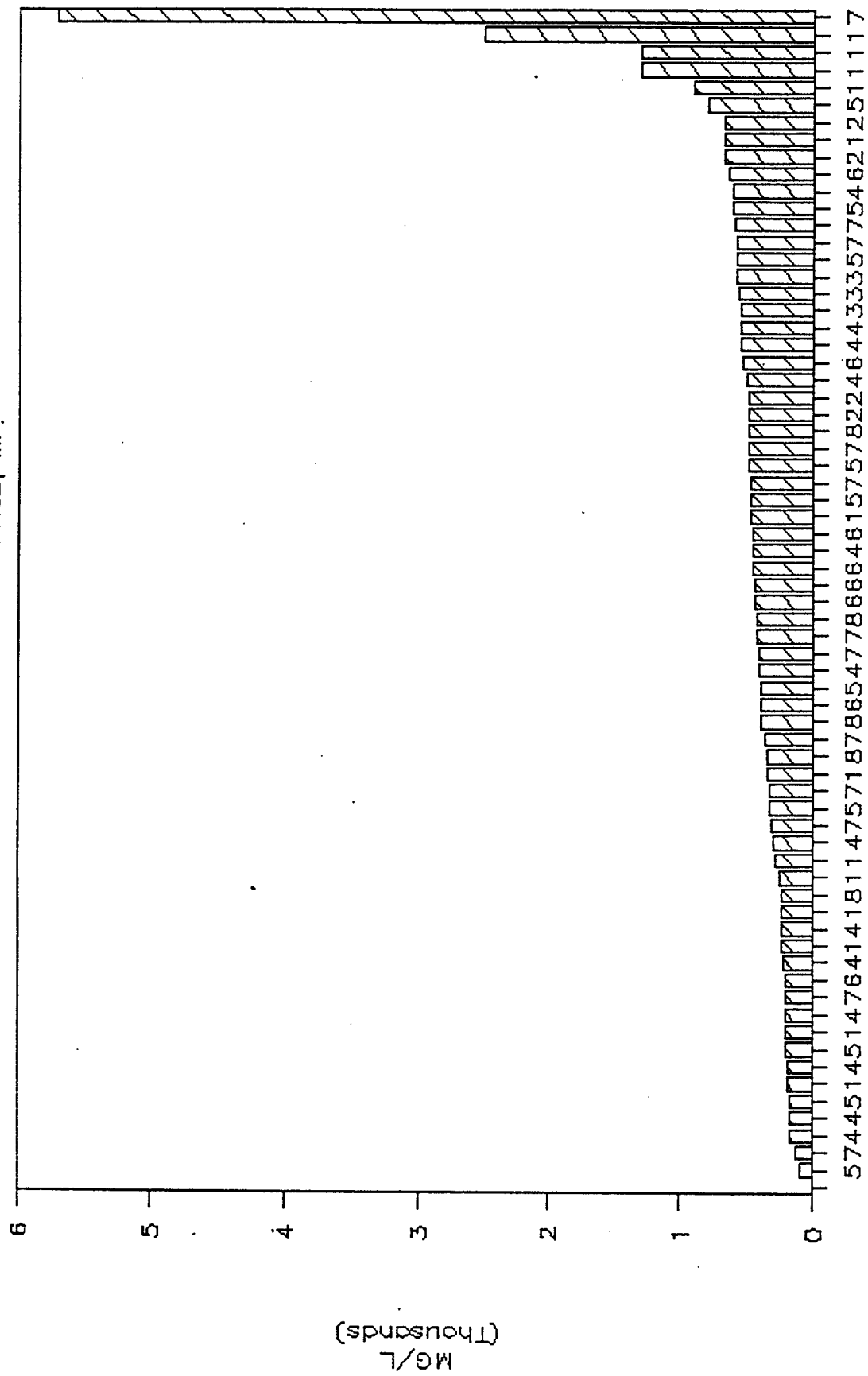
COD		Ammonia		TOC		BARIUM		ZINC	
Sample	mg/l	Sample	mg/l	Sample	mg/l	Sample	mg/l	Sample	mg/l
1 160 M021		6 108 M001	0.3	1 160 M001	2.7	1 263 M001		1 125 M001	
6 146 M001	18	1 124 M021	0.4	6 110 M001	3.6	3 118 M001		1 156 M001	
5 235 M001	23	1 257 M001	0.5	6 247 M001	3.8	6 108 M001		1 158 M001	
1 257 M001	29	5 132 M001	0.5	5 235 M001	4.2	6 109 M001		1 162 M001	
1 125 M121	30	5 235 M021	0.5	5 167 M001	4.6	6 110 M001		1 257 M001	
5 167 M001	31	5 167 M001	0.5	6 146 M001	4.6	6 144 M001		1 259 M001	
1 263 M001	31	6 146 M001	0.5	1 123 M001	4.9	6 144 M001		1 261 M001	
1 122 M021	31	6 110 M001	0.6	5 231 M001	5.4	6 146 M001		1 263 M001	
5 105 M001	45	1 125 M021	0.6	1 257 M001	5.4	6 245 M001		5 105 M001	
5 134 M001	45	5 130 M101	0.7	5 233 M001	5.6	6 247 M001		5 167 M001	
5 132 M001	52	1 259 M001	0.7	5 107 M001	7	3 117 M001	0.052	5 233 M001	
5 231 M001	53	5 231 M001	0.7	1 263 M001	7.1	1 122 M101	0.058	5 235 M001	
1 259 M001	55	1 162 M021	0.7	5 132 M001	7.2	1 162 M001	0.068	6 108 M001	
6 247 M021	56	1 125 M121	0.7	1 162 M001	8.7	3 116 M001	0.068	6 109 M001	
6 144 M001	56	5 134 M001	0.7	1 122 M101	8.8	1 160 M001	0.102	6 110 M001	
5 107 M001	57	5 105 M121	0.7	5 134 M001	8.8	1 122 M001	0.111	6 144 M001	
1 261 M001	57	1 263 M001	0.7	5 105 M001	9.3	1 259 M001	0.117	6 144 M001	
6 144 M001	64	1 122 M021	0.8	1 122 M001	9.4	5 130 M001	0.127	6 146 M001	
5 130 M101	69	5 130 M001	0.8	1 261 M001	10	5 130 M101	0.129	6 245 M001	
5 233 M001	74	6 247 M001	0.9	6 245 M001	10	5 107 M001	0.134	6 247 M001	
5 130 M001	76	1 123 M021	1	6 109 M001	12	1 123 M001	0.139	5 134 M001	0.011
6 108 M021	80	5 105 M021	1.3	5 130 M101	13	8 127 M101	0.143	3 117 M001	0.013
1 162 M021	88	1 261 M001	1.4	5 130 M001	13	8 127 M001	0.144	3 116 M001	0.013
1 125 M021	100	6 245 M001	1.5	1 125 M001	13	8 129 M001	0.149	1 122 M101	0.014
6 109 M021	290	5 107 M021	1.6	1 259 M001	14	1 125 M001	0.169	2 165 M001	0.014
6 245 M001	330	1 158 M021	1.7	6 108 M001	20	2 164 M001	0.174	1 123 M001	0.015
1 156 M021	380	5 233 M001	2.1	6 144 M001	20	5 132 M001	0.196	5 130 M101	0.015
1 123 M021	480	6 144 M001	3.2	6 144 M001	20	2 166 M001	0.235	5 130 M001	0.015
6 110 M021	540	6 144 M001	3.4	1 156 M001	52	1 156 M001	0.249	1 122 M001	0.018
1 124 M021	1800	6 109 M001	4.2	1 124 M001	1100	5 134 M001	0.29	5 231 M001	0.018
1 158 M021	7000	1 156 M021	4.6	1 158 M001	2000	2 165 M001	0.293	2 165 M101	0.021
		1 160 M021	12			5 235 M001	0.296	2 164 M001	0.021
						2 165 M101	0.315	3 118 M001	0.021
						8 128 M001	0.345	5 132 M001	0.023
						1 257 M001	0.413	8 129 M001	0.024
						5 167 M001	0.421	5 107 M001	0.025
						1 261 M001	0.518	2 166 M001	0.027
						5 231 M001	0.528	1 160 M001	0.04
						5 105 M001	0.629	8 127 M001	0.042
						1 158 M001	0.716	8 126 M001	0.053
						1 124 M001	0.765	8 127 M101	0.077
						8 126 M001	0.882	8 128 M001	0.096
						5 233 M001	0.929	1 124 M001	0.105

AVG 401.3333	AVG 1.578125	AVG 109.9387	AVG 0.107076	AVG 0.031347
STD 1269.415	STD 2.164303	STD 395.1738	STD 0.241990	STD 0.026124
VAR 1611414.	VAR 4.684208	VAR 156162.3	VAR 0.058559	VAR 0.000682

AVG - Average of detected concentrations.
STD - Standard deviation of detected concentrations.
VAR - Variance of detected concentrations.
Listed values and sample sites used to create associated histograms

ALKALINITY CONCENTRATION IN GROUNDWATER

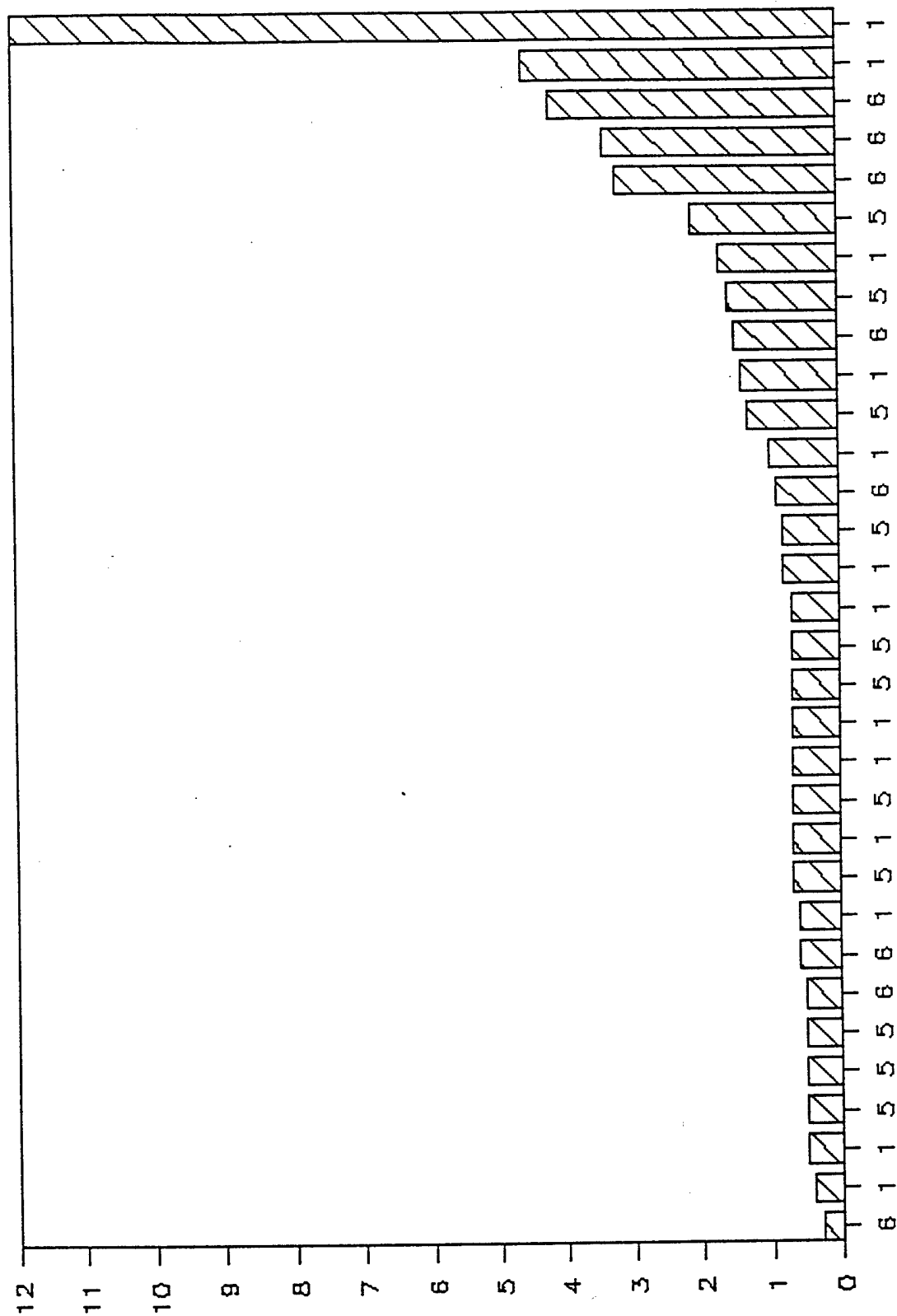
IRP STAGE 2 SELF-RIDGE ANGB, MI.



SAMPLE CONCENTRATION BY SITE LOCATION

AMMONIA CONCENTRATION IN GROUNDWATER

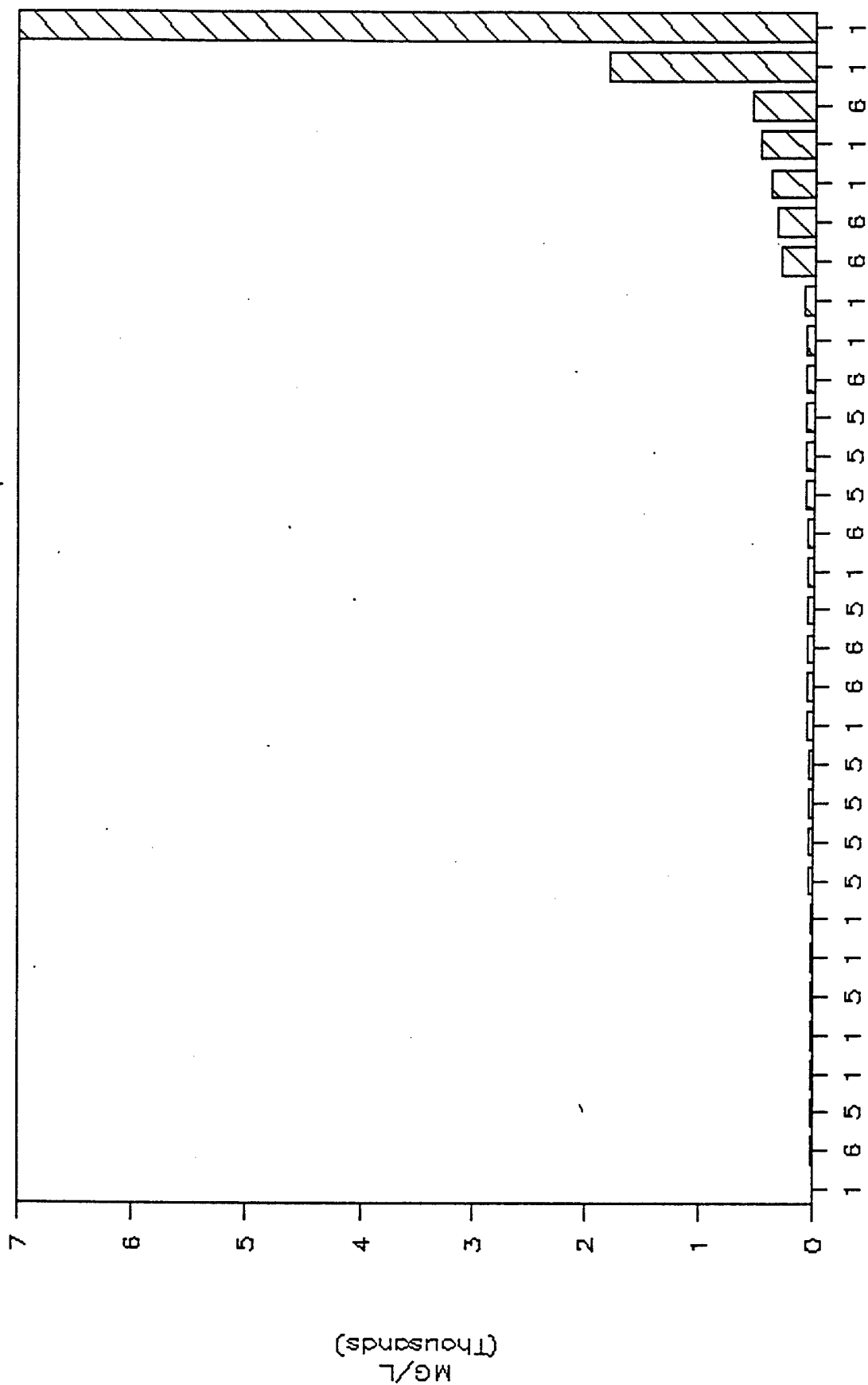
IRP STAGE 2 SELFRIIDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

COD CONCENTRATION IN GROUNDWATER

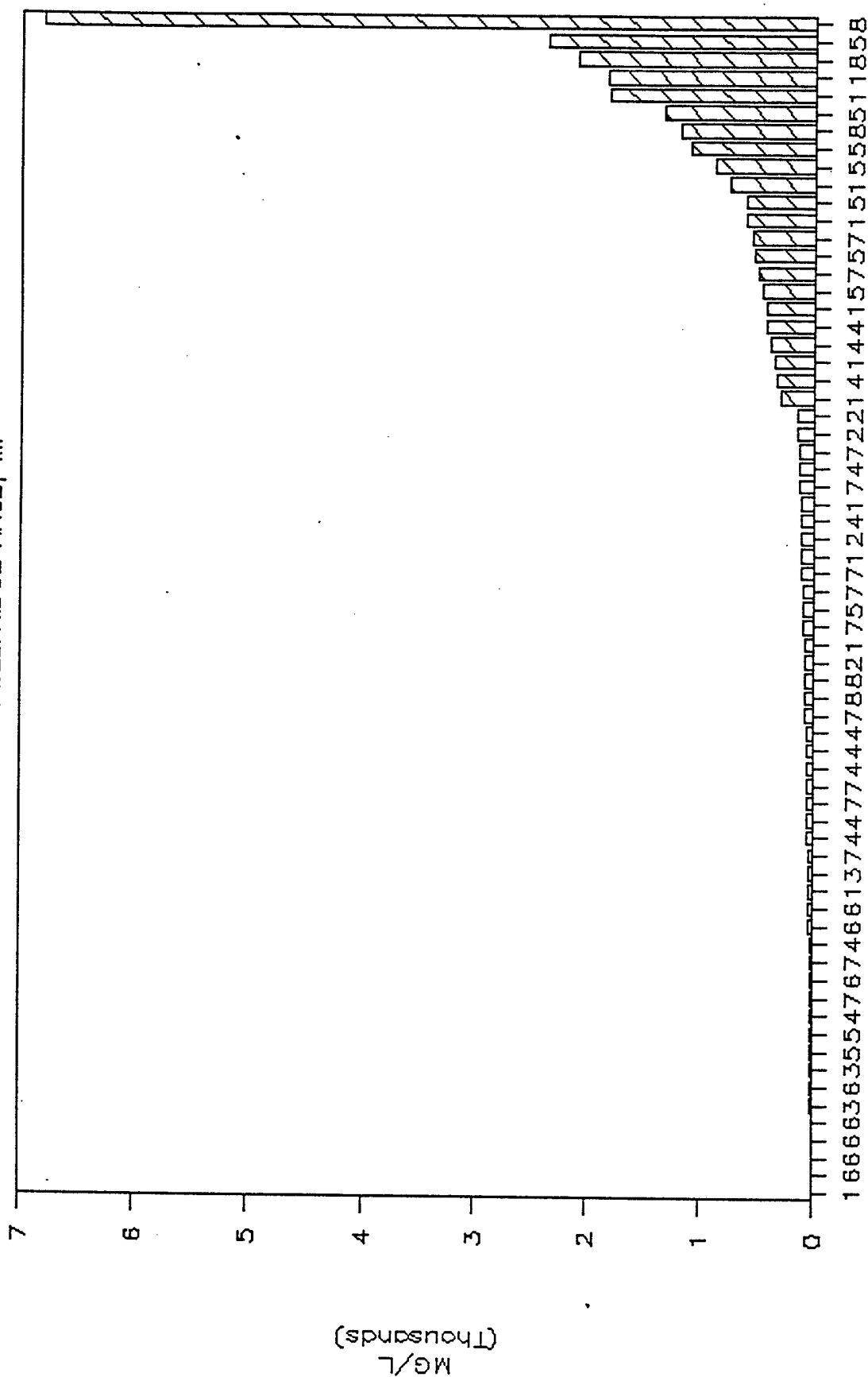
IRP STAGE 2 SELFRIIDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

CHLORIDE CONCENTRATION IN GROUNDWATER

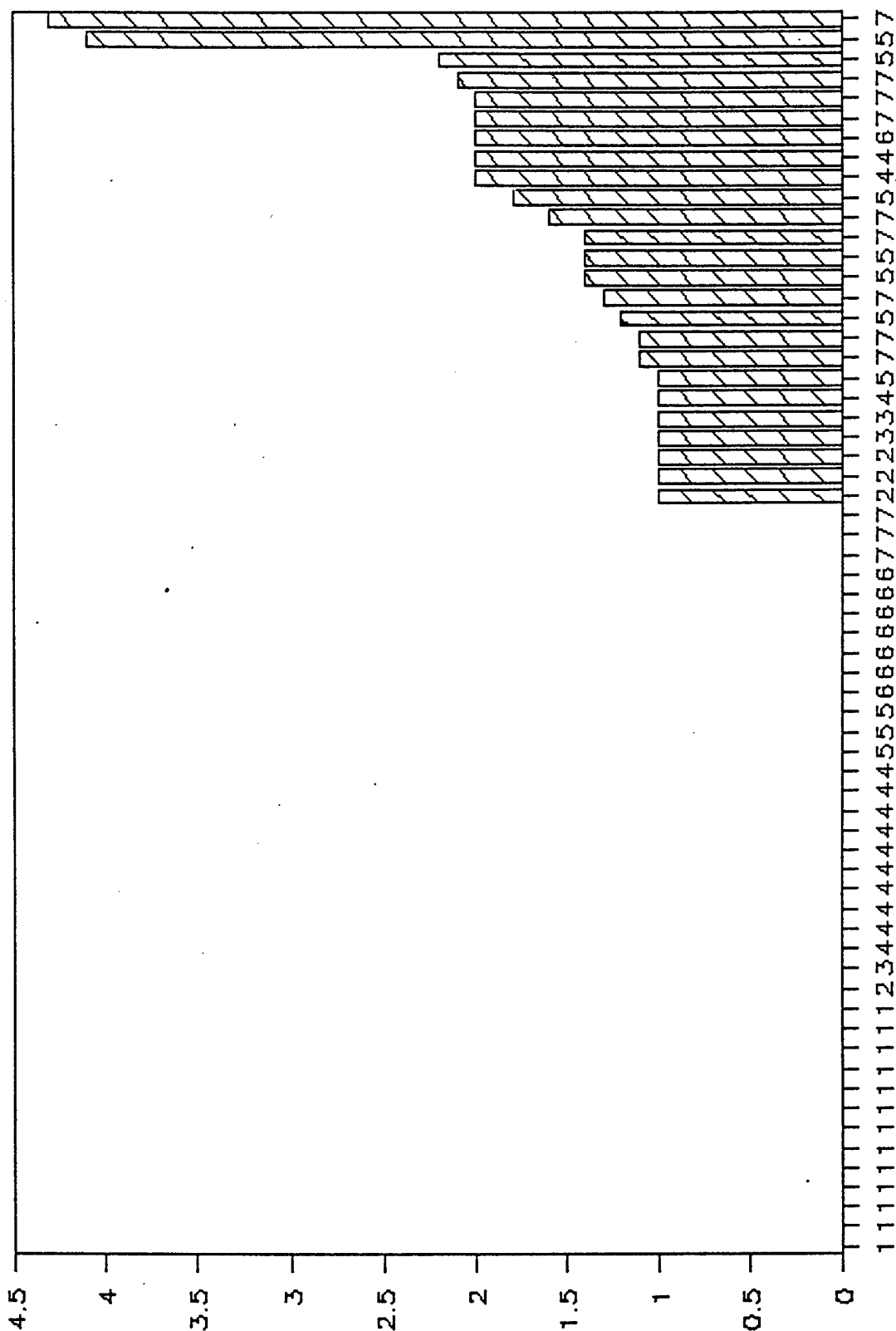
IRP STAGE 2 SELFRIIDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

PETRO HYDROCARBON CONC IN GROUNDWATER

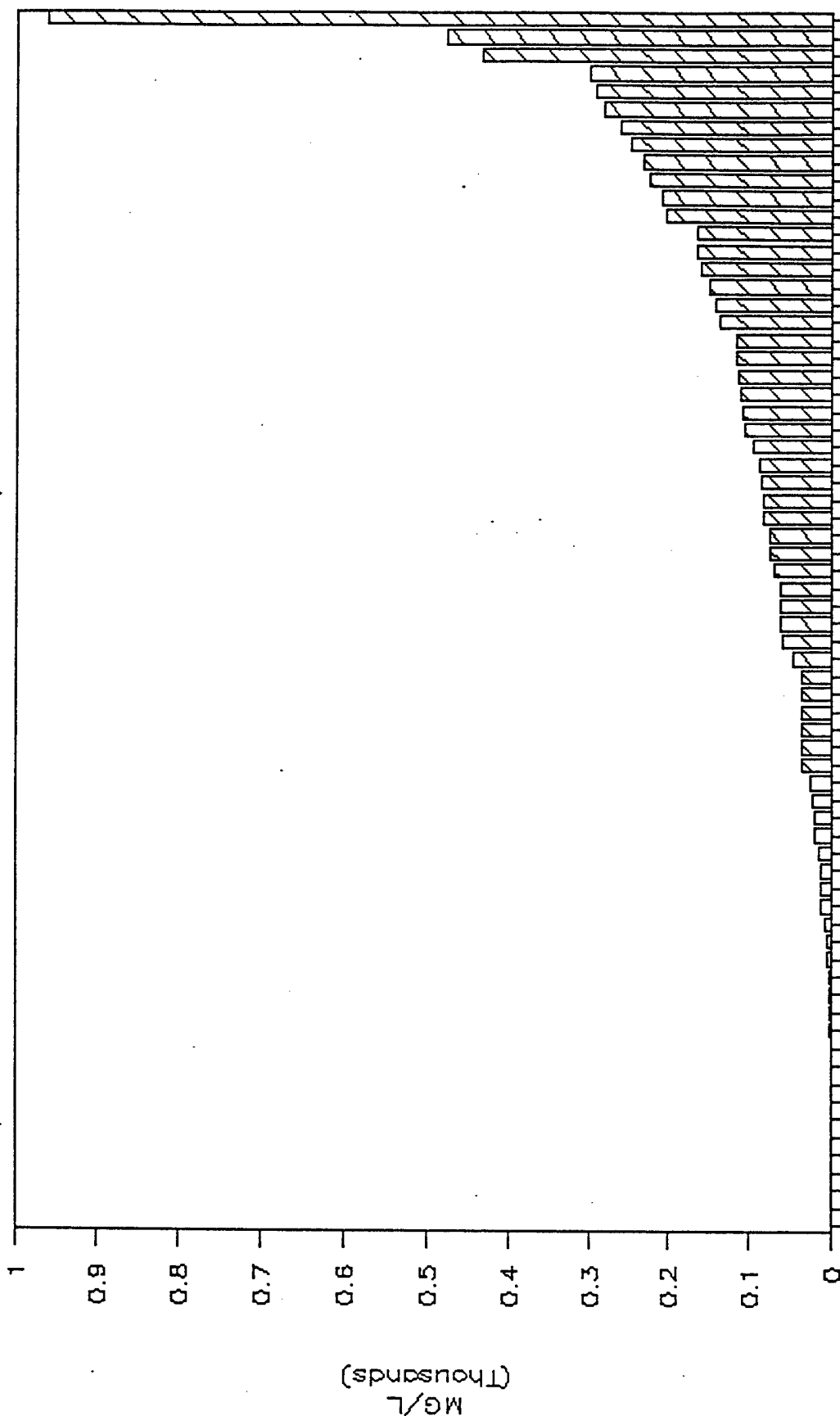
IRP STAGE 2 SELFRIIDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

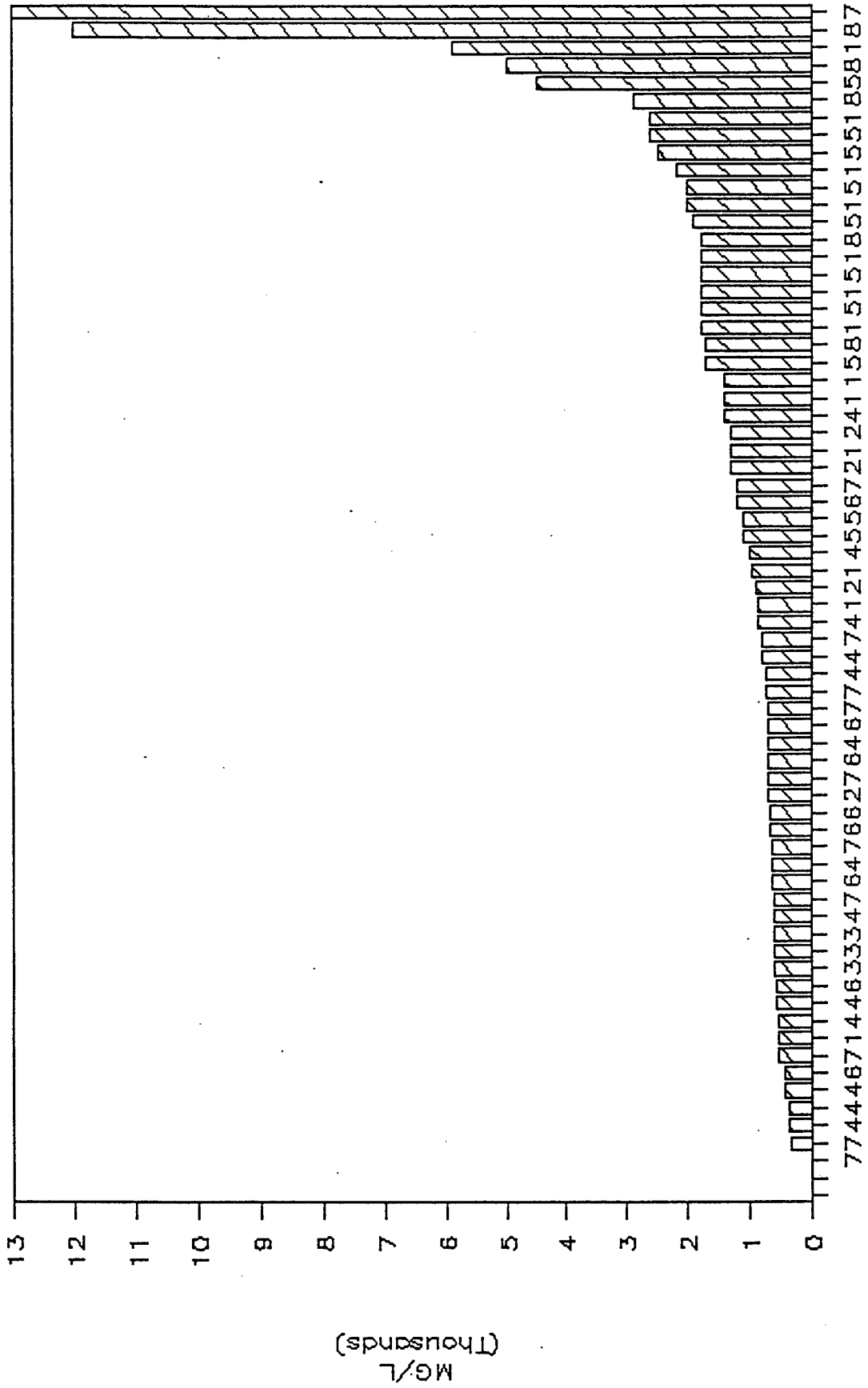
SULFATE CONCENTRATION IN GROUNDWATER

IRP STAGE 2 SELFRIIDGE ANGB, MI



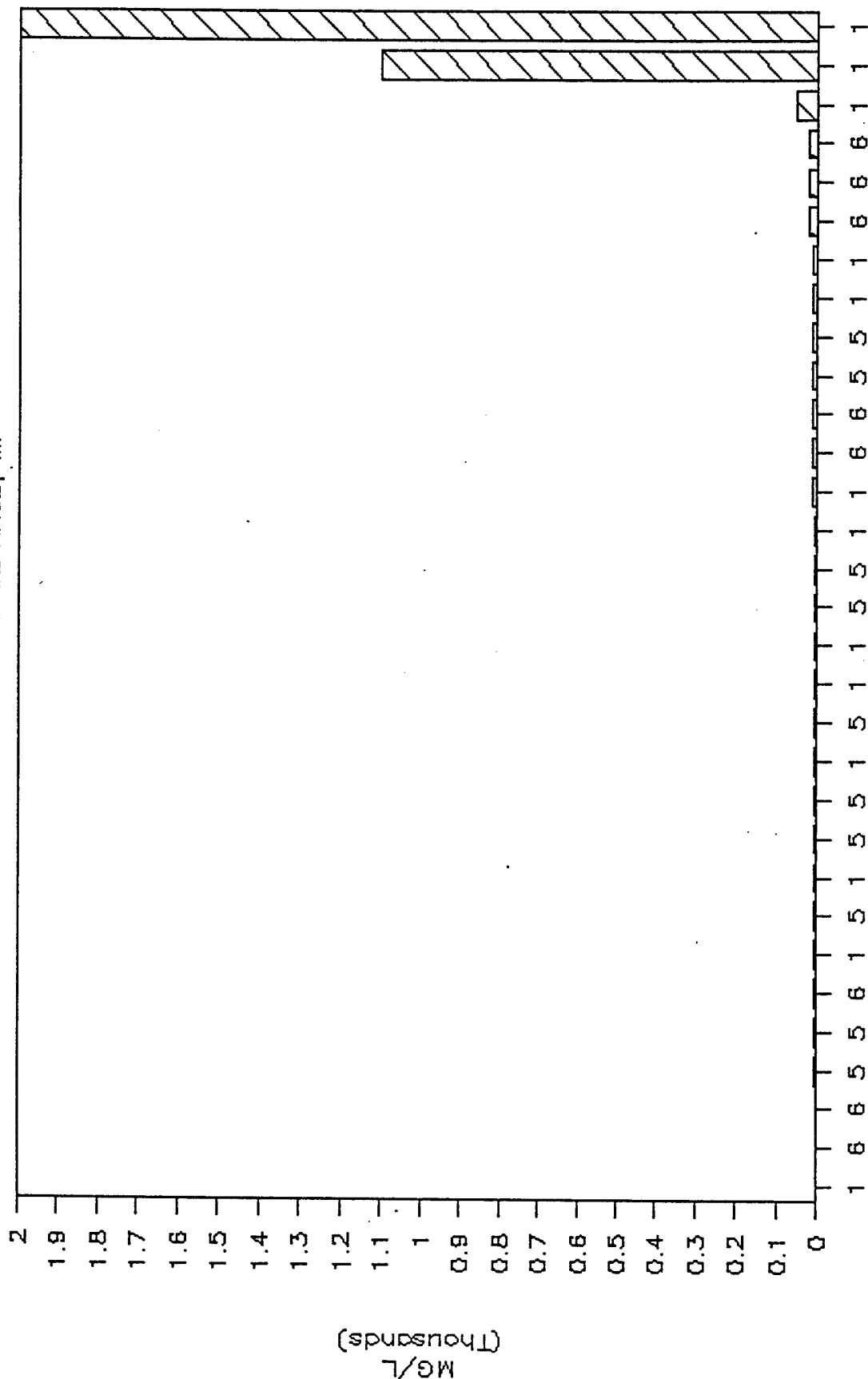
TDS CONCENTRATION IN GROUNDWATER

IRP STAGE 2 SELFRIIDGE ANGB, MI



TOC CONCENTRATION IN GROUNDWATER

IRP STAGE 2 SELFRIIDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

ZINC CONCENTRATION IN GROUNDWATER

IRP STAGE 2 SELFRIIDGE ANGB, MI

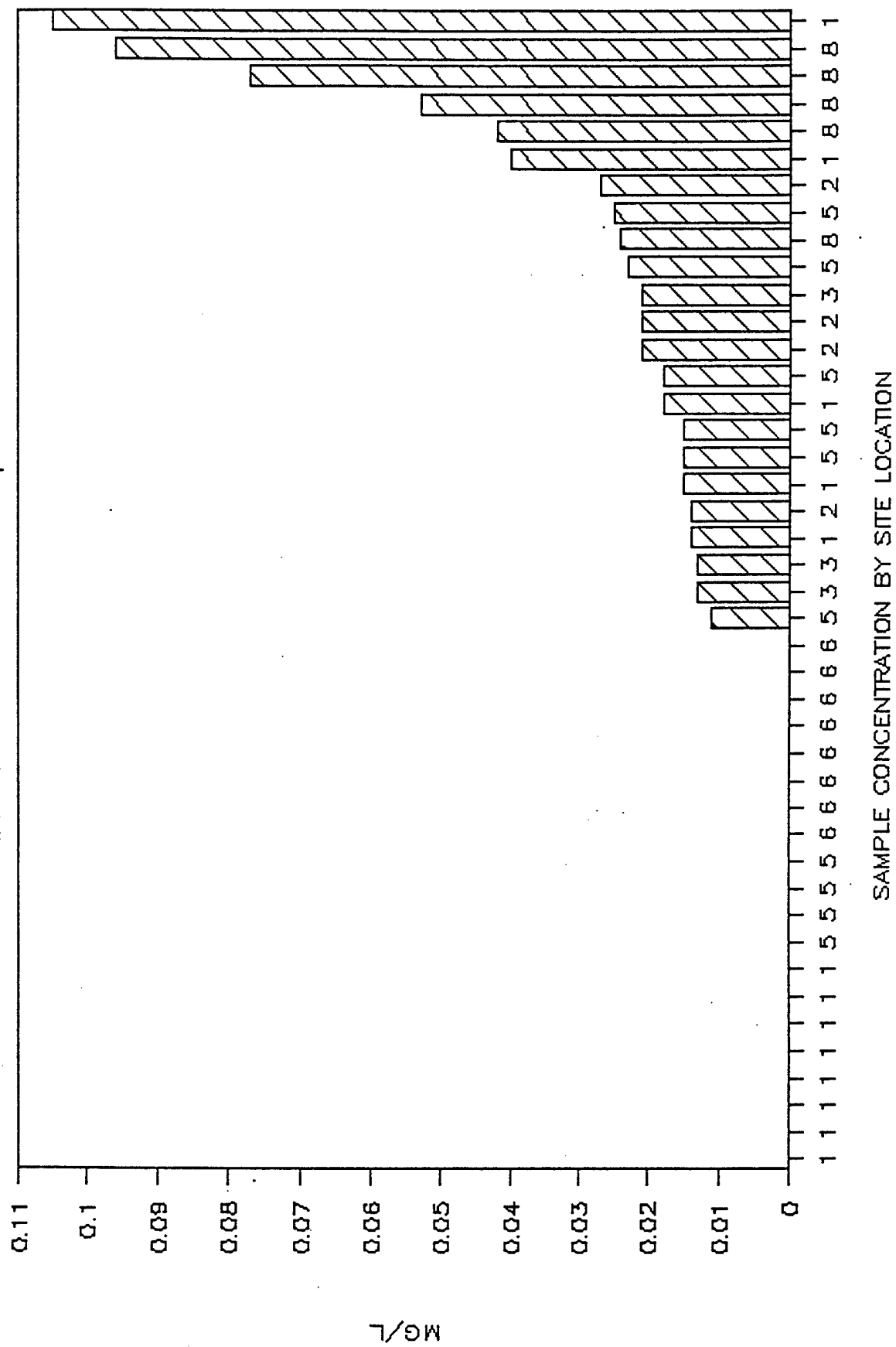


TABLE O-2
SORTED SURFACE WATER SAMPLE ANALYTICAL DATA ROUND 1
IRP STAGE 2
SELFRIDGE ANGB, MICHIGAN

Chloride		Sulfate		Alk		TDS		PET HYD	
Sample	mg/l	Sample	mg/l	Sample	mg/l	Sample	mg/l	Sample	mg/l
7 524 W001		7 524 W001		7 524 W001	70			1 503 W001	
6 520 W001	3.3	1 505 W001	10.7	6 520 W001	180			1 503 W101	
2 508 W001	4.4	2 507 W001	11.2	5 517 W001	180	1 501 W001		1 505 W001	
1 505 W001	4.8	5 514 W001	11.7	5 518 W001	190	1 503 W001		2 506 W001	
4 510 W001	6.5	6 520 W001	13.3	5 516 W001	200	2 506 W021		2 507 W001	
4 511 W001	8	2 508 W001	15.3	7 521 W001	240	5 515 W001		6 520 W001	
2 509 W001	12.9	4 510 W001	15.8	7 522 W001	290	7 524 W021	100	7 522 W021	
2 506 W001	22.3	7 522 W001	16.7	4 513 W001	300	6 520 W021	240	7 523 W021	
1 501 W001	22.5	2 506 W001	21.8	4 512 W101	320	1 505 W021	270	7 524 W021	
1 503 W001	29.4	6 519 W001	22.8	4 511 W001	320	2 509 W021	290	5 514 W001	1.1
1 503 W101	30.5	1 503 W001	26.6	1 504 W001	320	5 518 W121	290	1 504 W001	1.1
2 507 W001	42.4	5 518 W001	27.3	6 519 W001	320	1 504 W021	310	5 515 W001	1.1
4 513 W001	43.3	1 503 W101	27.6	4 512 W001	320	5 518 W021	310	1 502 W001	1.3
7 521 W001	45	7 521 W001	27.8	2 509 W001	340	2 508 W021	330	5 517 W001	1.5
6 519 W001	51.1	5 517 W001	28.2	1 503 W001	340	2 507 W021	380	4 511 W001	1.5
7 523 W001	56.6	7 523 W001	30.1	7 523 W001	350	4 512 W021	460	4 510 W001	1.6
4 512 W001	62	4 513 W001	33.1	2 508 W001	350	4 511 W021	460	6 519 W001	1.7
4 512 W101	62.2	2 509 W001	33.3	1 502 W001	360	4 513 W021	470	5 518 W001	1.7
7 522 W001	90.4	1 504 W001	33.9	1 503 W101	360	7 522 W021	500	4 512 W001	1.9
5 518 W001	97.1	5 515 W001	42.2	1 505 W001	390	4 510 W021	500	4 513 W001	1.9
1 504 W001	97.6	4 512 W101	48.2	5 515 W001	390	7 523 W021	530	4 512 W101	2
5 517 W001	126	4 511 W001	50.8	4 510 W001	460	1 502 W021	540	2 509 W001	2
5 516 W001	166	4 512 W001	55.1	5 514 W001	530	5 517 W021	560	2 508 W001	2
1 502 W001	186	5 516 W001	56.4	2 506 W001	540	6 519 W021	640	1 501 W001	2.4
5 514 W001	888	1 502 W001	100	1 501 W001	570	7 521 W021	690	5 516 W001	2.5
5 515 W001	1340	1 501 W001	199	2 507 W001	620	5 514 W021	2500	7 521 W001	4.6

AVG	139.932	AVG	38.356	AVG	340.3846	AVG	518.5	AVG	1.876470
STD	298.1357	STD	37.98786	STD	125.5903	STD	476.6159	STD	0.793005
VAR	88884.94	VAR	1443.077	VAR	15772.92	VAR	227162.7	VAR	0.628858

SORTED SURFACE WATER SAMPLE ANALYTICAL DATA ROUND 2
IRP STAGE 2
SELFRIDGE ANGB, MICHIGAN

Chloride		Sulfate		Alk		TDS		PET HYD	
Sample	mg/l	Sample	mg/l	Sample	mg/l	Sample	mg/l	Sample	mg/l
2 507 W002		2 507 W002		7 524 W002	72	5 515 W022		1 502 W002	
7 524 W002	3	5 518 W002	5.8	5 516 W002	130	7 524 W022	110	5 515 W002	
6 520 W002	4.5	1 503 W002	6.4	5 518 W002	170	5 517 W022	170	4 511 W002	1.1
2 508 W002	9.3	1 503 W102	7.4	6 520 W002	210	5 518 W022	190	4 510 W002	1.2
4 510 W002	9.5	4 510 W002	15.7	7 521 W002	230	5 516 W022	270	4 512 W002	1.3
4 511 W002	11.9	5 514 W002	21.1	7 522 W002	240	6 520 W022	280	2 509 W002	1.3
1 505 W002	16.3	2 508 W002	25.9	4 512 W002	260	4 511 W002	330	1 503 W102	1.3
2 509 W002	21.4	6 520 W002	35.5	4 512 W002	260	1 503 W102	340	4 512 W002	1.4
4 513 W002	29	7 524 W002	38.9	1 505 W002	260	2 508 W002	350	1 504 W002	1.4
1 503 W102	39.7	7 522 W002	43	4 511 W002	270	1 505 W002	380	7 524 W022	1.4
7 523 W002	43.2	2 509 W002	45.6	5 517 W002	280	1 503 W002	380	5 514 W002	1.5
1 503 W002	43.7	4 513 W002	49	2 508 W002	290	2 509 W002	410	1 505 W002	1.5
4 512 W002	50	5 516 W002	49.6	1 503 W002	290	4 513 W002	420	1 503 W002	1.5
4 512 W002	52	1 504 W002	49.8	2 509 W002	300	4 512 W002	440	1 501 W002	1.6
6 519 W002	85	7 523 W002	51.2	1 504 W002	300	7 523 W022	440	7 521 W022	1.6
7 521 W002	138	1 502 W002	54.3	6 519 W002	310	4 510 W002	460	2 508 W002	1.6
1 504 W002	145	7 521 W002	54.4	1 503 W102	310	7 522 W022	460	7 522 W022	1.7
5 517 W002	150	4 511 W002	56.2	7 523 W002	330	4 512 W002	510	5 516 W022	1.8
7 522 W002	160	4 512 W002	74	5 515 W002	360	6 519 W022	530	5 518 W022	1.9
5 516 W002	245	4 512 W002	75	1 502 W002	390	7 521 W022	570	2 507 W002	1.9
5 518 W002	248	6 519 W002	80	4 510 W002	410	1 504 W002	600	6 520 W022	1.9
1 502 W002	308	1 501 W002	92.5	4 513 W002	480	1 502 W002	990	4 513 W002	2.1
1 501 W002	328	5 515 W002	102	5 514 W002	480	2 507 W002	1100	7 523 W022	2.3
5 514 W002	800	5 517 W002	105	1 501 W002	680	1 501 W002	1400	5 517 W022	2.6
5 515 W002	1280	1 505 W002	325	2 507 W002	2500	5 514 W002	2000	6 519 W022	3.6

AVG	175.8541	AVG	60.97083	AVG	392.48	AVG	547.0833	AVG	1.717391
STD	286.3598	STD	61.61549	STD	446.3617	STD	418.9220	STD	0.534588
VAR	82001.94	VAR	3796.468	VAR	199238.8	VAR	175495.6	VAR	0.285784

AVG - Average of detected concentrations.
STD - Standard deviation of detected concentrations.
VAR - Variance of detected concentrations.
Listed values and sample sites used to create associated histograms.

TABLE O-2 (Continued)
SORTED SURFACE WATER SAMPLE ANALYTICAL DATA ROUND 1
IRP STAGE 2
SELFRIDGE ANGB, MICHIGAN

COD		Ammonia		TOC		BARIUM		ZINC	
Sample	mg/l	Sample	mg/l	Sample	mg/l	Sample	mg/l	Sample	mg/l
1 505 W001	10	1 504 W001	0.1	1 505 W001	4	1 504 W001		1 505 W001	
5 517 W001	19	1 505 W001	0.1	5 517 W001	6.4	1 505 W001		2 509 W001	
5 518 W001	19	1 502 W001	0.2	1 504 W001	6.6	2 508 W001		1 503 W101	0.011
1 504 W001	22	1 503 W001	0.2	5 518 W001	7.1	2 509 W001		1 504 W001	0.011
5 514 W001	24	1 503 W101	0.3	5 514 W001	7.4	5 517 W001		5 517 W001	0.012
5 516 W001	26	5 517 W001	0.4	6 520 W001	7.7	5 518 W001		2 508 W001	0.013
1 502 W001	41	1 501 W001	0.4	5 516 W001	8.3	6 519 W001	0.051	5 514 W001	0.015
1 503 W001	50	5 514 W001	0.5	1 502 W001	11	1 503 W101	0.054	1 503 W001	0.02
1 503 W101	50	5 518 W001	0.5	5 515 W001	12	2 506 W001	0.068	5 518 W001	0.021
5 515 W001	57	6 520 W001	0.6	1 503 W001	17	1 502 W001	0.069	5 515 W001	0.036
6 520 W001	160	6 519 W001	0.6	1 503 W101	17	5 516 W001	0.074	6 519 W001	0.042
6 519 W001	160	5 516 W001	0.8	6 519 W001	34	1 503 W001	0.101	1 502 W001	0.046
1 501 W001	390	5 515 W001	1.1	1 501 W001	52	2 507 W001	0.163	5 516 W001	0.056
						5 514 W001	0.177	2 506 W001	0.058
						6 520 W001	0.207	2 507 W001	0.102
						5 515 W001	0.354	6 520 W001	0.143
						1 501 W001	0.518	1 501 W001	0.44

AVG	79.07692	AVG	0.446153	AVG	14.65384	AVG	0.166909	AVG	0.0684
STD	101.7148	STD	0.276281	STD	13.14215	STD	0.140945	STD	0.105695
VAR	10345.91	VAR	0.076331	VAR	172.7163	VAR	0.019865	VAR	0.011171

SORTED SURFACE WATER SAMPLE ANALYTICAL DATA ROUND 2
IRP STAGE 2
SELFRIDGE ANGB, MICHIGAN

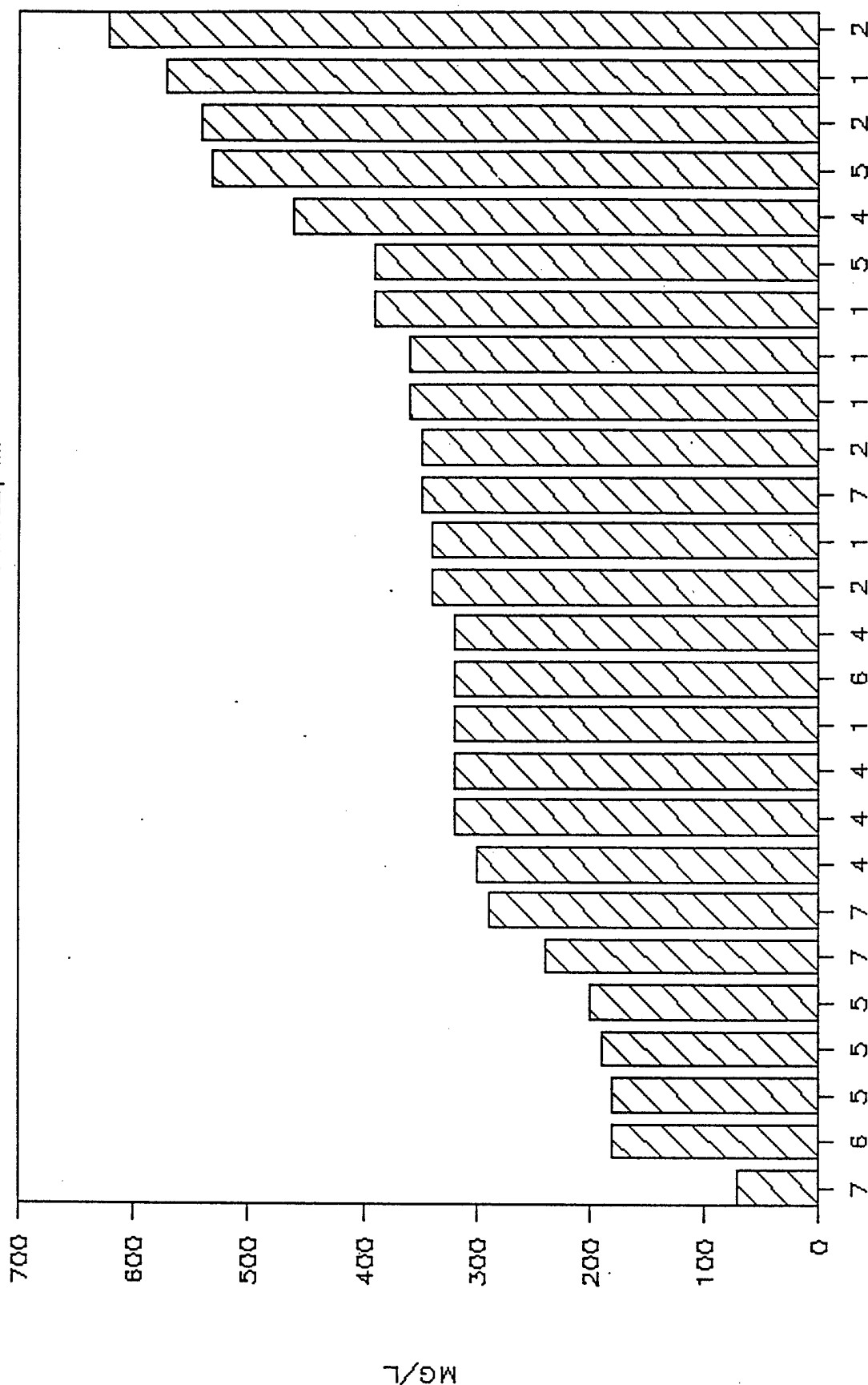
COD		Ammonia		TOC		BARIUM		ZINC	
Sample	mg/l	Sample	mg/l	Sample	mg/l	Sample	mg/l	Sample	mg/l
1 501 W022		1 502 W002		1 504 W002	6.1	1 503 W102		1 504 W002	
1 503 W022		1 505 W002		5 518 W002	6.4	1 504 W002		1 505 W002	
5 515 W022		1 501 W002	0.2	5 515 W002	8	1 505 W002		2 509 W002	0.013
1 505 W022	11	5 518 W002	0.2	5 516 W002	8.5	2 508 W002		5 514 W002	0.017
5 516 W022	29	1 503 W002	0.2	5 517 W002	8.8	2 509 W002		2 508 W002	0.034
1 504 W002	31	1 503 W102	0.2	6 520 W002	12	5 516 W002		5 517 W002	0.039
5 518 W002	37	5 517 W002	0.3	5 514 W002	15	6 519 W002		5 518 W002	0.041
5 517 W002	39	5 516 W002	0.4	1 502 W002	16	5 518 W002	0.052	6 519 W002	0.044
1 502 W002	60	6 519 W002	0.4	6 519 W002	24	1 503 W002	0.06	1 503 W102	0.056
6 520 W022	64	6 520 W002	0.8	1 503 W102	31	5 517 W002	0.102	1 503 W002	0.07
5 514 W022	76	5 515 W002	1	1 503 W002	34	1 502 W002	0.11	5 516 W002	0.091
6 519 W002	80	5 514 W002	1.8	1 501 W002	100	2 507 W002	0.155	5 515 W002	0.108
						5 514 W002	0.221	1 502 W002	0.148
						1 501 W002	0.28	2 507 W002	0.185
						5 515 W002	0.385	1 501 W002	0.242
						6 520 W002	1.31	6 520 W002	0.943

AVG	47.44444	AVG	0.55	AVG	22.48333	AVG	0.297222	AVG	0.145071
STD	22.17661	STD	0.492442	STD	25.07298	STD	0.372578	STD	0.230532
VAR	491.8024	VAR	0.2425	VAR	628.6547	VAR	0.138814	VAR	0.053145

AVG - Average of detected concentrations.
STD - Standard deviation of detected concentrations.
VAR - Variance of detected concentrations.
Listed values and sample sites used to create associated histograms.

ALKALINITY CONC. IN SURFACE WATER, RND1

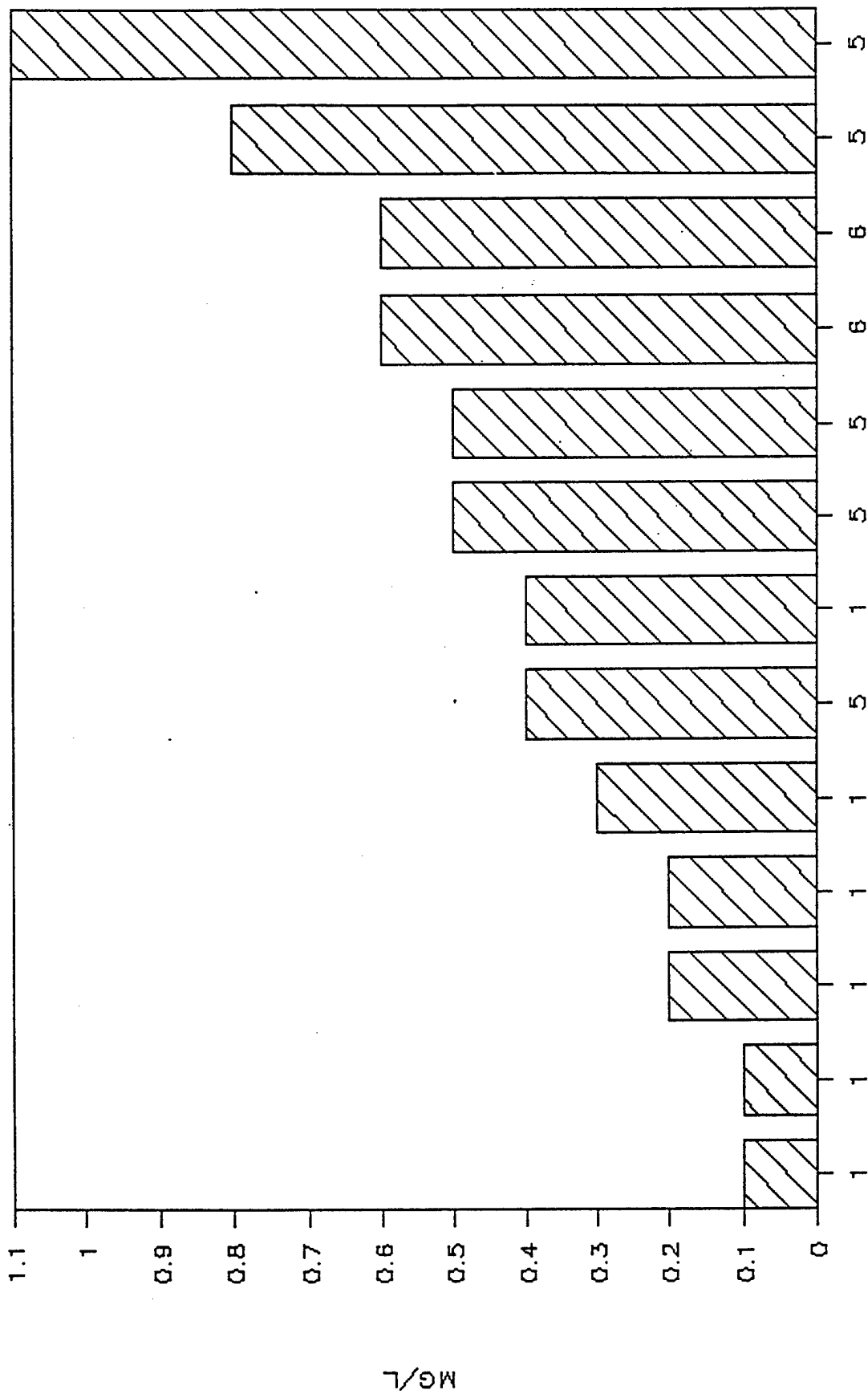
IRP STAGE 2 SELFRIAGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

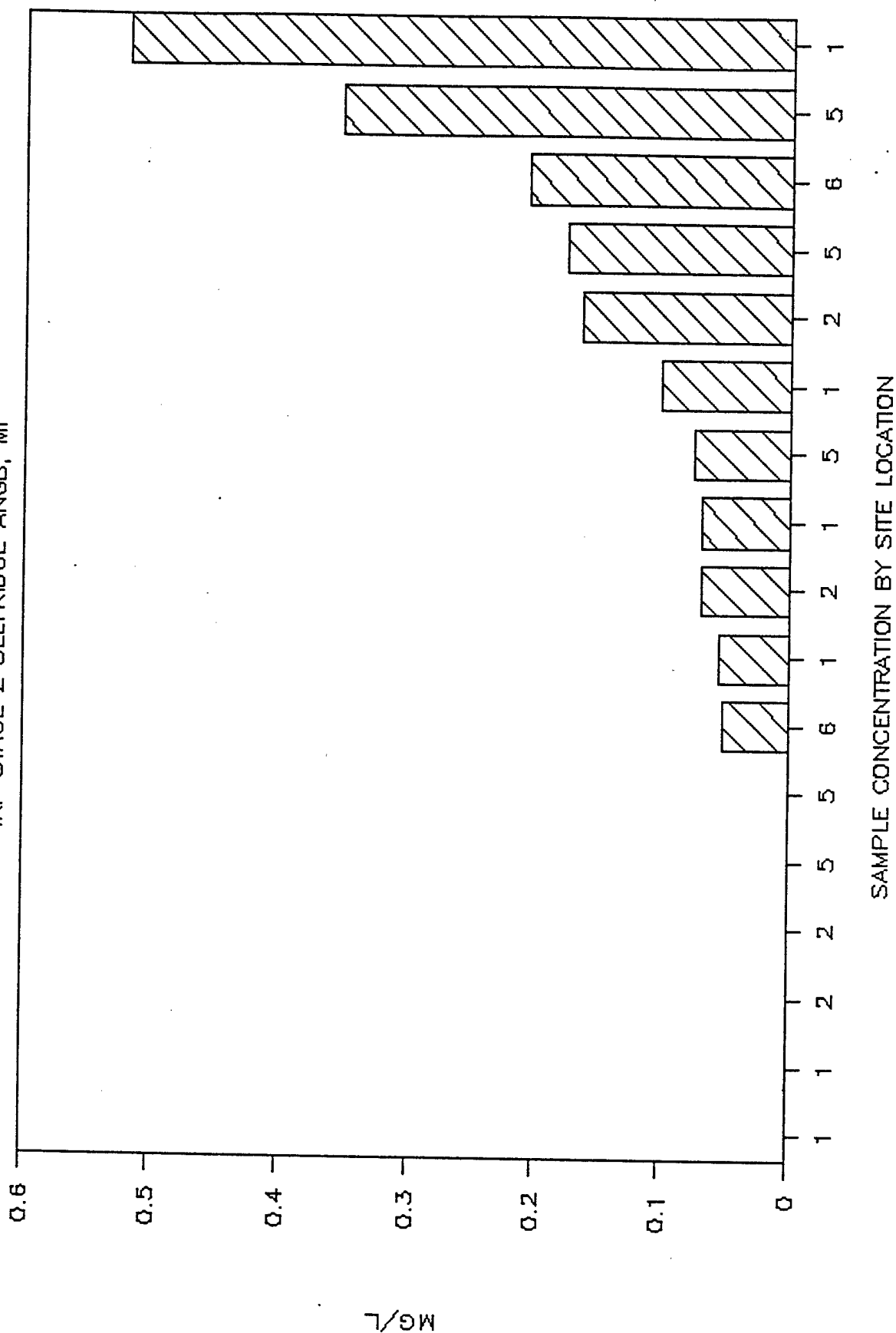
AMMONIA CONC. IN SURFACE WATER, RND1

IRP STAGE 2 SELFRIAGE ANGB, MI



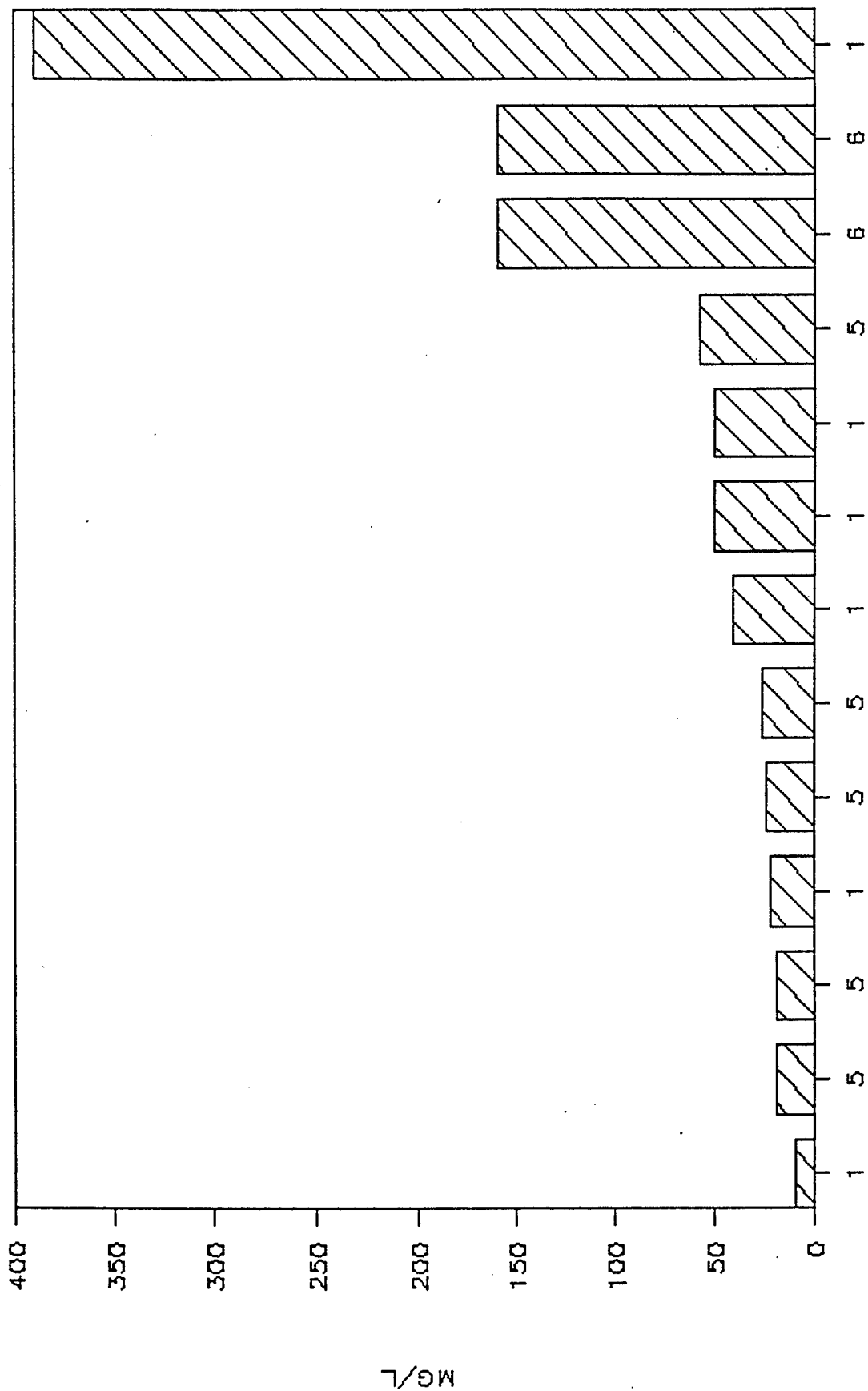
BARIUM CONC. IN SURFACE WATER, RND1

IRP STAGE 2 SELFRIAGE ANGB, MI



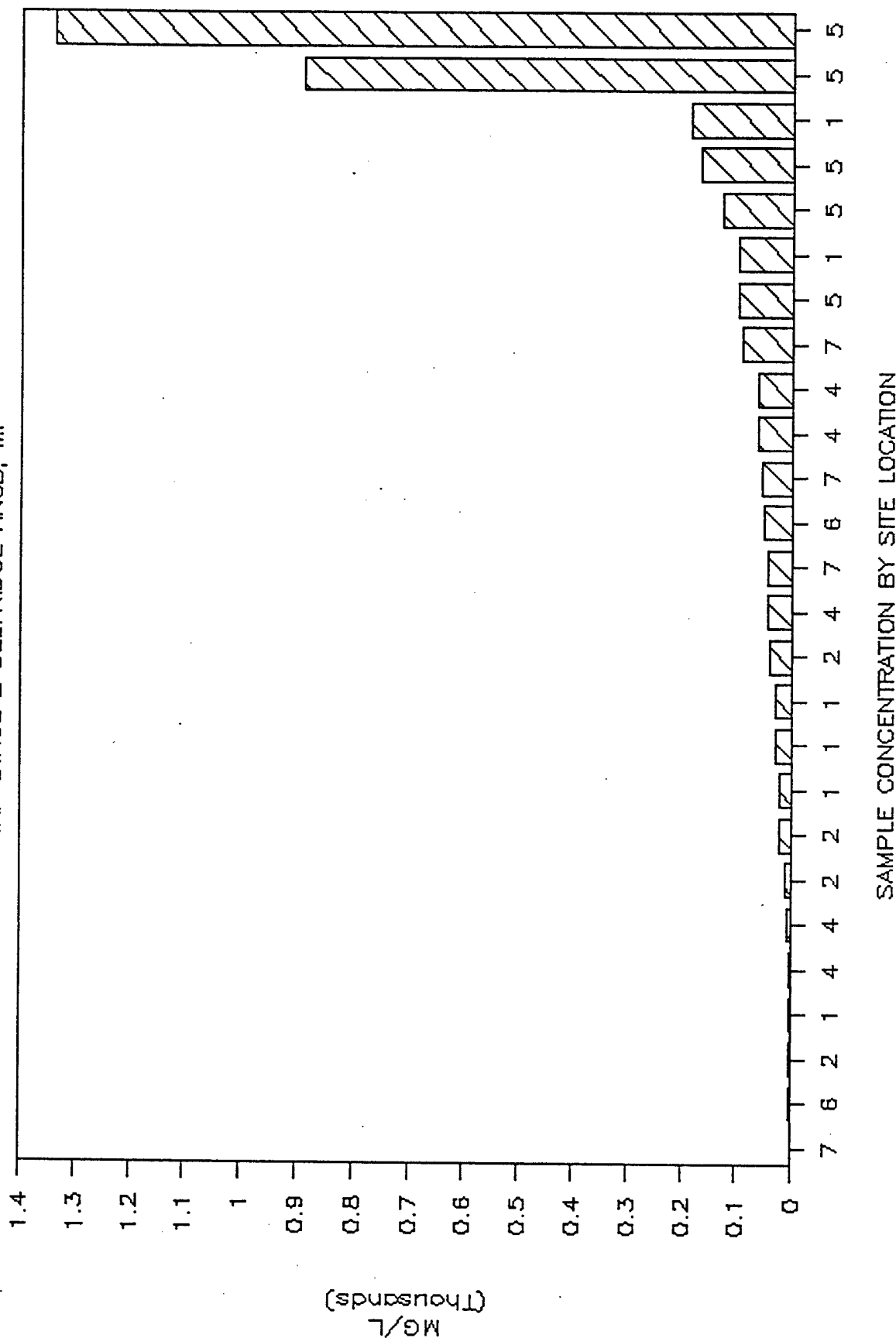
COD CONC. IN SURFACE WATER, RND1

IRP STAGE 2 SELFRIIDGE ANGB, MI



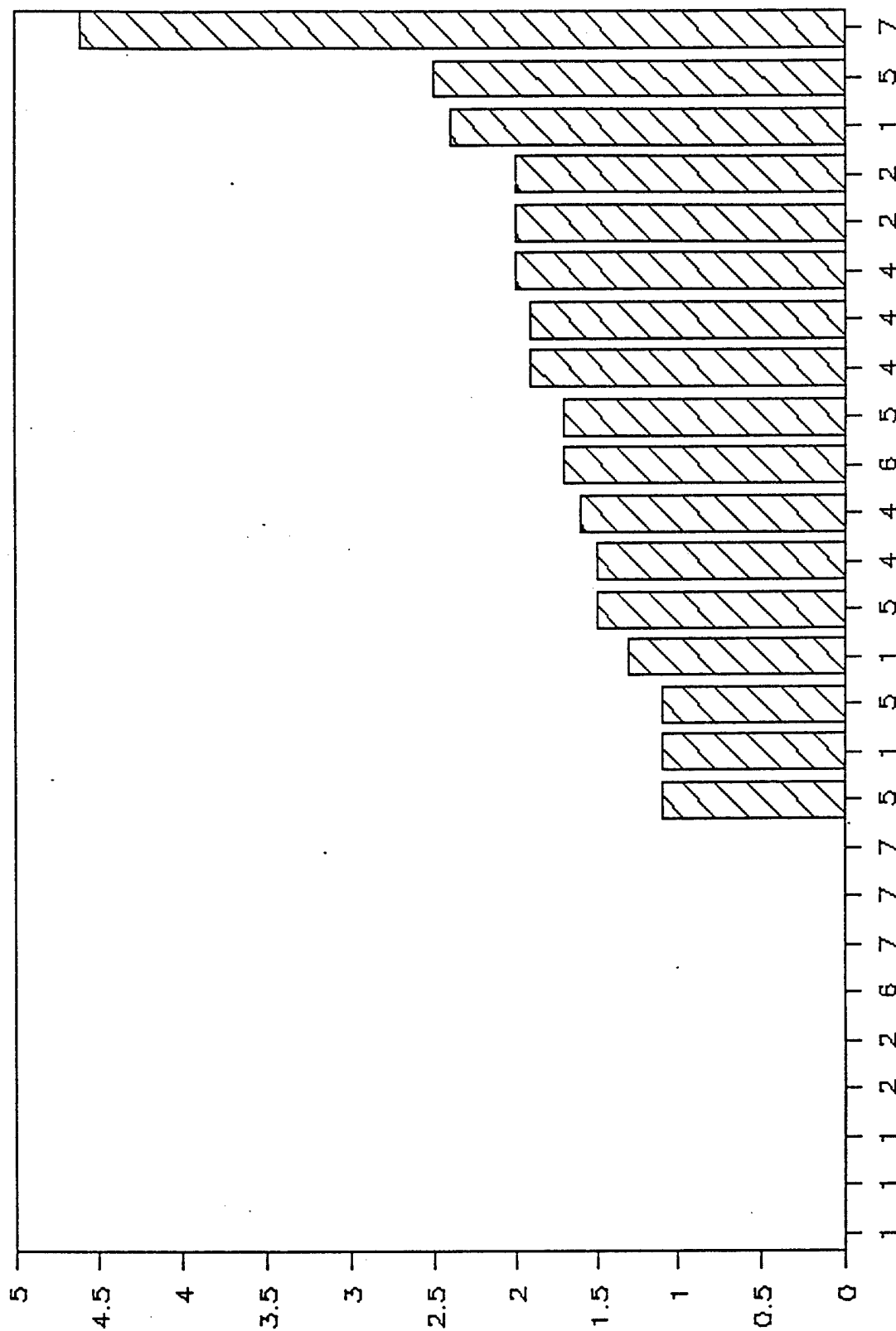
CHLORIDE CONC. IN SURFACE WATER, RND1

IRP STAGE 2 SELFRIAGE ANGB, MI



PET. HYD. CONC. IN SURFACE WATER, RND1

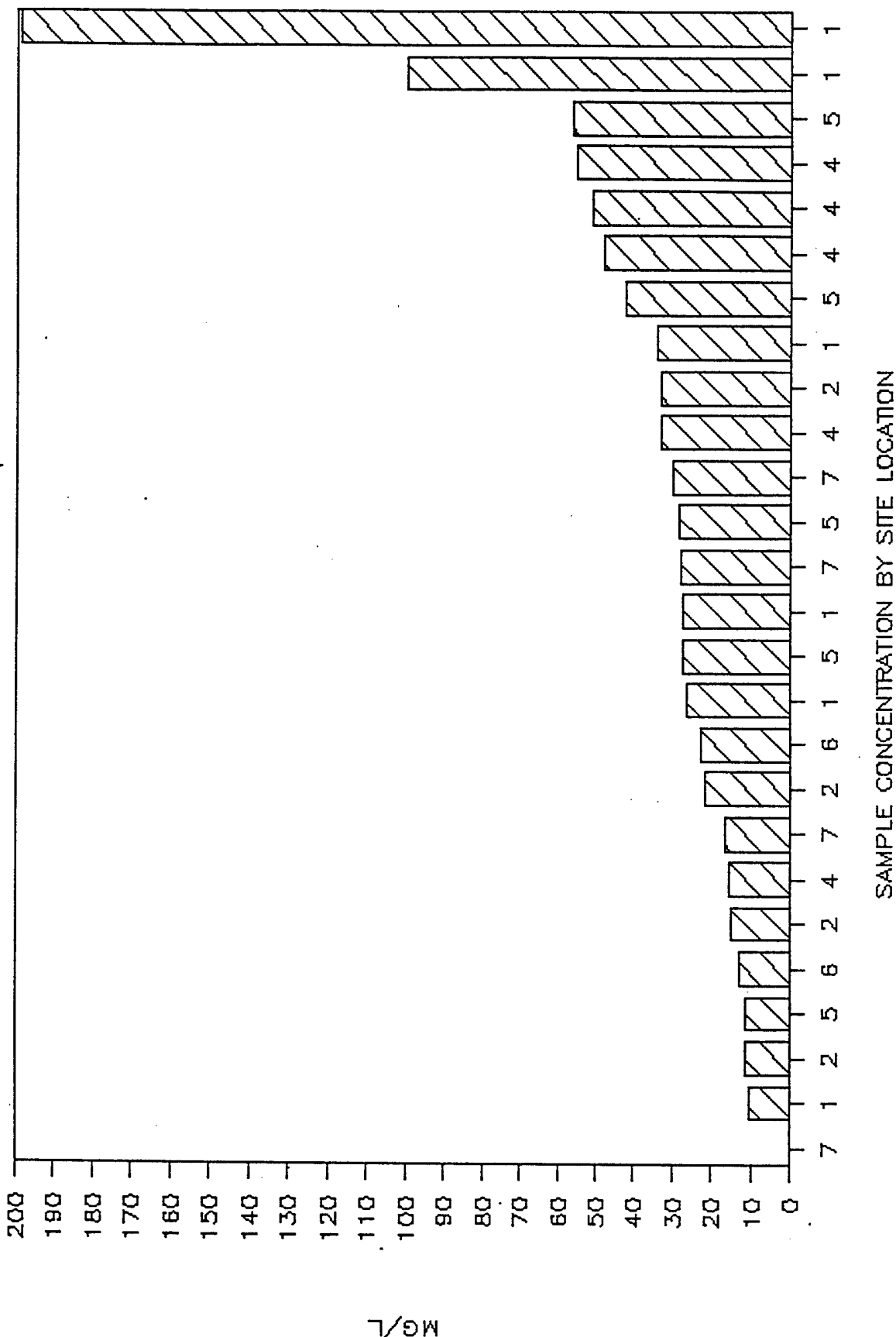
IRP STAGE 2 SELF-RIDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

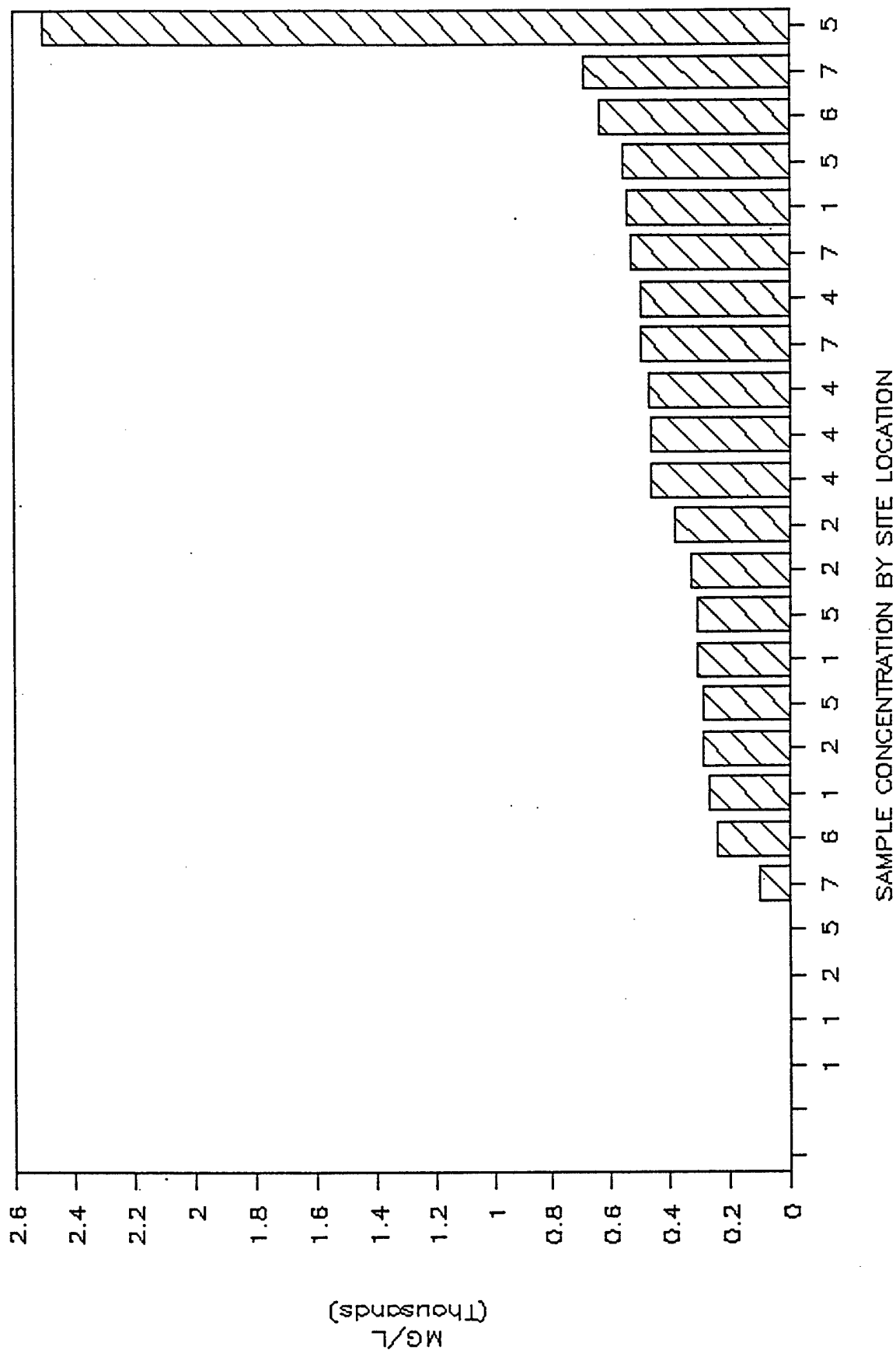
SULFATE CONC. IN SURFACE WATER, RND1

IRP STAGE 2 SELFRIDGE ANGB, MI



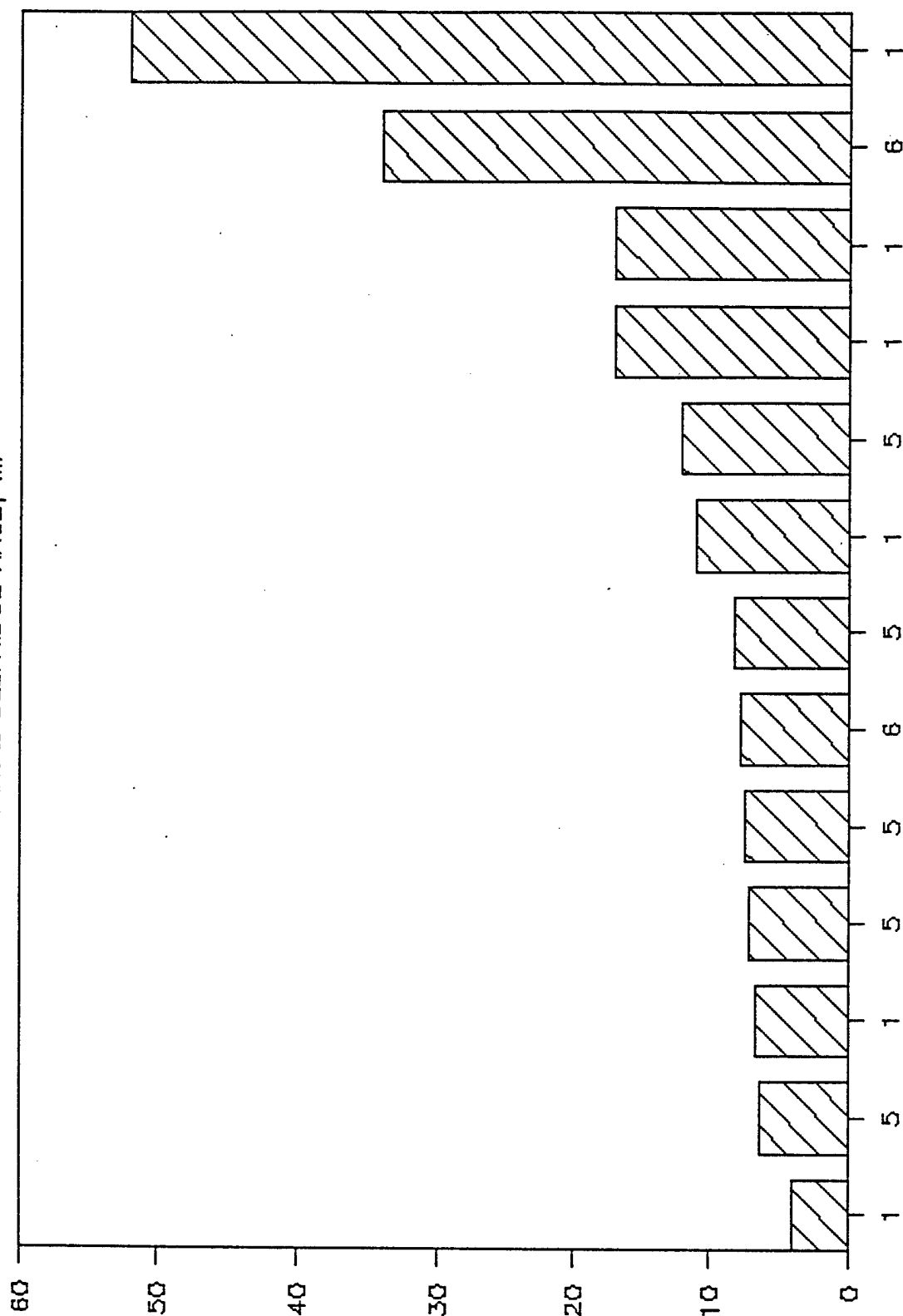
TDS CONC. IN SURFACE WATER, RND1

IRP STAGE 2 SELFRIAGE ANGB, MI



TOC CONC. IN SURFACE WATER, RND1

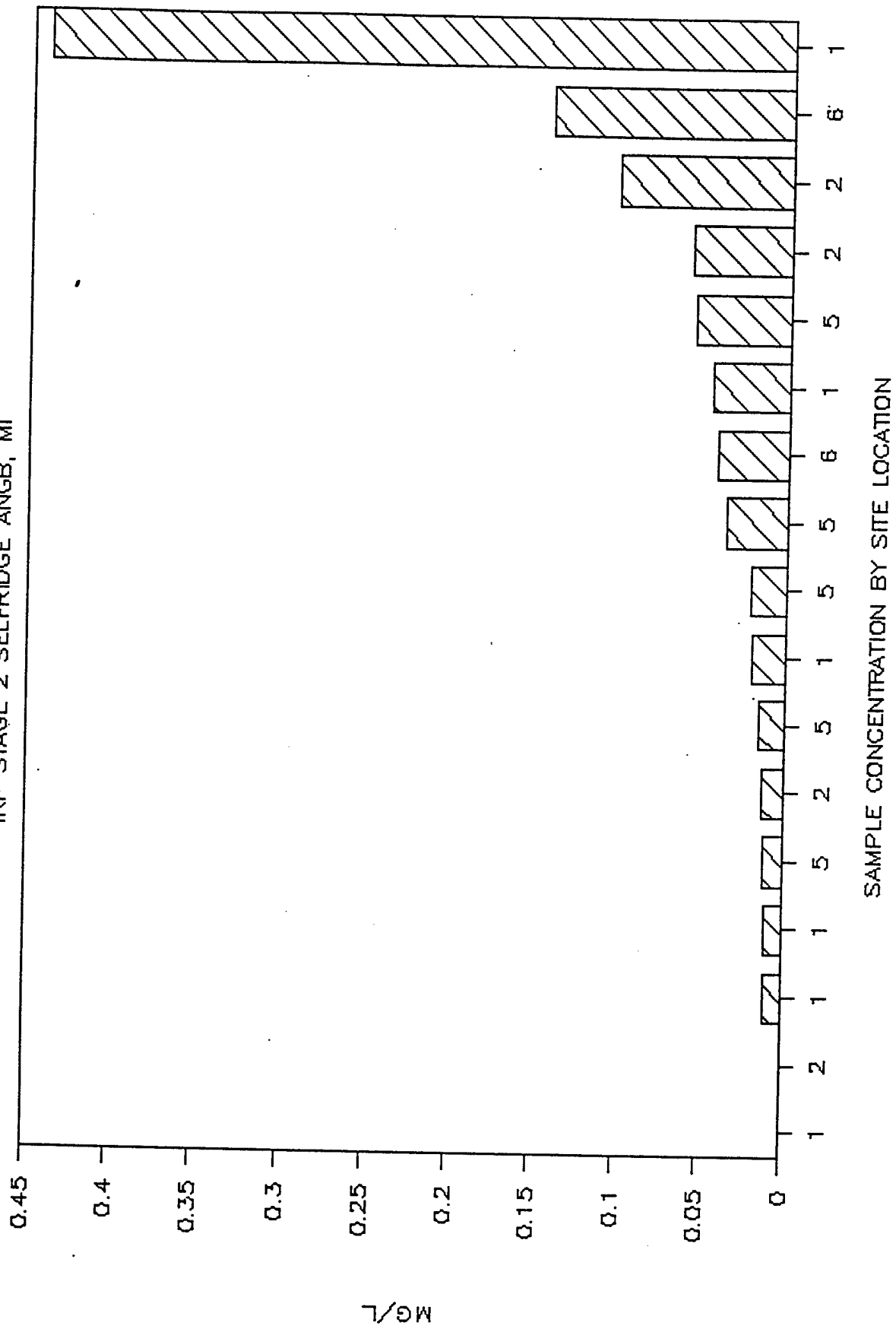
IRP STAGE 2 SELFIDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

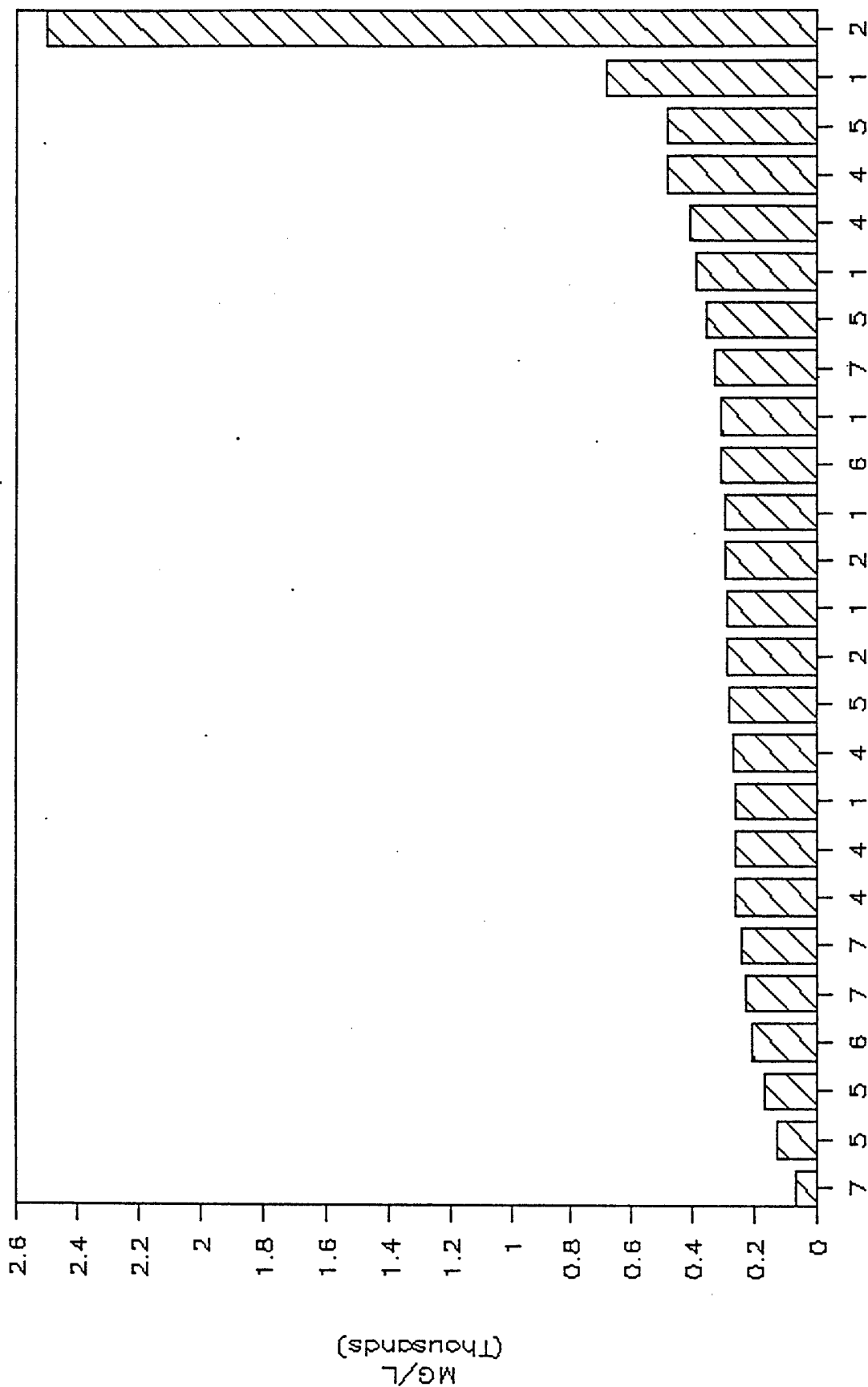
ZINC CONC. IN SURFACE WATER, RND1

IRP STAGE 2 SELFRIIDGE ANGB, MI



ALKALINITY CONC. IN SURFACE WATER, RND2

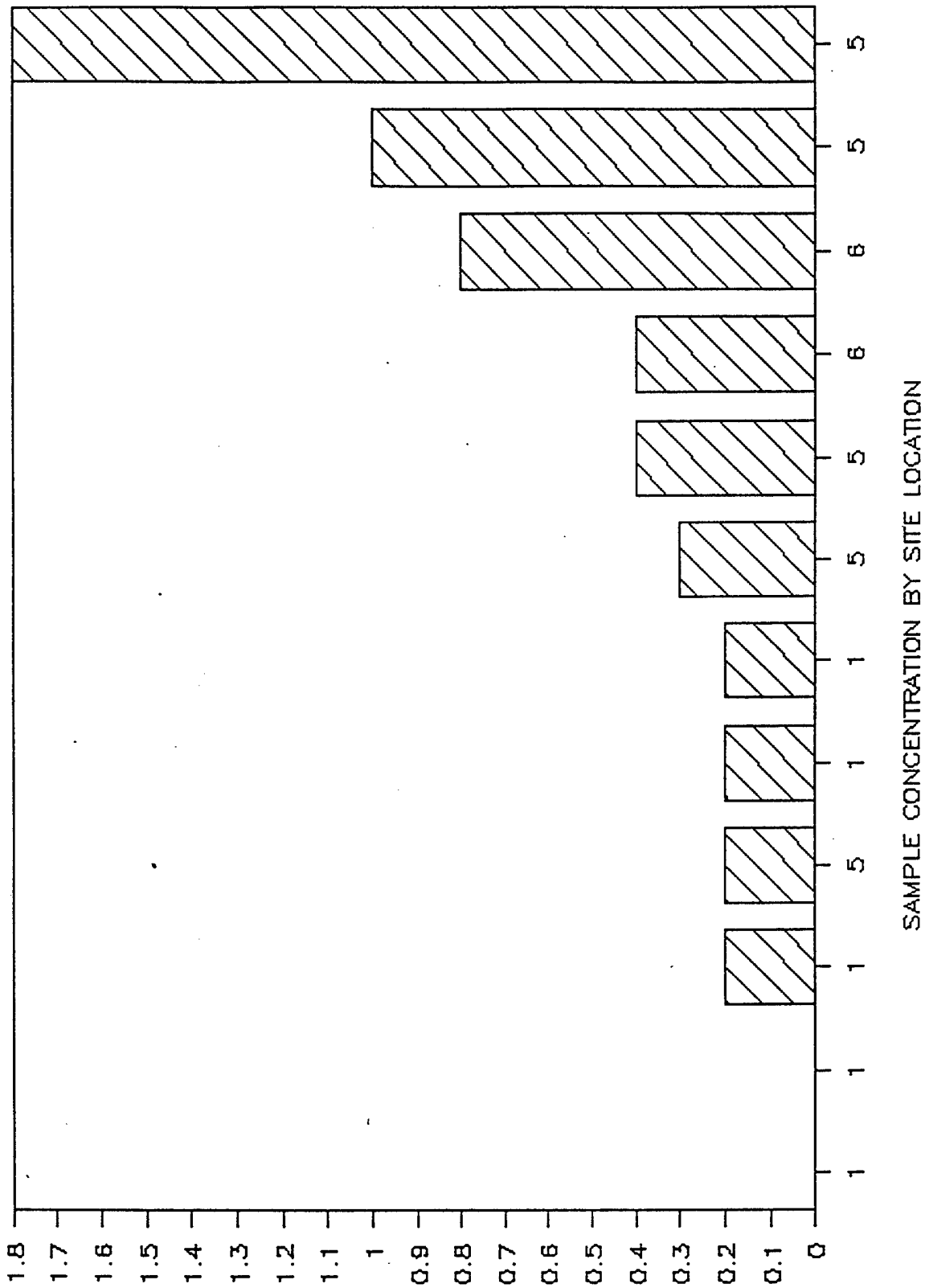
IRP STAGE 2 SELFRIIDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

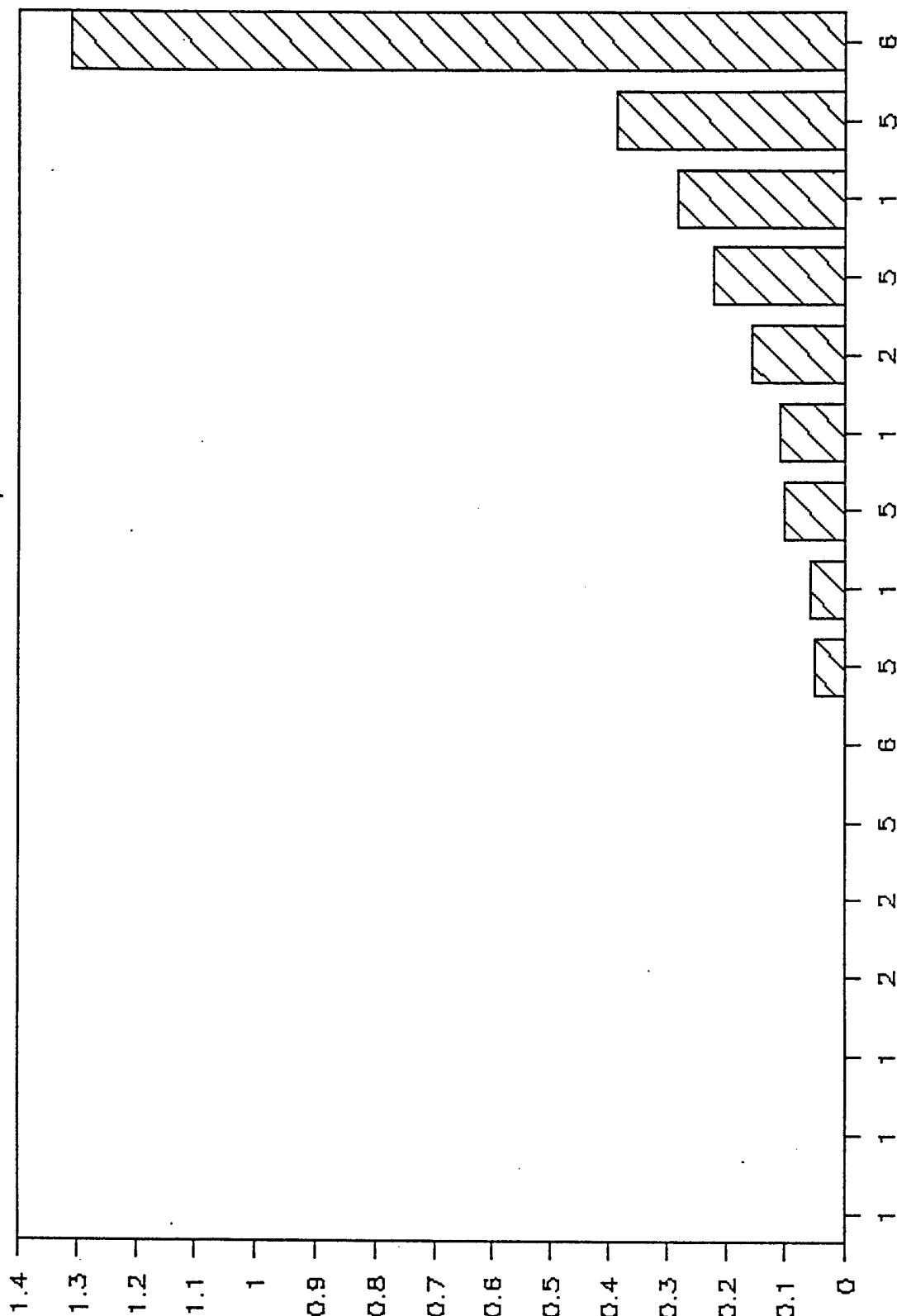
AMMONIA CONC. IN SURFACE WATER, RND2

IRP STAGE 2 SELFRIDGE ANGB, MI



BARIUM CONC. IN SURFACE WATER, RND2

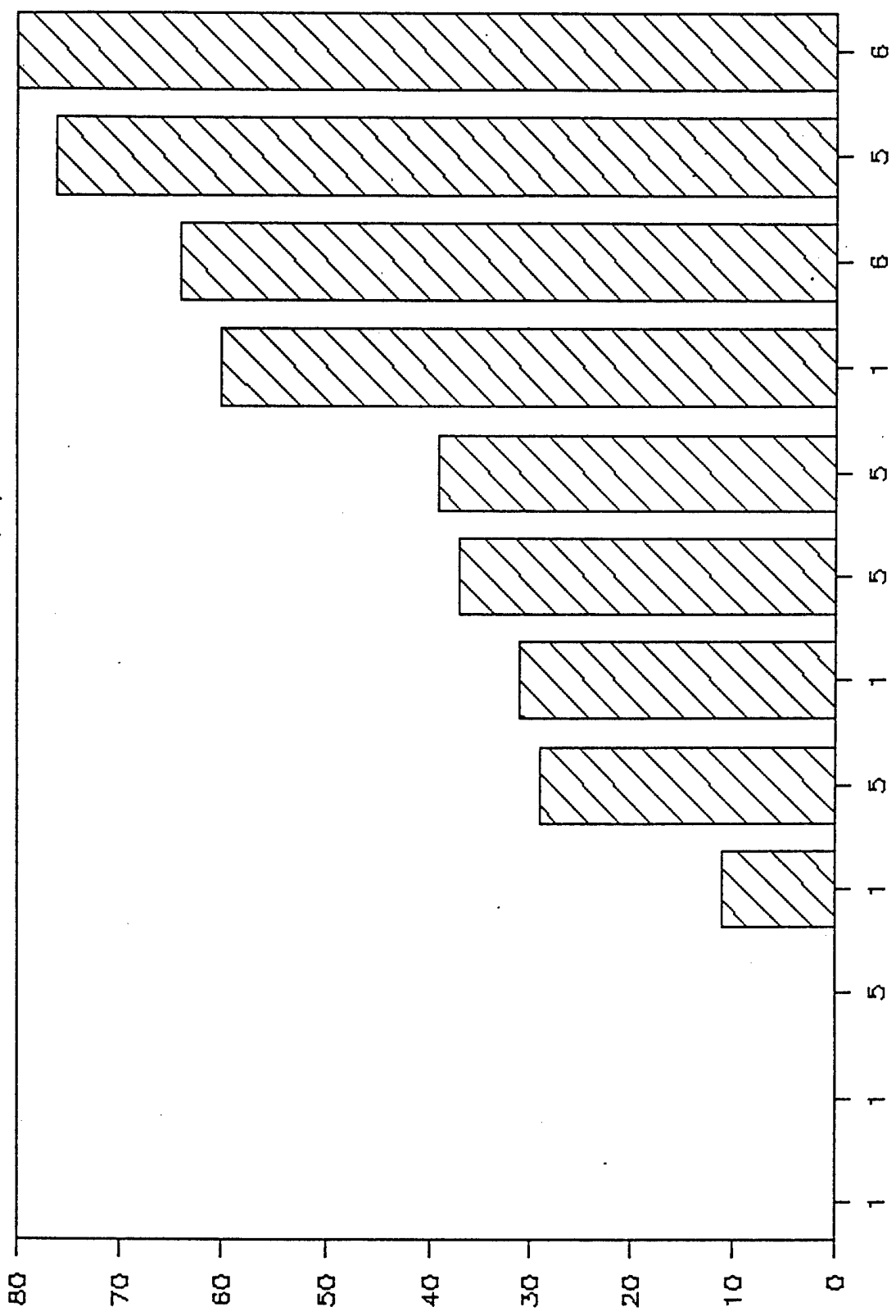
IRP STAGE 2 SELFRIÐGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

COD CONC. IN SURFACE WATER, RND2

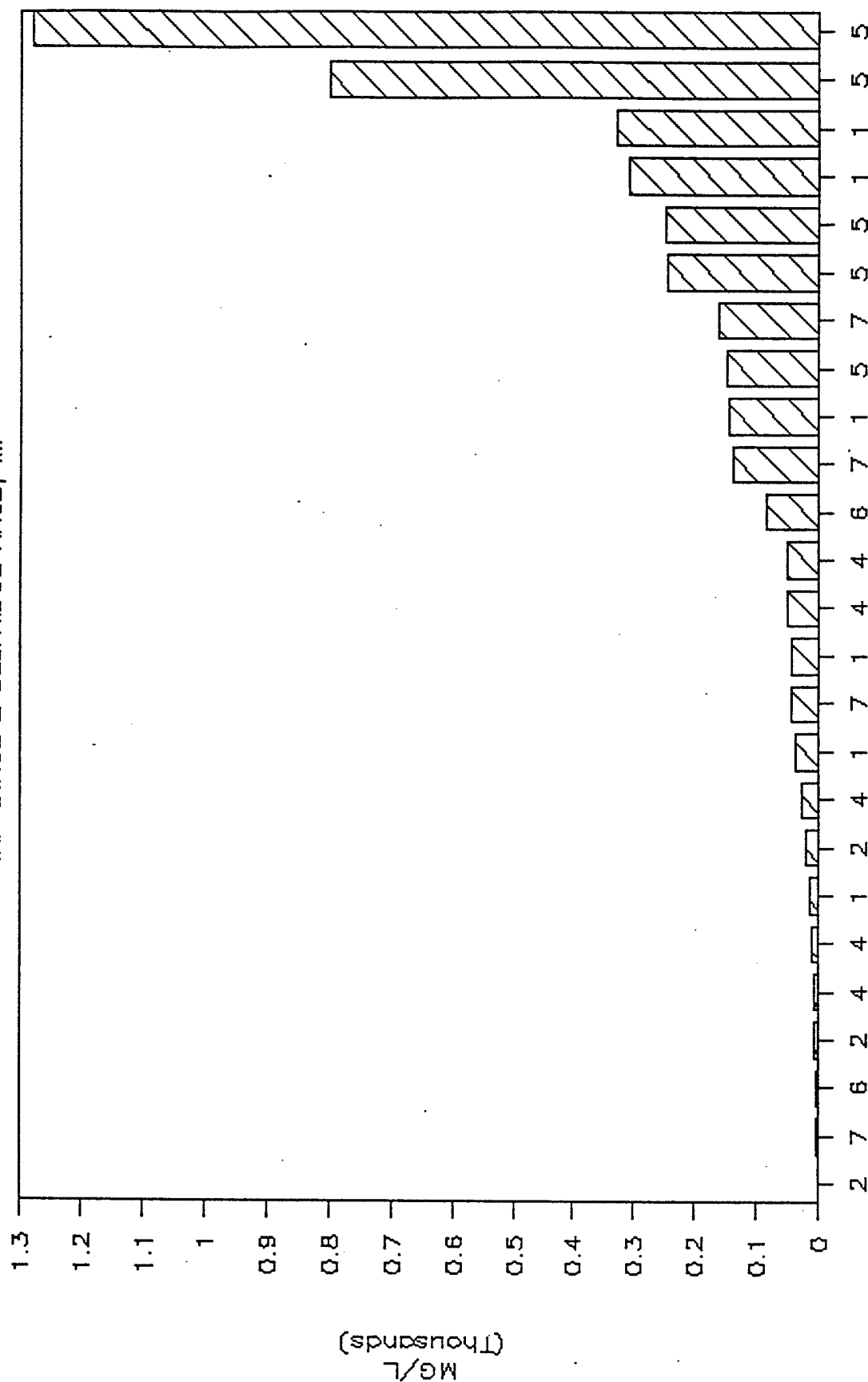
IRP STAGE 2 SELFRIAGE ANGB, MI



MG/L

CHLORIDE CONC. IN SURFACE WATER, RND2

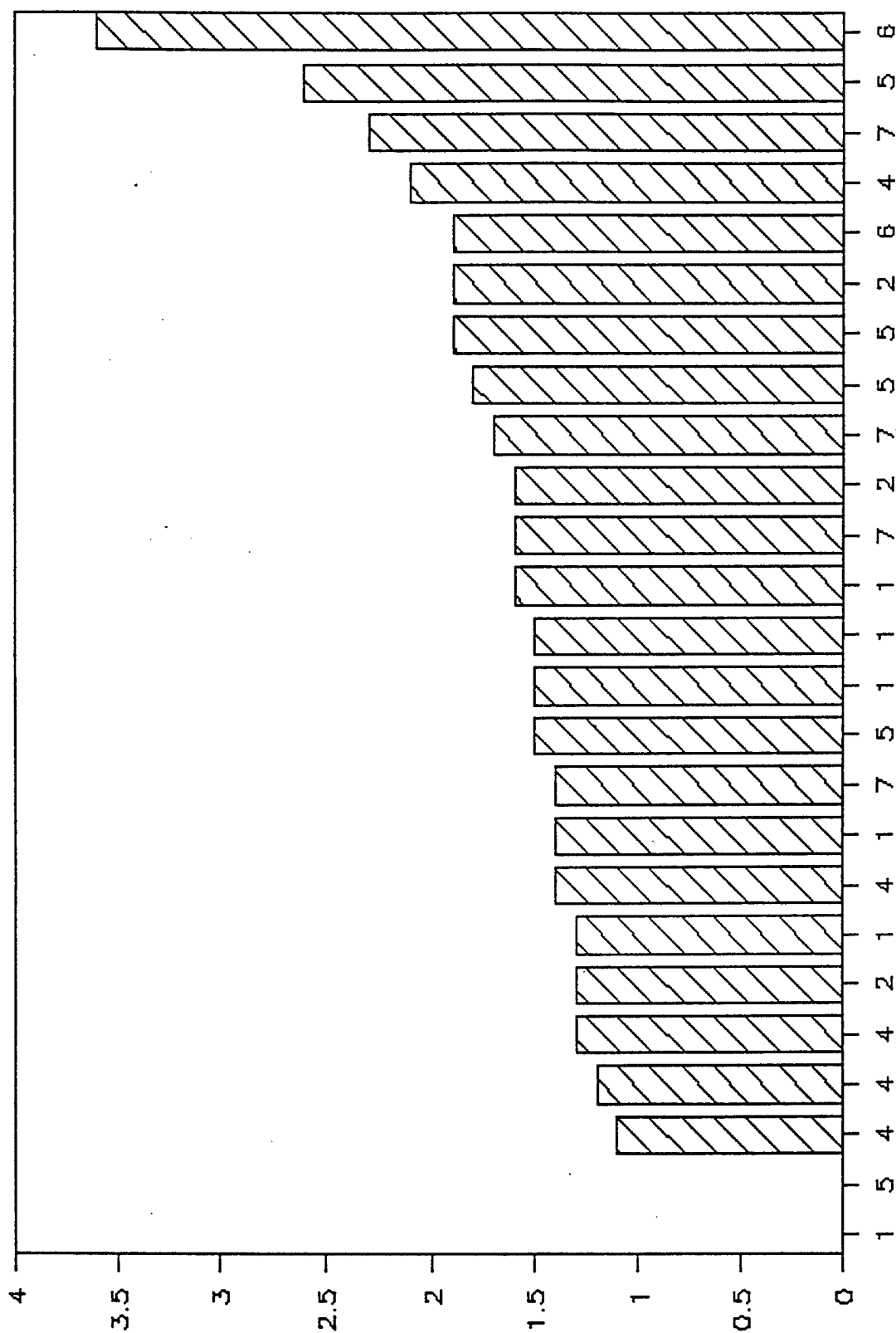
IRP STAGE 2 SELFRIAGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

PET. HYD. CONC. IN SURFACE WATER, RND2

IRP STAGE 2 SELFRIIDGE ANGB, MI

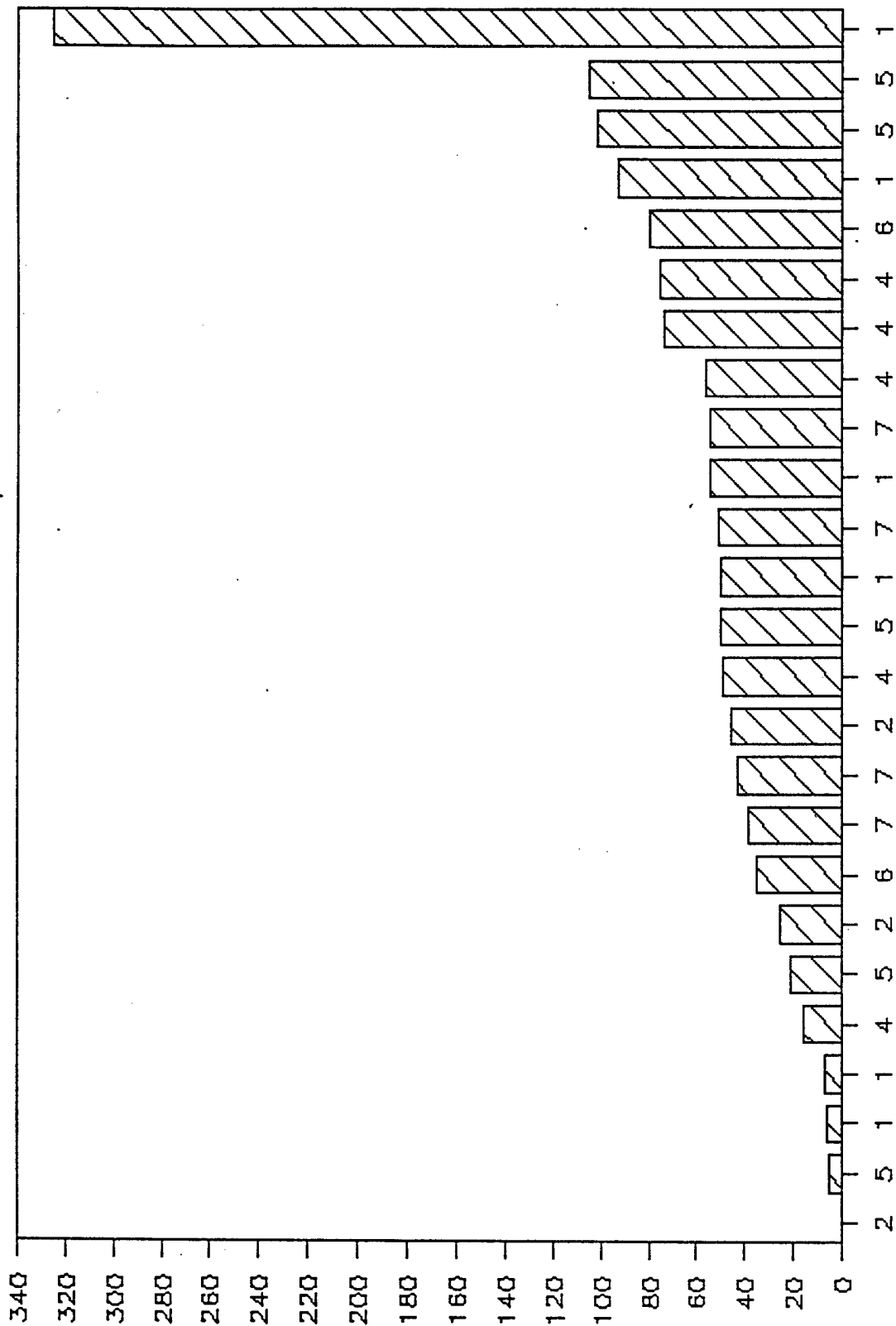


SAMPLE CONCENTRATION BY SITE LOCATION

MG/L

SULFATE CONC. IN SURFACE WATER, RND2

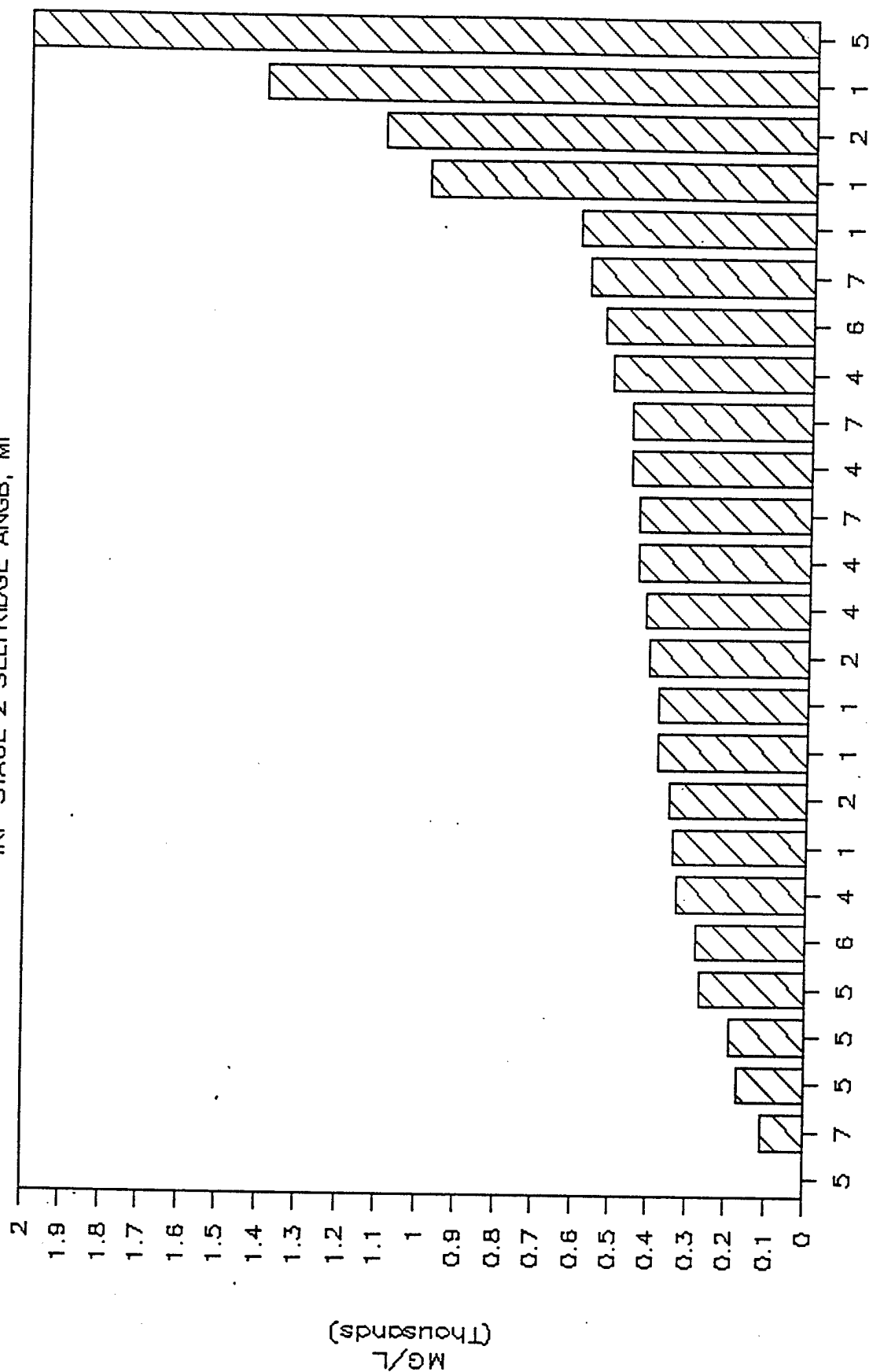
IRP STAGE 2 SELFRIIDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

TDS CONC. IN SURFACE WATER, RND2

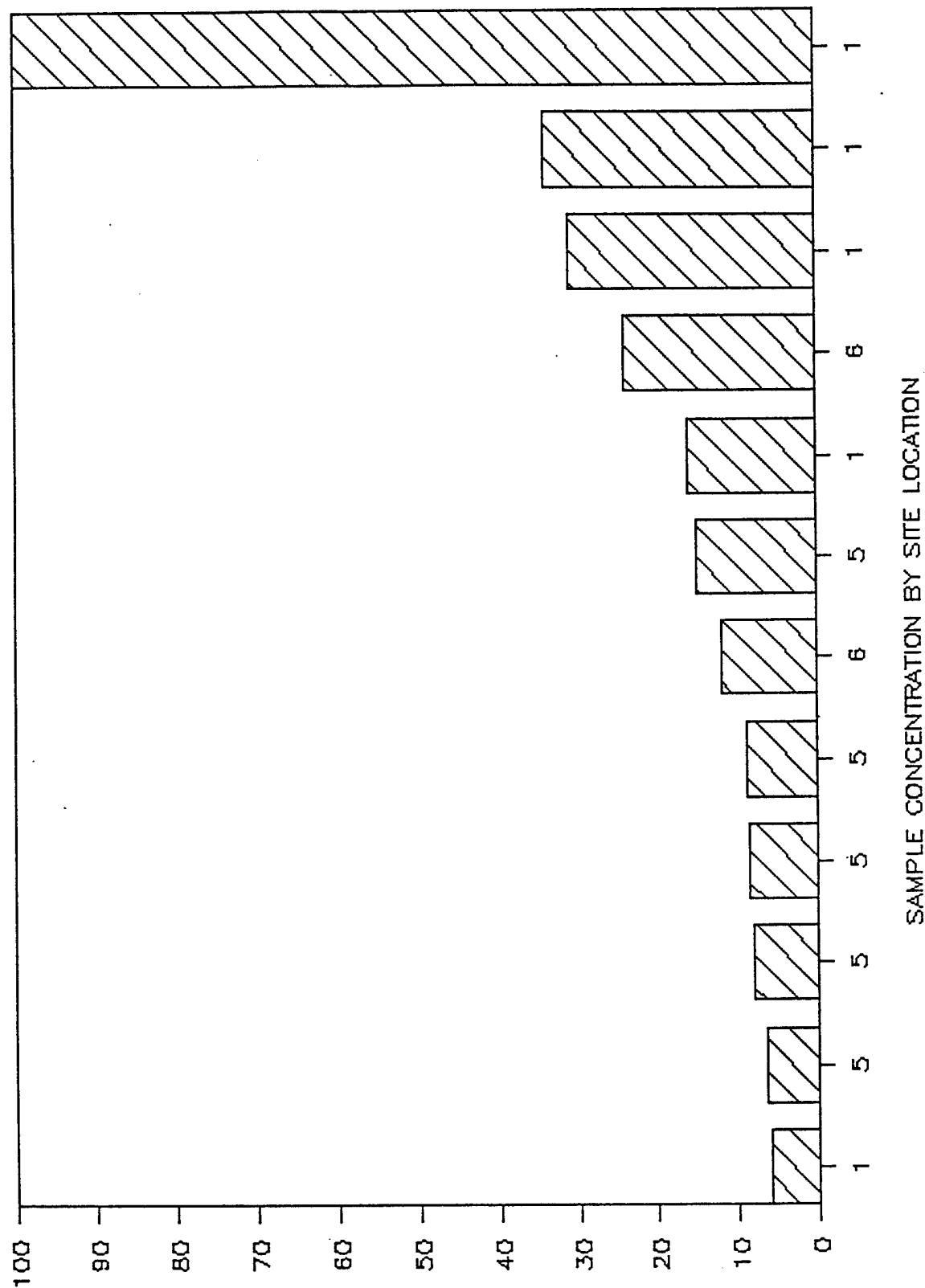
IRP STAGE 2 SELFRRIDGE ANGB, MI



SAMPLE CONCENTRATION BY SITE LOCATION

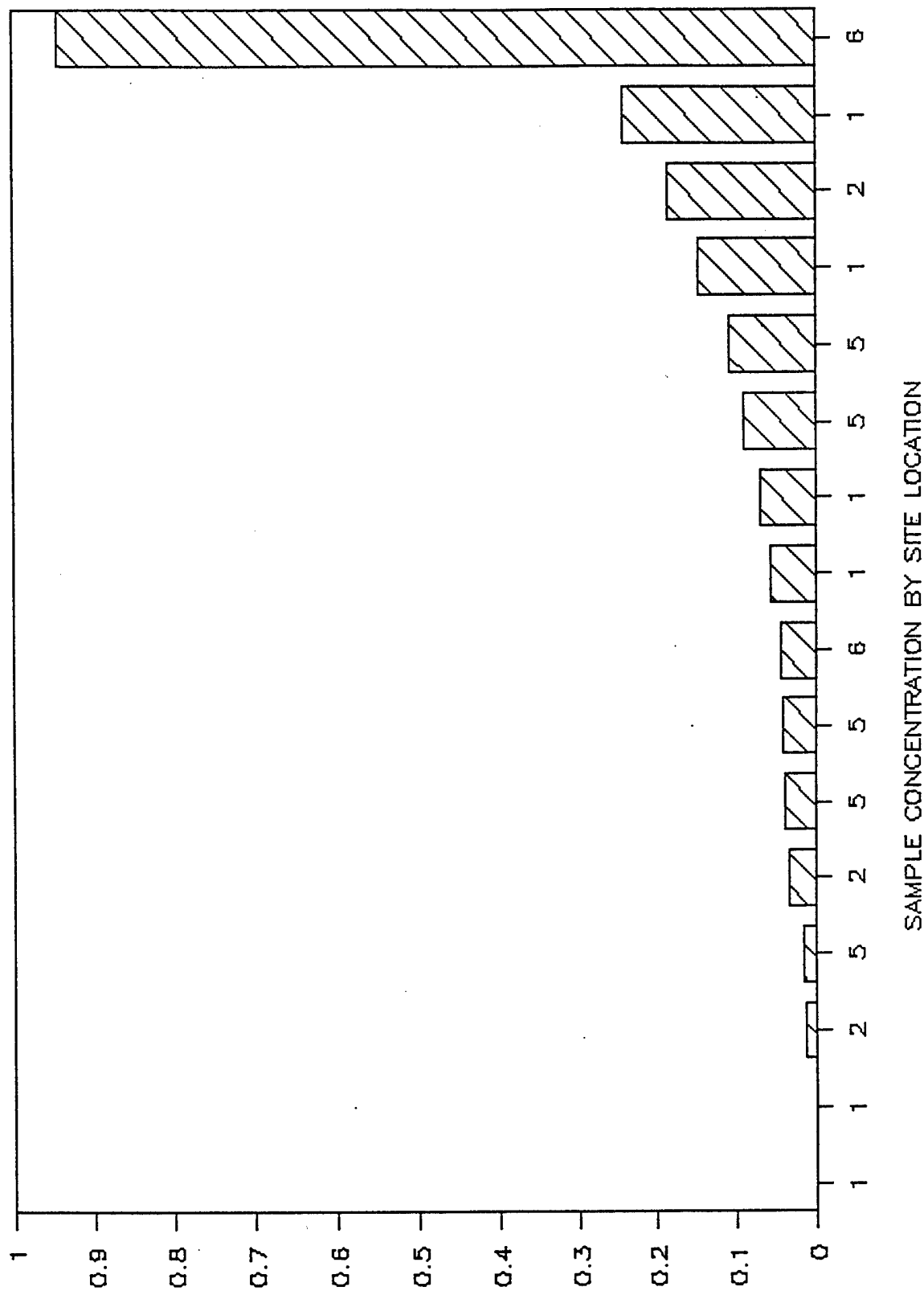
TOC CONC. IN SURFACE WATER, RND2

IRP STAGE 2 SELFIDGE ANGB, MI



ZINC CONC. IN SURFACE WATER, RND2

IRP STAGE 2 SELFRIAGE ANGB, MI





APPENDIX P

DEFENSE PRIORITY MODEL

Southwest Landfill (SWLF)
Defense Priority Model
List of Comments Used to Justify Scoring

<u>Item Number</u>	<u>Comment</u>
1.	Several contaminants, such as trichlorofluor-methane, phenol, and petroleum hydrocarbons were detected in the surface water. Analytical results are valid. Score as 100.
11.	Use score of 1.0 for waste containment effectiveness because some waste is exposed at the surface and new waste is added to the site. Also the cover is not properly graded, low spots occur, and it is not in good condition. There are no measures for preventing run-on or controlling run-off. Contaminants were detected in surface water near the base of uncovered construction debris. The active area where demolition debris is being dumped is not covered daily. Ponding of surface water occurs on the landfill surface.
13.	The contaminants xylenes, vinyl chloride, trichloroethene, toluene, TCE, petroleum hydrocarbons were detected in the groundwater. These concentrations are above background. Score as 100.
21.	Assigned a score of 1.0 because contaminants have been detected in the groundwater, and the landfill does not have a liner. No groundwater cleanup has been performed. General lack of a physical contaminant systems at the site.
23-42	Scoring of these questions is based on calculated sums and logs shown on hazard tables detailing the contaminants detected at the SWLF.
43.	The Mt Clemens water intake is greater than three miles from the SWLF. Score as 0.
44.	Assign a score of 3 based on the city water intake being more than 3 miles away and that untreated untreated surface water runoff is pumped into the Clinton River. Also water fowl using surface water bodies and fish in the river could serve as pathways for contaminants.

45. Population within 1,000 feet of the site numbers approximately 26-100. The population consists mainly of ground maintenance personnel and workers in the warehouses to the west of the site. Score as 2.
46. Distance to newest installation boundary is approximately 450 feet. Score as 3.
47. Land use within one mile is predominantly residential. Score as 3.
50. Assign a score of 1 because untreated surface water is discharged into the Clinton River. Lake St. Clair is >3 miles downstream and will not be considered in scoring.
51. No known critical environments occur within 1 mile of the SWLF. Score as 0.
54. No wells are known to be used for supplying water within 1 mile of the site. Wells to the SE of the SWLF would not be reached by contaminants because of slow groundwater velocities and the thick lacustrine clay deposit. The presence of upward gradients at the base would tend to prevent migration of contaminants to the screened interval. Score as 0.
55. No use of surface water occurs within 3 miles of site. Groundwater that would be intercepted by stormwater drainage line is discharged into the Clinton River but would not impact the drinking water source. Score as 0.
56. No groundwater is used from beneath or near the SWLF site. Wells within one mile of the site do not produce domestic drinking water. Score as 0.
57. No groundwater within one mile of the site is used by any of the local population. Water is supplied by the city treatment plant. No surface water used for drinking water within three miles of the site. Score as 0.
58. The population of residential and daytime base personnel within one mile of the site is approximately 26-100. This is based on the number

of people working in warehouses west of site and ground maintenance people accessing SWLF. Score as 2.

- 59. Distance to the nearest installation boundary is less than 3,000 ft. Score as 3.
- 62. Groundwater flow at the site is to the east would be intercepted by agricultural drain tiles. Based on the fastest travel time it would take approximately 4 years to reach the tiles. Score as 3.
- 63. Untreated groundwater would be discharged by the stormwater drainage system into the Clinton River. The river would be effected, but not Lake St. Clair because it is more than 3 miles from the site. Score as 1.
- 64. No known critical environments occur within one mile of SWLF. Score as 0.

Note to Question #55 --

Based on a phone conversation with an employee at the Mt Clemens water treatment plant, there are no domestic wells in the area being used to supply drinking water. All homes are supplied water by the city.

Site identification: Southwest Landfill (Site 01) - SWLF

SURFACE WATER PATHWAYS

	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
<u>Observed releases</u>				
1. Have contaminants been detected in surface water? If yes, assign score of 100 and proceed to item 10. If no, assign score of 0 and proceed to item 2.	0 <u>100</u>	1	<u>100</u>	100
<u>Pathway characteristics</u>				
2. Distance to nearest surface water	0 1 2 3	4	_____	12
3. Net precipitation	0 1 2 3	1	_____	3
4. Surface erosion potential	0 1 2 3	4	_____	12
5. Rainfall intensity	0 1 2 3	4	_____	12
6. Surface permeability	0 1 2 3	3	_____	9
7. Sum of items 2 through 6			_____	48
8. Normalized score (multiply item 7 x 100/48)			_____	
9. Flooding potential	0 1 2 3	8	_____	24
10. Adjusted pathways score If item 1 is 100, enter 100. If item 1 is 0, enter sum of items 8 and 9. If sum exceeds 100, enter 100.			<u>100</u>	
11. Waste containment effectiveness factor (Table 2)			<u>1.0</u>	
12. Final score for surface water pathways (multiply item 10 x item 11)			<u>100</u>	

COMMENTS ON SURFACE WATER PATHWAYS

All Comments are presented on the typed pages following the scoring sheets for the SWLF.

Prepared by Jim D. Chandler 9 Dec 88 Checked by RHG 12/9/88

Site identification: SWLF

GROUNDWATER PATHWAYS

	<u>Score</u> (circle one)	<u>Multiplier</u>	<u>Product</u> (score x mult.)	<u>Max.</u> <u>score</u>
<u>Observed releases</u>				
13. Have contaminants been detected in groundwater? If yes, assign score of 100 and proceed to item 20. If no, assign score of 0 and proceed to item 14.	0 (100)	1	<u>100</u>	100
<u>Pathway characteristics</u>				
14. Depth to seasonal high groundwater from base of waste or contaminated zone	0 1 2 3	9	<u> </u>	27
15. Permeability of the unsaturated zone	0 1 2 3	5	<u> </u>	15
16. Infiltration potential	0 1 2 3	5	<u> </u>	15
17. Sum of items 14 through 16			<u> </u>	57
18. Normalized score (multiply item 17 x 100/57)			<u> </u>	
19. Potential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table	0 1 2 3	5	<u> </u>	15
20. Adjusted pathways score. If item 13 is 100, enter 100. If item 13 is 0, enter sum of items 18 and 19. If sum exceeds 100, enter 100.			<u>100</u>	
21. Waste containment effectiveness factor (Table 5)			<u>1.0</u>	
22. Final score for groundwater pathways (multiply item 20 x item 21)			<u>100</u>	

COMMENTS ON GROUNDWATER PATHWAYS

Site identification: SWLF

CONTAMINANT HAZARD -- SURFACE WATER

If contaminants have been detected in surface water (score of 100 in item 1), complete items 23 through 28. If contaminants have not been detected (score of 0 in item 1), complete items 29 through 32. Attach Hazard Worksheet or list of contaminants, as appropriate.

	Score (circle one)	Result	Logarithm (base 10)
23. Sum of human health hazard quotients (from column 10 of Hazard Worksheet)		82279	4.9
24. Human health hazard score	0 1 2 4 (6)		
25. Normalized human health hazard score (multiply item 24 x 100/6)		100	
26. Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)		220	2.3
27. Ecological hazard score	0 1 2 3 4 (5) 6		
28. Normalized ecological hazard score (multiply item 27 x 100/6)		83.333	

29. Maximum human health hazard index	0 1 2 3 4 5 6 7 8 9	Contaminant: _____	
30. Normalized human health hazard score (multiply item 29 x 100/9)		_____	
31. Maximum ecological hazard index	0 1 2 4 6	Contaminant: _____	
32. Normalized ecological hazard score (multiply item 31 x 100/6)		_____	

CONTAMINANT HAZARD -- GROUNDWATER

If contaminants have been detected in groundwater (score of 100 in item 13), complete items 33 through 38. If contaminants have not been detected (score of 0 in item 13), complete items 39 through 42. Attach Hazard Worksheet or list of contaminants, as appropriate.

33. Sum of human health hazard quotients (from column 10 of Hazard Worksheet)		151997	5.1
34. Human health hazard score	0 1 2 4 (6)		
35. Normalized human health hazard score (multiply item 34 x 100/6)		100	
36. Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)		1854	3.2
37. Ecological hazard score	0 1 2 3 4 5 (6)		
38. Normalized ecological hazard score (multiply item 37 x 100/6)		100	

39. Maximum human health hazard index	0 1 2 3 4 5 6 7 8 9	Contaminant: _____	
40. Normalized human health hazard score (multiply item 39 x 100/9)		_____	
41. Maximum ecological hazard index	0 1 2 4 6	Contaminant: _____	
42. Normalized ecological hazard score (multiply item 41 x 100/6)		_____	

Site identification: SWLF

HUMAN HEALTH RECEPTORS -- SURFACE WATER PATHWAY

	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
43. Population that obtains drinking water from potentially affected surface water body(ies) within 3 miles (4.8 km) downstream	0 1 2 3	3	<u>0</u>	9
44. Water use of nearest surface water body(ies)	0 1 2 3	3	<u>6</u>	9
45. Population within 1000 ft (305 m) of the site	0 1 2 3	1	<u>2</u>	3
46. Distance to the nearest installation boundary	0 1 2 3	1	<u>3</u>	3
47. Land use and/or zoning within 1 mile (1.6 km) of the site	0 1 2 3	1	<u>3</u>	3
48. Sum of items 43 through 47			<u>14</u>	27
49. Final score for human health receptors on surface water pathways (multiply item 48 x 100/27)		51.852		

ECOLOGICAL RECEPTORS -- SURFACE WATER PATHWAYS

50. Importance/sensitivity of biota/habitats in potentially affected surface water bodies nearest the site	0 1 2 3	5	<u>5</u>	15
51. Presence of "critical environments" within 1 mile (1.6 km) of the site	0 3	1	<u>0</u>	3
52. Sum of items 50 and 51			<u>5</u>	18
53. Final score for ecological receptors on surface water pathways (multiply item 52 x 100/18)			<u>27.778</u>	

COMMENTS ON SURFACE WATER RECEPTORS

Site identification: SWLF

HUMAN HEALTH RECEPTORS -- GROUNDWATER PATHWAY

	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
54. Estimated mean groundwater travel time from current waste location to nearest downgradient water supply well(s)	0 1 2 3	9	0	27
55. Estimated mean groundwater travel time from current waste location to any downgradient surface water body that supplies water for domestic use or for food chain agriculture	0 1 2 3	5	0	15
56. Groundwater use of the uppermost aquifer	0 1 2 3	4	0	12
57. Population potentially at risk from groundwater contamination	0 6 9 12 18 24 27 36	1	0	36
58. Population within 1000 ft (305 m) of the site	0 1 2 3	1	2	3
59. Distance to the nearest installation boundary	0 1 2 3	1	3	3
60. Sum of items 54 through 59			5	96
61. Final score for human health receptors on groundwater pathways (multiply item 60 x 100/96)			5.208	

ECOLOGICAL RECEPTORS -- GROUNDWATER PATHWAYS

62. Estimated mean groundwater travel time from current waste location to any downgradient habitat or natural area	0 1 2 3	3	9	9
63. Importance/sensitivity of downgradient biota/habitats that are confirmed or suspected groundwater discharge points	0 1 2 3	3	3	9
64. Presence of "critical environments" within 1 mile (1.6 km) of the site	0 3	1	0	3
65. Sum of items 62 through 64			12	21
66. Final score for ecological receptors on groundwater pathways (multiply item 65 x 100/21)			57.143	

COMMENTS ON GROUNDWATER RECEPTORS (attach additional pages if needed)

Site identification:SWLF

SCORING SUMMARY SHEET

	<u>Pathways score</u>		<u>Contaminant hazard score</u>		<u>Receptors score</u>		<u>Overall score</u>
67. Surface water/human health scores	(<u>100</u> item 12	x	<u>100</u> item 25/30	x	<u>51.852</u> item 49	) /10,000 =	<u>51.852</u>
68. Surface water/ecological scores	(<u>100</u> item 12	x	<u>83.333</u> item 28/32	x	<u>27.778</u> item 53	) /10,000 =	<u>23.056</u>
69. Groundwater/human health scores	(<u>100</u> item 22	x	<u>100</u> item 35/40	x	<u>5.208</u> item 61	) /10,000 =	<u>5.208</u>
70. Groundwater/ecological scores	(<u>100</u> item 22	x	<u>100</u> item 38/42	x	<u>57.143</u> item 66	) /10,000 =	<u>57.143</u>

OVERALL SITE SCORE:

$$71. \quad \left(\frac{51.852}{\text{item 67}} \right)^2 \times 5 + \left(\frac{23.056}{\text{item 68}} \right)^2 + \left(\frac{5.208}{\text{item 69}} \right)^2 \times 5 + \left(\frac{57.143}{\text{item 70}} \right)^2 = 17375.666$$

$$72. \quad \text{Overall site score} = \sqrt{\frac{17375.666}{\text{item 71}}} = 38.053 \approx 38$$

TABLE P-1
SWLF HAZARD WORKSHEET
IRP STAGE 2
SELRIDGE, MICHIGAN

1	2	3	4	5	6
CONTAMINANT NAME	CONCENTRATION (ug/L)	HEALTH EFFECTS BENCHMARK (ug/day)	AQUATIC EFFECTS BENCHMARK (ug/L)	TERRESTRIAL EFFECTS BENCHMARK (ug/L)	BIOACCUMULATION FACTOR (L/KG)
SWLF GROUNDWATER CONTAMINANT HAZARD					
ALUMINUM		3		5000	280
ARSENIC	10	0.04	360	100	4
BARIUM	765	0.15	14500		32
BENZENE	60	30	5300		660
BUTYLBENZYLPHTHALATE	2	10000	1700		50
CADMIUM	47	20	0.66	10	200
CHROMIUM	17	0.016	16	100	210
COPPER		2000	9.2	200	690
1,4- DICHLOROBENZENE	9	460	1120		740
1,3- DICHLOROBENZENE	93	460	2850		14
1,1- DICHLOROETHANE	7.9	15	118000		7.2
TRANS-1,2- DICHLOROETHENE	650	2.6	135000		8
DICHLOROFLUOROMETHANE	450	116	11000		120
DIETHYLPHTHALATE	160	10000	52100		150
2,4- DIMETHYLPHENOL	80	9.6	2120		290
ETHYLBENZENE	92	2200	32000		100
IRON	700000	150	400	5000	300
LEAD		100	34	5000	400
MANGANESE	6730	0.25	350	200	4.4
METHYLENE CHLORIDE	310	4	193000		430
NAPHTHALENE		280	2300		100
NICKEL	87	260	1100	200	
4- NITROPHENOL		0.7	8280		
PENTACHLOROPHENOL		280	55	37300	780
PET HYDRO (ASSUME JP-4)		13	28800		120
PET HYDRO (ASSUME MOTOR OIL)		61.9			
PHENOL	5000	6800	10000		1.7
SILVER	240	20	1.2		2
1,1,2,2- TETRACHLOROETHANE	7.3	10	9320		7.9
TETRACHLOROETHENE	3.9	4	5280		44
TOLUENE	650	24	17500		83
TRICHLOROETHENE	6.7	42	45000		17
TRICHLOROFLUOROMETHANE		11	11000		74
VINYL CHLORIDE	21	1000	381000		7.2
XYLENES	210	16	13500		320
ZINC	105	10000	180	2000	1000

Col 7 = (col 2) x (2 L/day)
Col 8 = (col 2) x (col 6) x (0.0065 kg/day)
Col 9 = (col 7) + (col 8)
Col 10 = (col 9) / (col 3)
Col 11 = (col 2) / (col 4)
Col 12 = (col 2) / (col 5)

TABLE P-1 (CONTINUED)
SWLF HAZARD WORKSHEET
IRP STAGE 2
SELFRIIDGE, MICHIGAN

1	7	8	9	10	11	12
CONTAMINANT NAME	DRINKING WATER INTAKE (ug/day)	FOOD INTAKE (ug/day)	TOTAL INTAKE (ug/day)	HEALTH HAZARD QUOTIENT	AQUATIC HAZARD QUOTIENT	TERRESTRIAL HAZARD QUOTIENT
SWLF GROUNDWATER CONTAMINANT HAZARD						
ALUMINUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
ARSENIC	20	18.2000	38.2000	955.0000	0.0278	0.1000
BARIUM	1530	19.8900	1549.8900	10332.6000	0.0528	0.0000
BENZENE	120	12.4800	132.4800	4.4160	0.0113	0.0000
BUTYLBENZYLPHTHALATE	4	8.5800	12.5800	0.0013	0.0012	0.0000
CADMIUM	94	15.2750	109.2750	5.4638	71.2121	4.7000
CHROMIUM	34	22.1000	56.1000	3506.2500	1.0625	0.1700
COPPER	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,4- DICHLOROBENZENE	18	40.3650	58.3650	0.1269	0.0080	0.0000
1,3- DICHLOROBENZENE	186	447.3300	633.3300	1.3768	0.0326	0.0000
1,1- DICHLOROETHANE	15.8	0.7189	16.5189	1.1013	0.0001	0.0000
TRANS-1,2- DICHLOROETHENE	1300	30.4200	1330.4200	511.7000	0.0048	0.0000
DICHLOROFLUOROMETHANE	900	23.4000	923.4000	7.9603	0.0409	0.0000
DIETHYLPHTHALATE	320	124.8000	444.8000	0.0445	0.0031	0.0000
DIMETHYLPHENOL	160	78.0000	238.0000	24.7917	0.0377	0.0000
2,4- DIMETHYLPHENOL	184	173.4200	357.4200	0.1625	0.0029	0.0000
ETHYLBENZENE	1400000	455000.0000	1855000.0000	12366.6667	1750.0000	140.0000
IRON	0	0.0000	0.0000	0.0000	0.0000	0.0000
LEAD	13460	17498.0000	30958.0000	123832.0000	19.2286	33.6500
MANGANESE	620	8.8660	628.8660	157.2165	0.0016	0.0000
METHYLENE CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
NAPHTHALENE	174	56.5500	230.5500	0.8867	0.0791	0.4350
NICKEL	0	0.0000	0.0000	0.0000	0.0000	0.0000
4- NITROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PENTACHLOROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PET HYDRO (ASSUME JP-4)	10000	0.0000	10000.0000	161.5509	0.0000	0.0000
PET HYDRO (ASSUME MOTOR OIL)	480	2.6520	482.6520	0.0710	0.0240	0.0000
PHENOL	28	0.1820	28.1820	1.4091	11.6667	0.0000
SILVER	14.6	0.3749	14.9749	1.4975	0.0008	0.0000
1,1,2,2- TETRACHLOROETHANE	7.8	1.1154	8.9154	2.2289	0.0007	0.0000
TETRACHLOROETHENE	1300	350.6750	1650.6750	68.7781	0.0371	0.0000
TOLUENE	13.4	0.7404	14.1404	0.3367	0.0001	0.0000
TRICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROFLUOROMETHANE	42	0.9828	42.9828	0.0430	0.0001	0.0000
VINYL CHLORIDE	420	436.8000	856.8000	53.5500	0.0156	0.0000
XYLENES	210	682.5000	892.5000	0.0893	0.5833	0.0525
ZINC						
SUMS =			151997.3191		1854.1355	179.1075
LOG OF SUMS =			5.1818		3.2681	2.2531

Col 7 = (col 2) x (2 L/day)

Col 8 = (col 2) x (col 6) x (0.0065 kg/day)

Col 9 = (col 7) + (col 8)

Col 10 = (col 9) / (col 3)

Col 11 = (col 2) / (col 4)

Col 12 = (col 2) / (col 5)

TABLE P-2
SWLF HAZARD WORKSHEET
IRP STAGE 2
SELFIDGE, MICHIGAN

1 CONTAMINANT NAME	2 CONCENTRATION (ug/L)	3 HEALTH EFFECTS BENCHMARK (ug/day)	4 AQUATIC EFFECTS BENCHMARK (ug/L)	5 TERRESTRIAL EFFECTS BENCHMARK (ug/L)	6 BIOACCUMULATION FACTOR (L/KG)
SWLF SURFACE WATER CONTAMINANT HAZARD					
ALUMINUM	9270	3		5000	280
ARSENIC	32	0.04	360	100	4
BARIUM	518	0.15	14500		32
BENZENE		30	5300		660
BUTYLBENZYLPHTHALATE	6	10000	1700	10	50
CADMIUM	66	20	0.66	100	200
CHROMIUM	22	0.016	16	200	210
COPPER	32	2000	9.2		690
1,4- DICHLOROBENZENE		460	1120		740
1,3- DICHLOROBENZENE		460	2850		14
1,1- DICHLOROETHANE		15	118000		7.2
TRANS-1,2- DICHLOROETHENE		2.6	135000		8
DICHLOROFLUOROMETHANE		116	11000		120
DIETHYLPHTHALATE		10000	52100		150
2,4- DIMETHYLPHENOL		9.6	2120		290
ETHYLBENZENE	44900	2200	32000	5000	100
IRON	16	100	400	5000	300
LEAD	7570	150	34	5000	
MANGANESE	2	0.25	193000		4.4
METHYLENE CHLORIDE		4	2300		430
NAPHTHALENE	53	280	1100	200	100
NICKEL	12	260	8280		
4- NITROPHENOL	7	0.7	55		780
PENTACHLOROPHENOL		280	28800	37300	120
PET HYDRO (ASSUME JP-4)		13			
PET HYDRO (ASSUME MOTOR OIL)	2400	61.9			1.7
PHENOL	9	6800	10000		2
SILVER		20	1.2		7.9
1,1,2,2- TETRACHLOROETHANE		10	9320		44
TETRACHLOROETHENE		4	5280		83
TOLUENE		24	17500		17
TRICHLOROETHENE		42	45000		74
TRICHLOROFLUOROMETHANE	150	11	11000		7.2
VINYL CHLORIDE		1000	381000		320
XYLENES		16	13500		1000
ZINC	440	10000	180	2000	

Col 7 = (col 2) x (2 L/day)
Col 8 = (col 2) x (col 6) x (0.0065 kg/day)
Col 9 = (col 7) + (col 8)
Col 10 = (col 9) / (col 3)
Col 11 = (col 2) / (col 4)
Col 12 = (col 2) / (col 5)

TABLE P-2 (CONTINUED)
SWLF HAZARD WORKSHEET
IRP STAGE 2
SELEFRIDGE, MICHIGAN

1	7	8	9	10	11	12
CONTAMINANT NAME	DRINKING WATER INTAKE (ug/day)	FOOD INTAKE (ug/day)	TOTAL INTAKE (ug/day)	HEALTH HAZARD QUOTIENT	AQUATIC HAZARD QUOTIENT	TERRESTRIAL HAZARD QUOTIENT
ALUMINUM	18540	0.0000	18540.0000	6180.0000	0.0000	1.8540
ARSENIC	64	58.2400	122.2400	3056.0000	0.0889	0.3200
BARIUM	1036	13.4680	1049.4680	6996.4533	0.0357	0.0000
BENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
BUTYLBENZYLPHTHALATE	12	25.7400	37.7400	0.0038	0.0035	0.0000
CADMIUM	132	21.4500	153.4500	7.6725	100.0000	6.6000
CHROMIUM	44	28.6000	72.6000	4537.5000	1.3750	0.2200
COPPER	64	43.6800	107.6800	0.0538	3.4783	0.1600
1,4- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,3- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1- DICHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRANS-1,2- DICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DICHLOROFLUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DIETHYLPHTHALATE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DIETHYLPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
ETHYLBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
IRON	89800	29185.0000	118985.0000	793.2333	112.2500	8.9800
LEAD	32	31.2000	63.2000	0.6320	0.4706	0.0032
MANGANESE	15140	0.0000	15140.0000	60560.0000	0.0000	1.5140
METHYLENE CHLORIDE	4	0.0572	4.0572	1.0143	0.0000	0.0000
NAPHTHALENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
NICKEL	106	34.4500	140.4500	0.5402	0.0482	0.2650
4- NITROPHENOL	24	0.0000	24.0000	34.2857	0.0014	0.0000
PENTACHLOROPHENOL	14	35.4900	49.4900	0.1768	0.1273	0.0002
PET HYDRO (ASSUME JP-4)	0	0.0000	0.0000	0.0000	0.0000	0.0000
PET HYDRO (ASSUME MOTOR OIL)	4800	0.0000	4800.0000	77.5444	0.0000	0.0000
PHENOL	18	0.0995	18.0995	0.0027	0.0009	0.0000
SILVER	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1,2,2- TETRACHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TETRACHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TOLUENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROFLUOROMETHANE	300	72.1500	372.1500	33.8318	0.0136	0.0000
VINYL CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
XYLENES	0	0.0000	0.0000	0.0000	0.0000	0.0000
ZINC	880	2860.0000	3740.0000	0.3740	2.4444	0.2200
SUMS =				82279.3186	220.3379	20.1364
LOG OF SUMS =				4.9153	2.3431	1.3040
Col 7 = (col 2) x (2 L/day)						
Col 8 = (col 2) x (col 6) x (0.0065 kg/day)						
Col 9 = (col 7) + (col 8)						
Col 10 = (col 9) / (col 3)						
Col 11 = (col 2) / (col 4)						
Col 12 = (col 2) / (col 5)						

Fire Training Area-2 (FTA-2)
Defense Priority Model
List of Comments Used to Justify Scoring

<u>Item Number</u>	<u>Comment</u>
1.	Contaminants have been detected in the surface water. These include toluene, petroleum hydrocarbons, elevated metal concentrations and methylene chloride. Analytical results were above background. Score as 100.
11.	Surface effluent (fuels and water) are drained off the FTA-2 site into a wooded area. There is not an oil-water separator at the site. The FTA-2 consists of an earthen bern around the pit. Score as 1.
13.	Petroleum hydrocarbons were detected at elevated concentrations in the groundwater. Score as 100.
21.	The fire training area is unlined. Earthen material serves as the containment system. Score as 1.
23-42.	Scoring of these questions is based on calculated sums and logs presented on the hazard scoring tables detailing the contaminants detected at the FTA-2.
43.	No drinking water is obtained from surface water sources within three miles of the site. Therefore, no population would be affected. Score as 0.
44.	Surface water drains to the stormwater drainage system and is discharged to the Clinton River. It is greater than three miles from the discharge point to the public drinking water intake. Score as 2.
45.	Population is estimated to be 1-25. Population consists of fire fighters using the site, the base personnel using the engine test site, ground maintenance people working in area, and the police driving school using the old taxiway next to the site. These people are considered to be a daytime on-base population. Score as 1.
46.	Distance to nearest base boundary is approximately 800 feet. Score as 3.

Site identification: Fire Training Area - 2 (Site 02) - FTA-2

SURFACE WATER PATHWAYS

	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
<u>Observed releases</u>				
1. Have contaminants been detected in surface water? If yes, assign score of 100 and proceed to item 10. If no, assign score of 0 and proceed to item 2.	0 (100)	1	100	100
<u>Pathway characteristics</u>				
2. Distance to nearest surface water	0 1 2 3	4	_____	12
3. Net precipitation	0 1 2 3	1	_____	3
4. Surface erosion potential	0 1 2 3	4	_____	12
5. Rainfall intensity	0 1 2 3	4	_____	12
6. Surface permeability	0 1 2 3	3	_____	9
7. Sum of items 2 through 6			_____	48
8. Normalized score (multiply item 7 x 100/48)			_____	
9. Flooding potential	0 1 2 3	8	_____	24
10. Adjusted pathways score If item 1 is 100, enter 100. If item 1 is 0, enter sum of items 8 and 9. If sum exceeds 100, enter 100.			100	
11. Waste containment effectiveness factor (Table 2)			1.0	
12. Final score for surface water pathways (multiply item 10 x item 11)			100	

COMMENTS ON SURFACE WATER PATHWAYS

All comments are presented on the typed pages following the scoring sheets for the FTA-2

Prepared by Jon D. Wanda 9 Dec '88 Checked by RHG 12/9/88

Site identification: FTA-2

GROUNDWATER PATHWAYS

	<u>Score</u> (circle one)	<u>Multiplier</u>	<u>Product</u> (score x mult.)	<u>Max.</u> <u>score</u>
<u>Observed releases</u>				
13. Have contaminants been detected in groundwater? If yes, assign score of 100 and proceed to item 20. If no, assign score of 0 and proceed to item 14.	0 (100)	1	100	100
<u>Pathway characteristics</u>				
14. Depth to seasonal high groundwater from base of waste or contaminated zone	0 1 2 3	9	_____	27
15. Permeability of the unsaturated zone	0 1 2 3	5	_____	15
16. Infiltration potential	0 1 2 3	5	_____	15
17. Sum of items 14 through 16			_____	57
18. Normalized score (multiply item 17 x 100/57)			_____	
19. Potential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table	0 1 2 3	5	_____	15
20. Adjusted pathways score. If item 13 is 100, enter 100. If item 13 is 0, enter sum of items 18 and 19. If sum exceeds 100, enter 100.			100	
21. Waste containment effectiveness factor (Table 5)			1.0	
22. Final score for groundwater pathways (multiply item 20 x item 21)			100	

COMMENTS ON GROUNDWATER PATHWAYS

Site identification: FTA-2

CONTAMINANT HAZARD -- SURFACE WATER

If contaminants have been detected in surface water (score of 100 in item 1), complete items 23 through 28. If contaminants have not been detected (score of 0 in item 1), complete items 29 through 32. Attach Hazard Worksheet or list of contaminants, as appropriate.

	<u>Score</u> (circle one)	<u>Result</u>	<u>Logarithm</u> (base 10)
23. Sum of human health hazard quotients (from column 10 of Hazard Worksheet)		122998.2039	5.0899
24. Human health hazard score	0 1 2 4 (6)		
25. Normalized human health hazard score (multiply item 24 x 100/6)		100	
26. Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)		114.1181	2.0574
27. Ecological hazard score	0 1 2 3 4 (5) 6		
28. Normalized ecological hazard score (multiply item 27 x 100/6)		83.333	

29. Maximum human health hazard index	0 1 2 3 4 5 6 7 8 9		Contaminant: _____
30. Normalized human health hazard score (multiply item 29 x 100/9)			_____
31. Maximum ecological hazard index	0 1 2 4 6		Contaminant: _____
32. Normalized ecological hazard score (multiply item 31 x 100/6)			_____

CONTAMINANT HAZARD -- GROUNDWATER

If contaminants have been detected in groundwater (score of 100 in item 13), complete items 33 through 38. If contaminants have not been detected (score of 0 in item 13), complete items 39 through 42. Attach Hazard Worksheet or list of contaminants, as appropriate.

33. Sum of human health hazard quotients (from column 10 of Hazard Worksheet)		12107.6594	4.0831
34. Human health hazard score	0 1 2 4 (6)		
35. Normalized human health hazard score (multiply item 34 x 100/6)		100	
36. Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)		2.3898	0.3784
37. Ecological hazard score	0 1 2 (3) 4 5 6		
38. Normalized ecological hazard score (multiply item 37 x 100/6)		50	

39. Maximum human health hazard index	0 1 2 3 4 5 6 7 8 9		Contaminant: _____
40. Normalized human health hazard score (multiply item 39 x 100/9)			_____
41. Maximum ecological hazard index	0 1 2 4 6		Contaminant: _____
42. Normalized ecological hazard score (multiply item 41 x 100/6)			_____

Site identification: FTA-2

HUMAN HEALTH RECEPTORS -- SURFACE WATER PATHWAY

	<u>Score</u> (circle one)	<u>Multiplier</u>	<u>Product</u> (score x mult.)	<u>Max.</u> <u>score</u>
43. Population that obtains drinking water from potentially affected surface water body(ies) within 3 miles (4.8 km) downstream	0 1 2 3	3	<u>0</u>	9
44. Water use of nearest surface water body(ies)	0 1 2 3	3	<u>6</u>	9
45. Population within 1000 ft (305 m) of the site	0 1 2 3	1	<u>1</u>	3
46. Distance to the nearest installation boundary	0 1 2 3	1	<u>3</u>	3
47. Land use and/or zoning within 1 mile (1.6 km) of the site	0 1 2 3	1	<u>3</u>	3
48. Sum of items 43 through 47			<u>13</u>	27
49. Final score for human health receptors on surface water pathways (multiply item 48 x 100/27)			<u>48.148</u>	

ECOLOGICAL RECEPTORS -- SURFACE WATER PATHWAYS

50. Importance/sensitivity of biota/habitats in potentially affected surface water bodies nearest the site	0 1 2 3	5	<u>5</u>	15
51. Presence of "critical environments" within 1 mile (1.6 km) of the site	0 3	1	<u>0</u>	3
52. Sum of items 50 and 51			<u>5</u>	18
53. Final score for ecological receptors on surface water pathways (multiply item 52 x 100/18)			<u>27.778</u>	

COMMENTS ON SURFACE WATER RECEPTORS

Site identification: FTA-2

HUMAN HEALTH RECEPTORS -- GROUNDWATER PATHWAY

	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
54. Estimated mean groundwater travel time from current waste location to nearest downgradient water supply well(s)	0 1 2 3	9	0	27
55. Estimated mean groundwater travel time from current waste location to any downgradient surface water body that supplies water for domestic use or for food chain agriculture	0 1 2 3	5	0	15
56. Groundwater use of the uppermost aquifer	0 1 2 3	4	0	12
57. Population potentially at risk from groundwater contamination	0 6 9 12 18 24 27 36	1	0	36
58. Population within 1000 ft (305 m) of the site	0 1 2 3	1	1	3
59. Distance to the nearest installation boundary	0 1 2 3	1	3	3
60. Sum of items 54 through 59			4	96
61. Final score for human health receptors on groundwater pathways (multiply item 60 x 100/96)			4.167	

ECOLOGICAL RECEPTORS -- GROUNDWATER PATHWAYS

62. Estimated mean groundwater travel time from current waste location to any downgradient habitat or natural area	0 1 2 3	3	6	9
63. Importance/sensitivity of downgradient biota/habitats that are confirmed or suspected groundwater discharge points	0 1 2 3	3	3	9
64. Presence of "critical environments" within 1 mile (1.6 km) of the site	0 3	1	0	3
65. Sum of items 62 through 64			9	21
66. Final score for ecological receptors on groundwater pathways (multiply item 65 x 100/21)			42.857	

COMMENTS ON GROUNDWATER RECEPTORS (attach additional pages if needed)

Site identification: FTA-2

SCORING SUMMARY SHEET

	<u>Pathways score</u>		<u>Contaminant hazard score</u>		<u>Receptors score</u>		<u>Overall score</u>
67. Surface water/human health scores	(<u>100</u>)	x	<u>100</u>	x	<u>48.148</u>	/10,000 =	<u>48.148</u>
	item 12		item 25/30		item 49		
68. Surface water/ecological scores	(<u>100</u>)	x	<u>83.333</u>	x	<u>27.778</u>	/10,000 =	<u>23.148</u>
	item 12		item 28/32		item 53		
69. Groundwater/human health scores	(<u>100</u>)	x	<u>100</u>	x	<u>4.167</u>	/10,000 =	<u>4.167</u>
	item 22		item 35/40		item 61		
70. Groundwater/ecological scores	(<u>100</u>)	x	<u>50</u>	x	<u>42.857</u>	/10,000 =	<u>21.429</u>
	item 22		item 38/42		item 66		

OVERALL SITE SCORE:

$$71. \quad \frac{48.148}{\text{item 67}}^2 \times 5 + \frac{23.148}{\text{item 68}}^2 + \frac{4.167}{\text{item 69}}^2 \times 5 + \frac{21.429}{\text{item 70}}^2 = 12672.999$$

$$72. \quad \text{Overall site score} = \frac{\sqrt{12672.999}}{\text{item 71}} / 3.464 = 32.498 \approx 32$$

TABLE P-3 (continued)
FTA2 HAZARD WORKSHEET
IRP STAGE 2
SELFIDGE, MICHIGAN

1	7	8	9	10	11	12
CONTAMINANT NAME	DRINKING WATER INTAKE (ug/day)	FOOD INTAKE (ug/day)	TOTAL INTAKE (ug/day)	HEALTH HAZARD QUOTIENT	AQUATIC HAZARD QUOTIENT	TERRESTRIAL HAZARD QUOTIENT
FTA2 GROUNDWATER CONTAMINANT HAZARD						
ALUMINUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
ARSENIC	0	0.0000	0.0000	0.0000	0.0000	0.0000
BARIUM	630	8.1900	638.1900	4254.6000	0.0217	0.0000
BENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
BUTYLBENZYLPHTHALATE	0	0.0000	0.0000	0.0000	0.0000	0.0000
CADMIUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
CHROMIUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
COPPER	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,4- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,3- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1- DICHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRANS-1,2- DICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DICHLOROFLUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DIETHYLPHTHALATE	0	0.0000	0.0000	0.0000	0.0000	0.0000
2,4- DIMETHYLPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
ETHYLBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
IRON	298	96.8500	394.8500	2.6323	0.3725	0.0298
LEAD	0	0.0000	0.0000	0.0000	0.0000	0.0000
MANGANESE	830	1079.0000	1909.0000	7636.0000	1.1857	2.0750
METHYLENE CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
NAPHTHALENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
NICKEL	114	37.0500	151.0500	0.5810	0.0518	0.2850
4- NITROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PENTACHLOROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PET HYDRO (ASSUME JP-4)	2000	780.0000	2780.0000	213.8462	0.0347	0.0000
PET HYDRO (ASSUME MOTOR OIL)	0	0.0000	0.0000	0.0000	0.0000	0.0000
PHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
SILVER	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1,2,2- TETRACHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TOLUENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROFLUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
VINYL CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
XYLENES	0	0.0000	0.0000	0.0000	0.0000	0.0000
ZINC	0	0.0000	0.0000	0.0000	0.0000	0.0000

SUMS =

Col 7 = (col 2) x (2 L/day)
Col 8 = (col 2) x (col 6) x (0.0065 kg/day)
Col 9 = (col 7) + (col 8)
Col 10 = (col 9) / (col 3)
Col 11 = (col 2) / (col 4)
Col 12 = (col 2) / (col 5)

12107.6594
4.0831

1.6665
0.2218

2.3898
0.3784

TABLE P-3
FTA2 HAZARD WORKSHEET
IRP STAGE 2
SELFIDGE, MICHIGAN

1 CONTAMINANT NAME	2 CONCENTRATION (ug/L)	3 HEALTH EFFECTS BENCHMARK (ug/day)	4 AQUATIC EFFECTS BENCHMARK (ug/L)	5 TERRESTRIAL EFFECTS BENCHMARK (ug/L)	6 BIOACCUMULATION FACTOR (L/KG)
FTA2 GROUNDWATER CONTAMINANT HAZARD					
ALUMINUM		3		5000	
ARSENIC		0.04	360	100	280
BARIUM	315	0.15	14500		4
BENZENE		30	5300		32
BUTYLBENZYLPHTHALATE		10000	1700		660
CADMIUM		20	0.66	10	50
CHROMIUM		0.016	16	100	200
COPPER		2000	9.2	200	210
1,4- DICHLOROBENZENE		460	1120		690
1,3- DICHLOROBENZENE		460	2850		740
1,1- DICHLOROETHANE		15	118000		14
TRANS-1,2- DICHLOROETHENE		2.6	135000		7.2
DICHLOROFLUOROMETHANE		116	11000		8
DIETHYLPHTHALATE		10000	52100		120
2,4- DIMETHYLPHENOL		9.6	2120		150
ETHYLBENZENE		2200	32000		290
IRON	149	150	400	5000	100
LEAD		100	34	5000	300
MANGANESE	415	0.25	350	200	400
METHYLENE CHLORIDE		4	193000		4.4
NAPHTHALENE		280	2300	200	430
NICKEL	57	260	1100		100
4- NITROPHENOL		0.7	8280		
PENTACHLOROPHENOL		280	55		
PET HYDRO (ASSUME JP-4)		13	28800	37300	780
PET HYDRO (ASSUME MOTOR OIL)	1000	61.9			120
PHENOL		6800	10000		1.7
SILVER		20	1.2		2
1,1,2,2- TETRACHLOROETHANE		10	9320		7.9
TETRACHLOROETHENE		4	5280		44
TOLUENE		24	17500		83
TRICHLOROETHENE		42	45000		17
TRICHLOROFLUOROMETHANE		11	11000		74
VINYL CHLORIDE		1000	381000		7.2
XYLENES		16	13500		320
ZINC		10000	180	2000	1000

Col 7 = (col 2) x (2 L/day)
Col 8 = (col 2) x (col 6) x (0.0065 kg/day)
Col 9 = (col 7) + (col 8)
Col 10 = (col 9) / (col 3)
Col 11 = (col 2) / (col 4)
Col 12 = (col 2) / (col 5)

TABLE P-4
FTA2 HAZARD WORKSHEET
IRP STAGE 2
SELFRIIDGE, MICHIGAN

1 CONTAMINANT NAME	2 CONCENTRATION (ug/L)	3 HEALTH EFFECTS BENCHMARK (ug/day)	4 AQUATIC EFFECTS BENCHMARK (ug/L)	5 TERRESTRIAL EFFECTS BENCHMARK (ug/L)	6 BIOACCUMULATION FACTOR (L/KG)
FTA2 SURFACE WATER CONTAMINANT HAZARD					
ALUMINUM	9440	3		5000	280
ARSENIC	26	0.04	360	100	4
BARIUM	163	0.15	14500		32
BENZENE		30	5300		660
BUTYLBENZYLPHTHALATE		10000	1700		50
CADMIUM		20	0.66	10	200
CHROMIUM		0.016	16	100	210
COPPER	34	2000	9.2	200	690
1,4- DICHLOROBENZENE		460	1120		740
1,3- DICHLOROBENZENE		460	2850		14
1,1- DICHLOROETHANE		15	118000		7.2
TRANS-1,2- DICHLOROETHENE		2.6	135000		8
DICHLOROFLUOROMETHANE		116	11000		120
DIETHYLPHTHALATE		10000	52100		150
DIMETHYLPHENOL		9.6	2120		290
ETHYLBENZENE		2200	32000		100
IRON	34800	150	400	5000	300
LEAD	170	100	34	5000	400
MANGANESE	6020	0.25	350	200	4.4
METHYLENE CHLORIDE	390	4	193000		430
NAPHTHALENE		280	2300	200	100
NICKEL	41	260	1100		780
4- NITROPHENOL		0.7	8280	37300	120
PENTACHLOROPHENOL		280	55		1.7
PET. HYDRO (ASSUME JP-4)		13	28800		2
PET HYDRO (ASSUME MOTOR OIL)	2000	61.9			7.9
PHENOL		6800	10000		44
SILVER		20	1.2		83
1,1,2,2- TETRACHLOROETHANE		10	9320		17
TETRACHLOROETHENE		4	5280		74
TOLUENE	44	24	17500		7.2
TRICHLOROETHENE		42	45000		320
TRICHLOROFLUOROMETHANE		11	11000		1000
VINYL CHLORIDE		1000	381000		
XYLENES		16	13500		
ZINC	185	10000	180	2000	

Col 7 = (col 2) x (2 L/day)
Col 8 = (col 2) x (col 6) x (0.0065 kg/day)
Col 9 = (col 7) + (col 8)
Col 10 = (col 9) / (col 3)
Col 11 = (col 2) / (col 4)
Col 12 = (col 2) / (col 5)

TABLE P-4 (CONTINUED)
 FTA2 HAZARD WORKSHEET
 IRP STAGE 2
 SELFIDGE, MICHIGAN

1	7	8	9	10	11	12
CONTAMINANT NAME	DRINKING WATER INTAKE (ug/day)	FOOD INTAKE (ug/day)	TOTAL INTAKE (ug/day)	HEALTH HAZARD QUOTIENT	AQUATIC HAZARD QUOTIENT	TERRESTRIAL HAZARD QUOTIENT
FTA2 SURFACE WATER CONTAMINANT HAZARD						
ALUMINUM	18880	0.0000	18880.0000	6293.3333	0.0000	1.8880
ARSENIC	52	47.3200	99.3200	2483.0000	0.0722	0.2600
BARIUM	326	4.2380	330.2380	2201.5867	0.0112	0.0000
BENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
BUTYLBENZYLPHTHALATE	0	0.0000	0.0000	0.0000	0.0000	0.0000
CADMIUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
CHROMIUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
COPPER	68	46.4100	114.4100	0.0572	3.6957	0.1700
1,4- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,3- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1- DICHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRANS-1,2- DICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DICHLOROFLUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DIETHYLPHTHALATE	0	0.0000	0.0000	0.0000	0.0000	0.0000
2,4- DIMETHYLPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
ETHYLBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
IRON	69600	22620.0000	92220.0000	614.8000	87.0000	6.9600
LEAD	340	331.5000	671.5000	6.7150	5.0000	0.0340
MANGANESE	12040	15652.0000	27692.0000	110768.0000	17.2000	30.1000
METHYLENE CHLORIDE	780	11.1540	791.1540	197.7885	0.0020	0.0000
NAPHTHALENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
NICKEL	82	26.6500	108.6500	0.4179	0.0373	0.2050
4- NITROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PENTACHLOROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PET HYDRO (ASSUME JP-4)	4000	1560.0000	5560.0000	427.6923	0.0694	0.0000
PET HYDRO (ASSUME MOTOR OIL)	0	0.0000	0.0000	0.0000	0.0000	0.0000
PHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
SILVER	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1,2,2- TETRACHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TETRACHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TOLUENE	88	23.7380	111.7380	4.6558	0.0025	0.0000
TRICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROFLUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
VINYL CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
XYLENES	0	0.0000	0.0000	0.0000	0.0000	0.0000
ZINC	370	1202.5000	1572.5000	0.1573	1.0278	0.0925

Col 7 = (col 2) x (2 L/day)
 Col 8 = (col 2) x (col 6) x (0.0065 kg/day)
 Col 9 = (col 7) + (col 8)
 Col 10 = (col 9) / (col 3)
 Col 11 = (col 2) / (col 4)
 Col 12 = (col 2) / (col 5)

SUMS = 122998.2039
 LOG OF SUMS = 5.0899

114.1181
 2.0574
 39.7095
 1.5989

Fire Training Area-1 (FTA-1)
Defense Priority Model
List of Comments Used to Justify Scoring

<u>Item Number</u>	<u>Comment</u>
1.	No surface water samples were collected at this site. Score as 0 and proceed to questions #2-9.
2.	Closest surface water body is the Clinton River. It is located approximately 1 mile 950 feet to the south. Surface drainage from the site could flow in that direction via drainage ditches and empty into the river. Score as 3.
3.	Net precipitation: It was determined from base weather detachment records that the annual average precipitation received at the base is approximately 28.9 inches. Based on the DPM map the mean annual lake evaporation is 30 inches. Net precipitation would be -1.1 inches. Score as 1.
4.	Characterize soil erosion potential at site as <u>slight</u> . Slopes are less than 2%. The site is not in a depression so it would not be classified as a category one. No visible rills or gullies. Score as 1.
5.	Based on the DPM map, Figure 4, the 1-year 24-hour rainfall is approximately 2 inches for the Selfridge ANGB area. Score as 1.
6.	Estimated surface permeability is based on hydraulic conductivity values for the site. These values are in the range of 10^{-3} to 10^{-4} cm/sec. Estimate that soils are approximately 15-30% clay. Score as 1.
9.	The FTA-1 site and the base are not defined for flood potential on the insurance flood plain maps. Assume base is protected by dikes and embankments from flooding by Lake St. Clair or the Clinton River. Little to no flood potential. Score as 0.
11.	The former fire training area is covered, but may not be adequately covered. No runoff or runoff provisions at the site. Runoff would not be collected and treated. Score as 1.

13. Contaminants were detected in the groundwater. Score as 100.
21. The FTA-1 area is covered, but not by an engineered cover. No runoff or runoff provisions at the site. No evidence that the site was cleaned up upon its abandonment. Score as 1.
23. No surface water samples were collected at this site. Therefore, proceed to answer questions #29-32 in order to score the surface water contaminant hazard.
29. Petroleum hydrocarbons are known to be found at the site based on past activity. They were used in fire training exercises and were also detected in the groundwater. The petroleum hydrocarbons human health benchmark equals 13. Log base 10 is 1. The bioaccumulation factor for petroleum hydrocarbons is 120. Log base 10 of this is 2.079. The score was determined from Table 6 in the DPM. Score as 3.
31. Determined the ecological hazard index for petroleum hydrocarbons. The aquatic effects benchmark is 28,800 for petroleum hydrocarbons (assume JP-4). Log base 10 of 28,800 is 4.459. The score was determined from Table 7 in the DPM. Score as 1.
43. No drinking water is known to be obtained from groundwater or surface water sources within three miles of the site. The city water intake is greater than 3 miles from FTA-1. No surface water would be effected. Score as 0.
44. Surface water use of Lake St. Clair and the Clinton River, the nearest surface water bodies, would be for fishing. Possible that water fowl living in these areas would be affected. The city water intake is more than three miles away. Score as 2.
45. Population within 1,000 ft. of site would be approximately 26 to 100. These include base people at the guard house by Joy Gate, buildings located north and south of site, ground maintenance people and security working around the site. This figure also included an estimate

of people working in warehouses west of the site. Score as 2.

- 46. The distance to the nearest base boundary is approximately 600 ft. Score as 3.
- 47. Land use within one mile of site is dominantly residential with some commercial warehouses and light industry. Score as 3.
- 50. The downslope area where surface water from the site would travel is the Clinton River. This is in the category of a permanent stream. Score as 1.
- 51. No critical environments are known to occur within one mile of the site. Score as 0.
- 54. No known wells are being used to supply groundwater within one mile of the site. Therefore, no contaminants from the site would be affecting a drinking water source. Also, upward gradients exist at base. Score as 0.
- 55. Groundwater would not reach a surface water body in less than 100 years. Even if the stormwater system intercepted it, the time required is more than 100 years. The closest storm sewer in the direction of groundwater flow (NE) is approximately 1,800 feet away. Based on the calculated groundwater flow velocity, it would take more than 100 years to reach the storm sewer. Thus, no surface water would be effected in less than 100 years. Score as 0.
- 56. No use of groundwater occurs at the FTA-1 site or within one mile. The city supplies drinking water to the based and the surrounding area. Score as 0.
- 57. No known population would be affected because groundwater is not being used at the site or downgradient of it. Surface water is obtained for drinking at an intake greater than three miles from the site. This source would not be affected. Thus, no population is at risk. Score as 0.
- 58. See question 45. Population is considered to be a daytime population. It is estimated to be approximately 26 to 100 people. Score as 2.

- 59. Distance to nearest base boundary is approximately 600 feet. Score as 3.
- 62. See question 55. Based on the fastest travel time it would take more than 100 years. Score as 0.
- 63. The Clinton River would most likely receive any groundwater from the site. This would be groundwater intercepted by the storm drainage system and discharged to the river. Score as 1.
- 64. No known critical environments occur within one mile of the site. Score as 0.

Site identification: Fire Training Area - 1 (Site 03) - FTA-1

SURFACE WATER PATHWAYS

	<u>Score</u> (circle one)	<u>Multiplier</u>	<u>Product</u> (score x mult.)	<u>Max.</u> <u>score</u>
<u>Observed releases</u>				
1. Have contaminants been detected in surface water? If yes, assign score of 100 and proceed to item 10. If no, assign score of 0 and proceed to item 2.	① 100	1	<u>0</u>	100
<u>Pathway characteristics</u>				
2. Distance to nearest surface water	0 1 2 ③	4	<u>12</u>	12
3. Net precipitation	0 ① 2 3	1	<u>1</u>	3
4. Surface erosion potential	0 ① 2 3	4	<u>4</u>	12
5. Rainfall intensity	0 ① 2 3	4	<u>4</u>	12
6. Surface permeability	0 ① 2 3	3	<u>3</u>	9
7. Sum of items 2 through 6			<u>24</u>	48
8. Normalized score (multiply item 7 x 100/48)			<u>50</u>	
9. Flooding potential	① 1 2 3	8	<u>0</u>	24
10. Adjusted pathways score If item 1 is 100, enter 100. If item 1 is 0, enter sum of items 8 and 9. If sum exceeds 100, enter 100.			<u>50</u>	
11. Waste containment effectiveness factor (Table 2)			<u>1.0</u>	
12. Final score for surface water pathways (multiply item 10 x item 11)			<u>50</u>	

COMMENTS ON SURFACE WATER PATHWAYS

All comments are presented on the typed pages following the
scoring sheets for the FTA-1

Prepared by Jon D. Alkinder 9 Dec '88 Checked by RHG 12/19/88

Site identification: FTA-1

GROUNDWATER PATHWAYS

	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
<u>Observed releases</u>				
13. Have contaminants been detected in groundwater? If yes, assign score of 100 and proceed to item 20. If no, assign score of 0 and proceed to item 14.	0 (100)	1	<u>100</u>	100
<u>Pathway characteristics</u>				
14. Depth to seasonal high groundwater from base of waste or contaminated zone	0 1 2 3	9	_____	27
15. Permeability of the unsaturated zone	0 1 2 3	5	_____	15
16. Infiltration potential	0 1 2 3	5	_____	15
17. Sum of items 14 through 16			_____	57
18. Normalized score (multiply item 17 x 100/57)			_____	
19. Potential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table	0 1 2 3	5	_____	15
20. Adjusted pathways score. If item 13 is 100, enter 100. If item 13 is 0, enter sum of items 18 and 19. If sum exceeds 100, enter 100.			<u>100</u>	
21. Waste containment effectiveness factor (Table 5)			<u>1.0</u>	
22. Final score for groundwater pathways (multiply item 20 x item 21)			<u>100</u>	

COMMENTS ON GROUNDWATER PATHWAYS

Site identification: FTA-1

CONTAMINANT HAZARD -- SURFACE WATER

If contaminants have been detected in surface water (score of 100 in item 1), complete items 23 through 28. If contaminants have not been detected (score of 0 in item 1), complete items 29 through 32. Attach Hazard Worksheet or list of contaminants, as appropriate.

	<u>Score</u> (circle one)	<u>Result</u>	<u>Logarithm</u> (base 10)
23. Sum of human health hazard quotients (from column 10 of Hazard Worksheet)		<u>0</u>	
24. Human health hazard score	0 1 2 4 6		
25. Normalized human health hazard score (multiply item 24 x 100/6)			
26. Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)			
27. Ecological hazard score	0 1 2 3 4 5 6		
28. Normalized ecological hazard score (multiply item 27 x 100/6)			
29. Maximum human health hazard index	0 1 2 <u>3</u> 4 5 6 7 8 9	Contaminant: <u>Petroleum Hydro-</u> <u>carbons</u>	
30. Normalized human health hazard score (multiply item 29 x 100/9)		<u>33.333</u>	
31. Maximum ecological hazard index	0 <u>1</u> 2 4 6	Contaminant: <u>Petroleum Hydro-</u> <u>carbons</u>	
32. Normalized ecological hazard score (multiply item 31 x 100/6)		<u>16.667</u>	

CONTAMINANT HAZARD -- GROUNDWATER

If contaminants have been detected in groundwater (score of 100 in item 13), complete items 33 through 38. If contaminants have not been detected (score of 0 in item 13), complete items 39 through 42. Attach Hazard Worksheet or list of contaminants, as appropriate.

33. Sum of human health hazard quotients (from column 10 of Hazard Worksheet)		<u>7987.0287</u>	<u>3.9024</u>
34. Human health hazard score	0 1 2 4 <u>6</u>		
35. Normalized human health hazard score (multiply item 34 x 100/6)		<u>100</u>	
36. Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)		<u>2.5073</u>	<u>0.3992</u>
37. Ecological hazard score	0 1 2 <u>3</u> 4 5 6		
38. Normalized ecological hazard score (multiply item 37 x 100/6)		<u>50</u>	
39. Maximum human health hazard index	0 1 2 3 4 5 6 7 8 9	Contaminant: _____	
40. Normalized human health hazard score (multiply item 39 x 100/9)		_____	
41. Maximum ecological hazard index	0 1 2 4 6	Contaminant: _____	
42. Normalized ecological hazard score (multiply item 41 x 100/6)		_____	

Site identification: FTA-1

HUMAN HEALTH RECEPTORS -- SURFACE WATER PATHWAY

	<u>Score</u> (circle one)	<u>Multiplier</u>	<u>Product</u> (score x mult.)	<u>Max.</u> <u>score</u>
43. Population that obtains drinking water from potentially affected surface water body(ies) within 3 miles (4.8 km) downstream	① 1 2 3	3	<u>0</u>	9
44. Water use of nearest surface water body(ies)	0 1 ② 3	3	<u>6</u>	9
45. Population within 1000 ft (305 m) of the site	0 1 ② 3	1	<u>2</u>	3
46. Distance to the nearest installation boundary	0 1 2 ③	1	<u>3</u>	3
47. Land use and/or zoning within 1 mile (1.6 km) of the site	0 1 2 ③	1	<u>3</u>	3
48. Sum of items 43 through 47			<u>14</u>	27
49. Final score for human health receptors on surface water pathways (multiply item 48 x 100/27)			<u>51.852</u>	

ECOLOGICAL RECEPTORS -- SURFACE WATER PATHWAYS

50. Importance/sensitivity of biota/habitats in potentially affected surface water bodies nearest the site	0 ① 2 3	5	<u>5</u>	15
51. Presence of "critical environments" within 1 mile (1.6 km) of the site	① 3	1	<u>0</u>	3
52. Sum of items 50 and 51			<u>5</u>	18
53. Final score for ecological receptors on surface water pathways (multiply item 52 x 100/18)			<u>27.778</u>	

COMMENTS ON SURFACE WATER RECEPTORS

Site identification: FTA-1

HUMAN HEALTH RECEPTORS -- GROUNDWATER PATHWAY

	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
54. Estimated mean groundwater travel time from current waste location to nearest downgradient water supply well(s)	① 1 2 3	9	<u>0</u>	27
55. Estimated mean groundwater travel time from current waste location to any downgradient surface water body that supplies water for domestic use or for food chain agriculture	① 1 2 3	5	<u>0</u>	15
56. Groundwater use of the uppermost aquifer	① 1 2 3	4	<u>0</u>	12
57. Population potentially at risk from groundwater contamination	① 6 9 12 18 24 27 36	1	<u>0</u>	36
58. Population within 1000 ft (305 m) of the site	0 1 ② 3	1	<u>2</u>	3
59. Distance to the nearest installation boundary	0 1 2 ③	1	<u>3</u>	3
60. Sum of items 54 through 59			<u>5</u>	96
61. Final score for human health receptors on groundwater pathways (multiply item 60 x 100/96)			<u>5.208</u>	

ECOLOGICAL RECEPTORS -- GROUNDWATER PATHWAYS

62. Estimated mean groundwater travel time from current waste location to any downgradient habitat or natural area	① 1 2 3	3	<u>0</u>	9
63. Importance/sensitivity of downgradient biota/habitats that are confirmed or suspected groundwater discharge points	0 ① 2 3	3	<u>3</u>	9
64. Presence of "critical environments" within 1 mile (1.6 km) of the site	① 3	1	<u>0</u>	3
65. Sum of items 62 through 64			<u>3</u>	21
66. Final score for ecological receptors on groundwater pathways (multiply item 65 x 100/21)			<u>14.286</u>	

COMMENTS ON GROUNDWATER RECEPTORS (attach additional pages if needed)

Site identification: FTA-1

SCORING SUMMARY SHEET

	<u>Pathways score</u>		<u>Contaminant hazard score</u>		<u>Receptors score</u>		<u>Overall score</u>
67. Surface water/human health scores	(<u>50</u> item 12	x	<u>33.333</u> item 25/30	x	<u>51.852</u> item 49	) /10,000 =	<u>8.642</u>
68. Surface water/ecological scores	(<u>50</u> item 12	x	<u>16.667</u> item 28/32	x	<u>27.778</u> item 53	) /10,000 =	<u>2.315</u>
69. Groundwater/human health scores	(<u>100</u> item 22	x	<u>100</u> item 35/40	x	<u>5.208</u> item 61	) /10,000 =	<u>5.208</u>
70. Groundwater/ecological scores	(<u>100</u> item 22	x	<u>50</u> item 38/42	x	<u>14.286</u> item 66	) /10,000 =	<u>7.143</u>

OVERALL SITE SCORE:

$$71. \left(\frac{8.642}{\text{item 67}} \right)^2 \times 5 + \left(\frac{2.315}{\text{item 68}} \right)^2 + \left(\frac{5.208}{\text{item 69}} \right)^2 \times 5 + \left(\frac{7.143}{\text{item 70}} \right)^2 = 565.418$$

$$72. \text{Overall site score} = \sqrt{\frac{565.418}{\text{item 71}}} \times 3.464 = \underline{6.864} \approx 7$$

TABLE P-5
FTA1 HAZARD WORKSHEET
IRP STAGE 2
SELFIDGE, MICHIGAN

1 CONTAMINANT NAME	2 CONCENTRATION (ug/L)	3 HEALTH EFFECTS BENCHMARK (ug/day)	4 AQUATIC EFFECTS BENCHMARK (ug/L)	5 TERRESTRIAL EFFECTS BENCHMARK (ug/L)	6 BIOACCUMULATION FACTOR (L/KG)
FTA1 GROUNDWATER CONTAMINANT HAZARD					
ALUMINUM		3		5000	280
ARSENIC		0.04	360	100	4
BARIUM	68	0.15	14500		32
BENZENE		30	5300		660
BUTYLBENZYLPHTHALATE		10000	1700		50
CADMIUM		20	0.66	10	200
CHROMIUM		0.016	16	100	210
COPPER		2000	9.2	200	690
1,4- DICHLOROBENZENE		460	1120		740
1,3- DICHLOROBENZENE		460	2850		14
1,1- DICHLOROETHANE		15	118000		7.2
TRANS-1,2- DICHLOROETHENE		2.6	135000		8
DICHLOROFLUOROMETHANE		116	11000		120
DIETHYLPHTHALATE		10000	52100		150
2,4- DIMETHYLPHENOL		9.6	2120		290
ETHYLBENZENE		2200	32000		100
IRON	562	150	400	5000	300
LEAD		100	34	5000	400
MANGANESE	372	0.25	350	200	4.4
METHYLENE CHLORIDE		4	193000		430
NAPHTHALENE		280	2300		100
NICKEL		260	1100		
4- NITROPHENOL		0.7	8280		
PENTACHLOROPHENOL		280	55		
PET HYDRO (ASSUME JP-4)	1000	13	28800	37300	780
PET HYDRO (ASSUME MOTOR OIL)		61.9			120
PHENOL		6800	10000		1.7
SILVER		20	1.2		2
1,1,2,2- TETRACHLOROETHANE		10	9320		7.9
TETRACHLOROETHENE		4	5280		44
TOLUENE		24	17500		83
TRICHLOROETHENE		42	45000		17
TRICHLOROFLUOROMETHANE		11	11000		74
VINYL CHLORIDE		1000	381000		7.2
XYLENES		16	13500		320
ZINC		10000	180	2000	1000

Col 7 = (col 2) x (2 L/day)
Col 8 = (col 2) x (col 6) x (0.0065 kg/day)
Col 9 = (col 7) + (col 8)
Col 10 = (col 9) / (col 3)
Col 11 = (col 2) / (col 4)
Col 12 = (col 2) / (col 5)

TABLE P-5 (continued)
FTA1 HAZARD WORKSHEET
IRP STAGE 2
SELEFRIDGE, MICHIGAN

1	7	8	9	10	11	12
CONTAMINANT NAME	DRINKING WATER INTAKE (ug/day)	FOOD INTAKE (ug/day)	TOTAL INTAKE (ug/day)	HEALTH HAZARD QUOTIENT	AQUATIC HAZARD QUOTIENT	TERRESTRIAL HAZARD QUOTIENT
FTA1 GROUNDWATER CONTAMINANT HAZARD						
ALUMINUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
ARSENIC	0	0.0000	0.0000	0.0000	0.0000	0.0000
BARIUM	136	1.7680	137.7680	918.4533	0.0047	0.0000
BENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
BUTYLBENZYLPHTHALATE	0	0.0000	0.0000	0.0000	0.0000	0.0000
CADMIUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
CHROMIUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
COPPER	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,4- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,3- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1- DICHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRANS-1,2- DICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DICHLOROFLUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DIETHYLPHTHALATE	0	0.0000	0.0000	0.0000	0.0000	0.0000
2,4- DIMETHYLPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
ETHYLBENZENE	1124	365.3000	1489.3000	9.9287	1.4050	0.1124
IRON	0	0.0000	0.0000	0.0000	0.0000	0.0000
LEAD	744	967.2000	1711.2000	6844.8000	1.0629	1.8600
MANGANESE	0	0.0000	0.0000	0.0000	0.0000	0.0000
METHYLENE CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
NAPHTHALENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
NICKEL	0	0.0000	0.0000	0.0000	0.0000	0.0000
4- NITROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PENTACHLOROPHENOL	2000	780.0000	2780.0000	213.8462	0.0347	0.0000
PET HYDRO (ASSUME JP-4)	0	0.0000	0.0000	0.0000	0.0000	0.0000
PET HYDRO (ASSUME MOTOR OIL)	0	0.0000	0.0000	0.0000	0.0000	0.0000
PHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
SILVER	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1,2,2- TETRACHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TETRACHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TOLUENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROFLUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
VINYL CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
XYLENES	0	0.0000	0.0000	0.0000	0.0000	0.0000
ZINC	0	0.0000	0.0000	0.0000	0.0000	0.0000
SUMS =				7987.0282	2.5073	1.9724
LOG OF SUMS =				3.9024	0.3992	0.2950
Col 7 = (col 2) x (2 L/day)						
Col 8 = (col 2) x (col 6) x (0.0065 kg/day)						
Col 9 = (col 7) + (col 8)						
Col 10 = (col 9) / (col 3)						
Col 11 = (col 2) / (col 4)						
Col 12 = (col 2) / (col 5)						

West Ramp (WRMP)
Defense Priority Model
List of Comments Used to Justify Scoring

<u>Item Number</u>	<u>Comment</u>
1.	Contaminants were detected in the surface water. These contaminants were petroleum hydrocarbons and 1,4-dichlorobenzene. Score as 100.
11.	The WRMP is the site of a fuel spill. Contaminants may possibly be exposed at the surface. There are no provisions for runoff control or treatment at the site. Surface water is removed from the site by the stormwater drainage system. This water may be contaminated. Score as 1.
13.	Contaminants have been detected in the groundwater. These contaminants include petroleum hydrocarbons and benzene. Score as 100.
21.	No provisions for containment or treatment of contaminated groundwater at the site. Score as 1.
23-42	Scoring of these questions is based on contaminants detected and the hazard scoring tables for the WRMP.
43.	No surface water within three miles of site is used as a drinking water source. The water intake for the city treatment plant is more than 3 miles away. Score as 0.
44.	Surface water is discharged by stormwater drainage system into Lake St. Clair. The public drinking water intake is more than three miles from the site and the point of surface water discharge to the lake. Score as 2.
45.	Population within 1,000 ft. of site is greater than 100. The population includes base personnel working at and around the site, ground maintenance personnel, and base security accessing the site. Score as 3.

46. Distance to the nearest base boundary is approximately 1,300 ft. Score as 3.
47. Land use within one mile of the site is dominantly residential. Score as 3.
50. The closest surface water body that could receive surface water transported contaminants would be Lake St. Clair. This would occur via the stormwater drainage system. Score as 2.
51. No known critical environments occur within one mile of the site. Score as 0.
54. No wells are known to be used for drinking water downgradient of the site. Water is supplied to local residents and the base by the city. Upward gradients exist at the base. Score as 0.
55. Groundwater would be intercepted by the stormwater drainage system. The approximate groundwater travel time to interception is 5-20 years. However, there are no surface water intakes for public drinking water within three miles of the site. Score as 0.
56. No known groundwater is being used beneath the site. No wells are known to produce drinking water because water is supplied by the city. Score as 0.
57. There is no groundwater being used beneath the site. No population uses groundwater from any area that could potentially be contaminated. Water is supplied by the city. Score as 0.
58. A daytime population of more than 100 exists at the site. This population would consist of base personnel, maintenance personnel, and base security working at and around the site. Score as 3.
59. Distance to nearest base boundary is approximately 1,300 ft. Score as 3.
62. Groundwater would be intercepted by stormwater drainage system. This would occur over a period of approximately 11 to 35 years. Score as 2.
63. Groundwater would be discharged to Lake St. Clair. The lake is located less than 3 miles

downgradient from the site. The lake is a managed area for fishing. Score as 2.

64. No known critical environments occur within one mile of the site. Score as 0.

Site identification: West Ramp (Site 04) - WRMP

SURFACE WATER PATHWAYS

	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
<u>Observed releases</u>				
1. Have contaminants been detected in surface water? If yes, assign score of 100 and proceed to item 10. If no, assign score of 0 and proceed to item 2.	0 (100)	1	100	100
<u>Pathway characteristics</u>				
2. Distance to nearest surface water	0 1 2 3	4	_____	12
3. Net precipitation	0 1 2 3	1	_____	3
4. Surface erosion potential	0 1 2 3	4	_____	12
5. Rainfall intensity	0 1 2 3	4	_____	12
6. Surface permeability	0 1 2 3	3	_____	9
7. Sum of items 2 through 6			_____	48
8. Normalized score (multiply item 7 x 100/48)			_____	
9. Flooding potential	0 1 2 3	8	_____	24
10. Adjusted pathways score If item 1 is 100, enter 100. If item 1 is 0, enter sum of items 8 and 9. If sum exceeds 100, enter 100.			100	
11. Waste containment effectiveness factor (Table 2)			1.0	
12. Final score for surface water pathways (multiply item 10 x item 11)			100	

COMMENTS ON SURFACE WATER PATHWAYS

All comments are presented on the typed pages following the scoring sheets for the WRMP

Prepared by Jon D. Illender 9 Dec '88 Checked by RHG 12/9/88

Site identification: WRMP

GROUNDWATER PATHWAYS

	<u>Score</u> (circle one)	<u>Multiplier</u>	<u>Product</u> (score x mult.)	<u>Max.</u> <u>score</u>
<u>Observed releases</u>				
13. Have contaminants been detected in groundwater? If yes, assign score of 100 and proceed to item 20. If no, assign score of 0 and proceed to item 14.	0 (100)	1	<u>100</u>	100
<u>Pathway characteristics</u>				
14. Depth to seasonal high groundwater from base of waste or contaminated zone	0 1 2 3	9	<u> </u>	27
15. Permeability of the unsaturated zone	0 1 2 3	5	<u> </u>	15
16. Infiltration potential	0 1 2 3	5	<u> </u>	15
17. Sum of items 14 through 16			<u> </u>	57
18. Normalized score (multiply item 17 x 100/57)			<u> </u>	
19. Potential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table	0 1 2 3	5	<u> </u>	15
20. Adjusted pathways score. If item 13 is 100, enter 100. If item 13 is 0, enter sum of items 18 and 19. If sum exceeds 100, enter 100.			<u>100</u>	
21. Waste containment effectiveness factor (Table 5)			<u>1.0</u>	
22. Final score for groundwater pathways (multiply item 20 x item 21)			<u>100</u>	

COMMENTS ON GROUNDWATER PATHWAYS

Site identification: WRMP

CONTAMINANT HAZARD -- SURFACE WATER

If contaminants have been detected in surface water (score of 100 in item 1), complete items 23 through 28. If contaminants have not been detected (score of 0 in item 1), complete items 29 through 32. Attach Hazard Worksheet or list of contaminants, as appropriate.

	<u>Score</u> (circle one)	<u>Result</u>	<u>Logarithm</u> (base 10)
23. Sum of human health hazard quotients (from column 10 of Hazard Worksheet)		427.8051	2.6312
24. Human health hazard score	0 1 2 4 (6)		
25. Normalized human health hazard score (multiply item 24 x 100/6)		100	
26. Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)		0.0766	-1.1158
27. Ecological hazard score	0 (1) 2 3 4 5 6		
28. Normalized ecological hazard score (multiply item 27 x 100/6)		16.667	

29. Maximum human health hazard index	0 1 2 3 4 5 6 7 8 9	Contaminant: _____	
30. Normalized human health hazard score (multiply item 29 x 100/9)		_____	
31. Maximum ecological hazard index	0 1 2 4 6	Contaminant: _____	
32. Normalized ecological hazard score (multiply item 31 x 100/6)		_____	

CONTAMINANT HAZARD -- GROUNDWATER

If contaminants have been detected in groundwater (score of 100 in item 13), complete items 33 through 38. If contaminants have not been detected (score of 0 in item 13), complete items 39 through 42. Attach Hazard Worksheet or list of contaminants, as appropriate.

33. Sum of human health hazard quotients (from column 10 of Hazard Worksheet)		427.8395	2.6313
34. Human health hazard score	0 1 2 4 (6)		
35. Normalized human health hazard score (multiply item 34 x 100/6)		100	
36. Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)		0.0698	-1.1560
37. Ecological hazard score	0 (1) 2 3 4 5 6		
38. Normalized ecological hazard score (multiply item 37 x 100/6)		16.667	

39. Maximum human health hazard index	0 1 2 3 4 5 6 7 8 9	Contaminant: _____	
40. Normalized human health hazard score (multiply item 39 x 100/9)		_____	
41. Maximum ecological hazard index	0 1 2 4 6	Contaminant: _____	
42. Normalized ecological hazard score (multiply item 41 x 100/6)		_____	

Site identification: WRMP

HUMAN HEALTH RECEPTORS -- SURFACE WATER PATHWAY

	<u>Score</u> (circle one)	<u>Multiplier</u>	<u>Product</u> (score x mult.)	<u>Max.</u> <u>score</u>
43. Population that obtains drinking water from potentially affected surface water body(ies) within 3 miles (4.8 km) downstream	0 1 2 3	3	<u>0</u>	9
44. Water use of nearest surface water body(ies)	0 1 2 3	3	<u>6</u>	9
45. Population within 1000 ft (305 m) of the site	0 1 2 3	1	<u>3</u>	3
46. Distance to the nearest installation boundary	0 1 2 3	1	<u>3</u>	3
47. Land use and/or zoning within 1 mile (1.6 km) of the site	0 1 2 3	1	<u>3</u>	3
48. Sum of items 43 through 47			<u>15</u>	27
49. Final score for human health receptors on surface water pathways (multiply item 48 x 100/27)			<u>55.556</u>	

ECOLOGICAL RECEPTORS -- SURFACE WATER PATHWAYS

50. Importance/sensitivity of biota/habitats in potentially affected surface water bodies nearest the site	0 1 2 3	5	<u>10</u>	15
51. Presence of "critical environments" within 1 mile (1.6 km) of the site	0 3	1	<u>0</u>	3
52. Sum of items 50 and 51			<u>10</u>	18
53. Final score for ecological receptors on surface water pathways (multiply item 52 x 100/18)			<u>55.556</u>	

COMMENTS ON SURFACE WATER RECEPTORS

Site identification: WRMP

HUMAN HEALTH RECEPTORS -- GROUNDWATER PATHWAY

	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
54. Estimated mean groundwater travel time from current waste location to nearest downgradient water supply well(s)	① 1 2 3	9	<u>0</u>	27
55. Estimated mean groundwater travel time from current waste location to any downgradient surface water body that supplies water for domestic use or for food chain agriculture	① 1 2 3	5	<u>0</u>	15
56. Groundwater use of the uppermost aquifer	① 1 2 3	4	<u>0</u>	12
57. Population potentially at risk from groundwater contamination	① 6 9 12 18 24 27 36	1	<u>0</u>	36
58. Population within 1000 ft (305 m) of the site	0 1 2 ③	1	<u>3</u>	3
59. Distance to the nearest installation boundary	0 1 2 ③	1	<u>3</u>	3
60. Sum of items 54 through 59			<u>6</u>	96
61. Final score for human health receptors on groundwater pathways (multiply item 60 x 100/96)			<u>6.25</u>	

ECOLOGICAL RECEPTORS -- GROUNDWATER PATHWAYS

62. Estimated mean groundwater travel time from current waste location to any downgradient habitat or natural area	0 1 ② 3	3	<u>6</u>	9
63. Importance/sensitivity of downgradient biota/habitats that are confirmed or suspected groundwater discharge points	0 1 ② 3	3	<u>6</u>	9
64. Presence of "critical environments" within 1 mile (1.6 km) of the site	① 3	1	<u>0</u>	3
65. Sum of items 62 through 64			<u>12</u>	21
66. Final score for ecological receptors on groundwater pathways (multiply item 65 x 100/21)			<u>57.143</u>	

COMMENTS ON GROUNDWATER RECEPTORS (attach additional pages if needed)

Site identification: WRMP

SCORING SUMMARY SHEET

	Pathways score		Contaminant hazard score		Receptors score		Overall score
67. Surface water/human health scores	($\frac{100}{\text{item 12}}$)	x	($\frac{100}{\text{item 25/30}}$)	x	($\frac{55.556}{\text{item 49}}$)	/10,000 =	<u>55.556</u>
68. Surface water/ecological scores	($\frac{100}{\text{item 12}}$)	x	($\frac{16.667}{\text{item 28/32}}$)	x	($\frac{55.556}{\text{item 53}}$)	/10,000 =	<u>9.260</u>
69. Groundwater/human health scores	($\frac{100}{\text{item 22}}$)	x	($\frac{100}{\text{item 35/40}}$)	x	($\frac{6.25}{\text{item 61}}$)	/10,000 =	<u>6.25</u>
70. Groundwater/ecological scores	($\frac{100}{\text{item 22}}$)	x	($\frac{16.667}{\text{item 38/42}}$)	x	($\frac{57.143}{\text{item 66}}$)	/10,000 =	<u>9.524</u>

OVERALL SITE SCORE:

$$71. \quad \frac{55.556}{\text{item 67}}^2 \times 5 + \frac{9.260}{\text{item 68}}^2 + \frac{6.25}{\text{item 69}}^2 \times 5 + \frac{9.524}{\text{item 70}}^2 = 15804.112$$

$$72. \quad \text{Overall site score} = \frac{\sqrt{15804.112}}{\text{item 71}} / 3.464 = \underline{36.292} \approx 36$$

TABLE P-6
URMP HAZARD WORKSHEET
IRP STAGE 2
SELFIDGE, MICHIGAN

1 CONTAMINANT NAME	2 CONCENTRATION (ug/L)	3 HEALTH EFFECTS BENCHMARK (ug/day)	4 AQUATIC EFFECTS BENCHMARK (ug/L)	5 TERRESTRIAL EFFECTS BENCHMARK (ug/L)	6 BIOACCUMULATION FACTOR (L/KG)
URMP GROUNDWATER CONTAMINANT HAZARD					
ARSENIC		0.04	360	100	280
BARIUM		0.15	14500		4
BENZENE	2	30	5300		32
BUTYLBENZYLPHTHALATE		10000	1700		660
CADMIUM		20	0.66	10	50
CHROMIUM		0.016	16	100	200
COPPER		2000	9.2	200	210
1,4- DICHLOROBENZENE		460	1120		690
1,3- DICHLOROBENZENE		460	2850		740
1,1- DICHLOROETHANE		15	118000		14
TRANS-1,2- DICHLOROETHENE		2.6	135000		7.2
DICHLOROFLUOROMETHANE		116	11000		8
DIETHYLPHTHALATE		10000	52100		120
2,4- DIMETHYLPHENOL		9.6	2120		150
ETHYLBENZENE		2200	32000		290
LEAD		100	34	5000	300
METHYLENE CHLORIDE		4	193000		4.4
NAPHTHALENE		280	2300		430
NICKEL		260	1100	200	100
4- NITROPHENOL		0.7	8280		
PENTACHLOROPHENOL		280	55	37300	780
PET HYDRO (ASSUME JP-4)	2000	13	28800		120
PET HYDRO (ASSUME MOTOR OIL)		61.9			
PHENOL		6800	10000		1.7
SILVER		20	1.2		2
1,1,2,2- TETRACHLOROETHANE		10	9320		7.9
TETRACHLOROETHENE		4	5280		44
TOLUENE		24	17500		83
TRICHLOROETHENE		42	45000		17
TRICHLOROFLUOROMETHANE		11	11000		74
VINYL CHLORIDE		1000	381000		7.2
XYLENES		16	13500		320
ZINC		10000	180	2000	1000

Col 7 = (col 2) x (2 L/day)
Col 8 = (col 2) x (col 6) x (0.0065 kg/day)
Col 9 = (col 7) + (col 8)
Col 10 = (col 9) / (col 3)
Col 11 = (col 2) / (col 4)
Col 12 = (col 2) / (col 5)

TABLE P-6 (continued)
WRMP HAZARD WORKSHEET
IRP STAGE 2
SELFIDGE, MICHIGAN

1	7	8	9	10	11	12
CONTAMINANT NAME	DRINKING WATER INTAKE (ug/day)	FOOD INTAKE (ug/day)	TOTAL INTAKE (ug/day)	HEALTH HAZARD QUOTIENT	AQUATIC HAZARD QUOTIENT	TERRESTRIAL HAZARD QUOTIENT
WRMP GROUNDWATER CONTAMINANT HAZARD						
ARSENIC	0	0.0000	0.0000	0.0000	0.0000	0.0000
BARIUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
BENZENE	4	0.4160	4.4160	0.1472	0.0004	0.0000
BUTYLBENZYLPHTHALATE	0	0.0000	0.0000	0.0000	0.0000	0.0000
CADMIUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
CHROMIUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
COPPER	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,4- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,3- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1- DICHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRANS-1,2- DICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DICHLOROFLUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DIETHYLPHTHALATE	0	0.0000	0.0000	0.0000	0.0000	0.0000
2,4- DIMETHYLPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
ETHYLBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
LEAD	0	0.0000	0.0000	0.0000	0.0000	0.0000
METHYLENE CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
NAPHTHALENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
NICKEL	0	0.0000	0.0000	0.0000	0.0000	0.0000
4- NITROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PENTACHLOROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PET HYDRO (ASSUME JP-4)	4000	1560.0000	5560.0000	427.6923	0.0694	0.0000
PET HYDRO (ASSUME MOTOR OIL)	0	0.0000	0.0000	0.0000	0.0000	0.0000
PHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
SILVER	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1,2,2- TETRACHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TETRACHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TOLUENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROFLUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
VINYL CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
XYLENES	0	0.0000	0.0000	0.0000	0.0000	0.0000
ZINC	0	0.0000	0.0000	0.0000	0.0000	0.0000
Col 7 = (col 2) x (2 L/day)			SUMS =	427.8395	0.0698	0.0000
Col 8 = (col 2) x (col 6) x (0.0065 kg/day)			LOG OF SUMS =	2.6313	-1.1560	ERR
Col 9 = (col 7) + (col 8)						
Col 10 = (col 9) / (col 3)						
Col 11 = (col 2) / (col 4)						
Col 12 = (col 2) / (col 5)						

TABLE P-7
WRMP HAZARD WORKSHEET
IRP STAGE 2
SELFRIIDGE, MICHIGAN

1	2	3	4	5	6
CONTAMINANT NAME	CONCENTRATION (ug/L)	HEALTH EFFECTS BENCHMARK (ug/day)	AQUATIC EFFECTS BENCHMARK (ug/L)	TERRESTRIAL EFFECTS BENCHMARK (ug/L)	BIOACCUMULATION FACTOR (L/KG)
URMP SURFACE WATER CONTAMINANT HAZARD					
ARSENIC		0.04	360	100	280
BARIUM		0.15	14500		4
BENZENE		30	5300		32
BUTYLBENZYLPHTHALATE		10000	1700		660
CADMIUM		20	0.66	10	50
CHROMIUM		0.016	16	100	200
COPPER		2000	9.2	200	210
1,4- DICHLOROBENZENE	8	460	1120		690
1,3- DICHLOROBENZENE		460	2850		740
1,1- DICHLOROETHANE		15	118000		14
TRANS-1,2- DICHLOROETHENE		2.6	135000		7.2
DICHLOROFLUOROMETHANE		116	11000		8
DIETHYLPHTHALATE		10000	52100		120
2,4- DIMETHYLPHENOL		9.6	2120		150
ETHYLBENZENE		2200	32000		290
LEAD		100	34	5000	300
METHYLENE CHLORIDE		4	193000		4.4
NAPHTHALENE		280	2300		430
NICKEL		260	1100	200	100
4- NITROPHENOL		0.7	8280		
PENTACHLOROPHENOL		280	55	37300	780
PET HYDRO (ASSUME JP-4)	2000	13	28800		120
PET HYDRO (ASSUME MOTOR OIL)		61.9			
PHENOL		6800	10000		1.7
SILVER		20	1.2		2
1,1,2,2- TETRACHLOROETHANE		10	9320		7.9
TETRACHLOROETHENE		4	5280		44
TOLUENE		24	17500		83
TRICHLOROETHENE		42	45000		17
TRICHLOROFLUOROMETHANE		11	11000		74
VINYL CHLORIDE		1000	381000		7.2
XYLENES.		16	13500		320
ZINC		10000	180	2000	1000

Col 7 = (col 2) x (2 L/day)
Col 8 = (col 2) x (col 6) x (0.0065 kg/day)
Col 9 = (col 7) + (col 8)
Col 10 = (col 9) / (col 3)
Col 11 = (col 2) / (col 4)
Col 12 = (col 2) / (col 5)

TABLE P-7 (continued)
WRMP HAZARD WORKSHEET
IRP STAGE 2
SELFRIIDGE, MICHIGAN

1	2	3	4	5	6	7	8	9	10	11	12
CONTAMINANT NAME	URMP SURFACE WATER	HAZARD	DRINKING WATER INTAKE (ug/day)	FOOD INTAKE (ug/day)	TOTAL INTAKE (ug/day)	HEALTH HAZARD QUOTIENT	AQUATIC HAZARD QUOTIENT	TERRESTRIAL HAZARD QUOTIENT			
ARSENIC			0	0.0000	0.0000	0.0000	0.0000	0.0000			
BARIUM			0	0.0000	0.0000	0.0000	0.0000	0.0000			
BENZENE			0	0.0000	0.0000	0.0000	0.0000	0.0000			
BUTYLBENZYLPHTHALATE			0	0.0000	0.0000	0.0000	0.0000	0.0000			
CADMIUM			0	0.0000	0.0000	0.0000	0.0000	0.0000			
CHROMIUM			0	0.0000	0.0000	0.0000	0.0000	0.0000			
COPPER			0	0.0000	0.0000	0.0000	0.0000	0.0000			
1,4- DICHLOROBENZENE			16	35.8800	51.8800	0.1128	0.0071	0.0000			
1,3- DICHLOROBENZENE			0	0.0000	0.0000	0.0000	0.0000	0.0000			
1,1- DICHLOROETHANE			0	0.0000	0.0000	0.0000	0.0000	0.0000			
TRANS-1,2- DICHLOROETHENE			0	0.0000	0.0000	0.0000	0.0000	0.0000			
DICHLOROFLUOROMETHANE			0	0.0000	0.0000	0.0000	0.0000	0.0000			
DIETHYLPHTHALATE			0	0.0000	0.0000	0.0000	0.0000	0.0000			
2,4- DIMETHYLPHENOL			0	0.0000	0.0000	0.0000	0.0000	0.0000			
ETHYLBENZENE			0	0.0000	0.0000	0.0000	0.0000	0.0000			
LEAD			0	0.0000	0.0000	0.0000	0.0000	0.0000			
METHYLENE CHLORIDE			0	0.0000	0.0000	0.0000	0.0000	0.0000			
NAPHTHALENE			0	0.0000	0.0000	0.0000	0.0000	0.0000			
NICKEL			0	0.0000	0.0000	0.0000	0.0000	0.0000			
4- NITROPHENOL			0	0.0000	0.0000	0.0000	0.0000	0.0000			
PENTACHLOROPHENOL			0	0.0000	0.0000	0.0000	0.0000	0.0000			
PET HYDRO (ASSUME JP-4)			4000	1560.0000	5560.0000	427.6923	0.0694	0.0000			
PET HYDRO (ASSUME MOTOR OIL)			0	0.0000	0.0000	0.0000	0.0000	0.0000			
PHENOL			0	0.0000	0.0000	0.0000	0.0000	0.0000			
SILVER			0	0.0000	0.0000	0.0000	0.0000	0.0000			
1,1,2,2- TETRACHLOROETHANE			0	0.0000	0.0000	0.0000	0.0000	0.0000			
TETRACHLOROETHENE			0	0.0000	0.0000	0.0000	0.0000	0.0000			
TOLUENE			0	0.0000	0.0000	0.0000	0.0000	0.0000			
TRICHLOROETHENE			0	0.0000	0.0000	0.0000	0.0000	0.0000			
TRICHLOROFLUOROMETHANE			0	0.0000	0.0000	0.0000	0.0000	0.0000			
VINYL CHLORIDE			0	0.0000	0.0000	0.0000	0.0000	0.0000			
XYLENES			0	0.0000	0.0000	0.0000	0.0000	0.0000			
ZINC			0	0.0000	0.0000	0.0000	0.0000	0.0000			
Col 7 = (col 2) x (2 L/day)						SUMS =	427.8051	0.0766			
Col 8 = (col 2) x (col 6) x (0.0065 kg/day)						LOG OF SUMS =	2.6312	-1.1158			
Col 9 = (col 7) + (col 8)								ERR			
Col 10 = (col 9) / (col 3)											
Col 11 = (col 2) / (col 4)											
Col 12 = (col 2) / (col 5)											

Tucker Creek Landfill (TCLF)
Defense Priority Model
List of Comments Used to Justify Scoring

<u>Item Number</u>	<u>Comment</u>
1.	Contaminants have been detected in the surface water at TCLF. Contaminants detected were petroleum hydrocarbons, trans-1,2-dichloroethene, butylbenzylphthalate and elevated metals were found. Score as 100.
11.	The TCLF is covered by earthen material, but is probably not an engineered clay cap. Flood control structures, such as the dike around the lake perimeter, are present. Runon and ponding of surface water does occur at the site. Surface water is removed from the site by the stormwater drainage system. Score as 0.5.
13.	Analyses of groundwater samples determined that contaminants do occur in samples from the monitor wells at the site. Contaminants detected include petroleum hydrocarbons, trichloroethene, methylene chloride, di-n-butylbenzene, bis(2-ethylhexyl)-phthalate, 1,4-dichlorobenzene, butylbenzylphthalate and elevated concentrations of metals. Score as 100.
21.	No provisions have been taken to clean up contamination at the site. No structures exist to contain these contaminants. Also, the TCLF does not have an engineered liner. No record of the use of any type of a liner at the site. Score as 1.
23-42.	Scoring of these questions is based on calculated sums and logs shown on hazard scoring tables detailing the contaminants detected at the site.
43.	Drinking water is not obtained from Lake St. Clair within three miles of the TCLF site. There are no known users within this area. Score as 0.
44.	The nearest surface water body is Lake St. Clair. It is used for recreation and sport fishing. The city water plant intake is more than 3 miles from the site. Score as 2.

45. Population within 1,000 ft. of the site is greater than 100. This population includes people at the school, base homes, and offices. Score as 3.
46. Distance to the nearest base boundary is less than 10-20 ft. The boundary of the site is nearly coincident with the base boundary at the edge of Lake St. Clair. Score as 3.
47. Land use within one mile of the site is dominantly residential. There is also some commercial and light industry within this area. Score as 3.
50. Surface water from the site is discharged untreated, directly into Lake St. Clair. The lake is immediately adjacent to the site. The lake serves as an area for fish spawning and feeding. The lake is also managed by local and/or state agencies. Score as 2.
51. No known critical environments occur within one mile of the site. Score as 0.
54. No wells within three miles of the site are known to supply drinking water. Water is supplied by the city to the base and area residents. Score as 0.
55. Groundwater is being intercepted by the stormwater drainage system based on monitor well water levels and potentiometric surface maps constructed using water level data. Groundwater would be intercepted in a 5 to 20 year period by the sewers. The storm water drainage system discharges to Lake St. Clair. However, there are no surface water inlets within three miles. Score as 0.
56. No known use of water from the ground below the site occurs. Water is available from the city. There are no downgradient users of groundwater within 3 miles of the site. Score as 0.
57. No population uses groundwater from site or within three miles of the site. Surface water in Lake St. Clair that could be contaminated by groundwater from the site would not affect any population using drinking water from the lake. This is because the drinking water intake for the City of Mt Clemens is more than three miles from the site. Score as 0.

58. See question #45. Population within 1,000 ft. of site is greater than 100 people. Score as 3.
59. Distance to the nearest base boundary is less than 10-20 feet. Site boundary is nearly coincident with the base boundary along Lake St. Clair. Score as 3.
62. Groundwater is being intercepted by the stormwater drainage system based on monitor well water levels and potentiometric surface maps constructed using water level data. Groundwater would be intercepted in a 5 to 20 year period by the sewers. The storm water drainage system discharges to Lake St. Clair. However, there are no surface water inlets within three miles. Score as 0.
63. Lake St. Clair would receive any contaminated groundwater from the site. Score as 2.
64. No known critical environments occur within one mile of the site. Score as 0.

Site identification: Tucker Creek Landfill (Site 05) - TCLF

SURFACE WATER PATHWAYS

	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
<u>Observed releases</u>				
1. Have contaminants been detected in surface water? If yes, assign score of 100 and proceed to item 10. If no, assign score of 0 and proceed to item 2.	0 (100)	1	100	100
<u>Pathway characteristics</u>				
2. Distance to nearest surface water	0 1 2 3	4	_____	12
3. Net precipitation	0 1 2 3	1	_____	3
4. Surface erosion potential	0 1 2 3	4	_____	12
5. Rainfall intensity	0 1 2 3	4	_____	12
6. Surface permeability	0 1 2 3	3	_____	9
7. Sum of items 2 through 6			_____	48
8. Normalized score (multiply item 7 x 100/48)			_____	
9. Flooding potential	0 1 2 3	8	_____	24
10. Adjusted pathways score If item 1 is 100, enter 100. If item 1 is 0, enter sum of items 8 and 9. If sum exceeds 100, enter 100.			100	
11. Waste containment effectiveness factor (Table 2)			0.5	
12. Final score for surface water pathways (multiply item 10 x item 11)			50	

COMMENTS ON SURFACE WATER PATHWAYS

All comments are presented on the typed pages following the scoring sheets for the TCLF.

Prepared by Jon D. Alander 9 Dec 88 Checked by RHG 12/9/88

Site identification: TCLF

GROUNDWATER PATHWAYS

<u>Observed releases</u>	<u>Score</u> (circle one)	<u>Multiplier</u>	<u>Product</u> (score x mult.)	<u>Max.</u> <u>score</u>
13. Have contaminants been detected in groundwater? If yes, assign score of 100 and proceed to item 20. If no, assign score of 0 and proceed to item 14.	0 (100)	1	<u>100</u>	100
<u>Pathway characteristics</u>				
14. Depth to seasonal high groundwater from base of waste or contaminated zone	0 1 2 3	9	_____	27
15. Permeability of the unsaturated zone	0 1 2 3	5	_____	15
16. Infiltration potential	0 1 2 3	5	_____	15
17. Sum of items 14 through 16			_____	57
18. Normalized score (multiply item 17 x 100/57)			_____	
19. Potential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table	0 1 2 3	5	_____	15
20. Adjusted pathways score. If item 13 is 100, enter 100. If item 13 is 0, enter sum of items 18 and 19. If sum exceeds 100, enter 100.			<u>100</u>	
21. Waste containment effectiveness factor (Table 5)			<u>1.0</u>	
22. Final score for groundwater pathways (multiply item 20 x item 21)			<u>100</u>	

COMMENTS ON GROUNDWATER PATHWAYS

Site identification: TCLF

CONTAMINANT HAZARD -- SURFACE WATER

If contaminants have been detected in surface water (score of 100 in item 1), complete items 23 through 28. If contaminants have not been detected (score of 0 in item 1), complete items 29 through 32. Attach Hazard Worksheet or list of contaminants, as appropriate.

	<u>Score</u> (circle one)	<u>Result</u>	<u>Logarithm</u> (base 10)
23. Sum of human health hazard quotients (from column 10 of Hazard Worksheet)		44975.9984	4.6530
24. Human health hazard score	0 1 2 4 (6)		
25. Normalized human health hazard score (multiply item 24 x 100/6)		100	
26. Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)		45.1153	1.6543
27. Ecological hazard score	0 1 2 3 (4) 5 6		
28. Normalized ecological hazard score (multiply item 27 x 100/6)		66.667	

29. Maximum human health hazard index	0 1 2 3 4 5 6 7 8 9	Contaminant: _____	
30. Normalized human health hazard score (multiply item 29 x 100/9)		_____	
31. Maximum ecological hazard index	0 1 2 4 6	Contaminant: _____	
32. Normalized ecological hazard score (multiply item 31 x 100/6)		_____	

CONTAMINANT HAZARD -- GROUNDWATER

If contaminants have been detected in groundwater (score of 100 in item 13), complete items 33 through 38. If contaminants have not been detected (score of 0 in item 13), complete items 39 through 42. Attach Hazard Worksheet or list of contaminants, as appropriate.

33. Sum of human health hazard quotients (from column 10 of Hazard Worksheet)		51807.7911	4.7144
34. Human health hazard score	0 1 2 4 (6)		
35. Normalized human health hazard score (multiply item 34 x 100/6)		100	
36. Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)		19.5634	1.2914
37. Ecological hazard score	0 1 2 3 (4) 5 6		
38. Normalized ecological hazard score (multiply item 37 x 100/6)		66.667	

39. Maximum human health hazard index	0 1 2 3 4 5 6 7 8 9	Contaminant: _____	
40. Normalized human health hazard score (multiply item 39 x 100/9)		_____	
41. Maximum ecological hazard index	0 1 2 4 6	Contaminant: _____	
42. Normalized ecological hazard score (multiply item 41 x 100/6)		_____	

Site identification: TCLF

HUMAN HEALTH RECEPTORS -- SURFACE WATER PATHWAY

	<u>Score</u> (circle one)	<u>Multiplier</u>	<u>Product</u> (score x mult.)	<u>Max.</u> <u>score</u>
43. Population that obtains drinking water from potentially affected surface water body(ies) within 3 miles (4.8 km) downstream	0 1 2 3	3	<u>0</u>	9
44. Water use of nearest surface water body(ies)	0 1 2 3	3	<u>6</u>	9
45. Population within 1000 ft (305 m) of the site	0 1 2 3	1	<u>3</u>	3
46. Distance to the nearest installation boundary	0 1 2 3	1	<u>3</u>	3
47. Land use and/or zoning within 1 mile (1.6 km) of the site	0 1 2 3	1	<u>3</u>	3
48. Sum of items 43 through 47			<u>15</u>	27
49. Final score for human health receptors on surface water pathways (multiply item 48 x 100/27)			55.556	

ECOLOGICAL RECEPTORS -- SURFACE WATER PATHWAYS

50. Importance/sensitivity of biota/habitats in potentially affected surface water bodies nearest the site	0 1 2 3	5	<u>10</u>	15
51. Presence of "critical environments" within 1 mile (1.6 km) of the site	0 3	1	<u>0</u>	3
52. Sum of items 50 and 51			<u>10</u>	18
53. Final score for ecological receptors on surface water pathways (multiply item 52 x 100/18)			55.556	

COMMENTS ON SURFACE WATER RECEPTORS

Site identification: TCLF

HUMAN HEALTH RECEPTORS -- GROUNDWATER PATHWAY

	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
54. Estimated mean groundwater travel time from current waste location to nearest downgradient water supply well(s)	0 1 2 3	9	0	27
55. Estimated mean groundwater travel time from current waste location to any downgradient surface water body that supplies water for domestic use or for food chain agriculture	0 1 2 3	5	0	15
56. Groundwater use of the uppermost aquifer	0 1 2 3	4	0	12
57. Population potentially at risk from groundwater contamination	0 6 9 12 18 24 27 36	1	0	36
58. Population within 1000 ft (305 m) of the site	0 1 2 3	1	3	3
59. Distance to the nearest installation boundary	0 1 2 3	1	3	3
60. Sum of items 54 through 59			6	96
61. Final score for human health receptors on groundwater pathways (multiply item 60 x 100/96)			6.25	

ECOLOGICAL RECEPTORS -- GROUNDWATER PATHWAYS

62. Estimated mean groundwater travel time from current waste location to any downgradient habitat or natural area	0 1 2 3	3	6	9
63. Importance/sensitivity of downgradient biota/habitats that are confirmed or suspected groundwater discharge points	0 1 2 3	3	6	9
64. Presence of "critical environments" within 1 mile (1.6 km) of the site	0 3	1	0	3
65. Sum of items 62 through 64			12	21
66. Final score for ecological receptors on groundwater pathways (multiply item 65 x 100/21)			57.143	

COMMENTS ON GROUNDWATER RECEPTORS (attach additional pages if needed)

Site identification: TCLF

SCORING SUMMARY SHEET

	<u>Pathways score</u>		<u>Contaminant hazard score</u>		<u>Receptors score</u>		<u>Overall score</u>
67. Surface water/human health scores	($\frac{50}{\text{item 12}}$)	x	($\frac{100}{\text{item 25/30}}$)	x	($\frac{55.556}{\text{item 49}}$)	/10,000 =	<u>27.778</u>
68. Surface water/ecological scores	($\frac{50}{\text{item 12}}$)	x	($\frac{66.667}{\text{item 28/32}}$)	x	($\frac{55.556}{\text{item 53}}$)	/10,000 =	<u>18.519</u>
69. Groundwater/human health scores	($\frac{100}{\text{item 22}}$)	x	($\frac{100}{\text{item 35/40}}$)	x	($\frac{6.25}{\text{item 61}}$)	/10,000 =	<u>6.25</u>
70. Groundwater/ecological scores	($\frac{100}{\text{item 22}}$)	x	($\frac{66.667}{\text{item 38/42}}$)	x	($\frac{57.143}{\text{item 66}}$)	/10,000 =	<u>38.096</u>

OVERALL SITE SCORE:

$$71. \quad \frac{27.778^2}{\text{item 67}} \times 5 + \frac{18.519^2}{\text{item 68}} + \frac{6.25^2}{\text{item 69}} \times 5 + \frac{38.096^2}{\text{item 70}} = 5847.657$$

$$72. \quad \text{Overall site score} = \sqrt{\frac{5847.657}{\text{item 71}} \div 3.464} = 22.075 \approx 22$$

TABLE P-8
TCLF HAZARD WORKSHEET
IRP STAGE 2
SELFRIIDGE, MICHIGAN

1 CONTAMINANT NAME	2 CONCENTRATION (ug/L)	3 HEALTH EFFECTS BENCHMARK (ug/day)	4 AQUATIC EFFECTS BENCHMARK (ug/L)	5 TERRESTRIAL EFFECTS BENCHMARK (ug/L)	6 BIOACCUMULATION FACTOR (L/KG)
TCLF GROUNDWATER CONTAMINANT HAZARD					
ALUMINUM		3		5000	280
ARSENIC		0.04	360	100	4
BARIUM	929	0.15	14500		32
BENZENE	2	30	5300		310
BIS(2-ETHYLHEXYL)PHTHALATE	4	1000	160		660
BUTYLBENZYLPHTHALATE	1	10000	1700		50
CADMIUM	8	20	0.66	10	200
CHROMIUM		0.016	16	100	210
COPPER	30	2000	9.2	200	690
1,4- DICHLOROBENZENE	2	460	1120		740
1,3- DICHLOROBENZENE		460	2850		14
1,1- DICHLOROETHANE		15	118000		7.2
TRANS-1,2- DICHLOROETHENE		2.6	135000		8
DICHLOROFLUOROMETHANE		116	11000		120
DIETHYLPHTHALATE		10000	52100		150
2,4- DIMETHYLPHENOL	2	9.6	2120		89
DI-N-BUTYLPHTHALATE		10000	940		290
ETHYLBENZENE	68	2200	32000		100
IRON		150	400	5000	300
LEAD		100	34	5000	400
MANGANESE	1790	0.25	350	200	4.4
METHYLENE CHLORIDE	2	4	193000		430
NAPHTHALENE	55	280	2300		100
NICKEL		260	1100		780
4- NITROPHENOL		0.7	8280		120
PENTACHLOROPHENOL		13	55	37300	
PET HYDRO (ASSUME JP-4)		61.9	28800		1.7
PET HYDRO (ASSUME MOTOR OIL)	4100	6800	10000		2
PHENOL		20	1.2		7.9
SILVER		10	9320		44
1,1,2,2- TETRACHLOROETHANE		4	5280		83
TETRACHLOROETHENE		24	17500		17
TOLUENE	4.1	42	45000		74
TRICHLOROETHENE		11	11000		7.2
TRICHLOROFLUOROMETHANE		1000	381000		320
VINYL CHLORIDE		16	13500		1000
XYLENES		10000	180	2000	
ZINC	25				

Col 7 = (col 2) x (2 L/day)
Col 8 = (col 2) x (col 6) x (0.0065 kg/day)
Col 9 = (col 7) + (col 8)
Col 10 = (col 9) / (col 3)
Col 11 = (col 2) / (col 4)
Col 12 = (col 2) / (col 5)

TABLE P-8 (continued)
TCLF HAZARD WORKSHEET
IRP STAGE 2
SELFIDGE, MICHIGAN

1 CONTAMINANT NAME	7 DRINKING WATER INTAKE (ug/day)	8 FOOD INTAKE (ug/day)	9 TOTAL INTAKE (ug/day)	10 HEALTH HAZARD QUOTIENT	11 AQUATIC HAZARD QUOTIENT	12 TERRESTRIAL HAZARD QUOTIENT
TCLF GROUNDWATER CONTAMINANT HAZARD						
ALUMINUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
ARSENIC	0	0.0000	0.0000	0.0000	0.0000	0.0000
BARIUM	1858	24.1540	1882.1540	12547.6933	0.0641	0.0000
BENZENE	4	0.4160	4.4160	0.1472	0.0004	0.0000
BIS(2-ETHYLHEXYL)PHTHALATE	8	8.0600	16.0600	0.0161	0.0250	0.0000
BUTYLBENZYLPHTHALATE	2	4.2900	6.2900	0.0006	0.0006	0.0000
CADMIUM	16	2.6000	18.6000	0.9300	12.1212	0.0000
CHROMIUM	60	39.0000	99.0000	6187.5000	1.8750	0.3000
COPPER	ERR	ERR	ERR	0.0000	0.0000	0.0000
1,4- DICHLOROBENZENE	4	8.9700	12.9700	0.0282	0.0018	0.0000
1,3- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1- DICHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRANS-1,2- DICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DICHLOROFUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DIETHYLPHTHALATE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DIMETHYLPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
2,4- DI-N-BUTYLPHTHALATE	4	1.1570	5.1570	0.0005	0.0021	0.0000
ETHYLBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
IRON	136	44.2000	180.2000	1.2013	0.0000	0.0000
LEAD	0	0.0000	0.0000	0.0000	0.0000	0.0000
MANGANESE	3580	4654.0000	8234.0000	32936.0000	5.1143	0.0000
METHYLENE CHLORIDE	4	0.0572	4.0572	1.0143	0.0000	0.0000
NAPHTHALENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
NICKEL	110	35.7500	145.7500	0.5606	0.0500	0.2750
4- NITROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PENTACHLOROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PET HYDRO (ASSUME JP-4)	0	0.0000	0.0000	0.0000	0.0000	0.0000
PET HYDRO (ASSUME MOTOR OIL)	8200	0.0000	8200.0000	132.4717	0.0000	0.0000
PHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
SILVER	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1,2,2- TETRACHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TETRACHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TOLUENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROETHENE	8.2	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROFUOROMETHANE	0	0.4530	8.6530	0.2060	0.0001	0.0000
VINYL CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
XYLENES	0	0.0000	0.0000	0.0000	0.0000	0.0000
ZINC	50	0.0000	0.0000	0.0000	0.0000	0.0000
		162.5000	212.5000	0.0213	0.1389	0.0125
SUMS =				51807.7911	19.5634	10.3511
LOG OF SUMS =				4.7144	1.2914	1.0150
Col 7 = (col 2) x (2 L/day)						
Col 8 = (col 2) x (col 6) x (0.0065 kg/day)						
Col 9 = (col 7) + (col 8)						
Col 10 = (col 9) / (col 3)						
Col 11 = (col 2) / (col 4)						
Col 12 = (col 2) / (col 5)						

TABLE P-9
TCLF HAZARD WORKSHEET
IRP STAGE 2
SELFRIIDGE, MICHIGAN

1 CONTAMINANT NAME	2 CONCENTRATION (ug/L)	3 HEALTH EFFECTS BENCHMARK (ug/day)	4 AQUATIC EFFECTS BENCHMARK (ug/L)	5 TERRESTRIAL EFFECTS BENCHMARK (ug/L)	6 BIOACCUMULATION FACTOR (L/KG)
TCLF SURFACE WATER HAZARD					
ALUMINUM	11200	3		5000	280
ARSENIC	12	0.04	360	100	4
BARIUM	385	0.15	14500		32
BENZENE		30	5300		660
BUTYLBENZYLPHTHALATE	3	10000	1700		50
CADMIUM	8	20	0.66	10	200
CHROMIUM	17	0.016	16	100	210
COPPER	35	2000	9.2	200	690
1,4- DICHLOROBENZENE		460	1120		740
1,3- DICHLOROBENZENE		460	2850		14
1,1- DICHLOROETHANE		15	118000		7.2
TRANS-1,2- DICHLOROETHENE	1.4	2.6	135000		8
DICHLOROFLUOROMETHANE		116	52100		120
DIETHYLPHTHALATE		10000	2120		150
2,4- DIMETHYLPHENOL		9.6	940		89
DI-N-BUTYLPHTHALATE	2	10000	32000		290
ETHYLBENZENE		2200	400		100
IRON	8860	150	34	5000	300
LEAD	33	100	350	5000	400
MANGANESE	1490	0.25	193000	200	4.4
METHYLENE CHLORIDE		4	2300		430
NAPHTHALENE	21	280	1100	200	100
NICKEL		0.7	8280		780
4- NITROPHENOL		280	55	37300	120
PENTACHLOROPHENOL		13	28800		1.7
PET HYDRO (ASSUME JP-4)		61.9	10000		2
PET HYDRO (ASSUME MOTOR OIL)	2500	6800	1.2		7.9
PHENOL		20	9320		44
SILVER		10	5280		83
1,1,2,2- TETRACHLOROETHANE		4	17500		17
TETRACHLOROETHENE		24	45000		74
TOLUENE		42	11000		7.2
TRICHLOROETHENE		11	381000		320
TRICHLOROFLUOROMETHANE		1000	13500		1000
VINYL CHLORIDE		16	180		
XYLENES		10000		2000	
ZINC	120				

Col 7 = (col 2) x (2 L/day)
Col 8 = (col 2) x (col 6) x (0.0065 kg/day)
Col 9 = (col 7) + (col 8)
Col 10 = (col 9) / (col 3)
Col 11 = (col 2) / (col 4)
Col 12 = (col 2) / (col 5)

TABLE P-9 (continued)
TCLF HAZARD WORKSHEET
IRP STAGE 2
SELRIDGE, MICHIGAN

1	7	8	9	10	11	12
CONTAMINANT NAME	DRINKING WATER INTAKE (ug/day)	FOOD INTAKE (ug/day)	TOTAL INTAKE (ug/day)	HEALTH HAZARD QUOTIENT	AQUATIC HAZARD QUOTIENT	TERRESTRIAL HAZARD QUOTIENT
TCLF SURFACE WATER HAZARD						
ALUMINUM	22400	0.0000	22400.0000	7466.6667	0.0000	2.2400
ARSENIC	24	21.8400	45.8400	1146.0000	0.0333	0.1200
BARIUM	770	10.0100	780.0100	5200.0667	0.0266	0.0000
BENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
BUTYLBENZYLPHTHALATE	6	12.8700	18.8700	0.0019	0.0018	0.0000
CADMIUM	16	2.6000	18.6000	0.9300	12.1212	0.8000
CHROMIUM	34	22.1000	56.1000	3506.2500	1.0625	0.1700
COPPER	70	47.7750	117.7750	0.0589	3.8043	0.1750
1,4- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,3- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1- DICHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRANS-1,2- DICHLOROETHENE	2.8	0.0655	2.8655	1.1021	0.0000	0.0000
DICHLOROFLUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DIETHYLPHTHALATE	0	0.0000	0.0000	0.0000	0.0000	0.0000
2,4- DIMETHYLPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
DI-N-BUTYLPHTHALATE	4	1.1570	5.1570	0.0005	0.0021	0.0000
ETHYLBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
IRON	17720	5759.0000	23479.0000	156.5267	22.1500	1.7720
LEAD	66	64.3500	130.3500	1.3035	0.9706	0.0066
MANGANESE	2980	3874.0000	6854.0000	27416.0000	4.2571	7.4500
METHYLENE CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
NAPHTHALENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
NICKEL	42	13.6500	55.6500	0.2140	0.0191	0.1050
4- NITROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PENTACHLOROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PET HYDRO (ASSUME JP-4)	0	0.0000	0.0000	0.0000	0.0000	0.0000
PET HYDRO (ASSUME MOTOR OIL)	5000	0.0000	5000.0000	80.7754	0.0000	0.0000
PHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
SILVER	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1,2,2- TETRACHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TETRACHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TOLUENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROFLUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
VINYL CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
XYLENES	0	0.0000	0.0000	0.0000	0.0000	0.0000
ZINC	240	780.0000	1020.0000	0.1020	0.6667	0.0600
Col 7 = (col 2) x (2 L/day)			SUMS =	44975.9984	45.1153	12.8986
Col 8 = (col 2) x (col 6) x (0.0065 kg/day)			LOG OF SUMS =	4.6530	1.6543	1.1105
Col 9 = (col 7) + (col 8)						
Col 10 = (col 9) / (col 3)						
Col 11 = (col 2) / (col 4)						
Col 12 = (col 2) / (col 5)						

Northwest Landfill (NWLF)
Defense Priority Model
List of Comments Used to Justify Scoring

<u>Item Number</u>	<u>Comment</u>
1.	Contaminants have been detected in the surface water. Detected were butylbenzylphthalate di-n-butylphthalate, naphthane, petroleum hydrocarbons and elevated levels of metals. Score as 100.
11.	Landfill area has no run-on provisions and runoff is not controlled by any engineering measures. Ponding of excess surface water on site can occur. Waste at the site is not covered by an engineered cap. Score as 0.8.
13.	Contaminants were detected in the groundwater. Contaminants detected were bis(2-ethylhexyl)-phthalate, butylbenzylphthalate, and heavy metals. Score as 100.
21.	There are not any engineered barriers at the site. No cleanup measures have been initiated at the site. There is no evidence of a liner beneath the landfill. Score as 1.0.
23-42	Scoring of these questions is based on calculated sums and logs shown on hazard tables detailing the contaminants detected at the NWLF.
43.	No drinking water is obtained for the population from an area possibly effected by the NWLF. Lake St. Clair would be the nearest surface water body affected, but the contaminant entry point is greater than three miles from the drinking water intake for the city water plant. Score as 0.
44.	The nearest surface water body to the site is Lake St. Clair. Another surface water body, the Clinton River, is located to the south. Lake St. Clair is most likely to be affected by contaminants from the site because of the discharge of stormwater into the lake. Factors to consider are recreational uses of surface water bodies, such as fishing. It is greater than 3 miles to the public drinking water intake. Score as 2.

45. Population within 1,000 ft. of site is greater than 100 people. This includes base personnel as a daytime population of people in base buildings and hangers southwest and west of site. Use of a mess hall near the site contributes to this population estimate. Base personnel in the military reside in homes to the west of the site. Score as 3.
46. The distance to the nearest installation boundary is approximately 200-300 feet. Score as 3.
47. Land use within one mile of the site is dominantly residential. Score as 3.
50. Surface water from the site would be discharged, untreated, to Lake St. Clair. Biota and habitats affected would include fish and spawning. Score as 2.
51. No known critical environments occur within one mile of the site. Score as 0.
54. There are no known water wells using groundwater at the site. Water is supplied by the city. No groundwater downgradient of the site is being produced by any wells. Thus, any contaminated water from the site would not reach humans. Score as 0.
55. Groundwater flows from the site in a general southerly direction based on the potentiometric maps of the groundwater elevation data. Groundwater is intercepted by the stormwater drainage system along the south and southeast sides of the site. The estimated travel time to reach storm sewers is approximately 75 years. Water would be discharged to Lake St. Clair, but no surface water intakes for drinking water occur within three miles of this discharge point. Score as 0.
56. No groundwater beneath the site is being used. General lack of a defineable aquifer beneath the site, thus would not be a practical source of water. Water is supplied by the city, so there is not a need to use any groundwater at the site. Score as 0.
57. No known population would be effected by contaminated groundwater from the site because no production of groundwater occurs at the site or within

three miles of the site. Any surface water contaminated would also not affect the population because it is more than three miles to the nearest intake for drinking water. Score as 0.

- 58. Population within 1,000 feet of site is greater than 100 people. See question #45. Score as 3.
- 59. Distance to the nearest base boundary is approximately 200-300 feet. Score as 3.
- 62. Groundwater would reach the storm drainage system in approximately 75 years and is then discharged to Lake St. Clair. Based on this, the score would be 1.
- 63. The lake would be most likely to receive contaminated groundwater from the site. This would either occur via the storm drainage system or discharge of groundwater to the lake. This could affect fishing and spawning in Lake St. Clair. Score as 2.
- 64. No known critical environments occur within one mile of the site. Score as 0.

Site identification: Northwest Landfill (Site 06) - NWLF

SURFACE WATER PATHWAYS

	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
<u>Observed releases</u>				
1. Have contaminants been detected in surface water? If yes, assign score of 100 and proceed to item 10. If no, assign score of 0 and proceed to item 2.	0 (100)	1	<u>100</u>	100
<u>Pathway characteristics</u>				
2. Distance to nearest surface water	0 1 2 3	4	<u> </u>	12
3. Net precipitation	0 1 2 3	1	<u> </u>	3
4. Surface erosion potential	0 1 2 3	4	<u> </u>	12
5. Rainfall intensity	0 1 2 3	4	<u> </u>	12
6. Surface permeability	0 1 2 3	3	<u> </u>	9
7. Sum of items 2 through 6			<u> </u>	48
8. Normalized score (multiply item 7 x 100/48)			<u> </u>	
9. Flooding potential	0 1 2 3	8	<u> </u>	24
10. Adjusted pathways score If item 1 is 100, enter 100. If item 1 is 0, enter sum of items 8 and 9. If sum exceeds 100, enter 100.			<u>100</u>	
11. Waste containment effectiveness factor (Table 2)			<u>0.8</u>	
12. Final score for surface water pathways (multiply item 10 x item 11)			<u>80</u>	

COMMENTS ON SURFACE WATER PATHWAYS

All comments are presented on the typed pages following the scoring sheets for the NWLF.

Prepared by Jon D. Olander 9 Dec '88 Checked by RWG 12/9/88

Site identification: NWLF

GROUNDWATER PATHWAYS

<u>Observed releases</u>	<u>Score</u> (circle one)	<u>Multiplier</u>	<u>Product</u> (score x mult.)	<u>Max.</u> <u>score</u>
13. Have contaminants been detected in groundwater? If yes, assign score of 100 and proceed to item 20. If no, assign score of 0 and proceed to item 14.	0 (100)	1	100	100
<u>Pathway characteristics</u>				
14. Depth to seasonal high groundwater from base of waste or contaminated zone	0 1 2 3	9	_____	27
15. Permeability of the unsaturated zone	0 1 2 3	5	_____	15
16. Infiltration potential	0 1 2 3	5	_____	15
17. Sum of items 14 through 16			_____	57
18. Normalized score (multiply item 17 x 100/57)			_____	
19. Potential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table	0 1 2 3	5	_____	15
20. Adjusted pathways score. If item 13 is 100, enter 100. If item 13 is 0, enter sum of items 18 and 19. If sum exceeds 100, enter 100.			100	
21. Waste containment effectiveness factor (Table 5)			1.0	
22. Final score for groundwater pathways (multiply item 20 x item 21)			100	

COMMENTS ON GROUNDWATER PATHWAYS

Site identification: NWLF

CONTAMINANT HAZARD -- SURFACE WATER

If contaminants have been detected in surface water (score of 100 in item 1), complete items 23 through 28. If contaminants have not been detected (score of 0 in item 1), complete items 29 through 32. Attach Hazard Worksheet or list of contaminants, as appropriate.

	Score (circle one)	Result	Logarithm (base 10)
23. Sum of human health hazard quotients (from column 10 of Hazard Worksheet)		362021.5940	5.5587
24. Human health hazard score	0 1 2 4 (5)		
25. Normalized human health hazard score (multiply item 24 x 100/6)		100	
26. Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)		623.8730	2.7951
27. Ecological hazard score	0 1 2 3 4 (5) 6		
28. Normalized ecological hazard score (multiply item 27 x 100/6)		83.333	

29. Maximum human health hazard index	0 1 2 3 4 5 6 7 8 9		Contaminant: _____
30. Normalized human health hazard score (multiply item 29 x 100/9)			_____
31. Maximum ecological hazard index	0 1 2 4 6		Contaminant: _____
32. Normalized ecological hazard score (multiply item 31 x 100/6)			_____

CONTAMINANT HAZARD -- GROUNDWATER

If contaminants have been detected in groundwater (score of 100 in item 13), complete items 33 through 38. If contaminants have not been detected (score of 0 in item 13), complete items 39 through 42. Attach Hazard Worksheet or list of contaminants, as appropriate.

33. Sum of human health hazard quotients (from column 10 of Hazard Worksheet)		31306.5532	4.4956
34. Human health hazard score	0 1 2 4 (5)		
35. Normalized human health hazard score (multiply item 34 x 100/6)		100	
36. Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)		15.8228	1.1993
37. Ecological hazard score	0 1 2 3 (4) 5 6		
38. Normalized ecological hazard score (multiply item 37 x 100/6)		66.667	

39. Maximum human health hazard index	0 1 2 3 4 5 6 7 8 9		Contaminant: _____
40. Normalized human health hazard score (multiply item 39 x 100/9)			_____
41. Maximum ecological hazard index	0 1 2 4 6		Contaminant: _____
42. Normalized ecological hazard score (multiply item 41 x 100/6)			_____

Site identification: NWLF

HUMAN HEALTH RECEPTORS -- SURFACE WATER PATHWAY

	<u>Score</u> (circle one)	<u>Multiplier</u>	<u>Product</u> (score x mult.)	<u>Max.</u> <u>score</u>
43. Population that obtains drinking water from potentially affected surface water body(ies) within 3 miles (4.8 km) downstream	0 1 2 3	3	<u>0</u>	9
44. Water use of nearest surface water body(ies)	0 1 2 3	3	<u>6</u>	9
45. Population within 1000 ft (305 m) of the site	0 1 2 3	1	<u>3</u>	3
46. Distance to the nearest installation boundary	0 1 2 3	1	<u>3</u>	3
47. Land use and/or zoning within 1 mile (1.6 km) of the site	0 1 2 3	1	<u>3</u>	3
48. Sum of items 43 through 47			<u>15</u>	27
49. Final score for human health receptors on surface water pathways (multiply item 48 x 100/27)			<u>55.556</u>	

ECOLOGICAL RECEPTORS -- SURFACE WATER PATHWAYS

50. Importance/sensitivity of biota/habitats in potentially affected surface water bodies nearest the site	0 1 2 3	5	<u>10</u>	15
51. Presence of "critical environments" within 1 mile (1.6 km) of the site	0 3	1	<u>0</u>	3
52. Sum of items 50 and 51			<u>10</u>	18
53. Final score for ecological receptors on surface water pathways (multiply item 52 x 100/18)			<u>55.556</u>	

COMMENTS ON SURFACE WATER RECEPTORS

Site identification: NWLF

HUMAN HEALTH RECEPTORS -- GROUNDWATER PATHWAY

	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
54. Estimated mean groundwater travel time from current waste location to nearest downgradient water supply well(s)	① 1 2 3	9	<u>0</u>	27
55. Estimated mean groundwater travel time from current waste location to any downgradient surface water body that supplies water for domestic use or for food chain agriculture	① 1 2 3	5	<u>0</u>	15
56. Groundwater use of the uppermost aquifer	① 1 2 3	4	<u>0</u>	12
57. Population potentially at risk from groundwater contamination	① 6 9 12 18 24 27 36	1	<u>0</u>	36
58. Population within 1000 ft (305 m) of the site	0 1 2 ③	1	<u>3</u>	3
59. Distance to the nearest installation boundary	0 1 2 ③	1	<u>3</u>	3
60. Sum of items 54 through 59			<u>6</u>	96
61. Final score for human health receptors on groundwater pathways (multiply item 60 x 100/96)			<u>6.25</u>	

ECOLOGICAL RECEPTORS -- GROUNDWATER PATHWAYS

62. Estimated mean groundwater travel time from current waste location to any downgradient habitat or natural area	0 ① 2 3	3	<u>3</u>	9
63. Importance/sensitivity of downgradient biota/habitats that are confirmed or suspected groundwater discharge points	0 1 ② 3	3	<u>6</u>	9
64. Presence of "critical environments" within 1 mile (1.6 km) of the site	① 3	1	<u>0</u>	3
65. Sum of items 62 through 64			<u>9</u>	21
66. Final score for ecological receptors on groundwater pathways (multiply item 65 x 100/21)			<u>42.857</u>	

COMMENTS ON GROUNDWATER RECEPTORS (attach additional pages if needed)

Site identification: NWLF

SCORING SUMMARY SHEET

	<u>Pathways score</u>		<u>Contaminant hazard score</u>		<u>Receptors score</u>		<u>Overall score</u>
67. Surface water/human health scores	(<u>80</u>)	x	(<u>100</u>)	x	(<u>55.556</u>)	/10,000 =	<u>44.445</u>
	item 12		item 25/30		item 49		
68. Surface water/ecological scores	(<u>80</u>)	x	(<u>83.333</u>)	x	(<u>55.556</u>)	/10,000 =	<u>37.037</u>
	item 12		item 28/32		item 53		
69. Groundwater/human health scores	(<u>100</u>)	x	(<u>100</u>)	x	(<u>6.25</u>)	/10,000 =	<u>6.25</u>
	item 22		item 35/40		item 61		
70. Groundwater/ecological scores	(<u>100</u>)	x	(<u>66.667</u>)	x	(<u>42.857</u>)	/10,000 =	<u>28.571</u>
	item 22		item 38/42		item 66		

OVERALL SITE SCORE:

$$71. \quad \frac{44.445^2}{\text{item 67}} \times 5 + \frac{37.037^2}{\text{item 68}} + \frac{6.25^2}{\text{item 69}} \times 5 + \frac{28.571^2}{\text{item 70}} = 12260.143$$

$$72. \quad \text{Overall site score} = \sqrt{\frac{12260.143}{\text{item 71}}} \div 3.464 = 31.965 \approx 32$$

TABLE P-10
NWL F HAZARD WORKSHEET
IRP STAGE 2
SELFRI DGE, MICHIGAN

1 CONTAMINANT NAME	2 CONCENTRATION (ug/L)	3 HEALTH EFFECTS BENCHMARK (ug/day)	4 AQUATIC EFFECTS BENCHMARK (ug/L)	5 TERRESTRIAL EFFECTS BENCHMARK (ug/L)	6 BIOACCUMULATION FACTOR (L/KG)
NWL F GROUNDWATER CONTAMINANT HAZARD					
ALUMINUM	330	3		5000	280
ARSENIC	10	0.04	360	100	4
BARIUM	333	0.15	14500		32
BENZENE		30	5300		310
BIS(2-ETHYLHEXYL)PHTHALATE	9	10000	160		660
BUTYLBENZYLPHTHALATE	1	10000	1700		50
CADMIUM		20	0.66	10	200
CHROMIUM		0.016	16	100	210
COPPER	33	2000	9.2	200	690
1,4- DICHLOROBENZENE		460	1120		740
1,3- DICHLOROBENZENE		460	2850		14
1,1- DICHLOROETHANE		15	118000		7.2
TRANS-1,2- DICHLOROETHENE		2.6	135000		8
DICHLOROFLUOROMETHANE		116	11000		120
DIETHYLPHTHALATE		10000	52100		150
2,4- DIMETHYLPHENOL		9.6	2120		290
ETHYLBENZENE		2200	32000		100
IRON	3250	150	400	5000	300
LEAD		100	34	5000	400
MANGANESE	1390	0.25	350	200	4.4
METHYLENE CHLORIDE		4	193000		430
NAPHTHALENE		280	2300	200	100
NICKEL	35	260	1100		780
4- NITROPHENOL		0.7	8280	37300	120
PENTACHLOROPHENOL		280	55		1.7
PET HYDRO (ASSUME JP-4)		13	28800		2
PET HYDRO (ASSUME MOTOR OIL)		61.9			7.9
PHENOL		6800	10000		44
SILVER		20	1.2		83
1,1,2,2- TETRACHLOROETHANE		10	9320		17
TETRACHLOROETHENE		4	5280		74
TOLUENE		24	17500		320
TRICHLOROETHENE		42	45000		1000
TRICHLOROFLUOROMETHANE		11	11000		
VINYL CHLORIDE		1000	381000		
XYLENES		16	13500		
ZINC		10000	180	2000	

Col 7 = (col 2) x (2 L/day)

Col 8 = (col 2) x (col 6) x (0.0065 kg/day)

Col 9 = (col 7) + (col 8)

Col 10 = (col 9) / (col 3)

Col 11 = (col 2) / (col 4)

Col 12 = (col 2) / (col 5)

TABLE P-10 (continued)
 NWLF HAZARD WORKSHEET
 IRP STAGE 2
 SELFIDGE, MICHIGAN

1	7	8	9	10	11	12
CONTAMINANT NAME	DRINKING WATER INTAKE (ug/day)	FOOD INTAKE (ug/day)	TOTAL INTAKE (ug/day)	HEALTH HAZARD QUOTIENT	AQUATIC HAZARD QUOTIENT	TERRESTRIAL HAZARD QUOTIENT
NWLF GROUNDWATER CONTAMINANT HAZARD						
ALUMINUM	660	0.0000	660.0000	220.0000	0.0000	0.0660
ARSENIC	20	18.2000	38.2000	955.0000	0.0278	0.1000
BARIUM	666	8.6580	674.6580	4497.7200	0.0230	0.0000
BENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
BIS(2-ETHYLHEXYL)PHTHALATE	18	18.1350	36.1350	0.0036	0.0563	0.0000
BUTYLBENZYLPHTHALATE	2	4.2900	6.2900	0.0006	0.0006	0.0000
CADMIUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
CHROMIUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
COPPER	66	45.0450	111.0450	0.0555	3.5870	0.1650
1,4- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,3- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1- DICHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRANS-1,2- DICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DICHLOROFLUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DIETHYLPHTHALATE	0	0.0000	0.0000	0.0000	0.0000	0.0000
2,4- DIMETHYLPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
ETHYLBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
IRON	6500	2112.5000	8612.5000	57.4167	8.1250	0.6500
LEAD	0	0.0000	0.0000	0.0000	0.0000	0.0000
MANGANESE	2780	3614.0000	6394.0000	25576.0000	3.9714	6.9500
METHYLENE CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
NAPHTHALENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
NICKEL	70	22.7500	92.7500	0.3567	0.0318	0.1750
4- NITROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PENTACHLOROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PET HYDRO (ASSUME JP-4)	0	0.0000	0.0000	0.0000	0.0000	0.0000
PET HYDRO (ASSUME MOTOR OIL)	0	0.0000	0.0000	0.0000	0.0000	0.0000
PHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
SILVER	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1,2,2- TETRACHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TETRACHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TOLUENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROFLUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
VINYL CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
XYLENES	0	0.0000	0.0000	0.0000	0.0000	0.0000
ZINC	0	0.0000	0.0000	0.0000	0.0000	0.0000
SUMS =				31306.5532	15.8228	8.1060
LOG OF SUMS =				4.4956	1.1993	0.9088
Col 7 = (col 2) x (2 L/day)						
Col 8 = (col 2) x (col 6) x (0.0065 kg/day)						
Col 9 = (col 7) + (col 8)						
Col 10 = (col 9) / (col 3)						
Col 11 = (col 2) / (col 4)						
Col 12 = (col 2) / (col 5)						

TABLE P-11
NWLF HAZARD WORKSHEET
IRP STAGE 2
SELEFRIDGE, MICHIGAN

1 CONTAMINANT NAME	2 CONCENTRATION (ug/L)	3 HEALTH EFFECTS BENCHMARK (ug/day)	4 AQUATIC EFFECTS BENCHMARK (ug/L)	5 TERRESTRIAL EFFECTS BENCHMARK (ug/L)	6 BIOACCUMULATION FACTOR (L/KG)
NWLF SURFACE WATER CONTAMINANT HAZARD					
ALUMINUM	146000	3		5000	280
ARSENIC	242	0.04	360	100	4
BARIUM	1310	0.15	14500		32
BENZENE		30	5300		660
BUTYLBENZYLPHTHALATE	4	10000	1700		50
CADMIUM	20	20	0.66	10	200
CHROMIUM	188	0.016	16	100	210
COPPER	238	2000	9.2	200	690
1,4- DICHLOROBENZENE		460	1120		740
1,3- DICHLOROBENZENE		460	2850		14
1,1- DICHLOROETHANE		15	118000		7.2
TRANS-1,2- DICHLOROETHENE		2.6	135000		8
DICHLOROFLUOROMETHANE		116	11000		120
DIETHYLPHTHALATE		10000	52100		150
2,4- DIMETHYLPHENOL		9.6	2120		89
DI-N-BUTYLPHTHALATE	1	10000	940		290
ETHYLBENZENE		2200	32000		100
IRON	204000	150	400	5000	300
LEAD	592	100	34	5000	400
MANGANESE	7780	0.25	350	200	4.4
METHYLENE CHLORIDE		4	193000		430
NAPHTHALENE	2	280	2300	200	100
NICKEL	269	260	1100		780
4- NITROPHENOL		0.7	8280	37300	120
PENTACHLOROPHENOL		280	55		1.7
PET HYDRO (ASSUME JP-4)		13	28800		2
PET HYDRO (ASSUME MOTOR OIL)	1700	61.9			7.9
PHENOL		6800	10000		44
SILVER		20	1.2		83
1,1,2,2- TETRACHLOROETHANE		10	9320		17
TETRACHLOROETHENE		4	5280		74
TOLUENE		24	17500		0.01
TRICHLOROETHENE		42	45000		7.2
TRICHLOROFLUOROMETHANE		11	11000		320
VANDALIUM	287	0.015	4800	100	1000
VINYL CHLORIDE		1000	381000		
XYLENES		16	13500		
ZINC	943	10000	180	2000	

Col 7 = (col 2) x (2 L/day)

Col 8 = (col 2) x (col 6) x (0.0065 kg/day)

Col 9 = (col 7) + (col 8)

Col 10 = (col 9) / (col 3)

Col 11 = (col 2) / (col 4)

Col 12 = (col 2) / (col 5)

TABLE P-11 (continued)
NWL F HAZARD WORKSHEET
IRP STAGE 2
SELFRIDGE, MICHIGAN

1	7	8	9	10	11	12
CONTAMINANT NAME	DRINKING WATER INTAKE (ug/day)	FOOD INTAKE (ug/day)	TOTAL INTAKE (ug/day)	HEALTH HAZARD QUOTIENT	AQUATIC HAZARD QUOTIENT	TERRESTRIAL HAZARD QUOTIENT
NWL F SURFACE WATER CONTAMINANT HAZARD						
ALUMINUM	292000	0.0000	292000.0000	97333.3333	0.0000	29.2000
ARSENIC	484	440.4400	924.4400	23111.0000	0.6722	2.4200
BARIUM	2620	34.0600	2654.0600	17693.7333	0.0903	0.0000
BENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
BUTYLBENZYLPHTHALATE	8	17.1600	25.1600	0.0025	0.0024	0.0000
CADMIUM	40	6.5000	46.5000	2.3250	30.3030	2.0000
CHROMIUM	376	244.4000	620.4000	38775.0000	11.7500	1.8800
COPPER	476	324.8700	800.8700	0.4004	25.8696	1.1900
1,4- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,3- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1- DICHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRANS-1,2- DICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DICHLOROFLUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DIETHYLPHTHALATE	0	0.0000	0.0000	0.0000	0.0000	0.0000
2,4- DIMETHYLPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
DI-N-BUTYLPHTHALATE	2	0.5785	2.5785	0.0003	0.0011	0.0000
ETHYLBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
IRON	408000	132600.0000	540600.0000	3604.0000	510.0000	40.8000
LEAD	1184	1154.4000	2338.4000	23.3840	17.4118	0.1184
MANGANESE	15560	20228.0000	35788.0000	143152.0000	22.2286	38.9000
METHYLENE CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
NAPHTHALENE	4	5.5900	9.5900	0.0343	0.0009	0.0000
NICKEL	538	174.8500	712.8500	2.7417	0.2445	1.3450
4- NITROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PENTACHLOROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PET HYDRO (ASSUME JP-4)	0	0.0000	0.0000	0.0000	0.0000	0.0000
PET HYDRO (ASSUME MOTOR OIL)	3400	0.0000	3400.0000	54.9273	0.0000	0.0000
PHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
SILVER	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1,2,2- TETRACHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TETRACHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TOLUENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROFLUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
VANDALIUM	574	0.0187	574.0187	38267.9103	0.0598	2.8700
VINYL CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
XYLENES	0	0.0000	0.0000	0.0000	0.0000	0.0000
ZINC	1886	6129.5000	8015.5000	0.8016	5.2389	0.4715
SUMS =				362021.5940	623.8730	121.1949
LOG OF SUMS =				5.5587	2.7951	2.0835
Col 7 = (col 2) x (2 L/day)						
Col 8 = (col 2) x (col 6) x (0.0065 kg/day)						
Col 9 = (col 7) + (col 8)						
Col 10 = (col 9) / (col 3)						
Col 11 = (col 2) / (col 4)						
Col 12 = (col 2) / (col 5)						

East Ramp (ERMP)
Defense Priority Model
List of Comments Used to Justify Scoring

<u>Item Number</u>	<u>Comment</u>
1.	Contaminants have been detected in the surface water at the ERMP. Contaminants include petroleum hydrocarbons, xylenes, toluene, ethylbenzene and benzene. Score as 100.
11.	The ERMP is the site of a former fuel spill. Score under the waste containment effectiveness factor category as a spill. No known cleanup action has occurred at the site. Contaminants may be exposed at the surface and could be transported by stormwater runoff into the storm drainage network. These waters are untreated and would be discharged either into Lake St. Clair or the Clinton River. Score as 1.0.
13.	Contaminants have been detected in the groundwater. These contaminants were petroleum hydrocarbons and ethylbenzene. Score as 100.
21.	No known containment features exist at the site. None were constructed as a result of the spill. Thus, contaminants are uncontained. No known groundwater cleanup action has been undertaken. No engineered covering of the spill site is known to have occurred. Score as 1.0.
23-42.	Scores based on Contaminant Hazard Scoring Sheets for groundwater and surface water using sums and logs of benchmarks and intakes.
43.	No drinking water is obtained from surface water within three miles of the site. The city intake is more than three miles from the site. The scoring is based on both the Clinton River and Lake St. Clair surface water because stormwater is discharged, untreated, into both water bodies by the storm drainage system.
44.	The lake and river are used for recreational fishing. It is greater than 3 miles to the water treatment plant intake. Score as 2.
45.	The population within 1,000 feet of the site is greater than 100 people. This would include both a daytime population and resident population

living on the base. Daytime population includes ground maintenance people and workers in buildings and hangers around the perimeter of the site. Score as 3.

- 46. Distance to the nearest base boundary is approximately 800 feet. Score as 3.
- 47. Dominant land use within one mile of the site is residential. Score as 3.
- 50. Lake St. Clair would have the closest biota and habitats possibly affected by surface water discharged from the ERMP. The stormwater lift pump stations discharge untreated stormwater from the site into the lake as well as the river. This could affect spawning, fishing and the general management of the lake. Score as 2.
- 51. No known critical environments occur within one mile of site. Score as 0.
- 54. There are no known wells downgradient of the site. Wells within one mile of the site are not known to be used for supplying drinking water, because all domestic water is supplied by the city water plant. Score as 0.
- 55. Based on potentiometric map information groundwater is intercepted by the stormwater drainage system and is then discharged to the lake or river. The estimated time for groundwater to be intercepted is approximately 4.7 to 7.1 years. However, there are no surface water intakes within three miles of a discharge point on either the lake or river. Score as 0.
- 56. The groundwater below the ERMP is not being used for any domestic or drinking purpose. Water is supplied by the city. No wells within one mile of the site are known to produce drinking water. Score as 0.
- 57. No population would be at risk because the groundwater beneath the site is not being used. No wells are producing this water. Domestic water is supplied by the city. No downgradient users of water are known to exist. Score as 0.
- 58. See question #45. Population within 1,000 feet of the site is greater than 100. Score as 3.

- 59. See question #46. Distance to the nearest base boundary is 800 feet. Score as 3.
- 62. Estimated time for groundwater to reach the storm drainage system and be discharged to the lake or river is approximately 4.7 to 7.1 years. Score as 3.
- 63. Groundwater would be discharged both to Lake St. Clair and the Clinton River. Discharge to the lake could affect fish and spawning. Lake St. Clair is a managed area for fishing. Score as 2.
- 64. No known critical environments occur within one mile of the site. Score as 0.

Site identification: East Ramp (Site 07) - ERMP

SURFACE WATER PATHWAYS

	<u>Score</u> (circle one)	<u>Multiplier</u>	<u>Product</u> (score x mult.)	<u>Max.</u> <u>score</u>
<u>Observed releases</u>				
1. Have contaminants been detected in surface water? If yes, assign score of 100 and proceed to item 10. If no, assign score of 0 and proceed to item 2.	0 (100)	1	<u>100</u>	100
<u>Pathway characteristics</u>				
2. Distance to nearest surface water	0 1 2 3	4	<u> </u>	12
3. Net precipitation	0 1 2 3	1	<u> </u>	3
4. Surface erosion potential	0 1 2 3	4	<u> </u>	12
5. Rainfall intensity	0 1 2 3	4	<u> </u>	12
6. Surface permeability	0 1 2 3	3	<u> </u>	9
7. Sum of items 2 through 6			<u> </u>	48
8. Normalized score (multiply item 7 x 100/48)			<u> </u>	
9. Flooding potential	0 1 2 3	8	<u> </u>	24
10. Adjusted pathways score If item 1 is 100, enter 100. If item 1 is 0, enter sum of items 8 and 9. If sum exceeds 100, enter 100.			<u>100</u>	
11. Waste containment effectiveness factor (Table 2)			<u>1.0</u>	
12. Final score for surface water pathways (multiply item 10 x item 11)			<u>100</u>	

COMMENTS ON SURFACE WATER PATHWAYS

All comments are presented on the typed pages following the scoring sheets for the ERMP.

Prepared by Jon D. Chandler 9 Dec 88 Checked by RHG 12/9/88

Site identification: ERMP

GROUNDWATER PATHWAYS

	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
<u>Observed releases</u>				
13. Have contaminants been detected in groundwater? If yes, assign score of 100 and proceed to item 20. If no, assign score of 0 and proceed to item 14.	0 (100)	1	100	100
<u>Pathway characteristics</u>				
14. Depth to seasonal high groundwater from base of waste or contaminated zone	0 1 2 3	9	_____	27
15. Permeability of the unsaturated zone	0 1 2 3	5	_____	15
16. Infiltration potential	0 1 2 3	5	_____	15
17. Sum of items 14 through 16			_____	57
18. Normalized score (multiply item 17 x 100/57)			_____	
19. Potential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table	0 1 2 3	5	_____	15
20. Adjusted pathways score. If item 13 is 100, enter 100. If item 13 is 0, enter sum of items 18 and 19. If sum exceeds 100, enter 100.			100	
21. Waste containment effectiveness factor (Table 5)			1.0	
22. Final score for groundwater pathways (multiply item 20 x item 21)			100	

COMMENTS ON GROUNDWATER PATHWAYS

Site identification: ERMP

CONTAMINANT HAZARD -- SURFACE WATER

If contaminants have been detected in surface water (score of 100 in item 1), complete items 23 through 28. If contaminants have not been detected (score of 0 in item 1), complete items 29 through 32. Attach Hazard Worksheet or list of contaminants, as appropriate.

	Score (circle one)	Result	Logarithm (base 10)
23. Sum of human health hazard quotients (from column 10 of Hazard Worksheet)		1014.8283	3.0064
24. Human health hazard score	0 1 2 4 (6)		
25. Normalized human health hazard score (multiply item 24 x 100/6)		100	
26. Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)		0.1799	-0.7449
27. Ecological hazard score	0 1 (2) 3 4 5 6		
28. Normalized ecological hazard score (multiply item 27 x 100/6)		33.333	

29. Maximum human health hazard index	0 1 2 3 4 5 6 7 8 9	Contaminant: _____	
30. Normalized human health hazard score (multiply item 29 x 100/9)		_____	
31. Maximum ecological hazard index	0 1 2 4 6	Contaminant: _____	
32. Normalized ecological hazard score (multiply item 31 x 100/6)		_____	

CONTAMINANT HAZARD -- GROUNDWATER

If contaminants have been detected in groundwater (score of 100 in item 13), complete items 33 through 38. If contaminants have not been detected (score of 0 in item 13), complete items 39 through 42. Attach Hazard Worksheet or list of contaminants, as appropriate.

33. Sum of human health hazard quotients (from column 10 of Hazard Worksheet)		427.7029	2.6311
34. Human health hazard score	0 1 2 4 (6)		
35. Normalized human health hazard score (multiply item 34 x 100/6)		100	
36. Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)		0.0696	-1.1572
37. Ecological hazard score	0 (1) 2 3 4 5 6		
38. Normalized ecological hazard score (multiply item 37 x 100/6)		16.667	

39. Maximum human health hazard index	0 1 2 3 4 5 6 7 8 9	Contaminant: _____	
40. Normalized human health hazard score (multiply item 39 x 100/9)		_____	
41. Maximum ecological hazard index	0 1 2 4 6	Contaminant: _____	
42. Normalized ecological hazard score (multiply item 41 x 100/6)		_____	

Site identification: ERMP

HUMAN HEALTH RECEPTORS -- SURFACE WATER PATHWAY

	<u>Score</u> (circle one)	<u>Multiplier</u>	<u>Product</u> (score x mult.)	<u>Max.</u> <u>score</u>
43. Population that obtains drinking water from potentially affected surface water body(ies) within 3 miles (4.8 km) downstream	0 1 2 3	3	<u>0</u>	9
44. Water use of nearest surface water body(ies)	0 1 2 3	3	<u>6</u>	9
45. Population within 1000 ft (305 m) of the site	0 1 2 3	1	<u>3</u>	3
46. Distance to the nearest installation boundary	0 1 2 3	1	<u>3</u>	3
47. Land use and/or zoning within 1 mile (1.6 km) of the site	0 1 2 3	1	<u>3</u>	3
48. Sum of items 43 through 47			<u>15</u>	27
49. Final score for human health receptors on surface water pathways (multiply item 48 x 100/27)			<u>55.556</u>	

ECOLOGICAL RECEPTORS -- SURFACE WATER PATHWAYS

50. Importance/sensitivity of biota/habitats in potentially affected surface water bodies nearest the site	0 1 2 3	5	<u>10</u>	15
51. Presence of "critical environments" within 1 mile (1.6 km) of the site	0 3	1	<u>0</u>	3
52. Sum of items 50 and 51			<u>10</u>	18
53. Final score for ecological receptors on surface water pathways (multiply item 52 x 100/18)			<u>55.556</u>	

COMMENTS ON SURFACE WATER RECEPTORS

Site identification: ERMP

HUMAN HEALTH RECEPTORS -- GROUNDWATER PATHWAY

	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
54. Estimated mean groundwater travel time from current waste location to nearest downgradient water supply well(s)	① 1 2 3	9	<u>0</u>	27
55. Estimated mean groundwater travel time from current waste location to any downgradient surface water body that supplies water for domestic use or for food chain agriculture	① 1 2 3	5	<u>0</u>	15
56. Groundwater use of the uppermost aquifer	① 1 2 3	4	<u>0</u>	12
57. Population potentially at risk from groundwater contamination	① 6 9 12 18 24 27 36	1	<u>0</u>	36
58. Population within 1000 ft (305 m) of the site	0 1 2 ③	1	<u>3</u>	3
59. Distance to the nearest installation boundary	0 1 2 ③	1	<u>3</u>	3
60. Sum of items 54 through 59			<u>6</u>	96
61. Final score for human health receptors on groundwater pathways (multiply item 60 x 100/96)			<u>6.25</u>	

ECOLOGICAL RECEPTORS -- GROUNDWATER PATHWAYS

62. Estimated mean groundwater travel time from current waste location to any downgradient habitat or natural area	0 1 2 ③	3	<u>9</u>	9
63. Importance/sensitivity of downgradient biota/habitats that are confirmed or suspected groundwater discharge points	0 1 ② 3	3	<u>6</u>	9
64. Presence of "critical environments" within 1 mile (1.6 km) of the site	① 3	1	<u>0</u>	3
65. Sum of items 62 through 64			<u>15</u>	21
66. Final score for ecological receptors on groundwater pathways (multiply item 65 x 100/21)			<u>71.429</u>	

COMMENTS ON GROUNDWATER RECEPTORS (attach additional pages if needed)

Site identification: ERMP

SCORING SUMMARY SHEET

	<u>Pathways score</u>		<u>Contaminant hazard score</u>		<u>Receptors score</u>		<u>Overall score</u>
67. Surface water/human health scores	($\frac{100}{\text{item 12}}$)	x	($\frac{100}{\text{item 25/30}}$)	x	($\frac{55.556}{\text{item 49}}$)	/10,000 =	<u>55.556</u>
68. Surface water/ecological scores	($\frac{100}{\text{item 12}}$)	x	($\frac{33.333}{\text{item 28/32}}$)	x	($\frac{55.556}{\text{item 53}}$)	/10,000 =	<u>18.518</u>
69. Groundwater/human health scores	($\frac{100}{\text{item 22}}$)	x	($\frac{100}{\text{item 35/40}}$)	x	($\frac{6.25}{\text{item 61}}$)	/10,000 =	<u>6.25</u>
70. Groundwater/ecological scores	($\frac{100}{\text{item 22}}$)	x	($\frac{16.667}{\text{item 38/42}}$)	x	($\frac{71.429}{\text{item 66}}$)	/10,000 =	<u>11.905</u>

OVERALL SITE SCORE:

$$71. \quad \frac{55.556^2}{\text{item 67}} \times 5 + \frac{18.518^2}{\text{item 68}} + \frac{6.25^2}{\text{item 69}} \times 5 + \frac{11.905^2}{\text{item 70}} = \underline{16112.183}$$

$$72. \quad \text{Overall site score} = \frac{\sqrt{16112.183}}{\text{item 71}} / 3.464 = \underline{36.644} \approx 37$$

TABLE P-12
 ERMp HAZARD WORKSHEET
 IRP STAGE 2
 SELFRIIDGE, MICHIGAN

1 CONTAMINANT NAME	2 CONCENTRATION (ug/L)	3 HEALTH EFFECTS BENCHMARK (ug/day)	4 AQUATIC EFFECTS BENCHMARK (ug/L)	5 TERRESTRIAL EFFECTS BENCHMARK (ug/L)	6 BIOACCUMULATION FACTOR (L/KG)
ERMp GROUNDWATER CONTAMINANT HAZARD					
ARSENIC		0.04	360	100	280
BARIUM		0.15	14500		4
BENZENE		30	5300		32
BUTYLBENZYLPHTHALATE		10000	1700		660
CADMIUM		20	0.66	10	50
CHROMIUM		0.016	16	100	200
COPPER		2000	9.2	200	210
1,4- DICHLOROBENZENE		460	1120		690
1,3- DICHLOROBENZENE		460	2850		740
1,1- DICHLOROETHANE		15	118000		14
TRANS-1,2- DICHLOROETHENE		2.6	135000		7.2
DICHLOROFLUOROMETHANE		116	11000		8
DIETHYLPHTHALATE		10000	52100		120
2,4- DIMETHYLPHENOL		9.6	2120		150
ETHYLBENZENE	6	2200	32000		290
LEAD		100	34	5000	300
METHYLENE CHLORIDE		4	193000		4.4
NAPHTHALENE		280	2300	200	430
NICKEL		260	1100		100
4- NITROPHENOL		0.7	8280		
PENTACHLOROPHENOL		280	55	37300	780
PET HYDRO (ASSUME JP-4)		13	28800		120
PET HYDRO (ASSUME MOTOR OIL)	2000	61.9			
PHENOL		6800	10000		1.7
SILVER		20	1.2		2
1,1,2,2- TETRACHLOROETHANE		10	9320		7.9
TETRACHLOROETHENE		4	5280		44
TOLUENE		24	17500		83
TRICHLOROETHENE		42	45000		17
TRICHLOROFLUOROMETHANE		11	11000		74
VINYL CHLORIDE		1000	381000		7.2
XYLENES		16	13500		320
ZINC		10000	180	2000	1000

Col 7 = (col 2) x (2 L/day)

Col 8 = (col 2) x (col 6) x (0.0065 kg/day)

Col 9 = (col 7) + (col 8)

Col 10 = (col 9) / (col 3)

Col 11 = (col 2) / (col 4)

Col 12 = (col 2) / (col 5)

TABLE P-12 (continued)
 ERMP HAZARD WORKSHEET
 IRP STAGE 2
 SELFIDGE, MICHIGAN

1	7	8	9	10	11	12
CONTAMINANT NAME	DRINKING WATER INTAKE (ug/day)	FOOD INTAKE (ug/day)	TOTAL INTAKE (ug/day)	HEALTH HAZARD QUOTIENT	AQUATIC HAZARD QUOTIENT	TERRESTRIAL HAZARD QUOTIENT
ERMP GROUNDWATER CONTAMINANT HAZARD						
ARSENIC	0	0.0000	0.0000	0.0000	0.0000	0.0000
BARIUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
BENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
BUTYLBENZYLPHTHALATE	0	0.0000	0.0000	0.0000	0.0000	0.0000
CADMIUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
CHROMIUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
COPPER	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,4- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,3- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1- DICHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRANS-1,2- DICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DICHLOROFLUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DIETHYLPHTHALATE	0	0.0000	0.0000	0.0000	0.0000	0.0000
2,4- DIMETHYLPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
ETHYLBENZENE	12	11.3100	23.3100	0.0106	0.0002	0.0000
LEAD	0	0.0000	0.0000	0.0000	0.0000	0.0000
METHYLENE CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
NAPHTHALENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
NICKEL	0	0.0000	0.0000	0.0000	0.0000	0.0000
4- NITROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PENTACHLOROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PET HYDRO (ASSUME JP-4)	4000	1560.0000	5560.0000	427.6923	0.0694	0.0000
PET HYDRO (ASSUME MOTOR OIL)	0	0.0000	0.0000	0.0000	0.0000	0.0000
PHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
SILVER	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1,2,2- TETRACHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TETRACHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TOLUENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROFLUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
VINYL CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
XYLENES	0	0.0000	0.0000	0.0000	0.0000	0.0000
ZINC	0	0.0000	0.0000	0.0000	0.0000	0.0000

Col 7 = (col 2) x (2 L/day)
 Col 8 = (col 2) x (col 6) x (0.0065 kg/day)
 Col 9 = (col 7) + (col 8)
 Col 10 = (col 9) / (col 3)
 Col 11 = (col 2) / (col 4)
 Col 12 = (col 2) / (col 5)

SUMS =
 LOG OF SUMS =

427.7029
 2.6311

0.0696
 -1.1572
 ERR

TABLE P-13
 ERMP HAZARD WORKSHEET
 IRP STAGE 2
 SELFRIDGE, MICHIGAN

1	2	3	4	5	6
CONTAMINANT NAME	CONCENTRATION (ug/L)	HEALTH EFFECTS BENCHMARK (ug/day)	AQUATIC EFFECTS BENCHMARK (ug/L)	TERRESTRIAL EFFECTS BENCHMARK (ug/L)	BIOACCUMULATION FACTOR (L/KG)
ERMP SURFACE WATER CONTAMINANT HAZARD					
ARSENIC		0.04	360	100	280
BARIUM		0.15	14500		4
BENZENE	35	30	5300		32
BUTYLBENZYLPHTHALATE		10000	1700		660
CADMIUM		20	0.66	10	50
CHROMIUM		0.016	16	100	200
COPPER		2000	9.2	200	210
1,4- DICHLOROBENZENE		460	1120		690
1,3- DICHLOROBENZENE		460	2850		740
1,1- DICHLOROETHANE		15	118000		14
TRANS-1,2- DICHLOROETHENE		2.6	135000		7.2
DICHLOROFLUOROMETHANE		116	11000		8
DIETHYLPHTHALATE		10000	52100		120
2,4- DIMETHYLPHENOL		9.6	2120		150
ETHYLBENZENE	20	2200	32000		290
LEAD		100	34	5000	300
METHYLENE CHLORIDE		4	193000		4.4
NAPHTHALENE		280	2300		430
NICKEL		260	1100	200	100
4- NITROPHENOL		0.7	8280		
PENTACHLOROPHENOL		280	55	37300	780
PET HYDRO (ASSUME JP-4)	4600	13	28800		120
PET HYDRO (ASSUME MOTOR OIL)		61.9			
PHENOL		6800	10000		1.7
SILVER		20	1.2		2
1,1,2,2- TETRACHLOROETHANE		10	9320		7.9
TETRACHLOROETHENE		4	5280		44
TOLUENE	178	24	17500		83
TRICHLOROETHENE		42	45000		17
TRICHLOROFLUOROMETHANE		11	11000		74
VINYL CHLORIDE		1000	381000		7.2
XYLENES	38	16	13500		320
ZINC		10000	180	2000	1000

Col 7 = (col 2) x (2 L/day)

Col 8 = (col 2) x (col 6) x (0.0065 kg/day)

Col 9 = (col 7) + (col 8)

Col 10 = (col 9) / (col 3)

Col 11 = (col 2) / (col 4)

Col 12 = (col 2) / (col 5)

TABLE P-13 (continued)
 ERMp HAZARD WORKSHEET
 IRP STAGE 2
 SELFREDGE, MICHIGAN

1	7	8	9	10	11	12
CONTAMINANT NAME	DRINKING WATER INTAKE (ug/day)	FOOD INTAKE (ug/day)	TOTAL INTAKE (ug/day)	HEALTH HAZARD QUOTIENT	AQUATIC HAZARD QUOTIENT	TERRESTRIAL HAZARD QUOTIENT
ERMp SURFACE WATER CONTAMINANT HAZARD						
ARSENIC	0	0.0000	0.0000	0.0000	0.0000	0.0000
BARIUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
BENZENE	70	7.2800	77.2800	2.5760	0.0066	0.0000
BUTYLBENZYLPHTHALATE	0	0.0000	0.0000	0.0000	0.0000	0.0000
CADMIUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
CHROMIUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
COPPER	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,4- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,3- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1- DICHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRANS-1,2- DICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DICHLOROFLUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DIETHYLPHTHALATE	0	0.0000	0.0000	0.0000	0.0000	0.0000
2,4- DIMETHYLPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
ETHYLBENZENE	40	37.7000	77.7000	0.0353	0.0006	0.0000
LEAD	0	0.0000	0.0000	0.0000	0.0000	0.0000
METHYLENE CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
NAPHTHALENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
NICKEL	0	0.0000	0.0000	0.0000	0.0000	0.0000
4- NITROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PENTACHLOROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PET HYDRO (ASSUME JP-4)	9200	3588.0000	12788.0000	983.6923	0.1597	0.0000
PET HYDRO (ASSUME MOTOR OIL)	0	0.0000	0.0000	0.0000	0.0000	0.0000
PHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
SILVER	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1,2,2- TETRACHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TETRACHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TOLUENE	356	96.0310	452.0310	18.8346	0.0102	0.0000
TRICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROFLUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
VINYL CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
XYLENES	76	79.0400	155.0400	9.6900	0.0028	0.0000
ZINC	0	0.0000	0.0000	0.0000	0.0000	0.0000
SUMS =				1014.8283	0.1799	0.0000
LOG OF SUMS =				3.0064	-0.7449	ERR
Col 7 = (col 2) x (2 L/day)						
Col 8 = (col 2) x (col 6) x (0.0065 kg/day)						
Col 9 = (col 7) + (col 8)						
Col 10 = (col 9) / (col 3)						
Col 11 = (col 2) / (col 4)						
Col 12 = (col 2) / (col 5)						

Base Coal Storage Pile (BCSP)
Defense Priority Model
List of Comments Used to Justify Scoring

<u>Item Number</u>	<u>Comment</u>
1.	No surface water samples were collected at the BCSP. Score as 0 and proceed to questions #2-9.
2.	Surface water from the site would be drained and intercepted by the stormwater drainage system. It would then be discharged to the Clinton River. Distance is approximately 5,000 feet. Score as 1.0.
3.	Net precipitation at the base is approximately -1.9 inches. Score as 1.0.
4.	Site is relatively flat with no evidence of rills or vegetation cover. Runoff from site does occur. Score as 1.0. Surface slopes are 2% or less. Particle sizes are large, gravel size pieces of coal.
5.	The rainfall intensity for the area/site is approximately 2.2 inches. Score as 2.
6.	Surface permeabilities of the soils are approximately 10^{-4} to 10^{-6} cm/sec. Assume average clay content of 30-50%. Hydraulic conductivity of material around BCSP well screens was determined to be 10^{-5} cm/sec. Score as 2.
9.	Maps do not indicate flood potential of area at base. Structures exist to prevent flooding and stormwater drainage system discharges excess surface water from the base. Score as 0. Also IRP Presurvey Report, May 1984 reported the area to be outside 100-year floodplain.
11.	No category for the coal pile. Therefore; will treat as a spill site with the coal representing the "spill material" or "contaminant." The coal is exposed and any runoff from the site would not be collected for treatment. Stormwater drainage system would collect the runoff and discharge it, untreated, into the Clinton River. Score as 1.0.

- 13.-20. Score here is based on Contaminant Hazard Score Sheet for groundwater contaminants detected at the site. Contaminants detected were bis(2-ethylhexyl)phthalate, di-n-butylphthalate, pyrene, and elevated metal concentrations. Score as 100.
21. According to the scoring guidance a score of 1.0 should be assigned because contaminants are present in the groundwater and no cleanup action has occurred. Score as 1.0.
23. No surface water samples were collected. Proceed to questions #29-32 to determine the score.
29. Determine the score based on contaminants detected in the groundwater. Log base 10 of health effect benchmark (5644.5) is 4.7516. The log base 10 of the bioaccumulation factor (2221.8) is 3.3467. Score as 2.
31. Using highest toxicity benchmark, which is for aquatic hazard, the sum is 34.0480 and its log base 10 is 1.5321. The score is 4.
43. No drinking water is obtained from surface water sources within three miles of the site. Therefore, no population would be effected. Score as 0.
44. Nearest surface water bodies are the Clinton River and Lake St. Clair. These serve as an area for fishing and other recreational uses. The nearest location for the intake of drinking water occurs more than six miles from this site. Score as 2, because it is >3 miles to the drinking water intake.
45. Population within 1,000 feet of the site is greater than 100. The population is mainly day-time workers in the engineering building, plumbing shop, paint shop, ground maintenance building and other base buildings. Score as 3.
46. Distance to nearest base boundary is approximately 2,500 feet. Score as 3.
47. Land use within one mile of the site is dominantly residential. Score as 3.

50. Surface water from the site would be directed towards the Clinton River. The stormwater drainage system would intercept and discharge untreated water to the river. Score as 1.0.
51. No known critical environments occur within one mile of the site. Score as 0.
54. No groundwater from the BCSP site that is potentially contaminated would effect any groundwater well because no producing drinking water wells are known to be downgradient. No wells are known to produce groundwater on the base. Water is supplied by city. Score as 0.
55. Groundwater interception by the storm drainage system would occur in approximately 4.95 to 7.43 years. This is based on a depth of 10-15 feet for the sewer beneath the BCSP. Groundwater which is intercepted would then be discharged to the Clinton River. However, no surface water is used for drinking or ag/aquaculture within three miles. Score as 0.
56. Groundwater beneath the BCSP is not currently being produced for use. Wells within one mile of the site do not produce water for domestic drinking purposes. Score as 0.
57. No known population would be effected because groundwater is not being used at the site or downgradient of it. Public water is supplied to the base and the area within one mile of the base by the city treatment plant. Score as 0.
58. Population greater than 100, see question 45. Score as 3.
59. Distance to nearest base boundary is approximately 2,500 feet. Score as 3.
62. The estimated travel time based on groundwater flow, interception by storm drainage system and then discharge to river would be between 4.95 and 7.43 year. See question #55. Score as 3.
63. See question #50. Clinton River would be affected. Score as 1.0.
64. No known critical environments occur with one mile of the site. Score as 0.

Site identification: Base Coal Storage Pile (Site 08) - BCSP

SURFACE WATER PATHWAYS

	<u>Score</u> (circle one)	<u>Multiplier</u>	<u>Product</u> (score x mult.)	<u>Max.</u> <u>score</u>
<u>Observed releases</u>				
1. Have contaminants been detected in surface water? If yes, assign score of 100 and proceed to item 10. If no, assign score of 0 and proceed to item 2.	0	100	1	0
<u>Pathway characteristics</u>				
2. Distance to nearest surface water	0 1 2 3	4	4	12
3. Net precipitation	0 1 2 3	1	1	3
4. Surface erosion potential	0 1 2 3	4	4	12
5. Rainfall intensity	0 1 2 3	4	8	12
6. Surface permeability	0 1 2 3	3	6	9
7. Sum of items 2 through 6			23	48
8. Normalized score (multiply item 7 x 100/48)			47.917	
9. Flooding potential	0 1 2 3	8	0	24
10. Adjusted pathways score If item 1 is 100, enter 100. If item 1 is 0, enter sum of items 8 and 9. If sum exceeds 100, enter 100.			47.917	
11. Waste containment effectiveness factor (Table 2)			1.0	
12. Final score for surface water pathways (multiply item 10 x item 11)			47.917	

COMMENTS ON SURFACE WATER PATHWAYS

All comments are presented on the typed sheets following the scoring sheets for the BCSP.

Prepared by Jim D. Cleland 9 Dec 88 Checked by RHG 12/19/88

Site identification: BCSP

GROUNDWATER PATHWAYS

<u>Observed releases</u>	<u>Score</u> (circle one)	<u>Multiplier</u>	<u>Product</u> (score x mult.)	<u>Max.</u> <u>score</u>
13. Have contaminants been detected in groundwater? If yes, assign score of 100 and proceed to item 20. If no, assign score of 0 and proceed to item 14.	0 (100)	1	100	100
<u>Pathway characteristics</u>				
14. Depth to seasonal high groundwater from base of waste or contaminated zone	0 1 2 3	9	_____	27
15. Permeability of the unsaturated zone	0 1 2 3	5	_____	15
16. Infiltration potential	0 1 2 3	5	_____	15
17. Sum of items 14 through 16			_____	57
18. Normalized score (multiply item 17 x 100/57)			_____	
19. Potential for discrete features in the unsaturated zone to "short-circuit" the pathway to the water table	0 1 2 3	5	_____	15
20. Adjusted pathways score. If item 13 is 100, enter 100. If item 13 is 0, enter sum of items 18 and 19. If sum exceeds 100, enter 100.			100	
21. Waste containment effectiveness factor (Table 5)			1.0	
22. Final score for groundwater pathways (multiply item 20 x item 21)			100	

COMMENTS ON GROUNDWATER PATHWAYS

Site identification: BCSP

CONTAMINANT HAZARD -- SURFACE WATER

If contaminants have been detected in surface water (score of 100 in item 1), complete items 23 through 28. If contaminants have not been detected (score of 0 in item 1), complete items 29 through 32. Attach Hazard Worksheet or list of contaminants, as appropriate.

	Score (circle one)	Result	Logarithm (base 10)
23. Sum of human health hazard quotients (from column 10 of Hazard Worksheet)		_____	_____
24. Human health hazard score	0 1 2 4 6		
25. Normalized human health hazard score (multiply item 24 x 100/6)		_____	
26. Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)		_____	_____
27. Ecological hazard score	0 1 2 3 4 5 6		
28. Normalized ecological hazard score (multiply item 27 x 100/6)		_____	

29. Maximum human health hazard index	0 1 (2) 3 4 5 6 7 8 9		See list of ground- Contaminant: <u>water contaminants</u>
30. Normalized human health hazard score (multiply item 29 x 100/9)		22.222	
31. Maximum ecological hazard index	0 1 2 (4) 6		See list of ground- Contaminant: <u>water contaminants</u>
32. Normalized ecological hazard score (multiply item 31 x 100/6)		66.667	

CONTAMINANT HAZARD -- GROUNDWATER

If contaminants have been detected in groundwater (score of 100 in item 13), complete items 33 through 38. If contaminants have not been detected (score of 0 in item 13), complete items 39 through 42. Attach Hazard Worksheet or list of contaminants, as appropriate.

33. Sum of human health hazard quotients (from column 10 of Hazard Worksheet)		56445.1703	4.7516
34. Human health hazard score	0 1 2 4 (6)		
35. Normalized human health hazard score (multiply item 34 x 100/6)		100	
36. Sum of ecological hazard quotients (enter the larger of the sums of column 11 or 12 of Hazard Worksheet)		34.0480	1.5321
37. Ecological hazard score	0 1 2 3 (4) 5 6		
38. Normalized ecological hazard score (multiply item 37 x 100/6)		66.667	

39. Maximum human health hazard index	0 1 2 3 4 5 6 7 8 9		Contaminant: _____
40. Normalized human health hazard score (multiply item 39 x 100/9)		_____	
41. Maximum ecological hazard index	0 1 2 4 6		Contaminant: _____
42. Normalized ecological hazard score (multiply item 41 x 100/6)		_____	

Site identification: BCSP

HUMAN HEALTH RECEPTORS -- SURFACE WATER PATHWAY

	<u>Score</u> (circle one)	<u>Multiplier</u>	<u>Product</u> (score x mult.)	<u>Max.</u> <u>score</u>
43. Population that obtains drinking water from potentially affected surface water body(ies) within 3 miles (4.8 km) downstream	0 1 2 3	3	<u>0</u>	9
44. Water use of nearest surface water body(ies)	0 1 2 3	3	<u>6</u>	9
45. Population within 1000 ft (305 m) of the site	0 1 2 3	1	<u>3</u>	3
46. Distance to the nearest installation boundary	0 1 2 3	1	<u>3</u>	3
47. Land use and/or zoning within 1 mile (1.6 km) of the site	0 1 2 3	1	<u>3</u>	3
48. Sum of items 43 through 47			<u>15</u>	27
49. Final score for human health receptors on surface water pathways (multiply item 48 x 100/27)			<u>55.556</u>	

ECOLOGICAL RECEPTORS -- SURFACE WATER PATHWAYS

50. Importance/sensitivity of biota/habitats in potentially affected surface water bodies nearest the site	0 1 2 3	5	<u>5</u>	15
51. Presence of "critical environments" within 1 mile (1.6 km) of the site	0 3	1	<u>0</u>	3
52. Sum of items 50 and 51			<u>5</u>	18
53. Final score for ecological receptors on surface water pathways (multiply item 52 x 100/18)			<u>27.778</u>	

COMMENTS ON SURFACE WATER RECEPTORS

Site identification: BCSP

HUMAN HEALTH RECEPTORS -- GROUNDWATER PATHWAY

	Score (circle one)	Multiplier	Product (score x mult.)	Max. score
54. Estimated mean groundwater travel time from current waste location to nearest downgradient water supply well(s)	① 1 2 3	9	<u>0</u>	27
55. Estimated mean groundwater travel time from current waste location to any downgradient surface water body that supplies water for domestic use or for food chain agriculture	① 1 2 3	5	<u>0</u>	15
56. Groundwater use of the uppermost aquifer	① 1 2 3	4	<u>0</u>	12
57. Population potentially at risk from groundwater contamination	① 6 9 12 18 24 27 36	1	<u>0</u>	36
58. Population within 1000 ft (305 m) of the site	0 1 2 ③	1	<u>3</u>	3
59. Distance to the nearest installation boundary	0 1 2 ③	1	<u>3</u>	3
60. Sum of items 54 through 59			<u>6</u>	96
61. Final score for human health receptors on groundwater pathways (multiply item 60 x 100/96)			<u>6.25</u>	

ECOLOGICAL RECEPTORS -- GROUNDWATER PATHWAYS

62. Estimated mean groundwater travel time from current waste location to any downgradient habitat or natural area	0 1 2 ③	3	<u>9</u>	9
63. Importance/sensitivity of downgradient biota/habitats that are confirmed or suspected groundwater discharge points	0 ① 2 3	3	<u>3</u>	9
64. Presence of "critical environments" within 1 mile (1.6 km) of the site	① 3	1	<u>0</u>	3
65. Sum of items 62 through 64			<u>12</u>	21
66. Final score for ecological receptors on groundwater pathways (multiply item 65 x 100/21)			<u>57.143</u>	

COMMENTS ON GROUNDWATER RECEPTORS (attach additional pages if needed)

Site identification: BCSP

SCORING SUMMARY SHEET

	<u>Pathways score</u>		<u>Contaminant hazard score</u>		<u>Receptors score</u>		<u>Overall score</u>
67. Surface water/human health scores	($\frac{47.917}{\text{item 12}}$)	x	$\frac{22.222}{\text{item 25/30}}$	x	$\frac{55.556}{\text{item 49}}$)	/10,000 =	<u>5.916</u>
68. Surface water/ecological scores	($\frac{47.917}{\text{item 12}}$)	x	$\frac{66.667}{\text{item 28/32}}$	x	$\frac{27.778}{\text{item 53}}$)	/10,000 =	<u>8.874</u>
69. Groundwater/human health scores	($\frac{100}{\text{item 22}}$)	x	$\frac{100}{\text{item 35/40}}$	x	$\frac{6.25}{\text{item 61}}$)	/10,000 =	<u>6.25</u>
70. Groundwater/ecological scores	($\frac{100}{\text{item 22}}$)	x	$\frac{66.667}{\text{item 38/42}}$	x	$\frac{57.143}{\text{item 66}}$)	/10,000 =	<u>38.10</u>

OVERALL SITE SCORE:

$$71. \left(\frac{5.916}{\text{item 67}} \right)^2 \times 5 + \left(\frac{8.874}{\text{item 68}} \right)^2 + \left(\frac{6.25}{\text{item 69}} \right)^2 \times 5 + \left(\frac{38.10}{\text{item 70}} \right)^2 = 1900.666$$

$$72. \text{ Overall site score } = \sqrt{\frac{1900.666}{\text{item 71}}} / 3.464 = \underline{12.586} \approx 13$$

TABLE P-14
BCSP HAZARD WORKSHEET
IRP STAGE 2
SELFRIIDGE, MICHIGAN

1 CONTAMINANT NAME	2 CONCENTRATION (ug/L)	3 HEALTH EFFECTS BENCHMARK (ug/day)	4 AQUATIC EFFECTS BENCHMARK (ug/L)	5 TERRESTRIAL EFFECTS BENCHMARK (ug/L)	6 BIOACCUMULATION FACTOR (L/KG)
BCSP GROUNDWATER CONTAMINANT HAZARD					
ARSENIC		0.04	360	100	280
BARIUM	882	0.15	14500		4
BENZENE		30	5300		32
BIS(2-ETHYLHEXYL)PHTHALATE	15	10000	160		310
BUTYLBENZYLPHTHALATE		10000	1700		660
CADMIUM	13	20	0.66	10	50
CHROMIUM		0.016	16	100	200
COPPER	60	2000	9.2	200	210
1,4- DICHLOROBENZENE		460	1120		690
1,3- DICHLOROBENZENE		460	2850		740
1,1- DICHLOROETHANE		15	118000		14
TRANS-1,2- DICHLOROETHENE		2.6	135000		7.2
DICHLOROFLUOROMETHANE		116	11000		8
DIETHYLPHTHALATE		10000	52100		120
2,4- DIMETHYLPHENOL		9.6	2120		150
DI-N-BUTYLPHTHALATE	2	10000	940		89
ETHYLBENZENE		2200	32000		290
IRON	58	150	400	5000	100
LEAD		100	34	5000	300
MANGANESE	2420	0.25	350	200	400
METHYLENE CHLORIDE		4	193000		4.4
NAPHTHALENE		280	2300		430
NICKEL	88	260	1100	200	100
4- NITROPHENOL		0.7	8280		
PENTACHLOROPHENOL		280	55	37300	780
PET HYDRO (ASSUME JP-4)		13	28800		120
PET HYDRO (ASSUME MOTOR OIL)		61.9			
PHENOL		6800	10000		1.7
PYRENE	2	6			0.8
SILVER		20	1.2		2
1,1,2,2- TETRACHLOROETHANE		10	9320		7.9
TETRACHLOROETHENE		4	5280		44
TOLUENE		24	17500		83
TRICHLOROETHENE		42	45000		17
TRICHLOROFLUOROMETHANE		11	11000		74
VINYL CHLORIDE		1000	381000		7.2
XYLENES		16	13500		320
ZINC	96	10000	180	2000	1000

Col 7 = (col 2) x (2 L/day)
Col 8 = (col 2) x (col 6) x (0.0065 kg/day)
Col 9 = (col 7) + (col 8)
Col 10 = (col 9) / (col 3)
Col 11 = (col 2) / (col 4)
Col 12 = (col 2) / (col 5)

TABLE P-14 (continued)
BCSP HAZARD WORKSHEET
IRP STAGE 2
SELFRIIDGE, MICHIGAN

1	7	8	9	10	11	12
CONTAMINANT NAME	DRINKING WATER INTAKE (ug/day)	FOOD INTAKE (ug/day)	TOTAL INTAKE (ug/day)	HEALTH HAZARD QUOTIENT	AQUATIC HAZARD QUOTIENT	TERRESTRIAL HAZARD QUOTIENT
BCSP GROUNDWATER CONTAMINANT HAZARD						
ARSENIC	0	0.0000	0.0000	0.0000	0.0000	0.0000
BARIUM	1764	22.9320	1786.9320	11912.8800	0.0608	0.0000
BENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
BIS(2-ETHYLHEXYL)PHTHALATE	30	30.2250	60.2250	0.0060	0.0938	0.0000
BUTYLBENZYLPHTHALATE	0	0.0000	0.0000	0.0000	0.0000	0.0000
CADMIUM	26	4.2250	30.2250	1.5113	19.6970	1.3000
CHROMIUM	0	0.0000	0.0000	0.0000	0.0000	0.0000
COPPER	120	81.9000	201.9000	0.1010	6.5217	0.3000
1,4- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,3- DICHLOROBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1- DICHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRANS-1,2- DICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DICHLOROFLUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
DIETHYLPHTHALATE	0	0.0000	0.0000	0.0000	0.0000	0.0000
2,4- DIMETHYLPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
DI-N-BUTYLPHTHALATE	4	1.1570	5.1570	0.0005	0.0021	0.0000
ETHYLBENZENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
IRON	116	37.7000	153.7000	1.0247	0.1450	0.0116
LEAD	0	0.0000	0.0000	0.0000	0.0000	0.0000
MANGANESE	4840	6292.0000	11132.0000	44528.0000	6.9143	12.1000
METHYLENE CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
NAPHTHALENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
NICKEL	176	57.2000	233.2000	0.8969	0.0800	0.4400
4- NITROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PENTACHLOROPHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PET HYDRO (ASSUME JP-4)	0	0.0000	0.0000	0.0000	0.0000	0.0000
PET HYDRO (ASSUME MOTOR OIL)	0	0.0000	0.0000	0.0000	0.0000	0.0000
PHENOL	0	0.0000	0.0000	0.0000	0.0000	0.0000
PYRENE	4	0.0104	4.0104	0.6684	0.0000	0.0000
SILVER	0	0.0000	0.0000	0.0000	0.0000	0.0000
1,1,2,2- TETRACHLOROETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TETRACHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TOLUENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROETHENE	0	0.0000	0.0000	0.0000	0.0000	0.0000
TRICHLOROFLUOROMETHANE	0	0.0000	0.0000	0.0000	0.0000	0.0000
VINYL CHLORIDE	0	0.0000	0.0000	0.0000	0.0000	0.0000
XYLENES	0	0.0000	0.0000	0.0000	0.0000	0.0000
ZINC	192	624.0000	816.0000	0.0816	0.5333	0.0480
SUMS =				56445.1703	34.0480	14.1996
LOG OF SUMS =				4.7516	1.5321	1.1523
Col 7 = (col 2) x (2 L/day)						
Col 8 = (col 2) x (col 6) x (0.0065 kg/day)						
Col 9 = (col 7) + (col 8)						
Col 10 = (col 9) / (col 3)						
Col 11 = (col 2) / (col 4)						
Col 12 = (col 2) / (col 5)						

APPENDIX Q
CORRESPONDENCE

STATE OF MICHIGAN



NATURAL RESOURCES COMMISSION
THOMAS J. ANDERSON
MARLENE J. FLUHARTY
KERRY KAMMER
O. STEWART MYERS
DAVID D. OLSON
RAYMOND POUPORE

JAMES J. BLANCHARD, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING
BOX 30028
LANSING, MI 48909

GORDON E. GUYER, Director

December 8, 1988

Mr. Robert H. Gilbertsen
Assistant Project Engineer
WESTON
100 Corporate North, Suite 101
Route 22 and Lakeside Drive
Bannockburn, Illinois 60015

Dear Mr. Gilbertsen:

Your request for endangered species information was checked against known localities for special natural features recorded in the Michigan Natural Features Inventory (MNFI) database, which is part of the newly established Natural Resource Heritage Program of the Department of Natural Resources, Wildlife Division. The MNFI is an ongoing, continuously updated information base which is the most comprehensive single source of existing data on Michigan's endangered, threatened, or otherwise significant plant and animal species, natural plant communities, and other natural features.

There are no known occurrences of Federal- or State-listed endangered or threatened species at the locations(s) specified: Selfridge Air National Guard Base.

This database, however, cannot provide a definitive statement on the presence, absence, or condition of special natural features in any given locality, since most sites have not been specifically or thoroughly surveyed for the occurrence of special features. Therefore, the information provided above should not be regarded as a complete statement on the occurrence of special natural features at the sites(s) in question.

Thank you for your advance coordination in addressing the protection of Michigan's Natural Resource Heritage.

Sincerely,

Thomas F. Weise
Endangered Species Coordinator
Wildlife Division
517-373-1263

RECEIVED

DEC 12 1988

ROY F. WESTON, INC.
CHICAGO OFFICE



100 CORPORATE NORTH, SUITE 101
ROUTE 22 AND LAKESIDE DRIVE
BANNOCKBURN, ILLINOIS 60015
(312) 295-6020

FILE COPY

13 October 1988

Mr. Tom Weise
MDNR Wildlife Division
Box 30028
Lansing, Michigan 48909

W.O.# 0628-14-02

Subject: Critical Environments Around
Selfridge ANGB

Dear Mr. Weise:

As we discussed on the phone on 12 October 1988, WESTON is working for the Air Force on a Superfund-type environmental cleanup at the Selfridge Air National Guard Base on the shore of Lake St. Clair. The Base contains 8 individual sites that may require cleanup.

One of the items WESTON is investigating is whether the sites may presently threaten critical habitats. Another item of concern is whether future remediation activities would threaten critical habitats. Remediation activities typically involve earth moving, well drilling, and truck traffic. The Air Force defines critical habitats as follows:

- (1) lands or waters specifically recognized or managed by federal, state, or local government agencies or private organizations as rare, unique, unusually sensitive, or important natural resources (including designated critical habitat for endangered species, wilderness areas, nature preserves, or wildlife sanctuaries, but not parks established for historic preservation or recreation; and,
- (2) habitat utilized by any federally designated endangered species on a permanent or seasonal basis.

Our concern includes any critical habitat within 1 mile (1.6 kilometers) of the Base.

C0807

WESTON

Mr. Tom Weise

-2-

13 October 1988

It is our understanding from our phone conversation that no critical habitats are affected. Please review the enclosed maps and mail your conclusion to us.

Very truly yours,

ROY F. WESTON, INC.

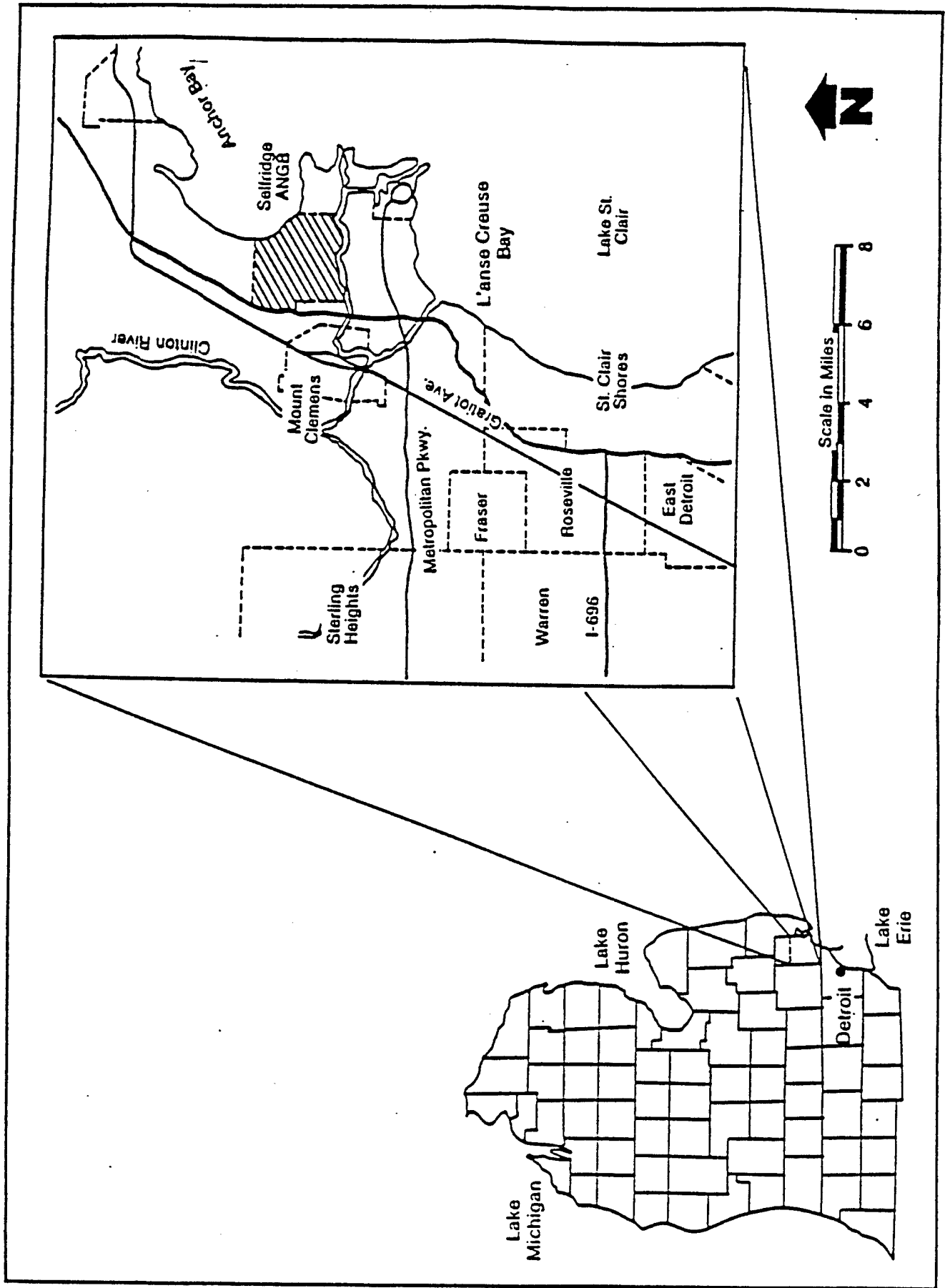


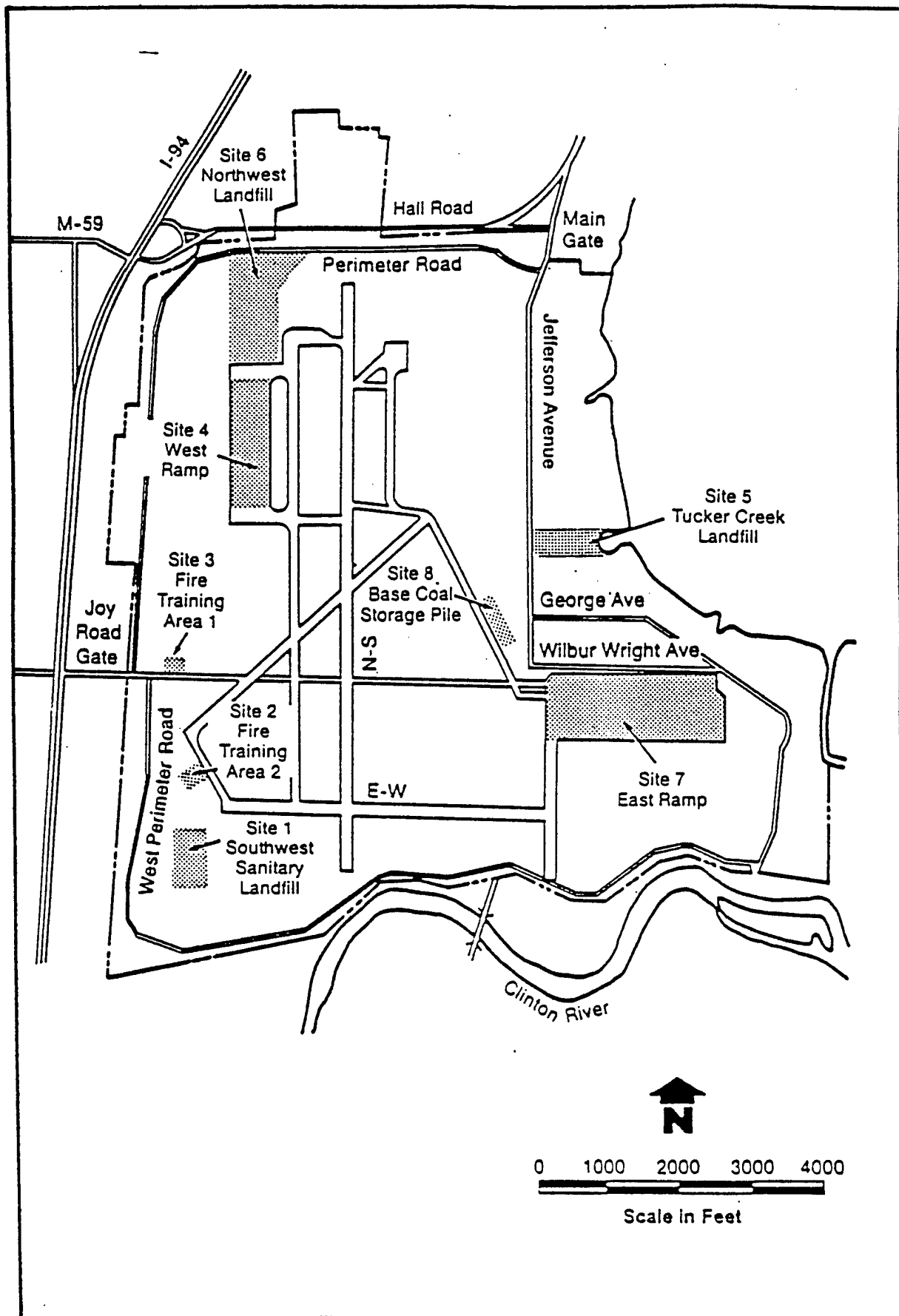
Robert H. Gilbertsen
Assistant Project Engineer

RHG/kvh

Attachments

C0807







100 CORPORATE NORTH, SUITE 101
ROUTE 22 AND LAKESIDE DRIVE
BANNOCKBURN, ILLINOIS 60015
(312) 295-6020

10 August 1988

Mr. Andy Hogarth
Michigan DNR
530 West Allegan
Lansing, Michigan 48933

W.O. 0628-14-02

SUBJECT: Second request for ARAR's for Selfridge Base

Dear Mr. Hogarth:

As we discussed over the telephone on 8 August 1988, Ken Burda has told WESTON that the Environmental Response Division would be our best contact with MDNR. With Mr. Burda's recommendation in mind, WESTON is resubmitting a set of questions from 21 July 1988 that were not previously answered. We look forward to receiving your answers and to the opportunity of working with you in the coming months.

Very truly yours,

ROY F. WESTON, INC.

Robert H. Gilbertsen
Assistant Engineer

RHG/ejf

Enclosure



100 CORPORATE NORTH, SUITE 101
ROUTE 22 AND LAKESIDE DRIVE
BANNOCKBURN, ILLINOIS 60015
(312) 295-6020

FILE COPY

21 July 1988

Mr. Ken Burda
Hazardous Waste Permit Chief
Michigan Department of Natural Resources
530 West Allegan
Lansing, MI 48933

W.O. 0628-14-02

Subject: Michigan ARAR's for Selfridge ANGB cleanup

Dear Mr. Burda:

Thank you for your prompt response to WESTON's preliminary request for Michigan ARAR's pertaining to the cleanup project at Selfridge Air National Guard Base. The information you provided will assist greatly in development of remedial alternatives.

Now that WESTON has some general regulatory information, we would like to learn more about four specific points.

1. CLEANUP CRITERIA FOR SOIL AND GROUNDWATER

Does MDNR issue chemical-specific cleanup criteria for chemical contaminants in soil and groundwater? If so, are these criteria developed for individual sites, or are there state-wide standards you can send us? Chemical-specific criteria will strongly affect the extent of cleanup and the selection of remedies.

2. WATER RESOURCES COMMISSION

Please clarify the role of the Michigan Water Resources Commission with respect to the cleanup. Should WESTON consult with the Commission as well as MDNR, or can MDNR remain our sole point of contact with the State of Michigan?

3. SITE ASSESSMENT SYSTEM (SAS)

WESTON intends to use the DOD's Defense Priority Model (DPM) rather than Michigan's SAS to score and rank the hazards present at the base. Like SAS, the DPM is an extension of USEPA's Hazard Ranking System (HRS).



Mr. Ken Burda

-2-

21 July 1988

4. ADDITIONAL DOCUMENTS

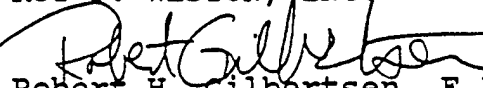
Can MDNR provide the following additional documents?

- A. Underground Storage Tank Act (Act 423, P.A. 1984)
- B. Applicable rules promulgated by the Water Resources Commission (as opposed to legislation granting rule-making authority to the Commission) in the areas of waste water, groundwater, and water quality standards.
- C. Michigan Environmental Response Act (Act 307, P.A. 1982)

Feel free to contact WESTON if you have any questions about this request or any other matters regarding the cleanup program at Selfridge.

Very truly yours,

ROY F. WESTON, INC.


Robert H. Gilbertsen, E.I.T.
Assistant Project Engineer


Edward A. Need, P.G.
Project Manager

RHG/EAN/ef

COMMUNICATION RECORD

Name: KEN BURDA		Subject: MI ARAR'S	
Company: MDNR		Delegated/Routed to: ED NEED	
Address: HAZARDOUS WASTE PERMIT CHIEF			
Due/Response Date:			
Phone: 517-373-0530		From: BOB G	
Sequence & Dates	Follow-up Needed	Subject/I Said	Response/They Said
7/14		MICHIGAN ARAR'S : → REQUEST OF JULY 1 RECEIVED?	YES!
		→ ABLE TO HELP ?	YES!
		→ WHEN RESPOND?	NEXT WEEK - THEY'RE PULLING RESPONSE TOGETHER NOW.
		X ON 7/22 RHG WILL CALL BURDA AGAIN IF ARARS HAVEN'T ARRIVED.	

2201-2202 REV. 7-87

Printed in USA

©1987

TIME



100 CORPORATE NORTH, SUITE 101
ROUTE 22 AND LAKESIDE DRIVE
BANNOCKBURN, ILLINOIS 60015
(312) 295-6020

6 July 1988

Mr. Basil Constantelos
USEPA Waste Management Division, Mail Code 5H-12
230 South Dearborn Street
Chicago, IL 60604 W.O. 0628-14-02

Subject: Request for Federal ARARs

Dear Mr. Constantelos:

WESTON is conducting a preliminary feasibility study for remediation of eight waste sites at Selfridge Air National Guard Base near Mr. Clemens, Michigan. Although none of the sites is on the Superfund list, the feasibility study will follow the standard Superfund format.

An important element of the feasibility study is the section on Applicable or Relevant and Appropriate Regulations (ARARs). WESTON requests that USEPA identify and provide copies of Federal waste site cleanup ARARs that apply to landfills, fuel spills, or heavy metal contamination. We require action-specific, chemical-specific, and location-specific ARARs. For each ARAR covered in your response, please provide the regulation's title, the citation, a brief summary of areas of applicability, and a copy of the complete text.

WESTON is pleased to take part in this waste cleanup in the State of Michigan. We request your prompt reply with the ARARs, and we stand ready to answer any questions you might have about the project.

Very truly yours,

ROY F. WESTON, INC.

Robert H. Gilbertsen
Assistant Project Engineer

RHG/iec



100 CORPORATE NORTH, SUITE 101
ROUTE 22 AND LAKESIDE DRIVE
BANNOCKBURN, ILLINOIS 60015
(312) 295-6020

1 July 1988

Mr. Ken Burda
Hazardous Waste Permit Chief
Michigan Department of Natural Resources
530 West Allegan
Lansing, MI 48933

W.O. 0628-14-02

Subject: Request for Michigan ARARs

Dear Mr. Burda:

WESTON is conducting a preliminary feasibility study for remediation of eight waste sites at Selfridge Air National Guard Base near Mt. Clemens, Michigan. Although none of the sites is on the Superfund list, the feasibility study will follow the standard Superfund format.

An important element of the feasibility study is the section on Applicable or Relevant and Appropriate Regulations (ARARs). WESTON requests that Michigan DNR identify and provide copies of Michigan's waste site cleanup ARARs that apply to landfills, fuel spills, or heavy metal contamination. We require action-specific, chemical-specific, and location-specific ARARs. To assist you, we are providing a list of 12 Michigan Action-Specific ARARs we have already identified but not researched. For each ARAR covered in your response, please provide the regulation's title, the citation, a brief summary of areas of applicability, and a copy of the complete text.

WESTON is pleased to take part in this waste cleanup in the State of Michigan. We request your prompt reply with the ARARs, and we stand ready to answer any questions you might have about the project.

Very truly yours,

ROY F. WESTON, INC.

Robert H. Gilbertsen
Assistant Project Engineer

RHG:amp
Enclosure

C0285

Action-Specific ARARs Checklist, Selfridge ANGB, Michigan Requirements



	Does This Requirement Apply to Site Conditions?		Explanations
	Yes	No	
1. Hazardous Waste Management Act (Act No. 64, P.A. 1979)	X		Consistent with RCRA, Applicable to all potential alternatives.
2. Underground Storage Tank Act (Act No. 423, P.A. 1984)		X	Requires registration and permitting of underground storage tanks.
3. Air Pollution Control Commission General Rules (R 336 Parts 2,3,6,9)	X		Applicable to soil removal activities and potential air stripping.
4. Michigan Solid Waste Management Act (Act No. 641, P.A. 1978)	X		Applicable to site landfills.
5. HDNR - Water Resources Commission (Act 245, P.A., 1929, as amended) R 323, Parts 9,21. Wastewater Reporting and Surveillance Fees Rules, and Wastewater Discharge Permits (HWA HPDES)	X		This regulation addressed the removal of liquid industrial waste and outlines requirements for licenses, recordkeeping and transportation.
6. Soil and Erosion Control (Act No. 347, P.A. 1972)	X		Applicable to soil removal activity.
7. Liquid Industrial Waste Disposal Act (Act No. 136, P.A. 1984)		X	This regulation addresses the removal of liquid industrial waste and outlines requirements for licenses, recordkeeping and transportation.
8. HDNR - Water Resources Commission (Act 245, P.A. 1929, as amended) R 323, Part 22, Groundwater Discharge Rules	X		Applicable to alternatives that involve discharges to groundwater.
9. HDNR - Water Resources Commission (Act 245, P.A. 1929, as amended) R 323, Part 4, Water Quality Standards	X		Applicable to alternatives that involve discharges to surface water.
10. Environmental Response Act - Act No. 307, P.A. 1982	X		Requires risk assessments for hazardous waste sites.
11. Great Lakes Water Quality Agreement (22 Nov. 1978)			Regulates water quality between Canada and the United States.