Final

Remedial Investigation Report
Operable Unit No. 12 (Site 3)

Marine Corps Base,
Camp Lejeune, North Carolina

Appendices

Prepared For:

Department of the Navy
Atlantic Division
Naval Facilities
Engineering Command
Norfolk, Virginia

Under the

LANTDIV CLEAN Program

Comprehensive Long-Term
Environmental Action Navy

Reference:
Contract
N62470-89-D-4814

CTO-0274
12
July 1996

APPENDICES

A	Field Investigation Documentation
B	Sample Documentation
C	Well Development Records
D	IDW Summary
E	Aquifer Characterization Data
F	Base Background Soil Report
G	Baker's Evaluation of Metals in Groundwater Report
H	Data and Frequency Summaries
I	Field Duplicate Summaries
J	QA/QC Summaries
K	Engineering Parameter Data
L	COPC Worksheet
M	Statistical Summaries
N	CDI Calculations and Spreadsheets
O	Field Data Sheets
P	Endangered Species Survey
Q	Terrestrial Reference Values and CDI Spreadsheets

APPENDIX A
FIELD INVESTIGATION DOCUMENTATION

APPENDIX A.1
TEST BORING LOGS

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-NA-SB03

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC.
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R.M. LEWIS
ENV. SCIENTIST: A.M. BERNHARDT
DATE BEGUN: 11/16/94 DATE COMPLETED: 11/16/94

GROUND SURFACE ELEVATION: 29.99' msl
TOTAL DEPTH: 9.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
	0.0		S-1	SS	-	-	-	-		SAND AND SILT: Fine grained, brown/gray/dark brown, damp, medium dense	0.0
29.00	1.0				4						1.0
28.00	2.0		S-2	SS	4 8 13	2.0	0.3	0.3			2.0
27.00	3.0				4						3.0
26.00	4.0		S-3	SS	8 8 7	2.0	0.3	0.3			4.0
25.00	5.0				3					SAND: Fine grained, little silt, gray, moist to wet, medium dense to loose	5.0
24.00	6.0		S-4	SS	3 3 4	2.0	0.3	0.3			6.0
23.00	7.0				3						7.0
22.00	8.0		S-5	SS	4 12 17	2.0	0.3	0.3			8.0
21.00	9.0									BOTTOM OF BOREHOLE @ 9.0'	9.0
20.00	10.0									NOTES:	10.0
19.00	11.0									1) Groundwater encountered at 7' during drilling	11.0
18.00	12.0										12.0
17.00	13.0										13.0
16.00	14.0										14.0
15.00	15.0										15.0
14.00	16.0										16.0
13.00	17.0										17.0
12.00	18.0										18.0
11.00	19.0										19.0
10.00	20.0										20.0
9.00	21.0										21.0
8.00	22.0										22.0
7.00	23.0										23.0
6.00	24.0										24.0
5.00	25.0										25.0
4.00	26.0										26.0
3.00	27.0										27.0
2.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-NA-SB05

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R.M. LEWIS
ENV SCIENTIST: A.M. BERNHARDI
DATE BEGUN: 11/16/94 DATE COMPLETED: 11/16/94

GROUND SURFACE ELEVATION: 30.51' msl
TOTAL DEPTH: 9.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
30.00	0.0		S-1	SS	-	-	-	-		SAND AND SILT: Fine grained, light brown, damp	0.0
29.00	1.0										1.0
	2.0		S-2	SS	10 15 10 9	1.75	0.3	0.3		SAND AND CLAY: Fine grained, trace silt, light brown, damp, medium dense	2.0
28.00	3.0										3.0
27.00	4.0		S-3	SS	2 4 7 7	2.0	0.3	0.2		SAND: Fine grained, trace to little silt, occasional trace clay, light brown to gray, moist to wet, medium dense	4.0
26.00	5.0										5.0
25.00	6.0		S-4	SS	3 3 7 7	2.0	0.2	0.2			6.0
24.00	7.0										7.0
23.00	8.0		S-5	SS	3 5 8 15	2.0	0.2	0.4			8.0
22.00	9.0										9.0
21.00	10.0									BOTTOM OF BOREHOLE @ 11.0'	10.0
20.00	11.0									NOTES	11.0
19.00	12.0									1) Groundwater encountered at 7' during drilling.	12.0
18.00	13.0										13.0
17.00	14.0										14.0
16.00	15.0										15.0
15.00	16.0										16.0
14.00	17.0										17.0
13.00	18.0										18.0
12.00	19.0										19.0
11.00	20.0										20.0
10.00	21.0										21.0
9.00	22.0										22.0
8.00	23.0										23.0
7.00	24.0										24.0
6.00	25.0										25.0
5.00	26.0										26.0
4.00	27.0										27.0
3.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-NA-SB08

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC.
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R.M. LEWIS
ENV SCIENTIST: A.M. BERNHARDT
DATE BEGUN: 11/16/94 DATE COMPLETED: 11/16/94

GROUND SURFACE ELEVATION: 31.18' msl
TOTAL DEPTH: 9.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
31.00	0.0		S-1	SS	-	-	-	-		SAND AND SILT. Fine grained, trace clay, light brown/gray, damp to wet, medium dense	0.0
30.00	1.0										1.0
29.00	2.0		S-2	SS	14 10 10 11	2.0	0.3	0.3			2.0
28.00	3.0										3.0
27.00	4.0		S-3	SS	3 7 9 20	2.0	0.3	0.3			4.0
26.00	5.0										5.0
25.00	6.0		S-4	SS	5 5 11 10	2.0	0.3	0.3			6.0
24.00	7.0										7.0
23.00	8.0		S-5	SS	3 9 24 25	2.0	0.3	0.3			8.0
22.00	9.0									BOTTOM OF BOREHOLE @ 9.0'	9.0
21.00	10.0									NOTES	10.0
20.00	11.0									1) Groundwater encountered at 7.5' during drilling.	11.0
19.00	12.0										12.0
18.00	13.0										13.0
17.00	14.0										14.0
16.00	15.0										15.0
15.00	16.0										16.0
14.00	17.0										17.0
13.00	18.0										18.0
12.00	19.0										19.0
11.00	20.0										20.0
10.00	21.0										21.0
9.00	22.0										22.0
8.00	23.0										23.0
7.00	24.0										24.0
6.00	25.0										25.0
5.00	26.0										26.0
4.00	27.0										27.0
3.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-NA-SB17/18/19

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT-WOLFF, INC
RIG TYPE & NUMBER: TRUCK RIG - CME 55
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, HOT
GEOLOGIST: M.K. DEJOHN
ENV. SCIENTIST: -
DATE BEGUN: 6/15/95 DATE COMPLETED: 6/15/95

GROUND SURFACE ELEVATION: 30.50' msl
TOTAL DEPTH: 9.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
30.00	0.0		S-1	HA	-	-	1.1	1.1		SILTY CLAY: trace fine grained sand, olive green w/orangish staining, very stiff	0.0
	1.0				5						1.0
29.00	2.0		S-2	SS	13	1.5	1.0	1.1			2.0
28.00	3.0				10 9						3.0
27.00	4.0		S-3	SS	5 6 7 5	1.7	1.1	1.1		SAND: fine grained, some silt, little to trace clay, tan/gray, moist to wet, stiff to medium dense	4.0
26.00	5.0										5.0
25.00	6.0		S-4	SS	3 5 6 5	1.5	1.1	1.1			6.0
24.00	7.0										7.0
23.00	8.0		S-5	SS	3 7 9 13	2.0	1.1	1.1			8.0
22.00	9.0									BOTTOM OF BOREHOLE @ 9.0'	9.0
21.00	10.0									NOTES:	10.0
20.00	11.0									1) Groundwater encountered at 6' during drilling	11.0
19.00	12.0										12.0
18.00	13.0										13.0
17.00	14.0										14.0
16.00	15.0										15.0
15.00	16.0										16.0
14.00	17.0										17.0
13.00	18.0										18.0
12.00	19.0										19.0
11.00	20.0										20.0
10.00	21.0										21.0
9.00	22.0										22.0
8.00	23.0										23.0
7.00	24.0										24.0
6.00	25.0										25.0
5.00	26.0										26.0
4.00	27.0										27.0
3.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-TA-SB08

SHEET: 1 OF 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R M. LEWIS
ENV. SCIENTIST: A M. BERNHARDT
DATE BEGUN: 11/14/94 DATE COMPLETED: 11/14/94

GROUND SURFACE ELEVATION 32.56' msl
TOTAL DEPTH: 11.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
32.00	0.0		S-1	SS	-	-	-	-		SAND: Fine grained, trace to little silt, black/brown/light, gray, dry to moist to wet, loose to dense	0.0
31.00	1.0										1.0
30.00	2.0		S-2	SS	4 4 4 4	2.0	0.2	3.5			2.0
29.00	3.0										3.0
28.00	4.0		S-3	SS	2 4 5 10	2.0	0.2	0.2			4.0
27.00	5.0										5.0
26.00	6.0		S-4	SS	2 12 17 20	2.0	0.2	0.2			6.0
25.00	7.0										7.0
24.00	8.0		S-5	SS	12 14 17 20	2.0	0.2	0.2			8.0
23.00	9.0										9.0
22.00	10.0		S-6	SS	5 7 8 6	1.5	0.2	1.2			10.0
21.00	11.0										11.0
20.00	12.0									BOTTOM OF BOREHOLE @ 11.0'	12.0
19.00	13.0									NOTES:	13.0
18.00	14.0									1) Groundwater encountered at 9' during drilling.	14.0
17.00	15.0										15.0
16.00	16.0										16.0
15.00	17.0										17.0
14.00	18.0										18.0
13.00	19.0										19.0
12.00	20.0										20.0
11.00	21.0										21.0
10.00	22.0										22.0
9.00	23.0										23.0
8.00	24.0										24.0
7.00	25.0										25.0
6.00	26.0										26.0
5.00	27.0										27.0
	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-TA-SB10

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC.
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R.M. LEWIS
ENV. SCIENTIST: A.M. BERNHARDT
DATE BEGUN: 11/14/99 DATE COMPLETED: 11/14/99

GROUND SURFACE ELEVATION: 30.94' msl
TOTAL DEPTH: 11.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
	0.0		S-1	SS	-	-	-	-		SAND AND SILT: Fine grained, black to dark brown, damp to wet, medium dense to loose	0.0
30.00	1.0										1.0
29.00	2.0		S-2	SS	5 6 6 6	2.0	0.2	0.2			2.0
28.00	3.0										3.0
27.00	4.0		S-3	SS	2 3 5 5	2.0	0.2	0.2			4.0
26.00	5.0										5.0
25.00	6.0		S-4	SS	3 4 5 7	2.0	0.2	0.2			6.0
24.00	7.0										7.0
23.00	8.0		S-5	SS	5 6 8 12	2.0	0.2	0.2			8.0
22.00	9.0										9.0
21.00	10.0		S-6	SS	4 6 8 16	2.0	0.2	0.3			10.0
20.00	11.0									BOTTOM OF BOREHOLE @ 11.0'	11.0
19.00	12.0									NOTES 1) Groundwater encountered at 9' during drilling	12.0
18.00	13.0										13.0
17.00	14.0										14.0
16.00	15.0										15.0
15.00	16.0										16.0
14.00	17.0										17.0
13.00	18.0										18.0
12.00	19.0										19.0
11.00	20.0										20.0
10.00	21.0										21.0
9.00	22.0										22.0
8.00	23.0										23.0
7.00	24.0										24.0
6.00	25.0										25.0
5.00	26.0										26.0
4.00	27.0										27.0
3.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-TA-SB14

SHEET 1 OF 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC.
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R.M. LEWIS
ENV. SCIENTIST: A.M. BERNHARDT
DATE BEGUN: 11/14/94 DATE COMPLETED: 11/14/94

GROUND SURFACE ELEVATION: 30.97' msl
TOTAL DEPTH: 11.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
	0.0		S-1	SS	-	-	-	-		SAND AND SILT/SILT AND SAND: Fine grained, black to dark brown and gray, damp to wet, loose to very loose	0.0
30.00	1.0		S-2	SS	5 5 3 5	1.5	0.4	0.4			1.0
29.00	2.0										2.0
28.00	3.0		S-3	SS	5 / 2 4"	1.0	0.5	0.5			3.0
27.00	4.0										4.0
26.00	5.0		S-4	SS	W 12" 1/ 12"	1.0	2.7	3.0			5.0
25.00	6.0										6.0
24.00	7.0		S-5	SS	W O R	0.1	1.4	1.4			7.0
23.00	8.0										8.0
22.00	9.0		S-6	SS	1 2 2 3	2.0	1.2	1.2			9.0
21.00	10.0										10.0
20.00	11.0									BOTTOM OF BOREHOLE @ 11.0'	11.0
19.00	12.0									NOTES:	12.0
18.00	13.0									1) Groundwater encountered at 5' during drilling	13.0
17.00	14.0										14.0
16.00	15.0										15.0
15.00	16.0										16.0
14.00	17.0										17.0
13.00	18.0										18.0
12.00	19.0										19.0
11.00	20.0										20.0
10.00	21.0										21.0
9.00	22.0										22.0
8.00	23.0										23.0
7.00	24.0										24.0
6.00	25.0										25.0
5.00	26.0										26.0
4.00	27.0										27.0
3.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-TA-SB21

SHEET: 1 OF 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R.M. LEWIS
ENV SCIENTIST: A.M. BERNHARDT
DATE BEGUN: 11/15/94 DATE COMPLETED 11/15/94

GROUND SURFACE ELEVATION: 30.71' msl
TOTAL DEPTH: 9.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
	0.0		S-1	SS	-	-	-	-		SAND AND SILT: fine grained, black, damp (Possible Fill)	0.0
30.00	1.0										1.0
29.00	2.0		S-2	SS	15 15 18 6	2.0	0.4	0.4		SAND: fine grained, trace silt, black to gray, damp to wet, dense to medium denser	2.0
28.00	3.0										3.0
27.00	4.0		S-3	SS	5 8 9 11	2.0	0.4	0.4			4.0
26.00	5.0										5.0
25.00	6.0		S-4	SS	5 4 6 9	2.0	0.4	0.4			6.0
24.00	7.0										7.0
23.00	8.0		S-5	SS	6 6 11 10	2.0	0.4	0.4			8.0
22.00	9.0									BOTTOM OF BOREHOLE @ 9.0'	9.0
21.00	10.0									NOTES:	10.0
20.00	11.0									1) Groundwater encountered at 7' during drilling	11.0
19.00	12.0										12.0
18.00	13.0										13.0
17.00	14.0										14.0
16.00	15.0										15.0
15.00	16.0										16.0
14.00	17.0										17.0
13.00	18.0										18.0
12.00	19.0										19.0
11.00	20.0										20.0
10.00	21.0										21.0
9.00	22.0										22.0
8.00	23.0										23.0
7.00	24.0										24.0
6.00	25.0										25.0
5.00	26.0										26.0
4.00	27.0										27.0
3.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-TA-SB23
SHEET: 1 OF: 1

PROJECT NUMBER: 62470-279
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC.
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R.M. LEWIS
ENV SCIENTIST: A.M. BERNHARDT
DATE BEGUN: 11/15/94 DATE COMPLETED: 11/15/94

GROUND SURFACE ELEVATION: 31.63' msl
TOTAL DEPTH: 11.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
31.00	0.0		S-1	SS	-	-	-	-			0.0
30.00	1.0									SAND: fine grained, and silt to trace silt, occasional trace of clay, black to dark brown and gray, damp to wet, loose to medium dense	1.0
			S-2	SS	8 9 13 10	2.0	0.3	0.3		Probable Fill from 0 to 3'	2.0
29.00	2.0										3.0
	3.0		S-3	SS	4 3 4 7	2.0	0.3	0.7			4.0
28.00	4.0										5.0
27.00	5.0		S-4	SS	5 7 3 7	2.0	0.3	0.4			6.0
26.00	6.0										7.0
25.00	7.0		S-5	SS	6 5 7 6	2.0	0.4	0.4			8.0
24.00	8.0										9.0
23.00	9.0		S-6	SS	5 3 3 6	2.0	0.4	0.5			10.0
22.00	10.0										11.0
21.00	11.0									BOTTOM OF BOREHOLE @ 11.0'	12.0
20.00	12.0									NOTES	13.0
19.00	13.0									1) Groundwater encountered at 5' during drilling	14.0
18.00	14.0										15.0
17.00	15.0										16.0
16.00	16.0										17.0
15.00	17.0										18.0
14.00	18.0										19.0
13.00	19.0										20.0
12.00	20.0										21.0
11.00	21.0										22.0
10.00	22.0										23.0
9.00	23.0										24.0
8.00	24.0										25.0
7.00	25.0										26.0
6.00	26.0										27.0
5.00	27.0										28.0
4.00	28.0										

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-TA-SB25

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R.M. LEWIS
ENV. SCIENTIST: A.M. BERNHARDT
DATE BEGUN: 11/15/94 DATE COMPLETED: 11/15/94

GROUND SURFACE ELEVATION: 30.72' msl
TOTAL DEPTH: 9.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
	0.0		S-1	SS	-	-	-	-		SAND AND SILT: Fine grained, dark gray to black, damp to moist, loose. (Possible Fill)	0.0
30.00	1.0				6 3 2 4						1.0
29.00	2.0		S-2	SS		2.0	0.5	0.5		SAND: Fine grained, some silt, black to brown, moist to wet, loose	2.0
28.00	3.0				1 2 3 3						3.0
27.00	4.0		S-3	SS		2.0	0.5	0.5			4.0
26.00	5.0				1 1 3 16						5.0
25.00	6.0		S-4	SS		2.0	0.5	0.5			6.0
24.00	7.0				6 13 13 8						7.0
23.00	8.0		S-5	SS		2.0	0.5	0.5			8.0
22.00	9.0									BOTTOM OF BOREHOLE @ 9.0'	9.0
21.00	10.0									NOTES:	10.0
20.00	11.0									1) Groundwater encountered at 6' during drilling	11.0
19.00	12.0										12.0
18.00	13.0										13.0
17.00	14.0										14.0
16.00	15.0										15.0
15.00	16.0										16.0
14.00	17.0										17.0
13.00	18.0										18.0
12.00	19.0										19.0
11.00	20.0										20.0
10.00	21.0										21.0
9.00	22.0										22.0
8.00	23.0										23.0
7.00	24.0										24.0
6.00	25.0										25.0
5.00	26.0										26.0
4.00	27.0										27.0
3.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-TA-SB29

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC.
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R.M LEWIS
ENV SCIENTIST: A.M BERNHARDT
DATE BEGUN: 11/15/94 DATE COMPLETED: 11/15/94

GROUND SURFACE ELEVATION: 33.80' msl
TOTAL DEPTH: 9.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
	0.0		S-1	SS	-	-	-	-			0.0
33.00	1.0									SAND AND SILT: Fine grained, black, damp, medium dense to loose	1.0
32.00	2.0		S-2	SS	12 8 8 6	2.0	0.7	0.7			2.0
31.00	3.0										3.0
30.00	4.0		S-3	SS	2 2 4 12	2.0	0.7	0.7			4.0
29.00	5.0										5.0
28.00	6.0		S-4	SS	11 12 18 20	2.0	0.7	0.7		SAND: Fine grained, little silt, gray, wet, dense	6.0
27.00	7.0										7.0
26.00	8.0		S-5	SS	5 10 7 4	2.0	0.7	0.7			8.0
25.00	9.0										9.0
24.00	10.0									BOTTOM OF BOREHOLE @ 9.0'	10.0
23.00	11.0									NOTES	11.0
22.00	12.0									1) Groundwater encountered at 6' during drilling	12.0
21.00	13.0										13.0
20.00	14.0										14.0
19.00	15.0										15.0
18.00	16.0										16.0
17.00	17.0										17.0
16.00	18.0										18.0
15.00	19.0										19.0
14.00	20.0										20.0
13.00	21.0										21.0
12.00	22.0										22.0
11.00	23.0										23.0
10.00	24.0										24.0
9.00	25.0										25.0
8.00	26.0										26.0
7.00	27.0										27.0
6.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-TA-SB34

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R M LEWIS
ENV. SCIENTIST: A M BERNHARDT
DATE BEGUN: 11/17/94 DATE COMPLETED: 11/17/94

GROUND SURFACE ELEVATION: 30.78' msl
TOTAL DEPTH: 9.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
	0.0		S-1	SS	-	-	-	-		SILT AND SAND: Fine grained, black, moist	0.0
30.00	1.0				3						1.0
29.00	2.0		S-2	SS	4 5 9	2.0	0.3	0.3		SAND Fine grained, some clay, brown to gray, moist, medium dense	2.0
28.00	3.0				3						3.0
27.00	4.0		S-3	SS	5 9 6	2.0	0.3	0.3		SAND. Fine grained, little silt, gray, moist, medium dense	4.0
26.00	5.0				1						5.0
25.00	6.0		S-4	SS	3 4 4	2.0	0.3	0.3		SAND Fine grained, some clay, gray, damp to wet, loose to medium dense	6.0
24.00	7.0				3						7.0
23.00	8.0		S-5	SS	10 7 10	2.0	0.3	0.3			8.0
22.00	9.0									BOTTOM OF BOREHOLE @ 9.0'	9.0
21.00	10.0									NOTES	10.0
20.00	11.0									1) Groundwater encountered at 7' during drilling.	11.0
19.00	12.0										12.0
18.00	13.0										13.0
17.00	14.0										14.0
16.00	15.0										15.0
15.00	16.0										16.0
14.00	17.0										17.0
13.00	18.0										18.0
12.00	19.0										19.0
11.00	20.0										20.0
10.00	21.0										21.0
9.00	22.0										22.0
8.00	23.0										23.0
7.00	24.0										24.0
6.00	25.0										25.0
5.00	26.0										26.0
4.00	27.0										27.0
3.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-TA-SB37

SHEET 1 OF 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R.M. LEWIS
ENV. SCIENTIST: A.M. BERNHARDT
DATE BEGUN: 11/15/94 DATE COMPLETED: 11/15/94

GROUND SURFACE ELEVATION: 31.11' msl
TOTAL DEPTH: 9.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
31.00	0.0		S-1	SS	-	-	-	-		SAND AND SILT: fine grained, black to dark gray, damp, medium dense	0.0
30.00	1.0				12						1.0
29.00	2.0		S-2	SS	11 10 14	2.0	0.4	0.4			2.0
28.00	3.0				4						3.0
27.00	4.0		S-3	SS	6 7 6	2.0	0.4	0.4			4.0
26.00	5.0				4						5.0
25.00	6.0		S-4	SS	7 4 10	2.0	0.4	0.4			6.0
24.00	7.0				6						7.0
23.00	8.0		S-5	SS	5 5 6	2.0	0.4	0.4		SAND Fine grained, trace silt, gray, wet, medium dense	8.0
22.00	9.0									BOTTOM OF BOREHOLE @ 9.0'	9.0
21.00	10.0									NOTES: 1) Groundwater encountered at 6' during drilling	10.0
20.00	11.0										11.0
19.00	12.0										12.0
18.00	13.0										13.0
17.00	14.0										14.0
16.00	15.0										15.0
15.00	16.0										16.0
14.00	17.0										17.0
13.00	18.0										18.0
12.00	19.0										19.0
11.00	20.0										20.0
10.00	21.0										21.0
9.00	22.0										22.0
8.00	23.0										23.0
7.00	24.0										24.0
6.00	25.0										25.0
5.00	26.0										26.0
4.00	27.0										27.0
3.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-TA-SB39
SHEET: 1 OF: 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R.M. LEWIS
ENV SCIENTIST: A.M. BERNHARDT
DATE BEGUN: 11/15/94 DATE COMPLETED: 11/15/94

GROUND SURFACE ELEVATION: 31.19' msl
TOTAL DEPTH: 11.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
31:00	0.0		S-1	SS	-	-	-	-		SAND AND SILT: Fine grained, brown to black, damp, dense (Possible Fill)	0.0
30:00	1.0										1.0
29:00	2.0		S-2	SS	8 15 13 20	2.0	0.4	0.4			2.0
28:00	3.0										3.0
27:00	4.0		S-3	SS	5 9 8 9	2.0	0.4	0.4		SAND AND SILT: Fine grained, black to dark gray, occasional trace clay, damp to wet, medium dense	4.0
26:00	5.0										5.0
25:00	6.0		S-4	SS	5 9 8 6	2.0	0.4	0.4			6.0
24:00	7.0										7.0
23:00	8.0		S-5	SS	5 6 8 12	2.0	0.4	0.4			8.0
22:00	9.0										9.0
21:00	10.0		S-6	SS	5 9 5 9	2.0	0.4	0.4			10.0
20:00	11.0									BOTTOM OF BOREHOLE @ 11.0'	11.0
19:00	12.0									NOTES:	12.0
18:00	13.0									1) Groundwater encountered at 9' during drilling	13.0
17:00	14.0										14.0
16:00	15.0										15.0
15:00	16.0										16.0
14:00	17.0										17.0
13:00	18.0										18.0
12:00	19.0										19.0
11:00	20.0										20.0
10:00	21.0										21.0
9:00	22.0										22.0
8:00	23.0										23.0
7:00	24.0										24.0
6:00	25.0										25.0
5:00	26.0										26.0
4:00	27.0										27.0
3:00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-TA-SB41
SHEET 1 OF 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R.M. LEWIS
ENV SCIENTIST: A.M. BERNHARDT
DATE BEGUN: 11/15/94 DATE COMPLETED: 11/15/94

GROUND SURFACE ELEVATION: 30.98' msl
TOTAL DEPTH: 9.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
	0.0		S-1	SS	-	-	-	-		SAND AND SILT: Fine grained, black, damp	0.0
30.00	1.0				12						1.0
29.00	2.0		S-2	SS	13 14 12	2.0	0.4	0.4		SAND: Fine grained, some silt, occsional trace clay, gray, damp/wet, medium dense	2.0
28.00	3.0				4						3.0
27.00	4.0		S-3	SS	4 3 3	2.0	0.4	0.4			4.0
26.00	5.0				1						5.0
25.00	6.0		S-4	SS	2 2 3	2.0	0.4	0.4			6.0
24.00	7.0									BOTTOM OF BOREHOLE @ 7.0'	7.0
23.00	8.0									NOTES	8.0
22.00	9.0									1) Groundwater encountered at 5' during drilling.	9.0
21.00	10.0										10.0
20.00	11.0										11.0
19.00	12.0										12.0
18.00	13.0										13.0
17.00	14.0										14.0
16.00	15.0										15.0
15.00	16.0										16.0
14.00	17.0										17.0
13.00	18.0										18.0
12.00	19.0										19.0
11.00	20.0										20.0
10.00	21.0										21.0
9.00	22.0										22.0
8.00	23.0										23.0
7.00	24.0										24.0
6.00	25.0										25.0
5.00	26.0										26.0
4.00	27.0										27.0
3.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-TA-SB43

SHEET 1 OF 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC.
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R.M. LEWIS
ENV. SCIENTIST: A.M. BERNHARDT
DATE BEGUN: 11/15/94 DATE COMPLETED: 11/15/94

GROUND SURFACE ELEVATION 31.18' msl
TOTAL DEPTH 9.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
31.00	0.0		S-1	SS	-	-	-	-		SAND AND SILT: fine grained, dark brown, damp, medium dense	0.0
30.00	1.0				9						1.0
29.00	2.0		S-2	SS	11 16 19	2.0	0.4	0.4			2.0
28.00	3.0				9						3.0
27.00	4.0		S-3	SS	12 14 12	2.0	0.4	0.4		SAND AND SILT: fine grained, gray, moist to wet, medium dense	4.0
26.00	5.0				4						5.0
25.00	6.0		S-4	SS	5 8 6	2.0	0.4	0.4			6.0
24.00	7.0				5						7.0
23.00	8.0		S-5	SS	3 3 3	2.0	0.4	0.4			8.0
22.00	9.0									BOTTOM OF BOREHOLE @ 9.0'	9.0
21.00	10.0									NOTES	10.0
20.00	11.0									1) Groundwater encountered at 7' during drilling	11.0
19.00	12.0										12.0
18.00	13.0										13.0
17.00	14.0										14.0
16.00	15.0										15.0
15.00	16.0										16.0
14.00	17.0										17.0
13.00	18.0										18.0
12.00	19.0										19.0
11.00	20.0										20.0
10.00	21.0										21.0
9.00	22.0										22.0
8.00	23.0										23.0
7.00	24.0										24.0
6.00	25.0										25.0
5.00	26.0										26.0
4.00	27.0										27.0
3.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-TA-SB45/46/47

SHEET 1 OF 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT-WOLFF, INC
RIG TYPE & NUMBER: TRUCK RIG - CME 55
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, HOT
GEOLOGIST: M.K. DEJOHN
ENV. SCIENTIST: -
DATE BEGUN: 6/15/95 DATE COMPLETED: 6/15/95

GROUND SURFACE ELEVATION: 32.19' msl
TOTAL DEPTH: 5.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
31:00	0.0		S-1	HA	-	-	0.7	0.7		SILT: little fine grained sand, trace clay, black/gray, damp, medium dense	0.0
30:00	1.0										1.0
29:00	2.0		S-2	SS	14 10 8 8	2.0	0.7	0.7			2.0
28:00	3.0									SAND: fine grained, some silt, trace to little clay, gray/tan, moist to wet, loose	3.0
27:00	4.0		S-3	SS	6 4 4 5	1.3	0.6	0.6			4.0
26:00	5.0									BOTTOM OF BOREHOLE @ 5.0' NOTES: 1) Groundwater encountered at 5' during drilling.	5.0
25:00	6.0										6.0
24:00	7.0										7.0
23:00	8.0										8.0
22:00	9.0										9.0
21:00	10.0										10.0
20:00	11.0										11.0
19:00	12.0										12.0
18:00	13.0										13.0
17:00	14.0										14.0
16:00	15.0										15.0
15:00	16.0										16.0
14:00	17.0										17.0
13:00	18.0										18.0
12:00	19.0										19.0
11:00	20.0										20.0
10:00	21.0										21.0
9:00	22.0										22.0
8:00	23.0										23.0
7:00	24.0										24.0
6:00	25.0										25.0
5:00	26.0										26.0
4:00	27.0										27.0
3:00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-TA-SB48/49/50

SHEET: 1 OF 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT-WOLFF, INC
RIG TYPE & NUMBER: TRUCK RIG - CME 55
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, HOT
GEOLOGIST: M.K. DEJOHN
ENV. SCIENTIST: -
DATE BEGUN: 6/15/95 DATE COMPLETED: 6/15/95

GROUND SURFACE ELEVATION: 32.19' msl
TOTAL DEPTH: 9.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
32.00	0.0		S-1	HA	-	-	-	-			0.0
31.00	1.0									SAND: Fine grained, little to some silt, layers of stones and clay, dark gray, damp, dense to medium dense	1.0
30.00	2.0		S-2	SS	17 13 17 15	1.7	0.9	2.0			2.0
29.00	3.0										3.0
28.00	4.0		S-3	SS	5 7 5 6	1.6	0.7	1.0			4.0
27.00	5.0										5.0
26.00	6.0		S-4	SS	4 4 5 6	2.0	0.7	1.1		SANDY CLAY: Fine grained, little silt, gray, damp, medium dense; strong creosote odor	6.0
25.00	7.0										7.0
24.00	8.0		S-5	SS	10 13 14 12	2.0	0.7	8.0		SAND: Fine grained, some silt, trace to little clay, gray w/brown staining, moist to wet, medium dense; strong odor and free product floating on water surface	8.0
23.00	9.0										9.0
22.00	10.0									BOTTOM OF BOREHOLE @ 9.0'	10.0
21.00	11.0									NOTES:	11.0
20.00	12.0									1) Groundwater encountered at 9' during drilling.	12.0
19.00	13.0										13.0
18.00	14.0										14.0
17.00	15.0										15.0
16.00	16.0										16.0
15.00	17.0										17.0
14.00	18.0										18.0
13.00	19.0										19.0
12.00	20.0										20.0
11.00	21.0										21.0
10.00	22.0										22.0
9.00	23.0										23.0
8.00	24.0										24.0
7.00	25.0										25.0
6.00	26.0										26.0
5.00	27.0										27.0
4.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-RS-SB01

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC.
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R.M. LEWIS
ENV. SCIENTIST: A.M. BERNHARDT
DATE BEGUN: 11/15/94 DATE COMPLETED: 11/15/94

GROUND SURFACE ELEVATION: 28 62' msl
TOTAL DEPTH: 9 0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
28:00	0.0		S-1	SS	-	-	-	-		SAND: Fine grained, little to trace clay, brown to gray, damp to wet, loose	0.0
27:00	1.0				2						1.0
	2.0		S-2	SS	2 3 6	2.0	0.3	0.3			2.0
26:00	3.0				2						3.0
25:00	4.0		S-3	SS	3 2 3	2.0	0.3	0.3			4.0
24:00	5.0				1						5.0
23:00	6.0		S-4	SS	2 3 3	2.0	0.3	0.3			6.0
22:00	7.0				1						7.0
21:00	8.0		S-5	SS	2 2 1	1.5	0.3	0.2			8.0
20:00	9.0									BOTTOM OF BOREHOLE @ 9.0'	9.0
19:00	10.0									NOTES:	10.0
18:00	11.0									1) Groundwater encountered at 7' during drilling.	11.0
17:00	12.0										12.0
16:00	13.0										13.0
15:00	14.0										14.0
14:00	15.0										15.0
13:00	16.0										16.0
12:00	17.0										17.0
11:00	18.0										18.0
10:00	19.0										19.0
9:00	20.0										20.0
8:00	21.0										21.0
7:00	22.0										22.0
6:00	23.0										23.0
5:00	24.0										24.0
4:00	25.0										25.0
3:00	26.0										26.0
2:00	27.0										27.0
1:00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-RS-SB02

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC.
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R.M. LEWIS
ENV. SCIENTIST: A.M. BERNHARDT
DATE BEGUN: 11/16/94 DATE COMPLETED: 11/16/94

GROUND SURFACE ELEVATION: 33.80' msl
TOTAL DEPTH: 11.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
	0.0		S-1	SS	-	-	-	-		SAND AND SILT: Fine grained, little brown to gray, damp	0.0
33.00	1.0				3						1.0
32.00	2.0		S-2	SS	5 8 11	2.0	0.4	0.5		SAND: Fine grained, little clay, brown, damp, medium dense	2.0
31.00	3.0				3						3.0
30.00	4.0		S-3	SS	7 10 13	2.0	0.4	0.4			4.0
29.00	5.0				4					SAND: Fine grained, trace to little silt, tan to gray, damp to wet, medium dense	5.0
28.00	6.0		S-4	SS	5 8 7	2.0	0.5	0.5			6.0
27.00	7.0				6						7.0
26.00	8.0		S-5	SS	6 8 17	2.0	0.5	0.5			8.0
25.00	9.0				11						9.0
24.00	10.0		S-6	SS	13 18 9	2.0	0.5	0.5			10.0
23.00	11.0									BOTTOM OF BOREHOLE @ 11.0'	11.0
22.00	12.0									NOTES:	12.0
21.00	13.0									1) Groundwater encountered at 9' during drilling	13.0
20.00	14.0										14.0
19.00	15.0										15.0
18.00	16.0										16.0
17.00	17.0										17.0
16.00	18.0										18.0
15.00	19.0										19.0
14.00	20.0										20.0
13.00	21.0										21.0
12.00	22.0										22.0
11.00	23.0										23.0
10.00	24.0										24.0
9.00	25.0										25.0
8.00	26.0										26.0
7.00	27.0										27.0
6.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-RS-SB05

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC.
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R.M. LEWIS
ENV. SCIENTIST: A.M. BERNHARDT
DATE BEGUN: 11/16/94 DATE COMPLETED: 11/16/94

GROUND SURFACE ELEVATION: 28.50' msl
TOTAL DEPTH: 11.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
28.00	0.0		S-1	SS	-	-	-	-		SAND AND SILT: fine grained, little brown/gray/brown, damp, medium dense	0.0
	1.0										1.0
27.00	2.0		S-2	SS	4 8 6 5	2.0	0.3	0.3			2.0
26.00	3.0										3.0
25.00	4.0		S-3	SS	2 6 5 8	2.0	0.3	0.3			4.0
24.00	5.0									SAND: fine grained, little clay, light brown, damp, medium dense	5.0
23.00	6.0		S-4	SS	4 11 17 4	1.5	0.3	2.5		SAND: fine grained, trace, tan to gray, damp to wet, medium dense	6.0
22.00	7.0										7.0
21.00	8.0		S-5	SS	6 12 11 9	1.5	0.3	0.5			8.0
20.00	9.0										9.0
19.00	10.0		S-6	SS	3 7 7 11	1.75	0.3	0.5			10.0
18.00	11.0									BOTTOM OF BOREHOLE @ 11.0'	11.0
17.00	12.0									NOTES	12.0
16.00	13.0									1) Groundwater encountered at 9' during drilling.	13.0
15.00	14.0										14.0
14.00	15.0										15.0
13.00	16.0										16.0
12.00	17.0										17.0
11.00	18.0										18.0
10.00	19.0										19.0
9.00	20.0										20.0
8.00	21.0										21.0
7.00	22.0										22.0
6.00	23.0										23.0
5.00	24.0										24.0
4.00	25.0										25.0
3.00	26.0										26.0
2.00	27.0										27.0
1.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-RS-SB06

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC.
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R.M. LEWIS
ENV. SCIENTIST: A.M. BERNHAROT
DATE BEGUN: 11/15/94 DATE COMPLETED: 11/15/94

GROUND SURFACE ELEVATION: 28.75' msl
TOTAL DEPTH: 11.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
	0.0		S-1	SS	-	-	-	-		SAND AND SILT: Fine grained, grades to some to trace silt, occasional trace clay, dark brown to gray, damp to wet, medium dense	0.0
28:00	1.0										1.0
27:00	2.0		S-2	SS	8 11 11 11	2.0	0.3	0.3			2.0
26:00	3.0										3.0
25:00	4.0		S-3	SS	5 6 7 9	2.0	0.4	0.4			4.0
24:00	5.0										5.0
23:00	6.0		S-4	SS	2 3 4 5	2.0	0.4	0.4			6.0
22:00	7.0										7.0
21:00	8.0		S-5	SS	2 4 6 7	2.0	0.4	0.4			8.0
20:00	9.0										9.0
19:00	10.0		S-6	SS	6 9 11 11	2.0	0.2	0.2			10.0
18:00	11.0									BOTTOM OF BOREHOLE @ 11.0'	11.0
17:00	12.0									NOTES:	12.0
16:00	13.0									1) Groundwater encountered at 9' during drilling.	13.0
15:00	14.0										14.0
14:00	15.0										15.0
13:00	16.0										16.0
12:00	17.0										17.0
11:00	18.0										18.0
10:00	19.0										19.0
9:00	20.0										20.0
8:00	21.0										21.0
7:00	22.0										22.0
6:00	23.0										23.0
5:00	24.0										24.0
4:00	25.0										25.0
3:00	26.0										26.0
2:00	27.0										27.0
1:00	28.0										28.0

APPENDIX A.2
WELL CONSTRUCTION LOGS

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 3-MW02IW

SHEET: 1 OF 4

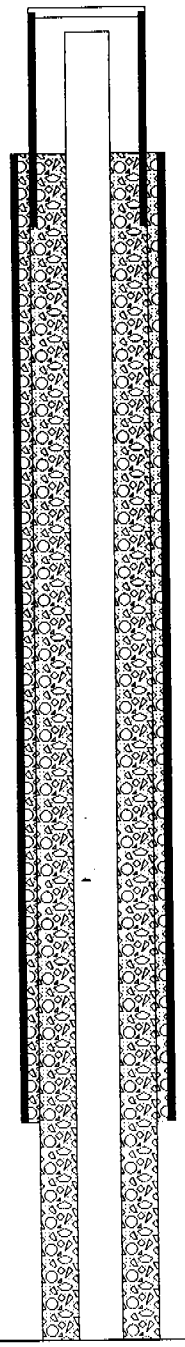
PROJECT NUMBER: 62470-212
PROJECT NAME: SITE 3 - OLD CREOSTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC.
RIG TYPE & NUMBER: MOBILE B-80
DRILLING METHOD: MUD ROTARY
WEATHER: SUNNY, HOT, HUMID
GEOLOGIST: J.E. ZIMMERMAN
ENV SCIENTIST: M.D. SMITH
DATE BEGUN: 1/16/94 DATE COMPLETED: 1/16/94

GROUND SURFACE ELEVATION: 32.50' msl
TOP OF CASING ELEVATION: 35.19' msl

WELL DETAILS (FT)

STICKUP:	2.5
INNER CASING (10"I.D.):	20.0
LENGTH OF RISER (2"I.D.):	71.5
LENGTH OF SCREEN (2"I.D.):	15.0
THICKNESS OF GROUT:	61.0
THICKNESS OF SEAL:	5.5
THICKNESS OF SAND PACK:	20.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE	BLOWS/0.5'	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
36.00	4.0										4.0	
35.00	3.0										3.0	
34.00	2.0										2.0	
33.00	1.0										1.0	
32.00	0.0		S-1	SS	-	-	0.2	0.2		SILTY SAND: fine grained, trace root material/burnt soil/charcoal/wood, dark brown, damp, very loose.	0.0	
31.00	1.0		S-2	SS	14 9 9 8	1.6	0.2	0.2		SILTY SAND: fine grained, trace clay, buff/light brown, damp, medium dense	1.0	
30.00	2.0										2.0	
29.00	3.0		S-3	SS	5 7 7 8	1.6	0.2	0.2			3.0	
28.00	4.0										4.0	
27.00	5.0		S-4	SS	8 9 8 9	1.6	0.2	0.2		SAND: fine grained, trace silt, occasional trace clay, light gray, damp to wet, medium dense/loose	5.0	
26.00	6.0										6.0	
25.00	7.0		S-5	SS	5 7 7 8	1.5	0.2	0.2			7.0	
24.00	8.0										8.0	
23.00	9.0		S-6	SS	9 9 10 12	0.8	0.2	0.2			9.0	
22.00	10.0										10.0	
21.00	11.0		S-7	SS	5 5 7 8	1.4	0.2	0.2			11.0	
20.00	12.0										12.0	
19.00	13.0		S-8	SS	7 5 4 3	2.0	0.2	0.2		creosote odor evident	13.0	
18.00	14.0										14.0	
17.00	15.0		S-9	SS	3 7 12 16	1.2	0.2	0.2			15.0	
16.00	16.0										16.0	
15.00	17.0		S-10	SS	3 3 3 4	2.0	0.4	0.4		SILTY CLAY: trace fine grained sand, greenish gray, moist, soft/very soft, creosote odor and contamination present	17.0	
14.00	18.0										18.0	
13.00	19.0										19.0	
12.00	20.0		S-11	SS	WOH WOH 1 3	2.0	0.4	0.4			20.0	
11.00	21.0										21.0	
10.00	22.0										22.0	
9.00	23.0										23.0	
	24.0										24.0	



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 3-MW02IW

SHEET: 2 OF: 4

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION
12-00	20.0									SILTY CLAY: trace fine grained sand, greenish gray, moist, soft/very soft, creosote odor and contamination present
11-00	21.0									
10-00	22.0									
9-00	23.0									
8-00	24.0									
7-00	25.0		S-12	SS	7 7 8 9	0.6	0.4	0.4		SAND: fine to medium grained, trace silt, occasional some to little clay, gray/greenish gray, wet, medium dense/ loose/dense
6-00	26.0									
5-00	27.0									
4-00	28.0									
3-00	29.0									
2-00	30.0		S-13	SS	3 3 3 5	1.2	0.4	0.4		
1-00	31.0									
0-00	32.0									
1-00	33.0									
2-00	34.0									
3-00	35.0		S-14	SS	2 3 10 13	1.1	0.3	0.3		
4-00	36.0									
5-00	37.0									
6-00	38.0									
7-00	39.0									
8-00	40.0		S-15	SS	3 6 6 14	1.8	0.3	0.3		
9-00	41.0									
10-00	42.0									
11-00	43.0									
12-00	44.0									Shell fragments w/micrite cement (0.8')
13-00	45.0		S-16	SS	13 13 15 20	1.6	0.3	0.3		
14-00	46.0									
15-00	47.0									
16-00	48.0									
17-00	49.0									
18-00	50.0		S-17	SS	20 17 17 40	1.1	0.3	0.3		
19-00	51.0									
	52.0									

DEPTH	WELL INSTALLATION
20.0	
21.0	
22.0	
23.0	
24.0	
25.0	
26.0	
27.0	
28.0	
29.0	
30.0	
31.0	
32.0	
33.0	
34.0	
35.0	
36.0	
37.0	
38.0	
39.0	
40.0	
41.0	
42.0	
43.0	
44.0	
45.0	
46.0	
47.0	
48.0	
49.0	
50.0	
51.0	
52.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 3-MW2IW

SHEET: 3 OF: 4

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION
18:00	50.0									SAND: Fine to medium grained, trace silt, trace shell fragments, gray to white/ greenish gray, wet, dense/very dense
19:00	51.0									
	52.0		S-18	SS	20 17 17 40	1.1	0.3	0.3		
20:00	53.0									
21:00	54.0									
22:00	55.0									
23:00	56.0		S-19	SS	30 74 100 /5"	1.4	-	-		
24:00	57.0									
25:00	58.0									
26:00	59.0									
27:00	60.0									
28:00	61.0		S-20	SS	20 34 50 40	0.8	-	-		
29:00	62.0									
30:00	63.0									
31:00	64.0									
32:00	65.0									
33:00	66.0		S-21	SS	42 100 /4"	0.7	0.7	0.7		
34:00	67.0									
35:00	68.0									
36:00	69.0									
37:00	70.0									
38:00	71.0		S-22	SS	100 /5" 100 /1"	0.8	0.7	0.7		
39:00	72.0									
40:00	73.0									
41:00	74.0									
42:00	75.0									
43:00	76.0		S-23	SS	46 100 /5"	0.8	0.7	0.7		
44:00	77.0									
45:00	78.0									
46:00	79.0									
47:00	80.0									
48:00	81.0									
49:00	82.0									

DEPTH	WELL INSTALLATION
50.0	
51.0	
52.0	
53.0	
54.0	
55.0	
56.0	
57.0	
58.0	
59.0	
60.0	
61.0	
62.0	
63.0	
64.0	
65.0	
66.0	
67.0	
68.0	
69.0	
70.0	
71.0	
72.0	
73.0	
74.0	
75.0	
76.0	
77.0	
78.0	
79.0	
80.0	
81.0	
82.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 3-MW02IW

SHEET: 4 OF: 4

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
-48.00	80.0										80.0	
	81.0		S-23	SS	36 100 /5"	0.6	0.7	0.7		SAND: Fine grained, trace silt, greenish gray, wet, very dense	81.0	
-49.00	82.0										82.0	
-50.00	83.0										83.0	
-51.00	84.0										84.0	
-52.00	85.0										85.0	
-53.00	86.0		S-24	SS	46 100 /4"	0.8	0.7	0.7			86.0	
-54.00	87.0									BOTTOM OF BOREHOLE @ 87.0'	87.0	
-55.00	88.0									NOTES:	88.0	
-56.00	89.0									1) Groundwater encountered @ 9.0' during drilling	89.0	
-57.00	90.0										90.0	
-58.00	91.0										91.0	
-59.00	92.0										92.0	
-60.00	93.0										93.0	
-61.00	94.0										94.0	
-62.00	95.0										95.0	
-63.00	96.0										96.0	
-64.00	97.0										97.0	
-65.00	98.0										98.0	
-66.00	99.0										99.0	
-67.00	100.0										100.0	
-68.00	101.0										101.0	
-69.00	102.0										102.0	
-70.00	103.0										103.0	
-71.00	104.0										104.0	
-72.00	105.0										105.0	
-73.00	106.0										106.0	
-74.00	107.0										107.0	
-75.00	108.0										108.0	
-76.00	109.0										109.0	
-77.00	110.0										110.0	
-78.00	111.0										111.0	
-79.00	112.0										112.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER
3-MW020W
SHEET: 1 OF 5

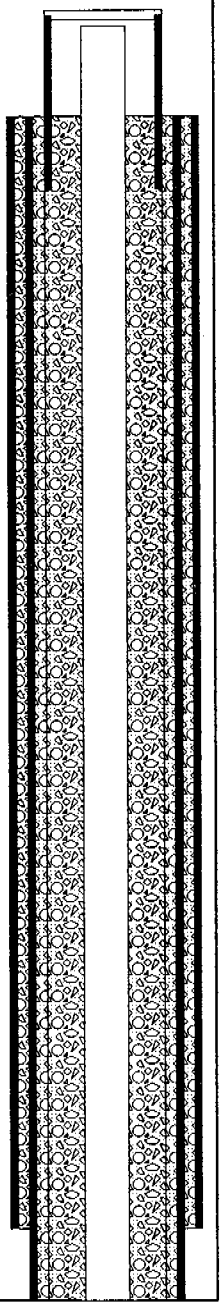
PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT-WOLFF, INC.
RIG TYPE & NUMBER: TRUCK RIG (I.D. *115)
DRILLING METHOD: MUD ROTARY
WEATHER: HOT, HUMID
GEOLOGIST: J.E. ZIMMERMAN/M.K. DEJOHN
ENV. SCIENTIST: M.D. SMITH
DATE BEGUN: 6/20/95 DATE COMPLETED: 6/28/95

GROUND SURFACE ELEVATION: 32.19' msl
TOP OF CASING ELEVATION: 34.06' msl

WELL DETAILS (FT)

STICKUP:	1.87
OUTER CASING (6"I.D.)	
LENGTH OF RISER (2"I.D.):	125.0
LENGTH OF SCREEN (2"I.D.):	15.0
THICKNESS OF GROUT:	108.0
THICKNESS OF SEAL:	14.0
THICKNESS OF SAND PACK:	18.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
36.00	4.0										4.0	
35.00	3.0										3.0	
34.00	2.0										2.0	
33.00	1.0										1.0	
32.00	0.0		S-1	SS	-	-	0.1	0.1		SILTY SAND. fine grained, trace root material, occasional trace clay, dark grayish brown, damp, very loose/medium dense; creosote odor detected at 1-3'	0.0	
31.00	1.0										1.0	
30.00	2.0		S-2	SS	9 8 8 7	1.6	0.1	0.1			2.0	
29.00	3.0										3.0	
28.00	4.0		S-3	SS	10 10 8 8	1.6	0.4	0.4		SAND. fine grained, trace silt, occasional trace clay, dark brownish gray/buff/light gray, damp/moist/wet, medium dense/loose; creosote odor present	4.0	
27.00	5.0										5.0	
26.00	6.0		S-4	SS	2 4 8 7	1.8	0.1	0.1			6.0	
25.00	7.0										7.0	
24.00	8.0		S-5	SS	3 5 7 7	1.5	0.1	0.1			8.0	
23.00	9.0										9.0	
22.00	10.0		S-6	SS	4 5 5 5	1.3	0.2	0.2			10.0	
21.00	11.0										11.0	
20.00	12.0		S-7	SS	3 5 7 3	1.5	0.2	0.2			12.0	
19.00	13.0										13.0	
18.00	14.0		S-8	SS	3 5 7 7	2.0	0.2	0.2			14.0	
17.00	15.0										15.0	
16.00	16.0		S-9	SS	2 2 2 2	1.6	0.2	0.2			16.0	
15.00	17.0										17.0	
14.00	18.0		S-10	SS	3 4 2 2	1.5	0.2	0.2			18.0	
13.00	19.0										19.0	
12.00	20.0		S-11	SS	3 2 1 1	1.4	0.2	0.2			20.0	
11.00	21.0										21.0	
10.00	22.0		S-12	SS	WOH 2 1 1	2.0	0.2	0.2		SILTY CLAY. dark greenish gray, damp, soft/very soft; creosote odor present	22.0	
9.00	23.0										23.0	
8.00	24.0										24.0	

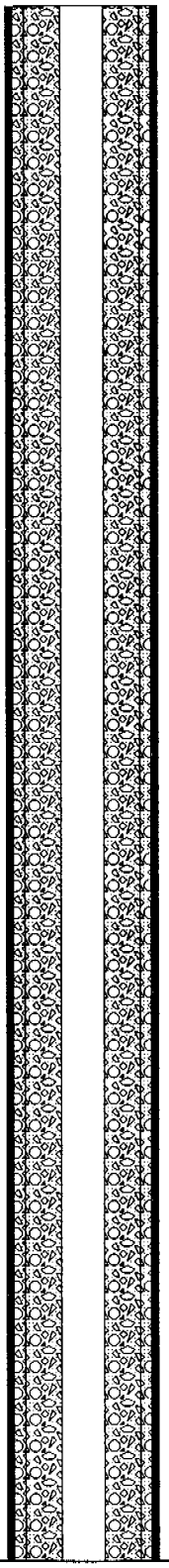


BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER
3-MW02DW
SHEET 2 OF 5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
12:00	20.0										20.0	
11:00	21.0										21.0	
10:00	22.0		S-12	SS	WOH 2 1 1	2.0	0.3	0.3		SAND: fine grained, trace silt, occasional trace clay, dark brownish gray/buff/light gray, damp/moist/wet, medium dense/loose. creosote odor present	22.0	
9:00	23.0									SILTY CLAY: dark greenish gray, damp, soft/very soft, creosote odor present	23.0	
8:00	24.0										24.0	
7:00	25.0		S-13	SS	10 27 38 27	0.7	0.2	0.2		SAND: fine grained, trace silt, occasional some to little clay, gray/greenish gray/ dark greenish gray, wet, very dense/loose/ medium dense/dense; creosote odor present to 47'	25.0	
6:00	26.0										26.0	
5:00	27.0										27.0	
4:00	28.0										28.0	
3:00	29.0										29.0	
2:00	30.0		S-14	SS	2 4 5 6	2.0	0.2	0.2			30.0	
1:00	31.0										31.0	
0:00	32.0										32.0	
1:00	33.0										33.0	
2:00	34.0										34.0	
3:00	35.0		S-15	SS	8 12 16 13	1.7	0.2	0.2			35.0	
4:00	36.0										36.0	
5:00	37.0										37.0	
6:00	38.0										38.0	
7:00	39.0										39.0	
8:00	40.0		S-16	SS	1 2 1 2	1.4	0.2	0.2			40.0	
9:00	41.0										41.0	
10:00	42.0										42.0	
11:00	43.0										43.0	
12:00	44.0										44.0	
13:00	45.0		S-17	SS	3 3 7 11	1.4	0.2	0.2			45.0	
14:00	46.0										46.0	
15:00	47.0										47.0	
16:00	48.0										48.0	
17:00	49.0										49.0	
18:00	50.0		S-18	SS	7 14 26 32	1.5	0.2	0.2			50.0	
19:00	51.0										51.0	
20:00	52.0										52.0	



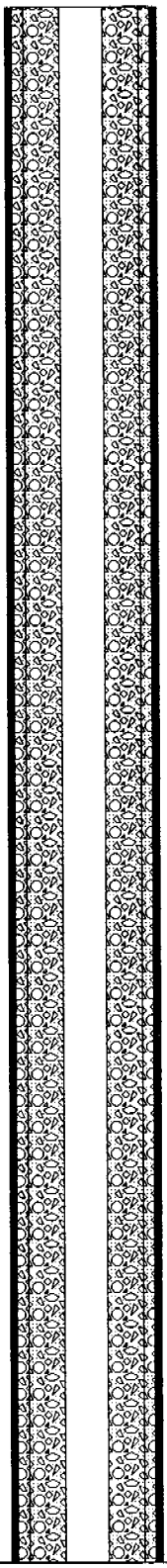
BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER
3-MW02DW
SHEET 3 OF 5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION
18:00	50.0									
19:00	51.0		S-18	SS	7 14 26 32	1.4	0.2	0.2		SAND Fine to medium grained, trace silt, trace to little shell fragments, dark greenish gray/gray/white, wet, dense/ very dense
20:00	52.0									
21:00	53.0									
22:00	54.0									
23:00	55.0		S-19	SS	14 34 53 63	1.3	0.2	0.2		
24:00	56.0									
25:00	57.0									
26:00	58.0									
27:00	59.0									
28:00	60.0		S-20	SS	14 18 18 23	1.2	0.2	0.2		
29:00	61.0									
30:00	62.0									
31:00	63.0									
32:00	64.0									
33:00	65.0		S-21	SS	24 60 82 100/4"	1.3	0.2	0.2		
34:00	66.0									
35:00	67.0									
36:00	68.0									
37:00	69.0									
38:00	70.0		S-22	SS	18 33 81 100/4"	1.3	0.2	0.2		
39:00	71.0									
40:00	72.0									
41:00	73.0									
42:00	74.0									
43:00	75.0		S-23	SS	18 34 63 92	1.4	0.3	0.3		
44:00	76.0									
45:00	77.0									
46:00	78.0									
47:00	79.0									
48:00	80.0		S-24	SS	22 56 98 100/4"	1.2	0.3	0.3		
49:00	81.0									
50:00	82.0									

DEPTH	WELL INSTALLATION
50.0	
51.0	
52.0	
53.0	
54.0	
55.0	
56.0	
57.0	
58.0	
59.0	
60.0	
61.0	
62.0	
63.0	
64.0	
65.0	
66.0	
67.0	
68.0	
69.0	
70.0	
71.0	
72.0	
73.0	
74.0	
75.0	
76.0	
77.0	
78.0	
79.0	
80.0	
81.0	
82.0	

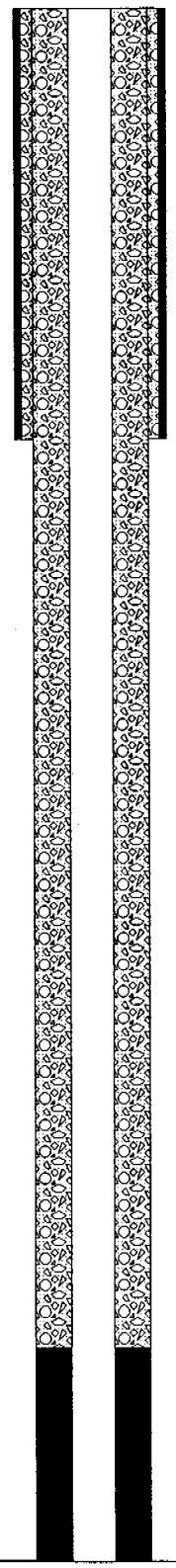


BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER
3-MW020W
SHEET 4 OF 5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
48:00	80.0		S-24	SS	22 56 98 100/4"	1.2	0.3	0.3		SAND: Fine to medium grained, trace silt, trace shell fragments, dark greenish gray/ gray/white, wet, very dense	80.0	
49:00	81.0										81.0	
50:00	82.0										82.0	
51:00	83.0										83.0	
52:00	84.0										84.0	
53:00	85.0		S-25	SS	28 42 96 100/4"	1.5	0.3	0.3			85.0	
54:00	86.0										86.0	
55:00	87.0										87.0	
56:00	88.0										88.0	
57:00	89.0										89.0	
58:00	90.0										90.0	
59:00	91.0										91.0	
60:00	92.0										92.0	
61:00	93.0									SAND and SILT: Fine grained, little clay, trace shell fragments, dark green, damp, dense	93.0	
62:00	94.0		S-26	SS	15 20 25 54	2.0	0.8	0.8			94.0	
63:00	95.0										95.0	
64:00	96.0										96.0	
65:00	97.0										97.0	
66:00	98.0										98.0	
67:00	99.0		S-27	SS	17 19 31 54	2.0	-	-		SHELL FRAGMENTS: some silt, little clay, gray, moist, very dense	99.0	
68:00	100.0									SILT: some shell fragments, little to some clay, gray, damp, hard	100.0	
69:00	101.0										101.0	
70:00	102.0										102.0	
71:00	103.0										103.0	
72:00	104.0		S-28	SS	27 28 18 32	2.0	0.4	0.4		SAND and SILT: little to some clay, trace shell fragments, taupe, moist, hard	104.0	
73:00	105.0										105.0	
74:00	106.0										106.0	
75:00	107.0										107.0	
76:00	108.0										108.0	
77:00	109.0		S-29	SS	- 27 34	2.0	0.4	0.4			109.0	
78:00	110.0										110.0	
79:00	111.0										111.0	
80:00	112.0										112.0	



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER
3-MW02DW
SHEET: 5 OF: 5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
78.00	110.0										110.0	
79.00	111.0									SAND and SILT: Fine grained, trace to some clay, trace shell fragments, taupe, moist, hard	111.0	
80.00	112.0										112.0	
81.00	113.0										113.0	
82.00	114.0										114.0	
83.00	115.0		S-30	SS	17 21 33 34	2.0	0.5	0.6		SHELL FRAGMENTS: little silt and clay, gray, wet, very dense	115.0	
84.00	116.0										116.0	
85.00	117.0										117.0	
86.00	118.0										118.0	
87.00	119.0										119.0	
88.00	120.0		S-31	SS	22 40 35 35	1.0	0.6	0.6			120.0	
89.00	121.0										121.0	
90.00	122.0										122.0	
91.00	123.0										123.0	
92.00	124.0										124.0	
93.00	125.0		S-32	SS	17 17 23 41	0.8	0.6	0.6		SAND: Fine to medium grained, little silt, trace shell fragments and clay, dark gray, wet, dense to very dense	125.0	
94.00	126.0										126.0	
95.00	127.0										127.0	
96.00	128.0										128.0	
97.00	129.0		S-33	SS	100/4"	0.3	0.6	0.6			129.0	
98.00	130.0										130.0	
99.00	131.0										131.0	
100.00	132.0										132.0	
101.00	133.0										133.0	
102.00	134.0		S-34	SS	200/6"	0.5	0.6	0.6			134.0	
103.00	135.0										135.0	
104.00	136.0										136.0	
105.00	137.0										137.0	
106.00	138.0										138.0	
107.00	139.0										139.0	
108.00	140.0									BOTTOM OF BOREHOLE @ 140'	140.0	
109.00	141.0									NOTES: 1) Groundwater encountered @ 6.0' during drilling	141.0	
110.00	142.0										142.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 3-MW04

SHEET: 1 OF 2

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC.
RIG TYPE & NUMBER: TRUCK RIG
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, HOT, HUMID
GEOLOGIST: R.M. LEWIS
ENV. SCIENTIST: A.M. BERNHARDT
DATE BEGUN: 11/17/94 DATE COMPLETED: 11/17/94

GROUND SURFACE ELEVATION: 30.91' msl
TOP OF PVC CASING ELEVATION: 33.43' msl

WELL DETAILS (FT)

STICKUP:	2.7
LENGTH OF RISER (2"I.D.):	10.0
LENGTH OF SCREEN (2"I.D.)	15.0
THICKNESS OF GROUT:	6.0
THICKNESS OF SEAL:	1.5
THICKNESS OF SAND PACK:	17.5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
	4.0										4.0	
34.00	3.0										3.0	
33.00	2.0										2.0	
32.00	1.0										1.0	
31.00	0.0		S-1	SS		-	0.3	0.3		SILT AND SAND: Fine grained, dark brown, damp	0.0	
30.00	1.0										1.0	
29.00	2.0		S-2	SS	7 8 20 14	2.0	0.3	0.4		SAND: Fine grained, some to little silt, dark brown/ light brown/gray, damp to wet, medium dense	2.0	
28.00	3.0										3.0	
27.00	4.0		S-3	SS	7 7 8 5	2.0	0.4	0.4			4.0	
26.00	5.0										5.0	
25.00	6.0		S-4	SS	3 8 8 5	2.0	0.4	0.4			6.0	
24.00	7.0										7.0	
23.00	8.0		S-5	SS	4 6 9 11	2.0	-	-			8.0	
22.00	9.0										9.0	
21.00	10.0		S-6	SS	9 7 5 7	2.0	-	-			10.0	
20.00	11.0										11.0	
19.00	12.0		S-7	SS	5 8 10 10	2.0	-	-			12.0	
18.00	13.0										13.0	
17.00	14.0		S-8	SS	4 5 8 4	2.0	-	-			14.0	
16.00	15.0										15.0	
15.00	16.0		S-9	SS	1 1 1 1	2.0	-	-			16.0	
14.00	17.0										17.0	
13.00	18.0		S-10	SS	1 1 1 3	2.0	-			SAND: Fine grained, trace clay, trace silt, wet, very loose to medium dense	18.0	
12.00	19.0										19.0	
11.00	20.0		S-11	SS	3 6 6 7	2.0	-	-			20.0	
10.00	21.0										21.0	
9.00	22.0		S-12	SS	6 8 6 8	2.0	-	-		no clay	22.0	
8.00	23.0										23.0	
7.00	24.0										24.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 3-MW09

SHEET: 2 OF: 2

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
11:00	20.0										20.0	
	21.0		S-12	SS	6 8 6 8	2.0	-	-		SAND: fine grained, trace clay, trace silt, wet medium dense	21.0	
10:00	22.0									SAND: fine grained, trace silt, wet, medium dense	22.0	
9:00	23.0		S-13	SS	2 4 8 10	2.0	-	-			23.0	
8:00	24.0										24.0	
7:00	25.0		S-14	SS	5 8 10 6	2.0	-	-			25.0	
6:00	26.0										26.0	
5:00	27.0									BOTTOM OF BORING @ 27.0'	27.0	
4:00	28.0									NOTES:	28.0	
3:00	29.0									1) Groundwater encountered at 13.0' during drilling	29.0	
2:00	30.0										30.0	
1:00	31.0										31.0	
0:00	32.0										32.0	
1:00	33.0										33.0	
2:00	34.0										34.0	
3:00	35.0										35.0	
4:00	36.0										36.0	
5:00	37.0										37.0	
6:00	38.0										38.0	
7:00	39.0										39.0	
8:00	40.0										40.0	
9:00	41.0										41.0	
10:00	42.0										42.0	
11:00	43.0										43.0	
12:00	44.0										44.0	
13:00	45.0										45.0	
14:00	46.0										46.0	
15:00	47.0										47.0	
16:00	48.0										48.0	
17:00	49.0										49.0	
18:00	50.0										50.0	
19:00	51.0										51.0	
20:00	52.0										52.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 3-MW05

SHEET: 1 OF 2

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC.
RIG TYPE & NUMBER: TRUCK RIG
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, HOT, HUMID
GEOLOGIST: R.M. LEWIS
ENV SCIENTIST: A.M. BERNHARDT
DATE BEGUN: 11/19/94 DATE COMPLETED: 11/19/94

GROUND SURFACE ELEVATION: 31.85' msl
TOP OF PVC CASING ELEVATION: 34.00' msl

WELL DETAILS (FT)

STICKUP:	2.7
LENGTH OF RISER (2"I.D.):	18.0
LENGTH OF SCREEN (2"I.D.):	15.0
THICKNESS OF GROUT:	14.0
THICKNESS OF SEAL:	2.0
THICKNESS OF SAND PACK:	18.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
	4.0										4.0	
35:00	3.0										3.0	
34:00	2.0										2.0	
33:00	1.0										1.0	
32:00	0.0		S-1	SS	-	-	1.1	1.1		SAND AND SILT: Fine grained, brown, damp loose to medium stiff	0.0	
31:00	1.0				4						1.0	
30:00	2.0		S-2	SS	4 5 5	2.0	1.1	1.1			2.0	
29:00	3.0				5						3.0	
28:00	4.0		S-3	SS	5 5 7	2.0	1.1	1.1			4.0	
27:00	5.0				5					SAND: Fine grained, trace to little silt, occasional trace clay, brown/gray, damp to wet, medium dense/ dense	5.0	
26:00	6.0		S-4	SS	7 13 20	2.0	1.0	1.0			6.0	
25:00	7.0				2						7.0	
24:00	8.0		S-5	SS	10 17 16	2.0	1.0	1.0			8.0	
23:00	9.0				2						9.0	
22:00	10.0		S-6	SS	12 25 38	2.0	0.9	0.9			10.0	
21:00	11.0				2						11.0	
20:00	12.0		S-7	SS	15 11 9	2.0	0.8	0.8			12.0	
19:00	13.0				5						13.0	
18:00	14.0		S-8	SS	6 14 12	2.0	0.8	0.8			14.0	
17:00	15.0				4						15.0	
16:00	16.0		S-9	SS	5 8 11	2.0	0.7	0.7			16.0	
15:00	17.0				9						17.0	
14:00	18.0		S-10	SS	9 15 11	2.0	0.7	0.7			18.0	
13:00	19.0				4						19.0	
12:00	20.0		S-11	SS	15 20 17	2.0	0.7	0.7			20.0	
11:00	21.0				5						21.0	
10:00	22.0		S-12	SS	5 13 12	2.0	0.8	0.8			22.0	
9:00	23.0										23.0	
8:00	24.0										24.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 3-MW05

SHEET: 2 OF: 2

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
11:00	20.0										20.0	
10:00	21.0										21.0	
9:00	22.0		S-12	SS	5 6 13 12	2.0	0.8	0.8		SAND: Fine grained, little silt, gray, moist/wet, medium dense/dense	22.0	
8:00	23.0										23.0	
7:00	24.0		S-13	SS	4 6 10 12	2.0	0.9	0.9			24.0	
6:00	25.0										25.0	
5:00	26.0		S-14	SS	6 11 12 15	2.0	1.0	1.0			26.0	
4:00	27.0										27.0	
3:00	28.0		S-15	SS	3 8 9 10	2.0	1.0	1.0			28.0	
2:00	29.0										29.0	
1:00	30.0		S-16	SS	8 17 24 28	2.0	1.0	1.0			30.0	
0:00	31.0										31.0	
1:00	32.0		S-17	SS	12 24 27 29	2.0	0.7	0.7			32.0	
2:00	33.0										33.0	
3:00	34.0									BOTTOM OF BORING @ 33.0'	34.0	
4:00	35.0									NOTES:	35.0	
5:00	36.0									1) Groundwater encountered @ 21.0' during drilling	36.0	
6:00	37.0										37.0	
7:00	38.0										38.0	
8:00	39.0										39.0	
9:00	40.0										40.0	
10:00	41.0										41.0	
11:00	42.0										42.0	
12:00	43.0										43.0	
13:00	44.0										44.0	
14:00	45.0										45.0	
15:00	46.0										46.0	
16:00	47.0										47.0	
17:00	48.0										48.0	
18:00	49.0										49.0	
19:00	50.0										50.0	
20:00	51.0										51.0	
	52.0										52.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 3-MW06

SHEET: 1 OF 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC.
RIG TYPE & NUMBER: TRUCK RIG
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, HOT, HUMID
GEOLOGIST: R.M. LEWIS
ENV. SCIENTIST: A.M. BERNHARDT
DATE BEGUN: 11/19/94 DATE COMPLETED: 11/19/94

GROUND SURFACE ELEVATION: 27.93' msl
TOP OF PVC CASING ELEVATION: 30.55' msl

WELL DETAILS (FT)

STICKUP:	2.7
LENGTH OF RISER (2"I.D.):	7.0
LENGTH OF SCREEN (2"I.D.):	15.0
THICKNESS OF GROUT:	3.5
THICKNESS OF SEAL:	1.5
THICKNESS OF SAND PACK:	17.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
31:00	3.0											
30:00	2.0											
29:00	1.0											
28:00	0.0		S-1	SS	-	-	-	-		SAND: fine grained, little to trace silt, brown/ light brown, damp to wet, medium dense	0.0	
27:00	1.0		S-2	SS	10 11 12 14	2.0	-	-			1.0	
26:00	2.0		S-3	SS	8 14 14 13	2.0	-	-			2.0	
25:00	3.0		S-4	SS	7 6 5 7	2.0	-	-			3.0	
24:00	4.0		S-5	SS	5 7 9 15	2.0	-	-			4.0	
23:00	5.0		S-6	SS	9 16 20 22	2.0	-	-			5.0	
22:00	6.0		S-7	SS	9 11 12 6	2.0	-	-			6.0	
21:00	7.0		S-8	SS	5 5 5 5	1.5	-				7.0	
20:00	8.0		S-9	SS	5 6 6 5	1.5	-	-			8.0	
19:00	9.0		S-10	SS	WOR 2 1 WOR	2.0	-	-			9.0	
18:00	10.0		S-11	SS	1 3 4 2	1.5		-			10.0	
17:00	11.0		S-12	SS	1 2 2 1	2.0	-	-			11.0	
16:00	12.0										12.0	
15:00	13.0										13.0	
14:00	14.0										14.0	
13:00	15.0										15.0	
12:00	16.0										16.0	
11:00	17.0										17.0	
10:00	18.0										18.0	
9:00	19.0										19.0	
8:00	20.0										20.0	
7:00	21.0									CLAY trace fine grained sand, dark gray, wet, medium stiff	21.0	
6:00	22.0										22.0	
5:00	23.0									BOTTOM OF BOREHOLE @ 23.0'	23.0	
4:00	24.0									NOTES 1) Groundwater encountered @ 11' during drilling	24.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 3-MW07

SHEET: 1 OF 1

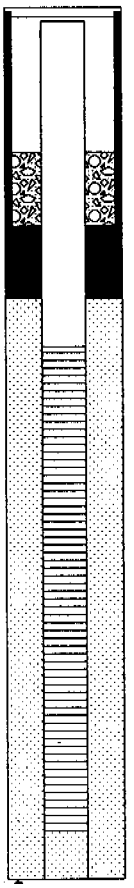
PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC.
RIG TYPE & NUMBER: TRUCK RIG
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, HOT, HUMID
GEOLOGIST: R.M. LEWIS
ENV. SCIENTIST: A.M. BERNHARDT
DATE BEGUN: 11/19/94 DATE COMPLETED: 11/19/94

GROUND SURFACE ELEVATION: 31.05' msl
TOP OF PVC CASING ELEVATION: 33.51' msl

WELL DETAILS (FT)

STICKUP:	2.7
LENGTH OF RISER (2"I.D.):	4.0
LENGTH OF SCREEN (2"I.D.):	10.0
THICKNESS OF GROUT:	1.5
THICKNESS OF SEAL:	1.5
THICKNESS OF SAND PACK:	11.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
31.00	0.0		S-1	SS	-	-	1.0	1.0		SAND AND SILT: fine grained, black to dark brown, damp	0.0	
30.00	1.0		S-2	SS	9 6 5 4	2.0	1.0	1.0		SAND: fine grained, some to little silt, brown/gray, damp to wet, medium dense to loose	1.0	
29.00	2.0										2.0	
28.00	3.0		S-3	SS	2 2 6 5	2.0	1.0	0.9			3.0	
27.00	4.0										4.0	
26.00	5.0		S-4	SS	2 3 3 3	1.75	1.0	1.0			5.0	
25.00	6.0										6.0	
24.00	7.0		S-5	SS	2 6 10 14	2.0	-	-			7.0	
23.00	8.0										8.0	
22.00	9.0		S-6	SS	4 6 6 6	2.0	-	-			9.0	
21.00	10.0										10.0	
20.00	11.0										11.0	
19.00	12.0		S-7	SS	7 5 4 4	2.0	-	-			12.0	
18.00	13.0										13.0	
17.00	14.0		S-8	SS	2 3 3 5	2.0	-	-		CLAY: trace fine grained sand, gray, wet, medium stiff	14.0	
16.00	15.0										15.0	
15.00	16.0									BOTTOM OF BOREHOLE @ 15.0'	16.0	
14.00	17.0									NOTES:	17.0	
13.00	18.0									1) Groundwater encountered @ 5' during drilling	18.0	
12.00	19.0										19.0	
11.00	20.0										20.0	
10.00	21.0										21.0	
9.00	22.0										22.0	
8.00	23.0										23.0	
7.00	24.0										24.0	



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 3-MW08

SHEET 1 OF 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC.
RIG TYPE & NUMBER: TRUCK RIG
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, HOT, HUMID
GEOLOGIST: R.M. LEWIS
ENV SCIENTIST: A.M BERNHARDT
DATE BEGUN: 11/20/94 DATE COMPLETED: 11/20/94

GROUND SURFACE ELEVATION: 30.13' msl
TOP OF PVC CASING ELEVATION: 32.62' msl

WELL DETAILS (FT)

STICKUP:	2.7
LENGTH OF RISER (2"I.D.):	3.0
LENGTH OF SCREEN (2"I.D.):	15.0
THICKNESS OF GROUT:	1.0
THICKNESS OF SEAL:	1.0
THICKNESS OF SAND PACK:	16.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
34:00	4.0											
33:00	3.0											
32:00	2.0											
31:00	1.0											
30:00	0.0		S-1	SS	-	-	0.8	0.8		SAND AND SILT: Fine grained, brown to gray, damp		
29:00	1.0		S-2	SS	5 25 12 10	2.0	0.8	0.8		SAND: Fine grained, little silt, occasional trace clay, brown/gray, damp to wet, medium dense		
28:00	2.0		S-3	SS	6 11 11 11	2.0	1.1	1.1				
27:00	3.0		S-4	SS	6 9 11 11	2.0	1.3	1.3				
26:00	4.0		S-5	SS	4 8 16 19	2.0	1.0	1.0				
25:00	5.0		S-6	SS	4 11 12 19	2.0	1.0	1.0				
24:00	6.0		S-7	SS	5 8 9 7	2.0	1.0	1.0				
23:00	7.0		S-8	SS	2 2 5 6	2.0	1.0	1.0				
22:00	8.0		S-9	SS	2 5 2 2	2.0	1.0	1.0				
21:00	9.0		S-10	SS	1 1	1.0	1.0	1.0		CLAY: trace fine grained sand, dark brown, wet, loose		
20:00	10.0											
19:00	11.0											
18:00	12.0											
17:00	13.0											
16:00	14.0											
15:00	15.0											
14:00	16.0											
13:00	17.0											
12:00	18.0											
11:00	19.0											
10:00	20.0											
9:00	21.0											
8:00	22.0											
7:00	23.0											
6:00	24.0											

BOTTOM OF BOREHOLE @ 18.0'

NOTES:
1) Groundwater encountered @ 5' during drilling

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 3-MW09

SHEET 1 OF 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT-WOLFF, INC.
RIG TYPE & NUMBER: TRUCK RIG (I.D. #115)
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: OVERCAST, MILD
GEOLOGIST: J.E. ZIMMERMAN
ENV. SCIENTIST: NONE
DATE BEGUN: 6/13/95 DATE COMPLETED: 6/134/95

GROUND SURFACE ELEVATION 31.50' msl
TOP OF PVC CASING ELEVATION: 33.29' msl

WELL DETAILS (FT)

STICKUP:	1.79
LENGTH OF RISER (2"I.D.)	4.0
LENGTH OF SCREEN (2"I.D.):	15.0
THICKNESS OF GROUT:	0.5
THICKNESS OF SEAL:	1.5
THICKNESS OF SAND PACK:	18.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
35:00	4.0										4.0	
	3.0										3.0	
34:00	2.0										2.0	
33:00	1.0										1.0	
32:00	0.0		S-1	SS	-	-	0.2	0.5		SILTY SAND: fine grained w/little rooted material, dark gray/brown, damp, very loose	0.0	
31:00	1.0				2						1.0	
30:00	2.0		S-2	SS	3 3 3	1.5	0.2	0.2		SAND: fine grained w/trace silt and trace clay, faint orange staining is traceable, brown/light brown, damp, loose to medium dense	2.0	
29:00	3.0										3.0	
28:00	4.0		S-3	SS	2 4 8 6	1.6	0.2	0.2			4.0	
27:00	5.0										5.0	
26:00	6.0		S-4	SS	2 3 4 3	1.7	0.2	0.2			6.0	
25:00	7.0										7.0	
24:00	8.0		S-5	SS	1 1 4 5	1.6	0.2	0.2			8.0	
23:00	9.0										9.0	
22:00	10.0		S-6	SS	3 4 5 4	1.5	0.2	0.2			10.0	
21:00	11.0										11.0	
20:00	12.0		S-7	SS	1 3 1 4	1.7	0.2	0.2			12.0	
19:00	13.0										13.0	
18:00	14.0		S-8	SS	2 1 1 2	1.7	0.2	0.2			14.0	
17:00	15.0									CLAY: w/trace silt, dark greenish gray, moist, very soft	15.0	
16:00	16.0		S-9	SS	1 / 12" 1	.9	0.2	0.2			16.0	
15:00	17.0										17.0	
14:00	18.0		S-10	SS	1 1 1 1	1.1	0.2	0.2			18.0	
13:00	19.0										19.0	
12:00	20.0									BOTTOM OF BOREHOLE @ 20.0'	20.0	
11:00	21.0									NOTES:	21.0	
10:00	22.0									1) Groundwater encountered @ 6.0' during drilling	22.0	
9:00	23.0									2) Borehole sampled to 19'	23.0	
8:00	24.0									3) Type II monitoring well set @ 19.1'	24.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 3-MW10

SHEET: 1 OF 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT-WOLFF, INC.
RIG TYPE & NUMBER: TRUCK RIG (I.D. #115)
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: CLEAR, MILD
GEOLOGIST: J. E. ZIMMERMAN
ENV. SCIENTIST: M. D. SMITH
DATE BEGUN: 6/14/95 DATE COMPLETED: 6/14/95

GROUND SURFACE ELEVATION: 32.40' msl
TOP OF PVC CASING ELEVATION: 33.85' msl

WELL DETAILS (FT)

STICKUP:	1.45
LENGTH OF RISER (2" I.D.):	3.5
LENGTH OF SCREEN (2" I.D.):	15.0
THICKNESS OF GROUT:	0.0
THICKNESS OF SEAL:	1.5
THICKNESS OF SAND PACK:	18.5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
36.00	4.0										4.0	
35.00	3.0										3.0	
34.00	2.0										2.0	
33.00	1.0										1.0	
32.00	0.0		S-1	SS	-	-	0.4	0.4		SILTY SAND: fine grained w/trace rooted material, dark gray/brown, damp, very loose	0.0	
31.00	1.0										1.0	
30.00	2.0		S-2	SS	4 5 7 7	1.5	0.4	0.4		SAND: fine grained w/trace silt, orange /faint yellowish orange staining is traceable to occasional, brown/light gray, damp to wet, medium dense to loose	2.0	
29.00	3.0										3.0	
28.00	4.0		S-3	SS	4 5 4 4	1.3	0.4	0.4			4.0	
27.00	5.0										5.0	
26.00	6.0		S-4	SS	2 4 6 5	1.2	0.4	0.4			6.0	
25.00	7.0										7.0	
24.00	8.0		S-5	SS	4 5 5 9	1.6	0.4	0.4			8.0	
23.00	9.0										9.0	
22.00	10.0		S-6	SS	5 6 6 6	1.6	0.4	0.4			10.0	
21.00	11.0										11.0	
20.00	12.0		S-7	SS	5 7 1 1	1.0	0.4	0.4			12.0	
19.00	13.0										13.0	
18.00	14.0		S-8	SS	1 1 1 1	1.8	0.4	0.4		CLAY: w/trace silt, dark greenish gray, moist, very soft	14.0	
17.00	15.0										15.0	
16.00	16.0		S-9	SS	1 / 12" 1	.5	0.4	0.4			16.0	
15.00	17.0										17.0	
14.00	18.0										18.0	
13.00	19.0										19.0	
12.00	20.0									BOTTOM OF BOREHOLE @ 20.0'	20.0	
11.00	21.0									NOTES: 1) Groundwater encountered @ 5.5' during drilling 2) Borehole sampled to 17' 3) Type II monitoring well set @ 19.0'	21.0	
10.00	22.0										22.0	
9.00	23.0										23.0	
8.00	24.0										24.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 3-MW11

SHEET: 1 OF 2

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT-WOLFF, INC
RIG TYPE & NUMBER: TRUCK RIG (ID #115)
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, HOT, HUMID
GEOLOGIST: J.E. ZIMMERMAN
ENV SCIENTIST: NONE
DATE BEGUN: 6/15/95 DATE COMPLETED: 6/15/95

GROUND SURFACE ELEVATION: 30.69' msl
TOP OF PVC CASING ELEVATION: 32.69' msl

WELL DETAILS (FT)

STICKUP	2.0
LENGTH OF RISER (2"I.D.)	16.5
LENGTH OF SCREEN (2"I.D.)	15.0
THICKNESS OF GROUT	11.5
THICKNESS OF SEAL	2.5
THICKNESS OF SAND PACK	18.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
34.00	4.0							0.1			4.0	
33.00	3.0										3.0	
32.00	2.0										2.0	
31.00	1.0										1.0	
30.00	0.0		S-1	SS	-	-	0.1			SILTY SAND: fine grained w/rooted material w/occasional orange staining, dark grayish brown, damp, very loose to medium dense	0.0	
29.00	1.0										1.0	
28.00	2.0		S-2	SS	5 11 13 17	1.6	0.1	0.1			2.0	
27.00	3.0										3.0	
26.00	4.0		S-3	SS	8 6 6 10	0.9	0.1	0.1		SILTY CLAY: w/little sand fine grained w/trace charcoal flecks and trace orange staining, dark brown/yellowish brown, damp, stiff to medium dense	4.0	
25.00	5.0										5.0	
24.00	6.0		S-4	SS	3 1 3 6	1.2	0.1	0.1		SAND: fine grained w/trace silt and clay and occasional orange/orange yellowish staining, brown/yellowish brown/light gray, damp, loose to medium dense	6.0	
23.00	7.0										7.0	
22.00	8.0		S-5	SS	6 5 8 8	1.3	0.1	0.1			8.0	
21.00	9.0										9.0	
20.00	10.0		S-6	SS	8 9 12 16	1.5	0.1	0.1			10.0	
19.00	11.0										11.0	
18.00	12.0		S-7	SS	8 14 17 16	1.0	0.1	0.1		SAND: fine grained w/trace silt and heavy to occasional orange/orange yellowish staining, light brown/light gray, damp to wet, dense to medium dense	12.0	
17.00	13.0										13.0	
16.00	14.0		S-8	SS	5 6 7 7	1.1	0.1	0.1			14.0	
15.00	15.0										15.0	
14.00	16.0		S-9	SS	6 6 5 6	1.4	0.1	0.1			16.0	
13.00	17.0										17.0	
12.00	18.0		S-10	SS	3 5 5 5	1.5	0.1	0.1		SAND: fine grained w/trace silt, light gray, wet, medium dense	18.0	
11.00	19.0										19.0	
10.00	20.0		S-11	SS	6 6 8 7	1.7	0.1	0.1			20.0	
9.00	21.0										21.0	
8.00	22.0		S-12	SS	7 7 8 7	1.8	0.1	0.1			22.0	
7.00	23.0										23.0	
	24.0										24.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER 3-MW11

SHEET 2 OF 2

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
10:00	20.0										20.0	
9:00	21.0										21.0	
8:00	22.0		S-12	SS	7 7 8 7	1.8	0.1	0.1		SAND Fine grained w/trace silt, light gray, wet, medium dense	22.0	
7:00	23.0										23.0	
6:00	24.0		S-13	SS	7 5 7 7	2.0	0.1	0.1			24.0	
5:00	25.0										25.0	
4:00	26.0		S-14	SS	2 3 5 6	2.0	0.1	0.1			26.0	
3:00	27.0										27.0	
2:00	28.0		S-15	SS	5 4 4 6	2.0	0.1	0.1		SAND Fine to medium grained w/trace silt, yellow/ orange staining, light gray, wet, loose	28.0	
1:00	29.0										29.0	
0:00	30.0		S-16	SS	2 2 2 3	2.0	0.1	0.1			30.0	
1:00	31.0										31.0	
2:00	32.0									CLAY w/trace silt, brown, damp, medium stiff	32.0	
3:00	33.0										33.0	
4:00	34.0									BOTTOM OF BORING @ 32.0'	34.0	
5:00	35.0									NOTES:	35.0	
6:00	36.0									1) Groundwater encountered at 18.5' during drilling	36.0	
7:00	37.0									2) Borehole sampled to 31'	37.0	
8:00	38.0									3) Type II monitoring well set @ 31.7'	38.0	
9:00	39.0										39.0	
10:00	40.0										40.0	
11:00	41.0										41.0	
12:00	42.0										42.0	
13:00	43.0										43.0	
14:00	44.0										44.0	
15:00	45.0										45.0	
16:00	46.0										46.0	
17:00	47.0										47.0	
18:00	48.0										48.0	
19:00	49.0										49.0	
20:00	50.0										50.0	
21:00	51.0										51.0	
	52.0										52.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER
3-MW11IW
SHEET: 1 OF 4

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT-WOLFF, INC.
RIG TYPE & NUMBER: TRUCK RIG (I.D. #115)
DRILLING METHOD: MUD ROTARY
WEATHER: HOT, HUMID
GEOLOGIST: J.E. ZIMMERMAN/H.K. DEJOHN
ENV SCIENTIST: M.D. SMITH
DATE BEGUN: 6/16/95 DATE COMPLETED: 6/29/95

GROUND SURFACE ELEVATION: 30.30' msl
TOP OF CASING ELEVATION: 32.55' msl

WELL DETAILS (FT)

STICKUP:	2.25
OUTER CASING (6"I.D.):	
LENGTH OF RISER (2"I.D.):	72.0
LENGTH OF SCREEN (2"I.D.):	15.0
THICKNESS OF GROUT:	59.0
THICKNESS OF SEAL:	10.0
THICKNESS OF SAND PACK:	18.0

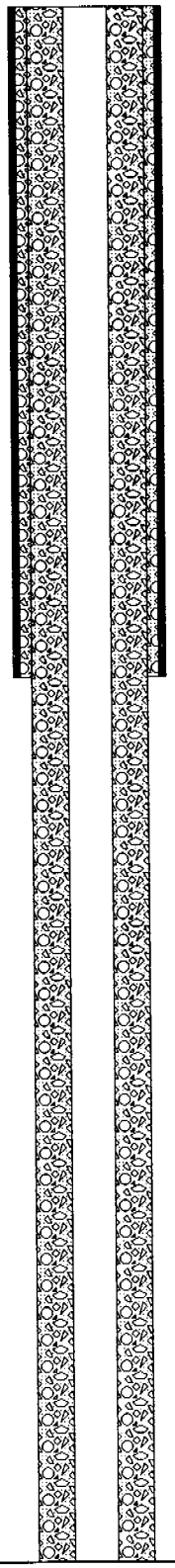
ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
34:00	4.0										4.0	
33:00	3.0										3.0	
32:00	2.0										2.0	
31:00	1.0										1.0	
30:00	0.0		S-1	SS	-	-	0.3	0.3		SILTY SAND: fine grained, trace root material at surface, dark grayish brown, damp, medium dense	0.0	
29:00	1.0		S-2	SS	6 12 13 11	1.7	0.3	0.3			1.0	
28:00	2.0										2.0	
27:00	3.0		S-3	SS	5 2 4 8	1.0	0.3	0.3		SILTY CLAY: little fine grained, dark brown to yellowish brown, damp, medium stiff	3.0	
26:00	4.0										4.0	
25:00	5.0		S-4	SS	4 5 6 9	1.7	0.3	0.3		SAND: fine grained, trace silt, occasional trace clay, dark gray to brown, damp, medium dense/loose	5.0	
24:00	6.0										6.0	
23:00	7.0		S-5	SS	6 8 10 12	1.9	0.3	0.3			7.0	
22:00	8.0										8.0	
21:00	9.0		S-6	SS	6 8 11 11	1.7	0.3	0.3			9.0	
20:00	10.0										10.0	
19:00	11.0		S-7	SS	4 6 9 8	1.5	0.3	0.3			11.0	
18:00	12.0										12.0	
17:00	13.0		S-8	SS	4 6 7 9	1.9	0.3	0.3			13.0	
16:00	14.0										14.0	
15:00	15.0		S-9	SS	5 4 4 6	1.9	0.3	0.3			15.0	
14:00	16.0										16.0	
13:00	17.0		S-10	SS	4 4 5 7	2.0	0.3	0.3			17.0	
12:00	18.0										18.0	
11:00	19.0										19.0	
10:00	20.0		S-11	SS	4 6 6 7	2.0	0.3	0.3			20.0	
9:00	21.0										21.0	
8:00	22.0										22.0	
7:00	23.0										23.0	
6:00	24.0										24.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER
3-MW11IW
SHEET 2 OF 4

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
13:00	20.0		S-11	SS	4 6 6 7	2.0	0.3	0.3		SAND Fine grained, trace silt, light gray, wet, medium dense	20.0	
12:00	21.0										21.0	
11:00	22.0										22.0	
10:00	23.0										23.0	
9:00	24.0										24.0	
8:00	25.0		S-12	SS	4 6 7 7	1.7	0.3	0.3			25.0	
7:00	26.0										26.0	
6:00	27.0										27.0	
5:00	28.0										28.0	
4:00	29.0										29.0	
3:00	30.0		S-13	SS	5 6 8 8	1.3	0.3	0.3			30.0	
2:00	31.0										31.0	
1:00	32.0		S-14	SS	2 2 1 1	2.0	0.3	0.3		SILTY CLAY: w/fine to coarse grained sand, trace Fine gravel, light gray, moist, soft to very loose	32.0	
0:00	33.0										33.0	
1:00	34.0										34.0	
2:00	35.0										35.0	
3:00	36.0		S-15	SS	5 7 7 9	1.5	0.2	0.2		SAND: Fine to medium grained, trace silt, light gray/light greenish gray, moist to wet, loose/medium dense/very dense	36.0	
4:00	37.0										37.0	
5:00	38.0		S-16	SS	6 8 7 9	1.7	0.2	0.2			38.0	
6:00	39.0										39.0	
7:00	40.0		S-17	SS	5 6 6 8	1.6	0.2	0.2			40.0	
8:00	41.0										41.0	
9:00	42.0										42.0	
10:00	43.0										43.0	
11:00	44.0										44.0	
12:00	45.0		S-18	SS	2 2 3 7	1.4	0.2	0.2			45.0	
13:00	46.0										46.0	
14:00	47.0										47.0	
15:00	48.0										48.0	
16:00	49.0										49.0	
17:00	50.0		S-19	SS	18 26 26 40	1.5	0.2	0.2			50.0	
18:00	51.0										51.0	
19:00	52.0										52.0	

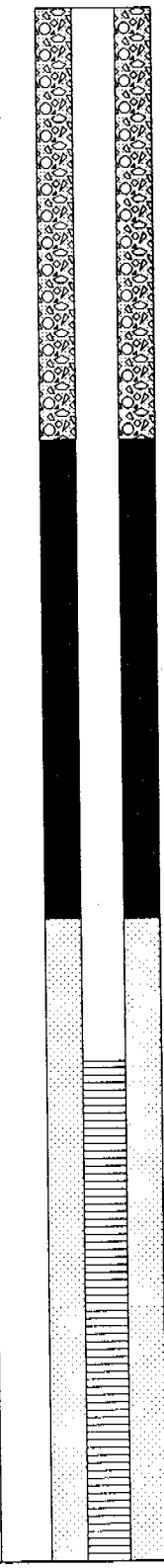


BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER
3-MW11IW
SHEET 3 OF 4

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION
20:00	50.0									SAND. Fine to medium grained, trace silt, trace shell fragments at 65 - 67', gray to white/greenish gray, wet, dense/ medium dense/very dense
21:00	51.0									
22:00	52.0									
23:00	53.0									
24:00	54.0									
25:00	55.0		S-19	SS	18 26 26 40	1.5	0.2	0.2		
26:00	56.0									
27:00	57.0									
28:00	58.0		S-20	SS	12 23 26 33	1.7	0.2	0.2		
29:00	59.0									
30:00	60.0									
31:00	61.0		S-21	SS	14 14 14 21	1.4	0.2	0.2		
32:00	62.0									
33:00	63.0									
34:00	64.0									
35:00	65.0		S-22	SS	22 24 30 32	1.5	0.2	0.2		
36:00	66.0									
37:00	67.0									
38:00	68.0									
39:00	69.0									
40:00	70.0		S-23	SS	18 33 40 45	1.7	0.2	0.2		
41:00	71.0									
42:00	72.0									
43:00	73.0									
44:00	74.0									
45:00	75.0		S-24	SS	25 40 51 44	1.0	0.2	0.2		
46:00	76.0									
47:00	77.0									
48:00	78.0									
49:00	79.0									
50:00	80.0		S-25	SS	28 39 42 63	1.2	0.2	0.2		
51:00	81.0									
52:00	82.0									

DEPTH	WELL INSTALLATION
50.0	
51.0	
52.0	
53.0	
54.0	
55.0	
56.0	
57.0	
58.0	
59.0	
60.0	
61.0	
62.0	
63.0	
64.0	
65.0	
66.0	
67.0	
68.0	
69.0	
70.0	
71.0	
72.0	
73.0	
74.0	
75.0	
76.0	
77.0	
78.0	
79.0	
80.0	
81.0	
82.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER
3-MW11IW
SHEET: 4 OF: 4

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION
50-00	80.0									
51-00	81.0		S-25	SS	28 39 42 63	1.2	0.2	0.2		SAND: fine to medium grained, trace silt, dark greenish gray, wet, very dense
52-00	82.0									
53-00	83.0									
54-00	84.0									
55-00	85.0		S-26	SS	39 42 63 72	1.3	0.2	0.2		
56-00	86.0									
57-00	87.0									
58-00	88.0									
59-00	89.0									BOTTOM OF BOREHOLE @ 89.0'
60-00	90.0									NOTES:
61-00	91.0									1) Groundwater encountered @ 18.0' during drilling
62-00	92.0									
63-00	93.0									
64-00	94.0									
65-00	95.0									
66-00	96.0									
67-00	97.0									
68-00	98.0									
69-00	99.0									
70-00	100.0									
71-00	101.0									
72-00	102.0									
73-00	103.0									
74-00	104.0									
75-00	105.0									
76-00	106.0									
77-00	107.0									
78-00	108.0									
79-00	109.0									
80-00	110.0									
81-00	111.0									
82-00	112.0									

DEPTH	WELL INSTALLATION
80.0	
81.0	
82.0	
83.0	
84.0	
85.0	
86.0	
87.0	
88.0	
89.0	
90.0	
91.0	
92.0	
93.0	
94.0	
95.0	
96.0	
97.0	
98.0	
99.0	
100.0	
101.0	
102.0	
103.0	
104.0	
105.0	
106.0	
107.0	
108.0	
109.0	
110.0	
111.0	
112.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER
3-MW12
SHEET: 1 OF 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT-WOLFF, INC.
RIG TYPE & NUMBER: TRUCK RIG (I.D. #115)
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: OVERCAST, HOT, HUMID
GEOLOGIST: J.E. ZIMMERMAN
ENV. SCIENTIST: M.D. SMITH
DATE BEGUN: 6/13/95 DATE COMPLETED: 6/13/95

GROUND SURFACE ELEVATION: 27.70' msl
TOP OF PVC CASING ELEVATION: 29.55' msl

WELL DETAILS (FT)

STICKUP:	1.85
LENGTH OF RISER (2"I.D.):	5.0
LENGTH OF SCREEN (2"I.D.):	15.0
THICKNESS OF GROUT:	1.0
THICKNESS OF SEAL:	2.0
THICKNESS OF SAND PACK:	18.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
31:00	4.0										4.0	
30:00	3.0										3.0	
29:00	2.0										2.0	
28:00	1.0										1.0	
27:00	0.0		S-1	SS	-	-	0.5	0.5		SILTY SAND: fine grained w/little coarse gravel, grayish brown, damp, very loose	0.0	
26:00	1.0		S-2	SS	5 7 8 7	0.9	0.5	0.5		SAND: fine grained w/trace silt and trace clay (at very top), orange staining is occasional to traceable, brown/light brown/light gray, damp, medium dense	1.0	
25:00	2.0										2.0	
24:00	3.0		S-3	SS	8 8 12 11	1.0	0.5	0.5			3.0	
23:00	4.0										4.0	
22:00	5.0		S-4	SS	6 6 5 6	1.5	0.5	0.5			5.0	
21:00	6.0										6.0	
20:00	7.0		S-5	SS	2 5 4 4	1.1	0.5	0.0			7.0	
19:00	8.0										8.0	
18:00	9.0		S-6	SS	1 1 2 1	0.8	0.5	1.0		SAND: fine grained w/trace silt and trace clay, light gray, wet, very loose	9.0	
17:00	10.0										10.0	
16:00	11.0		S-7	SS	1 2 1 1	2.0	0.5	1.0		SAND: fine grained w/trace silt, light gray, wet, very loose	11.0	
15:00	12.0										12.0	
14:00	13.0		S-8	SS	1 1 1 5	2.0	0.5	1.0		CLAY: w/trace silt, dark greenish gray, moist, soft	13.0	
13:00	14.0										14.0	
12:00	15.0		S-9	SS	1 5 5 8	0.8	0.5	1.0		SAND: fine grained w/trace silt, orange staining is heavy to occasional, light brown/light gray, wet medium dense	15.0	
11:00	16.0										16.0	
10:00	17.0		S-10	SS	5 7 6 5	0.8	0.5	1.0			17.0	
9:00	18.0										18.0	
8:00	19.0										19.0	
7:00	20.0		S-11	SS	6 6 5 6	1.0	0.5	0.5			20.0	
6:00	21.0										21.0	
5:00	22.0										22.0	
4:00	23.0										23.0	
	24.0										24.0	

BOTTOM OF BOREHOLE @ 21.0'

NOTES:
1) Groundwater encountered @ 7' during drilling
2) Borehole sampled to 21'
3) Type II monitoring well set @ 20.1'

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 3-MW13

SHEET: 1 OF 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT-WOLFF, INC.
RIG TYPE & NUMBER: TRUCK RIG (I.D. #115)
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: CLEAR, WARM
GEOLOGIST: J.E. ZIMMERMAN
ENV. SCIENTIST: NONE
DATE BEGUN: 6/14/95 DATE COMPLETED: 6/14/95

GROUND SURFACE ELEVATION: 20.80' msl
TOP OF PVC CASING ELEVATION: 22.93' msl

WELL DETAILS (FT)

STICKUP:	2.13
LENGTH OF RISER (2"I.D.):	6.5
LENGTH OF SCREEN (2"I.D.):	15.0
THICKNESS OF GROUT	2.0
THICKNESS OF SEAL:	2.0
THICKNESS OF SAND PACK:	18.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
24:00	4.0										4.0	
23:00	3.0										3.0	
22:00	2.0										2.0	
21:00	1.0										1.0	
20:00	0.0		S-1	SS	-	-	0.5	0.5		SILTY SAND: fine grained w/rooted material dark brown/dark gray, damp, very loose	0.0	
19:00	1.0		S-2	SS	2 3 2 2	1.8	0.5	0.5		SAND: fine grained w/trace silt dark brown/brown, damp, loose	1.0	
18:00	2.0		S-3	SS	5 5 6 7	1.3	0.5	0.5		SILTY CLAY: w/trace sand, fine grained, orange staining is present, light gray, damp, stiff to soft	2.0	
17:00	3.0										3.0	
16:00	4.0		S-4	SS	1 2 2 3	1.0	0.5	0.5			4.0	
15:00	5.0										5.0	
14:00	6.0		S-5	SS	5 3 7 8	1.6	0.5	0.5		SAND: fine grained w/trace silt and trace clay, brown, damp to wet, medium dense	6.0	
13:00	7.0										7.0	
12:00	8.0		S-6	SS	8 10 12 12	1.6	0.5	0.2		SAND: fine to medium grained w/trace silt, light brown, wet, medium dense to very loose	8.0	
11:00	9.0										9.0	
10:00	10.0										10.0	
9:00	11.0		S-7	SS	4 1 2 2	1.6	0.2	0.2		CLAY: w/trace silt, trace wood splinters, dark greenish gray, moist, soft to stiff	11.0	
8:00	12.0										12.0	
7:00	13.0		S-8	SS	5 8 3 3	2.0	0.2	0.2			13.0	
6:00	14.0										14.0	
5:00	15.0		S-9	SS	2 2 2 4	2.0	0.2	0.2		SAND: fine grained w/trace silt, gray, wet, medium dense	15.0	
4:00	16.0									CLAY: w/trace silt, dark greenish gray, moist, stiff to soft to medium stiff	16.0	
3:00	17.0		S-10	SS	1 2 1 2	2.0	0.2	0.2			17.0	
2:00	18.0										18.0	
1:00	19.0										19.0	
0:00	20.0		S-11	SS	3 4 4 4	2.0	0.2	0.2			20.0	
1:00	21.0										21.0	
2:00	22.0									BOTTOM OF BOREHOLE @ 22.0'	22.0	
3:00	23.0									NOTES: 1) Groundwater encountered @ 8.5' during drilling 2) Borehole sampled to 21' 3) Type II monitoring well set @ 21.7'	23.0	
	24.0										24.0	

APPENDIX A.3
BACKGROUND TEST BORING LOGS

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-BB-SB01

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R.M. LEWIS
ENV. SCIENTIST: A.M. BERNHARDT
DATE BEGUN: 11/16/94 DATE COMPLETED: 11/16/94

GROUND SURFACE ELEVATION: 29.19' msl
TOTAL DEPTH: 9.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
29.00	0.0		S-1	SS	-	-	-	-		SAND AND SILT: Fine grained, light brown, moist	0.0
28.00	1.0										1.0
			S-2	SS	4 7 9 7	2.0	-	-		SAND: Fine grained, little clay, trace silt, light brown to gray, moist, medium dense	
27.00	2.0										2.0
	3.0										3.0
26.00			S-3	SS	4 4 7 9	2.0	-	-			4.0
25.00	4.0										5.0
24.00	5.0		S-4	SS	9 10 9 10	2.0	-	-			6.0
23.00	6.0									SAND: Fine grained, little silt, gray moist to wet, medium dense	7.0
22.00	7.0		S-5	SS	6 9 9 12	2.0	-	-			8.0
21.00	8.0										9.0
20.00	9.0									BOTTOM OF BOREHOLE @ 9.0'	10.0
19.00	10.0									NOTES	11.0
18.00	11.0									1) Groundwater encountered at 7' during drilling.	12.0
17.00	12.0										13.0
16.00	13.0										14.0
15.00	14.0										15.0
14.00	15.0										16.0
13.00	16.0										17.0
12.00	17.0										18.0
11.00	18.0										19.0
10.00	19.0										20.0
9.00	20.0										21.0
8.00	21.0										22.0
7.00	22.0										23.0
6.00	23.0										24.0
5.00	24.0										25.0
4.00	25.0										26.0
3.00	26.0										27.0
2.00	27.0										28.0
1.00	28.0										

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-BB-SB02

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R M. LEWIS
ENV SCIENTIST: A.M. BERNHARDT
DATE BEGUN: 11/17/94 DATE COMPLETED: 11/17/94

GROUND SURFACE ELEVATION: 32.07' msl
TOTAL DEPTH: 7.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
32.00	0.0		S-1	SS	-	-	-	-		SILT AND SAND: Fine grained, black to dark brown, damp	0.0
31.00	1.0										1.0
30.00	2.0		S-2	SS	14 10 10 12	1.5	0.9	0.6		SAND: Fine grained, some silt, trace to little clay, brown/light brown/gray, damp to wet, medium dense to loose	2.0
29.00	3.0										3.0
28.00	4.0		S-3	SS	4 7 5 4	2.0	0.8	0.8			4.0
27.00	5.0										5.0
26.00	6.0		S-4	SS	2 3 4 4	1.5	0.8	0.8			6.0
25.00	7.0									BOTTOM OF BOREHOLE @ 7.0'	7.0
24.00	8.0									NOTES	8.0
23.00	9.0									1) Groundwater encountered at 6' during drilling	9.0
22.00	10.0										10.0
21.00	11.0										11.0
20.00	12.0										12.0
19.00	13.0										13.0
18.00	14.0										14.0
17.00	15.0										15.0
16.00	16.0										16.0
15.00	17.0										17.0
14.00	18.0										18.0
13.00	19.0										19.0
12.00	20.0										20.0
11.00	21.0										21.0
10.00	22.0										22.0
9.00	23.0										23.0
8.00	24.0										24.0
7.00	25.0										25.0
6.00	26.0										26.0
5.00	27.0										27.0
4.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 3-BB-SB03

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-274
PROJECT NAME: SITE 3 - OLD CREOSOTE PLANT
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: HARDIN-HUBER, INC.
RIG TYPE & NUMBER: ATV
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: R.M. LEWIS
ENV. SCIENTIST: A.M. BERNHARDT
DATE BEGUN: 11/17/94 DATE COMPLETED: 11/17/94

GROUND SURFACE ELEVATION: 31.34' msl
TOTAL DEPTH: 9.0' bgs

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
31.00	0.0		S-1	SS	-	-	-	-		SILT AND SAND: Fine grained, black to brown, damp	0.0
30.00	1.0										1.0
	2.0		S-2	SS	3 7 6 7	2.0	0.3	0.3		SAND: Fine grained, little to trace silt, brown to gray, damp to wet, medium dense	2.0
29.00	3.0										3.0
28.00	4.0		S-3	SS	3 6 6 8	2.0	0.4	0.4			4.0
27.00	5.0										5.0
26.00	6.0		S-4	SS	3 5 7 7	2.0	0.3	0.3			6.0
25.00	7.0										7.0
24.00	8.0		S-5	SS	7 7 8 15	2.0	0.3	0.3			8.0
23.00	9.0									BOTTOM OF BOREHOLE @ 9.0'	9.0
22.00	10.0									NOTES	10.0
21.00	11.0									1) Groundwater encountered at 7' during drilling.	11.0
20.00	12.0										12.0
19.00	13.0										13.0
18.00	14.0										14.0
17.00	15.0										15.0
16.00	16.0										16.0
15.00	17.0										17.0
14.00	18.0										18.0
13.00	19.0										19.0
12.00	20.0										20.0
11.00	21.0										21.0
10.00	22.0										22.0
9.00	23.0										23.0
8.00	24.0										24.0
7.00	25.0										25.0
6.00	26.0										26.0
5.00	27.0										27.0
4.00	28.0										28.0
3.00											

APPENDIX B
SAMPLE DOCUMENTATION

APPENDIX B.1
CHAIN-OF-CUSTODY

INTERNATIONAL TECHNOLOGY CORPORATION

LOC #3001 Event 7009

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325471

Page 1 of 12

Project Name/No.[1] CTO-274

Sample Team Members[2]

Profit Center No.[3]

Project Manager[4] Matt Barbara

Purchase Order No.[6]

Required Report Date[11] 28 day Turn

Samples Shipment Date[7] 11/14/94

Lab Destination[8]

Lab Contact[9]

Project Contact/Phone[12]

Carrier/Waybill No.[13] 1B9666006733

Bill to:[5] Baker Environmental 17326

Report to:[10] Matt Barbara

White: To accompany samples

Yellow: Field copy

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
3-TA-SB839-04	Soil	11-15-94/1200	P,G	—	—	TCL-Pest/PCB, TAL metals, grain size		
D WA-SB839-04		11/15/94/1200				BTEX-SVOC, moisture, cation exchange capacity		
3-TA-SB25-02	Soil	11-15-94/0946	P,G	—	—	TPH-SVOC		
D WA-SB25-02		11/15/94/0946						
3-TA-SB14-02	Soil	11-14-94/1626	P,G	—	—	TCL-SVOC same		
D WA-SB14-02								
3-TA-SB29-02	Soil	11-15-94/1046	G		—	TCL-SVOC		
3-TA-SB13-03	Soil	11-15-94/0808	G		—	TCL-SVOC		
3-TA-SB10-04	Soil	11-14-94/1556	G		—	TCL-SVOC		
3-TA-SB21-03	Soil	11-15-94/0901	G		—	TCL-SVOC		
3-TA-SB21-03D	Soil	11-15-94/0901	G		—	TCL-SVOC		

COPY

FOR LAB USE ONLY

FOR LAB USE ONLY

Special Instructions:[23]

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☒ Archive _____ (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐ 28 day, 7 days

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation)	Date: 11/15/94 Time: 1500	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

*See back of form for special instructions.

MCA 3/15/91

3001

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 325471

Page 2 of 2

Project Name LTO-274

Project No. LTO-274

Samples Shipment Date 11-15-94

ONE CONTAINER PER LINE

Sample Number [14]	Sample Description/Type [15]	Date/Time Collected [16]	Container Type [17]	Sample Volume [18]	Preservative [19]	Requested Testing Program [20]	Condition on Receipt [21]	Disposal Record No. [22]
3-TA-SB08-04	Soil	11-14-94/1511 ~~11-14~~	G		—	TCL-SVOC		
3-RS-01	SPLIT SPOON-liquid	11-14-94/1740	G		—	TCL-SVOC	FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	

COPY

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

C.O.C # 30[illegible]

Reference Document No. 325465

Page 1 of ____

Project Name/No.[1] CTO-274 | Samples Shipment Date[7] | Bill to:[5] BAKER ENVIRONMENTAL ENG.

Sample Team Members[2] | Lab Destination[8]

Profit Center No.[3] | Lab Contact[9]

Project Manager[4] MATT BARTMAN. | Project Contact/Phone[12] | Report to:[10] MATT BARTMAN.

Purchase Order No.[6] | Carrier/Waybill No.[13]

Required Report Date[11] 28-DAY TURN

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
3-TA-SB37-Ø2	SOIL	11/15/94 1407	G			TCL-SVOA.	FOR LAB USE ONLY	
3-TA-SB43-Ø3	SOIL	11/15/94 1430	G			TCL-SVOA.		
3-TA-SB41-Ø2	SOIL	11/15/94 1[illegible]	G			TCL-SVOA.		
3-TA-SB17-Ø4	SOIL	11/15/94 1453	G			TCL-SVOA.		
3-RS-SBØ6-Ø4	SOIL	11/15/94 1621	G			TCL-SVOA.	FOR LAB USE ONLY	
3-RS-SBØ1-Ø3	SOIL	11/15/94 1653	G			TCL-SVOA.		
3-RS-SBØ2-Ø4	SOIL	11/16/94 0836	G			TCL-SVOA.		
3-RS-SBØ5-Ø3	SOIL	11/16/94 0935	G			TCL-SVOA.		

COPY

Special Instructions:[23]

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25] Return to Client ☐ Disposal by Lab ☒ Archive ____ (mos.)

Turnaround Time Required:[26] Normal ☒ Rush ☐ 28-DAY TURN

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify): ____

1. Relinquished by[28] (Signature/Affiliation)	Date: Time:	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

MCA 3/15/91

White: To accompany samples

Yellow: Field copy

*See back of form for special instructions.

C.O.C # 3002

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 325465

Page 2 of 2

Project Name: CTO-274

Project No. CTO-274

Samples Shipment Date 11/16/94.

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
3-RS-SBØ5-ØY	Soil	11/16/94 0937	G			TCL-SVOA		
3-~~RS~~-NA-SBØ5-Ø3	Soil	11/16/94 1035	G			TCL-SVOA.		
3-NA-SBØ7-Ø3	Soil	11/16/94 1140	G			TCL-SVOA.		
3-TA-SB18-Ø3	Soil	11/16/94 0950	G			TCL SVOA.		
3-MWØ2IW-ØØ	Soil	11/16/94 1005	G			TCL-ORGANICS. TAL-INORGANICS	* Note	MS/MSD PROVIDED.
3-MWØ2IW-ØØD	Soil	11/16/94 1005	G			TCL-ORGANICS TAL-INORGANICS		
3-NA-SBØ8-Ø3	Soil	11/16/94 1144	G			TCL-SVOA		
3-TB-Ø1	TRIP BLANK. Liquid	11/16/94 1115	G		HCL	TCL-VOA.		
3-BB-SBØ1-Ø3	Soil	11/16/94 1248	G			TCL-SVOA.		
3-MW02IW-Ø3	Soil	11/16/94 1034	G			TCL-ORGANICS TAL-INORGANICS	* Note	MS/MSD PROVIDED
3-MW02IW-Ø3D	Soil	11/16/94 1034	G			TCL-ORGANICS TAL-INORGANICS		

COPY

FOR LAB USE ONLY

White: To accompany samples. Yellow: Field copy

*See back of form for special instructions.

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

C.O.C. # 3003

Reference Document No. 325472

White: To accompany samples

Yellow: Field copy

Project Name/No.[1] CTO-274

Sample Team Members[2]

Profit Center No.[3]

Project Manager[4] MATT BARTMAN

Purchase Order No.[6]

Required Report Date[11] 28-DAY TURN

Samples Shipment Date[7] 11/17/94

Lab Destination[8]

Lab Contact[9]

Project Contact/Phone[12]

Carrier/Waybill No.[13] 1396601651

Bill to:[5] BAKER ENVIRONMENTAL Inc.

Report to:[10] MATT BARTMAN

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Pre-servative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
3-RS-Ø3	RINSATE - SPLIT SPOON LIQUID	11/16/94 1565	G/P		HCL/HNO3	TCL-ORGANICS TAL-INORGANICS.		
3-TA-SB36-ØØ	SOIL	11/17/94 0830	G			TCL-SVOA.	FOR LAB USE ONLY	
3-MWØ2IW-Ø9	SOIL	11/17/94 0850	G			TCL-SVOA	*	
3-BB-SBØ1-ØØ	SOIL	11/17/94 0800	G			TCL-SVOA		
3-BB-SBØ2-ØØ	SOIL	11/17/94 0830	G			TCL-SVOA.	FOR LAB USE ONLY	
3-BB-SBØ2-ØØ	SOIL	11/17/94 0840	G			TCL-SVOA.		
3-TB-Ø2	SOIL	11/17/94 1000	G		HCL	TCL-VOA.		
3-BB-SBØ3-ØØ	SOIL	11/17/94 1050	G			TCL-SVOA.		

COPY

Special Instructions:[23] * NOTE TO LAB, THIS SAMPLE IS CONTAMINATED W/ CREOSOTE,

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☒ Archive _____ [mos.]

Turnaround Time Required:[26]
Normal ☒ Rush ☐ 28-DAY TURN.

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation) Teresa Monday	Date: 11/17/94 Time: 1700.
2. Relinquished by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:
1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Received by (Signature/Affiliation)	Date: Time:
3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

*See back of form for special instructions.

MCA 3/15/91

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 325472
Page 2 of 2

Project Name CTO-274 Project No. CTO-274 Samples Shipment Date 11/17/94.

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
3-BB-SB03-03	SOIL	11/17/94 1057	G			TCL-SVOA.		
3-RS-SB07-04	SOIL	11/17/94 1315	G			TCL-SVOA	FOR LAB USE ONLY	
3-RS-04	RINSATE S.S. BOWL LIQUID	11/17/94 1420	G/P		HCL/HNO3	TCL-ORGANICS TAL-INORGANICS	* HOLD - DO NOT ANALYZE	
3-TA-SB34-03	SOIL	11/17/94 0925	G			TCL-SVOA.	FOR LAB USE ONLY	
3-MW04-04	SOIL	11/17/94 1400	G			TCL-SVOA		
3-MW04-06	SOIL	11/17/94 1422	G			TCL-SVOA.	FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	

COPY

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

COC # 3004 cooler 2

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325349

Page 1 of 1

Project Name/No.[1] CTO-274 | Samples Shipment Date[7] 11-21-94 | Bill to:[5] Baker Environmental, Inc

Sample Team Members[2] | Lab Destination[8] |

Profit Center No.[3] | Lab Contact[9] |

Project Manager[4] Matt Bartman | Project Contact/Phone[12] 13966O1290 | Report to:[10] Matt Bartman

Purchase Order No.[6] | Carrier/Waybill No.[13] 43002-04683-

Required Report Date[11] 28-Day Turn

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
3-RS-05	Rinsate - split spoon Liquid	11-20-94/0810	G/P		Ice HNO_3	TCL-Pest/PCB, TCL-SVOA TAL-inorganics		

FOR LAB USE ONLY

FOR LAB USE ONLY

COPY

Special Instructions:[23]

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25] Return to Client ☐ Disposal by Lab ☑ Archive _____ (mos.)

Turnaround Time Required:[26] Normal ☑ Rush ☐ 28-day turn

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation) Debra Mundy Date: 11/21/94 Time: 1700	1. Received by[28] (Signature/Affiliation) Date: Time:
2. Relinquished by (Signature/Affiliation) Date: Time:	2. Received by (Signature/Affiliation) Date: Time:
3. Relinquished by (Signature/Affiliation) Date: Time:	3. Received by (Signature/Affiliation) Date: Time:

Comments:[29]

MCA 3/15/91

White: To accompany samples

Yellow: Field copy

*See back of form for special instructions.

COC # 3005 COOLER 1

Interra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 1088
Page 1 of 2

Project Name/No. 1 CTO-274
Sample Team Members 2
Profit Center No. 3
Project Manager 4 Matt Bartman
Purchase Order No. 6
Required Report Date 11 28-Day turn

Samples Shipment Date 7 11-21-94
Lab Destination 8
Lab Contact 9
Project Contact/Phone 12
Carrier/Waybill No. 13 ~~4300204683~~ 1396601290

Bill to: 5 Baker Environmental, Inc
Report to: 10 Matt Bartman

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Pre-servative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
3-MW08-00	Soil	11-20-94/0850	G			TLL- SVOC		
3-MW08-02	Soil	11-20-94/0858	G			TLL- SVOC		
3-MW06-00	Soil	11-19-94/1250	G			TLL- SVOC		
3-MW06-04	Soil	11-19-94/~~1307~~ 1304	G			TLL- SVOC		
3-MW07-00	Soil	11-19-94/0845	G			TLL- SVOC		
3-MW07-02	Soil	11-19-94/0847	G			TLL- SVOC		
3-MW05-00	Soil	11-19-94/1435	G			TLL- organics TLL- inorganics		
3-MW05-10	Soil	11-19-94/1512	G			TLL- organics TLL- inorganics		

FOR LAB USE ONLY

FOR LAB USE ONLY

Special Instructions: 23

Possible Hazard Identification: 24
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: 25
Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

Turnaround Time Required: 26
Normal ☑ Rush ☐ 28-day turn

QC Level: 27
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by 28 (Signature/Affiliation) Peter A Monaloy	Date: 11/21/94 Time: 1700	1. Received by 28 (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: 29

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

MCA 3/15/91

COC # 3005 COOLER 6

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 1088

Page 2 of 2

Project Name: CTO-274

Project No. CTO-274

Samples Shipment Date 11-21-94

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
3-MW05	Soil	11-20-94/0800	P		—	Engineering Parameters		
3-RS-05	Aqueous, soil smear Liquid	11-20-94/0810	G		HCL	TCL-VOA	FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	

COPY

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

C.O.C.# 3006 cooler #1

Reference Document No. 325325

Page 1 of 1

Project Name/No.[1] CTO-274

Sample Team Members[2]

Profit Center No.[3]

Project Manager[4]

Purchase Order No.[6]

Required Report Date[11] 28-DAY TURN

Samples Shipment Date[7] 12/1/94

Lab Destination[8]

Lab Contact[9]

Project Contact/Phone[12]

Carrier/Waybill No.[13] 139660/8446

Bill to:[5] BAKER ENVIRONMENTAL INC

Report to:[10] MATT BARTMAN

Write: To accompany samples

Yellow: Field copy

*See back of form for special instructions.

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Pre-servative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
3-MW07-01	LIQUID	12/1/94 1220	G		HCL	TCL-VOA	FOR LAB USE ONLY	
3-MW08-01	LIQUID	12/1/94 1050	G		HCL	TCL-VOA.		
							FOR LAB USE ONLY	

COPY

Special Instructions:[23] NOTE TRIP BLANK 7-TB-08 IS THE TRIP BLANK FOR COOLER #1.

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25] Return to Client ☐ Disposal by Lab ☑ Archive _____ [mos.]

Turnaround Time Required:[26] Normal ☒ Rush ☐ 28-DAY TURN.

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation) Peter A Montesi	Date: 12/1/94 Time: 1700	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

MCA 3/15/91

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

C.O.C. # 300 Folder #3

Reference Document No. 325327

Page 1 of 1

Project Name/No.[1] TO-274

Sample Team Members[2]

Profit Center No.[3]

Project Manager[4] MATT BARTMAN

Purchase Order No.[6]

Required Report Date[11] 28-DAY TURN.

Samples Shipment Date[7] 12/1/94

Lab Destination[8]

Lab Contact[9]

Project Contact/Phone[12]

Carrier/Waybill No.[13] 139660184 6

Bill to:[5] BAKER ENVIRONMENTAL INC

Report to:[10] MATT BARTMAN.

White: To accompany samples

Yellow: Field copy

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Pre-servative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
3-MW07-01	LIQUID	12/1/94/1220	G/P		HNO3	TCL-ORGANICS TAL-TOTAL-METALS	FOR LAB USE ONLY	
3-MW070-01	"	12/1/94/1220	P		"	DISSOLVED METALS		
3-MW08-01	"	12/1/94/1050	G/P		"	TCL-ORGANICS TAL-TOTAL-METALS		
3-MW080-01	"	12/1/94/1050	P		"	DISSOLVED METALS	FOR LAB USE ONLY	

COPY

Special Instructions:[23]

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25] Return to Client ☐ Disposal by Lab ☒ Archive _____ (mos.)

Turnaround Time Required:[26] Normal ☒ Rush ☐

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation)	Date: 12/1/94 Time: 1700	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

*See back of form for special instructions.

MCA 3/15/91

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

COC # 3008 COC # 2
Reference Document No. 325329
Page 1 of 1

Project Name/No.[1] 62470-274
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4] MATT BARTMAN
Purchase Order No.[6]
Required Report Date[11] 28 DAY TURN.

Samples Shipment Date[7] 2 DEC. 1994
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13] 1396601614

Bill to:[5] BAKER ENVIRONMENTAL
Report to:[10] MATT BARTMAN BAKER

White: To accompany samples
Yellow: Field copy

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Pre-servative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
3-MW03-01	Liquid	12/2/94 1405	P/G		HCl, HNO_3	TCL Organics TAL Inorganics	FOR LAB USE ONLY	
3-MW04-01	Liquid	12/2/94 0830	P/G		HCl, HNO_3	TCL Organics TAL Inorganics		
3-MW02-01	Liquid	12/2/94 1125	P/G		HCl, HNO_3	TCL Organics TAL Inorganics		
3-MW06-01	Liquid	12/2/94 1555	P/G		HCl, HNO_3	TCL Organics TAL Inorganics		
3-MW05-01	Liquid	12/2/94 0940	P/G		HCl, HNO_3	TCL Organics TAL Inorganics	FOR LAB USE ONLY	
~~3-TB03~~ 3-TB03	Liquid	12/2/94	G		HCl	TCL VOA		
These samples were already included on COC # 3007, (sent on 12/1/94) but not sent in that cooler.								
* 3-MW07-01	Liquid	12/1/94 1220	P		HNO_3	TAL Inorganics		

COPY

Special Instructions:[23]

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☒ Archive _____ (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐ 28 DAY

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation) E. J. Klein	Date: 2 DEC 1994 Time: 1800 H	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

*See back of form for special instructions.

MCA 3/15/91

C.O.C # 3009 Cooler #1.

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325331

Page 1 of 1

Project Name/No.[1] CTO-274

Sample Team Members[2]

Profit Center No.[3]

Project Manager[4] MATT BARTMAN

Purchase Order No.[6]

Required Report Date[11]

Samples Shipment Date[7] 12/3/94

Lab Destination[8]

Lab Contact[9]

Project Contact/Phone[12]

Carrier/Waybill No.[13] 139660162 5.

Bill to:[5] BAKER ENVIRONMENTAL.

Report to:[10] MATT BARTMAN.

White: To accompany samples

Yellow: Field copy

*See back of form for special instructions.

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
3-RS-06	RINSATE OFF PUMP LIQUID	12/3/94 0830	G/P		HCL/ICE	TCL-ORGANICS TAL-TOTAL METALS		
3-RSD-06	LIQUID	12/3/94 0830	P		HNO3	DISSOLVED METALS		

FOR LAB USE ONLY

FOR LAB USE ONLY

COPY

Special Instructions:[23]

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☑ Archive _____ (mos.)

Turnaround Time Required:[26]
Normal ☐ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation)	Date: 12/3/94 Time: 1300	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

MCA 3/15/91

COC#3010 Coolers 1&2

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325475

Page 1 of ___

Project Name/No.[1] CTO-274 | Samples Shipment Date[7] 12/5/94 | Bill to:[5] Baker Environmental

Sample Team Members[2] | Lab Destination[8] |

Profit Center No.[3] | Lab Contact[9] |

Project Manager[4] Matt Bartman | Project Contact/Phone[12] | Report to:[10] Matt Bartman

Purchase Order No.[6] | Carrier/Waybill No.[13] 1396601850

Required Report Date[11] 28 Day Turn

White: To accompany samples

Yellow: Field copy

*See back of form for special instructions.

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Pre-servative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
* 3-MW02DW-01	Liquid	1345 12-3-94	P/G		HCl, HNO_3	TCL Organics TAL Inorganics		
3-MW02DWD-01	Liquid	1345 12-3-94	P		HNO_3	Dissolved Metals	FOR LAB USE ONLY	
3-MW02DW-01D	Liquid	1345 12-3-94	P/G		HCl HNO_3	TCL Organics TAL Inorganics		
3-MW02DWD-01D	Liquid	1345 12-3-94	P		HNO_3	Dissolved Metals		
3-TB-04	Liquid	12-3-94	G		HCl	TCL VOA		
							FOR LAB USE ONLY	
* MS/MSD, extra volume included in Cooler #2								

COPY

Special Instructions:[23]

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25] Return to Client ☐ Disposal by Lab ☒ Archive ___ (mos.)

Turnaround Time Required:[26] Normal ☐ Rush ☐

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation) Lisa Johnson	Date: 12-5-94 Time: 1300	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

MCA 3/15/91

COC# 3011 Cooler #3

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325334

Page 1 of ___

Project Name/No.[1] CTO-0274 Samples Shipment Date[7] 12/5/94 Bill to:[5] Baker Environmental

Sample Team Members[2] ___ Lab Destination[8] ___

Profit Center No.[3] ___ Lab Contact[9] ___

Project Manager[4] Matt Bartman Project Contact/Phone[12] ___ Report to:[10] Matt Bartman

Purchase Order No.[6] ___ Carrier/Waybill No.[13] 1396601850

Required Report Date[11] 7 Day Turn

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Pre-servative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
~~3-RS-01~~	~~Liquid~~	~~12-3-94 0850~~	~~P/G~~		~~HCl HNO3~~	~~TCL Organics TAL Inorganics~~		
00-TK-01	Liquid	12-3-94 1540	G		HCl HNO3	TCL ~~VOA~~ Organics TAL Inorganics	FOR LAB USE ONLY	
3-TK-01	Liquid	12-3-94 1515	G		HCl	TCL VOA		
274-DRM-01	Liquid	12-3-94 1650	G		HCl	TCL VOA		
							FOR LAB USE ONLY	

COPY

Special Instructions:[23]

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25] Return to Client ☐ Disposal by Lab ☒ Archive ___ (mos.)

Turnaround Time Required:[26] Normal ☐ Rush ☐

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify): ___

1. Relinquished by[28] (Signature/Affiliation) Linda Johnson	Date: 12-5-94 Time: 1300	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

MCA 3/15/91

White: To accompany samples

Yellow: Field copy

*See back of form for special instructions.

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

COC#3012 Cooler #4
Reference Document No. 325335
Page 1 of ____

Project Name/No.[1] CTO-0274 Samples Shipment Date[7] 12/5/94
Sample Team Members[2] Lab Destination[8]
Profit Center No.[3] Lab Contact[9]
Project Manager[4] Matt Bartman Project Contact/Phone[12]
Purchase Order No.[6] Carrier/Waybill No.[13] 139660 1850
Required Report Date[11] 7 Day Turn

Bill to:[5] Baker Environmental
Report to:[10] Matt Bartman

White: To accompany samples
Yellow: Field copy

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Pre-servative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
3-TK-01	Liquid	12-3-94 1515	P/G		HNO_3	SVOA, Pest/PCB, Total Metals, Extra Vol.		
274-DRM-01	Liquid	12-3-94 1630	P/G		HNO_3	SVOA, Pest/PCB, Total Metals, Extra Vol.		

COPY

FOR LAB USE ONLY

FOR LAB USE ONLY

Special Instructions:[23]

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☒ Archive ____ (mos.)

Turnaround Time Required:[26]
Normal ☐ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation) Linda Johnson	Date: 12-5-94 Time: 1300	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

*See back of form for special instructions.

MCA 3/15/91

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

COC# 30001
Reference Document No. 390475
Page 1 of 2

Project Name/No.[1] CAMP LEJEUNE CTO-0261
Sample Team Members[2] BARTMAN/KIMES/MARTIN
Profit Center No.[3]
Project Manager[4] M. BARTMAN
Purchase Order No.[6]
Required Report Date[11] 28 DAYS

Samples Shipment Date[7] 9/22/94
Lab Destination[8] KNOXVILLE
Lab Contact[9] SHEREE SCHNEIDER
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] BAKER ENVIRONMENTAL c/o MATT BARTMAN
Report to:[10] BAKER ENVIRONMENTAL c/o MATT BARTMAN

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Pre-servative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
3-RS-SB06	SOIL	9/21/94 1511	G	4oz		TCL SVOA		
3-RS-SB01	SOIL	9/20/94 1715	G	8oz		TCL SVOA	FOR LAB USE ONLY	
3-RS-SB02	SOIL	9/20/94 1710	G	8oz		TCL SVOA		
3-RS-SB05	SOIL	9/21/94 1518	G	4oz		TCL SVOA		
3-RS-SB07	SOIL	9/22/94 0856	G	4oz		TCL SVOA	FOR LAB USE ONLY	
3-TA-SB08	SOIL	9/19/94 1455	G	8oz		TCL SVOA		
3-TA-SB09	SOIL	9/20/94 1056	G	8oz		TCL SVOA		
3-TA-SB10	SOIL	9/19/94 1506	G	8oz		TCL SVOA		

COPY

Special Instructions:[23] MS/MSD TO BE PERFORMED ON 3-CP-SB02 / 3-TA-SB21 / 3-NA-SB03

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25] Return to Client ☐ Disposal by Lab ☒ Archive _____ (mos.)

Turnaround Time Required:[26] Normal ☑ Rush ☐ 28 DAY

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation) Matthew J. Bartman	Date: 9/22/94 Time: 1300	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

MCA 3/15/91

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

COC # 30001

Reference Document No.[30] 590475

Page 2 of 2

Project Name CAMP LEJEUNE

Project No. CTO - 0274

Samples Shipment Date 9/22/94

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
3-TA-SB13	SOIL	9/19/94 1515	G	8oz		TCL SVOA		
3-TA-SB14	SOIL	9/19/94 1520	G	8oz		TCL SVOA	FOR LAB USE ONLY	
3-TA-SB17	SOIL	9/19/94 1530	G	8oz		TCL SVOA		
3-CP-SB02	SOIL	9/20/94 0815	G	8oz		TCL SVOA	FOR LAB USE ONLY	
3-CP-SB02D	SOIL	9/20/94 0815	G	8oz		TCL SVOA		
3-CP-SB04	SOIL	9/20/94 0805	G	8oz		TCL SVOA	FOR LAB USE ONLY	
3-TA-SB18	SOIL	9/19/94 1540	G	8oz		TCL SVOA		
3-TA-SB21	SOIL	9/20/94 1100	G	8oz		TCL SVOA	FOR LAB USE ONLY	
3-TA-SB21D	SOIL	9/20/94 1100	G	8oz		TCL SVOA		
3-TA-SB25	SOIL	9/19/94 1640	G	8oz		TCL SVOA	FOR LAB USE ONLY	
3-TA-SB29	SOIL	9/20/94 1105	G	8oz		TCL SVOA		
3-TA-SB34	SOIL	9/21/94 1553	G	4oz		TCL SVOA	FOR LAB USE ONLY	
3-TA-SB36	SOIL	9/21/94 1549	G	4oz		TCLSVOA		
3-TA-SB37	SOIL	9/21/94 1548	G	4oz		TCLSVOA	FOR LAB USE ONLY	
3-TA-SB39	SOIL	9/21/94 1540	G	4oz		TCL SVOA		
3-TA-SB41	Matthew Bautista	9/22/94 0830	G	9/22/94 1300 8oz		TCLSVOA	FOR LAB USE ONLY	
3-TA-SB43	SOIL	9/22/94 0822	G	4oz		TCLSVOA		
3-NA-SB01	SOIL	9/20/94 1004	G	8oz		TCLSVOA		
3-NA-SB01D	SOIL	9/20/94 1004	G	4oz		TCLSVOA		
3-NA-SB03	SOIL	9/20/94 0955	G	8oz		TCLSVOA		

COPY

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

IT INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

COC# 30002
Reference Document No. 390575
Page 1 of 2

Project Name/No.[1] CAMP LEJEUNE CTO-0274
Sample Team Members[2] BARTMAN/KIMES/MARTIN
Profit Center No.[3]
Project Manager[4] M. BARTMAN
Purchase Order No.[6]
Required Report Date[11] 28 DAYS

Samples Shipment Date[7] 9/22/94
Lab Destination[8] KNOXVILLE
Lab Contact[9] SHEREE SCHNEIDER
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] BAKER ENVIRONMENTAL c/o MATT BARTMAN
Report to:[10] BAKER ENVIRONMENTAL c/o MATT BARTMAN

White: To accompany samples
Yellow: Field copy

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Pre-servative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
3-NA-SB07	SOIL	9/20/94 1613	G	8		TCL SVOA		
3-NA-SB17	SOIL	9/21/94 1612	G	4		TCL SVOA	FOR LAB USE ONLY	
3-RS-SB03	SOIL	9/21/94 1515	G	4		TCL SVOA		
3-BB-SB03	SOIL	9/20/94 1135	G	8		TCL SVOA		
3-CP-SB09	SOIL	9/21/94 1600	G	4		TCL SVOA	FOR LAB USE ONLY	
3-CP-SB05	SOIL	9/20/94 0725	G	8		TCL SVOA		
3-TA-SB40	SOIL	9/22/94 0835	G	8		TCL SVOA		
3-TA-SB44	SOIL	9/22/94 0819	G	4		TCL SVOA		

COPY

Special Instructions:[23]

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☒ Archive _____ (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐ 28 DAY

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation) Matthew N Bartman	Date: 9/22/94 Time: 1300	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

*See back of form for special instructions.

MCA 3/15/91

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

CLEAN # 30002

Reference Document No.[30] 370575

Page 2 of 2

Project Name CAMP LEJEUNE Project No. CTO-0274 Samples Shipment Date 9/22/94

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
3-TA-SB14 2	SOIL	9/19/94 1312	G	802		TCL SVOA		
3-ER01	AQUEOUS	9/20/94 0650	G	1L		TCL SVOA	FOR LAB USE ONLY	
3-ER02	AQUEOUS	9/20/94 1500	G	1L		TCL SVOA		
3-NA-SB05	SOIL	9/20/94 0950	G	802		TCL SVOA	FOR LAB USE ONLY	
3-NA-SB08	SOIL	9/20/94 0951	G	802		TCL SVOA		
3-NA-SB10	SOIL	9/20/94 0944	G	82		TCL SVOA	FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	

COPY

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

C.O.C. 7013 Ca R #2.

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325332
Page 1 of 1

Project Name/No.[1] CTO-274
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4]
Purchase Order No.[6]
Required Report Date[11] @ 7 DAY TURN.

Samples Shipment Date[7] 12/3/94
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13] 139660625

Bill to:[5] BAKER ENVIRONMENTAL.
Report to:[10] MATT BARTMAN.

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
16-TK-01	LIQUID	12/3/94/0916	G/P		HCL/HNO3	TCL-ORGANICS TAL-INORGANICS	FOR LAB USE ONLY	
7-TK-01	LIQUID	12/3/94/0950	G/P		HCL/HNO3	TCL-ORGANICS TAL-INORGANICS		
3-RB-01	LIQUID	12/3/94/1230	G			TCL-PCB'S TCLP-ORGANICS/INORGANICS RCRA-HAZ. CHARACTERISTICS.		
							FOR LAB USE ONLY	

COPY

Special Instructions:[23] NOTE! 7-DAY TURN AROUND TIME

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☑ Archive _____ (mos.)

Turnaround Time Required:[26]
Normal ☐ Rush ☒ 7-DAY TURN.

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation)	Date: 12/9/94 Time: 830	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

MCA 3/15/91

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 2936
Page 1 of ___

Project Name/No.: [1] 62470-274-0000-03500
Sample Team Members: [2] DeJOHN / ZIMMERMAN
Profit Center No.: [3]
Project Manager: [4] MATT BARTMAN
Purchase Order No.: [6]
Required Report Date: [11]

Samples Shipment Date: [7] 6/13/95
Lab Destination: [8] PITTSBURGH
Lab Contact: [9] CARRIE SMITH GAMBLE
Project Contact/Phone: [12] 800-553-1153
Carrier/Waybill No.: [13] 407622536 5

Bill to: [5]
Report to: [10]

White: To accompany samples
Yellow: Field copy

ONE CONTAINER PER LINE

Sample Number [14]	Sample Description/Type [15]	Date/Time Collected [16]	Container Type [17]	Sample Volume [18]	Preservative [19]	Requested Testing Program [20]	Condition on Receipt [21]	Disposal Record No. [22]
02-MW02IW-02	GROUNDWATER	6/12 @ 1926	AMBER	250mL	H_2SO_4	BOD (STANDARD)	FOR LAB USE ONLY	
							FOR LAB USE ONLY	

Special Instructions: [23]

Possible Hazard Identification: [24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: [25]
Return to Client ☐ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required: [26]
Normal ☒ Rush ☐

QC Level: [27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by [28] (Signature/Affiliation)	Date: 6-13-95 Time: 1500	1. Received by [28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: [29] (STANDARD) - STANDARD 28 DAY TURN

*See back of form for special instructions

MCA 3/15/91

JUN-13-95 TUE 3:40 PM QUANTERRA ENVIRONMENTAL

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 390394
Page 1 of 3

Project Name/No. 1 62470-274-000-03500
Samples Shipment Date 7 6-13-95
Bill to: 5
Sample Team Members 2 SMITH/ZIMMERMAN/DeJOHN
Lab Destination 8 KNOXVILLE, TN
Profit Center No. 3 –
Lab Contact 9 JAMIE McKINNEY OR CARRIE SMITH-GAMBLE
Project Manager 4 MD BARTMAN
Project Contact/Phone 12 800-553-1153
Report to: 10
Purchase Order No. 6
Carrier/Waybill No. 13 4706224880
Required Report Date 11

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Pre-servative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
03-TB100	TRIP BLANK	6/13@1400	40ml VIALS	40ml	HCL	TCL VOA (2 VIALS) (STANDARD)		
03-MW02IW-02	GROUNDWATER	6/12@1926	1LP	1L	–	COD (RUSH) (STANDARD)		
03-MW12-00	SOIL	6/13@0825	WIDE MOUTH GLASS	2oz	–	TCL VOA (STANDARD)		
03-MW12-02	SOIL	6/13@0913		2oz	–	TCL VOA (STANDARD)		
~~80-MW08-05~~	~~SOIL~~	~~6/13@0950~~		~~2oz~~	~~–~~	~~TCL VOA (STANDARD)~~		
~~80-MW08-00~~	~~SOIL~~	~~6/13 0855~~		~~2oz~~	~~–~~	~~TCL VOA (STANDARD)~~		
03-MW12-00	SOIL	6/13@0825	AMBER	4oz	–	TCL SVOA (STANDARD)		
03-MW12-02	SOIL	6/13@0913	AMBER	4oz	–	TCL SVOA (STANDARD)		

FOR LAB USE ONLY

FOR LAB USE ONLY

COPY

Special Instructions: 23

Possible Hazard Identification: 24
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: 25
Return to Client ☐ Disposal by Lab ☐ Archive _____ (mos.)

Turnaround Time Required: 26
Normal ☒ Rush ☒ see COMMENTS

QC Level: 27
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by 28 (Signature/Affiliation) [signature]	Date: 6-13-95 Time: 1500	1. Received by 28 (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: 29 (STANDARD) – STANDARD 28 DAY TURN
(RUSH) – QUICK TURN 7 DAY TURN

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

MCA 3/15/91

JUN-13-95 TUE 3:42 PM BAKER ENVIRONMENTAL FAX NO. 3103311123

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 2937
Page 1 of 3

Project Name/No. 1 62470-274-0000-03500
Samples Shipment Date 7 6/13/95
Bill to: 5
Sample Team Members 2 DeJOHN/ZIMMERMAN
Lab Destination 8 KNOXVILLE
Profit Center No. 3
Lab Contact 9 JAMIE McKINNEY OR CARRIE Smith GAMBE
Project Manager 4 MATT BARTMAN
Project Contact/Phone 12 800-553-1153
Report to: 10
Purchase Order No. 6
Carrier/Waybill No. 13 4076224880
Required Report Date 11

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Preservative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
03-RB10	EQUIP. RINSATE	6/12@ 1648	40 mL VIAL	40 mL	HCl	TCL VOA (2 VIALS) (STANDARD)		
03-RB10	" "	" "	1L AMBER	1 L	–	TCL SVOA (2 BOTTLES) (STANDARD)		
03-FB10	FIELD BLANK	6/12@ 1840	40 mL VIAL	40 mL	HCl	TCL VOA (STANDARD)		
03-FB10	" "	" "	1L AMBER	1 L	–	TCL SVOA (STANDARD)		
03-MW02IW-02	GROUNDWATER	6/12@ 1926	40 ml VIAL	40 ml	HCl	TCL VOA (RUSH)		
03-MW02IW-02	"	" "	1 L AMBER	1 L	–	TCL SVOA (RUSH)		
03-MW02IW-02	"	" "	1L PLASTIC	1 L	–	TSS/TDS STANDARD ~~(RUSH)~~		
03-MW02IW-02	"	" "	40 mL VIAL	40 mL	H_2SO_4	TOC STANDARD ~~(RUSH)~~		

FOR LAB USE ONLY

FOR LAB USE ONLY

Special Instructions: 23

Possible Hazard Identification: 24
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: 25
Return to Client ☐ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required: 26
Normal ☐ Rush ☒ SEE COMMENTS

QC Level: 27
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by 28 (Signature/Affiliation) [signature]	Date: 6-13-95 Time: 1500	1. Received by 28 (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: 29 STANDARD - STANDARD ~~QUICK~~ 28 TURN
RUSH - QUICK TURN 7 DAY

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions

MCA 3/15/91

JUN-13-95 TUE 3:43 PM BAKER ENVIRONMENTAL FAX NO. 3104011720

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 2941
Page 1 of 4

Project Name/No.[1] 61470-274-000-0350.0
Sample Team Members[2] MDS/JES/MKD
Profit Center No.[3]
Project Manager[4] MD BARTMAN
Purchase Order No.[6]
Required Report Date[11]

Samples Shipment Date[7] 6/14/95
Lab Destination[8] KNOXVILLE, TN
Lab Contact[9] JAMIE McKINNEY
Project Contact/Phone[12] 800-553-1157
Carrier/Waybill No.[13] 407-622-4773

Bill to:[5] 3
Report to:[10]

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
03-MW09-02	~~GROUNDWATER~~ SOIL	6/13 @ 1505	~~AMBER~~ GLASS	4OZ	—	TCL SVOA	FOR LAB USE ONLY	
03-MW09-02	SOIL	6/13 @ 1505	GLASS	2OZ	—	TCL VOA		
03-MW10-02	SOIL	6/14 @ 0823	AMBER	4OZ	—	TCL SVOA		
03-MW10-02	SOIL	6/14 @ 0823	GLASS	2OZ	—	TCL VOA		
03-MW10-00	SOIL	6/14 @ 0955	AMBER	4OZ		TCL SVOA	FOR LAB USE ONLY	
03-MW10-00	SOIL	6/14 @ 0955	GLASS	2OZ		TCL VOA		
03-MW09-00	SOIL	6/13 @ 1445	AMBER	2OZ		TCL SVOA		
03-MW09-00	SOIL	6/13 @ 1445	GLASS	4OZ		TCL VOA		

Special Instructions:[23]

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation) Michael D Smith	Date: 6-14-95 Time: 1800	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29] STANDARD 28 DAY TURN

White: To accompany samples
Yellow: Field copy
*See back of form for special flow details.

MCA 3/15/91

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 2942
Page 1/4 of 4

Project Name/No.[1] 62420-274-000-03500
Sample Team Members[2] BDS/JEB/MKD
Profit Center No.[3]
Project Manager[4] MDEARTMAN
Purchase Order No.[6]
Required Report Date[11]

Samples Shipment Date[7] 6/14/95
Lab Destination[8] KNOXVILLE, TN
Lab Contact[9] JAMIE McKINNEY
Project Contact/Phone[12] 800-553-1153
Carrier/Waybill No.[13] 407-622-4778
407-622-4777

Bill to:[5]
Report to:[10]

White: To accompany samples
Yellow: Field copy

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
03-RB11	EQUIPMENT RINSEATE	6/13@ 1800	GLASS VIAL	2,40ml VIALS	HCL	TCL VOAS	FOR LAB USE ONLY	
03-RB11	EQUIPMENT RINSEATE	6/13@ 1800	AMBER	1L (2 BOTTLES)	—	TCL SVOAS		
03-TB102	TRIP BLANK	6/14@ 1800	GLASS VIAL	2,40ml VIALS	HCL	TCL VOAS	FOR LAB USE ONLY	

Special Instructions:[23]

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required:[26]
Normal ☐ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation) MKD Smith	Date: 6-14-95 Time: 1800	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29] STANDARD 28 DAY TURN

*See back of form for special instructions.

MCA 3/15/91

Quanterra
Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 2943
Page 1 of ___

Project Name/No.[1] 62470-274-000-03500 | Samples Shipment Date[7] 6-15-95 | Bill to:[5]
Sample Team Members[2] MDS/MKD | Lab Destination[8] Knoxville, TN
Profit Center No.[3] | Lab Contact[9] JAMIE McKINNEY
Project Manager[4] MD BARTMAN | Project Contact/Phone[12] 800-553-1153 | Report to:[10]
Purchase Order No.[6] | Carrier/Waybill No.[13]
Required Report Date[11]

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
03-MW11-00	SOIL	6/15 @ 0815	GLASS	2oz	—	TCL VOAs	FOR LAB USE ONLY	
03-MW11-00	SOIL	6/15 @ 0815	AMBER	4oz	—	TCL SVOAs		
03-MW11-08	SOIL	6/15 @ 1001	GLASS	2oz	—	TCL VOAs		
03-MW11-08	SOIL	6/15 @ 1001	AMBER	4oz	—	TCL SVOAs		
03-MW13-00	SOIL	6/14 @ 1303	GLASS	2oz	—	TCL VOAs	FOR LAB USE ONLY	
03-MW13-00	SOIL	6/14 @ 1303	AMBER	4oz	—	TCL SVOAs		
03-MW13-04	SOIL	6/14 @ 1342	GLASS	2oz	—	TCL VOAs		
03-MW13-04	SOIL	6/14 @ 1342	AMBER	4oz	—	TCL SVOAs		

Special Instructions:[23]

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25] Return to Client ☐ Disposal by Lab ☐ Archive (m

Turnaround Time Required:[26] Normal ☐ Rush ☐

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation) Date: Time:	1. Received by[28] (Signature/Affiliation) Date: Time:
2. Relinquished by (Signature/Affiliation) Date: Time:	2. Received by (Signature/Affiliation) Date: Time:
3. Relinquished by (Signature/Affiliation) Date: Time:	3. Received by (Signature/Affiliation) Date: Time:

Comments:[29]

White: To accompany samples
Yellow: Field copy

MCA 3/15/91

JUN-16-95 FRI 6:39 AM BAKER ENVIRONMENTAL FAX NO. 3104311172

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] _____
Page 2 of ____

Project Name _____ Project No. _____ Samples Shipment Date _____

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
03-NA-SB17-00	SOIL	6/15@ 1146	GLASS	2oz	—	TCL VOAs		
03-NA-SB17-00	SOIL	6/15@ 1146	AMBER	4oz	—	TCL SVOAs	FOR LAB USE ONLY	
03-NA-SB17-02	SOIL	6/15@ 1152	GLAS	2oz	—	TCL VOAs		
03-NA-SB17-02	SOIL	6/15@ 1152	AMBER	4oz	—	TCL SVOAs	FOR LAB USE ONLY	
03-NA-SB18-00	SOIL	6/15@ 1208	GLASS	2oz	—	TCL VOAs		
03-NA-SB18-00	SOIL	6/15@ 1208	AMBER	4oz	—	TCL SVOAs	FOR LAB USE ONLY	
03-NA-SB18-02	SOIL	6/15@ 1217	GLASS	2oz	—	TCL VOAs		
03-NA-SB18-02	SOIL	6/15@ 1217	AMBER	4oz	—	TCL SVOAs	FOR LAB USE ONLY	
03-NA-SB19-00	SOIL	6/15@ 1101	GLASS	2oz	—	TCL VOAs		
03-NA-SB19-00	SOIL	6/15@ 1101	AMBER	4oz	—	TCL SVOAs	FOR LAB USE ONLY	
03-NA-SB19-02	SOIL	6/15@ 1113	GLASS	2oz	—	TCL VOAs		
03-NA-SB19-02	SOIL	6/15@ 1113	AMBER	4oz	—	TCL SVOAs	FOR LAB USE ONLY	
03-TA-SB48-00	SOIL	6/15@ 0929	GLASS	2oz	—	TCL VOAs		
03-TA-SB48-00	SOIL	6/15@ 0929	AMBER	4oz	—	TCL SVOAs	FOR LAB USE ONLY	
03-TA-SB48-04	SOIL	6/15@ 0939	GLASS	2oz	—	TCL VOAs		
03-TA-SB48-04	SOIL	6/15@ 0939	AMBER	4oz	—	TCL SVOAs	FOR LAB USE ONLY	
03-TA-SB49-00	SOIL	6/15 0800	GLASS	2oz	—	TCL VOAs		
03-TA-SB49-00	SOIL	6/15 0800	AMBER	4oz	—	TCL SVOAs	FOR LAB USE ONLY	
03-TA-SB49-04	SOIL	6/15 0821	GLASS	2oz	—	TCL VOAs		
03-TA-SB49-04	SOIL	6/15 0821	AMBER	4oz	—	TCL SVOAs		

COPY

White: To accompany sam
Yellow: Field copy
*See be
rm for special instructions.

MCA 3/15/91

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] ______
Page 4 of ___

Project Name ______ Project No. ______ Samples Shipment Date ______

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Preservative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
80-DIA-SB19-04	SOIL	6/14 @ 1431	AMBER	4oz	—	TCL PESTICIDES		
03-RB12	WATER	6/14 @ 1915	AMBER	1L (2 BOTTLES)		TCL SVOAS	(HOLD) FOR LAB USE ONLY	
03-RB12	WATER	6/14 @ 1915	GLASS VIAL	40ml (2 VIALS)		TCL VOAS	(HOLD)	
80-RB13	WATER	6/14 @ 1920	AMBER	1L (2 BOTTLES)		TCL PESTICIDES	(RUN) FOR LAB USE ONLY	
TB-102	WATER	6/15 @ 0800	GLASS VIAL	40ml (2 VIALS)		TCL VOAS		
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	

COPY

White: To accompany sar... Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

JUN-16-95 FRI 6:43 AM BAKER ENVIRONMENTAL FAX NO. 3104311729

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] _____
Page 3 of ___

Project Name _____ Project No. _____ Samples Shipment Date _____

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
03-DPA-SB50-00	SOIL	6/15 @ 0851	GLASS	2oz	—	TCL VOAs	FOR LAB USE ONLY	
03-DPA-SB50-00	SOIL	6/15 @ 0851	AMBER	4oz	—	TCL SVOAs		
03-DPA-SB50-04	SOIL	6/15 @ 0904	GLASS	2oz	—	TCL VOAs		
03-DPA-SB50-04	SOIL	6/15 @ 0904	AMBER	4oz	—	TCL SVOAs		
80-DPA-SB05-00	SOIL	6/14 @ 1800	AMBER	4oz	—	TCL PESTICIDES	FOR LAB USE ONLY	
80-DPA-SB06-00		6/14 @ 1805						
80-DPA-SB07-00		6/14 @ 1806					FOR LAB USE ONLY	
80-DPA-SB10-00		6/14 @ 1808						
80-DPA-SB11-00		6/14 @ 1810					FOR LAB USE ONLY	
80-DPA-SB14-00		6/14 @ 1815						
80-DPA-SB09-00		6/14 @ 1145					FOR LAB USE ONLY	
80-DPA-SB09-04		6/14 @ 1156						
80-DPA-SB09-00D		6/14 @ 1145					FOR LAB USE ONLY	
80-DPA-SB09-04D		6/14 @ 1156						
80-DPA-SB12-04		6/14 @ 1530					FOR LAB USE ONLY	
80-DPA-SB15-00		6/14 @ 1817						
80-DPA-SB16-00		6/14 @ 1830					FOR LAB USE ONLY	
80-DPA-SB18-00		6/14 @ 1554						
80-DPA-SB18-04		6/14 @ 1603						
80-DPA-SB19-00		6/14 @ 1820						

COPY

White: To accompany sar
Yellow: Field copy
*See b... form for special instructions.

MCA 3/15/91

JUN-16-95 FRI 6:47 AM BAKER ENVIRONMENTAL FAX NO. 3104731170

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-4011

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 2945
Page 1 of 1

Project Name/No.[1] 62470-274-000-035*00
Sample Team Members[2] MKD & JEZ
Profit Center No.[3]
Project Manager[4] MD BARTMAN
Purchase Order No.[6]
Required Report Date[11]

Samples Shipment Date[7] 6-16-95
Lab Destination[8] KNOXVILLE, TN
Lab Contact[9] JAMIE MCKINNEY
Project Contact/Phone[12] 800-553-1153
Carrier/Waybill No.[13] 407622 4854

Bill to:[5]
Report to:[10]

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
03-RB14	WATER	6/16 @ 1530	2 VIALS	40ml	HCL	TCL VOAS	(HOLD)	
			1 AMBER	1 L	-	TCL SVOAS	(HOLD) 6/16 0905	
TB-103	WATER	6/16 @ 1530	2 VIALS	40ml	HCL	TCL VOAS	(HOLD)	FOR LAB USE ONLY
03-MW11W-08	SOIL	6/16 @ 1057	GLASS	20Z	-	TCL VOAS		
			AMBER	40Z	-	TCL SVOAS		
03-MW11W-00	SOIL	6/16 @ 0815	GLASS	20Z	-	TCL VOAS		
			AMBER	40Z	-	TCL SVOAS		
03-TA-SB45-00	SOIL	6/15 @ 1531	GLASS	20Z	-	TCL VOAS		FOR LAB USE ONLY
			AMBER	40Z	-	TCL SVOAS		
03-TA-SB45-02	SOIL	6/15 @ 1549	GLASS	20Z	-	TCL VOA		
			AMBER	40Z	-	TCL SVOAS		
03-TA-SB47-00	SOIL	6/15 @ 1647	GLASS	20Z	-	TCL VOAS		
			AMBER	40Z	-	TCL SVOAS		
03-TA-SB47-02	SOIL	6/15 @ 1656	GLASS	20Z	-	TCL VOAS		
			AMBER	40Z	-	TCL SVOAS		

Special Instructions:[23]

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☐ Archive ☐ (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐

QC Level:[27]
I ☐ II ☐ III ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation) Michael D Smith	Date: 6-16-95 Time: 1800	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]
STANDARD 28 DAY TURN

MCA 3/15/91

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

JUN-19-95 MON 8:26 AM BAKER ENVIRONMENTAL FAX NO. 9104511725 P. 2

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-5401

ANALYSIS REUEST AND CHAIN OF CUSTOY RECORD*

Reference Document No. 2946
Page 1 of 1

Project Name/No.[1] 62470-274-000-03500
Samples Shipment Dat[7] 6-17-95
Bill to:[5]
Sample Team Members[2] SMITH
Lab Destinatio[3] KNOXVILLE, TN
Profit Center No.[3] —
Lab Contac[3] JANE McKINNEY
Project Manager[4] MD BARTMAN
Project Contact/Phon[12] 1-800-553-1153
Report to:[10]
Purchase Order No.[6]
Carrier/Waybill N[13] 4076224832
Requred Report Date[11]

ONE CONTINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume	Pre-servative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
80-RB16	WATER	6/18 @ 1950	AMBER	2,1L	—	TCL PESTICIDES	(HOLD)	
03-RB15	WATER	6/18 @ 1940	AMBER VIALS	2,1L 2,40m	— HCL	TCL SVOA TCL VOA	(RUN)	
03 RB17	WATER	6/18 @ 2010	AMBER VIALS	2,1L 2,40m	 HCL	TCL SVOA TCL VOA	(HOLD) (HOLD)	
03-TA-SB46-00	SOIL	6/18 @ 1445	GLASS AMBER	2oz 4oz	— —	TCL VOA TCL SVOA		
03-TA-SB46-02	SOIL	6/18 @ 1515	GLASS AMBER	2oz 4oz	— —	TCL VOA TCL SVOA		
80-DPA-SB12-00	SOIL	6/18 @ 1640	AMBER	4oz	—	TCL PESTICIDE		
7B-104	WATER	6/19 @ 1130	VIALS	2,40	HCL	TCL VOA		

FOR LAB USE ONLY

FOR LAB USE ONLY

Special Instructions:[23]

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐

QC Level:
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by:[28] (Signature/Affiliation) Michael D. Smith — Date: 6-19-95 Time: 1530
1. Received by:[28] (Signature/Affiliation) — Date Time

2. Relinquished by (Signature/Affiliation) — Date: Time:
2. Received by (Signature/Affiliation) — Date Time

3. Relinquished by (Signature/Affiliation) — Date: Time:
3. Received by (Signature/Affiliation) — Date Time

Comments:[29]

White: To accompany samples
Yellow: Field copy
See back of form for special instructions

JUN 19 95 MON 11:49 AM BAKER ENVIRONMENTAL FAX NO. 3104011749

MCA 3/15/91

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 2947
Page 1 of 1

Project Name/No.[1] 162470-274-000-03500
Sample Team Members[2] JEZ / MDS
Profit Center No.[3]
Project Manager[4] MDBARTMAN
Purchase Order No.[6]
Required Report Date[11]

Samples Shipment Date[7] 6/20/95
Lab Destination[8] KNOXVILLE, TN
Lab Contact[9] JAMIE McKINNEY
Project Contact/Phone[12] 800-553-1153
Carrier/Waybill No.[13] 407622487 6

Bill to:[5]
Report to:[10]

White: To accompany samples
Yellow: Field copy

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No[22]
03-RB1B	WATER	6/20@ 0705	AMBER	1L 2 BOTTLES	—	TCL SVOA (RUN)	FOR LAB USE ONLY	
03-RB1B	WATER	6/20@ 0705	VIAL	40ml (2 VIALS)	HCL	TCL VOA (RUN)		
TB-105	WATER	6/20@ 1115	VIAL	40ml (2 VIALS)	HCL	TCL VOA		
03-MW02DW-00	SOIL	6/20@ 0750	GLASS AMBER	2oz 4oz	— —	TCL VOA TCL SVOA		
03-MW02DW-00D	SOIL	6/20@ 0750	GLASS AMBER	2oz 4oz	— —	TCL VOA TCL SVOA	FOR LAB USE ONLY	
03-MW02DW-02	SOIL	6/20@ 0814	GLASS AMBER	2oz 4oz	— —	TCL VOA TCL SVOA		
03-MW02DW-02D	SOIL	6/20@ 0814	GLASS AMBER	2oz 4oz	— —	TCL VOA TCL SVOA		

Special Instructions:[23]

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation) Michael D Smith	Date: 6-20-95 Time: 1200	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]
STANDARD 28 DAY TURN

*See back of form for Special Instructions

MCA 3/15/91

FAX NO. 9104311170 JUN-20-95 TUE 12:00 PM BAKER ENVIRONMENTAL

Sierra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 2824
Page 1 of 2

Project Name/No. [1] Camp Lejeune CTO-274
Sample Team Members [2] John E Zimmerman
Profit Center No. [3]
Project Manager [4] Mark Bartman
Purchase Order No. [6]
Required Report Date [11] 3 days

Samples Shipment Date [7] 7-3-95
Lab Destination [8] Knoxville, TN
Lab Contact [9] Jamie McKinney
Project Contact/Phone [12] Matt Bartman (412) 269-6000
Carrier/Waybill No. [13] FED EX 407622248 10

Bill to: [5] Baker Environmental
420 Rouser Road
Airport office Park, Bldg 3
Coraopolis, PA 15108
Report to: [10] Matt Bartman

White: To accompany samples
Yellow: Field copy

ONE CONTAINER PER LINE

Sample Number [14]	Sample Description/Type [15]	Date/Time Collected [16]	Container Type [17]	Sample Volume [18]	Preservative [19]	Requested Testing Program [20]	Condition on Receipt [21]	Disposal Record No. [22]
03IDW-01	Soil	7-2-95/0900	Glass Amber	250 ml	Cool	TCLP NONVOA		
03IDW-02	Soil	7-2-95/0900	Glass Amber	250 ml	Cool	TCLP NONVOA	FOR LAB USE ONLY	
03IDW-01	Soil	7-2-95/0900	Glass Amber	250 ml	Cool	RCRA CHAR		
03IDW-01	Soil	7-2-95/0900	Glass Amber	250 ml	Cool	RCRA CHAR		
03IDW-01	Soil	7-2-95/0900	Glass clear	60 ml	Cool	TCLP VOA		
03IDW-01	Soil	7-2-95/0900	Glass Clear	60 ml	Cool	TCLP VOA	FOR LAB USE ONLY	
03IDW-01	Soil	7-2-95/0900	Glass Clear	60 ml	Cool	TCLP VOA		

Special Instructions: [23]

Possible Hazard Identification: [24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: [25]
Return to Client ☐ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required: [26]
Normal ☑ Rush ☐

QC Level: [27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by [28] (Signature/Affiliation) John E Zimmerman / Baker	Date: 7-3-95 Time: 0900	1. Received by [28] (Signature/Affiliation) / FED EX	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: [29]

*See back of form for special instructions.

MCA 3/15/91

terra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. [illegible]
Page 1 of 2

Project Name/No. [1] Camp Lejeune CTO-274
Sample Team Members [2] John E Zimmerman
Profit Center No. [3]
Project Manager [4] Matt Bartman
Purchase Order No. [6]
Required Report Date [11] 28 days

Samples Shipment Date [7] 7-3-95
Lab Destination [8] Knoxville, TN
Lab Contact [9] Jamie McKinney
Project Contact/Phone [12] Matt Bartman (412) 269-6000
Carrier/Waybill No. [13] FED EX 407622481O

Bill to: [5] Baker Environmental, Inc
420 Rouser Rd
Airport office park, Bldg 3
Coraopolis, PE 5108

Report to: [10] Matt Bartman

White: To accompany samples
Yellow: Field copy

ONE CONTAINER PER LINE

Sample Number [14]	Sample Description/Type [15]	Date/Time Collected [16]	Container Type [17]	Sample Volume [18]	Pre-servative [19]	Requested Testing Program [20]	Condition on Receipt [21]	Disposal Record No. [22]
03TK-02	Water	7-2-95/0930	Glass Ambers	1 liter	cool	BNA	FOR LAB USE ONLY	
03TK-02	water	7-2-95/0930	Glass Amber	1 liter	cool	BNA		
03TK-02	water	7-2-95/0930	Glass Amber	1 liter	cool	BNA		
03TK-02	water	7-2-95/0930	Glass VOA	40 ml	HCL, cool	VOA		
03TK-02	water	7-2-95/0930	Glass VOA	40 ml	HCL, cool	VOA	FOR LAB USE ONLY	
03TK-02	water	7-2-95/0930	Glass VOA	40 ml	HCL, cool	VOA		
03-TB-106	water	—	Trip Blank	40 ml	HCL, cool	VOA		
03-TB-106	water	—	Trip Blank	40 ml	HCL, cool	VOA		

Special Instructions: [23]

Possible Hazard Identification: [24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: [25]
Return to Client ☐ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required: [26]
Normal ☑ Rush ☐

QC Level: [27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by [28] (Signature/Affiliation) John E Zimmerman / Baker	Date: 7-3-95 Time: 0900	1. Received by [28] (Signature/Affiliation) / FED EX	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: [29]

*See back of form for special instructions.

MCA 3/15/91

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 2889
Page 1 of ____

Project Name/No.[1] Camp Lejeune
Sample Team Members[2] NDS
Profit Center No.[3] 274
Project Manager[4] M. Bartman
Purchase Order No.[6]
Required Report Date[11]

Samples Shipment Date[7] 7-12-95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5]

Report to:[10] Matt Bartman
Baker Environmental

White: To accompany samples
Yellow: Field copy

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Pre-servative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
3-MW01IW-01	WATER	7/12 1310	2,40ml vial		HCL	TCL VOA		
			2, 1L AMBER		—	TCL SVOA		
3MW12-01	GROUNDWATER	7/12 1227	VIAL	2,40ml	HCL	TCL VOA		
			AMBER	2, 1L	—	TCL SVOA		
3-MW04-02	GROUNDWATER	7/11 1600	VIAL	2,40ml	HCL	TCL VOA		
			AMBER	2, 1L	—			
3-MW05-02	GROUNDWATER	7/11 1130	VIAL	2,40ml	HCL	TCL VOA		
			AMBER	2, 1L	—	TCL SVOA		
3-MW06-02	GROUNDWATER	7/11 1635	VIAL	2,40ml	HCL	TCL VOA		
			AMBER	2, 1L	—	TCL SVOA		
			PLASTIC	1L	—	TSS/TDS		
			VIAL	2,40ml	H_2SO_4	TOC		
			PLASTIC	250ml	H_2SO_4	COD		

FOR LAB USE ONLY

Special Instructions:[23]

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required:[26]
Normal ☐ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation) NDS/Baker	Date: 7/12/95 Time: 1650	1. Received by[28] (Signature/Affiliation) FedEx	Date: 7-12-95 Time: 1650
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

*See back of form for special instructions.

MCA 3/15/91

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] _____

Project Name CTO 274

Project No MCB LEJEUNE

Samples Shipment Date _____

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
3-RB18	WATER	7/11/1916	VIAL	2,40ml	HCL			
			1L Amber	1L	—		FOR LAB	
3-RB19	↓	7/11,1930	VIAL	2,40ml	HCL		USE ONLY	
			Amber	1L				
TB-200		7/12,2000	VIAL	2,40ml	HCL		FOR LAB	
							USE ONLY	
							FOR LAB	
							USE ONLY	
							FOR LAB	
							USE ONLY	
							FOR LAB	
							USE ONLY	
							FOR LAB	
							USE ONLY	
							FOR LAB	
							USE ONLY	
							FOR LAB	
							USE ONLY	
							FOR LAB	
							USE ONLY	

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 2919
Page 1 of 1

Project Name/No.[1] MCB CAMP LEJEUNE 62470-274-0000-3500
Sample Team Members[2] MOS/MKD
Profit Center No.[3]
Project Manager[4] MD BARTMAN
Purchase Order No.[6]
Required Report Date[11]

Samples Shipment Date[7] 7/13/95
Lab Destination[8] KNOXVILLE, TN
Lab Contact[9] JAMIE McKINNEY
Project Contact/Phone[12] 800-553-1153
Carrier/Waybill No.[13]

Bill to:[5] MD BARTMAN
C/O BEI SPN
420 ROUSER RD
CORAOPOLIS, PA

Report to:[10]

White: To accompany samples
Yellow: Field copy

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Pre-servative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
3-MW6-02	GROUNDWATER	7/12 2100	Vial	2,40ml	HCL	TCL VOA		
			AMBER	2,1L	—	TCL SVOA		
3-MW9-01		7/13 1020	Vial	2,40ml	HCL	TCL VOA		
			Amber	2,1L	—	TCL SVOA		
3-MW2** DW01D		7/13 1320	Vial	2,40ml	HCL	TCL VOA		
			Amber	2,1L	—	TCL SVOA		
3-MW2DW-01		7/13 1320	Vial	2,40ml	HCL	TCL VOA		
			Amber	2,1L	—	TCL SVOA		
3-MW7-02		7/12 1653	Vial	2,40ml	HCL	TCL VOA		
			Amber	2,1L	—	TCL SVOA		
3-MW2-02		7/13 1455	Vial	2,40ml	HCL	TCL VOA		
			Amber	2,1L	—	TCL SVOA		
3-MW2-02			PLASTIC	1L	—	TSS/TDS		
3-MW2-02			PLASTIC	250ml	H_2SO_4	COD		

FOR LAB USE ONLY

Special Instructions:[23]

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation) MD Smith	Date: 7/13/95 Time: 1700	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

*See back of form for special instructions.

MCA 3/15/91

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 2949

Page 2 of 2

Project Name MCB CAMP LEJEUNE CTO 274

Project No. 62470-274-0000-3500

Samples Shipment Date 7/13/95

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
3-MW8-02	GROUNDWATER	(TOC SAMPLE FROM PREVIOUS COC						
		COC INCLUDED IN COOLER)					FOR LAB USE ONLY	
3-MW11-01		7/12 1700	Vial / Amber	2,40m / 2,1L Amber	1, HCL —	TCL VOA / TCL SVOA		
3-MW10-01		7/12 2030	Vial / Amber	2,40m / 2,1L	1 HCL —	TCL VOA / TCL SVOA	FOR LAB USE ONLY	
TB-201	TRIPBLANK	7/13 1600	Vial	2,40m	1 HCL	TCL VOA	FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	

COPY

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 2018
Page 1 of 1

Project Name/No.[1] MCB LEJEUNE SITE 3, 62470-274-0000-35000
Sample Team Members[2] MDS / MKD
Profit Center No.[3]
Project Manager[4] MD BARTMAN
Purchase Order No.[6]
Required Report Date[11]

Samples Shipment Date[7] 7-13-95
Lab Destination[8] Pittsburgh, PA
Lab Contact[9] Carrie Smith-GAMBE
Project Contact/Phone[12] 800-553-1153
Carrier/Waybill No.[13]

Bill to:[5] MD BARTMAN
C/O SRN
BEI
420 ROUSER RD
CORAOPOLIS, PA 15108

Report to:[10] MD BARTMAN
BEI
420 ROUSER RD
CORAOPOLIS, PA 15108

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
3-MW2DW-01	GROUNDWATER	7/13 1320	AMBER	1L	-	BOD		
3-MW02-02	GROUNDWATER	7/13 1455	AMBER	1L	-	BOD		

FOR LAB USE ONLY

Special Instructions:[23]

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation) MD Smith	Date: 7/13 Time: 1700	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

MCA 3/15/91

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

SENT BY:KNOX. LAB 615/588-6401; 7-17-95 ; 11:57 ;QUANTERRA KNOXVILLE ; 412 269 2002;# 3/ 4

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

COC NO. *0004727*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 2950
Page 1 of 1

62470-274-0000-3500

Project Name/No.[1] _____
Sample Team Members[2] MDS / MKD
Profit Center No.[3] —
Project Manager[4] MD BARTMAN
Purchase Order No.[6] —
Required Report Date[11] —

Samples Shipment Date[7] 7/14/95
Lab Destination[8] KNOXVILLE, TN
Lab Contact[9] JAMIE MCKINNEY
Project Contact/Phone[12] MD BARTMAN 800-553-1143
Carrier/Waybill No.[13] 13960621905

Bill to:[5] MD BARTMAN
C/O BAKER ENVIRONMENTAL (SAN)
420 ROUTER RD
CORAOPOLIS, PA
Report to:[10] SAME

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
3-MW01-01	GROUND WATER	7/13 2020	Vial Amber	2, 40ml 2, 1L	HCL —	TCL VOA TCL SVOA	Rec'd at 28°C with	
3-MW03-02	↓	7/13 1700	Vial Amber	2, 40ml 2, 1L	HCL —	TCL VOA TCL SVOA	custody seals intact.	
3-MW13-01	↓	7/13 1920	Vial Amber	2, 40ml 2, 1L	HCL —	TCL VOA TCL SVOA	BCA	7/17/95
~~3-RB20~~ mod 7/14	WATER	7/14 0815	Vial Amber	2, 40ml 2, 1L	HCL —	TCL VOA TCL SVOA	HOLD	
3-RB21	↓	7/14 mod 0945 1100	Vial Amber	2, 40ml 2, 1L	HCL —	TCL VOA TCL SVOA		
80-RB22	↓	7/14 0745	Amber	2, 1L	—	TCL PESTICIDES		
~~80-MW08-01~~ mod	GROUNDWATER	7/14	Amber	2, 1L	—	TCL PESTICIDES		
FB-11	WATER	7/14 0900	Vial	2, 40ml	HCL	TCL VOA		
FB-11	↓	↓	AMBER	2, 1L	—	TCL SVOA		

Special Instructions:[23]

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation) MD Smith	Date: 7-14-95 Time: 1500	1. Received by[28] (Signature/Affiliation) Ron Anderson	Date: 7/17/95 Time: 0830
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

Write: To accompany samples Yellow: Field copy *See back of form for special instructions.

MCA 3-15-9*

RFA/COC# 4727 W.O.# 4164 RL# 4122

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 2950
Page 2 of 2

Project Name SITE 3 & 80 Project No. CTO 274 Samples Shipment Date

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
TB-202	WATER	7/14 1000	Vial	2, 40ml	HCl	TCL VOA	BEA 7/18/95	

White: To accompany samples Yellow: Field copy *See back of form for special instructions.

SENT BY:KNOX. LAB 615/588-6401; 7-17-95 ; 11:57 ;QUANTERRA KNOXVILLE → 412 269 2002;# 4/ 4

ICA 3/1/91

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

COC # 0301

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 0960
Page 1 of 3

Project Name/No.[1] CTO -274
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4] MATT BARTMAN.
Purchase Order No.[6]
Required Report Date[11]

Samples Shipment Date[7] 9/30/95.
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13] Fed-ex 1626610591.

Bill to:[5] BAKER ENVIRONMENTAL.
Report to:[10] MATT BARTMAN.

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
3-MW01-02	LIQUID	9/28/95/1900	G		HCL	TCL-VOA.	FOR LAB USE ONLY	
3-MW02-03		9/28/95/1600						
3-MW03-03		9/29/95/1015						
3-MW04-03		9/28/95/1930						
3-MW05-03		9/28/95/1900					FOR LAB USE ONLY	
3-MW06-03		9/29/95/0905						
3-MW07-03		9/28/95/1915						
3-MW08-03		9/28/95/1055	↓					

Special Instructions:[23] 14-DAY TURN

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required:[26]
Normal ☐ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation)	Date: 9/30/95 Time: 1300	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

MCA 3/15/91

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

C.O.C. # 0301

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 0961
Page 1 of 2 3

Project Name/No. [1]
Sample Team Members [2]
Profit Center No. [3]
Project Manager [4]
Purchase Order No. [6]
Required Report Date [11]

Samples Shipment Date [7]
Lab Destination [8]
Lab Contact [9]
Project Contact/Phone [12]
Carrier/Waybill No. [13]

Bill to: [5]
Report to: [10]

White: To accompany samples
Yellow: Field copy

ONE CONTAINER PER LINE

Sample Number [14]	Sample Description/Type [15]	Date/Time Collected [16]	Container Type [17]	Sample Volume [18]	Preservative [19]	Requested Testing Program [20]	Condition on Receipt [21]	Disposal Record No. [22]
3-MW09-02	LIQUID	9/29/95/1210	G		HCL	TCL-VOA	FOR LAB USE ONLY	
3-MW10-02		9/29/95/0935						
3-MW11-02		9/29/95/1320						
3-MW12-02		9/29/95/1500						
3-MW13-02		9/29/95/1405						
3-MW02IW-03		9/30/95/1100					FOR LAB USE ONLY	
3-MW20W-02		9/28/95/1912						
3-MW11IW-02		9/28/95/1715						

Special Instructions: [23]

Possible Hazard Identification: [24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: [25]
Return to Client ☐ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required: [26]
Normal ☐ Rush ☐

QC Level: [27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by [28] (Signature/Affiliation)	Date: Time:	1. Received by [28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: [29]

*See back of form for special instructions.

MCA 3/15/91

Quanterra
Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

#C.O.C.# 0301

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 0962
Page 1 of 3

Project Name/No. [1]
Sample Team Members [2]
Profit Center No. [3]
Project Manager [4]
Purchase Order No. [6]
Required Report Date [11]

Samples Shipment Date [7]
Lab Destination [8]
Lab Contact [9]
Project Contact/Phone [12]
Carrier/Waybill No. [13]

Bill to: [5]
Report to: [10]

White: To accompany samples
Yellow: Field copy

ONE CONTAINER PER LINE

Sample Number [14]	Sample Description/Type [15]	Date/Time Collected [16]	Container Type [17]	Sample Volume [18]	Pre-servative [19]	Requested Testing Program [20]	Condition on Receipt [21]	Disposal Record No. [22]
3-RS-50	~~9/29/95~~ LIQUID	9/29/95 1400	6		HCL	TCL-VOA & TCL-SVOA	FOR LAB USE ONLY	
3-TB-50	LIQUID	9/29/95 1950	6		HCL	TCL-VOA		
							FOR LAB USE ONLY	

Special Instructions: [23] 14-DAY TURN.

Possible Hazard Identification: [24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: [25]
Return to Client ☐ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required: [26]
Normal ☐ Rush ☐

QC Level: [27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by [28] (Signature/Affiliation)	Date: Time:	1. Received by [28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: [29]

*See back of form for special instructions.

MCA 3/15/91

Quanterra
Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

C.O.C # 0302

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] _____
Page 1 of 1

Project Name CTO-274

Project No. _____

Samples Shipment Date 9/30/95

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
3-MW01-02	Liquid	9/26/95/800	6 1-L		—	~~TCL~~ TCL-SVOA		
3-MW02-03	"	9/26/95/1620	"		"	"	FOR LAB USE ONLY	
3-MW03-03	"	9/29/95/1015	"		"	"	FOR LAB USE ONLY	
3-MW04-03	"	9/28/95/930	"		"	"	FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	

COPY

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

MCA 3/15/91

C.O.C # 0303

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] _____
Page ___ of ___

Project Name CTO-274

Project No. _____

Samples Shipment Date _____

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
3-MW05-03	Liquid	9/28/95/1900	G 1-L			TCL-SVOA		
3-MW06-03	"	9/29/95/0805	"			"	FOR LAB USE ONLY	
3-MW07-03	"	9/29/95/0815	"			"	*NOTE-only 1 (1-Liter)	
3-MW08-03	"	9/29/95/1055	"			"	FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	

COPY

White: To accompany samples
Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

C.O.C. # 0304.

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] _____
Page ___ of ___

Project Name CTO-274

Project No. _____

Samples Shipment Date _____

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
3-MW09-02	Liquid	9/29/95/1210	G-L.			TCL-SVOA		
3-MW10-02	"	9/29/95/0935	"			"	FOR LAB USE ONLY	
3-MW11-02	"	9/29/95/1320	"			"	FOR LAB USE ONLY	
3-MW12-02	"	9/29/95/1500	↓			↓	FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	

COPY

White: To accompany samples
Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

C.O.C. # 0305.

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] _____
Page ___ of ___

Project Name CTO-274

Project No. _____

Samples Shipment Date _____

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
3-MW13-02	Liquid	9/5/95/1605	G 1-L			TCL-SVOA		
3-MW02IW-03	"	9/6/95/1100	"			"	FOR LAB USE ONLY	
3-MW02DW-02	"	9/5/95/1912	"			"		
3-MW11IW-02	"	9/7/95/1715	"			"	FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	

COPY

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

MCA 3/15/91

APPENDIX B.2
INTERNAL SAMPLE TRACKING FORMS

CTO-0274
SITE 3, SOIL BORINGS

		Analysis Requested									Analysis Received												
		organics					eng. P				organics					eng. P.							
DATE SHIPPED	SAMPLE ID	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	TAL METALS (D)	ATTERBURG LIMITS	GRAIN SIZE	TOC		TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	TAL METALS (D)	ATTERBURG LIMITS	GRAIN SIZE	TOC	DATE EXPECTED	DATE REC'D	TURNAROUND TIME	SDG NO.	COMMENTS
9/22/94	3-RS-SB06		x									x							10/21/94	10/21/94	29		
9/22/94	3-RS-SB01		x									x							10/28/94	10/21/94	29		
9/22/94	3-RS-SB02		x									x							10/28/94	10/21/94	29		
9/22/94	3-RS-SB05		x									x							10/28/94	10/21/94	29		
9/22/94	3-RS-SB07		x									x							10/28/94	10/21/94	29		
9/22/94	3-TA-SB08		x									x							10/28/94	10/21/94	29		
9/22/94	3-TA-SB09		x									x							10/28/94	10/21/94	29		
9/22/94	3-TA-SB10		x									x							10/28/94	10/21/94	29		
9/22/94	3-TA-SB13		x									x							10/28/94	10/21/94	29		
9/22/94	3-TA-SB14		x									x							10/28/94	10/21/94	29		
9/22/94	3-TA-SB17		x									x							10/28/94	10/21/94	29		
9/22/94	3-CP-SB02		x									x							10/28/94	10/21/94	29		
9/22/94	3-CP-SB02D		x									x							10/28/94	10/21/94	29		
9/22/94	3-CP-SB04		x									x							10/28/94	10/21/94	29		
9/22/94	3-TA-SB18		x									x							10/28/94	10/21/94	29		
9/22/94	3-TASB21		x									x							10/28/94	10/21/94	29		
9/22/94	3-TASB21D		x									x							10/28/94	10/21/94	29		
9/22/94	3-TA-SB25		x									x							10/28/94	10/21/94	29		
9/22/94	3-TA-SB29		x									x							10/28/94	10/21/94	29		
9/22/94	3-TA-SB34		x									x							10/28/94	10/21/94	29		
9/22/94	3-TA-SB36		x									x							10/28/94	10/21/94	29		
9/22/94	3-TA-SB37		x									x							10/28/94	10/21/94	29		
9/22/94	3-TA-SB39		x									x							10/28/94	10/21/94	29		
9/22/94	3-TA-SB41		x									x							10/28/94	10/21/94	29		
9/22/94	3-TA-SB43		x									x							10/28/94	10/21/94	29		
9/22/94	3-NA-SB01		x									x							10/28/94	10/21/94	29		
9/22/94	3-NA-SB01D		x									x							10/28/94	10/21/94	29		
9/22/94	3-NA-SB03		x									x							10/28/94	10/21/94	29		

CTO-0274
SITE 3, SOIL BORINGS

		Analysis Requested									Analysis Received												
		organics					eng. P				organics					eng. P.							
DATE SHIPPED	SAMPLE ID	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	TAL METALS (D)	ATTERBURG LIMITS	GRAIN SIZE	TOC		TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	TAL METALS (D)	ATTERBURG LIMITS	GRAIN SIZE	TOC	DATE EXPECTED	DATE REC'D	TURNAROUND TIME	SDG NO.	COMMENTS
9/22/94	3-NA-SB07		x									x							10/28/94	10/21/94	29		
9/22/94	3-NA-SB17		x									x							10/28/94	10/21/94	29		
9/22/94	3-RS-SB03		x									x							10/28/94	10/21/94	29		
9/22/94	3-BB-SB03		x									x							10/28/94	10/21/94	29		
9/22/94	3-CP-SB09		x									x							10/28/94	10/21/94	29		
9/22/94	3-CP-SB05		x									x							10/28/94	10/21/94	29		
9/22/94	3-TA-SB40		x									x							10/28/94	10/21/94	29		
9/22/94	3-TA-SB44		x									x							10/28/94	10/21/94	29		
9/22/94	3-TA-SB12		x									x							10/28/94	10/21/94	29		
9/22/94	3-ER01		x									x							10/28/94	10/21/94	29		
9/22/94	3-ER02		x									x							10/28/94	10/21/94	29		
9/22/94	3-NA-SB05		x									x							10/28/94	10/21/94	29		
9/22/94	3-NA-SB08		x									x							10/28/94	10/21/94	29		
9/22/94	3-NA-SB10		x									x							10/28/94	10/21/94	29		
11/15/94	3-TA-SB39-04		x									x							12/21/94	1/9/95	54	2043	
11/15/94	3-TA-SB25-02		x									x							12/21/94	1/9/95	54	2043	
11/15/94	3-TA-SB14-02		x									x							12/21/94	1/9/95	54	2043	
11/15/94	3-TA-SB29-02		x									x							12/21/94	1/9/95	54	2043	
11/15/94	3-TA-SB13-03		x									x							12/21/94	1/9/95	54	2043	
11/15/94	3-TA-SB10-04		x									x							12/21/94	1/9/95	54	2043	
11/15/94	3-TA-SB21-03		x									x							12/21/94	1/9/95	54	2043	
11/15/94	3-TA-SB21-03D		x									x							12/21/94	1/9/95	54	2043	
11/15/94	3-TSA-SB08-04		x									x							12/21/94	1/9/95	54	2043	
11/15/94	3-RS-01		x									x							12/21/94	1/9/95	54	2043	
11/16/94	3-TA-SB37-02		x									x							12/22/94	1/3/95	47	2055	
11/16/94	3-TA-SB43-03		x									x							12/22/94	1/3/95	47	2055	
11/16/94	3-TA-SB41-02		x									x							12/22/94	1/3/95	47	2055	
11/16/94	3-TA-SB17-04		x									x							12/22/94	1/3/95	47	2055	

CTO-0274
SITE 3, SOIL BORINGS

		Analysis Requested								Analysis Received											
		organics					eng. P			organics					eng. P.						
DATE SHIPPED	SAMPLE ID	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	TAL METALS (D)	ATTERBURG LIMITS	GRAIN SIZE	TOC	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	TAL METALS (D)	ATTERBURG LIMITS	GRAIN SIZE	TOC	DATE EXPECTED	DATE REC'D	TURNAROUND TIME	SDG NO.	COMMENTS
11/16/94	3-RS-SB06-04		x								x							12/22/94	1/3/95	47	2055	
11/16/94	3-RS-SB01-03		x								x							12/22/94	1/3/95	47	2055	
11/16/94	3-RS-SB02-04		x								x							12/22/94	1/3/95	47	2055	
11/16/94	3-RS-SB05-03		x								x							12/22/94	1/3/95	47	2055	
11/16/94	3-RS-SB05-04		x								x							12/22/94	1/3/95	47	2055	
11/16/94	3-NA-SB05-03		x								x							12/22/94	1/3/95	47	2055	
11/16/94	3-NA-SB03-03		x								x							12/22/94	1/3/95	47	2055	
11/16/94	3-TA-SB18-03		x								x							12/22/94	1/3/95	47	2055	
11/16/94	3-MW02IW-00	x	x	x	x					x	x	x	x					12/22/94	1/3/95	47	2055	MS/MSD
11/16/94	3-MW02IW-00D	x	x	x	x					x	x	x	x					12/22/94	1/3/95	47	2055	
11/16/94	3-NA-SB08-03		x								x							12/22/94	1/3/95	47	2055	
11/16/94	3-TB-01	x								x								12/22/94	1/3/95	47	2055	
11/16/94	3-BB-SB01-03		x								x							12/22/94	1/3/95	47	2055	
11/16/94	3-MW02IW-03	x	x	x	x					x	x	x	x					12/22/94	1/3/95	47	2055	MS/MSD
11/16/94	3-MW02IW-03D	x	x	x	x					x	x	x	x					12/22/94	1/3/95	47	2055	
11/16/94	3-RS-02		x								x							12/22/94	1/3/95	47	2055	
11/17/94	3-RS-03	x	x	x	x					x	x	x	x					12/23/94	1/5/95	48	2074	
11/17/94	3-TA-SB36-03		x								x							12/23/94	1/5/95	48	2074	
11/17/94	3-MW02IW-09		x								x							12/23/94	1/5/95	48	2074	Contaminated with creosote
11/17/94	3-BB-SB01-00		x								x							12/23/94	1/5/95	48	2074	
11/17/94	3-BB-SB02-00		x								x							12/23/94	1/5/95	48	2074	
11/17/94	3-BB-SB02-02		x								x							12/23/94	1/5/95	48	2074	
11/17/94	3-TB-02	x								x								12/23/94	1/5/95	48	2074	
11/17/94	3-BB-SB03-00		x								x							12/23/94	1/5/95	48	2074	
11/17/94	3-BB-SB03-03		x								x							12/23/94	1/5/95	48	2074	
11/17/94	3-RS-SB07-04		x								x							12/23/94	1/5/95	48	2074	
11/17/94	3-RS-04	x	x	x	x													12/23/94	1/5/95	48	2074	HOLD Do not analyze
11/17/94	3-TA-SB34-03		x								x							12/23/94	1/5/95	48	2074	

CTO-0274
SITE 3, SOIL BORINGS

		Analysis Requested									Analysis Received												
		organics					eng. P				organics					eng. P.							
DATE SHIPPED	SAMPLE ID	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	TAL METALS (D)	ATTERBURG LIMITS	GRAIN SIZE	TOC		TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	TAL METALS (D)	ATTERBURG LIMITS	GRAIN SIZE	TOC	DATE EXPECTED	DATE REC'D	TURNAROUND TIME	SDG NO.	COMMENTS
11/17/94	3-MW04-00		x									x							12/23/94	1/5/95	48	2074	
11/17/94	3-MW04-06		x									x							12/23/94	1/5/95	48	2074	
11/21/94	3-MW05						x	x	x							x	x	x	12/27/94	1/9/95	48	2115	
11/21/94	3-RS-05	x	x	x	x						x	x	x	x					12/27/94	1/9/95	48	2115	
11/21/94	3-MW08-00		x									x							12/27/94	1/9/95	48	2115	
11/21/94	3-MW08-02		x									x							12/27/94	1/9/95	48	2115	
11/21/94	3-MW06-00		x									x							12/27/94	1/9/95	48	2115	
11/21/94	3-MW06-04		x									x							12/27/94	1/9/95	48	2115	
11/21/94	3-MW07-00		x									x							12/27/94	1/9/95	48	2115	
11/21/94	3-MW07-02		x									x							12/27/94	1/9/95	48	2115	
11/21/94	3-MW05-00	x	x	x	x						x	x	x	x					12/27/94	1/9/95	48	2115	
11/21/94	3-MW05-10	x	x	x	x						x	x	x	x					12/27/94	1/9/95	48	2115	
6/13/95	3-MW12-00	x	x								x	x							7/19/95	7/11/95	28	3857; 3861	
6/13/95	3-MW12-02	x	x								x	x							7/19/95	7/11/95	28	3857; 3861	
6/14/95	3-MW09-02	x	x								x	x							7/20/95	7/13/95	29	3874	
6/14/95	3-MW10-02	x	x								x	x							7/20/95	7/13/95	29	3874	
6/14/95	3-MW10-00	x	x								x	x							7/20/95	7/13/95	29	3874	
6/14/95	3-MW09-00	x	x								x	x							7/20/95	7/13/95	29	3874	
6/14/95	3-RB11	x	x								x	x							7/20/95	7/13/95	29	3874	
6/14/95	3-TB101	x									x								7/20/95	7/13/95	29	3874	
6/15/95	3-MW11-00	x	x								x	x							7/21/95	7/14/95	29	3883	
6/15/95	3-MW11-08	x	x								x	x							7/21/95	7/14/95	29	3883	
6/15/95	3-MW13-00	x	x								x	x							7/21/95	7/14/95	29	3883	
6/15/95	3-MW13-04	x	x								x	x							7/21/95	7/14/95	29	3883	
6/15/95	3-NA-SB17-00	x	x								x	x							7/21/95	7/14/95	29	3883	
6/15/95	3-NA-SB17-02	x	x								x	x							7/21/95	7/14/95	29	3883	
6/15/95	3-NA-SB18-00	x	x								x	x							7/21/95	7/14/95	29	3883	
6/15/95	3-NA-SB18-02	x	x								x	x							7/21/95	7/14/95	29	3883	

CTO-0274
SITE 3, SOIL BORINGS

		Analysis Requested								Analysis Received											
		organics					eng. P			organics					eng. P.						
DATE SHIPPED	SAMPLE ID	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	TAL METALS (D)	ATTERBURG LIMITS	GRAIN SIZE	TOC	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	TAL METALS (D)	ATTERBURG LIMITS	GRAIN SIZE	TOC	DATE EXPECTED	DATE REC'D	TURNAROUND TIME	SDG NO.	COMMENTS
6/15/95	3-NA-SB19-00	x	x							x	x							7/21/95	7/14/95	29	3883	
6/15/95	3-NA-SB19-02	x	x							x	x							7/21/95	7/14/95	29	3883	
6/15/95	3-TA-SB48-00	x	x							x	x							7/21/95	7/14/95	29	3883	
6/15/95	3-TA-SB48-04	x	x							x	x							7/21/95	7/14/95	29	3883	
6/15/95	3-TA-SB49-00	x	x							x	x							7/21/95	7/14/95	29	3883	
6/15/95	3-TA-SB49-04	x	x							x	x							7/21/95	7/14/95	29	3883	
6/15/95	3-TA-SB50-00	x	x							x	x							7/21/95	7/14/95	29	3883	
6/15/95	3-TA-SB50-04	x	x							x	x							7/21/95	7/14/95	29	3883	
6/15/95	3-RB12	x	x															7/21/95		####		on hold
6/15/95	TB-102	x								x								7/21/95	7/14/95	29	3883	
6/16/95	3-RB14	x	x							x	x							7/22/95	7/11/95	25	3897	
6/16/95	TB-103	x								x								7/22/95	7/11/95	25	3897	
6/16/95	3-MW11IW-08	x	x							x	x							7/22/95	7/11/95	25	3897	
6/16/95	3-MW11IW-00	x	x							x	x							7/22/95	7/11/95	25	3897	
6/16/95	3-TA-SB45-00	x	x							x	x							7/22/95	7/11/95	25	3897	
6/16/95	3-TA-SB45-02	x	x							x	x							7/22/95	7/11/95	25	3897	
6/16/95	3-TA-SB47-00	x	x							x	x							7/22/95	7/11/95	25	3897	
6/16/95	3-TA-SB47-02	x	x							x	x							7/22/95	7/11/95	25	3897	
6/19/95	3-RB15	x	x							x	x							7/25/95	7/18/95	29	3905	
6/19/95	3-RB17	x	x															7/25/95	7/18/95	29	3905	on hold
6/19/95	3-TA-SB46-00	x	x							x	x							7/25/95	7/18/95	29	3905	
6/19/95	3-TA-SB46-02	x	x							x	x							7/25/95	7/18/95	29	3905	
6/19/95	TB-104	x								x								7/25/95	7/18/95	29	3905	
6/20/95	3-MW02DW-00	x	x							x	x							7/26/95	7/18/95	28	3912	
6/20/95	3-MW02DW-00D	x	x							x	x							7/26/95	7/18/95	28	3912	
6/20/95	3-MW02DW-02	x	x							x	x							7/26/95	7/18/95	28	3912	
6/20/95	3-MW02DW-02D	x	x							x	x							7/26/95	7/18/95	28	3912	
6/20/95	3-RB18	x	x							x	x							7/26/95	7/18/95	28	3912	

CTO-0274
SITE 3, SOIL BORINGS

		Analysis Requested									Analysis Received													
		organics					eng. P				organics					eng. P.								
DATE SHIPPED	SAMPLE ID	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	TAL METALS (D)	ATTERBURG LIMITS	GRAIN SIZE	TOC		TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	TAL METALS (D)	ATTERBURG LIMITS	GRAIN SIZE	TOC		DATE EXPECTED	DATE REC'D	TURNAROUND TIME	SDG NO.	COMMENTS
6/20/95	TB-105	x									x									7/26/95	7/18/95	28	3912	
																						0		
																						0		
COUNT		56	133	9	9	0	1	1	1	0	53	130	8	8	0	1	1	1	0					

CTO-0274
SITE 3, MONITORING WELLS

		Analysis Requested									Analysis Received													
		organics									organics													
DATE SHIPPED	SAMPLE ID	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	TAL METALS (D)	COD	BOD	TSS/TDS	TOC	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	TAL METALS (D)	COD	BOD	TSS/TDS	TOC	DATE EXPECTED	DATE REC'D	TURNAROUND TIME	SDG NO.	COMMENTS
12/1/94	3-MW07-01	x	x	x	x						x	x	x	x						1/6/95	1/11/95	40	2192	
12/1/94	3-MW07D-01					x									x					1/6/95	1/11/95	40	2192	
12/1/94	3-MW08-01	x	x	x	x						x	x	x	x						1/6/95	1/11/95	40	2192	
12/1/94	3-MW08D-01					x									x					1/6/95	1/11/95	40	2192	
12/2/94	3-MW03-01		x									x								1/7/95	1/11/95	39	2216	
12/2/94	3-MW04-01		x									x								1/7/95	1/11/95	39	2216	
12/2/94	3-MW02-01		x									x								1/7/95	1/11/95	39	2216	
12/2/94	3-MW06-01		x									x								1/7/95	1/11/95	39	2216	
12/2/94	3-MW05-01		x									x								1/7/95	1/11/95	39	2216	
12/2/94	3-TB-03	x									x									1/7/95	1/11/95	39	2216	
12/3/94	3-RS-06	x	x	x	x						x	x	x	x						1/8/95	1/11/95	38	2221	
12/3/94	3-RSD-06					x									x					1/8/95	1/11/95	38	2221	
12/5/94	3-MW02DW-01	x	x	x	x						x	x	x	x						1/10/95	1/16/95	41	2228	MS/MSD
12/5/94	3-MW02DWD-01					x									x					1/10/95	1/16/95	41	2228	
12/5/94	3-MW02DW-01D	x	x	x	x						x	x	x	x						1/10/95	1/16/95	41	2228	
12/5/94	3-MW02DWD-01D					x									x					1/10/95	1/16/95	41	2228	
12/5/94	3-TB-04	x									x									1/10/95	1/16/95	41	2228	
6/13/95	3-RB10	x	x								x	x								7/19/95	7/11/95	28	3857; 3861	
6/13/95	3-FB10	x	x								x	x								7/19/95	7/11/95	28	3857; 3861	
6/13/95	3-MW02IW-02	x	x				x	x	x	x	x	x				x	x	x	x	7/19/95	7/11/95	28	3857; 3861	
6/13/95	3-TB100	x									x									7/19/95	7/11/95	28	3857; 3861	
7/12/95	3-MW11IW-01	x	x								x	x								8/17/95	8/14/95	32	4137	
7/12/95	3-MW12-01	x	x								x	x								8/17/95	8/14/95	32	4137	
7/12/95	3-MW04-02	x	x								x	x								8/17/95	8/14/95	32	4137	
7/12/95	3-MW05-02	x	x								x	x								8/17/95	8/14/95	32	4137	
7/12/95	3-MW08-02	x	x				x		x	x	x	x				x		x	x	8/17/95	8/14/95	32	4137	
7/12/95	3-RB18	x	x								x	x								8/17/95	8/14/95	32	4137	
7/12/95	3-RB19	x	x								x	x								8/17/95	8/14/95	32	4137	

CTO-0274
SITE 3, MONITORING WELLS

7/12/95	TB-200	x									x									8/17/95	8/14/95	32	4137	
7/13/95	3-MW06-02	x	x								x	x								8/18/95	8/14/95	31	4153	
7/13/95	3-MW09-01	x	x								x	x								8/18/95	8/14/95	31	4153	
7/13/95	3-MW02DW-01D	x	x								x	x								8/18/95	8/14/95	31	4153	
7/13/95	3-MW02DW-01	x	x					x			x	x					x			8/18/95	8/14/95	31	4153	
7/13/95	3-MW07-02	x	x								x	x								8/18/95	8/14/95	31	4153	
7/13/95	3-MW02-02	x	x				x	x	x		x	x				x	x	x	x	8/18/95	8/14/95	31	4153	rec'd TOC - not requested
7/13/95	3-MW08-02	x	x								x	x								8/18/95	8/14/95	31	4153	
7/13/95	3-MW11-01	x	x								x	x								8/18/95	8/14/95	31	4153	
7/13/95	3-MW10-01	x	x								x	x								8/18/95	8/14/95	31	4153	
7/13/95	TB-201	x									x									8/18/95	8/14/95	31	4153	
7/14/95	3-MW01-01	x	x								x	x								8/19/95	8/14/95	30	4164	
7/14/95	3-MW03-02	x	x								x	x								8/19/95	8/14/95	30	4164	
7/14/95	3-MW13-01	x	x								x	x								8/19/95	8/14/95	30	4164	
7/14/95	3-RB20	x	x																	8/19/95		#####		hold, do not analyze
7/14/95	3-RB21	x	x								x	x								8/19/95	8/14/95	30	4164	
7/14/95	FB-11	x	x								x	x								8/19/95	8/14/95	30	4164	
7/14/95	TB-202	x									x									8/19/95	8/14/95	30	4164	
9/30/95	3-MW01-02	x	x								x	x								10/14/95	10/23/95	23	4878	14-day turn
9/30/95	3-MW02-03	x	x								x	x								11/5/95	10/23/95	23	4878	14-day turn
9/30/95	3-MW03-03	x	x								x	x								11/5/95	10/23/95	23	4878	14-day turn
9/30/95	3-MW04-03	x	x								x	x								11/5/95	10/23/95	23	4878	14-day turn
9/30/95	3-MW05-03	x	x								x	x								11/5/95	10/23/95	23	4878	14-day turn
9/30/95	3-MW06-03	x	x								x	x								11/5/95	10/23/95	23	4878	14-day turn
9/30/95	3-MW07-03	x	x								x	x								11/5/95	10/23/95	23	4878	14-day turn
9/30/95	3-MW08-03	x	x								x	x								11/5/95	10/23/95	23	4878	14-day turn
9/30/95	3-MW09-02	x	x								x	x								11/5/95	10/23/95	23	4878	14-day turn
9/30/95	3-MW10-02	x	x								x	x								11/5/95	10/23/95	23	4878	14-day turn
9/30/95	3-MW11-02	x	x								x	x								11/5/95	10/23/95	23	4878	14-day turn
9/30/95	3-MW12-02	x	x								x	x								11/5/95	10/23/95	23	4878	14-day turn
9/30/95	3-MW13-02	x	x								x	x								11/5/95	10/23/95	23	4878	14-day turn
9/30/95	3-MW02IW-03	x	x								x	x								11/5/95	10/23/95	23	4878	14-day turn
9/30/95	3-MW02DW-02	x	x								x	x								11/5/95	10/23/95	23	4878	14-day turn
9/30/95	3-MW11IW-02	x	x								x	x								11/5/95	10/23/95	23	4878	14-day turn
9/30/95	3-RS-50	x									x									11/5/95	10/23/95	23	4878	14-day turn
9/30/95	3-TB-50	x									x									11/5/95	10/23/95	23	4878	14-day turn

CTO-0274
SITE 3, MONITORING WELLS

COUNT		36	35	5	5	5	3	3	3	2	35	34	5	5	5	3	3	3	3				

CTO-0274
SITE 3 IDW

		Analysis Requested				Analysis Received								
		organics				organics								
DATE SHIPPED	SAMPLE ID	TCL VOA	TCL SVOA	TCLP	RCRA	TCL VOA	TCL SVOA	TCLP	RCRA	DATE EXPECTED	DATE REC'D	TURNAROUND TIME	WO NO.	COMMENTS
7/3/95	3IDW-01			x	x			x	x	8/8/95	7/26/95	23	4068	
7/3/95	3-TK-02	x	x			x	x			8/8/95	7/26/95	23	4068	
7/3/95	3-TB-106	x				x				8/8/95	7/26/95	23	4068	
COUNT		1	1	1	1	1	1	1	1					

APPENDIX C
WELL DEVELOPMENT RECORDS

FIELD WELL DEVELOPMENT RECORD

Baker Environmental, Inc.

PROJECT: SITE 3 MCB. CAMP LEJEUNE, NC

CTO NO.: 274 WELL NO.: 3-MW01

DATE: 21 NOVEMBER 1994

GEOLOGIST/ENGINEER: RM LEWIS

TIME START: 0950

TIME FINISH: ——

INITIAL WATER LEVEL (FT): 27.15

TOTAL WELL DEPTH (TD): 27.85

WELL DIAMETER (INCHES): 2" ID

CALCULATED WELL VOLUME: ——

BOREHOLE DIAMETER (INCHES): 6" OD

BOREHOLE VOLUME: 1 GAL.

AMOUNT OF WATER ADDED DURING DRILLING: ——

DEVELOPMENT METHOD: ——

PUMP TYPE: ——

TOTAL TIME (A): ——

AVERAGE FLOW (GPM)(B): ——

TOTAL ESTIMATED WITHDRAWAL AxB = ——

HNU/OVA READING: ——

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY

OBSERVATIONS/NOTES

* TOO LITTLE WATER, NO REDEVELOPMENT ATTEMPTED.

FIELD WELL DEVELOPMENT RECORD

Baker
Baker Environmental, Inc

PROJECT: SITE 3 MCB CAMP LEJEUNE, NC

CTO NO.: 274 WELL NO.: 3-MW02

DATE: 29 NOVEMBER 1994

GEOLOGIST/ENGINEER: RM LEWIS

TIME START: 1145

TIME FINISH: 1515

INITIAL WATER LEVEL (FT): 11.14

TOTAL WELL DEPTH (TD): 19.86

WELL DIAMETER (INCHES): 2" OD

CALCULATED WELL VOLUME: —

BOREHOLE DIAMETER (INCHES):

BOREHOLE VOLUME: 12.7 GAL

AMOUNT OF WATER ADDED DURING DRILLING: —

DEVELOPMENT METHOD: PUMPING

PUMP TYPE: CENTRIFIGAL

TOTAL TIME (A): 80MIN

AVERAGE FLOW (GPM)(B): 0.8

TOTAL ESTIMATED WITHDRAWAL AxB = 65 GAL

(HNU)/OVA READING: 0.6/0.6

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1355	20	6.08	31.7	150	28.0	BROWN, SANDY & CLOUDY W/ ODOR
1410	35	6.41	30.7	150	27.0	BROWN, SANDY & CLOUDY W/ ODOR
1500	50	6.38	28.2	200	27.0	CLOUDY W/ ODOR
1510	65	6.89	24.0	170	27.5	CLOUDY W/ ODOR

OBSERVATIONS/NOTES

DOWN 1145 - 1355 PUMP CLOGGED W/ SEDIMENTS

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: SITE 3 MCB CAMP LEJEUNE, NC

CTO NO.: 274 WELL NO.: 3-MW02IW

DATE: 30 NOVEMBER 1994

GEOLOGIST/ENGINEER: RM LEWIS

TIME START	0830
TIME FINISH	1030
INITIAL WATER LEVEL (FT)	28.26
TOTAL WELL DEPTH (TD)	78.80
WELL DIAMETER (INCHES)	2" ID.
CALCULATED WELL VOLUME	—
BOREHOLE DIAMETER (INCHES)	6" OD
BOREHOLE VOLUME	73.78 GALS
AMOUNT OF WATER ADDED DURING DRILLING	—
DEVELOPMENT METHOD	AIR
PUMP TYPE	—
TOTAL TIME (A)	120 MINS.
AVERAGE FLOW (GPM)(B)	3.92 gpm
TOTAL ESTIMATED WITHDRAWAL AxB=	470 GALS.
HNU/OVA READING	1.0/1.0

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
841	70	9.04	23.0	300	17	BROWN, CLOUDY, ODOR
0855	150	9.19	19.6	282	18	BROWN, CLOUDY, ODOR
0920	225	9.27	19.5	270	17	BROWN, CLOUDY, ODOR
0944	300	9.20	19.6	270	18	LIGHT BROWN, CLOUDY, ODOR
1010	400	9.48	19.6	270	18	VERY LIGHT BROWN TO CLEAR.

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker Environmental, Inc

PROJECT: SITE 3 – MCB CAMP LEJEUNE, NC

CTO NO.: 274 WELL NO.: 3-MW02DW

DATE: 1 JULY 1995

GEOLOGIST/ENGINEER: J. E. ZIMMERMAN

TIME START	1330 H
TIME FINISH	1555 H
INITIAL WATER LEVEL (FT)	30.65
TOTAL WELL DEPTH (TD)	140.5
WELL DIAMETER (INCHES)	2" ID
CALCULATED WELL VOLUME	17.9 GAL
BOREHOLE DIAMETER (INCHES)	6" OD
BOREHOLE VOLUME	29.4 GAL
AMOUNT OF WATER ADDED DURING DRILLING	———
DEVELOPMENT METHOD	PUMPING
PUMP TYPE	WATTERA
TOTAL TIME (A)	2 H 25 M
AVERAGE FLOW (GPM)(B)	1 GPM
TOTAL ESTIMATED WITHDRAWAL AxB=	150 GALS.
HNU/OVA READING	0.1 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1330	5	10.67	22.5	380	22.5	BROWN, VERY SILTY
1335	10	10.50	21.1	378	21.1	– SAME –
1340	15	10.39	21.0	374	21.0	– SAME –
1345	20	10.34	21.1	370	21.1	– SAME –
1350	25	10.15	21.6	367	21.6	– SAME –
1355	30	10.15	20.7	364	20.7	– SAME –
1400	35	10.02	21.2	360	21.2	– SAME –
1405	40	9.96	20.9	363	20.9	– SAME –
1410	45	9.97	21.1	365	21.1	– SAME –
1415	50	9.92	21.8	363	21.8	– SAME –
1420	55	9.87	19.8	362	19.8	– SAME –
1425	60	9.83	19.4	363	19.4	– SAME –
1430	65	9.76	20.3	364	20.3	LIGHT BROWN, SLIGHTLY SILTY
1435	70	9.70	20.6	362	20.6	– SAME –
1440	75	9.68	19.5	362	19.5	– SAME –
1445	80	9.65	20.5	365	20.5	– SAME –

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: SITE 3 - MCB CAMP LEJEUNE, NC

CTO NO.: 274 WELL NO.: 3-MW02DW

DATE: 1 JULY 1995

GEOLOGIST/ENGINEER: J. E. ZIMMERMAN

	DEVELOPMENT DATA						
TIME START	TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
TIME FINISH	1450	85	9.62	19.9	361	19.9	- SAME -
INITIAL WATER LEVEL (FT)	1455	90	9.58	19.4	368	19.4	- SAME -
TOTAL WELL DEPTH (TD)	1500	95	9.58	19.5	365	19.5	- SAME -
WELL DIAMETER (INCHES)	1505	100	9.49	19.5	365	19.5	- SAME -
CALCULATED WELL VOLUME	1510	105	9.46	19.6	365	19.6	- SAME -
	1515	110	9.42	19.7	365	19.7	- SAME -
BOREHOLE DIAMETER (INCHES)	1520	115	9.41	18.7	365	18.7	- SAME -
	1525	120	9.41	17.5	365	17.5	- SAME -
BOREHOLE VOLUME	1530	125	9.40	18.2	365	18.2	- SAME -
AMOUNT OF WATER ADDED DURING DRILLING	1535	130	9.35	18.7	365	18.7	- SAME -
	1540	135	9.36	18.7	365	18.7	- SAME -
DEVELOPMENT METHOD	1545	140	9.32	18.8	365	18.8	- SAME -
	1550	145	9.33	18.3	365	18.3	- SAME -
PUMP TYPE	1555	150	9.27	18.9	365	18.9	- SAME -
TOTAL TIME (A)							
AVERAGE FLOW (GPM)(B)	OBSERVATIONS/NOTES						
TOTAL ESTIMATED WITHDRAWAL AxB =							
HNU/OVA READING							

FIELD WELL DEVELOPMENT RECORD

Baker Environmental, Inc

PROJECT: SITE 3 MCB CAMP LEJEUNE, NC

CTO NO.: 274 WELL NO.: 3-MW03

DATE: 29 NOVEMBER 1994

GEOLOGIST/ENGINEER: RM LEWIS

TIME START: 1515

TIME FINISH: 1650

INITIAL WATER LEVEL (FT): 12.10

TOTAL WELL DEPTH (TD): 19.80

WELL DIAMETER (INCHES): 2" ID

CALCULATED WELL VOLUME: ——

BOREHOLE DIAMETER (INCHES): 6" OD

BOREHOLE VOLUME: 10.22 GALS.

AMOUNT OF WATER ADDED DURING DRILLING: ——

DEVELOPMENT METHOD: PUMP

PUMP TYPE: CENTRIFIGAL

TOTAL TIME (A): 95 MIN.

AVERAGE FLOW (GPM)(B): 0.3 gpm

TOTAL ESTIMATED WITHDRAWAL AxB=: 25 GALS.

HNU/OVA READING: 0.4/0.4

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1550	10	6.49	30.3	145	31	CLOUDY, SILTY
1635	20	7.04	19.5	115	18	CLOUDY, SILTY
1650	25	—	—	—	—	FINISHED PUMPING

OBSERVATIONS/NOTES

* PUMP CLOGGING W/SAND

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: SITE 3 MCB CAMP LEJEUNE, NC

CTO NO.: 274 WELL NO.: 3-MW04

DATE: 21 NOVEMBER 1994

GEOLOGIST/ENGINEER: RM LEWIS

TIME START: 1330

TIME FINISH: 1700

INITIAL WATER LEVEL (FT): 21.65

TOTAL WELL DEPTH (TD): 26.30

WELL DIAMETER (INCHES): 2" OD

CALCULATED WELL VOLUME: —

BOREHOLE DIAMETER (INCHES):

BOREHOLE VOLUME: 6.8 GAL

AMOUNT OF WATER ADDED DURING DRILLING: —

DEVELOPMENT METHOD: HAND BAIL

PUMP TYPE: —

TOTAL TIME (A): 210 MIN

AVERAGE FLOW (GPM)(B): 0.2

TOTAL ESTIMATED WITHDRAWAL AxB=: 33 GAL

HNU/OVA READING: —

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1330	12	6.43	19.5	292	21.0	TAN, SILTY
1408	16	6.35	19.3	250	21.0	TAN, SILTY
1445	20	6.46	18.9	233	21.0	CLOUDY
1544	24	6.64	18.9	230	21.5	CLOUDY
1622	28	6.35	18.7	200	20.5	CLOUDY
1700	33	5.90	18.2	220	20.5	CLOUDY

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker
Baker Environmental, Inc

PROJECT: SITE 3 MCB CAMP LEJEUNE, NC
CTO NO.: 274 WELL NO.: 3-MW05
DATE: 30 NOVEMBER 1994
GEOLOGIST/ENGINEER: RM LEWIS

TIME START	1420
TIME FINISH	1700
INITIAL WATER LEVEL (FT)	25.44
TOTAL WELL DEPTH (TD)	35.10
WELL DIAMETER (INCHES)	2" ID
CALCULATED WELL VOLUME	—
BOREHOLE DIAMETER (INCHES)	6" OD
BOREHOLE VOLUME	14.10 GAL
AMOUNT OF WATER ADDED DURING DRILLING	—
DEVELOPMENT METHOD	BAILING
PUMP TYPE	—
TOTAL TIME (A)	140 MINS.
AVERAGE FLOW (GPM)(B)	0.5 gpm
TOTAL ESTIMATED WITHDRAWAL AxB =	70 GALS
HNU/OVA READING	0.4/0.6

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1455	15	5.44	26.7	75	19	RUST COLORED, SILTY
1530	30	5.30	31.2	75	18.5	RUST COLORED, SILTY
1605	45	5.90	19.8	77	18.5	RUST COLORED, LESS SILTY
1640	60	5.40	21.7	75	18.5	RUST COLORED, LESS SILTY
1700	70	5.36	19.3	78	18.5	RUST COLORED SILTY

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: SITE 3 MCB CAMP LEJEUNE, NC

CTO NO.: 274 WELL NO.: 3-MW06

DATE: 21 NOVEMBER 1994

GEOLOGIST/ENGINEER: RM LEWIS

TIME START	1505
TIME FINISH	1705
INITIAL WATER LEVEL (FT)	12.60
TOTAL WELL DEPTH (TD)	24.30
WELL DIAMETER (INCHES)	2" OD
CALCULATED WELL VOLUME	—
BOREHOLE DIAMETER (INCHES)	
BOREHOLE VOLUME	17.1 GAL
AMOUNT OF WATER ADDED DURING DRILLING	—
DEVELOPMENT METHOD	PUMPING
PUMP TYPE	CENTRIFIGAL
TOTAL TIME (A)	120 MIN
AVERAGE FLOW (GPM)(B)	0.7
TOTAL ESTIMATED WITHDRAWAL AxB=	85 GAL
HNU/OVA READING	—

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1525	30	6.90	23.1	79	25.0	CLOUDY
1550	40	5.81	23.0	98	25.0	CLEAR
1615	50	5.55	23.0	56	25.0	CLEAR
1640	65	5.74	22.6	60	24.0	CLEAR
1705	85	6.74	22.4	57	24.5	CLEAR

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker Environmental, Inc

PROJECT: SITE 3 MCB CAMP LEJEUNE, NC

CTO NO.: 274 WELL NO.: 3-MW07

DATE: 29 NOVEMBER 1994

GEOLOGIST/ENGINEER: RM LEWIS

TIME START: 1005

TIME FINISH: 1055

INITIAL WATER LEVEL (FT): 8.18

TOTAL WELL DEPTH (TD): 16.96

WELL DIAMETER (INCHES): 2" OD

CALCULATED WELL VOLUME: —

BOREHOLE DIAMETER (INCHES):

BOREHOLE VOLUME: 12.81 GAL

AMOUNT OF WATER ADDED DURING DRILLING: —

DEVELOPMENT METHOD: PUMPING

PUMP TYPE: CENTRIFIGAL

TOTAL TIME (A): 50 MIN

AVERAGE FLOW (GPM)(B): 1.5

TOTAL ESTIMATED WITHDRAWAL AxB=: 75 GAL

(HNU)/OVA READING: 0.9/0.6

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1005	12	6.50	25.8	130	23.0	BROWN, SILTY
1020	25	6.84	36.0	145	30.0	LIGHT BROWN
1035	45	5.65	28.0	130	26.0	CLEAR
1045	60	5.42	30.9	130	27.0	CLEAR
1055	75	5.18	28.7	130	27.0	CLEAR

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker
Baker Environmental, Inc

PROJECT: SITE 3 MCB CAMP LEJEUNE, NC

CTO NO.: 274 WELL NO.: 3-MW08

DATE: 29 NOVEMBER 1994

GEOLOGIST/ENGINEER: RM LEWIS

TIME START	0845
TIME FINISH	0935
INITIAL WATER LEVEL (FT)	9.66
TOTAL WELL DEPTH (TD)	20.48
WELL DIAMETER (INCHES)	2" OD
CALCULATED WELL VOLUME	—
BOREHOLE DIAMETER (INCHES)	
BOREHOLE VOLUME	15.8 GAL
AMOUNT OF WATER ADDED DURING DRILLING	—
DEVELOPMENT METHOD	PUMPING
PUMP TYPE	CENTRIFIGAL
TOTAL TIME (A)	50 MIN
AVERAGE FLOW (GPM)(B)	1.7
TOTAL ESTIMATED WITHDRAWAL AxB=	85 GAL
~~HNU~~/OVA READING	1.0/1.0

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
0845	15	7.40	28.4	110	29.0	GRAY, SILTY
0855	30	6.85	31.8	30	27.0	GRAY, SILTY
0905	45	6.61	29.8	30	26.0	BROWN, CLEAR
0915	55	6.42	28.9	31	26.0	CLEAR
0925	70	6.49	29.0	39	26.0	CLEAR
0935	85	5.51	30.5	37	26.0	CLEAR

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: SITE 3 - MCB CAMP LEJEUNE, NC

CTO NO.: 274 WELL NO.: 3-MW09

DATE: 17 JUNE 1995

GEOLOGIST/ENGINEER: M. K. DEJOHN

TIME START: 1009

TIME FINISH: 1323

INITIAL WATER LEVEL (FT): 5.69

TOTAL WELL DEPTH (TD): 20.76

WELL DIAMETER (INCHES): 2" ID

CALCULATED WELL VOLUME: 2.46 GAL

BOREHOLE DIAMETER (INCHES): 6" OD

BOREHOLE VOLUME: 22.1 GAL

AMOUNT OF WATER ADDED DURING DRILLING: 18 GALS

DEVELOPMENT METHOD: PUMPING

PUMP TYPE: WATTERA

TOTAL TIME (A): 194 MIN.

AVERAGE FLOW (GPM)(B): 0.41

TOTAL ESTIMATED WITHDRAWAL AxB=: 80 GAL

HNU/OVA READING: ——

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1010	2.5	5.68	21.1	118	21.1	DARK GRAY, VERY TURBID, OPAQUE
1012	5	5.69	19.2	114	19.4	-SAME-
1016	10	5.62	20.0	107	19.2	-SAME-
1023	15	5.71	21.5	110	21.5	-SAME-
1050	20	5.47	22.5	94	21.7	-SAME-
1057	25	5.67	23.1	106	21.8	-SAME-
1110	30	5.60	25.1	101	25.1	GRAY, VERY TURBID, OPAQUE
1123	35	5.54	24.9	94	24.6	GRAY, TURBID
1137	40	5.47	26.3	90	25.2	-SAME-
1151	45	5.42	27.1	90	25.8	-SAME-
1204	50	5.41	26.5	86	25.8	GRAY, TURBID, TRANSLUCENT
1218	55	5.37	27.7	83	25.0	-SAME-
1231	60	5.37	28.4	83	25.4	-SAME-
1244	65	5.37	28.9	83	26.1	-SAME-
1257	70	5.37	28.0	80	25.7	CLOUDY, SLIGHTLY TURBID
1310	75	5.36	27.7	81	25.7	-SAME-

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker
Baker Environmental, Inc

PROJECT: SITE 3 - MCB CAMP LEJEUNE, NC

CTO NO.: 274 WELL NO.: 3-MW09

DATE: 17 JUNE 1995

GEOLOGIST/ENGINEER: M. K. DeJOHN

	DEVELOPMENT DATA						
TIME START	TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
TIME FINISH							
INITIAL WATER LEVEL (FT)	1323	80	5.36	26.3	79	25.8	— SAME —
TOTAL WELL DEPTH (TD)							
WELL DIAMETER (INCHES)							
CALCULATED WELL VOLUME							
BOREHOLE DIAMETER (INCHES)							
BOREHOLE VOLUME							
AMOUNT OF WATER ADDED DURING DRILLING							
DEVELOPMENT METHOD							
PUMP TYPE							
TOTAL TIME (A)							
AVERAGE FLOW (GPM)(B)							
TOTAL ESTIMATED WITHDRAWAL AxB=							
HNU/OVA READING							

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker Environmental, Inc

PROJECT: SITE 3 - MCB CAMP LEJEUNE, NC

CTO NO.: 274 WELL NO.: 3-MW10

DATE: 16 JUNE 1995

GEOLOGIST/ENGINEER: M. K. DEJOHN

TIME START	0920
TIME FINISH	1220
INITIAL WATER LEVEL (FT)	5.59
TOTAL WELL DEPTH (TD)	20.61
WELL DIAMETER (INCHES)	2" ID
CALCULATED WELL VOLUME	2.45 GAL
BOREHOLE DIAMETER (INCHES)	6" OD
BOREHOLE VOLUME	22.1 GAL
AMOUNT OF WATER ADDED DURING DRILLING	———
DEVELOPMENT METHOD	PUMPING
PUMP TYPE	WATTERA
TOTAL TIME (A)	180 MIN.
AVERAGE FLOW (GPM)(B)	0.58 GPM
TOTAL ESTIMATED WITHDRAWAL AxB=	104.5 GAL
HNU/OVA READING	2.4 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
0920	2.5	5.72	19.2	112	19.2	GRAYISH BROWN, VERY TURBID, OPAQUE
0923	7.5	5.53	18.7	87	18.5	—SAME—
0930	12.5	5.47	19.9	91	19.7	—SAME—
0938	17.5	5.46	19.8	75	20.4	—SAME—
0945	22.5	5.43	20.2	71	20.4	GRAY, VERY TURBID, TRANSLUCENT
0953	27.5	5.43	20.2	68	20.6	—SAME—
1002	32.5	5.37	20.4	65	20.9	GRAY, TURBID, TRANSLUCENT
1009	37.5	5.35	21.0	64	20.8	—SAME—
1020	42.5	5.30	20.6	61	20.9	GRAY, TURBID
1030	47.5	5.37	20.7	65	20.5	GRAY, VERY TURBID
1040	52.5	5.29	21.0	62	20.8	GRAY, TURBID
1049	57.5	5.30	21.1	61	20.8	—SAME—
1058	62.5	5.28	21.0	60	20.8	GRAY, TURBID
1108	67.5	5.21	21.0	57	21.0	LIGHT GRAY, SL. TURBID
1118	72.5	5.22	21.2	57	21.5	NEARLY CLEAR
1128	77.5	5.19	22.5	56	21.6	—SAME—

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: SITE 3 - MCB CAMP LEJEUNE, NC

CTO NO.: 274 WELL NO.: 3-MW10

DATE: 16 JUNE 1995

GEOLOGIST/ENGINEER: M. K. DEJOHN

TIME START	DEVELOPMENT DATA						
TIME FINISH	TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
INITIAL WATER LEVEL (FT)	1138	82.5	5.17	22.7	57	23.1	-SAME-
TOTAL WELL DEPTH (TD)	1147	87.5	5.17	23.2	57	23.0	-SAME-
WELL DIAMETER (INCHES)	1157	92.5	5.16	23.4	57	23.9	-SAME-
CALCULATED WELL VOLUME	1207	97.5	5.14	23.4	56	23.1	-SAME-
BOREHOLE DIAMETER (INCHES)	1216	102.5	5.15	24.1	56	23.0	-SAME-
BOREHOLE VOLUME	1220	104.5	—	—	—	—	—
AMOUNT OF WATER ADDED DURING DRILLING							
DEVELOPMENT METHOD							
PUMP TYPE							
TOTAL TIME (A)							
AVERAGE FLOW (GPM)(B)							
TOTAL ESTIMATED WITHDRAWAL AxB=							
HNU/OVA READING							

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker Environmental, Inc

PROJECT: SITE 3 MCB CAMP LEJEUNE, NC

CTO NO.: 274 WELL NO.: 3-MW11

DATE: 18 JUNE 1995

GEOLOGIST/ENGINEER: M.D. SMITH

TIME START	0755 H
TIME FINISH	1129 H
INITIAL WATER LEVEL (FT)	23.44
TOTAL WELL DEPTH (TD)	33.27
WELL DIAMETER (INCHES)	2" ID.
CALCULATED WELL VOLUME	1.5 GAL.
BOREHOLE DIAMETER (INCHES)	6" OD
BOREHOLE VOLUME	14.4 GAL.
AMOUNT OF WATER ADDED DURING DRILLING	———
DEVELOPMENT METHOD	PUMPING
PUMP TYPE	CENTRIFUGAL
TOTAL TIME (A)	3 HR. 34 MIN.
AVERAGE FLOW (GPM)(B)	0.25 GPM
TOTAL ESTIMATED WITHDRAWAL AxB=	53.5 GAL.
HNU/OVA READING	———

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
0836	0.5 GAL.	4.95	21.8	124	21.8	TURBID, LT. BROWN
0840	3	4.88	23.1	102	23.4	TURBID, LT. BROWN
0843	4.5	5.00	27	113.7	27.9	—SAME—
0848	6	4.96	24.5	111.9	24.9	SLIGHT CLEARING TURBID, LT. BROWN
0851	7.5	4.94	24.5	110.2	24.6	—SAME—
0855	9	4.96	24.3	109.3	24.6	—SAME—
0858	11.5	4.90	24.4	109.5	24.7	—SAME—
0902	13	4.94	24.6	108.5	24.7	—SAME—
—	14.5	5.01	25.7	119.3	25.7	—SAME—
0912	16.75	5.00	25.1	114.5	25.8	TURBID, VERY LT. BROWN
0917	18.5	5.06	25.9	117.7	26.6	—SAME—
0922	20	5.19	27.8	120.5	27.9	—SAME—
0927	21.5	5.12	26.8	116.3	26.9	—SAME—
0930	23	5.11	25.9	108.3	26	—SAME—
0935	25	5.09	26.1	114.1	26.1	SLIGHT CLEARING TURBID, VERY LT. BROWN
0939	26.5	5.11	25.5	106.3	25.6	—SAME—

OBSERVATIONS/NOTES

TURBIDITY READINGS >200 NTU.

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: SITE 3 - MCB CAMP LEJEUNE, NC

CTO NO.: 274 WELL NO.: 3-MW11

DATE: 18 JUNE 1995

GEOLOGIST/ENGINEER: M. D. SMITH

TIME START	
TIME FINISH	
INITIAL WATER LEVEL (FT)	
TOTAL WELL DEPTH (TD)	
WELL DIAMETER (INCHES)	
CALCULATED WELL VOLUME	
BOREHOLE DIAMETER (INCHES)	
BOREHOLE VOLUME	
AMOUNT OF WATER ADDED DURING DRILLING	
DEVELOPMENT METHOD	
PUMP TYPE	
TOTAL TIME (A)	
AVERAGE FLOW (GPM)(B)	
TOTAL ESTIMATED WITHDRAWAL AxB=	
HNU/OVA READING	

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
0945	28.5	5.09	25.1	109.9	25.3	- SAME -
0948	29.5	5.20	26.9	110.6	27	- SAME -
0955	31.5	5.24	28.4	127.0	29.3	- SAME -
0959	32.5	5.26	28.9	122.3	29.4	SLIGHT CLEARING TURB. - 196 NTU
1006	34.5	5.14	28.3	118.7	28.9	- SAME -
1010	35.5	5.20	28.8	103.8	28.6	- SAME - TURB. - >200 NTU
1016	37	5.20	29.2	119.5	29.9	- SAME -
1020	38.5	5.30	29.9	120.5	31.2	- SAME -
1027	40	5.18	29.1	117.3	29.8	- SAME -
1035	41.5	5.19	29.3	111.8	29.7	- SAME -
1041	43	5.25	30.9	117.3	31.7	- SAME -
1047	44.5	5.10	27.0	102.8	27.2	- SAME -
1053	46	5.10	27.6	111.2	28.0	- SAME -
1059	47.5	5.14	27.1	102.7	27.5	- SAME -
1107	49	5.10	26.1	96.4	26.5	SLIGHT CLEARING TURB. - 91.3 NTU
1113	50.5	5.13	27.2	108.6	27.1	SLIGHT CLEARING TURB. - 45.9 NTU

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: SITE 3 - MCB CAMP LEJEUNE, NC

CTO NO.: 274 WELL NO.: 3-MW11

DATE: 18 JUNE 1995

GEOLOGIST/ENGINEER: M.D. SMITH

	DEVELOPMENT DATA						
TIME START	TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
TIME FINISH	1119	52	5.21	28.9	113.2	29.4	SLIGHT CLEARING TURB. - 31.3 NTU
INITIAL WATER LEVEL (FT)	1129	53.5	5.13	24.6	108	24.6	"
TOTAL WELL DEPTH (TD)							
WELL DIAMETER (INCHES)							
CALCULATED WELL VOLUME							
BOREHOLE DIAMETER (INCHES)							
BOREHOLE VOLUME							
AMOUNT OF WATER ADDED DURING DRILLING							
DEVELOPMENT METHOD							
PUMP TYPE							
TOTAL TIME (A)							
AVERAGE FLOW (GPM)(B)							
TOTAL ESTIMATED WITHDRAWAL AxB =							
HNU/OVA READING							

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: SITE 3 – MCB CAMP LEJEUNE, NC

CTO NO.: 274 WELL NO.: 3-MW11IW

DATE: 1 JULY 1995

GEOLOGIST/ENGINEER: J.E. ZIMMERMAN

TIME START	1740
TIME FINISH	1940
INITIAL WATER LEVEL (FT)	28.28
TOTAL WELL DEPTH (TD)	87.5
WELL DIAMETER (INCHES)	2" ID
CALCULATED WELL VOLUME	9.67 GALS.
BOREHOLE DIAMETER (INCHES)	6" OD
BOREHOLE VOLUME	24.97 GALS.
AMOUNT OF WATER ADDED DURING DRILLING	———
DEVELOPMENT METHOD	PUMPING
PUMP TYPE	WATTERA
TOTAL TIME (A)	120 MIN
AVERAGE FLOW (GPM)(B)	1 GPM
TOTAL ESTIMATED WITHDRAWAL AxB=	125 GALS.
HNU/OVA READING	0.2 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1740	5	11.37	18.9	528	18.9	BROWN, VERY SILTY
1745	10	11.62	19.7	888.	19.7	– SAME –
1750	15	11.77	19.3	1177	19.3	– SAME –
1755	20	11.89	19.3	1493	19.3	– SAME –
1800	25	11.92	19.5	1676	19.5	LIGHT BROWN, SLIGHTLY SILTY
1805	30	11.96	19.0	1793	19.0	– SAME –
1810	35	11.97	18.9	1760	18.9	CLEARING, TRACE SILT
1815	40	12.00	18.2	1766	18.2	CLEAR, TRACE SILT
1820	45	11.99	18.6	1786	18.6	– SAME –
1825	50	11.96	18.7	1736	18.7	– SAME –
1830	55	11.92	18.9	1691	18.9	– SAME –
1835	60	11.96	18.5	1680	18.5	– SAME –
1840	65	11.97	18.6	1647	18.6	– SAME –
1845	70	11.99	18.6	1621	18.6	– SAME –
1850	75	11.99	18.6	1596	18.6	– SAME –
1855	80	11.96	18.5	1544	18.5	– SAME –

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker
Baker Environmental, Inc

PROJECT: SITE 3 - MCB CAMP LEJEUNE, NC
CTO NO.: 274 WELL NO.: 3-MW11IW
DATE: 1 JULY 1995
GEOLOGIST/ENGINEER: J. E. ZIMMERMAN

TIME START	**DEVELOPMENT DATA**						
TIME FINISH	TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
INITIAL WATER LEVEL (FT)	1900	85	11.97	18.5	1512	18.5	— SAME —
TOTAL WELL DEPTH (TD)	1905	90	11.94	18.9	1488	18.9	— SAME —
	1910	95	11.92	18.9	1469	18.9	— SAME —
WELL DIAMETER (INCHES)	1915	100	11.99	19.0	1445	19.0	— SAME —
	1920	105	11.91	19.8	1404	19.8	— SAME —
CALCULATED WELL VOLUME	1925	110	11.94	19.4	1365	19.4	— SAME —
BOREHOLE DIAMETER (INCHES)	1930	115	11.87	19.1	1330	19.1	— SAME —
	1935	120	11.85	18.7	1303	18.7	— SAME —
BOREHOLE VOLUME	1940	125	11.85	18.7	1305	18.7	— SAME —
AMOUNT OF WATER ADDED DURING DRILLING							
DEVELOPMENT METHOD							
PUMP TYPE							
TOTAL TIME (A)							
AVERAGE FLOW (GPM)(B)	**OBSERVATIONS/NOTES**						
TOTAL ESTIMATED WITHDRAWAL AxB =							
HNU/OVA READING							

FIELD WELL DEVELOPMENT RECORD

Baker
Baker Environmental, Inc

PROJECT: SITE 3 – MCB CAMP LEJEUNE, NC
CTO NO.: 274 WELL NO.: 3-MW12
DATE: 20 JUNE 1995
GEOLOGIST/ENGINEER: M. D. SMITH

TIME START: 1615 H
TIME FINISH: 1702 H
INITIAL WATER LEVEL (FT): 17.4
TOTAL WELL DEPTH (TD): 21.9
WELL DIAMETER (INCHES): 2" ID
CALCULATED WELL VOLUME: 0.73 GAL
BOREHOLE DIAMETER (INCHES): 6" O.D.
BOREHOLE VOLUME: 6.6 GAL
AMOUNT OF WATER ADDED DURING DRILLING: —
DEVELOPMENT METHOD: BAILER
PUMP TYPE: —
TOTAL TIME (A): 47 MIN.
AVERAGE FLOW (GPM)(B): 0.15
TOTAL ESTIMATED WITHDRAWAL AxB=: 7 GAL.
HNU/OVA READING: —

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1615	0.25	4.56	20.3	101.5	22.2	VERY TURBID, GRAY
1622	1	4.77	18.7	95.1	19.9	— SAME —
1627	2	4.76	18.0	93.9	19.3	— SAME —
1635	4	4.77	18.6	93.5	19.5	— SAME —
1645	5	4.76	18.8	93.8	19.4	— SAME —
1651	6	4.77	19.6	95.1	19.5	— SAME —
1702	7	4.81	18.9	91.8	20	— SAME —

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker Environmental, Inc

PROJECT: SITE 3 - MCB CAMP LEJEUNE, NC

CTO NO.: 274 WELL NO.: 3-MW13

DATE: 17 JUNE 1995

GEOLOGIST/ENGINEER: M. K. DeJOHN

TIME START	1455
TIME FINISH	1747
INITIAL WATER LEVEL (FT)	17.32
TOTAL WELL DEPTH (TD)	23.32
WELL DIAMETER (INCHES)	2" ID
CALCULATED WELL VOLUME	0.98 GAL.
BOREHOLE DIAMETER (INCHES)	6" OD
BOREHOLE VOLUME	8.8 GAL
AMOUNT OF WATER ADDED DURING DRILLING	———
DEVELOPMENT METHOD	PUMPING/BAILING
PUMP TYPE	WATERA
TOTAL TIME (A)	172 MIN
AVERAGE FLOW (GPM)(B)	0.1 GPM
TOTAL ESTIMATED WITHDRAWAL AxB=	19 GAL
HNU/OVA READING	———

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1455	1	5.62	27.9	233	25.1	SLIGHTLY CLOUDY
1457	4	5.55	25.2	221	25.8	GRAY, VERY TURBID
1504	8	5.50	23.3	213	22.5	GRAY, SLIGHTLY TURBID
1528	10	5.96	27.1	259	27.1	GRAY, TURBID, TRANSLUCENT
1537	12	5.71	26.6	142	27.9	—SAME—
1626	14	5.68	19.0	189	18.6	DARK GRAY, VERY TURBID, OPAQUE
1642	16	5.72	19.1	192	18.8	—SAME—
1717	18	5.77	19.3	194	18.7	GRAY, TURBID
1747	19	5.80	18.8	195	18.7	—SAME—

OBSERVATIONS/NOTES

STARTED DEVELOPMENT BY PUMPING. KEPT GOING DRY. SWITCHED TO BAILING

APPENDIX D
IDW SUMMARY

APPENDIX D.1
IDW LETTER REPORT

Baker

Baker Environmental, Inc.
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108

(412) 269-6000
FAX (412) 269-2002

January 19, 1995

Commander
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Building N-26)
Norfolk, Virginia 23511-6299

Attn: Ms. Katherine Landman
Navy Technical Representative
Code 1823

Re: Contract N62470-89-D-4814
Navy CLEAN, District III
Contract Task Order (CTO) 0274
IDW Sampling and Analysis
Operable Units No. 8, 11, and 12
MCB Camp Lejeune, North Carolina

Dear Ms. Landman:

This letter report describes the sample collection activities, analysis, results, and recommendations for the disposition of investigation-derived waste (IDW) present at Sites 16, 7, 80, and 3, Marine Corps Base, Camp Lejeune, North Carolina. The IDW contained in 1,000 gallon tankers, 55 gallon drums, and lab packs, were generated during the period from September 15 to December 4, 1994, during the Baker Environmental, Inc. (Baker) remedial field investigation. An inventory of the IDW along with individual site quantities are provided in Table 1. Analytical results are provided in Attachment A.

Sample Collection and Analysis

Site 16

Two liquid samples were collected from Site 16. The first sample was collected from the well development and purge water holding tank and was given the sample identification 16-TK-01. Sample 16-TK-01 was analyzed for full Target Compound List (TCL)-Organics and Target Analytic List (TAL)-Inorganics.

The second sample was collected from a (55 - gallon) drum containing decontamination fluids. This sample was given the identification 16-DRM-01. Sample 16-DRM-01 was placed on ice and then was composited with decontamination fluids from other sites and given the sample identification 274-DRM-01. Sample 274-DRM-01 was analyzed for full TCL-Organics and TAL-Inorganics. The types and quantities of IDW for Site 16 are provided on Table 1. Analytical results for Site 16 are provided in Attachment A. Note, additional drums of decontamination fluids were also generated at lot 203 (field trailer). These drums were sampled along with all the site decontamination fluids and composited for sample 274-DRM-01. The decontamination fluids generated at Lot 203 are presented on Table 1.

Site 7

Two liquid samples were collected from Site 7. The first sample was collected from the well development and purge water holding tank and was given the sample identification 7-TK-01. Sample 7-TK-01 was analyzed for full TCL-Organics and TAL-Inorganics.

The second sample was collected by compositing two (55 - gallon) drums containing decontamination fluids. This sample was given the identification 7-DRM-01. Sample 7-DRM-01 was placed on ice and then was composited with decontamination fluids from other sites and given the sample identification 274-DRM-01.

Sample 274-DRM-01 was analyzed for full TCL-Organics and TAL-Inorganics. The types and quantities of IDW for Site 7 are provided on Table 1. Analytical results for Site 7 are provided in Attachment A.

Site 80

Two liquid samples were collected from Site 80. The first sample was collected from the well development and purge water holding tanks and was given the sample identification 80-TK-01. Sample 80-TK-01 was collected by compositing the water from both holding tanks, and was analyzed for full TCL-Organics and TAL-Inorganics.

The second sample was collected from a (55 - gallon) drum containing decontamination fluids. This sample was given the identification 80-DRM-01. Sample 80-DRM-01 was placed on ice and then was composited with decontamination fluids from other sites and given the sample identification 274-DRM-01. Sample 274-DRM-01 was analyzed for full TCL-Organics and TAL-Inorganics. The types and quantities of IDW for Site 80 are provided on Table 1. Analytical results for Site 80 are provided in Attachment A.

Site 3

One solid composite sample (3-RB-01) was collected from Site 3. This composite sample was comprised of drilling mud cuttings. One representative sample was collected from each of the six (55 - gallon) drums. These samples where in turn placed into a stainless steel bowl and homogenized prior to sample packaging. Sample 3-RB-01 was analyzed for RCRA hazardous waste characteristics including TCLP, ignitability, corrosivity, reactivity, and TCL PCBs.

Two liquid samples were collected from Site 3. The first sample was collected from the well development and purge water holding tank and was given the sample identification 3-TK-01. Sample 3-TK-01 was analyzed for full TCL-Organics and TAL-Inorganics.

The second sample was a composite sample from two (55 - gallon) drums of decontamination fluids. This sample was given the identification 3-DRM-01. Sample 3-DRM-01 was placed on ice and then was composited with decontamination fluids from other sites and given the sample identification 74-DRM-01. Sample 274-DRM-01 was analyzed for full TCL-Organics and TAL-Inorganics. The types and quantities of IDW for Site 3 are provided on Table 1. Analytical results for Site 3 are provided in Attachment A.

In addition to the solid and liquid IDW generated from Site 3, the ENSYS field screening investigation conducted at Site 3 generated approximately ten (10) liters of waste methanol. The waste methanol is stored in 10 - one liter glass bottles. These glass containers have been lab packed into two 5 - gallon plastic buckets with 5 containers in each bucket. A sample of the waste methanol was not collected due to waste methanol being a F - listed waste (F003), and proper disposal to a licensed Treatment Storage Disposal Facility (TSDF) is necessary.

Results

Site 16

Sample 16-TK-01 had only two positive volatile detections, one positive detection for semivolatiles, and no positive detections for pesticides/PCBs. Inorganic analysis did not indicate concentrations above what previous background groundwater analysis has indicated for inorganics. Concentrations of all contaminants did not exceed regulatory standards for classification as hazardous by characteristic (40CFR 261.24).

Sample 274-DRM-01 which is a composite sample of the decontamination fluids from all sites including Site 16, indicated positive detections for three volatile contaminants, five positive detections for semivolatiles, and one positive detection for pesticides. Inorganic analysis did not indicate concentrations above background for inorganics. Concentrations of all contaminants did not exceed regulatory standards for classification as hazardous by characteristic (40CFR 261.24).

Site 7

Sample 7-TK-01 had three positive volatile detections, and no positive detections for either semivolatile, or pesticide/PCB analysis. Inorganic analysis did not indicate concentrations above what previous background groundwater analysis has indicated for inorganics. Concentrations of all contaminants did not exceed 40CFR 261.24 standards.

Results of sample 274-DRM-01 which is a composite sample of the decontamination fluids from all sites, including Site 7, are provided in the results for Site 16.

Site 80

Sample 80-TK-01 had four positive volatile detections, and no positive detections for either semivolatile, or pesticide/PCB analysis. Inorganic analysis did not indicate concentrations above what previous background groundwater analysis has indicated for inorganics. Concentrations of all contaminants did not exceed 40CFR 261.24 standards.

Results of sample 274-DRM-01 which is a composite sample of the decontamination fluids from all sites, including Site 80, are provided in the results for Site 16.

Site 3

Sample 3-TK-01 had seven positive volatile detections, eleven positive semivolatile detections, and one positive detection for pesticides. Inorganic analysis did not indicate concentrations above previous background groundwater analysis has indicated for inorganics. Concentrations of all contaminants did not exceed 40CFR 261.24 standards.

Results of sample 274-DRM-01 which is a composite sample of the decontamination fluids from all sites, including Site 3, are provided in the results for Site 16.

Sample 3-RB-01 which was analyzed for RCRA hazardous waste characteristics, TCLP, and TCL-PCBs, had three positive volatile detections, and no positive detections for either semivolatiles and pesticides/herbicides. Also, PCB analysis indicated no positive detections, and inorganic analysis had one positive detection. Concentrations of all contaminants did not exceed 40CFR 261.24. Sample 3-RB-01 was not found to be reactive to sulfide and cyanide, be ignitable at less than 140 ° F, or be corrosive at less than 2 or greater than 12.

The waste methanol generated during the ENSYS soil investigation at Site 3 was not sampled. The methanol is a F - listed waste (F003), and proper disposal to a licensed TSDF is necessary.

Conclusions and Recommendations

Site 16

Analytical results indicate that samples 16-TK-01, and 274-DRM-01 have low level organic contaminant concentrations. These concentrations do not exceed regulatory values which would classify these samples as hazardous by characteristic. Therefore, the well development/purge water and the decontamination fluid will be disposed of onsite.

Site 7

Analytical results indicate that samples 7-TK-01, and 274-DRM-01 have low level organic contaminant concentrations. These concentrations do not exceed regulatory values which would classify these samples as hazardous by characteristics. Therefore, the well development/purge water and the decontamination fluid will be disposed of onsite.

Site 80

Analytical results indicate that samples 80-TK-01, and 274-DRM-01 have low level organic contaminant concentrations. These concentrations do not exceed regulatory values which would classify these samples as hazardous by characteristics. Therefore, the well development/purge water and the decontamination fluid will be disposed of onsite.

Site 3

Analytical results indicate that samples 3-TK-01, and 274-DRM-01 have low level organic contaminant concentrations. These concentrations do not exceed regulatory values which would classify these samples as hazardous by characteristics. Therefore, the well development/purge water and the decontamination fluid will be disposed of onsite.

Analytical results for sample (3-RB-01, drilling mud cuttings) indicate low level volatile contaminant concentrations. The RCRA hazardous waste characteristics show this sample to be non-hazardous. The TCLP and RCRA results do not exceed regulatory values which would classify this sample as hazardous by characteristics. Therefore, these drilling mud cuttings will be disposed of onsite.

The 10 liters of waste methanol will be packaged and removed from the base by a licensed waste hauler, and shipped to a licensed treatment, storage disposal facility (TSDF) for disposal in a certified fuels or incineration program.

Upon LANTDIV's approval of these disposal recommendations, the IDW will be managed as identified within this letter.

If you have any questions, please do not hesitate to contact me at (412) 269-2053.

Sincerely,

Baker Environmental, Inc.

Matthew D. Bartman
Project Manager

Attachment

MCD/lq

cc: Mr. Neal Paul
Mr. John Riggs

TABLE 1
SUMMARY OF INVESTIGATIVE DERIVED WASTE
REMEDIAL INVESTIGATION, CTO-0274
MCB CAMP LEJUENE, NORTH CAROLINA

SITE	MATERIAL	CONTAINERS		VOLUME OF WASTE	UNIT	LABORATORY ANALYSIS
		NUMBER	TYPE			
Site 16	Development/ Purge Water	1	1000 Gallon Tank	750	Gallons	TCL - Organics TAL - Inorganics
Site 16	Decon Water	1	55 Gallon Drum	55	Gallons	TCL - Organics TAL - Inorganics
Site 7	Development/ Purge Water	1	1000 Gallon Tanks	900	Gallons	TCL - Organics TAL - Inorganics
Site 7	Decon Water	2	55 Gallon Drums	70	Gallons	TCL - Organics TAL - Inorganics
Site 80	Development/ Purge Water	2	1000 Gallon Tanks	1,400	Gallons	TCL - Organics TAL - Inorganics
Site 80	Decon Water	1	55 Gallon Drums	55	Gallons	TCL - Organics TAL - Inorganics
Site 3	Development/ Purge Water	1	1000 Gallon Tanks	800	Gallons	TCL - Organics TAL - Inorganics
Site 3	Decon Water	2	55 Gallon Drums	110	Gallons	TCL - Organics TAL - Inorganics
Site 3	Drilling Mud Cuttings	6	55 Gallon Drums	40	Cubic Feet	TCLP - Organics TCLP - Inorganics RCRA - Haz. Characteristics TCL - PCBs
Site 3	Waste Methanol	10	1 Liter Bottles	10	Liters	No Analysis Performed
Lot 203	Decon Water	2	55 Gallon Drums	110	Gallons	TCL - Organics TAL - Inorganics

ATTACHMENT A (Laboratory Analysis)

00011
EPA SAMPLE NO.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

16TK01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2220 SAS No.: _____ SDG No.: 3RB01

Matrix: (soil/water) WATER Lab Sample ID: AD2051

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AD2051

Level: (low/med) LOW Date Received: 12/05/94

% Moisture: not dec. ____ Date Analyzed: 12/10/94

GC Column: RTX624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	1	BJ
67-64-1	Acetone	150	
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)		

00012
EPA SAMPLE NO.

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

16TK01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2220 SAS No.: SDG No.: 3RB01

Matrix: (soil/water) WATER Lab Sample ID: AD2051

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AD2051

Level: (low/med) LOW Date Received: 12/05/94

% Moisture: not dec. Date Analyzed: 12/10/94

GC Column: RTX624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.77	70	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16TK01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2220 SAS No.: _____ SDG No.: 3RB01

Matrix: (soil/water) WATER Lab Sample ID: AD2052

Sample wt/vol: 1000 (g/mL) ML Lab File ID: AD2052

Level: (low/med) LOW Date Received: 12/05/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 12/07/94

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 12/09/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	25	U
95-95-4	2,4,5-Trichlorophenol	10	U
91-58-7	2-Chloronaphthalene	25	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	25	U
99-09-2	3-Nitroaniline	10	U
83-32-9	Acenaphthene		

1C

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16TK01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2220 SAS No.: SDG No.: 3RB01

Matrix: (soil/water) WATER Lab Sample ID: AD2052

Sample wt/vol: 1000 (g/mL) ML Lab File ID: AD2052

Level: (low/med) LOW Date Received: 12/05/94

% Moisture: decanted: (Y/N) Date Extracted: 12/07/94

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 12/09/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	11	
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

00049
EPA SAMPLE NO.

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

16TK01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2220 SAS No.: SDG No.: 3RB01

Matrix: (soil/water) WATER Lab Sample ID: AD2052

Sample wt/vol: 1000 (g/mL) ML Lab File ID: AD2052

Level: (low/med) LOW Date Received: 12/05/94

% Moisture: decanted: (Y/N) Date Extracted: 12/07/94

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 12/09/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

Number TICs found: 2 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	17.27	14	J
2.		UNKNOWN	18.58	3	J

00092

EPA SAMPLE NO.

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

16TK01

Lab Name: ITAS-KNOXVILLE Contract: _____

Lab Code: _____ Case No.: WO2220 SAS No.: _____ SDG No.: 7TK01

Matrix: (soil/water) WATER Lab Sample ID: AD2052

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) ___ Date Received: 12/05/94

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 12/07/94

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 12/19/94

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

16TK01

Lab Name: ITAS_KNOXVILLE_____ Contract: BAKER/LEJE SDG No.: N/A___
Lab Code: ITSTU_ Case No.: 2220_ SAS No.: _____ Lab Sample ID: AD2053
Matrix (soil/water): WATER Date Received: 12/05/94
Level (low/med): LOW__
% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2160			P
7440-36-0	Antimony	50.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	25.7	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	8350			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	10.0	U		P
7440-50-8	Copper	10.0	U		P
7439-89-6	Iron	1620			P
7439-92-1	Lead	3.0	U		P
7439-95-4	Magnesium	1560	B		P
7439-96-5	Manganese	19.0			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	20.0	U		P
7440-09-7	Potassium	1750	B		P
7782-49-2	Selenium	5.0	U		P
7440-22-4	Silver	5.0	U		P
7440-23-5	Sodium	8630			P
7440-28-0	Thallium	10.0	U		P
7440-62-2	Vanadium	10.0	U		P
7440-66-6	Zinc	52.2			P

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___
Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

00009
EPA SAMPLE NO.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

7TK01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2220 SAS No.: _____ SDG No.: 3RB01

Matrix: (soil/water) WATER Lab Sample ID: AD2056

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AD2056

Level: (low/med) LOW Date Received: 12/05/94

% Moisture: not dec. ____ Date Analyzed: 12/10/94

GC Column: RTX624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	1	BJ
67-64-1	Acetone	140	
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	9	J
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)		

EPA SAMPLE NO. 00010

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

7TK01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2220 SAS No.: _____ SDG No.: 3RB01

Matrix: (soil/water) WATER Lab Sample ID: AD2056

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AD2056

Level: (low/med) LOW Date Received: 12/05/94

% Moisture: not dec. ____ Date Analyzed: 12/10/94

GC Column: RTX624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.77	15	J

00044
EPA SAMPLE NO.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

7TK01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2220 SAS No.: SDG No.: 3RB01

Matrix: (soil/water) WATER Lab Sample ID: AD2057

Sample wt/vol: 1000 (g/mL) ML Lab File ID: AD2057

Level: (low/med) LOW Date Received: 12/05/94

% Moisture: decanted: (Y/N) Date Extracted: 12/07/94

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 12/09/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

EPA SAMPLE NO.

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

7TK01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2220 SAS No.: SDG No.: 3RB01

Matrix: (soil/water) WATER Lab Sample ID: AD2057

Sample wt/vol: 1000 (g/mL) ML Lab File ID: AD2057

Level: (low/med) LOW Date Received: 12/05/94

% Moisture: decanted: (Y/N) Date Extracted: 12/07/94

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 12/09/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

* 00046
EPA SAMPLE NO.

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

7TK01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2220 SAS No.: SDG No.: 3RB01

Matrix: (soil/water) WATER Lab Sample ID: AD2057

Sample wt/vol: 1000 (g/mL) ML Lab File ID: AD2057

Level: (low/med) LOW Date Received: 12/05/94

% Moisture: decanted: (Y/N) Date Extracted: 12/07/94

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 12/09/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 2

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	18.58	3	J
2.	UNKNOWN	21.28	2	J

00091
EPA SAMPLE NO.

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

7TK01

Lab Name: ITAS-KNOXVILLE Contract: _____

Lab Code: _____ Case No.: WO2220 SAS No.: _____ SDG No.: 7TK01

Matrix: (soil/water) WATER Lab Sample ID: AD2057

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) ___ Date Received: 12/05/94

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 12/07/94

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 12/19/94

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.10	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.50	U
72-43-5	Methoxychlor	0.10	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.050	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	5.0	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	2.0	U
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

7TK01

Lab Name: ITAS KNOXVILLE Contract: BAKER/LEJE SDG No.: N/A

Lab Code: ITSTU Case No.: 2220 SAS No.: Lab Sample ID: AD2058

Matrix (soil/water): WATER Date Received: 12/05/94

Level (low/med): LOW

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1130			P
7440-36-0	Antimony	50.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	23.5	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	14400			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	10.0	U		P
7440-50-8	Copper	10.0	U		P
7439-89-6	Iron	392			P
7439-92-1	Lead	3.0	U		P
7439-95-4	Magnesium	2380	B		P
7439-96-5	Manganese	7.6	B		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	20.0	U		P
7440-09-7	Potassium	2070	B		P
7782-49-2	Selenium	5.0	U		P
7440-22-4	Silver	5.0	U		P
7440-23-5	Sodium	19300			P
7440-28-0	Thallium	10.0	U		P
7440-62-2	Vanadium	10.0	U		P
7440-66-6	Zinc	61.1			P

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
80TK01

Lab Name: ITAS-KNOXVILLE Contract: BAKER
Lab Code: ITSTU Case No.: 2227 SAS No.: SDG No.: 274DRM
Matrix: (soil/water) WATER Lab Sample ID: AD2151
Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AD2151R
Level: (low/med) LOW Date Received: 12/06/94
% Moisture: not dec. Date Analyzed: 12/12/94
GC Column: RTX624 ID: 0.530 (mm) Dilution Factor: 1.0
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	3	BJ
67-64-1	Acetone	590	BE
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	7	BJ
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	2	J
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)		

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

80TK01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: _____ SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2151

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AD2151R

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: not dec. _____ Date Analyzed: 12/12/94

GC Column: RTX624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 3

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.70	46	J
2.	UNKNOWN ALKENE	14.27	10	J
3.	UNKNOWN	15.73	9	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
80TK01DL

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2151

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AD2151D2

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: not dec. Date Analyzed: 12/12/94

GC Column: RTX624 ID: 0.530 (mm) Dilution Factor: 5.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	50	U
74-83-9	Bromomethane	50	U
75-01-4	Vinyl Chloride	50	U
75-00-3	Chloroethane	50	U
75-09-2	Methylene Chloride	14	BDJ
67-64-1	Acetone	780	BD
75-15-0	Carbon Disulfide	50	U
75-35-4	1,1-Dichloroethene	50	U
75-34-3	1,1-Dichloroethane	50	U
540-59-0	1,2-Dichloroethene (total)	50	U
67-66-3	Chloroform	50	U
107-06-2	1,2-Dichloroethane	50	U
78-93-3	2-Butanone	39	BDJ
71-55-6	1,1,1-Trichloroethane	50	U
56-23-5	Carbon Tetrachloride	50	U
75-27-4	Bromodichloromethane	50	U
78-87-5	1,2-Dichloropropane	50	U
10061-01-5	cis-1,3-Dichloropropene	50	U
79-01-6	Trichloroethene	50	U
124-48-1	Dibromochloromethane	50	U
79-00-5	1,1,2-Trichloroethane	50	U
71-43-2	Benzene	50	U
10061-02-6	trans-1,3-Dichloropropene	50	U
75-25-2	Bromoform	50	U
108-10-1	4-Methyl-2-Pentanone	50	U
591-78-6	2-Hexanone	5	DJ
127-18-4	Tetrachloroethene	5	DJ
79-34-5	1,1,2,2-Tetrachloroethane	50	U
108-88-3	Toluene	50	U
108-90-7	Chlorobenzene	50	U
100-41-4	Ethylbenzene	50	U
100-42-5	Styrene	50	U
1330-20-7	Xylene (total)	50	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.: 80TK01DL

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: _____ SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2151

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AD2151D2

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: not dec. _____ Date Analyzed: 12/12/94

GC Column: RTX624 ID: 0.530 (mm) Dilution Factor: 5.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.70	49	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

80TK01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2152

Sample wt/vol: 1000 (g/mL) ML Lab File ID: AD2152

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: decanted: (Y/N) Date Extracted: 12/07/94

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 12/09/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	25	U
95-95-4	2,4,5-Trichlorophenol	10	U
91-58-7	2-Chloronaphthalene	25	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	25	U
99-09-2	3-Nitroaniline	10	U
83-32-9	Acenaphthene		

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

80TK01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2152

Sample wt/vol: 1000 (g/mL) ML Lab File ID: AD2152

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: decanted: (Y/N) Date Extracted: 12/07/94

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 12/09/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

80TK01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2152

Sample wt/vol: 1000 (g/mL) ML Lab File ID: AD2152

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: decanted: (Y/N) Date Extracted: 12/07/94

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 12/09/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

Number TICs found: 6

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	872-50-4	2-PYRROLIDINONE, 1-METHYL-	6.10	19	JN
2.		UNKNOWN	13.25	3	J
3.		UNKNOWN	13.43	3	J
4.		UNKNOWN	17.68	8	J
5.		UNKNOWN	19.20	2	J
6.		UNKNOWN	19.50	2	J

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

80TK01

Lab Name: ITAS-KNOXVILLE Contract: _____

Lab Code: _____ Case No.: WO2227 SAS No.: _____ SDG No.: 3TK01

Matrix: (soil/water) WATER Lab Sample ID: AD2152

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) ___ Date Received: 12/05/94

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 12/07/94

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 12/19/94

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

80TK01RE

Lab Name: ITAS-KNOXVILLE Contract: _____

Lab Code: _____ Case No.: WO2227 SAS No.: _____ SDG No.: 3TK01

Matrix: (soil/water) WATER Lab Sample ID: AD2152RE

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) ___ Date Received: 12/05/94

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 12/20/94

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 12/21/94

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.10	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.50	U
72-43-5	Methoxychlor	0.10	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.050	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	5.0	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	2.0	U
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

80TK01

Lab Name: ITAS KNOXVILLE Contract: BAKER/LEJE SDG No.: N/A

Lab Code: ITSTU Case No.: 2227 SAS No.: Lab Sample ID: AD2153

Matrix (soil/water): WATER Date Received: 09/12/93

Level (low/med): LOW

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	422			P
7440-36-0	Antimony	50.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	27.7	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	44100			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	10.0	U		P
7440-50-8	Copper	10.0	U		P
7439-89-6	Iron	344			P
7439-92-1	Lead	3.0	U		P
7439-95-4	Magnesium	3160	B		P
7439-96-5	Manganese	39.0			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	20.0	U		P
7440-09-7	Potassium	1640	B		P
7782-49-2	Selenium	5.0	U		P
7440-22-4	Silver	5.0	U		P
7440-23-5	Sodium	22200			P
7440-28-0	Thallium	10.0	U		P
7440-62-2	Vanadium	10.0	U		P
7440-66-6	Zinc	31.9			P

Color Before: ORANGE Clarity Before: CLOUDY Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
3TK01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: _____ SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2145

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AD2145R

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: not dec. ____ Date Analyzed: 12/12/94

GC Column: RTX624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	3	J
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	2	BJ
67-64-1	Acetone	270	BE
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	B
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	2	J
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	1	J
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	~~10~~ 1	U J

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.: 3TK01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: _____ SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2145

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AD2145R

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: not dec. _____ Date Analyzed: 12/12/94

GC Column: RTX624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.70	17	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
3TK01DL

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: _____ SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2145

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AD2145D

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: not dec. _____ Date Analyzed: 12/12/94

GC Column: RTX624 ID: 0.530 (mm) Dilution Factor: 2.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	9	DJ
74-83-9	Bromomethane	20	U
75-01-4	Vinyl Chloride	20	U
75-00-3	Chloroethane	20	U
75-09-2	Methylene Chloride	4	BDJ
67-64-1	Acetone	400	BD
75-15-0	Carbon Disulfide	20	U
75-35-4	1,1-Dichloroethene	20	U
75-34-3	1,1-Dichloroethane	20	U
540-59-0	1,2-Dichloroethene (total)	20	U
67-66-3	Chloroform	20	U
107-06-2	1,2-Dichloroethane	20	U
78-93-3	2-Butanone	11	BDJ
71-55-6	1,1,1-Trichloroethane	20	U
56-23-5	Carbon Tetrachloride	20	U
75-27-4	Bromodichloromethane	20	U
78-87-5	1,2-Dichloropropane	20	U
10061-01-5	cis-1,3-Dichloropropene	20	U
79-01-6	Trichloroethene	20	U
124-48-1	Dibromochloromethane	20	U
79-00-5	1,1,2-Trichloroethane	20	U
71-43-2	Benzene	20	U
10061-02-6	trans-1,3-Dichloropropene	20	U
75-25-2	Bromoform	20	U
108-10-1	4-Methyl-2-Pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	20	U
79-34-5	1,1,2,2-Tetrachloroethane	20	U
108-88-3	Toluene	20	U
108-90-7	Chlorobenzene	20	U
100-41-4	Ethylbenzene	20	U
100-42-5	Styrene	20	U
1330-20-7	Xylene (total)	20	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

3TK01DL

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: _____ SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2145

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AD2145D

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: not dec. _____ Date Analyzed: 12/12/94

GC Column: RTX624 ID: 0.530 (mm) Dilution Factor: 2.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	2.33	12	J
2.		UNKNOWN	4.73	41	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

3TK01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: _____ SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2146

Sample wt/vol: 1000 (g/mL) ML Lab File ID: AD2146

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 12/07/94

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 12/09/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	100	E

Reanalyze

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: 3TK01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: _____ SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2146

Sample wt/vol: 1000 (g/mL) ML Lab File ID: AD2146

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 12/07/94

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 12/09/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	45	
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	62	
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	150	E
120-12-7	Anthracene	10	
86-74-8	Carbazole	6	J
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	35	
129-00-0	Pyrene	26	
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	2	J
218-01-9	Chrysene	2	J
117-81-7	bis(2-Ethylhexyl)Phthalate	1	J
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

3TK01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: _____ SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2146

Sample wt/vol: 1000 (g/mL) ML Lab File ID: AD2146

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 12/07/94

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 12/09/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

Number TICs found: 23

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	7.57	2	J
2.		UNKNOWN	8.73	12	J
3.		UNKNOWN	9.33	4	J
4.		NAPHTHALENE, -DIMETHYL-	9.68	6	JY
5.		NAPHTHALENE, -DIMETHYL-	9.85	8	JY
6.		NAPHTHALENE, -DIMETHYL-	10.08	2	JY
7.		UNKNOWN	10.22	2	J
8.		UNKNOWN	10.73	6	J
9.		UNKNOWN PAH	11.93	6	J
10.		UNKNOWN	12.02	3	J
11.		UNKNOWN	12.12	5	J
12.		UNKNOWN	12.20	18	J
13.		UNKNOWN	12.62	2	J
14.		UNKNOWN PAH	12.75	2	J
15.		9H-FLUORENE, -METHYL-	13.00	3	JY
16.		UNKNOWN	13.58	2	J
17.	132-65-0	DIBENZOTHIOPHENE	13.67	5	JN
18.		UNKNOWN	14.08	6	J
19.		UNKNOWN PAH	14.52	3	J
20.		UNKNOWN PAH	15.17	3	J
21.		UNKNOWN PAH	15.23	3	J
22.		UNKNOWN PAH	15.47	12	J
23.		UNKNOWN PAH	17.27	12	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

3TK01DL

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2146

Sample wt/vol: 1000 (g/mL) ML Lab File ID: AD2146D

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: decanted: (Y/N) Date Extracted: 12/07/94

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 12/13/94

Injection Volume: 2.0 (uL) Dilution Factor: 3.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	30	U
111-44-4	bis(2-Chloroethyl)Ether	30	U
95-57-8	2-Chlorophenol	30	U
541-73-1	1,3-Dichlorobenzene	30	U
106-46-7	1,4-Dichlorobenzene	30	U
95-50-1	1,2-Dichlorobenzene	30	U
95-48-7	2-Methylphenol	30	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	30	U
106-44-5	4-Methylphenol	30	U
621-64-7	N-Nitroso-Di-n-Propylamine	30	U
67-72-1	Hexachloroethane	30	U
98-95-3	Nitrobenzene	30	U
78-59-1	Isophorone	30	U
88-75-5	2-Nitrophenol	30	U
105-67-9	2,4-Dimethylphenol	30	U
111-91-1	bis(2-Chloroethoxy)Methane	30	U
120-83-2	2,4-Dichlorophenol	30	U
120-82-1	1,2,4-Trichlorobenzene	30	U
91-20-3	Naphthalene	30	U
106-47-8	4-Chloroaniline	30	U
87-68-3	Hexachlorobutadiene	30	U
59-50-7	4-Chloro-3-Methylphenol	30	U
91-57-6	2-Methylnaphthalene	30	U
77-47-4	Hexachlorocyclopentadiene	30	U
88-06-2	2,4,6-Trichlorophenol	30	U
95-95-4	2,4,5-Trichlorophenol	75	U
91-58-7	2-Chloronaphthalene	30	U
88-74-4	2-Nitroaniline	75	U
131-11-3	Dimethylphthalate	30	U
208-96-8	Acenaphthylene	30	U
606-20-2	2,6-Dinitrotoluene	30	U
99-09-2	3-Nitroaniline	75	U
83-32-9	Acenaphthene	77	D

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

3TK01DL

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2146

Sample wt/vol: 1000 (g/mL) ML Lab File ID: AD2146D

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: decanted: (Y/N) Date Extracted: 12/07/94

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 12/13/94

Injection Volume: 2.0(uL) Dilution Factor: 3.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
51-28-5	2,4-Dinitrophenol	75	U
100-02-7	4-Nitrophenol	75	U
132-64-9	Dibenzofuran	37	D
121-14-2	2,4-Dinitrotoluene	30	U
84-66-2	Diethylphthalate	30	U
7005-72-3	4-Chlorophenyl-phenylether	30	U
86-73-7	Fluorene	54	D
100-01-6	4-Nitroaniline	75	U
534-52-1	4,6-Dinitro-2-methylphenol	75	U
86-30-6	N-Nitrosodiphenylamine (1)	30	U
101-55-3	4-Bromophenyl-phenylether	30	U
118-74-1	Hexachlorobenzene	30	U
87-86-5	Pentachlorophenol	75	U
85-01-8	Phenanthrene	120	D
120-12-7	Anthracene	8	DJ
86-74-8	Carbazole	5	DJ
84-74-2	Di-n-Butylphthalate	30	U
206-44-0	Fluoranthene	31	D
129-00-0	Pyrene	22	DJ
85-68-7	Butylbenzylphthalate	30	U
91-94-1	3,3'-Dichlorobenzidine	30	U
56-55-3	Benzo(a)Anthracene	30	U
218-01-9	Chrysene	30	U
117-81-7	bis(2-Ethylhexyl)Phthalate	30	U
117-84-0	Di-n-Octyl Phthalate	30	U
205-99-2	Benzo(b)Fluoranthene	30	U
207-08-9	Benzo(k)Fluoranthene	30	U
50-32-8	Benzo(a)Pyrene	30	U
193-39-5	Indeno(1,2,3-cd)Pyrene	30	U
53-70-3	Dibenz(a,h)Anthracene	30	U
191-24-2	Benzo(g,h,i)Perylene	30	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.: 3TK01DL

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: _____ SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2146

Sample wt/vol: 1000 (g/mL) ML Lab File ID: AD2146D

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 12/07/94

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 12/13/94

Injection Volume: 2.0 (uL) Dilution Factor: 3.0

GPC Cleanup: (Y/N) N pH: ____

Number TICs found: 10 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		ETHANOL, UNKNOWN ETHER SUBST	8.13	6	J
2.		UNKNOWN PAH	9.75	9	J
3.	~~569-41-5~~	NAPHTHALENE, -DIMETHYL-	10.97	8	JY
4.		UNKNOWN	11.90	8	J
5.		UNKNOWN	13.43	17	J
6.		UNKNOWN	13.88	8	J
7.	132-65-0	DIBENZOTHIOPHENE	15.00	8	JN
8.		UNKNOWN	15.42	10	J
9.	~~203-64-5~~	UNKNOWN PAH	16.85	11	J
10.		UNKNOWN	18.37	13	J

Rms 12/14/94

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

3TK01

Lab Name: ITAS-KNOXVILLE Contract: _____

Lab Code: _____ Case No.: WO2227 SAS No.: _____ SDG No.: 3TK01

Matrix: (soil/water) WATER Lab Sample ID: AD2146

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) ___ Date Received: 12/05/94

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 12/07/94

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 12/19/94

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.11	P
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

3TK01 ME

Lab Name: ITAS-KNOXVILLE Contract: _____

Lab Code: _____ Case No.: WO2227 SAS No.: _____ SDG No.: 3TK01

Matrix: (soil/water) WATER Lab Sample ID: AD2146RE

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) ___ Date Received: 12/05/94

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 12/20/94

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 12/21/94

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.13	P
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.22	
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

3TK01

Lab Name: ITAS_KNOXVILLE_____ Contract: BAKER/LEJE

Lab Code: ITSTU_ Case No.: 2227_ SAS No.: _____ SDG No.: N/A___

Matrix (soil/water): WATER

Level (low/med): LOW__

% Solids: __0.0

Lab Sample ID: AD2147

Date Received: 09/12/93

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	98100			P
7440-36-0	Antimony	50.0	U		P
7440-38-2	Arsenic	36.3			P
7440-39-3	Barium	534			P
7440-41-7	Beryllium	7.5			P
7440-43-9	Cadmium	10.8			P
7440-70-2	Calcium	362000			P
7440-47-3	Chromium	220			P
7440-48-4	Cobalt	23.7	B		P
7440-50-8	Copper	286			P
7439-89-6	Iron	72700			P
7439-92-1	Lead	72.0			P
7439-95-4	Magnesium	12800			P
7439-96-5	Manganese	650			P
7439-97-6	Mercury	0.46			CV
7440-02-0	Nickel	67.6			P
7440-09-7	Potassium	7540			P
7782-49-2	Selenium	9.7			P
7440-22-4	Silver	5.0	U		P
7440-23-5	Sodium	17500			P
7440-28-0	Thallium	10.0	U		P
7440-62-2	Vanadium	165			P
7440-66-6	Zinc	587			P

Color Before: ORANGE___ Clarity Before: CLOUDY Texture: N/A___

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

_____

_____

_____

_____

TCLP VOLATILES ANALYSIS

Laboratory Name:	Quanterra-Knoxville	Job Number:	2220
Contract Name:	Quanterra-Export	TCLP Date:	N/A
Client Sample ID:	3-RB-01	Analysis Date:	12/10/94
Lab Sample ID:	AD2064	Sample Matrix:	Soil
Concentration Units:	mg/liter (ppm) in the leachate		

Compound	Concentration	Qualifier	Detection Limit
benzene	0.025	U	0.025
carbon tetrachloride	0.025	U	0.025
chlorobenzene	0.005	J	0.025
chloroform	0.025	U	0.025
1,2-dichloroethane	0.025	U	0.025
1,1-dichloroethene	0.025	U	0.025
methyl ethyl ketone	0.075	+ -	0.050
tetrachloroethene	0.006	J	0.025
trichloroethene	0.025	U	0.025
vinyl chloride	0.050	U	0.050

+ - Positive result.
J - Indicates an estimated value less than the detection limit.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

TCLP SEMIVOLATILES ANALYSIS

Laboratory Name:	Quanterra-Knoxville	Job Number:	2220
Contract Name:	Quanterra-Export	TCLP Date:	N/A
Client Sample ID:	3-RB-01	Extraction Date:	12/07/94
Lab Sample ID:	AD2065	Analysis Date:	12/14/94
Concentration Units:	mg/liter (ppm) in the leachate	Sample Matrix:	Soil

Compound	Concentration	Qualifier	Detection Limit
total cresols	0.04	U	0.04
1,4-dichlorobenzene	0.04	U	0.04
2,4-dinitrotoluene	0.04	U	0.04
hexachlorobenzene	0.04	U	0.04
hexachloro-1,3-butadiene	0.04	U	0.04
hexachloroethane	0.04	U	0.04
nitrobenzene	0.04	U	0.04
pentachlorophenol	0.20	U	0.20
pyridine	0.40	U	0.40
2,4,5-trichlorophenol	0.20	U	0.20
2,4,6-trichlorophenol	0.04	U	0.04

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

TCLP PESTICIDES ANALYSIS

Laboratory Name:	Quanterra-Knoxville	Job Number:	2220
Contract Name:	Quanterra-Export	TCLP Date:	N/A
Client Sample ID:	3-RB-01	Extraction Date:	12/07/94
Lab Sample ID:	AD2065	Analysis Date:	12/08/94
Concentration Units:	mg/liter (ppm) in the leachate	Sample Matrix:	Leachate

Compound	Concentration	Qualifier	Detection Limit
lindane	0.008	U	0.008
heptachlor	0.001	U	0.001
heptachlor epoxide	0.001	U	0.001
endrin	0.004	U	0.004
methoxychlor	0.08	U	0.08
chlordane	0.006	U	0.006
toxaphene	0.1	U	0.1

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

TCLP HERBICIDES ANALYSIS

Laboratory Name:	Quanterra-Knoxville	Job Number:	2220
Contract Name:	Quanterra-Export	TCLP Date:	N/A
Client Sample ID:	3-RB-01	Extraction Date:	12/07/94
Lab Sample ID:	AD2065	Analysis Date:	12/08/94
Concentration Units:	mg/liter (ppm) in the leachate	Sample Matrix:	Soil

Compound	Concentration	Qualifier	Detection Limit
2,4-D	0.1	U	0.1
2,4,5-TP (silvex)	0.02	U	0.02

Surrogate Recovery	2,4-DCPA
Lab Sample ID: AD2065	89

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

3RB01T

Lab Name: ITAS_KNOXVILLE_____ Contract: BAKER/LEJE

Lab Code: ITSTU_ Case No.: 2220T_ SAS No.: _____ SDG No.: N/A___

Matrix (soil/water): WATER Lab Sample ID: AD2065

Level (low/med): LOW__ Date Received: 12/05/94

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	200	U		P
7440-39-3	Barium	538			P
7440-43-9	Cadmium	50.0	U		P
7440-47-3	Chromium	100	U		P
7439-92-1	Lead	200	U		P
7439-97-6	Mercury	2.0	U		CV
7782-49-2	Selenium	200	U		P
7440-22-4	Silver	50.0	U		P

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

T_IN_THE_SAMPLE_NO._DESIGNATES_TCLP_EXTRACT._____

PCBs ANALYSIS

Laboratory Name:	Quanterra-Knoxville	Job Number:	2220
Contract Name:	Quanterra-Export	Extraction Date:	12/06/94
Client Sample ID:	3-RB-01	Analysis Date:	12/08/94
Lab Sample ID:	AD2061	Confirmation Date:	N/A
Sample Matrix:	Soil	Concentration Units:	µg/kg

Compound	Concentration	Qualifier
Aroclor-1016	20	U
Aroclor-1232	20	U
Aroclor-1242 †	20	U
Aroclor 1248	20	U
Aroclor 1254	40	U
Aroclor 1260	40	U

† - Sample Aroclor pattern identified and/or calculated as Aroclor 1242.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Quanterra
Environmental Services

General Chemistry Analysis

CCO #A

Client Sample ID: AD2063
Sample Date: 12/03/94
Lab Sample ID: Q41211001

Analysis Date	Parameter	Concentration mg/Kg
12/14/94	Sulfide, Reactive*	ND500
12/15/94	Cyanide, Reactive*	ND250

Lab Sample ID: Method Blank

Analysis Date	Parameter	Concentration mg/Kg
12/14/94	Sulfide, Reactive*	ND500
12/15/94	Cyanide, Reactive*	ND250

* Results were determined by methodologies specified in SW-846, 3rd edition, 1986. These methods are prone to failure in both accuracy and reproducibility, therefore, we cannot assume any liability for these results. The reported detection limits are the EPA action levels for this analysis.

QUANTEI PITTSBURGH

BY: WAH 12-14-94

ANALYSIS SUMMARY
FOR OPEN CUP IGNITABILITY
Page 1 of 1

Method: ITS001
Reviewed by: AWC
Date: 12/14/94

Project Name: IT MIDDLEBROOK Project Number: PC4620

Work Order No.: Q4-12-110 Q4-12-141 Case/SDG Number: —

Date Analyzed	Laboratory Sample ID	Client Sample ID	Results
12-13-94	Q4121001	N/A	>140°F
	Q4121001 Dup		>140°F
	Q4121401		>140°F
	Q4121401 Dup		>140°F

ITS001 Method-Placing Sample in Tare with a Thermometer and Heating to 140°F to see if Ignition occurs.

pH ANALYSIS

Laboratory Name:	Quanterra-Knoxville	Job Number:	2220
Contract Name:	Quanterra-Export	Extraction Date:	N/A
Sample Matrix:	Soil	Analysis Date:	12/14/94
Concentration Units:	standard units (s.u.)		

Client Sample ID	Lab Sample ID	Result
3-RB-01	AD2061	11.21

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
274DRM01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2148

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AD2148R

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: not dec. Date Analyzed: 12/12/94

GC Column: RTX624 ID: 0.530 (mm) Dilution Factor: 20.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	200	U
74-83-9	Bromomethane	200	U
75-01-4	Vinyl Chloride	200	U
75-00-3	Chloroethane	200	U
75-09-2	Methylene Chloride	38	BJ
67-64-1	Acetone	34000	BE
75-15-0	Carbon Disulfide	200	U
75-35-4	1,1-Dichloroethene	200	U
75-34-3	1,1-Dichloroethane	200	U
540-59-0	1,2-Dichloroethene (total)	200	U
67-66-3	Chloroform	200	U
107-06-2	1,2-Dichloroethane	200	U
78-93-3	2-Butanone	100	BJ
71-55-6	1,1,1-Trichloroethane	200	U
56-23-5	Carbon Tetrachloride	200	U
75-27-4	Bromodichloromethane	200	U
78-87-5	1,2-Dichloropropane	200	U
10061-01-5	cis-1,3-Dichloropropene	200	U
79-01-6	Trichloroethene	200	U
124-48-1	Dibromochloromethane	200	U
79-00-5	1,1,2-Trichloroethane	200	U
71-43-2	Benzene	200	U
10061-02-6	trans-1,3-Dichloropropene	200	U
75-25-2	Bromoform	200	U
108-10-1	4-Methyl-2-Pentanone	200	U
591-78-6	2-Hexanone	200	U
127-18-4	Tetrachloroethene	200	U
79-34-5	1,1,2,2-Tetrachloroethane	200	U
108-88-3	Toluene	200	U
108-90-7	Chlorobenzene	200	U
100-41-4	Ethylbenzene	200	U
100-42-5	Styrene	200	U
1330-20-7	Xylene (total)	200	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

274DRM01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2148

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AD2148R

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: not dec. Date Analyzed: 12/12/94

GC Column: RTX624 ID: 0.530 (mm) Dilution Factor: 20.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.70	6900	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
274DRM01DL

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2148

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AD2148D

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: not dec. Date Analyzed: 12/15/94

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 250.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	2500	U
74-83-9	Bromomethane	2500	U
75-01-4	Vinyl Chloride	2500	U
75-00-3	Chloroethane	2500	U
75-09-2	Methylene Chloride	730	BDJ
67-64-1	Acetone	16000	D
75-15-0	Carbon Disulfide	2500	U
75-35-4	1,1-Dichloroethene	2500	U
75-34-3	1,1-Dichloroethane	2500	U
540-59-0	1,2-Dichloroethene (total)	2500	U
67-66-3	Chloroform	2500	U
107-06-2	1,2-Dichloroethane	2500	U
78-93-3	2-Butanone	2500	U
71-55-6	1,1,1-Trichloroethane	2500	U
56-23-5	Carbon Tetrachloride	2500	U
75-27-4	Bromodichloromethane	2500	U
78-87-5	1,2-Dichloropropane	2500	U
10061-01-5	cis-1,3-Dichloropropene	2500	U
79-01-6	Trichloroethene	2500	U
124-48-1	Dibromochloromethane	480	DJ
79-00-5	1,1,2-Trichloroethane	2500	U
71-43-2	Benzene	2500	U
10061-02-6	trans-1,3-Dichloropropene	2500	U
75-25-2	Bromoform	2500	U
108-10-1	4-Methyl-2-Pentanone	2500	U
591-78-6	2-Hexanone	2500	U
127-18-4	Tetrachloroethene	2500	U
79-34-5	1,1,2,2-Tetrachloroethane	2500	U
108-88-3	Toluene	2500	U
108-90-7	Chlorobenzene	2500	U
100-41-4	Ethylbenzene	2500	U
100-42-5	Styrene	2500	U
1330-20-7	Xylene (total)	2500	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.: 274DRM01DL

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: _____ SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2148

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AD2148D

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: not dec. _____ Date Analyzed: 12/15/94

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 250.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.70	8400	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

274DRM01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2149

Sample wt/vol: 1000 (g/mL) ML Lab File ID: AD2149

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: decanted: (Y/N) Date Extracted: 12/07/94

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 12/09/94

Injection Volume: 2.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
108-95-2	Phenol	20	U
111-44-4	bis(2-Chloroethyl)Ether	20	U
95-57-8	2-Chlorophenol	20	U
541-73-1	1,3-Dichlorobenzene	20	U
106-46-7	1,4-Dichlorobenzene	20	U
95-50-1	1,2-Dichlorobenzene	20	U
95-48-7	2-Methylphenol	20	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	20	U
106-44-5	4-Methylphenol	20	U
621-64-7	N-Nitroso-Di-n-Propylamine	20	U
67-72-1	Hexachloroethane	20	U
98-95-3	Nitrobenzene	20	U
78-59-1	Isophorone	20	U
88-75-5	2-Nitrophenol	20	U
105-67-9	2,4-Dimethylphenol	22	
111-91-1	bis(2-Chloroethoxy)Methane	20	U
120-83-2	2,4-Dichlorophenol	20	U
120-82-1	1,2,4-Trichlorobenzene	20	U
91-20-3	Naphthalene	20	U
106-47-8	4-Chloroaniline	20	U
87-68-3	Hexachlorobutadiene	20	U
59-50-7	4-Chloro-3-Methylphenol	20	U
91-57-6	2-Methylnaphthalene	20	U
77-47-4	Hexachlorocyclopentadiene	20	U
88-06-2	2,4,6-Trichlorophenol	20	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	20	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	20	U
208-96-8	Acenaphthylene	20	U
606-20-2	2,6-Dinitrotoluene	20	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	2	J

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

274DRM01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2149

Sample wt/vol: 1000 (g/mL) ML Lab File ID: AD2149

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: decanted: (Y/N) Date Extracted: 12/07/94

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 12/09/94

Injection Volume: 2.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	20	U
121-14-2	2,4-Dinitrotoluene	20	U
84-66-2	Diethylphthalate	4	J
7005-72-3	4-Chlorophenyl-phenylether	20	U
86-73-7	Fluorene	20	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	20	U
101-55-3	4-Bromophenyl-phenylether	20	U
118-74-1	Hexachlorobenzene	20	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	6	J
120-12-7	Anthracene	20	U
86-74-8	Carbazole	20	U
84-74-2	Di-n-Butylphthalate	20	U
206-44-0	Fluoranthene	20	U
129-00-0	Pyrene	20	U
85-68-7	Butylbenzylphthalate	20	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	20	U
218-01-9	Chrysene	20	U
117-81-7	bis(2-Ethylhexyl)Phthalate	7	J
117-84-0	Di-n-Octyl Phthalate	20	U
205-99-2	Benzo(b)Fluoranthene	20	U
207-08-9	Benzo(k)Fluoranthene	20	U
50-32-8	Benzo(a)Pyrene	20	U
193-39-5	Indeno(1,2,3-cd)Pyrene	20	U
53-70-3	Dibenz(a,h)Anthracene	20	U
191-24-2	Benzo(g,h,i)Perylene	20	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
274DRM01

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 2227 SAS No.: _____ SDG No.: 274DRM

Matrix: (soil/water) WATER Lab Sample ID: AD2149

Sample wt/vol: 1000 (g/mL) ML Lab File ID: AD2149

Level: (low/med) LOW Date Received: 12/06/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 12/07/94

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 12/09/94

Injection Volume: 2.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: ____

Number TICs found: 24

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	7.27	42	J
2.		UNKNOWN	9.05	47	J
3.		UNKNOWN	11.23	150	J
4.	134-62-3	BENZAMIDE, N,N-DIETHYL-3-MET	11.48	37	JN
5.		UNKNOWN	11.73	94	J
6.	4536-87-2	BENZENE, (1-ETHYLNONYL)-	12.30	22	JN
7.	4536-88-3	BENZENE, (1-METHYLDECYL)-	12.70	22	JN
8.		UNKNOWN	13.30	43	J
9.		UNKNOWN	13.43	72	J
10.		UNKNOWN	13.88	36	J
11.		UNKNOWN	15.40	24	J
12.		UNKNOWN	15.63	82	J
13.		UNKNOWN	15.93	33	J
14.		UNKNOWN	17.43	67	J
15.		UNKNOWN	17.68	300	J
16.		UNKNOWN	18.35	22	J
17.		UNKNOWN	19.02	57	J
18.		UNKNOWN	19.18	63	J
19.		UNKNOWN	19.62	76	J
20.		UNKNOWN	20.18	92	J
21.		UNKNOWN	20.40	21	J
22.		UNKNOWN	20.72	79	J
23.		UNKNOWN	21.27	59	J
24.		UNKNOWN	21.83	41	J

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

274DRM01

Lab Name: ITAS-KNOXVILLE Contract: _____

Lab Code: _____ Case No.: WO2227 SAS No.: _____ SDG No.: 3TK01

Matrix: (soil/water) WATER Lab Sample ID: AD2149

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) ___ Date Received: 12/05/94

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 12/07/94

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 12/19/94

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.11	
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
274DRM01RE

Lab Name: ITAS-KNOXVILLE Contract: _____

Lab Code: _____ Case No.: WO2227 SAS No.: _____ SDG No.: 3TK01

Matrix: (soil/water) WATER Lab Sample ID: AD2149RE

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) ___ Date Received: 12/05/94

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 12/20/94

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 12/21/94

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

74DRM01

Lab Name: ITAS_KNOXVILLE_____ Contract: BAKER/LEJE

Lab Code: ITSTU_ Case No.: 2227_ SAS No.: _____ SDG No.: N/A___

Matrix (soil/water): WATER Lab Sample ID: AD2150

Level (low/med): LOW__ Date Received: 09/12/93

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	24500			P
7440-36-0	Antimony	50.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	57.4	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	12600			P
7440-47-3	Chromium	51.4			P
7440-48-4	Cobalt	10.0	U		P
7440-50-8	Copper	18.7	B		P
7439-89-6	Iron	49600			P
7439-92-1	Lead	29.9			P
7439-95-4	Magnesium	1540	B		P
7439-96-5	Manganese	292			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	29.5	B		P
7440-09-7	Potassium	16500			P
7782-49-2	Selenium	9.2			P
7440-22-4	Silver	5.0	U		P
7440-23-5	Sodium	39400			P
7440-28-0	Thallium	10.0	U		P
7440-62-2	Vanadium	34.2	B		P
7440-66-6	Zinc	1390			P

Color Before: ORANGE___ Clarity Before: CLOUDY Texture: N/A___

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

_____

_____

_____

_____

APPENDIX D.2
IDW DISPOSAL SUMMARY

Baker

Baker Environmental, Inc.
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108

(412) 269-6000
FAX (412) 269-2002

February 20, 1995

Commander
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Building N-26)
Norfolk, Virginia 23511-6299

Attn: Ms. Katherine Landman
Code 1823

Re: Contract N62470-89-D-4814
Navy CLEAN, District III
Contract Task Order (CTO) 0274
Operable Units No. 8, 11, and 12
Sites 3, 7, 16, and 80 IDW Removal
MCB Camp Lejeune, North Carolina

Dear Ms. Landman:

This letter report presents a summary of investigation-derived waste (IDW) disposal activities at Sites 3, 7, 16, and 80, Marine Corps Base, Camp Lejeune, North Carolina. The IDW generated during the remedial investigation conducted from October 10, 1994 through December 4, 1994, was contained in roll-off boxes, 1000 gallon tanks, and 55-gallon drums.

In a letter dated January 19, 1995, Baker Environmental provided the sample collection, analytical findings, conclusions and recommendations with respect to the IDW handling and disposal. The recommendations were subsequently approved by the Navy/Marine Corps. The remainder of this letter report provides a summary of the disposal activities conducted under this CTO.

DISPOSAL

Based on LANTDIV/MCB Camp Lejeune approval, Baker arranged for the disposal of the following:

- 3,850 gallons of nonhazardous well development and purge water
- 400 gallons of nonhazardous decontamination fluids
- 40 cubic feet of drilling mud

Based on the nonhazardous determination, all IDW was deposited back onto the site inwhich it was generated.

In addition, Baker arranged for Four Seasons Inc., (IDW subcontractor) to remove nine (9) liters of waste methanol from Lot 203. This waste was generated during the EnSys investigation performed at Site 3. The subcontractor was also required to transport the waste methanol to Ecoflo Inc., a licensed Treatment Storage Disposal Facility (TSDF) located in Greensboro, North Carolina. The signed hazardous waste manifest, along with the material characterization form, land disposal restrictions notification and certification form, lab pack certification, and drum inventories are provided in Attachment A.

If you have any questions, please do not hesitate to call me at (412) 269-2053 or Raymond P. Wattras (Activity Coordinator) at (412) 269-2016.

Sincerely,

BAKER ENVIRONMENTAL, INC.

Matthew D. Bartman
Project Manager

MDB/lq

cc: Mr. Neal Paul
Mr. John Riggs
Ms. Lee Ann Rapp, Code 183 (w/o attachments)
Ms. Beth Collier, Code 02115(w/o attachments)

ATTACHMENT A
HAZARDOUS WASTE MANIFEST AND CORRESPONDING DOCUMENTATION

NORTH CAROLINA HAZARDOUS WASTE MANIFEST

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)*

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: N C 6 1 7 0 0 2 2 5 8 0 1 — Manifest Document No.: 1 0 0 1 8

2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Commanding General AC/EMD/IR
Marine Corp Base - Camp Lejeune PSC 2004
Camp Lejeune, NC 28542-004

4. Generator's Phone (910) 451-5068

A. State Manifest Document Number:

B. State Generator's ID:

5. Transporter 1 Company Name: Four Seasons Environmental, Inc.

6. US EPA ID Number: N C D 9 9 1 2 7 7 7 3 2

C. State Transporter's ID:

D. Transporter's Phone: (910)273-2718

7. Transporter 2 Company Name:

8. US EPA ID Number:

E. State Transporter's ID:

F. Transporter's Phone:

9. Designated Facility Name and Site Address
Ecoflo, Inc.
2750 Patterson St.
Greensboro, NC 27407

10. US EPA ID Number: N C D 9 8 0 8 4 2 1 3 2

G. State Facility's ID:

H. Facility's Phone: (910)855-7925

11. US DOT Description *(Including Proper Shipping Name, Hazard Class, and ID Number)*	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste, Flammable Liquids, n.o.s. (methanol), 3, UN 1993, PG II	0 0 2	D F	0 0 0 4 4	P	F003, D001
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above
a) Lab Pack - See attached container inventories for container numbers MCB-01 and MCB-02

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Bill to : FSE PO Box 16590 Greensboro, NC 27416
Attn: K. Webb

24 Hour Emergency Phone: (910)273-2718
HAZ MAT Guide Number: 27

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment: OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name: Eugene H Jones — Signature: [signature] — Month Day Year: 10 20 3 95

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Kenneth Webb — Signature: [signature] — Month Day Year: 10 20 3 95

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name: — Signature: — Month Day Year:

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator. Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: — Signature: — Month Day Year:

EPA Form 8700-22 (Rev. 11-88) Previous editions are obsolete.

INSTRUCTIONS ON BACK SHEET

ECOFLO

Specialists in chemical and environmental management

Greensboro, NC (910) 855-7925
Savage, MD (301) 498-4550

Four Seasons Industrial Services, Inc.
P. O. Box 16590
Greensboro, NC 27416-0590
Attn: Kenn Webb

TO BE COMPLETED BY ECOFLO
E-Code No. _____
Sales Rep. _____
Sample ☐ Yes ☐ No

MATERIAL CHARACTERIZATION FORM

SECTION A: GENERATOR INFORMATION

1) Name: Commanding General AC/EMD/IR
2) Mailing Address: Marine Corp Base - Camp Lejeune
TSC 2004 Camp Lejeune, NC 28542-0004
3) Facility Address: Lot 203 - MCB Camp Lejeune
Camp Lejeune, NC 28542
4) Technical Contact: Kenn Webb
5) Title: Four Seasons Project Mgr
6) Phone: (704) 332-7636 Ext.
7) FAX Num.: (704) 332-7436
8) EPA I.D.#: NC 617 00 22 580

SECTION B: WASTE IDENTIFICATION

1) Waste Name: Lab Pack - Methanol and Water
2) Process Generating Waste: Decontamination Activities
3) Waste Code(s): EPA F003, D001 STATE _____
4) Source Code (See Reverse Page): A19 5) Form Code (See Reverse Page): B003 6) SIC Code: 9711

SECTION C: WASTE CHARACTERISTICS

1) PHYSICAL STATE at 70°F: ☐ Solid ☒ Liquid ☐ Gas Describe: _____
2) LAYERS: ☐ Multilayered ☐ Bilayered ☒ None 3) VISCOSITY at 70°F: ☒ Low ☐ Medium ☐ High
4) % TOTAL SOLIDS: varies % Describe: _____
5) BTU/lb. varies 6) pH varies 7) COLOR varies
8) FLASH POINT (CC): ☐ < 73°F ☒ 73° - 100°F ☐ 101° - 140°F ☐ 141° - 200°F ☐ > 200°F Exact: _____ °F
9) BOILING POINT: ☐ ≤ 95°F ☐ > 95°F 10) REACTIVE: ☐ Yes ☒ No Describe: _____
11) % TOTAL ORGANIC HALOGENS 0 Cl ☐ I ☐ F ☐ Br ☐ 12) CYANIDES: 0 ppm 13) PCB: 0 ppm
14) METALS (☐ TCLP ☐ TOTAL ☒ Below Regulatory Levels):
As _____ppm Ba _____ppm Cd _____ppm Cr _____ppm Pb _____ppm Hg _____ppm
Se _____ppm Ag _____ppm Sb _____ppm Tl _____ppm Ni _____ppm Be _____ppm

SECTION D: CHEMICAL CONSTITUENTS (must equal 100% and represent all constituents)

Lab Pack 100 %
See Drum Inventory Attached

IF UNUSED/VIRGIN MATERIAL PLEASE SUBMIT MSDS

SECTION E: SAFETY DATA

1) HAZARD ALERT SYMBOL
2 HEALTH
3 FLAMMABILITY
1 REACTIVITY

2) RATED TOXICITY:
2 Ingestion
2 Inhalation
1 Skin Absorption

3) INCOMPATIBILITIES: Oxidizers, heat Flame

SECTION F: RECERTIFICATION

I certify that this waste stream has not changed.
Signature NA
Date _____ Title _____

SECTION G: WASTE VOLUME

1) ANTICIPATED VOLUME/CONTAINER COUNT: 2 Gal / Lbs / (Drums) Cu.Yds. (Circle One)
per ☒ One Time ☐ Week ☐ Month ☐ Quarter ☐ Year ☐ Other _____
2) SIZE OF CONTAINER (5) / 10 / 20 / 30 / 40 / 55 / 85 gal. (Circle One). ☐ Other _____
3) CONTAINER SPEC.: ☒ Open Head Drum ☐ Closed Head Drum ☐ Lever Lock ☐ Roll-Off ☐ Pallet ☐ Tanker ☐ Tote Tank ☐ Super Sac
4) TYPE OF CONTAINER: ☒ Metal Drum or ☒ Poly Drum ☐ Polylined Metal Drum ☐ Wooden Box ☐ Fiber Drum or ☒ Fiber Box ☐ Polylined Fiber Drum ☐ Cylinder

SECTION H: SHIPPING INFORMATION SECTION (To Be Completed by W.A. Dept.)

PSN: _____
CLASS/DIV.: _____ UN/NA#: _____ PG: _____ Unspecified Labels: _____
RQ: _____ PIH (Yes/No) HAZARD ZONE: _____

SECTION I: CERTIFICATION

I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIAL IS NONRADIOACTIVE AND NONETIOLOGICAL/NONINFECTIOUS. I FURTHER CERTIFY THAT ALL INFORMATION SUBMITTED IN THIS AND ALL ATTACHED DOCUMENTS IS COMPLETE AND ACCURATE AND THAT ALL KNOWN OR SUSPECTED HAZARDS HAVE BEEN DISCLOSED.
IN ADDITION, I AUTHORIZE ECOFLO, INC., TO MAKE CORRECTIONS TO THIS MATERIAL CHARACTERIZATION FORM, SUCH CORRECTIONS TO BE CONSISTENT WITH THE RESULTS OF SAMPLE CHARACTERIZATION, AND/OR REGULATORY REQUIREMENTS. I UNDERSTAND THAT A COPY WILL BE SENT TO ME.

AUTHORIZED SIGNATURE

Biological Scientific Tech
TITLE

2/3/93
DATE

ORIGINAL

ECOFLO LAND DISPOSAL RESTRICTIONS NOTIFICATION AND CERTIFICATION FORM

Generator Name: MCB - Camp Lejeune

Manifest Doc. No.: ~~N~~ I 1008

Generator USEPA ID No. NC6170022580

State Manifest No.:

INSTRUCTIONS: In Column 1, identify all USEPA hazardous waste codes that apply to this waste shipment. In Column 2, indicate the appropriate Treatability Group Non-WasteWater (NWW) or WasteWater (WW) for each waste code. Place a check in Column 3 if the waste is California Listed. Also, check the appropriate California List constituent in Table - 2. In Coulmn 4, enter the appropriate Subcategory Key # from Table - 4, if applicable, and also ente "Debris" in Column 4 if the waste is debris that will be treated using one of the alternative treatment technologies provided by 268.45. In Colum 5, reference the appropriate Waste Management paragraph(s) from Table - 3 of this form. In Column 6, enter the Reference Number or Numbers fror Table - 1 for all regulated constituents associated with F001-F005, F039, D001, D002 and D012-D043. Also, if the waste is a debris, enter i Column 6 the Reference Number or Numbers from Table - 1 of the contaminants subject to treatment.

☐ Check this box if using a continuation sheet.

REF #	1. WASTE CODE	2. TREAT GROUP	3. CALIF LISTED	4. SUBCATEGORY	5. WASTE MANAGEMENT	6. REGULATED CONSTITUENTS
1	F003	NWW	NA	19	A	131
2	D001	NWW	NA	~~High~~ 1	A	131
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

I hereby certify that all information submitted in this and all associated documents is complete and accurate to the best of my knowledge and information

Signature: Eugene A Jones

Title: Biological Scientist

Print Name: Eugene A Jones

Date: 2/3/95

ECOFLO LAB PACK CERTIFICATION

Generator Name: Marine Corp Base - Camp Lejeune

Manifest Doc. No.: F 1008

EPA ID Number: NC617 002 2580

State Manifest Doc. No.: _____

If your waste is packaged in lab packs and does NOT include waste codes listed on Appendix IV (see below), the following certification must be completed and the respective container numbers listed. Use additional sheets if necessary. If any lab pack containers INCLUDE waste codes listed in Appendix IV, the LDR Notification and Certification Form must be completed for those containers and the corresponding waste codes.

☐ Check this box if using a continuation sheet.

Container number(s):

MCB-01	MCB-02						

APPENDIX IV

D009	K004	K062	K106	P012	U134
F019	K005	K071	P010	P076	U151
K003	K006	K100	P011	P078	

I certify under penalty of law that I personally have examined and am familiar with the waste and that the lab pack does contain any wastes identified at 268.42(c)(2). I am aware that there are significant penalties for submitting a false certifica including the possibility of fine or imprisonment.

Signature: _____ Print Name: Eugene A Jones Date: 2/3/95

Table 1 - Regulated Constituents

#	CONSTITUENT	#	CONSTITUENT	#	CONSTITUENT
115	Heptachlor	150	2-Nitropropane	185	Toluene
116	Heptachlor epoxide	151	N-Nitrosodiethylamine	186	Toxaphene
117	Hexachlorobenzene	152	N-Nitrosodimethylamine	187	Tribromomethane (Bromoform)
118	Hexachlorobutadiene	153	N-Nitroso-di-n-butylamine	188	1,2,4-Trichlorobenzene
119	Hexachlorodibenzo-furans	154	N-Nitrosomethylethylamine	189	1,1,1-Trichloroethane
120	Hexachlorodibenzo-p-dioxins	155	N-Nitrosomorpholine	190	1,1,2-Trichloroethane
121	Hexachlorocyclopentadiene	156	N-Nitrosopiperidine	191	Trichloroethylene
122	Hexachloroethane	157	N-Nitrosopyrrolidine	192	Trichloromonofluoromethane
123	Hexachloropropylene	158	Parathion	193	2,4,5-Trichlorophenol
124	Indeno (1,2,3-c,d)pyrene	159	Pentachlorobenzene	194	2,4,6-Trichlorophenol
125	Iodomethane	160	Pentachlorodibenzo-furans	195	1,2,3-Trichloropropane
126	Isobutyl alcohol	161	Pentachlorodibenzo-p-dioxins	196	1,1,2-Trichloro-1,2,2-trifluoroethane
127	Isodrin	162	Pentachloroethane	197	Vinyl chloride
128	Isosafrole	163	Pentachloronitrobenzene	198	Xylenes (Total)
129	Kepone	164	Pentachlorophenol	199	Total PCB's
130	Methacrylonitrile	165	Phenacetin	200	Antimony
131	Methanol	166	Phenanthrene	201	Arsenic
132	Methapyrilene	167	Phenol	202	Barium
133	Methoxychlor	168	Phorate	203	Beryllium
134	3-Methylcholanthrene	169	Phthalic acid	204	Cadmium
135	4,4-Methylene-bis-(2-chloroaniline)	170	Phthalic anhydride	205	Chromium (Total)
136	Methylene chloride	171	Pronamide	206	Cyanide (Total)
137	Methyl ethyl ketone	172	Propanenitrile (Ethyl cyanide)	207	Cyanide (Amenable)
138	Methyl isobutyl ketone	173	Pyrene	208	Fluoride
139	Methyl methacrylate	174	Pyridine	209	Lead
140	Methyl methansulfonate	175	Safrole	210	Mercury - NWW from Retort
141	Methyl parathion	176	Silvex (2,4,5-TP)	211	Mercury - All Others
142	Naphthalene	177	2,4,5-T	212	Nickel
143	2-Naphthylamine	178	1,2,4,5-Tetrachlorobenzene	213	Selenium
144	p-Nitroaniline	179	Tetrachlorodibenzo-furans	214	Silver
145	o-Nitroaniline	180	Tetrachlorodibenzo-p-dioxins	215	Sulfide
146	Nitrobenzene	181	1,1,1,2-Tetrachloroethane	216	Thallium
147	5-Nitro-o-toluidine	182	1,1,2,2-Tetrachloroethane	217	Vanadium
148	o-Nitrophenol	183	Tetrachloroethylene	218	Zinc
149	p-Nitrophenol	184	2,3,4,6-Tetrachlorophenol		

Table 2 - California Listed Waste

____ 1) Liquid PCB's ≥ 50 ppm ____ 2) Halogenated organic carbon (HOC's) ≥ 1000 mg/l ____ 3) Free Cyanides (Liquids) ≥ 1000 mg/l

____ 4) Nickel (Ni) ≥ 134 mg/l ____ 5) Thallium (Tl) ≥ 130 mg/l

Table 1 - Regulated Constituents

#	CONSTITUENT	#	CONSTITUENT	#	CONSTITUENT
1	Acenaphthylene	39	p-Chloroaniline	77	trans-1,2-Dichloroethylene
2	Acenaphthene	40	Chlorobenzene	78	2,4-Dichlorophenol
3	Acetone	41	Chlorobenzilate	79	2,6-Dichlorophenol
4	Acetonitrile	42	2-Chloro-1,3-butadiene	80	1,2-Dichloropropane
5	Acetophenone	43	Chlorodibromomethane	81	cis-1,3-Dichloropropylene
6	2-Acetylaminofluorene	44	Chloroethane	82	trans-1,3-Dichloropropylene
7	Acrolein	45	Chloroform	83	Dieldrin
8	Acrylamide	46	p-Chloro-m-cresol	84	Diethyl phthalate
9	Acrylonitrile	47	2-Chloroethyl vinyl ether	85	2,4-Dimethyl phenol
10	Aldrin	48	Chloromethane (methyl chloride)	86	Dimethyl phthalate
11	4-Aminobiphenyl	49	2-Chloronaphthalene	87	Di-n-butyl phthalate
12	Aniline	50	2-Chlorophenol	88	1,4-Dinitrobenzene
13	Anthracene	51	3-Chloropropylene	89	4,6-Dinitro-o-cresol
14	Aramite	52	Chrysene	90	2,4-Dinitrophenol
15	alpha-BHC	53	p-Cresol	91	2,4-Dinitrotoluene
16	beta-BHC	54	m-Cresol	92	2,6-Dinitrotoluene
17	delta-BHC	55	o-Cresol	93	Di-n-octyl phthelate
18	gamma-BHC	56	Cyclohexanone	94	Di-n-propylnitrosamine
19	Benz(a)anthracene	57	2,4-Dichlorophenoxyacetic acid (2,4-D)	95	Diphenylamine
20	Benzal chloride	58	o,p'-DDD	96	1,2-Diphenylhydrazine
21	Benzene	59	p,p'-DDD	97	Diphenylnitrosamine
22	Benzo(a)pyrene	60	o,p'-DDE	98	1,4-Dioxane
23	Benzo(b)fluoranthene	61	p,p'-DDE	99	p-Dimethylaminoazobenzene
24	Benzo(g,h,i)perylene	62	o,p'-DDT	100	Disulfoton
25	Benzo(k)fluoranthene	63	p,p'-DDT	101	Endosulfan I
26	bis-(2-Chloroethoxy)methane	64	Dibenzo(a,e)pyrene	102	Endosulfan II
27	bis-(2-Chloroethyl) ether	65	Dibenzo(a,h)anthracene	103	Endosulfan sulfate
28	bis-(2-Chloroisopropyl)ether	66	tris-(2,3-Dibromopropyl) phosphate	104	Endrin
29	bis-(2-Ethylhexyl) phthalate	67	1,2-Dibromo-3-chloropropane	105	Endrin aldehyde
30	Bromodichloromethane	68	1,2-Dibromoethane (ethylene dibromide)	106	2-Ethoxyethanol
31	Bromomethane (methyl bromide)	69	Dibromomethane	107	Ethyl acetate
32	4-Bromophenyl phenyl ether	70	m-Dichlorobenzene	108	Ethyl benzene
33	n-Butyl alcohol	71	o-Dichlorobenzene	109	Ethyl ether
34	Buthyl benzyl phthalate	72	p-Dichlorobenzene	110	Ethyl methacrylate
35	2-sec-Butyl-4,6-dinitrophenol(Dinoseb)	73	Dichlorodifluoromethane	111	Ethylene oxide
36	Carbon disulfide	74	1,1-Dichloroethane	112	Famphur
37	Carbon tetrachloride	75	1,2-Dichloroethane	113	Fluoranthene
38	Chlordane (alpha & gamma isomers)	76	1,1-Dichloroethylene	114	Fluorene

Table 3 - Waste Management

(A) THIS RESTRICTED WASTE REQUIRES TREATMENT TO THE APPLICABLE STANDARD

This waste must be treated to the applicable treatment standard set forth in 40 CFR Part 268 Subpart D, 268.32, or RCRA Section 3004(d) prior to land disposal.

B THIS RESTRICTED WASTE HAS BEEN TREATED TO THE PERFORMANCE STANDARDS

I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and that, based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the performance levels specified in 40 CFR Part 268 Subpart D, and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA Section 3004(d) without impermissible dilution of the prohibited waste. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

C THIS RESTRICTED WASTE, FOR WHICH THE TREATMENT STANDARD IS EXPRESSED AS A SPECIFIED TECHNOLOGY, HAS BEEN TREATED BY THE SPECIFIED TECHNOLOGY

I certify under penalty of law that the waste has been treated in accordance with the requirements of 40 CFR 268.42. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

D. THIS RESTRICTED WASTE CAN BE LAND DISPOSED WITHOUT FURTHER TREATMENT

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified is 40 CFR Part 268 Subpart D and all applicable prohibitions set forth on 40 CFR 268.32 or RCRA Section 3004(d). I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification including the possibility of a fine and imprisonment.

E. THIS RESTRICTED DEBRIS HAS BEEN TREATED IN ACCORDANCE WITH 40 CFR 268.45

I certify under penalty of law that the debris has been treated in accordance with the requirements of 40 CFR 268.4 I am aware that there are significant penalties for making a false certification, including the possibility of fine a imprisonment.

Table 4 - Subcategories

WASTE CODES	KEY #	SUBCATEGORY
D001	1	High TOC ignitable liquids (High TOC NWW).
	2	Low TOC ignitable liquids managed in CWA, CWA-equivalent or Class 1 SDWA systems.
	3	Low TOC ignitable liquids not managed in CWA, CWA-equivalent, or Class 1 SDWA systems.
D002	4	Corrosive waste managed in CWA, CWA-equivalent, or Class 1 SDWA systems.
	5	Corrosive waste not managed in CWA, CWA-equivalent, or Class 1 SDWA systems.
D003	6	Reactive sulfides
	7	Explosives.
	8	Other reactives.
	9	Wastes reactives
	10	Reactive cyanides.
D006	11	Cadmium.
	12	Cadmium containing batteries.
D008	13	Lead.
	14	Lead acid batteries.
D009	15	High mercury NWW's ≥ 260 ppm with organics (and are not incinerator residues).
	16	High mercury NWW's ≥ 260 ppm with inorganics (including incinerator residues and residues from RMERC).
	17	Low mercury NWW's ≤ 260 ppm.
	18	All D009 WW's
F003 F005	19	Wastes that contain any combination of one or more of the following solvents as the only listed F001-5 solvents: carbon disulfide, cyclohexanone, and/or methanol.
F005	20	Containing 2-Nitropropane as the only F001-5 solvent.
	21	Containing 2-Ethoxyethenol as the only F001-5 solvent.
F025	22	Light Ends.
	23	Spent filters/aids and desiccants.
K006	24	Anhydrous.
	25	Hydrated.
K069	26	--- Calcium Sulfate (low Lead).
	27	Non-Calcium Sulfate (High Lead).
K071	28	Residues from RMERC.
	29	Other nonwastewaters.
	30	All K071 wastewaters.
K106	31	NWW's containing ≥ 260 ppm total mercury.
	32	Residues from RMERC < 260 ppm total mercury.
	33	Other nonwastewaters < 260 ppm total mercury.
	34	All K106 wastewaters.
P047	35	4,6-Dinitro-o-cresol
	36	4,6-Dinitro-o-cresol salts
P065	37	Nonwastewaters, not incinerator or RMERC residues.
	38	Nonwastewaters from incinerator or RMERC residues containing ≥ 260 ppm mercury.
	39	Nonwastewaters from RMERC residues containing < 260 ppm mercury.
	40	Nonwastewaters from incinerator residues containing < 260 ppm mercury.
	41	All P065 wastewaters.
P092	42	Nonwastewaters, not incinerator or RMERC residues.
	43	Nonwastewaters from incineration or RMERC containing ≥ 260 ppm total mercury.
	44	Nonwastewaters from RMERC residues containing ≤ 260 ppm total mercury.
	45	Nonwastewaters from incinerator residues containing ≤ 260 ppm total mercury.
	46	All P092 wastewaters.
U151	47	Nonwastewaters containing ≥ 260 ppm total mercury.
	48	Nonwastewaters from RMERC residues only, containing < 260 ppm total mercury.
	49	Nonwastewaters not from RMERC residues containing < 260 ppm total mercury.
	50	All U151 wastewaters.
U240	51	2,4-D (2,4-Dichlorophenoxyacetic acid).
	52	2,4-D salts and esters.

ECOFLO

DRUM INVENTORY

JOB# 95- ACCEPT. CODE

DRUM# MCB-02 HANDLING CODE

E-CODE

GENERATOR Marine Corp Base - Camp Lejeune DATE 1/24/95 MANIFEST# I1008

PROPER SHIPPING NAME Waste, Flammable Liquids, nos. (Methanol) UN/NA# UN1993

HAZARD CLASS Class 3, PG II DRUM TYPE (DA) ~~DM~~ 5gal SHIPPING WT./CU. FT.

QUANTITY	SUBSTANCE	EPA CODE	PHYS. STATE	CONT. TYPE	COMMENTS
~~5 x 1 Liter~~	Methyl alcohol with water	F003	Liquid	glass	
4 x 1 Liter		D001	-		

1/24/95 REVIEWER

ECOFLO

DRUM INVENTORY

PAGE 1 OF 1

JOB# 95- ACCEPT. CODE

DRUM# MCB-01 HANDLING CODE

E-CODE

GENERATOR Marine Corp Base - Camp Lejeune DATE 1/24/95 MANIFEST# I1008

PROPER SHIPPING NAME Waste, Flammable Liquids, n.o.s. (Methanol) UN/NA# UN 1993

HAZARD CLASS Class 3, PG II DRUM TYPE (DA) ~~DM~~ 5 gal SHIPPING WT./CU. FT.

QUANTITY	SUBSTANCE	EPA CODE	PHYS. STATE	CONT. TYPE	COMMENTS
~~5 x 1 Liter~~	Methyl Alcohol with Water	F003	Liquid	glass	
4 x 1 Liter		D001			
1 x 1/2 Liter					

PACKER Webb REVIEWER

APPENDIX D.3
ADDITIONAL IDW SUMMARY REPORT

Baker Environmental, Inc.
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108

(412) 269-6000
FAX (412) 269-2002

August 1, 1995

Commander
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Building N-26)
Norfolk, Virginia 23511-2699

Attn: Ms. Katherine Landman
Code 18232

Re: Contract N62470-89-D-4814
Navy CLEAN, District III
Contract Task Order (CTO) 0274
IDW Handling and Disposal
Operable Unit No. 12 (Site 3)
MCB Camp Lejeune, North Carolina

Dear Ms. Landman:

This letter report describes the sample collection activities, results, and recommendations for the disposition of investigative-derived waste (IDW) at Site 3, Marine Corps Base, Camp Lejeune, North Carolina.

The IDW at Site 3 is contained in two 1,000-gallon polyethylene tanks, and one 20-cubic yard roll-off box. It was generated during the period from June 12, 1995 through July 15, 1995 during the additional soil and groundwater investigation conducted at Site 3. An inventory of the IDW along with quantities are provided in Table 1. Analytical results are provided in Attachment A.

Sample Collection and Analysis: Site 3

One sample was collected from both of the two polyethylene tanks, composited into one sample, and given the sample identification 3-TK-01. Both tanks contain well development and purge water. The composite sample was analyzed for full Target Compound List (TCL) volatiles and semivolatiles. Pesticides, PCBs, and metals were not analyzed due to previous groundwater analytical results that indicated only volatile and semivolatile contamination.

Three grab samples were collected from varying locations within the roll-off box. These grab samples were placed within a stainless steel mixing bowl, homogenized into one composite sample, and given the sample identification 3-IDW-01. A representative sample was collected for volatile organics analysis prior to homogenizing the samples. This composite sample was analyzed for full Toxicity Characteristic Leachate Procedure (TCLP) and Resource Conservation Recovery Act (RCRA) characteristics (corrosivity, ignitability, and reactivity).

Results Site 3

Sample 3-TK-01 had four positive volatile detections, and nine positive semivolatile detections. Sample 3-IDW-01, which was analyzed for TCLP and RCRA characteristics, had no positive detections for organics. Inorganic analysis did not indicate concentrations above regulatory standards. In addition, sample 3-IDW-01 was not found to be reactive to sulfide and cyanide, ignitable at less than 140°F, or corrosive at less than or equal to 2 or greater than or equal to 12.5.

Conclusions and Recommendations Site 3

Analytical results indicate that samples 3-TK-01 and 3-IDW-01 have levels of organic contamination that do not exceed regulatory standards. Therefore, both the well development and purge water, and the drill cuttings and mud will be deposited back on-site. Additionally, the solids will be graded out over Site 3.

Upon LANTDIV's approval of these disposal recommendations, the IDW will be managed as identified within this letter.

If you have any questions, please do not hesitate to contact me at (412) 269-2053.

Sincerely,

BAKER ENVIRONMENTAL, INC.

Matthew D Bartman

Matthew D. Bartman
Project Manager

MDB/PAM/lq

Attachments

cc: Mr. Neal Paul
Mr. John Riggs

TABLE 1

TABLE 1

SUMMARY OF INVESTIGATIVE DERIVED WASTE
OPERABLE UNIT NO. 12 (SITE 3)
REMEDIAL INVESTIGATION, CTO-0274
MCB, CAMP LEJEUNE, NORTH CAROLINA

MATERIAL (LOCATION)	QUANTITY PRODUCED	CONTAINERTYPE	VOLUME OF WASTE	UNIT	LABORATORY ANALYSIS
Development/Purge Water (Site 3)	2	1,000 Gallon Polyethylene Tank	2,000	gallons	TCL Volatiles and Semivolatiles
Drill Mud/Cuttings (Site 3)	1	20 cubic yard roll-off box	10	cubic yards	TCLP Organics TCLP Inorganics RCRA Hazardous Characteristics

ATTACHMENT B

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

03TK02

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 4068 SAS No.: _____ SDG No.: 03IDW

Matrix: (soil/water) WATER Lab Sample ID: AF8963

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AF8963

Level: (low/med) LOW Date Received: 07/05/95

% Moisture: not dec. _____ Date Analyzed: 07/11/95

GC Column: RTX-624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS:-
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	1	BJ
67-64-1	Acetone	430	E
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	2	J
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)		

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

03TK02

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 4068 SAS No.: _____ SDG No.: 03IDW

Matrix: (soil/water) WATER Lab Sample ID: AF8963

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AF8963

Level: (low/med) LOW Date Received: 07/05/95

% Moisture: not dec. ____ Date Analyzed: 07/11/95

GC Column: RTX-624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN PAH	19.80	26	J

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

03TK02DL

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 4068 SAS No.: _____ SDG No.: 03IDW

Matrix: (soil/water) WATER Lab Sample ID: AF8963

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AF8963D2

Level: (low/med) LOW Date Received: 07/05/95

% Moisture: not dec. _____ Date Analyzed: 07/12/95

GC Column: RTX624 ID: 0.530 (mm) Dilution Factor: 5.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	50	U
74-83-9	Bromomethane	50	U
75-01-4	Vinyl Chloride	50	U
75-00-3	Chloroethane	50	U
75-09-2	Methylene Chloride	12	BDJ
67-64-1	Acetone	620	D
75-15-0	Carbon Disulfide	50	U
75-35-4	1,1-Dichloroethene	50	U
75-34-3	1,1-Dichloroethane	50	U
540-59-0	1,2-Dichloroethene (total)	50	U
67-66-3	Chloroform	50	U
107-06-2	1,2-Dichloroethane	50	U
78-93-3	2-Butanone	50	U
71-55-6	1,1,1-Trichloroethane	50	U
56-23-5	Carbon Tetrachloride	50	U
75-27-4	Bromodichloromethane	50	U
78-87-5	1,2-Dichloropropane	50	U
10061-01-5	cis-1,3-Dichloropropene	50	U
79-01-6	Trichloroethene	50	U
124-48-1	Dibromochloromethane	50	U
79-00-5	1,1,2-Trichloroethane	50	U
71-43-2	Benzene	50	U
10061-02-6	trans-1,3-Dichloropropene	50	U
75-25-2	Bromoform	50	U
108-10-1	4-Methyl-2-Pentanone	50	U
591-78-6	2-Hexanone	50	U
127-18-4	Tetrachloroethene	50	U
79-34-5	1,1,2,2-Tetrachloroethane	50	U
108-88-3	Toluene	50	U
108-90-7	Chlorobenzene	50	U
100-41-4	Ethylbenzene	50	U
100-42-5	Styrene	50	U
1330-20-7	Xylene (total)		

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

03TK02DL

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 4068 SAS No.: _____ SDG No.: 03IDW

Matrix: (soil/water) WATER Lab Sample ID: AF8963

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AF8963D2

Level: (low/med) LOW Date Received: 07/05/95

% Moisture: not dec. _____ Date Analyzed: 07/12/95

GC Column: RTX624 ID: 0.530 (mm) Dilution Factor: 5.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 1

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN PAH	19.83	34	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

03TK02

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 4068 SAS No.: _____ SDG No.: 03IDW

Matrix: (soil/water) WATER Lab Sample ID: AF8962

Sample wt/vol: 1020 (g/mL) ML Lab File ID: AF8962

Level: (low/med) LOW Date Received: 07/05/95

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 07/07/95

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/95

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
108-95-2	Phenol	9	J
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	18	
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	35	
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	4	J
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	25	U
95-95-4	2,4,5-Trichlorophenol	10	U
91-58-7	2-Chloronaphthalene	25	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	25	U
99-09-2	3-Nitroaniline	7	J
83-32-9	Acenaphthene		

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

03TK02

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 4068 SAS No.: SDG No.: 03IDW

Matrix: (soil/water) WATER Lab Sample ID: AF8962

Sample wt/vol: 1020 (g/mL) ML Lab File ID: AF8962

Level: (low/med) LOW Date Received: 07/05/95

% Moisture: decanted: (Y/N) Date Extracted: 07/07/95

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/95

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	4	J
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	4	J
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	6	J
120-12-7	Anthracene	10	U
86-74-8	Carbazole	13	
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

03TK02

Lab Name: ITAS-KNOXVILLE Contract: BAKER

Lab Code: ITSTU Case No.: 4068 SAS No.: _____ SDG No.: 03IDW

Matrix: (soil/water) WATER Lab Sample ID: AF8962

Sample wt/vol: 1020 (g/mL) ML Lab File ID: AF8962

Level: (low/med) LOW Date Received: 07/05/95

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 07/07/95

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/95

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 29

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN (ORGANIC ACID)	3.63	18	J
2.	3724-65-0	CROTONIC ACID	4.20	9	JN
3.		UNKNOWN ORGANIC ACID	4.32	12	J
4.	4536-23-6	HEXANOIC ACID, 2-METHYL-	4.50	9	JN
5.	142-62-1	HEXANOIC ACID	4.88	7	JN
6.		UNKNOWN	5.27	4	J
7.	74645-86-6	2-DECENE, 5-METHYL-, (Z)-	7.07	8	JN
8.		UNKNOWN	7.90	28	J
9.		UNKNOWN (CYCLOHEXANE)	8.48	8	J
10.		UNKNOWN	9.13	15	J
11.	112-34-5	ETHANOL, 2-(2-BUTOXYETHOXY)-	9.42	14	JN
12.	614-60-8	2-PROPENOIC ACID, 3-(2-HYDRO	9.78	9	JN
13.		UNKNOWN	9.87	7	J
14.	103-82-2	BENZENEACETIC ACID	10.25	11	JN
15.		UNKNOWN	10.38	15	J
16.	119-65-3	ISOQUINOLINE	10.72	5	JN
17.		UNKNOWN	11.20	24	J
18.	501-52-0	BENZENEPROPANOIC ACID	11.43	21	JN
19.	100-83-4	BENZALDEHYDE, 3-HYDROXY-	11.68	10	JN
20.	121-33-5	BENZALDEHYDE, 4-HYDROXY-3-ME	12.32	18	JN
21.		UNKNOWN	12.92	6	J
22.	134-62-3	BENZAMIDE, N,N-DIETHYL-3-MET	14.35	14	JN
23.		UNKNOWN	14.57	5	J
24.		UNKNOWN	15.42	12	J
25.	7400-08-0	2-PROPENOIC ACID, 3-(4-HYDRO	15.53	4	JN
26.		UNKNOWN	15.88	4	J
27.		UNKNOWN	16.18	9	J
28.		UNKNOWN	16.43	5	J
29.		UNKNOWN	17.20	14	J

TCLP VOLATILE ORGANICS ANALYSIS

Laboratory Name:	Quanterra-Knoxville	Job Number:	4068
Contract Name:	Baker Environmental Camp Lejeune	TCLP Date:	07/11/95
Client Sample ID:	03IDW-01	Analysis Date:	07/18/95
Lab Sample ID:	AF8956	Concentration Units:	mg/liter in the leachate
Sample Matrix:	Leachate		

Compound	Concentration	Qualifier	Reporting limit
benzene	0.025	U	0.025
carbon tetrachloride	0.025	U	0.025
chlorobenzene	0.025	U	0.025
chloroform	0.025	U	0.025
1,2-dichloroethane	0.025	U	0.025
1,1-dichloroethene	0.025	U	0.025
methyl ethyl ketone	0.050	U	0.050
tetrachloroethene	0.025	U	0.025
trichloroethene	0.025	U	0.025
vinyl chloride	0.050	U	0.050

U - Compound was analyzed for but not detected. The number is the reporting limit for the sample.

TCLP SEMIVOLATILE ORGANICS ANALYSIS

Laboratory Name:	Quanterra-Knoxville	Job Number:	4068
Contract Name:	Baker Environmental Camp Lejeune	TCLP Date:	07/10/95
Client Sample ID:	03IDW-01	Extraction Date:	07/11/95
Lab Sample ID:	AF8955	Analysis Date:	07/14/95
Sample Matrix:	Leachate	Concentration Units:	mg/liter in the leachate

Compound	Concentration	Qualifier	Reporting limit
total cresols	0.04	U	0.04
1,4-dichlorobenzene	0.04	U	0.04
2,4-dinitrotoluene	0.04	U	0.04
hexachlorobenzene	0.04	U	0.04
hexachloro-1,3-butadiene	0.04	U	0.04
hexachloroethane	0.04	U	0.04
nitrobenzene	0.04	U	0.04
pentachlorophenol	0.20	U	0.20
pyridine	0.40	U	0.40
2,4,5-trichlorophenol	0.20	U	0.20
2,4,6-trichlorophenol	0.04	U	0.04

U - Compound was analyzed for but not detected. The number is the reporting limit for the sample.

TCLP PESTICIDES ANALYSIS

Laboratory Name:	Quanterra-Knoxville	Job Number:	4068
Contract Name:	Baker Environmental Camp Lejeune	TCLP Date:	07/10/95
Client Sample ID:	03IDW-01	Extraction Date:	07/11/95
Lab Sample ID:	AF8955	Analysis Date:	07/14/95
Sample Matrix:	Leachate	Concentration Units:	mg/liter in the leachate

Compound	Concentration	Qualifier	Reporting limit
lindane	0.008	U	0.008
heptachlor	0.001	U	0.001
heptachlor epoxide	0.001	U	0.001
endrin	0.004	U	0.004
methoxychlor	0.08	U	0.08
chlordane	0.006	U	0.006
toxaphene	0.1	U	0.1

Surrogate Recovery	tetrachloro-m-xylene	dibutylchlorendate
Acceptance Limits	23-128%	64-132%
Lab Sample ID: AF8955	97	109

U - Compound was analyzed for but not detected. The number is the reporting limit for the sample.

TCLP HERBICIDES ANALYSIS

Laboratory Name:	Quanterra-Knoxville	Job Number:	4068
Contract Name:	Baker Environmental Camp Lejeune	TCLP Date:	NA
Client Sample ID:	03IDW-01	Extraction Date:	07/11/95
Lab Sample ID:	AF8955	Analysis Date:	07/14/95
Sample Matrix:	Leachate	Concentration Units:	mg/liter in the leachate

Compound	Concentration	Qualifier	Reporting limit
2, 4-D	0.1	U	0.1
2, 4, 5-TP	0.02	U	0.02

Surrogate Recovery	2, 4-DCPA
Lab Sample ID: AF8955	70

U - Compound was analyzed for but not detected. The number is the reporting limit for the sample.

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

03IDW-01

Lab Name: QUANTERRA_KNOXVILLE_____ Contract: BAKER_CL__ SDG No.: 03IDW-
Lab Code: ITSTU_ Case No.: 4068_ SAS No.: _____ Lab Sample ID: AF8955
Matrix (soil/water): WATER Date Received: 07/05/95
Level (low/med): LOW__
% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	200	U		P
7440-39-3	Barium	647			P
7440-43-9	Cadmium	50.0	U		P
7440-47-3	Chromium	100	U		P
7439-92-1	Lead	200	U		P
7439-97-6	Mercury	1.0	U		CV
7782-49-2	Selenium	200	U		P
7440-22-4	Silver	50.0	U		P

Color Before: _____ Clarity Before: _____ Texture: _____
Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

_____

_____

_____

_____

QUANTERRA

03IDW-01

WO #: A5AKK
LAB #: C5G060004-001
MATRIX: SOLID

DATE SAMPLED: 7/02/95
TIME SAMPLED: 9:00
DATE RECEIVED: 7/06/95

INORGANIC ANALYTICAL REPORT

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Flash Point Closed Cup	>200		deg F	SW846 1010	7/12/95	5193045
pH Non-Aqueous	12.4		su	SW846 9045	7/08/95	5191049
Reactive Cyanide	ND	50.0	mg/kg	SW846 7.3.3.2	7/11- 7/12/95	5193060
Sulfide Reactive	ND	50.0	mg/kg	SW846 7.3.4.2	7/11/95	5192072

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

APPENDIX D.4
ADDITIONAL IDW SUMMARY

Baker

Baker Environmental, Inc.
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108

(412) 269-6000
FAX (412) 269-2002

September 7, 1995

Commander
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Building N-26)
Norfolk, Virginia 23511-2699

Attn: Ms. Katherine Landman
Navy Technical Representative
Code 18232

Re: Contract N62470-89-D-4814
Navy CLEAN, District III
Contract Task Order (CTO) 0274
IDW Removal
Operable Unit No. 12 (Site 3)
MCB, Camp Lejeune, North Carolina

Dear Ms. Landman:

This letter report describes a summary of investigative-derived waste (IDW) disposal activities conducted at Operable Unit No. 12 (Site 3), Marine Corps Base, Camp Lejeune, North Carolina. The IDW generated during the additional remedial investigation activities conducted from June 12 through July 15, 1995, was contained in one roll-off box, and (two-1000 gallon) polyethylene tanks.

In a letter dated August 1, 1995, Baker Environmental provided the sample collection, analytical findings, conclusions, and recommendations with respect to the IDW handling and disposal. The recommendations were subsequently approved by the Navy/Marine Corps. The remainder of this letter report provides a summary of the disposal activities conducted under this CTO.

DISPOSAL

Based on LANTDIV/MCB Camp Lejeune approval, Baker arranged for the disposal of the following:

- 2,000 gallons of nonhazardous well development and purge water
- 10 cubic feet of nonhazardous drilling mud

Based on the nonhazardous determination, all IDW was deposited back onto Site 3 on August 15, 1995.

Baker appreciates the opportunity to serve LANTDIV on this important project. If you have any questions, please do not hesitate to call me at (412) 269-2053.

Sincerely,

BAKER ENVIRONMENTAL, INC.

Matthew D Bartman

Matthew D. Bartman
Project Manager

MDB/lq

cc: Mr. Neal Paul, IRP Director, MCB Camp Lejeune
Mr. John Riggs Environmental Control Specialist, MCB Camp Lejeune
Ms. Lee Ann Rapp, Code 18312
Ms. Beth Collier, Code 02115

APPENDIX E
AQUIFER CHARACTERIZATION DATA

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V

A Program for
Automatic Estimation of Aquifer Coefficients
From Aquifer Test Data

By:

Glenn M. Duffield
and
James O. Rumbaugh, III

Geraghty & Miller Modeling Group
1895 Preston White Drive, Suite 301
Reston, VA 22091

(703) 476 - 0335

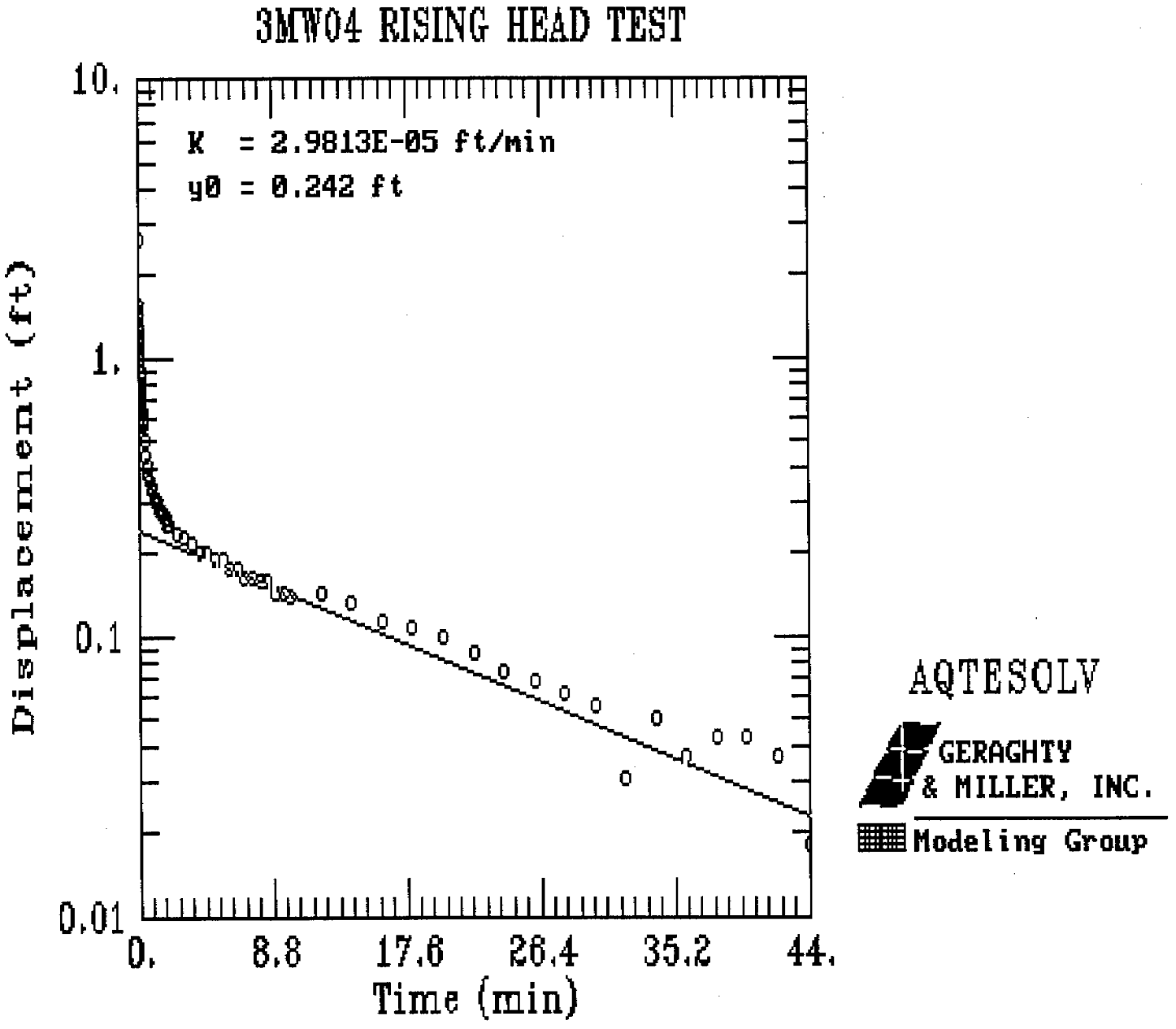
A Q T E S O L V is a user-friendly program designed to analyze data from aquifer tests automatically. Aquifer coefficients for a variety of aquifer test conditions can be estimated by A Q T E S O L V , including the following:

- o confined aquifers, unconfined aquifers, and leaky aquifers
- o pumping tests, injection tests, recovery tests, and slug tests

Features:

- o Interactive, menu-driven program design
- o Nonlinear least-squares estimation of aquifer coefficients
- o Statistical analysis of results
- o Complete graphical display of results

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>


3MW04 RISING HEAD TEST
K = 2.9813E-05 ft/min
y0 = 0.242 ft
Displacement (ft)
10.
1.
0.1
0.01
0.
8.8
17.6
26.4
35.2
44.
Time (min)
AQTESOLV
GERAGHTY
& MILLER, INC.
Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S
Version 1.10

03/06/95 14:05:55

TEST DESCRIPTION

Data set........... B:3MW04R.DAT
Data set title..... 3MW04 RISING HEAD TEST

Knowns and Constants:
- No. of data points.................. 77
- Radius of well casing............... 0.083
- Radius of well...................... 0.25
- Aquifer saturated thickness......... 5.18
- Well screen length.................. 15
- Static height of water in well...... 5.18
- Log(Re/Rw).......................... 2.423
- A, B, C............................. 0.000, 0.000, 2.989

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	1.2853E-003	+/-	1.8060E-004
y0 =	1.4359E+000	+/-	8.2708E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 77
- Number of estimated parameters.... 2
- Degrees of freedom................ 75
- Residual mean..................... 0.08583
- Residual standard deviation....... 0.2257
- Residual variance................. 0.05093

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.0166	2.66	1.3819	1.2781	1
0.02	0.608	1.3711	-0.76311	1
0.0233	1.55	1.3607	0.18931	1
0.0266	1.468	1.3504	0.11764	1
0.03	1.424	1.3398	0.084205	1

0.0333	1.399	1.3296	0.06938	1
0.05	1.292	1.2793	0.012699	1
0.0666	1.205	1.2312	-0.02617	1
0.0833	1.129	1.1846	-0.055576	1
0.1	1.054	1.1397	-0.085745	1
0.1166	0.997	1.0969	-0.099865	1
0.1333	0.947	1.0554	-0.10835	1
0.15	0.891	1.0154	-0.12441	1
0.1666	0.853	0.97721	-0.12421	1
0.1833	0.809	0.94023	-0.13123	1
0.2	0.778	0.90465	-0.12665	1
0.2166	0.74	0.87061	-0.13061	1
0.2333	0.715	0.83766	-0.12266	1
0.25	0.684	0.80596	-0.12196	1
0.2666	0.659	0.77564	-0.11664	1
0.2833	0.633	0.74628	-0.11328	1
0.3	0.608	0.71804	-0.11004	1
0.3166	0.596	0.69103	-0.095026	1
0.3333	0.571	0.66487	-0.093874	1
0.4166	0.502	0.54849	-0.046485	1
0.5	0.445	0.45237	-0.0073662	1
0.5833	0.407	0.37318	0.033822	1
0.6666	0.382	0.30785	0.074148	1
0.75	0.364	0.2539	0.1101	1
0.8333	0.345	0.20946	0.13554	1
0.9166	0.332	0.17279	0.15921	1
1	0.32	0.14251	0.17749	1
1.0833	0.307	0.11756	0.18944	1
1.1666	0.301	0.096983	0.20402	1
1.25	0.301	0.079987	0.22101	1
1.3333	0.288	0.065985	0.22202	1
1.4166	0.282	0.054434	0.22757	1
1.5	0.276	0.044895	0.23111	1
1.5833	0.276	0.037036	0.23896	1
1.6666	0.263	0.030553	0.23245	1
1.75	0.263	0.025198	0.2378	1
1.8333	0.263	0.020787	0.24221	1
1.9166	0.251	0.017148	0.23385	1
2	0.251	0.014143	0.23686	1
2.5	0.232	0.0044556	0.22754	1
3	0.225	0.0014036	0.2236	1
3.5	0.213	0.00044219	0.21256	1
4	0.2	0.0001393	0.19986	1
4.5	0.2	4.3885E-005	0.19996	1
5	0.188	1.3825E-005	0.18799	1
5.5	0.188	4.3553E-006	0.188	1
6	0.175	1.3721E-006	0.175	1
6.5	0.175	4.3224E-007	0.175	1
7	0.163	1.3617E-007	0.163	1
7.5	0.163	4.2897E-008	0.163	1
8	0.156	1.3514E-008	0.156	1
8.5	0.156	4.2573E-009	0.156	1
9	0.144	1.3412E-009	0.144	1
9.5	0.144	4.2252E-010	0.144	1
10	0.138	1.3311E-010	0.138	1
12	0.144	1.311E-012	0.144	1
14	0.131	1.2913E-014	0.131	1
16	0.112	1.2718E-016	0.112	1
18	0.106	1.2527E-018	0.106	1
20	0.1			

1.2338E-020	0.1	1		
22	0.087	1.2152E-022	0.087	1
24	0.075	1.197E-024	0.075	1
26	0.068	1.1789E-026	0.068	1
28	0.062	1.1612E-028	0.062	1
30	0.056	1.1437E-030	0.056	1
32	0.031	1.1265E-032	0.031	1
34	0.05	1.1095E-034	0.05	1
36	0.037	1.0928E-036	0.037	1
38	0.043	1.0764E-038	0.043	1
40	0.043	1.0602E-040	0.043	1
42	0.037	1.0442E-042	0.037	1
44	0.018	1.0285E-044	0.018	1

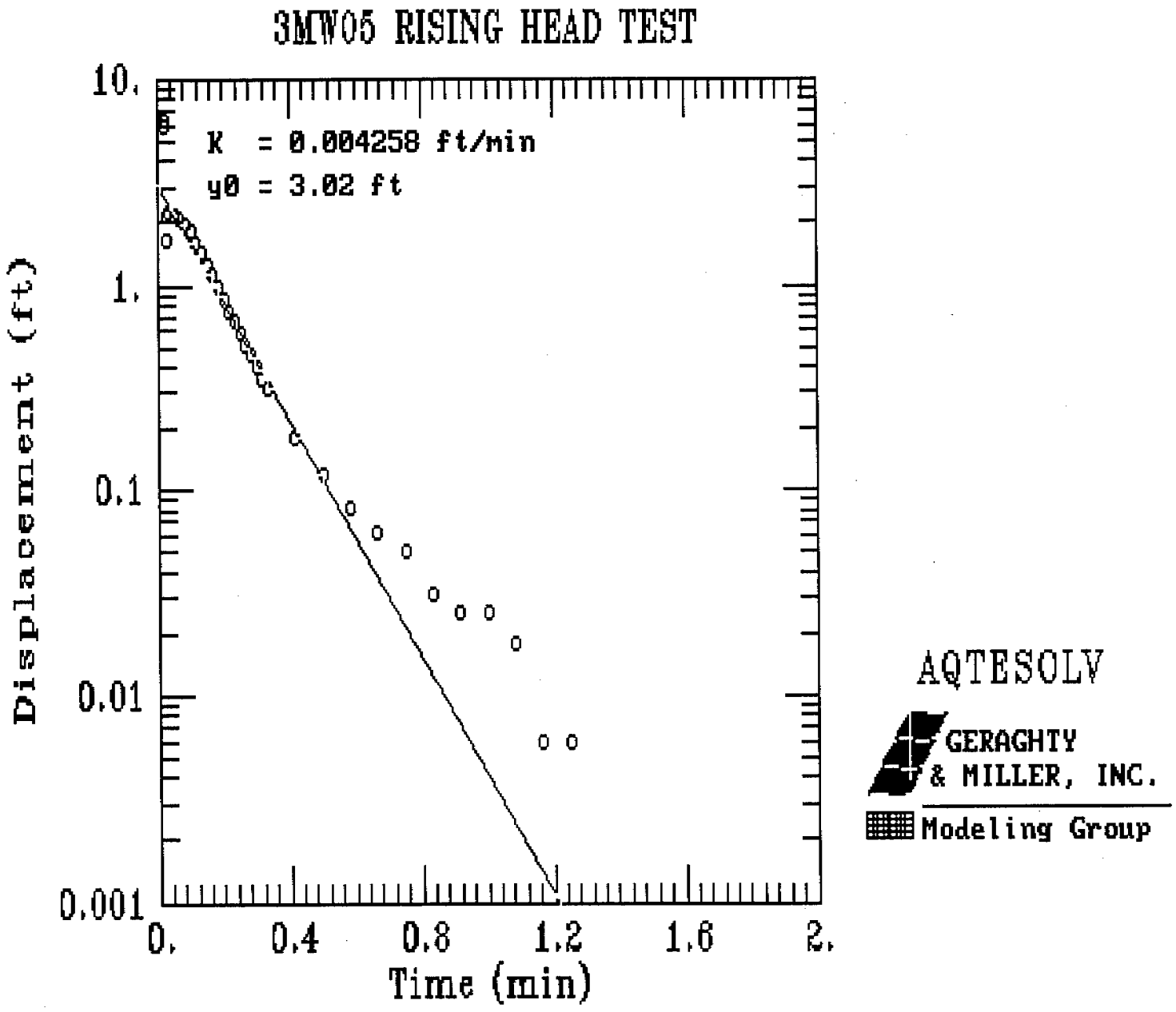
==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	4.7521E-005
y0 =	2.9421E-001

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>


3MW05 RISING HEAD TEST
K = 0.004258 ft/min
y0 = 3.02 ft
Displacement (ft)
10.
1.
0.1
0.01
0.001
0.
0.4
0.8
1.2
1.6
2.
Time (min)
AQTESOLV
GERAGHTY
& MILLER, INC.
Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S

Version 1.10

03/06/95 14:08:29

TEST DESCRIPTION

Data set........... B:3MW05R.DAT
Data set title..... 3MW05 RISING HEAD TEST

Knowns and Constants:
No. of data points.................. 34
Radius of well casing............... 0.083
Radius of well...................... 0.25
Aquifer saturated thickness......... 9.23
Well screen length.................. 15
Static height of water in well...... 9.23
Log(Re/Rw).......................... 2.82
A, B, C............................. 0.000, 0.000, 2.989

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	6.2592E-003	+/-	1.2239E-003
y0 =	4.7039E+000	+/-	5.5634E-001

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 34
Number of estimated parameters.... 2
Degrees of freedom................ 32
Residual mean..................... 0.04596
Residual standard deviation....... 0.7675
Residual variance................. 0.5891

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.02	6.34	3.877	2.463	1
0.0233	5.92	3.7553	2.1647	1
0.0266	1.651	3.6374	-1.9864	1
0.03	2.191	3.5198	-1.3288	1
0.0333	2.223	3.4093	-1.1863	1

0.05	2.21	2.901	-0.69104	1
0.0666	2.122	2.471	-0.34896	1
0.0833	1.972	2.1026	-0.13061	1
0.1	1.802	1.7892	0.012835	1
0.1166	1.614	1.5239	0.09008	1
0.1333	1.432	1.2967	0.13526	1
0.15	1.268	1.1034	0.16457	1
0.1666	1.118	0.93985	0.17815	1
0.1833	0.979	0.79974	0.17926	1
0.2	0.866	0.68052	0.18548	1
0.2166	0.753	0.57964	0.17336	1
0.2333	0.665	0.49323	0.17177	1
0.25	0.584	0.4197	0.1643	1
0.2666	0.515	0.35748	0.15752	1
0.2833	0.452	0.30419	0.14781	1
0.3	0.395	0.25884	0.13616	1
0.3166	0.351	0.22047	0.13053	1
0.3333	0.314	0.1876	0.1264	1
0.4166	0.182	0.083857	0.098143	1
0.5	0.119	0.037447	0.081553	1
0.5833	0.081	0.016739	0.064261	1
0.6666	0.062	0.0074821	0.054518	1
0.75	0.05	0.0033412	0.046659	1
0.8333	0.031	0.0014935	0.029507	1
0.9166	0.025	0.00066758	0.024332	1
1	0.025	0.00029811	0.024702	1
1.0833	0.018	0.00013325	0.017867	1
1.1666	0.006	5.9564E-005	0.0059404	1
1.25	0.006	2.6599E-005	0.0059734	1

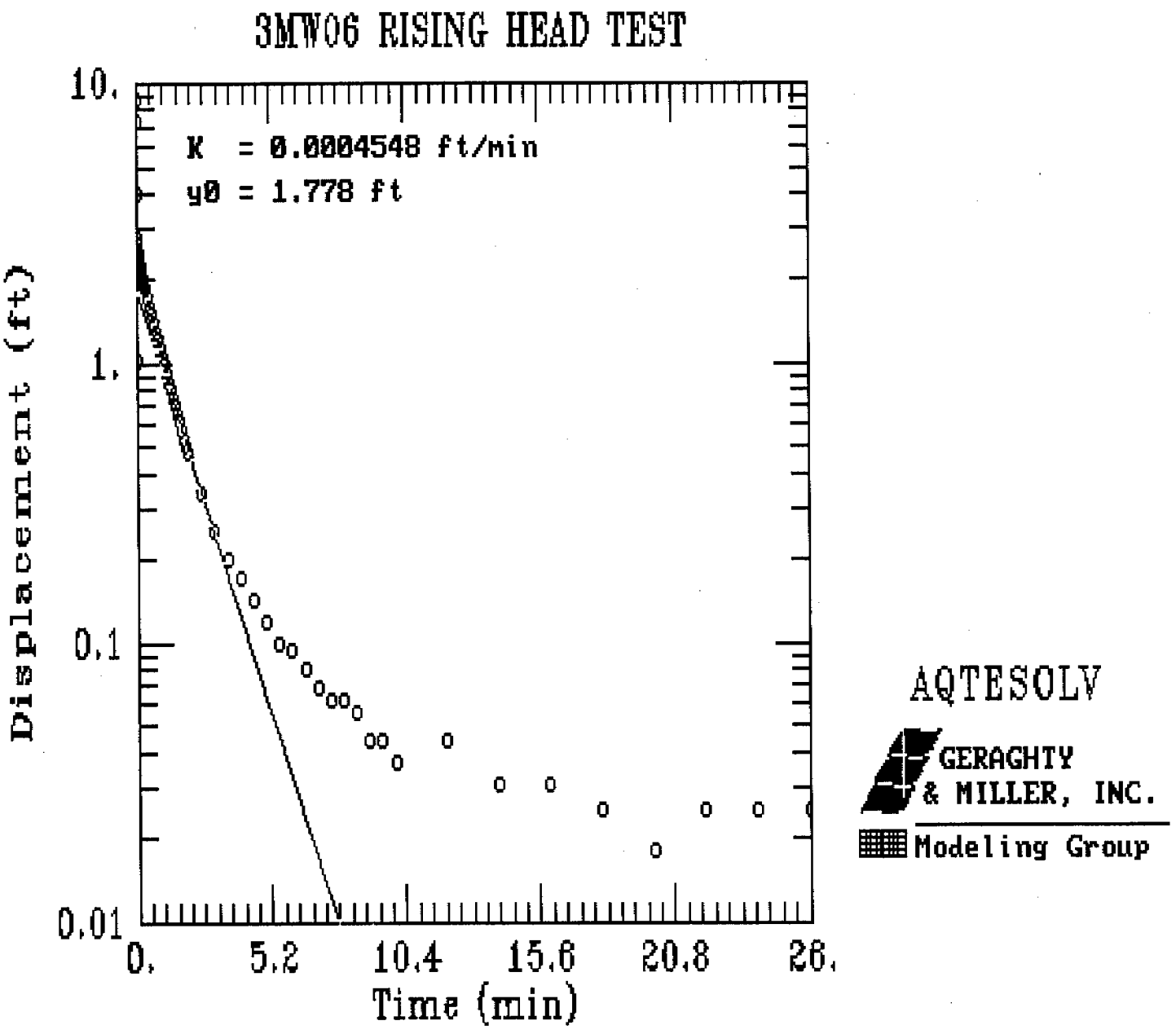
==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	4.5410E-003
y0 =	3.4674E+000

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>


3MW06 RISING HEAD TEST
K = 0.0004548 ft/min
y0 = 1.778 ft
Displacement (ft)
10.
1.
0.1
0.01
0.
5.2
10.4
15.6
20.8
26.
Time (min)
AQTESOLV
GERAGHTY
& MILLER, INC.
Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S
Version 1.10

03/06/95 14:11:11

==

TEST DESCRIPTION

Data set........... B:3MW06R.DAT
Data set title..... 3MW06 RISING HEAD TEST

Knowns and Constants:
- No. of data points.................. 70
- Radius of well casing............... 0.083
- Radius of well...................... 0.25
- Aquifer saturated thickness......... 11.76
- Well screen length.................. 15
- Static height of water in well...... 11.76
- Log(Re/Rw).......................... 2.981
- A, B, C............................. 0.000, 0.000, 2.989

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	1.0548E-003	+/-	2.2508E-004
y0 =	3.4473E+000	+/-	2.6664E-001

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 70
- Number of estimated parameters.... 2
- Degrees of freedom................ 68
- Residual mean..................... 0.07082
- Residual standard deviation....... 0.9201
- Residual variance................. 0.8465

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.01	8.839	3.3946	5.4444	1
0.0133	7.252	3.3774	3.8746	1
0.0166	4.001	3.3603	0.64074	1
0.02	1.018	3.3427	-2.3247	1
0.0233	2.814	3.3258	-0.51175	1

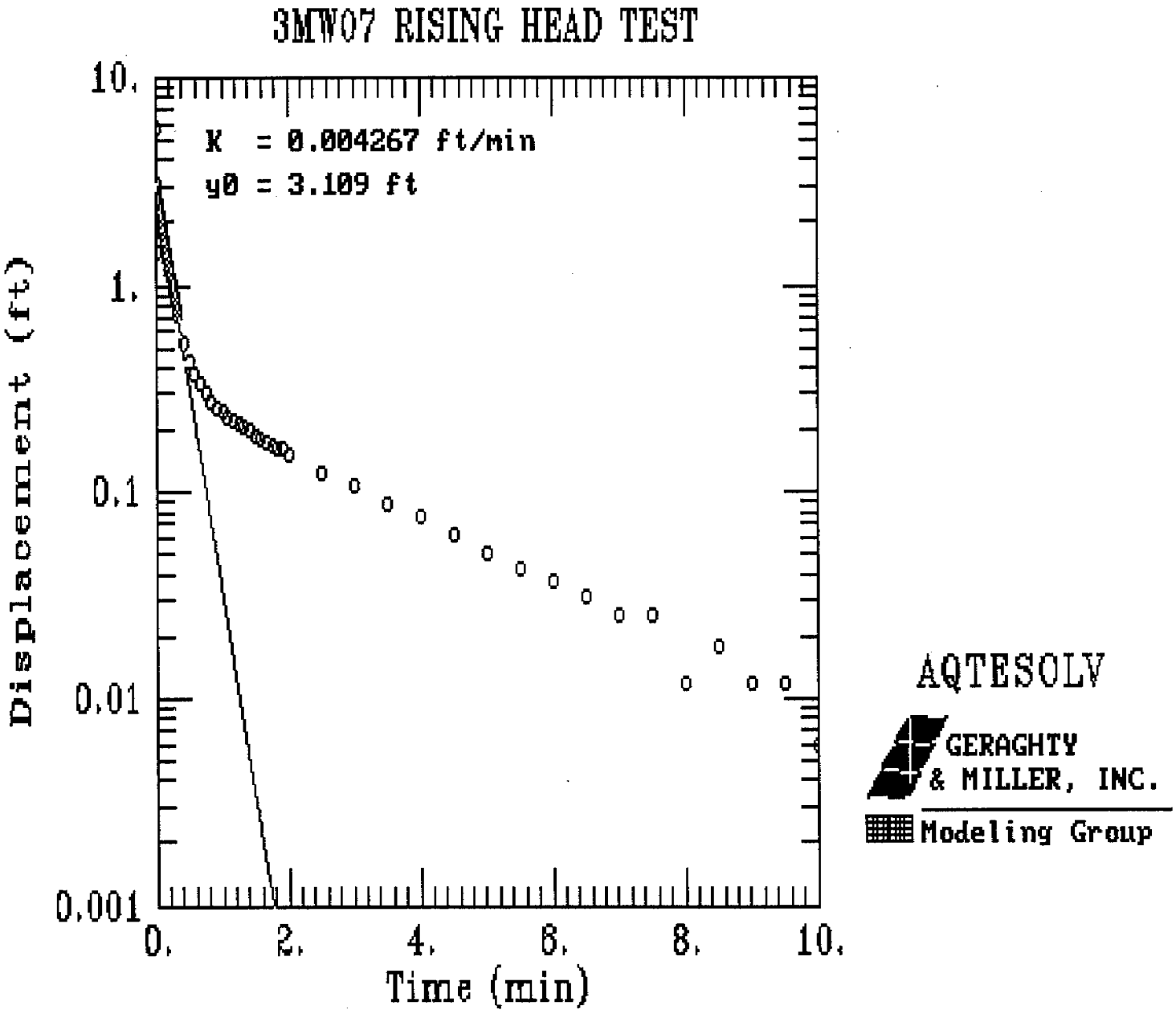
0.0266	2.676	3.3089	-0.63288	1
0.03	2.644	3.2916	-0.64759	1
0.0333	2.682	3.2749	-0.5929	1
0.05	2.544	3.1917	-0.6477	1
0.0666	2.481	3.1111	-0.6301	1
0.0833	2.431	3.0321	-0.60107	1
0.1	2.381	2.955	-0.57404	1
0.1166	2.324	2.8804	-0.55641	1
0.1333	2.286	2.8072	-0.52124	1
0.15	2.236	2.7359	-0.49992	1
0.1666	2.199	2.6668	-0.46783	1
0.1833	2.161	2.5991	-0.43808	1
0.2	2.123	2.5331	-0.41005	1
0.2166	2.085	2.4691	-0.38409	1
0.2333	2.054	2.4064	-0.35236	1
0.25	2.016	2.3452	-0.32923	1
0.2666	1.985	2.286	-0.301	1
0.2833	1.954	2.2279	-0.27393	1
0.3	1.928	2.1713	-0.24333	1
0.3166	1.897	2.1165	-0.2195	1
0.3333	1.866	2.0627	-0.19673	1
0.4166	1.721	1.8143	-0.093257	1
0.5	1.602	1.5955	0.0065303	1
0.5833	1.489	1.4033	0.085717	1
0.6666	1.382	1.2342	0.14775	1
0.75	1.294	1.0854	0.20859	1
0.8333	1.206	0.95466	0.25134	1
0.9166	1.124	0.83966	0.28434	1
1	1.055	0.73841	0.31659	1
1.0833	0.986	0.64946	0.33654	1
1.1666	0.923	0.57123	0.35177	1
1.25	0.86	0.50234	0.35766	1
1.3333	0.804	0.44183	0.36217	1
1.4166	0.754	0.38861	0.36539	1
1.5	0.71	0.34174	0.36826	1
1.5833	0.659	0.30058	0.35842	1
1.6666	0.622	0.26437	0.35763	1
1.75	0.578	0.23249	0.34551	1
1.8333	0.54	0.20449	0.33551	1
1.9166	0.509	0.17985	0.32915	1
2	0.477	0.15816	0.31884	1
2.5	0.339	0.073201	0.2658	1
3	0.251	0.033878	0.21712	1
3.5	0.201	0.015679	0.18532	1
4	0.169	0.0072566	0.16174	1
4.5	0.144	0.0033585	0.14064	1
5	0.119	0.0015543	0.11745	1
5.5	0.1	0.00071938	0.099281	1
6	0.094	0.00033294	0.093667	1
6.5	0.081	0.00015409	0.080846	1
7	0.069	7.1314E-005	0.068929	1
7.5	0.062	3.3005E-005	0.061967	1
8	0.062	1.5275E-005	0.061985	1
8.5	0.056	7.0696E-006	0.055993	1
9	0.044	3.2719E-006	0.043997	1
9.5	0.044	1.5143E-006	0.043998	1
10	0.037	7.0083E-007	0.036999	1
12	0.044	3.2155E-008	0.044	1
14	0.031	1.4753E-009	0.031	1
16	0.031	6.7686E-011	0.031	1
18	0.025	3.1054E-012	0.025	1
20	0.018	1.4248E-013	0.018	1
22	0.025	6.537E-015	0.025	1
24	0.025	2.9992E-016	0.025	1
26	0.025	1.376E-017	0.025	1

```
================================================================================
                         RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

           Estimate
   K  =    4.7792E-004
   y0 =    1.9532E+000

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
```


3MW07 RISING HEAD TEST
K = 0.004267 ft/min
y0 = 3.109 ft
Displacement (ft)
10.
1.
0.1
0.01
0.001
0.
2.
4.
6.
8.
10.
Time (min)
AQTESOLV
GERAGHTY
& MILLER, INC.
Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S
Version 1.10

03/06/95 14:14:39

TEST DESCRIPTION

Data set........... B:3MW07R.DAT
Data set title..... 3MW07 RISING HEAD TEST

Knowns and Constants:
No. of data points.................. 62
Radius of well casing............... 0.083
Radius of well...................... 0.25
Aquifer saturated thickness......... 8.97
Well screen length.................. 10
Static height of water in well...... 8.97
Log(Re/Rw).......................... 2.742
A, B, C............................. 0.000, 0.000, 2.297

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	4.2667E-003	+/-	5.1662E-004
y0 =	3.1091E+000	+/-	1.7024E-001

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 62
Number of estimated parameters.... 2
Degrees of freedom................ 60
Residual mean..................... 0.06421
Residual standard deviation....... 0.4237
Residual variance................. 0.1795

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.01	5.675	2.9718	2.7032	1
0.0133	1.419	2.9278	-1.5088	1
0.0166	3.052	2.8845	0.16754	1
0.02	2.286	2.8405	-0.5545	1
0.0233	2.731	2.7985	-0.067475	1

0.0266	2.687	2.7571	-0.07007	1
0.03	2.505	2.7151	-0.21005	1
0.0333	2.487	2.6749	-0.18788	1
0.05	2.323	2.4805	-0.15752	1
0.0666	2.166	2.3013	-0.13533	1
0.0833	2.028	2.1341	-0.10611	1
0.1	1.896	1.979	-0.083047	1
0.1166	1.777	1.8361	-0.059079	1
0.1333	1.658	1.7027	-0.044669	1
0.15	1.551	1.579	-0.027953	1
0.1666	1.45	1.4649	-0.014888	1
0.1833	1.35	1.3584	-0.008449	1
0.2	1.256	1.2597	-0.0037441	1
0.2166	1.174	1.1687	0.0052612	1
0.2333	1.092	1.0838	0.0081818	1
0.25	1.017	1.0051	0.011932	1
0.2666	0.948	0.93246	0.015539	1
0.2833	0.885	0.86471	0.020292	1
0.3	0.816	0.80188	0.014122	1
0.3166	0.76	0.74395	0.01605	1
0.3333	0.722	0.68989	0.032106	1
0.4166	0.533	0.47355	0.059446	1
0.5	0.427	0.32491	0.10209	1
0.5833	0.37	0.22302	0.14698	1
0.6666	0.332	0.15309	0.17891	1
0.75	0.301	0.10503	0.19597	1
0.8333	0.276	0.072096	0.2039	1
0.9166	0.257	0.049488	0.20751	1
1	0.244	0.033954	0.21005	1
1.0833	0.232	0.023307	0.20869	1
1.1666	0.226	0.015998	0.21	1
1.25	0.213	0.010976	0.20202	1
1.3333	0.207	0.0075343	0.19947	1
1.4166	0.201	0.0051717	0.19583	1
1.5	0.188	0.0035483	0.18445	1
1.5833	0.182	0.0024356	0.17956	1
1.6666	0.175	0.0016718	0.17333	1
1				

.75	0.169	0.0011471	0.16785	1
1.8333	0.163	0.00078736	0.16221	1
1.9166	0.163	0.00054046	0.16246	1
2	0.15	0.00037081	0.14963	1
2.5	0.125	3.8751E-005	0.12496	1
3	0.106	4.0496E-006	0.106	1
3.5	0.087	4.232E-007	0.087	1
4	0.075	4.4226E-008	0.075	1
4.5	0.062	4.6218E-009	0.062	1
5	0.05	4.8299E-010	0.05	1
5.5	0.043	5.0474E-011	0.043	1
6	0.037	5.2747E-012	0.037	1
6.5	0.031	5.5123E-013	0.031	1
7	0.025	5.7605E-014	0.025	1
7.5	0.025	6.0199E-015	0.025	1
8	0.012	6.291E-016	0.012	1
8.5	0.018	6.5744E-017	0.018	1
9	0.012	6.8704E-018	0.012	1
9.5	0.012	7.1798E-019	0.012	1
10	0.006	7.5032E-020	0.006	1

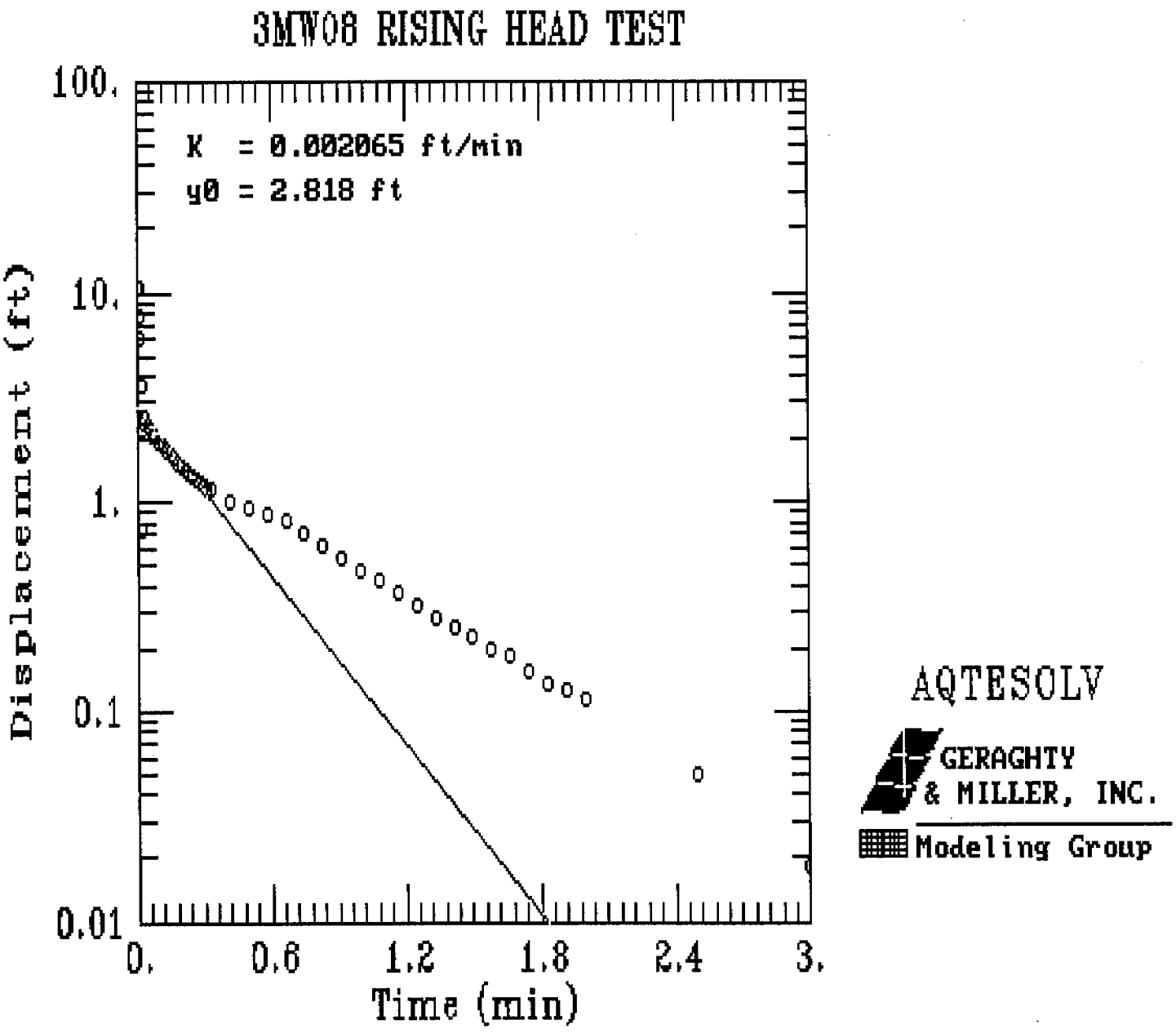
==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	2.7973E-003
y0 =	1.7572E+000

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>


3MW08 RISING HEAD TEST
K = 0.002065 ft/min
y0 = 2.818 ft
Displacement (ft)
100.
10.
1.
0.1
0.01
0.
0.6
1.2
1.8
2.4
3.
Time (min)
AQTESOLV
GERAGHTY
& MILLER, INC.
Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S
Version 1.10

03/06/95 14:17:07

==

TEST DESCRIPTION

Data set........... B:3MW08R.DAT
Data set title..... 3MW08 RISING HEAD TEST

Knowns and Constants:
- No. of data points.................. 48
- Radius of well casing............... 0.083
- Radius of well...................... 0.25
- Aquifer saturated thickness......... 10.86
- Well screen length.................. 15
- Static height of water in well...... 10.86
- Log(Re/Rw).......................... 2.928
- A, B, C............................. 0.000, 0.000, 2.989

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	5.5584E-003	+/-	1.3760E-003
y0 =	5.3528E+000	+/-	6.5065E-001

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 48
- Number of estimated parameters.... 2
- Degrees of freedom................ 46
- Residual mean..................... 0.2465
- Residual standard deviation....... 1.314
- Residual variance................. 1.728

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.01	10.546	4.9281	5.6179	1
0.0133	7.793	4.7955	2.9975	1
0.0166	6.111	4.6665	1.4445	1
0.02	0.747	4.5372	-3.7902	1
0.0233	3.612	4.4151	-0.80307	1

0.0266	2.243	4.2963	-2.0533	1
0.03	2.563	4.1772	-1.6142	1
0.0333	2.413	4.0648	-1.6518	1
0.05	2.281	3.5407	-1.2597	1
0.0666	2.098	3.0867	-0.98871	1
0.0833	2.054	2.6887	-0.63471	1
0.1	1.941	2.342	-0.40103	1
0.1166	1.853	2.0417	-0.18874	1
0.1333	1.765	1.7785	-0.013482	1
0.15	1.684	1.5492	0.13483	1
0.1666	1.608	1.3505	0.25746	1
0.1833	1.539	1.1764	0.3626	1
0.2	1.476	1.0247	0.45128	1
0.2166	1.42	0.89333	0.52667	1
0.2333	1.37	0.77814	0.59186	1
0.25	1.326	0.67781	0.64819	1
0.2666	1.275	0.5909	0.6841	1
0.2833	1.238	0.51471	0.72329	1
0.3	1.2	0.44835	0.75165	1
0.3166	1.168	0.39086	0.77714	1
0.3333	1.137	0.34046	0.79654	1
0.4166	1.018	0.17101	0.84699	1
0.5	0.93	0.085829	0.84417	1
0.5833	0.867	0.043112	0.82389	1
0.6666	0.804	0.021655	0.78234	1
0.75	0.703	0.010868	0.69213	1
0.8333	0.622	0.0054591	0.61654	1
0.9166	0.54	0.0027421	0.53726	1
1	0.477	0.0013762	0.47562	1
1.0833	0.421	0.00069127	0.42031	1
1.1666	0.364	0.00034723	0.36365	1
1.25	0.32	0.00017427	0.31983	1
1.3333	0.282	8.7534E-005	0.28191	1
1.4166	0.251	4.3968E-005	0.25096	1
1.5	0.226	2.2067E-005	0.22598	1
1.5833	0.201	1.1084E-005	0.20099	1
1.6666	0.182	5.5676E-006	0.18199	1
1.75	0.157	2.7943E-006	0.157	1
1.8333	0.138	1.4036E-006	0.138	1
1.9166	0.125	7.0501E-007	0.125	1
2	0.113	3.5383E-007	0.113	1
2.5	0.05	5.6735E-009	0.05	1
3	0.018	9.0971E-011	0.018	1

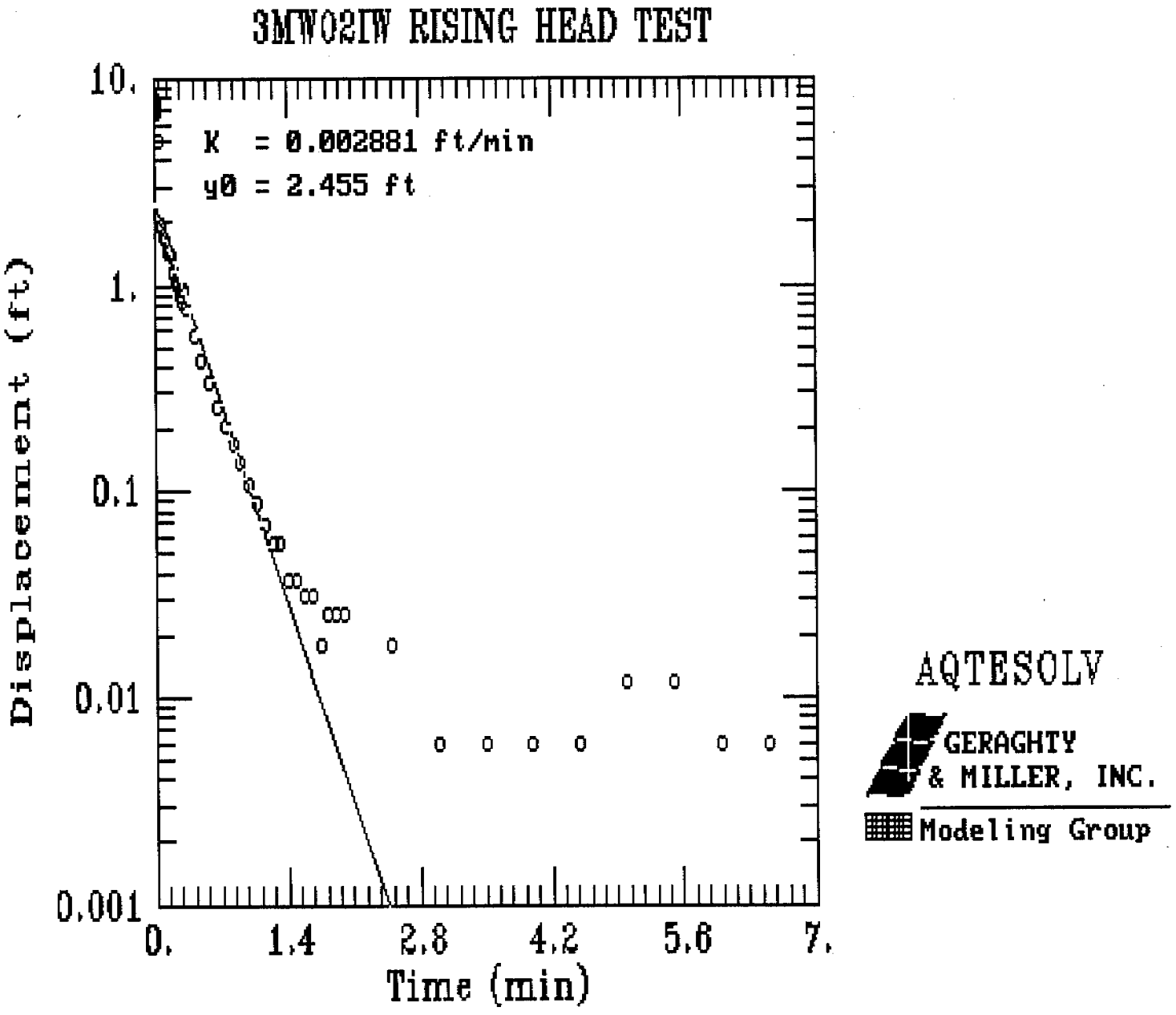
==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

```
        Estimate
  K  =   1.5597E-003
  y0 =   2.3442E+000
```

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>


3MW02IW RISING HEAD TEST
K = 0.002881 ft/min
y0 = 2.455 ft
Displacement (ft)
10.
1.
0.1
0.01
0.001
0.
1.4
2.8
4.2
5.6
7.
Time (min)
AQTESOLV
GERAGHTY & MILLER, INC.
Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S
Version 1.10

03/06/95 14:20:21

==

TEST DESCRIPTION

Data set........... B:3MW02IWR.DAT
Data set title..... 3MW02IW RISING HEAD TEST

Knowns and Constants:
- No. of data points.................. 52
- Radius of well casing.............. 0.083
- Radius of well...................... 0.25
- Aquifer saturated thickness......... 58.06
- Well screen length.................. 15
- Static height of water in well...... 58.06
- Log(Re/Rw).......................... 3.972
- A, B, C.............................. 0.000, 0.000, 2.989

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	1.5012E-002	+/-	1.2656E-003
y0 =	1.1429E+001	+/-	6.4474E-001

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 52
- Number of estimated parameters.... 2
- Degrees of freedom................ 50
- Residual mean..................... 0.1899
- Residual standard deviation....... 0.5607
- Residual variance................. 0.3144

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.02	9.132	8.2239	0.90806	1
0.0233	7.046	7.7892	-0.74323	1
0.0266	6.832	7.3775	-0.5455	1
0.03	7.33	6.976	0.35395	1
0.0333	7.815	6.6073	1.2077	1

0.05	5.035	5.0196	0.015406	1
0.0666	1.975	3.8197	-1.8447	1
0.0833	1.893	2.9018	-1.0088	1
0.1	1.729	2.2045	-0.47553	1
0.1166	1.628	1.6776	-0.049551	1
0.1333	1.489	1.2744	0.21456	1
0.15	1.42	0.9682	0.4518	1
0.1666	1.432	0.73676	0.69524	1
0.1833	1.369	0.55972	0.80928	1
0.2	1.161	0.42522	0.73578	1
0.2166	1.123	0.32357	0.79943	1
0.2333	1.06	0.24582	0.81418	1
0.25	0.997	0.18675	0.81025	1
0.2666	0.94	0.14211	0.79789	1
0.2833	0.883	0.10796	0.77504	1
0.3	0.833	0.082018	0.75098	1
0.3166	0.94	0.062412	0.87759	1
0.3333	0.782	0.047415	0.73459	1
0.4166	0.574	0.012038	0.56196	1
0.5	0.435	0.0030514	0.43195	1
0.5833	0.34	0.00077473	0.33923	1
0.6666	0.258	0.0001967	0.2578	1
0.75	0.208	4.9859E-005	0.20795	1
0.8333	0.17	1.2659E-005	0.16999	1
0.9166	0.138	3.214E-006	0.138	1
1	0.107	8.1467E-007	0.107	1
1.0833	0.088	2.0684E-007	0.088	1
1.1666	0.069	5.2515E-008	0.069	1
1.25	0.056	1.3311E-008	0.056	1
1.3333	0.056	3.3797E-009	0.056	1
1.4166	0.037	8.5807E-010	0.037	1
1.5	0.037	2.175E-010	0.037	1
1.5833	0.031	5.5222E-011	0.031	1
1.6666	0.031	1.4021E-011	0.031	1
1.75	0.018	3.5539E-012	0.018	1
1.8333	0.025	9.0231E-013	0.025	1
1.9166	0.025	2.2909E-013	0.025	1
2	0.025	5.8069E-014	0.025	1
2.5	0.018	1.5503E-017	0.018	1
3	0.006	4.1391E-021	0.006	1
3.5	0.006	1.1051E-024	0.006	1
4	0.006	2.9503E-028	0.006	1
4.5	0.006	7.8767E-032	0.006	1
5	0.012	2.1029E-035	0.012	1
5.5	0.012	5.6144E-039	0.012	1
6	0.006	1.499E-042	0.006	1
6.5	0.006	4.0019E-046	0.006	1

==

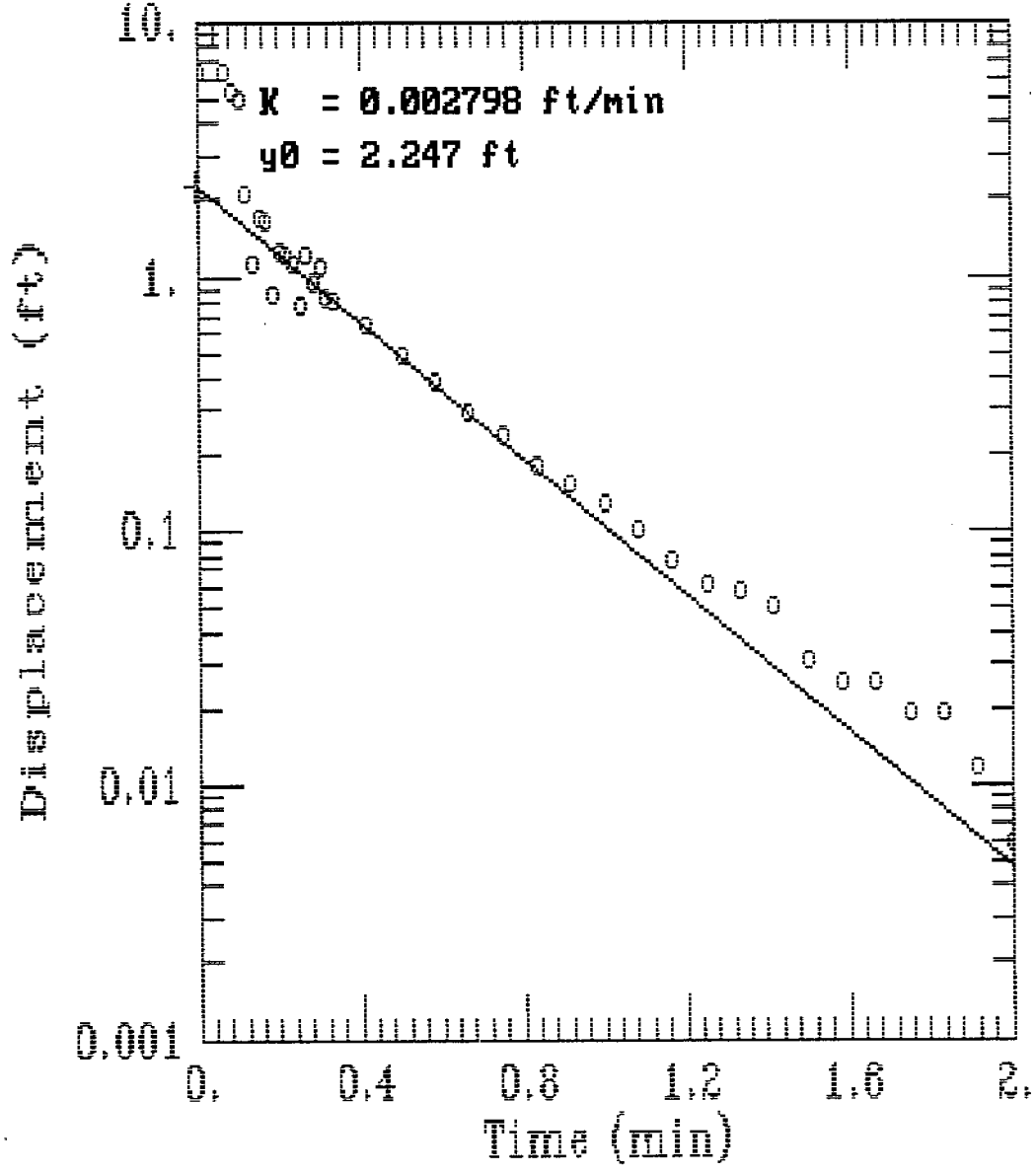
RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

```
        Estimate
  K  =   2.8150E-003
  y0 =   2.2728E+000
```

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

3MW02IW FALLING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S

Version 1.10

03/06/95 17:07:40

TEST DESCRIPTION

Data set........... B:3MW02IWF.DAT
Data set title..... 3MW02IW FALLING HEAD TEST

Knowns and Constants:
No. of data points.................. 37
Radius of well casing............... 0.083
Radius of well...................... 0.25
Aquifer saturated thickness......... 58.06
Well screen length.................. 15
Static height of water in well...... 58.06
Log(Re/Rw).......................... 3.972
A, B, C............................. 0.000, 0.000, 2.989

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	1.2024E-002	+/-	1.1746E-003
y0 =	1.4853E+001	+/-	1.9635E+000

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals................ 37
Number of estimated parameters.... 2
Degrees of freedom................ 35
Residual mean..................... 0.1519
Residual standard deviation....... 0.4856
Residual variance................. 0.2358

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.0666	6.35	6.1738	0.17623	1
0.0833	5.269	4.9539	0.31509	1
0.1	4.928	3.9751	0.95292	1
0.1166	2.096	3.1939	-1.0979	1
0.1333	1.136	2.5628	-1.4268	1

0.15	1.736	2.0564	-0.32041	1
0.1666	1.667	1.6523	0.014733	1
0.1833	0.865	1.3258	-0.4608	1
0.2	1.256	1.0638	0.19216	1
0.2166	1.2	0.85476	0.34524	1
0.2333	1.111	0.68587	0.42513	1
0.25	0.764	0.55035	0.21365	1
0.2666	1.2	0.44219	0.75781	1
0.2833	0.941	0.35482	0.58618	1
0.3	1.086	0.28471	0.80129	1
0.3166	0.84	0.22876	0.61124	1
0.3333	0.808	0.18356	0.62444	1
0.4166	0.65	0.061222	0.58878	1
0.5	0.486	0.020392	0.46561	1
0.5833	0.385	0.0068014	0.3782	1
0.6666	0.297	0.0022684	0.29473	1
0.75	0.24	0.00075559	0.23924	1
0.8333	0.183	0.00025201	0.18275	1
0.9166	0.152	8.4053E-005	0.15192	1
1	0.126	2.7997E-005	0.12597	1
1.0833	0.101	9.3378E-006	0.10099	1
1.1666	0.075	3.1144E-006	0.074997	1
1.25	0.063	1.0374E-006	0.062999	1
1.3333	0.057	3.4599E-007	0.057	1
1.4166	0.05	1.154E-007	0.05	1
1.5	0.031	3.8438E-008	0.031	1
1.5833	0.025	1.282E-008	0.025	1
1.6666	0.025	4.2759E-009	0.025	1
1.75	0.019	1.4242E-009	0.019	1
1.8333	0.019	4.7502E-010	0.019	1
1.9166	0.012	1.5843E-010	0.012	1
2	0.006	5.2772E-011	0.006	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	2.7975E-003
y0 =	2.2474E+000

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

SE1000C
Environmental Logger
12/09 20:59

Unit# 01607 Test 3

Setups:	INPUT 1
Type	Level (F)
Mode	Surface
I.D.	03004
Reference	0.000
Linearity	0.110
Scale factor	19.880
Offset	-0.060
Delay mSEC	50.000

Step 1 12/09 12:33:26

Elapsed Time	INPUT 1
0.0000	0.150
0.0033	0.144
0.0066	0.144
0.0100	0.138
0.0133	0.138
0.0166	-2.660
0.0200	-0.608
0.0233	-1.550
0.0266	-1.468
0.0300	-1.424
0.0333	-1.399
0.0500	-1.292
0.0666	-1.205
0.0833	-1.129
0.1000	-1.054
0.1166	-0.997
0.1333	-0.947
0.1500	-0.891
0.1666	-0.853
0.1833	-0.809
0.2000	-0.778
0.2166	-0.740
0.2333	-0.715
0.2500	-0.684
0.2666	-0.659
0.2833	-0.633
0.3000	-0.608
0.3166	-0.596
0.3333	-0.571
0.4166	-0.502
0.5000	-0.445
0.5833	-0.407
0.6666	-0.382
0.7500	-0.364
0.8333	-0.345
0.9166	-0.332
1.0000	-0.320
1.0833	-0.307
1.1666	-0.301
1.2500	-0.301
1.3333	-0.288
1.4166	-0.282
1.5000	-0.276

1.5833	-0.276
1.6666	-0.263
1.7500	-0.263
1.8333	-0.263
1.9166	-0.251
2.0000	-0.251
2.5000	-0.232
3.0000	-0.225
3.5000	-0.213
4.0000	-0.200
4.5000	-0.200
5.0000	-0.188
5.5000	-0.188
6.0000	-0.175
6.5000	-0.175
7.0000	-0.163
7.5000	-0.163
8.0000	-0.156
8.5000	-0.156
9.0000	-0.144
9.5000	-0.144
10.0000	-0.138
12.0000	-0.144
14.0000	-0.131
16.0000	-0.112
18.0000	-0.106
20.0000	-0.100
22.0000	-0.087
24.0000	-0.075
26.0000	-0.068
28.0000	-0.062
30.0000	-0.056
32.0000	-0.031
34.0000	-0.050
36.0000	-0.037
38.0000	-0.043
40.0000	-0.043
42.0000	-0.037
44.0000	-0.018

SE1000C
Environmental Logger
12/09 21:02

Unit# 01607 Test 4

Setups:	INPUT 1
Type	Level (F)
Mode	Surface
I.D.	03005
Reference	0.000
Linearity	0.110
Scale factor	19.880
Offset	-0.060
Delay mSEC	50.000

Step 1 12/09 14:14:53

Elapsed Time	INPUT 1
0.0000	0.031
0.0033	0.037
0.0066	0.037
0.0100	0.037
0.0133	-0.012
0.0166	-3.077
0.0200	-6.340
0.0233	-5.920
0.0266	-1.651
0.0300	-2.191
0.0333	-2.223
0.0500	-2.210
0.0666	-2.122
0.0833	-1.972
0.1000	-1.802
0.1166	-1.614
0.1333	-1.432
0.1500	-1.268
0.1666	-1.118
0.1833	-0.979
0.2000	-0.866
0.2166	-0.753
0.2333	-0.665
0.2500	-0.584
0.2666	-0.515
0.2833	-0.452
0.3000	-0.395
0.3166	-0.351
0.3333	-0.314
0.4166	-0.182
0.5000	-0.119
0.5833	-0.081
0.6666	-0.062
0.7500	-0.050
0.8333	-0.031
0.9166	-0.025
1.0000	-0.025
1.0833	-0.018
1.1666	-0.006
1.2500	-0.006
1.3333	0.000
1.4166	0.000
1.5000	0.000

1.5833	0.006
1.6666	0.006
1.7500	0.012
1.8333	0.006
1.9166	0.012
2.0000	0.012
2.5000	0.018
3.0000	0.025
3.5000	0.025
4.0000	0.025
4.5000	0.025
5.0000	0.025
5.5000	0.025
6.0000	0.025
6.5000	0.031
7.0000	0.018
7.5000	0.025
8.0000	0.025
8.5000	0.025
9.0000	0.031
9.5000	0.031
10.0000	0.031
12.0000	0.012
14.0000	0.018
16.0000	0.018
18.0000	0.018
20.0000	0.018
22.0000	0.012

SE1000C
Environmental Logger
12/09 21:06

Unit# 01607 Test 5

Setups:	INPUT 1
Type	Level (F)
Mode	Surface
I.D.	03006
Reference	0.000
Linearity	0.110
Scale factor	19.880
Offset	-0.060
Delay mSEC	50.000

Step 1 12/09 15:20:29

Elapsed Time	INPUT 1
0.0000	0.012
0.0033	0.050
0.0066	-1.633
0.0100	-8.839
0.0133	-7.252
0.0166	-4.001
0.0200	-1.018
0.0233	-2.814
0.0266	-2.676
0.0300	-2.644
0.0333	-2.682
0.0500	-2.544
0.0666	-2.481
0.0833	-2.431
0.1000	-2.381
0.1166	-2.324
0.1333	-2.286
0.1500	-2.236
0.1666	-2.199
0.1833	-2.161
0.2000	-2.123
0.2166	-2.085
0.2333	-2.054
0.2500	-2.016
0.2666	-1.985
0.2833	-1.954
0.3000	-1.928
0.3166	-1.897
0.3333	-1.866
0.4166	-1.721
0.5000	-1.602
0.5833	-1.489
0.6666	-1.382
0.7500	-1.294
0.8333	-1.206
0.9166	-1.124
1.0000	-1.055
1.0833	-0.986
1.1666	-0.923
1.2500	-0.860
1.3333	-0.804
1.4166	-0.754
1.5000	-0.710

1.5833	-0.659
1.6666	-0.622
1.7500	-0.578
1.8333	-0.540
1.9166	-0.509
2.0000	-0.477
2.5000	-0.339
3.0000	-0.251
3.5000	-0.201
4.0000	-0.169
4.5000	-0.144
5.0000	-0.119
5.5000	-0.100
6.0000	-0.094
6.5000	-0.081
7.0000	-0.069
7.5000	-0.062
8.0000	-0.062
8.5000	-0.056
9.0000	-0.044
9.5000	-0.044
10.0000	-0.037
12.0000	-0.044
14.0000	-0.031
16.0000	-0.031
18.0000	-0.025
20.0000	-0.018
22.0000	-0.025
24.0000	-0.025
26.0000	-0.025

SE1000C
Environmental Logger
12/09 21:10

Unit# 01607 Test 6

Setups:	INPUT 1
Type	Level (F)
Mode	Surface
I.D.	03007
Reference	0.000
Linearity	0.110
Scale factor	19.880
Offset	-0.060
Delay mSEC	50.000

Step 1 12/09 16:21:19

Elapsed Time	INPUT 1
0.0000	0.025
0.0033	-1.651
0.0066	-5.430
0.0100	-5.675
0.0133	-1.419
0.0166	-3.052
0.0200	-2.286
0.0233	-2.731
0.0266	-2.687
0.0300	-2.505
0.0333	-2.487
0.0500	-2.323
0.0666	-2.166
0.0833	-2.028
0.1000	-1.896
0.1166	-1.777
0.1333	-1.658
0.1500	-1.551
0.1666	-1.450
0.1833	-1.350
0.2000	-1.256
0.2166	-1.174
0.2333	-1.092
0.2500	-1.017
0.2666	-0.948
0.2833	-0.885
0.3000	-0.816
0.3166	-0.760
0.3333	-0.722
0.4166	-0.533
0.5000	-0.427
0.5833	-0.370
0.6666	-0.332
0.7500	-0.301
0.8333	-0.276
0.9166	-0.257
1.0000	-0.244
1.0833	-0.232
1.1666	-0.226
1.2500	-0.213
1.3333	-0.207
1.4166	-0.201
1.5000	-0.188

1.5833	-0.182
1.6666	-0.175
1.7500	-0.169
1.8333	-0.163
1.9166	-0.163
2.0000	-0.150
2.5000	-0.125
3.0000	-0.106
3.5000	-0.087
4.0000	-0.075
4.5000	-0.062
5.0000	-0.050
5.5000	-0.043
6.0000	-0.037
6.5000	-0.031
7.0000	-0.025
7.5000	-0.025
8.0000	-0.012
8.5000	-0.018
9.0000	-0.012
9.5000	-0.012
10.0000	-0.006

SE1000C
Environmental Logger
12/10 17:36

Unit# 01607 Test 0

Setups:	INPUT 1
Type	Level (F)
Mode	Surface
I.D.	03008
Reference	0.000
Linearity	0.110
Scale factor	19.880
Offset	-0.060
Delay mSEC	50.000

Step 1 12/10 08:41:23

Elapsed Time	INPUT 1
0.0000	-0.201
0.0033	-3.631
0.0066	-8.402
0.0100	-10.546
0.0133	-7.793
0.0166	-6.111
0.0200	-0.747
0.0233	-3.612
0.0266	-2.243
0.0300	-2.563
0.0333	-2.413
0.0500	-2.281
0.0666	-2.098
0.0833	-2.054
0.1000	-1.941
0.1166	-1.853
0.1333	-1.765
0.1500	-1.684
0.1666	-1.608
0.1833	-1.539
0.2000	-1.476
0.2166	-1.420
0.2333	-1.370
0.2500	-1.326
0.2666	-1.275
0.2833	-1.238
0.3000	-1.200
0.3166	-1.168
0.3333	-1.137
0.4166	-1.018
0.5000	-0.930
0.5833	-0.867
0.6666	-0.804
0.7500	-0.703
0.8333	-0.622
0.9166	-0.540
1.0000	-0.477
1.0833	-0.421
1.1666	-0.364
1.2500	-0.320
1.3333	-0.282
1.4166	-0.251
1.5000	-0.226

1.5833	-0.201
1.6666	-0.182
1.7500	-0.157
1.8333	-0.138
1.9166	-0.125
2.0000	-0.113
2.5000	-0.050
3.0000	-0.018
3.5000	0.000
4.0000	0.006
4.5000	0.012
5.0000	0.018
5.5000	0.018
6.0000	0.018
6.5000	0.018
7.0000	0.018
7.5000	0.018
8.0000	0.012
8.5000	0.012
9.0000	0.018
9.5000	0.018
10.0000	0.018
12.0000	0.012
14.0000	0.012

SE1000C
Environmental Logger
12/10 17:40

Unit# 01607 Test 1

Setups:	INPUT 1
Type	Level (F)
Mode	Surface
I.D.	03020
Reference	0.000
Linearity	0.110
Scale factor	19.880
Offset	-0.060
Delay mSEC	50.000

Step 1 12/10 09:49:59

Elapsed Time	INPUT 1
0.0000	-0.006
0.0033	-0.012
0.0066	-1.199
0.0100	-4.360
0.0133	-6.844
0.0166	-8.804
0.0200	-9.132
0.0233	-7.046
0.0266	-6.832
0.0300	-7.330
0.0333	-7.815
0.0500	-5.035
0.0666	-1.975
0.0833	-1.893
0.1000	-1.729
0.1166	-1.628
0.1333	-1.489
0.1500	-1.420
0.1666	-1.432
0.1833	-1.369
0.2000	-1.161
0.2166	-1.123
0.2333	-1.060
0.2500	-0.997
0.2666	-0.940
0.2833	-0.883
0.3000	-0.833
0.3166	-0.940
0.3333	-0.782
0.4166	-0.574
0.5000	-0.435
0.5833	-0.340
0.6666	-0.258
0.7500	-0.208
0.8333	-0.170
0.9166	-0.138
1.0000	-0.107
1.0833	-0.088
1.1666	-0.069
1.2500	-0.056
1.3333	-0.056
1.4166	-0.037
1.5000	-0.037

1.5833	-0.031
1.6666	-0.031
1.7500	-0.018
1.8333	-0.025
1.9166	-0.025
2.0000	-0.025
2.5000	-0.018
3.0000	-0.006
3.5000	-0.006
4.0000	-0.006
4.5000	-0.006
5.0000	-0.012
5.5000	-0.012
6.0000	-0.006
6.5000	-0.006
7.0000	0.000
7.5000	-0.006
8.0000	-0.006
8.5000	0.000
9.0000	-0.012
9.5000	-0.006
10.0000	0.006

SE1000C
Environmental Logger
12/10 17:38

Unit# 01607 Test 1

Setups:	INPUT 1
Type	Level (F)
Mode	Surface
I.D.	03020
Reference	0.000
Linearity	0.110
Scale factor	19.880
Offset	-0.060
Delay mSEC	50.000

Step 0 12/10 09:34:27

Elapsed Time	INPUT 1
0.0000	0.006
0.0033	0.006
0.0066	0.012
0.0100	0.012
0.0133	0.000
0.0166	0.000
0.0200	0.012
0.0233	0.012
0.0266	0.012
0.0300	0.019
0.0333	0.025
0.0500	3.619
0.0666	6.350
0.0833	5.269
0.1000	4.928
0.1166	2.096
0.1333	1.136
0.1500	1.736
0.1666	1.667
0.1833	0.865
0.2000	1.256
0.2166	1.200
0.2333	1.111
0.2500	0.764
0.2666	1.200
0.2833	0.941
0.3000	1.086
0.3166	0.840
0.3333	0.808
0.4166	0.650
0.5000	0.486
0.5833	0.385
0.6666	0.297
0.7500	0.240
0.8333	0.183
0.9166	0.152
1.0000	0.126
1.0833	0.101
1.1666	0.075
1.2500	0.063
1.3333	0.057
1.4166	0.050
1.5000	0.031

1.5833	0.025
1.6666	0.025
1.7500	0.019
1.8333	0.019
1.9166	0.012
2.0000	0.006
2.5000	0.000
3.0000	-0.006
3.5000	-0.006
4.0000	0.000
4.5000	-0.006
5.0000	-0.006
5.5000	-0.006
6.0000	0.000
6.5000	-0.006
7.0000	-0.006
7.5000	-0.006
8.0000	-0.012
8.5000	-0.012
9.0000	-0.006
9.5000	-0.006
10.0000	-0.006
12.0000	-0.006
14.0000	0.000

APPENDIX F
BASE BACKGROUND SOIL REPORT

EVALUATION OF METALS IN SURFACE AND SUBSURFACE SOIL AT MCB, CAMP LEJEUNE

MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

CONTRACT TASK ORDER 0340

APRIL1, 1996

Prepared for:

DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES
ENGINEERING COMMAND
Norfolk, Virginia

Under the:

LANTDIV CLEAN Program
Contract N62470-89-D-4814

Prepared by:

BAKER ENVIRONMENTAL, INC.
Coraopolis, Pennsylvania

1.0 INTRODUCTION

Under the Department of the Navy (DoN) Installation Restoration Program (IRP). Baker Environmental, Inc. (Baker) has conducted numerous remedial investigations at Marine Corps Base (MCB), Camp Lejeune, North Carolina. As part of these investigations soil, surface and subsurface, samples have been collected. These samples provide the basis for a compilation of data that is representative of the natural concentration of metals in soils within the boundaries of MCB, Camp Lejeune. In general, chemical specific standards and criteria are not available for soil and as a result, base-specific background concentrations have been compiled from a number of locations throughout MCB, Camp Lejeune, allowing for the evaluation of background levels of metals in the surface and subsurface soils. The objectives of this report are as follows:

- To provide insight into the selection of soil locations used as control or background sample locations.
- To discuss general soil types encountered in each area that samples were collected.
- To provide the base background concentrations for each of the metals.
- To provide maps illustrating the locations of each of the background and/or control samples.

2.0 SELECTION OF SAMPLE LOCATIONS

The samples selected for inclusion into the basewide database were collected during nine Remedial Investigations including 23 sites. These samples were collected in areas not known to have been impacted by site operations or disposal activities based on the site histories. In some cases, these soils are representative of naturally occurring conditions and in other cases the soils have been impacted by other base related activities. In the later case the samples are referred to as "control" samples. Control samples are samples which may not represent background conditions, but represent the current state of soil quality upgradient of the site. Examples of activities that may not be site related but still impact the quality of the soils upgradient and across the entire site would include troop maneuvers, artillery practice, and various forms of combat training. Fifty-two surface and forty-six subsurface soil samples were collected from the following sites for inclusion into the base background data base: Sites 6, 78, 41, 69, 74, 1, 2, 28, 30, 35, 48, 16, 80, 7, 36, 43, 44, 54, 86, and 65 (see Figures 1 through 21).

Site background and base background concentration values for metal elements in surface and subsurface soil are presented in Tables 1 and 2, respectively. At the end of each of the tables, the minimum and maximum concentrations, the average and 2 times average concentrations are presented for each of the elements of concern.

3.0 GENERALIZED SOIL COMPARISON

MCB, Camp Lejeune is situated within the Tidewater region of the Atlantic Coastal Plain physiographic province. The sediments of the Atlantic Coastal Plain consist mostly of interbedded sand, silt, clay, calcareous clay, shell beds, sandstone and limestone. These sediments are layered in interfingering beds and lenses that gently dip and thicken to the southeast to a combined thickness of approximately 1,500 feet. These sediments were deposited in marine or near-shore environments and range in age from early Cretaceous to Quaternary time. Regionally, they comprise 10 aquifers and 9 confining units which overlie

igneous and metamorphic basement rocks of the pre-Cretaceous age. Seven of these aquifers and their associated confining units are present in the MCB, Camp Lejeune area (ESE, 1990).

For the basis of discussion, MCB, Camp Lejeune has been segregated into six areas that will be discussed. These areas are as follows: Camp Geiger, Marine Corps Air Station (MCAS), Mumford Point/Tarawa Terrace, Hadnot Point/Holcomb Boulevard, Rifle Range, and Courthouse Bay. The discussion will only involve the soil descriptions from borings advanced for the purpose of collecting background or control samples. In addition, only the soils between ground surface and the water table will be discussed since this is the interval from which the samples were collected.

Sites 35, 36, and 44 are considered within the boundaries of Camp Geiger for the purpose of this report. Fairly consistent soil types were encountered at the three sites considered within the Camp Geiger area. Some of these sites may actually be located just beyond the actual boundaries of Camp Geiger. Soils collected from ground surface to one foot below surface at the forementioned sites were primarily sand with varying amounts of silt.

The soils within MCAS (Sites 41, 43, 48, 54, and 86) are vary inconsistent throughout the area. Background boring logs indicate that sand, silt and clay are encountered to a depth of nine feet. This area of Camp Lejeune has numerous lenses of clay that can range from one to several feet thick, and is discontinuous. One location encountered clay within Site 41 from the zero to one foot interval. The soils from one to seven feet were a combination of sands, silts and clays.

The soils at the Mumford Point/Tarawa Terrace area (Sites 7, 16, and 80) are similar to the soils in the area of Camp Geiger. The first foot of soil appears to be consistently sand and silt with the exception of two locations which specify that clay was encountered. Clay was encountered at Sites 7 and 80. Below one foot bgs the soils are consistently interbedded sand and silt with discontinuous clay beds.

Sites 1, 6, 28, 30 and 74 make up the Hadnot Point/Holcomb Boulevard area. The soils encountered in this area of MCB, Camp Lejeune were primarily sand with varying percentages of silt and clay. This lithology is consistent to depths greater than 19 feet.

Limited information exists from the Rifle Range area. The only site included in the background data is Site 69. The background borings were advanced only to one foot bgs. The soil type encountered at each location was sand. Monitoring wells installed at Site 69 indicate a predominance of fine sand with trace silt present in the subsurface soil. However, within a few monitoring wells, subsurface soils indicate the presence of clay with fine to medium sand and trace silts.

The Courthouse Bay area is comprised of Site 65. The soil types described at Site 65 indicate that sand is the predominant soil from ground surface to 17 feet bgs. At Site 65 a clay was encountered between nine and 11 feet bgs, with sand being encountered again to a groundwater.

Tables 3 and 4 provide a summary of surface soil and subsurface soil, respectively for the sites referenced above.

TABLES

TABLE 1
BASE BACKGROUND
SURFACE SOILS
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	6-201N-SB11-00	6-201N-SB12-00	6-201C-SB38-00	6-201C-SB39-00	78-BB-SB-00	41-BB-SB01-00	41-BB-SB02-00
Aluminum	1120	45.25	748	245	1490	528	1430
Antimony	4.7	4.8	1.4	1.3	0.33	2.07	0.865
Arsenic	0.28	0.29	0.91	0.28	0.22	0.356	0.317
Barium	2	2.05	16.5	3.5	8.6	1.525	4.06
Beryllium	0.095	0.1	0.03	0.03	0.11	0.1	0.09
Cadmium	0.285	0.295	0.58	0.175	0.55	0.392	0.349
Calcium	178	108	10700	402	941	18.3	54.6
Chromium	0.475	0.49	1.6	0.33	2.2	1.02	0.91
Cobalt	0.85	0.9	0.195	0.185	1.8	1.965	1.75
Copper	0.55	0.6	3.1	0.75	2	2	87.2
Iron	525	160	684	238	1020	83	970
Lead	2	3	62.9	25.1	20.4	2.59	10.9
Magnesium	11.65	10.1	200	26	118	8.85	39.1
Manganese	3.1	1	16	4.5	11.1	0.87	10.2
Mercury	0.01	0.01	0.05	0.06	0.05	0.0305	0.078
Nickel	1.6	1.65	0.8	0.75	2.2	3.55	3.15
Potassium	36.55	37.5	54.5	30.6	102	91.5	81.5
Selenium	0.47	0.485	0.5	0.465	0.31	0.311	0.277
Silver	0.95	1	0.195	0.185	0.33	0.1965	0.175
Sodium	19.65	15.85	14	4.7	67.5	44.1	39.3
Thallium	0.19	0.195	0.205	0.185	0.11	0.565	0.505
Vanadium	1.05	0.8	2.8	1.6	5.3	2.505	2.23
Zinc	0.55	0.8	23.1	4.6	28.3	2.66	6.11
Cyanide					0.265	1.23	1.09

Concentrations are in millograms per kilogram (mg/kg).
Qualifiers have been removed per Baker's standards.
Qualifiers R, U, and UJ have been given one-half the detection value.
Qualifiers J, NJ, and B have been removed with no detection value change.

TABLE 1
BASE BACKGROUND
SURFACE SOILS
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	41-BB-SB03-00	41-BB-SB04-00	69-BB-SB01-00	69-BB-SB02-00	69-BB-SB03-00	69-BB-SB04-00	74-BB-SB01-00
Aluminum	2100	5370	1310	4150	9570	5360	3110
Antimony	0.87	0.94	0.85	0.95	0.95	0.95	0.905
Arsenic	0.3205	0.345	0.31	0.345	0.79	0.35	0.3325
Barium	4.53	13.4	5.6	15.4	19.6	20.8	11.1
Beryllium	0.09	0.095	0.14	0.155	0.155	0.155	0.148
Cadmium	0.3525	0.38	0.26	0.285	0.29	0.29	0.2695
Calcium	79.2	46.3	28.2	43.6	282	53	181
Chromium	2.64	3.24	0.75	4	12.5	5.8	0.84
Cobalt	1.77	1.905	2.1	2.3	2.35	2.35	2.225
Copper	1.8	1.94	1.75	1.9	1.95	1.95	4.56
Iron	1120	2160	425	1430	9640	3890	1740
Lead	9.98	6.61	2.8	6	5.3	5.6	5.19
Magnesium	74	144	37.3	91.8	610	247	70
Manganese	11.6	11.8	15.1	12.7	12.3	8.3	9.44
Mercury	0.057	0.08	0.015	0.06	0.045	0.025	0.04
Nickel	3.2	3.45	2.9	1.6	1.65	1.65	1.56
Potassium	190	177	32.25	35.5	361	106	87.5
Selenium	0.2795	0.301	0.27	0.295	0.3	0.3	0.29
Silver	0.177	0.1905	0.045	0.045	4.3	0.39	0.046
Sodium	39.65	42.75	20	22	22.4	22.3	70.4
Thallium	0.51	0.55	0.495	0.55	0.55	0.55	0.53
Vanadium	2.255	2.43	1.8	1.95	13.5	5.6	5.21
Zinc	5.97	7.15	3.1	5.2	10.8	7.9	1.27
Cyanide	1.1	1.19	2.2	2.4	2.4	2.4	1.15

Concentrations are in millograms per kilogram (mg/kg).
Qualifiers have been removed per Baker's standards.
Qualifiers R, U, and UJ have been given one-half the detection value.

Qualifiers J, NJ, and B have been removed with no detection value change.

TABLE 1
BASE BACKGROUND
SURFACE SOILS
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	74-BB-SB02-00	74-BB-SB03-00	74-BB-SB04-00	1-BB-SB38-00	1-BB-SB39-00	1-GW13-00	28-BB-SB37-00	28-BB-SB38-00
Aluminum	1730	1000	2100	3920	4930	1600	2840	379
Antimony	0.925	0.855	0.96	3.6	3.15	8.0	3.55	2.9
Arsenic	0.339	0.314	0.352	0.315	0.28	0.29	0.31	0.255
Barium	1.6	3.12	16	9.6	9.3	2.8	5.1	1.8
Beryllium	0.151	0.14	0.1565	0.105	0.10	0.095	0.105	0.085
Cadmium	0.275	0.2545	0.285	0.315	0.28	0.285	0.31	0.255
Calcium	46.9	43.9	377	538	353	248	114	13.10
Chromium	2.7	0.795	1.98	3.5	4.7	4.1	2.0	0.60
Cobalt	2.27	2.1	2.355	0.42	0.375	0.38	0.415	0.34
Copper	3.92	1.755	1.965	1.6	0.6	1.9	0.6	0.50
Iron	401	787	1640	2270	1470	1000	1210	444
Lead	3.79	1.14	142	5.9	4.5	4.2	2.8	1.7
Magnesium	37.5	16.1	52.5	152	183	47.2	68.8	12.9
Manganese	3.13	7.37	4.61	10.6	4.2	5.9	2.7	3.3
Mercury	0.048	0.0305	0.05	0.03	0.025	0.03	0.025	0.025
Nickel	1.59	1.475	1.65	0.8	0.65	0.65	0.750	0.6
Potassium	89	82.5	92.5	149	153	20.650	29.75	8.35
Selenium	0.296	0.274	0.307	0.42	0.375	0.38	0.415	0.34
Silver	0.047	0.0435	0.0485	0.5	0.465	0.475	0.5	0.425
Sodium	71.8	87.6	122	11.0	17.2	7.25	28.5	18.2
Thallium	0.54	0.4985	0.56	0.42	0.38	0.38	0.415	0.34
Vanadium	1.94	1.8	4.69	7.9	6.1	3.5	3.6	2.1
Zinc	1.15	1.97	2.87	7.2	4.0	1.4	0.9	0.71
Cyanide	1.17	1.08	1.21					

Concentrations are in milligrams per kilogram (mg/kg).
Qualifiers have been removed per Baker's standards.
Qualifiers R, U, and UJ have been given one-half the detection value.

Qualifiers J, NJ, and B have been removed with no detection value change.

TABLE 1
BASE BACKGROUND
SURFACE SOILS
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	28-GW09DW-00	30-BB-SB12-00	30-BB-SB13-00	30-BB-SB14-00	30-BB-SB15-00	30-BB-SB16-00	30-GW03-00	35-SS01-00
Aluminum	5460	54.6	24.9	49.2	37.5	196	17.7	2220.0
Antimony	3.35	3.2	3.2	3.3	3.5	3.650	3.9	2.45
Arsenic	1.8	0.28	0.29	0.29	0.31	0.325	0.34	0.065
Barium	11.6	1.8	0.7	0.7	0.7	3.100	0.8	15.6
Beryllium	0.10	0.095	0.10	0.10	0.10	0.110	0.12	0.11
Cadmium	0.295	0.28	0.29	0.29	0.31	0.325	0.34	0.04
Calcium	368	11.45	4.3	9.9	9.0	172	5.2	605.0
Chromium	6.0	1.6	0.7	1.9	0.7	0.75	0.8	1.9
Cobalt	0.91	0.375	0.38	0.38	0.41	0.43	0.45	0.60
Copper	2.9	0.55	0.6	0.6	0.6	0.65	0.7	3.9
Iron	2250	276	102	218	69.7	167	80.4	1250.0
Lead	11.6	3.3	0.47	2.4	0.73	4.4	0.86	3.60
Magnesium	157	6.5	2.6	2.6	2.8	37.1	3.1	71.6
Manganese	4.1	11.9	4.4	9.5	1.3	2.5	2.3	5.5
Mercury	0.025	0.06	0.02	0.03	0.05	0.03	0.03	0.065
Nickel	1.9	0.65	0.7	0.7	1.7	0.9	0.8	1.3
Potassium	158	8.25	11.1	3.8	1.0	29.6	1.2	129.5
Selenium	0.94	0.375	0.38	0.38	0.41	0.43	0.45	0.075
Silver	0.49	0.47	0.47	0.48	0.5	0.6	0.6	0.16
Sodium	15.0	14.8	26.0	4.9	5.2	18.2	5.8	126.00
Thallium	0.395	0.375	0.38	0.38	0.41	0.43	0.45	0.06
Vanadium	8.3	1.7	0.75	1.7	0.31	0.76	0.34	3.60
Zinc	6.6	0.35	0.30	0.48	1.7	2.0	1.2	7.4
Cyanide								

Concentrations are in millograms per kilogram (mg/kg).
Qualifiers have been removed per Baker's standards.
Qualifiers R, U, and UJ have been given one-half the detection value.

Qualifiers J, NJ, and B have been removed with no detection value change.

TABLE 1
BASE BACKGROUND
SURFACE SOILS
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	BB-SB02-00	BB-SB03-00	16-BB-SB01-00	16-BB-SB02-00	16-BB-SB03-00	80-BB-SB01-00	80-BB-SB02-00	80-BB-SB03-00
Aluminum	3630.0	1950.0	1710.0	3630	1950	2240.0	7770.0	2850.0
Antimony	5.00	5.55	5.05	5	5.55	1.35	1.40	1.40
Arsenic	1.000	1.100	1.000	1	1.1	0.250	3.200	0.265
Barium	7.4	7.0	4.1	7.4	7	9.9	13.0	11.6
Beryllium	0.10	0.11	0.23	0.1	0.11	0.020	0.10	0.06
Cadmium	0.50	0.55	1.00	0.5	0.55	0.165	0.175	0.175
Calcium	113.0	227.0	96.8	113	227	505	997.0	239.0
Chromium	3.3	2.5	1.0	3.3	2.5	1.200	10.0	2.0
Cobalt	1.00	1.10	1.00	1	1.1	0.205	1.30	0.45
Copper	1.0	1.1	1.0	1	1.1	1.3	2.2	0.92
Iron	2150.0	1610.0	1260.0	2150	1610	604.0	5550.0	1450.0
Lead	5.20	10.20	7.40	5.2	10.2	7.5	8.90	8.30
Magnesium	99.1	69.4	42.9	99.1	69.4	94.8	289.0	94.2
Manganese	7.4	5.5	6.9	7.4	5.5	66.0	30.7	12.8
Mercury	0.055	0.055	0.055	0.055	0.055	0.050	0.050	0.060
Nickel	2.0	2.25	2.00	2	2.25	1.4	2.70	1.40
Potassium	1.0	111.5	101.0	100	111.5	163.0	416.0	90.9
Selenium	0.500	0.550	0.500	0.5	0.55	0.285	0.300	0.300
Silver	0.50	0.55	0.50	0.5	0.55	0.220	0.23	0.23
Sodium	25.20	26.20	35.90	25.2	26.2	24.1	77.10	72.70
Thallium	1.00	1.10	1.00	1	1.1	0.435	0.46	0.465
Vanadium	5.40	3.10	4.50	5.4	3.1	2.3	14.70	4.30
Zinc	8.7	22.1	9.2	4.35	22.1	6.1	12.9	3.5
Cyanide								

Concentrations are in milligrams per kilogram (mg/kg).
Qualifiers have been removed per Baker's standards.
Qualifiers R, U, and UJ have been given one-half the detection value.

Qualifiers J, NJ, and B have been removed with no detection value change.

TABLE 1
BASE BACKGROUND
SURFACE SOILS
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	7-BB-SB01-00	7-BB-SB02-00	7-BB-SB03-00	36-BB-SB01-00	36-BB-SB02-00	36-BB-SB03-00	43-BB-SB01-00	43-BB-SB02-00
Aluminum	7180.0	3770.0	5800.0	6950	2300	2380	3520	2510
Antimony	6.05	5.50	5.60	1.15	1.2	1.75	2.35	2.3
Arsenic	1.200	1.100	3.900	0.42	0.205	0.17	0.51	0.55
Barium	12.0	10.2	9.7	13.2	12.4	14	6.3	10.8
Beryllium	0.26	0.11	0.11	0.03	0.035	0.075	0.105	0.1
Cadmium	0.600	0.550	0.550	0.31	0.3	0.235	0.335	0.31
Calcium	397.0	69.5	615.0	462	897	1690	1180	908
Chromium	8.4	3.8	10.6	7.9	2.7	3.1	2.8	2.8
Cobalt	1.20	1.10	1.10	0.245	0.255	0.255	0.345	0.335
Copper	1.20	1.10	2.30	2.8	2.8	4.9	0.7	11.2
Iron	3050.0	2170.0	7510.0	6670	1750	1560	1050	2050
Lead	7.10	6.40	8.70	10.3	17.5	39.6	6.6	13.6
Magnesium	104.0	50.5	79.5	185	105	86	68.9	56.4
Manganese	3.25	3.1	1.8	6.9	14.3	21.4	3	5
Mercury	0.060	0.060	0.060	0.045	0.05	0.045	0.13	0.12
Nickel	2.40	2.20	2.25	0.45	1.6	0.9	1.25	1.2
Potassium	121.0	110.0	111.5	138	60.2	58	78.5	76
Selenium	0.600	0.550	1.300	0.12	0.16	0.135	0.195	0.17
Silver	0.60	0.55	0.55	0.265	0.275	0.255	0.345	0.335
Sodium	15.80	15.25	17.30	13.1	14.1	14.05	14.45	9.9
Thallium	1.200	1.100	1.100	0.055	0.075	0.1	0.12	0.105
Vanadium	9.70	5.40	18.20	15.4	8.3	6.4	1.6	3.7
Zinc	5.3	2.9	3.8	6	12.7	20.8	2.6	16.7
Cyanide								

Concentrations are in millograms per kilogram (mg/kg).
Qualifiers have been removed per Baker's standards.
Qualifiers R, U, and UJ have been given one-half the detection value.

Qualifiers J, NJ, and B have been removed with no detection value change.

TABLE 1
BASE BACKGROUND
SURFACE SOILS
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	43-BB-SB03-00	44-BB-SB01-00	54-BB-SB01-00	54-BB-SB02-00	86-BB-SB01-00	65-DW04-00	MIN	MAX	AVG	2Xaverage
Aluminum	2730	4950	8990	4950	6590	773	17.7	9570	2928.041	5856.083
Antimony	2.2	1.2	1.25	1.3	1.95	5.55	0.33	8	2.727	5.455
Arsenic	0.67	1.3	1.1	1.2	0.45	1.1	0.065	3.9	0.661	1.322
Barium	13	14.9	18.7	13.3	13.9	6.9	0.65	20.8	8.646	17.292
Beryllium	0.095	0.08	0.0345	0.0375	0.085	0.11	0.02	0.26	0.103	0.205
Cadmium	0.3	0.325	0.335	0.34	0.265	0.55	0.04	1	0.348	0.696
Calcium	1610	668	1020	3590	3960	79.3	4.25	10700	686.488	1372.977
Chromium	2.9	5.9	9.2	6.8	6.5	1.1	0.33	12.5	3.303	6.607
Cobalt	0.32	0.43	0.375	0.41	0.285	4.15	0.185	4.15	1.023	2.046
Copper	0.75	2.5	2.1	4.2	2.2	1.1	0.5	87.2	3.552	7.104
Iron	1110	3220	4700	2780	4030	509	69.7	9640	1851.213	3702.427
Lead	13.8	19.6	3.95	12.3	21.5	2	0.47	142	11.685	23.370
Magnesium	60.5	189	371	259	233	30.3	2.55	610	101.480	202.960
Manganese	6.5	6.7	14.8	19.9	11.5	9.6	0.87	66	9.255	18.510
Mercury	0.05	0.06	0.041	0.04	0.04	0.055	0.01	0.13	0.047	0.094
Nickel	1.15	1.7	1.3	1.6	7.2	2.25	0.45	7.2	1.727	3.455
Potassium	73.5	220	223	175	160	111.5	1	416	100.030	200.060
Selenium	0.185	0.34	0.145	0.13	0.43	0.55	0.075	1.3	0.377	0.753
Silver	0.32	0.28	0.285	0.295	0.285	0.55	0.0435	4.3	0.440	0.880
Sodium	12.7	12.75	8.3	9.55	18.3	22.25	4.7	126	29.507	59.013
Thallium	0.11	0.065	0.065	0.06	0.13	1.1	0.055	1.2	0.462	0.924
Vanadium	4	11.8	13.4	9.1	48.6	1.1	0.305	48.6	5.723	11.447
Zinc	4.5	7.4	7.2	9.1	18.4	3.9	0.3	28.3	6.882	13.763
Cyanide							0.265	2.4	1.453	2.905

Concentrations are in millograms per kilogram (mg/kg).
Qualifiers have been removed per Baker's standards.
Qualifiers R, U, and UJ have been given one-half the detection value.

Qualifiers J, NJ, and B have been removed with no detection value change.

TABLE 2
BASE BACKGROUND
SUBSURFACE SOIL
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	6-201N-SB11-07	6-201N-SB12-02	6-201C-SB38-01	6-201C-SB39-04	78-BB-SB-01	2-GW09-01	1-BB-SB38-05	1-BB-SB39-04	1-BB-SB39-06	1-GW13-04
Aluminum	672	857	3620	2970	10200	8520	4580	6180	5980	4160
Antimony	4.7	4.85	1.4	1.25	0.355	1.6	4.2	3.25	2.95	6.9
Arsenic	0.31	0.315	0.033	0.305	0.24	0.47	1.1	0.29	0.26	0.285
Barium	2	2.05	7.6	6.5	10.9	6.6	7.5	11.800	8.600	7.500
Beryllium	0.095	0.1	0.03	0.025	0.12	0.23	0.125	0.095	0.085	0.095
Cadmium	0.285	0.295	0.57	0.17	0.6	1.2	0.370	0.290	0.260	0.285
Calcium	5.35	5.4	4410	12.1	81.3	10.6	35.600	12.250	19.700	52.400
Chromium	1.6	1.85	6	2.2	5.7	8.7	10.5	5.5	5.3	7.1
Cobalt	0.65	0.9	0.235	0.175	0.95	1.9	0.495	0.385	0.350	0.380
Copper	0.475	0.6	1.7	0.65	0.95	0.47	6.6	0.6	0.5	2.1
Iron	257	126	456	833	822	2840	4940	1510	1210	567
Lead	1.2	1.6	11.5	2.7	6.1	4.3	5.1	3.8	3.1	3.3
Magnesium	13.1	12.7	133	86.8	188	260	222	189	217	131
Manganese	0.475	0.395	7.5	2.6	2.4	5.2	4.1	4.9	5.4	2.0
Mercury	0.01	0.01	0.04	0.015	0.045	0.11	0.025	0.025	0.020	0.050
Nickel	1.6	1.7	0.8	0.7	2.4	4.7	0.850	2.300	0.600	0.650
Potassium	48.9	40.8	84.7	187	123	184	409	191	268	98
Selenium	0.5	0.5	0.55	0.5	0.29	0.115	0.495	0.385	0.350	0.380
Silver	0.95	1	0.195	0.175	0.355	0.7	0.600	0.480	0.435	0.475
Sodium	12.7	12.15	13.25	7.25	44.9	31.5	12.850	21.6	9.2	9.6
Thallium	0.205	0.21	0.22	0.2	0.12	0.23	0.495	0.385	0.350	0.380
Vanadium	0.75	1	3	4.7	7.4	13.4	12.200	6.500	6.100	3.500
Zinc	0.475	0.395	11.6	0.9	2.1	1.4	4.700	2.900	2.400	1.000

TABLE 2
BASE BACKGROUND
SUBSURFACE SOIL
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	1-GW13-08	28-BB-SB37-03	28-BB-SB38-04	28-GW09DW-01	30-BB-SB12-03	30-BB-SB13-01	30-BB-SB14-01	30-BB-SB15-01	30-BB-SB16-02	30-GW03-01
Aluminum	6600	5170	2830	5730	2970	17.1	25.7	42.6	777	16.9
Antimony	3.2	3.55	3.55	3.75	3.9	3.1	3.6	3.6	3.4	3.9
Arsenic	0.280	0.315	0.315	1.500	0.34	0.28	0.32	0.32	0.30	0.34
Barium	8.400	9.700	5.000	11.700	0.8	0.7	0.8	0.8	3.5	0.8
Beryllium	0.095	0.105	0.105	0.110	0.12	0.09	0.11	0.11	0.10	0.12
Cadmium	0.280	0.315	0.315	0.330	0.34	0.28	0.32	0.32	0.30	0.34
Calcium	92.600	23.450	6.850	441.000	7.0	6.9	4.8	6.3	116	6.6
Chromium	8.3	7.3	3.4	4.7	3.9	0.7	0.8	0.8	0.7	0.8
Cobalt	0.375	0.42	0.42	0.93	0.45	0.37	0.42	0.43	0.40	0.46
Copper	1.6	0.65	0.65	0.65	0.7	0.6	0.7	0.7	0.6	0.7
Iron	959	2090	749	2780	908	95.9	155	63.3	514	74.5
Lead	4.0	4.1	2.3	7.4	0.7	0.47	1.9	0.91	3.2	0.59
Magnesium	262	153	66	157	24.7	7.5	2.9	2.9	30.2	3.1
Manganese	4.5	3.2	1.5	5.3	1.7	4.3	6.7	1.1	3.7	1.7
Mercury	0.025	0.025	0.025	0.025	0.03	0.03	0.08	0.25	0.03	0.68
Nickel	0.650	0.750	0.750	1	0.8	0.7	0.8	2.2	1.7	0.8
Potassium	308	122	91.3	136	13.2	6.3	1.1	21.3	21.9	1.2
Selenium	0.375	0.420	0.420	0.440	0.45	0.37	0.42	0.43	0.40	0.46
Silver	0.470	0.500	0.550	0.550	0.6	0.46	0.6	0.6	0.50	0.6
Sodium	10.9	33.8	28.6	20.3	12.5	11.1	19.3	5.4	14.4	5.8
Thallium	0.375	0.420	0.420	0.440	0.45	0.37	0.42	0.43	0.40	0.46
Vanadium	10.100	6.4	2.8	8.5	6.2	0.73	1.0	0.84	1.6	0.34
Zinc	2.700	1.9	1.0	4.2	0.35	0.32	0.39	1.2	1.7	1.3

TABLE 2
BASE BACKGROUND
SUBSURFACE SOIL
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	35-GWDS01-03	BB-SB02-07	BB-SB03-05	80-BB-SB01-06	80-SS-SB01-03	80-BB-SB2-03	80-BB-SB02-06	80-BB-SB03-03	80-BB-SB03-06	7-BB-SB01-05
Aluminum	2910	888	2330	11000	2520	5950	9600	9500	1060	1400
Antimony	2.750	5.000	5.600	6.200	1.300	1.350	1.650	3.500	1.300	5.150
Arsenic	0.12	1.00	1.10	15.40	0.245	1.60	4.70	1.80	0.24	1.05
Barium	5.5	1.6	3.8	22.3	4.5	9.9	13.5	10.9	4.3	16.1
Beryllium	0.06	0.10	0.11	0.31	0.01	0.04	0.20	0.09	0.01	0.105
Cadmium	0.30	0.50	0.55	0.205	0.16	0.165	0.205	0.16	0.155	0.50
Calcium	456.0	74.2	290.0	257.0	105.0	323.0	210.0	142.0	34.2	38.95
Chromium	2.2	2.4	4.2	66.4	2.1	10.0	22.0	12.0	2.9	5.0
Cobalt	0.65	1	1.1	7	0.42	0.71	1.40	0.75	0.20	1.05
Copper	0.550	1	1.1	9.5	0.670	1.6	4.4	2.2	0.630	1.05
Iron	442	1220	1870	90500	795	2920	12800	3350	557	571
Lead	8.1	2.4	3.8	21.4	2.9	5	11.7	7.8	5.4	3
Magnesium	63.5	35.7	115.0	852.0	76.0	282.0	455.0	357.0	50.7	30.6
Manganese	5.6	2.7	2.4	14.9	1.8	19.9	7.4	6.2	5.4	1.95
Mercury	0.03	0.055	0.06	0.07	0.045	0.055	0.07	0.045	0.045	0.055
Nickel	1.050	2	2.250	0.600	0.455	1.4	0.6	2.2	0.450	2.050
Potassium	145	100.5	228	1250	161	297	1020	458	130	103
Selenium	0.085	0.500	0.550	2.400	0.275	0.285	0.355	0.275	0.275	0.50
Silver	0.39	0.50	0.55	0.275	0.21	0.22	0.275	0.21	0.21	0.50
Sodium	141.0	20.6	28.2	124.0	63.4	25.5	47.1	73.2	18.3	16.85
Thallium	0.06	1.00	1.10	2.70	0.425	0.44	0.55	0.42	0.42	1.05
Vanadium	3.0	3.9	4.9	69.4	2.3	10.8	18.4	13.5	2.4	2.3
Zinc	2.6	8.7	4.9	26.6	2.0	3.5	8.1	4.8	1.7	3.1

TABLE 2
BASE BACKGROUND
SUBSURFACE SOIL
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	7-BB-SB02-05	7-BB-SB03-09	16-BB-SB01-07	16-BB-SB02-07	16-BB-SB03-05	36-BB-SB01-02	36-BB-SB02-02	36-BB-SB03-03	43-BB-SB01-02	43-BB-SB02-01
Aluminum	1700	581	1940	888	2330	4480	8700	3810	4320	959
Antimony	5.150	5.750	5.8	5	5.6	1.15	1.2	1.9	2.3	1.75
Arsenic	1.05	1.15	1.15	1	1.1	0.155	0.69	0.185	0.44	0.115
Barium	22.6	10.8	3.7	0.8	3.8	13.9	13.7	5.5	8.9	2.2
Beryllium	0.105	0.115	0.115	0.1	0.11	0.032	0.035	0.08	0.1	0.075
Cadmium	0.50	0.550	0.6	0.5	0.55	0.31	0.315	0.255	0.31	0.235
Calcium	41.55	32.15	135	74.2	290	116	225	48.2	76.9	77.6
Chromium	6.2	3.9	4.7	2.4	4.2	4.2	13.5	3.7	5.5	1.2
Cobalt	1.05	1.15	1.15	1	1.1	0.245	0.25	0.275	0.335	0.255
Copper	1.05	1.15	1.15	1	1.1	0.43	0.98	0.175	0.21	0.16
Iron	709	1620	1150	1220	1870	2690	4080	976	2370	414
Lead	1.8	1.1	2.9	2.4	3.8	5.4	6.6	4	6.1	1.6
Magnesium	44.1	12.25	104	35.7	115	78.6	292	110	121	17.9
Manganese	2.65	2.1	5	2.7	2.4	2.5	6.7	3.6	3	1.3
Mercury	0.050	0.060	0.06	0.055	0.06	0.06	0.06	0.045	0.045	0.05
Nickel	2.050	2.300	2.3	2	2.25	1	9.1	1	1.2	0.9
Potassium	102.5	114.5	116	100.5	228	91.3	222	62.5	76	57.5
Selenium	0.50	0.55	0.6	0.5	0.55	0.12	0.175	0.145	0.185	0.155
Silver	0.50	0.55	0.6	0.5	0.55	0.27	0.27	0.275	0.335	0.255
Sodium	13.6	15.65	29.8	10.3	28.2	11.3	25.6	6.1	36.65	4.2
Thallium	1.05	1.15	1.15	1	1.1	0.055	0.085	0.105	0.11	0.095
Vanadium	3.1	2.5	4	3.9	4.9	8.2	17	2.05	5.9	0.9
Zinc	2.1	3.15	15	4.35	2.45	0.82	2.6	0.89	2.3	0.76

TABLE 2
BASE BACKGROUND
SUBSURFACE SOIL
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	43-BB-SB03-02	44-BB-SB01-03	54-BB-SB01-04	54-BB-SB02-04	86-BB-SB01-02	65-DW04-05	MIN	MAX	AVG	2Xaverage
Aluminum	2260	10300	1100	1040	2460	4560	16.900	11000.000	3706.615	7413.230
Antimony	2.25	1.15	1.25	1.25	2	5.25	0.355	6.900	3.249	6.498
Arsenic	0.31	1.2	0.16	0.195	0.22	1.05	0.033	15.400	0.985	1.971
Barium	9.1	12.5	1.15	1.05	4.4	10.9	0.650	22.600	7.185	14.370
Beryllium	0.1	0.065	0.06	0.0345	0.09	0.105	0.010	0.310	0.096	0.191
Cadmium	0.305	0.305	0.325	0.335	0.275	0.5	0.155	1.200	0.359	0.718
Calcium	295	20.9	24.6	14.7	50.8	111	4.750	4410.000	193.912	387.824
Chromium	2	11	1.15	1	3.1	5.7	0.650	66.400	6.268	12.537
Cobalt	0.33	0.495	0.26	0.305	0.29	3.2	0.175	7.000	0.805	1.611
Copper	0.265	0.86	0.45	0.46	0.185	1.05	0.160	9.500	1.205	2.410
Iron	507	4720	392	319	3160	925	63.300	90500.000	3567.320	7134.639
Lead	2.8	4.15	0.8	1.75	2.4	2.7	0.465	21.400	4.132	8.264
Magnesium	49.3	302	16.4	17.35	71.3	192	2.850	852.000	131.699	263.398
Manganese	2.5	3.9	0.5	0.6	1.8	5.6	0.395	19.900	3.995	7.990
Mercury	0.055	0.0425	0.11	0.05	0.055	0.05	0.010	0.680	0.065	0.129
Nickel	1.2	0.92	9.2	7.7	1.05	2.1	0.450	9.200	1.863	3.725
Potassium	75	207	29.9	14.45	66.5	105	1.050	1250.000	172.126	344.252
Selenium	0.17	0.155	0.145	0.17	0.175	0.5	0.085	2.400	0.403	0.806
Silver	0.33	0.26	0.28	0.29	0.29	0.5	0.175	1.000	0.434	0.869
Sodium	8.75	86.4	4.4	2.2	6.8	69.9	2.200	141.000	27.285	54.570
Thallium	0.105	0.07	0.065	0.08	0.13	1.05	0.055	2.700	0.490	0.980
Vanadium	1.7	17.1	0.85	0.8	1.85	4.1	0.340	69.400	6.670	13.340
Zinc	1.6	2.5	0.92	1.3	0.37	3.45	0.320	26.600	3.334	6.668

TABLE 3

SUMMARY OF SURFACE SOILS, PHYSICAL PROPERTIES
EVALUATION OF METALS AT
MCB CAMP LEJEUNE, NORTH CAROLINA

Soil Boring Identification	Location	USCS		USDA Soil Symbol	Field Observation		Physical Characteristics		Organic Matter
		Classification	Depth		Description	Depth	Soil Reaction pH	Moist Bulk Density	
6-20IN-SB11	Site 6	SP, SP-SM	0 - 80"	KuB	Fine sand with trace to little silt and clay	0 - 1'	4.5 - 7.3	-0.2	<2
6-201N-SB12	Site 6	SP, SP-SM	0 - 80"	KuB	Fine sand with trace to little silt and clay	0 - 1'	4.5 - 7.3	-0.2	<2
6-201C-SB38	Site 6	SP, SP-SM	0 - 80"	KuB	Fine sand with trace to little silt and clay	0 - 1'	4.5 - 7.3	-0.2	<2
6-201C-SB39	Site 6	SP, SP-SM	0 - 80"	KuB	Fine sand with trace to little silt and clay	0 - 1'	4.5 - 7.3	-0.2	<2
78-BB-SB01	Site 78	SP, SP-SM	0 - 21"	On	Fine sand with trace to little silt and clay	0 - 1'	3.6 - 5.5	-0.2	.5 - 2
41-BB-SB01	Site 41	ML, SC, SM, SM-SC	0 - 28"	Mk	Silty sand fine grained with trace clay	0 - 1'	5.1 - 7.3	---	.5 - 2
41-BB-SB02	Site 41	SM, SP-SM	0 - 36"	BmB	Silty sand fine grained with trace clay	0 - 1'	4.5 - 6.5	-0.15	.5 - 1
41-BB-SB03	Site 41	SM	0 - 12"	MaC	Silty sand fine grained with trace clay	0 - 1'	4.5 - 6.5	---	<2
41-BB-SB04	Site 41	SM	0 - 12"	MaC	Silty sand fine grained with trace clay	0 - 1'	4.5 - 6.0	---	<2
69-BB-SB01	Site 69	SM, SP-SM	0 - 30"	BmB	Fine grained sand with silt	0 - 1'	4.5 - 6.5	-0.15	.5 - 1

TABLE 3 (Continued)

SUMMARY OF SURFACE SOILS, PHYSICAL PROPERTIES
EVALUATION OF METALS AT
MCB CAMP LEJEUNE, NORTH CAROLINA

Soil Boring Identification	Location	USCS		USDA Soil Symbol	Field Observation		Physical Characteristics		Organic Matter
		Classification	Depth		Description	Depth	Soil Reaction pH	Moist Bulk Density	
69-BB-SB02	Site 69	SM, SP-SM	0 - 30"	BmB	Fine grained sand with silt	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1
69-BB-SB03	Site 69	SM, SP-SM	0 - 30"	BmB	Fine grained sand with silt	0 - 1'	4. 5 - 6.5	1.60 - 1.75	.5 - 1
69-BB-SB04	Site 69	SM, SP-SM	0 - 30"	BmB	Fine grained sand with silt	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1
74-BB-SB01	Site 74	SM	0 - 8"	FoA	Silt and clay	0 - 1'	4.5 - 6.5	1.20 - 1.40	.5 - 2
74-BB-SB02	Site 74	SM	0 - 8"	FoA	Fine sand with trace to little silt and clay	0 - 1'	4.5 - 6.5	1.20 - 1.40	.5 - 2
74-BB-SB03	Site 74	SM	0 - 8"	FoA	Fine sand with trace to little silt and clay	0 - 1'	4.5 - 6.5	1.20 - 1.40	.5 - 2
74-BB-SB04	Site 74	SM	0 - 8"	FoA	Fine sand with trace to little silt and clay	0 - 1'	4.5 - 6.5	1.20 - 1.40	.5 - 2
1-BB-SB38	Site 1	SM, SP-SM	0 - 30"	BmB	Fine sand with trace to little silt and clay	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1
1-BB-SB39	Site 1	SM, SP-SM	0 - 30"	BmB	Fine sand with trace to little silt and clay	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1
1-GW13	Site 1	SM, SP-SM	0 - 30"	BmB	Fine sand with trace to little silt and clay	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1
2-GW09	NA	NA	NA	NA	NA	NA	NA	NA	NA
28-BB-SB37	Site 28	SM, SP-SM	0 - 30"	BmB	Fine sand with trace to little silt and clay	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 -1
28-BB-SB38	Site 28	SM, SP-SM	0 - 30"	BmB	Fine sand with trace to little silt and clay	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1

TABLE 3 (Continued)

SUMMARY OF SURFACE SOILS, PHYSICAL PROPERTIES
EVALUATION OF METALS AT
MCB CAMP LEJEUNE, NORTH CAROLINA

Soil Boring Identification	Location	USCS		USDA Soil Symbol	Field Observation		Physical Characteristics		Organic Matter
		Classification	Depth		Description	Depth	Soil Reaction pH	Moist Bulk Density	
28-GW09DW	Site 28	SM, SP-SM	0 - 30"	BaB	Fine sand with trace to little silt and clay	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1
30-BB-SB12	NA	NA	NA	NA	NA	NA	NA	NA	NA
30-BB-SB13	Site 30	SP, SP-SM	0 - 80"	KuB	Fine grained sand with trace silt	0 - 1'	4.5 - 7.3	1.60 - 1.80	<2
30-BB-SB14	Site 30	SP, SP-SM	0 - 80"	KuB	Fine grained sand with trace silt	0 - 1'	4.5 - 7.3	1.60 - 1.80	<2
30-BB-SB15	Site 30	SP, SP-SM	0 - 80"	KuB	Fine grained sand with trace silt	0 - 1'	4.5 - 7.3	1.60 - 1.80	<2
30-BB-SB16	Site 30	SP, SP-SM	0 - 80"	KuB	Fine grained sand with trace silt	0 - 1'	4.5 - 7.3	1.60 - 1.80	<2
30-GW03	Site 30	SP, SP-SM	0 - 80"	KuB	Fine grained sand with trace silt	0 - 1'	4.5 - 7.3	1.60 - 1.80	<2
35-GWD-1	NA	NA	NA	NA	NA	NA	NA	NA	NA
35-SS01	Site 35	SM, SP-SM	0 - 30"	BaB	Silty sand fine grained	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1
48-BB-SB02	Site 48	SM, SP-SM	0 - 30"	BmB	Fine grained sand with silt, trace clay	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1
48-BB-SB03	Site 48	SM, SP-SM	0 - 30"	BmB	Fine grained sand with silt, trace clay	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1
16-BB-SB01	Site 16	SM, SP-SM	0 - 30"	BmB	Fine grained, little to trace silt, trace clay	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1
16-BB-SB02	Site 16	SM, SP-SM	0 - 30"	BmB	Fine grained, little to trace silt, trace clay	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1

TABLE 3 (Continued)

SUMMARY OF SURFACE SOILS, PHYSICAL PROPERTIES
EVALUATION OF METALS AT
MCB CAMP LEJEUNE, NORTH CAROLINA

Soil Boring Identification	Location	USCS		USDA Soil Symbol	Field Observation		Physical Characteristics		Organic Matter
		Classification	Depth		Description	Depth	Soil Reaction pH	Moist Bulk Density	
16-BB-SB03	Site 16	SM, SP-SM	0 - 30"	BmB	Fine grained, little to trace silt, trace clay	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1
80-BB-SB01	Site 80	SM, ML	0 - 12"	Ra	Silt, trace fine grained sand and clay	0 - 1'	4.5 - 6.5	1.30 - 1.60	1 - 6
80-BB-SB02	Site 80	SM, ML	0 - 12"	Ra	Silt, trace fine grained sand and clay	0 - 1'	4.5 - 6.5	1.30 - 1.60	1 - 6
80-BB-SB03	Site 80	SM, ML	0 - 12"	Ra	Silt, trace fine grained sand and clay	0 - 1'	4.5 - 6.5	1.30 - 1.60	1 - 6
7-BB-SB01	Site 7	ML, SC, SM	0 - 28"	Mk	Silty clay with trace fine grained sand	0 - 1'	5.1 - 7.3	---	.5 - 2
7-BB-SB02	Site 7	SM	0 - 12"	MaC	Fine grained sand with little to trace silt	0 - 1'	4.5 - 6.0	---	<2
7-BB-SB03	Site 7	SM	0 - 12"	MaC	Fine grained sand with little to trace silt	0 - 1'	4.5 - 6.0	---	<2
36-BB-SB01	Site 36	SM, SP-SM	0 - 30"	BaB	Fine sand with trace silt and clay	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1
36-BB-SB02	Site 36	SM, SP-SM	0 - 30"	BaB	Fine sand with trace silt and clay	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1
36-BB-SB03	Site 36	SM, SP-SM	0 - 30"	BaB	Fine sand with trace silt and clay	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1
43-BB-SB01	Site 43	SM, SP-SM	0 - 30"	BaB	Fine sand with trace silt and clay	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1
43-BB-SB02	Site 43	SM, SP-SM	0 - 30"	BaB	Fine sand with trace silt and clay	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1

TABLE 3 (Continued)

SUMMARY OF SURFACE SOILS, PHYSICAL PROPERTIES
EVALUATION OF METALS AT
MCB CAMP LEJEUNE, NORTH CAROLINA

Soil Boring Identification	Location	USCS		USDA Soil Symbol	Field Observation		Physical Characteristics		Organic Matter
		Classification	Depth		Description	Depth	Soil Reaction pH	Moist Bulk Density	
43-BB-SB03	Site 43	SM, SP-SM	0 - 30"	BaB	Fine sand with trace silt and clay	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1
44-BB-SB01	Site 44	SM, SP-SM	0 - 30"	BaB	Fine sand with trace silt and clay	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1
54-BB-SB01	Site 54	SM, SP-SM	0 - 30"	BaB	Fine sand with trace silt and clay	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1
54-BB-SB02	Site 54	SM, SP-SM	0 - 30"	BaB	Fine sand with trace silt and clay	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1
86-BB-SB01	Site 86	SM, SM-SC	0 - 13"	GpB	Fine grained sand with some silt, trace clay	0 - 1'	4.5 - 6.0	1.40 - 1.60	.5 - 2
65-DW04	Site 65	SM, SP-SM	0 - 30"	BmB	Fine grained sand with trace silt	0 - 1'	4.5 - 6.5	1.60 - 1.75	.5 - 1

Notes:

SP = Fine sand
SM = Loamy fine sand
ML = Loam
SC = Clayey sand
---- = Not estimated
NA = Not Available - No surface sample collected

TABLE 4

SUMMARY OF SUBSURFACE SOILS, PHYSICAL PROPERTIES
EVALUATION OF METALS AT
MCB CAMP LEJEUNE, NORTH CAROLINA

Soil Boring Identification	Location	USCS		USDA Soil Symbol	Field Observation		Physical Characteristics		Organic Matter (%)
		Classification	Depth (inches)		Description	Depth (feet)	Soil Reaction pH	Moist Bulk Density	
6-201N-SB11-07	Site 6	SP, SP-SM	0 - 80	--	Fine to medium grained sand, trace silt	13 - 15	4.5 - 7.3	1.60 - 1.80	>2
6-201N-SB12-02	Site 6	SP, SP-SM	0 - 80	KuB	Fine to medium grained sand, trace silt	3 - 5	4.5 - 7.3	1.60 - 1.80	>2
6-201C-SB38-01	Site 6	SP, SP-SM	0 - 80	KuB	Fine to medium grained sand, trace silt	1 - 3	4.5 - 7.3	1.60 - 1.80	>2
6-201C-SB39-04	Site 6	SP, SP-SM	0 - 80	KuB	Fine to medium grained sand, trace silt	7 - 9	4.5 - 7.3	1.60 - 1.80	>2
78-BB-SB01-01	Site 78	SM, SP-SM	21 - 68	On	Fine sand, little silt	1 - 3	3.6 - 5.5	1.30 - 1.50	.5 - 2
2-GW09-01	Site 2	SM	12 - 80	Wo	Fine grained sand, some silt	1 - 3	3.6 - 5.5	1.45 - 1.65	2 - 4
1-BB-SB38-05	Site 1	SM, SP-SM	56 - 80	--	Fine grained sand, little silt	9 - 11	4.5 - 6.5	1.60 - 1.75	.5 - 1
1-BB-SB39-06	Site 1	SM, SP-SM	56 - 80	--	Fine grained sand, little silt	11 - 13	4.5 - 6.5	1.60 - 1.75	.5 - 1
1-GW13-04	Site 1	SM, SP-SM	56 - 80	BmB	Fine grained sand with silt, trace clay	7 - 9	4.5 - 6.5	1.60 - 1.75	.5 - 1
1-GW13-08	Site 1	SM, SP-SM	56 - 80	--	Fine grained sand with silt, trace clay	15 - 17	4.5 - 6.5	1.60 - 1.75	.5 - 1

TABLE 4 (Continued)

SUMMARY OF SUBSURFACE SOILS, PHYSICAL PROPERTIES
EVALUATION OF METALS AT
MCB CAMP LEJEUNE, NORTH CAROLINA

Soil Boring Identification	Location	USCS		USDA Soil Symbol	Field Observation		Physical Characteristics		Organic Matter (%)
		Classification	Depth (inches)		Description	Depth (feet)	Soil Reaction pH	Moist Bulk Density	
28-BB-SB37-03	Site 28	SM, SP-SM	56 - 80	BmB	Silt, little fine grained sand	5 - 7	4.5 - 6.5	1.60 - 1.75	.5 - 1
28-BB-SB38-04	Site 28	SM, SP-SM	56 - 80	BmB	Fine grained sand, trace silt and clay	7 - 9	4.5 - 6.5	1.60 - 1.75	.5 - 1
28-GW09DW-01	Site 28	SM, SP-SM	0 - 30	BaB	Fine grained sand, trace silt	1 - 3	4.5 - 6.5	1.60 - 1.75	.5 - 1
30-BB-SB12-03	Site 30	SM, SP-SM	0 - 80	KuB	Fine grained sand, trace silt	5 - 7	4.5 - 7.3	1.60 - 1.80	<2
30-BB-SB13-01	Site 30	SP, SP-SM	0 - 80	KuB	Fine grained sand, trace silt	1 - 3	4.5 - 7.3	1.60 - 1.80	<2
30-BB-SB14-01	Site 30	SP, SP-SM	0 - 80	KuB	Fine grained sand, trace silt	1 - 3	4.5 - 7.3	1.60 - 1.80	<2
30-BB-SB15-01	Site 30	SP, SP-SM	0 - 80	KuB	Fine grained sand, trace silt	1 - 3	4.5 - 7.3	1.60 - 1.80	<2
30-BB-SB16-02	Site 30	SP, SP-SM	0 - 80	KuB	Fine grained sand, trace silt	3 - 5	4.5 - 7.3	1.60 - 1.80	<2
30-GW-03-01	Site 30	SP, SP-SM	0 - 80	KuB	Fine grained sand, little silt	1 - 3	4.5 - 7.3	1.60 - 1.80	<2
35-GWDS01-03	Site 35	SM, SP-SM	56 - 80	BaB	Fine grained sand, some silt	5 - 7	4.5 - 6.5	1.60 - 1.75	.5 - 1
48-BB-SB02-07	Site 48	SM, SP-SM	56 - 80	--	Fine grained sand, little silt, trace clay	13 - 15	4.5 - 6.5	1.60 - 1.75	.5 - 1

TABLE 4 (Continued)

SUMMARY OF SUBSURFACE SOILS, PHYSICAL PROPERTIES
EVALUATION OF METALS AT
MCB CAMP LEJEUNE, NORTH CAROLINA

Soil Boring Identification	Location	USCS		USDA Soil Symbol	Field Observation		Physical Characteristics		Organic Matter (%)
		Classification	Depth (inches)		Description	Depth (feet)	Soil Reaction pH	Moist Bulk Density	
48-BB-SB03-05	Site 48	SM, SP-SM	56 - 80	--	Fine grained sand, little silt, trace clay	9 - 11	4.5 - 6.5	1.60 - 1.75	.5 - 1
16-BB-SB01-07	Site 16	SM, SP-SM	56 - 80	--	Fine grained sand, little to trace silt, trace clay	13 - 15	4.5 - 6.5	1.60 - 1.75	.5 - 1
16-BB-SB02-07	Site 16	SM, SP-SM	56 - 80	--	Fine grained sand, little to trace silt, trace clay	13 - 15	4.5 - 6.5	1.60 - 1.75	.5 - 1
16-BB-SB03-05	Site 16	SM, SP-SM	56 - 80	--	Fine grained sand, little to trace silt	9 - 11	4.5 - 6.5	1.60 - 1.75	.5 - 1
80-BB-SB01-06	Site 80	SM, SC, ML, CL	45 - 80	--	Clay, trace silt	11 - 13	4.5 - 5.5	1.30 - 1.60	1 - 6
80-BB-SB01-03	Site 80	SM, SC, ML, CL	45 - 80	Ra	Fine to medium grained sand, little to trace silt, trace clay	5 - 7	4.5 - 5.5	1.30 - 1.60	1 - 6
80-BB-SB02-03	Site 80	SM, SC, ML, CL	45 - 80	Ra	Clay, trace silt, and fine grained sand	5 - 7	4.5 - 5.5	1.30 - 1.60	1 - 6
80-BB-SB02-06	Site 80	SM, SC, ML, CL	45 - 80	--	Fine grained sand, little clay, trace silt	11 - 13	4.5 - 5.5	1.30 - 1.60	1 - 6
80-BB-SB03-03	Site 80	SM, SC, ML, CL	45 - 80	Ra	Silt, trace to some clay, little fine grained sand	5 - 7	4.5 - 5.5	1.30 - 1.60	1 - 6

TABLE 4 (Continued)

SUMMARY OF SUBSURFACE SOILS, PHYSICAL PROPERTIES
EVALUATION OF METALS AT
MCB CAMP LEJEUNE, NORTH CAROLINA

Soil Boring Identification	Location	USCS		USDA Soil Symbol	Field Observation		Physical Characteristics		Organic Matter (%)
		Classification	Depth (inches)		Description	Depth (feet)	Soil Reaction pH	Moist Bulk Density	
80-BB-SB03-06	Site 80	SM, SC, ML, CL	45 - 80	--	Fine grained sand trace to little silt, trace clay	11 - 13	4.5 - 5.5	1.30 - 1.60	1-6
7-BB-SB01-05	Site 7	SM	28 - 75	--	Fine grained sand, little to trace silt	9 - 11	5.6 - 8.4	--	..5 - 2
7-BB-SB02-05	Site 7	Sm, CL, ML, CL	52 - 75	--	Fine grained sand, little trace silt, trace clay	9 - 11	4.5 - 6.0	--	<2
7-BB-SB03-09	Site 7	SM, SC, ML, CL	52 - 75	--	Fine to medium grained sand, little to trace silt, trace clay	17 - 19	4.5 - 6.0	--	<2
36-BB-SB01-02	Site 36	SC, SM,. SM-SC	30 - 56	BaB	Fine grained sand, some silt, trace clay	3 - 5	4.5 - 6.5	1.45 - 1.60	.5 - 1
36-BB-SB02-02	Site 36	SC, SM,. SM-SC	30 - 56	BaB	Silt and clay, trace fine grained sand	3 - 5	4.5 - 6.5	1.45 - 1.60	.5 - 1
36-BB-SB03-03	Site 36	SM, SP-SM	56 - 80	BaB	Fine grained sand, some silt, trace clay	5 - 7	4.5 - 6.5	1.60 - 1.75	.5 - 1
43-BB-SB01-02	Site 43	SC, SM, SM-SC	30 - 56	BaB	Fine grained sand, some silt, trace clay	3 - 5	4.5 - 6.5	1.45 - 1.60	.5 - 1
43-BB-SB02-01	Site 43	SM, SP-SM	0 - 30	BaB	Fine grained sand, some silt, trace clay	1 - 3	4.5 - 6.5	1.60 - 1.75	.5 - 1
43-BB-SB03-02	Site 43	SC, SM, SM-SC	30 - 56	BaB	Fine grained sand, some silt, trace clay	3 - 5	4.5 - 6.5	1.45 - 1.60	.5 - 1

TABLE 4 (Continued)

SUMMARY OF SUBSURFACE SOILS, PHYSICAL PROPERTIES
EVALUATION OF METALS AT
MCB CAMP LEJEUNE, NORTH CAROLINA

Soil Boring Identification	Location	USCS		USDA Soil Symbol	Field Observation		Physical Characteristics		Organic Matter (%)
		Classification	Depth (inches)		Description	Depth (feet)	Soil Reaction pH	Moist Bulk Density	
44-BB-SB01-03	Site 44	SM, SP-SM	56 - 80	BaB	Fine grained sand, some silt and clay	5 - 7	4.5 - 6.5	1.60 - 1.75	.5 - 1
54-BB-SB01-04	Site 54	SM, SP-SM	56 - 80	BaB	Fine to medium grained sand, little silt	7 - 9	4.5 - 6.5	1.60 - 1.75	.5 - 1
54-BB-SB02-04	Site 54	SM, SP-=SM	56 - 80	BaB	fine to coarse grained sand, trace to little silt, trace clay	7 - 9	4.5 - 6.5	1.60 - 1.75	.5 - 1
86-BB-SB01-02	Site 86	SM-SC, SC, CL-ML, CL	13 - 80	GpB	Fine to medium grained sand, some silt, little clay	3 - 5	4.5 - 5.5	1.30 - 1.50	.5 - 2
65-DW04-05	Site 65	SM, SP-SM	56 - 80	--	Sand, fine grained, trace silt	9 - 11	4.5 - 6.5	1.60 - 1.75	.5 - 1

Notes:

CL = Clayey sand
SP = Fine sand
SM = Loamy fine sand
ML = Loam
SC = Clayey sand
---- = Not estimated
NA = Not Available - No subsurface sample collected

FIGURES

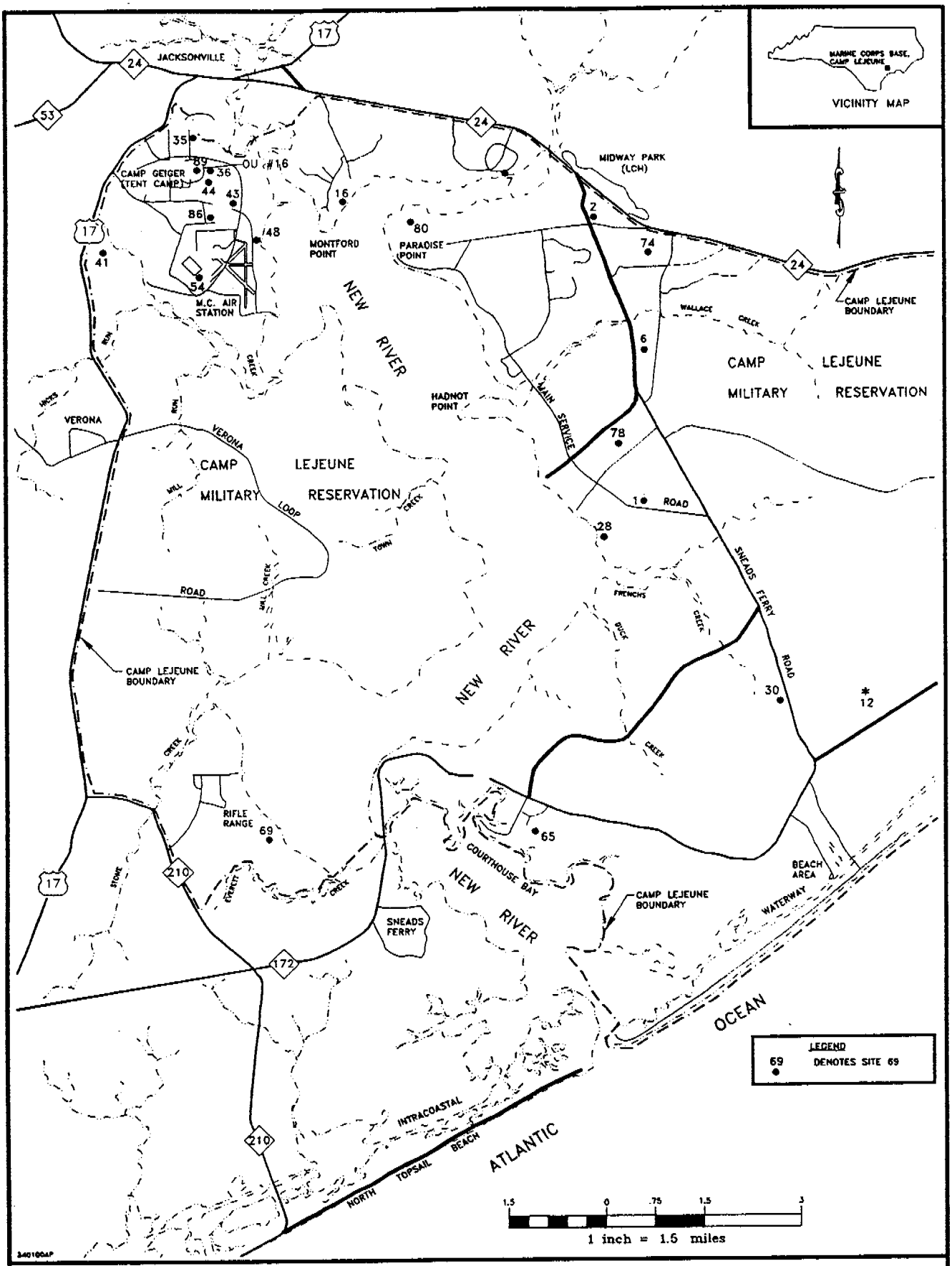


FIGURE 1
SITE LOCATIONS AT
MARINE CORPS BASE CAMP LEJEUNE

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

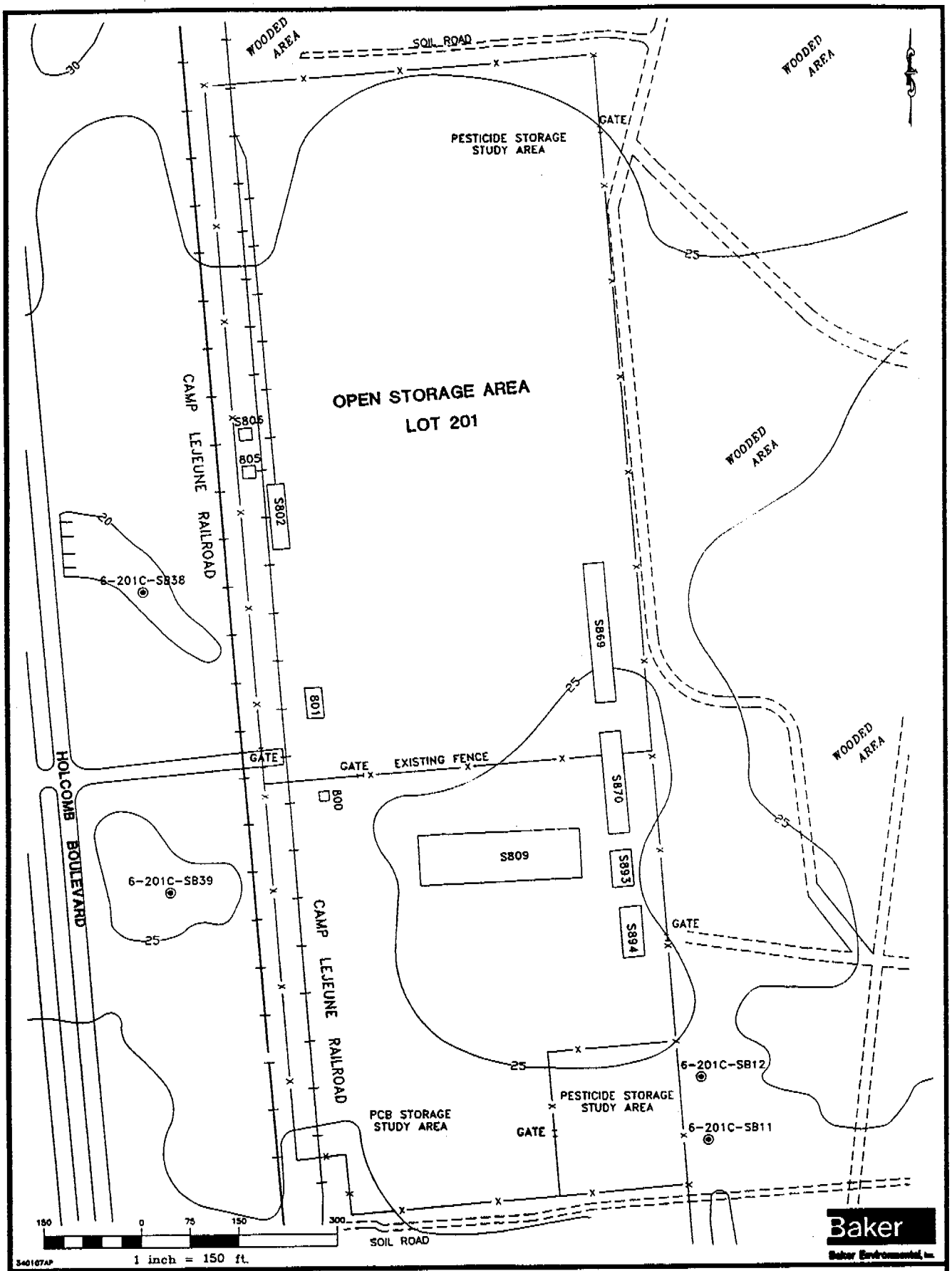
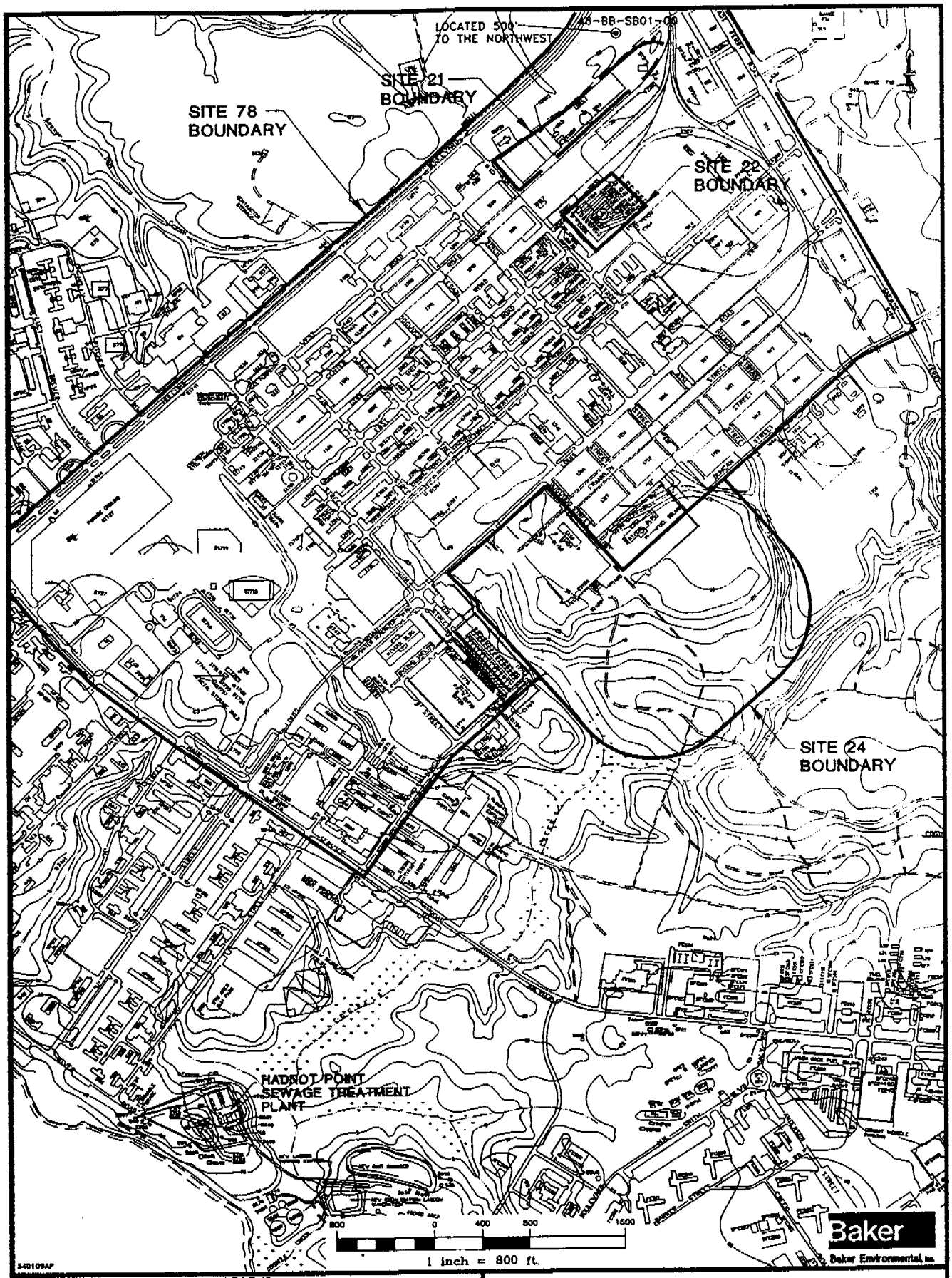


FIGURE 2
SITE PLAN OF LOT 201
SITE 6
REMEDIAL INVESTIGATION CTO-0133

MARINE CORPS BASE CAMP LEJEUNE
NORTH CAROLINA

SOURCE: LANTDIV, FEBRUARY 1992



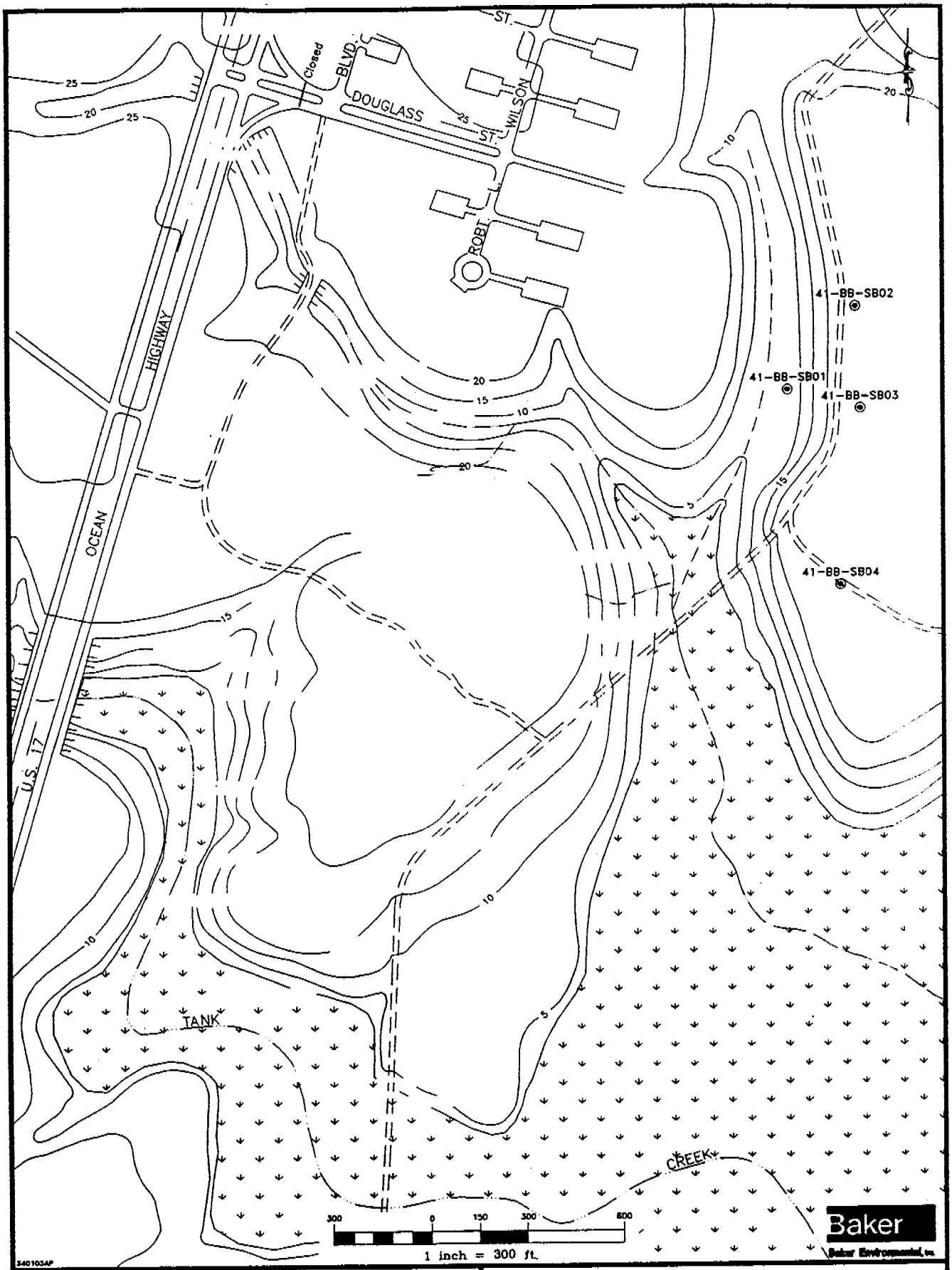
LEGEND

X

SOURCE: LANTDIV, FEBRUARY 1992

FIGURE 3
SITE MAP
SITE 78: HPIA
REMEDIAL INVESTIGATION CTO-0177

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



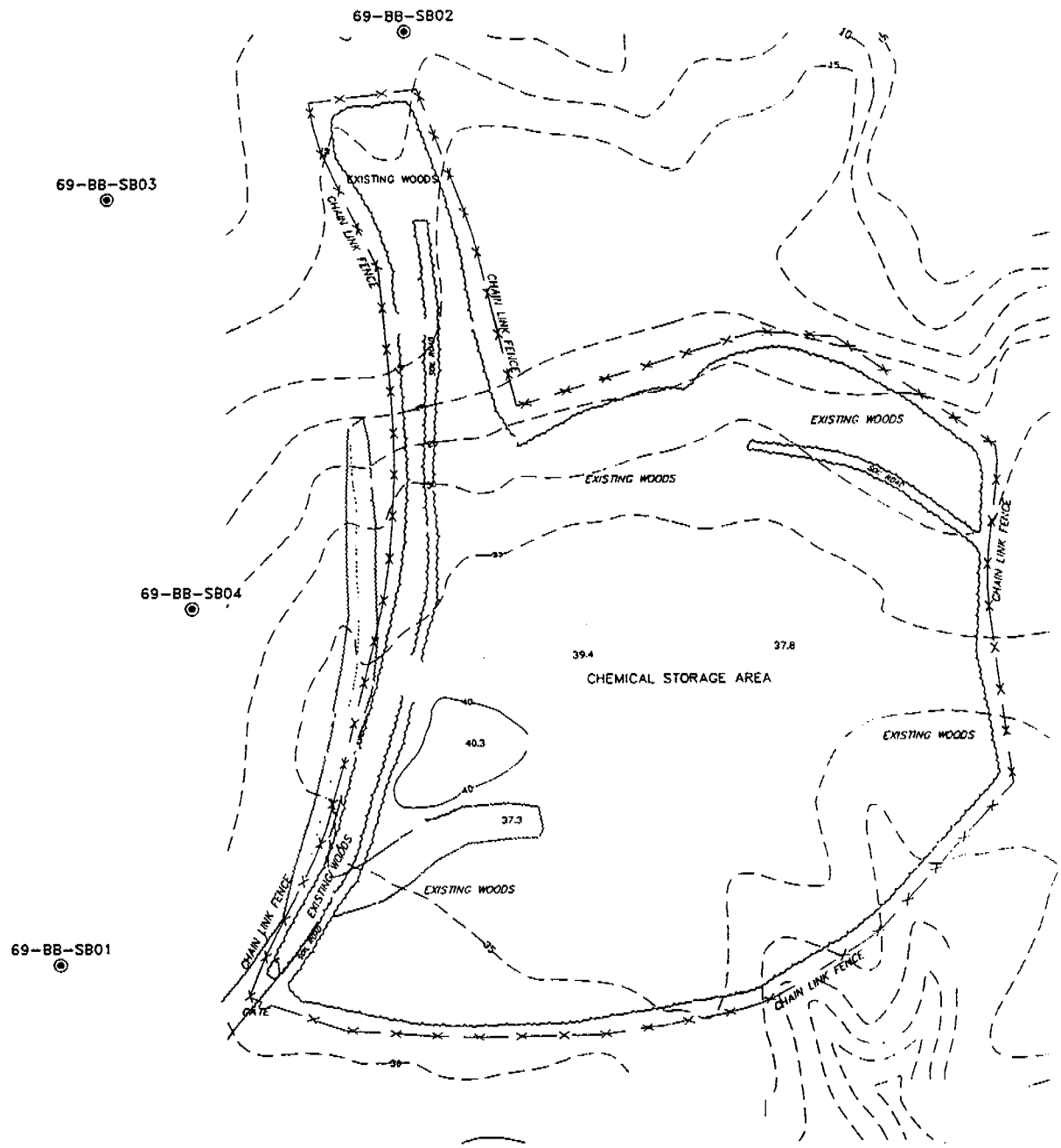
LEGEND

41-BB-SB01 – SOIL BORING LOCATION
– MARSH
5 – TOPOGRAPHIC ELEVATION LINES (FEET, MEAN SEA LEVEL)
– ROAD (IMPROVED)
– ROAD (UNIMPROVED)
– INTERMITTENT STREAM

SOURCE: LANTDIV, OCT. 1991

FIGURE 4
SURFACE AND SUBSURFACE SOIL SAMPLING LOCATIONS – SITE 41
CAMP GEIGER DUMP NEAR FORMER TRAILER PARK
REMEDIAL INVESTIGATION CTO-0212
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

340102AP



200 0 100 200 400

1 inch = 200 ft.

Baker

Baker Environmental, Inc.

LEGEND

69-BB-SB01 SOIL BORING LOCATION

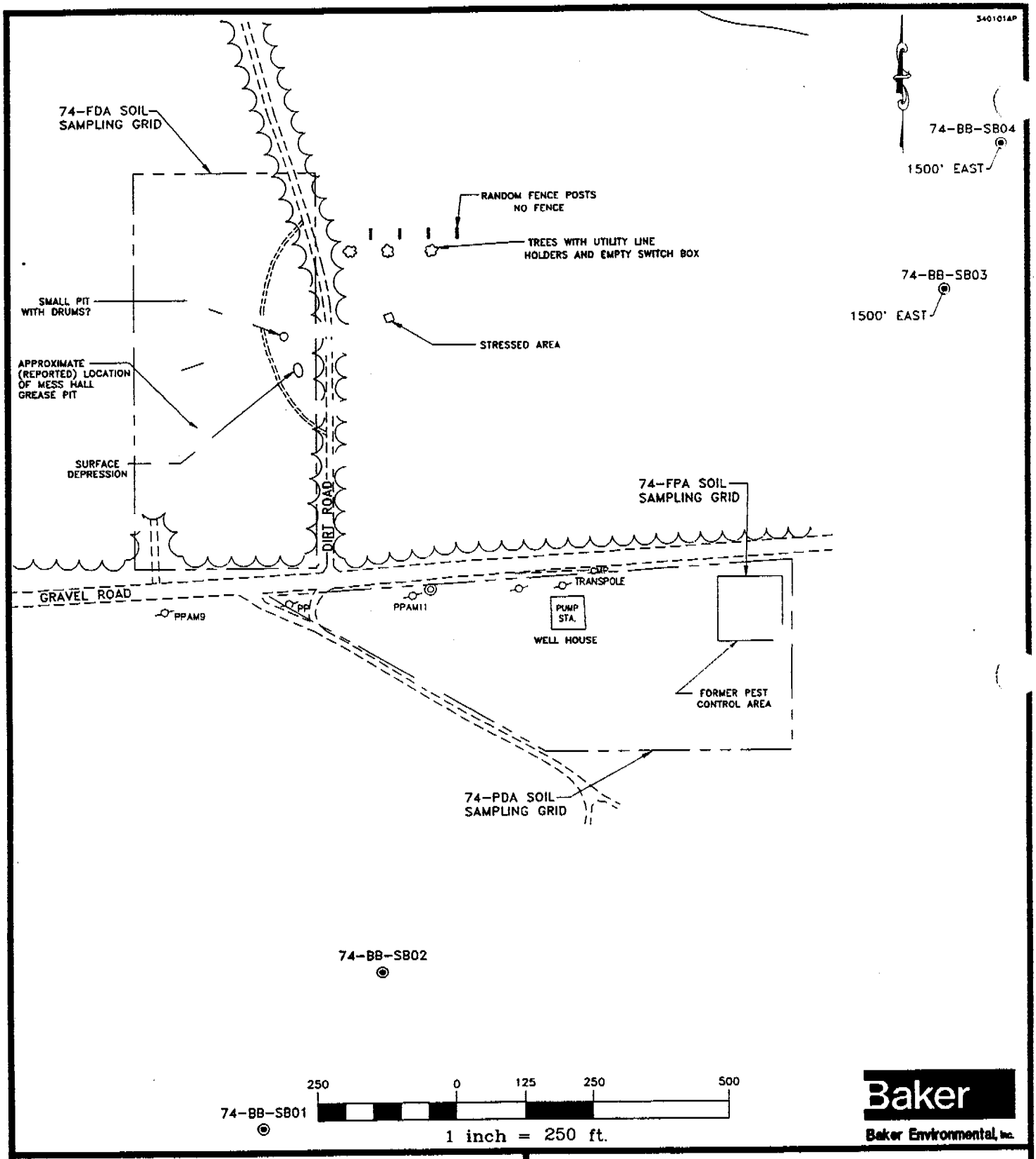
FENCE

VEGETATION

TOPOGRAPHIC ELEVATION LINES (FEET, MSL)

SOURCE: REVISED FROM LANTDIV, OCT. 1991

FIGURE 5
SURFACE AND SUBSURFACE SOIL SAMPLING LOCATIONS
SITE 69 - RIFLE RANGE CHEMICAL DUMP
REMEDIAL INVESTIGATION CTO-0212
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

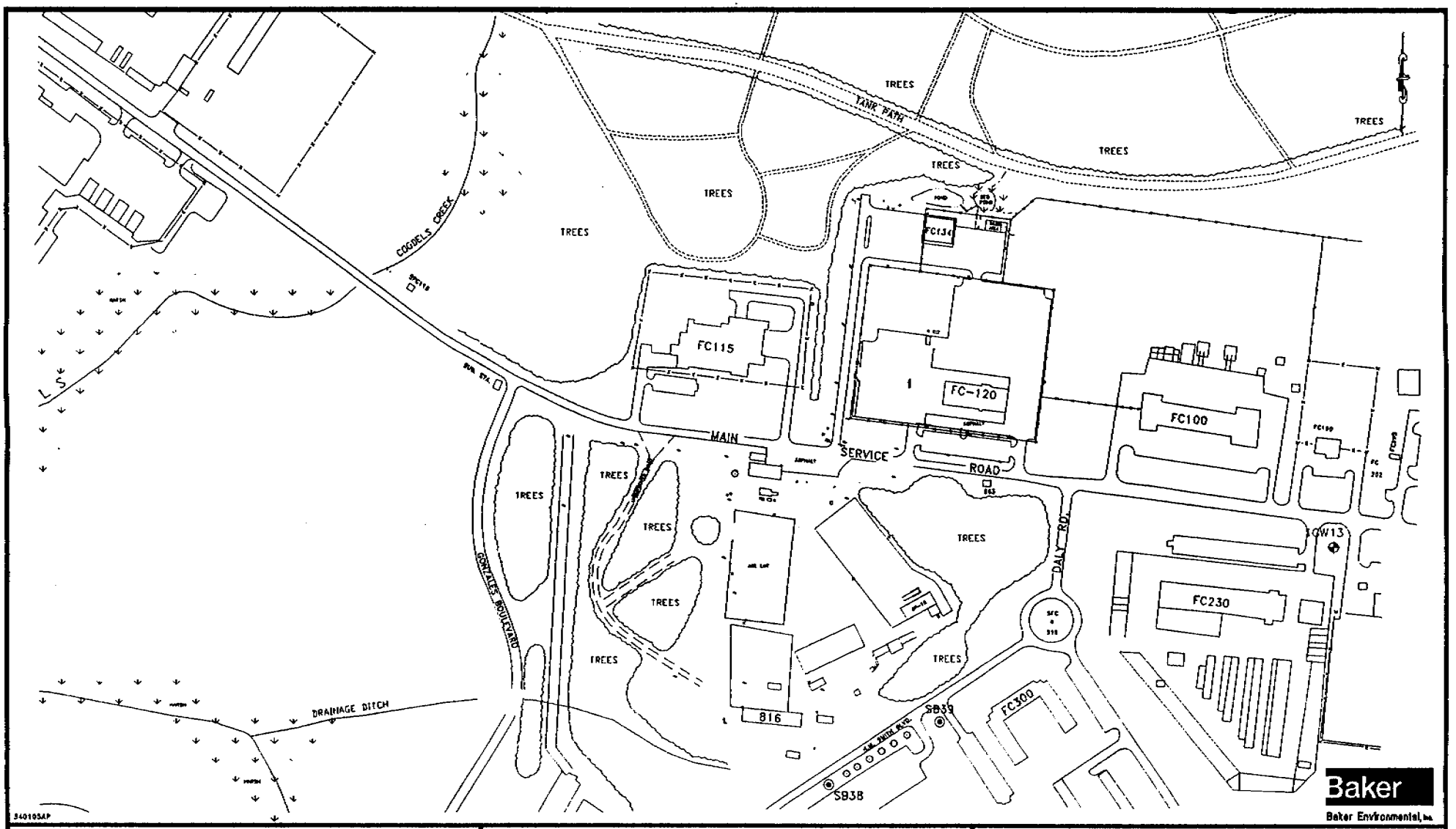


LEGEND

74-BB-SB02 ◉ BACKGROUND SOIL BORING LOCATION

SOURCE: REVISED FROM LANTDIV. OCT. 1991

FIGURE 6
SURFACE AND SUBSURFACE SOIL SAMPLING LOCATIONS - SITE 74
MESS HALL GREASE PIT DISPOSAL AREA
REMEDIAL INVESTIGATION CTO-0212
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



LEGEND

1GW13 SHALLOW MONITORING WELL

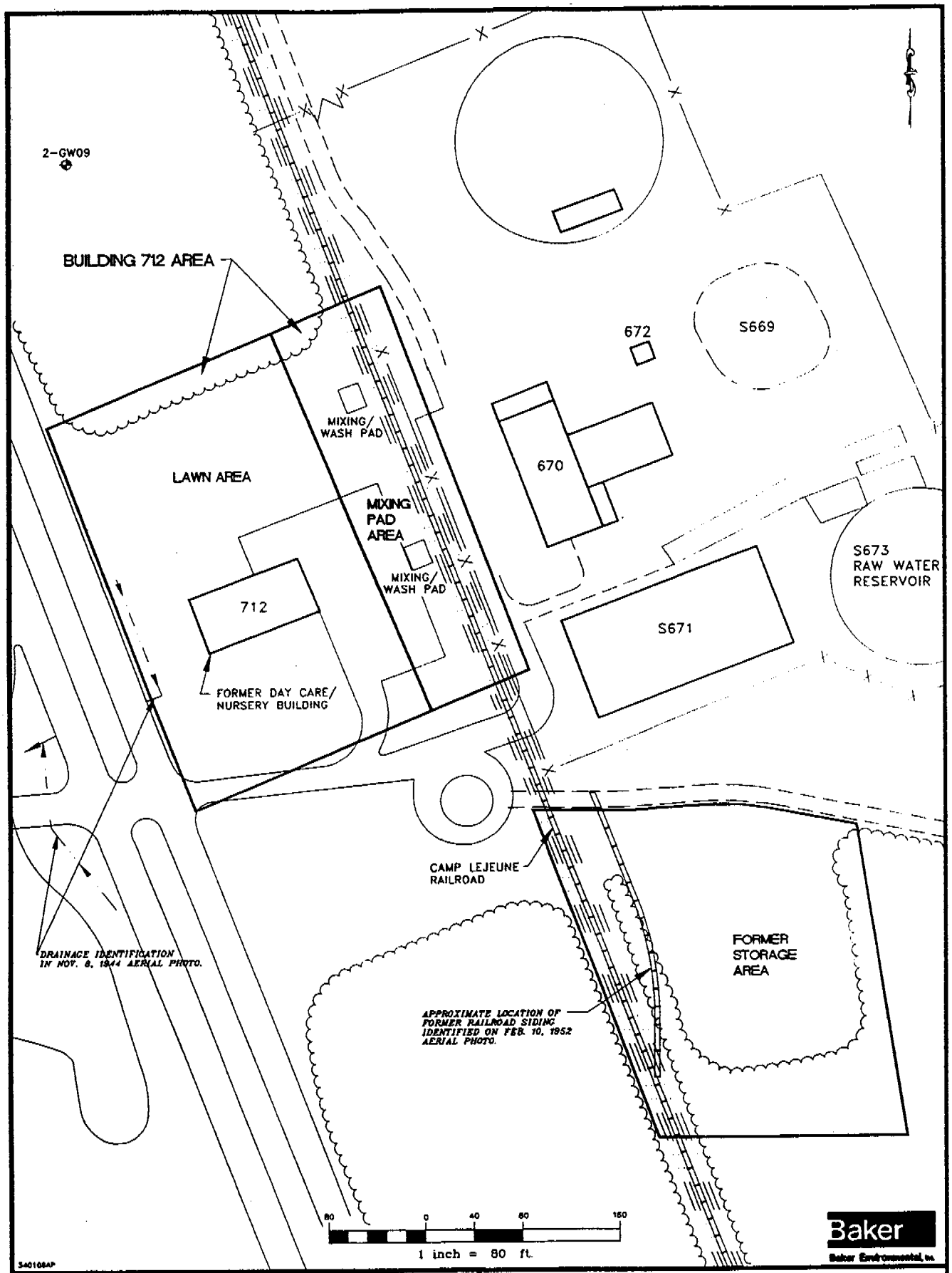
SB39 SOIL BORING LOCATION

300 0 150 300 600

1 inch = 300 ft.

SOURCE: LANTDIV, FEBRUARY 1992, ESE, SEPTEMBER 1990, AND W.K. DICKSON & ASSOC., JUNE 1994

FIGURE 7
SAMPLING LOCATIONS
CONFIRMATION STUDY
SITE 1 – FRENCH CREEK LIQUIDS DISPOSAL AREA
REMEDIAL INVESTIGATION CTO-0231
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



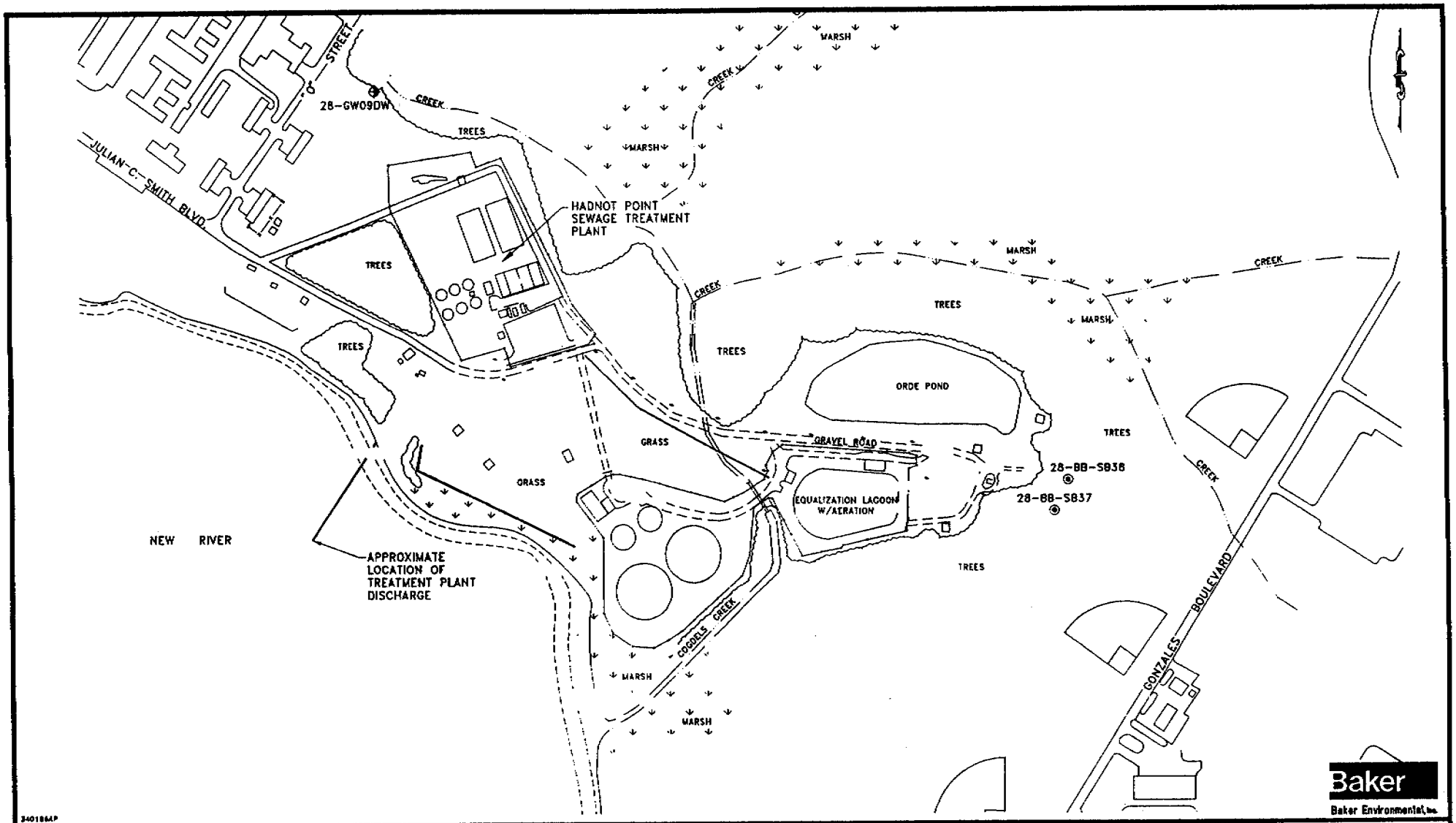
LEGEND

2-GW09 SOIL BORING FOR SHALLOW MONITORING WELL

SOURCE: LANTDIV, FEB. 1992

FIGURE 8
STUDY AREA
SITE 2
REMEDIAL INVESTIGATION CTO-0174

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



LEGEND

28-GW01DW NEWLY INSTALLED DEEP MONITORING WELL (BAKER, 1994)

SB37 SOIL BORING LOCATION

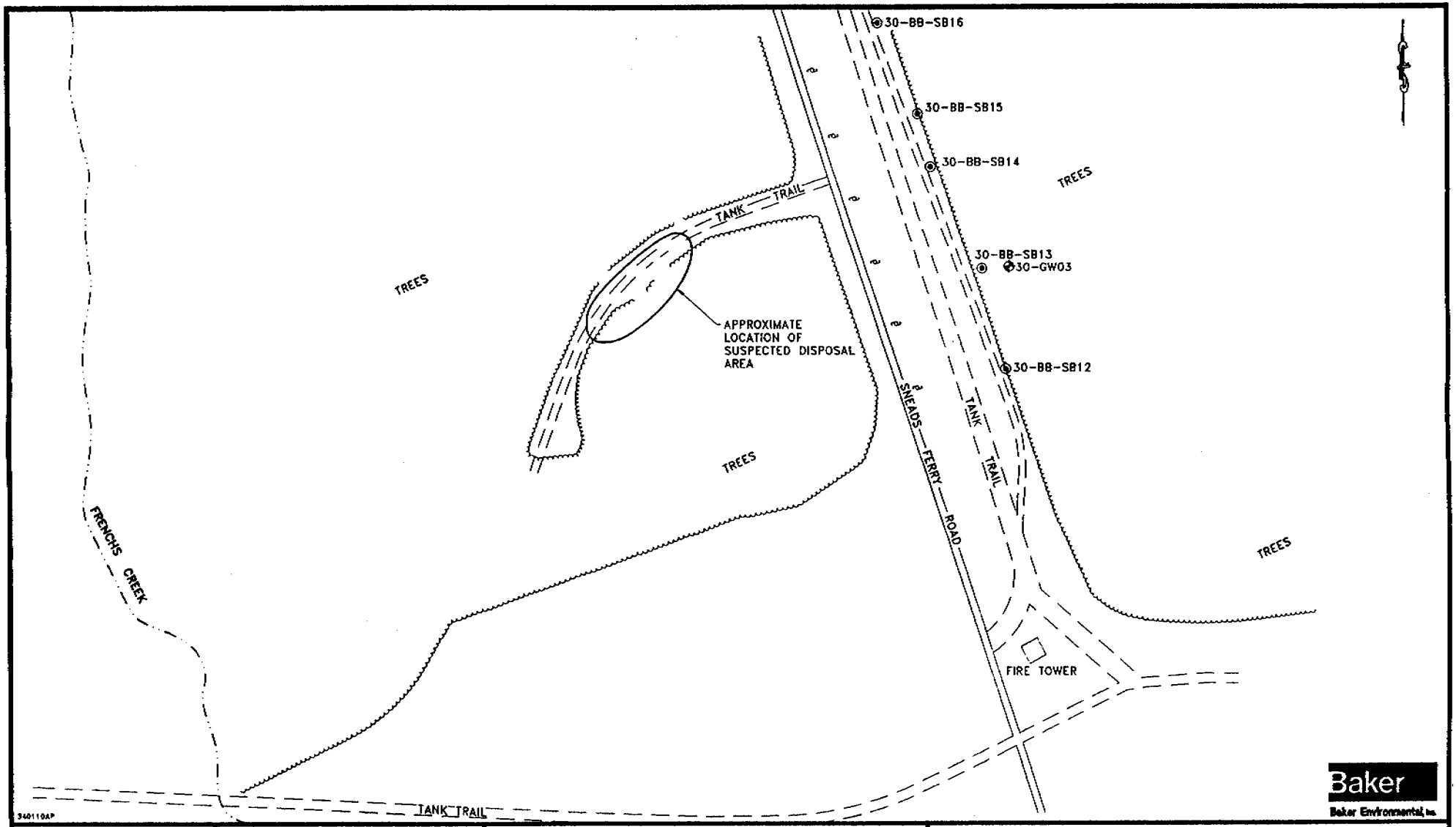
SOURCE: LANTDIV, FEBRUARY 1992 AND W.K. DICKSON, JUNE 1994

300 0 150 300 600

1 inch = 300 ft.

FIGURE 9
SHALLOW AND DEEP MONITORING WELL LOCATIONS
SITE 28 - HADNOT POINT BURN DUMP
REMEDIAL INVESTIGATION CTO-0231

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



LEGEND

30-GW03 PILOT TEST BORING FOR SHALLOW MONITORING WELL

SOIL BORING LOCATION

30-BB-SB12 BASE BACKGROUND SOIL BORING LOCATION

ASPHALT ROAD

UNIMPROVED ROAD

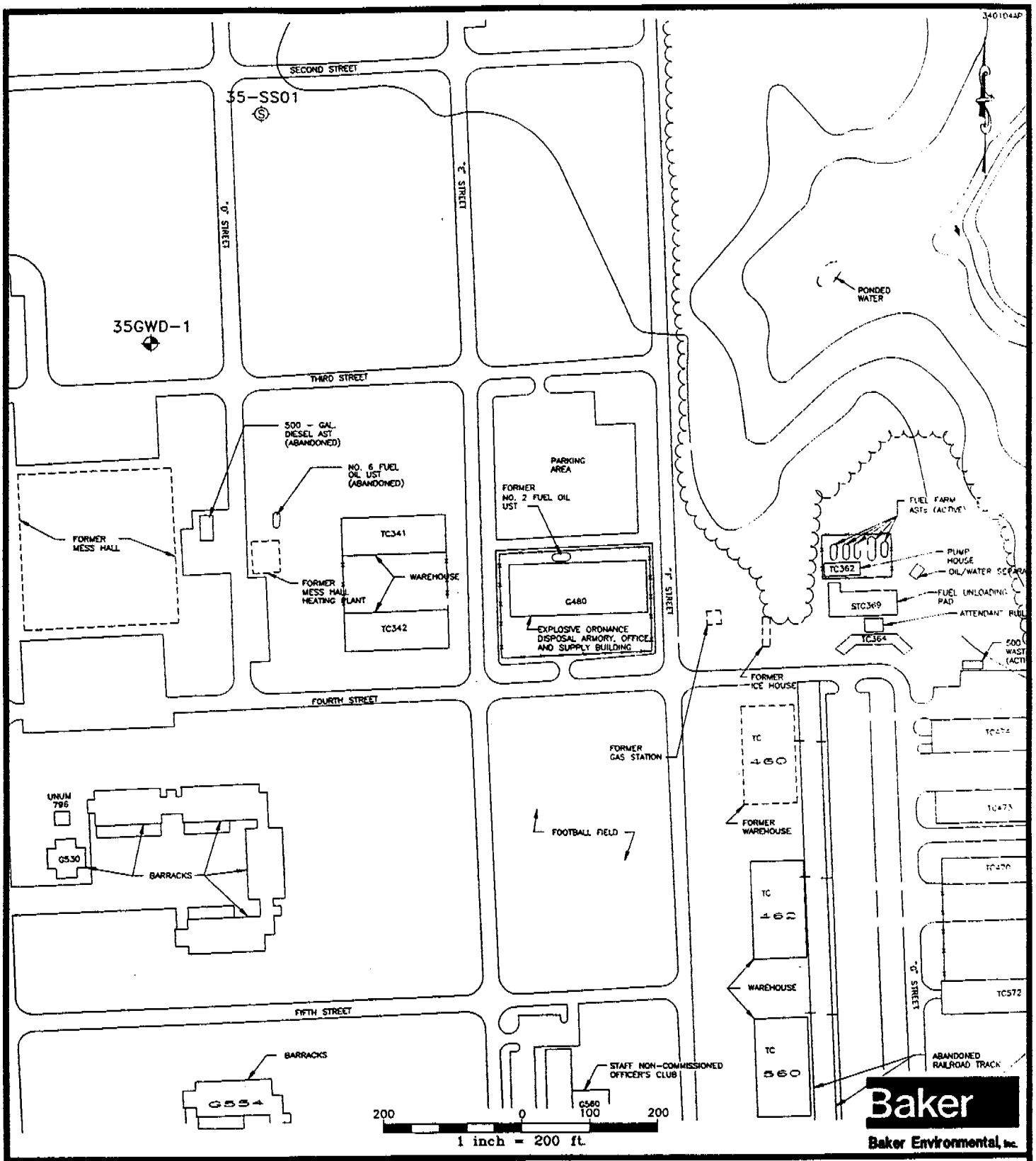
POLE

SOURCE: LAI ... EB. 1992 AND W.K. DICKSON, JUNE 1994

300 0 150 300 600

1 inch = 300 ft.

FIGURE 10
SURFACE AND SUBSURFACE SOIL SAMPLING LOCATIONS
SITE 30 - SNEADS FERRY ROAD FUEL
TANK SLUDGE AREA
REMEDIAL INVESTIGATION CTO-0231
MARINE CORPS BASE, CAMP LE... E
NORTH CAROLINA



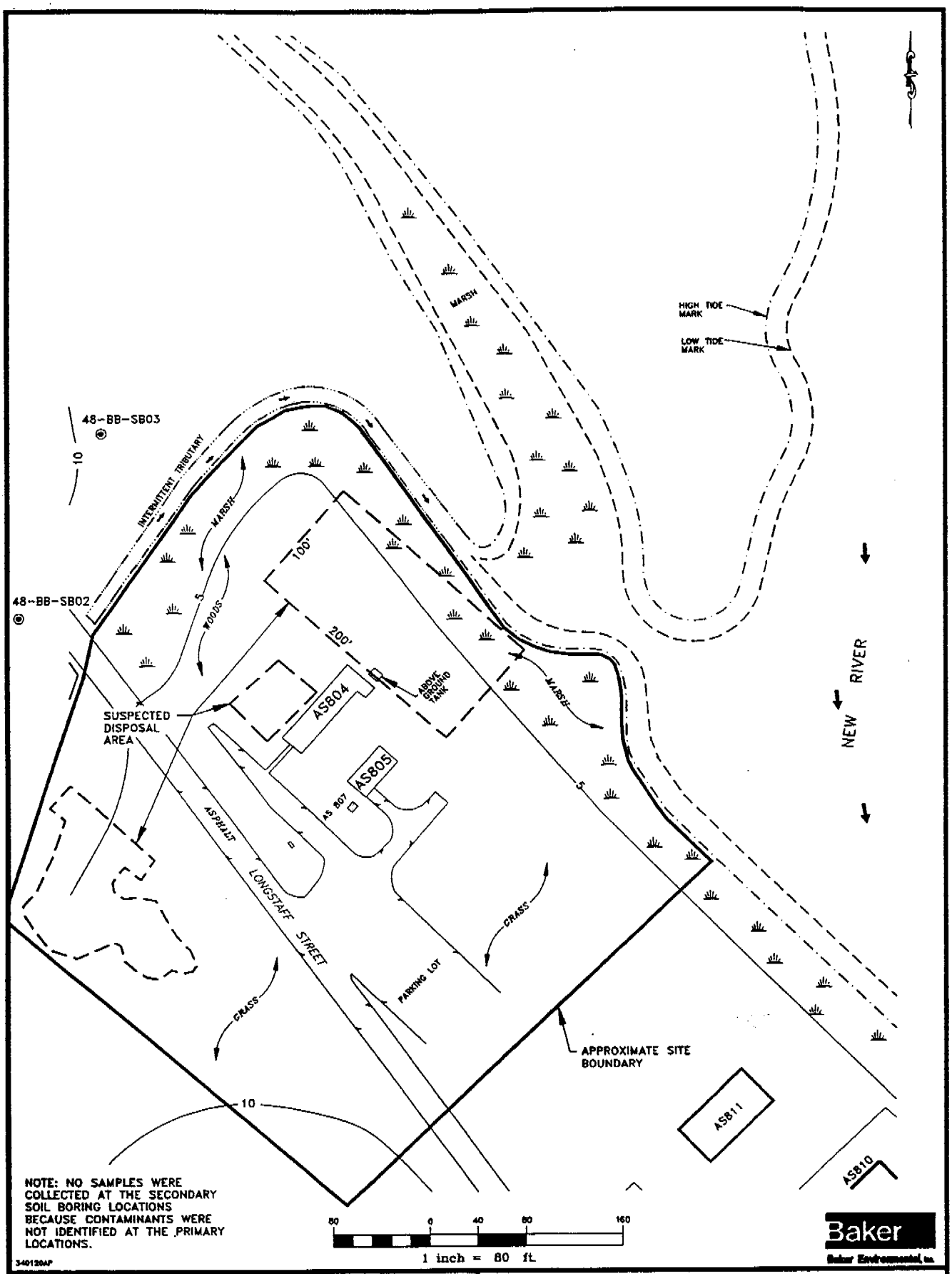
LEGEND

35-SS01 SOIL BORING LOCATION

35GWD-1 SOIL BORING FOR SHALLOW MONITORING WELL

SOURCE: FEB. 1992

FIGURE 11
SAMPLING LOCATIONS
SITE 35, CAMP GEIGER
AREA FUEL FARM
CTO-0232
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



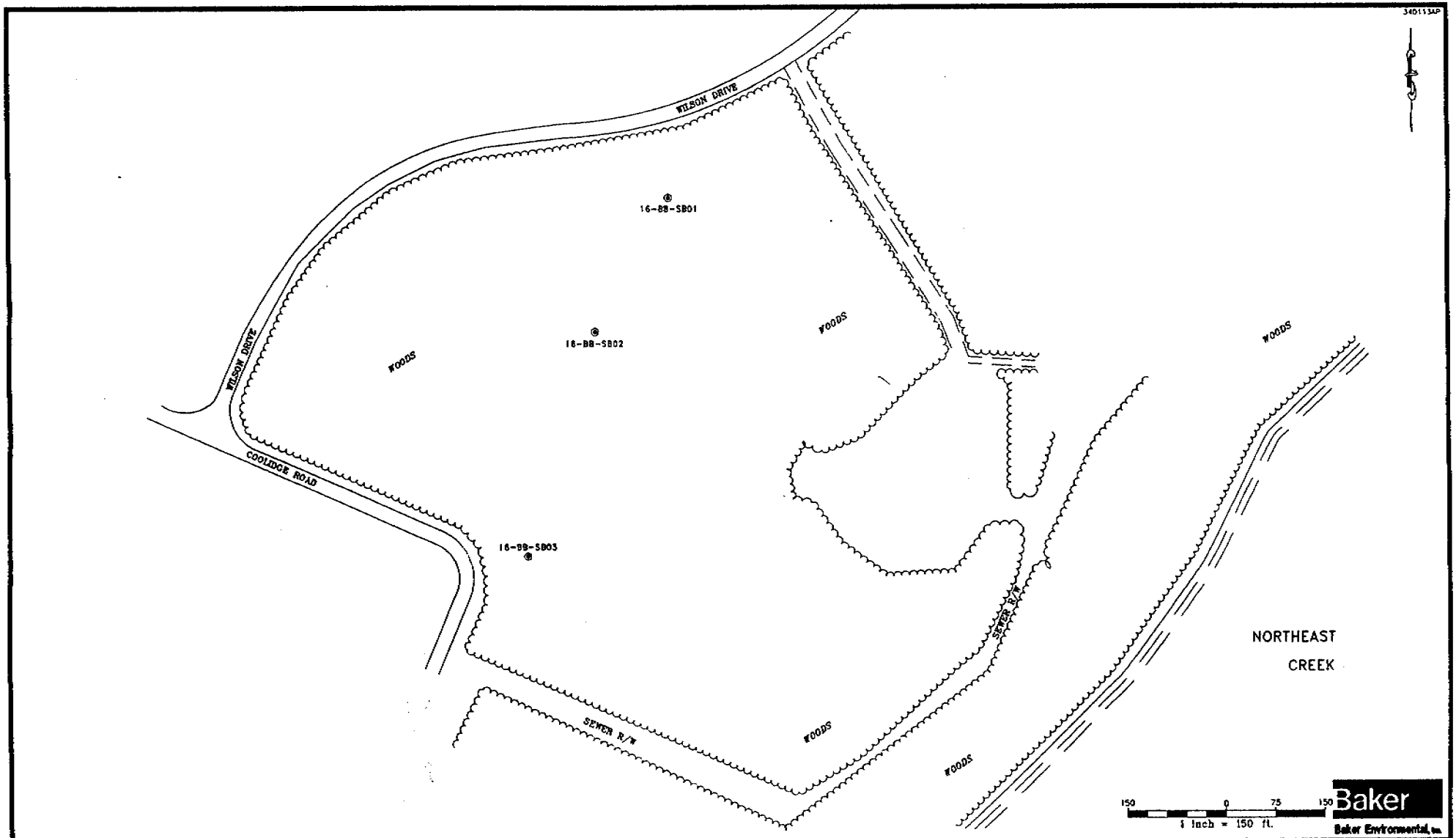
LEGEND

48-BB-SB02 BACKGROUND SOIL BORING

SOURCE: LANTDIV, FEB. 1992

FIGURE 12
SOIL BORING LOCATION MAP
SITE 48

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

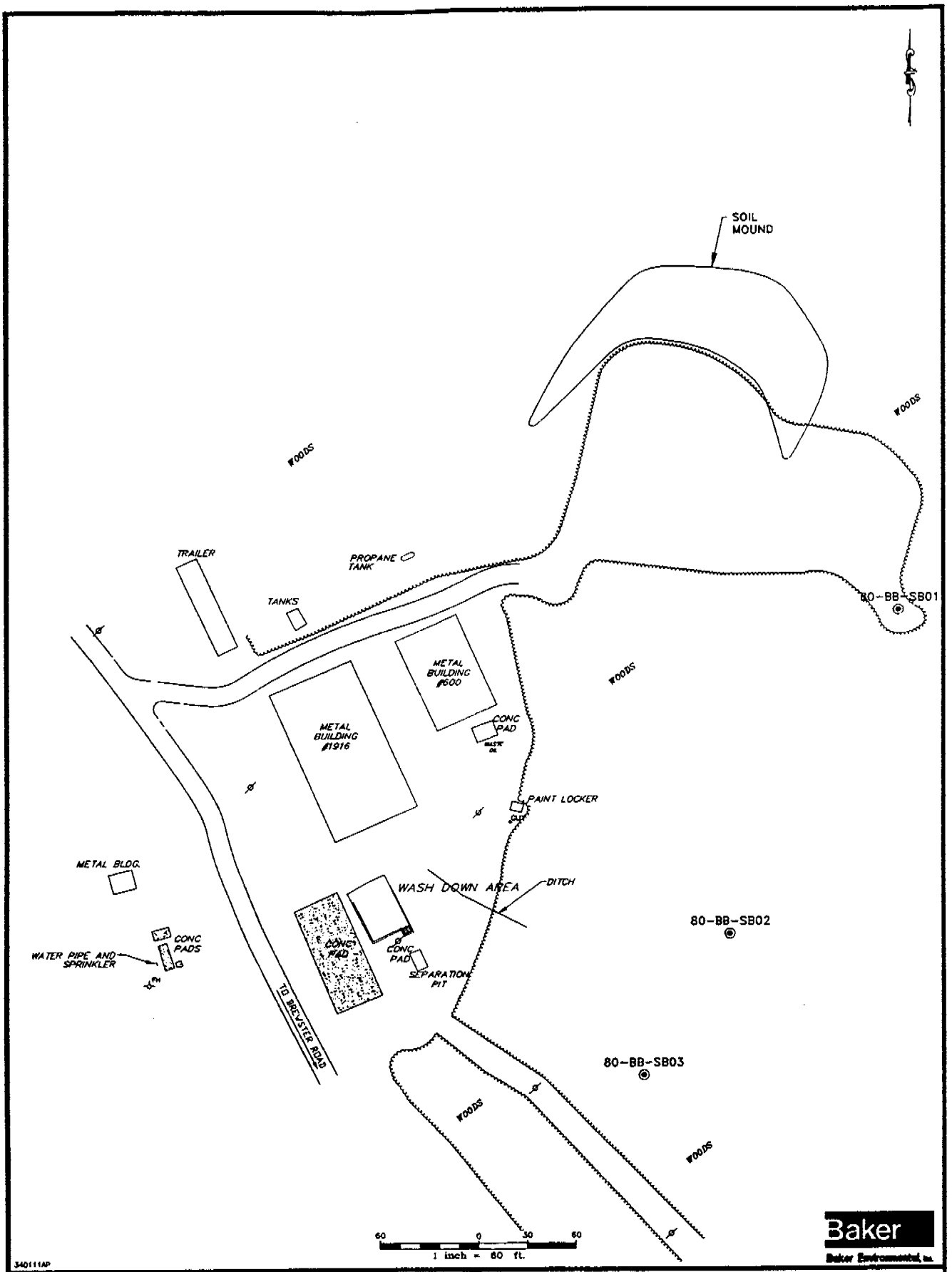


LEGEND

16-BB-S903 SOIL BORING LOCATION

SOURCE: W.K. DICKSON & CO., INC., JANUARY 1995

FIGURE 13
SOIL SAMPLING LOCATIONS
SITE 16 - MONTFORD POINT BURN DUMP
REMEDIAL INVESTIGATION CTO-0274
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

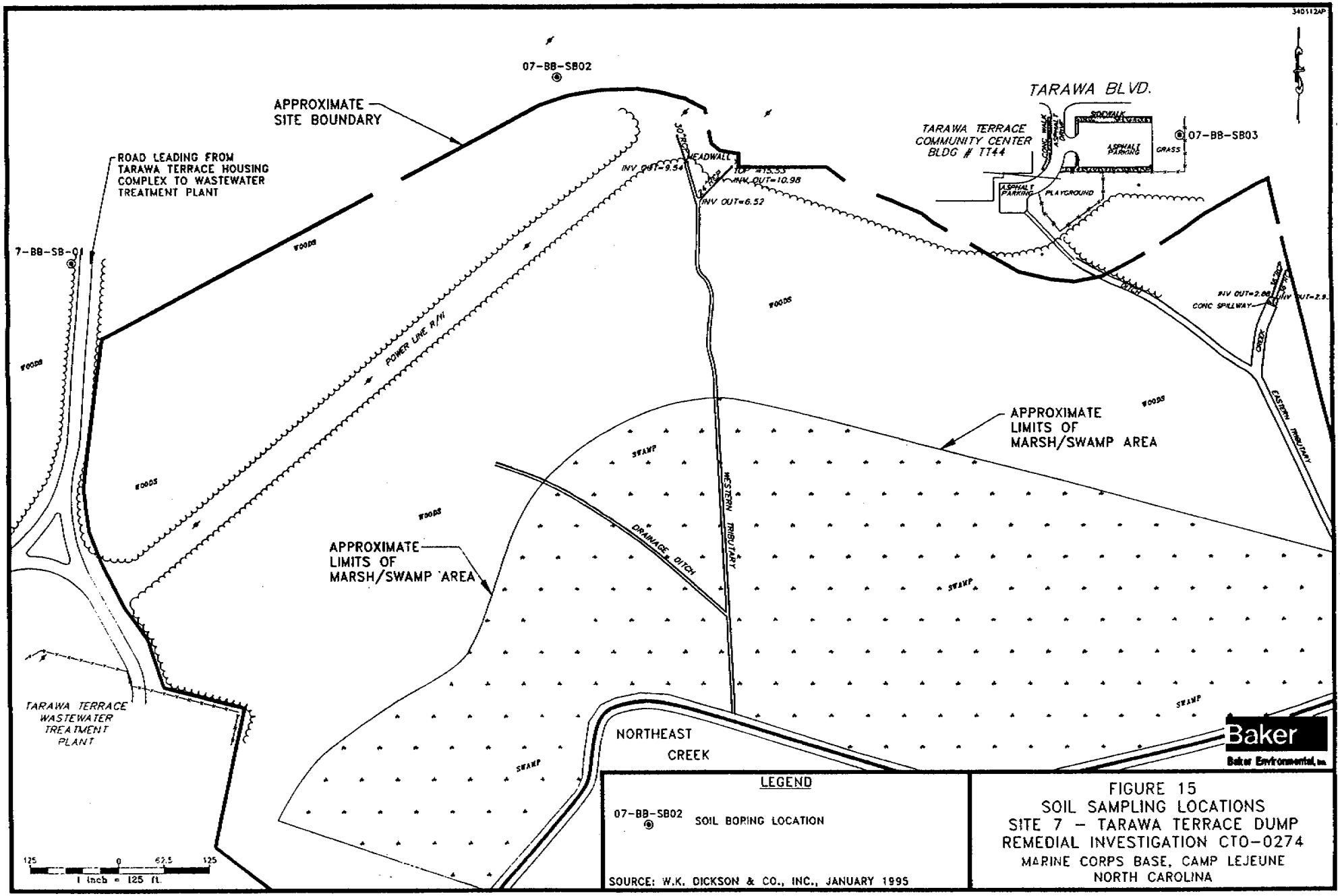


LEGEND

80-BB-SB01 ◉ SOIL BORING LOCATION (INSTALLED DURING THE FIRST PART OF THE SOIL INVESTIGATION NOVEMBER 1 THROUGH NOVEMBER 7, 1994).

SOURCE: W.K. DICKSON & CO., INC., JANUARY 1995

FIGURE 14
SOIL SAMPLING LOCATIONS
SITE 80 – PARADISE POINT
GOLF COURSE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0274
MARINE CORPS BASE, CAMP, LEJEUNE
NORTH CAROLINA


340512AP
07-BB-SB02
APPROXIMATE SITE BOUNDARY
ROAD LEADING FROM TARAWA TERRACE HOUSING COMPLEX TO WASTEWATER TREATMENT PLANT
7-BB-SB-01
TARAWA BLVD.
TARAWA TERRACE COMMUNITY CENTER BLDG # TT44
07-BB-SB03
SIDEWALK
ASPHALT PARKING
GRASS
ASPHALT PARKING
PLAYGROUND
30"RCP
HEADWALL
INV OUT=9.54
TOP =15.53
INV OUT=10.98
INV OUT=6.52
POWER LINE R/W
WOODS
INV OUT=2.08
CONC SPILLWAY
DITCH
EASTERN TRIBUTARY
APPROXIMATE LIMITS OF MARSH/SWAMP AREA
SWAMP
WESTERN TRIBUTARY
DRAINAGE DITCH
APPROXIMATE LIMITS OF MARSH/SWAMP AREA
TARAWA TERRACE WASTEWATER TREATMENT PLANT
NORTHEAST CREEK
125 0 62.5 125
1 inch = 125 ft.
LEGEND
07-BB-SB02 SOIL BORING LOCATION
SOURCE: W.K. DICKSON & CO., INC., JANUARY 1995
Baker
Baker Environmental, Inc.
FIGURE 15
SOIL SAMPLING LOCATIONS
SITE 7 - TARAWA TERRACE DUMP
REMEDIAL INVESTIGATION CTO-0274
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

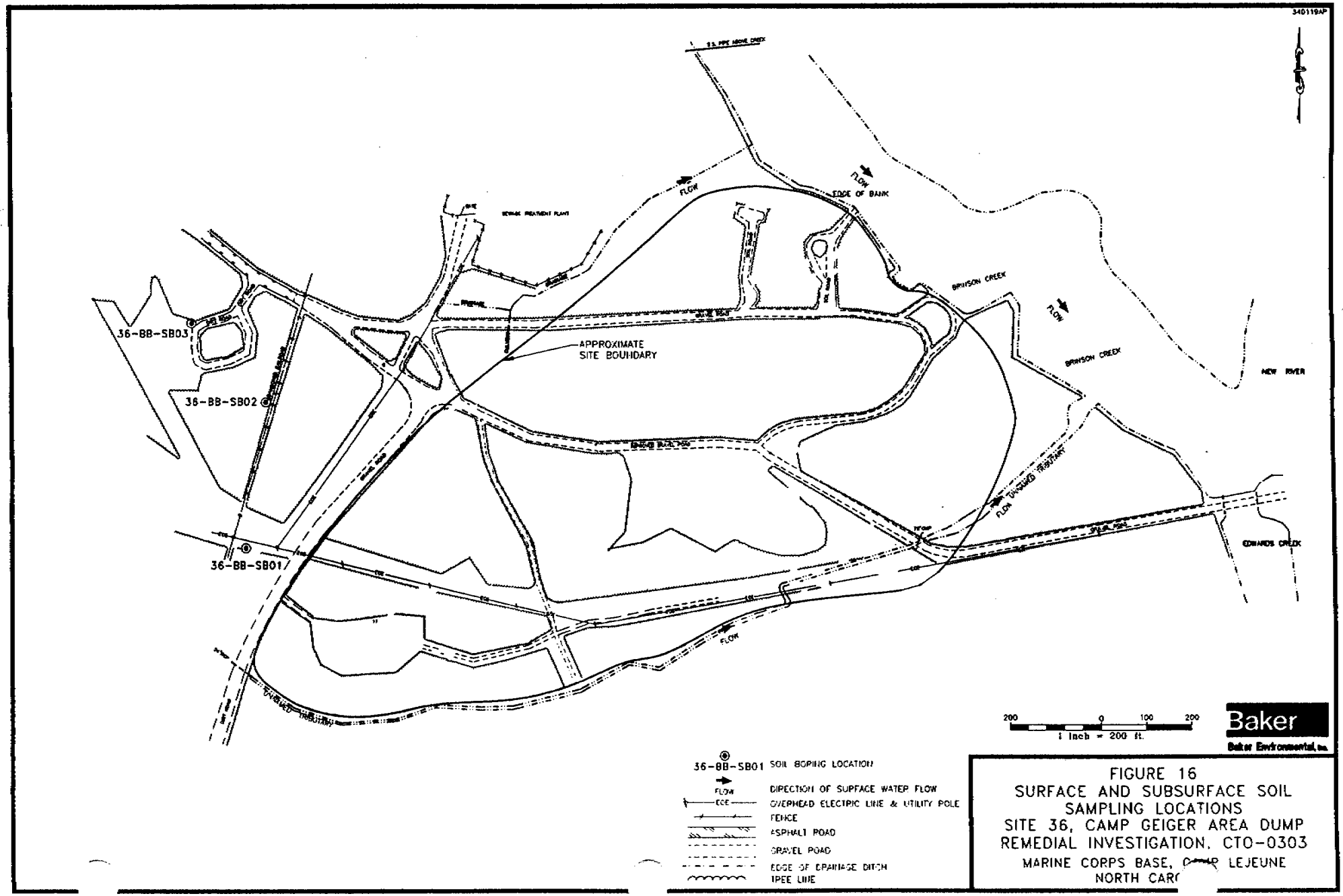


FIGURE 16
SURFACE AND SUBSURFACE SOIL SAMPLING LOCATIONS
SITE 36, CAMP GEIGER AREA DUMP
REMEDIAL INVESTIGATION, CTO-0303
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAR[illegible]

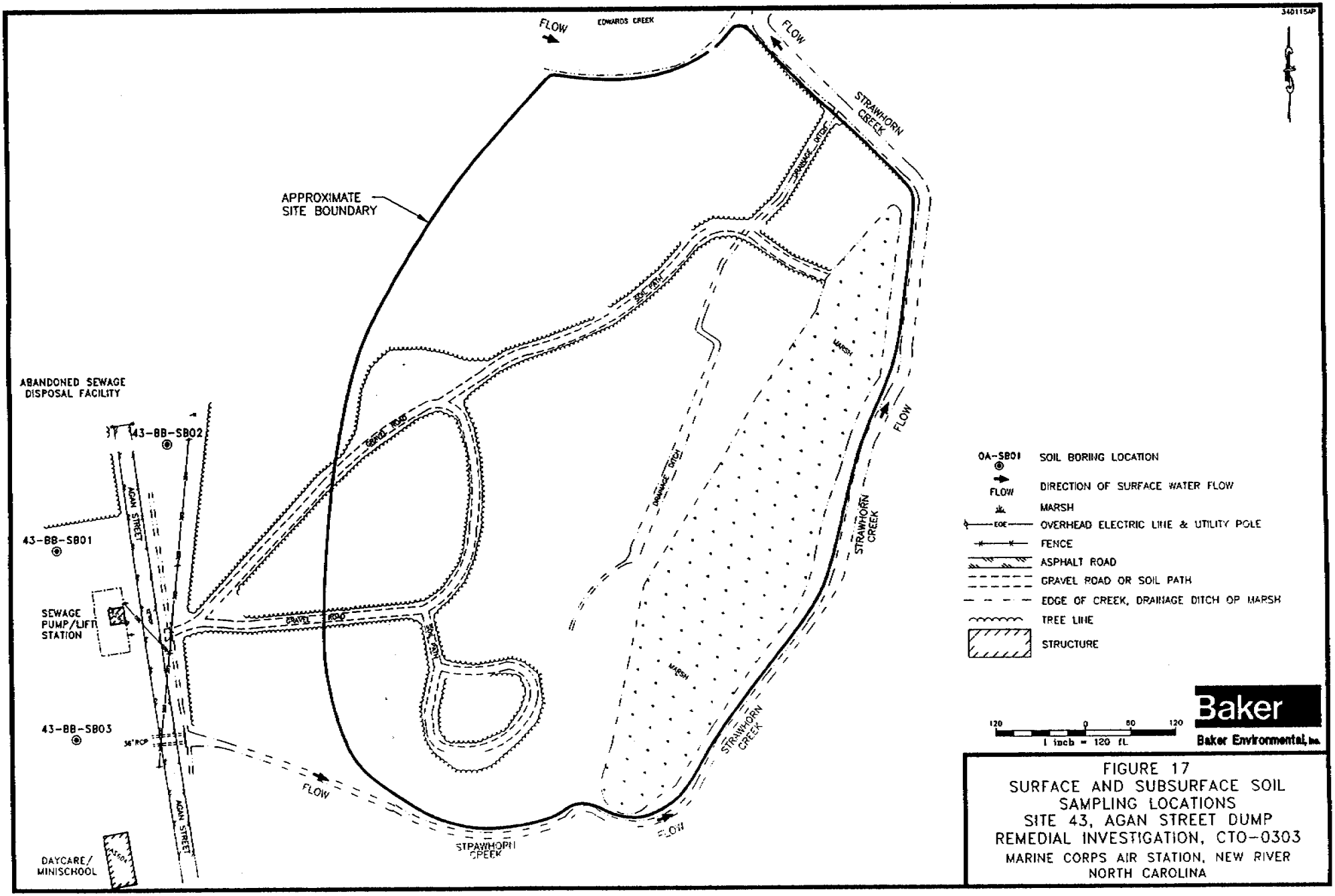


FIGURE 17
SURFACE AND SUBSURFACE SOIL SAMPLING LOCATIONS
SITE 43, AGAN STREET DUMP
REMEDIAL INVESTIGATION, CTO-0303
MARINE CORPS AIR STATION, NEW RIVER
NORTH CAROLINA

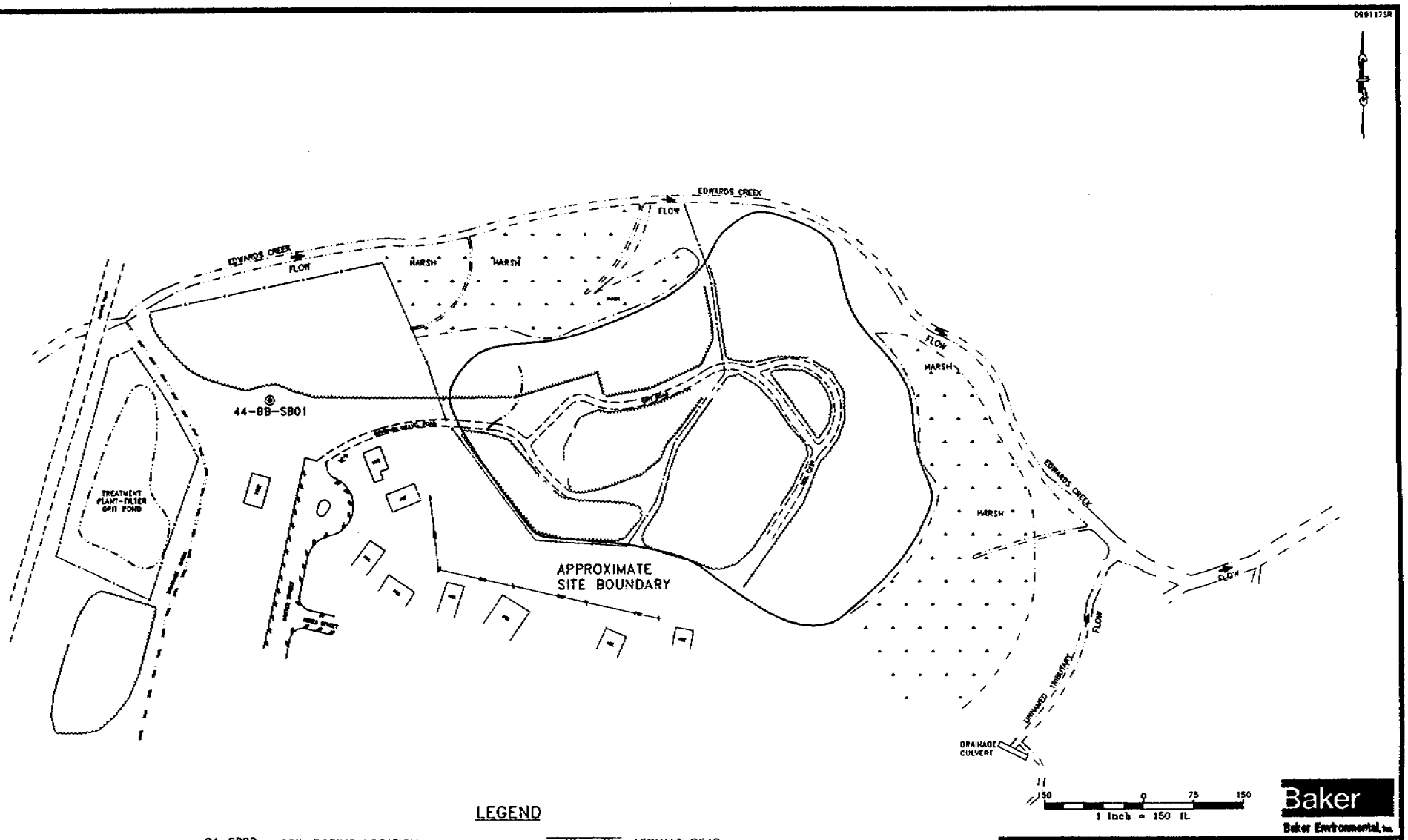


FIGURE 18
SURFACE AND SUBSURFACE SOIL SAMPLING LOCATION
SITE 44, JONES STREET DUMP
REMEDIAL INVESTIGATION, CTO-0303
MARINE CORPS AIR STATION NEW RIVER
NORTH CAROLINA

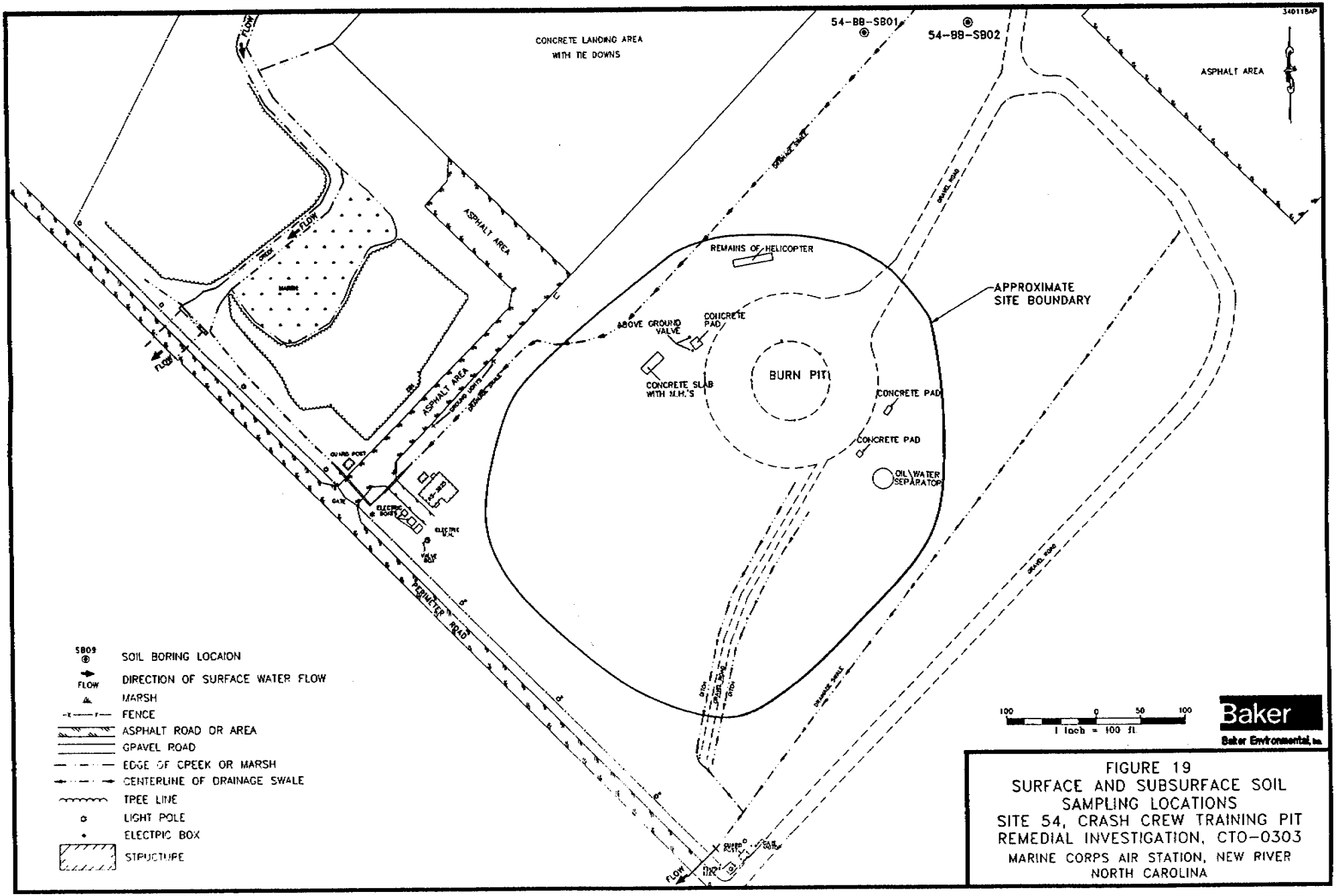
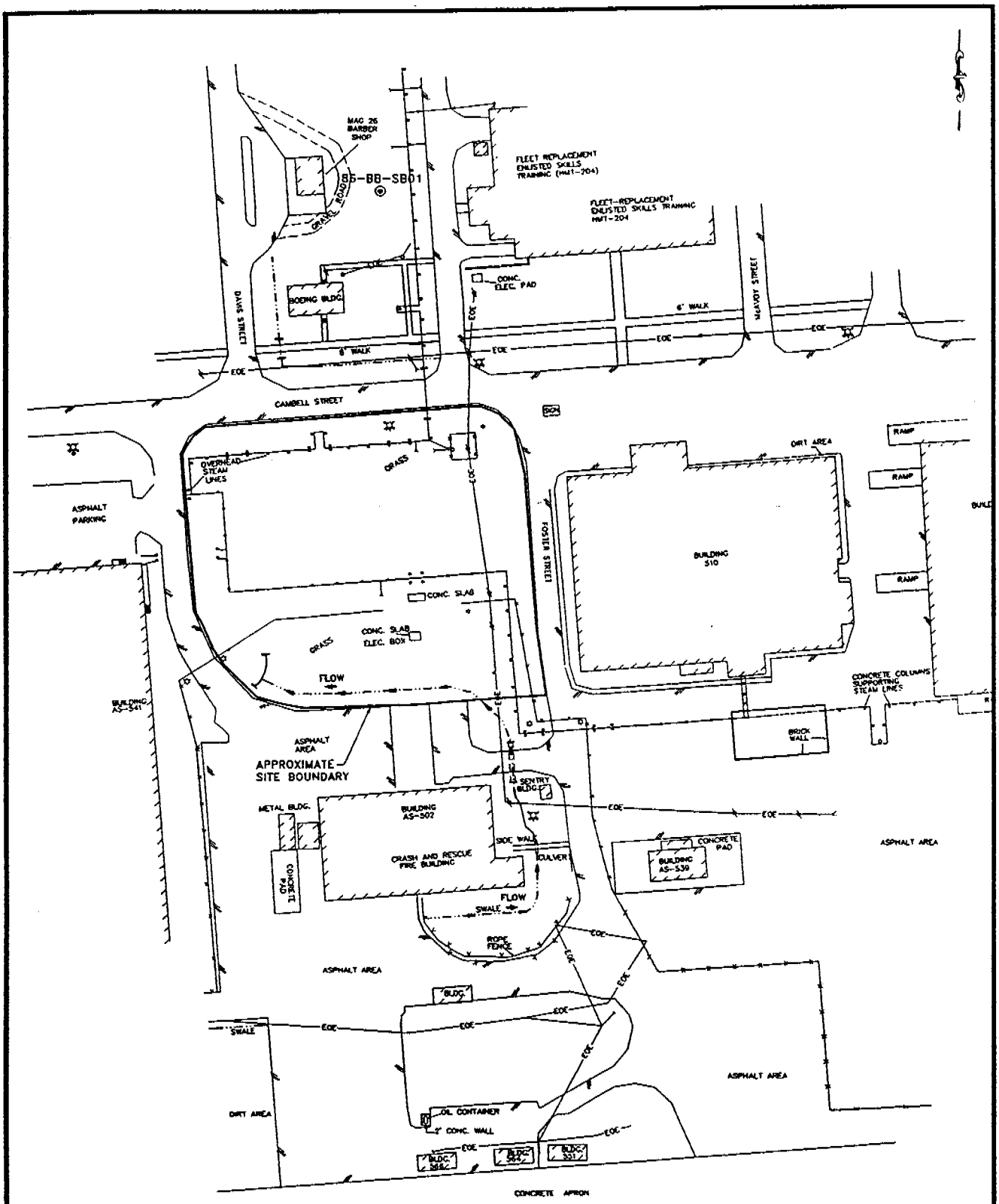


FIGURE 19
SURFACE AND SUBSURFACE SOIL SAMPLING LOCATIONS
SITE 54, CRASH CREW TRAINING PIT
REMEDIAL INVESTIGATION, CTO-0303
MARINE CORPS AIR STATION, NEW RIVER
NORTH CAROLINA



3401164P

LEGEND

- SB09 — SOIL BORING LOCATION
- FLOW — DIRECTION OF SURFACE WATER FLOW
- OVERHEAD ELECTRIC LINE & UTILITY POLE
- ASPHALT ROAD
- CENTERLINE OF DRAINAGE SWALE
- LIGHTPOLE
- STRUCTURE
- FENCE
- GUY WIRE
- FIRE HYDRANT

SOURCE: LANTDIV, OCT. 1991

80 0 40 80
1 inch = 80 ft.

Baker
Baker Environmental, Inc.

FIGURE 20
SURFACE AND SUBSURFACE SOIL SAMPLING LOCATION
SITE 86, ABOVE GROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MARINE CORPS AIR STATION, NEW RIVER
BAMP LEJEUNE

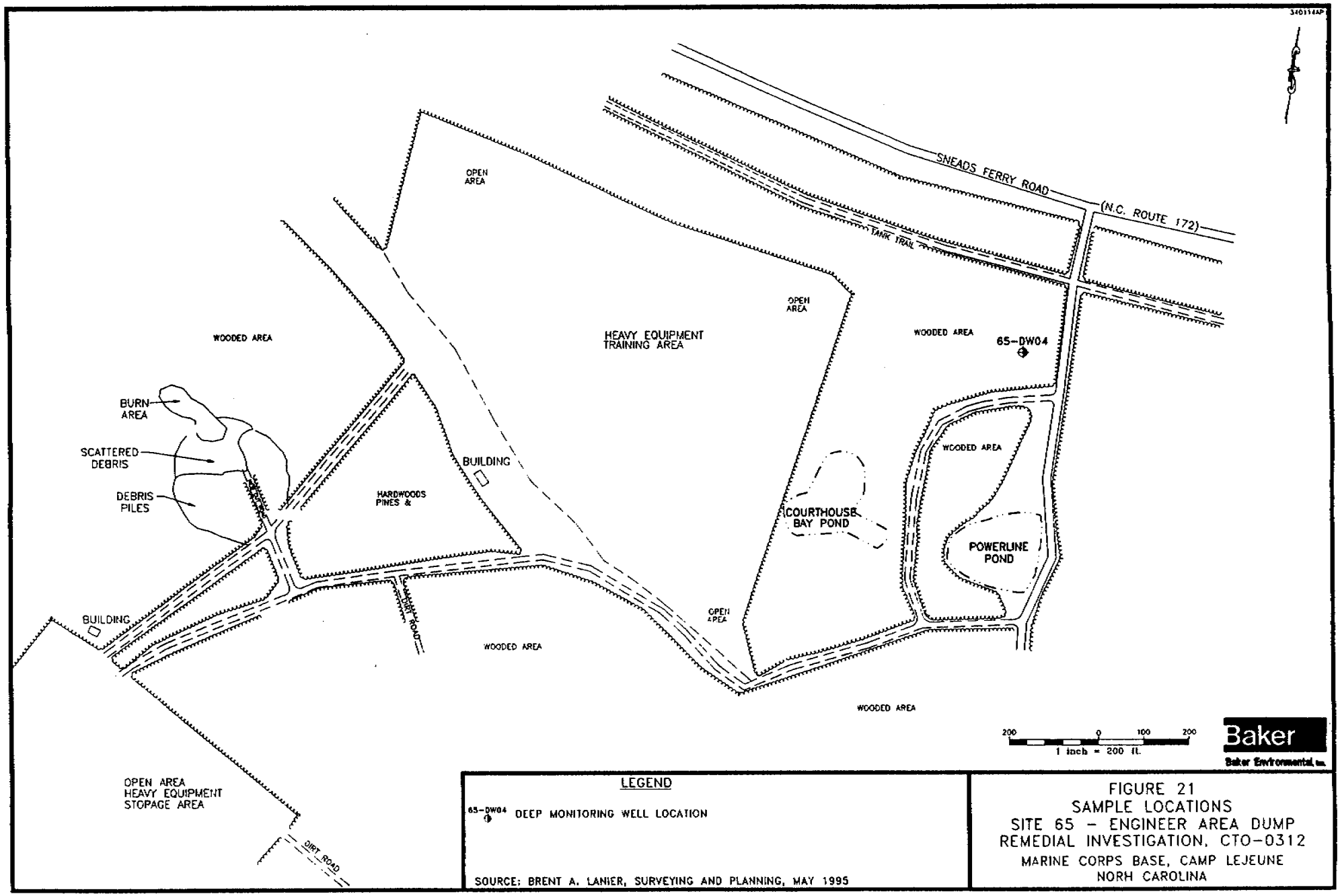


FIGURE 21
SAMPLE LOCATIONS
SITE 65 - ENGINEER AREA DUMP
REMEDIAL INVESTIGATION, CTO-0312
MARINE CORPS BASE, CAMP LEJEUNE
NORH CAROLINA

APPENDIX G
BAKER'S EVALUATION OF METALS IN GROUNDWATER

DRAFT

EVALUATION OF METALS IN GROUNDWATER

MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA

CONTRACT TASK ORDER 0177

JUNE 3, 1994

Prepared for:

DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES
ENGINEERING COMMAND
Norfolk, Virginia

Under the:

LANTDIV CLEAN Program
Contract N62470-89-D-4814

Prepared by:

BAKER ENVIRONMENTAL, INC.
Coraopolis, Pennsylvania

TABLE OF CONTENTS

		Page
1.0	INTRODUCTION	1
2.0	STUDY OBJECTIVES	1
3.0	SCOPE OF WORK	2
4.0	DATA ANALYSIS	3
5.0	ANALYSIS OF STUDY OBJECTIVES	8
6.0	CONCLUSIONS	10
7.0	RECOMMENDATIONS	10

FIGURES

1 Site Location Map
2 Positive Detections Above Applicable Federal and State Standards for Total and Filtered Inorganic Analytes in Groundwater-Site 2
3 Positive Detections of Total Metals Above Federal MCLs and NCWQS in Shallow Wells-Site 78
4 Positive Detections of Total Metals Above Federal MCLs and NCWQS in Intermediate Wells-Site 78
5 Positive Detections of Total Metals Above Federal MCLs and NCWQS in Deep Wells-Site 78

TABLES

1 Summary of Total Metals in Shallow Wells
2 Comparison of Repeat Sampling in Shallow Wells
3 Summary of Dissolved Metals in Shallow Wells
4 Summary of Total Metals in Upgradient Wells
5 Comparison of Inorganic Subsurface Soil Concentrations in "Clean" and "Contaminated" Wells
6 Total Metals in Deep Monitoring Wells
7 Summary of Field Parameters in Shallow, Deep, and Supply Wells

1.0 INTRODUCTION

Numerous groundwater investigations have been conducted at Marine Corps Base (MCB), Camp Lejeune under the Department of the Navy (DON) Installation Restoration Program (IRP). These studies have identified elevated levels of total metals in shallow groundwater at almost every site. The degree of contamination, based on dissolved metals analysis of groundwater samples, is limited. It is believed that the presence of elevated metals are not always related to past disposal activities for several reasons, which is the basis of this study.

Currently, Records of Decision (ROD) are being prepared for Operable Units No. 1 (Sites 21, 24, and 78) and No. 5 (Site 2). Both RODs are proposing to not remediate shallow groundwater which contains elevated levels of total metals above State groundwater standards (i.e., North Carolina Water Quality Standards) and/or Federal drinking water standards (i.e., Maximum Contaminant Levels). Specifically, remediation of shallow groundwater due to elevated total metals is not cost effective, or practical, due to the following: (1) the shallow aquifer is not used for potable supply; (2) the source of metals in groundwater cannot be correlated with soil data or previous disposal practices; (3) the extent of shallow groundwater contamination (based on total metals analysis) is widespread and in many cases undefinable, since there are no apparent contaminant plumes or patterns associated with the metals; and (4) deep groundwater, which is the source of potable water, is not significantly contaminated with metals above the standards.

2.0 STUDY OBJECTIVES

The DON/Marine Corps initiated a study on inorganics in groundwater throughout MCB Camp Lejeune to assess whether total metals in groundwater are related to disposal practices or to other factors. The overall goal of this study is to provide information that would be used in consideration of not remediating shallow groundwater at Operable Units No. 1 and No. 5, and possibly other operable units where total metals are elevated without cause. The following study objectives were identified:

(1) Determine whether the elevated total metals detected in the shallow aquifer are related to past disposal practices, well construction factors, sampling techniques, or suspended particulates in the samples;

(2) Determine whether total metals in shallow groundwater are elevated throughout the region or MCB Camp Lejeune;

(3) Determine whether there is a correlation between elevated total metals in groundwater and metals in soil; and

(4) Determine whether the concentrations of total metals (i.e., low versus high) is related to shallow and deep aquifer characteristics.

3.0 SCOPE OF WORK

Groundwater and soil data from a total of 21 sites were compiled as part of the overall study. Three of the 21 sites are located outside the boundary of the base. These sites include the ABC Cleaners Superfund Site, located along Route 24 in Jacksonville, and two sites located along Highway 17 (Off-site Properties No. 1 and No. 2). The two sites along Route 17 were investigated by the DON/Marine Corps as part of a real estate survey. The other 18 sites are located throughout various portions of MCB Camp Lejeune (see Figure 1).

Information from studies conducted by Baker and other consultants were obtained to evaluate metal concentrations in groundwater. The study focused on 14 metals of potential concern to human health and the environment. Some of the information was collected under the IR Program whereas other information was obtained during other investigations (e.g., ABC Cleaners RI/FS). The following data tables were then prepared to determine why total metals are generally elevated in shallow groundwater.

Table 1 - Total Metal Concentrations in Shallow Groundwater by Site

Table 2 - Summary of Repeat Sampling of Shallow Wells (Sites 2 and 78)

Table 3 - Dissolved Metal Concentrations in Shallow Groundwater by Site

Table 4 - Summary of Total Metal Concentrations in Upgradient Wells

Table 5 - Comparison of Subsurface Metal Concentrations in Uncontaminated and Contaminated Wells

Table 6 - Total Metal Concentrations in Deep Groundwater by Site

Table 7 - Summary of Field Parameters in Shallow Monitoring Wells, Deep Monitoring Wells, and Supply Wells

The tables are presented at the end of this report.

4.0 DATA ANALYSIS

The following discussion represents an analysis of the information contained in each of the previously mentioned tables.

Table 1 (Total Metal Concentrations in Shallow Groundwater)

All of the sites had at least one (and in most cases several) metal which exceeded either State water quality standards or Federal drinking water standards. The most frequently detected metals included chromium, lead, and manganese, which were detected at almost every site above drinking water standards. Other frequently detected metals which exceeded drinking water standards included arsenic, beryllium, cadmium, and nickel.

An analysis of the data from Table 1 indicates that elevated total metals are present in shallow groundwater at every site, including the three sites which are located off base. The two sites which did not exhibit significant contamination include the ABC Cleaners site (only chromium exceeded the standards) and Site 48 (only manganese exceeded the standards).

Total metals detected in shallow groundwater at Site 2 exceeded State and/or Federal standards in seven of the 11 shallow monitoring wells. Manganese was the most frequently detected metal (7/11). Lead (3/11), chromium (2/11), and cadmium (1/11) were also detected above the standards,, but less frequently (see Figure 2).

With the exception of Wells 78GW03 and 78GW19, total metals were detected at Site 78 (Hadnot Point Industrial Area) above Federal MCLs or NCWQS in every shallow well (see Figure 3). The extent of elevated total metals in groundwater is widespread, encompassing approximately one square mile (or approximately 660 acres) in total area. The distribution and concentration of total metals in shallow groundwater makes it virtually impossible to identify or illustrate contaminant plumes (see Figure 3).

An analysis of the total metals results indicates the following pattern. Samples exhibiting elevated levels of lead, chromium, or other contaminants of concern, also exhibited elevated levels of other metals such as aluminum, antimony, iron, and zinc. Samples which did not exhibit elevated levels of lead, chromium, or manganese also did not exhibit elevated levels of other metals. This pattern indicates that the elevated total metals are not limited to one or

two contaminants, which would be the case if a lead or chromium plume in the groundwater truly existed. In other words, if a site is impacted by a particular metal due to disposal activities (say chromium for example), then other metals such as aluminum, lead, or zinc should not be consistently elevated as in the case of samples collected from the shallow aquifer at MCB Camp Lejeune. This point is depicted in the data summary tables provided in Appendix A for Sites 2 and 78. These tables were taken from the Remedial Investigation Reports for Operable Units No. 1 and No. 5. As an example, note that sample numbers 78-MW08, 78-MW10, 78-MW11, and 78-MW12 all had elevated levels of total metals when compared to samples 78-MW09-2 and 78-MW09-3. It is clear that most of the metal concentrations in a particular sample follow a consistent pattern throughout.

Table 2 (Comparison of Repeat Sampling of Shallow Wells

Five wells from Sites 2 and 78 were randomly chosen to evaluate total metals concentrations between sampling rounds. The comparison was limited to only chromium, lead, and manganese since these contaminants were frequently detected throughout MCB Camp Lejeune. In several cases, metal concentrations were significantly different between the sampling rounds. If the shallow aquifer was impacted due to former disposal activities, a contaminant plume would be present and concentrations would not significantly deviate. The deviation in metal concentrations may indicate that sampling results are biased due to suspended particulates in the samples.

Table 3 (Dissolved Metal Concentration in Shallow Groundwater by Site)

The data base for Table 3 was limited to 12 sites since many of the previous investigations (i.e., prior to Navy CLEAN) did not analyze for dissolved metals. Nevertheless, an analysis of the 12 sites revealed that elevated levels of dissolved metals in groundwater is limited. Manganese was the most frequently detected metal above drinking water standards (10 of 12 sites exhibited elevated levels). Lead was detected at only one site (Site 21) above drinking water standards. Chromium was also detected at only one site (Site 78) above drinking water standards. No other metal was detected above the standards.

Literature searches have indicated that manganese is a naturally occurring metal in North Carolina. Therefore, the presence of manganese may not be attributable to site-related activities (Greenhorne & O'Mara, 1992).

An analysis of the data from Table 3 clearly shows a significant reduction in metal concentrations when compared to Table 1 (total metals in shallow groundwater). One possible reason for this reduction is that suspended solids or particles are not being introduced into the analysis of the sample due to filtering. A second possibility is that the metals are not significantly present in a dissolved state in shallow groundwater due to the species of metals under site conditions. It should be noted that calcium and sodium did not exhibit such a pattern since the salts of these metals are more soluble in water. For example, the concentrations of total calcium and total sodium versus dissolved calcium and dissolved sodium are similar and are not affected by the removal of the particulates during filtering. The fact that these salts do not exhibit the pattern that the other metals show supports the possibility that total metal concentrations are influenced by particulates in the sample.

Table 4 (Total Metals in Upgradient Shallow Wells)

The data base for Table 4 consists of groundwater results from 14 upgradient shallow monitoring wells (i.e., one well per site). These wells were installed to determine baseline groundwater quality to which on-site groundwater conditions could be compared. In some cases, the upgradient wells were located in areas where other base activities may have influenced groundwater quality.

The analysis of this data shows that manganese was the most frequently detected metal above Federal or State standards in upgradient shallow wells. Manganese was detected in 7 of the 14 upgradient wells above drinking water standards. Chromium and lead were also frequently detected above drinking water standards in upgradient (background) wells. These contaminants were detected in 6 of the 14 upgradient wells. At Site 2, samples collected from an upgradient well (2GW9) exhibited elevated levels of chromium (83µ/l), lead (27.2µ/l) and manganese (747µ/l). At Site 78, samples collected from upgradient wells 96W4 and 78GW26 did not exhibit elevated levels of total metals. The concentration range for metals detected above NC WQS and/of Federal MCLs in upgradient wells is provided below:

- beryllium (ND-46.5 µ/l)
- cadmium (ND-10 µ/l)
- chromium (ND-198 µ/l)
- lead (ND-78.8 µ/l)
- manganese (ND-747 µ/l)
- mercury (ND-1.6J µ/l)

Based on the above range representing upgradient wells, none of the on-site wells at Site 2 exhibited total metals above the maximum background concentrations. However, at Site 78, lead and chromium were detected above the maximum background in several on-site wells.

An analysis of the data from Table 4 indicates that shallow groundwater upgradient of some sites contains total metals above drinking water standards. A comparison of Table 4 data against Table 1 data indicates that shallow groundwater samples from upgradient wells are less contaminated than samples collected from on-site monitoring wells. However, it should be noted that the data base for Table 4 consists of only 14 wells whereas the data base for Table 1 consists of over 130 wells. Therefore, to assume that upgradient groundwater quality is better than on-site groundwater quality may not be justified due to the different data bases.

Table 5 (Comparison of Subsurface Metal Concentrations in Uncontaminated and Contaminated Wells)

The purpose of this table is to determine whether metal concentrations in soils correlate with the elevated levels of metals in shallow groundwater.

To evaluate this, metals in subsurface soils, representing an area of groundwater contamination, were compared to metals in subsurface soil in areas which did not exhibit groundwater contamination. If the elevated total metals in shallow groundwater are present due to former disposal activities, subsurface metals in soil representing an area of groundwater contamination would be expected to be elevated or higher than metals in subsurface soil representing a non-contaminated area. This evaluation assumes that the well exhibiting elevated total metals is within a source area and that the soil sample is representative of soil impacted by metal contamination.

As shown on Table 5, there is no clear pattern or correlation which indicates that elevated total metals are due to soil contamination. Note that in many cases, the concentration of metals which represent "non-contaminated" areas are greater than the metals which represent "contaminated" areas. Also note that the metals in subsurface soil are within or close to background subsurface metal concentrations. Therefore, this supports the possibility that in many cases at MCB Camp Lejeune, the elevated total metals in shallow groundwater cannot be attributable to a source or to past disposal practices.

Table 6 (Total Metals in Deep Monitoring Wells)

Table 6 presents total metal concentrations in deep groundwater for each site. The data base is limited to only 8 sites. Metal concentrations in supply wells were also included for comparison purposes.

As shown on Table 6, total metals in deep groundwater are below drinking water standards with a few exceptions. Arsenic and cadmium were detected above the standards in one deep monitoring well at Site 78 (see Figure 4). Manganese was detected in deep groundwater at three sites and a few of the supply wells. Lead was detected in one supply well at 16 µ/l, which is slightly above the drinking water standard of 15 µ/l.

Elevated total metals are not widespread in deep groundwater for two possible reasons. First, most metals are not very mobile in the environment. Second, deep groundwater samples may not have significant amounts of suspended particulates due to different geologic conditions. Soils in the deeper aquifer are more compacted and consist primarily of calcareous sands, clays, and limestone fragments. Soils in the shallow aquifer are loosely compacted and consist primarily of fine-grained sands, silts, and clays. This classification may support the possibility that suspended solids are collected during sampling, thereby influencing the analysis for total metals.

Table 7 (Summary of Field Parameters in Shallow, Deep, and Supply Wells)

Table 7 provides a range of pH and specific conductivity values representative of shallow and deep groundwater. In general, lower pH values were noted more often in shallow wells than in deep wells (including the supply wells). This condition may influence the leachability and speciation of metals in groundwater.

Deep groundwater usually exhibited higher specific conductivity values. High specific conductivity values are representative of high dissolved conditions. The fact that deep groundwater generally exhibited higher specific conductivity values indicates that most of the metals, if present, are in a dissolved state. The high specific conductivity values could also indicate less suspended particulates due to the geologic conditions of the deep aquifer. The lower specific conductivity values observed in shallow wells indicates that the metals in the shallow aquifer are not in a dissolved state. This also supports the possibility that suspended particulates in the shallow aquifer are influencing the analysis of total metals.

5.0 ANALYSIS OF THE STUDY OBJECTIVES

Each of the objectives identified for this study are analyzed below based on the information collected.

Objective No. 1 (Determine whether the elevated total metals in the shallow aquifer are related to past disposal practices, well construction factors, sampling techniques, or suspended particulates in the samples)

Based on the analysis of information provided in Tables 1 through 7 and Appendix A, it appears that suspended particulates in groundwater samples could influence the concentration of total metals in groundwater. Well construction factors and sampling techniques are probably not a significant factor since the data base is representative of data obtained by Baker, ESE (Site 28 and 30), Roy F. Weston (ABC Cleaners), and Halliburton NUS (Site 7). No particular pattern was noted between sites which Baker obtained the samples versus sites in which other consultants obtained the data. Sampling methods were also considered. For Sites 63 and 65 for example, samples were collected with a bailer. At Sites 2 and 78, samples were collected with a low flow pump. All four sites exhibited elevated levels of total metals in groundwater samples. In addition, due to the fact that deep groundwater quality is not significantly impacted with metals indicates that well construction or sampling techniques are probably not factors related to elevated total metals in groundwater.

With respect to past disposal practices, Table 5 clearly shows that soil concentrations do not correlate with elevated total metals in groundwater. Based on this analysis, and on many of the sites previously investigated, the source of total metals in groundwater cannot be attributable to soil contamination or disposal practices in many cases. This is based on both the history of the site as well as the analytical soil results. In some cases, total metals were detected at elevated levels even when the site history did not correlate with the contaminants found. For example, Sites 2 and 21 have a history of pesticide storage and handling, and there are no known disposal areas (i.e., buried debris) within the site boundary. Nevertheless, both of these sites exhibited several metals above drinking water standards that would not be expected to be present at high concentrations based on the historical use of the site. These metals included lead, chromium, beryllium, cadmium, and manganese.

Objective No. 2 (Determine whether total metals in shallow groundwater are elevated throughout the region or MCB Camp Lejeune)

Based on groundwater data obtained from both upgradient wells and off base wells, total metals were detected above drinking water standards in shallow groundwater in areas that would not be influenced by former disposal activities at the sites. Given that some of the upgradient wells are contaminated, it is apparent that total metals in shallow groundwater are elevated in certain areas of the base outside of the influence of site-related disposal activities. However, it is unknown whether the shallow aquifer upgradient of the sites is contaminated due to other base-related activities or whether the levels in groundwater samples are also elevated due to the influence of suspended fines in the samples.

Objective No. 3 (Determine whether there is a correlation between elevated total metals in groundwater and metals in soil)

An evaluation of the data presented in Table 5 shows that metals in soil samples collected in areas of groundwater contamination are not elevated when compared to metals in soil samples collected in areas that did not exhibit groundwater contamination. This supports the possibility that in many cases, elevated levels of total metals in shallow groundwater are not related to the disposal history at the site. As previously mentioned, sites which did not exhibit soil contamination (when compared to background soil levels) or did not have a history of disposal indicative of metals contamination still exhibited elevated levels of total metals in groundwater. Since there is no apparent correlation between metals in soil and total metals in groundwater, then the possibility exists that the elevated total metals in groundwater are biased high due to suspended particulates.

Objective No. 4 (Determine whether the concentrations of total metals in groundwater is related to shallow and deep aquifer characteristics)

There is some evidence that the geologic conditions of the shallow and deep aquifers influence the amount of total metals detected in groundwater samples. The fact that the deep aquifer generally exhibited higher specific conductivity values indicates that there is more dissolved constituents in the deep aquifer when compared to the shallow aquifer. This was evident when comparing Table 1 (total metals in shallow groundwater) to Table 6 (total metals in deep groundwater). Table 6 did not indicate significant levels of total metals in deep groundwater throughout MCB Camp Lejeune.

The geologic conditions of the shallow aquifer would tend to result in samples that may contain suspended particulates. The suspended particulates could influence the total metals concentrations in the samples.

6.0 CONCLUSIONS

1. Elevated levels of total metals in the shallow aquifer are probably influenced to some degree by the geologic conditions of the site.

2. There is no correlation between metal levels in soil and total metals in groundwater. Therefore, elevated total metals in groundwater cannot be attributable to soil contamination of past disposal practices.

3. Elevated levels of total metals in the shallow aquifer may be biased high due to suspended particulates in the samples.

4. Dissolved metals in groundwater were generally below Federal MCLs and NC WQS and therefore, do not present a significant problem at MCB Camp Lejeune.

5. Total and dissolved metal concentrations in the Castle Hayne aquifer were generally below drinking water standards and therefore, do not present a significant problem at MCB Camp Lejeune.

6. The presence of manganese in shallow and deep groundwater may be due to naturally occurring geologic conditions.

7.0 RECOMMENDATIONS

1. Remediation of total metals in the shallow aquifer at Operable Units 1 and 5 is not recommended based on the following:

   - Elevated metals in groundwater at both operable units does not appear to be related to soil contamination or past disposal practices;
   - The distribution of total metals in groundwater is not characteristic of a plume that would be present due to a source of contamination;
   - Remediation of total metals would not be practical from an engineering or cost standpoint; and
   - Currently, there is no human or environmental exposure to shallow groundwater.

2. Additional background wells should be installed at all sites in order to provide a baseline for comparing on-site groundwater quality.

Tables

TABLE 1
TOTAL METALS BY SITE
SHALLOW MONITORING WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

Site Number / Units	NCWQS ug/L	FEDERAL MCL ug/L	Site 1 ug/L	Site 2 ug/L	Site 6 ug/L	Site 7 ug/L	Site 9 ug/L	Site 21 ug/L	Site 24 ug/L	Site 28 ug/L	Site 30 ug/L	Site 41 ug/L	Site 43 ug/L	Site 44 ug/L
Arsenic	50	50	7.2 - 57.4	2.2 - 23.6	ND - 23.3	ND - 43.4J	ND	ND - 101	ND - 116J	5.4 - 13J	6.4 - 12J	2.4 - 36.3	ND - 23.4	ND - 570
Barium	2000	2000	335 - 833	46 - 1420	ND - 1020	427 - 641	ND - 1060	ND - 647	ND - 1120	78.8 - 576	60.1 - 396	55.2 - 999	220 - 745	315 - 3180
Beryllium	NE	4	2.7 J - 43.4	1 - 3	ND - 7.5	ND - 10.3J	ND	ND - 8	ND - 19	ND - 1.2J	ND - 2.4	0.80 - 42.8	1.5 - 4.2	1.4 - 36.6
Cadmium	5	5	ND - 12.9	7	ND	ND	ND	ND	ND - 12	3.3J - 17.3J	ND - 10.7J	3.2 - 110	ND - 6.9	ND - 32
Calcium	NA	NA	8850 - 726000	5710 - 450000	5430 - 64900	5050 - 51300	16100 - 90700	6130J - 63000J	ND - 151000	20200 - 160000	1730 - 11900	8750 - 828000	10300 - 91900	2430 - 191000
Chromium	50	100	172 - 627	11 - 117	ND - 201	47.8 - 220	ND - 214	ND - 348J	19 - 316	9.0J - 140	42.8 - 106J	10.5 - 244	161 - 249	126 - 895
Copper	1000	1300	44.6 - 117	3 - 23	ND - 175	17.7 - 36.4	ND - 39.7	ND - 84	ND - 52	18.8J - 75.4	15.8 - 42.5	16.3 - 1030	64.2 - 104	28.6 - 313
Lead	15	15	40.8J - 176J	2.7 - 44.8	ND - 200	23 - 37.3	ND - 127	ND - 2000J	5.1 - 89	20.3J - 234J	7.7J - 115J	4.8 - 9340	16.5 - 28.8	15.8 - 508
Manganese	50	50 (1)	125 - 1720	21 - 190	ND - 362	56.9 - 220	ND - 91.3	59 - 276J	29 - 518	82.2 - 304	78.5 - 578	56.6 - 2110	72.6 - 297	88 - 1730
Mercury	1.1	2	ND - 1.2J	ND	ND - .46	0.2 - 0.36	ND - 1.4	ND - 2.4J	ND - 3.2	ND - 1.4J	0.88J - 0.9J	0.13 - 0.92	ND - 0.24	ND - 1.1
Nickel	100	100	28.5 - 426	ND	ND - 41.9	ND	ND	ND - 123	ND - 140	ND - 59.8	17.1J - 52.6J	28.8 - 137	20.5 - 143	21.9 - 486
Sodium	NA	NA	9090 - 19000	ND - 103000	1110 - 68700	7040 - 156000	1390 - 4170	7950 - 15700	5230 - 19200	9480 - 74700	5320 - 8100	2080 - 40200	9160 - 22100	4060 - 12600
Vanadium	NE	NE	214 - 640	9 - 184	ND - 330	37.8 - 423	ND - 175	ND - 419	ND - 408	6.1 - 164	57 - 101	20.4 - 244	122 - 233	184 - 759
Zinc	2100	5000 (1)	ND - 1110	6 - 146	ND - 1620	83.6 - 133	ND - 118	27J - 487J	20 - 650	ND	79.2 - 104	25.7 - 5180	19 J - 661J	87.3 - 2800J

Site Number / Units	Site 48 ug/L	Site 63 ug/L	Site 65 ug/L	Site 69 ug/L	Site 78 ug/L	Site 82 ug/L	ABC Cleaners ug/L	Offsite Property #1 ug/L	Offsite Property #2 ug/L
Arsenic	ND	ND - 23.4	ND - 308	2.9 - 29.0	ND - 405J	ND - 67.8	ND - 12	10.3 - 160	ND
Barium	18 - 51.3	56.1 - 5410	105 - 638	46.5 - 850	ND - 1250	ND - 540	35 - 220	ND - 468	ND
Beryllium	ND	ND - 3.1	ND	1.3 - 10.6	ND - 19	ND	NA	ND - 8.5	ND
Cadmium	2.2 - 3.3	ND	ND	2.4 - 11.4	ND - 21	ND	NA	ND	ND
Calcium	30600 - 115000	2830 - 24300	33300 - 181000	2010 - 38700	ND - 642000	6580 - 60800	790 - 16000	ND - 22800	ND - 5200
Chromium	5.8 - 17.5	4.4 - 134	50.1 - 364	15.1 - 159	ND - 858J	ND - 174	ND - 57	52.8 - 636	ND - 94
Copper	3.1 - 13.5	10.7 - 126	28.2 - 127	16.2 - 70.8	ND - 699	ND - 29.3	ND - 89	ND - 140	ND
Lead	ND	4.3 J - 369	19.1 - 132	7.8 - 188	ND - 360J	ND - 89	ND - 10	12.3 - 345	6.3 - 62.3
Manganese	38.1 - 585	50.3 - 1020	56.2 - 474	13.0 - 912	26 - 714	26.9 - 283	4 - 44	56 - 973	ND - 60.1
Mercury	0.04 - 0.09	ND - 0.20	ND - 0.29	0.10 - 0.94	ND - 1.5	ND - 0.66	NA	ND	ND
Nickel	ND	19.8 - 54.2	19.4 - 84.3	13.6 - 99.8	ND - 234	ND - 34.6	ND - 77	40.2 - 380	ND
Sodium	5750 - 8760	3150 - 7100	3850 - 11700	4790 - 41300	ND - 42500	5670 - 36500	5800 - 33000	ND - 9390	ND - 7630
Vanadium	3.4 - 12.8	7.9 - 163	59.8 - 433	17.3 - 210	ND - 1700	ND - 256	ND - 45	70 - 739	ND - 64.7
Zinc	ND - 30.3	58.5J - 1110J	148J - 406J	36.2 - 12100	6J - 967J	ND - 204	14 - 220	ND - 736	ND - 40.8

NOTES:
J - Value is estimated.
JB - Value is estimated below the CRDL, but greater than the IDL.
NE - Not established.
NA - Not analyzed.
ND - Not detected.
NCWQS - North Carolina Water Quality Standard
MCL - Maximum Contaminant Level
(1) - Secondary MCL

TABLE 2
COMPARISON OF REPEAT SAMPLING OF SHALLOW WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

Well	2GW01		2GW03		2GW06		2GW08		2GW09	
Date	5/1993	3/1994	5/1993	3/1994	5/1993	3/1994	5/1993	3/1994	5/1993	3/1994
Chromium	18	ND	11	ND	15	ND	ND	ND	25	83
Lead	15.5 J	ND	3.5 J	ND	6.7 J	ND	ND	3.4	27.2 J	23.6
Manganese	55	47	21	ND	79	140	53	415	290	747

Well	78GW05		78GW08		78GW15		78GW16		78GW19	
Date	1/1991	4/1994	1/1991	4/1994	1/1991	4/1994	1/1991	4/1994	1/1991	4/1994
Chromium	ND	17 J	91.8	491 J	21.4	215 J	209	353 J	13.8	ND
Lead	13.6	13.1 J	54.1	131 J	16.6	53	100	224	31.7	8.3
Manganese	162	161 J	46.5	213 J	18.3	115	98.3	150	79	26

NOTES:
J - Value is estimated..
ND - Not detected.

TABLE 3
DISSOLVED METALS BY SITE
SHALLOW MONITORING WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

Site Number / Units	NCWQS ug/L	FEDERAL MCL ug/L	Site 1 ug/L	Site 2 ug/L	Site 6 ug/L	Site 7 ug/L	Site 9 ug/L	Site 21 ug/L	Site 24 ug/L	Site 28 ug/L	Site 30 ug/L	Site 41 ug/L	Site 43 ug/L	Site 44 ug/L
Arsenic	50	50	NA	2.2 - 7.1	ND	NA	ND	ND - 10.6	ND - 16.3	NA	NA	2.2 - 4.7	NA	NA
Barium	2000	2000	NA	25 - 149	ND	NA	ND	ND	ND	NA	NA	12.4 - 451	NA	NA
Beryllium	NE	4	NA	1	ND	NA	ND	ND	ND	NA	NA	0.80 - 3.2	NA	NA
Cadmium	5	5	NA	ND	ND	NA	ND	ND - 5	ND	NA	NA	3.2 - 4.2	NA	NA
Calcium	NA	NA	NA	5800 - 441000	6230 - 57400	NA	15800 - 82400	35900	ND - 113000	NA	NA	4710 - 138000	NA	NA
Chromium	50	100	NA	10	ND	NA	ND	ND	ND	NA	NA	8.3 - 9.6	NA	NA
Copper	1000	1300	NA	2 - 9	ND	NA	ND	ND	ND	NA	NA	16.3 - 23.9	NA	NA
Lead	15	15	NA	2.1	ND	NA	ND	ND - 94	ND	NA	NA	1.0	NA	NA
Manganese	50	50 (1)	NA	17 - 129	ND - 92.7	NA	ND	40 - 134	ND - 320	NA	NA	7.1 - 521	NA	NA
Mercury	1.1	2	NA	ND	ND	NA	ND	ND	ND - 0.5	NA	NA	0.13 - 0.20	NA	NA
Nickel	100	100	NA	ND	ND	NA	ND	ND	ND - 57	NA	NA	28.8 - 31.2	NA	NA
Sodium	NA	NA	NA	ND - 103000	1420 - 70500	NA	1280 - 3860	16200	ND - 183000	NA	NA	2500 - 34200	NA	NA
Vanadium	NE	NE	NA	43	ND	NA	ND	ND	ND	NA	NA	20.4	NA	NA
Zinc	2100	5000 (1)	NA	8 - 35	ND - 350	NA	ND	6B - 50	ND - 437	NA	NA	10.6 - 125	NA	NA

Site Number / Units	Site 48 ug/L	Site 63 ug/L	Site 65 ug/L	Site 69 ug/L	Site 78 ug/L	Site 82 ug/L	ABC Cleaners ug/L	Offsite Property #1 ug/L	Offsite Property #2 ug/L
Arsenic	ND	NA	NA	2.9	ND - 21.6	ND	NA	ND - 18.8	ND
Barium	16.8 - 27.6	NA	NA	13.7 - 35.8	ND	ND	NA	ND	ND
Beryllium	ND	NA	NA	1.3	ND	ND	NA	ND	ND
Cadmium	ND - 3.1	NA	NA	2.4	ND	ND	NA	ND - 7710	ND
Calcium	72600 - 80700	NA	NA	764 - 10600	ND - 296000	15200 - 58500	NA	ND - 30.0	ND
Chromium	ND	NA	NA	7.2	ND - 59	ND	NA	ND - 10.7	ND
Copper	2.6 - 7.6	NA	NA	16.2	ND - 121	ND	NA	ND - 15.8	ND
Lead	ND	NA	NA	1	ND - 17.2	ND	NA	ND - 63.8	ND - 21.3
Manganese	39.7 - 539	NA	NA	8.5 - 139	ND - 152	21 - 127	NA	ND	ND
Mercury	0.05 - 0.09	NA	NA	0.1	ND - 0.6	ND	NA	ND	ND
Nickel	ND	NA	NA	13.6	ND	ND	NA	ND - 9540	ND - 6750
Sodium	6430 - 8920	NA	NA	5170 - 41100	ND - 42200	5980 - 36000	NA	ND	ND
Vanadium	ND	NA	NA	16.6	ND	ND	NA	ND - 468	ND - 222
Zinc	ND	NA	NA	7.0 - 7670	ND - 58	ND - 119	NA		

NOTES:
J - Value is estimated.
JB - Value is estimated below the CRDL, but greater than the IDL.
NE - Not established.
NA - Not analyzed.
ND - Not detected.
NCWQS - North Carolina Water Quality Standard
MCL - Maximum Contaminant Level
(1) - Secondary MCL

TABLE 4
SUMMARY OF TOTAL METALS IN UPGRADIENT WELLS
SHALLOW MONITORING WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

Well Number	NCWQS	FEDERAL MCL	Upgradient of Site 1	Upgradient of Site 2	Upgradient of Site 6	Upgradient of Site 7	Upgradient of Site 9	Upgradient of Sites 21 and 78	Upgradient of Site 24	Upgradient of Site 28	Upgradient of Site 30	Upgradient of Site 41	Upgradient of Site 43	Upgradient of Site 44
			1GW06	2GW09	6BP6S	7GW03	9GW4S	78GW26	24GW07	28GW04		41GW05		
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		ug/L		
Arsenic	50	50	17.8 J	12.9	ND	ND	ND	ND	3.7 J	7.4 J	No Upgradient Well Sites	13.1	No Upgradient Well Sites	No Upgradient Well Sites
Barium	2000	2000	548	328	257	428	71.3	ND	ND	576		55.7		
Beryllium	NE	4	3.2 J	3	ND	ND	ND	ND	ND	9.3 J		1.6		
Cadmium	5	5	ND	ND	ND	ND	ND	not reported	ND	3.3 J		10		
Chromium	50	100	193	75	198	124	ND	13	37	122		54.4		
Copper	1000	1300	64.8	25	35.6	36.4	ND	ND	ND	20.7 J		27		
Lead	15	15	78.8 J	27.2	64.4	30.3 J	ND	9	11.4	22.4 J		23.7		
Manganese	50	50 (1)	202	747	84.5	56.9 J	ND	ND	39	206		203		
Mercury	1.1	2	1.6 J	ND	ND	0.36	ND	ND	ND	ND		0.16		
Nickel	100	100	51.6	ND	ND	ND	ND	ND	ND	59.8		38		
Vanadium	NE	NE	214	86	209	152	ND	149	64	85.3		38.1		
Zinc	2100	5000 (1)	ND	103	56.6	86.4 J	ND	68.1	41	ND		173		

Well Number	Upgradient of Site 48	Upgradient of Site 63	Upgradient of Site 65	Upgradient of Site 69	Upgradient of Site 78	Upgradient of Site 82	Upgradient of ABC Cleaners	Upgradient of Offsite Property #1	Upgradient of Offsite Property #2
	48GW1			69GW07	9GW04	6MW3S	MW-S01		
Units	ug/L			ug/L	ug/L	ug/L	ug/L		
Arsenic	ND	No Upgradient Well Sites	No Upgradient Well Sites	2.9	ND	ND	ND	No Upgradient Well Sites	No Upgradient Well Sites
Barium	29.4 J			46.5	ND	ND	35		
Beryllium	ND			1.3	ND	ND	NA		
Cadmium	2.5 J			2.4	ND	ND	NA		
Chromium	ND			15.8	ND	ND	ND		
Copper	ND			16.2	ND	ND	ND		
Lead	ND			7.8	ND	ND	3		
Manganese	70.6			13	ND	ND	10		
Mercury	ND			0.1	ND	ND	NA		
Nickel	ND			13.6	ND	ND	ND		
Vanadium	3.4 J			17.3	ND	ND	9		
Zinc	ND			36.2	ND	ND	23		

NOTES:
J - Value is estimated.
JB - Value is estimated below the CRDL, but greater than the IDL.
NE - Not established.
NA - Not analyzed.
ND - Not detected.
NCWQS - North Carolina Water Quality Standard
MCL - Maximum Contaminant Level
(1) - Secondary MCL

TABLE 5
COMPARISON OF INORGANIC SUBSURFACE SOIL CONCENTRATIONS IN "CLEAN" AND "CONTAMINATED" WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

	Camp LeJeune Background Subsurface Soil Data	Site 1		Site 2		Site 6		Site 7		Site 9		Site 21	
		"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Well Number		--	--	2GW07	2GW09	6GW18	6GW15	7GW03	7GW02	9GW5	9GW1	21GW03	21GW02
Soil Sample Number		--	--	2-GW07-01	2 - GW09-02	6-GW18-0303	6-GW15-03	GW03-002	GW02-7595	9-GW5-03	9-SB35-03	21-GW03	21-GW02
Arsenic	0.03 - 0.47	NA	NA	1.7 J	ND	ND	ND	1.5	ND	ND	ND	ND	0.55 J
Barium	2 - 11	NA	NA	12.5 J	ND	ND	ND	6.6	71	ND	ND	ND	4.4 J
Beryllium	0.03 - 0.23	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	0.17 - 1.2	NA	NA	ND	ND	ND	ND	1.3	4.5	ND	ND	ND	ND
Chromium	2 - 9	NA	NA	10.9 J	4.6	ND	1.6	5.2	6	ND	2.6 J	15.2	3.2 J
Copper	0.47 - 2	NA	NA	0.97 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	1 - 12	NA	NA	8 J	4.3	3.3 J	3.2	2.5	34.4	1.6	8.5 J	7.1	6.9 J
Manganese	0.40 - 8	NA	NA	4.3 J	4.1	ND	1.8 B	3	11.8	ND	3.7 J	9.3	3.4 J
Mercury	0.01 - 0.11	NA	NA	0.3 J	ND	ND	ND	10.13	0.48	ND	ND	ND	ND
Nickel	0.70 - 5.0	NA	NA	ND	ND	ND	ND	3.4	11.8	ND	ND	ND	ND
Vanadium	0.75 - 13	NA	NA	13.8 J	ND	ND	2.9 B	5.5	4.5	ND	ND	15.5	4.4 J
Zinc	0.40 - 12	NA	NA	ND	ND	ND	ND	1.3	ND	ND	6.1 J	5.7	3 J

NOTES:
Shaded area indicates inorganic which exceeded a MCL and/or NCWQS in groundwater sample.
J - Value is estimated.
JB - Value is estimated below the CRDL, but greater than the IDL.
NA - No available wells to compare OR compound was not analyzed.
ND - Not detected.
NCWQS - North Carolina Water Quality Standard
MCL - Maximum Contaminant Level
(1) - Secondary MCL

TABLE 5
COMPARISON OF INORGANIC SUBSURFACE SOIL CONCENTRATIONS IN "CLEAN" AND "CONTAMINATED" WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

	Site 24		Site 28		Site 30		Site 41		Site 43		Site 44	
	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Well Number	24GW10	24GW02	--	--	--	--	41GW04	41-GW11	43GW01	43GW02	44GW02	44GW01
Soil Sample Number	24-GW10	24-BDA-SB09	--	--	--	--	41-GW04-DW	41-GW11-01	43-GW01-00	43-GW02-00	44-GW02-035	--
Arsenic	ND	ND	NA	NA	NA	NA	0.51	1.6	ND	ND	ND	1.7
Barium	ND	ND	NA	NA	NA	NA	9.4	22.6	ND	ND	ND	17.9
Beryllium	ND	ND	NA	NA	NA	NA	0.18	0.18	ND	ND	ND	ND
Cadmium	ND	ND	NA	NA	NA	NA	0.73	0.73	8.3	ND	ND	ND
Chromium	11.2	9 J	NA	NA	NA	NA	3.6	11.2	8.3	6.7	5.6 J	10 J
Copper	ND	ND	NA	NA	NA	NA	3.7	22.5	3.4	ND	6.2 J	25.4 J
Lead	4.6 J	6.2 J	NA	NA	NA	NA	4.8	110	6.8	6.1	4.5 J	10.7
Manganese	4.7	8.4 J	NA	NA	NA	NA	3.7	95.5	31.2	8.2	3.5	20.4
Mercury	ND	ND	NA	NA	NA	NA	0.06	0.31	ND	ND	ND	ND
Nickel	ND	ND	NA	NA	NA	NA	6.6	6.4	7.6	4.1	3.1	5.4
Vanadium	18.4	10	NA	NA	NA	NA	6.8	9.3	7.2	5.8	5	14.7
Zinc	ND	7.8	NA	NA	NA	NA	7.7	130	20.1	3	3.2	24.9

NOTES:
Shaded area indicates inorganic which exceeded a MCL and/or NCWQS in groundwater sample.
J - Value is estimated.
JB - Value is estimated below the CRDL, but greater than the IDL.
NA - No available wells to compare OR compound was not analyzed.
ND - Not detected.
NCWQS - North Carolina Water Quality Standard
MCL - Maximum Contaminant Level
(1) - Secondary MCL

TABLE 5
COMPARISON OF INORGANIC SUBSURFACE SOIL CONCENTRATIONS IN "CLEAN" AND "CONTAMINATED" WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

	Site 48		Site 63		Site 65		Site 69		Site 78		Site 82	
	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Well Number	48-GW01	48-GW03	63MW03	63MW02	65MW03	65MW02	69-GW11	69-GW03	78GW34	78GW24-1	6-GW28	82MW3
Soil Sample Number	48-GW1A-01	48-C3-03	63-MW03-04	63-MW02-06	65-MW03-11	65-MW02-06	69-GW11-04	69-CSA-SB23-00	78-GW34	78-B903-SB03	6-GW28-09	6-GW27D-06
Arsenic	1.3	0.77 J	ND	ND	ND	13	0.68	0.63	ND	ND	0.31	15.9
Barium	21.1	15	ND	ND	3.4	6.8	5.6	3	ND	ND	ND	ND
Beryllium	0.2	0.19	ND	ND	ND	ND	0.3	0.28	ND	ND	ND	ND
Cadmium	1.4	1.8 J	ND	ND	NA	NA	0.56	0.52	ND	ND	ND	ND
Chromium	18.2	18.6	7.7	ND	5.9	5.7	6.8	1.7	18.5	9.1	2.6	3
Copper	3.5	3.8	ND	ND	1.5	3.1	3.8	3.5	3.4 B	ND	ND	ND
Lead	32.3	14.3	4.2	2.6	1.7	3.2	4.3	1.1	4.5 J	2.6 J	2.7	4.3
Manganese	411	7	4.9	18.8	3.5	6.9	4	1.2	9.2	ND	ND	ND
Mercury	ND	ND	ND	ND	NA	NA	0.06	0.05	ND	ND	ND	ND
Nickel	2.2	1.9 J	ND	ND	ND	ND	3.2	3	ND	ND	ND	ND
Vanadium	28.3	20.8 J	ND	ND	4.4	3	4.4	3.6	18.7	19.2	ND	ND
Zinc	ND	ND	ND	ND	2.7	5	3.2	1.5	7.9	ND	ND	ND

NOTES:
Shaded area indicates inorganic which exceeded a MCL and/or NCWQS in groundwater sample.
J - Value is estimated.
JB - Value is estimated below the CRDL, but greater than the IDL.
NA - No available wells to compare OR compound was not analyzed.
ND - Not detected.
NCWQS - North Carolina Water Quality Standard
MCL - Maximum Contaminant Level
(1) - Secondary MCL

TABLE 5
COMPARISON OF INORGANIC SUBSURFACE SOIL CONCENTRATIONS IN "CLEAN" AND "CONTAMINATED" WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

	ABC Cleaners		Offsite Property #1		Offsite Property #2	
	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Well Number	--	--	--	--	--	--
Soil Sample Number	--	--	--	--	--	--
Arsenic	NA	NA	NA	NA	NA	NA
Barium	NA	NA	NA	NA	NA	NA
Beryllium	NA	NA	NA	NA	NA	NA
Cadmium	NA	NA	NA	NA	NA	NA
Chromium	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA
Lead	NA	NA	NA	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	NA
Mercury	NA	NA	NA	NA	NA	NA
Nickel	NA	NA	NA	NA	NA	NA
Vanadium	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA

NOTES:
Shaded area indicates inorganic which exceeded a MCL and/or NCWQS in groundwater sample.
J - Value is estimated.
JB - Value is estimated below the CRDL, but greater than the IDL.
NA - No available wells to compare OR compound was not analyzed.
ND - Not detected.
NCWQS - North Carolina Water Quality Standard
MCL - Maximum Contaminant Level
(1) - Secondary MCL

TABLE 6
TOTAL METALS BY SITE
DEEP MONITORING WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

	Site 1	Site 2	Site 6	Site 7	Site 9	Site 21	Site 24	Site 28	Site 30	Site 41	Site 43	Site 44	Site 48	Site 63	Site 65	Site 69	Site 78	Site 82	ABC Cleaners	Base Supply Wells (1)
Arsenic	No Deep Wells	ND	ND	No Deep Wells	ND	No Deep Wells	No Deep Wells	No Deep Wells	No Deep Wells	2.2 - 9.6	No Deep Wells	No Deep Wells	No Deep Wells	No Deep Wells	No Deep Wells	2.2 - 3.5	2 - 118 J	ND	ND - 14	ND
Barium		1420	ND		ND					22.6 - 186						42.3 - 58.0	ND - 547	ND	4 - 36	ND
Beryllium		ND	ND		ND					3.2						0.80 - 0.89	ND	ND	NA	NA
Cadmium		ND	ND		ND					4.2 - 4.7						3.2	ND - 21	ND	NA	ND
Chromium		16	ND		ND					9.6 - 40.5						8.3 - 20.7	ND - 10	ND	ND - 32	ND
Copper		ND	ND		ND					23.9						16.3	ND	ND	ND - 41	ND - 130
Lead		ND	ND		ND					1.0 - 11.1						3.1 - 6.8	ND	ND	ND - 10	ND - 16
Manganese		ND	ND - 33.5		ND					16.9 - 101						53.7 - 114	ND - 591	ND - 21.6	ND - 45	10 - 120
Mercury		ND	ND		ND					0.15 - 0.17						0.16 - 0.17	ND - 0.3	ND	NA	ND
Nickel		ND	ND		ND					31.2						28.8	ND	ND	ND - 14	NA
Vanadium		ND	ND		ND					20.4 - 49.8						20.4	ND - 24 J	ND	ND - 15	NA
Zinc		ND	ND		ND					17.8 - 83.8						31.1 - 48.7	ND - 181 J	ND	58 - 390	ND - 120

NOTES:
J - Value is estimated..
NA - Not analyzed.
ND - Not detected.
(1) - Range is based on 67 supply wells located throughout MCB, Camp Lejeune, NC.

TABLE 7
SUMMARY OF FIELD PARAMETERS IN SHALLOW, DEEP, AND SUPPLY WELLS MCB, CAMP LEJEUNE, NORTH CAROLINA

	Shallow Wells		Deep Wells		Supply Wells	
	Range (1)	Average Maximum	Range (2)	Average Maximum	Range (3)	Average Maximum
pH (standard units)	4.5 - 7.28	6.08	7.52 - 11.34	8.88	6.91 - 7.45	7.32
Specific Conductivity (micromhos/cm)	40 - 580	267	149 - 525	350	212 - 511	353

(1) - Based on data from 11 sites.
(2) - Based on data from 6 sites.
(3) - Based on data from 9 supply wells.

Figures

Appendix A
Data Summary Tables for Sites 2 and 78

OPERABLE UNIT NO. 1 - SITES 21, 24, 78
SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

	MINIMUM NONDETECTED UG/L	MAXIMUM NONDETECTED UG/L	MINIMUM DETECTED UG/L	MAXIMUM DETECTED UG/L	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
ALUMINUM	NA	NA	68 J	542000 J	78-GW06-01	59 / 59
ANTIMONY	3 U	20 U	3.3 B	169 J	78-GW02-01	7 / 33
ARSENIC	2 U	10 U	2.3 J	405 J	78-GW02-01	44 / 48
BARIUM	NA	NA	17 B	1250	78-GW07-01	59 / 59
BERYLLIUM	1 U	4 U	1 B	19	24-GW02-01	52 / 59
CADMIUM	5 U	25 U	5	21	78-GW04-3-01	9 / 59
CALCIUM	NA	NA	2420 B	642000	78-GW04-1-01	59 / 59
CHROMIUM	10 U	50 U	10	858 J	78-GW06-01	46 / 59
COBALT	8 U	8 U	8 B	170	78-GW22-2-01	25 / 59
COPPER	2 U	2 U	3 B	699	78-GW39-01	58 / 59
IRON	NA	NA	32 B	523000	78-GW04-3-01	59 / 59
LEAD	1.8 U	4.9 U	2.9 B	2000 J	21-GW0B-01	50 / 59
MAGNESIUM	NA	NA	88 B	37100	24-GW03-01	59 / 59
MANGANESE	2 U	2 U	2 B	714	78-GW24-1-01	57 / 59
MERCURY	0.2 U	0.2 U	0.23 J	3.2	24-GW06-01	24 / 52
NICKEL	20 U	20 U	20 B	234	78-GW22-2-01	31 / 59
POTASSIUM	NA	NA	982 B	67300	78-GW32-3-01	59 / 59
SELENIUM	1 U	5 U	1.1 J	99.5 J	78-GW32-2-01	41 / 54
SILVER	3 U	15 U	5 J	5 J	78-GW09-3-01	1 / 59
SODIUM	NA	NA	2450 B	42500	78-GW32-3-01	59 / 59
THALLIUM	1 U	1 U	1 B	7.3 J	78-GW32-2-01	16 / 59
VANADIUM	4 U	4 U	4 J	1700	78-GW08-01	55 / 59
ZINC	6 U	6 U	6 J	967 J	78-GW22-2-01	57 / 59
CYANIDE	10 U	10 U	ND	ND	ND	0 / 54

OPERABLE UNIT NO. 1 - SITES 21, 24, 78
SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

	SAMPLE NO.	21-GW01-01	21-GW02-01	21-GW03-01	21-GW04-01	21-GW0A-01	21-GW0B-01
	UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
ALUMINUM		4910 J	319000 J	4820 J	20100 J	16900 J	118000 J
ANTIMONY		7 UJ	7 U	7 U	7 U	7 R	7 U
ARSENIC		15	10	2 U	11.8	45.2 J	30.4
BARIUM		32 B	647	51 B	119 B	100 B	386
BERYLLIUM		1 B	5	1 B	1 B	1 B	6
CADMIUM		5 U	10 U	5 U	5 U	5 U	10 U
CALCIUM		63000 J	24100 J	6130 J	21700 J	23800	6250 J
CHROMIUM		10 UJ	348 J	10 UJ	33 J	21 J	192 J
COBALT		8 U	18 B	8 U	10 B	8 U	36 B
COPPER		4 B	79	7 B	28	24 B	38
IRON		9920 J	122000 J	13400 J	24900 J	38900 J	72900 J
LEAD		1.8 UJ	214 J	4.9 UJ	33 J	29	2000 J
MAGNESIUM		5070	15400	4550 B	5490	4850 B	11600
MANGANESE		64 J	179 J	134 J	193 J	59	276 J
MERCURY		0.2 R	2.4 J	0.2 R	0.2 R	0.2 U	0.2 R
NICKEL		20 U	86	20 U	20 U	20 U	60
POTASSIUM		2390 B	10500	2240 B	3800 B	2360 B	9520
SELENIUM		1 U	11 J	1 U	1 U	1 UJ	3.7 J
SILVER		3 U	3 U	3 U	3 U	3 UJ	3 U
SODIUM		15700	12600	7950	14400	12600	14400
THALLIUM		1 U	1 UJ	1 U	1 UJ	1 UJ	1 U
VANADIUM		30 B	281	11 B	42 B	48 B	243
ZINC		65 J	136 J	27 J	57 J	41 J	175 J
CYANIDE		10 U	10 U	10 U	10 U	10 U	10 U

OPERABLE UNIT NO. 1 - SITES 21, 24, 78
SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

SAMPLE NO.	21-GW0C-01	24-GW01-01	24-GW02-01	24-GW03-01	24-GW04-01	24-GW06-01
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
ALUMINUM	209000 J	262000	93700	50200	58900	19800
ANTIMONY	7 U	3 U	3 UJ	3 U	4.6 B	3.5 B
ARSENIC	101	10 UJ	2.3 J	4.7 J	116 J	10.1 J
BARIUM	467	380	1120	480	290	159 B
BERYLLIUM	8	3 B	19	5	2 B	9
CADMIUM	10 U	5 U	12	5 U	5 U	5
CALCIUM	35200 J	4120 B	2420 B	124000	65600	151000
CHROMIUM	291 J	296	316	110	153	78
COBALT	60	8 U	41 B	66	8 U	35 B
COPPER	84	49	52	22 B	31	15 B
IRON	106000 J	58600	395000	16300	70500	69500
LEAD	92.5 J	89	17.9	21.6	23.6	7.4
MAGNESIUM	16300	12200	7240	37100	7690	4320 B
MANGANESE	273 J	117	518	393	66	431
MERCURY	0.23 J	0.23	2.6	0.2 U	0.2 U	3.2
NICKEL	123	38 B	140	85	20 U	93
POTASSIUM	11800	12000	7550	15400	6130	3370 B
SELENIUM	4.3 B	1.3 J	1.1 J	16.2 J	4.3 J	1 UJ
SILVER	3 U	3 UJ	15 UJ	3 UJ	3 UJ	3 UJ
SODIUM	15200	6030	11600	19200	5230	7280
THALLIUM	1 U	1 U	1 U	2.4 B	1 U	1 B
VANADIUM	419	304	408	92	202	83
ZINC	487 J	118	461	650	80	489
CYANIDE	10 U					

OPERABLE UNIT NO. 1 - SITES 21, 24, 78
SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

	SAMPLE NO.	24-GW07-01	24-GW08-01	24-GW09-01	24-GW10-01	78-GW02-01	78-GW03-01
	UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
ALUMINUM		36000	61100	12800	23300	29200 J	23900 J
ANTIMONY		3 U	3 U	3.3 B	5.7 B	169 J	38.5 J
ARSENIC		3.7 J	8 J	4.3 J	2.5 J	405 J	5.7 J
BARIUM		85 B	112 B	164 B	59 B	109 B	36 B
BERYLLIUM		1 B	2 B	1 B	1 U	12	2 B
CADMIUM		5 U	5 U	5 U	5 U	8	5 U
CALCIUM		4960 B	27000	9530	3820 B	37000	32900
CHROMIUM		37	85	19	21	18 J	10 UJ
COBALT		8 U	8 U	11 B	8 U	8 U	8 U
COPPER		19 B	24 B	11 B	13 B	20 B	8 B
IRON		13700	27500	13100	7010	427000 J	5020 J
LEAD		11.4	23.8	5.1	7.3	19.6	3.4
MAGNESIUM		2670 B	5050	7630	1760 B	3650 B	2210 B
MANGANESE		39	47	180	29	141	27
MERCURY		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL		20 U	20 U	20 U	20 U	20 U	20 U
POTASSIUM		3870 B	5580	4280 B	2620 B	2770 B	1320 B
SELENIUM		2.1 J	1.9 J	2.6 J	1 UJ	19.8 J	2.4 J
SILVER		3 UJ	3 UJ	3 UJ	3 UJ	15 UJ	3 UJ
SODIUM		6520	6550	6010	6650	5120	4270 B
THALLIUM		1 U	1 U	1 U	1 U	1 UJ	1 UJ
VANADIUM		64	129	26 B	34 B	1660	50
ZINC		41	47	50	20	58 J	12 J
CYANIDE		10 U	10 U	10 U	10 U	10 U	10 U

OPERABLE UNIT NO. 1 - SITES 21, 24, 78
SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

SAMPLE NO.	78-GW04-1-01	78-GW04-2-01	78-GW04-3-01	78-GW05-01	78-GW06-01	78-GW07-01
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
ALUMINUM	297000 J	286	115 B	23000 J	542000 J	207000 J
ANTIMONY	7 R	7 R	7 R	7 U	7 U	7 U
ARSENIC	18.6 J	2 R	118 J	5.2 J	26 B	16.2
BARIUM	728	519	547	54 B	1200	1250
BERYLLIUM	19	1 B	1 B	2 B	9	5
CADMIUM	12	5 U	21	5 U	5 U	5 U
CALCIUM	642000	170000	105000	90200 J	7180 J	18700 J
CHROMIUM	496 J	10 U	50 U	17 J	858 J	400 J
COBALT	28 B	8 U	8 U	8 U	11 B	20 B
COPPER	87	4 B	7 B	8 B	127	53
IRON	267000 J	32 B	523000	14900 J	142000 J	96700 J
LEAD	126	2 U	2 U	13.1 J	155 J	61.5 J
MAGNESIUM	25500	88 B	3210 B	12700	24000	20000
MANGANESE	703	51	591	161 J	184 J	135 J
MERCURY	0.75	0.2 U	0.3	0.2 R	1.1 J	0.44 J
NICKEL	136	20 B	20 U	20 U	86	54
POTASSIUM	18800	21800	11300	4770 B	25600	13200
SELENIUM	9 J	1 R	1 R	6.4	5.5 B	9.1
SILVER	6 UJ	3 U	15 U	3 U	3 U	3 U
SODIUM	8870	11500	9290	23900	5090	9260
THALLIUM	1.2 J	1 U	1 U	1 UJ	1.1 B	1 UJ
VANADIUM	591	4 UJ	24 J	28 B	811	406
ZINC	373 J	7 J	79 J	32 J	223 J	158 J
CYANIDE	10 U	10 U	10 U	10 U	10 U	10 U

OPERABLE UNIT NO. 1 - SITES 21, 24, 78
SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

SAMPLE NO.	78-GW08-01	78-GW09-2-01	78-GW09-3-01	78-GW10-01	78-GW11-01	78-GW12-01
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
ALUMINUM	483000 J	68 J	2710 J	404000 J	332000	108000 J
ANTIMONY	7 U	7 R	7 R	7 R	7 R	7 R
ARSENIC	60.5	2 R	2 R	43 J	10 R	9.6 J
BARIUM	740	27 B	41 B	582	631	155 B
BERYLLIUM	9	1 U	1 B	8	5	2 B
CADMIUM	25 U	5 U	5 U	10 U	25 U	10 U
CALCIUM	28200 J	114000	99100	54400	9130	31200
CHROMIUM	491 J	10 UJ	10 UJ	362 J	412	114 J
COBALT	29 B	8 U	8 U	31 B	8 U	8 U
COPPER	86	4 B	4 B	91	84	30
IRON	138000 J	955 J	99 J	157000 J	120000	26400 J
LEAD	131 J	2 U	2 U	257	195	35.5
MAGNESIUM	18500	2550 B	249 B	17400	15400	7220
MANGANESE	213 J	19	2 U	326	174	47
MERCURY	1.3 J	0.2 U	0.2 U	1.5	0.75	0.2 U
NICKEL	89	20 U	20 U	108	79	20 U
POTASSIUM	14700	1220 B	7820	15800	13000	6090
SELENIUM	25.3	1 UJ	1 UJ	18 J	12 J	3.6 J
SILVER	3 U	3 UJ	5 J	3 UJ	3 U	3 UJ
SODIUM	4710 B	5820	7280	3340 B	3490 B	5420
THALLIUM	1.3 J	1 UJ	1 UJ	1 UJ	1 U	1 UJ
VANADIUM	1700	4 U	9 B	499	526	145
ZINC	200 J	11 J	181 J	217 J	120 J	64 J
CYANIDE	10 U	10 U	10 U	10 U	10 U	10 U

OPERABLE UNIT NO. 1 - SITES 21, 24, 78
SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

	SAMPLE NO.	78-GW13-01	78-GW14-01	78-GW15-01	78-GW16-01	78-GW17-1-01	78-GW17-2-01
	UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
ALUMINUM		61800 J	103000 J	205000 J	341000 J	168000 J	541 J
ANTIMONY		7 U	7 R	7 R	7 R	7 R	7 R
ARSENIC		38.3	18.4 J	4 R	19 J	11.6 J	2 R
BARIUM		236	321	469	511	261	57 B
BERYLLIUM		3 B	1 B	4 B	6	4 B	1 B
CADMIUM		5 U	10 U	5 U	5 U	10 U	5 U
CALCIUM		4040 J	5300	29100	62700	86900	144000
CHROMIUM		222 J	113 J	215 J	353 J	200 J	10 UJ
COBALT		20 B	8 U	9 B	13 B	9 B	8 U
COPPER		18 B	33	49	80	40	5 B
IRON		61800 J	49600 J	43300 J	80900 J	48700 J	2120 J
LEAD		26.4 J	63	53	224	81	5.9
MAGNESIUM		11800	10600	13400	10800	9940	2570 B
MANGANESE		57 J	68	115	150	96	33
MERCURY		0.3 J	0.38	0.2 U	0.38	0.2 U	0.2 U
NICKEL		40	34 B	29 B	61	30 B	20 U
POTASSIUM		8210	6460	12000	14000	11600	1630 B
SELENIUM		4.7 B	12.4 J	2.1 J	14.5 J	5 UJ	1 UJ
SILVER		3 U	3 UJ	3 UJ	3 UJ	3 UJ	3 UJ
SODIUM		15000	15400	6410	4120 B	3180 B	9480
THALLIUM		1 U	1 UJ	1 J	1.4 J	1 J	1 UJ
VANADIUM		158	122	248	371	289	4 U
ZINC		96 J	51 J	116 J	157 J	98 J	6 UJ
CYANIDE		10 U	10 U	10 U	10 U	10 U	10 U

OPERABLE UNIT NO. 1 - SITES 21, 24, 78
SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

	SAMPLE NO.	78-GW19-01	78-GW20-01	78-GW21-01	78-GW22-01	78-GW22-1-01	78-GW22-2-01
	UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
ALUMINUM		4110 J	149000 J	23800 J	78900 J	257000	190000 J
ANTIMONY		7 R	7 U	7 U	14 J	7 R	7 UJ
ARSENIC		3.1 J	30.3	6.3 J	10 J	59.5 J	75.6
BARIUM		101 B	430	382	107 B	411	471
BERYLLIUM		1 B	4 B	2 B	1 B	4 B	12
CADMIUM		5 U	5 U	5 U	10 U	25 U	6
CALCIUM		3700 B	5450 J	32900 J	90100	44500	118000 J
CHROMIUM		10 UJ	231 J	22 J	83 J	238	389 J
COBALT		8 U	35 B	10 B	8 U	8 U	170
COPPER		3 B	61	11 B	34	54	92
IRON		8500 J	101000 J	26400 J	27600 J	62300	140000 J
LEAD		8.3	119 J	19.1 J	37.2	272	360 J
MAGNESIUM		5740	13100	9110	5500	12000	13000
MANGANESE		26	93 J	85 J	70	158	348 J
MERCURY		0.2 U	0.37 J	0.2 R	0.3	0.45	0.2 R
NICKEL		20 U	75	20 U	21 B	99	234
POTASSIUM		2130 B	9100	4100 B	6180	12000	10200
SELENIUM		1 UJ	4.2 B	1.1 B	4.2 J	7.5 J	45
SILVER		3 UJ	3 U	3 U	3 UJ	3 U	3 U
SODIUM		24000	11900	9480	12100	9910	8230
THALLIUM		1 UJ	1.8 B	1 U	1.7 J	1 U	3 B
VANADIUM		9 B	236	86	114	269	547
ZINC		6 J	250 J	108 J	50 J	150 J	967 J
CYANIDE		10 U	10 U	10 U	10 U	10 U	10 U

OPERABLE UNIT NO. 1 - SITES 21, 24, 78
SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

	SAMPLE NO.	78-GW23-01	78-GW24-1-01	78-GW24-2-01	78-GW24-3-01	78-GW25-01	78-GW29-01
	UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
ALUMINUM		111000 J	160000	1340	304	101000 J	78800 J
ANTIMONY		7 R	7 R	7 R	7 R	7 R	7 R
ARSENIC		7.6 J	100 J	2 R	2 R	11.4 J	19 J
BARIUM		230	396	34 B	17 B	119 B	1070
BERYLLIUM		2 B	7	1 B	1 U	2 B	12
CADMIUM		5 U	5 U	5	5	5 U	5 U
CALCIUM		10800	34400	107000	73400	37800	41600
CHROMIUM		101 J	264	10	10 U	82 J	252 J
COBALT		8 B	39 B	8 U	8 U	8 U	17 B
COPPER		25	71	6 B	5 B	26	34
IRON		30800 J	159000	2320	2370	26300 J	125000 J
LEAD		50	152	3.3	2.9 B	30.5	25.5
MAGNESIUM		7110	11600	1740 B	1500 B	4500 B	21900
MANGANESE		87	714	21	41	33	341
MERCURY		0.3	0.75	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL		42	91	20 U	20 U	20 U	125
POTASSIUM		5450	9090	1050 B	982 B	4950 B	11600
SELENIUM		4.4 J	17.6 J	1 R	1 R	1.6 J	2.5 J
SILVER		3 UJ	3 U	3 U	3 U	3 UJ	3 UJ
SODIUM		7450	10800	8350	7050	16400	21200
THALLIUM		1.7 J	1.5 B	1 U	1 U	1.3 J	1 UJ
VANADIUM		108	436	4 J	4 UJ	144	183
ZINC		67 J	291 J	11 J	16 J	34 J	330 J
CYANIDE		10 U	10 U	10 U	10 U	10 U	10 U

OPERABLE UNIT NO. 1 - SITES 21, 24, 78
SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

SAMPLE NO.	78-GW31-2-01	78-GW31-3-01	78-GW32-2-01	78-GW32-3-01	78-GW33-01	78-GW34-01
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
ALUMINUM	110 B	1200	112000 J	539 J	78200	6870
ANTIMONY	7 R	7 R	7 R	7 R	3 U	3 U
ARSENIC	2 R	2 R	21.6 J	2 R	5.6 J	4.4 J
BARIUM	17 B	415	476	42 B	162 B	173 B
BERYLLIUM	1 B	1 B	10	1 B	1 B	1 U
CADMIUM	5 U	5 U	10	5 U	5 U	5 U
CALCIUM	77600	308000	94600	5440	64800	10400
CHROMIUM	10 U	21	215 J	10 UJ	65	10 U
COBALT	8 U	8 U	84	8 U	8 U	8 U
COPPER	3 B	5 B	87	2 U	20 B	11 B
IRON	280	72 B	98500 J	112 J	14900	7250
LEAD	2 U	2 U	146	2 U	18.1	5.5
MAGNESIUM	2200 B	151 B	13700	319 B	7290	2880 B
MANGANESE	8 B	2 B	328	2 U	86	96
MERCURY	0.3	0.2 U	0.3	0.2 U	0.2 U	0.2 U
NICKEL	20 U	20 U	166	20 U	20 B	20 U
POTASSIUM	1640 B	61600	8460	67300	6900	2620 B
SELENIUM	1 R	1.7 J	99.5 J	1 UJ	12.8 J	1 UJ
SILVER	3 U	3 U	3 UJ	3 UJ	3 UJ	3 UJ
SODIUM	10400	26100	7510	42500	7030	4070 B
THALLIUM	1 U	1 UJ	7.3 J	1.3 J	1 U	1 U
VANADIUM	4 J	10 J	462	5 B	74	15 B
ZINC	23 J	10 J	826 J	6 UJ	37	59
CYANIDE	10 U	10 U	10 U	10 U	10 U	10 U

OPERABLE UNIT NO. 1 - SITES 21, 24, 78
SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

	SAMPLE NO.	78-GW35-01	78-GW36-01	78-GW37-01	78-GW38-01	78-GW39-01
	UNITS	UG/L	UG/L	UG/L	UG/L	UG/L
ALUMINUM		47100	120000	73500	102000	60000
ANTIMONY		3 U	20 U	3 U	20 U	20 U
ARSENIC		2 UJ	3.1 J	4 J	33.6 J	4 UJ
BARIUM		261	152 B	123 B	420	256
BERYLLIUM		1 B	2 U	2 B	4 U	1 U
CADMIUM		5 U	5 U	5 U	25 U	5 U
CALCIUM		7480	35400	10100	62200	16800
CHROMIUM		55	111	65	201	60
COBALT		8 U	8 U	8 U	8 U	10 B
COPPER		15 B	29	22 B	110	699
IRON		11800	21200	18800	67500	28800
LEAD		13.2	30.2	21.8	41.2	186
MAGNESIUM		5680	5740	4600 B	17500	14300
MANGANESE		57	62	62	106	84
MERCURY		0.2 U	0.3	0.2 U	0.2 U	0.52
NICKEL		20 U	24 B	20 U	32 B	32 B
POTASSIUM		6150	5820	5990	8180	3840 B
SELENIUM		3.5 J	1.7 J	1.1 J	1.3 J	4.3 J
SILVER		3 UJ	3 UJ	3 UJ	3 UJ	3 UJ
SODIUM		10300	2450 B	7270	10300	19500
THALLIUM		1 U	1 U	1 U	1 U	1 U
VANADIUM		59	98	106	235	67
ZINC		30	57	58	134	138
CYANIDE		10 U	10 U	10 U	10 U	10 U

OPERABLE UNIT NO. 5 - SITE 2
SHALLOW AND DEEP MONITORING WELLS
GROUNDWATER STATISTICAL SUMMARY
REMEDIAL INVESTIGATION CTO - 19174
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

SAMPLE NO.	2-GW01-01	2-GW02-01	2-GW03-01	2-GW03DW-01	2-GW04-01	2-GW05-01
UNITS	UG/L		UG/L	UG/L	UG/L	UG/L
ALUMINUM	36000		5200	269	16800	4050
ANTIMONY	10 U		10 U	3.5 U	10 U	10 U
ARSENIC	21.2		2.5 B	1 UJ	23.6	2.2 B
BARIUM	52 B		46 B	1420	95 B	100 B
BERYLLIUM	1 B		0.5 U	0.5 U	2 B	0.5 U
CADMIUM	7		2.5 U	2.5 U	2.5 U	2.5 U
CALCIUM	23700		8460	450000	11100	21000
CHROMIUM	18		11	16	5 U	5 U
COBALT	10 B		4 U	4 U	4 U	4 U
COPPER	10 B		4 B	8 B	5 B	3 B
IRON	10300		7190	127	28100	12700
LEAD	15.5 J		3.5 J	1.1 UJ	2.7 J	0.5 UJ
MAGNESIUM	5660		1600 B	75 B	1920 B	4800 B
MANGANESE	55		21	2 U	21	46
MERCURY	0.1 U		0.1 U	0.1 U	0.1 U	0.1 U
NICKEL	10 U		10 U	10 U	10 U	10 U
POTASSIUM	2560 B		1030 B	187000	1210 B	2130 B
SELENIUM	4.2 B		0.5 U	0.5 U	0.5 U	0.5 U
SILVER	1.5 U		1.5 U	1.5 U	1.5 U	1.5 U
SODIUM	4040 B		5490	103000	5560	10100
THALLIUM	0.5 U		0.5 U	0.5 U UJ	0.5 U	0.5 U
VANADIUM	72		10 B	2 U	89	9 B
ZINC	146		13 B	9 B	16 B	6 B
CYANIDE	5 U		5 U	5 U	5 U	5 U

OPERABLE UNIT NO. 5 - SITE 2
SHALLOW AND DEEP MONITORING WELLS
GROUNDWATER STATISTICAL SUMMARY
REMEDIAL INVESTIGATION CTO - 19174
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

SAMPLE NO.	2-GW06-01	2-GW07-01	2-GW08-01	2-GW09-01
UNITS	UG/L	UG/L	UG/L	UG/L
ALUMINUM	13600	8550	6380	56300
ANTIMONY	10 U	10 U	3.5 UJ	10 U
ARSENIC	5.4 B	5.7 B	9.2 B	12.9
BARIUM	173 B	98 B	98 B	328
BERYLLIUM	0.5 U	0.5 U	0.5 U	3 B
CADMIUM	2.5 U	2.5 U	2.5 U	2.5 U
CALCIUM	7940	9350	5710	22100
CHROMIUM	15	15	5 U	75
COBALT	12 B	4 U	4 U	10 B
COPPER	5 B	7 B	6 B	25
IRON	11700	12500	9150	42000
LEAD	6.7 J	8.3 J	1.8 UJ	27.2 J
MAGNESIUM	4120 B	3620 B	2020 B	9980
MANGANESE	79	77	53	290
MERCURY	0.1 U	0.1 U	0.1 U	0.1 U
NICKEL	10 U	10 U	10 U	25 B
POTASSIUM	2570 B	1940 B	1550 B	6610
SELENIUM	0.5 U	0.5 U	0.5 U	0.5 U
SILVER	1.5 U	1.5 U	1.5 U	1.5 U
SODIUM	21900	8180	11800	18300
THALLIUM	0.5 U	0.5 U	0.5 U	0.5 U
VANADIUM	15 B	18 B	12 B	86
ZINC	26	22	27	103
CYANIDE	5 U	5 U	5 U	5 U

OPERABLE UNIT NO. 5 - SITE 2
SHALLOW AND DEEP MONITORING WELLS
GROUNDWATER STATISTICAL SUMMARY
REMEDIAL INVESTIGATION CTO - 19174
MCB CAMP LEJEUNE, NORTH CAROLINA
DISSOLVED METALS

SAMPLE NO.	2-GW01D-01	2-GW02D-01	2-GW03D-01	2-GW03DWD-01	2-GW04D-01	2-GW05D-01
UNITS	UG/L		UG/L	UG/L	UG/L	UG/L
ALUMINUM	1930		66 B	89 B	60 B	1990
ANTIMONY	10 U		10 U	3.5 UJ	10 U	10 U
ARSENIC	2.2 B		1 U	1 UJ	6.1 B	1 U
BARIUM	42 B		25 B	1400	64 B	98 B
BERYLLIUM	1 B		0.5 U	0.5 U	0.5 U	1 B
CADMIUM	2.5 U		2.5 U	2.5 U	2.5 U	2.5 U
CALCIUM	24400		7100	441000	11300	21800
CHROMIUM	5 U		5 U	11	5 U	5 U
COBALT	4 U		4 U	4 U	4 U	4 U
COPPER	4 B		2 B	6 B	9 B	4 B
IRON	2560		2170	10 U	2720	7400
LEAD	2.1 J		0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
MAGNESIUM	5220		1030 B	26 B	1840 B	4900 B
MANGANESE	51		4.5 U	1 U	17	46
MERCURY	0.1 U		0.1 U	0.1 U	0.1 U	0.1 U
NICKEL	10 U		10 U	10 U	10 U	10 U
POTASSIUM	2140 B		589 B	188000	1130 B	2170 B
SELENIUM	0.5 U		0.5 U	0.5 U	0.5 U	0.5 U
SILVER	1.5 U		1.5 U	1.5 U	1.5 U	1.5 U
SODIUM	3590 B		5400	103000	5710	9970
THALLIUM	0.5 U		0.5 U	0.5 U	0.5 U	0.5 U
VANADIUM	2 U		2 U	2 U	2 U	2 U
ZINC	28		3 U	3 U	8 B	9 B
CYANIDE						

OPERABLE \ NO. 5 - SITE 2
SHALLOW AND DEEP MONITORING WELLS
GROUNDWATER STATISTICAL SUMMARY
REMEDIAL INVESTIGATION CTO - 19174
MCB CAMP LEJEUNE, NORTH CAROLINA
DISSOLVED METALS

SAMPLE NO.	2-GW06D-01	2-GW07D-01	2-GW08D-01	2-GW09D-01
UNITS	UG/L	UG/L	UG/L	UG/L
ALUMINUM	149 B	43 B	95 B	1230
ANTIMONY	10 U	10 U	3.5 U	10 U
ARSENIC	2.9 B	1 U	7.1 B	1 U
BARIUM	126 B	49 B	62 B	149 B
BERYLLIUM	0.5 U	0.5 U	0.5 U	1 B
CADMIUM	2.5 U	2.5 U	2.5 U	2.5 U
CALCIUM	8080	9590	5800	20800
CHROMIUM	5 U	5 U	5 U	10
COBALT	10 B	8 B	4 U	14 B
COPPER	2 B	5 B	4 B	5 B
IRON	7070	4660	6180	7040
LEAD	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
MAGNESIUM	3610 B	3060 B	1730 B	6890
MANGANESE	65	48	40	129
MERCURY	0.1 U	0.1 U	0.1 U	0.1 U
NICKEL	10 U	10 U	10 U	10 U
POTASSIUM	1970 B	1490 B	1150 B	2790
SELENIUM	0.5 U	0.5 U	0.5 U	0.5 U
SILVER	1.5 U	1.5 U	1.5 U	1.5 U
SODIUM	22600	8720	12100	17200
THALLIUM	0.5 U	0.5 U	0.5 U	0.5 U
VANADIUM	2 U	2 U	2 U	2 U
ZINC	12 B	13 B	19 B	35
CYANIDE				

APPENDIX H
DATA AND FREQUENCY SUMMARIES

APPENDIX H.1
SURFACE SOIL - ORGANICS

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-CP-SB02	3-CP-SB04	3-CP-SB05	3-CP-SB09	3-MW02DW-00	3-MW02IW-00
Laboratory Sample ID:		AC0948	AC0950	AC0928	AC0927	AF7367	AC9747
Date Sampled:		9/20/94	9/20/94	9/20/94	9/21/94	06/20/95	11/16/94
	UNITS						
VOLATILES							
Chloromethane	UG/KG	NA	NA	NA	NA	11 U	10 U
Bromomethane	UG/KG	NA	NA	NA	NA	11 U	10 U
Vinyl chloride	UG/KG	NA	NA	NA	NA	11 U	10 U
Chloroethane	UG/KG	NA	NA	NA	NA	11 U	10 U
Methylene chloride	UG/KG	NA	NA	NA	NA	11 U	10 U
Acetone	UG/KG	NA	NA	NA	NA	11 U	10 U
Carbon Disulfide	UG/KG	NA	NA	NA	NA	11 U	10 U
1,1-Dichloroethene	UG/KG	NA	NA	NA	NA	11 U	10 U
1,1-Dichloroethane	UG/KG	NA	NA	NA	NA	11 U	10 U
1,2-Dichloroethene(total)	UG/KG	NA	NA	NA	NA	11 UJ	10 U
Chloroform	UG/KG	NA	NA	NA	NA	11 U	10 UJ
1,2-Dichloroethane	UG/KG	NA	NA	NA	NA	11 U	10 UJ
2-Butanone	UG/KG	NA	NA	NA	NA	11 U	13 U
1,1,1-Trichloroethane	UG/KG	NA	NA	NA	NA	11 U	10 U
Carbon tetrachloride	UG/KG	NA	NA	NA	NA	11 U	10 U
Bromodichloromethane	UG/KG	NA	NA	NA	NA	11 U	10 U
1,2-Dichloropropane	UG/KG	NA	NA	NA	NA	11 U	10 U
cis-1,3-Dichloropropene	UG/KG	NA	NA	NA	NA	11 U	10 U
Trichloroethene	UG/KG	NA	NA	NA	NA	11 U	10 U
Dibromochloromethane	UG/KG	NA	NA	NA	NA	11 U	10 U
1,1,2-Trichloroethane	UG/KG	NA	NA	NA	NA	11 U	10 U
Benzene	UG/KG	NA	NA	NA	NA	11 U	10 U
trans-1,3-Dichloropropene	UG/KG	NA	NA	NA	NA	11 U	10 U
Bromoform	UG/KG	NA	NA	NA	NA	11 U	10 U
4-Methyl-2-pentanone	UG/KG	NA	NA	NA	NA	11 U	10 U
2-Hexanone	UG/KG	NA	NA	NA	NA	11 U	10 U
Tetrachloroethene	UG/KG	NA	NA	NA	NA	11 U	10 U
1,1,2,2-Tetrachloroethane	UG/KG	NA	NA	NA	NA	11 U	10 U
Toluene	UG/KG	NA	NA	NA	NA	11 U	2 J
Chlorobenzene	UG/KG	NA	NA	NA	NA	11 U	10 U
Ethylbenzene	UG/KG	NA	NA	NA	NA	11 U	10 U
Styrene	UG/KG	NA	NA	NA	NA	11 U	10 U
Xylenes (total)	UG/KG	NA	NA	NA	NA	11 U	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-CP-SB02	3-CP-SB04	3-CP-SB05	3-CP-SB09	3-MW02DW-00	3-MW02IW-00
Laboratory Sample ID:		AC0948	AC0950	AC0928	AC0927	AF7367	AC9747
Date Sampled:		9/20/94	9/20/94	9/20/94	9/21/94	06/20/95	11/16/94
	UNITS						
SEMIVOLATILES							
Phenol	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
bis(2-Chloroethyl) ether	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
2-Chlorophenol	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
1,3-Dichlorobenzene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
1,4-Dichlorobenzene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
1,2-Dichlorobenzene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
2-Methylphenol	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
2,2'-oxybis-(1-chloropropane)	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
4-Methylphenol	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
N-Nitroso-di-n-propylamine	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
Hexachloroethane	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
Nitrobenzene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
Isophorone	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
2-Nitrophenol	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
2,4-Dimethylphenol	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
bis(2-Chloroethoxy) methane	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
2,4-Dichlorophenol	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
1,2,4-Trichlorobenzene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
Naphthalene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
4-Chloroaniline	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
Hexachlorobutadiene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
4-Chloro-3-methylphenol	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
2-Methylnaphthalene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
Hexachlorocyclopentadiene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
2,4,6-Trichlorophenol	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
2,4,5-Trichlorophenol	UG/KG	870 U	870 U	890 U	880 U	4500 UJ	770 U
2-Chloronaphthalene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
2-Nitroaniline	UG/KG	870 U	870 U	890 U	880 U	4500 UJ	770 U
Dimethyl phthalate	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
Acenaphthylene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
2,6-Dinitrotoluene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
3-Nitroaniline	UG/KG	870 U	870 U	890 U	880 U	4500 UJ	770 U
Acenaphthene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-CP-SB02	3-CP-SB04	3-CP-SB05	3-CP-SB09	3-MW02DW-00	3-MW02IW-00
Laboratory Sample ID:		AC0948	AC0950	AC0928	AC0927	AF7367	AC9747
Date Sampled:		9/20/94	9/20/94	9/20/94	9/21/94	06/20/95	11/16/94
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/KG	870 U	870 U	890 U	880 U	4500 UJ	770 UJ
4-Nitrophenol	UG/KG	870 U	870 U	890 U	880 U	4500 UJ	770 U
Dibenzofuran	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
2,4-Dinitrotoluene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
Diethylphthalate	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
4-Chlorophenyl phenyl ether	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
Fluorene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
4-Nitroaniline	UG/KG	870 U	870 U	890 U	880 U	4500 UJ	770 U
4,6-Dinitro-2-methylphenol	UG/KG	870 U	870 U	890 U	880 U	4500 UJ	770 U
N-nitrosodiphenylamine	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
4-Bromophenyl-phenylether	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
Hexachlorobenzene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
Pentachlorophenol	UG/KG	870 U	870 U	890 U	880 U	4500 UJ	770 U
Phenanthrene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
Anthracene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	49 J
Carbazole	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
di-n-Butylphthalate	UG/KG	170 J	64 J	92 J	70 J	1900 UJ	110 J
Fluoranthene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	55 J
Pyrene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	86 J
Butyl benzyl phthalate	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
3,3'-Dichlorobenzidine	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
Benzo[a]anthracene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	32 J
Chrysene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	64 J
bis(2-Ethylhexyl)phthalate	UG/KG	43 J	65 J	43 J	42 J	1900 UJ	320 U
di-n-Octylphthalate	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
Benzo[b]fluoranthene	UG/KG	360 U	360 U	370 U	360 U	210 J	120 J
Benzo[k]fluoranthene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	83 J
Benzo[a]pyrene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	59 J
Indeno[1,2,3-cd]pyrene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	65 J
Dibenz[a,h]anthracene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	320 U
Benzo[g,h,i]perylene	UG/KG	360 U	360 U	370 U	360 U	1900 UJ	52 J

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-CP-SB02	3-CP-SB04	3-CP-SB05	3-CP-SB09	3-MW02DW-00	3-MW02IW-00
Laboratory Sample ID:		AC0948	AC0950	AC0928	AC0927	AF7367	AC9747
Date Sampled:		9/20/94	9/20/94	9/20/94	9/21/94	06/20/95	11/16/94
	UNITS						
PESTICIDES/PCBs							
alpha-BHC	UG/KG	NA	NA	NA	NA	NA	1.7 U
beta-BHC	UG/KG	NA	NA	NA	NA	NA	1.7 U
delta-BHC	UG/KG	NA	NA	NA	NA	NA	1.7 U
Lindane (gamma-BHC)	UG/KG	NA	NA	NA	NA	NA	1.7 U
Heptachlor	UG/KG	NA	NA	NA	NA	NA	1.7 U
Aldrin	UG/KG	NA	NA	NA	NA	NA	1.7 U
Heptachlor epoxide	UG/KG	NA	NA	NA	NA	NA	1.7 U
Endosulfan I	UG/KG	NA	NA	NA	NA	NA	1.7 U
Dieldrin	UG/KG	NA	NA	NA	NA	NA	3.3 U
4,4'-DDE	UG/KG	NA	NA	NA	NA	NA	3.3 U
Endrin	UG/KG	NA	NA	NA	NA	NA	3.3 U
Endosulfan II	UG/KG	NA	NA	NA	NA	NA	3.3 U
4,4'-DDD	UG/KG	NA	NA	NA	NA	NA	3.3 U
Endosulfan sulfate	UG/KG	NA	NA	NA	NA	NA	3.3 U
4,4'-DDT	UG/KG	NA	NA	NA	NA	NA	3.3 U
Methoxychlor	UG/KG	NA	NA	NA	NA	NA	17 U
Endrin ketone	UG/KG	NA	NA	NA	NA	NA	3.3 U
Endrin aldehyde	UG/KG	NA	NA	NA	NA	NA	3.3 U
alpha-Chlordane	UG/KG	NA	NA	NA	NA	NA	1.7 U
gamma-Chlordane	UG/KG	NA	NA	NA	NA	NA	1.7 U
Toxaphene	UG/KG	NA	NA	NA	NA	NA	170 U
Aroclor 1016	UG/KG	NA	NA	NA	NA	NA	33 U
Aroclor 1221	UG/KG	NA	NA	NA	NA	NA	66 U
Aroclor 1232	UG/KG	NA	NA	NA	NA	NA	33 U
Aroclor 1242	UG/KG	NA	NA	NA	NA	NA	33 U
Aroclor 1248	UG/KG	NA	NA	NA	NA	NA	33 U
Aroclor 1254	UG/KG	NA	NA	NA	NA	NA	33 U
Aroclor 1260	UG/KG	NA	NA	NA	NA	NA	33 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-MW04-00	3-MW05-00	3-MW06-00	3-MW07-00	3-MW08-00	3-MW09-00
Laboratory Sample ID:		AD0036	AD0556	AD0551	AD0553	AD0549	AF6815
Date Sampled:		11/17/94	11/19/94	11/19/94	11/19/94	11/20/94	06/13/95
	UNITS						
VOLATILES							
Chloromethane	UG/KG	NA	11 U	NA	NA	NA	12 UR
Bromomethane	UG/KG	NA	11 U	NA	NA	NA	12 UR
Vinyl chloride	UG/KG	NA	11 U	NA	NA	NA	12 UR
Chloroethane	UG/KG	NA	11 U	NA	NA	NA	12 UR
Methylene chloride	UG/KG	NA	11 U	NA	NA	NA	12 UR
Acetone	UG/KG	NA	11 UJ	NA	NA	NA	12 UR
Carbon Disulfide	UG/KG	NA	11 U	NA	NA	NA	12 UR
1,1-Dichloroethene	UG/KG	NA	11 U	NA	NA	NA	12 UR
1,1-Dichloroethane	UG/KG	NA	11 U	NA	NA	NA	12 UR
1,2-Dichloroethene(total)	UG/KG	NA	11 U	NA	NA	NA	12 UR
Chloroform	UG/KG	NA	11 U	NA	NA	NA	12 UR
1,2-Dichloroethane	UG/KG	NA	11 U	NA	NA	NA	12 UR
2-Butanone	UG/KG	NA	11 U	NA	NA	NA	12 UR
1,1,1-Trichloroethane	UG/KG	NA	11 U	NA	NA	NA	12 UR
Carbon tetrachloride	UG/KG	NA	11 U	NA	NA	NA	12 UR
Bromodichloromethane	UG/KG	NA	11 U	NA	NA	NA	12 UR
1,2-Dichloropropane	UG/KG	NA	11 U	NA	NA	NA	12 UR
cis-1,3-Dichloropropene	UG/KG	NA	11 U	NA	NA	NA	12 UR
Trichloroethene	UG/KG	NA	11 U	NA	NA	NA	12 UR
Dibromochloromethane	UG/KG	NA	11 U	NA	NA	NA	12 UR
1,1,2-Trichloroethane	UG/KG	NA	11 U	NA	NA	NA	12 UR
Benzene	UG/KG	NA	11 U	NA	NA	NA	12 UR
trans-1,3-Dichloropropene	UG/KG	NA	11 U	NA	NA	NA	12 UR
Bromoform	UG/KG	NA	11 U	NA	NA	NA	12 UR
4-Methyl-2-pentanone	UG/KG	NA	11 U	NA	NA	NA	12 UR
2-Hexanone	UG/KG	NA	11 U	NA	NA	NA	12 UR
Tetrachloroethene	UG/KG	NA	11 U	NA	NA	NA	12 UR
1,1,2,2-Tetrachloroethane	UG/KG	NA	11 U	NA	NA	NA	12 UR
Toluene	UG/KG	NA	11 U	NA	NA	NA	12 UR
Chlorobenzene	UG/KG	NA	11 U	NA	NA	NA	12 UR
Ethylbenzene	UG/KG	NA	11 U	NA	NA	NA	12 UR
Styrene	UG/KG	NA	11 U	NA	NA	NA	12 UR
Xylenes (total)	UG/KG	NA	11 U	NA	NA	NA	12 UR

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-MW04-00	3-MW05-00	3-MW06-00	3-MW07-00	3-MW08-00	3-MW09-00
Laboratory Sample ID:		AD0036	AD0556	AD0551	AD0553	AD0549	AF6815
Date Sampled:		11/17/94	11/19/94	11/19/94	11/19/94	11/20/94	06/13/95
	UNITS						
SEMIVOLATILES							
Phenol	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
bis(2-Chloroethyl) ether	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
2-Chlorophenol	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
1,3-Dichlorobenzene	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
1,4-Dichlorobenzene	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
1,2-Dichlorobenzene	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
2-Methylphenol	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
2,2'-oxybis-(1-chloropropane)	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
4-Methylphenol	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
N-Nitroso-di-n-propylamine	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
Hexachloroethane	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
Nitrobenzene	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
Isophorone	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
2-Nitrophenol	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
2,4-Dimethylphenol	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
bis(2-Chloroethoxy) methane	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
2,4-Dichlorophenol	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
1,2,4-Trichlorobenzene	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
Naphthalene	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
4-Chloroaniline	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
Hexachlorobutadiene	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
4-Chloro-3-methylphenol	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
2-Methylnaphthalene	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
Hexachlorocyclopentadiene	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
2,4,6-Trichlorophenol	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
2,4,5-Trichlorophenol	UG/KG	880 U	870 U	870 U	880 U	870 U	970 U
2-Chloronaphthalene	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
2-Nitroaniline	UG/KG	880 U	870 U	870 U	880 U	870 U	970 U
Dimethyl phthalate	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
Acenaphthylene	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
2,6-Dinitrotoluene	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
3-Nitroaniline	UG/KG	880 U	870 U	870 U	880 U	870 U	970 U
Acenaphthene	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-MW04-00	3-MW05-00	3-MW06-00	3-MW07-00	3-MW08-00	3-MW09-00
Laboratory Sample ID:		AD0036	AD0556	AD0551	AD0553	AD0549	AF6815
Date Sampled:		11/17/94	11/19/94	11/19/94	11/19/94	11/20/94	06/13/95
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/KG	880 UJ	870 UJ	870 UJ	880 UJ	870 UJ	970 U
4-Nitrophenol	UG/KG	880 UJ	870 U	870 U	880 U	870 U	970 U
Dibenzofuran	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
2,4-Dinitrotoluene	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
Diethylphthalate	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
4-Chlorophenyl phenyl ether	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
Fluorene	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
4-Nitroaniline	UG/KG	880 U	870 U	870 U	880 U	870 U	970 U
4,6-Dinitro-2-methylphenol	UG/KG	880 U	870 U	870 U	880 U	870 U	970 U
N-nitrosodiphenylamine	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
4-Bromophenyl-phenylether	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
Hexachlorobenzene	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
Pentachlorophenol	UG/KG	880 U	870 U	870 U	880 U	870 U	970 U
Phenanthrene	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
Anthracene	UG/KG	360 U	360 U	360 U	110 J	360 U	400 U
Carbazole	UG/KG	360 U	360 U	360 U	45 J	360 U	400 U
di-n-Butylphthalate	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
Fluoranthene	UG/KG	46 J	360 U	49 J	91 J	62 J	400 U
Pyrene	UG/KG	64 J	360 U	73 J	100 J	60 J	400 U
Butyl benzyl phthalate	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
3,3'-Dichlorobenzidine	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
Benzo[a]anthracene	UG/KG	360 U	360 U	360 U	42 J	360 U	400 U
Chrysene	UG/KG	54 J	360 U	49 J	81 J	47 J	400 U
bis(2-Ethylhexyl)phthalate	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
di-n-Octylphthalate	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
Benzo[b]fluoranthene	UG/KG	96 J	360 U	74 J	100 J	39 J	400 U
Benzo[k]fluoranthene	UG/KG	360 U	360 U	48 J	120 J	39 J	400 U
Benzo[a]pyrene	UG/KG	360 U	360 U	38 J	57 J	360 U	400 U
Indeno[1,2,3-cd]pyrene	UG/KG	360 U	360 U	360 U	68 J	360 U	400 U
Dibenz[a,h]anthracene	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U
Benzo[g,h,i]perylene	UG/KG	360 U	360 U	360 U	360 U	360 U	400 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-MW04-00	3-MW05-00	3-MW06-00	3-MW07-00	3-MW08-00	3-MW09-00
Laboratory Sample ID:		AD0036	AD0556	AD0551	AD0553	AD0549	AF6815
Date Sampled:		11/17/94	11/19/94	11/19/94	11/19/94	11/20/94	06/13/95
	UNITS						
PESTICIDES/PCBs							
alpha-BHC	UG/KG	NA	1.9 U	NA	NA	NA	NA
beta-BHC	UG/KG	NA	1.9 U	NA	NA	NA	NA
delta-BHC	UG/KG	NA	1.9 U	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/KG	NA	1.9 U	NA	NA	NA	NA
Heptachlor	UG/KG	NA	1.9 U	NA	NA	NA	NA
Aldrin	UG/KG	NA	1.9 U	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	1.9 U	NA	NA	NA	NA
Endosulfan I	UG/KG	NA	1.9 U	NA	NA	NA	NA
Dieldrin	UG/KG	NA	3.6 U	NA	NA	NA	NA
4,4'-DDE	UG/KG	NA	3.6 U	NA	NA	NA	NA
Endrin	UG/KG	NA	3.6 U	NA	NA	NA	NA
Endosulfan II	UG/KG	NA	3.6 U	NA	NA	NA	NA
4,4'-DDD	UG/KG	NA	3.6 U	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	3.6 U	NA	NA	NA	NA
4,4'-DDT	UG/KG	NA	3.6 U	NA	NA	NA	NA
Methoxychlor	UG/KG	NA	19 U	NA	NA	NA	NA
Endrin ketone	UG/KG	NA	3.6 U	NA	NA	NA	NA
Endrin aldehyde	UG/KG	NA	3.6 U	NA	NA	NA	NA
alpha-Chlordane	UG/KG	NA	1.9 U	NA	NA	NA	NA
gamma-Chlordane	UG/KG	NA	1.9 U	NA	NA	NA	NA
Toxaphene	UG/KG	NA	190 U	NA	NA	NA	NA
Aroclor 1016	UG/KG	NA	36 U	NA	NA	NA	NA
Aroclor 1221	UG/KG	NA	74 U	NA	NA	NA	NA
Aroclor 1232	UG/KG	NA	36 U	NA	NA	NA	NA
Aroclor 1242	UG/KG	NA	36 U	NA	NA	NA	NA
Aroclor 1248	UG/KG	NA	36 U	NA	NA	NA	NA
Aroclor 1254	UG/KG	NA	36 U	NA	NA	NA	NA
Aroclor 1260	UG/KG	NA	36 U	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-MW10-00	3-MW11-00	3-MW11IW-00	3-MW12-00	3-MW13-00	3-NA-SB01
Laboratory Sample ID:		AF6813	AF6976	AF7154	AF6645	AF6981	AC0962
Date Sampled:		06/14/95	06/15/95	06/16/95	06/13/95	06/14/95	9/20/94
	UNITS						
VOLATILES							
Chloromethane	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
Bromomethane	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
Vinyl chloride	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
Chloroethane	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
Methylene chloride	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
Acetone	UG/KG	26 U	11 U	11 U	11 U	22 UJ	NA
Carbon Disulfide	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
1,1-Dichloroethene	UG/KG	12 UJ	11 U	11 U	11 U	15 UJ	NA
1,1-Dichloroethane	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
1,2-Dichloroethene(total)	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
Chloroform	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
1,2-Dichloroethane	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
2-Butanone	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
1,1,1-Trichloroethane	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
Carbon tetrachloride	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
Bromodichloromethane	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
1,2-Dichloropropane	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
cis-1,3-Dichloropropene	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
Trichloroethene	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
Dibromochloromethane	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
1,1,2-Trichloroethane	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
Benzene	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
trans-1,3-Dichloropropene	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
Bromoform	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
4-Methyl-2-pentanone	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
2-Hexanone	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
Tetrachloroethene	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
1,1,2,2-Tetrachloroethane	UG/KG	12 U	11 U	11 U	11 UJ	15 UJ	NA
Toluene	UG/KG	12 U	11 U	11 U	11 U	2 J	NA
Chlorobenzene	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
Ethylbenzene	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
Styrene	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA
Xylenes (total)	UG/KG	12 U	11 U	11 U	11 U	15 UJ	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-MW10-00	3-MW11-00	3-MW11IW-00	3-MW12-00	3-MW13-00	3-NA-SB01
Laboratory Sample ID:		AF6813	AF6976	AF7154	AF6645	AF6981	AC0962
Date Sampled:		06/14/95	06/15/95	06/16/95	06/13/95	06/14/95	9/20/94
	UNITS						
SEMIVOLATILES							
Phenol	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
bis(2-Chloroethyl) ether	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
2-Chlorophenol	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
1,3-Dichlorobenzene	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
1,4-Dichlorobenzene	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
1,2-Dichlorobenzene	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
2-Methylphenol	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
2,2'-oxybis-(1-chloropropane)	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
4-Methylphenol	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
N-Nitroso-di-n-propylamine	UG/KG	390 U	1900 U	370 UJ	370 U	5000 U	360 U
Hexachloroethane	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
Nitrobenzene	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
Isophorone	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
2-Nitrophenol	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
2,4-Dimethylphenol	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
bis(2-Chloroethoxy) methane	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
2,4-Dichlorophenol	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
1,2,4-Trichlorobenzene	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
Naphthalene	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
4-Chloroaniline	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
Hexachlorobutadiene	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
4-Chloro-3-methylphenol	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
2-Methylnaphthalene	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
Hexachlorocyclopentadiene	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
2,4,6-Trichlorophenol	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
2,4,5-Trichlorophenol	UG/KG	950 U	4500 U	910 U	900 U	12000 U	860 U
2-Chloronaphthalene	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
2-Nitroaniline	UG/KG	950 U	4500 U	910 U	900 U	12000 U	860 U
Dimethyl phthalate	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
Acenaphthylene	UG/KG	390 U	290 J	370 U	370 U	5000 U	360 U
2,6-Dinitrotoluene	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
3-Nitroaniline	UG/KG	950 U	4500 U	910 U	900 U	12000 U	860 U
Acenaphthene	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-MW10-00	3-MW11-00	3-MW11W-00	3-MW12-00	3-MW13-00	3-NA-SB01
Laboratory Sample ID:		AF6813	AF6976	AF7154	AF6645	AF6981	AC0962
Date Sampled:		06/14/95	06/15/95	06/16/95	06/13/95	06/14/95	9/20/94
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/KG	950 U	4500 U	910 U	900 U	12000 U	860 U
4-Nitrophenol	UG/KG	950 U	4500 U	910 U	900 U	12000 U	860 U
Dibenzofuran	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
2,4-Dinitrotoluene	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
Diethylphthalate	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
4-Chlorophenyl phenyl ether	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
Fluorene	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
4-Nitroaniline	UG/KG	950 U	4500 U	910 U	900 U	12000 U	860 U
4,6-Dinitro-2-methylphenol	UG/KG	950 U	4500 U	910 U	900 U	12000 U	860 U
N-nitrosodiphenylamine	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
4-Bromophenyl-phenylether	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
Hexachlorobenzene	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
Pentachlorophenol	UG/KG	950 U	4500 U	910 U	900 U	12000 U	860 U
Phenanthrene	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
Anthracene	UG/KG	390 U	290 J	370 U	370 U	5000 U	360 U
Carbazole	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
di-n-Butylphthalate	UG/KG	390 U	1900 U	370 U	50 J	5000 U	130 J
Fluoranthene	UG/KG	390 U	530 J	370 U	370 U	5000 U	360 U
Pyrene	UG/KG	390 U	1700 J	370 U	370 U	5000 U	360 U
Butyl benzyl phthalate	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
3,3'-Dichlorobenzidine	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
Benzo[a]anthracene	UG/KG	390 U	1800 J	370 U	370 U	5000 U	360 U
Chrysene	UG/KG	390 U	3300	370 U	370 U	5000 U	360 U
bis(2-Ethylhexyl)phthalate	UG/KG	390 U	1900 U	370 U	370 U	5000 U	91 J
di-n-Octylphthalate	UG/KG	390 U	1900 U	370 U	370 U	5000 U	360 U
Benzo[b]fluoranthene	UG/KG	390 U	3800	370 U	370 U	5000 U	360 U
Benzo[k]fluoranthene	UG/KG	390 U	2000	370 U	370 U	5000 U	360 U
Benzo[a]pyrene	UG/KG	390 U	2000	370 U	370 U	5000 U	360 U
Indeno[1,2,3-cd]pyrene	UG/KG	390 U	940 J	370 U	370 U	5000 U	360 U
Dibenz[a,h]anthracene	UG/KG	390 U	390 J	370 U	370 U	5000 U	360 U
Benzo[g,h,i]perylene	UG/KG	390 U	690 J	370 U	370 U	5000 U	360 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-MW10-00	3-MW11-00	3-MW11IW-00	3-MW12-00	3-MW13-00	3-NA-SB01
Laboratory Sample ID:		AF6813	AF6976	AF7154	AF6645	AF6981	AC0962
Date Sampled:		06/14/95	06/15/95	06/16/95	06/13/95	06/14/95	9/20/94
	UNITS						
PESTICIDES/PCBs							
alpha-BHC	UG/KG	NA	NA	NA	NA	NA	NA
beta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
delta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor	UG/KG	NA	NA	NA	NA	NA	NA
Aldrin	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan I	UG/KG	NA	NA	NA	NA	NA	NA
Dieldrin	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDE	UG/KG	NA	NA	NA	NA	NA	NA
Endrin	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan II	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDD	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDT	UG/KG	NA	NA	NA	NA	NA	NA
Methoxychlor	UG/KG	NA	NA	NA	NA	NA	NA
Endrin ketone	UG/KG	NA	NA	NA	NA	NA	NA
Endrin aldehyde	UG/KG	NA	NA	NA	NA	NA	NA
alpha-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
gamma-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
Toxaphene	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1016	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1221	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1232	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1242	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1248	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1254	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1260	UG/KG	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-NA-SB03	3-NA-SB05	3-NA-SB07	3-NA-SB08	3-NA-SB10	3-NA-SB17
Laboratory Sample ID:		AC0964	AC0932	AC0923	AC0933	AC0934	AC0924
Date Sampled:		9/20/94	9/20/94	9/20/94	9/20/94	9/20/94	9/21/94
	UNITS						
VOLATILES							
Chloromethane	UG/KG	NA	NA	NA	NA	NA	NA
Bromomethane	UG/KG	NA	NA	NA	NA	NA	NA
Vinyl chloride	UG/KG	NA	NA	NA	NA	NA	NA
Chloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Methylene chloride	UG/KG	NA	NA	NA	NA	NA	NA
Acetone	UG/KG	NA	NA	NA	NA	NA	NA
Carbon Disulfide	UG/KG	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	UG/KG	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(total)	UG/KG	NA	NA	NA	NA	NA	NA
Chloroform	UG/KG	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
2-Butanone	UG/KG	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	UG/KG	NA	NA	NA	NA	NA	NA
Bromodichloromethane	UG/KG	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	UG/KG	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	UG/KG	NA	NA	NA	NA	NA	NA
Trichloroethene	UG/KG	NA	NA	NA	NA	NA	NA
Dibromochloromethane	UG/KG	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Benzene	UG/KG	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	UG/KG	NA	NA	NA	NA	NA	NA
Bromoform	UG/KG	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	UG/KG	NA	NA	NA	NA	NA	NA
2-Hexanone	UG/KG	NA	NA	NA	NA	NA	NA
Tetrachloroethene	UG/KG	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Toluene	UG/KG	NA	NA	NA	NA	NA	NA
Chlorobenzene	UG/KG	NA	NA	NA	NA	NA	NA
Ethylbenzene	UG/KG	NA	NA	NA	NA	NA	NA
Styrene	UG/KG	NA	NA	NA	NA	NA	NA
Xylenes (total)	UG/KG	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-NA-SB03	3-NA-SB05	3-NA-SB07	3-NA-SB08	3-NA-SB10	3-NA-SB17
Laboratory Sample ID:		AC0964	AC0932	AC0923	AC0933	AC0934	AC0924
Date Sampled:		9/20/94	9/20/94	9/20/94	9/20/94	9/20/94	9/21/94
	UNITS						
SEMIVOLATILES							
Phenol	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
bis(2-Chloroethyl) ether	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
2-Chlorophenol	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
1,3-Dichlorobenzene	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
1,4-Dichlorobenzene	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
1,2-Dichlorobenzene	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
2-Methylphenol	UG/KG	2000 U	1800 UJ	370 U	1900 UJ	3700 UJ	380 U
2,2'-oxybis-(1-chloropropane)	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
4-Methylphenol	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
N-Nitroso-di-n-propylamine	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
Hexachloroethane	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
Nitrobenzene	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
Isophorone	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
2-Nitrophenol	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
2,4-Dimethylphenol	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
bis(2-Chloroethoxy) methane	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
2,4-Dichlorophenol	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
1,2,4-Trichlorobenzene	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
Naphthalene	UG/KG	2000 U	200 J	370 U	1900 U	3700 U	380 U
4-Chloroaniline	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
Hexachlorobutadiene	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
4-Chloro-3-methylphenol	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
2-Methylnaphthalene	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
Hexachlorocyclopentadiene	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
2,4,6-Trichlorophenol	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
2,4,5-Trichlorophenol	UG/KG	4800 U	4300 U	910 U	4700 U	9100 U	910 U
2-Chloronaphthalene	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
2-Nitroaniline	UG/KG	4800 U	4300 U	910 U	4700 U	9100 U	910 U
Dimethyl phthalate	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
Acenaphthylene	UG/KG	2700	590 J	370 U	470 J	3700 U	380 U
2,6-Dinitrotoluene	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
3-Nitroaniline	UG/KG	4800 U	4300 U	910 U	4700 U	9100 U	910 U
Acenaphthene	UG/KG	2000 U	460 J	370 U	1900 U	3700 U	380 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-NA-SB03	3-NA-SB05	3-NA-SB07	3-NA-SB08	3-NA-SB10	3-NA-SB17
Laboratory Sample ID:		AC0964	AC0932	AC0923	AC0933	AC0934	AC0924
Date Sampled:		9/20/94	9/20/94	9/20/94	9/20/94	9/20/94	9/21/94
SEMIVOLATILES Cont.	UNITS						
2,4-Dinitrophenol	UG/KG	4800 U	4300 U	910 U	4700 U	9100 U	910 U
4-Nitrophenol	UG/KG	4800 U	4300 U	910 U	4700 U	9100 U	910 U
Dibenzofuran	UG/KG	2000 U	370 J	370 U	1900 U	3700 U	380 U
2,4-Dinitrotoluene	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
Diethylphthalate	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
4-Chlorophenyl phenyl ether	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
Fluorene	UG/KG	350 J	620 J	370 U	240 J	3700 U	380 U
4-Nitroaniline	UG/KG	4800 U	4300 U	910 U	4700 U	9100 U	910 U
4,6-Dinitro-2-methylphenol	UG/KG	4800 U	4300 U	910 U	4700 U	9100 U	910 U
N-nitrosodiphenylamine	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
4-Bromophenyl-phenylether	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
Hexachlorobenzene	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
Pentachlorophenol	UG/KG	4800 U	4300 U	910 U	4700 U	9100 U	910 U
Phenanthrene	UG/KG	970 J	2900	370 U	1300 J	3700 U	380 U
Anthracene	UG/KG	7700	1300 J	370 U	1100 J	3700 U	380 U
Carbazole	UG/KG	830 J	350 J	370 U	210 J	3700 U	380 U
di-n-Butylphthalate	UG/KG	220 J	1800 U	170 J	1900 U	3700 U	230 J
Fluoranthene	UG/KG	11000	9400	370 U	5100	3700 U	380 U
Pyrene	UG/KG	14000	12000	370 U	7200	3700 U	380 U
Butyl benzyl phthalate	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
3,3'-Dichlorobenzidine	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
Benzo[a]anthracene	UG/KG	8300	4500	370 U	3000	3700 U	380 U
Chrysene	UG/KG	12000	6900	370 U	4400	3700 U	380 U
bis(2-Ethylhexyl)phthalate	UG/KG	2000 U	1800 U	54 J	1900 U	3700 U	57 J
di-n-Octylphthalate	UG/KG	2000 U	1800 U	370 U	1900 U	3700 U	380 U
Benzo[b]fluoranthene	UG/KG	13000	7200	370 U	4300	3700 U	380 U
Benzo[k]fluoranthene	UG/KG	9000	6700	370 U	4200	3700 U	380 U
Benzo[a]pyrene	UG/KG	8700	4500	370 U	3200	3700 U	380 U
Indeno[1,2,3-cd]pyrene	UG/KG	6800	3600	370 U	2300	3700 U	380 U
Dibenz[a,h]anthracene	UG/KG	2900	1800 U	370 U	1900 U	3700 U	380 U
Benzo[g,h,i]perylene	UG/KG	4700	3000	370 U	2200	3700 U	380 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-NA-SB03	3-NA-SB05	3-NA-SB07	3-NA-SB08	3-NA-SB10	3-NA-SB17
Laboratory Sample ID:		AC0964	AC0932	AC0923	AC0933	AC0934	AC0924
Date Sampled:		9/20/94	9/20/94	9/20/94	9/20/94	9/20/94	9/21/94
	UNITS						
PESTICIDES/PCBs							
alpha-BHC	UG/KG	NA	NA	NA	NA	NA	NA
beta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
delta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor	UG/KG	NA	NA	NA	NA	NA	NA
Aldrin	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan I	UG/KG	NA	NA	NA	NA	NA	NA
Dieldrin	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDE	UG/KG	NA	NA	NA	NA	NA	NA
Endrin	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan II	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDD	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDT	UG/KG	NA	NA	NA	NA	NA	NA
Methoxychlor	UG/KG	NA	NA	NA	NA	NA	NA
Endrin ketone	UG/KG	NA	NA	NA	NA	NA	NA
Endrin aldehyde	UG/KG	NA	NA	NA	NA	NA	NA
alpha-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
gamma-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
Toxaphene	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1016	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1221	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1232	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1242	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1248	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1254	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1260	UG/KG	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-NA-SB17A-00	3-NA-SB18-00	3-NA-SB19-00	3-RS-SB01	3-RS-SB02	3-RS-SB03
Laboratory Sample ID:		AF6990	AF6995	AF6999	AC0938	AC0939	AC0925
Date Sampled:		06/15/95	06/15/95	06/15/95	9/20/94	9/20/94	9/21/94
	UNITS						
VOLATILES							
Chloromethane	UG/KG	11 U	11 U	11 U	NA	NA	NA
Bromomethane	UG/KG	11 U	11 U	11 U	NA	NA	NA
Vinyl chloride	UG/KG	11 U	11 U	11 U	NA	NA	NA
Chloroethane	UG/KG	11 U	11 U	11 U	NA	NA	NA
Methylene chloride	UG/KG	11 U	11 U	11 U	NA	NA	NA
Acetone	UG/KG	11 U	11 U	11 U	NA	NA	NA
Carbon Disulfide	UG/KG	11 U	11 U	11 U	NA	NA	NA
1,1-Dichloroethene	UG/KG	11 U	11 U	11 U	NA	NA	NA
1,1-Dichloroethane	UG/KG	11 U	11 U	11 U	NA	NA	NA
1,2-Dichloroethene(total)	UG/KG	11 U	11 U	11 U	NA	NA	NA
Chloroform	UG/KG	11 U	11 U	11 U	NA	NA	NA
1,2-Dichloroethane	UG/KG	11 U	11 U	11 U	NA	NA	NA
2-Butanone	UG/KG	11 U	11 U	11 U	NA	NA	NA
1,1,1-Trichloroethane	UG/KG	11 U	11 U	11 U	NA	NA	NA
Carbon tetrachloride	UG/KG	11 U	11 U	11 U	NA	NA	NA
Bromodichloromethane	UG/KG	11 U	11 U	11 U	NA	NA	NA
1,2-Dichloropropane	UG/KG	11 U	11 U	11 U	NA	NA	NA
cis-1,3-Dichloropropene	UG/KG	11 U	11 U	11 U	NA	NA	NA
Trichloroethene	UG/KG	11 U	11 U	11 U	NA	NA	NA
Dibromochloromethane	UG/KG	11 U	11 U	11 U	NA	NA	NA
1,1,2-Trichloroethane	UG/KG	11 U	11 U	11 U	NA	NA	NA
Benzene	UG/KG	11 U	11 U	11 U	NA	NA	NA
trans-1,3-Dichloropropene	UG/KG	11 U	11 U	11 U	NA	NA	NA
Bromoform	UG/KG	11 U	11 U	11 U	NA	NA	NA
4-Methyl-2-pentanone	UG/KG	11 U	11 U	11 U	NA	NA	NA
2-Hexanone	UG/KG	11 U	11 U	11 U	NA	NA	NA
Tetrachloroethene	UG/KG	11 U	11 U	11 U	NA	NA	NA
1,1,2,2-Tetrachloroethane	UG/KG	11 U	11 U	11 U	NA	NA	NA
Toluene	UG/KG	11 U	11 U	11 U	NA	NA	NA
Chlorobenzene	UG/KG	11 U	11 U	11 U	NA	NA	NA
Ethylbenzene	UG/KG	11 U	11 U	11 U	NA	NA	NA
Styrene	UG/KG	11 U	11 U	11 U	NA	NA	NA
Xylenes (total)	UG/KG	11 U	11 U	11 U	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-NA-SB17A-00	3-NA-SB18-00	3-NA-SB19-00	3-RS-SB01	3-RS-SB02	3-RS-SB03
Laboratory Sample ID:		AF6990	AF6995	AF6999	AC0938	AC0939	AC0925
Date Sampled:		06/15/95	06/15/95	06/15/95	9/20/94	9/20/94	9/21/94
	UNITS						
SEMIVOLATILES							
Phenol	UG/KG	370 U	360 U	360 U	410 U	360 U	38 J
bis(2-Chloroethyl) ether	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
2-Chlorophenol	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
1,3-Dichlorobenzene	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
1,4-Dichlorobenzene	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
1,2-Dichlorobenzene	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
2-Methylphenol	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
2,2'-oxybis-(1-chloropropane)	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
4-Methylphenol	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
N-Nitroso-di-n-propylamine	UG/KG	370 U	360 U	360 UJ	410 U	360 U	380 U
Hexachloroethane	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
Nitrobenzene	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
Isophorone	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
2-Nitrophenol	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
2,4-Dimethylphenol	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
bis(2-Chloroethoxy) methane	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
2,4-Dichlorophenol	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
1,2,4-Trichlorobenzene	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
Naphthalene	UG/KG	370 U	360 U	360 U	410 U	38 J	380 U
4-Chloroaniline	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
Hexachlorobutadiene	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
4-Chloro-3-methylphenol	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
2-Methylnaphthalene	UG/KG	370 U	360 U	360 U	410 U	41 J	380 U
Hexachlorocyclopentadiene	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
2,4,6-Trichlorophenol	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
2,4,5-Trichlorophenol	UG/KG	890 U	880 U	870 U	990 U	880 U	910 U
2-Chloronaphthalene	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
2-Nitroaniline	UG/KG	890 U	880 U	870 U	990 U	880 U	910 U
Dimethyl phthalate	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
Acenaphthylene	UG/KG	370 U	360 U	360 U	410 U	480	44 J
2,6-Dinitrotoluene	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
3-Nitroaniline	UG/KG	890 U	880 U	870 U	990 U	880 U	910 U
Acenaphthene	UG/KG	370 U	360 U	360 U	410 U	44 J	380 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-NA-SB17A-00	3-NA-SB18-00	3-NA-SB19-00	3-RS-SB01	3-RS-SB02	3-RS-SB03
Laboratory Sample ID:		AF6990	AF6995	AF6999	AC0938	AC0939	AC0925
Date Sampled:		06/15/95	06/15/95	06/15/95	9/20/94	9/20/94	9/21/94
SEMIVOLATILES Cont.	UNITS						
2,4-Dinitrophenol	UG/KG	890 U	880 U	870 U	990 U	880 U	910 U
4-Nitrophenol	UG/KG	890 U	880 U	870 U	990 U	880 U	910 U
Dibenzofuran	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
2,4-Dinitrotoluene	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
Diethylphthalate	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
4-Chlorophenyl phenyl ether	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
Fluorene	UG/KG	370 U	360 U	360 U	410 U	57 J	380 U
4-Nitroaniline	UG/KG	890 U	880 U	870 U	990 U	880 U	910 U
4,6-Dinitro-2-methylphenol	UG/KG	890 U	880 U	870 U	990 U	880 U	910 U
N-nitrosodiphenylamine	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
4-Bromophenyl-phenylether	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
Hexachlorobenzene	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
Pentachlorophenol	UG/KG	890 U	880 U	870 U	990 U	880 U	910 U
Phenanthrene	UG/KG	370 U	360 U	360 U	410 U	95 J	380 U
Anthracene	UG/KG	370 U	360 U	360 U	410 U	690	88 J
Carbazole	UG/KG	370 U	360 U	360 U	410 U	83 J	380 U
di-n-Butylphthalate	UG/KG	370 U	37 J	360 U	62 J	85 J	180 J
Fluoranthene	UG/KG	370 U	360 U	360 U	410 U	220 J	110 J
Pyrene	UG/KG	45 J	360 U	39 J	410 U	320 J	140 J
Butyl benzyl phthalate	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
3,3'-Dichlorobenzidine	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
Benzo[a]anthracene	UG/KG	370 U	360 U	360 U	410 U	240 J	62 J
Chrysene	UG/KG	370 U	360 U	360 U	410 U	460	100 J
bis(2-Ethylhexyl)phthalate	UG/KG	370 U	360 U	360 U	48 J	64 J	48 J
di-n-Octylphthalate	UG/KG	370 U	360 U	360 U	410 U	360 U	380 U
Benzo[b]fluoranthene	UG/KG	46 J	360 U	40 J	63 J	630	170 J
Benzo[k]fluoranthene	UG/KG	370 U	360 U	44 J	47 J	690	160 J
Benzo[a]pyrene	UG/KG	370 U	360 U	360 U	44 J	560	93 J
Indeno[1,2,3-cd]pyrene	UG/KG	370 U	360 U	360 U	410 U	650	120 J
Dibenz[a,h]anthracene	UG/KG	370 U	360 U	360 U	410 U	270 J	42 J
Benzo[g,h,i]perylene	UG/KG	370 U	360 U	360 U	410 U	770	77 J

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-NA-SB17A-00	3-NA-SB18-00	3-NA-SB19-00	3-RS-SB01	3-RS-SB02	3-RS-SB03
Laboratory Sample ID:		AF6990	AF6995	AF6999	AC0938	AC0939	AC0925
Date Sampled:		06/15/95	06/15/95	06/15/95	9/20/94	9/20/94	9/21/94
	UNITS						
PESTICIDES/PCBs							
alpha-BHC	UG/KG	NA	NA	NA	NA	NA	NA
beta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
delta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor	UG/KG	NA	NA	NA	NA	NA	NA
Aldrin	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan I	UG/KG	NA	NA	NA	NA	NA	NA
Dieldrin	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDE	UG/KG	NA	NA	NA	NA	NA	NA
Endrin	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan II	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDD	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDT	UG/KG	NA	NA	NA	NA	NA	NA
Methoxychlor	UG/KG	NA	NA	NA	NA	NA	NA
Endrin ketone	UG/KG	NA	NA	NA	NA	NA	NA
Endrin aldehyde	UG/KG	NA	NA	NA	NA	NA	NA
alpha-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
gamma-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
Toxaphene	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1016	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1221	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1232	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1242	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1248	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1254	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1260	UG/KG	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-RS-SB05	3-RS-SB06	3-RS-SB07	3-TA-SB08	3-TA-SB09	3-TA-SB10
Laboratory Sample ID:		AC0940	AC0937	AC0941	AC0942	AC0943	AC0944
Date Sampled:		9/21/94	9/21/94	9/22/94	9/19/94	9/20/94	9/19/94
	UNITS						
VOLATILES							
Chloromethane	UG/KG	NA	NA	NA	NA	NA	NA
Bromomethane	UG/KG	NA	NA	NA	NA	NA	NA
Vinyl chloride	UG/KG	NA	NA	NA	NA	NA	NA
Chloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Methylene chloride	UG/KG	NA	NA	NA	NA	NA	NA
Acetone	UG/KG	NA	NA	NA	NA	NA	NA
Carbon Disulfide	UG/KG	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	UG/KG	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(total)	UG/KG	NA	NA	NA	NA	NA	NA
Chloroform	UG/KG	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
2-Butanone	UG/KG	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	UG/KG	NA	NA	NA	NA	NA	NA
Bromodichloromethane	UG/KG	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	UG/KG	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	UG/KG	NA	NA	NA	NA	NA	NA
Trichloroethene	UG/KG	NA	NA	NA	NA	NA	NA
Dibromochloromethane	UG/KG	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Benzene	UG/KG	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	UG/KG	NA	NA	NA	NA	NA	NA
Bromoform	UG/KG	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	UG/KG	NA	NA	NA	NA	NA	NA
2-Hexanone	UG/KG	NA	NA	NA	NA	NA	NA
Tetrachloroethene	UG/KG	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Toluene	UG/KG	NA	NA	NA	NA	NA	NA
Chlorobenzene	UG/KG	NA	NA	NA	NA	NA	NA
Ethylbenzene	UG/KG	NA	NA	NA	NA	NA	NA
Styrene	UG/KG	NA	NA	NA	NA	NA	NA
Xylenes (total)	UG/KG	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-RS-SB05	3-RS-SB06	3-RS-SB07	3-TA-SB08	3-TA-SB09	3-TA-SB10
Laboratory Sample ID:		AC0940	AC0937	AC0941	AC0942	AC0943	AC0944
Date Sampled:		9/21/94	9/21/94	9/22/94	9/19/94	9/20/94	9/19/94
	UNITS						
SEMIVOLATILES							
Phenol	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
bis(2-Chloroethyl) ether	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
2-Chlorophenol	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
1,3-Dichlorobenzene	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
1,4-Dichlorobenzene	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
1,2-Dichlorobenzene	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
2-Methylphenol	UG/KG	360 U	360 UJ	380 U	360 U	3700 U	370 U
2,2'-oxybis-(1-chloropropane)	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
4-Methylphenol	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
N-Nitroso-di-n-propylamine	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
Hexachloroethane	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
Nitrobenzene	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
Isophorone	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
2-Nitrophenol	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
2,4-Dimethylphenol	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
bis(2-Chloroethoxy) methane	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
2,4-Dichlorophenol	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
1,2,4-Trichlorobenzene	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
Naphthalene	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
4-Chloroaniline	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
Hexachlorobutadiene	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
4-Chloro-3-methylphenol	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
2-Methylnaphthalene	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
Hexachlorocyclopentadiene	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
2,4,6-Trichlorophenol	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
2,4,5-Trichlorophenol	UG/KG	870 U	870 U	920 U	870 U	8900 U	900 U
2-Chloronaphthalene	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
2-Nitroaniline	UG/KG	870 U	870 U	920 U	870 U	8900 U	900 U
Dimethyl phthalate	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
Acenaphthylene	UG/KG	190 J	360 U	200 J	360 U	3700 U	64 J
2,6-Dinitrotoluene	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
3-Nitroaniline	UG/KG	870 U	870 U	920 U	870 U	8900 U	900 U
Acenaphthene	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-RS-SB05	3-RS-SB06	3-RS-SB07	3-TA-SB08	3-TA-SB09	3-TA-SB10
Laboratory Sample ID:		AC0940	AC0937	AC0941	AC0942	AC0943	AC0944
Date Sampled:		9/21/94	9/21/94	9/22/94	9/19/94	9/20/94	9/19/94
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/KG	870 U	870 U	920 U	870 U	8900 U	900 U
4-Nitrophenol	UG/KG	870 U	870 U	920 U	870 U	8900 U	900 U
Dibenzofuran	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
2,4-Dinitrotoluene	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
Diethylphthalate	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
4-Chlorophenyl phenyl ether	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
Fluorene	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
4-Nitroaniline	UG/KG	870 U	870 U	920 U	870 U	8900 U	900 U
4,6-Dinitro-2-methylphenol	UG/KG	870 U	870 U	920 U	870 U	8900 U	900 U
N-nitrosodiphenylamine	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
4-Bromophenyl-phenylether	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
Hexachlorobenzene	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
Pentachlorophenol	UG/KG	870 U	870 U	920 U	870 U	8900 U	900 U
Phenanthrene	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
Anthracene	UG/KG	320 J	360 U	470	99 J	3700 U	130 J
Carbazole	UG/KG	93 J	360 U	110 J	360 U	3700 U	45 J
di-n-Butylphthalate	UG/KG	53 J	170 J	75 J	140 J	3700 U	190 J
Fluoranthene	UG/KG	170 J	190 J	1400	250 J	3700 U	120 J
Pyrene	UG/KG	210 J	330 J	3200 J	350 J	3700 U	160 J
Butyl benzyl phthalate	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
3,3'-Dichlorobenzidine	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
Benzo[a]anthracene	UG/KG	130 J	100 J	1000	57 J	3700 U	81 J
Chrysene	UG/KG	190 J	180 J	1200	63 J	3700 U	240 J
bis(2-Ethylhexyl)phthalate	UG/KG	90 J	58 J	84 J	47 J	3700 U	42 J
di-n-Octylphthalate	UG/KG	360 U	360 U	380 U	360 U	3700 U	370 U
Benzo[b]fluoranthene	UG/KG	280 J	350 J	1600	130 J	3700 U	350 J
Benzo[k]fluoranthene	UG/KG	290 J	360 U	1300	90 J	3700 U	180 J
Benzo[a]pyrene	UG/KG	190 J	110 J	910	75 J	3700 U	140 J
Indeno[1,2,3-cd]pyrene	UG/KG	240 J	140 J	590	98 J	3700 U	180 J
Dibenz[a,h]anthracene	UG/KG	85 J	360 U	290 J	44 J	3700 U	63 J
Benzo[g,h,i]perylene	UG/KG	280 J	170 J	410	110 J	3700 U	160 J

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-RS-SB05	3-RS-SB06	3-RS-SB07	3-TA-SB08	3-TA-SB09	3-TA-SB10
Laboratory Sample ID:		AC0940	AC0937	AC0941	AC0942	AC0943	AC0944
Date Sampled:		9/21/94	9/21/94	9/22/94	9/19/94	9/20/94	9/19/94
	UNITS						
PESTICIDES/PCBs							
alpha-BHC	UG/KG	NA	NA	NA	NA	NA	NA
beta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
delta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor	UG/KG	NA	NA	NA	NA	NA	NA
Aldrin	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan I	UG/KG	NA	NA	NA	NA	NA	NA
Dieldrin	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDE	UG/KG	NA	NA	NA	NA	NA	NA
Endrin	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan II	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDD	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDT	UG/KG	NA	NA	NA	NA	NA	NA
Methoxychlor	UG/KG	NA	NA	NA	NA	NA	NA
Endrin ketone	UG/KG	NA	NA	NA	NA	NA	NA
Endrin aldehyde	UG/KG	NA	NA	NA	NA	NA	NA
alpha-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
gamma-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
Toxaphene	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1016	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1221	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1232	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1242	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1248	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1254	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1260	UG/KG	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TA-SB12	3-TA-SB13	3-TA-SB14	3-TA-SB17	3-TA-SB18	3-TA-SB21
Laboratory Sample ID:		AC0931	AC0945	AC0946	AC0947	AC0951	AC0952
Date Sampled:		9/19/94	9/19/94	9/19/94	9/19/94	9/19/94	9/20/94
	UNITS						
VOLATILES							
Chloromethane	UG/KG	NA	NA	NA	NA	NA	NA
Bromomethane	UG/KG	NA	NA	NA	NA	NA	NA
Vinyl chloride	UG/KG	NA	NA	NA	NA	NA	NA
Chloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Methylene chloride	UG/KG	NA	NA	NA	NA	NA	NA
Acetone	UG/KG	NA	NA	NA	NA	NA	NA
Carbon Disulfide	UG/KG	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	UG/KG	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(total)	UG/KG	NA	NA	NA	NA	NA	NA
Chloroform	UG/KG	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
2-Butanone	UG/KG	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	UG/KG	NA	NA	NA	NA	NA	NA
Bromodichloromethane	UG/KG	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	UG/KG	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	UG/KG	NA	NA	NA	NA	NA	NA
Trichloroethene	UG/KG	NA	NA	NA	NA	NA	NA
Dibromochloromethane	UG/KG	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Benzene	UG/KG	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	UG/KG	NA	NA	NA	NA	NA	NA
Bromoform	UG/KG	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	UG/KG	NA	NA	NA	NA	NA	NA
2-Hexanone	UG/KG	NA	NA	NA	NA	NA	NA
Tetrachloroethene	UG/KG	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Toluene	UG/KG	NA	NA	NA	NA	NA	NA
Chlorobenzene	UG/KG	NA	NA	NA	NA	NA	NA
Ethylbenzene	UG/KG	NA	NA	NA	NA	NA	NA
Styrene	UG/KG	NA	NA	NA	NA	NA	NA
Xylenes (total)	UG/KG	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TA-SB12	3-TA-SB13	3-TA-SB14	3-TA-SB17	3-TA-SB18	3-TA-SB21
Laboratory Sample ID:		AC0931	AC0945	AC0946	AC0947	AC0951	AC0952
Date Sampled:		9/19/94	9/19/94	9/19/94	9/19/94	9/19/94	9/20/94
	UNITS						
SEMIVOLATILES							
Phenol	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
bis(2-Chloroethyl) ether	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
2-Chlorophenol	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
1,3-Dichlorobenzene	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
1,4-Dichlorobenzene	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
1,2-Dichlorobenzene	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
2-Methylphenol	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
2,2'-oxybis-(1-chloropropane)	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
4-Methylphenol	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
N-Nitroso-di-n-propylamine	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
Hexachloroethane	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
Nitrobenzene	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
Isophorone	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
2-Nitrophenol	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
2,4-Dimethylphenol	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
bis(2-Chloroethoxy) methane	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
2,4-Dichlorophenol	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
1,2,4-Trichlorobenzene	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
Naphthalene	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
4-Chloroaniline	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
Hexachlorobutadiene	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
4-Chloro-3-methylphenol	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
2-Methylnaphthalene	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
Hexachlorocyclopentadiene	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
2,4,6-Trichlorophenol	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
2,4,5-Trichlorophenol	UG/KG	900 U	870 U	870 U	860 U	870 U	840 U
2-Chloronaphthalene	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
2-Nitroaniline	UG/KG	900 U	870 U	870 U	860 U	870 U	840 U
Dimethyl phthalate	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
Acenaphthylene	UG/KG	370 U	360 U	61 J	350 U	58 J	58 J
2,6-Dinitrotoluene	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
3-Nitroaniline	UG/KG	900 U	870 U	870 U	860 U	870 U	840 U
Acenaphthene	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TA-SB12	3-TA-SB13	3-TA-SB14	3-TA-SB17	3-TA-SB18	3-TA-SB21
Laboratory Sample ID:		AC0931	AC0945	AC0946	AC0947	AC0951	AC0952
Date Sampled:		9/19/94	9/19/94	9/19/94	9/19/94	9/19/94	9/20/94
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/KG	900 U	870 U	870 U	860 U	870 U	840 U
4-Nitrophenol	UG/KG	900 U	870 U	870 U	860 U	870 U	840 U
Dibenzofuran	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
2,4-Dinitrotoluene	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
Diethylphthalate	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
4-Chlorophenyl phenyl ether	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
Fluorene	UG/KG	370 U	360 U	360 U	350 U	39 J	350 U
4-Nitroaniline	UG/KG	900 U	870 U	870 U	860 U	870 U	840 U
4,6-Dinitro-2-methylphenol	UG/KG	900 U	870 U	870 U	860 U	870 U	840 U
N-nitrosodiphenylamine	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
4-Bromophenyl-phenylether	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
Hexachlorobenzene	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
Pentachlorophenol	UG/KG	900 U	870 U	870 U	860 U	870 U	840 U
Phenanthrene	UG/KG	370 U	360 U	130 J	350 U	67 J	55 J
Anthracene	UG/KG	40 J	75 J	250 J	63 J	2600	190 J
Carbazole	UG/KG	370 U	360 U	66 J	350 U	220 J	63 J
di-n-Butylphthalate	UG/KG	54 J	340 J	160 J	210 J	90 J	96 J
Fluoranthene	UG/KG	48 J	71 J	380	42 J	110 J	410 J
Pyrene	UG/KG	48 J	100 J	330 J	350 U	49 J	320 J
Butyl benzyl phthalate	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
3,3'-Dichlorobenzidine	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
Benzo[a]anthracene	UG/KG	370 U	56 J	110 J	350 U	71 J	120 J
Chrysene	UG/KG	48 J	120 J	180 J	40 J	150 J	230 J
bis(2-Ethylhexyl)phthalate	UG/KG	41 J	47 J	51 J	50 J	66 J	36 J
di-n-Octylphthalate	UG/KG	370 U	360 U	360 U	350 U	360 U	350 U
Benzo[b]fluoranthene	UG/KG	89 J	230 J	310 J	97 J	160 J	350 J
Benzo[k]fluoranthene	UG/KG	56 J	140 J	150 J	80 J	130 J	200 J
Benzo[a]pyrene	UG/KG	55 J	120 J	110 J	350 U	360 U	89 J
Indeno[1,2,3-cd]pyrene	UG/KG	47 J	360 U	140 J	350 U	40 J	130 J
Dibenz[a,h]anthracene	UG/KG	370 U	360 U	64 J	350 U	44 J	68 J
Benzo[g,h,i]perylene	UG/KG	51 J	360 U	39 J	350 U	360 U	350 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TA-SB12	3-TA-SB13	3-TA-SB14	3-TA-SB17	3-TA-SB18	3-TA-SB21
Laboratory Sample ID:		AC0931	AC0945	AC0946	AC0947	AC0951	AC0952
Date Sampled:		9/19/94	9/19/94	9/19/94	9/19/94	9/19/94	9/20/94
	UNITS						
PESTICIDES/PCBs							
alpha-BHC	UG/KG	NA	NA	NA	NA	NA	NA
beta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
delta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor	UG/KG	NA	NA	NA	NA	NA	NA
Aldrin	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan I	UG/KG	NA	NA	NA	NA	NA	NA
Dieldrin	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDE	UG/KG	NA	NA	NA	NA	NA	NA
Endrin	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan II	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDD	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDT	UG/KG	NA	NA	NA	NA	NA	NA
Methoxychlor	UG/KG	NA	NA	NA	NA	NA	NA
Endrin ketone	UG/KG	NA	NA	NA	NA	NA	NA
Endrin aldehyde	UG/KG	NA	NA	NA	NA	NA	NA
alpha-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
gamma-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
Toxaphene	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1016	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1221	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1232	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1242	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1248	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1254	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1260	UG/KG	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TA-SB25	3-TA-SB29	3-TA-SB34	3-TA-SB36	3-TA-SB37	3-TA-SB39
Laboratory Sample ID:		AC0954	AC0955	AC0956	AC0957	AC0958	AC0959
Date Sampled:		9/19/94	9/20/94	9/21/94	9/21/94	9/21/94	9/21/94
	UNITS						
VOLATILES							
Chloromethane	UG/KG	NA	NA	NA	NA	NA	NA
Bromomethane	UG/KG	NA	NA	NA	NA	NA	NA
Vinyl chloride	UG/KG	NA	NA	NA	NA	NA	NA
Chloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Methylene chloride	UG/KG	NA	NA	NA	NA	NA	NA
Acetone	UG/KG	NA	NA	NA	NA	NA	NA
Carbon Disulfide	UG/KG	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	UG/KG	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(total)	UG/KG	NA	NA	NA	NA	NA	NA
Chloroform	UG/KG	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
2-Butanone	UG/KG	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	UG/KG	NA	NA	NA	NA	NA	NA
Bromodichloromethane	UG/KG	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	UG/KG	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	UG/KG	NA	NA	NA	NA	NA	NA
Trichloroethene	UG/KG	NA	NA	NA	NA	NA	NA
Dibromochloromethane	UG/KG	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Benzene	UG/KG	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	UG/KG	NA	NA	NA	NA	NA	NA
Bromoform	UG/KG	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	UG/KG	NA	NA	NA	NA	NA	NA
2-Hexanone	UG/KG	NA	NA	NA	NA	NA	NA
Tetrachloroethene	UG/KG	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Toluene	UG/KG	NA	NA	NA	NA	NA	NA
Chlorobenzene	UG/KG	NA	NA	NA	NA	NA	NA
Ethylbenzene	UG/KG	NA	NA	NA	NA	NA	NA
Styrene	UG/KG	NA	NA	NA	NA	NA	NA
Xylenes (total)	UG/KG	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TA-SB25	3-TA-SB29	3-TA-SB34	3-TA-SB36	3-TA-SB37	3-TA-SB39
Laboratory Sample ID:		AC0954	AC0955	AC0956	AC0957	AC0958	AC0959
Date Sampled:		9/19/94	9/20/94	9/21/94	9/21/94	9/21/94	9/21/94
	UNITS						
SEMIVOLATILES							
Phenol	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
bis(2-Chloroethyl) ether	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
2-Chlorophenol	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
1,3-Dichlorobenzene	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
1,4-Dichlorobenzene	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
1,2-Dichlorobenzene	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
2-Methylphenol	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
2,2'-oxybis-(1-chloropropane)	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
4-Methylphenol	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
N-Nitroso-di-n-propylamine	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
Hexachloroethane	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
Nitrobenzene	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
Isophorone	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
2-Nitrophenol	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
2,4-Dimethylphenol	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
bis(2-Chloroethoxy) methane	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
2,4-Dichlorophenol	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
1,2,4-Trichlorobenzene	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
Naphthalene	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
4-Chloroaniline	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
Hexachlorobutadiene	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
4-Chloro-3-methylphenol	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
2-Methylnaphthalene	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
Hexachlorocyclopentadiene	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
2,4,6-Trichlorophenol	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
2,4,5-Trichlorophenol	UG/KG	880 U	900 U	910 U	860 U	860 U	850 U
2-Chloronaphthalene	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
2-Nitroaniline	UG/KG	880 U	900 U	910 U	860 U	860 U	850 U
Dimethyl phthalate	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
Acenaphthylene	UG/KG	70 J	68 J	370 U	40 J	350 U	350 U
2,6-Dinitrotoluene	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
3-Nitroaniline	UG/KG	880 U	900 U	910 U	860 U	860 U	850 U
Acenaphthene	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TA-SB25	3-TA-SB29	3-TA-SB34	3-TA-SB36	3-TA-SB37	3-TA-SB39
Laboratory Sample ID:		AC0954	AC0955	AC0956	AC0957	AC0958	AC0959
Date Sampled:		9/19/94	9/20/94	9/21/94	9/21/94	9/21/94	9/21/94
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/KG	880 U	900 U	910 U	860 U	860 U	850 U
4-Nitrophenol	UG/KG	880 U	900 U	910 U	860 U	860 UJ	850 UJ
Dibenzofuran	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
2,4-Dinitrotoluene	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
Diethylphthalate	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
4-Chlorophenyl phenyl ether	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
Fluorene	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
4-Nitroaniline	UG/KG	880 U	900 U	910 U	860 U	860 U	850 U
4,6-Dinitro-2-methylphenol	UG/KG	880 U	900 U	910 U	860 U	860 U	850 U
N-nitrosodiphenylamine	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
4-Bromophenyl-phenylether	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
Hexachlorobenzene	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
Pentachlorophenol	UG/KG	880 U	900 U	910 U	860 U	860 U	850 U
Phenanthrene	UG/KG	360 U	370 U	370 U	360 U	350 U	41 J
Anthracene	UG/KG	160 J	120 J	46 J	70 J	100 J	350 U
Carbazole	UG/KG	47 J	40 J	370 U	360 U	350 U	350 U
di-n-Butylphthalate	UG/KG	100 J	210 J	150 J	77 J	170 J	160 J
Fluoranthene	UG/KG	310 J	130 J	42 J	74 J	760	200 J
Pyrene	UG/KG	360 J	160 J	58 J	91 J	1200	280 J
Butyl benzyl phthalate	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
3,3'-Dichlorobenzidine	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
Benzo[a]anthracene	UG/KG	160 J	72 J	370 U	360 U	800	94 J
Chrysene	UG/KG	230 J	140 J	50 J	74 J	880	170 J
bis(2-Ethylhexyl)phthalate	UG/KG	41 J	47 J	46 J	58 J	350 U	52 J
di-n-Octylphthalate	UG/KG	360 U	370 U	370 U	360 U	350 U	350 U
Benzo[b]fluoranthene	UG/KG	430	300 J	120 J	120 J	1000	250 J
Benzo[k]fluoranthene	UG/KG	270 J	180 J	57 J	100 J	670	210 J
Benzo[a]pyrene	UG/KG	230 J	150 J	66 J	72 J	510	130 J
Indeno[1,2,3-cd]pyrene	UG/KG	230 J	210 J	68 J	88 J	350 U	350 U
Dibenz[a,h]anthracene	UG/KG	91 J	72 J	370 U	40 J	350 U	350 U
Benzo[g,h,i]perylene	UG/KG	250 J	200 J	77 J	90 J	350 U	350 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TA-SB25	3-TA-SB29	3-TA-SB34	3-TA-SB36	3-TA-SB37	3-TA-SB39
Laboratory Sample ID:		AC0954	AC0955	AC0956	AC0957	AC0958	AC0959
Date Sampled:		9/19/94	9/20/94	9/21/94	9/21/94	9/21/94	9/21/94
	UNITS						
PESTICIDES/PCBs							
alpha-BHC	UG/KG	NA	NA	NA	NA	NA	NA
beta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
delta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor	UG/KG	NA	NA	NA	NA	NA	NA
Aldrin	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan I	UG/KG	NA	NA	NA	NA	NA	NA
Dieldrin	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDE	UG/KG	NA	NA	NA	NA	NA	NA
Endrin	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan II	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDD	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDT	UG/KG	NA	NA	NA	NA	NA	NA
Methoxychlor	UG/KG	NA	NA	NA	NA	NA	NA
Endrin ketone	UG/KG	NA	NA	NA	NA	NA	NA
Endrin aldehyde	UG/KG	NA	NA	NA	NA	NA	NA
alpha-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
gamma-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
Toxaphene	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1016	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1221	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1232	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1242	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1248	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1254	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1260	UG/KG	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TA-SB40	3-TA-SB41	3-TA-SB43	3-TA-SB44	3-TA-SB45-00	3-TA-SB46-00
Laboratory Sample ID:		AC0929	AC0960	AC0961	AC0930	AF7156	AF7311
Date Sampled:		9/22/94	9/22/94	9/22/94	9/22/94	06/15/95	06/18/95
	UNITS						
VOLATILES							
Chloromethane	UG/KG	NA	NA	NA	NA	12 U	12 U
Bromomethane	UG/KG	NA	NA	NA	NA	12 U	12 U
Vinyl chloride	UG/KG	NA	NA	NA	NA	12 U	12 U
Chloroethane	UG/KG	NA	NA	NA	NA	12 U	12 U
Methylene chloride	UG/KG	NA	NA	NA	NA	12 U	12 U
Acetone	UG/KG	NA	NA	NA	NA	12 U	12 U
Carbon Disulfide	UG/KG	NA	NA	NA	NA	12 U	12 U
1,1-Dichloroethene	UG/KG	NA	NA	NA	NA	12 U	12 U
1,1-Dichloroethane	UG/KG	NA	NA	NA	NA	12 U	12 U
1,2-Dichloroethene(total)	UG/KG	NA	NA	NA	NA	12 U	12 U
Chloroform	UG/KG	NA	NA	NA	NA	12 U	12 U
1,2-Dichloroethane	UG/KG	NA	NA	NA	NA	12 U	12 U
2-Butanone	UG/KG	NA	NA	NA	NA	12 U	12 U
1,1,1-Trichloroethane	UG/KG	NA	NA	NA	NA	12 U	12 U
Carbon tetrachloride	UG/KG	NA	NA	NA	NA	12 U	12 U
Bromodichloromethane	UG/KG	NA	NA	NA	NA	12 U	12 U
1,2-Dichloropropane	UG/KG	NA	NA	NA	NA	12 U	12 U
cis-1,3-Dichloropropene	UG/KG	NA	NA	NA	NA	12 U	12 U
Trichloroethene	UG/KG	NA	NA	NA	NA	12 U	12 U
Dibromochloromethane	UG/KG	NA	NA	NA	NA	12 U	12 U
1,1,2-Trichloroethane	UG/KG	NA	NA	NA	NA	12 U	12 U
Benzene	UG/KG	NA	NA	NA	NA	12 U	12 U
trans-1,3-Dichloropropene	UG/KG	NA	NA	NA	NA	12 U	12 U
Bromoform	UG/KG	NA	NA	NA	NA	12 U	12 U
4-Methyl-2-pentanone	UG/KG	NA	NA	NA	NA	12 U	12 U
2-Hexanone	UG/KG	NA	NA	NA	NA	12 U	12 U
Tetrachloroethene	UG/KG	NA	NA	NA	NA	12 U	12 U
1,1,2,2-Tetrachloroethane	UG/KG	NA	NA	NA	NA	12 U	12 U
Toluene	UG/KG	NA	NA	NA	NA	12 U	12 U
Chlorobenzene	UG/KG	NA	NA	NA	NA	12 U	12 U
Ethylbenzene	UG/KG	NA	NA	NA	NA	12 U	12 U
Styrene	UG/KG	NA	NA	NA	NA	12 U	12 U
Xylenes (total)	UG/KG	NA	NA	NA	NA	12 U	12 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TA-SB40	3-TA-SB41	3-TA-SB43	3-TA-SB44	3-TA-SB45-00	3-TA-SB46-00
Laboratory Sample ID:		AC0929	AC0960	AC0961	AC0930	AF7156	AF7311
Date Sampled:		9/22/94	9/22/94	9/22/94	9/22/94	06/15/95	06/18/95
	UNITS						
SEMIVOLATILES							
Phenol	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
bis(2-Chloroethyl) ether	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
2-Chlorophenol	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
1,3-Dichlorobenzene	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
1,4-Dichlorobenzene	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
1,2-Dichlorobenzene	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
2-Methylphenol	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
2,2'-oxybis-(1-chloropropane)	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
4-Methylphenol	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
N-Nitroso-di-n-propylamine	UG/KG	370 U	360 U	360 U	360 U	390 UJ	2000 UJ
Hexachloroethane	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
Nitrobenzene	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
Isophorone	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
2-Nitrophenol	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
2,4-Dimethylphenol	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
bis(2-Chloroethoxy) methane	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
2,4-Dichlorophenol	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
1,2,4-Trichlorobenzene	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
Naphthalene	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
4-Chloroaniline	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
Hexachlorobutadiene	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
4-Chloro-3-methylphenol	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
2-Methylnaphthalene	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
Hexachlorocyclopentadiene	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
2,4,6-Trichlorophenol	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
2,4,5-Trichlorophenol	UG/KG	900 U	880 U	870 U	870 U	950 U	4900 U
2-Chloronaphthalene	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
2-Nitroaniline	UG/KG	900 U	880 U	870 U	870 U	950 U	4900 U
Dimethyl phthalate	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
Acenaphthylene	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
2,6-Dinitrotoluene	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
3-Nitroaniline	UG/KG	900 U	880 U	870 U	870 U	950 U	4900 U
Acenaphthene	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TA-SB40	3-TA-SB41	3-TA-SB43	3-TA-SB44	3-TA-SB45-00	3-TA-SB46-00
Laboratory Sample ID:		AC0929	AC0960	AC0961	AC0930	AF7156	AF7311
Date Sampled:		9/22/94	9/22/94	9/22/94	9/22/94	06/15/95	06/18/95
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/KG	900 U	880 U	870 U	870 U	950 U	4900 U
4-Nitrophenol	UG/KG	900 U	880 UJ	870 UJ	870 U	950 U	4900 U
Dibenzofuran	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
2,4-Dinitrotoluene	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
Diethylphthalate	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
4-Chlorophenyl phenyl ether	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
Fluorene	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
4-Nitroaniline	UG/KG	900 U	880 U	870 U	870 U	950 U	4900 U
4,6-Dinitro-2-methylphenol	UG/KG	900 U	880 U	870 U	870 U	950 U	4900 U
N-nitrosodiphenylamine	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
4-Bromophenyl-phenylether	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
Hexachlorobenzene	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
Pentachlorophenol	UG/KG	900 U	880 U	870 U	870 U	950 U	4900 U
Phenanthrene	UG/KG	370 U	360 U	37 J	360 U	390 U	2000 U
Anthracene	UG/KG	370 U	360 U	80 J	360 U	48 J	2000 U
Carbazole	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
di-n-Butylphthalate	UG/KG	140 J	270 J	130 J	190 J	390 U	2000 U
Fluoranthene	UG/KG	370 U	75 J	350 J	360 U	54 J	2000 U
Pyrene	UG/KG	370 U	110 J	670	360 U	93 J	2000 U
Butyl benzyl phthalate	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
3,3'-Dichlorobenzidine	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
Benzo[a]anthracene	UG/KG	370 U	360 U	260 J	360 U	47 J	2000 U
Chrysene	UG/KG	370 U	92 J	540	360 U	80 J	2000 U
bis(2-Ethylhexyl)phthalate	UG/KG	44 J	51 J	51 J	360 U	390 U	2000 U
di-n-Octylphthalate	UG/KG	370 U	360 U	360 U	360 U	390 U	2000 U
Benzo[b]fluoranthene	UG/KG	370 U	200 J	860	360 U	130 J	2000 U
Benzo[k]fluoranthene	UG/KG	37 J	130 J	360 U	360 U	160 J	2000 U
Benzo[a]pyrene	UG/KG	370 U	97 J	280 J	360 U	70 J	2000 U
Indeno[1,2,3-cd]pyrene	UG/KG	370 U	96 J	280 J	360 U	74 J	2000 U
Dibenz[a,h]anthracene	UG/KG	370 U	360 U	150 J	360 U	390 U	2000 U
Benzo[g,h,i]perylene	UG/KG	370 U	94 J	200 J	360 U	390 U	2000 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TA-SB40	3-TA-SB41	3-TA-SB43	3-TA-SB44	3-TA-SB45-00	3-TA-SB46-00
Laboratory Sample ID:		AC0929	AC0960	AC0961	AC0930	AF7156	AF7311
Date Sampled:		9/22/94	9/22/94	9/22/94	9/22/94	06/15/95	06/18/95
	UNITS						
PESTICIDES/PCBs							
alpha-BHC	UG/KG	NA	NA	NA	NA	NA	NA
beta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
delta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor	UG/KG	NA	NA	NA	NA	NA	NA
Aldrin	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan I	UG/KG	NA	NA	NA	NA	NA	NA
Dieldrin	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDE	UG/KG	NA	NA	NA	NA	NA	NA
Endrin	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan II	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDD	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDT	UG/KG	NA	NA	NA	NA	NA	NA
Methoxychlor	UG/KG	NA	NA	NA	NA	NA	NA
Endrin ketone	UG/KG	NA	NA	NA	NA	NA	NA
Endrin aldehyde	UG/KG	NA	NA	NA	NA	NA	NA
alpha-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
gamma-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
Toxaphene	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1016	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1221	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1232	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1242	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1248	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1254	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1260	UG/KG	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TA-SB47-00	3-TA-SB48-00	3-TA-SB49-00	3-TA-SB50-00
Laboratory Sample ID:		AF7160	AF7003	AF7007	AF7011
Date Sampled:		06/15/95	06/15/95	06/15/95	06/15/95
	UNITS				
VOLATILES					
Chloromethane	UG/KG	12 U	11 U	11 U	11 U
Bromomethane	UG/KG	12 U	11 U	11 U	11 U
Vinyl chloride	UG/KG	12 U	11 U	11 U	11 U
Chloroethane	UG/KG	12 U	11 U	11 U	11 U
Methylene chloride	UG/KG	12 U	11 U	11 U	11 u
Acetone	UG/KG	12 U	11 U	12 UJ	11 U
Carbon Disulfide	UG/KG	12 U	11 U	11 U	11 U
1,1-Dichloroethene	UG/KG	12 U	11 U	11 U	11 U
1,1-Dichloroethane	UG/KG	12 U	11 U	11 U	11 U
1,2-Dichloroethene(total)	UG/KG	12 U	11 U	11 U	11 U
Chloroform	UG/KG	12 U	11 U	11 U	11 U
1,2-Dichloroethane	UG/KG	12 U	11 U	11 U	11 U
2-Butanone	UG/KG	12 U	11 U	11 U	11 U
1,1,1-Trichloroethane	UG/KG	12 U	11 U	11 U	11 U
Carbon tetrachloride	UG/KG	12 U	11 U	11 U	11 U
Bromodichloromethane	UG/KG	12 U	11 U	11 U	11 U
1,2-Dichloropropane	UG/KG	12 U	11 U	11 U	11 U
cis-1,3-Dichloropropene	UG/KG	12 U	11 U	11 U	11 U
Trichloroethene	UG/KG	12 U	11 U	11 U	11 U
Dibromochloromethane	UG/KG	12 U	11 U	11 U	11 U
1,1,2-Trichloroethane	UG/KG	12 U	11 U	11 U	11 U
Benzene	UG/KG	12 U	11 U	11 U	11 U
trans-1,3-Dichloropropene	UG/KG	12 U	11 U	11 U	11 U
Bromoform	UG/KG	12 U	11 U	11 U	11 U
4-Methyl-2-pentanone	UG/KG	12 U	11 U	11 U	11 U
2-Hexanone	UG/KG	12 U	11 U	11 U	11 U
Tetrachloroethene	UG/KG	12 U	11 U	11 U	11 U
1,1,2,2-Tetrachloroethane	UG/KG	12 U	11 UJ	11 UJ	11 UJ
Toluene	UG/KG	12 U	11 U	11 U	11 U
Chlorobenzene	UG/KG	12 U	11 U	11 U	11 U
Ethylbenzene	UG/KG	12 U	11 U	11 U	2 J
Styrene	UG/KG	12 U	11 U	11 U	11 U
Xylenes (total)	UG/KG	12 U	11 U	11 U	6 J

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TA-SB47-00	3-TA-SB48-00	3-TA-SB49-00	3-TA-SB50-00
Laboratory Sample ID:		AF7160	AF7003	AF7007	AF7011
Date Sampled:		06/15/95	06/15/95	06/15/95	06/15/95
	UNITS				
SEMIVOLATILES					
Phenol	UG/KG	380 U	360 U	350 U	1800 U
bis(2-Chloroethyl) ether	UG/KG	380 U	360 U	350 U	1800 U
2-Chlorophenol	UG/KG	380 U	360 U	350 U	1800 U
1,3-Dichlorobenzene	UG/KG	380 U	360 U	350 U	1800 U
1,4-Dichlorobenzene	UG/KG	380 U	360 U	350 U	1800 U
1,2-Dichlorobenzene	UG/KG	380 U	360 U	350 U	1800 U
2-Methylphenol	UG/KG	380 U	360 U	350 U	1800 U
2,2'-oxybis-(1-chloropropane)	UG/KG	380 U	360 U	350 U	1800 U
4-Methylphenol	UG/KG	380 U	360 U	350 U	1800 U
N-Nitroso-di-n-propylamine	UG/KG	380 UJ	360 UJ	350 UJ	1800 UJ
Hexachloroethane	UG/KG	380 U	360 U	350 U	1800 U
Nitrobenzene	UG/KG	380 U	360 U	350 U	1800 U
Isophorone	UG/KG	380 U	360 U	350 U	1800 U
2-Nitrophenol	UG/KG	380 U	360 U	350 U	1800 U
2,4-Dimethylphenol	UG/KG	380 U	360 U	350 U	1800 U
bis(2-Chloroethoxy) methane	UG/KG	380 U	360 U	350 U	1800 U
2,4-Dichlorophenol	UG/KG	380 U	360 U	350 U	1800 U
1,2,4-Trichlorobenzene	UG/KG	380 U	360 U	350 U	1800 U
Naphthalene	UG/KG	380 U	360 U	350 U	1800 U
4-Chloroaniline	UG/KG	380 U	360 U	350 U	1800 U
Hexachlorobutadiene	UG/KG	380 U	360 U	350 U	1800 U
4-Chloro-3-methylphenol	UG/KG	380 U	360 U	350 U	1800 U
2-Methylnaphthalene	UG/KG	380 U	360 U	350 U	1800 U
Hexachlorocyclopentadiene	UG/KG	380 U	360 U	350 U	1800 U
2,4,6-Trichlorophenol	UG/KG	380 U	360 U	350 U	1800 U
2,4,5-Trichlorophenol	UG/KG	910 U	870 U	850 U	4500 U
2-Chloronaphthalene	UG/KG	380 U	360 U	350 U	1800 U
2-Nitroaniline	UG/KG	910 U	870 U	850 U	4500 U
Dimethyl phthalate	UG/KG	380 U	360 U	350 U	1800 U
Acenaphthylene	UG/KG	380 U	46 J	350 U	1800 U
2,6-Dinitrotoluene	UG/KG	380 U	360 U	350 U	1800 U
3-Nitroaniline	UG/KG	910 U	870 U	850 U	4500 U
Acenaphthene	UG/KG	380 U	360 U	350 U	1800 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TA-SB47-00	3-TA-SB48-00	3-TA-SB49-00	3-TA-SB50-00
Laboratory Sample ID:		AF7160	AF7003	AF7007	AF7011
Date Sampled:		06/15/95	06/15/95	06/15/95	06/15/95
SEMIVOLATILES Cont.	UNITS				
2,4-Dinitrophenol	UG/KG	910 U	870 U	850 U	4500 U
4-Nitrophenol	UG/KG	910 U	870 U	850 U	4500 U
Dibenzofuran	UG/KG	380 U	360 U	350 U	1800 U
2,4-Dinitrotoluene	UG/KG	380 U	360 U	350 U	1800 U
Diethylphthalate	UG/KG	380 U	360 U	350 U	1800 U
4-Chlorophenyl phenyl ether	UG/KG	380 U	360 U	350 U	1800 U
Fluorene	UG/KG	380 U	360 U	350 U	1800 U
4-Nitroaniline	UG/KG	910 U	870 U	850 U	4500 U
4,6-Dinitro-2-methylphenol	UG/KG	910 U	870 U	850 U	4500 U
N-nitrosodiphenylamine	UG/KG	380 U	360 U	350 U	1800 U
4-Bromophenyl-phenylether	UG/KG	380 U	360 U	350 U	1800 U
Hexachlorobenzene	UG/KG	380 U	360 U	350 U	1800 U
Pentachlorophenol	UG/KG	910 U	870 U	850 U	4500 U
Phenanthrene	UG/KG	380 U	360 U	350 U	1800 U
Anthracene	UG/KG	380 U	85 J	350 U	1800 U
Carbazole	UG/KG	380 U	56 J	350 U	1800 U
di-n-Butylphthalate	UG/KG	380 U	44 J	38 J	1800 U
Fluoranthene	UG/KG	380 U	190 J	350 U	1800 U
Pyrene	UG/KG	380 U	270 J	41 J	1800 U
Butyl benzyl phthalate	UG/KG	380 U	360 U	350 U	1800 U
3,3'-Dichlorobenzidine	UG/KG	380 U	360 U	350 U	1800 U
Benzo[a]anthracene	UG/KG	380 U	230 J	350 U	1800 U
Chrysene	UG/KG	380 U	380	350 U	1800 U
bis(2-Ethylhexyl)phthalate	UG/KG	63 J	360 U	350 U	1800 U
di-n-Octylphthalate	UG/KG	380 U	360 U	350 U	1800 U
Benzo[b]fluoranthene	UG/KG	380 U	400	60 J	1800 U
Benzo[k]fluoranthene	UG/KG	46 J	460	64 J	1800 U
Benzo[a]pyrene	UG/KG	380 U	220 J	57 J	1800 U
Indeno[1,2,3-cd]pyrene	UG/KG	380 U	180 J	43 J	1800 U
Dibenz[a,h]anthracene	UG/KG	380 U	67 J	350 U	1800 U
Benzo[g,h,i]perylene	UG/KG	380 U	180 J	48 J	1800 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TA-SB47-00	3-TA-SB48-00	3-TA-SB49-00	3-TA-SB50-00
Laboratory Sample ID:		AF7160	AF7003	AF7007	AF7011
Date Sampled:		06/15/95	06/15/95	06/15/95	06/15/95
	UNITS				
PESTICIDES/PCBs					
alpha-BHC	UG/KG	NA	NA	NA	NA
beta-BHC	UG/KG	NA	NA	NA	NA
delta-BHC	UG/KG	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/KG	NA	NA	NA	NA
Heptachlor	UG/KG	NA	NA	NA	NA
Aldrin	UG/KG	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	NA
Endosulfan I	UG/KG	NA	NA	NA	NA
Dieldrin	UG/KG	NA	NA	NA	NA
4,4'-DDE	UG/KG	NA	NA	NA	NA
Endrin	UG/KG	NA	NA	NA	NA
Endosulfan II	UG/KG	NA	NA	NA	NA
4,4'-DDD	UG/KG	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	NA
4,4'-DDT	UG/KG	NA	NA	NA	NA
Methoxychlor	UG/KG	NA	NA	NA	NA
Endrin ketone	UG/KG	NA	NA	NA	NA
Endrin aldehyde	UG/KG	NA	NA	NA	NA
alpha-Chlordane	UG/KG	NA	NA	NA	NA
gamma-Chlordane	UG/KG	NA	NA	NA	NA
Toxaphene	UG/KG	NA	NA	NA	NA
Aroclor 1016	UG/KG	NA	NA	NA	NA
Aroclor 1221	UG/KG	NA	NA	NA	NA
Aroclor 1232	UG/KG	NA	NA	NA	NA
Aroclor 1242	UG/KG	NA	NA	NA	NA
Aroclor 1248	UG/KG	NA	NA	NA	NA
Aroclor 1254	UG/KG	NA	NA	NA	NA
Aroclor 1260	UG/KG	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
VOLATILES							
Chloromethane	UG/KG	10 U	15 UJ	ND	ND		0/17
Bromomethane	UG/KG	10 U	15 UJ	ND	ND		0/17
Vinyl chloride	UG/KG	10 U	15 UJ	ND	ND		0/17
Chloroethane	UG/KG	10 U	15 UJ	ND	ND		0/17
Methylene chloride	UG/KG	10 U	15 UJ	ND	ND		0/17
Acetone	UG/KG	10 U	26 U	ND	ND		0/17
Carbon Disulfide	UG/KG	10 U	15 UJ	ND	ND		0/17
1,1-Dichloroethene	UG/KG	10 U	15 UJ	ND	ND		0/17
1,1-Dichloroethane	UG/KG	10 U	15 UJ	ND	ND		0/17
1,2-Dichloroethene(total)	UG/KG	10 U	15 UJ	ND	ND		0/17
Chloroform	UG/KG	10 UJ	15 UJ	ND	ND		0/17
1,2-Dichloroethane	UG/KG	10 UJ	15 UJ	ND	ND		0/17
2-Butanone	UG/KG	11 U	15 UJ	ND	ND		0/17
1,1,1-Trichloroethane	UG/KG	10 U	15 UJ	ND	ND		0/17
Carbon tetrachloride	UG/KG	10 U	15 UJ	ND	ND		0/17
Bromodichloromethane	UG/KG	10 U	15 UJ	ND	ND		0/17
1,2-Dichloropropane	UG/KG	10 U	15 UJ	ND	ND		0/17
cis-1,3-Dichloropropene	UG/KG	10 U	15 UJ	ND	ND		0/17
Trichloroethene	UG/KG	10 U	15 UJ	ND	ND		0/17
Dibromochloromethane	UG/KG	10 U	15 UJ	ND	ND		0/17
1,1,2-Trichloroethane	UG/KG	10 U	15 UJ	ND	ND		0/17
Benzene	UG/KG	10 U	15 UJ	ND	ND		0/17
trans-1,3-Dichloropropene	UG/KG	10 U	15 UJ	ND	ND		0/17
Bromoform	UG/KG	10 U	15 UJ	ND	ND		0/17
4-Methyl-2-pentanone	UG/KG	10 U	15 UJ	ND	ND		0/17
2-Hexanone	UG/KG	10 U	15 UJ	ND	ND		0/17
Tetrachloroethene	UG/KG	10 U	15 UJ	ND	ND		0/17
1,1,2,2-Tetrachloroethane	UG/KG	10 U	15 UJ	ND	ND		0/17
Toluene	UG/KG	11 U	12 U	2 J	2 J	3-MW13-00	2/17
Chlorobenzene	UG/KG	10 U	15 UJ	ND	ND		0/17
Ethylbenzene	UG/KG	10 U	15 UJ	2 J	2 J	3-TA-SB50-00	1/17
Styrene	UG/KG	10 U	15 UJ	ND	ND		0/17
Xylenes (total)	UG/KG	10 U	15 UJ	6 J	6 J	3-TA-SB50-00	1/17

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
SEMIVOLATILES							
Phenol	UG/KG	320 U	5000 U	38 J	38 J	3-RS-SB03	1/58
bis(2-Chloroethyl) ether	UG/KG	320 U	5000 U	ND	ND		0/58
2-Chlorophenol	UG/KG	320 U	5000 U	ND	ND		0/58
1,3-Dichlorobenzene	UG/KG	320 U	5000 U	ND	ND		0/58
1,4-Dichlorobenzene	UG/KG	320 U	5000 U	ND	ND		0/58
1,2-Dichlorobenzene	UG/KG	320 U	5000 U	ND	ND		0/58
2-Methylphenol	UG/KG	320 U	5000 U	ND	ND		0/58
2,2'-oxybis-(1-chloropropane)	UG/KG	320 U	5000 U	ND	ND		0/58
4-Methylphenol	UG/KG	320 U	5000 U	ND	ND		0/58
N-Nitroso-di-n-propylamine	UG/KG	320 U	5000 U	ND	ND		0/58
Hexachloroethane	UG/KG	320 U	5000 U	ND	ND		0/58
Nitrobenzene	UG/KG	320 U	5000 U	ND	ND		0/58
Isophorone	UG/KG	320 U	5000 U	ND	ND		0/58
2-Nitrophenol	UG/KG	320 U	5000 U	ND	ND		0/58
2,4-Dimethylphenol	UG/KG	320 U	5000 U	ND	ND		0/58
bis(2-Chloroethoxy) methane	UG/KG	320 U	5000 U	ND	ND		0/58
2,4-Dichlorophenol	UG/KG	320 U	5000 U	ND	ND		0/58
1,2,4-Trichlorobenzene	UG/KG	320 U	5000 U	ND	ND		0/58
Naphthalene	UG/KG	320 U	5000 U	38 J	200 J	3-NA-SB05	2/58
4-Chloroaniline	UG/KG	320 U	5000 U	ND	ND		0/58
Hexachlorobutadiene	UG/KG	320 U	5000 U	ND	ND		0/58
4-Chloro-3-methylphenol	UG/KG	320 U	5000 U	ND	ND		0/58
2-Methylnaphthalene	UG/KG	320 U	5000 U	41 J	41 J	3-RS-SB02	1/58
Hexachlorocyclopentadiene	UG/KG	320 U	5000 U	ND	ND		0/58
2,4,6-Trichlorophenol	UG/KG	320 U	5000 U	ND	ND		0/58
2,4,5-Trichlorophenol	UG/KG	770 U	12000 U	ND	ND		0/58
2-Chloronaphthalene	UG/KG	320 U	5000 U	ND	ND		0/58
2-Nitroaniline	UG/KG	770 U	12000 U	ND	ND		0/58
Dimethyl phthalate	UG/KG	320 U	5000 U	ND	ND		0/58
Acenaphthylene	UG/KG	320 U	5000 U	40 J	2700	3-NA-SB03	16/58
2,6-Dinitrotoluene	UG/KG	320 U	5000 U	ND	ND		0/58
3-Nitroaniline	UG/KG	770 U	12000 U	ND	ND		0/58
Acenaphthene	UG/KG	320 U	5000 U	44 J	460 J	3-NA-SB05	2/58

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/KG	770 UJ	12000 U	ND	ND		0/58
4-Nitrophenol	UG/KG	770 U	12000 U	ND	ND		0/58
Dibenzofuran	UG/KG	320 U	5000 U	370 J	370 J	3-NA-SB05	1/58
2,4-Dinitrotoluene	UG/KG	320 U	5000 U	ND	ND		0/58
Diethylphthalate	UG/KG	320 U	5000 U	ND	ND		0/58
4-Chlorophenyl phenyl ether	UG/KG	320 U	5000 U	ND	ND		0/58
Fluorene	UG/KG	320 U	5000 U	39 J	620 J	3-NA-SB05	5/58
4-Nitroaniline	UG/KG	770 U	12000 U	ND	ND		0/58
4,6-Dinitro-2-methylphenol	UG/KG	770 U	12000 U	ND	ND		0/58
N-nitrosodiphenylamine	UG/KG	320 U	5000 U	ND	ND		0/58
4-Bromophenyl-phenylether	UG/KG	320 U	5000 U	ND	ND		0/58
Hexachlorobenzene	UG/KG	320 U	5000 U	ND	ND		0/58
Pentachlorophenol	UG/KG	770 U	12000 U	ND	ND		0/58
Phenanthrene	UG/KG	320 U	5000 U	37 J	2900	3-NA-SB05	9/58
Anthracene	UG/KG	350 U	5000 U	40 J	7700	3-NA-SB03	26/58
Carbazole	UG/KG	320 U	5000 U	40 J	830 J	3-NA-SB03	14/58
di-n-Butylphthalate	UG/KG	360 U	5000 U	37 J	340 J	3-TA-SB13	37/58
Fluoranthene	UG/KG	350 U	5000 U	42 J	11000	3-NA-SB03	32/58
Pyrene	UG/KG	350 U	5000 U	39 J	14000	3-NA-SB03	34/58
Butyl benzyl phthalate	UG/KG	320 U	5000 U	ND	ND		0/58
3,3'-Dichlorobenzidine	UG/KG	320 U	5000 U	ND	ND		0/58
Benzo[a]anthracene	UG/KG	350 U	5000 U	32 J	8300	3-NA-SB03	24/58
Chrysene	UG/KG	350 U	5000 U	40 J	12000	3-NA-SB03	32/58
bis(2-Ethylhexyl)phthalate	UG/KG	320 U	5000 U	36 J	91 J	3-NA-SB01	30/58
di-n-Octylphthalate	UG/KG	320 U	5000 U	ND	ND		0/58
Benzo[b]fluoranthene	UG/KG	360 U	5000 U	39 J	13000	3-NA-SB03	37/58
Benzo[k]fluoranthene	UG/KG	360 U	5000 U	37 J	9000	3-NA-SB03	34/58
Benzo[a]pyrene	UG/KG	350 U	5000 U	38 J	8700	3-NA-SB03	30/58
Indeno[1,2,3-cd]pyrene	UG/KG	350 U	5000 U	40 J	6800	3-NA-SB03	26/58
Dibenz[a,h]anthracene	UG/KG	320 U	5000 U	40 J	2900	3-NA-SB03	16/58
Benzo[g,h,i]perylene	UG/KG	350 U	5000 U	39 J	4700	3-NA-SB03	22/58

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
PESTICIDES/PCBs							
alpha-BHC	UG/KG	1.7 U	1.9 U	ND	ND		0/2
beta-BHC	UG/KG	1.7 U	1.9 U	ND	ND		0/2
delta-BHC	UG/KG	1.7 U	1.9 U	ND	ND		0/2
Lindane (gamma-BHC)	UG/KG	1.7 U	1.9 U	ND	ND		0/2
Heptachlor	UG/KG	1.7 U	1.9 U	ND	ND		0/2
Aldrin	UG/KG	1.7 U	1.9 U	ND	ND		0/2
Heptachlor epoxide	UG/KG	1.7 U	1.9 U	ND	ND		0/2
Endosulfan I	UG/KG	1.7 U	1.9 U	ND	ND		0/2
Dieldrin	UG/KG	3.3 U	3.6 U	ND	ND		0/2
4,4'-DDE	UG/KG	3.3 U	3.6 U	ND	ND		0/2
Endrin	UG/KG	3.3 U	3.6 U	ND	ND		0/2
Endosulfan II	UG/KG	3.3 U	3.6 U	ND	ND		0/2
4,4'-DDD	UG/KG	3.3 U	3.6 U	ND	ND		0/2
Endosulfan sulfate	UG/KG	3.3 U	3.6 U	ND	ND		0/2
4,4'-DDT	UG/KG	3.3 U	3.6 U	ND	ND		0/2
Methoxychlor	UG/KG	17 U	19 U	ND	ND		0/2
Endrin ketone	UG/KG	3.3 U	3.6 U	ND	ND		0/2
Endrin aldehyde	UG/KG	3.3 U	3.6 U	ND	ND		0/2
alpha-Chlordane	UG/KG	1.7 U	1.9 U	ND	ND		0/2
gamma-Chlordane	UG/KG	1.7 U	1.9 U	ND	ND		0/2
Toxaphene	UG/KG	170 U	190 U	ND	ND		0/2
Aroclor 1016	UG/KG	33 U	36 U	ND	ND		0/2
Aroclor 1221	UG/KG	66 U	74 U	ND	ND		0/2
Aroclor 1232	UG/KG	33 U	36 U	ND	ND		0/2
Aroclor 1242	UG/KG	33 U	36 U	ND	ND		0/2
Aroclor 1248	UG/KG	33 U	36 U	ND	ND		0/2
Aroclor 1254	UG/KG	33 U	36 U	ND	ND		0/2
Aroclor 1260	UG/KG	33 U	36 U	ND	ND		0/2

APPENDIX H.2
SURFACE SOIL - INORGANICS

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT Na. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL INORGANICS

Client Sample ID:		3-MW02IW-00	3-MW05-00
Laboratory Sample ID:		AC9747	AD0556
Date Sampled:		11/16/94	11/19/94
	UNITS		
Aluminum	MG/KG	1740	4240
Antimony	MG/KG	9.9 U	11.1 U
Arsenic	MG/KG	2 U	2.2 U
Barium	MG/KG	6.4 J	7.8 J
Beryllium	MG/KG	0.2 U	0.22 U
Cadmium	MG/KG	0.99 U	1.1 U
Calcium	MG/KG	67700	4020
Chromium	MG/KG	7.1	2.7
Cobalt	MG/KG	2 U	2.2 U
Copper	MG/KG	2 U	2.2 U
Iron	MG/KG	1390	1970
Lead	MG/KG	4.4 J	4.6 U
Magnesium	MG/KG	1020	150
Manganese	MG/KG	11.7	13.1
Mercury	MG/KG	0.1 U	0.11 U
Nickel	MG/KG	4 U	4.4 U
Potassium	MG/KG	199 U	221 U
Selenium	MG/KG	0.99 U	1.1 U
Silver	MG/KG	0.99 U	1.1 U
Sodium	MG/KG	112	34.5 U
Thallium	MG/KG	2 UJ	2.2 U
Vanadium	MG/KG	3.3	5.2
Zinc	MG/KG	16.6	8.9 UJ
Moisture	%	0.44	9.69

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT Na. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL INORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
Aluminum	MG/KG	NA	NA	1740	4240	3-MW05-00	2/2
Antimony	MG/KG	9.9 U	11.1 U	ND	ND		0/2
Arsenic	MG/KG	2 U	2.2 U	ND	ND		0/2
Barium	MG/KG	NA	NA	6.4 J	7.8 J	3-MW05-00	2/2
Beryllium	MG/KG	0.2 U	0.22 U	ND	ND		0/2
Cadmium	MG/KG	0.99 U	1.1 U	ND	ND		0/2
Calcium	MG/KG	NA	NA	4020	67700	3-MW02IW-00	2/2
Chromium	MG/KG	NA	NA	2.7	7.1	3-MW02IW-00	2/2
Cobalt	MG/KG	2 U	2.2 U	ND	ND		0/2
Copper	MG/KG	2 U	2.2 U	ND	ND		0/2
Iron	MG/KG	NA	NA	1390	1970	3-MW05-00	2/2
Lead	MG/KG	4.6 U	4.6 U	4.4 J	4.4 J	3-MW02IW-00	1/2
Magnesium	MG/KG	NA	NA	150	1020	3-MW02IW-00	2/2
Manganese	MG/KG	NA	NA	11.7	13.1	3-MW05-00	2/2
Mercury	MG/KG	0.1 U	0.11 U	ND	ND		0/2
Nickel	MG/KG	4 U	4.4 U	ND	ND		0/2
Potassium	MG/KG	199 U	221 U	ND	ND		0/2
Selenium	MG/KG	0.99 U	1.1 U	ND	ND		0/2
Silver	MG/KG	0.99 U	1.1 U	ND	ND		0/2
Sodium	MG/KG	34.5 U	34.5 U	112	112	3-MW02IW-00	1/2
Thallium	MG/KG	2 UJ	2.2 U	ND	ND		0/2
Vanadium	MG/KG	NA	NA	3.3	5.2	3-MW05-00	2/2
Zinc	MG/KG	8.9 UJ	8.9 UJ	16.6	16.6	3-MW02IW-00	1/2
Moisture	%						

APPENDIX H.3
SUBSURFACE SOIL - ORGANICS

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		03-MW02DW-02	3-MW02IW-03	3-MW02IW-09	3-MW04-06	3-MW05-10	3-MW06-04
Laboratory Sample ID:		AF7371	AC9764	AD0022	AD0037	AD0558	AD0552
Date Sampled:		06/20/95	11/16/94	11/17/94	11/17/94	11/19/94	11/19/94
	UNITS						
VOLATILES							
Chloromethane	UG/KG	11 U	12 U	NA	NA	12 U	NA
Bromomethane	UG/KG	11 U	12 U	NA	NA	12 U	NA
Vinyl chloride	UG/KG	11 U	12 U	NA	NA	12 U	NA
Chloroethane	UG/KG	11 U	12 U	NA	NA	12 U	NA
Methylene chloride	UG/KG	11 U	12 U	NA	NA	12 U	NA
Acetone	UG/KG	27 U	20 U	NA	NA	12 UJ	NA
Carbon Disulfide	UG/KG	11 U	12 U	NA	NA	12 U	NA
1,1-Dichloroethene	UG/KG	11 U	12 U	NA	NA	12 U	NA
1,1-Dichloroethane	UG/KG	11 U	12 U	NA	NA	12 U	NA
1,2-Dichloroethene(total)	UG/KG	11 UJ	12 U	NA	NA	12 U	NA
Chloroform	UG/KG	11 U	12 UJ	NA	NA	12 U	NA
1,2-Dichloroethane	UG/KG	11 U	12 UJ	NA	NA	12 U	NA
2-Butanone	UG/KG	11 U	12 U	NA	NA	12 U	NA
1,1,1-Trichloroethane	UG/KG	11 U	12 U	NA	NA	12 U	NA
Carbon tetrachloride	UG/KG	11 U	12 U	NA	NA	12 U	NA
Bromodichloromethane	UG/KG	11 U	12 U	NA	NA	12 U	NA
1,2-Dichloropropane	UG/KG	11 U	12 U	NA	NA	12 U	NA
cis-1,3-Dichloropropene	UG/KG	11 U	12 U	NA	NA	12 U	NA
Trichloroethene	UG/KG	11 U	12 U	NA	NA	12 U	NA
Dibromochloromethane	UG/KG	11 U	12 U	NA	NA	12 U	NA
1,1,2-Trichloroethane	UG/KG	11 U	12 U	NA	NA	12 U	NA
Benzene	UG/KG	11 U	2 J	NA	NA	12 U	NA
trans-1,3-Dichloropropene	UG/KG	11 U	12 U	NA	NA	12 U	NA
Bromoform	UG/KG	11 U	12 U	NA	NA	12 U	NA
4-Methyl-2-pentanone	UG/KG	11 U	12 U	NA	NA	12 U	NA
2-Hexanone	UG/KG	11 U	12 U	NA	NA	12 U	NA
Tetrachloroethene	UG/KG	11 U	12 U	NA	NA	12 U	NA
1,1,2,2-Tetrachloroethane	UG/KG	11 U	12 U	NA	NA	12 U	NA
Toluene	UG/KG	11 U	6 J	NA	NA	12 U	NA
Chlorobenzene	UG/KG	11 U	12 U	NA	NA	12 U	NA
Ethylbenzene	UG/KG	11 U	3 J	NA	NA	12 U	NA
Styrene	UG/KG	11 U	12 U	NA	NA	12 U	NA
Xylenes (total)	UG/KG	11 U	7 J	NA	NA	12 U	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		03-MW02DW-02	3-MW02IW-03	3-MW02IW-09	3-MW04-06	3-MW05-10	3-MW06-04
Laboratory Sample ID:		AF7371	AC9764	AD0022	AD0037	AD0558	AD0552
Date Sampled:		06/20/95	11/16/94	11/17/94	11/17/94	11/19/94	11/19/94
	UNITS						
SEMIVOLATILES							
Phenol	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
bis(2-Chloroethyl) ether	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
2-Chlorophenol	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
1,3-Dichlorobenzene	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
1,4-Dichlorobenzene	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
1,2-Dichlorobenzene	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
2-Methylphenol	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
2,2'-oxybis-(1-chloropropane)	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
4-Methylphenol	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
N-Nitroso-di-n-propylamine	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
Hexachloroethane	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
Nitrobenzene	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
Isophorone	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
2-Nitrophenol	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
2,4-Dimethylphenol	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
bis(2-Chloroethoxy) methane	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
2,4-Dichlorophenol	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
1,2,4-Trichlorobenzene	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
Naphthalene	UG/KG	530 J	110 J	17000	370 U	380 U	360 U
4-Chloroaniline	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
Hexachlorobutadiene	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
4-Chloro-3-methylphenol	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
2-Methylnaphthalene	UG/KG	290 J	100 J	7200	370 U	380 U	360 U
Hexachlorocyclopentadiene	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
2,4,6-Trichlorophenol	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
2,4,5-Trichlorophenol	UG/KG	4500 UJ	910 U	1000 U	900 U	920 U	860 U
2-Chloronaphthalene	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
2-Nitroaniline	UG/KG	4500 UJ	910 U	1000 U	900 U	920 U	860 U
Dimethyl phthalate	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
Acenaphthylene	UG/KG	1900 UJ	380 U	190 J	370 U	380 U	360 U
2,6-Dinitrotoluene	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
3-Nitroaniline	UG/KG	4500 UJ	910 U	1000 U	900 U	920 U	860 U
Acenaphthene	UG/KG	1000 J	560	13000	370 U	380 U	360 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		03-MW02DW-02	3-MW02IW-03	3-MW02IW-09	3-MW04-06	3-MW05-10	3-MW06-04
Laboratory Sample ID:		AF7371	AC9764	AD0022	AD0037	AD0558	AD0552
Date Sampled:		06/20/95	11/16/94	11/17/94	11/17/94	11/19/94	11/19/94
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/KG	4500 UJ	910 UJ	1000 UJ	900 UJ	920 UJ	860 UJ
4-Nitrophenol	UG/KG	4500 UJ	910 U	1000 UJ	900 UJ	920 U	860 U
Dibenzofuran	UG/KG	660 J	440	9000	370 U	380 U	360 U
2,4-Dinitrotoluene	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
Diethylphthalate	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
4-Chlorophenyl phenyl ether	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
Fluorene	UG/KG	870 J	710	9100	370 U	380 U	360 U
4-Nitroaniline	UG/KG	4500 UJ	910 U	1000 U	900 U	920 U	860 U
4,6-Dinitro-2-methylphenol	UG/KG	4500 UJ	910 U	1000 U	900 U	920 U	860 U
N-nitrosodiphenylamine	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
4-Bromophenyl-phenylether	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
Hexachlorobenzene	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
Pentachlorophenol	UG/KG	4500 UJ	910 U	1000 U	900 U	920 U	860 U
Phenanthrene	UG/KG	1800 J	2700	24000	370 U	380 U	360 U
Anthracene	UG/KG	370 J	530	2400	370 U	380 U	360 U
Carbazole	UG/KG	270 J	200 J	1600	370 U	380 U	360 U
di-n-Butylphthalate	UG/KG	1900 UJ	110 J	430 U	370 U	380 U	360 U
Fluoranthene	UG/KG	4800 J	1900	11000 U	370 U	380 U	360 U
Pyrene	UG/KG	3500 J	1300	9400	370 U	380 U	360 U
Butyl benzyl phthalate	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
3,3'-Dichlorobenzidine	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
Benzo[a]anthracene	UG/KG	1100 J	270 J	2100	370 U	380 U	360 U
Chrysene	UG/KG	1700 J	310 J	1700	370 U	380 U	360 U
bis(2-Ethylhexyl)phthalate	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
di-n-Octylphthalate	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
Benzo[b]fluoranthene	UG/KG	780 J	140 J	1200	370 U	380 U	360 U
Benzo[k]fluoranthene	UG/KG	740 J	150 J	430 U	370 U	380 U	360 U
Benzo[a]pyrene	UG/KG	450 J	120 J	700	370 U	380 U	360 U
Indeno[1,2,3-cd]pyrene	UG/KG	1900 UJ	54 J	200 J	370 U	380 U	360 U
Dibenz[a,h]anthracene	UG/KG	1900 UJ	380 U	430 U	370 U	380 U	360 U
Benzo[g,h,i]perylene	UG/KG	240 J	380 U	71 J	370 U	380 U	360 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		03-MW02DW-02	3-MW02IW-03	3-MW02IW-09	3-MW04-06	3-MW05-10	3-MW06-04
Laboratory Sample ID:		AF7371	AC9764	AD0022	AD0037	AD0558	AD0552
Date Sampled:		06/20/95	11/16/94	11/17/94	11/17/94	11/19/94	11/19/94
	UNITS						
PESTICIDES/PCBs							
alpha-BHC	UG/KG	NA	1.9 U	NA	NA	1.9 U	NA
beta-BHC	UG/KG	NA	1.9 U	NA	NA	1.9 U	NA
delta-BHC	UG/KG	NA	1.9 U	NA	NA	1.9 U	NA
Lindane (gamma-BHC)	UG/KG	NA	1.9 U	NA	NA	1.9 U	NA
Heptachlor	UG/KG	NA	1.9 U	NA	NA	1.9 U	NA
Aldrin	UG/KG	NA	1.9 U	NA	NA	1.9 U	NA
Heptachlor epoxide	UG/KG	NA	1.9 U	NA	NA	1.9 U	NA
Endosulfan I	UG/KG	NA	1.9 U	NA	NA	1.9 U	NA
Dieldrin	UG/KG	NA	3.7 U	NA	NA	3.8 U	NA
4,4'-DDE	UG/KG	NA	3.7 U	NA	NA	3.8 U	NA
Endrin	UG/KG	NA	3.7 U	NA	NA	3.8 U	NA
Endosulfan II	UG/KG	NA	3.7 U	NA	NA	3.8 U	NA
4,4'-DDD	UG/KG	NA	3.7 U	NA	NA	3.8 U	NA
Endosulfan sulfate	UG/KG	NA	3.7 U	NA	NA	3.8 U	NA
4,4'-DDT	UG/KG	NA	3.7 U	NA	NA	3.8 U	NA
Methoxychlor	UG/KG	NA	19 U	NA	NA	19 U	NA
Endrin ketone	UG/KG	NA	3.7 U	NA	NA	3.8 U	NA
Endrin aldehyde	UG/KG	NA	3.7 U	NA	NA	3.8 U	NA
alpha-Chlordane	UG/KG	NA	1.9 U	NA	NA	1.9 U	NA
gamma-Chlordane	UG/KG	NA	1.9 U	NA	NA	1.9 U	NA
Toxaphene	UG/KG	NA	190 U	NA	NA	190 U	NA
Aroclor 1016	UG/KG	NA	37 U	NA	NA	38 U	NA
Aroclor 1221	UG/KG	NA	75 U	NA	NA	77 U	NA
Aroclor 1232	UG/KG	NA	37 U	NA	NA	38 U	NA
Aroclor 1242	UG/KG	NA	37 U	NA	NA	38 U	NA
Aroclor 1248	UG/KG	NA	37 U	NA	NA	38 U	NA
Aroclor 1254	UG/KG	NA	37 U	NA	NA	38 U	NA
Aroclor 1260	UG/KG	NA	37 U	NA	NA	38 U	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-MW07-02	3-MW08-02	03-MW09-02	03-MW10-02	03-MW11-08	03-MW11IW-08
Laboratory Sample ID:		AD0554	AD0550	AF6809	AF6811	AF6979	AF7152
Date Sampled:		11/19/94	11/20/94	06/13/95	06/14/95	06/15/95	06/16/95
	UNITS						
VOLATILES							
Chloromethane	UG/KG	NA	NA	11 U	12 U	11 U	12 U
Bromomethane	UG/KG	NA	NA	11 U	12 U	11 U	12 U
Vinyl chloride	UG/KG	NA	NA	11 U	12 U	11 U	12 U
Chloroethane	UG/KG	NA	NA	11 U	12 U	11 U	12 U
Methylene chloride	UG/KG	NA	NA	11 U	12 U	11 U	12 U
Acetone	UG/KG	NA	NA	92 UJ	16 U	11 U	12 U
Carbon Disulfide	UG/KG	NA	NA	11 U	12 U	11 U	12 U
1,1-Dichloroethene	UG/KG	NA	NA	11 U	12 U	11 U	12 U
1,1-Dichloroethane	UG/KG	NA	NA	11 U	12 U	11 U	12 U
1,2-Dichloroethene(total)	UG/KG	NA	NA	11 U	12 UJ	11 U	12 U
Chloroform	UG/KG	NA	NA	11 U	12 U	11 U	3 J
1,2-Dichloroethane	UG/KG	NA	NA	11 U	12 U	11 U	12 U
2-Butanone	UG/KG	NA	NA	11 U	12 U	11 U	12 U
1,1,1-Trichloroethane	UG/KG	NA	NA	11 U	12 U	11 U	12 U
Carbon tetrachloride	UG/KG	NA	NA	11 U	12 U	11 U	12 U
Bromodichloromethane	UG/KG	NA	NA	11 U	12 U	11 U	12 U
1,2-Dichloropropane	UG/KG	NA	NA	11 U	12 U	11 U	12 U
cis-1,3-Dichloropropene	UG/KG	NA	NA	11 U	12 U	11 U	12 U
Trichloroethene	UG/KG	NA	NA	11 U	12 U	11 U	12 U
Dibromochloromethane	UG/KG	NA	NA	11 U	12 U	11 U	12 U
1,1,2-Trichloroethane	UG/KG	NA	NA	11 U	12 U	11 U	12 U
Benzene	UG/KG	NA	NA	11 U	12 U	11 U	12 U
trans-1,3-Dichloropropene	UG/KG	NA	NA	11 U	12 U	11 U	12 U
Bromoform	UG/KG	NA	NA	11 U	12 U	11 U	12 U
4-Methyl-2-pentanone	UG/KG	NA	NA	11 U	12 U	11 U	12 U
2-Hexanone	UG/KG	NA	NA	11 U	12 U	11 U	12 U
Tetrachloroethene	UG/KG	NA	NA	11 U	12 U	11 U	12 U
1,1,2,2-Tetrachloroethane	UG/KG	NA	NA	11 UJ	12 U	11 U	12 U
Toluene	UG/KG	NA	NA	11 U	12 U	11 U	12 U
Chlorobenzene	UG/KG	NA	NA	11 U	12 U	11 U	12 U
Ethylbenzene	UG/KG	NA	NA	11 U	12 U	11 U	12 U
Styrene	UG/KG	NA	NA	5 J	12 U	11 U	12 U
Xylenes (total)	UG/KG	NA	NA	11 U	12 U	11 U	12 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:	3-MW07-02	3-MW08-02	03-MW09-02	03-MW10-02	03-MW11-08	03-MW11IW-08
Laboratory Sample ID:	AD0554	AD0550	AF6809	AF6811	AF6979	AF7152
Date Sampled:	11/19/94	11/20/94	06/13/95	06/14/95	06/15/95	06/16/95
	UNITS					
SEMIVOLATILES						
Phenol	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
bis(2-Chloroethyl) ether	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
2-Chlorophenol	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
1,3-Dichlorobenzene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
1,4-Dichlorobenzene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
1,2-Dichlorobenzene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
2-Methylphenol	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
2,2'-oxybis-(1-chloropropane)	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
4-Methylphenol	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
N-Nitroso-di-n-propylamine	UG/KG	400 U	370 U	380 U	400 U	360 U	380 UJ
Hexachloroethane	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
Nitrobenzene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
Isophorone	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
2-Nitrophenol	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
2,4-Dimethylphenol	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
bis(2-Chloroethoxy) methane	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
2,4-Dichlorophenol	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
1,2,4-Trichlorobenzene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
Naphthalene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
4-Chloroaniline	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
Hexachlorobutadiene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
4-Chloro-3-methylphenol	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
2-Methylnaphthalene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
Hexachlorocyclopentadiene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
2,4,6-Trichlorophenol	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
2,4,5-Trichlorophenol	UG/KG	970 U	900 U	910 U	960 U	880 U	930 U
2-Chloronaphthalene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
2-Nitroaniline	UG/KG	970 U	900 U	910 U	960 U	880 U	930 U
Dimethyl phthalate	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
Acenaphthylene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
2,6-Dinitrotoluene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
3-Nitroaniline	UG/KG	970 U	900 U	910 U	960 U	880 U	930 U
Acenaphthene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-MW07-02	3-MW08-02	03-MW09-02	03-MW10-02	03-MW11-08	03-MW11IW-08
Laboratory Sample ID:		AD0554	AD0550	AF6809	AF6811	AF6979	AF7152
Date Sampled:		11/19/94	11/20/94	06/13/95	06/14/95	06/15/95	06/16/95
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/KG	970 UJ	900 UJ	910 U	960 U	880 U	930 U
4-Nitrophenol	UG/KG	970 U	900 U	910 U	960 U	880 U	930 U
Dibenzofuran	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
2,4-Dinitrotoluene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
Diethylphthalate	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
4-Chlorophenyl phenyl ether	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
Fluorene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
4-Nitroaniline	UG/KG	970 U	900 U	910 U	960 U	880 U	930 U
4,6-Dinitro-2-methylphenol	UG/KG	970 U	900 U	910 U	960 U	880 U	930 U
N-nitrosodiphenylamine	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
4-Bromophenyl-phenylether	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
Hexachlorobenzene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
Pentachlorophenol	UG/KG	970 U	900 U	910 U	960 U	880 U	930 U
Phenanthrene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
Anthracene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
Carbazole	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
di-n-Butylphthalate	UG/KG	400 U	370 U	380 U	400 U	360 U	39 J
Fluoranthene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
Pyrene	UG/KG	400 U	43 J	380 U	400 U	360 U	380 U
Butyl benzyl phthalate	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
3,3'-Dichlorobenzidine	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
Benzo[a]anthracene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
Chrysene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
bis(2-Ethylhexyl)phthalate	UG/KG	400 U	370 U	380 U	400 U	360 U	240 J
di-n-Octylphthalate	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
Benzo[b]fluoranthene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
Benzo[k]fluoranthene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
Benzo[a]pyrene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
Indeno[1,2,3-cd]pyrene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
Dibenz[a,h]anthracene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U
Benzo[g,h,i]perylene	UG/KG	400 U	370 U	380 U	400 U	360 U	380 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:	3-MW07-02	3-MW08-02	03-MW09-02	03-MW10-02	03-MW11-08	03-MW11IW-08
Laboratory Sample ID:	AD0554	AD0550	AF6809	AF6811	AF6979	AF7152
Date Sampled:	11/19/94	11/20/94	06/13/95	06/14/95	06/15/95	06/16/95
	UNITS					
PESTICIDES/PCBs						
alpha-BHC	UG/KG	NA	NA	NA	NA	NA	NA
beta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
delta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor	UG/KG	NA	NA	NA	NA	NA	NA
Aldrin	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan I	UG/KG	NA	NA	NA	NA	NA	NA
Dieldrin	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDE	UG/KG	NA	NA	NA	NA	NA	NA
Endrin	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan II	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDD	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDT	UG/KG	NA	NA	NA	NA	NA	NA
Methoxychlor	UG/KG	NA	NA	NA	NA	NA	NA
Endrin ketone	UG/KG	NA	NA	NA	NA	NA	NA
Endrin aldehyde	UG/KG	NA	NA	NA	NA	NA	NA
alpha-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
gamma-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
Toxaphene	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1016	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1221	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1232	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1242	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1248	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1254	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1260	UG/KG	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:	03-MW12-02	03-MW13-04	3-NA-SB03-03	3-NA-SB05-03	3-NA-SB08-03	03-NA-SB17A-02
Laboratory Sample ID:	AF6650	AF6984	AC9737	AC9736	AC9740	AF6993
Date Sampled:	06/13/95	06/14/95	11/16/94	11/16/94	11/16/94	06/15/95
	UNITS					
VOLATILES						
Chloromethane	UG/KG	12 U	12 U	NA	NA	NA	11 U
Bromomethane	UG/KG	12 U	12 U	NA	NA	NA	11 U
Vinyl chloride	UG/KG	12 U	12 U	NA	NA	NA	11 U
Chloroethane	UG/KG	12 U	12 U	NA	NA	NA	11 U
Methylene chloride	UG/KG	12 U	12 U	NA	NA	NA	11 U
Acetone	UG/KG	24 U	12 U	NA	NA	NA	120
Carbon Disulfide	UG/KG	1 J	12 U	NA	NA	NA	11 U
1,1-Dichloroethene	UG/KG	12 U	12 U	NA	NA	NA	11 U
1,1-Dichloroethane	UG/KG	12 U	12 U	NA	NA	NA	11 U
1,2-Dichloroethene(total)	UG/KG	12 U	12 U	NA	NA	NA	11 U
Chloroform	UG/KG	12 U	12 U	NA	NA	NA	11 U
1,2-Dichloroethane	UG/KG	12 U	12 U	NA	NA	NA	11 U
2-Butanone	UG/KG	12 U	12 U	NA	NA	NA	11 U
1,1,1-Trichloroethane	UG/KG	12 U	12 U	NA	NA	NA	11 U
Carbon tetrachloride	UG/KG	12 U	12 U	NA	NA	NA	11 U
Bromodichloromethane	UG/KG	12 U	12 U	NA	NA	NA	11 U
1,2-Dichloropropane	UG/KG	12 U	12 U	NA	NA	NA	11 U
cis-1,3-Dichloropropene	UG/KG	12 U	12 U	NA	NA	NA	11 U
Trichloroethene	UG/KG	12 U	12 U	NA	NA	NA	11 U
Dibromochloromethane	UG/KG	12 U	12 U	NA	NA	NA	11 U
1,1,2-Trichloroethane	UG/KG	12 U	12 U	NA	NA	NA	11 U
Benzene	UG/KG	12 U	12 U	NA	NA	NA	11 U
trans-1,3-Dichloropropene	UG/KG	12 U	12 U	NA	NA	NA	11 U
Bromoform	UG/KG	12 U	12 U	NA	NA	NA	11 U
4-Methyl-2-pentanone	UG/KG	12 U	12 U	NA	NA	NA	11 U
2-Hexanone	UG/KG	12 U	12 U	NA	NA	NA	11 U
Tetrachloroethene	UG/KG	12 U	12 U	NA	NA	NA	11 U
1,1,2,2-Tetrachloroethane	UG/KG	12 UJ	12 U	NA	NA	NA	11 U
Toluene	UG/KG	12 U	12 U	NA	NA	NA	11 U
Chlorobenzene	UG/KG	12 U	12 U	NA	NA	NA	11 U
Ethylbenzene	UG/KG	12 U	12 U	NA	NA	NA	11 U
Styrene	UG/KG	12 U	12 U	NA	NA	NA	11 U
Xylenes (total)	UG/KG	12 U	12 U	NA	NA	NA	11 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:	03-MW12-02	03-MW13-04	3-NA-SB03-03	3-NA-SB05-03	3-NA-SB08-03	03-NA-SB17A-02
Laboratory Sample ID:	AF6650	AF6984	AC9737	AC9736	AC9740	AF6993
Date Sampled:	06/13/95	06/14/95	11/16/94	11/16/94	11/16/94	06/15/95
	UNITS					
SEMIVOLATILES						
Phenol	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
bis(2-Chloroethyl) ether	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
2-Chlorophenol	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
1,3-Dichlorobenzene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
1,4-Dichlorobenzene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
1,2-Dichlorobenzene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
2-Methylphenol	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
2,2'-oxybis-(1-chloropropane)	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
4-Methylphenol	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
N-Nitroso-di-n-propylamine	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
Hexachloroethane	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
Nitrobenzene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
Isophorone	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
2-Nitrophenol	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
2,4-Dimethylphenol	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
bis(2-Chloroethoxy) methane	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
2,4-Dichlorophenol	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
1,2,4-Trichlorobenzene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
Naphthalene	UG/KG	80 J	55 J	400 U	370 U	380 U	380 U
4-Chloroaniline	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
Hexachlorobutadiene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
4-Chloro-3-methylphenol	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
2-Methylnaphthalene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
Hexachlorocyclopentadiene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
2,4,6-Trichlorophenol	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
2,4,5-Trichlorophenol	UG/KG	940 U	930 U	960 U	900 U	920 U	910 U
2-Chloronaphthalene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
2-Nitroaniline	UG/KG	940 U	930 U	960 U	900 U	920 U	910 U
Dimethyl phthalate	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
Acenaphthylene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
2,6-Dinitrotoluene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
3-Nitroaniline	UG/KG	940 U	930 U	960 U	900 U	920 U	910 U
Acenaphthene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		03-MW12-02	03-MW13-04	3-NA-SB03-03	3-NA-SB05-03	3-NA-SB08-03	03-NA-SB17A-02
Laboratory Sample ID:		AF6650	AF6984	AC9737	AC9736	AC9740	AF6993
Date Sampled:		06/13/95	06/14/95	11/16/94	11/16/94	11/16/94	06/15/95
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/KG	940 U	930 U	960 U	900 UJ	920 UJ	910 U
4-Nitrophenol	UG/KG	940 U	930 U	960 UJ	900 U	920 U	910 U
Dibenzofuran	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
2,4-Dinitrotoluene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
Diethylphthalate	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
4-Chlorophenyl phenyl ether	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
Fluorene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
4-Nitroaniline	UG/KG	940 U	930 U	960 U	900 U	920 U	910 U
4,6-Dinitro-2-methylphenol	UG/KG	940 U	930 U	960 U	900 U	920 U	910 U
N-nitrosodiphenylamine	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
4-Bromophenyl-phenylether	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
Hexachlorobenzene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
Pentachlorophenol	UG/KG	940 U	930 U	960 U	900 U	920 U	910 U
Phenanthrene	UG/KG	66 J	61 J	400 U	370 U	380 U	380 U
Anthracene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
Carbazole	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
di-n-Butylphthalate	UG/KG	43 J	390 U	140 J	120 J	110 J	40 J
Fluoranthene	UG/KG	51 J	390 U	400 U	370 U	380 U	380 U
Pyrene	UG/KG	390 U	43 J	400 U	370 U	380 U	380 U
Butyl benzyl phthalate	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
3,3'-Dichlorobenzidine	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
Benzo[a]anthracene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
Chrysene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
bis(2-Ethylhexyl)phthalate	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
di-n-Octylphthalate	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
Benzo[b]fluoranthene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
Benzo[k]fluoranthene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
Benzo[a]pyrene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
Indeno[1,2,3-cd]pyrene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
Dibenz[a,h]anthracene	UG/KG	390 U	390 U	400 U	370 U	380 U	380 U
Benzo[g,h,i]perylene	UG/KG	390 U	71 J	400 U	370 U	380 U	380 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		03-MW12-02	03-MW13-04	3-NA-SB03-03	3-NA-SB05-03	3-NA-SB08-03	03-NA-SB17A-02
Laboratory Sample ID:		AF6650	AF6984	AC9737	AC9736	AC9740	AF6993
Date Sampled:		06/13/95	06/14/95	11/16/94	11/16/94	11/16/94	06/15/95
	UNITS						
PESTICIDES/PCBs							
alpha-BHC	UG/KG	NA	NA	NA	NA	NA	NA
beta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
delta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor	UG/KG	NA	NA	NA	NA	NA	NA
Aldrin	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan I	UG/KG	NA	NA	NA	NA	NA	NA
Dieldrin	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDE	UG/KG	NA	NA	NA	NA	NA	NA
Endrin	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan II	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDD	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDT	UG/KG	NA	NA	NA	NA	NA	NA
Methoxychlor	UG/KG	NA	NA	NA	NA	NA	NA
Endrin ketone	UG/KG	NA	NA	NA	NA	NA	NA
Endrin aldehyde	UG/KG	NA	NA	NA	NA	NA	NA
alpha-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
gamma-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
Toxaphene	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1016	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1221	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1232	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1242	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1248	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1254	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1260	UG/KG	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:	03-NA-SB18-02	03-NA-SB19-02	3-RS-SB01-03	3-RS-SB02-04	3-RS-SB05-03	3-RS-SB05-04
Laboratory Sample ID:	AF6997	AF7001	AC9732	AC9733	AC9734	AC9735
Date Sampled:	06/15/95	06/15/95	11/15/94	11/15/94	11/15/94	11/16/94
	UNITS					
VOLATILES						
Chloromethane	UG/KG	12 U	12 U	NA	NA	NA	NA
Bromomethane	UG/KG	12 U	12 U	NA	NA	NA	NA
Vinyl chloride	UG/KG	12 U	12 U	NA	NA	NA	NA
Chloroethane	UG/KG	12 U	12 U	NA	NA	NA	NA
Methylene chloride	UG/KG	12 U	12 U	NA	NA	NA	NA
Acetone	UG/KG	32 U	14 U	NA	NA	NA	NA
Carbon Disulfide	UG/KG	12 U	12 U	NA	NA	NA	NA
1,1-Dichloroethene	UG/KG	12 U	12 U	NA	NA	NA	NA
1,1-Dichloroethane	UG/KG	12 U	12 U	NA	NA	NA	NA
1,2-Dichloroethene(total)	UG/KG	12 U	12 U	NA	NA	NA	NA
Chloroform	UG/KG	12 U	12 U	NA	NA	NA	NA
1,2-Dichloroethane	UG/KG	12 U	12 U	NA	NA	NA	NA
2-Butanone	UG/KG	12 U	3 J	NA	NA	NA	NA
1,1,1-Trichloroethane	UG/KG	12 U	12 U	NA	NA	NA	NA
Carbon tetrachloride	UG/KG	12 U	12 U	NA	NA	NA	NA
Bromodichloromethane	UG/KG	12 U	12 U	NA	NA	NA	NA
1,2-Dichloropropane	UG/KG	12 U	12 U	NA	NA	NA	NA
cis-1,3-Dichloropropene	UG/KG	12 U	12 U	NA	NA	NA	NA
Trichloroethene	UG/KG	12 U	12 U	NA	NA	NA	NA
Dibromochloromethane	UG/KG	12 U	12 U	NA	NA	NA	NA
1,1,2-Trichloroethane	UG/KG	12 U	12 U	NA	NA	NA	NA
Benzene	UG/KG	12 U	12 U	NA	NA	NA	NA
trans-1,3-Dichloropropene	UG/KG	12 U	12 U	NA	NA	NA	NA
Bromoform	UG/KG	12 U	12 U	NA	NA	NA	NA
4-Methyl-2-pentanone	UG/KG	12 U	12 U	NA	NA	NA	NA
2-Hexanone	UG/KG	12 U	12 U	NA	NA	NA	NA
Tetrachloroethene	UG/KG	12 U	12 U	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	UG/KG	12 U	12 U	NA	NA	NA	NA
Toluene	UG/KG	12 U	12 U	NA	NA	NA	NA
Chlorobenzene	UG/KG	12 U	12 U	NA	NA	NA	NA
Ethylbenzene	UG/KG	12 U	12 U	NA	NA	NA	NA
Styrene	UG/KG	12 U	12 U	NA	NA	NA	NA
Xylenes (total)	UG/KG	12 U	12 U	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		03-NA-SB18-02	03-NA-SB19-02	3-RS-SB01-03	3-RS-SB02-04	3-RS-SB05-03	3-RS-SB05-04
Laboratory Sample ID:		AF6997	AF7001	AC9732	AC9733	AC9734	AC9735
Date Sampled:		06/15/95	06/15/95	11/15/94	11/15/94	11/15/94	11/16/94
	UNITS						
SEMIVOLATILES							
Phenol	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
bis(2-Chloroethyl) ether	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
2-Chlorophenol	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
1,3-Dichlorobenzene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
1,4-Dichlorobenzene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
1,2-Dichlorobenzene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
2-Methylphenol	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
2,2'-oxybis-(1-chloropropane)	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
4-Methylphenol	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
N-Nitroso-di-n-propylamine	UG/KG	380 U	390 UJ	440 U	380 U	390 U	370 U
Hexachloroethane	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Nitrobenzene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Isophorone	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
2-Nitrophenol	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
2,4-Dimethylphenol	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
bis(2-Chloroethoxy) methane	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
2,4-Dichlorophenol	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
1,2,4-Trichlorobenzene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Naphthalene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
4-Chloroaniline	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Hexachlorobutadiene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
4-Chloro-3-methylphenol	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
2-Methylnaphthalene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Hexachlorocyclopentadiene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
2,4,6-Trichlorophenol	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
2,4,5-Trichlorophenol	UG/KG	930 U	950 U	1100 U	920 U	950 U	900 U
2-Chloronaphthalene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
2-Nitroaniline	UG/KG	930 U	950 U	1100 U	920 U	950 U	900 U
Dimethyl phthalate	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Acenaphthylene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
2,6-Dinitrotoluene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
3-Nitroaniline	UG/KG	930 U	950 U	1100 U	920 U	950 U	900 U
Acenaphthene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		03-NA-SB18-02	03-NA-SB19-02	3-RS-SB01-03	3-RS-SB02-04	3-RS-SB05-03	3-RS-SB05-04
Laboratory Sample ID:		AF6997	AF7001	AC9732	AC9733	AC9734	AC9735
Date Sampled:		06/15/95	06/15/95	11/15/94	11/15/94	11/15/94	11/16/94
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/KG	930 U	950 U	1100 UJ	920 UJ	950 UJ	900 UJ
4-Nitrophenol	UG/KG	930 U	950 U	1100 U	920 U	950 U	900 U
Dibenzofuran	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
2,4-Dinitrotoluene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Diethylphthalate	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
4-Chlorophenyl phenyl ether	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Fluorene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
4-Nitroaniline	UG/KG	930 U	950 U	1100 U	920 U	950 U	900 U
4,6-Dinitro-2-methylphenol	UG/KG	930 U	950 U	1100 U	920 U	950 U	900 U
N-nitrosodiphenylamine	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
4-Bromophenyl-phenylether	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Hexachlorobenzene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Pentachlorophenol	UG/KG	930 U	950 U	1100 U	920 U	950 U	900 U
Phenanthrene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Anthracene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Carbazole	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
di-n-Butylphthalate	UG/KG	380 U	41 J	110 J	150 J	97 J	130 J
Fluoranthene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Pyrene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Butyl benzyl phthalate	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
3,3'-Dichlorobenzidine	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Benzo[a]anthracene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Chrysene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
bis(2-Ethylhexyl)phthalate	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
di-n-Octylphthalate	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Benzo[b]fluoranthene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Benzo[k]fluoranthene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Benzo[a]pyrene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Indeno[1,2,3-cd]pyrene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Dibenz[a,h]anthracene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U
Benzo[g,h,i]perylene	UG/KG	380 U	390 U	440 U	380 U	390 U	370 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:	03-NA-SB18-02	03-NA-SB19-02	3-RS-SB01-03	3-RS-SB02-04	3-RS-SB05-03	3-RS-SB05-04
Laboratory Sample ID:	AF6997	AF7001	AC9732	AC9733	AC9734	AC9735
Date Sampled:	06/15/95	06/15/95	11/15/94	11/15/94	11/15/94	11/16/94
UNITS						
PESTICIDES/PCBs						
alpha-BHC	UG/KG	NA	NA	NA	NA	NA	NA
beta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
delta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor	UG/KG	NA	NA	NA	NA	NA	NA
Aldrin	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan I	UG/KG	NA	NA	NA	NA	NA	NA
Dieldrin	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDE	UG/KG	NA	NA	NA	NA	NA	NA
Endrin	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan II	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDD	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDT	UG/KG	NA	NA	NA	NA	NA	NA
Methoxychlor	UG/KG	NA	NA	NA	NA	NA	NA
Endrin ketone	UG/KG	NA	NA	NA	NA	NA	NA
Endrin aldehyde	UG/KG	NA	NA	NA	NA	NA	NA
alpha-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
gamma-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
Toxaphene	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1016	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1221	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1232	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1242	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1248	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1254	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1260	UG/KG	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:	3-RS-SB06-04	3-RS-SB07-04	3-TA-SB08-04	3-TA-SB10-04	3-TA-SB13-03	3-TA-SB14-02
Laboratory Sample ID:	AC9731	AD0031	AC9586	AC9583	AC9582	AC9580
Date Sampled:	11/15/94	11/17/94	11/14/94	11/14/94	11/15/94	11/14/94
UNITS						
VOLATILES						
Chloromethane	UG/KG	NA	NA	NA	NA	NA	NA
Bromomethane	UG/KG	NA	NA	NA	NA	NA	NA
Vinyl chloride	UG/KG	NA	NA	NA	NA	NA	NA
Chloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Methylene chloride	UG/KG	NA	NA	NA	NA	NA	NA
Acetone	UG/KG	NA	NA	NA	NA	NA	NA
Carbon Disulfide	UG/KG	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	UG/KG	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(total)	UG/KG	NA	NA	NA	NA	NA	NA
Chloroform	UG/KG	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
2-Butanone	UG/KG	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	UG/KG	NA	NA	NA	NA	NA	NA
Bromodichloromethane	UG/KG	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	UG/KG	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	UG/KG	NA	NA	NA	NA	NA	NA
Trichloroethene	UG/KG	NA	NA	NA	NA	NA	NA
Dibromochloromethane	UG/KG	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Benzene	UG/KG	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	UG/KG	NA	NA	NA	NA	NA	NA
Bromoform	UG/KG	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	UG/KG	NA	NA	NA	NA	NA	NA
2-Hexanone	UG/KG	NA	NA	NA	NA	NA	NA
Tetrachloroethene	UG/KG	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Toluene	UG/KG	NA	NA	NA	NA	NA	NA
Chlorobenzene	UG/KG	NA	NA	NA	NA	NA	NA
Ethylbenzene	UG/KG	NA	NA	NA	NA	NA	NA
Styrene	UG/KG	NA	NA	NA	NA	NA	NA
Xylenes (total)	UG/KG	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:	3-RS-SB06-04	3-RS-SB07-04	3-TA-SB08-04	3-TA-SB10-04	3-TA-SB13-03	3-TA-SB14-02
Laboratory Sample ID:	AC9731	AD0031	AC9586	AC9583	AC9582	AC9580
Date Sampled:	11/15/94	11/17/94	11/14/94	11/14/94	11/15/94	11/14/94
	UNITS					
SEMIVOLATILES						
Phenol	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
bis(2-Chloroethyl) ether	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
2-Chlorophenol	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
1,3-Dichlorobenzene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
1,4-Dichlorobenzene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
1,2-Dichlorobenzene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
2-Methylphenol	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
2,2'-oxybis-(1-chloropropane)	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
4-Methylphenol	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
N-Nitroso-di-n-propylamine	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
Hexachloroethane	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
Nitrobenzene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
Isophorone	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
2-Nitrophenol	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
2,4-Dimethylphenol	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
bis(2-Chloroethoxy) methane	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
2,4-Dichlorophenol	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
1,2,4-Trichlorobenzene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
Naphthalene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
4-Chloroaniline	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
Hexachlorobutadiene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
4-Chloro-3-methylphenol	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
2-Methylnaphthalene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
Hexachlorocyclopentadiene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
2,4,6-Trichlorophenol	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
2,4,5-Trichlorophenol	UG/KG	900 U	880 U	880 U	960 U	950 U	940 U
2-Chloronaphthalene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
2-Nitroaniline	UG/KG	900 U	880 U	880 U	960 U	950 U	940 U
Dimethyl phthalate	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
Acenaphthylene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
2,6-Dinitrotoluene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
3-Nitroaniline	UG/KG	900 U	880 U	880 U	960 U	950 U	940 U
Acenaphthene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-RS-SB06-04	3-RS-SB07-04	3-TA-SB08-04	3-TA-SB10-04	3-TA-SB13-03	3-TA-SB14-02
Laboratory Sample ID:		AC9731	AD0031	AC9586	AC9583	AC9582	AC9580
Date Sampled:		11/15/94	11/17/94	11/14/94	11/14/94	11/15/94	11/14/94
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/KG	900 UJ	880 U	880 U	960 U	950 U	940 U
4-Nitrophenol	UG/KG	900 U	880 U	880 U	960 U	950 U	940 U
Dibenzofuran	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
2,4-Dinitrotoluene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
Diethylphthalate	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
4-Chlorophenyl phenyl ether	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
Fluorene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
4-Nitroaniline	UG/KG	900 U	880 U	880 U	960 U	950 U	940 U
4,6-Dinitro-2-methylphenol	UG/KG	900 U	880 U	880 U	960 U	950 U	940 U
N-nitrosodiphenylamine	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
4-Bromophenyl-phenylether	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
Hexachlorobenzene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
Pentachlorophenol	UG/KG	900 U	880 U	880 U	960 U	950 U	940 U
Phenanthrene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
Anthracene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
Carbazole	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
di-n-Butylphthalate	UG/KG	92 J	360 U	360 U	390 U	390 U	390 U
Fluoranthene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
Pyrene	UG/KG	370 U	61 J	360 U	390 U	390 U	390 U
Butyl benzyl phthalate	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
3,3'-Dichlorobenzidine	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
Benzo[a]anthracene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
Chrysene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
bis(2-Ethylhexyl)phthalate	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
di-n-Octylphthalate	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
Benzo[b]fluoranthene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
Benzo[k]fluoranthene	UG/KG	370 U	360 UJ	360 U	390 U	390 U	390 U
Benzo[a]pyrene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
Indeno[1,2,3-cd]pyrene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
Dibenz[a,h]anthracene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U
Benzo[g,h,i]perylene	UG/KG	370 U	360 U	360 U	390 U	390 U	390 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:	3-RS-SB06-04	3-RS-SB07-04	3-TA-SB08-04	3-TA-SB10-04	3-TA-SB13-03	3-TA-SB14-02
Laboratory Sample ID:	AC9731	AD0031	AC9586	AC9583	AC9582	AC9580
Date Sampled:	11/15/94	11/17/94	11/14/94	11/14/94	11/15/94	11/14/94
PESTICIDES/PCBs	UNITS					
alpha-BHC	UG/KG	NA	NA	NA	NA	NA	NA
beta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
delta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor	UG/KG	NA	NA	NA	NA	NA	NA
Aldrin	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan I	UG/KG	NA	NA	NA	NA	NA	NA
Dieldrin	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDE	UG/KG	NA	NA	NA	NA	NA	NA
Endrin	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan II	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDD	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDT	UG/KG	NA	NA	NA	NA	NA	NA
Methoxychlor	UG/KG	NA	NA	NA	NA	NA	NA
Endrin ketone	UG/KG	NA	NA	NA	NA	NA	NA
Endrin aldehyde	UG/KG	NA	NA	NA	NA	NA	NA
alpha-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
gamma-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
Toxaphene	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1016	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1221	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1232	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1242	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1248	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1254	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1260	UG/KG	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:	3-TA-SB17-04	3-TA-SB18-03	3-TA-SB21-03	3-TA-SB25-02	3-TA-SB29-02	3-TA-SB34-03
Laboratory Sample ID:	AC9729	AC9738	AC9584	AC9579	AC9581	AD0035
Date Sampled:	11/15/94	11/16/94	11/15/94	11/15/94	11/15/94	11/17/94
	UNITS					
VOLATILES						
Chloromethane	UG/KG	NA	NA	NA	NA	NA	NA
Bromomethane	UG/KG	NA	NA	NA	NA	NA	NA
Vinyl chloride	UG/KG	NA	NA	NA	NA	NA	NA
Chloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Methylene chloride	UG/KG	NA	NA	NA	NA	NA	NA
Acetone	UG/KG	NA	NA	NA	NA	NA	NA
Carbon Disulfide	UG/KG	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	UG/KG	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(total)	UG/KG	NA	NA	NA	NA	NA	NA
Chloroform	UG/KG	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
2-Butanone	UG/KG	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	UG/KG	NA	NA	NA	NA	NA	NA
Bromodichloromethane	UG/KG	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	UG/KG	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	UG/KG	NA	NA	NA	NA	NA	NA
Trichloroethene	UG/KG	NA	NA	NA	NA	NA	NA
Dibromochloromethane	UG/KG	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Benzene	UG/KG	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	UG/KG	NA	NA	NA	NA	NA	NA
Bromoform	UG/KG	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	UG/KG	NA	NA	NA	NA	NA	NA
2-Hexanone	UG/KG	NA	NA	NA	NA	NA	NA
Tetrachloroethene	UG/KG	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Toluene	UG/KG	NA	NA	NA	NA	NA	NA
Chlorobenzene	UG/KG	NA	NA	NA	NA	NA	NA
Ethylbenzene	UG/KG	NA	NA	NA	NA	NA	NA
Styrene	UG/KG	NA	NA	NA	NA	NA	NA
Xylenes (total)	UG/KG	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TA-SB17-04	3-TA-SB18-03	3-TA-SB21-03	3-TA-SB25-02	3-TA-SB29-02	3-TA-SB34-03
Laboratory Sample ID:		AC9729	AC9738	AC9584	AC9579	AC9581	AD0035
Date Sampled:		11/15/94	11/16/94	11/15/94	11/15/94	11/15/94	11/17/94
	UNITS						
SEMIVOLATILES							
Phenol	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
bis(2-Chloroethyl) ether	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
2-Chlorophenol	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
1,3-Dichlorobenzene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
1,4-Dichlorobenzene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
1,2-Dichlorobenzene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
2-Methylphenol	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
2,2'-oxybis-(1-chloropropane)	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
4-Methylphenol	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
N-Nitroso-di-n-propylamine	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Hexachloroethane	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Nitrobenzene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Isophorone	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
2-Nitrophenol	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
2,4-Dimethylphenol	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
bis(2-Chloroethoxy) methane	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
2,4-Dichlorophenol	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
1,2,4-Trichlorobenzene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Naphthalene	UG/KG	320 J	420 U	400 U	440 U	400 U	390 U
4-Chloroaniline	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Hexachlorobutadiene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
4-Chloro-3-methylphenol	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
2-Methylnaphthalene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Hexachlorocyclopentadiene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
2,4,6-Trichlorophenol	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
2,4,5-Trichlorophenol	UG/KG	940 U	1000 U	980 U	1100 U	970 U	960 U
2-Chloronaphthalene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
2-Nitroaniline	UG/KG	940 U	1000 U	980 U	1100 U	970 U	960 U
Dimethyl phthalate	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Acenaphthylene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
2,6-Dinitrotoluene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
3-Nitroaniline	UG/KG	940 U	1000 U	980 U	1100 U	970 U	960 U
Acenaphthene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TA-SB17-04	3-TA-SB18-03	3-TA-SB21-03	3-TA-SB25-02	3-TA-SB29-02	3-TA-SB34-03
Laboratory Sample ID:		AC9729	AC9738	AC9584	AC9579	AC9581	AD0035
Date Sampled:		11/15/94	11/16/94	11/15/94	11/15/94	11/15/94	11/17/94
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/KG	940 UJ	1000 UJ	980 U	1100 U	970 U	960 UJ
4-Nitrophenol	UG/KG	940 U	1000 U	980 U	1100 U	970 U	960 UJ
Dibenzofuran	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
2,4-Dinitrotoluene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Diethylphthalate	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
4-Chlorophenyl phenyl ether	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Fluorene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
4-Nitroaniline	UG/KG	940 U	1000 U	980 U	1100 U	970 U	960 U
4,6-Dinitro-2-methylphenol	UG/KG	940 U	1000 U	980 U	1100 U	970 U	960 U
N-nitrosodiphenylamine	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
4-Bromophenyl-phenylether	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Hexachlorobenzene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Pentachlorophenol	UG/KG	940 U	1000 U	980 U	1100 U	970 U	960 U
Phenanthrene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Anthracene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Carbazole	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
di-n-Butylphthalate	UG/KG	110 J	170 J	400 U	440 U	400 U	390 U
Fluoranthene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Pyrene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Butyl benzyl phthalate	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
3,3'-Dichlorobenzidine	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Benzo[a]anthracene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Chrysene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
bis(2-Ethylhexyl)phthalate	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
di-n-Octylphthalate	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Benzo[b]fluoranthene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Benzo[k]fluoranthene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Benzo[a]pyrene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Indeno[1,2,3-cd]pyrene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Dibenz[a,h]anthracene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U
Benzo[g,h,i]perylene	UG/KG	390 U	420 U	400 U	440 U	400 U	390 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TA-SB17-04	3-TA-SB18-03	3-TA-SB21-03	3-TA-SB25-02	3-TA-SB29-02	3-TA-SB34-03
Laboratory Sample ID:		AC9729	AC9738	AC9584	AC9579	AC9581	AD0035
Date Sampled:		11/15/94	11/16/94	11/15/94	11/15/94	11/15/94	11/17/94
	UNITS						
PESTICIDES/PCBs							
alpha-BHC	UG/KG	NA	NA	NA	NA	NA	NA
beta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
delta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor	UG/KG	NA	NA	NA	NA	NA	NA
Aldrin	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan I	UG/KG	NA	NA	NA	NA	NA	NA
Dieldrin	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDE	UG/KG	NA	NA	NA	NA	NA	NA
Endrin	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan II	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDD	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDT	UG/KG	NA	NA	NA	NA	NA	NA
Methoxychlor	UG/KG	NA	NA	NA	NA	NA	NA
Endrin ketone	UG/KG	NA	NA	NA	NA	NA	NA
Endrin aldehyde	UG/KG	NA	NA	NA	NA	NA	NA
alpha-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
gamma-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
Toxaphene	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1016	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1221	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1232	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1242	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1248	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1254	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1260	UG/KG	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:	3-TA-SB36-03	3-TA-SB37-02	3-TA-SB39-04	3-TA-SB41-02	3-TA-SB43-03	03-TA-SB45-02
Laboratory Sample ID:	AD0020	AC9724	AC9578	AC9728	AC9727	AF7158
Date Sampled:	11/17/94	11/15/94	11/15/94	11/15/94	11/15/94	06/15/95
	UNITS					
VOLATILES						
Chloromethane	UG/KG	NA	NA	NA	NA	NA	12 U
Bromomethane	UG/KG	NA	NA	NA	NA	NA	12 U
Vinyl chloride	UG/KG	NA	NA	NA	NA	NA	12 U
Chloroethane	UG/KG	NA	NA	NA	NA	NA	12 U
Methylene chloride	UG/KG	NA	NA	NA	NA	NA	12 U
Acetone	UG/KG	NA	NA	NA	NA	NA	82 U
Carbon Disulfide	UG/KG	NA	NA	NA	NA	NA	12 U
1,1-Dichloroethene	UG/KG	NA	NA	NA	NA	NA	12 U
1,1-Dichloroethane	UG/KG	NA	NA	NA	NA	NA	12 U
1,2-Dichloroethene(total)	UG/KG	NA	NA	NA	NA	NA	12 U
Chloroform	UG/KG	NA	NA	NA	NA	NA	12 U
1,2-Dichloroethane	UG/KG	NA	NA	NA	NA	NA	12 U
2-Butanone	UG/KG	NA	NA	NA	NA	NA	12 U
1,1,1-Trichloroethane	UG/KG	NA	NA	NA	NA	NA	12 U
Carbon tetrachloride	UG/KG	NA	NA	NA	NA	NA	12 U
Bromodichloromethane	UG/KG	NA	NA	NA	NA	NA	12 U
1,2-Dichloropropane	UG/KG	NA	NA	NA	NA	NA	12 U
cis-1,3-Dichloropropene	UG/KG	NA	NA	NA	NA	NA	12 U
Trichloroethene	UG/KG	NA	NA	NA	NA	NA	12 U
Dibromochloromethane	UG/KG	NA	NA	NA	NA	NA	12 U
1,1,2-Trichloroethane	UG/KG	NA	NA	NA	NA	NA	12 U
Benzene	UG/KG	NA	NA	NA	NA	NA	12 U
trans-1,3-Dichloropropene	UG/KG	NA	NA	NA	NA	NA	12 U
Bromoform	UG/KG	NA	NA	NA	NA	NA	12 U
4-Methyl-2-pentanone	UG/KG	NA	NA	NA	NA	NA	12 U
2-Hexanone	UG/KG	NA	NA	NA	NA	NA	12 U
Tetrachloroethene	UG/KG	NA	NA	NA	NA	NA	12 U
1,1,2,2-Tetrachloroethane	UG/KG	NA	NA	NA	NA	NA	12 U
Toluene	UG/KG	NA	NA	NA	NA	NA	12 U
Chlorobenzene	UG/KG	NA	NA	NA	NA	NA	12 U
Ethylbenzene	UG/KG	NA	NA	NA	NA	NA	12 U
Styrene	UG/KG	NA	NA	NA	NA	NA	12 U
Xylenes (total)	UG/KG	NA	NA	NA	NA	NA	12 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:	3-TA-SB36-03	3-TA-SB37-02	3-TA-SB39-04	3-TA-SB41-02	3-TA-SB43-03	03-TA-SB45-02
Laboratory Sample ID:	AD0020	AC9724	AC9578	AC9728	AC9727	AF7158
Date Sampled:	11/17/94	11/15/94	11/15/94	11/15/94	11/15/94	06/15/95
	UNITS					
SEMIVOLATILES						
Phenol	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
bis(2-Chloroethyl) ether	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
2-Chlorophenol	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
1,3-Dichlorobenzene	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
1,4-Dichlorobenzene	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
1,2-Dichlorobenzene	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
2-Methylphenol	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
2,2'-oxybis-(1-chloropropane)	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
4-Methylphenol	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
N-Nitroso-di-n-propylamine	UG/KG	400 U	390 U	390 U	380 U	390 U	390 UJ
Hexachloroethane	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
Nitrobenzene	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
Isophorone	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
2-Nitrophenol	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
2,4-Dimethylphenol	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
bis(2-Chloroethoxy) methane	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
2,4-Dichlorophenol	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
1,2,4-Trichlorobenzene	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
Naphthalene	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
4-Chloroaniline	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
Hexachlorobutadiene	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
4-Chloro-3-methylphenol	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
2-Methylnaphthalene	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
Hexachlorocyclopentadiene	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
2,4,6-Trichlorophenol	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
2,4,5-Trichlorophenol	UG/KG	970 U	950 U	960 U	930 U	940 U	940 U
2-Chloronaphthalene	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
2-Nitroaniline	UG/KG	970 U	950 U	960 U	930 U	940 U	940 U
Dimethyl phthalate	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
Acenaphthylene	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
2,6-Dinitrotoluene	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
3-Nitroaniline	UG/KG	970 U	950 U	960 U	930 U	940 U	940 U
Acenaphthene	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TA-SB36-03	3-TA-SB37-02	3-TA-SB39-04	3-TA-SB41-02	3-TA-SB43-03	03-TA-SB45-02
Laboratory Sample ID:		AD0020	AC9724	AC9578	AC9728	AC9727	AF7158
Date Sampled:		11/17/94	11/15/94	11/15/94	11/15/94	11/15/94	06/15/95
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/KG	970 UJ	950 UJ	960 U	930 UJ	940 UJ	940 U
4-Nitrophenol	UG/KG	970 UJ	950 U	960 U	930 U	940 U	940 U
Dibenzofuran	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
2,4-Dinitrotoluene	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
Diethylphthalate	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
4-Chlorophenyl phenyl ether	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
Fluorene	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
4-Nitroaniline	UG/KG	970 U	950 U	960 U	930 U	940 U	940 U
4,6-Dinitro-2-methylphenol	UG/KG	970 U	950 U	960 U	930 U	940 U	940 U
N-nitrosodiphenylamine	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
4-Bromophenyl-phenylether	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
Hexachlorobenzene	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
Pentachlorophenol	UG/KG	970 U	950 U	960 U	930 U	940 U	940 U
Phenanthrene	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
Anthracene	UG/KG	400 U	390 U	390 U	380 U	42 J	390 U
Carbazole	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
di-n-Butylphthalate	UG/KG	400 U	140 J	390 U	110 J	170 J	390 U
Fluoranthene	UG/KG	400 U	390 U	390 U	380 U	86 J	390 U
Pyrene	UG/KG	400 U	390 U	390 U	380 U	110 J	390 U
Butyl benzyl phthalate	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
3,3'-Dichlorobenzidine	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
Benzo[a]anthracene	UG/KG	400 U	390 U	390 U	380 U	77 J	390 U
Chrysene	UG/KG	400 U	390 U	390 U	380 U	86 J	390 U
bis(2-Ethylhexyl)phthalate	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
di-n-Octylphthalate	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
Benzo[b]fluoranthene	UG/KG	400 U	390 U	390 U	380 U	96 J	390 U
Benzo[k]fluoranthene	UG/KG	400 U	390 U	390 U	380 U	79 J	390 U
Benzo[a]pyrene	UG/KG	400 U	390 U	390 U	380 U	55 J	390 U
Indeno[1,2,3-cd]pyrene	UG/KG	400 U	390 U	390 U	380 U	46 J	390 U
Dibenz[a,h]anthracene	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U
Benzo[g,h,i]perylene	UG/KG	400 U	390 U	390 U	380 U	390 U	390 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:	3-TA-SB36-03	3-TA-SB37-02	3-TA-SB39-04	3-TA-SB41-02	3-TA-SB43-03	03-TA-SB45-02
Laboratory Sample ID:	AD0020	AC9724	AC9578	AC9728	AC9727	AF7158
Date Sampled:	11/17/94	11/15/94	11/15/94	11/15/94	11/15/94	06/15/95
PESTICIDES/PCBs	UNITS					
alpha-BHC	UG/KG	NA	NA	NA	NA	NA	NA
beta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
delta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor	UG/KG	NA	NA	NA	NA	NA	NA
Aldrin	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan I	UG/KG	NA	NA	NA	NA	NA	NA
Dieldrin	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDE	UG/KG	NA	NA	NA	NA	NA	NA
Endrin	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan II	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDD	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDT	UG/KG	NA	NA	NA	NA	NA	NA
Methoxychlor	UG/KG	NA	NA	NA	NA	NA	NA
Endrin ketone	UG/KG	NA	NA	NA	NA	NA	NA
Endrin aldehyde	UG/KG	NA	NA	NA	NA	NA	NA
alpha-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
gamma-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
Toxaphene	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1016	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1221	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1232	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1242	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1248	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1254	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1260	UG/KG	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 11
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		03-TA-SB46-02	03-TA-SB47-02	03-TA-SB48-04	03-TA-SB49-04	03-TA-SB50-04
Laboratory Sample ID:		AF7313	AF7162	AF7005	AF7009	AF7013
Date Sampled:		06/18/95	06/15/95	06/15/95	06/15/95	06/15/95
	UNITS					
VOLATILES						
Chloromethane	UG/KG	11 U	12 U	12 U	12 U	12 U
Bromomethane	UG/KG	11 U	12 U	12 U	12 U	12 U
Vinyl chloride	UG/KG	11 U	12 U	12 U	12 U	12 U
Chloroethane	UG/KG	11 U	12 U	12 U	12 U	12 U
Methylene chloride	UG/KG	11 U	12 U	12 U	12 U	12 U
Acetone	UG/KG	11 U	15 U	27 UJ	21 UJ	58 UJ
Carbon Disulfide	UG/KG	11 U	12 U	12 U	12 U	12 U
1,1-Dichloroethene	UG/KG	11 U	12 U	12 U	12 U	12 U
1,1-Dichloroethane	UG/KG	11 U	12 U	12 U	12 U	12 U
1,2-Dichloroethene(total)	UG/KG	11 U	12 U	12 U	12 U	12 U
Chloroform	UG/KG	11 U	12 U	12 U	12 U	12 U
1,2-Dichloroethane	UG/KG	11 U	12 U	12 U	12 U	12 U
2-Butanone	UG/KG	11 U	12 U	12 U	12 U	12 U
1,1,1-Trichloroethane	UG/KG	11 U	12 U	12 U	12 U	12 U
Carbon tetrachloride	UG/KG	11 U	12 U	12 U	12 U	12 U
Bromodichloromethane	UG/KG	11 U	12 U	12 U	12 U	12 U
1,2-Dichloropropane	UG/KG	11 U	12 U	12 U	12 U	12 U
cis-1,3-Dichloropropene	UG/KG	11 U	12 U	12 U	12 U	12 U
Trichloroethene	UG/KG	11 U	12 U	12 U	12 U	12 U
Dibromochloromethane	UG/KG	11 U	12 U	12 U	12 U	12 U
1,1,2-Trichloroethane	UG/KG	11 U	12 U	12 U	12 U	12 U
Benzene	UG/KG	11 U	12 U	2 J	12 U	12 U
trans-1,3-Dichloropropene	UG/KG	11 U	12 U	12 U	12 U	12 U
Bromoform	UG/KG	11 U	12 U	12 U	12 U	12 U
4-Methyl-2-pentanone	UG/KG	11 U	12 U	12 U	12 U	12 U
2-Hexanone	UG/KG	11 U	12 U	12 U	12 U	12 U
Tetrachloroethene	UG/KG	11 U	12 U	12 U	12 U	12 U
1,1,2,2-Tetrachloroethane	UG/KG	11 U	12 U	12 UJ	12 UJ	12 UJ
Toluene	UG/KG	11 U	12 U	11 J	13	3 J
Chlorobenzene	UG/KG	11 U	12 U	12 U	12 U	12 U
Ethylbenzene	UG/KG	11 U	12 U	15	110	9 J
Styrene	UG/KG	11 U	12 U	4 J	12 U	12 U
Xylenes (total)	UG/KG	11 U	12 U	40	300	22

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 11
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		03-TA-SB46-02	03-TA-SB47-02	03-TA-SB48-04	03-TA-SB49-04	03-TA-SB50-04
Laboratory Sample ID:		AF7313	AF7162	AF7005	AF7009	AF7013
Date Sampled:		06/18/95	06/15/95	06/15/95	06/15/95	06/15/95
	UNITS					
SEMIVOLATILES						
Phenol	UG/KG	370 U	390 U	7200 J	3900 U	4000 U
bis(2-Chloroethyl) ether	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
2-Chlorophenol	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
1,3-Dichlorobenzene	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
1,4-Dichlorobenzene	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
1,2-Dichlorobenzene	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
2-Methylphenol	UG/KG	370 U	390 U	2000 J	3900 U	4000 U
2,2'-oxybis-(1-chloropropane)	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
4-Methylphenol	UG/KG	370 U	390 U	5900 J	3900 U	4000 U
N-Nitroso-di-n-propylamine	UG/KG	370 UJ	390 UJ	10000 UJ	3900 UJ	4000 UJ
Hexachloroethane	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
Nitrobenzene	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
Isophorone	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
2-Nitrophenol	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
2,4-Dimethylphenol	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
bis(2-Chloroethoxy) methane	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
2,4-Dichlorophenol	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
1,2,4-Trichlorobenzene	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
Naphthalene	UG/KG	370 U	390 U	95000 J	24000	62000
4-Chloroaniline	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
Hexachlorobutadiene	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
4-Chloro-3-methylphenol	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
2-Methylnaphthalene	UG/KG	370 U	390 U	31000 J	8300	10000
Hexachlorocyclopentadiene	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
2,4,6-Trichlorophenol	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
2,4,5-Trichlorophenol	UG/KG	910 U	950 U	25000 UJ	9400 U	9700 U
2-Chloronaphthalene	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
2-Nitroaniline	UG/KG	910 U	950 U	25000 UJ	9400 U	9700 U
Dimethyl phthalate	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
Acenaphthylene	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
2,6-Dinitrotoluene	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
3-Nitroaniline	UG/KG	910 U	950 U	25000 UJ	9400 U	9700 U
Acenaphthene	UG/KG	370 U	390 U	47000 J	17000	32000

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 11
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		03-TA-SB46-02	03-TA-SB47-02	03-TA-SB48-04	03-TA-SB49-04	03-TA-SB50-04
Laboratory Sample ID:		AF7313	AF7162	AF7005	AF7009	AF7013
Date Sampled:		06/18/95	06/15/95	06/15/95	06/15/95	06/15/95
	UNITS					
SEMIVOLATILES Cont.						
2,4-Dinitrophenol	UG/KG	910 U	950 U	25000 UJ	9400 U	9700 U
4-Nitrophenol	UG/KG	910 U	950 U	25000 UJ	9400 U	570 J
Dibenzofuran	UG/KG	370 U	390 U	36000 J	11000	19000
2,4-Dinitrotoluene	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
Diethylphthalate	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
4-Chlorophenyl phenyl ether	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
Fluorene	UG/KG	370 U	390 U	35000 J	13000	20000
4-Nitroaniline	UG/KG	910 U	950 U	25000 UJ	9400 U	9700 U
4,6-Dinitro-2-methylphenol	UG/KG	910 U	950 U	25000 UJ	9400 U	9700 U
N-nitrosodiphenylamine	UG/KG	370 U	390 U	1100 J	3900 U	400 J
4-Bromophenyl-phenylether	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
Hexachlorobenzene	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
Pentachlorophenol	UG/KG	910 U	950 U	25000 UJ	9400 U	9700 U
Phenanthrene	UG/KG	370 U	390 U	110000 J	42000	110000
Anthracene	UG/KG	370 U	390 U	12000 J	3300 J	7000
Carbazole	UG/KG	370 U	390 U	4200 J	3300 J	4900
di-n-Butylphthalate	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
Fluoranthene	UG/KG	370 U	390 U	53000 J	17000	66000
Pyrene	UG/KG	370 U	390 U	38000 J	12000	30000
Butyl benzyl phthalate	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
3,3'-Dichlorobenzidine	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
Benzo[a]anthracene	UG/KG	370 U	390 U	7500 J	2900 J	8000
Chrysene	UG/KG	370 U	390 U	8400 J	2800 J	5700
bis(2-Ethylhexyl)phthalate	UG/KG	370 U	53 J	10000 UJ	3900 U	4000 U
di-n-Octylphthalate	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
Benzo[b]fluoranthene	UG/KG	370 U	390 U	3500 J	1000 J	3000 J
Benzo[k]fluoranthene	UG/KG	370 U	390 U	3100 J	1400 J	3300 J
Benzo[a]pyrene	UG/KG	370 U	390 U	3300 J	1100 J	2600 J
Indeno[1,2,3-cd]pyrene	UG/KG	370 U	390 U	3100 J	3900 U	770 J
Dibenz[a,h]anthracene	UG/KG	370 U	390 U	10000 UJ	3900 U	4000 U
Benzo[g,h,i]perylene	UG/KG	370 U	390 U	1200 J	3900 U	4000 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 11
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		03-TA-SB46-02	03-TA-SB47-02	03-TA-SB48-04	03-TA-SB49-04	03-TA-SB50-04
Laboratory Sample ID:		AF7313	AF7162	AF7005	AF7009	AF7013
Date Sampled:		06/18/95	06/15/95	06/15/95	06/15/95	06/15/95
	UNITS					
PESTICIDES/PCBs						
alpha-BHC	UG/KG	NA	NA	NA	NA	NA
beta-BHC	UG/KG	NA	NA	NA	NA	NA
delta-BHC	UG/KG	NA	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/KG	NA	NA	NA	NA	NA
Heptachlor	UG/KG	NA	NA	NA	NA	NA
Aldrin	UG/KG	NA	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	NA	NA
Endosulfan I	UG/KG	NA	NA	NA	NA	NA
Dieldrin	UG/KG	NA	NA	NA	NA	NA
4,4'-DDE	UG/KG	NA	NA	NA	NA	NA
Endrin	UG/KG	NA	NA	NA	NA	NA
Endosulfan II	UG/KG	NA	NA	NA	NA	NA
4,4'-DDD	UG/KG	NA	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	NA	NA
4,4'-DDT	UG/KG	NA	NA	NA	NA	NA
Methoxychlor	UG/KG	NA	NA	NA	NA	NA
Endrin ketone	UG/KG	NA	NA	NA	NA	NA
Endrin aldehyde	UG/KG	NA	NA	NA	NA	NA
alpha-Chlordane	UG/KG	NA	NA	NA	NA	NA
gamma-Chlordane	UG/KG	NA	NA	NA	NA	NA
Toxaphene	UG/KG	NA	NA	NA	NA	NA
Aroclor 1016	UG/KG	NA	NA	NA	NA	NA
Aroclor 1221	UG/KG	NA	NA	NA	NA	NA
Aroclor 1232	UG/KG	NA	NA	NA	NA	NA
Aroclor 1242	UG/KG	NA	NA	NA	NA	NA
Aroclor 1248	UG/KG	NA	NA	NA	NA	NA
Aroclor 1254	UG/KG	NA	NA	NA	NA	NA
Aroclor 1260	UG/KG	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 11
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
VOLATILES							
Chloromethane	UG/KG	11 U	12 U	ND	ND		0/18
Bromomethane	UG/KG	11 U	12 U	ND	ND		0/18
Vinyl chloride	UG/KG	11 U	12 U	ND	ND		0/18
Chloroethane	UG/KG	11 U	12 U	ND	ND		0/18
Methylene chloride	UG/KG	11 U	12 U	ND	ND		0/18
Acetone	UG/KG	11 U	92 UJ	120	120	03-NA-SB17A-02	1/18
Carbon Disulfide	UG/KG	11 U	12 U	1 J	1 J	03-MW12-02	1/18
1,1-Dichloroethene	UG/KG	11 U	12 U	ND	ND		0/18
1,1-Dichloroethane	UG/KG	11 U	12 U	ND	ND		0/18
1,2-Dichloroethene(total)	UG/KG	11 UJ	12 U	ND	ND		0/18
Chloroform	UG/KG	11 U	12 UJ	3 J	3 J	03-MW11IW-08	1/18
1,2-Dichloroethane	UG/KG	11 U	12 UJ	ND	ND		0/18
2-Butanone	UG/KG	11 U	12 U	3 J	3 J	03-NA-SB19-02	1/18
1,1,1-Trichloroethane	UG/KG	11 U	12 U	ND	ND		0/18
Carbon tetrachloride	UG/KG	11 U	12 U	ND	ND		0/18
Bromodichloromethane	UG/KG	11 U	12 U	ND	ND		0/18
1,2-Dichloropropane	UG/KG	11 U	12 U	ND	ND		0/18
cis-1,3-Dichloropropene	UG/KG	11 U	12 U	ND	ND		0/18
Trichloroethene	UG/KG	11 U	12 U	ND	ND		0/18
Dibromochloromethane	UG/KG	11 U	12 U	ND	ND		0/18
1,1,2-Trichloroethane	UG/KG	11 U	12 U	ND	ND		0/18
Benzene	UG/KG	11 U	12 U	2 J	2 J	03-TA-SB48-04	2/18
trans-1,3-Dichloropropene	UG/KG	11 U	12 U	ND	ND		0/18
Bromoform	UG/KG	11 U	12 U	ND	ND		0/18
4-Methyl-2-pentanone	UG/KG	11 U	12 U	ND	ND		0/18
2-Hexanone	UG/KG	11 U	12 U	ND	ND		0/18
Tetrachloroethene	UG/KG	11 U	12 U	ND	ND		0/18
1,1,2,2-Tetrachloroethane	UG/KG	11 U	12 U	ND	ND		0/18
Toluene	UG/KG	11 U	12 U	3 J	13	03-TA-SB49-04	4/18
Chlorobenzene	UG/KG	11 U	12 U	ND	ND		0/18
Ethylbenzene	UG/KG	11 U	12 U	3 J	110	03-TA-SB49-04	4/18
Styrene	UG/KG	11 U	12 U	4 J	5 J	03-MW09-02	2/18
Xylenes (total)	UG/KG	11 U	12 U	7 J	300	03-TA-SB49-04	4/18

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 11
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
SEMIVOLATILES							
Phenol	UG/KG	360 U	4000 U	7200 J	7200 J	03-TA-SB48-04	1/47
bis(2-Chloroethyl) ether	UG/KG	360 U	10000 UJ	ND	ND		0/47
2-Chlorophenol	UG/KG	360 U	10000 UJ	ND	ND		0/47
1,3-Dichlorobenzene	UG/KG	360 U	10000 UJ	ND	ND		0/47
1,4-Dichlorobenzene	UG/KG	360 U	10000 UJ	ND	ND		0/47
1,2-Dichlorobenzene	UG/KG	360 U	10000 UJ	ND	ND		0/47
2-Methylphenol	UG/KG	360 U	4000 U	2000 J	2000 J	03-TA-SB48-04	1/47
2,2'-oxybis-(1-chloropropane)	UG/KG	360 U	10000 UJ	ND	ND		0/47
4-Methylphenol	UG/KG	360 U	4000 U	5900 J	5900 J	03-TA-SB48-04	1/47
N-Nitroso-di-n-propylamine	UG/KG	360 U	10000 UJ	ND	ND		0/47
Hexachloroethane	UG/KG	360 U	10000 UJ	ND	ND		0/47
Nitrobenzene	UG/KG	360 U	10000 UJ	ND	ND		0/47
Isophorone	UG/KG	360 U	10000 UJ	ND	ND		0/47
2-Nitrophenol	UG/KG	360 U	10000 UJ	ND	ND		0/47
2,4-Dimethylphenol	UG/KG	360 U	10000 UJ	ND	ND		0/47
bis(2-Chloroethoxy) methane	UG/KG	360 U	10000 UJ	ND	ND		0/47
2,4-Dichlorophenol	UG/KG	360 U	10000 UJ	ND	ND		0/47
1,2,4-Trichlorobenzene	UG/KG	360 U	10000 UJ	ND	ND		0/47
Naphthalene	UG/KG	360 U	440 U	55 J	95000 J	03-TA-SB48-04	9/47
4-Chloroaniline	UG/KG	360 U	10000 UJ	ND	ND		0/47
Hexachlorobutadiene	UG/KG	360 U	10000 UJ	ND	ND		0/47
4-Chloro-3-methylphenol	UG/KG	360 U	10000 UJ	ND	ND		0/47
2-Methylnaphthalene	UG/KG	360 U	440 U	100 J	31000 J	03-TA-SB48-04	6/47
Hexachlorocyclopentadiene	UG/KG	360 U	10000 UJ	ND	ND		0/47
2,4,6-Trichlorophenol	UG/KG	360 U	10000 UJ	ND	ND		0/47
2,4,5-Trichlorophenol	UG/KG	860 U	25000 UJ	ND	ND		0/47
2-Chloronaphthalene	UG/KG	360 U	10000 UJ	ND	ND		0/47
2-Nitroaniline	UG/KG	860 U	25000 UJ	ND	ND		0/47
Dimethyl phthalate	UG/KG	360 U	10000 UJ	ND	ND		0/47
Acenaphthylene	UG/KG	360 U	10000 UJ	190 J	190 J	3-MW02IW-09	1/47
2,6-Dinitrotoluene	UG/KG	360 U	10000 UJ	ND	ND		0/47
3-Nitroaniline	UG/KG	860 U	25000 UJ	ND	ND		0/47
Acenaphthene	UG/KG	360 U	440 U	560	47000 J	03-TA-SB48-04	6/47

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 11
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/KG	860 UJ	25000 UJ	ND	ND		0/47
4-Nitrophenol	UG/KG	860 U	25000 UJ	570 J	570 J	03-TA-SB50-04	1/47
Dibenzofuran	UG/KG	360 U	440 U	440	36000 J	03-TA-SB48-04	6/47
2,4-Dinitrotoluene	UG/KG	360 U	10000 UJ	ND	ND		0/47
Diethylphthalate	UG/KG	360 U	10000 UJ	ND	ND		0/47
4-Chlorophenyl phenyl ether	UG/KG	360 U	10000 UJ	ND	ND		0/47
Fluorene	UG/KG	360 U	440 U	710	35000 J	03-TA-SB48-04	6/47
4-Nitroaniline	UG/KG	860 U	25000 UJ	ND	ND		0/47
4,6-Dinitro-2-methylphenol	UG/KG	860 U	25000 UJ	ND	ND		0/47
N-nitrosodiphenylamine	UG/KG	360 U	3900 U	400 J	1100 J	03-TA-SB48-04	2/47
4-Bromophenyl-phenylether	UG/KG	360 U	10000 UJ	ND	ND		0/47
Hexachlorobenzene	UG/KG	360 U	10000 UJ	ND	ND		0/47
Pentachlorophenol	UG/KG	860 U	25000 UJ	ND	ND		0/47
Phenanthrene	UG/KG	360 U	440 U	61 J	110000 J	03-TA-SB50-04	8/47
Anthracene	UG/KG	360 U	440 U	42 J	12000 J	03-TA-SB48-04	7/47
Carbazole	UG/KG	360 U	440 U	200 J	4900	03-TA-SB50-04	6/47
di-n-Butylphthalate	UG/KG	360 U	10000 UJ	39 J	170 J	3-TA-SB43-03	18/47
Fluoranthene	UG/KG	360 U	11000 U	51 J	66000	03-TA-SB50-04	7/47
Pyrene	UG/KG	360 U	440 U	43 J	38000 J	03-TA-SB48-04	10/47
Butyl benzyl phthalate	UG/KG	360 U	10000 UJ	ND	ND		0/47
3,3'-Dichlorobenzidine	UG/KG	360 U	10000 UJ	ND	ND		0/47
Benzo[a]anthracene	UG/KG	360 U	440 U	77 J	8000	03-TA-SB50-04	7/47
Chrysene	UG/KG	360 U	440 U	86 J	8400 J	03-TA-SB48-04	7/47
bis(2-Ethylhexyl)phthalate	UG/KG	360 U	10000 UJ	53 J	240 J	03-MW11IW-08	2/47
di-n-Octylphthalate	UG/KG	360 U	10000 UJ	ND	ND		0/47
Benzo[b]fluoranthene	UG/KG	360 U	440 U	96 J	3500 J	03-TA-SB48-04	7/47
Benzo[k]fluoranthene	UG/KG	360 U	440 U	79 J	3300 J	03-TA-SB50-04	6/47
Benzo[a]pyrene	UG/KG	360 U	440 U	55 J	3300 J	03-TA-SB48-04	7/47
Indeno[1,2,3-cd]pyrene	UG/KG	360 U	3900 U	46 J	3100 J	03-TA-SB48-04	5/47
Dibenz[a,h]anthracene	UG/KG	360 U	10000 UJ	ND	ND		0/47
Benzo[g,h,i]perylene	UG/KG	360 U	4000 U	71 J	1200 J	03-TA-SB48-04	4/47

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 11
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:		MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
	UNITS						
PESTICIDES/PCBs							
alpha-BHC	UG/KG	1.9 U	1.9 U	ND	ND		0/2
beta-BHC	UG/KG	1.9 U	1.9 U	ND	ND		0/2
delta-BHC	UG/KG	1.9 U	1.9 U	ND	ND		0/2
Lindane (gamma-BHC)	UG/KG	1.9 U	1.9 U	ND	ND		0/2
Heptachlor	UG/KG	1.9 U	1.9 U	ND	ND		0/2
Aldrin	UG/KG	1.9 U	1.9 U	ND	ND		0/2
Heptachlor epoxide	UG/KG	1.9 U	1.9 U	ND	ND		0/2
Endosulfan I	UG/KG	1.9 U	1.9 U	ND	ND		0/2
Dieldrin	UG/KG	3.7 U	3.8 U	ND	ND		0/2
4,4'-DDE	UG/KG	3.7 U	3.8 U	ND	ND		0/2
Endrin	UG/KG	3.7 U	3.8 U	ND	ND		0/2
Endosulfan II	UG/KG	3.7 U	3.8 U	ND	ND		0/2
4,4'-DDD	UG/KG	3.7 U	3.8 U	ND	ND		0/2
Endosulfan sulfate	UG/KG	3.7 U	3.8 U	ND	ND		0/2
4,4'-DDT	UG/KG	3.7 U	3.8 U	ND	ND		0/2
Methoxychlor	UG/KG	19 U	19 U	ND	ND		0/2
Endrin ketone	UG/KG	3.7 U	3.8 U	ND	ND		0/2
Endrin aldehyde	UG/KG	3.7 U	3.8 U	ND	ND		0/2
alpha-Chlordane	UG/KG	1.9 U	1.9 U	ND	ND		0/2
gamma-Chlordane	UG/KG	1.9 U	1.9 U	ND	ND		0/2
Toxaphene	UG/KG	190 U	190 U	ND	ND		0/2
Aroclor 1016	UG/KG	37 U	38 U	ND	ND		0/2
Aroclor 1221	UG/KG	75 U	77 U	ND	ND		0/2
Aroclor 1232	UG/KG	37 U	38 U	ND	ND		0/2
Aroclor 1242	UG/KG	37 U	38 U	ND	ND		0/2
Aroclor 1248	UG/KG	37 U	38 U	ND	ND		0/2
Aroclor 1254	UG/KG	37 U	38 U	ND	ND		0/2
Aroclor 1260	UG/KG	37 U	38 U	ND	ND		0/2

APPENDIX H.4
SUBSURFACE SOIL - INORGANICS

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL INORGANICS

Client Sample ID:	3-MW02IW-03	3-MW05-10
Laboratory Sample ID:	AC9764	AD0558
Date Sampled:	11/16/94	11/19/94

	UNITS		
Aluminum	MG/KG	6570	3950
Antimony	MG/KG	11.5 U	11.6 U
Arsenic	MG/KG	2.3 U	2.3 U
Barium	MG/KG	6.6 J	4.6 J
Beryllium	MG/KG	0.23 U	0.23 U
Cadmium	MG/KG	1.1 U	1.2 U
Calcium	MG/KG	638	77.4
Chromium	MG/KG	7.5	3.7
Cobalt	MG/KG	2.3 U	2.3 U
Copper	MG/KG	2.3 U	2.3 U
Iron	MG/KG	1030	734
Lead	MG/KG	5.7 J	3.4 U
Magnesium	MG/KG	112	104
Manganese	MG/KG	2.8 J	5.4 UJ
Mercury	MG/KG	0.12 U	0.12 U
Nickel	MG/KG	4.6 U	4.7 U
Potassium	MG/KG	230 U	233 U
Selenium	MG/KG	1.1 U	1.2 U
Silver	MG/KG	1.1 U	1.2 U
Sodium	MG/KG	23 U	27.3 U
Thallium	MG/KG	2.3 UJ	2.3 U
Vanadium	MG/KG	5	3.7
Zinc	MG/KG	6.5 UJ	7.5 UJ
Moisture	%	13.92	14.09

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL INORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
Aluminum	MG/KG	NA	NA	3950	6570	3-MW02IW-03	2/2
Antimony	MG/KG	11.5 U	11.6 U	ND	ND		0/2
Arsenic	MG/KG	2.3 U	2.3 U	ND	ND		0/2
Barium	MG/KG	NA	NA	4.6 J	6.6 J	3-MW02IW-03	2/2
Beryllium	MG/KG	0.23 U	0.23 U	ND	ND		0/2
Cadmium	MG/KG	1.1 U	1.2 U	ND	ND		0/2
Calcium	MG/KG	NA	NA	77.4	638	3-MW02IW-03	2/2
Chromium	MG/KG	NA	NA	3.7	7.5	3-MW02IW-03	2/2
Cobalt	MG/KG	2.3 U	2.3 U	ND	ND		0/2
Copper	MG/KG	2.3 U	2.3 U	ND	ND		0/2
Iron	MG/KG	NA	NA	734	1030	3-MW02IW-03	2/2
Lead	MG/KG	3.4 U	3.4 U	5.7 J	5.7 J	3-MW02IW-03	1/2
Magnesium	MG/KG	NA	NA	104	112	3-MW02IW-03	2/2
Manganese	MG/KG	5.4 UJ	5.4 UJ	2.8 J	2.8 J	3-MW02IW-03	1/2
Mercury	MG/KG	0.12 U	0.12 U	ND	ND		0/2
Nickel	MG/KG	4.6 U	4.7 U	ND	ND		0/2
Potassium	MG/KG	230 U	233 U	ND	ND		0/2
Selenium	MG/KG	1.1 U	1.2 U	ND	ND		0/2
Silver	MG/KG	1.1 U	1.2 U	ND	ND		0/2
Sodium	MG/KG	23 U	27.3 U	ND	ND		0/2
Thallium	MG/KG	2.3 UJ	2.3 UJ	ND	ND		0/2
Vanadium	MG/KG	NA	NA	3.7	5	3-MW02IW-03	2/2
Zinc	MG/KG	6.5 UJ	7.5 UJ	ND	ND		0/2
Moisture	%						

APPENDIX H.5
ROUND I GROUNDWATER - ORGANICS

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-MW02-01	3-MW02DW-01	3-MW03-01	3-MW04-01	3-MW05-01	3-MW06-01
Laboratory Sample ID:		AD1965	AD2155	AD1956	AD1962	AD1971	AD1968
Date Sampled:		12/02/94	12/03/94	12/02/94	12/02/94	12/02/94	12/01/94
	UNITS						
VOLATILES							
Chloromethane	UG/L	NA	10 UJ	NA	NA	NA	NA
Bromomethane	UG/L	NA	10 UJ	NA	NA	NA	NA
Vinyl chloride	UG/L	NA	10 UJ	NA	NA	NA	NA
Chloroethane	UG/L	NA	10 UJ	NA	NA	NA	NA
Methylene chloride	UG/L	NA	10 UJ	NA	NA	NA	NA
Acetone	UG/L	NA	12 UJ	NA	NA	NA	NA
Carbon Disulfide	UG/L	NA	10 UJ	NA	NA	NA	NA
1,1-Dichloroethene	UG/L	NA	10 UJ	NA	NA	NA	NA
1,1-Dichloroethane	UG/L	NA	10 UJ	NA	NA	NA	NA
1,2-Dichloroethene(total)	UG/L	NA	10 UJ	NA	NA	NA	NA
Chloroform	UG/L	NA	10 UJ	NA	NA	NA	NA
1,2-Dichloroethane	UG/L	NA	10 UJ	NA	NA	NA	NA
2-Butanone	UG/L	NA	10 UJ	NA	NA	NA	NA
1,1,1-Trichloroethane	UG/L	NA	10 UJ	NA	NA	NA	NA
Carbon tetrachloride	UG/L	NA	10 UJ	NA	NA	NA	NA
Bromodichloromethane	UG/L	NA	10 UJ	NA	NA	NA	NA
1,2-Dichloropropane	UG/L	NA	10 UJ	NA	NA	NA	NA
cis-1,3-Dichloropropene	UG/L	NA	10 UJ	NA	NA	NA	NA
Trichloroethene	UG/L	NA	10 UJ	NA	NA	NA	NA
Dibromochloromethane	UG/L	NA	10 UJ	NA	NA	NA	NA
1,1,2-Trichloroethane	UG/L	NA	10 UJ	NA	NA	NA	NA
Benzene	UG/L	NA	11 J	NA	NA	NA	NA
trans-1,3-Dichloropropene	UG/L	NA	10 UJ	NA	NA	NA	NA
Bromoform	UG/L	NA	10 UJ	NA	NA	NA	NA
4-Methyl-2-pentanone	UG/L	NA	10 UJ	NA	NA	NA	NA
2-Hexanone	UG/L	NA	10 UJ	NA	NA	NA	NA
Tetrachloroethene	UG/L	NA	10 UJ	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	UG/L	NA	10 UJ	NA	NA	NA	NA
Toluene	UG/L	NA	4 J	NA	NA	NA	NA
Chlorobenzene	UG/L	NA	10 UJ	NA	NA	NA	NA
Ethylbenzene	UG/L	NA	10 UJ	NA	NA	NA	NA
Styrene	UG/L	NA	10 UJ	NA	NA	NA	NA
Xylenes (total)	UG/L	NA	7 J	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-MW02-01	3-MW02DW-01	3-MW03-01	3-MW04-01	3-MW05-01	3-MW06-01
Laboratory Sample ID:		AD1965	AD2155	AD1956	AD1962	AD1971	AD1968
Date Sampled:		12/02/94	12/03/94	12/02/94	12/02/94	12/02/94	12/01/94
	UNITS						
SEMIVOLATILES							
Phenol	UG/L	3 J	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl) ether	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol	UG/L	1 J	10 U	10 UJ	10 UJ	10 UJ	10 UJ
2,2'-oxybis-(1-chloropropane)	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	UG/L	3 J	10 U	10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	UG/L	2 J	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy) methane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	UG/L	64	3 J	10 U	10 U	10 U	6 J
4-Chloroaniline	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	UG/L	65	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	UG/L	10 UJ	10 U	10 UJ	10 UJ	10 UJ	10 UJ
2,4,6-Trichlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
2-Chloronaphthalene	UG/L	65 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
Dimethyl phthalate	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	UG/L	3 J	3 J	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
Acenaphthene	UG/L	280	95	10 U	10 U	10 U	2 J

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-MW02-01	3-MW02DW-01	3-MW03-01	3-MW04-01	3-MW05-01	3-MW06-01
Laboratory Sample ID:		AD1965	AD2155	AD1956	AD1962	AD1971	AD1968
Date Sampled:		12/02/94	12/03/94	12/02/94	12/02/94	12/02/94	12/01/94
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/L	25 UJ	25 U	25 UJ	25 UJ	25 UJ	25 UJ
4-Nitrophenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
Dibenzofuran	UG/L	230	57	10 U	10 U	10 U	2 J
2,4-Dinitrotoluene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	UG/L	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Fluorene	UG/L	210	59	10 U	10 U	10 U	1 J
4-Nitroaniline	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
N-nitrosodiphenylamine	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	UG/L	10 UJ	10 U	10 UJ	10 UJ	10 UJ	10 UJ
Pentachlorophenol	UG/L	25 U	25 U	25 U	25 U	25 U	25 U
Phenanthrene	UG/L	410	75	10 U	10 U	10 U	10 U
Anthracene	UG/L	33	5 J	10 U	10 U	10 U	10 U
Carbazole	UG/L	39 J	10 U	10 U	10 U	10 U	10 U
di-n-Butylphthalate	UG/L	1 J	10 U	10 U	10 U	10 U	10 U
Fluoranthene	UG/L	100	10	10 U	10 U	10 U	10 U
Pyrene	UG/L	58	7 J	10 U	10 U	10 U	10 U
Butyl benzyl phthalate	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[a]anthracene	UG/L	8 J	10 U	10 U	10 U	10 U	10 U
Chrysene	UG/L	8 J	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
di-n-Octylphthalate	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[b]fluoranthene	UG/L	3 J	10 U	10 U	10 U	10 U	10 U
Benzo[k]fluoranthene	UG/L	3 J	10 UJ	10 U	10 U	10 U	10 U
Benzo[a]pyrene	UG/L	3 J	10 U	10 U	10 U	10 U	10 U
Indeno[1,2,3-cd]pyrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Dibenz[a,h]anthracene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[g,h,i]perylene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-MW02-01	3-MW02DW-01	3-MW03-01	3-MW04-01	3-MW05-01	3-MW06-01
Laboratory Sample ID:		AD1965	AD2155	AD1956	AD1962	AD1971	AD1968
Date Sampled:		12/02/94	12/03/94	12/02/94	12/02/94	12/02/94	12/01/94
	UNITS						
PESTICIDES/PCBs							
alpha-BHC	UG/L	NA	0.05 UJ	NA	NA	NA	NA
beta-BHC	UG/L	NA	0.05 UJ	NA	NA	NA	NA
delta-BHC	UG/L	NA	0.05 UJ	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/L	NA	0.05 UJ	NA	NA	NA	NA
Heptachlor	UG/L	NA	0.05 UJ	NA	NA	NA	NA
Aldrin	UG/L	NA	0.05 UJ	NA	NA	NA	NA
Heptachlor epoxide	UG/L	NA	0.05 UJ	NA	NA	NA	NA
Endosulfan I	UG/L	NA	0.05 UJ	NA	NA	NA	NA
Dieldrin	UG/L	NA	0.1 UJ	NA	NA	NA	NA
4,4'-DDE	UG/L	NA	0.1 UJ	NA	NA	NA	NA
Endrin	UG/L	NA	0.1 UJ	NA	NA	NA	NA
Endosulfan II	UG/L	NA	0.1 UJ	NA	NA	NA	NA
4,4'-DDD	UG/L	NA	0.1 UJ	NA	NA	NA	NA
Endosulfan sulfate	UG/L	NA	0.1 UJ	NA	NA	NA	NA
4,4'-DDT	UG/L	NA	0.1 UJ	NA	NA	NA	NA
Methoxychlor	UG/L	NA	0.5 UJ	NA	NA	NA	NA
Endrin ketone	UG/L	NA	0.1 UJ	NA	NA	NA	NA
Endrin aldehyde	UG/L	NA	0.1 UJ	NA	NA	NA	NA
alpha-Chlordane	UG/L	NA	0.05 UJ	NA	NA	NA	NA
gamma-Chlordane	UG/L	NA	0.05 UJ	NA	NA	NA	NA
Toxaphene	UG/L	NA	5 UJ	NA	NA	NA	NA
Aroclor 1016	UG/L	NA	1 UJ	NA	NA	NA	NA
Aroclor 1221	UG/L	NA	2 UJ	NA	NA	NA	NA
Aroclor 1232	UG/L	NA	1 UJ	NA	NA	NA	NA
Aroclor 1242	UG/L	NA	1 UJ	NA	NA	NA	NA
Aroclor 1248	UG/L	NA	1 UJ	NA	NA	NA	NA
Aroclor 1254	UG/L	NA	1 UJ	NA	NA	NA	NA
Aroclor 1260	UG/L	NA	1 UJ	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-MW07-01	3-MW08-01
Laboratory Sample ID:		AD1647	AD1650
Date Sampled:		12/01/94	12/01/94
	UNITS		
VOLATILES			
Chloromethane	UG/L	10 UJ	10 UJ
Bromomethane	UG/L	10 UJ	10 UJ
Vinyl chloride	UG/L	10 UJ	10 UJ
Chloroethane	UG/L	10 UJ	10 UJ
Methylene chloride	UG/L	10 UJ	10 UJ
Acetone	UG/L	10 UJ	10 UJ
Carbon Disulfide	UG/L	1 J	10 UJ
1,1-Dichloroethene	UG/L	10 UJ	10 UJ
1,1-Dichloroethane	UG/L	10 UJ	10 UJ
1,2-Dichloroethene(total)	UG/L	10 UJ	10 UJ
Chloroform	UG/L	10 UJ	10 UJ
1,2-Dichloroethane	UG/L	10 UJ	10 UJ
2-Butanone	UG/L	10 UJ	10 UJ
1,1,1-Trichloroethane	UG/L	10 UJ	10 UJ
Carbon tetrachloride	UG/L	10 UJ	10 UJ
Bromodichloromethane	UG/L	10 UJ	10 UJ
1,2-Dichloropropane	UG/L	10 UJ	10 UJ
cis-1,3-Dichloropropene	UG/L	10 UJ	10 UJ
Trichloroethene	UG/L	10 UJ	10 UJ
Dibromochloromethane	UG/L	10 UJ	10 UJ
1,1,2-Trichloroethane	UG/L	10 UJ	10 UJ
Benzene	UG/L	13 J	40 J
trans-1,3-Dichloropropene	UG/L	10 UJ	10 UJ
Bromoform	UG/L	10 UJ	10 UJ
4-Methyl-2-pentanone	UG/L	10 UJ	10 UJ
2-Hexanone	UG/L	10 UJ	10 UJ
Tetrachloroethene	UG/L	10 UJ	10 UJ
1,1,2,2-Tetrachloroethane	UG/L	10 UJ	10 UJ
Toluene	UG/L	5 J	10 J
Chlorobenzene	UG/L	10 UJ	10 UJ
Ethylbenzene	UG/L	10 UJ	10 UJ
Styrene	UG/L	10 UJ	10 UJ
Xylenes (total)	UG/L	6 J	9 J

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:	3-MW07-01	3-MW08-01
Laboratory Sample ID:	AD1647	AD1650
Date Sampled:	12/01/94	12/01/94

	UNITS		
SEMIVOLATILES			
Phenol	UG/L	10 U	10 U
bis(2-Chloroethyl) ether	UG/L	10 U	10 U
2-Chlorophenol	UG/L	10 U	10 U
1,3-Dichlorobenzene	UG/L	10 U	10 U
1,4-Dichlorobenzene	UG/L	10 U	10 U
1,2-Dichlorobenzene	UG/L	10 U	10 U
2-Methylphenol	UG/L	10 UJ	10 UJ
2,2'-oxybis-(1-chloropropane)	UG/L	10 U	10 U
4-Methylphenol	UG/L	10 U	10 U
N-Nitroso-di-n-propylamine	UG/L	10 U	10 U
Hexachloroethane	UG/L	10 U	10 U
Nitrobenzene	UG/L	10 U	10 U
Isophorone	UG/L	10 U	10 U
2-Nitrophenol	UG/L	10 U	2 J
2,4-Dimethylphenol	UG/L	10 U	10 U
bis(2-Chloroethoxy) methane	UG/L	10 U	10 U
2,4-Dichlorophenol	UG/L	10 U	10 U
1,2,4-Trichlorobenzene	UG/L	10 U	10 U
Naphthalene	UG/L	5 J	8 J
4-Chloroaniline	UG/L	10 U	10 U
Hexachlorobutadiene	UG/L	10 U	10 U
4-Chloro-3-methylphenol	UG/L	10 U	10 U
2-Methylnaphthalene	UG/L	10 U	10 U
Hexachlorocyclopentadiene	UG/L	10 U	10 U
2,4,6-Trichlorophenol	UG/L	10 U	10 U
2,4,5-Trichlorophenol	UG/L	25 U	25 U
2-Chloronaphthalene	UG/L	10 U	10 U
2-Nitroaniline	UG/L	25 U	25 U
Dimethyl phthalate	UG/L	10 U	10 U
Acenaphthylene	UG/L	10 U	10 U
2,6-Dinitrotoluene	UG/L	10 U	10 U
3-Nitroaniline	UG/L	25 U	25 U
Acenaphthene	UG/L	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-MW07-01	3-MW08-01
Laboratory Sample ID:		AD1647	AD1650
Date Sampled:		12/01/94	12/01/94
	UNITS		
SEMIVOLATILES Cont.			
2,4-Dinitrophenol	UG/L	25 UJ	25 UJ
4-Nitrophenol	UG/L	25 U	25 U
Dibenzofuran	UG/L	10 U	10 U
2,4-Dinitrotoluene	UG/L	10 U	10 U
Diethylphthalate	UG/L	10 U	10 U
4-Chlorophenyl phenyl ether	UG/L	10 U	10 U
Fluorene	UG/L	10 U	10 U
4-Nitroaniline	UG/L	25 U	25 U
4,6-Dinitro-2-methylphenol	UG/L	25 U	25 U
N-nitrosodiphenylamine	UG/L	10 U	10 U
4-Bromophenyl-phenylether	UG/L	10 U	10 U
Hexachlorobenzene	UG/L	10 U	10 U
Pentachlorophenol	UG/L	25 U	25 U
Phenanthrene	UG/L	10 U	10 U
Anthracene	UG/L	10 U	10 U
Carbazole	UG/L	10 U	10 U
di-n-Butylphthalate	UG/L	10 U	10 U
Fluoranthene	UG/L	10 U	10 U
Pyrene	UG/L	10 U	10 U
Butyl benzyl phthalate	UG/L	10 U	10 U
3,3'-Dichlorobenzidine	UG/L	10 U	10 U
Benzo[a]anthracene	UG/L	10 U	10 U
Chrysene	UG/L	10 U	10 U
bis(2-Ethylhexyl)phthalate	UG/L	10 U	10 U
di-n-Octylphthalate	UG/L	10 U	10 U
Benzo[b]fluoranthene	UG/L	10 U	10 U
Benzo[k]fluoranthene	UG/L	10 U	10 U
Benzo[a]pyrene	UG/L	10 U	10 U
Indeno[1,2,3-cd]pyrene	UG/L	10 U	10 U
Dibenz[a,h]anthracene	UG/L	10 U	10 U
Benzo[g,h,i]perylene	UG/L	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-MW07-01	3-MW08-01
Laboratory Sample ID:		AD1647	AD1650
Date Sampled:		12/01/94	12/01/94
	UNITS		
PESTICIDES/PCBs			
alpha-BHC	UG/L	0.05 U	0.05 U
beta-BHC	UG/L	0.05 U	0.05 U
delta-BHC	UG/L	0.05 U	0.05 U
Lindane (gamma-BHC)	UG/L	0.05 U	0.05 U
Heptachlor	UG/L	0.05 U	0.05 U
Aldrin	UG/L	0.05 U	0.05 U
Heptachlor epoxide	UG/L	0.05 U	0.05 U
Endosulfan I	UG/L	0.05 U	0.05 U
Dieldrin	UG/L	0.1 U	0.1 U
4,4'-DDE	UG/L	0.1 U	0.1 U
Endrin	UG/L	0.1 U	0.1 U
Endosulfan II	UG/L	0.1 U	0.1 U
4,4'-DDD	UG/L	0.1 U	0.1 U
Endosulfan sulfate	UG/L	0.1 U	0.1 U
4,4'-DDT	UG/L	0.1 U	0.1 U
Methoxychlor	UG/L	0.5 U	0.5 U
Endrin ketone	UG/L	0.1 U	0.1 U
Endrin aldehyde	UG/L	0.1 U	0.1 U
alpha-Chlordane	UG/L	0.05 U	0.05 U
gamma-Chlordane	UG/L	0.05 U	0.05 U
Toxaphene	UG/L	5 U	5 U
Aroclor 1016	UG/L	1 U	1 U
Aroclor 1221	UG/L	2 U	2 U
Aroclor 1232	UG/L	1 U	1 U
Aroclor 1242	UG/L	1 U	1 U
Aroclor 1248	UG/L	1 U	1 U
Aroclor 1254	UG/L	1 U	1 U
Aroclor 1260	UG/L	1 U	1 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
VOLATILES							
Chloromethane	UG/L	10 UJ	10 UJ	ND	ND		0/3
Bromomethane	UG/L	10 UJ	10 UJ	ND	ND		0/3
Vinyl chloride	UG/L	10 UJ	10 UJ	ND	ND		0/3
Chloroethane	UG/L	10 UJ	10 UJ	ND	ND		0/3
Methylene chloride	UG/L	10 UJ	10 UJ	ND	ND		0/3
Acetone	UG/L	10 UJ	12 UJ	ND	ND		0/3
Carbon Disulfide	UG/L	10 UJ	10 UJ	1 J	1 J	3-MW07-01	1/3
1,1-Dichloroethene	UG/L	10 UJ	10 UJ	ND	ND		0/3
1,1-Dichloroethane	UG/L	10 UJ	10 UJ	ND	ND		0/3
1,2-Dichloroethene(total)	UG/L	10 UJ	10 UJ	ND	ND		0/3
Chloroform	UG/L	10 UJ	10 UJ	ND	ND		0/3
1,2-Dichloroethane	UG/L	10 UJ	10 UJ	ND	ND		0/3
2-Butanone	UG/L	10 UJ	10 UJ	ND	ND		0/3
1,1,1-Trichloroethane	UG/L	10 UJ	10 UJ	ND	ND		0/3
Carbon tetrachloride	UG/L	10 UJ	10 UJ	ND	ND		0/3
Bromodichloromethane	UG/L	10 UJ	10 UJ	ND	ND		0/3
1,2-Dichloropropane	UG/L	10 UJ	10 UJ	ND	ND		0/3
cis-1,3-Dichloropropene	UG/L	10 UJ	10 UJ	ND	ND		0/3
Trichloroethene	UG/L	10 UJ	10 UJ	ND	ND		0/3
Dibromochloromethane	UG/L	10 UJ	10 UJ	ND	ND		0/3
1,1,2-Trichloroethane	UG/L	10 UJ	10 UJ	ND	ND		0/3
Benzene	UG/L	NA	NA	11 J	40 J	3-MW08-01	3/3
trans-1,3-Dichloropropene	UG/L	10 UJ	10 UJ	ND	ND		0/3
Bromoform	UG/L	10 UJ	10 UJ	ND	ND		0/3
4-Methyl-2-pentanone	UG/L	10 UJ	10 UJ	ND	ND		0/3
2-Hexanone	UG/L	10 UJ	10 UJ	ND	ND		0/3
Tetrachloroethene	UG/L	10 UJ	10 UJ	ND	ND		0/3
1,1,2,2-Tetrachloroethane	UG/L	10 UJ	10 UJ	ND	ND		0/3
Toluene	UG/L	NA	NA	4 J	10 J	3-MW08-01	3/3
Chlorobenzene	UG/L	10 UJ	10 UJ	ND	ND		0/3
Ethylbenzene	UG/L	10 UJ	10 UJ	ND	ND		0/3
Styrene	UG/L	10 UJ	10 UJ	ND	ND		0/3
Xylenes (total)	UG/L	NA	NA	6 J	9 J	3-MW08-01	3/3

SURFACE SOIL INGESTION EXPOSURE ASSESSMENT
OPERABLE UNIT NO. 12 (SITE 3)
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Intake from ingestion of soil is calculated as follows:

Intake (mg/kg-day) = C * CF * EF * ED * IR/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:

	INPUTS
C = contaminant concentration in soil (mg/kg)	1E-06
CF = conversion for kg to mg	350
EF = child exposure frequency (days/yr)	6
ED = child exposure duration (yr)	200
IR = child soil ingestion rate (mg/day)	15
BW = child body weight (kg)	70
ATc = averaging time for carcinogen (yr)	6
ATnc = averaging time for noncarcinogen (yr)	365
DY = days per year (days/year)	specific
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	

COPC	Concentration (mg/kg)	Exposure Frequency (days/yr) Child	Exposure Duration (yr) Child	Conversion Factor (kg/mg)	Ingestion Rate (mg/day) Child	Body Weight (kg) Child	Average Carc Time (days)	Carc Dose (mg/kg/day) Child	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Child	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
Benzo(a)anthracene	0.72	350	6	1E-06	200	15	25550	7.9E-07	7.30E-01	5.73E-07	5%	2190	9.2E-06	0.00E+00	0.0E+00	0%
Chrysene	0.94	350	6	1E-06	200	15	25550	1.0E-06	7.30E-03	7.49E-09	0%	2190	1.2E-05	0.00E+00	0.0E+00	0%
Benzo(b)fluoranthene	1.01	350	6	1E-06	200	15	25550	1.1E-06	7.30E-01	8.04E-07	7%	2190	1.3E-05	0.00E+00	0.0E+00	0%
Benzo(k)fluoranthene	0.87	350	6	1E-06	200	15	25550	9.6E-07	7.30E-02	6.99E-08	1%	2190	1.1E-05	0.00E+00	0.0E+00	0%
Benzo(a)pyrene	0.72	350	6	1E-06	200	15	25550	7.9E-07	7.30E+00	5.75E-06	51%	2190	9.2E-06	0.00E+00	0.0E+00	0%
Indeno(1,2,3-cd)pyrene	0.63	350	6	1E-06	200	15	25550	6.8E-07	7.30E-01	5.00E-07	4%	2190	8.0E-06	0.00E+00	0.0E+00	0%
Dibenzo(a,h)anthracene	0.44	350	6	1E-06	200	15	25550	4.9E-07	7.30E+00	3.56E-06	32%	2190	5.7E-06	0.00E+00	0.0E+00	0%
TOTAL										1.1E-05					0.0E+00	

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
SEMIVOLATILES							
Phenol	UG/L	10 U	10 U	3 J	3 J	3-MW02-01	1/8
bis(2-Chloroethyl) ether	UG/L	10 U	10 U	ND	ND		0/8
2-Chlorophenol	UG/L	10 U	10 U	ND	ND		0/8
1,3-Dichlorobenzene	UG/L	10 U	10 U	ND	ND		0/8
1,4-Dichlorobenzene	UG/L	10 U	10 U	ND	ND		0/8
1,2-Dichlorobenzene	UG/L	10 U	10 U	ND	ND		0/8
2-Methylphenol	UG/L	10 U	10 U	1 J	1 J	3-MW02-01	1/8
2,2'-oxybis-(1-chloropropane)	UG/L	10 U	10 U	ND	ND		0/8
4-Methylphenol	UG/L	10 U	10 U	3 J	3 J	3-MW02-01	1/8
N-Nitroso-di-n-propylamine	UG/L	10 U	10 U	ND	ND		0/8
Hexachloroethane	UG/L	10 U	10 U	ND	ND		0/8
Nitrobenzene	UG/L	10 U	10 U	ND	ND		0/8
Isophorone	UG/L	10 U	10 U	ND	ND		0/8
2-Nitrophenol	UG/L	10 U	10 U	2 J	2 J	3-MW08-01	1/8
2,4-Dimethylphenol	UG/L	10 U	10 U	2 J	2 J	3-MW02-01	1/8
bis(2-Chloroethoxy) methane	UG/L	10 U	10 U	ND	ND		0/8
2,4-Dichlorophenol	UG/L	10 U	10 U	ND	ND		0/8
1,2,4-Trichlorobenzene	UG/L	10 U	10 U	ND	ND		0/8
Naphthalene	UG/L	10 U	10 U	3 J	64	3-MW02-01	5/8
4-Chloroaniline	UG/L	10 U	10 U	ND	ND		0/8
Hexachlorobutadiene	UG/L	10 U	10 U	ND	ND		0/8
4-Chloro-3-methylphenol	UG/L	10 U	10 U	ND	ND		0/8
2-Methylnaphthalene	UG/L	10 U	10 U	65	65	3-MW02-01	1/8
Hexachlorocyclopentadiene	UG/L	10 UJ	10 UJ	ND	ND		0/8
2,4,6-Trichlorophenol	UG/L	10 U	10 U	ND	ND		0/8
2,4,5-Trichlorophenol	UG/L	25 U	25 U	ND	ND		0/8
2-Chloronaphthalene	UG/L	10 U	65 U	ND	ND		0/8
2-Nitroaniline	UG/L	25 U	25 U	ND	ND		0/8
Dimethyl phthalate	UG/L	10 U	10 U	ND	ND		0/8
Acenaphthylene	UG/L	10 U	10 U	3 J	3 J	3-MW02DW-01	2/8
2,6-Dinitrotoluene	UG/L	10 U	10 U	ND	ND		0/8
3-Nitroaniline	UG/L	25 U	25 U	ND	ND		0/8
Acenaphthene	UG/L	10 U	10 U	2 J	280	3-MW02-01	3/8

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:		MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/L	25 UJ	25 UJ	ND	ND		0/8
4-Nitrophenol	UG/L	25 U	25 U	ND	ND		0/8
Dibenzofuran	UG/L	10 U	10 U	2 J	230	3-MW02-01	3/8
2,4-Dinitrotoluene	UG/L	10 U	10 U	ND	ND		0/8
Diethylphthalate	UG/L	10 U	10 U	ND	ND		0/8
4-Chlorophenyl phenyl ether	UG/L	10 UJ	10 UJ	ND	ND		0/8
Fluorene	UG/L	10 U	10 U	1 J	210	3-MW02-01	3/8
4-Nitroaniline	UG/L	25 U	25 U	ND	ND		0/8
4,6-Dinitro-2-methylphenol	UG/L	25 U	25 U	ND	ND		0/8
N-nitrosodiphenylamine	UG/L	10 U	10 U	ND	ND		0/8
4-Bromophenyl-phenylether	UG/L	10 U	10 U	ND	ND		0/8
Hexachlorobenzene	UG/L	10 UJ	10 UJ	ND	ND		0/8
Pentachlorophenol	UG/L	25 U	25 U	ND	ND		0/8
Phenanthrene	UG/L	10 U	10 U	75	410	3-MW02-01	2/8
Anthracene	UG/L	10 U	10 U	5 J	33	3-MW02-01	2/8
Carbazole	UG/L	10 U	10 U	39 J	39 J	3-MW02-01	1/8
di-n-Butylphthalate	UG/L	10 U	10 U	1 J	1 J	3-MW02-01	1/8
Fluoranthene	UG/L	10 U	10 U	10	100	3-MW02-01	2/8
Pyrene	UG/L	10 U	10 U	7 J	58	3-MW02-01	2/8
Butyl benzyl phthalate	UG/L	10 U	10 U	ND	ND		0/8
3,3'-Dichlorobenzidine	UG/L	10 U	10 U	ND	ND		0/8
Benzo[a]anthracene	UG/L	10 U	10 U	8 J	8 J	3-MW02-01	1/8
Chrysene	UG/L	10 U	10 U	8 J	8 J	3-MW02-01	1/8
bis(2-Ethylhexyl)phthalate	UG/L	10 U	10 U	ND	ND		0/8
di-n-Octylphthalate	UG/L	10 U	10 U	ND	ND		0/8
Benzo[b]fluoranthene	UG/L	10 U	10 U	3 J	3 J	3-MW02-01	1/8
Benzo[k]fluoranthene	UG/L	10 UJ	10 UJ	3 J	3 J	3-MW02-01	1/8
Benzo[a]pyrene	UG/L	10 U	10 U	3 J	3 J	3-MW02-01	1/8
Indeno[1,2,3-cd]pyrene	UG/L	10 U	10 U	ND	ND		0/8
Dibenz[a,h]anthracene	UG/L	10 U	10 U	ND	ND		0/8
Benzo[g,h,i]perylene	UG/L	10 U	10 U	ND	ND		0/8

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:		MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
	UNITS						
PESTICIDES/PCBs							
alpha-BHC	UG/L	0.05 UJ	0.05 UJ	ND	ND		0/3
beta-BHC	UG/L	0.05 UJ	0.05 UJ	ND	ND		0/3
delta-BHC	UG/L	0.05 UJ	0.05 UJ	ND	ND		0/3
Lindane (gamma-BHC)	UG/L	0.05 UJ	0.05 UJ	ND	ND		0/3
Heptachlor	UG/L	0.05 UJ	0.05 UJ	ND	ND		0/3
Aldrin	UG/L	0.05 UJ	0.05 UJ	ND	ND		0/3
Heptachlor epoxide	UG/L	0.05 UJ	0.05 UJ	ND	ND		0/3
Endosulfan I	UG/L	0.05 UJ	0.05 UJ	ND	ND		0/3
Dieldrin	UG/L	0.1 UJ	0.1 UJ	ND	ND		0/3
4,4'-DDE	UG/L	0.1 UJ	0.1 UJ	ND	ND		0/3
Endrin	UG/L	0.1 UJ	0.1 UJ	ND	ND		0/3
Endosulfan II	UG/L	0.1 UJ	0.1 UJ	ND	ND		0/3
4,4'-DDD	UG/L	0.1 UJ	0.1 UJ	ND	ND		0/3
Endosulfan sulfate	UG/L	0.1 UJ	0.1 UJ	ND	ND		0/3
4,4'-DDT	UG/L	0.1 UJ	0.1 UJ	ND	ND		0/3
Methoxychlor	UG/L	0.5 UJ	0.5 UJ	ND	ND		0/3
Endrin ketone	UG/L	0.1 UJ	0.1 UJ	ND	ND		0/3
Endrin aldehyde	UG/L	0.1 UJ	0.1 UJ	ND	ND		0/3
alpha-Chlordane	UG/L	0.05 UJ	0.05 UJ	ND	ND		0/3
gamma-Chlordane	UG/L	0.05 UJ	0.05 UJ	ND	ND		0/3
Toxaphene	UG/L	5 UJ	5 UJ	ND	ND		0/3
Aroclor 1016	UG/L	1 UJ	1 UJ	ND	ND		0/3
Aroclor 1221	UG/L	2 UJ	2 UJ	ND	ND		0/3
Aroclor 1232	UG/L	1 UJ	1 UJ	ND	ND		0/3
Aroclor 1242	UG/L	1 UJ	1 UJ	ND	ND		0/3
Aroclor 1248	UG/L	1 UJ	1 UJ	ND	ND		0/3
Aroclor 1254	UG/L	1 UJ	1 UJ	ND	ND		0/3
Aroclor 1260	UG/L	1 UJ	1 UJ	ND	ND		0/3

APPENDIX H.7
ROUND III GROUNDWATER - ORGANICS

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-MW01-02	3-MW02-03	3-MW02DW-02	3-MW02IW-03	3-MW03-03	3-MW04-03
Laboratory Sample ID:		AG9863	AG9865	AG9891	AG9889	AG9867	AG9869
Date Sampled:		09/28/95	09/28/95	09/28/95	09/29/95	09/29/95	09/28/95
	UNITS						
VOLATILES							
Chloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	UG/L	10 U	10 UJ	10 U	10 U	10 U	10 U
Carbon Disulfide	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene(total)	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	UG/L	10 U	3 J	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	UG/L	10 U	11	10 U	10 U	10 U	10 U
Chlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	UG/L	10 U	10	10 U	10 U	10 U	10 U
Styrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (total)	UG/L	10 U	20	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-MW01-02	3-MW02-03	3-MW02DW-02	3-MW02IW-03	3-MW03-03	3-MW04-03
Laboratory Sample ID:		AG9863	AG9865	AG9891	AG9889	AG9867	AG9869
Date Sampled:		09/28/95	09/28/95	09/28/95	09/29/95	09/29/95	09/28/95
	UNITS						
SEMIVOLATILES							
Phenol	UG/L	11 U	68	10 U	10 U	12 U	11 U
bis(2-Chloroethyl) ether	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
2-Chlorophenol	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
1,3-Dichlorobenzene	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
1,4-Dichlorobenzene	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
1,2-Dichlorobenzene	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
2-Methylphenol	UG/L	11 U	160 J	10 U	10 U	12 U	11 U
2,2'-oxybis-(1-chloropropane)	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
4-Methylphenol	UG/L	11 U	200 J	10 U	10 U	12 U	11 U
N-Nitroso-di-n-propylamine	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
Hexachloroethane	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
Nitrobenzene	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
Isophorone	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
2-Nitrophenol	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
2,4-Dimethylphenol	UG/L	11 U	64 J	10 U	10 U	12 U	11 U
bis(2-Chloroethoxy) methane	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
2,4-Dichlorophenol	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
1,2,4-Trichlorobenzene	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
Naphthalene	UG/L	11 U	1500	10 U	4 J	12 U	11 U
4-Chloroaniline	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
Hexachlorobutadiene	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
4-Chloro-3-methylphenol	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
2-Methylnaphthalene	UG/L	11 U	94	10 U	1 J	12 U	11 U
Hexachlorocyclopentadiene	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
2,4,6-Trichlorophenol	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
2,4,5-Trichlorophenol	UG/L	26 U	26 U	24 U	24 U	29 U	28 U
2-Chloronaphthalene	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
2-Nitroaniline	UG/L	26 U	26 U	24 U	24 U	29 U	28 U
Dimethyl phthalate	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
Acenaphthylene	UG/L	11 U	2 J	10 U	10 U	12 U	11 U
2,6-Dinitrotoluene	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
3-Nitroaniline	UG/L	26 U	26 U	24 U	24 U	29 U	28 U
Acenaphthene	UG/L	11 U	45 J	10 U	25	12 U	11 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-MW01-02	3-MW02-03	3-MW02DW-02	3-MW02IW-03	3-MW03-03	3-MW04-03
Laboratory Sample ID:		AG9863	AG9865	AG9891	AG9889	AG9867	AG9869
Date Sampled:		09/28/95	09/28/95	09/28/95	09/29/95	09/29/95	09/28/95
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/L	26 U	26 U	24 U	24 U	29 U	28 U
4-Nitrophenol	UG/L	26 U	26 U	24 U	24 U	29 U	28 U
Dibenzofuran	UG/L	11 U	120 J	10 U	29	12 U	11 U
2,4-Dinitrotoluene	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
Diethylphthalate	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
4-Chlorophenyl phenyl ether	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
Fluorene	UG/L	11 U	80	10 U	35	12 U	11 U
4-Nitroanitine	UG/L	26 U	26 U	24 U	24 U	29 U	28 U
4,6-Dinitro-2-methylphenol	UG/L	26 U	26 U	24 U	24 U	29 U	28 U
N-nitrosodiphenylamine	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
4-Bromophenyl-phenylether	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
Hexachlorobenzene	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
Pentachlorophenol	UG/L	26 U	26 U	24 U	24 U	29 U	28 U
Phenanthrene	UG/L	11 U	97 J	10 U	120	12 U	11 U
Anthracene	UG/L	11 U	5 NJ	10 U	11 NJ	12 U	11 U
Carbazole	UG/L	11 U	82	10 U	4 J	12 U	11 U
di-n-Butylphthalate	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
Fluoranthene	UG/L	11 U	10 J	10 U	28	12 U	11 U
Pyrene	UG/L	11 U	8 J	10 U	16	12 U	11 U
Butyl benzyl phthalate	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
3,3'-Dichlorobenzidine	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
Benzo[a]anthracene	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
Chrysene	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
bis(2-Ethylhexyl)phthalate	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
di-n-Octylphthalate	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
Benzo[b]fluoranthene	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
Benzo[k]fluoranthene	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
Benzo[a]pyrene	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
Indeno[1,2,3-cd]pyrene	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
Dibenz[a,h]anthracene	UG/L	11 U	11 U	10 U	10 U	12 U	11 U
Benzo[g,h,i]perylene	UG/L	11 U	11 U	10 U	10 U	12 U	11 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-MW05-03	3-MW06-03	3-MW07-03	3-MW08-03	3-MW09-02	3-MW10-02
Laboratory Sample ID:		AG9871	AG9873	AG9875	AG9877	AG9879	AG9881
Date Sampled:		09/28/95	09/29/95	09/29/95	09/29/95	09/29/95	09/29/95
	UNITS						
VOLATILES							
Chloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene(total)	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	UG/L	10 U	8 J	10 U	10 U	10 U	10 U
Chlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	UG/L	10 U	1 J	10 U	10 U	10 U	10 U
Styrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (total)	UG/L	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-MW05-03	3-MW06-03	3-MW07-03	3-MW08-03	3-MW09-02	3-MW10-02
Laboratory Sample ID:		AG9871	AG9873	AG9875	AG9877	AG9879	AG9881
Date Sampled:		09/28/95	09/29/95	09/29/95	09/29/95	09/29/95	09/29/95
	UNITS						
SEMIVOLATILES							
Phenol	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
bis(2-Chloroethyl) ether	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
2-Chlorophenol	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
1,3-Dichlorobenzene	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
1,4-Dichlorobenzene	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
1,2-Dichlorobenzene	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
2-Methylphenol	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
2,2'-oxybis-(1-chloropropane)	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
4-Methylphenol	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
N-Nitroso-di-n-propylamine	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
Hexachloroethane	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
Nitrobenzene	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
Isophorone	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
2-Nitrophenol	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
2,4-Dimethylphenol	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
bis(2-Chloroethoxy) methane	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
2,4-Dichlorophenol	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
1,2,4-Trichlorobenzene	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
Naphthalene	UG/L	11 U	360	12 U	12 U	12 U	11 U
4-Chloroaniline	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
Hexachlorobutadiene	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
4-Chloro-3-methylphenol	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
2-Methylnaphthalene	UG/L	11 U	23	12 U	12 U	12 U	11 U
Hexachlorocyclopentadiene	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
2,4,6-Trichlorophenol	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
2,4,5-Trichlorophenol	UG/L	28 U	29 U	29 U	30 U	30 U	28 U
2-Chloronaphthalene	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
2-Nitroaniline	UG/L	28 U	29 U	29 U	30 U	30 U	28 U
Dimethyl phthalate	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
Acenaphthylene	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
2,6-Dinitrotoluene	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
3-Nitroaniline	UG/L	28 U	29 U	29 U	30 U	30 U	28 U
Acenaphthene	UG/L	11 U	55	12 U	12 U	12 U	11 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-MW05-03	3-MW06-03	3-MW07-03	3-MW08-03	3-MW09-02	3-MW10-02
Laboratory Sample ID:		AG9871	AG9873	AG9875	AG9877	AG9879	AG9881
Date Sampled:		09/28/95	09/29/95	09/29/95	09/29/95	09/29/95	09/29/95
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/L	28 U	29 U	29 U	30 U	30 U	28 U
4-Nitrophenol	UG/L	28 U	29 U	29 U	30 U	30 U	28 U
Dibenzofuran	UG/L	11 U	24	12 U	12 U	12 U	11 U
2,4-Dinitrotoluene	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
Diethylphthalate	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
4-Chlorophenyl phenyl ether	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
Fluorene	UG/L	11 U	20	12 U	12 U	12 U	11 U
4-Nitroaniline	UG/L	28 U	29 U	29 U	30 U	30 U	28 U
4,6-Dinitro-2-methylphenol	UG/L	28 U	29 U	29 U	30 U	30 U	28 U
N-nitrosodiphenylamine	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
4-Bromophenyl-phenylether	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
Hexachlorobenzene	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
Pentachlorophenol	UG/L	28 U	29 U	29 U	30 U	30 U	28 U
Phenanthrene	UG/L	11 U	23	12 U	12 U	12 U	11 U
Anthracene	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
Carbazole	UG/L	11 U	11 J	12 U	12 U	12 U	11 U
di-n-Butylphthalate	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
Fluoranthene	UG/L	11 U	3 J	12 U	12 U	12 U	11 U
Pyrene	UG/L	11 U	2 J	12 U	12 U	12 U	11 U
Butyl benzyl phthalate	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
3,3'-Dichlorobenzidine	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
Benzo[a]anthracene	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
Chrysene	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
bis(2-Ethylhexyl)phthalate	UG/L	11 U	1 J	12 U	12 U	1 J	11 U
di-n-Octylphthalate	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
Benzo[b]fluoranthene	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
Benzo[k]fluoranthene	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
Benzo[a]pyrene	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
Indeno[1,2,3-cd]pyrene	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
Dibenz[a,h]anthracene	UG/L	11 U	12 U	12 U	12 U	12 U	11 U
Benzo[g,h,i]perylene	UG/L	11 U	12 U	12 U	12 U	12 U	11 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-MW11-02	3-MW11IW-02	3-MW12-02	3-MW13-02
Laboratory Sample ID:		AG9883	AG9893	AG9885	AG9887
Date Sampled:		09/29/95	09/28/95	09/29/95	09/29/95
	UNITS				
VOLATILES					
Chloromethane	UG/L	10 U	10 U	10 U	10 U
Bromomethane	UG/L	10 U	10 U	10 U	10 U
Vinyl chloride	UG/L	10 U	10 U	10 U	10 U
Chloroethane	UG/L	10 U	10 U	10 U	10 U
Methylene chloride	UG/L	10 U	10 U	10 U	10 U
Acetone	UG/L	10 U	10 U	10 U	10 U
Carbon Disulfide	UG/L	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/L	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/L	10 U	10 U	10 U	10 U
1,2-Dichloroethene(total)	UG/L	10 U	10 U	10 U	10 U
Chloroform	UG/L	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/L	10 U	10 U	10 U	10 U
2-Butanone	UG/L	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/L	10 U	10 U	10 U	10 U
Carbon tetrachloride	UG/L	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/L	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/L	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 U
Trichloroethene	UG/L	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/L	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/L	10 U	10 U	10 U	10 U
Benzene	UG/L	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 U
Bromoform	UG/L	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	UG/L	10 U	10 U	10 U	10 U
2-Hexanone	UG/L	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/L	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 U	10 U	10 U
Toluene	UG/L	10 U	10 U	10 U	10 U
Chlorobenzene	UG/L	10 U	10 U	10 U	10 U
Ethylbenzene	UG/L	10 U	10 U	10 U	10 U
Styrene	UG/L	10 U	10 U	10 U	10 U
Xylenes (total)	UG/L	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-MW11-02	3-MW11IW-02	3-MW12-02	3-MW13-02
Laboratory Sample ID:		AG9883	AG9893	AG9885	AG9887
Date Sampled:		09/29/95	09/28/95	09/29/95	09/29/95
	UNITS				
SEMIVOLATILES					
Phenol	UG/L	12 U	1 J	12 U	12 U
bis(2-Chloroethyl) ether	UG/L	12 U	10 U	12 U	12 U
2-Chlorophenol	UG/L	12 U	10 U	12 U	12 U
1,3-Dichlorobenzene	UG/L	12 U	10 U	12 U	12 U
1,4-Dichlorobenzene	UG/L	12 U	10 U	12 U	12 U
1,2-Dichlorobenzene	UG/L	12 U	10 U	12 U	12 U
2-Methylphenol	UG/L	12 U	10 U	12 U	12 U
2,2'-oxybis-(1-chloropropane)	UG/L	12 U	10 U	12 U	12 U
4-Methylphenol	UG/L	12 U	10 U	12 U	12 U
N-Nitroso-di-n-propylamine	UG/L	12 U	10 U	12 U	12 U
Hexachloroethane	UG/L	12 U	10 U	12 U	12 U
Nitrobenzene	UG/L	12 U	10 U	12 U	12 U
Isophorone	UG/L	12 U	10 U	12 U	12 U
2-Nitrophenol	UG/L	12 U	10 U	12 U	12 U
2,4-Dimethylphenol	UG/L	12 U	10 U	12 U	12 U
bis(2-Chloroethoxy) methane	UG/L	12 U	10 U	12 U	12 U
2,4-Dichlorophenol	UG/L	12 U	10 U	12 U	12 U
1,2,4-Trichlorobenzene	UG/L	12 U	10 U	12 U	12 U
Naphthalene	UG/L	12 U	10 U	12 U	12 U
4-Chloroaniline	UG/L	12 U	10 U	12 U	12 U
Hexachlorobutadiene	UG/L	12 U	10 U	12 U	12 U
4-Chloro-3-methylphenol	UG/L	12 U	10 U	12 U	12 U
2-Methylnaphthalene	UG/L	12 U	10 U	12 U	12 U
Hexachlorocyclopentadiene	UG/L	12 U	10 U	12 U	12 U
2,4,6-Trichlorophenol	UG/L	12 U	10 U	12 U	12 U
2,4,5-Trichlorophenol	UG/L	29 U	26 U	29 U	31 U
2-Chloronaphthalene	UG/L	12 U	10 U	12 U	12 U
2-Nitroaniline	UG/L	29 U	26 U	29 U	31 U
Dimethyl phthalate	UG/L	12 U	10 U	12 U	12 U
Acenaphthylene	UG/L	12 U	10 U	12 U	12 U
2,6-Dinitrotoluene	UG/L	12 U	10 U	12 U	12 U
3-Nitroaniline	UG/L	29 U	26 U	29 U	31 U
Acenaphthene	UG/L	12 U	10 U	12 U	12 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-MW11-02	3-MW11IW-02	3-MW12-02	3-MW13-02
Laboratory Sample ID:		AG9883	AG9893	AG9885	AG9887
Date Sampled:		09/29/95	09/28/95	09/29/95	09/29/95
	UNITS				
SEMIVOLATILES Cont.					
2,4-Dinitrophenol	UG/L	29 U	26 U	29 U	31 U
4-Nitrophenol	UG/L	29 U	26 U	29 U	31 U
Dibenzofuran	UG/L	12 U	10 U	12 U	12 U
2,4-Dinitrotoluene	UG/L	12 U	10 U	12 U	12 U
Diethylphthalate	UG/L	12 U	10 U	12 U	12 U
4-Chlorophenyl phenyl ether	UG/L	12 U	10 U	12 U	12 U
Fluorene	UG/L	12 U	10 U	12 U	12 U
4-Nitroaniline	UG/L	29 U	26 U	29 U	31 U
4,6-Dinitro-2-methylphenol	UG/L	29 U	26 U	29 U	31 U
N-nitrosodiphenylamine	UG/L	12 U	10 U	12 U	12 U
4-Bromophenyl-phenylether	UG/L	12 U	10 U	12 U	12 U
Hexachlorobenzene	UG/L	12 U	10 U	12 U	12 U
Pentachlorophenol	UG/L	29 U	26 U	29 U	31 U
Phenanthrene	UG/L	12 U	10 U	12 U	12 U
Anthracene	UG/L	12 U	10 U	12 U	12 U
Carbazole	UG/L	12 U	10 U	12 U	12 U
di-n-Butylphthalate	UG/L	12 U	10 U	12 U	12 U
Fluoranthene	UG/L	12 U	10 U	12 U	12 U
Pyrene	UG/L	12 U	10 U	12 U	12 U
Butyl benzyl phthalate	UG/L	12 U	10 U	12 U	12 U
3,3'-Dichlorobenzidine	UG/L	12 U	10 U	12 U	12 U
Benzo[a]anthracene	UG/L	12 U	10 U	12 U	12 U
Chrysene	UG/L	12 U	10 U	12 U	12 U
bis(2-Ethylhexyl)phthalate	UG/L	12 U	10 U	12 U	12 U
di-n-Octylphthalate	UG/L	12 U	10 U	12 U	12 U
Benzo[b]fluoranthene	UG/L	12 U	10 U	12 U	12 U
Benzo[k]fluoranthene	UG/L	12 U	10 U	12 U	12 U
Benzo[a]pyrene	UG/L	12 U	10 U	12 U	12 U
Indeno[1,2,3-cd]pyrene	UG/L	12 U	10 U	12 U	12 U
Dibenz[a,h]anthracene	UG/L	12 U	10 U	12 U	12 U
Benzo[g,h,i]perylene	UG/L	12 U	10 U	12 U	12 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID: Laboratory Sample ID: Date Sampled:		MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
	UNITS						
VOLATILES							
Chloromethane	UG/L	10 U	10 U	ND	ND		0/16
Bromomethane	UG/L	10 U	10 U	ND	ND		0/16
Vinyl chloride	UG/L	10 U	10 U	ND	ND		0/16
Chloroethane	UG/L	10 U	10 U	ND	ND		0/16
Methylene chloride	UG/L	10 U	10 U	ND	ND		0/16
Acetone	UG/L	10 U	10 U	ND	ND		0/16
Carbon Disulfide	UG/L	10 U	10 U	ND	ND		0/16
1,1-Dichloroethene	UG/L	10 U	10 U	ND	ND		0/16
1,1-Dichloroethane	UG/L	10 U	10 U	ND	ND		0/16
1,2-Dichloroethene(total)	UG/L	10 U	10 U	ND	ND		0/16
Chloroform	UG/L	10 U	10 U	ND	ND		0/16
1,2-Dichloroethane	UG/L	10 U	10 U	ND	ND		0/16
2-Butanone	UG/L	10 U	10 U	ND	ND		0/16
1,1,1-Trichloroethane	UG/L	10 U	10 U	ND	ND		0/16
Carbon tetrachloride	UG/L	10 U	10 U	ND	ND		0/16
Bromodichloromethane	UG/L	10 U	10 U	ND	ND		0/16
1,2-Dichloropropane	UG/L	10 U	10 U	ND	ND		0/16
cis-1,3-Dichloropropene	UG/L	10 U	10 U	ND	ND		0/16
Trichloroethene	UG/L	10 U	10 U	ND	ND		0/16
Dibromochloromethane	UG/L	10 U	10 U	ND	ND		0/16
1,1,2-Trichloroethane	UG/L	10 U	10 U	ND	ND		0/16
Benzene	UG/L	10 U	10 U	3 J	3 J	3-MW02-03	1/16
trans-1,3-Dichloropropene	UG/L	10 U	10 U	ND	ND		0/16
Bromoform	UG/L	10 U	10 U	ND	ND		0/16
4-Methyl-2-pentanone	UG/L	10 U	10 U	ND	ND		0/16
2-Hexanone	UG/L	10 U	10 U	ND	ND		0/16
Tetrachloroethene	UG/L	10 U	10 U	ND	ND		0/16
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 U	ND	ND		0/16
Toluene	UG/L	10 U	10 U	8 J	11	3-MW02-03	2/16
Chlorobenzene	UG/L	10 U	10 U	ND	ND		0/16
Ethylbenzene	UG/L	10 U	10 U	1 J	10	3-MW02-03	2/16
Styrene	UG/L	10 U	10 U	ND	ND		0/16
Xylenes (total)	UG/L	10 U	10 U	20	20	3-MW02-03	1/16

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
SEMIVOLATILES							
Phenol	UG/L	10 U	12 U	1 J	68	3-MW02-03	2/16
bis(2-Chloroethyl) ether	UG/L	10 U	12 U	ND	ND		0/16
2-Chlorophenol	UG/L	10 U	12 U	ND	ND		0/16
1,3-Dichlorobenzene	UG/L	10 U	12 U	ND	ND		0/16
1,4-Dichlorobenzene	UG/L	10 U	12 U	ND	ND		0/16
1,2-Dichlorobenzene	UG/L	10 U	12 U	ND	ND		0/16
2-Methylphenol	UG/L	10 U	12 U	160 J	160 J	3-MW02-03	1/16
2,2'-oxybis-(1-chloropropane)	UG/L	10 U	12 U	ND	ND		0/16
4-Methylphenol	UG/L	10 U	12 U	200 J	200 J	3-MW02-03	1/16
N-Nitroso-di-n-propylamine	UG/L	10 U	12 U	ND	ND		0/16
Hexachloroethane	UG/L	10 U	12 U	ND	ND		0/16
Nitrobenzene	UG/L	10 U	12 U	ND	ND		0/16
Isophorone	UG/L	10 U	12 U	ND	ND		0/16
2-Nitrophenol	UG/L	10 U	12 U	ND	ND		0/16
2,4-Dimethylphenol	UG/L	10 U	12 U	64 J	64 J	3-MW02-03	1/16
bis(2-Chloroethoxy) methane	UG/L	10 U	12 U	ND	ND		0/16
2,4-Dichlorophenol	UG/L	10 U	12 U	ND	ND		0/16
1,2,4-Trichlorobenzene	UG/L	10 U	12 U	ND	ND		0/16
Naphthalene	UG/L	10 U	12 U	4 J	1500	3-MW02-03	3/16
4-Chloroaniline	UG/L	10 U	12 U	ND	ND		0/16
Hexachlorobutadiene	UG/L	10 U	12 U	ND	ND		0/16
4-Chloro-3-methylphenol	UG/L	10 U	12 U	ND	ND		0/16
2-Methylnaphthalene	UG/L	10 U	12 U	1 J	94	3-MW02-03	3/16
Hexachlorocyclopentadiene	UG/L	10 U	12 U	ND	ND		0/16
2,4,6-Trichlorophenol	UG/L	10 U	12 U	ND	ND		0/16
2,4,5-Trichlorophenol	UG/L	24 U	31 U	ND	ND		0/16
2-Chloronaphthalene	UG/L	10 U	12 U	ND	ND		0/16
2-Nitroaniline	UG/L	24 U	31 U	ND	ND		0/16
Dimethyl phthalate	UG/L	10 U	12 U	ND	ND		0/16
Acenaphthylene	UG/L	10 U	12 U	2 J	2 J	3-MW02-03	1/16
2,6-Dinitrotoluene	UG/L	10 U	12 U	ND	ND		0/16
3-Nitroaniline	UG/L	24 U	31 U	ND	ND		0/16
Acenaphthene	UG/L	10 U	12 U	25	55	3-MW06-03	3/16

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID: Laboratory Sample ID: Date Sampled:		MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/L	24 U	31 U	ND	ND		0/16
4-Nitrophenol	UG/L	24 U	31 U	ND	ND		0/16
Dibenzofuran	UG/L	10 U	12 U	24	120 J	3-MW02-03	3/16
2,4-Dinitrotoluene	UG/L	10 U	12 U	ND	ND		0/16
Diethylphthalate	UG/L	10 U	12 U	ND	ND		0/16
4-Chlorophenyl phenyl ether	UG/L	10 U	12 U	ND	ND		0/16
Fluorene	UG/L	10 U	12 U	20	80	3-MW02-03	3/16
4-Nitroaniline	UG/L	24 U	31 U	ND	ND		0/16
4,6-Dinitro-2-methylphenol	UG/L	24 U	31 U	ND	ND		0/16
N-nitrosodiphenylamine	UG/L	10 U	12 U	ND	ND		0/16
4-Bromophenyl-phenylether	UG/L	10 U	12 U	ND	ND		0/16
Hexachlorobenzene	UG/L	10 U	12 U	ND	ND		0/16
Pentachlorophenol	UG/L	24 U	31 U	ND	ND		0/16
Phenanthrene	UG/L	10 U	12 U	23	120	3-MW02IW-03	3/16
Anthracene	UG/L	10 U	12 U	5 NJ	11 NJ	3-MW02IW-03	2/16
Carbazole	UG/L	10 U	12 U	4 J	82	3-MW02-03	3/16
di-n-Butylphthalate	UG/L	10 U	12 U	ND	ND		0/16
Fluoranthene	UG/L	10 U	12 U	3 J	28	3-MW02IW-03	3/16
Pyrene	UG/L	10 U	12 U	2 J	16	3-MW02IW-03	3/16
Butyl benzyl phthalate	UG/L	10 U	12 U	ND	ND		0/16
3,3'-Dichlorobenzidine	UG/L	10 U	12 U	ND	ND		0/16
Benzo[a]anthracene	UG/L	10 U	12 U	ND	ND		0/16
Chrysene	UG/L	10 U	12 U	ND	ND		0/16
bis(2-Ethylhexyl)phthalate	UG/L	10 U	12 U	1 J	1 J	3-MW09-02	2/16
di-n-Octylphthalate	UG/L	10 U	12 U	ND	ND		0/16
Benzo[b]fluoranthene	UG/L	10 U	12 U	ND	ND		0/16
Benzo[k]fluoranthene	UG/L	10 U	12 U	ND	ND		0/16
Benzo[a]pyrene	UG/L	10 U	12 U	ND	ND		0/16
Indeno[1,2,3-cd]pyrene	UG/L	10 U	12 U	ND	ND		0/16
Dibenz[a,h]anthracene	UG/L	10 U	12 U	ND	ND		0/16
Benzo[g,h,i]perylene	UG/L	10 U	12 U	ND	ND		0/16

APPENDIX H.8
ROUND I GROUNDWATER - INORGANICS

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL INORGANICS

Client Sample ID:		3-MW02DW-01	3-MW07-01	3-MW08-01
Laboratory Sample ID:		AD2156	AD2282	AD1651
Date Sampled:		12/03/94	12/01/94	12/01/94
	UNITS			
Aluminum	UG/L	44 U	447	4030
Antimony	UG/L	50 U	50 U	50 U
Arsenic	UG/L	10 U	10 U	10 U
Barium	UG/L	31.8 J	120	88.8
Beryllium	UG/L	1 U	1 U	1 U
Cadmium	UG/L	5 U	5 UJ	5 UJ
Calcium	UG/L	43600	2870	3870
Chromium	UG/L	10 U	10 U	31.6
Cobalt	UG/L	10 U	10 U	10 U
Copper	UG/L	10 U	10 U	10 U
Iron	UG/L	43.2	840	2190
Lead	UG/L	3 U	3 U	3.2 J
Magnesium	UG/L	1410	4200	2080
Manganese	UG/L	4.5 J	17.1 J	21.7 J
Mercury	UG/L	0.2 U	0.2 U	0.2 U
Nickel	UG/L	20 U	20 U	34.1
Potassium	UG/L	1300	1490	1900
Selenium	UG/L	5 U	5 UJ	5 UJ
Silver	UG/L	5 U	5 U	5 U
Sodium	UG/L	15300	4750	8890
Thallium	UG/L	10 U	10 U	10 U
Vanadium	UG/L	10 U	10 U	10 U
Zinc	UG/L	18.7 UJ	16.1 UJ	114

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL INORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
Aluminum	UG/L	44 U	44 U	447	4030	3-MW08-01	2/3
Antimony	UG/L	50 U	50 U	ND	ND		0/3
Arsenic	UG/L	10 U	10 U	ND	ND		0/3
Barium	UG/L	NA	NA	31.8 J	120	3-MW07-01	3/3
Beryllium	UG/L	1 U	1 U	ND	ND		0/3
Cadmium	UG/L	5 U	5 U	ND	ND		0/3
Calcium	UG/L	NA	NA	2870	43600	3-MW02DW-01	3/3
Chromium	UG/L	10 U	10 U	31.6	31.6	3-MW08-01	1/3
Cobalt	UG/L	10 U	10 U	ND	ND		0/3
Copper	UG/L	10 U	10 U	ND	ND		0/3
Iron	UG/L	NA	NA	43.2	2190	3-MW08-01	3/3
Lead	UG/L	3 U	3 U	3.2 J	3.2 J	3-MW08-01	1/3
Magnesium	UG/L	NA	NA	1410	4200	3-MW07-01	3/3
Manganese	UG/L	NA	NA	4.5 J	21.7 J	3-MW08-01	3/3
Mercury	UG/L	0.2 U	0.2 U	ND	ND		0/3
Nickel	UG/L	20 U	20 U	34.1	34.1	3-MW08-01	1/3
Potassium	UG/L	NA	NA	1300	1900	3-MW08-01	3/3
Selenium	UG/L	5 U	5 U	ND	ND		0/3
Silver	UG/L	5 U	5 U	ND	ND		0/3
Sodium	UG/L	NA	NA	4750	15300	3-MW02DW-01	3/3
Thallium	UG/L	10 U	10 U	ND	ND		0/3
Vanadium	UG/L	10 U	10 U	ND	ND		0/3
Zinc	UG/L	16.1 UJ	18.7 UJ	114	114	3-MW08-01	1/3

APPENDIX H.6
ROUND II GROUNDWATER - ORGANICS

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-MW01-01	3-MW02-02	3-MW02-DW-01	3-MW02IW-02	3-MW03-02	3-MW04-02
Laboratory Sample ID:		AG0340	AG0132	AG0126	AF6617	AG0342	AF9815
Date Sampled:		07/13/95	07/13/95	07/13/95	06/12/95	07/13/95	07/11/95
	UNITS						
VOLATILES							
Chloromethane	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
Bromomethane	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
Vinyl chloride	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 UJ
Chloroethane	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
Methylene chloride	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
Acetone	UG/L	10 UJ	10 U	14 UJ	10 U	10 UJ	10 UJ
Carbon Disulfide	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
1,1-Dichloroethene	UG/L	10 UJ	10 U	10 UJ	1 J	10 UJ	10 U
1,1-Dichloroethane	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
1,2-Dichloroethene(total)	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
Chloroform	UG/L	10 UJ	1 J	10 UJ	10 U	10 UJ	10 U
1,2-Dichloroethane	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
2-Butanone	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
1,1,1-Trichloroethane	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
Carbon tetrachloride	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
Bromodichloromethane	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
1,2-Dichloropropane	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
cis-1,3-Dichloropropene	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
Trichloroethene	UG/L	10 UJ	10 U	10 UJ	1 J	10 UJ	1 J
Dibromochloromethane	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
1,1,2-Trichloroethane	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
Benzene	UG/L	10 UJ	10 U	3 J	10 U	10 UJ	10 U
trans-1,3-Dichloropropene	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
Bromoform	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
4-Methyl-2-pentanone	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
2-Hexanone	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
Tetrachloroethene	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
1,1,2,2-Tetrachloroethane	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
Toluene	UG/L	10 UJ	10 U	15 J	2 J	10 UJ	10 U
Chlorobenzene	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
Ethylbenzene	UG/L	10 UJ	10 U	14 J	10 U	10 UJ	10 U
Styrene	UG/L	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
Xylenes (total)	UG/L	10 UJ	10 U	32 J	10 U	10 UJ	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-MW01-01	3-MW02-02	3-MW02-DW-01	3-MW02IW-02	3-MW03-02	3-MW04-02
Laboratory Sample ID:		AG0340	AG0132	AG0126	AF6617	AG0342	AF9815
Date Sampled:		07/13/95	07/13/95	07/13/95	06/12/95	07/13/95	07/11/95
	UNITS						
SEMIVOLATILES							
Phenol	UG/L	10 U	11 U	420 J	10 U	11 U	10 U
bis(2-Chloroethyl) ether	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
2-Chlorophenol	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
1,3-Dichlorobenzene	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
1,4-Dichlorobenzene	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
1,2-Dichlorobenzene	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
2-Methylphenol	UG/L	10 U	11 U	300 J	10 U	11 U	10 U
2,2'-oxybis-(1-chloropropane)	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
4-Methylphenol	UG/L	10 U	11 U	690 J	10 U	11 U	10 U
N-Nitroso-di-n-propylamine	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
Hexachloroethane	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
Nitrobenzene	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
Isophorone	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
2-Nitrophenol	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
2,4-Dimethylphenol	UG/L	10 U	11 U	170 J	10 U	11 U	10 U
bis(2-Chloroethoxy) methane	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
2,4-Dichlorophenol	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
1,2,4-Trichlorobenzene	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
Naphthalene	UG/L	10 U	11 U	2400 J	10 U	11 U	10 U
4-Chloroaniline	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 UJ
Hexachlorobutadiene	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
4-Chloro-3-methylphenol	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
2-Methylnaphthalene	UG/L	10 U	11 U	250 J	10 U	11 U	10 U
Hexachlorocyclopentadiene	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 UJ
2,4,6-Trichlorophenol	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
2,4,5-Trichlorophenol	UG/L	24 U	27 U	260 UJ	24 U	27 U	26 U
2-Chloronaphthalene	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
2-Nitroaniline	UG/L	24 U	27 U	260 UJ	24 U	27 U	26 U
Dimethyl phthalate	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
Acenaphthylene	UG/L	10 U	11 U	100 UJ	1 J	11 U	10 U
2,6-Dinitrotoluene	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
3-Nitroaniline	UG/L	24 U	27 U	260 UJ	24 U	27 U	26 U
Acenaphthene	UG/L	10 U	11 U	320 J	34	11 U	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-MW01-01	3-MW02-02	3-MW02-DW-01	3-MW02IW-02	3-MW03-02	3-MW04-02
Laboratory Sample ID:		AG0340	AG0132	AG0126	AF6617	AG0342	AF9815
Date Sampled:		07/13/95	07/13/95	07/13/95	06/12/95	07/13/95	07/11/95
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/L	24 U	27 U	260 UJ	24 UJ	27 U	26 UJ
4-Nitrophenol	UG/L	24 U	27 U	260 UJ	24 U	27 U	26 UJ
Dibenzofuran	UG/L	10 U	11 U	140 J	17	11 U	10 U
2,4-Dinitrotoluene	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
Diethylphthalate	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
4-Chlorophenyl phenyl ether	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
Fluorene	UG/L	10 U	11 U	160 J	23	11 U	10 U
4-Nitroaniline	UG/L	24 U	27 U	260 UJ	24 U	27 U	26 UJ
4,6-Dinitro-2-methylphenol	UG/L	24 U	27 U	260 UJ	24 U	27 U	26 UJ
N-nitrosodiphenylamine	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
4-Bromophenyl-phenylether	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
Hexachlorobenzene	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
Pentachlorophenol	UG/L	24 U	27 U	260 UJ	24 U	27 U	26 U
Phenanthrene	UG/L	10 U	11 U	130 J	10 U	11 U	10 U
Anthracene	UG/L	10 U	11 U	13 J	3 J	11 U	10 U
Carbazole	UG/L	10 U	11 U	87 J	3 J	11 U	10 U
di-n-Butylphthalate	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
Fluoranthene	UG/L	10 U	11 U	21 J	17	11 U	10 U
Pyrene	UG/L	10 U	11 U	14 J	11	11 U	10 U
Butyl benzyl phthalate	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
3,3'-Dichlorobenzidine	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
Benzo[a]anthracene	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
Chrysene	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
bis(2-Ethylhexyl)phthalate	UG/L	10 U	2 J	100 UJ	10 U	11 U	10 U
di-n-Octylphthalate	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
Benzo[b]fluoranthene	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
Benzo[k]fluoranthene	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
Benzo[a]pyrene	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
Indeno[1,2,3-cd]pyrene	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
Dibenz[a,h]anthracene	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U
Benzo[g,h,i]perylene	UG/L	10 U	11 U	100 UJ	10 U	11 U	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-MW05-02	3-MW06-02	3-MW07-02	3-MW08-02	3-MW09-01	3-MW10-01
Laboratory Sample ID:		AF9817	AG0120	AG0129	AF9819	AG0122	AG0142
Date Sampled:		07/11/95	07/12/95	07/12/95	07/11/95	07/13/95	07/12/95
	UNITS						
VOLATILES							
Chloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	UG/L	10 UJ	10 U	10 U	10 UJ	10 U	10 U
Chloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene(total)	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (total)	UG/L	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-MW05-02	3-MW06-02	3-MW07-02	3-MW08-02	3-MW09-01	3-MW10-01
Laboratory Sample ID:		AF9817	AG0120	AG0129	AF9819	AG0122	AG0142
Date Sampled:		07/11/95	07/12/95	07/12/95	07/11/95	07/13/95	07/12/95
	UNITS						
SEMIVOLATILES							
Phenol	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
bis(2-Chloroethyl) ether	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
2-Chlorophenol	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
1,3-Dichlorobenzene	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
1,4-Dichlorobenzene	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
1,2-Dichlorobenzene	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
2-Methylphenol	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
2,2'-oxybis-(1-chloropropane)	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
4-Methylphenol	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
N-Nitroso-di-n-propylamine	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
Hexachloroethane	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
Nitrobenzene	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
Isophorone	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
2-Nitrophenol	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
2,4-Dimethylphenol	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
bis(2-Chloroethoxy) methane	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
2,4-Dichlorophenol	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
1,2,4-Trichlorobenzene	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
Naphthalene	UG/L	10 U	110	4 J	11 U	11 U	10 U
4-Chloroaniline	UG/L	10 UJ	10 U	11 U	11 UJ	11 U	10 U
Hexachlorobutadiene	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
4-Chloro-3-methylphenol	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
2-Methylnaphthalene	UG/L	10 U	10	11 U	11 U	11 U	10 U
Hexachlorocyclopentadiene	UG/L	10 UJ	10 U	11 U	11 UJ	11 U	10 U
2,4,6-Trichlorophenol	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
2,4,5-Trichlorophenol	UG/L	26 U	24 U	26 U	27 U	26 U	26 U
2-Chloronaphthalene	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
2-Nitroaniline	UG/L	26 U	24 U	26 U	27 U	26 U	26 U
Dimethyl phthalate	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
Acenaphthylene	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
2,6-Dinitrotoluene	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
3-Nitroaniline	UG/L	26 U	24 U	26 U	27 U	26 U	26 U
Acenaphthene	UG/L	10 U	24	11 U	11 U	11 U	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-MW05-02	3-MW06-02	3-MW07-02	3-MW08-02	3-MW09-01	3-MW10-01
Laboratory Sample ID:		AF9817	AG0120	AG0129	AF9819	AG0122	AG0142
Date Sampled:		07/11/95	07/12/95	07/12/95	07/11/95	07/13/95	07/12/95
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/L	26 UJ	24 U	26 U	27 UJ	26 U	26 U
4-Nitrophenol	UG/L	26 UJ	24 U	26 U	27 UJ	26 U	26 U
Dibenzofuran	UG/L	10 U	25	11 U	11 U	11 U	10 U
2,4-Dinitrotoluene	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
Diethylphthalate	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
4-Chlorophenyl phenyl ether	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
Fluorene	UG/L	10 U	28	11 U	11 U	11 U	10 U
4-Nitroaniline	UG/L	26 UJ	24 U	26 U	27 UJ	26 U	26 U
4,6-Dinitro-2-methylphenol	UG/L	26 UJ	24 U	26 U	27 UJ	26 U	26 U
N-nitrosodiphenylamine	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
4-Bromophenyl-phenylether	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
Hexachlorobenzene	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
Pentachlorophenol	UG/L	26 U	24 U	26 U	27 U	26 U	26 U
Phenanthrene	UG/L	10 U	21	11 U	11 U	11 U	10 U
Anthracene	UG/L	10 U	1 J	11 U	11 U	11 U	10 U
Carbazole	UG/L	10 U	10	11 U	11 U	11 U	10 U
di-n-Butylphthalate	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
Fluoranthene	UG/L	10 U	2 J	11 U	11 U	11 U	10 U
Pyrene	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
Butyl benzyl phthalate	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
3,3'-Dichlorobenzidine	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
Benzo[a]anthracene	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
Chrysene	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
bis(2-Ethylhexyl)phthalate	UG/L	10 U	2 J	11 U	11 U	11	10 U
di-n-Octylphthalate	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
Benzo[b]fluoranthene	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
Benzo[k]fluoranthene	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
Benzo[a]pyrene	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
Indeno[1,2,3-cd]pyrene	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
Dibenz[a,h]anthracene	UG/L	10 U	10 U	11 U	11 U	11 U	10 U
Benzo[g,h,i]perylene	UG/L	10 U	10 U	11 U	11 U	11 U	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-MW11-01	3-MW11IW-01	3-MW12-01	3-MW13-01
Laboratory Sample ID:		AG0140	AF9801	AF9813	AG0344
Date Sampled:		07/12/95	07/12/95	07/12/95	07/13/95
	UNITS				
VOLATILES					
Chloromethane	UG/L	10 U	10 U	10 U	10 UJ
Bromomethane	UG/L	10 U	10 U	10 U	10 UJ
Vinyl chloride	UG/L	10 U	10 UJ	10 UJ	10 UJ
Chloroethane	UG/L	10 U	10 U	10 U	10 UJ
Methylene chloride	UG/L	10 U	10 U	10 U	10 UJ
Acetone	UG/L	10 U	15 UJ	10 U	10 UJ
Carbon Disulfide	UG/L	10 U	10 U	10 U	10 UJ
1,1-Dichloroethene	UG/L	10 U	10 U	10 U	10 UJ
1,1-Dichloroethane	UG/L	10 U	10 U	10 U	10 UJ
1,2-Dichloroethene(total)	UG/L	10 U	10 U	10 U	10 UJ
Chloroform	UG/L	10 U	1 J	10 U	10 UJ
1,2-Dichloroethane	UG/L	10 U	10 U	10 U	10 UJ
2-Butanone	UG/L	10 U	10 U	10 U	10 UJ
1,1,1-Trichloroethane	UG/L	10 U	10 U	10 U	10 UJ
Carbon tetrachloride	UG/L	10 U	10 U	10 U	10 UJ
Bromodichloromethane	UG/L	10 U	10 U	10 U	10 UJ
1,2-Dichloropropane	UG/L	10 U	10 U	10 U	10 UJ
cis-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 UJ
Trichloroethene	UG/L	10 U	10 U	1 J	10 UJ
Dibromochloromethane	UG/L	10 U	10 U	10 U	10 UJ
1,1,2-Trichloroethane	UG/L	10 U	10 U	10 U	10 UJ
Benzene	UG/L	10 U	10 U	10 U	10 UJ
trans-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 UJ
Bromoform	UG/L	10 U	10 U	10 U	10 UJ
4-Methyl-2-pentanone	UG/L	10 U	10 U	10 U	10 UJ
2-Hexanone	UG/L	10 U	10 U	10 U	10 UJ
Tetrachloroethene	UG/L	10 U	10 U	10 U	10 UJ
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 U	10 U	10 UJ
Toluene	UG/L	10 U	10 U	10 U	10 UJ
Chlorobenzene	UG/L	10 U	10 U	10 U	10 UJ
Ethylbenzene	UG/L	10 U	10 U	10 U	10 UJ
Styrene	UG/L	10 U	10 U	10 U	10 UJ
Xylenes (total)	UG/L	10 U	10 U	10 U	10 UJ

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-MW11-01	3-MW11IW-01	3-MW12-01	3-MW13-01
Laboratory Sample ID:		AG0140	AF9801	AF9813	AG0344
Date Sampled:		07/12/95	07/12/95	07/12/95	07/13/95
	UNITS				
SEMIVOLATILES					
Phenol	UG/L	11 U	10 U	10 U	10 U
bis(2-Chloroethyl) ether	UG/L	11 U	10 U	10 U	10 U
2-Chlorophenol	UG/L	11 U	10 U	10 U	10 U
1,3-Dichlorobenzene	UG/L	11 U	10 U	10 U	10 U
1,4-Dichlorobenzene	UG/L	11 U	10 U	10 U	10 U
1,2-Dichlorobenzene	UG/L	11 U	10 U	10 U	10 U
2-Methylphenol	UG/L	11 U	10 U	10 U	10 U
2,2'-oxybis-(1-chloropropane)	UG/L	11 U	10 U	10 U	10 U
4-Methylphenol	UG/L	11 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine	UG/L	11 U	10 U	10 U	10 U
Hexachloroethane	UG/L	11 U	10 U	10 U	10 U
Nitrobenzene	UG/L	11 U	10 U	10 U	10 U
Isophorone	UG/L	11 U	10 U	10 U	10 U
2-Nitrophenol	UG/L	11 U	10 U	10 U	10 U
2,4-Dimethylphenol	UG/L	11 U	10 U	10 U	10 U
bis(2-Chloroethoxy) methane	UG/L	11 U	10 U	10 U	10 U
2,4-Dichlorophenol	UG/L	11 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	UG/L	11 U	10 U	10 U	10 U
Naphthalene	UG/L	11 U	10 U	10 U	10 U
4-Chloroaniline	UG/L	11 U	10 UJ	10 UJ	10 U
Hexachlorobutadiene	UG/L	11 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	UG/L	11 U	10 U	10 U	10 U
2-Methylnaphthalene	UG/L	11 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	UG/L	11 U	10 UJ	10 UJ	10 U
2,4,6-Trichlorophenol	UG/L	11 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	UG/L	27 U	26 U	26 U	26 U
2-Chloronaphthalene	UG/L	11 U	10 U	10 U	10 U
2-Nitroaniline	UG/L	27 U	26 U	26 U	26 U
Dimethyl phthalate	UG/L	11 U	10 U	10 U	10 U
Acenaphthylene	UG/L	11 U	10 U	10 U	10 U
2,6-Dinitrotoluene	UG/L	11 U	10 U	10 U	10 U
3-Nitroaniline	UG/L	27 U	26 U	26 U	26 U
Acenaphthene	UG/L	11 U	10 U	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-MW11-01	3-MW11IW-01	3-MW12-01	3-MW13-01
Laboratory Sample ID:		AG0140	AF9801	AF9813	AG0344
Date Sampled:		07/12/95	07/12/95	07/12/95	07/13/95
	UNITS				
SEMIVOLATILES Cont.					
2,4-Dinitrophenol	UG/L	27 U	26 UJ	26 UJ	26 U
4-Nitrophenol	UG/L	27 U	26 UJ	26 UJ	26 U
Dibenzofuran	UG/L	11 U	10 U	10 U	10 U
2,4-Dinitrotoluene	UG/L	11 U	10 U	10 U	10 U
Diethylphthalate	UG/L	11 U	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	UG/L	11 U	10 U	10 U	10 U
Fluorene	UG/L	11 U	10 U	10 U	10 U
4-Nitroaniline	UG/L	27 U	26 UJ	26 UJ	26 U
4,6-Dinitro-2-methylphenol	UG/L	27 U	26 UJ	26 UJ	26 U
N-nitrosodiphenylamine	UG/L	11 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	UG/L	11 U	10 U	10 U	10 U
Hexachlorobenzene	UG/L	11 U	10 U	10 U	10 U
Pentachlorophenol	UG/L	27 U	26 U	26 U	26 U
Phenanthrene	UG/L	11 U	10 U	10 U	10 U
Anthracene	UG/L	11 U	10 U	10 U	10 U
Carbazole	UG/L	11 U	10 U	10 U	10 U
di-n-Butylphthalate	UG/L	11 U	10 U	10 U	10 U
Fluoranthene	UG/L	11 U	10 U	10 U	10 U
Pyrene	UG/L	11 U	10 U	10 U	10 U
Butyl benzyl phthalate	UG/L	11 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	UG/L	11 U	10 U	10 U	10 U
Benzo[a]anthracene	UG/L	11 U	10 U	10 U	10 U
Chrysene	UG/L	11 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	UG/L	4 J	10 U	10 U	10 U
di-n-Octylphthalate	UG/L	11 U	10 U	10 U	10 U
Benzo[b]fluoranthene	UG/L	11 U	10 U	10 U	10 U
Benzo[k]fluoranthene	UG/L	11 U	10 U	10 U	10 U
Benzo[a]pyrene	UG/L	11 U	10 U	10 U	10 U
Indeno[1,2,3-cd]pyrene	UG/L	11 U	10 U	10 U	10 U
Dibenz[a,h]anthracene	UG/L	11 U	10 U	10 U	10 U
Benzo[g,h,i]perylene	UG/L	11 U	10 U	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID: Laboratory Sample ID: Date Sampled:		MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
	UNITS						
VOLATILES							
Chloromethane	UG/L	10 UJ	10 UJ	ND	ND		0/16
Bromomethane	UG/L	10 UJ	10 UJ	ND	ND		0/16
Vinyl chloride	UG/L	10 UJ	10 UJ	ND	ND		0/16
Chloroethane	UG/L	10 UJ	10 UJ	ND	ND		0/16
Methylene chloride	UG/L	10 UJ	10 UJ	ND	ND		0/16
Acetone	UG/L	10 UJ	15 UJ	ND	ND		0/16
Carbon Disulfide	UG/L	10 UJ	10 UJ	ND	ND		0/16
1,1-Dichloroethene	UG/L	10 UJ	10 UJ	1 J	1 J	3-MW02IW-02	1/16
1,1-Dichloroethane	UG/L	10 UJ	10 UJ	ND	ND		0/16
1,2-Dichloroethene(total)	UG/L	10 UJ	10 UJ	ND	ND		0/16
Chloroform	UG/L	10 UJ	10 UJ	1 J	1 J	3-MW11IW-01	2/16
1,2-Dichloroethane	UG/L	10 UJ	10 UJ	ND	ND		0/16
2-Butanone	UG/L	10 UJ	10 UJ	ND	ND		0/16
1,1,1-Trichloroethane	UG/L	10 UJ	10 UJ	ND	ND		0/16
Carbon tetrachloride	UG/L	10 UJ	10 UJ	ND	ND		0/16
Bromodichloromethane	UG/L	10 UJ	10 UJ	ND	ND		0/16
1,2-Dichloropropane	UG/L	10 UJ	10 UJ	ND	ND		0/16
cis-1,3-Dichloropropene	UG/L	10 UJ	10 UJ	ND	ND		0/16
Trichloroethene	UG/L	10 UJ	10 UJ	1 J	1 J	3-MW12-01	3/16
Dibromochloromethane	UG/L	10 UJ	10 UJ	ND	ND		0/16
1,1,2-Trichloroethane	UG/L	10 UJ	10 UJ	ND	ND		0/16
Benzene	UG/L	10 UJ	10 UJ	3 J	3 J	3-MW02-DW-01	1/16
trans-1,3-Dichloropropene	UG/L	10 UJ	10 UJ	ND	ND		0/16
Bromoform	UG/L	10 UJ	10 UJ	ND	ND		0/16
4-Methyl-2-pentanone	UG/L	10 UJ	10 UJ	ND	ND		0/16
2-Hexanone	UG/L	10 UJ	10 UJ	ND	ND		0/16
Tetrachloroethene	UG/L	10 UJ	10 UJ	ND	ND		0/16
1,1,2,2-Tetrachloroethane	UG/L	10 UJ	10 UJ	ND	ND		0/16
Toluene	UG/L	10 UJ	10 UJ	2 J	15 J	3-MW02-DW-01	2/16
Chlorobenzene	UG/L	10 UJ	10 UJ	ND	ND		0/16
Ethylbenzene	UG/L	10 UJ	10 UJ	14 J	14 J	3-MW02-DW-01	1/16
Styrene	UG/L	10 UJ	10 UJ	ND	ND		0/16
Xylenes (total)	UG/L	10 UJ	10 UJ	32 J	32 J	3-MW02-DW-01	1/16

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES .

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
SEMIVOLATILES							
Phenol	UG/L	10 U	11 U	420 J	420 J	3-MW02-DW-01	1/16
bis(2-Chloroethyl) ether	UG/L	10 U	100 UJ	ND	ND		0/16
2-Chlorophenol	UG/L	10 U	100 UJ	ND	ND		0/16
1,3-Dichlorobenzene	UG/L	10 U	100 UJ	ND	ND		0/16
1,4-Dichlorobenzene	UG/L	10 U	100 UJ	ND	ND		0/16
1,2-Dichlorobenzene	UG/L	10 U	100 UJ	ND	ND		0/16
2-Methylphenol	UG/L	10 U	11 U	300 J	300 J	3-MW02-DW-01	1/16
2,2'-oxybis-(1-chloropropane)	UG/L	10 U	100 UJ	ND	ND		0/16
4-Methylphenol	UG/L	10 U	11 U	690 J	690 J	3-MW02-DW-01	1/16
N-Nitroso-di-n-propylamine	UG/L	10 U	100 UJ	ND	ND		0/16
Hexachloroethane	UG/L	10 U	100 UJ	ND	ND		0/16
Nitrobenzene	UG/L	10 U	100 UJ	ND	ND		0/16
Isophorone	UG/L	10 U	100 UJ	ND	ND		0/16
2-Nitrophenol	UG/L	10 U	100 UJ	ND	ND		0/16
2,4-Dimethylphenol	UG/L	10 U	11 U	170 J	170 J	3-MW02-DW-01	1/16
bis(2-Chloroethoxy) methane	UG/L	10 U	100 UJ	ND	ND		0/16
2,4-Dichlorophenol	UG/L	10 U	100 UJ	ND	ND		0/16
1,2,4-Trichlorobenzene	UG/L	10 U	100 UJ	ND	ND		0/16
Naphthalene	UG/L	10 U	11 U	4 J	2400 J	3-MW02-DW-01	3/16
4-Chloroaniline	UG/L	10 U	100 UJ	ND	ND		0/16
Hexachlorobutadiene	UG/L	10 U	100 UJ	ND	ND		0/16
4-Chloro-3-methylphenol	UG/L	10 U	100 UJ	ND	ND		0/16
2-Methylnaphthalene	UG/L	10 U	11 U	10	250 J	3-MW02-DW-01	2/16
Hexachlorocyclopentadiene	UG/L	10 U	100 UJ	ND	ND		0/16
2,4,6-Trichlorophenol	UG/L	10 U	100 UJ	ND	ND		0/16
2,4,5-Trichlorophenol	UG/L	24 U	260 UJ	ND	ND		0/16
2-Chloronaphthalene	UG/L	10 U	100 UJ	ND	ND		0/16
2-Nitroaniline	UG/L	24 U	260 UJ	ND	ND		0/16
Dimethyl phthalate	UG/L	10 U	100 UJ	ND	ND		0/16
Acenaphthylene	UG/L	10 U	100 UJ	1 J	1 J	3-MW02IW-02	1/16
2,6-Dinitrotoluene	UG/L	10 U	100 UJ	ND	ND		0/16
3-Nitroaniline	UG/L	24 U	260 UJ	ND	ND		0/16
Acenaphthene	UG/L	10 U	11 U	24	320 J	3-MW02-DW-01	3/16

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID: Laboratory Sample ID: Date Sampled:		MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/L	24 U	260 UJ	ND	ND		0/16
4-Nitrophenol	UG/L	24 U	260 UJ	ND	ND		0/16
Dibenzofuran	UG/L	10 U	11 U	17	140 J	3-MW02-DW-01	3/16
2,4-Dinitrotoluene	UG/L	10 U	100 UJ	ND	ND		0/16
Diethylphthalate	UG/L	10 U	100 UJ	ND	ND		0/16
4-Chlorophenyl phenyl ether	UG/L	10 U	100 UJ	ND	ND		0/16
Fluorene	UG/L	10 U	11 U	23	160 J	3-MW02-DW-01	3/16
4-Nitroaniline	UG/L	24 U	260 UJ	ND	ND		0/16
4,6-Dinitro-2-methylphenol	UG/L	24 U	260 UJ	ND	ND		0/16
N-nitrosodiphenylamine	UG/L	10 U	100 UJ	ND	ND		0/16
4-Bromophenyl-phenylether	UG/L	10 U	100 UJ	ND	ND		0/16
Hexachlorobenzene	UG/L	10 U	100 UJ	ND	ND		0/16
Pentachlorophenol	UG/L	24 U	260 UJ	ND	ND		0/16
Phenanthrene	UG/L	10 U	11 U	21	130 J	3-MW02-DW-01	2/16
Anthracene	UG/L	10 U	11 U	1 J	13 J	3-MW02-DW-01	3/16
Carbazole	UG/L	10 U	11 U	3 J	87 J	3-MW02-DW-01	3/16
di-n-Butylphthalate	UG/L	10 U	100 UJ	ND	ND		0/16
Fluoranthene	UG/L	10 U	11 U	2 J	21 J	3-MW02-DW-01	3/16
Pyrene	UG/L	10 U	11 U	11	14 J	3-MW02-DW-01	2/16
Butyl benzyl phthalate	UG/L	10 U	100 UJ	ND	ND		0/16
3,3'-Dichlorobenzidine	UG/L	10 U	100 UJ	ND	ND		0/16
Benzo[a]anthracene	UG/L	10 U	100 UJ	ND	ND		0/16
Chrysene	UG/L	10 U	100 UJ	ND	ND		0/16
bis(2-Ethylhexyl)phthalate	UG/L	10 U	100 UJ	2 J	11	3-MW09-01	4/16
di-n-Octylphthalate	UG/L	10 U	100 UJ	ND	ND		0/16
Benzo[b]fluoranthene	UG/L	10 U	100 UJ	ND	ND		0/16
Benzo[k]fluoranthene	UG/L	10 U	100 UJ	ND	ND		0/16
Benzo[a]pyrene	UG/L	10 U	100 UJ	ND	ND		0/16
Indeno[1,2,3-cd]pyrene	UG/L	10 U	100 UJ	ND	ND		0/16
Dibenz[a,h]anthracene	UG/L	10 U	100 UJ	ND	ND		0/16
Benzo[g,h,i]perylene	UG/L	10 U	100 UJ	ND	ND		0/16

APPENDIX I
FIELD DUPLICATE SUMMARIES

APPENDIX I.1
SOIL - ORGANICS

FIELD DUPLICATE SUMMARY
OPERABLE UNIT No. 12
SITE 3 - FIELD DUPLICATES - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-CP-SB02	3-CP-SB02D	3-MW02IW-00	3-MW02IW-00D	3-MW02IW-03	3-MW02IW-03D
Laboratory Sample ID:		AC0948	AC0949	AC9747	AC9759	AC9764	AC9775
Date Sampled:		9/20/94	9/20/94	11/16/94	11/16/94	11/16/94	11/16/94
	UNITS						
VOLATILES							
Chloromethane	UG/KG	NA	NA	10 U	11 U	12 U	13 U
Bromomethane	UG/KG	NA	NA	10 U	11 U	12 U	13 U
Vinyl chloride	UG/KG	NA	NA	10 U	11 U	12 U	13 U
Chloroethane	UG/KG	NA	NA	10 U	11 U	12 U	13 U
Methylene chloride	UG/KG	NA	NA	10 U	11 U	12 U	13 U
Acetone	UG/KG	NA	NA	10 U	11 U	20 U	18 U
Carbon Disulfide	UG/KG	NA	NA	10 U	11 U	12 U	13 U
1,1-Dichloroethene	UG/KG	NA	NA	10 U	11 U	12 U	13 U
1,1-Dichloroethane	UG/KG	NA	NA	10 U	11 U	12 U	13 U
1,2-Dichloroethene(total)	UG/KG	NA	NA	10 U	11 U	12 U	13 U
Chloroform	UG/KG	NA	NA	10 UJ	11 UJ	12 UJ	13 UJ
1,2-Dichloroethane	UG/KG	NA	NA	10 UJ	11 UJ	12 UJ	13 UJ
2-Butanone	UG/KG	NA	NA	13 U	16 U	12 U	13 U
1,1,1-Trichloroethane	UG/KG	NA	NA	10 U	11 U	12 U	13 U
Carbon tetrachloride	UG/KG	NA	NA	10 U	11 U	12 U	13 U
Bromodichloromethane	UG/KG	NA	NA	10 U	11 U	12 U	13 U
1,2-Dichloropropane	UG/KG	NA	NA	10 U	11 U	12 U	13 U
cis-1,3-Dichloropropene	UG/KG	NA	NA	10 U	11 U	12 U	13 U
Trichloroethene	UG/KG	NA	NA	10 U	11 U	12 U	13 U
Dibromochloromethane	UG/KG	NA	NA	10 U	11 U	12 U	13 U
1,1,2-Trichloroethane	UG/KG	NA	NA	10 U	11 U	12 U	13 U
Benzene	UG/KG	NA	NA	10 U	11 U	2 J	5 J
trans-1,3-Dichloropropene	UG/KG	NA	NA	10 U	11 U	12 U	13 U
Bromoform	UG/KG	NA	NA	10 U	11 U	12 U	13 U
4-Methyl-2-pentanone	UG/KG	NA	NA	10 U	11 U	12 U	13 U
2-Hexanone	UG/KG	NA	NA	10 U	11 U	12 U	13 U
Tetrachloroethene	UG/KG	NA	NA	10 U	11 U	12 U	13 U
1,1,2,2-Tetrachloroethane	UG/KG	NA	NA	10 U	11 U	12 U	13 U
Toluene	UG/KG	NA	NA	2 J	4 J	6 J	6 J
Chlorobenzene	UG/KG	NA	NA	10 U	11 U	12 U	13 U
Ethylbenzene	UG/KG	NA	NA	10 U	11 U	3 J	5 J
Styrene	UG/KG	NA	NA	10 U	11 U	12 U	13 U
Xylenes (total)	UG/KG	NA	NA	10 U	11 U	7 J	10 J

FIELD DUPLICATE SUMMARY
OPERABLE UNIT No. 12
SITE 3 - FIELD DUPLICATES - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-CP-SB02	3-CP-SB02D	3-MW02IW-00	3-MW02IW-00D	3-MW02IW-03	3-MW02IW-03D
Laboratory Sample ID:		AC0948	AC0949	AC9747	AC9759	AC9764	AC9775
Date Sampled:		9/20/94	9/20/94	11/16/94	11/16/94	11/16/94	11/16/94
	UNITS						
SEMIVOLATILES							
Phenol	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
bis(2-Chloroethyl) ether	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
2-Chlorophenol	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
1,3-Dichlorobenzene	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
1,4-Dichlorobenzene	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
1,2-Dichlorobenzene	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
2-Methylphenol	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
2,2'-oxybis-(1-chloropropane)	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
4-Methylphenol	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
N-Nitroso-di-n-propylamine	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
Hexachloroethane	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
Nitrobenzene	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
Isophorone	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
2-Nitrophenol	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
2,4-Dimethylphenol	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
bis(2-Chloroethoxy) methane	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
2,4-Dichlorophenol	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
1,2,4-Trichlorobenzene	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
Naphthalene	UG/KG	360 U	360 U	320 U	360 U	110 J	99 J
4-Chloroaniline	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
Hexachlorobutadiene	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
4-Chloro-3-methylphenol	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
2-Methylnaphthalene	UG/KG	360 U	360 U	320 U	360 U	100 J	67 J
Hexachlorocyclopentadiene	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
2,4,6-Trichlorophenol	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
2,4,5-Trichlorophenol	UG/KG	870 U	880 U	770 U	870 U	910 U	1000 U
2-Chloronaphthalene	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
2-Nitroaniline	UG/KG	870 U	880 U	770 U	870 U	910 U	1000 U
Dimethyl phthalate	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
Acenaphthylene	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
2,6-Dinitrotoluene	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
3-Nitroaniline	UG/KG	870 U	880 U	770 U	870 U	910 U	1000 U
Acenaphthene	UG/KG	360 U	360 U	320 U	360 U	560	330 J

FIELD DUPLICATE SUMMARY
OPERABLE UNIT No. 12
SITE 3 - FIELD DUPLICATES - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-CP-SB02	3-CP-SB02D	3-MW02IW-00	3-MW02IW-00D	3-MW02IW-03	3-MW02IW-03D
Laboratory Sample ID:		AC0948	AC0949	AC9747	AC9759	AC9764	AC9775
Date Sampled:		9/20/94	9/20/94	11/16/94	11/16/94	11/16/94	11/16/94
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/KG	870 U	880 U	770 UJ	870 UJ	910 UJ	1000 UJ
4-Nitrophenol	UG/KG	870 U	880 U	770 U	870 U	910 U	1000 U
Dibenzofuran	UG/KG	360 U	360 U	320 U	360 U	440	290 J
2,4-Dinitrotoluene	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
Diethylphthalate	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
4-Chlorophenyl phenyl ether	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
Fluorene	UG/KG	360 U	360 U	320 U	360 U	710	500
4-Nitroaniline	UG/KG	870 U	880 U	770 U	870 U	910 U	1000 U
4,6-Dinitro-2-methylphenol	UG/KG	870 U	880 U	770 U	870 U	910 U	1000 U
N-nitrosodiphenylamine	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
4-Bromophenyl-phenylether	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
Hexachlorobenzene	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
Pentachlorophenol	UG/KG	870 U	880 U	770 U	870 U	910 U	1000 U
Phenanthrene	UG/KG	360 U	360 U	320 U	360 U	2700	2000
Anthracene	UG/KG	360 U	360 U	49 J	56 J	530	530
Carbazole	UG/KG	360 U	360 U	320 U	360 U	200 J	190 J
di-n-Butylphthalate	UG/KG	170 J	230 J	110 J	110 J	110 J	170 J
Fluoranthene	UG/KG	360 U	360 U	55 J	81 J	1900	1400
Pyrene	UG/KG	360 U	360 U	86 J	120 J	1300	960
Butyl benzyl phthalate	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
3,3'-Dichlorobenzidine	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
Benzo[a]anthracene	UG/KG	360 U	360 U	32 J	47 J	270 J	190 J
Chrysene	UG/KG	360 U	360 U	64 J	82 J	310 J	220 J
bis(2-Ethylhexyl)phthalate	UG/KG	43 J	73 J	320 U	360 U	380 U	420 U
di-n-Octylphthalate	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
Benzo[b]fluoranthene	UG/KG	360 U	360 U	120 J	140 J	140 J	90 J
Benzo[k]fluoranthene	UG/KG	360 U	360 U	83 J	110 J	150 J	96 J
Benzo[a]pyrene	UG/KG	360 U	360 U	59 J	78 J	120 J	70 J
Indeno[1,2,3-cd]pyrene	UG/KG	360 U	360 U	65 J	73 J	54 J	420 U
Dibenz[a,h]anthracene	UG/KG	360 U	360 U	320 U	360 U	380 U	420 U
Benzo[g,h,i]perylene	UG/KG	360 U	360 U	52 J	59 J	380 U	420 U

FIELD DUPLICATE SUMMARY
OPERABLE UNIT No. 12
SITE 3 - FIELD DUPLICATES - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-CP-SB02	3-CP-SB02D	3-MW02IW-00	3-MW02IW-00D	3-MW02IW-03	3-MW02IW-03D
Laboratory Sample ID:		AC0948	AC0949	AC9747	AC9759	AC9764	AC9775
Date Sampled:		9/20/94	9/20/94	11/16/94	11/16/94	11/16/94	11/16/94
	UNITS						
PESTICIDES/PCBs							
alpha-BHC	UG/KG	NA	NA	1.7 U	1.8 U	1.9 U	2.2 U
beta-BHC	UG/KG	NA	NA	1.7 U	1.8 U	1.9 U	2.2 U
delta-BHC	UG/KG	NA	NA	1.7 U	1.8 U	1.9 U	2.2 U
Lindane (gamma-BHC)	UG/KG	NA	NA	1.7 U	1.8 U	1.9 U	2.2 U
Heptachlor	UG/KG	NA	NA	1.7 U	1.8 U	1.9 U	2.2 U
Aldrin	UG/KG	NA	NA	1.7 U	1.8 U	1.9 U	2.2 U
Heptachlor epoxide	UG/KG	NA	NA	1.7 U	1.8 U	1.9 U	2.2 U
Endosulfan I	UG/KG	NA	NA	1.7 U	1.8 U	1.9 U	2.2 U
Dieldrin	UG/KG	NA	NA	3.3 U	3.6 U	3.7 U	4.2 U
4,4'-DDE	UG/KG	NA	NA	3.3 U	3.6 U	3.7 U	4.2 U
Endrin	UG/KG	NA	NA	3.3 U	3.6 U	3.7 U	4.2 U
Endosulfan II	UG/KG	NA	NA	3.3 U	3.6 U	3.7 U	4.2 U
4,4'-DDD	UG/KG	NA	NA	3.3 U	3.6 U	3.7 U	4.2 U
Endosulfan sulfate	UG/KG	NA	NA	3.3 U	3.6 U	3.7 U	4.2 U
4,4'-DDT	UG/KG	NA	NA	3.3 U	3.6 U	3.7 U	4.2 U
Methoxychlor	UG/KG	NA	NA	17 U	18 U	19 U	22 U
Endrin ketone	UG/KG	NA	NA	3.3 U	3.6 U	3.7 U	4.2 U
Endrin aldehyde	UG/KG	NA	NA	3.3 U	3.6 U	3.7 U	4.2 U
alpha-Chlordane	UG/KG	NA	NA	1.7 U	1.8 U	1.9 U	2.2 U
gamma-Chlordane	UG/KG	NA	NA	1.7 U	1.8 U	1.9 U	2.2 U
Toxaphene	UG/KG	NA	NA	170 U	180 U	190 U	220 U
Aroclor 1016	UG/KG	NA	NA	33 U	36 U	37 U	42 U
Aroclor 1221	UG/KG	NA	NA	66 U	72 U	75 U	85 U
Aroclor 1232	UG/KG	NA	NA	33 U	36 U	37 U	42 U
Aroclor 1242	UG/KG	NA	NA	33 U	36 U	37 U	42 U
Aroclor 1248	UG/KG	NA	NA	33 U	36 U	37 U	42 U
Aroclor 1254	UG/KG	NA	NA	33 U	36 U	37 U	42 U
Aroclor 1260	UG/KG	NA	NA	33 U	36 U	37 U	42 U

FIELD DUPLICATE SUMMARY
OPERABLE UNIT No. 12
SITE 3 - FIELD DUPLICATES - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-NA-SB01	3-NA-SB01D	3-TA-SB21	3-TA-SB21D	3-TA-SB21-03	3-TA-SB21-03D
Laboratory Sample ID:		AC0962	AC0963	AC0952	AC0953	AC9584	AC9585
Date Sampled:		9/20/94	9/20/94	9/20/94	9/20/94	11/15/94	11/15/94
	UNITS						
VOLATILES							
Chloromethane	UG/KG	NA	NA	NA	NA	NA	NA
Bromomethane	UG/KG	NA	NA	NA	NA	NA	NA
Vinyl chloride	UG/KG	NA	NA	NA	NA	NA	NA
Chloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Methylene chloride	UG/KG	NA	NA	NA	NA	NA	NA
Acetone	UG/KG	NA	NA	NA	NA	NA	NA
Carbon Disulfide	UG/KG	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	UG/KG	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(total)	UG/KG	NA	NA	NA	NA	NA	NA
Chloroform	UG/KG	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
2-Butanone	UG/KG	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	UG/KG	NA	NA	NA	NA	NA	NA
Bromodichloromethane	UG/KG	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	UG/KG	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	UG/KG	NA	NA	NA	NA	NA	NA
Trichloroethene	UG/KG	NA	NA	NA	NA	NA	NA
Dibromochloromethane	UG/KG	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Benzene	UG/KG	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	UG/KG	NA	NA	NA	NA	NA	NA
Bromoform	UG/KG	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	UG/KG	NA	NA	NA	NA	NA	NA
2-Hexanone	UG/KG	NA	NA	NA	NA	NA	NA
Tetrachloroethene	UG/KG	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	UG/KG	NA	NA	NA	NA	NA	NA
Toluene	UG/KG	NA	NA	NA	NA	NA	NA
Chlorobenzene	UG/KG	NA	NA	NA	NA	NA	NA
Ethylbenzene	UG/KG	NA	NA	NA	NA	NA	NA
Styrene	UG/KG	NA	NA	NA	NA	NA	NA
Xylenes (total)	UG/KG	NA	NA	NA	NA	NA	NA

FIELD DUPLICATE SUMMARY
OPERABLE UNIT No. 12
SITE 3 - FIELD DUPLICATES - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-NA-SB01	3-NA-SB01D	3-TA-SB21	3-TA-SB21D	3-TA-SB21-03	3-TA-SB21-03D
Laboratory Sample ID:		AC0962	AC0963	AC0952	AC0953	AC9584	AC9585
Date Sampled:		9/20/94	9/20/94	9/20/94	9/20/94	11/15/94	11/15/94
	UNITS						
SEMIVOLATILES							
Phenol	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
bis(2-Chloroethyl) ether	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
2-Chlorophenol	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
1,3-Dichlorobenzene	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
1,4-Dichlorobenzene	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
1,2-Dichlorobenzene	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
2-Methylphenol	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
2,2'-oxybis-(1-chloropropane)	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
4-Methylphenol	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
N-Nitroso-di-n-propylamine	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
Hexachloroethane	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
Nitrobenzene	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
Isophorone	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
2-Nitrophenol	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
2,4-Dimethylphenol	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
bis(2-Chloroethoxy) methane	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
2,4-Dichlorophenol	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
1,2,4-Trichlorobenzene	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
Naphthalene	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
4-Chloroaniline	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
Hexachlorobutadiene	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
4-Chloro-3-methylphenol	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
2-Methylnaphthalene	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
Hexachlorocyclopentadiene	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
2,4,6-Trichlorophenol	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
2,4,5-Trichlorophenol	UG/KG	860 U	920 U	840 U	880 U	980 U	940 U
2-Chloronaphthalene	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
2-Nitroaniline	UG/KG	860 U	920 U	840 U	880 U	980 U	940 U
Dimethyl phthalate	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
Acenaphthylene	UG/KG	360 U	380 U	58 J	180 J	400 U	390 U
2,6-Dinitrotoluene	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
3-Nitroaniline	UG/KG	860 U	920 U	840 U	880 U	980 U	940 U
Acenaphthene	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U

FIELD DUPLICATE SUMMARY
OPERABLE UNIT No. 12
SITE 3 - FIELD DUPLICATES - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-NA-SB01	3-NA-SB01D	3-TA-SB21	3-TA-SB21D	3-TA-SB21-03	3-TA-SB21-03D
Laboratory Sample ID:		AC0962	AC0963	AC0952	AC0953	AC9584	AC9585
Date Sampled:		9/20/94	9/20/94	9/20/94	9/20/94	11/15/94	11/15/94
SEMIVOLATILES Cont.	UNITS						
2,4-Dinitrophenol	UG/KG	860 U	920 U	840 U	880 U	980 U	940 U
4-Nitrophenol	UG/KG	860 U	920 U	840 U	880 U	980 U	940 U
Dibenzofuran	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
2,4-Dinitrotoluene	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
Diethylphthalate	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
4-Chlorophenyl phenyl ether	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
Fluorene	UG/KG	360 U	380 U	350 U	48 J	400 U	390 U
4-Nitroaniline	UG/KG	860 U	920 U	840 U	880 U	980 U	940 U
4,6-Dinitro-2-methylphenol	UG/KG	860 U	920 U	840 U	880 U	980 U	940 U
N-nitrosodiphenylamine	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
4-Bromophenyl-phenylether	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
Hexachlorobenzene	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
Pentachlorophenol	UG/KG	860 U	920 U	840 U	880 U	980 U	940 U
Phenanthrene	UG/KG	360 U	380 U	55 J	130 J	400 U	390 U
Anthracene	UG/KG	360 U	380 U	190 J	420	400 U	390 U
Carbazole	UG/KG	360 U	380 U	63 J	100 J	400 U	390 U
di-n-Butylphthalate	UG/KG	130 J	140 J	96 J	84 J	400 U	390 U
Fluoranthene	UG/KG	360 U	380 U	410 J	4500 J	400 U	390 U
Pyrene	UG/KG	360 U	380 U	320 J	4100 J	400 U	390 U
Butyl benzyl phthalate	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
3,3'-Dichlorobenzidine	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
Benzo[a]anthracene	UG/KG	360 U	380 U	120 J	1300 J	400 U	390 U
Chrysene	UG/KG	360 U	380 U	230 J	1400 J	400 U	390 U
bis(2-Ethylhexyl)phthalate	UG/KG	91 J	59 J	36 J	54 J	400 U	390 U
di-n-Octylphthalate	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U
Benzo[b]fluoranthene	UG/KG	360 U	380 U	350 J	1300 J	400 U	390 U
Benzo[k]fluoranthene	UG/KG	360 U	380 U	200 J	690	400 U	390 U
Benzo[a]pyrene	UG/KG	360 U	380 U	89 J	570	400 U	390 U
Indeno[1,2,3-cd]pyrene	UG/KG	360 U	380 U	130 J	440	400 U	390 U
Dibenz[a,h]anthracene	UG/KG	360 U	380 U	68 J	360 U	400 U	390 U
Benzo[g,h,i]perylene	UG/KG	360 U	380 U	350 U	360 U	400 U	390 U

FIELD DUPLICATE SUMMARY
OPERABLE UNIT No. 12
SITE 3 - FIELD DUPLICATES - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-NA-SB01	3-NA-SB01D	3-TA-SB21	3-TA-SB21D	3-TA-SB21-03	3-TA-SB21-03D
Laboratory Sample ID:		AC0962	AC0963	AC0952	AC0953	AC9584	AC9585
Date Sampled:		9/20/94	9/20/94	9/20/94	9/20/94	11/15/94	11/15/94
	UNITS						
PESTICIDES/PCBs							
alpha-BHC	UG/KG	NA	NA	NA	NA	NA	NA
beta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
delta-BHC	UG/KG	NA	NA	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor	UG/KG	NA	NA	NA	NA	NA	NA
Aldrin	UG/KG	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan I	UG/KG	NA	NA	NA	NA	NA	NA
Dieldrin	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDE	UG/KG	NA	NA	NA	NA	NA	NA
Endrin	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan II	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDD	UG/KG	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	NA	NA	NA
4,4'-DDT	UG/KG	NA	NA	NA	NA	NA	NA
Methoxychlor	UG/KG	NA	NA	NA	NA	NA	NA
Endrin ketone	UG/KG	NA	NA	NA	NA	NA	NA
Endrin aldehyde	UG/KG	NA	NA	NA	NA	NA	NA
alpha-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
gamma-Chlordane	UG/KG	NA	NA	NA	NA	NA	NA
Toxaphene	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1016	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1221	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1232	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1242	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1248	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1254	UG/KG	NA	NA	NA	NA	NA	NA
Aroclor 1260	UG/KG	NA	NA	NA	NA	NA	NA

FIELD DUPLICATE SUMMARY
OPERABLE UNIT No. 12
SITE 3 - FIELD DUPLICATES - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		03-MW02DW-00	03-MW02DW-00D	03-MW02DW-02	03-MW02DW-02D
Laboratory Sample ID:		AF7367	AF7369	AF7371	AF7373
Date Sampled:		06/20/95	06/20/95	06/20/95	06/20/95
	UNITS				
VOLATILES					
Chloromethane	UG/KG	11 U	11 U	11 U	11 U
Bromomethane	UG/KG	11 U	11 U	11 U	11 U
Vinyl chloride	UG/KG	11 U	11 U	11 U	11 U
Chloroethane	UG/KG	11 U	11 U	11 U	11 U
Methylene chloride	UG/KG	11 U	11 U	11 U	11 U
Acetone	UG/KG	11 U	11 U	27 U	28 U
Carbon Disulfide	UG/KG	11 U	11 U	11 U	11 U
1,1-Dichloroethene	UG/KG	11 U	11 U	11 U	11 U
1,1-Dichloroethane	UG/KG	11 U	11 U	11 U	11 U
1,2-Dichloroethene(total)	UG/KG	11 UJ	11 UJ	11 UJ	11 UJ
Chloroform	UG/KG	11 U	11 U	11 U	11 U
1,2-Dichloroethane	UG/KG	11 U	11 U	11 U	11 U
2-Butanone	UG/KG	11 U	11 U	11 U	11 U
1,1,1-Trichloroethane	UG/KG	11 U	11 U	11 U	11 U
Carbon tetrachloride	UG/KG	11 U	11 U	11 U	11 U
Bromodichloromethane	UG/KG	11 U	11 U	11 U	11 U
1,2-Dichloropropane	UG/KG	11 U	11 U	11 U	11 U
cis-1,3-Dichloropropene	UG/KG	11 U	11 U	11 U	11 U
Trichloroethene	UG/KG	11 U	11 U	11 U	11 U
Dibromochloromethane	UG/KG	11 U	11 U	11 U	11 U
1,1,2-Trichloroethane	UG/KG	11 U	11 U	11 U	11 U
Benzene	UG/KG	11 U	11 U	11 U	11 U
trans-1,3-Dichloropropene	UG/KG	11 U	11 U	11 U	11 U
Bromoform	UG/KG	11 U	11 U	11 U	11 U
4-Methyl-2-pentanone	UG/KG	11 U	11 U	11 U	11 U
2-Hexanone	UG/KG	11 U	11 U	11 U	11 U
Tetrachloroethene	UG/KG	11 U	11 U	11 U	11 U
1,1,2,2-Tetrachloroethane	UG/KG	11 U	11 U	11 U	11 U
Toluene	UG/KG	11 U	11 U	11 U	11 U
Chlorobenzene	UG/KG	11 U	11 U	11 U	11 U
Ethylbenzene	UG/KG	11 U	11 U	11 U	11 U
Styrene	UG/KG	11 U	11 U	11 U	11 U
Xylenes (total)	UG/KG	11 U	11 U	11 U	11 U

FIELD DUPLICATE SUMMARY
OPERABLE UNIT No. 12
SITE 3 - FIELD DUPLICATES - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		03-MW02DW-00	03-MW02DW-00D	03-MW02DW-02	03-MW02DW-02D
Laboratory Sample ID:		AF7367	AF7369	AF7371	AF7373
Date Sampled:		06/20/95	06/20/95	06/20/95	06/20/95
	UNITS				
SEMIVOLATILES					
Phenol	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
bis(2-Chloroethyl) ether	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
2-Chlorophenol	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
1,3-Dichlorobenzene	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
1,4-Dichlorobenzene	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
1,2-Dichlorobenzene	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
2-Methylphenol	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
2,2'-oxybis-(1-chloropropane)	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
4-Methylphenol	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
N-Nitroso-di-n-propylamine	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
Hexachloroethane	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
Nitrobenzene	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
Isophorone	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
2-Nitrophenol	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
2,4-Dimethylphenol	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
bis(2-Chloroethoxy) methane	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
2,4-Dichlorophenol	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
1,2,4-Trichlorobenzene	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
Naphthalene	UG/KG	1900 UJ	290 J	530 J	1800 UJ
4-Chloroaniline	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
Hexachlorobutadiene	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
4-Chloro-3-methylphenol	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
2-Methylnaphthalene	UG/KG	1900 UJ	1900 UJ	290 J	1800 UJ
Hexachlorocyclopentadiene	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
2,4,6-Trichlorophenol	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
2,4,5-Trichlorophenol	UG/KG	4500 UJ	4500 UJ	4500 UJ	4500 UJ
2-Chloronaphthalene	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
2-Nitroaniline	UG/KG	4500 UJ	4500 UJ	4500 UJ	4500 UJ
Dimethyl phthalate	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
Acenaphthylene	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
2,6-Dinitrotoluene	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
3-Nitroaniline	UG/KG	4500 UJ	4500 UJ	4500 UJ	4500 UJ
Acenaphthene	UG/KG	1900 UJ	540 J	1000 J	1800 UJ

FIELD DUPLICATE SUMMARY
OPERABLE UNIT No. 12
SITE 3 - FIELD DUPLICATES - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		03-MW02DW-00	03-MW02DW-00D	03-MW02DW-02	03-MW02DW-02D
Laboratory Sample ID:		AF7367	AF7369	AF7371	AF7373
Date Sampled:		06/20/95	06/20/95	06/20/95	06/20/95
	UNITS				
SEMIVOLATILES Cont.					
2,4-Dinitrophenol	UG/KG	4500 UJ	4500 UJ	4500 UJ	4500 UJ
4-Nitrophenol	UG/KG	4500 UJ	4500 UJ	4500 UJ	4500 UJ
Dibenzofuran	UG/KG	1900 UJ	390 J	660 J	1800 UJ
2,4-Dinitrotoluene	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
Diethylphthalate	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
4-Chlorophenyl phenyl ether	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
Fluorene	UG/KG	1900 UJ	530 J	870 J	1800 UJ
4-Nitroaniline	UG/KG	4500 UJ	4500 UJ	4500 UJ	4500 UJ
4,6-Dinitro-2-methylphenol	UG/KG	4500 UJ	4500 UJ	4500 UJ	4500 UJ
N-nitrosodiphenylamine	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
4-Bromophenyl-phenylether	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
Hexachlorobenzene	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
Pentachlorophenol	UG/KG	4500 UJ	4500 UJ	4500 UJ	4500 UJ
Phenanthrene	UG/KG	1900 UJ	1100 J	1800 J	1800 UJ
Anthracene	UG/KG	1900 UJ	240 J	370 J	1800 UJ
Carbazole	UG/KG	1900 UJ	1900 UJ	270 J	1800 UJ
di-n-Butylphthalate	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
Fluoranthene	UG/KG	1900 UJ	3300 J	4800 J	1800 UJ
Pyrene	UG/KG	1900 UJ	2500 J	3500 J	230 J
Butyl benzyl phthalate	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
3,3'-Dichlorobenzidine	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
Benzo[a]anthracene	UG/KG	1900 UJ	730 J	1100 J	1800 UJ
Chrysene	UG/KG	1900 UJ	1100 J	1700 J	1800 UJ
bis(2-Ethylhexyl)phthalate	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
di-n-Octylphthalate	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
Benzo[b]fluoranthene	UG/KG	210 J	670 J	780 J	360 J
Benzo[k]fluoranthene	UG/KG	1900 UJ	380 J	740 J	1800 UJ
Benzo[a]pyrene	UG/KG	1900 UJ	410 J	450 J	1800 UJ
Indeno[1,2,3-cd]pyrene	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
Dibenz[a,h]anthracene	UG/KG	1900 UJ	1900 UJ	1900 UJ	1800 UJ
Benzo[g,h,i]perylene	UG/KG	1900 UJ	1900 UJ	240 J	1800 UJ

FIELD DUPLICATE SUMMARY
OPERABLE UNIT No. 12
SITE 3 - FIELD DUPLICATES - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		03-MW02DW-00	03-MW02DW-00D	03-MW02DW-02	03-MW02DW-02D
Laboratory Sample ID:		AF7367	AF7369	AF7371	AF7373
Date Sampled:		06/20/95	06/20/95	06/20/95	06/20/95
	UNITS				
PESTICIDES/PCBs					
alpha-BHC	UG/KG	NA	NA	NA	NA
beta-BHC	UG/KG	NA	NA	NA	NA
delta-BHC	UG/KG	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/KG	NA	NA	NA	NA
Heptachlor	UG/KG	NA	NA	NA	NA
Aldrin	UG/KG	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	NA	NA	NA	NA
Endosulfan I	UG/KG	NA	NA	NA	NA
Dieldrin	UG/KG	NA	NA	NA	NA
4,4'-DDE	UG/KG	NA	NA	NA	NA
Endrin	UG/KG	NA	NA	NA	NA
Endosulfan II	UG/KG	NA	NA	NA	NA
4,4'-DDD	UG/KG	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	NA	NA	NA	NA
4,4'-DDT	UG/KG	NA	NA	NA	NA
Methoxychlor	UG/KG	NA	NA	NA	NA
Endrin ketone	UG/KG	NA	NA	NA	NA
Endrin aldehyde	UG/KG	NA	NA	NA	NA
alpha-Chlordane	UG/KG	NA	NA	NA	NA
gamma-Chlordane	UG/KG	NA	NA	NA	NA
Toxaphene	UG/KG	NA	NA	NA	NA
Aroclor 1016	UG/KG	NA	NA	NA	NA
Aroclor 1221	UG/KG	NA	NA	NA	NA
Aroclor 1232	UG/KG	NA	NA	NA	NA
Aroclor 1242	UG/KG	NA	NA	NA	NA
Aroclor 1248	UG/KG	NA	NA	NA	NA
Aroclor 1254	UG/KG	NA	NA	NA	NA
Aroclor 1260	UG/KG	NA	NA	NA	NA

APPENDIX I.2
SOIL - INORGANICS

FIELD DUPLICATE SUMMARY
OPERABLE UNIT No. 12
SITE 3 - FIELD DUPLICATES - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL INORGANICS

Client Sample ID:		3-MW02IW-00	3-MW02IW-00D	3-MW02IW-03	3-MW02IW-03D
Laboratory Sample ID:		AC9747	AC9759	AC9764	AC9775
Date Sampled:		11/16/94	11/16/94	11/16/94	11/16/94
	UNITS				
Aluminum	MG/KG	1740	2090	6570	6410
Antimony	MG/KG	9.9 U	10.4 U	11.5 U	12.8 U
Arsenic	MG/KG	2 U	2.1 U	2.3 U	2.6 U
Barium	MG/KG	6.4 J	7 J	6.6 J	6.5 J
Beryllium	MG/KG	0.2 U	0.21 U	0.23 U	0.26 U
Cadmium	MG/KG	0.99 U	1 U	1.1 U	1.3 U
Calcium	MG/KG	67700	71900	638	1590
Chromium	MG/KG	7.1	8.9	7.5	7.4
Cobalt	MG/KG	2 U	2.1 U	2.3 U	2.6 U
Copper	MG/KG	2 U	2.1 U	2.3 U	2.6 U
Iron	MG/KG	1390	1630	1030	1010
Lead	MG/KG	4.4 J	7.4 J	5.7 J	5 J
Magnesium	MG/KG	1020	994	112	100
Manganese	MG/KG	11.7	15.3	2.8 J	1.9 J
Mercury	MG/KG	0.1 U	0.11 U	0.12 U	0.13 U
Nickel	MG/KG	4 U	4.2 U	4.6 U	5.1 U
Potassium	MG/KG	199 U	209 U	230 U	255 U
Selenium	MG/KG	0.99 U	1 U	1.1 U	1.3 U
Silver	MG/KG	0.99 U	1 U	1.1 U	1.3 U
Sodium	MG/KG	112	181	23 U	34.3
Thallium	MG/KG	2 UJ	2.1 UJ	2.3 UJ	2.6 UJ
Vanadium	MG/KG	3.3	3.9	5	4.8
Zinc	MG/KG	16.6	22.4	6.5 UJ	6.4 UJ
Moisture	%	0.44	7.77	13.92	21.68

APPENDIX I.3
GROUNDWATER - ORGANICS

FIELD DUPLICATE SUMMARY
OPERABLE UNIT No. 12
SITE 3 - FIELD DUPLICATES - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-MW02DW-01	3-MW02DW-01D
Laboratory Sample ID:		AD2155	AD2164
Date Sampled:		12/03/94	12/03/94
	UNITS		
SEMIVOLATILES			
Phenol	UG/L	10 U	10 U
bis(2-Chloroethyl) ether	UG/L	10 U	10 U
2-Chlorophenol	UG/L	10 U	10 U
1,3-Dichlorobenzene	UG/L	10 U	10 U
1,4-Dichlorobenzene	UG/L	10 U	10 U
1,2-Dichlorobenzene	UG/L	10 U	10 U
2-Methylphenol	UG/L	10 U	10 U
2,2'-oxybis-(1-chloropropane)	UG/L	10 U	10 U
4-Methylphenol	UG/L	10 U	2 J
N-Nitroso-di-n-propylamine	UG/L	10 U	10 U
Hexachloroethane	UG/L	10 U	10 U
Nitrobenzene	UG/L	10 U	10 U
Isophorone	UG/L	10 U	10 U
2-Nitrophenol	UG/L	10 U	10 U
2,4-Dimethylphenol	UG/L	10 U	10 U
bis(2-Chloroethoxy) methane	UG/L	10 U	10 U
2,4-Dichlorophenol	UG/L	10 U	10 U
1,2,4-Trichlorobenzene	UG/L	10 U	10 U
Naphthalene	UG/L	3 J	10 U
4-Chloroaniline	UG/L	10 U	10 U
Hexachlorobutadiene	UG/L	10 U	10 U
4-Chloro-3-methylphenol	UG/L	10 U	10 U
2-Methylnaphthalene	UG/L	10 U	10 U
Hexachlorocyclopentadiene	UG/L	10 U	10 U
2,4,6-Trichlorophenol	UG/L	10 U	10 U
2,4,5-Trichlorophenol	UG/L	25 U	25 U
2-Chloronaphthalene	UG/L	10 U	10 U
2-Nitroaniline	UG/L	25 U	25 U
Dimethyl phthalate	UG/L	10 U	10 U
Acenaphthylene	UG/L	3 J	3 J
2,6-Dinitrotoluene	UG/L	10 U	10 U
3-Nitroaniline	UG/L	25 U	25 U
Acenaphthene	UG/L	95	91

FIELD DUPLICATE SUMMARY
OPERABLE UNIT No. 12
SITE 3 - FIELD DUPLICATES - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-MW02DW-01	3-MW02DW-01D
Laboratory Sample ID:		AD2155	AD2164
Date Sampled:		12/03/94	12/03/94
	UNITS		
SEMIVOLATILES Cont.			
2,4-Dinitrophenol	UG/L	25 U	25 U
4-Nitrophenol	UG/L	25 U	25 U
Dibenzofuran	UG/L	57	58
2,4-Dinitrotoluene	UG/L	10 U	10 U
Diethylphthalate	UG/L	10 U	10 U
4-Chlorophenyl phenyl ether	UG/L	10 UJ	10 UJ
Fluorene	UG/L	59	62
4-Nitroaniline	UG/L	25 U	25 U
4,6-Dinitro-2-methylphenol	UG/L	25 U	25 U
N-nitrosodiphenylamine	UG/L	10 U	10 U
4-Bromophenyl-phenylether	UG/L	10 U	10 U
Hexachlorobenzene	UG/L	10 U	10 U
Pentachlorophenol	UG/L	25 U	25 U
Phenanthrene	UG/L	75	78
Anthracene	UG/L	5 J	5 J
Carbazole	UG/L	10 U	10 U
di-n-Butylphthalate	UG/L	10 U	10 U
Fluoranthene	UG/L	10	10
Pyrene	UG/L	7 J	7 J
Butyl benzyl phthalate	UG/L	10 U	10 U
3,3'-Dichlorobenzidine	UG/L	10 U	10 U
Benzo[a]anthracene	UG/L	10 U	10 U
Chrysene	UG/L	10 U	10 U
bis(2-Ethylhexyl)phthalate	UG/L	10 U	1 J
di-n-Octylphthalate	UG/L	10 U	10 U
Benzo[b]fluoranthene	UG/L	10 U	10 U
Benzo[k]fluoranthene	UG/L	10 UJ	10 UJ
Benzo[a]pyrene	UG/L	10 U	10 U
Indeno[1,2,3-cd]pyrene	UG/L	10 U	10 U
Dibenz[a,h]anthracene	UG/L	10 U	10 U
Benzo[g,h,i]perylene	UG/L	10 U	10 U

FIELD DUPLICATE SUMMARY
OPERABLE UNIT No. 12
SITE 3 - FIELD DUPLICATES - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-MW02DW-01	3-MW02DW-01D
Laboratory Sample ID:		AD2155	AD2164
Date Sampled:		12/03/94	12/03/94
	UNITS		
PESTICIDES/PCBs			
alpha-BHC	UG/L	0.05 UJ	0.05 UJ
beta-BHC	UG/L	0.05 UJ	0.05 UJ
delta-BHC	UG/L	0.05 UJ	0.05 UJ
Lindane (gamma-BHC)	UG/L	0.05 UJ	0.05 UJ
Heptachlor	UG/L	0.05 UJ	0.05 UJ
Aldrin	UG/L	0.05 UJ	0.05 UJ
Heptachlor epoxide	UG/L	0.05 UJ	0.05 UJ
Endosulfan I	UG/L	0.05 UJ	0.05 UJ
Dieldrin	UG/L	0.1 UJ	0.1 UJ
4,4'-DDE	UG/L	0.1 UJ	0.1 UJ
Endrin	UG/L	0.1 UJ	0.1 UJ
Endosulfan II	UG/L	0.1 UJ	0.1 UJ
4,4'-DDD	UG/L	0.1 UJ	0.1 UJ
Endosulfan sulfate	UG/L	0.1 UJ	0.1 UJ
4,4'-DDT	UG/L	0.1 UJ	0.1 UJ
Methoxychlor	UG/L	0.5 UJ	0.5 UJ
Endrin ketone	UG/L	0.1 UJ	0.1 UJ
Endrin aldehyde	UG/L	0.1 UJ	0.1 UJ
alpha-Chlordane	UG/L	0.05 UJ	0.05 UJ
gamma-Chlordane	UG/L	0.05 UJ	0.05 UJ
Toxaphene	UG/L	5 UJ	5 UJ
Aroclor 1016	UG/L	1 UJ	1 UJ
Aroclor 1221	UG/L	2 UJ	2 UJ
Aroclor 1232	UG/L	1 UJ	1 UJ
Aroclor 1242	UG/L	1 UJ	1 UJ
Aroclor 1248	UG/L	1 UJ	1 UJ
Aroclor 1254	UG/L	1 UJ	1 UJ
Aroclor 1260	UG/L	1 UJ	1 UJ

APPENDIX I.4
GROUNDWATER - INORGANICS

FIELD DUPLICATE SUMMARY
OPERABLE UNIT No. 12
SITE 3 - FIELD DUPLICATES - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL TOTAL & DISSOLVED INORGANICS

Client Sample ID:		3-MW02DW-01	3-MW02DW-01D	3-MW02DWD-01	3-MW02DWD-01D
Laboratory Sample ID:		AD2156	AD2165	AD2166	AD2169
Date Sampled:		12/03/94	12/03/94	12/03/94	12/03/94
	UNITS				
Aluminum	UG/L	44 U	53.1 U	40 U	40 U
Antimony	UG/L	50 U	50 U	50 U	50 U
Arsenic	UG/L	10 U	10 U	10 U	10 U
Barium	UG/L	31.8 J	33.8 J	29 J	35.1 J
Beryllium	UG/L	1 U	1 U	1 U	1 U
Cadmium	UG/L	5 U	5 U	5 U	5 U
Calcium	UG/L	43600	47200	42200	48500
Chromium	UG/L	10 U	10 U	10 U	10 U
Cobalt	UG/L	10 U	10 U	10 U	10 U
Copper	UG/L	10 U	10 U	10 U	10 U
Iron	UG/L	43.2	44.1	24.4	20.3
Lead	UG/L	3 U	3 U	3 U	3 U
Magnesium	UG/L	1410	1510	1370	1590
Manganese	UG/L	4.5 J	6.2 J	4.9 J	6.4 J
Mercury	UG/L	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	UG/L	20 U	20 U	20 U	20 U
Potassium	UG/L	1300	1000 U	1000 U	1560
Selenium	UG/L	5 U	5 U	5 U	5 U
Silver	UG/L	5 U	5 U	5 U	5 U
Sodium	UG/L	15300	15800	13900 J	16500 J
Thallium	UG/L	10 U	10 U	10 U	10 U
Vanadium	UG/L	10 U	10 U	10 U	10 U
Zinc	UG/L	18.7 UJ	9.4 UJ	6 UJ	11.4 UJ

APPENDIX J
QA/QC SUMMARIES

APPENDIX J.1
SOIL - ORGANICS

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-ER01	3-ER02	3-RS-01	3-RS-03	3-RS-05	3-TB-01
Laboratory Sample ID:		AC0935	AC0936	AC9612	AD0017	AD0560	AC9785
Date Sampled:		9/20/94	9/20/94	11/14/94	11/16/94	11/20/94	11/16/94
	UNITS						
VOLATILES							
Chloromethane	UG/L	NA	NA	NA	10 U	10 U	10 U
Bromomethane	UG/L	NA	NA	NA	10 UJ	10 U	10 UJ
Vinyl chloride	UG/L	NA	NA	NA	10 U	10 U	10 UJ
Chloroethane	UG/L	NA	NA	NA	10 U	10 U	10 U
Methylene chloride	UG/L	NA	NA	NA	3 J	2 J	2 J
Acetone	UG/L	NA	NA	NA	28	15	5 J
Carbon Disulfide	UG/L	NA	NA	NA	10 U	10 U	10 U
1,1-Dichloroethene	UG/L	NA	NA	NA	10 U	10 U	10 U
1,1-Dichloroethane	UG/L	NA	NA	NA	10 U	10 U	10 U
1,2-Dichloroethene(total)	UG/L	NA	NA	NA	10 U	10 U	10 U
Chloroform	UG/L	NA	NA	NA	10 U	10 U	10 U
1,2-Dichloroethane	UG/L	NA	NA	NA	1 J	1 J	3 J
2-Butanone	UG/L	NA	NA	NA	10 J	9 J	5 J
1,1,1-Trichloroethane	UG/L	NA	NA	NA	10 U	10 U	10 U
Carbon tetrachloride	UG/L	NA	NA	NA	10 U	10 U	10 U
Bromodichloromethane	UG/L	NA	NA	NA	10 U	10 U	10 U
1,2-Dichloropropane	UG/L	NA	NA	NA	10 U	10 U	10 U
cis-1,3-Dichloropropene	UG/L	NA	NA	NA	10 U	10 U	10 U
Trichloroethene	UG/L	NA	NA	NA	10 U	10 U	10 U
Dibromochloromethane	UG/L	NA	NA	NA	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/L	NA	NA	NA	10 U	10 U	10 U
Benzene	UG/L	NA	NA	NA	10 U	10 U	10 U
trans-1,3-Dichloropropene	UG/L	NA	NA	NA	10 U	10 U	10 U
Bromoform	UG/L	NA	NA	NA	10 U	10 U	10 U
4-Methyl-2-pentanone	UG/L	NA	NA	NA	10 U	10 U	10 U
2-Hexanone	UG/L	NA	NA	NA	1 J	10 U	10 U
Tetrachloroethene	UG/L	NA	NA	NA	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/L	NA	NA	NA	10 U	10 U	10 U
Toluene	UG/L	NA	NA	NA	10 U	10 U	10 U
Chlorobenzene	UG/L	NA	NA	NA	10 U	10 U	10 U
Ethylbenzene	UG/L	NA	NA	NA	10 U	10 U	10 U
Styrene	UG/L	NA	NA	NA	10 U	10 U	10 U
Xylenes (total)	UG/L	NA	NA	NA	10 U	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-ER01	3-ER02	3-RS-01	3-RS-03	3-RS-05	3-TB-01
Laboratory Sample ID:		AC0935	AC0936	AC9612	AD0017	AD0560	AC9785
Date Sampled:		9/20/94	9/20/94	11/14/94	11/16/94	11/20/94	11/16/94
	UNITS						
SEMIVOLATILES							
Phenol	UG/L	10 U	10 U	10 U	10 U	10 U	NA
bis(2-Chloroethyl) ether	UG/L	10 U	10 U	10 U	10 U	10 U	NA
2-Chlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	NA
1,3-Dichlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	NA
1,4-Dichlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	NA
1,2-Dichlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	NA
2-Methylphenol	UG/L	10 U	10 U	10 U	10 U	10 U	NA
2,2'-oxybis-(1-chloropropane)	UG/L	10 U	10 U	10 U	10 U	10 U	NA
4-Methylphenol	UG/L	10 U	10 U	10 U	10 U	10 U	NA
N-Nitroso-di-n-propylamine	UG/L	10 U	10 U	10 U	10 U	10 U	NA
Hexachloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	NA
Nitrobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	NA
Isophorone	UG/L	10 U	10 U	10 U	10 U	10 U	NA
2-Nitrophenol	UG/L	10 U	10 U	10 U	10 U	10 U	NA
2,4-Dimethylphenol	UG/L	10 U	10 U	10 U	10 U	10 U	NA
bis(2-Chloroethoxy) methane	UG/L	10 U	10 U	10 U	10 U	10 U	NA
2,4-Dichlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	NA
1,2,4-Trichlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	NA
Naphthalene	UG/L	10 U	10 U	10 U	10 U	10 U	NA
4-Chloroaniline	UG/L	10 U	10 U	10 U	10 U	10 U	NA
Hexachlorobutadiene	UG/L	10 U	10 U	10 U	10 U	10 U	NA
4-Chloro-3-methylphenol	UG/L	10 U	10 U	10 U	10 U	10 U	NA
2-Methylnaphthalene	UG/L	10 U	10 U	10 U	10 U	10 U	NA
Hexachlorocyclopentadiene	UG/L	10 U	10 U	10 U	10 U	10 U	NA
2,4,6-Trichlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	NA
2,4,5-Trichlorophenol	UG/L	25 U	25 U	25 U	25 U	25 U	NA
2-Chloronaphthalene	UG/L	10 U	10 U	10 U	10 U	10 U	NA
2-Nitroaniline	UG/L	25 U	25 U	25 U	25 U	25 U	NA
Dimethyl phthalate	UG/L	10 U	10 U	10 U	10 U	10 U	NA
Acenaphthylene	UG/L	10 U	10 U	10 U	10 U	10 U	NA
2,6-Dinitrotoluene	UG/L	10 U	10 U	10 U	10 U	10 U	NA
3-Nitroaniline	UG/L	25 U	25 U	25 U	25 U	25 U	NA
Acenaphthene	UG/L	10 U	10 U	10 U	10 U	10 U	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-ER01	3-ER02	3-RS-01	3-RS-03	3-RS-05	3-TB-01
Laboratory Sample ID:		AC0935	AC0936	AC9612	AD0017	AD0560	AC9785
Date Sampled:		9/20/94	9/20/94	11/14/94	11/16/94	11/20/94	11/16/94
SEMIVOLATILES Cont.	UNITS						
2,4-Dinitrophenol	UG/L	25 U	25 U	25 U	25 U	25 U	NA
4-Nitrophenol	UG/L	25 U	25 U	25 U	25 UJ	25 U	NA
Dibenzofuran	UG/L	10 U	10 U	10 U	10 U	10 U	NA
2,4-Dinitrotoluene	UG/L	10 U	10 U	10 U	10 U	10 U	NA
Diethylphthalate	UG/L	10 U	10 U	10 U	10 U	10 U	NA
4-Chlorophenyl phenyl ether	UG/L	10 U	10 U	10 U	10 U	10 U	NA
Fluorene	UG/L	10 U	10 U	10 U	10 U	10 U	NA
4-Nitroaniline	UG/L	25 U	25 U	25 U	25 U	25 U	NA
4,6-Dinitro-2-methylphenol	UG/L	25 U	25 U	25 U	25 U	25 U	NA
N-nitrosodiphenylamine	UG/L	10 U	10 U	10 U	10 U	10 U	NA
4-Bromophenyl-phenylether	UG/L	10 U	10 U	10 U	10 U	10 U	NA
Hexachlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	NA
Pentachlorophenol	UG/L	25 U	25 U	25 U	25 UJ	25 U	NA
Phenanthrene	UG/L	10 U	10 U	10 U	10 U	10 U	NA
Anthracene	UG/L	10 U	10 U	10 U	10 U	10 U	NA
Carbazole	UG/L	10 U	10 U	10 U	10 U	10 U	NA
di-n-Butylphthalate	UG/L	10 U	10 U	10 U	10 U	10 U	NA
Fluoranthene	UG/L	10 U	10 U	10 U	10 U	10 U	NA
Pyrene	UG/L	10 U	10 U	10 U	10 U	10 U	NA
Butyl benzyl phthalate	UG/L	10 U	10 U	10 U	10 U	10 U	NA
3,3'-Dichlorobenzidine	UG/L	10 U	10 U	10 U	10 U	10 U	NA
Benzo[a]anthracene	UG/L	10 U	10 U	10 U	10 U	10 U	NA
Chrysene	UG/L	10 U	10 U	10 U	10 U	10 U	NA
bis(2-Ethylhexyl)phthalate	UG/L	10 U	10 U	10 U	10 U	10 U	NA
di-n-Octylphthalate	UG/L	10 U	10 U	10 U	10 U	10 U	NA
Benzo[b]fluoranthene	UG/L	10 U	10 U	10 U	10 U	10 UJ	NA
Benzo[k]fluoranthene	UG/L	10 U	10 U	10 U	10 UJ	10 UJ	NA
Benzo[a]pyrene	UG/L	10 U	10 U	10 U	10 U	10 UJ	NA
Indeno[1,2,3-cd]pyrene	UG/L	10 U	10 U	10 U	10 U	10 UJ	NA
Dibenz[a,h]anthracene	UG/L	10 U	10 U	10 U	10 U	10 UJ	NA
Benzo[g,h,i]perylene	UG/L	10 U	10 U	10 U	10 U	10 U	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-ER01	3-ER02	3-RS-01	3-RS-03	3-RS-05	3-TB-01
Laboratory Sample ID:		AC0935	AC0936	AC9612	AD0017	AD0560	AC9785
Date Sampled:		9/20/94	9/20/94	11/14/94	11/16/94	11/20/94	11/16/94
	UNITS						
PESTICIDES/PCBs							
alpha-BHC	UG/L	NA	NA	NA	0.05 U	0.05 U	NA
beta-BHC	UG/L	NA	NA	NA	0.05 U	0.05 U	NA
delta-BHC	UG/L	NA	NA	NA	0.05 U	0.05 U	NA
Lindane (gamma-BHC)	UG/L	NA	NA	NA	0.05 U	0.05 U	NA
Heptachlor	UG/L	NA	NA	NA	0.05 U	0.05 U	NA
Aldrin	UG/L	NA	NA	NA	0.05 U	0.05 U	NA
Heptachlor epoxide	UG/L	NA	NA	NA	0.05 U	0.05 U	NA
Endosulfan I	UG/L	NA	NA	NA	0.05 U	0.05 U	NA
Dieldrin	UG/L	NA	NA	NA	0.1 U	0.1 U	NA
4,4'-DDE	UG/L	NA	NA	NA	0.1 U	0.1 U	NA
Endrin	UG/L	NA	NA	NA	0.1 U	0.1 U	NA
Endosulfan II	UG/L	NA	NA	NA	0.1 U	0.1 U	NA
4,4'-DDD	UG/L	NA	NA	NA	0.1 U	0.1 U	NA
Endosulfan sulfate	UG/L	NA	NA	NA	0.1 U	0.1 U	NA
4,4'-DDT	UG/L	NA	NA	NA	0.1 U	0.1 U	NA
Methoxychlor	UG/L	NA	NA	NA	0.5 U	0.5 U	NA
Endrin ketone	UG/L	NA	NA	NA	0.1 U	0.1 U	NA
Endrin aldehyde	UG/L	NA	NA	NA	0.1 U	0.1 U	NA
alpha-Chlordane	UG/L	NA	NA	NA	0.05 U	0.05 U	NA
gamma-Chlordane	UG/L	NA	NA	NA	0.05 U	0.05 U	NA
Toxaphene	UG/L	NA	NA	NA	5 U	5 U	NA
Aroclor 1016	UG/L	NA	NA	NA	1 U	1 U	NA
Aroclor 1221	UG/L	NA	NA	NA	2 U	2 U	NA
Aroclor 1232	UG/L	NA	NA	NA	1 U	1 U	NA
Aroclor 1242	UG/L	NA	NA	NA	1 U	1 U	NA
Aroclor 1248	UG/L	NA	NA	NA	1 U	1 U	NA
Aroclor 1254	UG/L	NA	NA	NA	1 U	1 U	NA
Aroclor 1260	UG/L	NA	NA	NA	1 U	1 U	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TB-02	03-FB10	03-RB10	03-RB11	03-RB15	03-RB18
Laboratory Sample ID:		AD0026	AF6656	AF6652	AF6817	AF7307	AF7364
Date Sampled:		11/17/94	06/12/95	06/12/95	06/13/95	06/18/95	06/20/95
	UNITS						
VOLATILES							
Chloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	UG/L	10 UJ	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	UG/L	4 J	1 J	2 J	10 U	2 J	10 U
Acetone	UG/L	8 J	28	720 J	52	11 J	11 J
Carbon Disulfide	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene(total)	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/L	2 J	10 U	10 U	10 U	10 U	10 U
2-Butanone	UG/L	7 J	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	UG/L	1 J	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (total)	UG/L	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TB-02	03-FB10	03-RB10	03-RB11	03-RB15	03-RB18
Laboratory Sample ID:		AD0026	AF6656	AF6652	AF6817	AF7307	AF7364
Date Sampled:		11/17/94	06/12/95	06/12/95	06/13/95	06/18/95	06/20/95
	UNITS						
SEMIVOLATILES							
Phenol	UG/L	NA	6 J	5 J	7 J	10 U	10 U
bis(2-Chloroethyl) ether	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
2-Chlorophenol	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
1,3-Dichlorobenzene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
1,4-Dichlorobenzene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
1,2-Dichlorobenzene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
2-Methylphenol	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
2,2'-oxybis-(1-chloropropane)	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
4-Methylphenol	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
N-Nitroso-di-n-propylamine	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Hexachloroethane	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Nitrobenzene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Isophorone	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
2-Nitrophenol	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
2,4-Dimethylphenol	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
bis(2-Chloroethoxy) methane	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
2,4-Dichlorophenol	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
1,2,4-Trichlorobenzene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Naphthalene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
4-Chloroaniline	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Hexachlorobutadiene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
4-Chloro-3-methylphenol	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
2-Methylnaphthalene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Hexachlorocyclopentadiene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
2,4,6-Trichlorophenol	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
2,4,5-Trichlorophenol	UG/L	NA	24 U	25 U	24 UJ	24 U	25 U
2-Chloronaphthalene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
2-Nitroaniline	UG/L	NA	24 U	25 U	24 UJ	24 U	25 U
Dimethyl phthalate	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Acenaphthylene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
2,6-Dinitrotoluene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
3-Nitroaniline	UG/L	NA	24 U	25 U	24 UJ	24 U	25 U
Acenaphthene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TB-02	03-FB10	03-RB10	03-RB11	03-RB15	03-RB18
Laboratory Sample ID:		AD0026	AF6656	AF6652	AF6817	AF7307	AF7364
Date Sampled:		11/17/94	06/12/95	06/12/95	06/13/95	06/18/95	06/20/95
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/L	NA	24 UJ	25 UJ	24 UJ	24 U	25 U
4-Nitrophenol	UG/L	NA	24 U	25 U	24 UJ	24 U	25 U
Dibenzofuran	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
2,4-Dinitrotoluene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Diethylphthalate	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
4-Chlorophenyl phenyl ether	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Fluorene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
4-Nitroaniline	UG/L	NA	24 U	25 U	24 UJ	24 U	25 U
4,6-Dinitro-2-methylphenol	UG/L	NA	24 U	25 U	24 UJ	24 U	25 U
N-nitrosodiphenylamine	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
4-Bromophenyl-phenylether	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Hexachlorobenzene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Pentachlorophenol	UG/L	NA	24 U	25 U	24 UJ	24 U	25 U
Phenanthrene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Anthracene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Carbazole	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
di-n-Butylphthalate	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Fluoranthene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Pyrene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Butyl benzyl phthalate	UG/L	NA	4 J	10 U	10 UJ	10 U	10 U
3,3'-Dichlorobenzidine	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Benzo[a]anthracene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Chrysene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
bis(2-Ethylhexyl)phthalate	UG/L	NA	10 U	2 J	4 J	10 U	10 U
di-n-Octylphthalate	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Benzo[b]fluoranthene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Benzo[k]fluoranthene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Benzo[a]pyrene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Indeno[1,2,3-cd]pyrene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Dibenz[a,h]anthracene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U
Benzo[g,h,i]perylene	UG/L	NA	10 U	10 U	10 UJ	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-TB-02	03-FB10	03-RB10	03-RB11	03-RB15	03-RB18
Laboratory Sample ID:		AD0026	AF6656	AF6652	AF6817	AF7307	AF7364
Date Sampled:		11/17/94	06/12/95	06/12/95	06/13/95	06/18/95	06/20/95
	UNITS						
PESTICIDES/PCBs							
alpha-BHC	UG/L	NA	NA	NA	NA	NA	NA
beta-BHC	UG/L	NA	NA	NA	NA	NA	NA
delta-BHC	UG/L	NA	NA	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/L	NA	NA	NA	NA	NA	NA
Heptachlor	UG/L	NA	NA	NA	NA	NA	NA
Aldrin	UG/L	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	UG/L	NA	NA	NA	NA	NA	NA
Endosulfan I	UG/L	NA	NA	NA	NA	NA	NA
Dieldrin	UG/L	NA	NA	NA	NA	NA	NA
4,4'-DDE	UG/L	NA	NA	NA	NA	NA	NA
Endrin	UG/L	NA	NA	NA	NA	NA	NA
Endosulfan II	UG/L	NA	NA	NA	NA	NA	NA
4,4'-DDD	UG/L	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	UG/L	NA	NA	NA	NA	NA	NA
4,4'-DDT	UG/L	NA	NA	NA	NA	NA	NA
Methoxychlor	UG/L	NA	NA	NA	NA	NA	NA
Endrin ketone	UG/L	NA	NA	NA	NA	NA	NA
Endrin aldehyde	UG/L	NA	NA	NA	NA	NA	NA
alpha-Chlordane	UG/L	NA	NA	NA	NA	NA	NA
gamma-Chlordane	UG/L	NA	NA	NA	NA	NA	NA
Toxaphene	UG/L	NA	NA	NA	NA	NA	NA
Aroclor 1016	UG/L	NA	NA	NA	NA	NA	NA
Aroclor 1221	UG/L	NA	NA	NA	NA	NA	NA
Aroclor 1232	UG/L	NA	NA	NA	NA	NA	NA
Aroclor 1242	UG/L	NA	NA	NA	NA	NA	NA
Aroclor 1248	UG/L	NA	NA	NA	NA	NA	NA
Aroclor 1254	UG/L	NA	NA	NA	NA	NA	NA
Aroclor 1260	UG/L	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		03-TB-100	03-TB-101	03-TB-102	03-TB-103	03-TB-104	03-TB-105
Laboratory Sample ID:		AF6642	AF6818	AF7038	AF7150	AF7315	AF7365
Date Sampled:		06/13/95	06/14/95	06/15/95	06/16/95	06/18/95	06/20/95
	UNITS						
VOLATILES							
Chloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	UG/L	10 U	10 U	10 UJ	10 U	10 U	10 U
Chloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	UG/L	6 J	6 J	7 J	5 J	7 J	6 J
Acetone	UG/L	10 U	10 U	10 U	10 U	10 U	9 J
Carbon Disulfide	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene(total)	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (total)	UG/L	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		03-TB-100	03-TB-101	03-TB-102	03-TB-103	03-TB-104	03-TB-105
Laboratory Sample ID:		AF6642	AF6818	AF7038	AF7150	AF7315	AF7365
Date Sampled:		06/13/95	06/14/95	06/15/95	06/16/95	06/18/95	06/20/95
	UNITS						
SEMIVOLATILES							
Phenol	UG/L	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	UG/L	NA	NA	NA	NA	NA	NA
2-Chlorophenol	UG/L	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	UG/L	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	UG/L	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	UG/L	NA	NA	NA	NA	NA	NA
2-Methylphenol	UG/L	NA	NA	NA	NA	NA	NA
2,2'-oxybis-(1-chloropropane)	UG/L	NA	NA	NA	NA	NA	NA
4-Methylphenol	UG/L	NA	NA	NA	NA	NA	NA
N-Nitroso-di-n-propylamine	UG/L	NA	NA	NA	NA	NA	NA
Hexachloroethane	UG/L	NA	NA	NA	NA	NA	NA
Nitrobenzene	UG/L	NA	NA	NA	NA	NA	NA
Isophorone	UG/L	NA	NA	NA	NA	NA	NA
2-Nitrophenol	UG/L	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	UG/L	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy) methane	UG/L	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	UG/L	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	UG/L	NA	NA	NA	NA	NA	NA
Naphthalene	UG/L	NA	NA	NA	NA	NA	NA
4-Chloroaniline	UG/L	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	UG/L	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	UG/L	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	UG/L	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	UG/L	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	UG/L	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	UG/L	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	UG/L	NA	NA	NA	NA	NA	NA
2-Nitroaniline	UG/L	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	UG/L	NA	NA	NA	NA	NA	NA
Acenaphthylene	UG/L	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	UG/L	NA	NA	NA	NA	NA	NA
3-Nitroaniline	UG/L	NA	NA	NA	NA	NA	NA
Acenaphthene	UG/L	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		03-TB-100	03-TB-101	03-TB-102	03-TB-103	03-TB-104	03-TB-105
Laboratory Sample ID:		AF6642	AF6818	AF7038	AF7150	AF7315	AF7365
Date Sampled:		06/13/95	06/14/95	06/15/95	06/16/95	06/18/95	06/20/95
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/L	NA	NA	NA	NA	NA	NA
4-Nitrophenol	UG/L	NA	NA	NA	NA	NA	NA
Dibenzofuran	UG/L	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	UG/L	NA	NA	NA	NA	NA	NA
Diethylphthalate	UG/L	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	UG/L	NA	NA	NA	NA	NA	NA
Fluorene	UG/L	NA	NA	NA	NA	NA	NA
4-Nitroaniline	UG/L	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	UG/L	NA	NA	NA	NA	NA	NA
N-nitrosodiphenylamine	UG/L	NA	NA	NA	NA	NA	NA
4-Bromophenyl-phenylether	UG/L	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	UG/L	NA	NA	NA	NA	NA	NA
Pentachlorophenol	UG/L	NA	NA	NA	NA	NA	NA
Phenanthrene	UG/L	NA	NA	NA	NA	NA	NA
Anthracene	UG/L	NA	NA	NA	NA	NA	NA
Carbazole	UG/L	NA	NA	NA	NA	NA	NA
di-n-Butylphthalate	UG/L	NA	NA	NA	NA	NA	NA
Fluoranthene	UG/L	NA	NA	NA	NA	NA	NA
Pyrene	UG/L	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate	UG/L	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	UG/L	NA	NA	NA	NA	NA	NA
Benzo[a]anthracene	UG/L	NA	NA	NA	NA	NA	NA
Chrysene	UG/L	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	UG/L	NA	NA	NA	NA	NA	NA
di-n-Octylphthalate	UG/L	NA	NA	NA	NA	NA	NA
Benzo[b]fluoranthene	UG/L	NA	NA	NA	NA	NA	NA
Benzo[k]fluoranthene	UG/L	NA	NA	NA	NA	NA	NA
Benzo[a]pyrene	UG/L	NA	NA	NA	NA	NA	NA
Indeno[1,2,3-cd]pyrene	UG/L	NA	NA	NA	NA	NA	NA
Dibenz[a,h]anthracene	UG/L	NA	NA	NA	NA	NA	NA
Benzo[g,h,i]perylene	UG/L	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		03-TB-100	03-TB-101	03-TB-102	03-TB-103	03-TB-104	03-TB-105
Laboratory Sample ID:		AF6642	AF6818	AF7038	AF7150	AF7315	AF7365
Date Sampled:		06/13/95	06/14/95	06/15/95	06/16/95	06/18/95	06/20/95
	UNITS						
PESTICIDES/PCBs							
alpha-BHC	UG/L	NA	NA	NA	NA	NA	NA
beta-BHC	UG/L	NA	NA	NA	NA	NA	NA
delta-BHC	UG/L	NA	NA	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/L	NA	NA	NA	NA	NA	NA
Heptachlor	UG/L	NA	NA	NA	NA	NA	NA
Aldrin	UG/L	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	UG/L	NA	NA	NA	NA	NA	NA
Endosulfan I	UG/L	NA	NA	NA	NA	NA	NA
Dieldrin	UG/L	NA	NA	NA	NA	NA	NA
4,4'-DDE	UG/L	NA	NA	NA	NA	NA	NA
Endrin	UG/L	NA	NA	NA	NA	NA	NA
Endosulfan II	UG/L	NA	NA	NA	NA	NA	NA
4,4'-DDD	UG/L	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	UG/L	NA	NA	NA	NA	NA	NA
4,4'-DDT	UG/L	NA	NA	NA	NA	NA	NA
Methoxychlor	UG/L	NA	NA	NA	NA	NA	NA
Endrin ketone	UG/L	NA	NA	NA	NA	NA	NA
Endrin aldehyde	UG/L	NA	NA	NA	NA	NA	NA
alpha-Chlordane	UG/L	NA	NA	NA	NA	NA	NA
gamma-Chlordane	UG/L	NA	NA	NA	NA	NA	NA
Toxaphene	UG/L	NA	NA	NA	NA	NA	NA
Aroclor 1016	UG/L	NA	NA	NA	NA	NA	NA
Aroclor 1221	UG/L	NA	NA	NA	NA	NA	NA
Aroclor 1232	UG/L	NA	NA	NA	NA	NA	NA
Aroclor 1242	UG/L	NA	NA	NA	NA	NA	NA
Aroclor 1248	UG/L	NA	NA	NA	NA	NA	NA
Aroclor 1254	UG/L	NA	NA	NA	NA	NA	NA
Aroclor 1260	UG/L	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
VOLATILES							
Chloromethane	UG/L	10 U	10 U	ND	ND		0/15
Bromomethane	UG/L	10 UJ	10 UJ	ND	ND		0/15
Vinyl chloride	UG/L	10 U	10 U	ND	ND		0/15
Chloroethane	UG/L	10 U	10 U	ND	ND		0/15
Methylene chloride	UG/L	10 U	10 U	1 J	7 J	03-TB-104	13/15
Acetone	UG/L	10 U	10 U	5 J	720 J	03-RB10	10/15
Carbon Disulfide	UG/L	10 U	10 U	ND	ND		0/15
1,1-Dichloroethene	UG/L	10 U	10 U	ND	ND		0/15
1,1-Dichloroethane	UG/L	10 U	10 U	ND	ND		0/15
1,2-Dichloroethene(total)	UG/L	10 U	10 U	ND	ND		0/15
Chloroform	UG/L	10 U	10 U	ND	ND		0/15
1,2-Dichloroethane	UG/L	10 U	10 U	1 J	3 J	3-TB-01	4/15
2-Butanone	UG/L	10 U	10 U	5 J	10 J	3-RS-03	4/15
1,1,1-Trichloroethane	UG/L	10 U	10 U	ND	ND		0/15
Carbon tetrachloride	UG/L	10 U	10 U	ND	ND		0/15
Bromodichloromethane	UG/L	10 U	10 U	ND	ND		0/15
1,2-Dichloropropane	UG/L	10 U	10 U	ND	ND		0/15
cis-1,3-Dichloropropene	UG/L	10 U	10 U	ND	ND		0/15
Trichloroethene	UG/L	10 U	10 U	ND	ND		0/15
Dibromochloromethane	UG/L	10 U	10 U	ND	ND		0/15
1,1,2-Trichloroethane	UG/L	10 U	10 U	ND	ND		0/15
Benzene	UG/L	10 U	10 U	ND	ND		0/15
trans-1,3-Dichloropropene	UG/L	10 U	10 U	ND	ND		0/15
Bromoform	UG/L	10 U	10 U	ND	ND		0/15
4-Methyl-2-pentanone	UG/L	10 U	10 U	ND	ND		0/15
2-Hexanone	UG/L	10 U	10 U	1 J	1 J	3-TB-02	2/15
Tetrachloroethene	UG/L	10 U	10 U	ND	ND		0/15
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 U	ND	ND		0/15
Toluene	UG/L	10 U	10 U	ND	ND		0/15
Chlorobenzene	UG/L	10 U	10 U	ND	ND		0/15
Ethylbenzene	UG/L	10 U	10 U	ND	ND		0/15
Styrene	UG/L	10 U	10 U	ND	ND		0/15
Xylenes (total)	UG/L	10 U	10 U	ND	ND		0/15

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:		MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
	UNITS						
SEMIVOLATILES							
Phenol	UG/L	10 U	10 U	5 J	7 J	03-RB11	3/10
bis(2-Chloroethyl) ether	UG/L	10 U	10 U	ND	ND		0/10
2-Chlorophenol	UG/L	10 U	10 U	ND	ND		0/10
1,3-Dichlorobenzene	UG/L	10 U	10 U	ND	ND		0/10
1,4-Dichlorobenzene	UG/L	10 U	10 U	ND	ND		0/10
1,2-Dichlorobenzene	UG/L	10 U	10 U	ND	ND		0/10
2-Methylphenol	UG/L	10 U	10 U	ND	ND		0/10
2,2'-oxybis-(1-chloropropane)	UG/L	10 U	10 U	ND	ND		0/10
4-Methylphenol	UG/L	10 U	10 U	ND	ND		0/10
N-Nitroso-di-n-propylamine	UG/L	10 U	10 U	ND	ND		0/10
Hexachloroethane	UG/L	10 U	10 U	ND	ND		0/10
Nitrobenzene	UG/L	10 U	10 U	ND	ND		0/10
Isophorone	UG/L	10 U	10 U	ND	ND		0/10
2-Nitrophenol	UG/L	10 U	10 U	ND	ND		0/10
2,4-Dimethylphenol	UG/L	10 U	10 U	ND	ND		0/10
bis(2-Chloroethoxy) methane	UG/L	10 U	10 U	ND	ND		0/10
2,4-Dichlorophenol	UG/L	10 U	10 U	ND	ND		0/10
1,2,4-Trichlorobenzene	UG/L	10 U	10 U	ND	ND		0/10
Naphthalene	UG/L	10 U	10 U	ND	ND		0/10
4-Chloroaniline	UG/L	10 U	10 U	ND	ND		0/10
Hexachlorobutadiene	UG/L	10 U	10 U	ND	ND		0/10
4-Chloro-3-methylphenol	UG/L	10 U	10 U	ND	ND		0/10
2-Methylnaphthalene	UG/L	10 U	10 U	ND	ND		0/10
Hexachlorocyclopentadiene	UG/L	10 U	10 U	ND	ND		0/10
2,4,6-Trichlorophenol	UG/L	10 U	10 U	ND	ND		0/10
2,4,5-Trichlorophenol	UG/L	24 U	25 U	ND	ND		0/10
2-Chloronaphthalene	UG/L	10 U	10 U	ND	ND		0/10
2-Nitroaniline	UG/L	24 U	25 U	ND	ND		0/10
Dimethyl phthalate	UG/L	10 U	10 U	ND	ND		0/10
Acenaphthylene	UG/L	10 U	10 U	ND	ND		0/10
2,6-Dinitrotoluene	UG/L	10 U	10 U	ND	ND		0/10
3-Nitroaniline	UG/L	24 U	25 U	ND	ND		0/10
Acenaphthene	UG/L	10 U	10 U	ND	ND		0/10

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/L	24 UJ	25 U	ND	ND		0/10
4-Nitrophenol	UG/L	24 U	25 U	ND	ND		0/10
Dibenzofuran	UG/L	10 U	10 U	ND	ND		0/10
2,4-Dinitrotoluene	UG/L	10 U	10 U	ND	ND		0/10
Diethylphthalate	UG/L	10 U	10 U	ND	ND		0/10
4-Chlorophenyl phenyl ether	UG/L	10 U	10 U	ND	ND		0/10
Fluorene	UG/L	10 U	10 U	ND	ND		0/10
4-Nitroaniline	UG/L	24 U	25 U	ND	ND		0/10
4,6-Dinitro-2-methylphenol	UG/L	24 U	25 U	ND	ND		0/10
N-nitrosodiphenylamine	UG/L	10 U	10 U	ND	ND		0/10
4-Bromophenyl-phenylether	UG/L	10 U	10 U	ND	ND		0/10
Hexachlorobenzene	UG/L	10 U	10 U	ND	ND		0/10
Pentachlorophenol	UG/L	24 U	25 U	ND	ND		0/10
Phenanthrene	UG/L	10 U	10 U	ND	ND		0/10
Anthracene	UG/L	10 U	10 U	ND	ND		0/10
Carbazole	UG/L	10 U	10 U	ND	ND		0/10
di-n-Butylphthalate	UG/L	10 U	10 U	ND	ND		0/10
Fluoranthene	UG/L	10 U	10 U	ND	ND		0/10
Pyrene	UG/L	10 U	10 U	ND	ND		0/10
Butyl benzyl phthalate	UG/L	10 U	10 U	4 J	4 J	03-FB10	1/10
3,3'-Dichlorobenzidine	UG/L	10 U	10 U	ND	ND		0/10
Benzo[a]anthracene	UG/L	10 U	10 U	ND	ND		0/10
Chrysene	UG/L	10 U	10 U	ND	ND		0/10
bis(2-Ethylhexyl)phthalate	UG/L	10 U	10 U	2 J	4 J	03-RB11	2/10
di-n-Octylphthalate	UG/L	10 U	10 U	ND	ND		0/10
Benzo[b]fluoranthene	UG/L	10 U	10 U	ND	ND		0/10
Benzo[k]fluoranthene	UG/L	10 U	10 U	ND	ND		0/10
Benzo[a]pyrene	UG/L	10 U	10 U	ND	ND		0/10
Indeno[1,2,3-cd]pyrene	UG/L	10 U	10 U	ND	ND		0/10
Dibenz[a,h]anthracene	UG/L	10 U	10 U	ND	ND		0/10
Benzo[g,h,i]perylene	UG/L	10 U	10 U	ND	ND		0/10

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
PESTICIDES/PCBs							
alpha-BHC	UG/L	0.05 U	0.05 U	ND	ND		0/2
beta-BHC	UG/L	0.05 U	0.05 U	ND	ND		0/2
delta-BHC	UG/L	0.05 U	0.05 U	ND	ND		0/2
Lindane (gamma-BHC)	UG/L	0.05 U	0.05 U	ND	ND		0/2
Heptachlor	UG/L	0.05 U	0.05 U	ND	ND		0/2
Aldrin	UG/L	0.05 U	0.05 U	ND	ND		0/2
Heptachlor epoxide	UG/L	0.05 U	0.05 U	ND	ND		0/2
Endosulfan I	UG/L	0.05 U	0.05 U	ND	ND		0/2
Dieldrin	UG/L	0.1 U	0.1 U	ND	ND		0/2
4,4'-DDE	UG/L	0.1 U	0.1 U	ND	ND		0/2
Endrin	UG/L	0.1 U	0.1 U	ND	ND		0/2
Endosulfan II	UG/L	0.1 U	0.1 U	ND	ND		0/2
4,4'-DDD	UG/L	0.1 U	0.1 U	ND	ND		0/2
Endosulfan sulfate	UG/L	0.1 U	0.1 U	ND	ND		0/2
4,4'-DDT	UG/L	0.1 U	0.1 U	ND	ND		0/2
Methoxychlor	UG/L	0.5 U	0.5 U	ND	ND		0/2
Endrin ketone	UG/L	0.1 U	0.1 U	ND	ND		0/2
Endrin aldehyde	UG/L	0.1 U	0.1 U	ND	ND		0/2
alpha-Chlordane	UG/L	0.05 U	0.05 U	ND	ND		0/2
gamma-Chlordane	UG/L	0.05 U	0.05 U	ND	ND		0/2
Toxaphene	UG/L	5 U	5 U	ND	ND		0/2
Aroclor 1016	UG/L	1 U	1 U	ND	ND		0/2
Aroclor 1221	UG/L	2 U	2 U	ND	ND		0/2
Aroclor 1232	UG/L	1 U	1 U	ND	ND		0/2
Aroclor 1242	UG/L	1 U	1 U	ND	ND		0/2
Aroclor 1248	UG/L	1 U	1 U	ND	ND		0/2
Aroclor 1254	UG/L	1 U	1 U	ND	ND		0/2
Aroclor 1260	UG/L	1 U	1 U	ND	ND		0/2

APPENDIX J.2
SOIL - INORGANICS

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL INORGANICS

Client Sample ID:		3-RS-03	3-RS-05
Laboratory Sample ID:		AD0018	AD0561
Date Sampled:		11/16/94	11/20/94
	UNITS		
Aluminum	UG/L	40 U	40 U
Antimony	UG/L	50 U	50 U
Arsenic	UG/L	10 U	10 U
Barium	UG/L	2 U	2 U
Beryllium	UG/L	1 U	1 U
Cadmium	UG/L	5 U	5 U
Calcium	UG/L	29.8	44.8
Chromium	UG/L	10 U	10 U
Cobalt	UG/L	10 U	10 U
Copper	UG/L	10 U	10 U
Iron	UG/L	24.3	23.4
Lead	UG/L	3 U	4.2
Magnesium	UG/L	50 U	50 U
Manganese	UG/L	2 U	2 U
Mercury	UG/L	0.2 U	0.2 U
Nickel	UG/L	20 U	20 U
Potassium	UG/L	1000 U	1000 U
Selenium	UG/L	5 U	5 U
Silver	UG/L	5 U	5 U
Sodium	UG/L	100 U	145
Thallium	UG/L	10 UJ	10 U
Vanadium	UG/L	10 U	10 U
Zinc	UG/L	27.2 J	50.1

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL INORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
Aluminum	UG/L	40 U	40 U	ND	ND		0/2
Antimony	UG/L	50 U	50 U	ND	ND		0/2
Arsenic	UG/L	10 U	10 U	ND	ND		0/2
Barium	UG/L	2 U	2 U	ND	ND		0/2
Beryllium	UG/L	1 U	1 U	ND	ND		0/2
Cadmium	UG/L	5 U	5 U	ND	ND		0/2
Calcium	UG/L	NA	NA	29.8	44.8	3-RS-05	2/2
Chromium	UG/L	10 U	10 U	ND	ND		0/2
Cobalt	UG/L	10 U	10 U	ND	ND		0/2
Copper	UG/L	10 U	10 U	ND	ND		0/2
Iron	UG/L	NA	NA	23.4	24.3	3-RS-03	2/2
Lead	UG/L	3 U	3 U	4.2	4.2	3-RS-05	1/2
Magnesium	UG/L	50 U	50 U	ND	ND		0/2
Manganese	UG/L	2 U	2 U	ND	ND		0/2
Mercury	UG/L	0.2 U	0.2 U	ND	ND		0/2
Nickel	UG/L	20 U	20 U	ND	ND		0/2
Potassium	UG/L	1000 U	1000 U	ND	ND		0/2
Selenium	UG/L	5 U	5 U	ND	ND		0/2
Silver	UG/L	5 U	5 U	ND	ND		0/2
Sodium	UG/L	100 U	100 U	145	145	3-RS-05	1/2
Thallium	UG/L	10 UJ	10 UJ	ND	ND		0/2
Vanadium	UG/L	10 U	10 U	ND	ND		0/2
Zinc	UG/L	NA	NA	27.2 J	50.1	3-RS-05	2/2

APPENDIX J.3
ROUND I GROUNDWATER - ORGANICS

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:		3-RS-06	3-TB-03	3-TB-04
Laboratory Sample ID:		AD2071	AD1988	AD2170
Date Sampled:		12/03/94	12/02/94	12/03/94
	UNITS			
VOLATILES				
Chloromethane	UG/L	10 U	10 UJ	2 J
Bromomethane	UG/L	10 U	10 UJ	10 UJ
Vinyl chloride	UG/L	10 U	10 UJ	10 UJ
Chloroethane	UG/L	10 UJ	10 UJ	10 UJ
Methylene chloride	UG/L	2 J	2 J	2 J
Acetone	UG/L	19	10 UJ	10 UJ
Carbon Disulfide	UG/L	10 U	10 UJ	10 UJ
1,1-Dichloroethene	UG/L	10 U	10 UJ	10 UJ
1,1-Dichloroethane	UG/L	10 U	10 UJ	10 UJ
1,2-Dichloroethene(total)	UG/L	10 U	10 UJ	10 UJ
Chloroform	UG/L	10 U	10 UJ	10 UJ
1,2-Dichloroethane	UG/L	10 U	3 J	3 J
2-Butanone	UG/L	17	11 J	12 J
1,1,1-Trichloroethane	UG/L	10 U	10 UJ	10 UJ
Carbon tetrachloride	UG/L	10 U	10 UJ	10 UJ
Bromodichloromethane	UG/L	10 U	10 UJ	10 UJ
1,2-Dichloropropane	UG/L	10 U	10 UJ	10 UJ
cis-1,3-Dichloropropene	UG/L	10 U	10 UJ	10 UJ
Trichloroethene	UG/L	10 U	10 UJ	10 UJ
Dibromochloromethane	UG/L	10 U	10 UJ	10 UJ
1,1,2-Trichloroethane	UG/L	10 U	10 UJ	10 UJ
Benzene	UG/L	10 U	10 UJ	10 UJ
trans-1,3-Dichloropropene	UG/L	10 U	10 UJ	10 UJ
Bromoform	UG/L	10 U	10 UJ	10 UJ
4-Methyl-2-pentanone	UG/L	10 U	10 UJ	10 UJ
2-Hexanone	UG/L	10 U	10 UJ	10 UJ
Tetrachloroethene	UG/L	10 U	1 J	10 UJ
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 UJ	10 UJ
Toluene	UG/L	10 U	10 UJ	10 UJ
Chlorobenzene	UG/L	10 U	10 UJ	10 UJ
Ethylbenzene	UG/L	10 U	10 UJ	10 UJ
Styrene	UG/L	10 U	10 UJ	10 UJ
Xylenes (total)	UG/L	10 U	10 UJ	10 UJ

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:	3-RS-06	3-TB-03	3-TB-04	
Laboratory Sample ID:	AD2071	AD1988	AD2170	
Date Sampled:	12/03/94	12/02/94	12/03/94	
	UNITS			
SEMIVOLATILES				
Phenol	UG/L	10 U	NA	NA
bis(2-Chloroethyl) ether	UG/L	10 U	NA	NA
2-Chlorophenol	UG/L	10 U	NA	NA
1,3-Dichlorobenzene	UG/L	10 U	NA	NA
1,4-Dichlorobenzene	UG/L	10 U	NA	NA
1,2-Dichlorobenzene	UG/L	10 U	NA	NA
2-Methylphenol	UG/L	10 U	NA	NA
2,2'-oxybis-(1-chloropropane)	UG/L	10 U	NA	NA
4-Methylphenol	UG/L	10 U	NA	NA
N-Nitroso-di-n-propylamine	UG/L	10 U	NA	NA
Hexachloroethane	UG/L	10 U	NA	NA
Nitrobenzene	UG/L	10 U	NA	NA
Isophorone	UG/L	10 U	NA	NA
2-Nitrophenol	UG/L	10 U	NA	NA
2,4-Dimethylphenol	UG/L	10 U	NA	NA
bis(2-Chloroethoxy) methane	UG/L	10 U	NA	NA
2,4-Dichlorophenol	UG/L	10 U	NA	NA
1,2,4-Trichlorobenzene	UG/L	10 U	NA	NA
Naphthalene	UG/L	10 U	NA	NA
4-Chloroaniline	UG/L	10 U	NA	NA
Hexachlorobutadiene	UG/L	10 U	NA	NA
4-Chloro-3-methylphenol	UG/L	10 U	NA	NA
2-Methylnaphthalene	UG/L	10 U	NA	NA
Hexachlorocyclopentadiene	UG/L	10 U	NA	NA
2,4,6-Trichlorophenol	UG/L	10 U	NA	NA
2,4,5-Trichlorophenol	UG/L	25 U	NA	NA
2-Chloronaphthalene	UG/L	10 U	NA	NA
2-Nitroaniline	UG/L	25 U	NA	NA
Dimethyl phthalate	UG/L	10 U	NA	NA
Acenaphthylene	UG/L	10 U	NA	NA
2,6-Dinitrotoluene	UG/L	10 U	NA	NA
3-Nitroaniline	UG/L	25 U	NA	NA
Acenaphthene	UG/L	10 U	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:	3-RS-06	3-TB-03	3-TB-04
Laboratory Sample ID:	AD2071	AD1988	AD2170
Date Sampled:	12/03/94	12/02/94	12/03/94

SEMIVOLATILES Cont.	UNITS			
2,4-Dinitrophenol	UG/L	25 U	NA	NA
4-Nitrophenol	UG/L	25 U	NA	NA
Dibenzofuran	UG/L	10 U	NA	NA
2,4-Dinitrotoluene	UG/L	10 U	NA	NA
Diethylphthalate	UG/L	10 U	NA	NA
4-Chlorophenyl phenyl ether	UG/L	10 UJ	NA	NA
Fluorene	UG/L	10 U	NA	NA
4-Nitroaniline	UG/L	25 U	NA	NA
4,6-Dinitro-2-methylphenol	UG/L	25 U	NA	NA
N-nitrosodiphenylamine	UG/L	10 U	NA	NA
4-Bromophenyl-phenylether	UG/L	10 U	NA	NA
Hexachlorobenzene	UG/L	10 U	NA	NA
Pentachlorophenol	UG/L	25 U	NA	NA
Phenanthrene	UG/L	10 U	NA	NA
Anthracene	UG/L	10 U	NA	NA
Carbazole	UG/L	10 U	NA	NA
di-n-Butylphthalate	UG/L	10 U	NA	NA
Fluoranthene	UG/L	10 U	NA	NA
Pyrene	UG/L	10 U	NA	NA
Butyl benzyl phthalate	UG/L	10 U	NA	NA
3,3'-Dichlorobenzidine	UG/L	10 U	NA	NA
Benzo[a]anthracene	UG/L	10 U	NA	NA
Chrysene	UG/L	10 U	NA	NA
bis(2-Ethylhexyl)phthalate	UG/L	10 U	NA	NA
di-n-Octylphthalate	UG/L	10 U	NA	NA
Benzo[b]fluoranthene	UG/L	10 U	NA	NA
Benzo[k]fluoranthene	UG/L	10 UJ	NA	NA
Benzo[a]pyrene	UG/L	10 U	NA	NA
Indeno[1,2,3-cd]pyrene	UG/L	10 U	NA	NA
Dibenz[a,h]anthracene	UG/L	10 U	NA	NA
Benzo[g,h,i]perylene	UG/L	10 U	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID:	3-RS-06	3-TB-03	3-TB-04
Laboratory Sample ID:	AD2071	AD1988	AD2170
Date Sampled:	12/03/94	12/02/94	12/03/94

PESTICIDES/PCBs	UNITS			
alpha-BHC	UG/L	0.05 U	NA	NA
beta-BHC	UG/L	0.05 U	NA	NA
delta-BHC	UG/L	0.05 U	NA	NA
Lindane (gamma-BHC)	UG/L	0.05 U	NA	NA
Heptachlor	UG/L	0.05 U	NA	NA
Aldrin	UG/L	0.05 U	NA	NA
Heptachlor epoxide	UG/L	0.05 U	NA	NA
Endosulfan I	UG/L	0.05 U	NA	NA
Dieldrin	UG/L	0.1 U	NA	NA
4,4'-DDE	UG/L	0.1 U	NA	NA
Endrin	UG/L	0.1 U	NA	NA
Endosulfan II	UG/L	0.1 U	NA	NA
4,4'-DDD	UG/L	0.1 U	NA	NA
Endosulfan sulfate	UG/L	0.1 U	NA	NA
4,4'-DDT	UG/L	0.1 U	NA	NA
Methoxychlor	UG/L	0.5 U	NA	NA
Endrin ketone	UG/L	0.1 U	NA	NA
Endrin aldehyde	UG/L	0.1 U	NA	NA
alpha-Chlordane	UG/L	0.05 U	NA	NA
gamma-Chlordane	UG/L	0.05 U	NA	NA
Toxaphene	UG/L	5 U	NA	NA
Aroclor 1016	UG/L	1 U	NA	NA
Aroclor 1221	UG/L	2 U	NA	NA
Aroclor 1232	UG/L	1 U	NA	NA
Aroclor 1242	UG/L	1 U	NA	NA
Aroclor 1248	UG/L	1 U	NA	NA
Aroclor 1254	UG/L	1 U	NA	NA
Aroclor 1260	UG/L	1 U	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
VOLATILES		NA	NA	0	ND		3/3
Chloromethane	UG/L	10 U	10 U	2 J	2 J	3-TB-04	1/3
Bromomethane	UG/L	10 U	10 U	ND	ND		0/3
Vinyl chloride	UG/L	10 U	10 U	ND	ND		0/3
Chloroethane	UG/L	10 UJ	10 UJ	ND	ND		0/3
Methylene chloride	UG/L	NA	NA	2 J	2 J	3-TB-04	3/3
Acetone	UG/L	10 UJ	10 UJ	19	19	3-RS-06	1/3
Carbon Disulfide	UG/L	10 U	10 U	ND	ND		0/3
1,1-Dichloroethene	UG/L	10 U	10 U	ND	ND		0/3
1,1-Dichloroethane	UG/L	10 U	10 U	ND	ND		0/3
1,2-Dichloroethene(total)	UG/L	10 U	10 U	ND	ND		0/3
Chloroform	UG/L	10 U	10 U	ND	ND		0/3
1,2-Dichloroethane	UG/L	10 U	10 U	3 J	3 J	3-TB-04	2/3
2-Butanone	UG/L	NA	NA	11 J	17	3-RS-06	3/3
1,1,1-Trichloroethane	UG/L	10 U	10 U	ND	ND		0/3
Carbon tetrachloride	UG/L	10 U	10 U	ND	ND		0/3
Bromodichloromethane	UG/L	10 U	10 U	ND	ND		0/3
1,2-Dichloropropane	UG/L	10 U	10 U	ND	ND		0/3
cis-1,3-Dichloropropene	UG/L	10 U	10 U	ND	ND		0/3
Trichloroethene	UG/L	10 U	10 U	ND	ND		0/3
Dibromochloromethane	UG/L	10 U	10 U	ND	ND		0/3
1,1,2-Trichloroethane	UG/L	10 U	10 U	ND	ND		0/3
Benzene	UG/L	10 U	10 U	ND	ND		0/3
trans-1,3-Dichloropropene	UG/L	10 U	10 U	ND	ND		0/3
Bromoform	UG/L	10 U	10 U	ND	ND		0/3
4-Methyl-2-pentanone	UG/L	10 U	10 U	ND	ND		0/3
2-Hexanone	UG/L	10 U	10 U	ND	ND		0/3
Tetrachloroethene	UG/L	10 U	10 U	1 J	1 J	3-TB-03	1/3
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 U	ND	ND		0/3
Toluene	UG/L	10 U	10 U	ND	ND		0/3
Chlorobenzene	UG/L	10 U	10 U	ND	ND		0/3
Ethylbenzene	UG/L	10 U	10 U	ND	ND		0/3
Styrene	UG/L	10 U	10 U	ND	ND		0/3
Xylenes (total)	UG/L	10 U	10 U	ND	ND		0/3

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
SEMIVOLATILES							
Phenol	UG/L	10 U	10 U	ND	ND		0/3
bis(2-Chloroethyl) ether	UG/L	10 U	10 U	ND	ND		0/3
2-Chlorophenol	UG/L	10 U	10 U	ND	ND		0/3
1,3-Dichlorobenzene	UG/L	10 U	10 U	ND	ND		0/3
1,4-Dichlorobenzene	UG/L	10 U	10 U	ND	ND		0/3
1,2-Dichlorobenzene	UG/L	10 U	10 U	ND	ND		0/3
2-Methylphenol	UG/L	10 U	10 U	ND	ND		0/3
2,2'-oxybis-(1-chloropropane)	UG/L	10 U	10 U	ND	ND		0/3
4-Methylphenol	UG/L	10 U	10 U	ND	ND		0/3
N-Nitroso-di-n-propylamine	UG/L	10 U	10 U	ND	ND		0/3
Hexachloroethane	UG/L	10 U	10 U	ND	ND		0/3
Nitrobenzene	UG/L	10 U	10 U	ND	ND		0/3
Isophorone	UG/L	10 U	10 U	ND	ND		0/3
2-Nitrophenol	UG/L	10 U	10 U	ND	ND		0/3
2,4-Dimethylphenol	UG/L	10 U	10 U	ND	ND		0/3
bis(2-Chloroethoxy) methane	UG/L	10 U	10 U	ND	ND		0/3
2,4-Dichlorophenol	UG/L	10 U	10 U	ND	ND		0/3
1,2,4-Trichlorobenzene	UG/L	10 U	10 U	ND	ND		0/3
Naphthalene	UG/L	10 U	10 U	ND	ND		0/3
4-Chloroaniline	UG/L	10 U	10 U	ND	ND		0/3
Hexachlorobutadiene	UG/L	10 U	10 U	ND	ND		0/3
4-Chloro-3-methylphenol	UG/L	10 U	10 U	ND	ND		0/3
2-Methylnaphthalene	UG/L	10 U	10 U	ND	ND		0/3
Hexachlorocyclopentadiene	UG/L	10 U	10 U	ND	ND		0/3
2,4,6-Trichlorophenol	UG/L	10 U	10 U	ND	ND		0/3
2,4,5-Trichlorophenol	UG/L	25 U	25 U	ND	ND		0/3
2-Chloronaphthalene	UG/L	10 U	10 U	ND	ND		0/3
2-Nitroaniline	UG/L	25 U	25 U	ND	ND		0/3
Dimethyl phthalate	UG/L	10 U	10 U	ND	ND		0/3
Acenaphthylene	UG/L	10 U	10 U	ND	ND		0/3
2,6-Dinitrotoluene	UG/L	10 U	10 U	ND	ND		0/3
3-Nitroaniline	UG/L	25 U	25 U	ND	ND		0/3
Acenaphthene	UG/L	10 U	10 U	ND	ND		0/3

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/L	25 U	25 U	ND	ND		0/3
4-Nitrophenol	UG/L	25 U	25 U	ND	ND		0/3
Dibenzofuran	UG/L	10 U	10 U	ND	ND		0/3
2,4-Dinitrotoluene	UG/L	10 U	10 U	ND	ND		0/3
Diethylphthalate	UG/L	10 U	10 U	ND	ND		0/3
4-Chlorophenyl phenyl ether	UG/L	10 UJ	10 UJ	ND	ND		0/3
Fluorene	UG/L	10 U	10 U	ND	ND		0/3
4-Nitroaniline	UG/L	25 U	25 U	ND	ND		0/3
4,6-Dinitro-2-methylphenol	UG/L	25 U	25 U	ND	ND		0/3
N-nitrosodiphenylamine	UG/L	10 U	10 U	ND	ND		0/3
4-Bromophenyl-phenylether	UG/L	10 U	10 U	ND	ND		0/3
Hexachlorobenzene	UG/L	10 U	10 U	ND	ND		0/3
Pentachlorophenol	UG/L	25 U	25 U	ND	ND		0/3
Phenanthrene	UG/L	10 U	10 U	ND	ND		0/3
Anthracene	UG/L	10 U	10 U	ND	ND		0/3
Carbazole	UG/L	10 U	10 U	ND	ND		0/3
di-n-Butylphthalate	UG/L	10 U	10 U	ND	ND		0/3
Fluoranthene	UG/L	10 U	10 U	ND	ND		0/3
Pyrene	UG/L	10 U	10 U	ND	ND		0/3
Butyl benzyl phthalate	UG/L	10 U	10 U	ND	ND		0/3
3,3'-Dichlorobenzidine	UG/L	10 U	10 U	ND	ND		0/3
Benzo[a]anthracene	UG/L	10 U	10 U	ND	ND		0/3
Chrysene	UG/L	10 U	10 U	ND	ND		0/3
bis(2-Ethylhexyl)phthalate	UG/L	10 U	10 U	ND	ND		0/3
di-n-Octylphthalate	UG/L	10 U	10 U	ND	ND		0/3
Benzo[b]fluoranthene	UG/L	10 U	10 U	ND	ND		0/3
Benzo[k]fluoranthene	UG/L	10 UJ	10 UJ	ND	ND		0/3
Benzo[a]pyrene	UG/L	10 U	10 U	ND	ND		0/3
Indeno[1,2,3-cd]pyrene	UG/L	10 U	10 U	ND	ND		0/3
Dibenz[a,h]anthracene	UG/L	10 U	10 U	ND	ND		0/3
Benzo[g,h,i]perylene	UG/L	10 U	10 U	ND	ND		0/3

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:		MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
	UNITS						
PESTICIDES/PCBs							
alpha-BHC	UG/L	0.05 U	0.05 U	ND	ND		0/3
beta-BHC	UG/L	0.05 U	0.05 U	ND	ND		0/3
delta-BHC	UG/L	0.05 U	0.05 U	ND	ND		0/3
Lindane (gamma-BHC)	UG/L	0.05 U	0.05 U	ND	ND		0/3
Heptachlor	UG/L	0.05 U	0.05 U	ND	ND		0/3
Aldrin	UG/L	0.05 U	0.05 U	ND	ND		0/3
Heptachlor epoxide	UG/L	0.05 U	0.05 U	ND	ND		0/3
Endosulfan I	UG/L	0.05 U	0.05 U	ND	ND		0/3
Dieldrin	UG/L	0.1 U	0.1 U	ND	ND		0/3
4,4'-DDE	UG/L	0.1 U	0.1 U	ND	ND		0/3
Endrin	UG/L	0.1 U	0.1 U	ND	ND		0/3
Endosulfan II	UG/L	0.1 U	0.1 U	ND	ND		0/3
4,4'-DDD	UG/L	0.1 U	0.1 U	ND	ND		0/3
Endosulfan sulfate	UG/L	0.1 U	0.1 U	ND	ND		0/3
4,4'-DDT	UG/L	0.1 U	0.1 U	ND	ND		0/3
Methoxychlor	UG/L	0.5 U	0.5 U	ND	ND		0/3
Endrin ketone	UG/L	0.1 U	0.1 U	ND	ND		0/3
Endrin aldehyde	UG/L	0.1 U	0.1 U	ND	ND		0/3
alpha-Chlordane	UG/L	0.05 U	0.05 U	ND	ND		0/3
gamma-Chlordane	UG/L	0.05 U	0.05 U	ND	ND		0/3
Toxaphene	UG/L	5 U	5 U	ND	ND		0/3
Aroclor 1016	UG/L	1 U	1 U	ND	ND		0/3
Aroclor 1221	UG/L	2 U	2 U	ND	ND		0/3
Aroclor 1232	UG/L	1 U	1 U	ND	ND		0/3
Aroclor 1242	UG/L	1 U	1 U	ND	ND		0/3
Aroclor 1248	UG/L	1 U	1 U	ND	ND		0/3
Aroclor 1254	UG/L	1 U	1 U	ND	ND		0/3
Aroclor 1260	UG/L	1 U	1 U	ND	ND		0/3

APPENDIX J.4
ROUND II GROUNDWATER - ORGANICS

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER QA/QC SAMPLES
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-RB18	3-RB19	3-RB21	FB-11	TB-200	TB-201
Laboratory Sample ID:		AF9836	AF9839	AG0348	AG0352	AF9844	AG0143
Date Sampled:		07/11/95	07/11/95	07/14/95	07/14/95	07/12/95	07/13/95
	UNITS						
VOLATILES							
Chloromethane	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
Bromomethane	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
Vinyl chloride	UG/L	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 U
Chloroethane	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
Methylene chloride	UG/L	10 U	10 U	10 UJ	10 UJ	4 J	4 J
Acetone	UG/L	160 J	25 J	54 J	62 J	8 J	9 J
Carbon Disulfide	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
1,1-Dichloroethene	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
1,1-Dichloroethane	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
1,2-Dichloroethene(total)	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
Chloroform	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
1,2-Dichloroethane	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
2-Butanone	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
1,1,1-Trichloroethane	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
Carbon tetrachloride	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
Bromodichloromethane	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
1,2-Dichloropropane	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
cis-1,3-Dichloropropene	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
Trichloroethene	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
Dibromochloromethane	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
1,1,2-Trichloroethane	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
Benzene	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
trans-1,3-Dichloropropene	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
Bromoform	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
4-Methyl-2-pentanone	UG/L	10 U	10	10 UJ	10 UJ	10 U	10 U
2-Hexanone	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
Tetrachloroethene	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
Toluene	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
Chlorobenzene	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
Ethylbenzene	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
Styrene	UG/L	10 U	10 U	10 UJ	10 UJ	10 U	10 U
Xylenes (total)	UG/L	10 U	1 J	10 UJ	10 UJ	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER QA/QC SAMPLES
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-RB18	3-RB19	3-RB21	FB-11	TB-200	TB-201
Laboratory Sample ID:		AF9836	AF9839	AG0348	AG0352	AF9844	AG0143
Date Sampled:		07/11/95	07/11/95	07/14/95	07/14/95	07/12/95	07/13/95
	UNITS						
SEMIVOLATILES							
Phenol	UG/L	10 U	10 U	16	14	NA	NA
bis(2-Chloroethyl) ether	UG/L	10 U	10 U	10 U	10 U	NA	NA
2-Chlorophenol	UG/L	10 U	10 U	10 U	10 U	NA	NA
1,3-Dichlorobenzene	UG/L	10 U	10 U	10 U	10 U	NA	NA
1,4-Dichlorobenzene	UG/L	10 U	10 U	10 U	10 U	NA	NA
1,2-Dichlorobenzene	UG/L	10 U	10 U	10 U	10 U	NA	NA
2-Methylphenol	UG/L	10 U	10 U	10 U	10 U	NA	NA
2,2'-oxybis-(1-chloropropane)	UG/L	10 U	10 U	10 U	10 U	NA	NA
4-Methylphenol	UG/L	10 U	10 U	10 U	10 U	NA	NA
N-Nitroso-di-n-propylamine	UG/L	10 U	10 U	10 U	10 U	NA	NA
Hexachloroethane	UG/L	10 U	10 U	10 U	10 U	NA	NA
Nitrobenzene	UG/L	10 U	10 U	10 U	10 U	NA	NA
Isophorone	UG/L	10 U	10 U	10 U	10 U	NA	NA
2-Nitrophenol	UG/L	10 U	10 U	10 U	10 U	NA	NA
2,4-Dimethylphenol	UG/L	10 U	10 U	10 U	10 U	NA	NA
bis(2-Chloroethoxy) methane	UG/L	10 U	10 U	10 U	10 U	NA	NA
2,4-Dichlorophenol	UG/L	10 U	10 U	10 U	10 U	NA	NA
1,2,4-Trichlorobenzene	UG/L	10 U	10 U	10 U	10 U	NA	NA
Naphthalene	UG/L	10 U	10 U	10 U	10 U	NA	NA
4-Chloroaniline	UG/L	10 UJ	10 UJ	10 U	10 U	NA	NA
Hexachlorobutadiene	UG/L	10 U	10 U	10 U	10 U	NA	NA
4-Chloro-3-methylphenol	UG/L	10 U	10 U	10 U	10 U	NA	NA
2-Methylnaphthalene	UG/L	10 U	10 U	10 U	10 U	NA	NA
Hexachlorocyclopentadiene	UG/L	10 UJ	10 UJ	10 U	10 U	NA	NA
2,4,6-Trichlorophenol	UG/L	10 U	10 U	10 U	10 U	NA	NA
2,4,5-Trichlorophenol	UG/L	25 U	25 U	26 U	25 U	NA	NA
2-Chloronaphthalene	UG/L	10 U	10 U	10 U	10 U	NA	NA
2-Nitroaniline	UG/L	25 U	25 U	26 U	25 U	NA	NA
Dimethyl phthalate	UG/L	10 U	10 U	10 U	10 U	NA	NA
Acenaphthylene	UG/L	10 U	10 U	10 U	10 U	NA	NA
2,6-Dinitrotoluene	UG/L	10 U	10 U	10 U	10 U	NA	NA
3-Nitroaniline	UG/L	25 U	25 U	26 U	25 U	NA	NA
Acenaphthene	UG/L	10 U	10 U	10 U	10 U	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER QA/QC SAMPLES
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-RB18	3-RB19	3-RB21	FB-11	TB-200	TB-201
Laboratory Sample ID:		AF9836	AF9839	AG0348	AG0352	AF9844	AG0143
Date Sampled:		07/11/95	07/11/95	07/14/95	07/14/95	07/12/95	07/13/95
	UNITS						
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/L	25 UJ	25 UJ	26 U	25 U	NA	NA
4-Nitrophenol	UG/L	25 UJ	25 UJ	26 U	25 U	NA	NA
Dibenzofuran	UG/L	10 U	10 U	10 U	10 U	NA	NA
2,4-Dinitrotoluene	UG/L	10 U	10 U	10 U	10 U	NA	NA
Diethylphthalate	UG/L	10 U	10 U	10 U	1 J	NA	NA
4-Chlorophenyl phenyl ether	UG/L	10 U	10 U	10 U	10 U	NA	NA
Fluorene	UG/L	10 U	10 U	10 U	10 U	NA	NA
4-Nitroaniline	UG/L	25 UJ	25 UJ	26 U	25 U	NA	NA
4,6-Dinitro-2-methylphenol	UG/L	25 UJ	25 UJ	26 U	25 U	NA	NA
N-nitrosodiphenylamine	UG/L	10 U	10 U	10 U	10 U	NA	NA
4-Bromophenyl-phenylether	UG/L	10 U	10 U	10 U	10 U	NA	NA
Hexachlorobenzene	UG/L	10 U	10 U	10 U	10 U	NA	NA
Pentachlorophenol	UG/L	25 U	25 U	26 U	25 U	NA	NA
Phenanthrene	UG/L	10 U	10 U	10 U	10 U	NA	NA
Anthracene	UG/L	10 U	10 U	10 U	10 U	NA	NA
Carbazole	UG/L	10 U	10 U	10 U	10 U	NA	NA
di-n-Butylphthalate	UG/L	1 J	1 J	10 U	10 U	NA	NA
Fluoranthene	UG/L	10 U	10 U	10 U	10 U	NA	NA
Pyrene	UG/L	10 U	10 U	10 U	10 U	NA	NA
Butyl benzyl phthalate	UG/L	10 U	10 U	10 U	10 U	NA	NA
3,3'-Dichlorobenzidine	UG/L	10 U	10 U	10 U	10 U	NA	NA
Benzo[a]anthracene	UG/L	10 U	10 U	10 U	10 U	NA	NA
Chrysene	UG/L	10 U	10 U	10 U	10 U	NA	NA
bis(2-Ethylhexyl)phthalate	UG/L	65	3 J	7 J	10 U	NA	NA
di-n-Octylphthalate	UG/L	10 U	10 U	10 U	10 U	NA	NA
Benzo[b]fluoranthene	UG/L	10 U	10 U	10 U	10 U	NA	NA
Benzo[k]fluoranthene	UG/L	10 U	10 U	10 U	10 U	NA	NA
Benzo[a]pyrene	UG/L	10 U	10 U	10 U	10 U	NA	NA
Indeno[1,2,3-cd]pyrene	UG/L	10 U	10 U	10 U	10 U	NA	NA
Dibenz[a,h]anthracene	UG/L	10 U	10 U	10 U	10 U	NA	NA
Benzo[g,h,i]perylene	UG/L	10 U	10 U	10 U	10 U	NA	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER QA/QC SAMPLES
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:	TB-202
Laboratory Sample ID:	AG0353
Date Sampled:	07/14/95

SEMIVOLATILES	UNITS	
Phenol	UG/L	NA
bis(2-Chloroethyl) ether	UG/L	NA
2-Chlorophenol	UG/L	NA
1,3-Dichlorobenzene	UG/L	NA
1,4-Dichlorobenzene	UG/L	NA
1,2-Dichlorobenzene	UG/L	NA
2-Methylphenol	UG/L	NA
2,2'-oxybis-(1-chloropropane)	UG/L	NA
4-Methylphenol	UG/L	NA
N-Nitroso-di-n-propylamine	UG/L	NA
Hexachloroethane	UG/L	NA
Nitrobenzene	UG/L	NA
Isophorone	UG/L	NA
2-Nitrophenol	UG/L	NA
2,4-Dimethylphenol	UG/L	NA
bis(2-Chloroethoxy) methane	UG/L	NA
2,4-Dichlorophenol	UG/L	NA
1,2,4-Trichlorobenzene	UG/L	NA
Naphthalene	UG/L	NA
4-Chloroaniline	UG/L	NA
Hexachlorobutadiene	UG/L	NA
4-Chloro-3-methylphenol	UG/L	NA
2-Methylnaphthalene	UG/L	NA
Hexachlorocyclopentadiene	UG/L	NA
2,4,6-Trichlorophenol	UG/L	NA
2,4,5-Trichlorophenol	UG/L	NA
2-Chloronaphthalene	UG/L	NA
2-Nitroaniline	UG/L	NA
Dimethyl phthalate	UG/L	NA
Acenaphthylene	UG/L	NA
2,6-Dinitrotoluene	UG/L	NA
3-Nitroaniline	UG/L	NA
Acenaphthene	UG/L	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER QA/QC SAMPLES
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID: Laboratory Sample ID: Date Sampled:		MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
	UNITS						
VOLATILES							
Chloromethane	UG/L	10 U	10 U	ND	ND		0/7
Bromomethane	UG/L	10 U	10 U	ND	ND		0/7
Vinyl chloride	UG/L	10 UJ	10 UJ	ND	ND		0/7
Chloroethane	UG/L	10 U	10 U	ND	ND		0/7
Methylene chloride	UG/L	10 U	10 U	4 J	6 J	TB-202	3/7
Acetone	UG/L	NA	NA	7 J	160 J	3-RB18	7/7
Carbon Disulfide	UG/L	10 U	10 U	ND	ND		0/7
1,1-Dichloroethene	UG/L	10 U	10 U	ND	ND		0/7
1,1-Dichloroethane	UG/L	10 U	10 U	ND	ND		0/7
1,2-Dichloroethene(total)	UG/L	10 U	10 U	ND	ND		0/7
Chloroform	UG/L	10 U	10 U	ND	ND		0/7
1,2-Dichloroethane	UG/L	10 U	10 U	ND	ND		0/7
2-Butanone	UG/L	10 U	10 U	ND	ND		0/7
1,1,1-Trichloroethane	UG/L	10 U	10 U	ND	ND		0/7
Carbon tetrachloride	UG/L	10 U	10 U	ND	ND		0/7
Bromodichloromethane	UG/L	10 U	10 U	ND	ND		0/7
1,2-Dichloropropane	UG/L	10 U	10 U	ND	ND		0/7
cis-1,3-Dichloropropene	UG/L	10 U	10 U	ND	ND		0/7
Trichloroethene	UG/L	10 U	10 U	ND	ND		0/7
Dibromochloromethane	UG/L	10 U	10 U	ND	ND		0/7
1,1,2-Trichloroethane	UG/L	10 U	10 U	ND	ND		0/7
Benzene	UG/L	10 U	10 U	ND	ND		0/7
trans-1,3-Dichloropropene	UG/L	10 U	10 U	ND	ND		0/7
Bromoform	UG/L	10 U	10 U	ND	ND		0/7
4-Methyl-2-pentanone	UG/L	10 U	10 U	10	10	3-RB19	1/7
2-Hexanone	UG/L	10 U	10 U	ND	ND		0/7
Tetrachloroethene	UG/L	10 U	10 U	ND	ND		0/7
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 U	ND	ND		0/7
Toluene	UG/L	10 U	10 U	ND	ND		0/7
Chlorobenzene	UG/L	10 U	10 U	ND	ND		0/7
Ethylbenzene	UG/L	10 U	10 U	ND	ND		0/7
Styrene	UG/L	10 U	10 U	ND	ND		0/7
Xylenes (total)	UG/L	10 U	10 U	1 J	1 J	3-RB19	1/7

APPENDIX J.5
ROUND III GROUNDWATER - ORGANICS

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER QA/QC SAMPLES
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-RS-50	3-TB-50
Laboratory Sample ID:		AG9895	AG9897
Date Sampled:		09/28/95	09/29/95
	UNITS		
VOLATILES			
Chloromethane	UG/L	10 U	10 U
Bromomethane	UG/L	10 U	10 U
Vinyl chloride	UG/L	10 U	10 U
Chloroethane	UG/L	10 U	10 U
Methylene chloride	UG/L	2 J	2 J
Acetone	UG/L	35 J	10
Carbon Disulfide	UG/L	10 U	10 U
1,1-Dichloroethene	UG/L	10 U	10 U
1,1-Dichloroethane	UG/L	10 U	10 U
1,2-Dichloroethene(total)	UG/L	10 U	10 U
Chloroform	UG/L	10 U	10 U
1,2-Dichloroethane	UG/L	10 U	10 U
2-Butanone	UG/L	6 J	10 U
1,1,1-Trichloroethane	UG/L	10 U	10 U
Carbon tetrachloride	UG/L	10 U	10 U
Bromodichloromethane	UG/L	10 U	10 U
1,2-Dichloropropane	UG/L	10 U	10 U
cis-1,3-Dichloropropene	UG/L	10 U	10 U
Trichloroethene	UG/L	10 U	10 U
Dibromochloromethane	UG/L	10 U	10 U
1,1,2-Trichloroethane	UG/L	10 U	10 U
Benzene	UG/L	10 U	10 U
trans-1,3-Dichloropropene	UG/L	10 U	10 U
Bromoform	UG/L	10 U	10 U
4-Methyl-2-pentanone	UG/L	10 U	10 U
2-Hexanone	UG/L	10 U	10 U
Tetrachloroethene	UG/L	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 U
Toluene	UG/L	1 J	10 U
Chlorobenzene	UG/L	10 U	10 U
Ethylbenzene	UG/L	10 U	10 U
Styrene	UG/L	10 U	10 U
Xylenes (total)	UG/L	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER QA/QC SAMPLES
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-RS-50	3-TB-50
Laboratory Sample ID:		AG9895	AG9897
Date Sampled:		09/28/95	09/29/95
	UNITS		
SEMIVOLATILES			
Phenol	UG/L	11 U	NA
bis(2-Chloroethyl) ether	UG/L	11 U	NA
2-Chlorophenol	UG/L	11 U	NA
1,3-Dichlorobenzene	UG/L	11 U	NA
1,4-Dichlorobenzene	UG/L	11 U	NA
1,2-Dichlorobenzene	UG/L	11 U	NA
2-Methylphenol	UG/L	11 U	NA
2,2'-oxybis-(1-chloropropane)	UG/L	11 U	NA
4-Methylphenol	UG/L	11 U	NA
N-Nitroso-di-n-propylamine	UG/L	11 U	NA
Hexachloroethane	UG/L	11 U	NA
Nitrobenzene	UG/L	11 U	NA
Isophorone	UG/L	11 U	NA
2-Nitrophenol	UG/L	11 U	NA
2,4-Dimethylphenol	UG/L	11 U	NA
bis(2-Chloroethoxy) methane	UG/L	11 U	NA
2,4-Dichlorophenol	UG/L	11 U	NA
1,2,4-Trichlorobenzene	UG/L	11 U	NA
Naphthalene	UG/L	11 U	NA
4-Chloroaniline	UG/L	11 U	NA
Hexachlorobutadiene	UG/L	11 U	NA
4-Chloro-3-methylphenol	UG/L	11 U	NA
2-Methylnaphthalene	UG/L	11 U	NA
Hexachlorocyclopentadiene	UG/L	11 U	NA
2,4,6-Trichlorophenol	UG/L	11 U	NA
2,4,5-Trichlorophenol	UG/L	27 U	NA
2-Chloronaphthalene	UG/L	11 U	NA
2-Nitroaniline	UG/L	27 U	NA
Dimethyl phthalate	UG/L	11 U	NA
Acenaphthylene	UG/L	11 U	NA
2,6-Dinitrotoluene	UG/L	11 U	NA
3-Nitroaniline	UG/L	27 U	NA
Acenaphthene	UG/L	11 U	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER QA/QC SAMPLES
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-RS-50	3-TB-50
Laboratory Sample ID:		AG9895	AG9897
Date Sampled:		09/28/95	09/29/95
	UNITS		
SEMIVOLATILES Cont.			
2,4-Dinitrophenol	UG/L	27 U	NA
4-Nitrophenol	UG/L	27 U	NA
Dibenzofuran	UG/L	11 U	NA
2,4-Dinitrotoluene	UG/L	11 U	NA
Diethylphthalate	UG/L	11 U	NA
4-Chlorophenyl phenyl ether	UG/L	11 U	NA
Fluorene	UG/L	11 U	NA
4-Nitroaniline	UG/L	27 U	NA
4,6-Dinitro-2-methylphenol	UG/L	27 U	NA
N-nitrosodiphenylamine	UG/L	11 U	NA
4-Bromophenyl-phenylether	UG/L	11 U	NA
Hexachlorobenzene	UG/L	11 U	NA
Pentachlorophenol	UG/L	27 U	NA
Phenanthrene	UG/L	11 U	NA
Anthracene	UG/L	11 U	NA
Carbazole	UG/L	11 U	NA
di-n-Butylphthalate	UG/L	1 J	NA
Fluoranthene	UG/L	11 U	NA
Pyrene	UG/L	11 U	NA
Butyl benzyl phthalate	UG/L	11 U	NA
3,3'-Dichlorobenzidine	UG/L	11 U	NA
Benzo[a]anthracene	UG/L	11 U	NA
Chrysene	UG/L	11 U	NA
bis(2-Ethylhexyl)phthalate	UG/L	11 U	NA
di-n-Octylphthalate	UG/L	11 U	NA
Benzo[b]fluoranthene	UG/L	11 U	NA
Benzo[k]fluoranthene	UG/L	11 U	NA
Benzo[a]pyrene	UG/L	11 U	NA
Indeno[1,2,3-cd]pyrene	UG/L	11 U	NA
Dibenz[a,h]anthracene	UG/L	11 U	NA
Benzo[g,h,i]perylene	UG/L	11 U	NA

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER QA/QC SAMPLES
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
VOLATILES							
Chloromethane	UG/L	10 U	10 U	ND	ND		0/2
Bromomethane	UG/L	10 U	10 U	ND	ND		0/2
Vinyl chloride	UG/L	10 U	10 U	ND	ND		0/2
Chloroethane	UG/L	10 U	10 U	ND	ND		0/2
Methylene chloride	UG/L	NA	NA	2 J	2 J	3-TB-50	2/2
Acetone	UG/L	NA	NA	10	35 J	3-RS-50	2/2
Carbon Disulfide	UG/L	10 U	10 U	ND	ND		0/2
1,1-Dichloroethene	UG/L	10 U	10 U	ND	ND		0/2
1,1-Dichloroethane	UG/L	10 U	10 U	ND	ND		0/2
1,2-Dichloroethene(total)	UG/L	10 U	10 U	ND	ND		0/2
Chloroform	UG/L	10 U	10 U	ND	ND		0/2
1,2-Dichloroethane	UG/L	10 U	10 U	ND	ND		0/2
2-Butanone	UG/L	10 U	10 U	6 J	6 J	3-RS-50	1/2
1,1,1-Trichloroethane	UG/L	10 U	10 U	ND	ND		0/2
Carbon tetrachloride	UG/L	10 U	10 U	ND	ND		0/2
Bromodichloromethane	UG/L	10 U	10 U	ND	ND		0/2
1,2-Dichloropropane	UG/L	10 U	10 U	ND	ND		0/2
cis-1,3-Dichloropropene	UG/L	10 U	10 U	ND	ND		0/2
Trichloroethene	UG/L	10 U	10 U	ND	ND		0/2
Dibromochloromethane	UG/L	10 U	10 U	ND	ND		0/2
1,1,2-Trichloroethane	UG/L	10 U	10 U	ND	ND		0/2
Benzene	UG/L	10 U	10 U	ND	ND		0/2
trans-1,3-Dichloropropene	UG/L	10 U	10 U	ND	ND		0/2
Bromoform	UG/L	10 U	10 U	ND	ND		0/2
4-Methyl-2-pentanone	UG/L	10 U	10 U	ND	ND		0/2
2-Hexanone	UG/L	10 U	10 U	ND	ND		0/2
Tetrachloroethene	UG/L	10 U	10 U	ND	ND		0/2
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 U	ND	ND		0/2
Toluene	UG/L	10 U	10 U	1 J	1 J	3-RS-50	1/2
Chlorobenzene	UG/L	10 U	10 U	ND	ND		0/2
Ethylbenzene	UG/L	10 U	10 U	ND	ND		0/2
Styrene	UG/L	10 U	10 U	ND	ND		0/2
Xylenes (total)	UG/L	10 U	10 U	ND	ND		0/2

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER QA/QC SAMPLES
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID: Laboratory Sample ID: Date Sampled:		MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
	UNITS						
SEMIVOLATILES							
Phenol	UG/L	11 U	11 U	ND	ND		0/1
bis(2-Chloroethyl) ether	UG/L	11 U	11 U	ND	ND		0/1
2-Chlorophenol	UG/L	11 U	11 U	ND	ND		0/1
1,3-Dichlorobenzene	UG/L	11 U	11 U	ND	ND		0/1
1,4-Dichlorobenzene	UG/L	11 U	11 U	ND	ND		0/1
1,2-Dichlorobenzene	UG/L	11 U	11 U	ND	ND		0/1
2-Methylphenol	UG/L	11 U	11 U	ND	ND		0/1
2,2'-oxybis-(1-chloropropane)	UG/L	11 U	11 U	ND	ND		0/1
4-Methylphenol	UG/L	11 U	11 U	ND	ND		0/1
N-Nitroso-di-n-propylamine	UG/L	11 U	11 U	ND	ND		0/1
Hexachloroethane	UG/L	11 U	11 U	ND	ND		0/1
Nitrobenzene	UG/L	11 U	11 U	ND	ND		0/1
Isophorone	UG/L	11 U	11 U	ND	ND		0/1
2-Nitrophenol	UG/L	11 U	11 U	ND	ND		0/1
2,4-Dimethylphenol	UG/L	11 U	11 U	ND	ND		0/1
bis(2-Chloroethoxy) methane	UG/L	11 U	11 U	ND	ND		0/1
2,4-Dichlorophenol	UG/L	11 U	11 U	ND	ND		0/1
1,2,4-Trichlorobenzene	UG/L	11 U	11 U	ND	ND		0/1
Naphthalene	UG/L	11 U	11 U	ND	ND		0/1
4-Chloroaniline	UG/L	11 U	11 U	ND	ND		0/1
Hexachlorobutadiene	UG/L	11 U	11 U	ND	ND		0/1
4-Chloro-3-methylphenol	UG/L	11 U	11 U	ND	ND		0/1
2-Methylnaphthalene	UG/L	11 U	11 U	ND	ND		0/1
Hexachlorocyclopentadiene	UG/L	11 U	11 U	ND	ND		0/1
2,4,6-Trichlorophenol	UG/L	11 U	11 U	ND	ND		0/1
2,4,5-Trichlorophenol	UG/L	27 U	27 U	ND	ND		0/1
2-Chloronaphthalene	UG/L	11 U	11 U	ND	ND		0/1
2-Nitroaniline	UG/L	27 U	27 U	ND	ND		0/1
Dimethyl phthalate	UG/L	11 U	11 U	ND	ND		0/1
Acenaphthylene	UG/L	11 U	11 U	ND	ND		0/1
2,6-Dinitrotoluene	UG/L	11 U	11 U	ND	ND		0/1
3-Nitroaniline	UG/L	27 U	27 U	ND	ND		0/1
Acenaphthene	UG/L	11 U	11 U	ND	ND		0/1

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER QA/QC SAMPLES
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
SEMIVOLATILES Cont.							
2,4-Dinitrophenol	UG/L	27 U	27 U	ND	ND		0/1
4-Nitrophenol	UG/L	27 U	27 U	ND	ND		0/1
Dibenzofuran	UG/L	11 U	11 U	ND	ND		0/1
2,4-Dinitrotoluene	UG/L	11 U	11 U	ND	ND		0/1
Diethylphthalate	UG/L	11 U	11 U	ND	ND		0/1
4-Chlorophenyl phenyl ether	UG/L	11 U	11 U	ND	ND		0/1
Fluorene	UG/L	11 U	11 U	ND	ND		0/1
4-Nitroaniline	UG/L	27 U	27 U	ND	ND		0/1
4,6-Dinitro-2-methylphenol	UG/L	27 U	27 U	ND	ND		0/1
N-nitrosodiphenylamine	UG/L	11 U	11 U	ND	ND		0/1
4-Bromophenyl-phenylether	UG/L	11 U	11 U	ND	ND		0/1
Hexachlorobenzene	UG/L	11 U	11 U	ND	ND		0/1
Pentachlorophenol	UG/L	27 U	27 U	ND	ND		0/1
Phenanthrene	UG/L	11 U	11 U	ND	ND		0/1
Anthracene	UG/L	11 U	11 U	ND	ND		0/1
Carbazole	UG/L	11 U	11 U	ND	ND		0/1
di-n-Butylphthalate	UG/L	NA	NA	1 J	1 J	3-RS-50	1/1
Fluoranthene	UG/L	11 U	11 U	ND	ND		0/1
Pyrene	UG/L	11 U	11 U	ND	ND		0/1
Butyl benzyl phthalate	UG/L	11 U	11 U	ND	ND		0/1
3,3'-Dichlorobenzidine	UG/L	11 U	11 U	ND	ND		0/1
Benzo[a]anthracene	UG/L	11 U	11 U	ND	ND		0/1
Chrysene	UG/L	11 U	11 U	ND	ND		0/1
bis(2-Ethylhexyl)phthalate	UG/L	11 U	11 U	ND	ND		0/1
di-n-Octylphthalate	UG/L	11 U	11 U	ND	ND		0/1
Benzo[b]fluoranthene	UG/L	11 U	11 U	ND	ND		0/1
Benzo[k]fluoranthene	UG/L	11 U	11 U	ND	ND		0/1
Benzo[a]pyrene	UG/L	11 U	11 U	ND	ND		0/1
Indeno[1,2,3-cd]pyrene	UG/L	11 U	11 U	ND	ND		0/1
Dibenz[a,h]anthracene	UG/L	11 U	11 U	ND	ND		0/1
Benzo[g,h,i]perylene	UG/L	11 U	11 U	ND	ND		0/1

POSITIVE DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER QA/QC SAMPLES
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID:		3-RS-50	3-TB-50
Laboratory Sample ID:		AG9895	AG9897
Date Sampled:		09/28/95	09/29/95
	UNITS		
VOLATILES			
Methylene chloride	UG/L	2 J	2 J
Acetone	UG/L	35 J	10
2-Butanone	UG/L	6 J	ND
Toluene	UG/L	1 J	ND
SEMIVOLATILES			
di-n-Butylphthalate	UG/L	1 J	NA

APPENDIX J.6
ROUND I GROUNDWATER - INORGANICS

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL TOTAL & DISSOLVED INORGANICS

Client Sample ID:	3-RS-06	3-RSD-06
Laboratory Sample ID:	AD2072	AD2085
Date Sampled:	12/03/94	12/01/94

	UNITS		
Aluminum	UG/L	40 U	52.2
Antimony	UG/L	50 U	50 U
Arsenic	UG/L	10 U	10 U
Barium	UG/L	2 U	2 U
Beryllium	UG/L	1 UJ	1 UJ
Cadmium	UG/L	5 U	5 U
Calcium	UG/L	46.6	62.6
Chromium	UG/L	10 U	10 U
Cobalt	UG/L	10 U	10 U
Copper	UG/L	10 U	10 U
Iron	UG/L	12.6	28.3
Lead	UG/L	5.8 J	3 U
Magnesium	UG/L	50 U	50 U
Manganese	UG/L	2 U	2 U
Mercury	UG/L	0.2 U	0.2 U
Nickel	UG/L	20 U	20 U
Potassium	UG/L	1000 U	1000 U
Selenium	UG/L	5 U	5 U
Silver	UG/L	5 U	5 U
Sodium	UG/L	100 U	128
Thallium	UG/L	10 U	10 U
Vanadium	UG/L	10 U	10 U
Zinc	UG/L	23.2 J	53.8 J

FREQUENCY OF DETECTION SUMMARY
OPERABLE UNIT No. 12
SITE 3 - QA/QC - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL TOTAL & DISSOLVED INORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
Aluminum	UG/L	40 U	40 U	52.2	52.2	3-RSD-06	1/2
Antimony	UG/L	50 U	50 U	ND	ND		0/2
Arsenic	UG/L	10 U	10 U	ND	ND		0/2
Barium	UG/L	2 U	2 U	ND	ND		0/2
Beryllium	UG/L	1 UJ	1 UJ	ND	ND		0/2
Cadmium	UG/L	5 U	5 U	ND	ND		0/2
Calcium	UG/L	NA	NA	46.6	62.6	3-RSD-06	2/2
Chromium	UG/L	10 U	10 U	ND	ND		0/2
Cobalt	UG/L	10 U	10 U	ND	ND		0/2
Copper	UG/L	10 U	10 U	ND	ND		0/2
Iron	UG/L	NA	NA	12.6	28.3	3-RSD-06	2/2
Lead	UG/L	3 U	3 U	5.8 J	5.8 J	3-RS-06	1/2
Magnesium	UG/L	50 U	50 U	ND	ND		0/2
Manganese	UG/L	2 U	2 U	ND	ND		0/2
Mercury	UG/L	0.2 U	0.2 U	ND	ND		0/2
Nickel	UG/L	20 U	20 U	ND	ND		0/2
Potassium	UG/L	1000 U	1000 U	ND	ND		0/2
Selenium	UG/L	5 U	5 U	ND	ND		0/2
Silver	UG/L	5 U	5 U	ND	ND		0/2
Sodium	UG/L	100 U	100 U	128	128	3-RSD-06	1/2
Thallium	UG/L	10 U	10 U	ND	ND		0/2
Vanadium	UG/L	10 U	10 U	ND	ND		0/2
Zinc	UG/L	NA	NA	23.2 J	53.8 J	3-RSD-06	2/2

APPENDIX K
ENGINEERING PARAMETER DATA

DATA 11

INTERNATIONAL TECHNOLOGY CORPORATION

GEOTECHNICAL LABORATORY REPORT FOR BAKER

483569.01

DECEMBER 29, 1994

Environmental Technology Development Center
P.O. Box 4339 • 1570 Bear Creek Road • Oak Ridge, Tennessee 37830 • 615-482-6497 • FAX: 615-482-1890

IT Corporation is a wholly owned subsidiary of International Technology Corporation

INTERNATIONAL TECHNOLOGY CORPORATION

GEOTECHNICAL LABORATORY

CERTIFICATE OF ANALYSIS

December 29, 1994

Jackie Waddell
Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, TN 37921

ETDC Project Number: 483569.01 Client Purchase Order: 130789

This is the Certificate of Analysis for the following samples:

Client Project ID:	BAKER
Date Received by Lab:	November 17 and 23, 1994
Number of Samples:	Four (4)
Sample Type:	Soil

I. Introduction/Case Narrative

Four soil samples were received by the IT/ETDC Geotechnical Laboratory on November 17 and November 23, 1994. Requested testing included natural moisture content, particle-size analysis, cation-exchange capacity, bulk density, and porosity. Not all samples required all parameters.

Please see Appendix A, Sample Number Cross Reference List; Appendix B, Analysis Results; and Appendix C, Chain of Custody and Request for Analysis Records; and Appendix D, Variance Documents for specific sample information..

Reviewed and Approved:

Ralph Cole
Laboratory Supervisor, Geotechnical Services

IT ENVIRONMENTAL TECHNOLOGY
DEVELOPMENT CENTER
OAK RIDGE, TN
(615) 482-6497

II. Analytical Results/Methodology

REFERENCES: American Society for Testing and Materials (ASTM) Annual Book of Standards, Section 4, Construction, Volume 4.08, Soil and Rock (I). United States Army Corps of Engineers Laboratory Soils Testing, Engineering Manual EM1110-2-1906, and Environmental Protection Agency (EPA), Test Methods for Evaluating Solid Waste, SW846.

Moisture Content	ASTM D 2216
Particle-Size Analysis	ASTM D 422
Cation-Exchange Capacity	EPA SW846, 9081
Bulk Density	EM1110-2-1906, Appendix II
Porosity	EM1110-2-1906, Appendix II

III. Quality Control

Quality control checks such as duplicates and spikes (QC samples), are not normally applicable to geotechnical testing. This is due to the inability of obtaining samples with known characteristics, the heterogenous nature of the samples, and Quality Control procedures built-in to the analytical method.

QC measures to ensure accuracy and precision of test results include the following:

- 100% verification on all numerical results - all raw data entries, transcriptions and calculations entered by lab technicians are checked, recalculated and verified. Most data calculations are performed by computer programs.
- Data validation through test reasonableness - summaries of all test results for individual reports are reviewed to determine the overall reasonableness of data and to determine the presence of any data that may be considered outliers.
- Quality control procedures are built into most standardized geotechnical procedures. For example, many analyses routinely call for a re-analysis, specifying an acceptance criteria.
- Routine instrument calibration - all instruments, gauges and equipment used in testing are calibrated on a routine basis. All instrument calibration follows ASTM or manufacturer guidelines.

IT ENVIRONMENTAL TECHNOLOGY
DEVELOPMENT CENTER
OAK RIDGE, TN
(615) 482-6497

- Maintenance of all past calibration records - records and certification documents of all instruments, gauges and equipment are updated routinely and maintained in the Quality Control Coordinators Quality/Operations files.

- Use of trained personnel for conducting tests - all technicians are trained in the application of standard laboratory procedures for geotechnical analyses as well as the quality assurance measures implemented by IT.

IV. Data Qualification

Moisture contents are calculated in accordance with ASTM D 2216. Given results are based on the sample dry weight, not on the sample wet weight as is common in analytical chemistry.

Bulk density and porosity data was requested for sample number AD0564 (ETDC-6186). These tests were not performed because the sample was highly disturbed upon receipt and would not have yielded results corresponding to in-situ soil conditions. Please see Appendix D of this report for a copy of the variance documenting the sample condition.

The cation exchange procedure included analysis of a blank, duplicate and matrix spike. The blank was found to be below the detection limit of 0.4 mg/l. The relative percent difference for the duplicate sample was found to be 0.4%. The percent recovery for the spike sample was found to 103.0%.

Appendix A

Jackie Waddell
Quanterra Environmental Services
December 29, 1994
Client Project ID: BAKER
ETDC Project No.: 483569.01

IT ENVIRONMENTAL TECHNOLOGY
DEVELOPMENT CENTER
OAK RIDGE, TN
(615) 482-6497

SAMPLE NUMBER CROSS-REFERENCE LIST

ETDC SAMPLE NO.	CLIENT SAMPLE NO.
ETDC-6128	AC9589
ETDC-6129	AC9600
ETDC-6130	AC9603
ETDC-6186	AD0564

Appendix B

Jackie Waddell
Quanterra Environmental Services
December 29, 1994
Client Project ID: BAKER
ETDC Project No.: 483569.01

IT ENVIRONMENTAL TECHNOLOGY
DEVELOPMENT CENTER
OAK RIDGE, TN
(615) 482-6497

MOISTURE CONTENT
ASTM D 2216

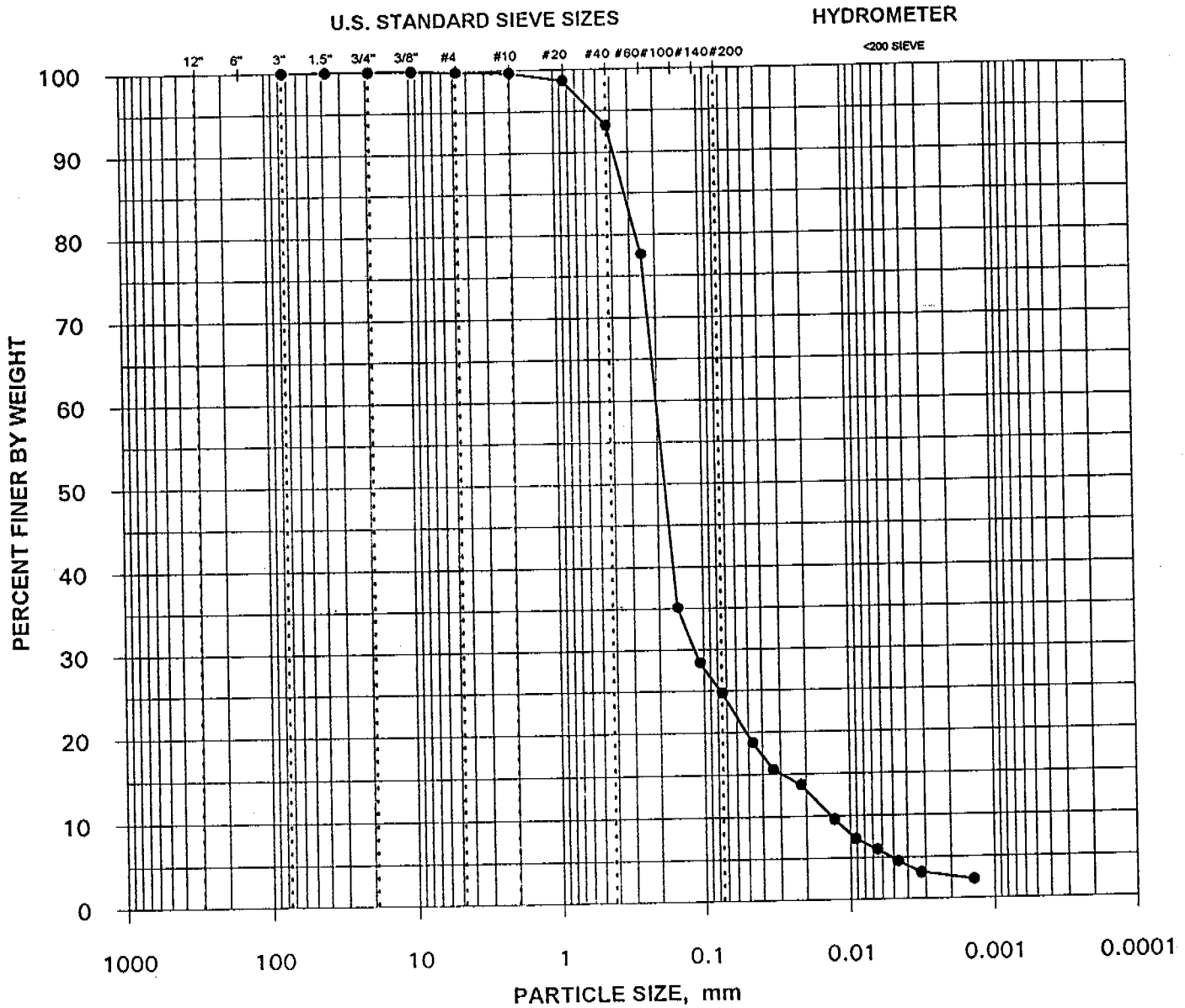
PROJECT NAME: BAKER PROJECT NUMBER: 483569.01

ETDC SAMPLE NO.	CLIENT SAMPLE NO.	% MOISTURE	% SOLIDS
ETDC-6128	AC9589	37.7	72.6
ETDC-6129	AC9600	29.8	77.0
ETDC-6130	AC9603	13.2	88.3
ETDC-6186	AD0564	12.7	88.7

Jackie Waddell
Quanterra Environmental Services
December 29, 1994
Client Project ID: BAKER
ETDC Project No.: 483569.01

IT ENVIRONMENTAL TECHNOLOGY
DEVELOPMENT CENTER
OAK RIDGE, TN
(615) 482-6497

BAKER



CLIENT SAMPLE NO.: AC9589

ETDC SAMPLE NO.: ETDC-6128

BOULDERS	COBBLES	GRAVEL		SAND			SILT 2 - 75 microns CLAY <2 microns
		COARSE	FINE	COARSE	MEDIUM	FINE	

682A-6-93

Jackie Waddell
Quanterra Environmental Services
December 29, 1994
Client Project ID: BAKER
ETDC Project No.: 483569.01

IT ENVIRONMENTAL TECHNOLOGY
DEVELOPMENT CENTER
OAK RIDGE, TN
(615) 482-6497

PARTICLE SIZE ANALYSIS
ASTM D 422

Project Name: BAKER

Project Number: 483569.01

Client Number: AC9600

ETDC Number: ETDC-6129

Specific Gravity = 2.6500 Assumed

* Moisture Content = 29.8%

SIEVE ANALYSIS

COARSE

Sieve No.	Diameter mm	Percent Finer
3"	75.000	100.0%
1.5"	37.500	100.0%
0.75"	19.000	100.0%
0.375"	9.500	100.0%
#4	4.750	99.9%
#10	2.000	99.6%

FINE

Sieve No.	Diameter mm	Percent Finer
#20	0.850	98.9%
#40	0.425	95.9%
#60	0.250	90.1%
#100	0.149	71.8%
#140	0.106	62.8%
#200	0.075	56.8%

HYDROMETER ANALYSIS

HYDROMETER

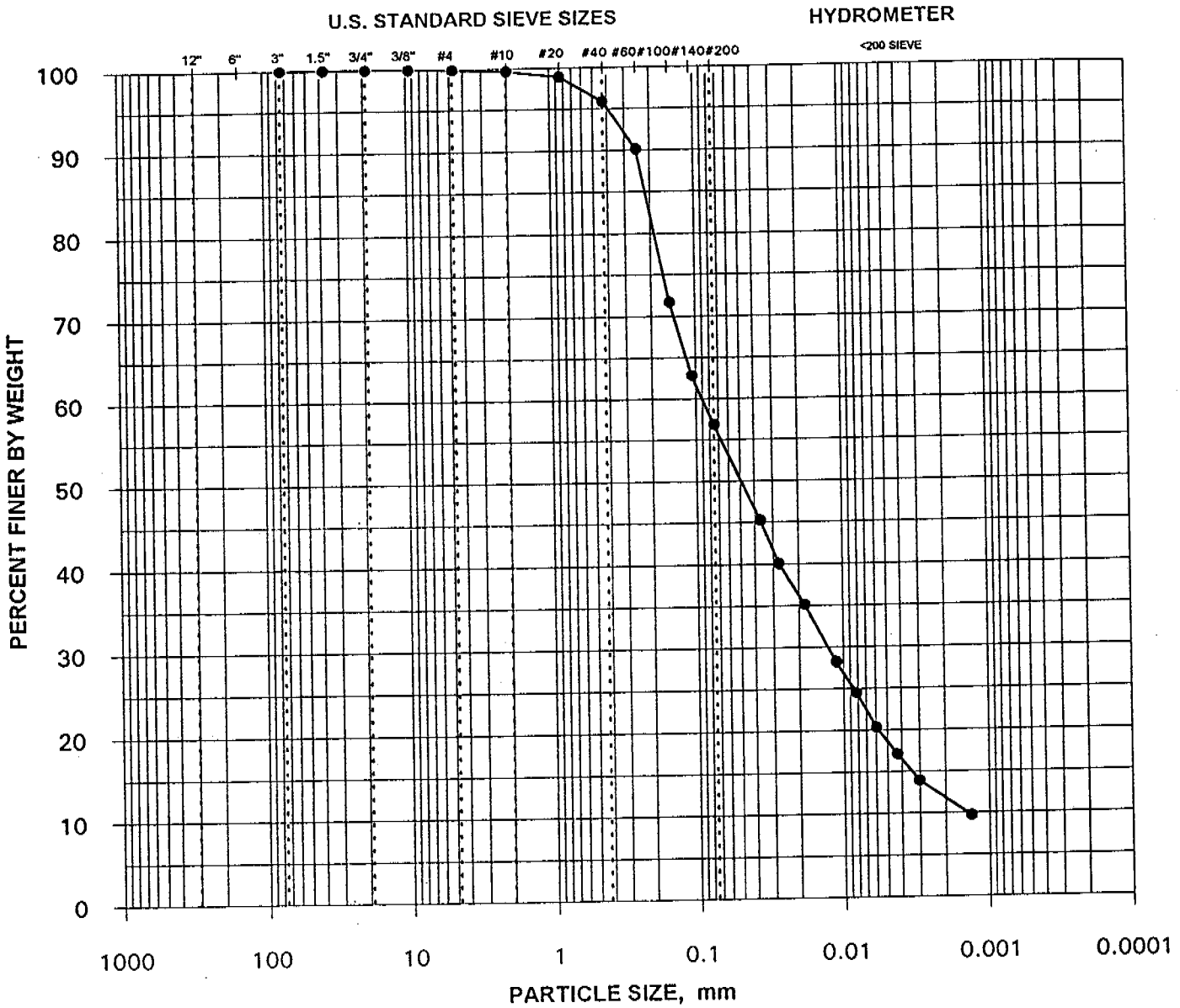
Diameter mm	Percent Finer
0.03642	45.2%
0.02729	40.2%
0.01819	35.1%
0.01117	28.2%
0.00816	24.5%
0.00595	20.3%
0.00426	17.1%
0.00303	13.9%
0.00133	9.7%

*DRY SAMPLE BASIS

Jackie Waddell
Quanterra Environmental Services
December 29, 1994
Client Project ID: BAKER
ETDC Project No.: 483569.01

IT ENVIRONMENTAL TECHNOLOGY
DEVELOPMENT CENTER
OAK RIDGE, TN
(615) 482-6497

BAKER



CLIENT SAMPLE NO.: AC9600

ETDC SAMPLE NO.: ETDC-6129

BOULDERS	COBBLES	GRAVEL		SAND			SILT 2 - 75 microns CLAY <2 microns
		COARSE	FINE	COARSE	MEDIUM	FINE	

682A-6-93

Jackie Waddell
Quanterra Environmental Services
December 29, 1994
Client Project ID: BAKER
ETDC Project No.: 483569.01

IT ENVIRONMENTAL TECHNOLOGY
DEVELOPMENT CENTER
OAK RIDGE, TN
(615) 482-6497

PARTICLE SIZE ANALYSIS
ASTM D 422

Project Name: BAKER

Project Number: 483569.01

Client Number: AC9603

ETDC Number: ETDC-6130

Specific Gravity = 2.6500 Assumed

* Moisture Content = 13.2%

SIEVE ANALYSIS

	Sieve No.	Diameter mm	Percent Finer
COARSE	3"	75.000	100.0%
	1.5"	37.500	100.0%
	0.75"	19.000	100.0%
	0.375"	9.500	100.0%
	#4	4.750	99.9%
	#10	2.000	99.3%

	Sieve No.	Diameter mm	Percent Finer
FINE	#20	0.850	99.2%
	#40	0.425	98.2%
	#60	0.250	95.4%
	#100	0.149	58.3%
	#140	0.106	37.6%
	#200	0.075	29.4%

HYDROMETER ANALYSIS

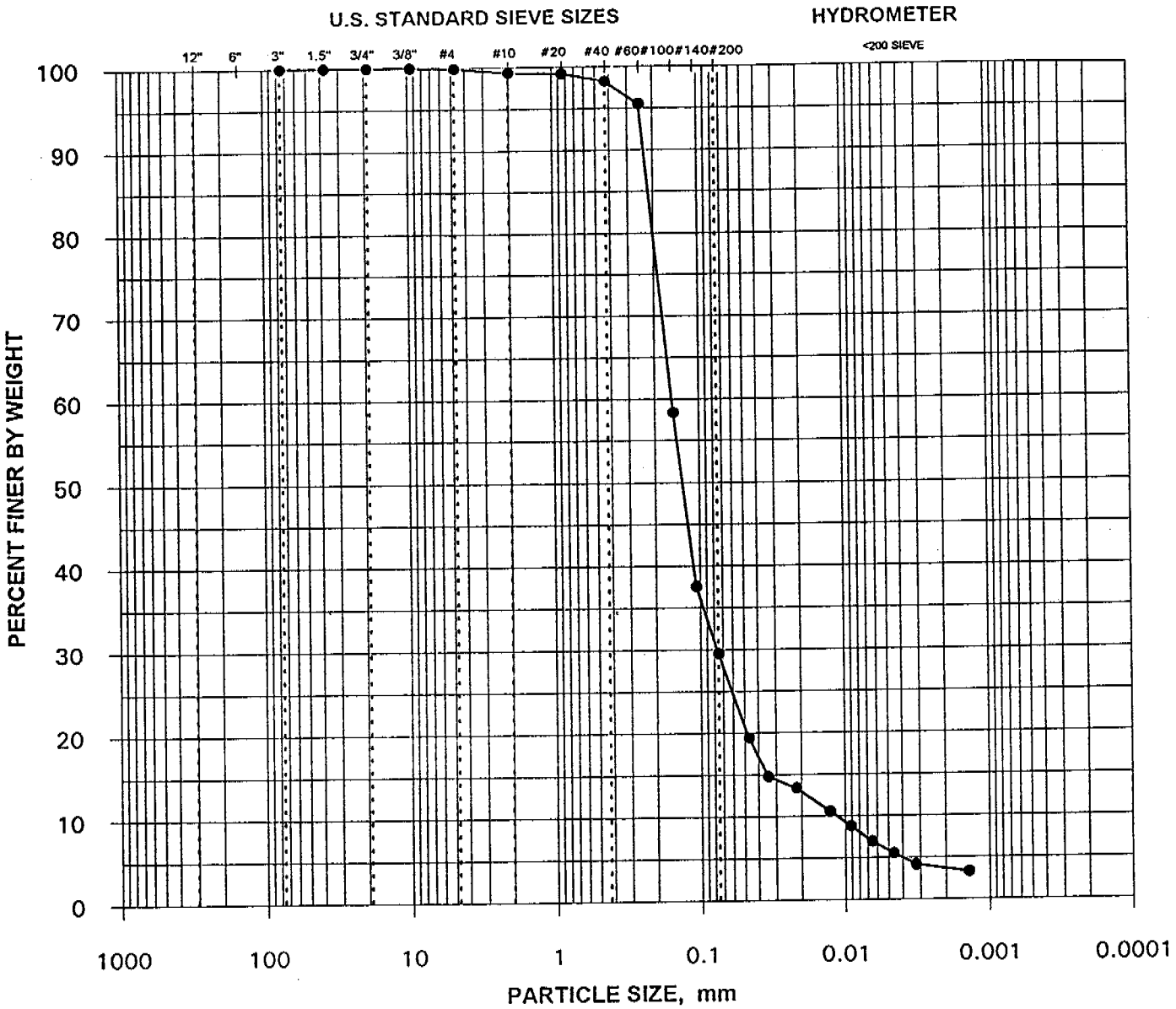
	Diameter mm	Percent Finer
HYDROMETER		
	0.04650	19.4%
	0.03397	14.8%
	0.02169	13.4%
	0.01274	10.6%
	0.00913	8.8%
	0.00653	6.9%
	0.00460	5.5%
	0.00322	4.2%
	0.00138	3.2%

*DRY SAMPLE BASIS

Jackie Waddell
Quanterra Environmental Services
December 29, 1994
Client Project ID: BAKER
ETDC Project No.: 483569.01

IT ENVIRONMENTAL TECHNOLOGY
DEVELOPMENT CENTER
OAK RIDGE, TN
(615) 482-6497

BAKER



CLIENT SAMPLE NO.: AC9603

ETDC SAMPLE NO.: ETDC-6130

BOULDERS	COBBLES	GRAVEL		SAND			SILT 2 - 75 microns CLAY <2 microns
		COARSE	FINE	COARSE	MEDIUM	FINE	

682A-6-93

Jackie Waddell
Quanterra Environmental Services
December 29, 1994
Client Project ID: BAKER
ETDC Project No.: 483569.01

IT ENVIRONMENTAL TECHNOLOGY
DEVELOPMENT CENTER
OAK RIDGE, TN
(615) 482-6497

PARTICLE SIZE ANALYSIS
ASTM D 422

Project Name: BAKER

Project Number: 483569.01

Client Number: AD0564

ETDC Number: ETDC-6186

Specific Gravity = 2.6500 Assumed

* Moisture Content = 12.7%

SIEVE ANALYSIS

	Sieve No.	Diameter mm	Percent Finer
COARSE	3"	75.000	100.0%
	1.5"	37.500	100.0%
	0.75"	19.000	100.0%
	0.375"	9.500	100.0%
	#4	4.750	100.0%
	#10	2.000	100.0%

	Sieve No.	Diameter mm	Percent Finer
FINE	#20	0.850	99.9%
	#40	0.425	99.2%
	#60	0.250	95.6%
	#100	0.149	47.7%
	#140	0.106	24.9%
	#200	0.075	16.6%

HYDROMETER ANALYSIS

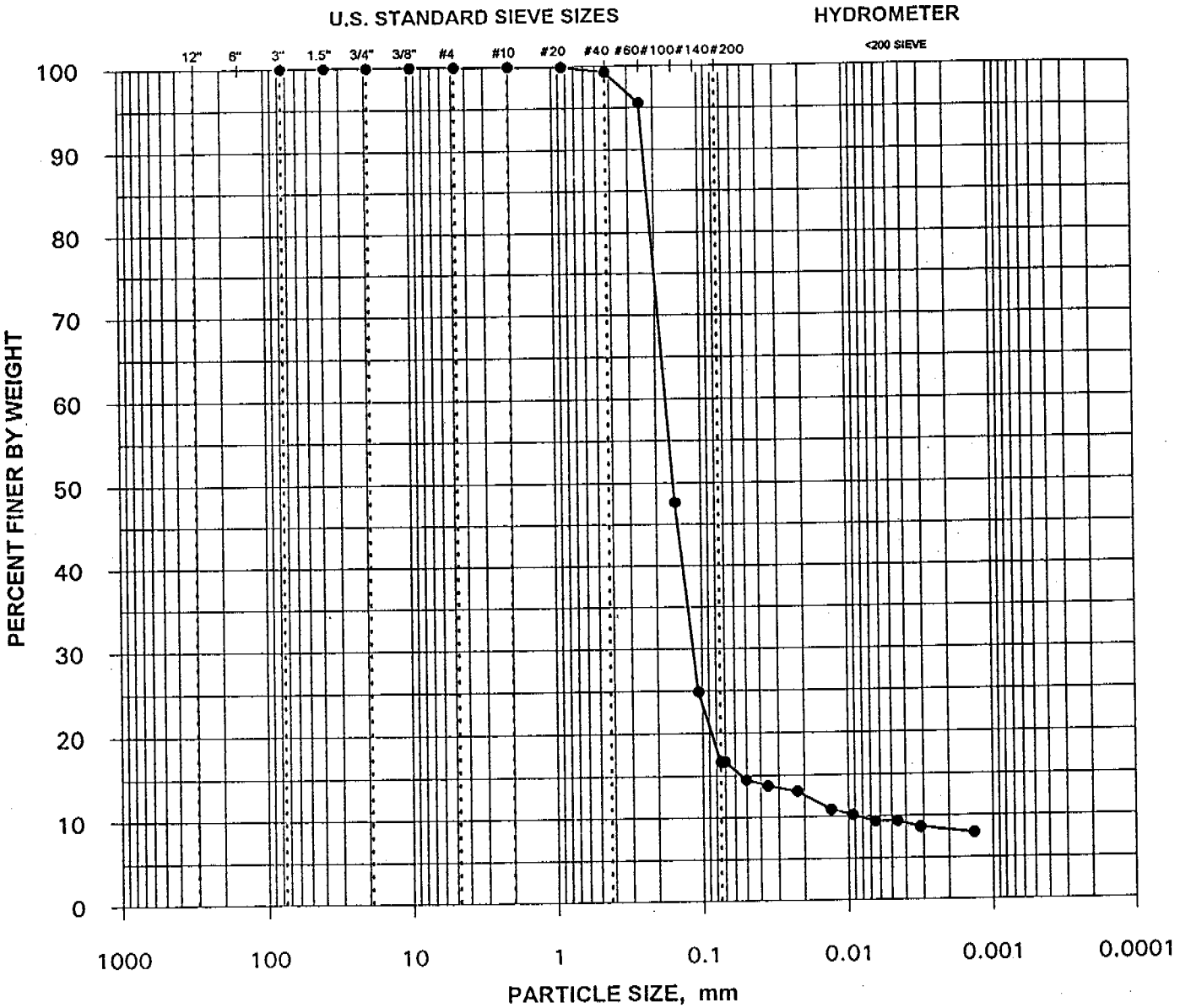
	Diameter mm	Percent Finer
HYDROMETER	0.06978	16.6%
	0.04989	14.5%
	0.03534	13.7%
	0.02239	13.0%
	0.01307	10.8%
	0.00927	10.1%
	0.00653	9.4%
	0.00457	9.4%
	0.00319	8.7%
	0.00135	8.0%

*DRY SAMPLE BASIS

Jackie Waddell
Quanterra Environmental Services
December 29, 1994
Client Project ID: BAKER
ETDC Project No.: 483569.01

IT ENVIRONMENTAL TECHNOLOGY
DEVELOPMENT CENTER
OAK RIDGE, TN
(615) 482-6497

BAKER



CLIENT SAMPLE NO.: AD0564

ETDC SAMPLE NO.: ETDC-6186

BOULDERS	COBBLES	GRAVEL		SAND			SILT 2 - 75 microns
		COARSE	FINE	COARSE	MEDIUM	FINE	CLAY <2 microns

682A-6-93

Jackie Waddell
Quanterra Environmental Services
December 29, 1994
Client Project ID: BAKER
ETDC Project No.: 483569.01

IT ENVIRONMENTAL TECHNOLOGY
DEVELOPMENT CENTER
OAK RIDGE, TN
(615) 482-6497

CATION EXCHANGE CAPACITY EPA SW-846 METHOD 9081

PROJECT NAME: BAKER PROJECT NUMBER: 483569.01

ETDC SAMPLE NUMBER	CLIENT SAMPLE NUMBER	WEIGHT OF SAMPLE, GRAMS	SODIUM CONCENTRATION, MG/L	CATION EXCHANGE CAPACITY, MEQ/100 GRAMS	RPD % *
ETDC-6128	AC9589	7.00	283.0	17.59	
ETDC-6128DUP.	AC9589	7.07	287.0	17.66	0.4
ETDC-6129	AC9600	6.62	348.0	22.87	
ETDC-6130	AC9603	6.15	149.0	10.54	
ETDC-6186	AD0564	6.39	75.7	5.15	

*RPD = RELATIVE PERCENT DIFFERENCE FOR ORIGINAL & DUPLICATE SAMPLES

Appendix C

Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 1087

Page 1 of 1

Project Name/No. 1 2043 / Baker
Sample Team Members 2 N/A
Profit Center No. 3 140
Project Manager 4 Jackie Waddell
Purchase Order No. 6 To Follow
Required Report Date 11 Normal 21 days

Samples Shipment Date 7 11/
Lab Destination 8 IT ETDC
Lab Contact 9 N/A
Project Contact/Phone 12 615-588-6401
Carrier/Waybill No. 13

Bill to: 5 Quanterra
5815 Middlebrook Pike
Knoxville, TN 37921

Report to: 10 Jackie Waddell

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Preservative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
AC9589	7-WM-SB01 Soil	11/14/94 1450	Plastic	1 gal Ziplock	None	Moisture Content Grain Size, Cation Exch. Cap.	ETDC OK 6128	
AC9600	7-WM-SB02	1415					ETDC 6129	
AC9603	7-WM-SB03	1515					ETDC 6130	

FOR LAB USE ONLY

Special Instructions: 23

Possible Hazard Identification: 24
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal: 25
Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

Turnaround Time Required: 26
Normal ☑ Rush ☐

QC Level: 27
I. ☐ II. ☐ III. ☑ Project Specific (specify) Neesa Level D

1. Relinquished by 28 (Signature/Affiliation) Bryan Blomquist QESKN	Date: 11-17-94 Time: 16:45	1. Received by 28 (Signature/Affiliation) Kenya Klemm	Date: 11-17-94 Time: 16:45
2. Relinquished by (Signature/Affiliation) Kenya Klemm	Date: 11-17-94 Time: 16:45	2. Received by (Signature/Affiliation) Kenneth Ferguson	Date: 11-17-94 Time: 16:45
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: 29

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

MCA 3/15/91

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

483569.01

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD *

Reference Document No. 2004
Page 1 of 1

Project Name/No.[1] 2115
Sample Team Members[2] N/A
Profit Center No.[3] 140
Project Manager[4] Jackie Waddell
Purchase Order No.[6] To Follow
Required Report Date[11] Normal

Samples Shipment Date[7] 11/23/94
Lab Destination[8] ETL ETDC
Lab Contact[9] N/A
Project Contact/Phone[12] 615-588-6401
Carrier/Waybill No.[13] HAND

Bill to:[5] Quanterra
5815 Middlebrook Pike
Knoxville, TN 37921

Report to:[10] Jackie Waddell
(Same)

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
AD0564	3-MW05 Soil	11/20/94 0800	Ziplock	5x 1gal	None	Grain Size, Cation Exch. Cap., Porosity, Density, Moisture Content	ETDC OK 6186 11-23-94	FOR LAB USE ONLY
								FOR LAB USE ONLY

Special Instructions:[23]

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal:[25] Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

Turnaround Time Required:[26] Normal ☑ Rush ☐

QC Level:[27] I ☐ II ☐ III ☐ Project Specific (specify): NEESA Level D

	Relinquished by:[28] (Signature/Affiliation)	Date/Time	Received by:[28] (Signature/Affiliation)	Date/Time
1.	Bryan Longust QESIN	Date: 11/23/94 Time: 1230	David D Flora Quanterra	Date: 11-23-94 Time: 1230
2.	D Flora Quanterra	Date: 11-23-94 Time:		Date: 11-23-94 Time: 1400
3.		Date: Time:		Date: Time:

Comments:[29]

Appendix D

NONCONFORMANCE/VARIANCE REPORT

NONCONFORMANCE or VARIANCE (circle one)	Project Name: BAKER	Date: 12-08-94	Page 1 of 1
	Project No.: 483569.01		Report No.: ETDC-022-94V

Nonconformance/Variance Description (include requirement violated)

CHAIN of COSTODY No. 2004

SAMPLE NO. AD0564 (ETDC-6186)

REQUESTED TEST FOR DENSITY. SAMPLE RECEIVED IN PLASTIC BAGS. CANNOT PERFORM A DENSITY TEST ON DISTURBED SAMPLE THAT WILL REPRESENT IN-SITU CONDITIONS.

Identified by [signature]

Root Cause

N/A

Corrective Action (include expected completion date)

COULD PERFORM A "LOOSE/DISTURBED DENSITY" TEST, BUT IT WOULD NOT BE ACCURATE FOR UNDISTURBED, IN-SITU SOIL. IF IT MAY BE JUST AS ACCURATE TO ASSUME A DENSITY of 100 pcf for the CLEAN SAND.

To be completed by — Expected Completion Date

Action taken to preclude recurrence

N/A

To be performed by — Expected Completion Date

Client notified (include client name, how notified, and response)

Client was notified on 12/8/94 by BLL by phone. Janice McKinney of Quanterra Middlebrook, called & said client would like to disregard density test on this sample. (ETDC-6186) BLL

Notified by — Date 12/8/94

Corrective action completed by — Date

Corrective action approved by

Laboratory Supervisor [signature] Date 12-09-94

Project Manager [signature] Date 12/9/94

QA Comments

QAO Approval [signature] Date 12-9-94

Use back of page for additional space. Attach additional pages if necessary.

CHEMICAL OXYGEN DEMAND ANALYSIS

Laboratory Name:	Quanterra-Knoxville	Job Number:	4137
Contract Name:	Baker Camp Lejeune	Analysis Date:	07/14/95
Sample Matrix:	Water	Concentration Units:	mg/L

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	AF9955	20	U
3-MW08-02	AF9830	20	U

U - Compound was analyzed for but not detected. The number is the reporting limit for the sample.

TOTAL DISSOLVED SOLIDS ANALYSIS

Laboratory Name:	Quanterra-Knoxville	Job Number:	4137
Contract Name:	Baker Camp Lejeune	Analysis Date:	07/17/95
Sample Matrix:	Water	Concentration Units:	mg/L

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	AG0497	10	U
3-MW08-02	AF9829	42	+

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the reporting limit for the sample.

TOTAL SUSPENDED SOLIDS ANALYSIS

Laboratory Name:	Quanterra-Knoxville	Job Number:	4137
Contract Name:	Baker Camp Lejeune	Analysis Date:	07/17/95
Sample Matrix:	Water	Concentration Units:	mg/L

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	AG0502	4	U
3-MW08-02	AF9829	4	U

U - Compound was analyzed for but not detected. The number is the reporting limit for the sample.

TOTAL ORGANIC CARBON ANALYSIS

Laboratory Name:	Quanterra-Knoxville	Job Number:	4137
Contract Name:	Baker Camp Lejeune	Analysis Date:	07/17/95
Sample Matrix:	Water	Concentration Units:	mg/L

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	AG0471	1	U
3-MW08-02	AF9847	3	+

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the reporting limit for the sample.

QUANTERRA

3-MW02-02

WO #: A5D40
LAB #: C5G140004-002
MATRIX: WATER

DATE SAMPLED: 7/13/95
TIME SAMPLED: 14:55
DATE RECEIVED: 7/14/95

- - - - - - - - - - - - - - - - - - INORGANIC ANALYTICAL REPORT - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Biochemical Oxygen Demand - 5 Day	10.3	2.0	mg/L	MCAWW 405.1	7/14/95	5198007

NOTE: AS RECEIVED

5204A

CHEMICAL OXYGEN DEMAND ANALYSIS

Laboratory Name:	Quanterra-Knoxville	Job Number:	4153
Contract Name:	Baker Camp Lejeune	Analysis Date:	07/19/95
Sample Matrix:	Water	Concentration Units:	mg/L

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	AG0732	20	U
3-MW2-02	AG0134	25	+

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the reporting limit for the sample.

TOTAL ORGANIC CARBON ANALYSIS

Laboratory Name:	Quanterra-Knoxville	Job Number:	4153
Contract Name:	Baker Camp Lejeune	Analysis Date:	07/17/95
Sample Matrix:	Water	Concentration Units:	mg/L

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	AG0471	1	U
3-MW2-02	AG0135	2	+

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the reporting limit for the sample.

QUANTERRA

3-MW2DW-01

WO #: A5D3X
LAB #: C5G140004-001
MATRIX: WATER

DATE SAMPLED: 7/13/95
TIME SAMPLED: 13:20
DATE RECEIVED: 7/14/95

- - - - - - - - - - - - - - - - - - INORGANIC ANALYTICAL REPORT - - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Biochemical Oxygen Demand - 5 Day	ND	2.0	mg/L	MCAWW 405.1	7/14/95	5198007

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

5603A

TOTAL DISSOLVED SOLIDS ANALYSIS

Laboratory Name:	Quanterra-Knoxville	Job Number:	4153
Contract Name:	Baker Camp Lejeune	Analysis Date:	07/17/95
Sample Matrix:	Water	Concentration Units:	mg/L

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	AG0497	10	U
3-MW2DW-01	AG0133	1800	+

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the reporting limit for the sample.

TOTAL SUSPENDED SOLIDS ANALYSIS

Laboratory Name:	Quanterra-Knoxville	Job Number:	4153
Contract Name:	Baker Camp Lejeune	Analysis Date:	07/17/95
Sample Matrix:	Water	Concentration Units:	mg/L

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	AG0502	4	U
3-MW2DW-01	AG0133	12	+

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the reporting limit for the sample.

APPENDIX L
COPC WORKSHEET

CTO-274
3 COPC

GROUNDWATER (ug/L) **Round 2**	Maximum Detection	LOG UPPER 95% CONFIDENCE INTERVAL	Number Used for Risk Calculations (mg/L)
1,1-Dichloroethene	1	6.00	0.001
Chloroform	1	6.40	0.001
Benzene	3	5.20	0.003
2-Methylphenol	300	24.10	0.024
4-Methylphenol	690	37.5	0.0375
2,4-Dimethylphenol	170	16.4	0.0164
Naphthalene	2400	184.3	0.1843
2-Methylnaphthalene	250	21.1	0.0211
Acenaphthene	320	37.4	0.0374
Dibenzofuran	140	21	0.021
Fluorene	160	23.9	0.0239
Phenanthrene	130	17.2	0.0172
Carbazole	87	12.7	0.0127

GROUNDWATER ug/l **Worst Case**	mg/l
1,1-Dichloroethene	0.001
Chloroform	0.001
Benzene	0.04
2-Methylphenol	0.024
4-Methylphenol	0.0375
2,4-Dimethylphenol	0.0164
Naphthalene	0.1843
2-Methylnaphthalene	0.0211
Acenaphthene	0.28
Dibenzofuran	0.23
Fluorene	0.21
Phenanthrene	0.41
Carbazole	0.0192
Benzo(a)anthracene	0.0061
Chrysene	0.0061
Benzo(b)fluoranthene	0.003
Benzo(k)fluoranthene	0.003
Benzo(a)pyrene	0.003
Aluminum	4.03
Chromium	0.0316

Surface Soil	(mg/kg)
Benzo(a)anthracene	0.717
Chrysene	0.9359
Benzo(b)fluoranthene	1.005
Benzo(k)fluoranthene	0.874
Benzo(a)pyrene	0.719
Indeno(1,2,3-cd)pyrene	0.625
Dibenzo(a,h)anthracene	0.445

Subsurface Soil	(mg/kg)
Dibenzofuran	1.1593
Benzo(a)anthracene	0.5598
Chrysene	0.5521
Benzo(b)fluoranthene	0.3798
Benzo(k)fluoranthene	0.3546
Benzo(a)pyrene	0.3509
Indeno(1,2,3-cd)pyrene	0.3337

Site 3 Surface Soil

(1)

CONTAMINANT	RANGE	95% UCL	FREQUENCY	BLANK	BACKGROUND	HISTORY	ANTHROPOGENIC	NUTRIENT	TOXICITY	* Res. RBC	ARAR	COPC
Toluene	2J-2J		2/17							1,600,000		
Ethylbenzene	2J		1/17							780,000		
Xylenes	6J		1/17	7J						16,000,000		
Phenol	38J		1/58							4,700,000		
Naphthalene	38J-200J		2/58							310,000		
2-Methylnaphthalene	41J		1/58							310,000		
Acenaphthylene	40J-2700		16/58							230,000		
Acenaphthene	44J-460J		2/58							470,000		
Dibenzofuran	370J		1/58							31,000		
Fluorene	39J-620J		5/58							310,000		
Phenanthrene	37J-2900		9/58							230,000		
Anthracene	40J-7700		26/58							2,300,000		
Carbazole	40J-830J		14/58							32,000		
Di-n-butylphthalate	37J-340J		37/58							780,000		
Fluoranthene	42J-11,000		32/58							310,000		
Pyrene	39J-14,000		34/58							230,000		
Benzo(a)anthracene	32J-8300	~~715.5~~	24/58							880		X
Chrysene	40J-12,000		32/58							88,000		+
bis(2-Ethylhexyl)phthalate	36J-91J		30/58	4J						46,000		
Benzo(b)fluoranthene	39J-13000	~~1405~~	37/58							880		X
Benzo(k)fluoranthene	37J-900	~~87.5~~	34/58							8800		X
Benzo(a)pyrene	38J-8700	~~771.5~~	30/58							88		X
Indeno(1,2,3-cd)pyrene	40J-6800	~~635.0~~	26/58							880		X
Dibenz(a,h)anthracene	40J-2900	~~1144.5~~	16/58							88		X
Benzo(g,h,i)perylene	39J-4700		22/58							230,000		

* Noncarcinogens divided by 10.

+ re-include all cPAHs detected

11/95

Site 3 Surface Soil

(2)

CONTAMINANT	RANGE	95% UCL	FREQUENCY	BLANK	BACKGROUND	HISTORY	ANTHROPOGENIC	NUTRIENT	TOXICITY	* Res. RBC	ARAR	COPC
Aluminum	1740 - 4240	10882.5	2/2		5856.083					7800✓		
Barium	6.4J - 7.8J	11.5	2/2		17.292				✓	550✓		
Calcium	4020 - 67,100	23689.8	2/2	44.8	1372.977			✓		NA		
Chromium	2.7 - 7.1	18.8	2/2		6.607					.39✓		
Iron	1390 - 1970	3511.1	2/2	24.3	3702.427✓					NA		
Lead	4.4J	10.0	1/2	4.2	23.37				✓	400✓		
Magnesium	150 - 1020	3331.6	2/2		202.96			✓		NA		
Manganese	11.7 - 13.1	16.8	2/2		18.51					1100✓		
Sodium	112	363.8	1/2	145✓	59.013					NA		
Vanadium	3.3 - 5.2	10.2	2/2		11.447					55✓		
Zinc	16.6	48.9	1/2	50.1	13.763					2300✓		

* Noncarcinogens divided by 10.

11/95

Site 3 Subsurface Soil

(1)

CONTAMINANT	RANGE	95% UCL	FREQUENCY	BLANK	BACKGROUND	HISTORY	ANTHROPOGENIC	NUTRIENT	TOXICITY	* Res. RBC	ARAR	COPC
Acetone	120		1/18	720 J						780,000		
Carbon Disulfide	1J		1/18							780,000		
Chloroform	3J		1/18							100,000		
2-Butanone	3J		1/18	10 J						4,700,000		
Benzene	2J-2J		2/18							22,000		
Toluene	3J-13		4/18							1,600,000		
Ethylbenzene	3J-110		4/18							780,000		
Styrene	4J-5J		2/18							1,600,000		
Xylenes	7J-300		4/18							16,000,000		
Phenol	7200 J		1/47	7J						4,700,000		
2-Methylphenol	2000 J		1/47							390,000		
4-Methylphenol	5900 J		1/47							39,000		
Naphthalene	55J-95,000 J		9/47							310,000		
2-Methylnaphthalene	100 J-31,000 J		6/47							310,000		
Acenaphthylene	190 J		1/47							230,000		
Acenaphthene	560-47,000 J		6/47							470,000		
4-Nitrophenol	570 J		1/47							480,000		
Dibenzofuran	440-36,000 J ~~11593~~		6/47							31,000		X
Fluorene	710-35,000 J		6/47							310,000		
N-nitrosodiphenylamine	400 J-1100 J		2/47							13,000		
Phenanthrene	615-110,000 J		8/47							230,000		
Anthracene	425-12,000 J		7/47							1,700,000		
Carbazole	200 J-4900		6/47							32,000		
di-n-Butylphthalate	39J-170 J		18/47							780,000		
Fluoranthene	51J-66,000		7/47							310,000		

* Residential Soil RBCs; noncarcinogens divided by 10.

11/95

Site 3 Subsurface Soil

(2)

CONTAMINANT	RANGE	95% UCL	FREQUENCY	BLANK	BACKGROUND	HISTORY	ANTHROPOGENIC	NUTRIENT	TOXICITY	* Res. RBC	ARAR	COPC
Pyrene	43J-38,000J		10/47							230,000		
Benzo(a)anthracene	77J-8000 ~~550.9~~		7/47							880		+ X
Chrysene	86J-8400J		7/47							88,000		+
bis(2-Ethylhexyl)phthalate	53J-240J		2/47	4J						46,000		
Benzo(b)fluoranthene	96J-3500J ~~379.8~~		7/47							880		X
Benzo(k)fluoranthene	79J-3300J		6/47							8800		+
Benzo(a)pyrene	55J-3300J	350.9	7/47							88		X
Indeno(1,2,3-cd)pyrene	46J-3100J	333.7	5/47							880		X
Benzo(g,h,i)perylene	91J-1200J		4/47							230,000		
Aluminum	5750-6570		2/2		7413.23					7800		
Barium	4.6-6.6J		2/2		14.37					550		
Calcium	22.4-		2/2	4.8	387.824			✓		NA		-
Chromium	2.7-7.5		2/2		12.537					39		
Iron	7.34-1030		2/2	24.3	7134.639					NA		
Lead	5.7J		1/2	4.2	8.264					400		
Magnesium	104-112		2/2		263.398					NA		
Manganese	2.8J		1/2		7.99					1100		
Vanadium	3.7-5		2/2		13.34					55		

* Residential Soil RBCs: noncarcinogens divided by 10.

+ re-include all cPAHs detected

11/95

Site 3 Groundwater - Ronna T

(1)

CONTAMINANT	RANGE	95% UCL	FREQUENCY	BLANK	BACKGROUND	HISTORY	ANTHROPOGENIC	NUTRIENT	TOXICITY	* RBC	ARAR	COPC
Carbon Disulfide	1J		1/3							2.1✓		
Benzene	11J-~~400~~	4058.4	3/3							0.36		X
Toluene	4J-10J		3/3							75✓		
Xylenes	6J-9J		3/3							1200✓		
Phenol	3J		1/8							2200✓		
2-Methylphenol	1J		1/8							180✓		
4-Methylphenol	3J		1/8							18✓		
NA 2-Nitrophenol	~~25~~	6.2	1/8							NA		X
2,4-Dimethylphenol	2J		1/8							73✓		
Naphthalene	3J-64		5/8							150✓		
2-Methylnaphthalene	65		1/8							150✓		
Acenaphthylene	3J		3/8							110✓		
Acenaphthene	2J-~~280~~	1871.6	3/8							220		X
Dibenzofuran	2J-~~230~~	1007.5	3/8							15		X
Fluorene	1J-~~210~~	1305.0	3/8							150		X
Phenanthrene	75-~~410~~	1910.2	2/8							110		X
Anthracene	5J-33		2/8							1100✓		
Carbazole	39J	~~19.2~~	1/8							3.4		X
di-n-Butylphthalate	1J		1/8							370✓		
Fluoranthene	10-100		2/8							150✓		
Pyrene	10-58		2/8							110✓		
Benzo(a)anthracene	8J	~~6.4~~	1/8							0.092		X
Chrysene	8J		1/8							9.2✓		+
Benzo(b)fluoranthene	~~35~~	5.4	1/8							0.092		X
~~Benzo(a)pyrene~~												

* Noncarcinogens divided by 10.

+ re-include all cPAHs detected

11/95

Site 3 Groundwater - Round I

(2)

CONTAMINANT	RANGE	95% UCL	FREQUENCY	BLANK	BACKGROUND	HISTORY	ANTHROPOGENIC	NUTRIENT	TOXICITY	* RBC	ARAR	COPC
Benzo(k)fluoranthene	~~3J~~	5.4	1/8							0.92		X
Benzo(a)pyrene	~~3J~~	5.4	1/8							0.0092		X
Aluminum	447-~~[illegible]~~		2/3	52.2						3700		X
Barium	31.8J-120		3/3							260✓		
Calcium	2870-43600		3/3	62.6				✓		NA		
Chromium	~~[illegible]~~		1/3							18		X
Iron	43.2-2190		3/3	28.3				✓		NA		
Lead	3.2J		1/3	5.8J✓						NA		
Magnesium	1410-4200		3/3					✓		NA		
Manganese	4.5J-21.2J		2/3							510✓		
Nickel	34.1		1/3							73✓		
Potassium	1800-1900		3/3					✓		NA		
Sodium	4750-~~15,200~~		3/3	128				✓		NA		
Zinc	114		1/3	53.8J						1100✓		

* Noncarcinogens divided by 10.

11/95

S. 3 Groundwater - Round

	CONTAMINANT	RANGE	95% UCL	FREQUENCY	BLANK	BACKGROUND	HISTORY	ANTHROPOGENIC	NUTRIENT	TOXICITY	* RBC	ARAR	COPC
✓	1,1-Dichloroethene	~~1J~~	6.0	1/16							0.044		X
✓	Chloroform	~~4J~~ *	6.4	2/16							0.15		X
✓	Trichloroethene	1J		3/16							1.6 ✓		
✓	Benzene	~~3J~~	5.2	1/16							0.36		X
	Toluene	2J-15J		2/16							75 ✓		
	Ethylbenzene	14J		1/16							130 ✓		
	Xylenes (total)	32J		1/16	1J						1200 ✓		
	Phenol	420J		1/16	16						2200 ✓		
✓	2-Methylphenol	300J	~~24.1~~	1/16							180		X
✓	4-Methylphenol	690J	~~37.5~~	1/16							18		X
✓	2,4-Dimethylphenol	170J	~~16.4~~	1/16							73		X
✓	Naphthalene	4J-2400J	~~184.3~~	3/16							150		X
NA	2-Methylnaphthalene	10-250J	~~21.1~~	2/16							150		X
	Acenaphthylene	1J		1/16							110 ✓		
✓	Acenaphthene	24-320J	~~37.4~~	3/16							220		X
✓	Dibenzofuran	17-140J	~~21.0~~	3/16							15		X
✓	Fluorene	23-160J	~~23.9~~	3/16							150		X
NA	Phenanthrene	21-130J	~~17.2~~	2/16							110		X
	Anthracene	1J-13J		3/16							1100 ✓		
✓	Carbazole	3J-87J	~~12.7~~	3/16							3.4		X
	Fluoranthene	2J-21J		3/16							160 ✓		
	Pyrene	11-14J		2/16							110 ✓		
	bis(2-Ethylhexyl)phthalate	2J-11		4/16	65 ✓						4.8		

* Noncarcinogens divided by 10.

Site 3 Groundwater - Round III

CONTAMINANT	RANGE	95% UCL	FREQUENCY	BLANK	BACKGROUND	HISTORY	ANTHROPOGENIC	NUTRIENT	TOXICITY	* RBC	ARAR	COPC
Benzene	~~3J~~	5.2	1/16							0.36		X
Toluene	8J-11		2/16							75 ✓		
Ethylbenzene	1J-10		2/16							130 ✓		
Xylenes	20		1/16							1200 ✓		
Phenol	1J-68		2/16							2200 ✓		
2-Methylphenol	160J		1/16							180 ✓		
4-Methylphenol	200J	~~18.5~~	1/16							18		X
2,4-Dimethylphenol	64J		1/16							73 ✓		
Naphthalene	4J-1500		3/16							150		
2-Methylnaphthalene	1J-84		3/16							150 ✓		
Acenaphthylene	2J		1/16							110 ✓		
Acenaphthene	25-55		3/16							220 ✓		
Dibenzofuran	24-120J	~~21.5~~	3/16							15 ✓		X
Fluorene	20-80		3/16							150 ✓		
Phenanthrene	23-120	~~33.4~~	3/16							110 ✓		X
Anthracene	5NJ-11NJ		2/16							1100 ✓		
Carbazole	4J-82	~~42.9~~	3/16							3.4		X
Fluoranthene	3J-28		3/16							150 ✓		
Pyrene	2J-16		3/16							110 ✓		
bis(2-Ethylhexyl)phthalate	1J		2/16							4.8 ✓		

* Noncarcinogens divided by 10.

11/95

APPENDIX M
STATISTICAL SUMMARIES

APPENDIX M.1
SURFACE SOIL - ORGANICS

STATISTICAL SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MAXIMUM DETECTED	ARITHMETIC MEAN	STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG NORMAL UPPER 95% CONFIDENCE INTERVAL
VOLATILES						
Chloromethane	UG/KG	ND	NA	NA	NA	NA
Bromomethane	UG/KG	ND	NA	NA	NA	NA
Vinyl chloride	UG/KG	ND	NA	NA	NA	NA
Chloroethane	UG/KG	ND	NA	NA	NA	NA
Methylene chloride	UG/KG	ND	NA	NA	NA	NA
Acetone	UG/KG	ND	NA	NA	NA	NA
Carbon Disulfide	UG/KG	ND	NA	NA	NA	NA
1,1-Dichloroethene	UG/KG	ND	NA	NA	NA	NA
1,1-Dichloroethane	UG/KG	ND	NA	NA	NA	NA
1,2-Dichloroethene(total)	UG/KG	ND	NA	NA	NA	NA
Chloroform	UG/KG	ND	NA	NA	NA	NA
1,2-Dichloroethane	UG/KG	ND	NA	NA	NA	NA
2-Butanone	UG/KG	ND	NA	NA	NA	NA
1,1,1-Trichloroethane	UG/KG	ND	NA	NA	NA	NA
Carbon tetrachloride	UG/KG	ND	NA	NA	NA	NA
Bromodichloromethane	UG/KG	ND	NA	NA	NA	NA
1,2-Dichloropropane	UG/KG	ND	NA	NA	NA	NA
cis-1,3-Dichloropropene	UG/KG	ND	NA	NA	NA	NA
Trichloroethene	UG/KG	ND	NA	NA	NA	NA
Dibromochloromethane	UG/KG	ND	NA	NA	NA	NA
1,1,2-Trichloroethane	UG/KG	ND	NA	NA	NA	NA
Benzene	UG/KG	ND	NA	NA	NA	NA
trans-1,3-Dichloropropene	UG/KG	ND	NA	NA	NA	NA
Bromoform	UG/KG	ND	NA	NA	NA	NA
4-Methyl-2-pentanone	UG/KG	ND	NA	NA	NA	NA
2-Hexanone	UG/KG	ND	NA	NA	NA	NA
Tetrachloroethene	UG/KG	ND	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	UG/KG	ND	NA	NA	NA	NA
Toluene	UG/KG	2 J	5.2	1.2	5.7	6.2
Chlorobenzene	UG/KG	ND	NA	NA	NA	NA
Ethylbenzene	UG/KG	2 J	5.5	1.0	5.9	6.3
Styrene	UG/KG	ND	NA	NA	NA	NA
Xylenes (total)	UG/KG	6 J	5.7	0.5	6.0	5.9

STATISTICAL SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MAXIMUM DETECTED	ARITHMETIC MEAN	STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG NORMAL UPPER 95% CONFIDENCE INTERVAL
SEMIVOLATILES						
Phenol	UG/KG	38 J	370.0	478.5	475.8	410.6
bis(2-Chloroethyl) ether	UG/KG	ND	NA	NA	NA	NA
2-Chlorophenol	UG/KG	ND	NA	NA	NA	NA
1,3-Dichlorobenzene	UG/KG	ND	NA	NA	NA	NA
1,4-Dichlorobenzene	UG/KG	ND	NA	NA	NA	NA
1,2-Dichlorobenzene	UG/KG	ND	NA	NA	NA	NA
2-Methylphenol	UG/KG	ND	NA	NA	NA	NA
2,2'-oxybis-(1-chloropropane)	UG/KG	ND	NA	NA	NA	NA
4-Methylphenol	UG/KG	ND	NA	NA	NA	NA
N-Nitroso-di-n-propylamine	UG/KG	ND	NA	NA	NA	NA
Hexachloroethane	UG/KG	ND	NA	NA	NA	NA
Nitrobenzene	UG/KG	ND	NA	NA	NA	NA
Isophorone	UG/KG	ND	NA	NA	NA	NA
2-Nitrophenol	UG/KG	ND	NA	NA	NA	NA
2,4-Dimethylphenol	UG/KG	ND	NA	NA	NA	NA
bis(2-Chloroethoxy) methane	UG/KG	ND	NA	NA	NA	NA
2,4-Dichlorophenol	UG/KG	ND	NA	NA	NA	NA
1,2,4-Trichlorobenzene	UG/KG	ND	NA	NA	NA	NA
Naphthalene	UG/KG	200 J	358.1	473.6	462.8	392.3
4-Chloroaniline	UG/KG	ND	NA	NA	NA	NA
Hexachlorobutadiene	UG/KG	ND	NA	NA	NA	NA
4-Chloro-3-methylphenol	UG/KG	ND	NA	NA	NA	NA
2-Methylnaphthalene	UG/KG	41 J	370.2	478.4	476.0	410.0
Hexachlorocyclopentadiene	UG/KG	ND	NA	NA	NA	NA
2,4,6-Trichlorophenol	UG/KG	ND	NA	NA	NA	NA
2,4,5-Trichlorophenol	UG/KG	ND	NA	NA	NA	NA
2-Chloronaphthalene	UG/KG	ND	NA	NA	NA	NA
2-Nitroaniline	UG/KG	ND	NA	NA	NA	NA
Dimethyl phthalate	UG/KG	ND	NA	NA	NA	NA
Acenaphthylene	UG/KG	2700	363.0	556.4	486.0	423.8
2,6-Dinitrotoluene	UG/KG	ND	NA	NA	NA	NA
3-Nitroaniline	UG/KG	ND	NA	NA	NA	NA
Acenaphthene	UG/KG	460 J	362.7	473.3	467.3	398.4

STATISTICAL SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MAXIMUM DETECTED	ARITHMETIC MEAN	STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG NORMAL UPPER 95% CONFIDENCE INTERVAL
SEMIVOLATILES Cont.						
2,4-Dinitrophenol	UG/KG	ND	NA	NA	NA	NA
4-Nitrophenol	UG/KG	ND	NA	NA	NA	NA
Dibenzofuran	UG/KG	370 J	363.4	471.8	467.8	391.7
2,4-Dinitrotoluene	UG/KG	ND	NA	NA	NA	NA
Diethylphthalate	UG/KG	ND	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	UG/KG	ND	NA	NA	NA	NA
Fluorene	UG/KG	620 J	339.8	461.1	441.7	371.2
4-Nitroaniline	UG/KG	ND	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	UG/KG	ND	NA	NA	NA	NA
N-nitrosodiphenylamine	UG/KG	ND	NA	NA	NA	NA
4-Bromophenyl-phenylether	UG/KG	ND	NA	NA	NA	NA
Hexachlorobenzene	UG/KG	ND	NA	NA	NA	NA
Pentachlorophenol	UG/KG	ND	NA	NA	NA	NA
Phenanthrene	UG/KG	2900	401.5	590.1	532.0	464.5
Anthracene	UG/KG	7700	519.0	1117.1	766.0	600.4
Carbazole	UG/KG	830 J	328.0	471.3	432.2	380.2
di-n-Butylphthalate	UG/KG	340 J	327.7	485.7	435.1	394.4
Fluoranthene	UG/KG	11000	772.3	1968.9	1207.7	873.2
Pyrene	UG/KG	14000	976.7	2544.3	1539.3	1129.1
Butyl benzyl phthalate	UG/KG	ND	NA	NA	NA	NA
3,3'-Dichlorobenzidine	UG/KG	ND	NA	NA	NA	NA
Benzo[a]anthracene	UG/KG	8300	613.2	1313.0	903.5	715.5
Chrysene	UG/KG	12000	784.3	1900.8	1204.6	935.9
bis(2-Ethylhexyl)phthalate	UG/KG	91 J	305.9	507.6	418.2	394.6
di-n-Octylphthalate	UG/KG	ND	NA	NA	NA	NA
Benzo[b]fluoranthene	UG/KG	13000	840.8	2027.4	1289.1	1005.3
Benzo[k]fluoranthene	UG/KG	9000	698.1	1561.6	1043.4	873.9
Benzo[a]pyrene	UG/KG	8700	621.1	1364.6	922.8	719.1
Indeno[1,2,3-cd]pyrene	UG/KG	6800	538.7	1079.5	777.3	625.0
Dibenz[a,h]anthracene	UG/KG	2900	375.8	581.2	504.3	444.7
Benzo[g,h,i]perylene	UG/KG	4700	489.7	842.3	675.9	584.6

STATISTICAL SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MAXIMUM DETECTED	ARITHMETIC MEAN	STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG NORMAL UPPER 95% CONFIDENCE INTERVAL
PESTICIDES/PCBs						
alpha-BHC	UG/KG	ND	NA	NA	NA	NA
beta-BHC	UG/KG	ND	NA	NA	NA	NA
delta-BHC	UG/KG	ND	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/KG	ND	NA	NA	NA	NA
Heptachlor	UG/KG	ND	NA	NA	NA	NA
Aldrin	UG/KG	ND	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	ND	NA	NA	NA	NA
Endosulfan I	UG/KG	ND	NA	NA	NA	NA
Dieldrin	UG/KG	ND	NA	NA	NA	NA
4,4'-DDE	UG/KG	ND	NA	NA	NA	NA
Endrin	UG/KG	ND	NA	NA	NA	NA
Endosulfan II	UG/KG	ND	NA	NA	NA	NA
4,4'-DDD	UG/KG	ND	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	ND	NA	NA	NA	NA
4,4'-DDT	UG/KG	ND	NA	NA	NA	NA
Methoxychlor	UG/KG	ND	NA	NA	NA	NA
Endrin ketone	UG/KG	ND	NA	NA	NA	NA
Endrin aldehyde	UG/KG	ND	NA	NA	NA	NA
alpha-Chlordane	UG/KG	ND	NA	NA	NA	NA
gamma-Chlordane	UG/KG	ND	NA	NA	NA	NA
Toxaphene	UG/KG	ND	NA	NA	NA	NA
Aroclor 1016	UG/KG	ND	NA	NA	NA	NA
Aroclor 1221	UG/KG	ND	NA	NA	NA	NA
Aroclor 1232	UG/KG	ND	NA	NA	NA	NA
Aroclor 1242	UG/KG	ND	NA	NA	NA	NA
Aroclor 1248	UG/KG	ND	NA	NA	NA	NA
Aroclor 1254	UG/KG	ND	NA	NA	NA	NA
Aroclor 1260	UG/KG	ND	NA	NA	NA	NA

APPENDIX M.2
SURFACE SOIL - INORGANICS

STATISTICAL SUMMARY
OPERABLE UNIT Na. 12
SITE 3 - SURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL INORGANICS

Client Sample ID:		3-MW02IW-00	3-MW05-00
Laboratory Sample ID:		AC9747	AD0556
Date Sampled:		11/16/94	11/19/94
	UNITS		
Aluminum	MG/KG	1740	4240
Antimony	MG/KG	4.95 U	5.55 U
Arsenic	MG/KG	1 U	1.1 U
Barium	MG/KG	6.4 J	7.8 J
Beryllium	MG/KG	0.1 U	0.11 U
Cadmium	MG/KG	0.495 U	0.55 U
Calcium	MG/KG	67700	4020
Chromium	MG/KG	7.1	2.7
Cobalt	MG/KG	1 U	1.1 U
Copper	MG/KG	1 U	1.1 U
Iron	MG/KG	1390	1970
Lead	MG/KG	4.4 J	2.3 U
Magnesium	MG/KG	1020	150
Manganese	MG/KG	11.7	13.1
Mercury	MG/KG	0.05 U	0.055 U
Nickel	MG/KG	2 U	2.2 U
Potassium	MG/KG	99.5 U	110.5 U
Selenium	MG/KG	0.495 U	0.55 U
Silver	MG/KG	0.495 U	0.55 U
Sodium	MG/KG	112	17.25 U
Thallium	MG/KG	1 UJ	1.1 U
Vanadium	MG/KG	3.3	5.2
Zinc	MG/KG	16.6	4.45 UJ
Moisture	%	0.44	9.69

APPENDIX M.3
SUBSURFACE SOIL - ORGANICS

STATISTICAL SUMMARY
OPERABLE UNIT No. 11
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MAXIMUM DETECTED	ARITHMETIC MEAN	STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG NORMAL UPPER 95% CONFIDENCE INTERVAL
VOLATILES						
Chloromethane	UG/KG	ND	NA	NA	NA	NA
Bromomethane	UG/KG	ND	NA	NA	NA	NA
Vinyl chloride	UG/KG	ND	NA	NA	NA	NA
Chloroethane	UG/KG	ND	NA	NA	NA	NA
Methylene chloride	UG/KG	ND	NA	NA	NA	NA
Acetone	UG/KG	120	20.2	27.7	31.5	31.8
Carbon Disulfide	UG/KG	1 J	5.6	1.2	6.1	7.1
1,1-Dichloroethene	UG/KG	ND	NA	NA	NA	NA
1,1-Dichloroethane	UG/KG	ND	NA	NA	NA	NA
1,2-Dichloroethene(total)	UG/KG	ND	NA	NA	NA	NA
Chloroform	UG/KG	3 J	5.7	0.7	6.0	6.1
1,2-Dichloroethane	UG/KG	ND	NA	NA	NA	NA
2-Butanone	UG/KG	3 J	5.7	0.7	6.0	6.1
1,1,1-Trichloroethane	UG/KG	ND	NA	NA	NA	NA
Carbon tetrachloride	UG/KG	ND	NA	NA	NA	NA
Bromodichloromethane	UG/KG	ND	NA	NA	NA	NA
1,2-Dichloropropane	UG/KG	ND	NA	NA	NA	NA
cis-1,3-Dichloropropene	UG/KG	ND	NA	NA	NA	NA
Trichloroethene	UG/KG	ND	NA	NA	NA	NA
Dibromochloromethane	UG/KG	ND	NA	NA	NA	NA
1,1,2-Trichloroethane	UG/KG	ND	NA	NA	NA	NA
Benzene	UG/KG	2 J	5.4	1.3	5.9	6.5
trans-1,3-Dichloropropene	UG/KG	ND	NA	NA	NA	NA
Bromoform	UG/KG	ND	NA	NA	NA	NA
4-Methyl-2-pentanone	UG/KG	ND	NA	NA	NA	NA
2-Hexanone	UG/KG	ND	NA	NA	NA	NA
Tetrachloroethene	UG/KG	ND	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	UG/KG	ND	NA	NA	NA	NA
Toluene	UG/KG	13	6.4	2.2	7.3	7.3
Chlorobenzene	UG/KG	ND	NA	NA	NA	NA
Ethylbenzene	UG/KG	110	12.1	24.5	22.2	14.6
Styrene	UG/KG	5 J	5.7	0.5	5.9	6.0
Xylenes (total)	UG/KG	300	25.0	69.2	53.4	32.9

STATISTICAL SUMMARY
OPERABLE UNIT No. 11
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MAXIMUM DETECTED	ARITHMETIC MEAN	STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG NORMAL UPPER 95% CONFIDENCE INTERVAL
SEMIVOLATILES						
Phenol	UG/KG	7200 J	434.8	1076.2	699.1	394.5
bis(2-Chloroethyl) ether	UG/KG	ND	NA	NA	NA	NA
2-Chlorophenol	UG/KG	ND	NA	NA	NA	NA
1,3-Dichlorobenzene	UG/KG	ND	NA	NA	NA	NA
1,4-Dichlorobenzene	UG/KG	ND	NA	NA	NA	NA
1,2-Dichlorobenzene	UG/KG	ND	NA	NA	NA	NA
2-Methylphenol	UG/KG	2000 J	324.1	451.7	435.1	339.1
2,2'-oxybis-(1-chloropropane)	UG/KG	ND	NA	NA	NA	NA
4-Methylphenol	UG/KG	5900 J	407.1	901.0	628.4	384.7
N-Nitroso-di-n-propylamine	UG/KG	ND	NA	NA	NA	NA
Hexachloroethane	UG/KG	ND	NA	NA	NA	NA
Nitrobenzene	UG/KG	ND	NA	NA	NA	NA
Isophorone	UG/KG	ND	NA	NA	NA	NA
2-Nitrophenol	UG/KG	ND	NA	NA	NA	NA
2,4-Dimethylphenol	UG/KG	ND	NA	NA	NA	NA
bis(2-Chloroethoxy) methane	UG/KG	ND	NA	NA	NA	NA
2,4-Dichlorophenol	UG/KG	ND	NA	NA	NA	NA
1,2,4-Trichlorobenzene	UG/KG	ND	NA	NA	NA	NA
Naphthalene	UG/KG	95000 J	4392.3	16700.1	8494.5	2157.7
4-Chloroaniline	UG/KG	ND	NA	NA	NA	NA
Hexachlorobutadiene	UG/KG	ND	NA	NA	NA	NA
4-Chloro-3-methylphenol	UG/KG	ND	NA	NA	NA	NA
2-Methylnaphthalene	UG/KG	31000 J	1379.1	4876.7	2577.0	875.7
Hexachlorocyclopentadiene	UG/KG	ND	NA	NA	NA	NA
2,4,6-Trichlorophenol	UG/KG	ND	NA	NA	NA	NA
2,4,5-Trichlorophenol	UG/KG	ND	NA	NA	NA	NA
2-Chloronaphthalene	UG/KG	ND	NA	NA	NA	NA
2-Nitroaniline	UG/KG	ND	NA	NA	NA	NA
Dimethyl phthalate	UG/KG	ND	NA	NA	NA	NA
Acenaphthylene	UG/KG	190 J	387.4	783.8	580.0	372.5
2,6-Dinitrotoluene	UG/KG	ND	NA	NA	NA	NA
3-Nitroaniline	UG/KG	ND	NA	NA	NA	NA
Acenaphthene	UG/KG	47000 J	2521.1	8591.1	4631.4	1496.9

STATISTICAL SUMMARY
OPERABLE UNIT No. 11
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MAXIMUM DETECTED	ARITHMETIC MEAN	STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG NORMAL UPPER 95% CONFIDENCE INTERVAL
SEMIVOLATILES Cont.						
2,4-Dinitrophenol	UG/KG	ND	NA	NA	NA	NA
4-Nitrophenol	UG/KG	570 J	856.4	1858.0	1312.8	804.6
Dibenzofuran	UG/KG	36000 J	1787.9	6098.7	3285.9	1159.3
2,4-Dinitrotoluene	UG/KG	ND	NA	NA	NA	NA
Diethylphthalate	UG/KG	ND	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	UG/KG	ND	NA	NA	NA	NA
Fluorene	UG/KG	35000 J	1842.8	6114.9	3344.8	1229.1
4-Nitroaniline	UG/KG	ND	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	UG/KG	ND	NA	NA	NA	NA
N-nitrosodiphenylamine	UG/KG	1100 J	271.0	303.7	345.6	285.3
4-Bromophenyl-phenylether	UG/KG	ND	NA	NA	NA	NA
Hexachlorobenzene	UG/KG	ND	NA	NA	NA	NA
Pentachlorophenol	UG/KG	ND	NA	NA	NA	NA
Phenanthrene	UG/KG	110000 J	6344.0	23153.8	12031.4	3358.3
Anthracene	UG/KG	12000 J	710.1	2020.9	1206.6	589.6
Carbazole	UG/KG	4900	476.6	1000.8	722.4	449.9
di-n-Butylphthalate	UG/KG	170 J	354.5	793.6	549.5	366.8
Fluoranthene	UG/KG	66000	3316.5	12331.8	6345.7	2073.8
Pyrene	UG/KG	38000 J	2162.4	7180.8	3926.3	1576.8
Butyl benzyl phthalate	UG/KG	ND	NA	NA	NA	NA
3,3'-Dichlorobenzidine	UG/KG	ND	NA	NA	NA	NA
Benzo[a]anthracene	UG/KG	8000	631.5	1595.6	1023.5	559.8
Chrysene	UG/KG	8400 J	604.9	1482.3	969.0	552.1
bis(2-Ethylhexyl)phthalate	UG/KG	240 J	386.0	784.5	578.7	381.3
di-n-Octylphthalate	UG/KG	ND	NA	NA	NA	NA
Benzo[b]fluoranthene	UG/KG	3500 J	371.3	648.5	530.6	379.8
Benzo[k]fluoranthene	UG/KG	3300 J	355.7	636.5	512.1	354.6
Benzo[a]pyrene	UG/KG	3300 J	341.7	582.0	484.7	350.9
Indeno[1,2,3-cd]pyrene	UG/KG	3100 J	315.0	506.2	439.3	333.7
Dibenz[a,h]anthracene	UG/KG	ND	NA	NA	NA	NA
Benzo[g,h,i]perylene	UG/KG	1200 J	286.3	389.9	382.1	301.5

STATISTICAL SUMMARY
OPERABLE UNIT No. 11
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MAXIMUM DETECTED	ARITHMETIC MEAN	STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG NORMAL UPPER 95% CONFIDENCE INTERVAL
PESTICIDES/PCBs						
alpha-BHC	UG/KG	ND	NA	NA	NA	NA
beta-BHC	UG/KG	ND	NA	NA	NA	NA
delta-BHC	UG/KG	ND	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/KG	ND	NA	NA	NA	NA
Heptachlor	UG/KG	ND	NA	NA	NA	NA
Aldrin	UG/KG	ND	NA	NA	NA	NA
Heptachlor epoxide	UG/KG	ND	NA	NA	NA	NA
Endosulfan I	UG/KG	ND	NA	NA	NA	NA
Dieldrin	UG/KG	ND	NA	NA	NA	NA
4,4'-DDE	UG/KG	ND	NA	NA	NA	NA
Endrin	UG/KG	ND	NA	NA	NA	NA
Endosulfan II	UG/KG	ND	NA	NA	NA	NA
4,4'-DDD	UG/KG	ND	NA	NA	NA	NA
Endosulfan sulfate	UG/KG	ND	NA	NA	NA	NA
4,4'-DDT	UG/KG	ND	NA	NA	NA	NA
Methoxychlor	UG/KG	ND	NA	NA	NA	NA
Endrin ketone	UG/KG	ND	NA	NA	NA	NA
Endrin aldehyde	UG/KG	ND	NA	NA	NA	NA
alpha-Chlordane	UG/KG	ND	NA	NA	NA	NA
gamma-Chlordane	UG/KG	ND	NA	NA	NA	NA
Toxaphene	UG/KG	ND	NA	NA	NA	NA
Aroclor 1016	UG/KG	ND	NA	NA	NA	NA
Aroclor 1221	UG/KG	ND	NA	NA	NA	NA
Aroclor 1232	UG/KG	ND	NA	NA	NA	NA
Aroclor 1242	UG/KG	ND	NA	NA	NA	NA
Aroclor 1248	UG/KG	ND	NA	NA	NA	NA
Aroclor 1254	UG/KG	ND	NA	NA	NA	NA
Aroclor 1260	UG/KG	ND	NA	NA	NA	NA

APPENDIX M.4
SUBSURFACE SOIL - INORGANICS

STATISTICAL SUMMARY
OPERABLE UNIT No. 12
SITE 3 - SUBSURFACE SOIL
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL INORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MAXIMUM DETECTED	ARITHMETIC MEAN	STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG NORMAL UPPER 95% CONFIDENCE INTERVAL
Aluminum	MG/KG	6570	5260.0	1852.6	13531.3	NA
Antimony	MG/KG	ND	NA	NA	NA	NA
Arsenic	MG/KG	ND	NA	NA	NA	NA
Barium	MG/KG	6.6 J	5.6	1.4	11.9	NA
Beryllium	MG/KG	ND	NA	NA	NA	NA
Cadmium	MG/KG	ND	NA	NA	NA	NA
Calcium	MG/KG	638	357.7	396.4	2127.5	NA
Chromium	MG/KG	7.5	5.6	2.7	17.6	NA
Cobalt	MG/KG	ND	NA	NA	NA	NA
Copper	MG/KG	ND	NA	NA	NA	NA
Iron	MG/KG	1030	882.0	209.3	1816.5	NA
Lead	MG/KG	5.7 J	3.7	2.8	16.3	NA
Magnesium	MG/KG	112	108.0	5.7	133.3	NA
Manganese	MG/KG	2.8 J	2.8	0.1	3.1	NA
Mercury	MG/KG	ND	NA	NA	NA	NA
Nickel	MG/KG	ND	NA	NA	NA	NA
Potassium	MG/KG	ND	NA	NA	NA	NA
Selenium	MG/KG	ND	NA	NA	NA	NA
Silver	MG/KG	ND	NA	NA	NA	NA
Sodium	MG/KG	ND	NA	NA	NA	NA
Thallium	MG/KG	ND	NA	NA	NA	NA
Vanadium	MG/KG	5	4.4	0.9	8.5	NA
Zinc	MG/KG	ND	NA	NA	NA	NA
Moisture	%					

APPENDIX M.5
ROUND I GROUNDWATER - ORGANICS

STATISTICAL SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MAXIMUM DETECTED	ARITHMETIC MEAN	STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG NORMAL UPPER 95% CONFIDENCE INTERVAL
VOLATILES						
Chloromethane	UG/L	ND	NA	NA	NA	NA
Bromomethane	UG/L	ND	NA	NA	NA	NA
Vinyl chloride	UG/L	ND	NA	NA	NA	NA
Chloroethane	UG/L	ND	NA	NA	NA	NA
Methylene chloride	UG/L	ND	NA	NA	NA	NA
Acetone	UG/L	ND	NA	NA	NA	NA
Carbon Disulfide	UG/L	1 J	3.7	2.3	7.6	23841.4 ←
1,1-Dichloroethene	UG/L	ND	NA	NA	NA	NA
1,1-Dichloroethane	UG/L	ND	NA	NA	NA	NA
1,2-Dichloroethene(total)	UG/L	ND	NA	NA	NA	NA
Chloroform	UG/L	ND	NA	NA	NA	NA
1,2-Dichloroethane	UG/L	ND	NA	NA	NA	NA
2-Butanone	UG/L	ND	NA	NA	NA	NA
1,1,1-Trichloroethane	UG/L	ND	NA	NA	NA	NA
Carbon tetrachloride	UG/L	ND	NA	NA	NA	NA
Bromodichloromethane	UG/L	ND	NA	NA	NA	NA
1,2-Dichloropropane	UG/L	ND	NA	NA	NA	NA
cis-1,3-Dichloropropene	UG/L	ND	NA	NA	NA	NA
Trichloroethene	UG/L	ND	NA	NA	NA	NA
Dibromochloromethane	UG/L	ND	NA	NA	NA	NA
1,1,2-Trichloroethane	UG/L	ND	NA	NA	NA	NA
Benzene	UG/L	40 J	21.3	16.2	48.6	4058.4
trans-1,3-Dichloropropene	UG/L	ND	NA	NA	NA	NA
Bromoform	UG/L	ND	NA	NA	NA	NA
4-Methyl-2-pentanone	UG/L	ND	NA	NA	NA	NA
2-Hexanone	UG/L	ND	NA	NA	NA	NA
Tetrachloroethene	UG/L	ND	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	UG/L	ND	NA	NA	NA	NA
Toluene	UG/L	10 J	6.3	3.2	11.8	58.8
Chlorobenzene	UG/L	ND	NA	NA	NA	NA
Ethylbenzene	UG/L	ND	NA	NA	NA	NA
Styrene	UG/L	ND	NA	NA	NA	NA
Xylenes (total)	UG/L	9 J	7.3	1.5	9.9	13.4

STATISTICAL SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MAXIMUM DETECTED	ARITHMETIC MEAN	STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG NORMAL UPPER 95% CONFIDENCE INTERVAL
SEMIVOLATILES						
Phenol	UG/L	3 J	4.8	0.7	5.2	5.4
bis(2-Chloroethyl) ether	UG/L	ND	NA	NA	NA	NA
2-Chlorophenol	UG/L	ND	NA	NA	NA	NA
1,3-Dichlorobenzene	UG/L	ND	NA	NA	NA	NA
1,4-Dichlorobenzene	UG/L	ND	NA	NA	NA	NA
1,2-Dichlorobenzene	UG/L	ND	NA	NA	NA	NA
2-Methylphenol	UG/L	1 J	4.5	1.4	5.4	8.4
2,2'-oxybis-(1-chloropropane)	UG/L	ND	NA	NA	NA	NA
4-Methylphenol	UG/L	3 J	4.8	0.7	5.2	5.4
N-Nitroso-di-n-propylamine	UG/L	ND	NA	NA	NA	NA
Hexachloroethane	UG/L	ND	NA	NA	NA	NA
Nitrobenzene	UG/L	ND	NA	NA	NA	NA
Isophorone	UG/L	ND	NA	NA	NA	NA
2-Nitrophenol	UG/L	2 J	4.6	1.1	5.3	6.2
2,4-Dimethylphenol	UG/L	2 J	4.6	1.1	5.3	6.2
bis(2-Chloroethoxy) methane	UG/L	ND	NA	NA	NA	NA
2,4-Dichlorophenol	UG/L	ND	NA	NA	NA	NA
1,2,4-Trichlorobenzene	UG/L	ND	NA	NA	NA	NA
Naphthalene	UG/L	64	12.6	20.8	26.6	37.3
4-Chloroaniline	UG/L	ND	NA	NA	NA	NA
Hexachlorobutadiene	UG/L	ND	NA	NA	NA	NA
4-Chloro-3-methylphenol	UG/L	ND	NA	NA	NA	NA
2-Methylnaphthalene	UG/L	65	12.5	21.2	26.7	34.5
Hexachlorocyclopentadiene	UG/L	ND	NA	NA	NA	NA
2,4,6-Trichlorophenol	UG/L	ND	NA	NA	NA	NA
2,4,5-Trichlorophenol	UG/L	ND	NA	NA	NA	NA
2-Chloronaphthalene	UG/L	ND	NA	NA	NA	NA
2-Nitroaniline	UG/L	ND	NA	NA	NA	NA
Dimethyl phthalate	UG/L	ND	NA	NA	NA	NA
Acenaphthylene	UG/L	3 J	4.5	0.9	5.1	5.4
2,6-Dinitrotoluene	UG/L	ND	NA	NA	NA	NA
3-Nitroaniline	UG/L	ND	NA	NA	NA	NA
Acenaphthene	UG/L	280	50.3	98.1	116.0	1871.6

STATISTICAL SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MAXIMUM DETECTED	ARITHMETIC MEAN	STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG NORMAL UPPER 95% CONFIDENCE INTERVAL
SEMIVOLATILES Cont.						
2,4-Dinitrophenol	UG/L	ND	NA	NA	NA	NA
4-Nitrophenol	UG/L	ND	NA	NA	NA	NA
Dibenzofuran	UG/L	230	39.3	79.2	92.3	1007.5 ←
2,4-Dinitrotoluene	UG/L	ND	NA	NA	NA	NA
Diethylphthalate	UG/L	ND	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	UG/L	ND	NA	NA	NA	NA
Fluorene	UG/L	210	36.9	72.5	85.5	1305.0 ←
4-Nitroaniline	UG/L	ND	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	UG/L	ND	NA	NA	NA	NA
N-nitrosodiphenylamine	UG/L	ND	NA	NA	NA	NA
4-Bromophenyl-phenylether	UG/L	ND	NA	NA	NA	NA
Hexachlorobenzene	UG/L	ND	NA	NA	NA	NA
Pentachlorophenol	UG/L	ND	NA	NA	NA	NA
Phenanthrene	UG/L	410	64.4	141.8	159.4	1910.2 ←
Anthracene	UG/L	33	8.5	9.9	15.1	15.9
Carbazole	UG/L	39 J	9.3	12.0	17.3	19.2
di-n-Butylphthalate	UG/L	1 J	4.5	1.4	5.4	8.4
Fluoranthene	UG/L	100	17.5	33.4	39.9	72.3
Pyrene	UG/L	58	11.9	18.7	24.4	29.3
Butyl benzyl phthalate	UG/L	ND	NA	NA	NA	NA
3,3'-Dichlorobenzidine	UG/L	ND	NA	NA	NA	NA
Benzo[a]anthracene	UG/L	8 J	5.4	1.1	6.1	6.1
Chrysene	UG/L	8 J	5.4	1.1	6.1	6.1
bis(2-Ethylhexyl)phthalate	UG/L	ND	NA	NA	NA	NA
di-n-Octylphthalate	UG/L	ND	NA	NA	NA	NA
Benzo[b]fluoranthene	UG/L	3 J	4.8	0.7	5.2	5.4
Benzo[k]fluoranthene	UG/L	3 J	4.8	0.7	5.2	5.4
Benzo[a]pyrene	UG/L	3 J	4.8	0.7	5.2	5.4
Indeno[1,2,3-cd]pyrene	UG/L	ND	NA	NA	NA	NA
Dibenz[a,h]anthracene	UG/L	ND	NA	NA	NA	NA
Benzo[g,h,i]perylene	UG/L	ND	NA	NA	NA	NA

STATISTICAL SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MAXIMUM DETECTED	ARITHMETIC MEAN	STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG NORMAL UPPER 95% CONFIDENCE INTERVAL
PESTICIDES/PCBs						
alpha-BHC	UG/L	ND	NA	NA	NA	NA
beta-BHC	UG/L	ND	NA	NA	NA	NA
delta-BHC	UG/L	ND	NA	NA	NA	NA
Lindane (gamma-BHC)	UG/L	ND	NA	NA	NA	NA
Heptachlor	UG/L	ND	NA	NA	NA	NA
Aldrin	UG/L	ND	NA	NA	NA	NA
Heptachlor epoxide	UG/L	ND	NA	NA	NA	NA
Endosulfan I	UG/L	ND	NA	NA	NA	NA
Dieldrin	UG/L	ND	NA	NA	NA	NA
4,4'-DDE	UG/L	ND	NA	NA	NA	NA
Endrin	UG/L	ND	NA	NA	NA	NA
Endosulfan II	UG/L	ND	NA	NA	NA	NA
4,4'-DDD	UG/L	ND	NA	NA	NA	NA
Endosulfan sulfate	UG/L	ND	NA	NA	NA	NA
4,4'-DDT	UG/L	ND	NA	NA	NA	NA
Methoxychlor	UG/L	ND	NA	NA	NA	NA
Endrin ketone	UG/L	ND	NA	NA	NA	NA
Endrin aldehyde	UG/L	ND	NA	NA	NA	NA
alpha-Chlordane	UG/L	ND	NA	NA	NA	NA
gamma-Chlordane	UG/L	ND	NA	NA	NA	NA
Toxaphene	UG/L	ND	NA	NA	NA	NA
Aroclor 1016	UG/L	ND	NA	NA	NA	NA
Aroclor 1221	UG/L	ND	NA	NA	NA	NA
Aroclor 1232	UG/L	ND	NA	NA	NA	NA
Aroclor 1242	UG/L	ND	NA	NA	NA	NA
Aroclor 1248	UG/L	ND	NA	NA	NA	NA
Aroclor 1254	UG/L	ND	NA	NA	NA	NA
Aroclor 1260	UG/L	ND	NA	NA	NA	NA

APPENDIX M.6
ROUND II GROUNDWATER - ORGANICS

STATISTICAL SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID: Laboratory Sample ID: Date Sampled:		MAXIMUM DETECTED	ARITHMETIC MEAN	STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG NORMAL UPPER 95% CONFIDENCE INTERVAL
	UNITS					
VOLATILES						
Chloromethane	UG/L	ND	NA	NA	NA	NA
Bromomethane	UG/L	ND	NA	NA	NA	NA
Vinyl chloride	UG/L	ND	NA	NA	NA	NA
Chloroethane	UG/L	ND	NA	NA	NA	NA
Methylene chloride	UG/L	ND	NA	NA	NA	NA
Acetone	UG/L	ND	NA	NA	NA	NA
Carbon Disulfide	UG/L	ND	NA	NA	NA	NA
1,1-Dichloroethene	UG/L	1 J	4.8	1.0	5.2	6.0
1,1-Dichloroethane	UG/L	ND	NA	NA	NA	NA
1,2-Dichloroethene(total)	UG/L	ND	NA	NA	NA	NA
Chloroform	UG/L	1 J	4.5	1.4	5.1	6.4
1,2-Dichloroethane	UG/L	ND	NA	NA	NA	NA
2-Butanone	UG/L	ND	NA	NA	NA	NA
1,1,1-Trichloroethane	UG/L	ND	NA	NA	NA	NA
Carbon tetrachloride	UG/L	ND	NA	NA	NA	NA
Bromodichloromethane	UG/L	ND	NA	NA	NA	NA
1,2-Dichloropropane	UG/L	ND	NA	NA	NA	NA
cis-1,3-Dichloropropene	UG/L	ND	NA	NA	NA	NA
Trichloroethene	UG/L	1 J	4.3	1.6	5.0	6.6
Dibromochloromethane	UG/L	ND	NA	NA	NA	NA
1,1,2-Trichloroethane	UG/L	ND	NA	NA	NA	NA
Benzene	UG/L	3 J	4.9	0.5	5.1	5.2
trans-1,3-Dichloropropene	UG/L	ND	NA	NA	NA	NA
Bromoform	UG/L	ND	NA	NA	NA	NA
4-Methyl-2-pentanone	UG/L	ND	NA	NA	NA	NA
2-Hexanone	UG/L	ND	NA	NA	NA	NA
Tetrachloroethene	UG/L	ND	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	UG/L	ND	NA	NA	NA	NA
Toluene	UG/L	15 J	5.4	2.7	6.6	6.5
Chlorobenzene	UG/L	ND	NA	NA	NA	NA
Ethylbenzene	UG/L	14 J	5.6	2.3	6.5	6.2
Styrene	UG/L	ND	NA	NA	NA	NA
Xylenes (total)	UG/L	32 J	6.7	6.8	9.6	7.9

STATISTICAL SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MAXIMUM DETECTED	ARITHMETIC MEAN	STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG NORMAL UPPER 95% CONFIDENCE INTERVAL
SEMIVOLATILES						
Phenol	UG/L	420 J	31.1	103.7	76.6	28.7
bis(2-Chloroethyl) ether	UG/L	ND	NA	NA	NA	NA
2-Chlorophenol	UG/L	ND	NA	NA	NA	NA
1,3-Dichlorobenzene	UG/L	ND	NA	NA	NA	NA
1,4-Dichlorobenzene	UG/L	ND	NA	NA	NA	NA
1,2-Dichlorobenzene	UG/L	ND	NA	NA	NA	NA
2-Methylphenol	UG/L	300 J	23.6	73.7	55.9	24.1
2,2'-oxybis-(1-chloropropane)	UG/L	ND	NA	NA	NA	NA
4-Methylphenol	UG/L	690 J	48.0	171.2	123.0	37.5
N-Nitroso-di-n-propylamine	UG/L	ND	NA	NA	NA	NA
Hexachloroethane	UG/L	ND	NA	NA	NA	NA
Nitrobenzene	UG/L	ND	NA	NA	NA	NA
Isophorone	UG/L	ND	NA	NA	NA	NA
2-Nitrophenol	UG/L	ND	NA	NA	NA	NA
2,4-Dimethylphenol	UG/L	170 J	15.5	41.2	33.6	16.4
bis(2-Chloroethoxy) methane	UG/L	ND	NA	NA	NA	NA
2,4-Dichlorophenol	UG/L	ND	NA	NA	NA	NA
1,2,4-Trichlorobenzene	UG/L	ND	NA	NA	NA	NA
Naphthalene	UG/L	2400 J	161.3	597.5	423.2	184.3
4-Chloroaniline	UG/L	ND	NA	NA	NA	NA
Hexachlorobutadiene	UG/L	ND	NA	NA	NA	NA
4-Chloro-3-methylphenol	UG/L	ND	NA	NA	NA	NA
2-Methylnaphthalene	UG/L	250 J	20.8	61.1	47.6	21.1
Hexachlorocyclopentadiene	UG/L	ND	NA	NA	NA	NA
2,4,6-Trichlorophenol	UG/L	ND	NA	NA	NA	NA
2,4,5-Trichlorophenol	UG/L	ND	NA	NA	NA	NA
2-Chloronaphthalene	UG/L	ND	NA	NA	NA	NA
2-Nitroaniline	UG/L	ND	NA	NA	NA	NA
Dimethyl phthalate	UG/L	ND	NA	NA	NA	NA
Acenaphthylene	UG/L	1 J	7.8	11.3	12.7	10.8
2,6-Dinitrotoluene	UG/L	ND	NA	NA	NA	NA
3-Nitroaniline	UG/L	ND	NA	NA	NA	NA
Acenaphthene	UG/L	320 J	27.9	78.3	62.2	37.4

STATISTICAL SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MAXIMUM DETECTED	ARITHMETIC MEAN	STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG NORMAL UPPER 95% CONFIDENCE INTERVAL
SEMIVOLATILES Cont.						
2,4-Dinitrophenol	UG/L	ND	NA	NA	NA	NA
4-Nitrophenol	UG/L	ND	NA	NA	NA	NA
Dibenzofuran	UG/L	140 J	15.6	33.6	30.4	21.0
2,4-Dinitrotoluene	UG/L	ND	NA	NA	NA	NA
Diethylphthalate	UG/L	ND	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	UG/L	ND	NA	NA	NA	NA
Fluorene	UG/L	160 J	17.4	38.6	34.4	23.9
4-Nitroaniline	UG/L	ND	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	UG/L	ND	NA	NA	NA	NA
N-nitrosodiphenylamine	UG/L	ND	NA	NA	NA	NA
4-Bromophenyl-phenylether	UG/L	ND	NA	NA	NA	NA
Hexachlorobenzene	UG/L	ND	NA	NA	NA	NA
Pentachlorophenol	UG/L	ND	NA	NA	NA	NA
Phenanthrene	UG/L	130 J	14.0	31.2	27.7	17.2
Anthracene	UG/L	13 J	5.3	2.4	6.3	7.2
Carbazole	UG/L	87 J	10.5	20.4	19.5	12.7
di-n-Butylphthalate	UG/L	ND	NA	NA	NA	NA
Fluoranthene	UG/L	21 J	6.8	4.9	8.9	8.8
Pyrene	UG/L	14 J	6.1	2.6	7.2	7.1
Butyl benzyl phthalate	UG/L	ND	NA	NA	NA	NA
3,3'-Dichlorobenzidine	UG/L	ND	NA	NA	NA	NA
Benzo[a]anthracene	UG/L	ND	NA	NA	NA	NA
Chrysene	UG/L	ND	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	UG/L	11	7.8	11.4	12.8	10.7
di-n-Octylphthalate	UG/L	ND	NA	NA	NA	NA
Benzo[b]fluoranthene	UG/L	ND	NA	NA	NA	NA
Benzo[k]fluoranthene	UG/L	ND	NA	NA	NA	NA
Benzo[a]pyrene	UG/L	ND	NA	NA	NA	NA
Indeno[1,2,3-cd]pyrene	UG/L	ND	NA	NA	NA	NA
Dibenz[a,h]anthracene	UG/L	ND	NA	NA	NA	NA
Benzo[g,h,i]perylene	UG/L	ND	NA	NA	NA	NA

APPENDIX M.7
ROUND III GROUNDWATER - ORGANICS

STATISTICAL SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MAXIMUM DETECTED	ARITHMETIC MEAN	STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG NORMAL UPPER 95% CONFIDENCE INTERVAL
VOLATILES						
Chloromethane	UG/L	ND	NA	NA	NA	NA
Bromomethane	UG/L	ND	NA	NA	NA	NA
Vinyl chloride	UG/L	ND	NA	NA	NA	NA
Chloroethane	UG/L	ND	NA	NA	NA	NA
Methylene chloride	UG/L	ND	NA	NA	NA	NA
Acetone	UG/L	ND	NA	NA	NA	NA
Carbon Disulfide	UG/L	ND	NA	NA	NA	NA
1,1-Dichloroethene	UG/L	ND	NA	NA	NA	NA
1,1-Dichloroethane	UG/L	ND	NA	NA	NA	NA
1,2-Dichloroethene(total)	UG/L	ND	NA	NA	NA	NA
Chloroform	UG/L	ND	NA	NA	NA	NA
1,2-Dichloroethane	UG/L	ND	NA	NA	NA	NA
2-Butanone	UG/L	ND	NA	NA	NA	NA
1,1,1-Trichloroethane	UG/L	ND	NA	NA	NA	NA
Carbon tetrachloride	UG/L	ND	NA	NA	NA	NA
Bromodichloromethane	UG/L	ND	NA	NA	NA	NA
1,2-Dichloropropane	UG/L	ND	NA	NA	NA	NA
cis-1,3-Dichloropropene	UG/L	ND	NA	NA	NA	NA
Trichloroethene	UG/L	ND	NA	NA	NA	NA
Dibromochloromethane	UG/L	ND	NA	NA	NA	NA
1,1,2-Trichloroethane	UG/L	ND	NA	NA	NA	NA
Benzene	UG/L	3 J	4.9	0.5	5.1	5.2
trans-1,3-Dichloropropene	UG/L	ND	NA	NA	NA	NA
Bromoform	UG/L	ND	NA	NA	NA	NA
4-Methyl-2-pentanone	UG/L	ND	NA	NA	NA	NA
2-Hexanone	UG/L	ND	NA	NA	NA	NA
Tetrachloroethene	UG/L	ND	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	UG/L	ND	NA	NA	NA	NA
Toluene	UG/L	11	5.6	1.6	6.3	6.2
Chlorobenzene	UG/L	ND	NA	NA	NA	NA
Ethylbenzene	UG/L	10	5.1	1.7	5.8	6.6
Styrene	UG/L	ND	NA	NA	NA	NA
Xylenes (total)	UG/L	20	5.9	3.8	7.6	6.9

STATISTICAL SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MAXIMUM DETECTED	ARITHMETIC MEAN	STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG NORMAL UPPER 95% CONFIDENCE INTERVAL
SEMIVOLATILES						
Phenol	UG/L	68	9.3	15.7	16.2	12.9
bis(2-Chloroethyl) ether	UG/L	ND	NA	NA	NA	NA
2-Chlorophenol	UG/L	ND	NA	NA	NA	NA
1,3-Dichlorobenzene	UG/L	ND	NA	NA	NA	NA
1,4-Dichlorobenzene	UG/L	ND	NA	NA	NA	NA
1,2-Dichlorobenzene	UG/L	ND	NA	NA	NA	NA
2-Methylphenol	UG/L	160 J	15.3	38.6	32.2	16.8
2,2'-oxybis-(1-chloropropane)	UG/L	ND	NA	NA	NA	NA
4-Methylphenol	UG/L	200 J	17.8	48.6	39.1	18.5
N-Nitroso-di-n-propylamine	UG/L	ND	NA	NA	NA	NA
Hexachloroethane	UG/L	ND	NA	NA	NA	NA
Nitrobenzene	UG/L	ND	NA	NA	NA	NA
Isophorone	UG/L	ND	NA	NA	NA	NA
2-Nitrophenol	UG/L	ND	NA	NA	NA	NA
2,4-Dimethylphenol	UG/L	64 J	9.3	14.6	15.7	11.2
bis(2-Chloroethoxy) methane	UG/L	ND	NA	NA	NA	NA
2,4-Dichlorophenol	UG/L	ND	NA	NA	NA	NA
1,2,4-Trichlorobenzene	UG/L	ND	NA	NA	NA	NA
Naphthalene	UG/L	1500	121.1	378.2	286.9	217.4
4-Chloroaniline	UG/L	ND	NA	NA	NA	NA
Hexachlorobutadiene	UG/L	ND	NA	NA	NA	NA
4-Chloro-3-methylphenol	UG/L	ND	NA	NA	NA	NA
2-Methylnaphthalene	UG/L	94	12.0	22.3	21.8	18.4
Hexachlorocyclopentadiene	UG/L	ND	NA	NA	NA	NA
2,4,6-Trichlorophenol	UG/L	ND	NA	NA	NA	NA
2,4,5-Trichlorophenol	UG/L	ND	NA	NA	NA	NA
2-Chloronaphthalene	UG/L	ND	NA	NA	NA	NA
2-Nitroaniline	UG/L	ND	NA	NA	NA	NA
Dimethyl phthalate	UG/L	ND	NA	NA	NA	NA
Acenaphthylene	UG/L	2 J	5.4	1.0	5.9	6.2
2,6-Dinitrotoluene	UG/L	ND	NA	NA	NA	NA
3-Nitroaniline	UG/L	ND	NA	NA	NA	NA
Acenaphthene	UG/L	55	12.4	15.5	19.2	18.1

STATISTICAL SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TCL VOLATILES AND SEMIVOLATILES

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MAXIMUM DETECTED	ARITHMETIC MEAN	STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG NORMAL UPPER 95% CONFIDENCE INTERVAL
SEMIVOLATILES Cont.						
2,4-Dinitrophenol	UG/L	ND	NA	NA	NA	NA
4-Nitrophenol	UG/L	ND	NA	NA	NA	NA
Dibenzofuran	UG/L	120 J	15.4	28.8	28.1	21.5
2,4-Dinitrotoluene	UG/L	ND	NA	NA	NA	NA
Diethylphthalate	UG/L	ND	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	UG/L	ND	NA	NA	NA	NA
Fluorene	UG/L	80	13.1	19.5	21.6	18.8
4-Nitroaniline	UG/L	ND	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	UG/L	ND	NA	NA	NA	NA
N-nitrosodiphenylamine	UG/L	ND	NA	NA	NA	NA
4-Bromophenyl-phenylether	UG/L	ND	NA	NA	NA	NA
Hexachlorobenzene	UG/L	ND	NA	NA	NA	NA
Pentachlorophenol	UG/L	ND	NA	NA	NA	NA
Phenanthrene	UG/L	120	19.6	35.2	35.1	33.4
Anthracene	UG/L	11 NJ	6.0	1.4	6.6	6.5
Carbazole	UG/L	82	10.7	19.1	19.0	12.9
di-n-Butylphthalate	UG/L	ND	NA	NA	NA	NA
Fluoranthene	UG/L	28	7.2	5.7	9.7	8.8
Pyrene	UG/L	16	6.3	2.9	7.5	7.6
Butyl benzyl phthalate	UG/L	ND	NA	NA	NA	NA
3,3'-Dichlorobenzidine	UG/L	ND	NA	NA	NA	NA
Benzo[a]anthracene	UG/L	ND	NA	NA	NA	NA
Chrysene	UG/L	ND	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	UG/L	1 J	5.0	1.6	5.7	7.4
di-n-Octylphthalate	UG/L	ND	NA	NA	NA	NA
Benzo[b]fluoranthene	UG/L	ND	NA	NA	NA	NA
Benzo[k]fluoranthene	UG/L	ND	NA	NA	NA	NA
Benzo[a]pyrene	UG/L	ND	NA	NA	NA	NA
Indeno[1,2,3-cd]pyrene	UG/L	ND	NA	NA	NA	NA
Dibenz[a,h]anthracene	UG/L	ND	NA	NA	NA	NA
Benzo[g,h,i]perylene	UG/L	ND	NA	NA	NA	NA

APPENDIX M.8
ROUND I GROUNDWATER - INORGANICS

STATISTICAL SUMMARY
OPERABLE UNIT No. 12
SITE 3 - GROUNDWATER
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL INORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MAXIMUM DETECTED	ARITHMETIC MEAN	STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG NORMAL UPPER 95% CONFIDENCE INTERVAL
Aluminum	UG/L	4030	1499.7	2201.6	5211.3	3.4E+35 ←
Antimony	UG/L	ND	NA	NA	NA	NA
Arsenic	UG/L	ND	NA	NA	NA	NA
Barium	UG/L	120	80.2	44.7	155.6	7919.4
Beryllium	UG/L	ND	NA	NA	NA	NA
Cadmium	UG/L	ND	NA	NA	NA	NA
Calcium	UG/L	43600	16780.0	23232.2	55946.3	22855456739502.0 ←
Chromium	UG/L	31.6	13.9	15.4	39.8	3548636.2
Cobalt	UG/L	ND	NA	NA	NA	NA
Copper	UG/L	ND	NA	NA	NA	NA
Iron	UG/L	2190	1024.4	1085.2	2853.9	1.2E+24
Lead	UG/L	3.2 J	2.1	1.0	3.7	15.8
Magnesium	UG/L	4200	2563.3	1456.4	5018.7	57055.9
Manganese	UG/L	21.7 J	14.4	8.9	29.4	19382.8
Mercury	UG/L	ND	NA	NA	NA	NA
Nickel	UG/L	34.1	18.0	13.9	41.5	3589.1
Potassium	UG/L	1900	1563.3	306.6	2080.3	2461.3
Selenium	UG/L	ND	NA	NA	NA	NA
Silver	UG/L	ND	NA	NA	NA	NA
Sodium	UG/L	15300	9646.7	5315.5	18607.9	259739.1
Thallium	UG/L	ND	NA	NA	NA	NA
Vanadium	UG/L	ND	NA	NA	NA	NA
Zinc	UG/L	114	43.8	60.8	146.3	56830857187.4

APPENDIX N
CDI CALCULATIONS AND SPREADSHEETS

Computed by: :LHJ Checked by: MDB Date: 12/95

EXAMPLE SOIL INGESTION CALCULATIONS
OPERABLE UNIT NO. 12 (SITE 3)
CONTRACT TASK ORDER 0274

Purpose: Estimate intake/risk from ingestion of soil

$$Intake\ (mg/kg{\cdot}day) = \frac{C \times CF \times EF \times ED \times IR}{BW \times AT}$$

Where:

	C	=	Contaminant concentration in soil (mg/kg)
	CF	=	Conversion factor (kg/mg)
	EF	=	Exposure frequency (days/year)
	ED	=	Exposure duration (years)
	IR	=	Ingestion rate (mg/day)
	BW	=	Body weight (kg)
	AT_c	=	Averaging time carcinogen (days)
	AT_{nc}	=	Averaging time noncarcinogen (days)

Risks:

Carcinogens = Intake (mg/kg·day) x CSF $(mg/kg{\cdot}day)^{-1}$
Noncarcinogens = Intake (mg/kg·day)/RfD (mg/kg·day)

Example Carcinogen: benzo(a)pyrene

$$Intake\ (mg/kg{\cdot}day) = \frac{0.7191\ mg/kg \times 100\ mg/day \times 350\ days/yr \times 24\ yrs \times 1.0E{-}6\ kg/mg}{70\ kg \times 25{,}550\ days}$$

$$= 3.38E\text{-}07$$

Risk = 3.38E-07 mg/kg·day x 7.30E+00 $mg/kg{\cdot}day^{-1}$ = 2.47E-06

Example Noncarcinogen:

There are no noncarcinogens retained as COPCs.

Re: Site 3 Future Residential Adult

SURFACE SOIL INGESTION EXPOSURE ASSESSMENT
OPERABLE UNIT NO.12 (SITE 3)
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from ingestion of soil is calculated as follows:

Intake (mg/kg-day) = C * CF * EF * ED * IR/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:		INPUTS
C = contaminant concentration in soil (mg/kg)		
CF = conversion for kg to mg		1E-06
EF = adult exposure frequency (days/yr)		350
ED = adult exposure duration (yr)		24
IR = adult soil ingestion rate (mg/day)		100
BW = adult body weight (kg)		70
ATc = averaging time for carcinogen (yr)		70
ATnc = averaging time for noncarcinogen (yr)		24
DY = days per year (days/year)		365
CSF = cancer slope factor (mg/kg-day)-1	specific	
RfD = reference dose (mg/kg-day)	specific	

COPC	Concentration (mg/kg)	Exposure Frequency (days/yr) Adult	Exposure Duration (yr) Adult	Conversion Factor (kg/mg)	Ingestion Rate (mg/day) Adult	Body Weight (kg) Adult	Average Carc Time (days)	Carc Dose (mg/kg/day) Adult	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Adult	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Benzo(a)anthracene	0.72	350	24	1E-06	100	70	25550	3.4E-07	7.3E-01	2.46E-07	5%	8760	9.8E-07	0.0E+00	0.0E+00	0%
Chrysene	0.94	350	24	1E-06	100	70	25550	4.4E-07	7.3E-03	3.21E-09	0%	8760	1.3E-06	0.0E+00	0.0E+00	0%
Benzo(b)fluoranthene	1.01	350	24	1E-06	100	70	25550	4.7E-07	7.3E-01	3.45E-07	7%	8760	1.4E-06	0.0E+00	0.0E+00	0%
Benzo(k)fluoranthene	0.87	350	24	1E-06	100	70	25550	4.1E-07	7.3E-02	3.00E-08	1%	8760	1.2E-06	0.0E+00	0.0E+00	0%
Benzo(a)pyrene	0.72	350	24	1E-06	100	70	25550	3.4E-07	7.3E+00	2.47E-06	51%	8760	9.9E-07	0.0E+00	0.0E+00	0%
Indeno(1,2,3-cd)pyrene	0.63	350	24	1E-06	100	70	25550	2.9E-07	7.3E-01	2.14E-07	4%	8760	8.6E-07	0.0E+00	0.0E+00	0%
Dibenzo(a,h)anthracene	0.44	350	24	1E-06	100	70	25550	2.1E-07	7.3E+00	1.52E-06	32%	8760	6.1E-07	0.0E+00	0.0E+00	0%
TOTAL										4.8E-06					0.0E+00	

SURFACE SOIL INGESTION EXPOSURE ASSESSMENT
OPERABLE UNIT NO. 12 (SITE 3)
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT MILITARY PERSONNEL

Intake from ingestion of soil is calculated as follows:

Intake (mg/kg-day) = C * CF * EF * ED * IR/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion for kg to mg	1E-06
EF = adult exposure frequency (days/yr)	350
ED = adult exposure duration (yr)	4
IR = adult soil ingestion rate (mg/day)	100
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	4
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration Carcinogen (mg/kg)	Exposure Frequency (days/yr) Adult	Exposure Duration (yr) Adult	Conversio Factor (kg/mg)	Ingestion Rate (mg/day) Adult	Body Weight (kg) Adult	Average Carc Tim (days)	Carc Dose (mg/kg/day) Adult	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Adult	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Benzo(a)anthracene	0.72	350	4	1E-06	100	70	25550	5.6E-08	7.3E-01	4.09E-08	5%	1460	9.8E-07	0.0E+00	0.00E+00	0%
Chrysene	0.94	350	4	1E-06	100	70	25550	7.3E-08	7.3E-03	5.35E-10	0%	1460	1.3E-06	0.0E+00	0.00E+00	0%
Benzo(b)fluoranthene	1.01	350	4	1E-06	100	70	25550	7.9E-08	7.3E-01	5.74E-08	7%	1460	1.4E-06	0.0E+00	0.00E+00	0%
Benzo(k)fluoranthene	0.87	350	4	1E-06	100	70	25550	6.8E-08	7.3E-02	4.99E-09	1%	1460	1.2E-06	0.0E+00	0.00E+00	0%
Benzo(a)pyrene	0.72	350	4	1E-06	100	70	25550	5.6E-08	7.3E+00	4.11E-07	51%	1460	9.9E-07	0.0E+00	0.00E+00	0%
Indeno(1,2,3-cd)pyrene	0.63	350	4	1E-06	100	70	25550	4.9E-08	7.3E-01	3.57E-08	4%	1460	8.6E-07	0.0E+00	0.00E+00	0%
Dibenzo(a,h)anthracene	0.44	350	4	1E-06	100	70	25550	3.5E-08	7.3E+00	2.54E-07	32%	1460	6.1E-07	0.0E+00	0.00E+00	0%
TOTAL										8.0E-07					0.0E+00	

SUBSURFACE SOIL INGESTION EXPOSURE ASSESSMENT
OPERABLE UNIT NO. 12 (SITE 3)
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE CONSTRUCTION WORKER

Intake from ingestion of soil is calculated as follows:

Intake (mg/kg-day) = C * CF * EF * ED * IR/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion for kg to mg	1E-06
EF = adult exposure frequency (days/yr)	90
ED = adult exposure duration (yr)	1
IR = adult soil ingestion rate (mg/day)	480
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	1
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration Carcinogen (mg/kg)	Exposure Frequency (days/yr) Adult	Exposure Duration (yr) Adult	Conversion Factor (kg/mg)	Ingestion Rate (mg/day) Adult	Body Weight (kg) Adult	Average Carc Tim (days)	Carc Dose (mg/kg/day) Adult	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Adult	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Dibenzofuran	1.159	90	1	1E-06	480	70	25550	2.8E-08	0.0E+00	0.0E+00	0%	365	2.0E-06	4.0E-03	4.9E-04	100%
Benzo(a)anthracene	0.560	90	1	1E-06	480	70	25550	1.4E-08	7.3E-01	9.9E-09	12%	365	9.5E-07	0.0E+00	0.0E+00	0%
Chrysene	0.552	90	1	1E-06	480	70	25550	1.3E-08	7.3E-03	9.7E-11	0%	365	9.3E-07	0.0E+00	0.0E+00	0%
Benzo(b)fluoranthene	0.380	90	1	1E-06	480	70	25550	9.2E-09	7.3E-01	6.7E-09	8%	365	6.4E-07	0.0E+00	0.0E+00	0%
Benzo(k)fluoranthene	0.355	90	1	1E-06	480	70	25550	8.6E-09	7.3E-02	6.3E-10	1%	365	6.0E-07	0.0E+00	0.0E+00	0%
Benzo(a)pyrene	0.351	90	1	1E-06	480	70	25550	8.5E-09	7.3E+00	6.2E-08	73%	365	5.9E-07	0.0E+00	0.0E+00	0%
Indeno(1,2,3-cd)pyrene	0.334	90	1	1E-06	480	70	25550	8.1E-09	7.3E-01	5.9E-09	7%	365	5.6E-07	0.0E+00	0.0E+00	0%
TOTAL										8.5E-08					4.9E-04	

Computed by: :LHJ Checked by: MDB Date: 12/95

EXAMPLE DERMAL CONTACT WITH SOIL CALCULATIONS
OPERABLE UNIT NO. 12 (SITE 3)
CONTRACT TASK ORDER 0274

Purpose: Estimate intake/risk from dermal contact with soil

$$Intake\ (mg/kg{\cdot}day) = \frac{C \times CF \times SA \times AF \times Abs \times EF \times ED}{BW \times AT}$$

Where:	C	=	Contaminant concentration in soil (mg/kg)
	CF	=	Conversion factor (kg/mg)
	SA	=	Surface available for contact (cm^2/event)
	AF	=	Soil to skin adherence factor (mg/cm^2)
	Abs	=	Fraction absorbed (percent)
	EF	=	Exposure frequency (days/year)
	ED	=	Exposure duration (years)
	BW	=	Body weight (kg)
	AT_c	=	Averaging time carcinogen (days)
	AT_{nc}	=	Averaging time noncarcinogen (days)

Risks:

Carcinogens = Intake (mg/kg·day) x CSF $(mg/kg{\cdot}day)^{-1}$
Noncarcinogens = Intake (mg/kg·day)/RfD (mg/kg·day)

Example Carcinogen: benzo(a)pyrene

$$ke\ (mg/kg{\cdot}day) = \frac{0.7191\ mg/kg \times 1.0E{-}06\ kg/mg \times 5{,}800\ cm^2/event \times 1\% \times 1\ mg/cm^2 \times 350\ event/yr \times 24}{70\ kg \times 25{,}550\ days}$$

= 1.96E-07

Risk = 1.96E-07 mg/kg·day x 7.30E+00 $mg/kg{\cdot}day^{-1}$ = 1.43E-06

Example Noncarcinogen:

There are no noncarcinogens retained as COPCs.

SURFACE SOIL DERMAL CONTACT EXPOSURE ASSESSMENT
OPERABLE UNIT NO. 12 (SITE 3)
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Dermal contact with soil is calculated as follows:

Intake (mg/kg-day) = C * CF * SA * AF * Abs * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion factor (kg/mg)	1E-06
SA = child exposed skin surface area (cm2)	2300
AF = soil to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless)	Specific
EF = child exposure frequency (events/yr)	350
ED = child exposure duration (years)	6
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = day per year (day/yr)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Child	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Child	Exposure Duration (yrs) Child	Body Weight (kg) Child	Average Carc Time (days)	Carc Dose (mg/kg/day) Child	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Child	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
Benzo(a)anthracene	0.72	1E-06	2300	1	0.01	350	6	15	25550	9.0E-08	1.5E+00	1.32E-07	5%	2190	1.1E-06	0.0E+00	0.0E+00	0%
Chrysene	0.94	1E-06	2300	1	0.01	350	6	15	25550	1.2E-07	1.5E-02	1.72E-09	0%	2190	1.4E-06	0.0E+00	0.0E+00	0%
Benzo(b)fluoranthene	1.01	1E-06	2300	1	0.01	350	6	15	25550	1.3E-07	1.5E+00	1.85E-07	7%	2190	1.5E-06	0.0E+00	0.0E+00	0%
Benzo(k)fluoranthene	0.87	1E-06	2300	1	0.01	350	6	15	25550	1.1E-07	1.5E-01	1.61E-08	1%	2190	1.3E-06	0.0E+00	0.0E+00	0%
Benzo(a)pyrene	0.72	1E-06	2300	1	0.01	350	6	15	25550	9.1E-08	1.5E+01	1.32E-06	51%	2190	1.1E-06	0.0E+00	0.0E+00	0%
Indeno(1,2,3-cd)pyrene	0.63	1E-06	2300	1	0.01	350	6	15	25550	7.9E-08	1.5E+00	1.15E-07	4%	2190	9.2E-07	0.0E+00	0.0E+00	0%
Dibenzo(a,h)anthracene	0.44	1E-06	2300	1	0.01	350	6	15	25550	5.6E-08	1.5E+01	8.18E-07	32%	2190	6.5E-07	0.0E+00	0.0E+00	0%
TOTAL												2.6E-06					0.0E+00	

SURFACE SOIL DERMAL CONTACT EXPOSURE ASSESSMENT
OPERABLE UNIT NO.12 (SITE 3)
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Dermal contact with soil is calculated as follows:

Intake (mg/kg-day) = C * CF * SA * AF * Abs * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion factor (kg/mg)	1E-06
SA = adult exposed skin surface area (cm2)	5800
AF = soil to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless)	Specific
EF = adult exposure frequency (events/yr)	350
ED = adult exposure duration (years)	24
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	24
DY = day per year (day/yr)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Adult	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Adult	Exposure Duration (yrs) Adult	Body Weight (kg) Adult	Average Carc Time (days)	Carc Dose (mg/kg/day) Adult	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Tim (days)	Noncarc Dose (mg/kg/day) Adult	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Benzo(a)anthracene	0.717	1E-06	5800	1	0.01	350	24	70	25550	2.0E-07	1.5E+00	2.85E-07	35%	8760	5.7E-07	0.0E+00	0.0E+00	0%
Chrysene	0.936	1E-06	5800	1	0.001	350	24	70	25550	2.5E-08	1.5E-02	3.72E-10	0%	8760	7.4E-08	0.0E+00	0.0E+00	0%
Benzo(b)fluoranthene	1.005	1E-06	5800	1	0.001	350	24	70	25550	2.7E-08	1.5E+00	4.00E-08	5%	8760	8.0E-08	0.0E+00	0.0E+00	0%
Benzo(k)fluoranthene	0.874	1E-06	5800	1	0.001	350	24	70	25550	2.4E-08	1.5E-01	3.48E-09	0%	8760	6.9E-08	0.0E+00	0.0E+00	0%
Benzo(a)pyrene	0.719	1E-06	5800	1	0.001	350	24	70	25550	2.0E-08	1.5E+01	2.86E-07	35%	8760	5.7E-08	0.0E+00	0.0E+00	0%
Indeno(1,2,3-cd)pyrene	0.625	1E-06	5800	1	0.001	350	24	70	25550	1.7E-08	1.5E+00	2.49E-08	3%	8760	5.0E-08	0.0E+00	0.0E+00	0%
Dibenzo(a,h)anthracene	0.445	1E-06	5800	1	0.001	350	24	70	25550	1.2E-08	1.5E+01	1.77E-07	22%	8760	3.5E-08	0.0E+00	0.0E+00	0%
TOTAL												8.2E-07					0.0E+00	

SURFACE SOIL DERMAL CONTACT EXPOSURE ASSESSMENT
OPERABLE UNIT NO. 12 (SITE 3)
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT MILITARY PERSONNEL

Dermal contact with soil is calculated as follows:

Intake (mg/kg-day) = C * CF * SA * AF * Abs * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion factor (kg/mg)	1E-06
SA = adult exposed skin surface area (cm2)	5800
AF = soil to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless)	Specific
EF = adult exposure frequency (events/yr)	350
ED = adult exposure duration (years)	4
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	4
DY = day per year (day/yr)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

Note: Inputs are scenario and site specific

COPC	Concentration Carcinogen (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Adult	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Adult	Exposure Duration (yrs) Adult	Body Weight (kg) Adult	Average Carc Time (days)	Carc Dose (mg/kg/day) Adult	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Tim (days)	Noncarc Dose (mg/kg/day) Adult	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Benzo(a)anthracene	0.7166	1E-06	5800	1	0.01	350	4	70	25550	3.3E-08	1.46E+00	4.75E-08	5%	1460	5.7E-07	0.00E+00	0.00E+00	0%
Chrysene	0.94	1E-06	5800	1	0.01	350	4	70	25550	4.2E-08	1.46E-02	6.20E-10	0%	1460	7.4E-07	0.00E+00	0.00E+00	0%
Benzo(b)fluoranthene	1.01	1E-06	5800	1	0.01	350	4	70	25550	4.6E-08	1.46E+00	6.66E-08	7%	1460	8.0E-07	0.00E+00	0.00E+00	0%
Benzo(k)fluoranthene	0.87	1E-06	5800	1	0.01	350	4	70	25550	4.0E-08	1.46E-01	5.79E-09	1%	1460	6.9E-07	0.00E+00	0.00E+00	0%
Benzo(a)pyrene	0.72	1E-06	5800	1	0.01	350	4	70	25550	3.3E-08	1.46E+01	4.77E-07	51%	1460	5.7E-07	0.00E+00	0.00E+00	0%
Indeno(1,2,3-cd)pyrene	0.63	1E-06	5800	1	0.01	350	4	70	25550	2.8E-08	1.46E+00	4.14E-08	4%	1460	5.0E-07	0.00E+00	0.00E+00	0%
Dibenzo(a,h)anthracene	0.44	1E-06	5800	1	0.01	350	4	70	25550	2.0E-08	1.46E+01	2.95E-07	32%	1460	3.5E-07	0.00E+00	0.00E+00	0%
TOTAL												9.3E-07					0.0E+00	

SUBSURFACE SOIL DERMAL CONTACT EXPOSURE ASSESSMENT
OPERABLE UNIT NO. 12 (SITE 3)
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE CONSTRUCTION WORKER

Dermal contact with soil is calculated as follows:

Intake (mg/kg-day) = C * CF * SA * AF * Abs * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion factor (kg/mg)	1E-06
SA = adult exposed skin surface area (cm2)	4300
AF = soil to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless)	Specific
EF = adult exposure frequency (events/yr)	90
ED = adult exposure duration (years)	1
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	1
DY = day per year (day/yr)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration Carcinogen (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Adult	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Adult	Exposure Duration (yrs) Adult	Body Weight (kg) Adult	Average Carc Time (days)	Carc Dose (mg/kg/day) Adult	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Adult	Dermally-Adjusted Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Dibenzofuran	1.159	1E-06	4300	1	0.01	90	1	70	25550	2.5E-09	0.0E+00	0.0E+00	0%	365	1.8E-07	2.0E-03	8.8E-05	100%
Benzo(a)anthracene	0.560	1E-06	4300	1	0.01	90	1	70	25550	1.2E-09	1.5E+00	1.8E-09	12%	365	8.5E-08	0.0E+00	0.0E+00	0%
Chrysene	0.552	1E-06	4300	1	0.01	90	1	70	25550	1.2E-09	1.5E-02	1.7E-11	0%	365	8.4E-08	0.0E+00	0.0E+00	0%
Benzo(b)fluoranthene	0.380	1E-06	4300	1	0.01	90	1	70	25550	8.2E-10	1.5E+00	1.2E-09	8%	365	5.8E-08	0.0E+00	0.0E+00	0%
Benzo(k)fluoranthene	0.355	1E-06	4300	1	0.01	90	1	70	25550	7.7E-10	1.5E-01	1.1E-10	1%	365	5.4E-08	0.0E+00	0.0E+00	0%
Benzo(a)pyrene	0.351	1E-06	4300	1	0.01	90	1	70	25550	7.6E-10	1.5E+01	1.1E-08	73%	365	5.3E-08	0.0E+00	0.0E+00	0%
Indeno(1,2,3-cd)pyrene	0.334	1E-06	4300	1	0.01	90	1	70	25550	7.2E-10	1.5E+00	1.1E-09	7%	365	5.1E-08	0.0E+00	0.0E+00	0%
TOTAL												1.5E-08					8.8E-05	

Computed by: :LHJ Checked by: MDB Date: 12/95

EXAMPLE INHALATION OF PARTICULATES CALCULATIONS
OPERABLE UNIT NO. 12 (SITE 3)
CONTRACT TASK ORDER 0274

Purpose: Estimate intake/risk from the inhalation of soil particulates

$$Intake\ (mg/kg{\cdot}day) = \frac{C \times IR \times EF \times ED \times 1/PEF}{BW \times AT}$$

Where:	C	=	Contaminant concentration in soil (mg/kg)
	IR	=	Inhalation rate (m^3/day)
	EF	=	Exposure frequency (days/year)
	ED	=	Exposure duration (years)
	PEF	=	Particulate Emission Factor (m^3/kg)
	BW	=	Body weight (kg)
	AT_c	=	Averaging time carcinogen (days)
	AT_{nc}	=	Averaging time noncarcinogen (days)

Risks:

Carcinogens = Intake (mg/kg·day) x CSF $(mg/kg{\cdot}day)^{-1}$
Noncarcinogens = Intake (mg/kg·day)/RfD (mg/kg·day)

Example Carcinogen: benzo(a)pyrene

$$Intake\ (mg/kg{\cdot}day) = \frac{0.7191\ mg/kg \times 20\ m^3/day \times 350\ days/yr \times 24\ yrs \times 1/6.79E{+}08\ m^3/kg}{70\ kg \times 25{,}550\ days}$$

$$= 9.95E\text{-}11$$

Risk = 9.95E-11 mg/kg·day x 6.10E+00 $mg/kg{\cdot}day^{-1}$ = 6.07E-10

Example Noncarcinogen:

There are no noncarcinogens retained as COPCs.

Re: Site 3 Future Residential Adult

SURFACE SOIL PARTICULATE INHALATION EXPOSURE ASSESSMENT
OPERABLE UNIT NO. 12 (SITE 3)
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Intake from the inhalation of particulates is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * IR * 1/PEF)/(BW * ATc or ATnc * DY)

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	Calculated
CSF = carcinogenic slope factor	Specific
RfD = reference dose for noncarcinogen	Specific
IR = inhalation rate (m3)	15
EF = child exposure frequency (days)	350
ED = child exposure duration (years)	6
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = day per year (day/yr)	365
PEF = particulate emission factor (m3/kg)	1.32E+09

COPC	Concentration (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Contribution to Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Benzo(a)anthracene	0.72	1.3E+09	350	15	6	15	25550	4.5E-11	6.1E-01	2.7E-11	5%	2190	5.2E-10	0.0E+00	0.0E+00	0%
Chrysene	0.94	1.3E+09	350	15	6	15	25550	5.8E-11	6.1E-03	3.6E-13	0%	2190	6.8E-10	0.0E+00	0.0E+00	0%
Benzo(b)fluoranthene	1.01	1.3E+09	350	15	6	15	25550	6.3E-11	6.1E-01	3.8E-11	7%	2190	7.3E-10	0.0E+00	0.0E+00	0%
Benzo(k)fluoranthene	0.87	1.3E+09	350	15	6	15	25550	5.4E-11	6.1E-02	3.3E-12	1%	2190	6.3E-10	0.0E+00	0.0E+00	0%
Benzo(a)pyrene	0.72	1.3E+09	350	15	6	15	25550	4.5E-11	6.1E+00	2.7E-10	51%	2190	5.2E-10	0.0E+00	0.0E+00	0%
Indeno(1,2,3-cd)pyrene	0.63	1.3E+09	350	15	6	15	25550	3.9E-11	6.1E-01	2.4E-11	4%	2190	4.5E-10	0.0E+00	0.0E+00	0%
Dibenzo(a,h)anthracene	0.44	1.3E+09	350	15	6	15	25550	2.8E-11	6.1E+00	1.7E-10	32%	2190	3.2E-10	0.0E+00	0.0E+00	0%
TOTAL										5.3E-10					0.0E+00	

SURFACE SOIL PARTICULATE INHALATION EXPOSURE ASSESSMENT
OPERABLE UNIT NO.12 (SITE 3)
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from the inhalation of particulates is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * IR * 1/PEF)/(BW * ATc or ATnc * DY)

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	Calculated
CSF = carcinogenic slope factor	Specific
RfD = reference dose for noncarcinogen	Specific
IR = inhalation rate (m3)	20
EF = adult exposure frequency (days)	350
ED = adult exposure duration (years)	24
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	24
DY = day per year (day/yr)	365
PEF = particulate emission factor (m3/kg)	1.32E+09

COPC	Concentration (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Contribution to Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Benzo(a)anthracene	0.72	1.3E+09	350	20	24	70	25550	5.1E-11	6.1E-01	3.1E-11	5%	8760	1.5E-10	0.0E+00	0.0E+00	0%
Chrysene	0.94	1.3E+09	350	20	24	70	25550	6.7E-11	6.1E-03	4.1E-13	0%	8760	1.9E-10	0.0E+00	0.0E+00	0%
Benzo(b)fluoranthene	1.01	1.3E+09	350	20	24	70	25550	7.2E-11	6.1E-01	4.4E-11	7%	8760	2.1E-10	0.0E+00	0.0E+00	0%
Benzo(k)fluoranthene	0.87	1.3E+09	350	20	24	70	25550	6.2E-11	6.1E-02	3.8E-12	1%	8760	1.8E-10	0.0E+00	0.0E+00	0%
Benzo(a)pyrene	0.72	1.3E+09	350	20	24	70	25550	5.1E-11	6.1E+00	3.1E-10	51%	8760	1.5E-10	0.0E+00	0.0E+00	0%
Indeno(1,2,3-cd)pyrene	0.63	1.3E+09	350	20	24	70	25550	4.4E-11	6.1E-01	2.7E-11	4%	8760	1.3E-10	0.0E+00	0.0E+00	0%
Dibenzo(a,h)anthracene	0.44	1.3E+09	350	20	24	70	25550	3.2E-11	6.1E+00	1.9E-10	32%	8760	9.2E-11	0.0E+00	0.0E+00	0%
TOTAL										6.1E-10					0.0E+00	

SURFACE SOIL PARTICULATE INHALATION EXPOSURE ASSESSMENT
OPERABLE UNIT NO. 12 (SITE 3)
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT MILITARY PERSONNEL

Intake from the inhalation of particulates is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * IR * 1/PEF)/(BW * ATc or ATnc * DY)

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	Calculated
CSF = carcinogenic slope factor	Specific
RfD = reference dose for noncarcinogen	Specific
IR = inhalation rate (m3)	20
EF = adult exposure frequency (days)	350
ED = adult exposure duration (years)	4
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	4
DY = day per year (day/yr)	365
PEF = particulate emission factor (m3/kg)	1.32E+09

COPC	Concentration Carcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Body Weight (kg)	Average Carc Tim (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Contribution to Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Benzo(a)anthracene	0.717	1.3E+09	350	20	4	70	25550	8.5E-12	6.1E-01	5.2E-12	5%	1460	1.5E-10	0.0E+00	0.0E+00	0%
Chrysene	0.936	1.3E+09	350	20	4	70	25550	1.1E-11	6.1E-03	6.8E-14	0%	1460	1.9E-10	0.0E+00	0.0E+00	0%
Benzo(b)fluoranthene	1.005	1.3E+09	350	20	4	70	25550	1.2E-11	6.1E-01	7.3E-12	7%	1460	2.1E-10	0.0E+00	0.0E+00	0%
Benzo(k)fluoranthene	0.874	1.3E+09	350	20	4	70	25550	1.0E-11	6.1E-02	6.3E-13	1%	1460	1.8E-10	0.0E+00	0.0E+00	0%
Benzo(a)pyrene	0.719	1.3E+09	350	20	4	70	25550	8.5E-12	6.1E+00	5.2E-11	51%	1460	1.5E-10	0.0E+00	0.0E+00	0%
Indeno(1,2,3-cd)pyrene	0.625	1.3E+09	350	20	4	70	25550	7.4E-12	6.1E-01	4.5E-12	4%	1460	1.3E-10	0.0E+00	0.0E+00	0%
Dibenzo(a,h)anthracene	0.445	1.3E+09	350	20	4	70	25550	5.3E-12	6.1E+00	3.2E-11	32%	1460	9.2E-11	0.0E+00	0.0E+00	0%
TOTAL										1.0E-10					0.0E+00	

Computed by: :LHJ Checked by: MDB Date: 12/95

EXAMPLE GROUNDWATER INGESTION CALCULATIONS (Round 2 only)
OPERABLE UNIT NO. 12 (SITE 3)
CONTRACT TASK ORDER 0274

Purpose: Estimate intake/risk from ingestion of groundwater

$$Intake\ (mg/kg{\cdot}day) = \frac{C \times IR \times EF \times ED}{BW \times AT}$$

Where:			
	C	=	Contaminant concentration in groundwater (mg/L)
	IR	=	Daily intake ingestion rate (L/day)
	EF	=	Exposure frequency (days/year)
	ED	=	Exposure duration (years)
	BW	=	Body weight (kg)
	AT_c	=	Averaging time carcinogen (days)
	AT_{nc}	=	Averaging time noncarcinogen (days)

Risks:

Carcinogens = Intake (mg/kg·day) x CSF (mg/kg·day)$^{-1}$
Noncarcinogens = Intake (mg/kg·day)/RfD (mg/kg·day)

Example Carcinogen: benzene

$$Intake\ (mg/kg{\cdot}day) = \frac{0.003\ mg/L \times 2\ L/day \times 350\ days/yr \times 30\ yrs}{70\ kg \times 25{,}550\ days}$$

$$= 3.52E\text{-}05$$

Risk = 3.52E-05 mg/kg·day x 2.90E-02 mg/kg·day^{-1} = 1.02E-06

Example Noncarcinogen: naphthalene

$$Intake\ (mg/kg{\cdot}day) = \frac{0.1843\ mg/L \times 2\ L/day \times 350\ days/yr \times 30\ yrs}{70\ kg \times 10{,}950\ days}$$

$$= 5.05E\text{-}03$$

$$Risk = \frac{5.05E-03\ mg/kg{\cdot}day}{4.00E-02\ mg/kg{\cdot}day} = 0.126$$

Re: Site 3 Future Residential Adult

GROUNDWATER INGESTION EXPOSURE ASSESSMENT (ROUND 2 ONLY)
OPERABLE UNIT NO. 12 (SITE 3)
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Intake from drinking water is calculated as follows:

Intake (mg/kg-day) = C * IRw * EF * ED/BW * AT or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in water (mg/l)	
IRw = child daily water ingestion rate (L/Day)	1
EF = child exposure frequency (days/yr)	350
ED = child exposure duration (yr)	6
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = days per year (day/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration Carcinogen (mg/l)	Ingestion Rate (L/day) Child	Exposure Frequency (day/year) Child	Exposure Duration (year) Child	Body Weight (kg) Child	Average Carc Time (days)	Carc Dose (mg/kg-day) Child	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Child	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
1,1-Dichloroethene	0.001	1	350	6	15	25550	5.5E-06	6.0E-01	3.3E-06	63%	2190	6.4E-05	9.0E-03	7.1E-03	1%
Chloroform	0.001	1	350	6	15	25550	5.5E-06	6.1E-03	3.3E-08	1%	2190	6.4E-05	1.0E-02	6.4E-03	0%
Benzene	0.003	1	350	6	15	25550	1.6E-05	2.9E-02	4.8E-07	9%	2190	1.9E-04	0.0E+00	0.0E+00	0%
2-Methylphenol	0.024	1	350	6	15	25550	1.3E-04	0.0E+00	0.0E+00	0%	2190	1.5E-03	5.0E-02	3.1E-02	2%
4-Methylphenol	0.038	1	350	6	15	25550	2.1E-04	0.0E+00	0.0E+00	0%	2190	2.4E-03	5.0E-03	4.8E-01	35%
2,4-Dimethylphenol	0.016	1	350	6	15	25550	9.0E-05	0.0E+00	0.0E+00	0%	2190	1.0E-03	2.0E-02	5.2E-02	4%
Naphthalene	0.184	1	350	6	15	25550	1.0E-03	0.0E+00	0.0E+00	0%	2190	1.2E-02	4.0E-02	2.9E-01	22%
2-Methylnaphthalene	0.021	1	350	6	15	25550	1.2E-04	0.0E+00	0.0E+00	0%	2190	1.3E-03	4.0E-02	3.4E-02	2%
Acenaphthene	0.037	1	350	6	15	25550	2.0E-04	0.0E+00	0.0E+00	0%	2190	2.4E-03	6.0E-02	4.0E-02	3%
Dibenzofuran	0.021	1	350	6	15	25550	1.2E-04	0.0E+00	0.0E+00	0%	2190	1.3E-03	4.0E-03	3.4E-01	25%
Fluorene	0.024	1	350	6	15	25550	1.3E-04	0.0E+00	0.0E+00	0%	2190	1.5E-03	4.0E-02	3.8E-02	3%
Phenanthrene	0.017	1	350	6	15	25550	9.4E-05	0.0E+00	0.0E+00	0%	2190	1.1E-03	3.0E-02	3.7E-02	3%
Carbazole	0.013	1	350	6	15	25550	7.0E-05	2.0E-02	1.4E-06	27%	2190	8.1E-04	0.0E+00	0.0E+00	0%
TOTAL									5.2E-06					1.4	

GROUNDWATER INGESTION EXPOSURE ASSESSMENT (ROUND 2 ONLY)
OPERABLE UNIT NO.12 (SITE 3)
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from drinking water is calculated as follows:

Intake (mg/kg-day) = C * IRw * EF * ED/BW * AT or ATnc * DY

Risk = Intake * CSF or /RfD

Where:		INPUTS
C = contaminant concentration in water (mg/l)		
IRw = adult daily water ingestion rate (L/Day)		2
EF = adult exposure frequency (days/yr)		350
ED = adult exposure duration (yr)		30
BW = adult body weight (kg)		70
ATc = averaging time for carcinogen (yr)		70
ATnc = averaging time for noncarcinogen (yr)		30
DY = days per year (day/year)		365
CSF = cancer slope factor (mg/kg-day)-1	specific	
RfD = reference dose (mg/kg-day)	specific	

COPC	Concentration (mg/l)	Ingestion Rate (L/day) Adult	Exposure Frequency (day/year) Adult	Exposure Duration (year) Adult	Body Weight (kg) Adult	Average Carc Tim (days)	Carc Dose (mg/kg-day) Adult	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogeni Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Adult	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcionogenic Risk Adult
1,1-Dichloroethene	0.001	2	350	30	70	25550	1.2E-05	6.0E-01	7.0E-06	63%	10950	2.7E-05	9.0E-03	3.0E-03	1%
Chloroform	0.001	2	350	30	70	25550	1.2E-05	6.1E-03	7.2E-08	1%	10950	2.7E-05	1.0E-02	2.7E-03	0%
Benzene	0.003	2	350	30	70	25550	3.5E-05	2.9E-02	1.0E-06	9%	10950	8.2E-05	0.0E+00	0.0E+00	0%
2-Methylphenol	0.024	2	350	30	70	25550	2.8E-04	0.0E+00	0.0E+00	0%	10950	6.6E-04	5.0E-02	1.3E-02	2%
4-Methylphenol	0.038	2	350	30	70	25550	4.4E-04	0.0E+00	0.0E+00	0%	10950	1.0E-03	5.0E-03	2.1E-01	35%
2,4-Dimethylphenol	0.016	2	350	30	70	25550	1.9E-04	0.0E+00	0.0E+00	0%	10950	4.5E-04	2.0E-02	2.2E-02	4%
Naphthalene	0.184	2	350	30	70	25550	2.2E-03	0.0E+00	0.0E+00	0%	10950	5.0E-03	4.0E-02	1.3E-01	22%
2-Methylnaphthalene	0.021	2	350	30	70	25550	2.5E-04	0.0E+00	0.0E+00	0%	10950	5.8E-04	4.0E-02	1.4E-02	2%
Acenaphthene	0.037	2	350	30	70	25550	4.4E-04	0.0E+00	0.0E+00	0%	10950	1.0E-03	6.0E-02	1.7E-02	3%
Dibenzofuran	0.021	2	350	30	70	25550	2.5E-04	0.0E+00	0.0E+00	0%	10950	5.8E-04	4.0E-03	1.4E-01	25%
Fluorene	0.024	2	350	30	70	25550	2.8E-04	0.0E+00	0.0E+00	0%	10950	6.5E-04	4.0E-02	1.6E-02	3%
Phenanthrene	0.017	2	350	30	70	25550	2.0E-04	0.0E+00	0.0E+00	0%	10950	4.7E-04	3.0E-02	1.6E-02	3%
Carbazole	0.013	2	350	30	70	25550	1.5E-04	2.0E-02	3.0E-06	27%	10950	3.5E-04	0.0E+00	0.0E+00	0%
TOTAL									1.11E-05					0.58	

Computed by: :LHJ Checked by: MDB Date: 12/95

EXAMPLE GROUNDWATER INGESTION CALCULATIONS (Worst Case Results)
OPERABLE UNIT NO. 12 (SITE 3)
CONTRACT TASK ORDER 0274

Purpose: Estimate intake/risk from ingestion of groundwater

$$Intake\ (mg/kg{\cdot}day) = \frac{C \times IR \times EF \times ED}{BW \times AT}$$

Where:

C	=	Contaminant concentration in groundwater (mg/L)
IR	=	Daily intake ingestion rate (L/day)
EF	=	Exposure frequency (days/year)
ED	=	Exposure duration (years)
BW	=	Body weight (kg)
AT_c	=	Averaging time carcinogen (days)
AT_{nc}	=	Averaging time noncarcinogen (days)

Risks:

Carcinogens = Intake (mg/kg·day) x CSF (mg/kg·day)$^{-1}$
Noncarcinogens = Intake (mg/kg·day)/RfD (mg/kg·day)

Example Carcinogen: benzene

$$Intake\ (mg/kg{\cdot}day) = \frac{0.04\ mg/L \times 2\ L/day \times 350\ days/yr \times 30\ yrs}{70\ kg \times 25{,}550\ days}$$

= 4.70E-04

Risk = 4.70E-04 mg/kg·day x 2.90E-02 mg/kg·day^{-1} = 1.36E-05

Example Noncarcinogen: chromium

$$Intake\ (mg/kg{\cdot}day) = \frac{0.0316\ mg/L \times 2\ L/day \times 350\ days/yr \times 30\ yrs}{70\ kg \times 10{,}950\ days}$$

= 8.66E-04

$$Risk = \frac{8.66E{-}04\ mg/kg{\cdot}day}{5.00E{-}03\ mg/kg{\cdot}day} = 0.173$$

Re: Site 3 Future Residential Adult

GROUNDWATER INGESTION EXPOSURE ASSESSMENT (WORST CASE-COMBINED ROUNDS)
OPERABLE UNIT NO. 12 (SITE 3)
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Intake from drinking water is calculated as follows:

Intake (mg/kg-day) = C * IRw * EF * ED/BW * AT or ATnc * DY

Risk = Intake * CSF or /RfD

Where:		INPUTS
C = contaminant concentration in water (mg/l)		
IRw = child daily water ingestion rate (L/Day)		1
EF = child exposure frequency (days/yr)		350
ED = child exposure duration (yr)		6
BW = child body weight (kg)		15
ATc = averaging time for carcinogen (yr)		70
ATnc = averaging time for noncarcinogen (yr)		6
DY = days per year (day/year)		365
CSF = cancer slope factor (mg/kg-day)-1	specific	
RfD = reference dose (mg/kg-day)	specific	

COPC	Concentration Carcinogen (mg/l)	Ingestion Rate (L/day) Child	Exposure Frequency (day/year) Child	Exposure Duration (year) Child	Body Weight (kg) Child	Average Carc Time (days)	Carc Dose (mg/kg-day) Child	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Child	Reference Dose (mg/kg-day)	Noncarc Risk Child	Percent Noncarc Risk Child
1,1-Dichloroethene	0.001	1	350	6	15	25550	5.5E-06	6.0E-01	3.3E-06	2%	2190	6.4E-05	9.0E-03	7.1E-03	0%
Chloroform	0.001	1	350	6	15	25550	5.5E-06	6.1E-03	3.3E-08	0%	2190	6.4E-05	1.0E-02	6.4E-03	0%
Benzene	0.040	1	350	6	15	25550	2.2E-04	2.9E-02	6.4E-06	4%	2190	2.6E-03	0.0E+00	0.0E+00	0%
2-Methylphenol	0.024	1	350	6	15	25550	1.3E-04	0.0E+00	0.0E+00	0%	2190	1.5E-03	5.0E-02	3.1E-02	0%
4-Methylphenol	0.038	1	350	6	15	25550	2.1E-04	0.0E+00	0.0E+00	0%	2190	2.4E-03	5.0E-03	4.8E-01	7%
2,4-Dimethylphenol	0.016	1	350	6	15	25550	9.0E-05	0.0E+00	0.0E+00	0%	2190	1.0E-03	2.0E-02	5.2E-02	1%
Naphthalene	0.184	1	350	6	15	25550	1.0E-03	0.0E+00	0.0E+00	0%	2190	1.2E-02	4.0E-02	2.9E-01	4%
2-Methylnaphthalene	0.021	1	350	6	15	25550	1.2E-04	0.0E+00	0.0E+00	0%	2190	1.3E-03	4.0E-02	3.4E-02	0%
Acenaphthene	0.280	1	350	6	15	25550	1.5E-03	0.0E+00	0.0E+00	0%	2190	1.8E-02	6.0E-02	3.0E-01	4%
Dibenzofuran	0.230	1	350	6	15	25550	1.3E-03	0.0E+00	0.0E+00	0%	2190	1.5E-02	4.0E-03	3.7E+00	54%
Fluorene	0.210	1	350	6	15	25550	1.2E-03	0.0E+00	0.0E+00	0%	2190	1.3E-02	4.0E-02	3.4E-01	5%
Phenanthrene	0.410	1	350	6	15	25550	2.2E-03	0.0E+00	0.0E+00	0%	2190	2.6E-02	3.0E-02	8.7E-01	13%
Carbazole	0.019	1	350	6	15	25550	1.1E-04	2.0E-02	2.1E-06	1%	2190	1.2E-03	0.0E+00	0.0E+00	0%
Benzo(a)anthracene	0.006	1	350	6	15	25550	3.3E-05	7.3E-01	2.4E-05	14%	2190	3.9E-04	0.0E+00	0.0E+00	0%
Chrysene	0.006	1	350	6	15	25550	3.3E-05	7.3E-03	2.4E-07	0%	2190	3.9E-04	0.0E+00	0.0E+00	0%
Benzo(b)fluoranthene	0.003	1	350	6	15	25550	1.6E-05	7.3E-01	1.2E-05	7%	2190	1.9E-04	0.0E+00	0.0E+00	0%
Benzo(k)fluoranthene	0.003	1	350	6	15	25550	1.6E-05	7.3E-02	1.2E-06	1%	2190	1.9E-04	0.0E+00	0.0E+00	0%
Benzo(a)pyrene	0.003	1	350	6	15	25550	1.6E-05	7.3E+00	1.2E-04	71%	2190	1.9E-04	0.0E+00	0.0E+00	0%
Aluminum	4.030	1	350	6	15	25550	2.2E-02	0.0E+00	0.0E+00	0%	2190	2.6E-01	1.0E+00	2.6E-01	4%
Chromium	0.032	1	350	6	15	25550	1.7E-04	0.0E+00	0.0E+00	0%	2190	2.0E-03	5.0E-03	4.0E-01	6%
TOTAL									1.7E-04					6.7	

GROUNDWATER INGESTION EXPOSURE ASSESSMENT (WORST CASE-COMBINED ROUNDS)
OPERABLE UNIT NO.12 (SITE 3)
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from drinking water is calculated as follows:

Intake (mg/kg-day) = C * IRw * EF * ED/BW * AT or ATnc * DY

Risk = Intake * CSF or /RfD

Where:		INPUTS
C = contaminant concentration in water (mg/l)		
IRw = adult daily water ingestion rate (L/Day)		2
EF = adult exposure frequency (days/yr)		350
ED = adult exposure duration (yr)		30
BW = adult body weight (kg)		70
ATc = averaging time for carcinogen (yr)		70
ATnc = averaging time for noncarcinogen (yr)		30
DY = days per year (day/year)		365
CSF = cancer slope factor (mg/kg-day)-1	specific	
RfD = reference dose (mg/kg-day)	specific	

COPC	Concentration (mg/l)	Ingestion Rate (L/day) Adult	Exposure Frequency (day/year) Adult	Exposure Duration (year) Adult	Body Weight (kg) Adult	Average Carc Time (days)	Carc Dose (mg/kg-day) Adult	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Adult	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcionogen Risk Adult
1,1-Dichloroethene	0.001	2	350	30	70	25550	1.2E-05	6.0E-01	7.0E-06	2%	10950	2.7E-05	9.0E-03	3.0E-03	0%
Chloroform	0.001	2	350	30	70	25550	1.2E-05	6.1E-03	7.2E-08	0%	10950	2.7E-05	1.0E-02	2.7E-03	0%
Benzene	0.040	2	350	30	70	25550	4.7E-04	2.9E-02	1.4E-05	4%	10950	1.1E-03	0.0E+00	0.0E+00	0%
2-Methylphenol	0.024	2	350	30	70	25550	2.8E-04	0.0E+00	0.0E+00	0%	10950	6.6E-04	5.0E-02	1.3E-02	0%
4-Methylphenol	0.038	2	350	30	70	25550	4.4E-04	0.0E+00	0.0E+00	0%	10950	1.0E-03	5.0E-03	2.1E-01	7%
2,4-Dimethylphenol	0.016	2	350	30	70	25550	1.9E-04	0.0E+00	0.0E+00	0%	10950	4.5E-04	2.0E-02	2.2E-02	1%
Naphthalene	0.184	2	350	30	70	25550	2.2E-03	0.0E+00	0.0E+00	0%	10950	5.0E-03	4.0E-02	1.3E-01	4%
2-Methylnaphthalene	0.021	2	350	30	70	25550	2.5E-04	0.0E+00	0.0E+00	0%	10950	5.8E-04	4.0E-02	1.4E-02	0%
Acenaphthene	0.280	2	350	30	70	25550	3.3E-03	0.0E+00	0.0E+00	0%	10950	7.7E-03	6.0E-02	1.3E-01	4%
Dibenzofuran	0.230	2	350	30	70	25550	2.7E-03	0.0E+00	0.0E+00	0%	10950	6.3E-03	4.0E-03	1.6E+00	54%
Fluorene	0.210	2	350	30	70	25550	2.5E-03	0.0E+00	0.0E+00	0%	10950	5.8E-03	4.0E-02	1.4E-01	5%
Phenanthrene	0.410	2	350	30	70	25550	4.8E-03	0.0E+00	0.0E+00	0%	10950	1.1E-02	3.0E-02	3.7E-01	13%
Carbazole	0.019	2	350	30	70	25550	2.3E-04	2.0E-02	4.5E-06	1%	10950	5.3E-04	0.0E+00	0.0E+00	0%
Benzo(a)anthracene	0.006	2	350	30	70	25550	7.2E-05	7.3E-01	5.2E-05	14%	10950	1.7E-04	0.0E+00	0.0E+00	0%
Chrysene	0.006	2	350	30	70	25550	7.2E-05	7.3E-03	5.2E-07	0%	10950	1.7E-04	0.0E+00	0.0E+00	0%
Benzo(b)fluoranthene	0.003	2	350	30	70	25550	3.5E-05	7.3E-01	2.6E-05	7%	10950	8.2E-05	0.0E+00	0.0E+00	0%
Benzo(k)fluoranthene	0.003	2	350	30	70	25550	3.5E-05	7.3E-02	2.6E-06	1%	10950	8.2E-05	0.0E+00	0.0E+00	0%
Benzo(a)pyrene	0.003	2	350	30	70	25550	3.5E-05	7.3E+00	2.6E-04	71%	10950	8.2E-05	0.0E+00	0.0E+00	0%
Aluminum	4.030	2	350	30	70	25550	4.7E-02	0.0E+00	0.0E+00	0%	10950	1.1E-01	1.0E+00	1.1E-01	4%
Chromium	0.032	2	350	30	70	25550	3.7E-04	0.0E+00	0.0E+00	0%	10950	8.7E-04	5.0E-03	1.7E-01	6%
TOTAL									3.63E-04					2.89	

Computed by: LHJ Checked by: MDB Date: 12/95

EXAMPLE DERMAL CONTACT WITH GROUNDWATER CALCULATIONS (Round 2 Only)
OPERABLE UNIT NO. 12 (SITE 3)
CONTRACT TASK ORDER 0274

Purpose: Estimate intake/risk from dermal contact with groundwater

$$Intake\ (mg/kg{\cdot}day) = \frac{C \times SA \times PC \times ET \times EF \times ED \times CF}{BW \times AT}$$

Where:

C	=	Contaminant concentration in groundwater (mg/L)
SA	=	Exposed skin surface available for contact (cm^2)
PC	=	Permeability constant (cm/hr)
ET	=	Exposure time (hr/day)
EF	=	Exposure frequency (days/year)
ED	=	Exposure duration (years)
CF	=	Conversion factor (1 L/1,000 cm^3)
BW	=	Body weight (kg)
AT_c	=	Averaging time carcinogen (days)
AT_{nc}	=	Averaging time noncarcinogen (days)

Risks:

Carcinogens = Intake (mg/kg·day) x CSF (mg/kg·day)$^{-1}$
Noncarcinogens = Intake (mg/kg·day)/RfD (mg/kg·day)

Example Carcinogen: Benzene

$$Intake\ (mg/kg{\cdot}day) = \frac{0.003\ mg/L \times 23{,}000\ cm^2 \times 1.1E{-}01\ cm/hr \times 0.25\ hr/day \times 350\ days/yr \times 30\ yrs \times 1\ L/1{,}000\ cm^3}{70\ kg \times 25{,}550\ days}$$

$$= 1.11E\text{-}05$$

Risk = 1.11E-05 mg/kg·day x 2.90E-02 mg/kg·day^{-1} = 3.23E-07

Example Noncarcinogen: Naphthalene

$$Intake\ (mg/kg{\cdot}day) = \frac{0.1843\ mg/L \times 23{,}000\ cm^2/hr \times 6.90E{-}02\ cm/hr \times 0.25\ hr/day \times 350\ days/yr \times 30\ yrs \times 1\ L/1{,}000\ cm^3}{70\ kg \times 10{,}950\ days}$$

$$= 1.00E\text{-}03$$

$$Risk = \frac{1.00E{-}03\ mg/kg{\cdot}day}{4.00E{-}03\ mg/kg{\cdot}day} = 0.25$$

Re: Site 3 Future Residential Adult

GROUNDWATER DERMAL CONTACT EXPOSURE ASSESSMENT (ROUND 2 ONLY)
OPERABLE UNIT NO.12 (SITE 3)
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Dermal Contact from groundwater is calcuated as follows:

Intake (mg/kg-day) = CW * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = adult skin surface available for contact (cm2)	23000
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = adult exposure time (hours/day)	0.25
EF = adult exposure frequency (days/yr)	350
ED = adult exposure duration (years)	30
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = days per year (days)	365

Note: Inputs are site and scenario specific

COPC	Concentration Carcinogen (mg/l)	Surface Area (cm2) Adult	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Adult	Exposure Frequency (days/yr) Adult	Exposure Duration (years) Adult	Volumetric Conversion (L/m3)	Body Weight (kg) Adult	Averaging Carc Time (years)	Carc Dose (mg/kg-day) Adult	Derm. Adj. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (years)	Noncarc Dose (mg/kg-day) Adult	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarc Risk Adult	Percent Noncarcinogeni Risk Adult
1,1-Dichloroethene	0.001	23000	1.50E-03	0.25	350	30	0.001	70	25550	5.1E-08	7.5E-01	3.8E-08	27%	10950	1.2E-07	7.2E-03	1.6E-05	0%
Chloroform	0.001	23000	8.90E-03	0.25	350	30	0.001	70	25550	3.0E-07	7.6E-03	2.3E-09	2%	10950	7.0E-07	8.0E-03	8.8E-05	0%
Benzene	0.003	23000	2.10E-02	0.25	350	30	0.001	70	25550	2.1E-06	3.6E-02	7.7E-08	54%	10950	5.0E-06	0.0E+00	0.0E+00	0%
2-Methylphenol	0.024	23000	1.60E-02	0.25	350	30	0.001	70	25550	1.3E-05	0.0E+00	0.0E+00	0%	10950	3.0E-05	2.5E-02	1.2E-03	1%
4-Methylphenol	0.038	23000	1.80E-02	0.25	350	30	0.001	70	25550	2.3E-05	0.0E+00	0.0E+00	0%	10950	5.3E-05	2.5E-03	2.1E-02	17%
2,4-Dimethylphenol	0.016	23000	1.50E-02	0.25	350	30	0.001	70	25550	8.3E-06	0.0E+00	0.0E+00	0%	10950	1.9E-05	1.0E-02	1.9E-03	2%
Naphthalene	0.184	23000	6.90E-02	0.25	350	30	0.001	70	25550	4.3E-04	0.0E+00	0.0E+00	0%	10950	1.0E-03	2.0E-02	5.0E-02	39%
2-Methylnaphthalene	0.021	23000	1.42E-01	0.25	350	30	0.001	70	25550	1.0E-04	0.0E+00	0.0E+00	0%	10950	2.4E-04	2.0E-02	1.2E-02	9%
Acenaphthene	0.037	23000	1.52E-01	0.25	350	30	0.001	70	25550	1.9E-04	0.0E+00	0.0E+00	0%	10950	4.5E-04	3.0E-02	1.5E-02	12%
Dibenzofuran	0.021	23000	1.50E-03	0.25	350	30	0.001	70	25550	1.1E-06	0.0E+00	0.0E+00	0%	10950	2.5E-06	2.0E-03	1.2E-03	1%
Fluorene	0.024	23000	1.50E-03	0.25	350	30	0.001	70	25550	1.2E-06	0.0E+00	0.0E+00	0%	10950	2.8E-06	2.0E-02	1.4E-04	0%
Phenanthrene	0.017	23000	2.70E-01	0.25	350	30	0.001	70	25550	1.6E-04	0.0E+00	0.0E+00	0%	10950	3.7E-04	1.5E-02	2.4E-02	19%
Carbazole	0.013	23000	1.50E-03	0.25	350	30	0.001	70	25550	6.4E-07	4.0E-02	2.6E-08	18%	10950	1.5E-06	0.0E+00	0.0E+00	0%
TOTAL												1.4E-07					1.3E-01	

GROUNDWATER DERMAL CONTACT EXPOSURE ASSESSMENT (ROUND 2 ONLY)
OPERABLE UNIT NO. 12 (SITE 3)
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Dermal Contact from groundwater is calcuated as follows:

Intake (mg/kg-day) = CW * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = child skin surface available for contact (cm2)	10000
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = child exposure time (hours/day)	0.25
EF = child exposure frequency (days/yr)	350
ED = child exposure duration (years)	6
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = days per year (days)	365

COPC	Concentration Carcinogen (mg/l)	Surface Area (cm2) Child	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Child	Exposure Frequency (days/yr) Child	Exposure Duration (years) Child	Volumetric Conversion (L/m3)	Body Weight (kg) Child	Averaging Carc Time (days)	Carc Dose (mg/kg-day) Child	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Child	Dermal. Adjust. Reference Dose (mg/kg-day)	Noncarc Risk Child	Percent Noncarcinogenic Risk Child
1,1-Dichloroethene	0.001	10000	1.50E-03	0.25	350	6	0.001	15	25550	2.1E-08	7.5E-01	1.5E-08	27%	2190	2.4E-07	7.2E-03	3.3E-05	0%
Chloroform	0.001	10000	8.90E-03	0.25	350	6	0.001	15	25550	1.2E-07	7.6E-03	9.3E-10	2%	2190	1.4E-06	8.0E-03	1.8E-04	0%
Benzene	0.003	10000	2.10E-02	0.25	350	6	0.001	15	25550	8.6E-07	3.6E-02	3.1E-08	54%	2190	1.0E-05	0.0E+00	0.0E+00	0%
2-Methylphenol	0.024	10000	1.60E-02	0.25	350	6	0.001	15	25550	5.3E-06	0.0E+00	0.0E+00	0%	2190	6.2E-05	2.5E-02	2.5E-03	1%
4-Methylphenol	0.038	10000	1.80E-02	0.25	350	6	0.001	15	25550	9.2E-06	0.0E+00	0.0E+00	0%	2190	1.1E-04	2.5E-03	4.3E-02	17%
2,4-Dimethylphenol	0.016	10000	1.50E-02	0.25	350	6	0.001	15	25550	3.4E-06	0.0E+00	0.0E+00	0%	2190	3.9E-05	1.0E-02	3.9E-03	2%
Naphthalene	0.184	10000	6.90E-02	0.25	350	6	0.001	15	25550	1.7E-04	0.0E+00	0.0E+00	0%	2190	2.0E-03	2.0E-02	1.0E-01	39%
2-Methylnaphthalene	0.021	10000	1.42E-01	0.25	350	6	0.001	15	25550	4.1E-05	0.0E+00	0.0E+00	0%	2190	4.8E-04	2.0E-02	2.4E-02	9%
Acenaphthene	0.037	10000	1.52E-01	0.25	350	6	0.001	15	25550	7.8E-05	0.0E+00	0.0E+00	0%	2190	9.1E-04	3.0E-02	3.0E-02	12%
Dibenzofuran	0.021	10000	1.50E-03	0.25	350	6	0.001	15	25550	4.3E-07	0.0E+00	0.0E+00	0%	2190	5.0E-06	2.0E-03	2.5E-03	1%
Fluorene	0.024	10000	1.50E-03	0.25	350	6	0.001	15	25550	4.9E-07	0.0E+00	0.0E+00	0%	2190	5.7E-06	2.0E-02	2.9E-04	0%
Phenanthrene	0.017	10000	2.70E-01	0.25	350	6	0.001	15	25550	6.4E-05	0.0E+00	0.0E+00	0%	2190	7.4E-04	1.5E-02	4.9E-02	19%
Carbazole	0.013	10000	1.50E-03	0.25	350	6	0.001	15	25550	2.6E-07	4.0E-02	1.0E-08	18%	2190	3.0E-06	0.0E+00	0.0E+00	0%
TOTAL												5.8E-08					2.6E-01	

Computed by: :LHJ Checked by: MDB Date: 12/95

EXAMPLE DERMAL CONTACT WITH GROUNDWATER CALCULATIONS (Worst Case Results)
OPERABLE UNIT NO. 12 (SITE 3)
CONTRACT TASK ORDER 0274

Purpose: Estimate intake/risk from dermal contact with groundwater

$$Intake\ (mg/kg{\cdot}day) = \frac{C \times SA \times PC \times ET \times EF \times ED \times CF}{BW \times AT}$$

Where:

C	=	Contaminant concentration in groundwater (mg/L)
SA	=	Exposed skin surface available for contact (cm^2)
PC	=	Permeability constant (cm/hr)
ET	=	Exposure time (hr/day)
EF	=	Exposure frequency (days/year)
ED	=	Exposure duration (years)
CF	=	Conversion factor (1 L/1,000 cm^3)
BW	=	Body weight (kg)
AT_c	=	Averaging time carcinogen (days)
AT_{nc}	=	Averaging time noncarcinogen (days)

Risks:

Carcinogens = Intake (mg/kg·day) x CSF $(mg/kg{\cdot}day)^{-1}$
Noncarcinogens = Intake (mg/kg·day)/RfD (mg/kg·day)

Example Carcinogen: benzene

$$Intake\ (mg/kg{\cdot}day) = \frac{0.04\ mg/L \times 23{,}000\ cm^2 \times 1.10E{-}01\ cm/hr \times 0.25\ hr/day \times 350\ days/yr \times 30\ yrs \times 1\ L/1{,}000\ cm^3}{70\ kg \times 25{,}550\ days}$$

$$= 1.49E{-}04$$

Risk = 1.49E-04 mg/kg·day x 2.90E-02 $mg/kg{\cdot}day^{-1}$ = 4.31E-06

Example Noncarcinogen: chromium

$$ntake\ (mg/kg{\cdot}day) = \frac{0.0316\ mg/L \times 23{,}000\ cm^2/hr \times 1.00E{-}03\ cm/hr \times 0.25\ hr/day \times 350\ days/yr \times 30\ yrs \times 1\ L/1{,}000\ cm}{70\ kg \times 10{,}950\ days}$$

$$= 2.50E{-}06$$

$$Risk = \frac{2.50E{-}06\ mg/kg{\cdot}day}{5.00E{-}03\ mg/kg{\cdot}day} = 0.000498$$

Re: Site 3 Future Residential Adult

GROUNDWATER DERMAL CONTACT EXPOSURE ASSESSMENT (WORST CASE-COMBINED ROUNDS)
OPERABLE UNIT NO. 12 (SITE 3)
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Dermal Contact from groundwater is calcuated as follows:

Intake (mg/kg-day) = CW * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = child skin surface available for contact (cm2)	10000
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = child exposure time (hours/day)	0.25
EF = child exposure frequency (days/yr)	350
ED = child exposure duration (years)	6
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = days per year (days)	365

COPC	Concentration Carcinogen (mg/l)	Surface Area (cm2) Child	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Child	Exposure Frequency (days/yr) Child	Exposure Duration (years) Child	Volumetric Conversion (L/m3)	Body Weight (kg) Child	Averaging Carc Time (days)	Carc Dose (mg/kg-day) Child	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Child	Dermal. Adjust. Reference Dose (mg/kg-day)	Noncarc Risk Child	Percent Noncarcinogenic Risk Child
1,1-Dichloroethene	0.001	10000	1.50E-03	0.25	350	6	0.001	15	25550	2.1E-08	7.5E-01	1.5E-08	0%	2190	2.4E-07	7.2E-03	3.3E-05	0%
Chloroform	0.001	10000	8.90E-03	0.25	350	6	0.001	15	25550	1.2E-07	7.6E-03	9.3E-10	0%	2190	1.4E-06	8.0E-03	1.8E-04	0%
Benzene	0.040	10000	2.10E-02	0.25	350	6	0.001	15	25550	1.2E-05	3.6E-02	4.2E-07	0%	2190	1.3E-04	0.0E+00	0.0E+00	0%
2-Methylphenol	0.024	10000	1.60E-02	0.25	350	6	0.001	15	25550	5.3E-06	0.0E+00	0.0E+00	0%	2190	6.2E-05	2.5E-02	2.5E-03	0%
4-Methylphenol	0.038	10000	1.80E-02	0.25	350	6	0.001	15	25550	9.2E-06	0.0E+00	0.0E+00	0%	2190	1.1E-04	2.5E-03	4.3E-02	3%
2,4-Dimethylphenol	0.016	10000	1.50E-02	0.25	350	6	0.001	15	25550	3.4E-06	0.0E+00	0.0E+00	0%	2190	3.9E-05	1.0E-02	3.9E-03	0%
Naphthalene	0.184	10000	6.90E-02	0.25	350	6	0.001	15	25550	1.7E-04	0.0E+00	0.0E+00	0%	2190	2.0E-03	2.0E-02	1.0E-01	6%
2-Methylnaphthalene	0.021	10000	1.42E-01	0.25	350	6	0.001	15	25550	4.1E-05	0.0E+00	0.0E+00	0%	2190	4.8E-04	2.0E-02	2.4E-02	1%
Acenaphthene	0.280	10000	1.52E-01	0.25	350	6	0.001	15	25550	5.8E-04	0.0E+00	0.0E+00	0%	2190	6.8E-03	3.0E-02	2.3E-01	14%
Dibenzofuran	0.230	10000	1.50E-03	0.25	350	6	0.001	15	25550	4.7E-06	0.0E+00	0.0E+00	0%	2190	5.5E-05	2.0E-03	2.8E-02	2%
Fluorene	0.210	10000	1.50E-03	0.25	350	6	0.001	15	25550	4.3E-06	0.0E+00	0.0E+00	0%	2190	5.0E-05	2.0E-02	2.5E-03	0%
Phenanthrene	0.410	10000	2.70E-01	0.25	350	6	0.001	15	25550	1.5E-03	0.0E+00	0.0E+00	0%	2190	1.8E-02	1.5E-02	1.2E+00	73%
Carbazole	0.019	10000	1.50E-03	0.25	350	6	0.001	15	25550	3.9E-07	4.0E-02	1.6E-08	0%	2190	4.6E-06	0.0E+00	0.0E+00	0%
Benzo(a)anthracene	0.006	10000	7.92E-03	0.25	350	6	0.001	15	25550	6.6E-07	1.5E+00	9.7E-07	0%	2190	7.7E-06	0.0E+00	0.0E+00	0%
Chrysene	0.006	10000	6.20E-01	0.25	350	6	0.001	15	25550	5.2E-05	1.5E-02	7.6E-07	0%	2190	6.0E-04	0.0E+00	0.0E+00	0%
Benzo(b)fluoranthene	0.003	10000	6.20E-01	0.25	350	6	0.001	15	25550	2.5E-05	1.5E+00	3.7E-05	6%	2190	3.0E-04	0.0E+00	0.0E+00	0%
Benzo(k)fluoranthene	0.003	10000	6.20E-01	0.25	350	6	0.001	15	25550	2.5E-05	1.5E-01	3.7E-06	1%	2190	3.0E-04	0.0E+00	0.0E+00	0%
Benzo(a)pyrene	0.003	10000	9.00E-01	0.25	350	6	0.001	15	25550	3.7E-05	1.5E+01	5.4E-04	93%	2190	4.3E-04	0.0E+00	0.0E+00	0%
Aluminum	4.030	10000	1.00E-03	0.25	350	6	0.001	15	25550	5.5E-05	0.0E+00	0.0E+00	0%	2190	6.4E-04	2.0E-01	3.2E-03	0%
Chromium	0.032	10000	1.00E-03	0.25	350	6	0.001	15	25550	4.3E-07	0.0E+00	0.0E+00	0%	2190	5.1E-06	1.0E-03	5.1E-03	0%
TOTAL												5.8E-04					1.6E+00	

GROUNDWATER DERMAL CONTACT EXPOSURE ASSESSMENT (WORST CASE-COMBINED ROUNDS)
OPERABLE UNIT NO.12 (SITE 3)
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Dermal Contact from groundwater is calcuated as follows:

Intake (mg/kg-day) = CW * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = adult skin surface available for contact (cm2)	23000
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = adult exposure time (hours/day)	0.25
EF = adult exposure frequency (days/yr)	350
ED = adult exposure duration (years)	30
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = days per year (days)	365

Note: Inputs are site and scenario specific

COPC	Concentration Carcinogen (mg/l)	Surface Area (cm2) Adult	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Adult	Exposure Frequency (days/yr) Adult	Exposure Duration (years) Adult	Volumetric Conversion (L/m3)	Body Weight (kg) Adult	Averaging Carc Time (years)	Carc Dose (mg/kg-day) Adult	Derm. Adj. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (years)	Noncarc Dose (mg/kg-day) Adult	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarc Risk Adult	Percent Noncarc Risk Adult
1,1-Dichloroethene	0.001	23000	1.50E-03	0.25	350	30	0.001	70	25550	5.1E-08	7.5E-01	3.8E-08	0%	10950	1.2E-07	7.2E-03	1.6E-05	0%
Chloroform	0.001	23000	8.90E-03	0.25	350	30	0.001	70	25550	3.0E-07	7.6E-03	2.3E-09	0%	10950	7.0E-07	8.0E-03	8.8E-05	0%
Benzene	0.040	23000	2.10E-02	0.25	350	30	0.001	70	25550	2.8E-05	3.6E-02	1.0E-06	0%	10950	6.6E-05	0.0E+00	0.0E+00	0%
2-Methylphenol	0.024	23000	1.60E-02	0.25	350	30	0.001	70	25550	1.3E-05	0.0E+00	0.0E+00	0%	10950	3.0E-05	2.5E-02	1.2E-03	0%
4-Methylphenol	0.038	23000	1.80E-02	0.25	350	30	0.001	70	25550	2.3E-05	0.0E+00	0.0E+00	0%	10950	5.3E-05	2.5E-03	2.1E-02	3%
2,4-Dimethylphenol	0.016	23000	1.50E-02	0.25	350	30	0.001	70	25550	8.3E-06	0.0E+00	0.0E+00	0%	10950	1.9E-05	1.0E-02	1.9E-03	0%
Naphthalene	0.184	23000	6.90E-02	0.25	350	30	0.001	70	25550	4.3E-04	0.0E+00	0.0E+00	0%	10950	1.0E-03	2.0E-02	5.0E-02	6%
2-Methylnaphthalene	0.021	23000	1.42E-01	0.25	350	30	0.001	70	25550	1.0E-04	0.0E+00	0.0E+00	0%	10950	2.4E-04	2.0E-02	1.2E-02	1%
Acenaphthene	0.280	23000	1.52E-01	0.25	350	30	0.001	70	25550	1.4E-03	0.0E+00	0.0E+00	0%	10950	3.3E-03	3.0E-02	1.1E-01	14%
Dibenzofuran	0.230	23000	1.50E-03	0.25	350	30	0.001	70	25550	1.2E-05	0.0E+00	0.0E+00	0%	10950	2.7E-05	2.0E-03	1.4E-02	2%
Fluorene	0.210	23000	1.50E-03	0.25	350	30	0.001	70	25550	1.1E-05	0.0E+00	0.0E+00	0%	10950	2.5E-05	2.0E-02	1.2E-03	0%
Phenanthrene	0.410	23000	2.70E-01	0.25	350	30	0.001	70	25550	3.7E-03	0.0E+00	0.0E+00	0%	10950	8.7E-03	1.5E-02	5.8E-01	73%
Carbazole	0.019	23000	1.50E-03	0.25	350	30	0.001	70	25550	9.7E-07	4.0E-02	3.9E-08	0%	10950	2.3E-06	0.0E+00	0.0E+00	0%
Benzo(a)anthracene	0.006	23000	7.92E-03	0.25	350	30	0.001	70	25550	1.6E-06	1.5E+00	2.4E-06	0%	10950	3.8E-06	0.0E+00	0.0E+00	0%
Chrysene	0.006	23000	6.20E-01	0.25	350	30	0.001	70	25550	1.3E-04	1.5E-02	1.9E-06	0%	10950	3.0E-04	0.0E+00	0.0E+00	0%
Benzo(b)fluoranthene	0.003	23000	6.20E-01	0.25	350	30	0.001	70	25550	6.3E-05	1.5E+00	9.2E-05	6%	10950	1.5E-04	0.0E+00	0.0E+00	0%
Benzo(k)fluoranthene	0.003	23000	6.20E-01	0.25	350	30	0.001	70	25550	6.3E-05	1.5E-01	9.2E-06	1%	10950	1.5E-04	0.0E+00	0.0E+00	0%
Benzo(a)pyrene	0.003	23000	9.00E-01	0.25	350	30	0.001	70	25550	9.1E-05	1.5E+01	1.3E-03	93%	10950	2.1E-04	0.0E+00	0.0E+00	0%
Aluminum	4.030	23000	1.00E-03	0.25	350	30	0.001	70	25550	1.4E-04	0.0E+00	0.0E+00	0%	10950	3.2E-04	2.0E-01	1.6E-03	0%
Chromium	0.032	23000	1.00E-03	0.25	350	30	0.001	70	25550	1.1E-06	0.0E+00	0.0E+00	0%	10950	2.5E-06	1.0E-03	2.5E-03	0%
TOTAL												1.4E-03					8.0E-01	

Computed by: LHJ Checked by: MDB Date: 12/95

EXAMPLE INHALATION OF VOLATILE ORGANICS CALCULATIONS (Round 2 Only)
OPERABLE UNIT NO. 12 (SITE 3)
CONTRACT TASK ORDER 0274

Purpose: Estimate intake/risk from the inhalation of volatile organics

$$Intake\ (mg/kg{\cdot}day) = \frac{Cs \times IR \times ET \times EF \times ED \times 1.0}{BW \times AT}$$

Where:	Cs	=	Shower air concentration (mg/m^3)
	IR	=	Inhalation rate (m^3/hr)
	ET	=	Exposure time (hrs/day)
	EF	=	Exposure frequency (days/year)
	ED	=	Exposure duration (years)
	BW	=	Body weight (kg)
	AT	=	Averaging time (days)

Risks:

Carcinogens = Intake (mg/kg·day) x CSF $(mg/kg{\cdot}day)^{-1}$
Noncarcinogens = Intake (mg/kg·day)/RfD (mg/kg·day)

Example Carcinogen: 1,1-dichloroethene

$$Intake\ (mg/kg{\cdot}day) = \frac{3.6E{-}05\ mg/m^3 \times 0.6\ m^3/hr \times 0.25\ hrs/d \times 350\ days/yr \times 30\ yrs}{70\ kg \times 25{,}550\ days}$$

$$= 3.17E{-}08$$

Risk = 3.17E-08 mg/kg·day x 1.75E-01 $mg/kg{\cdot}day^{-1}$ = 5.5E-09

Example Noncarcinogen: Benzene

$$Intake\ (mg/kg{\cdot}day) = \frac{3.0E{-}06\ mg/m^3 \times 0.6\ m^3/hr \times 0.25\ hrs/d \times 350\ days/yr \times 30\ yrs}{70\ kg \times 10{,}950\ days}$$

$$= 6.2E{-}09$$

$$Risk = \frac{6.2E{-}09\ mg/kg{\cdot}day}{1.71E{-}03\ mg/kg{\cdot}day} = .0000036$$

Re: Site 3 Future Residential Adult

INHALATION OF VOLATILE ORGANICS IN GROUNDWATER (ROUND 2 ONLY)
OPERABLE UNIT NO. 12 (SITE 3)
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULTS AND CHILDREN

PURPOSE: TO ESTABLISH AIR CONCENTRATIONS OF VOLATILE ORGANIC CONSTITUENTS (VOCs) ASSOCIATED WITH SHOWERING AND THE SUBSEQUENT FUTURE HYPOTHETICAL INHALATION EXPOSURE OF ADULTS AND ADOLESCENTS.

PERTINANT EQUATIONS:

$$Cs = Cinf[1+(1/(kts))(exp(-kts)-1)]$$

where:

Cs = SHOWER AIR CONCENTRATION (mg/m^3)
Cinf = ASSYMPTOTIC CONCENTRATION IN AIR (mg/m^3)
ts = SHOWERING TIME (min)
k = RATE CONSTANT (min^-1)

$$Cinf = [(E)(Fw)(Ct/1000)]/Fa$$

where:

E = THE EFFICIENCY OF RELEASE - WATER TO AIR
Fw = THE FLOW RATE OF WATER IN THE SHOWER (L/min)
Ct = CONSTITUENT CONCENTRATION IN SHOWER WATER
Fa = FLOW RATE OF AIR IN THE SHOWER (m^3/min)

$$k = Fa/Vb$$

where:

Vb = THE VOLUME OF AN AVERAGE BATHROOM (m^3)

$$EI = (Etce)(HI)/(Htce)$$

where:

EI = THE RELATIVE EFFICIENCY OF RELEASE OF CHEMICA
Etce = THE EFFICIENCY OF RELEASE OF TCE
Hi = THE HENRY's CONSTANT FOR CHEMICAL I (m^3 atm/
Htce = THE HENRY's CONSTANT FOR TCE (m^3 atm/mol)

ADULT AND CHILD EXPOSURE TO VOCs WHILE SHOWERING

CONSTITUENTS		Etce	Htce	Hi	Ei	Fa	Vb
			(m^3 atm/mol)	(m^3 atm/mol)		(m^3/min)	(m^3)
1,1-Dichloroethene		0.6	9.10E-03	1.90E-01	12.5275	2.4	12
Chloroform		0.6	9.10E-03	3.39E-03	0.2235	2.4	12
Benzene		0.6	9.10E-03	5.50E-03	0.3626	2.4	12

CONSTITUENTS	IR*	IR	ET	EF	ED	ED*	BW
	(m^3/hr)	(m^3/hr)	(hrs/d)	(d/yrs)	(yrs)	(yrs)	(Kg)
1,1-Dichloroethene	0.6	0.6	0.25	350	30	6	70
Chloroform	0.6	0.6	0.25	350	30	6	70
Benzene	0.6	0.6	0.25	350	30	6	70

Totals

ICR	ICR*	HI	HI*
5.50E-09	5.13E-09	ERR	ERR
4.51E-11	4.21E-11	ERR	ERR
7.91E-11	7.38E-11	3.72E-06	1.74E-05
5.62E-09	5.25E-09	ERR	ERR

Computed by: LHJ Checked by: MDB Date: 12/95

EXAMPLE INHALATION OF VOLATILE ORGANICS CALCULATIONS (Worst Case Results)
OPERABLE UNIT NO. 12 (SITE 3)
CONTRACT TASK ORDER 0274

Purpose: Estimate intake/risk from the inhalation of volatile organics

$$Intake\ (mg/kg{\cdot}day) = \frac{Cs \times IR \times ET \times EF \times ED \times 1.0}{BW \times AT}$$

Where:	Cs	=	Shower air concentration (mg/m^3)
	IR	=	Inhalation rate (m^3/hr)
	ET	=	Exposure time (hrs/day)
	EF	=	Exposure frequency (days/year)
	ED	=	Exposure duration (years)
	BW	=	Body weight (kg)
	AT	=	Averaging time (days)

Risks:

Carcinogens = Intake (mg/kg·day) x CSF $(mg/kg{\cdot}day)^{-1}$
Noncarcinogens = Intake (mg/kg·day)/RfD (mg/kg·day)

Example Carcinogen: 1,1-dichloroethene

$$Intake\ (mg/kg{\cdot}day) = \frac{3.6E{-}05\ mg/m^3 \times 0.6\ m^3/hr \times 0.25\ hrs/d \times 350\ days/yr \times 30\ yrs}{70\ kg \times 25{,}550\ days}$$

$$= 3.17E\text{-}08$$

Risk = 3.17E-08 mg/kg·day x 1.75E-01 $mg/kg{\cdot}day^{-1}$ = 5.5E-09

Example Noncarcinogen: Benzene

$$Intake\ (mg/kg{\cdot}day) = \frac{4.1E{-}05\ mg/m^3 \times 0.6\ m^3/hr \times 0.25\ hrs/d \times 350\ days/yr \times 30\ yrs}{70\ kg \times 10{,}950\ days}$$

$$= 8.42E\text{-}08$$

$$Risk = \frac{8.42E{-}08\ mg/kg{\cdot}day}{1.71E{-}03\ mg/kg{\cdot}day} = .000049$$

Re: Site 3 Future Residential Adult

INHALATION OF VOLATILE ORGANICS IN GROUNDWATER (WORST CASE - COMBINED ROUNDS)
OPERABLE UNIT NO. 12 (SITE 3)
REMEDIAL INVESTIGATION CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULTS AND CHILDREN

PURPOSE: TO ESTABLISH AIR CONCENTRATIONS OF VOLATILE ORGANIC CONSTITUENTS (VOCs) ASSOCIATED WITH SHOWERING AND THE SUBSEQUENT FUTURE HYPOTHETICAL INHALATION EXPOSURE OF ADULTS AND ADOLESCENTS.

PERTINANT EQUATIONS:

$$Cs = Cinf[1+(1/(kts))(exp(-kts)-1)]$$

where:

Cs = SHOWER AIR CONCENTRATION (mg/m^3)
Cinf = ASSYMPTOTIC CONCENTRATION IN AIR (mg/m^3)
ts = SHOWERING TIME (min)
k = RATE CONSTANT (min^-1)

$$Cinf = [(E)(Fw)(Ct/1000)]/Fa$$

where:

E = THE EFFICIENCY OF RELEASE - WATER TO AIR
Fw = THE FLOW RATE OF WATER IN THE SHOWER (L/min)
Ct = CONSTITUENT CONCENTRATION IN SHOWER WATER
Fa = FLOW RATE OF AIR IN THE SHOWER (m^3/min)

$$k = Fa/Vb$$

where:

Vb = THE VOLUME OF AN AVERAGE BATHROOM (m^3)

$$Ei = (Etce)(Hi)/(Htce)$$

where:

Ei = THE RELATIVE EFFICIENCY OF RELEASE OF CHEMICA
Etce = THE EFFICIENCY OF RELEASE OF TCE
HI = THE HENRY's CONSTANT FOR CHEMICAL I (m^3 atm/
Htce = THE HENRY's CONSTANT FOR TCE (m^3 atm/mol)

ADULT AND CHILD EXPOSURE TO VOCs WHILE SHOWERING

CONSTITUENTS		Etce	Htce	Hi	Ei	Fa	Vb
			(m^3 atm/mol)	(m^3 atm/mol)		(m^3/min)	(m^3)
1,1-Dichloroethene		0.6	9.10E-03	1.90E-01	12.5275	2.4	12
Chloroform		0.6	9.10E-03	3.39E-03	0.2235	2.4	12
Benzene		0.6	9.10E-03	5.50E-03	0.3626	2.4	12

CONSTITUENTS	IR*	IR	ET	EF	ED	ED*	BW
	(m^3/hr)	(m^3/hr)	(hrs/d)	(d/yrs)	(yrs)	(yrs)	(Kg)
1,1-Dichloroethene	0.6	0.6	0.25	350	30	6	70
Chloroform	0.6	0.6	0.25	350	30	6	70
Benzene	0.6	0.6	0.25	350	30	6	70

Totals

ICR	ICR*	HI	HI*
5.50E-09	5.13E-09	ERR	ERR
4.51E-11	4.21E-11	ERR	ERR
1.05E-09	9.84E-10	4.96E-05	2.32E-04
6.60E-09	6.16E-09	ERR	ERR

APPENDIX O
FIELD DATA SHEETS

ECOLOGICAL EVALUATION
FIELD DATA SHEET - TERRESTRIAL

Project Name: Habitat Evaluation

Location: MCB Camp Lejeune, Jacksonville, NC

Date: 12/7/94

Sampling Location: Creosote Mixing Area

Data Collected By: JSS, CDC

Habitat Type: Mixed Deciduous/Pine Forest

Vegetation:

Trees:

Dominant Species:

1. Loblolly - Pinus taeda - dom. in some areas
2.
3.
4.
5.
6.
7.
8.
9.
10.

Secondary Species:

1. Tulip Poplar - Liriodendron Tulipifera
2. Black Cherry - Prunus serotina
3. Water Oak - Quercus nigra
4. Sassafras - Sassafras albidum
5. Willow Oak - Q. phellos
6. Sweetgum - Liquidambar styraciflua
7. Southern red oak - Q. falcata
8. Holly - Ilex opaca
9. Sweet Bay - Magnolia virginiana
10.

Saplings/Shrubs:

Dominant Species:

1. none dominant
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Secondary Species:

1. Privit - Ligustrum vulgare
2. Juniper - Juniperus virginiana
3. Blueberry - Vaccinum sp.
4. Sweet Myrtle - Myrica cerafera
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Woody Vines:

Dominant Species:

1. _____
2. _____
3. none
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Secondary Species:

1. _____
2. _____
3. none
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Herbs:

Dominant Species:

1. _____ 6. _____
2. _____ 7. _____
3. none dominant 8. _____
4. _____ 9. _____
5. _____ 10. _____

Secondary Species:

1. Switch cane - Arundinaria tecta 6. _____
2. Bracken - Pteridium aquilinum (damp areas) 7. _____
3. Hydrocotyl - Hydrocotyl americana 8. _____
4. Broom Sedge - Andropogen americana 9. _____
5. _____ 10. _____

Birds: _____

Time: _____

Weather Conditions:

Species	Sex	Feeding	Nesting	Approx. No.
1.				
2.				
3.				
4.				
5.			listed with open area	
6.				
7.				
8.				
9.				

10. _____

Mammals: _____

Time: _____

Weather Conditions:

Species	Observed	Sign	Adult/Juvenile	Sex
1.				
2.				
3.				
4.				
5.				
6.	listed with open area			
7.				
8.				
9.				
10.				

Reptiles and Amphibians: _____

Time: _____

Weather Conditions:

Species	Observed	Sign	Adult/Juvenile	Sex
1.				
2.				
3.	listed with open area			
4.				
5.				
6.				

7. _____

8. _____

9. _____

10. _____

Miscellaneous Notes:

Ecotone exists between this forest and open area - has mix of forest & open vegetation - varies from several yards to 50-100 yds in width

ECOLOGICAL EVALUATION
FIELD DATA SHEET - TERRESTRIAL

Project Name: Habitat Evaluation

Location: MCB Camp Lejeune, Jacksonville, NC

Date: 12/7/94

Sampling Location: Creosote Mixing Area

Data Collected By: YSS, CDC

Habitat Type: Open Area

Vegetation: grasses dominant with scattered loblolly & junipers, areas of bare soil present

Trees:

Dominant Species:

1. _____
2. _____
3. none dominant
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Secondary Species:

1. _____
2. Loblolly pine - Pinus taeda
3. _____
4. present as scattered trees
5. _____
6. Black Cherry - Prunus serotina
7. Tulip Poplar - Liriodendron tulipifera
8. _____
9. Juniper - Juniperus virginiana
10. _____

Saplings/Shrubs:

Dominant Species:

1. _____ 6. _____
2. _____ 7. _____
3. none dominant 8. _____
4. _____ 9. _____
5. _____ 10. _____

Secondary Species:

1. Sweet Myrtle - Myrica cerifera 6. _____
2. _____ 7. _____
3. _____ 8. _____
4. _____ 9. _____
5. _____ 10. _____

Woody Vines:

Dominant Species:

1. _____ 6. _____
2. _____ 7. _____
3. none 8. _____
4. _____ 9. _____
5. _____ 10. _____

Secondary Species:

1. _____ 6. _____
2. _____ 7. _____
3. _____ 8. _____
4. none 9. _____
5. _____ 10. _____

Herbs:

Dominant Species:

1. Broom Sedge - Andropogon virginicus
2. Bushy Beardgrass - A. glomeratus
3. other grasses
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Secondary Species:

1. narrow-leaved plantain - Plantago lanceolata
2. sweet white clover - Melilotus alba
3. dandelion - Taraxacum officinalis
4. Slender bush clover - Lespedeza virginica
5. pussytoes - Antennaria sp.
6. dog fennel - Eupatorium capillifolium
7. aster - Aster sp.
8. Verbena brasiliensis - verbena
9. Monarda punctata - Lemon mint
10. Eremochloa ophiuroides - grass

Birds: _____

Time: _____

Weather Conditions:

Species	Sex	Feeding	Nesting	Approx. No.
1. Robin - Turdus migratorius				
2. Carolina wren - Thyrothorus ludovicianus				
3. Song sparrow - Melospiza melodia				
4. Bachmans sparrow - Aimophila aestivalis tentative id.				
5. Towhee - Pipilo erythrophthalmus				
6. Common crow - Corvus brachyrhynchos				
7. bluebird - Sialia sialis				large flocks
8. myrtle warbler - Dendroica coronata				large flocks
9.				

10. _____

Mammals: _____

Time: _____

Weather Conditions:

Species	Observed	Sign	Adult/Juvenile	Sex
1. white-tailed deer - Odocoileus virginianus				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Reptiles and Amphibians: _____

Time: _____

Weather Conditions:

Species	Observed	Sign	Adult/Juvenile	Sex
1.				
2.				
3. none				
4.				
5.				
6.				

7. _____

8. _____

9. _____

10. _____

Miscellaneous Notes:

ECOLOGICAL EVALUATION
FIELD DATA SHEET - TERRESTRIAL

Project Name: Habitat Evaluation

Location: MCB Camp Lejeune, Jacksonville, NC

Date: 12/7/94

Sampling Location: Creosote Mixing Area

Data Collected By: LBS, CDC

Habitat Type: Pine Forest

Vegetation:

Trees:

Dominant Species:

1. _____
2. Loblolly pine - Pinus
3. _____ taeda
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Secondary Species:

1. _____
2. no secondary tree
3. _____ species
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Saplings/Shrubs:

Dominant Species:

1. _____ 6. _____
2. _____ 7. _____
3. _____ 8. _____
4. _____ 9. _____
5. _____ 10. _____

Secondary Species:

1. Sweet myrtle - Myrica cerifera 6. _____
2. _____ 7. _____
3. _____ 8. _____
4. _____ 9. _____
5. _____ 10. _____

Woody Vines:

Dominant Species:

1. _____ 6. _____
2. _____ 7. _____
3. none 8. _____
4. _____ 9. _____
5. _____ 10. _____

Secondary Species:

1. _____ 6. _____
2. _____ 7. _____
3. none 8. _____
4. _____ 9. _____
5. _____ 10. _____

Herbs:

Dominant Species:

1. _____ 6. _____
2. _____ 7. _____
3. none 8. _____
4. _____ 9. _____
5. _____ 10. _____

Secondary Species:

1. _____ 6. _____
2. none 7. _____
3. _____ 8. _____
4. _____ 9. _____
5. _____ 10. _____

Birds: _____

Time: _____

Weather Conditions:

Species	Sex	Feeding	Nesting	Approx. No.
1.				
2.				
3.				
4.				
5.		listed w. open area		
6.				
7.				
8.				
9.				

10. _____

Mammals: _____

Time: _____

Weather Conditions:

Species	Observed	Sign	Adult/Juvenile	Sex
1.				
2.				
3.				
4.				
5.				
6.		listed w. open area		
7.				
8.				
9.				
10.				

Reptiles and Amphibians: _____

Time: _____

Weather Conditions:

Species	Observed	Sign	Adult/Juvenile	Sex
1.				
2.				
3.				
4.		listed w. open area		
5.				
6.				

7. _____

8. _____

9. _____

10. _____

Miscellaneous Notes:

APPENDIX P
ENDANGERED SPECIES SURVEY

III. SUMMARY OF FINDINGS

A. SPECIES SIGNIFICANCE

Camp Lejeune Marine Corps Base contains an impressive spectrum of high quality habitats associated with the outer Coastal Plain of North Carolina. This quality is reflected in the exceptionally large number of rare animal and plant species documented during the inventory. A total of 15 animal species and 55 plant species recognized as rare at the Federal or State level are known to occur in Camp Lejeune. Among these are six Federally listed species:

FEDERALLY ENDANGERED
Peregrine Falcon (Falco peregrinus)
Rough-leaf Loosestrife (Lysimachia asperulifolia)
Red-cockaded Woodpecker (Picoides borealis)

FEDERALLY THREATENED
American Loggerhead Turtle (Caretta caretta)
Piping Plover (Charadrius melodus)
Green Turtle (Chelonia mydas)

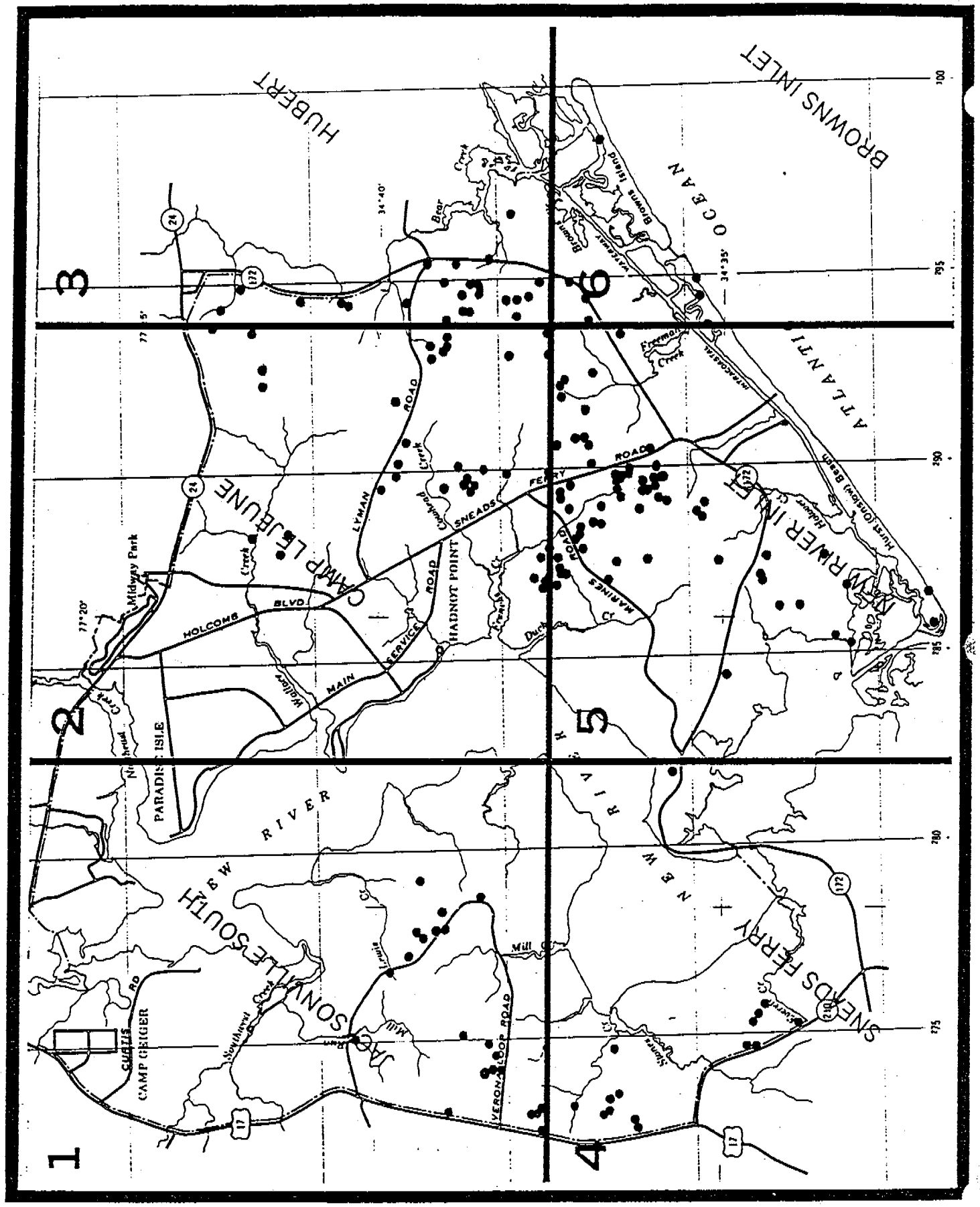
Another 15 species are Candidates for Federal listing:

ANIMAL CANDIDATES FOR FEDERAL LISTING
Bachman's Sparrow (Aimophila aestivalis)
Southern Hognose Snake (Heterodon simus)
Diamondback Terrapin (Malaclemys terrapin)
Carolina Gopher Frog (Rana capito capito)

PLANT CANDIDATES FOR FEDERAL LISTING
Seabeach Amaranth (Amaranthus pumilus)
Chapman's Sedge (Carex chapmanii)
Hirst's Witchgrass (Dichanthelium species 1)*
Pondspice (Litsea aestivalis)
Boykin's Lobelia (Lobelia boykinii)
Loose Watermilfoil (Myriophyllum laxum)
Savanna Cowbane (Oxypolis ternata)
Awned Meadow-beauty (Rhexia aristosa)
Carolina Goldenrod (Solidago pulchra)
Carolina Dropseed (Sporobolus species 1)*
Carolina Asphodel (Tofieldia glabra)

* Hirst's Witchgrass was formerly known by the scientific name of Panicum hirstii, and remains to be reclassified in the genus to which it belongs (Dichanthelium). Carolina Dropseed previously was erroneously included in Sporobolus teretifolius, and remains to be described as a new species.

Venus Flytrap (Dionaea muscipula) had been recommended for upgrading to the status of Federal Candidate at the time of this report.



Locations of all rare plant and animal species.

Camp Lejeune habitats contain significant percentages of the known global populations of the following plant species:

	Lejeune sites	Global %
Lejeune Goldenrod (Solidago species 1)	1	100
Awned Meadow-beauty (Rhexia aristosa)	53	64
Carolina Goldenrod (Solidago pulchra)	24	40
Hirst's Witchgrass (Dichanthelium species 1)	2	29
Chapman's Sedge (Carex chapmanii)	5	20
Venus Flytrap (Dionaea muscipula)	23	15
Carolina Asphodel (Tofieldia glabra)	13	13
Rough-leaf Loosestrife (Lysimachia asperulifolia)	3	5

The 55 Camp Lejeune sites for Bachman's Sparrow (Aimophila aestivalis) constitute the largest concentration of this Federal Candidate in North Carolina.

B. HABITAT SIGNIFICANCE

Camp Lejeune contains several areas with exemplary natural communities, often supporting many rare species. The most important of these have been identified as "Natural Areas." Fourteen Natural Areas have been inventoried and described (see Chapter IX.A). Two of them--Longleaf Pine Natural Area and Wallace Creek Swamp Natural Area--already have been registered with the N.C. Natural Heritage Program, and the other 12 areas are recommended for registry.

These Natural Areas contain one-to-several exemplary natural communities. A natural community is defined as "a distinct and reoccurring assemblage of populations of plants, animals, bacteria, and fungi naturally associated with each other and their physical environment" (Schafale and Weakley 1990). A discrete Pine Savanna, Small Depression Pond, or Salt Marsh are examples of the several natural community types found in Camp Lejeune.

Camp Lejeune contains some of the finest examples of these natural communities known in North Carolina, and a few of these community types are globally rare. The Calcareous Coastal Fringe Forest on the 100-acre midden at Corn Landing is the only known extant example of this community type. Camp Lejeune contains some of the best examples of the following globally rare natural community types: Cypress Savanna, Depression Meadow, and Small Depression Pond. The Maritime Evergreen Forest hammocks at and between Cedar Point and Shell Point are connected by shell tombolos, and appear to be a very rare geological formation.

There are several reasons why Camp Lejeune is a refuge for rare species and natural communities that were once in greater abundance on the outer Coastal Plain. Relatively small portions of the landscape were altered by agriculture prior to the camp's establishment, and silviculture similarly has been restricted.

The infrastructure of the base is mostly clustered. Much of the training activity is confined to roadbeds and training on foot, greatly reducing impacts to natural systems. Importantly, the base Environmental Management Department actively manages habitats to maintain natural communities through protection or replication of natural processes, such as by controlled burns. Camp Lejeune Marine Corps Base can take great pride in the fact that it has preserved and protected many threatened components of the natural landscape while achieving its training objectives.

C. TABLES OF SPECIAL-INTEREST NATURAL AREAS, EXEMPLARY NATURAL COMMUNITIES AND NATURAL AREAS.

Table 5. Identified special-interest natural areas at Camp Lejeune, including training areas, exemplary natural communities, and UTM coordinates.

Name	Training Area	Exemplary Natural Communities/ UTM Coordinates
Africa Pond Limesinks	HF	Small Depression Pond 891306, 892308, 894310, 895309, 896312, 897308, 897309
Alligator Meadow Limesinks	HE	Depression Meadow 889332, 896332 Vernal Pool 892334, 893334
Corn Landing Forest	IC	Calcareous Coastal Fringe 856262 Maritime Evergreen Forest 851259-853257 Salt Marsh 851259-853257
Cowhead Creek Limesinks	GA	Cypress Savanna 898359 Depression Meadow 894359, 896360, 901361 Pine Savanna 899349 Pine/Scrub Oak Sandhill 896358
Dixon Pine Savanna	LB	Pine Savanna 725317 Streamhead Pocosin 728317
Longleaf Pine	HB	Pond Pine Woodland 875319 Small Depression Pocosin 870322 Wet Pine Flatwoods 870320, 875321
Loosestrife Pocosin	GE,GF	Pine Savanna GE- 907330, 918333; GF- 914327 Small Depression Pocosin GF- 914327 Wet Pine Flatwoods GE- 907330, 918333; GF- 914327

Table 5 con't

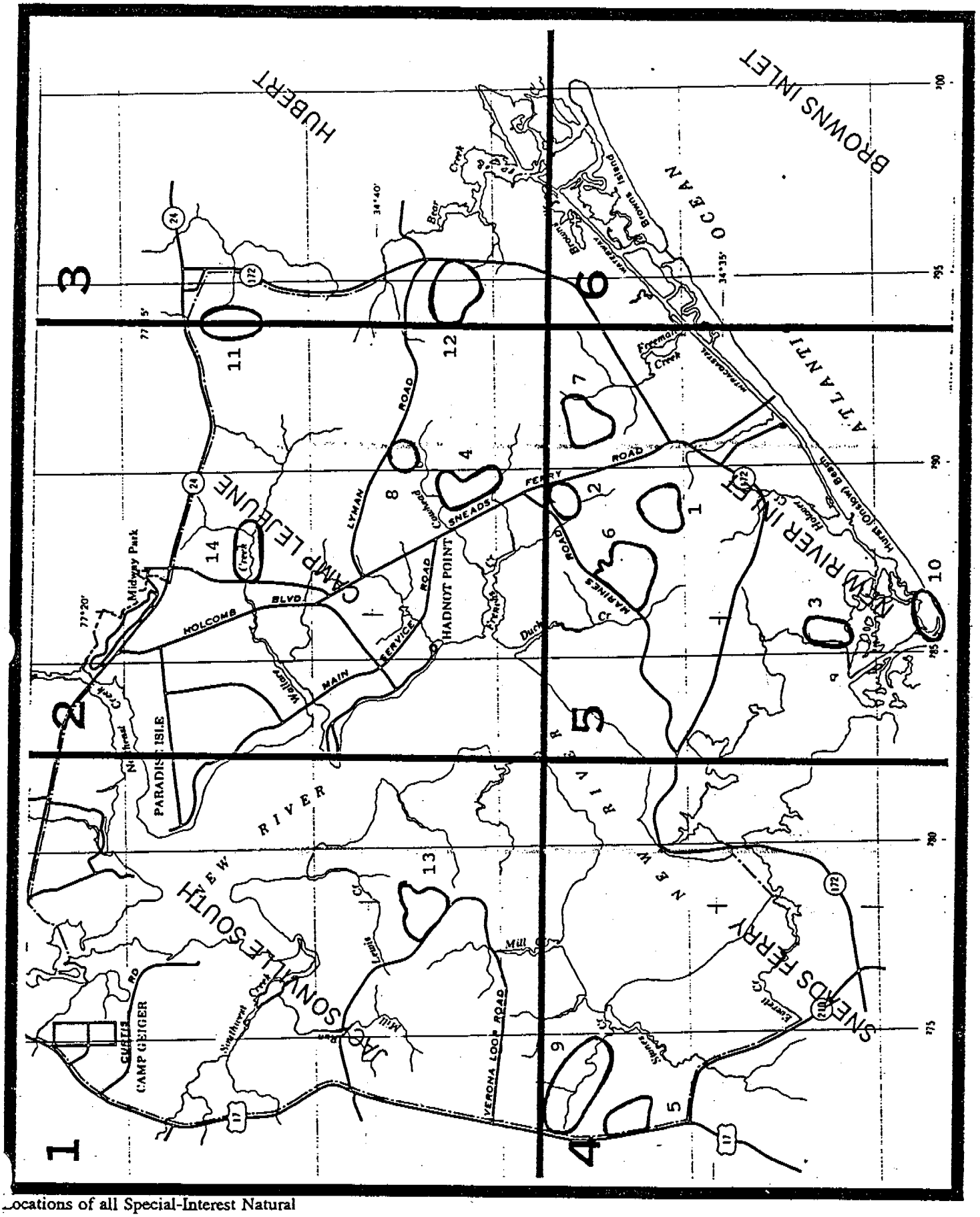
Lyman Road Cypress Savanna	FD	Cypress Savanna 904377
Millstone Creek Swamp	LA,LB	Mesic Mixed Hardwood Forest 726334-751320 Small Stream Swamp 726334-751320
New River Inlet	E	Brackish Marsh 860237 Upper Beach 856235
Pocosin Road Flatwoods	FB	Mesic Pine Flatwoods 937416, 939426 Pine/Scrub Oak Sandhill 937416, 939426
Spring Branch Limesinks	GC,QB	Depression Meadow GC- 942358, 942359, 948356, 949356, 949358 Pine/Scrub Oak Sandhill GC- 948359 Small Depression Pond GC- 946360, 948358 Vernal Pool GC- 947356; QB- 954361
Verona Loop Flatwoods	KC,MF	Wet Pine Flatwoods KC- 778369; MF- 778368
Wallace Creek Swamp	FA,RA,RB	Cypress-Gum Swamp 882417 Small Stream Swamp 882417

Table 6. Exemplary natural communities outside of identified special-interest natural areas at Camp Lejeune; includes training areas, exemplary natural communities, and UTM coordinates.

Name	Training Area	Exemplary Natural Communities/ UTM Coordinates
Combat Meadow	HF	Depression Meadow 900316
Combat Town Pond	HF	Small Depression Pond 892318
Freeman Creek Meadow	GG	Depression Meadow 934317
Holover Pond	IA	Small Depression Pond 886297
Meadow-beauty Pond	HE	Small Depression Pond 882329
Mill Creek Streamhead Pocosin	GC	Streamhead Pocosin 944348
Peterson's Pond	GF	Small Depression Pond 907328
Pocosin Pond	HB	Small Depression Pond 878328
Pondspice Meadow	FC	Depression Meadow 918378
Range Road Sandhill	FB	Xeric Sandhill Scrub 922416
Spectacle Pond	HA	Small Depression Pond 872334, 873334
Starretts Meadow	QA	Depression Meadow 946402
Tom's Creek Ponds	IC	Small Depression Pond 869280, 270280
Weil Camp Meadow	HD	Depression Meadow 871341
Weil Point Meadows	HA	Depression Meadow 874336, 876335

INDEX TO BASE MAP OF SPECIAL-INTEREST NATURAL AREAS

(1) Africa Pond Limesinks Natural Area
(2) Alligator Meadow Limesinks Natural Area
(3) Corn Landing Natural Area
(4) Cowhead Creek Limesinks Natural Area
(5) Dixon Pine Savanna Natural Area
(6) Longleaf Pine Natural Area
(7) Loosestrife Pocosin Natural Area
(8) Lyman Road Cypress Savanna Natural Area
(9) Millstone Creek Swamp Natural Area
(10) New River Inlet Natural Area
(11) Pocosin Road Flatwoods Natural Area
(12) Spring Branch Limesinks Natural Area
(13) Verona Loop Flatwoods Natural Area
(14) Wallace Creek Swamp Natural Area



Locations of all Special-Interest Natural Areas at Camp Lejeune.

D. TABLES OF RARE SPECIES

The tables in this section list all of the Federal and State listed rare animal and plant species documented in Camp Lejeune. The Federal and State rarity status codes and Global and State abundance ranks are given for each species in the tables. These status and rank codes are defined below.

DEFINITION OF STATUS AND RANK CODES

STATUS CODES (DESIGNATED RARITY)

U.S. Status. As designated by the U.S. Fish and Wildlife Service (USFWS).

E = Endangered. A species that is threatened with extinction throughout all or a significant portion of its range.

T = Threatened. A species that is likely to become endangered in the foreseeable future.

P = Proposed. Species currently proposed, as either Endangered or Threatened. Species formally proposed receive some legal protection.

C1 = Candidate 1. A species for which the USFWS has on file enough substantial information to list as Endangered or Threatened. Listing is "warranted but precluded by other pending proposals of higher priority." The USFWS is "directed to make prompt use of the emergency listing provisions if the well-being of any such species is at significant risk." (No Camp Lejeune species possessed this status at the time of this report.)

C2 = Candidate 2. A species for which there is some evidence of vulnerability, but for which there are not enough data to support listing as Endangered or Threatened at this time. Listing is "warranted but precluded by other pending proposals of higher priority." The USFWS is "directed to make prompt use of the emergency listing provisions if the well-being of any such species is at significant risk."

3A = Candidate 3A. A species for which the USFWS has persuasive evidence of extinction. (No Camp Lejeune species possessed this status at the time of this report.)

3B = Candidate 3B. A name that, on the basis of current taxonomic understanding, does not represent a distinct species. (No Camp Lejeune species possessed this status at the time of this report.)

3C = Candidate 3C. A species that has proven to be more abundant or widespread than previously believed and/or those that are not subject to any identifiable threat. They may be reevaluated for possible inclusion in categories 1 or 2. Five Camp Lejeune plant species possess this status: *Calamovilfa brevipilis*, *Dionaea muscipula*, *Muhlenbergia torreyana*, *Sageretia minutiflora*, and *Sarracenia rubra* ssp. *rubra*. *Dionaea muscipula* had been recommended for upgrading to Candidate 2 at the time of this report.

N.C. Status - Animals.

E = Endangered. Any native or once-native species of wild animal whose continued existence as a viable component of the State's fauna is determined by the Wildlife Resources Commission to be in jeopardy, or any species of wild animal determined to be an Endangered species pursuant to the U.S. Endangered Species Act.

T = Threatened. Any native or once-native species of wild animal which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range in North Carolina, or one that is designated as a Threatened species pursuant to the U.S. Endangered Species Act.

SC = Special Concern. Any species of wild animal native or once-native to North Carolina which is determined by the Wildlife Resources Commission to require monitoring but which may be taken under regulations adopted under the provisions of Article 25 of Chapter 113 of the General Statutes.

P = Proposed for State listing, but not yet official (PE = Proposed Endangered; PT = Proposed Threatened; PSC = Proposed Special Concern). (No Camp Lejeune species possessed this status at the time of this report.)

SR = Significantly Rare. Any other species which has not been determined as an Endangered, Threatened, or Special Concern species, but which exists in the State in small numbers and has been determined to need monitoring. This is a N.C. Natural Heritage Program designation.

V = Vulnerable. A relatively rare species with significant problems at present or anticipated in the near future. Used only for Marine and Estuarine Fishes. (No Camp Lejeune species possessed this status at the time of this report.)

UNK = Undetermined (unknown). A species for which insufficient data are available for precise assessment. This is a N.C. Natural Heritage Program designation. (No Camp Lejeune species possessed this status at the time of this report.)

* = Species is a game animal, and therefore (by law) cannot be listed for State protection as E, T, or SC. (No Camp Lejeune species possessed this status at the time of this report.)

= Species proposed for Endangered status, but not adopted by the Wildlife Resources Commission; species is protected from take. (No Camp Lejeune species possessed this status at the time of this report.)

@ = Species proposed for Special Concern status, but not adopted by the Wildlife Resources Commission; species is protected from take. (No Camp Lejeune species possessed this status at the time of this report.)

N.C. Status - Plants.

E = Endangered. Any species whose continued existence as a viable component of the State's flora is in jeopardy. Endangered species may not be removed from the wild except when a permit is obtained for research, propagation, or rescue which will enhance the survival of the species. Sale or distribution of wild-collected Endangered species is not permitted.

T = Threatened. Any species likely to become an endangered species within the foreseeable future. Regulations are the same as for Endangered species.

SC = Special Concern. Any species which requires population monitoring, but which may be collected and sold under specific regulations. Special Concern species which are not also listed as Endangered or Threatened may be collected from the wild and sold under specific regulations. Propagated material only of Special Concern species which are also listed as Endangered or Threatened may be traded or sold under specific regulations.

P = Proposed. Any species which has been formally proposed for listing as Endangered, Threatened, or Special Concern, but has not yet completed the legally mandated State listing process.

C = Candidate. Any species which, because of small numbers of populations, rare habitat, or distribution, may become threatened in the future; or a species suspected of being endangered or threatened, but for which sufficient information is not currently available to support such a status classification.

SR = Significantly Rare. Any other species which has been determined to be rare in North Carolina and in need of conservation and monitoring.

W = Watch List. Any other species believed to be rare in North Carolina, but with inadequate information to assess its rarity. For most species in this category, actual biological status has not been determined, either because taxonomic validity is unresolved, or because the species is frequently overlooked in the field and could be more common than present data indicate, or because it is a peripheral species common in an adjacent state.

RANK CODES (RANGEWIDE ABUNDANCE)

Global Rank. This is based on a species' abundance rangewide, and is the best available scientific assessment of a species' rarity throughout its range.

G1 = Critically imperiled globally because of extreme rarity (five or fewer occurrences or very few remaining individuals) or because of other factors making it especially vulnerable to extinction.

G2 = Imperiled globally because of rarity (six to 20 occurrences or few remaining individuals) or because of other factors making it very vulnerable to extinction.

G3 = Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g., a single physiographic region) or because of other factors making it vulnerable to extinction. Occurrences range from 21 to 100.

G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.

G5 = Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.

G? = Unranked, or rank uncertain.

Q = Following a "G" rank, this indicates questionable taxonomic status.

T = Following a "G" rank, this indicates the rank of a subspecies or variety. For example, "G4T1" would apply to a subspecies or variety of a species with an overall rank of G4, but with the subspecies or variety warranting a rank of G1.

A ranking involving two "G" numbers indicates a greater uncertainty or range of ranking. For instance, a "G2G3" rank indicates that the species may be a G2 or a G3, but that existing data do not allow that determination to be made.

North Carolina Rank. This is based on a species' abundance throughout North Carolina, independently of the global rank (however, a State rank can never show a greater abundance than the global rank).

S1 = Critically imperiled in North Carolina because of extreme rarity (five or fewer occurrences or very few remaining individuals) or because of other factors making it especially vulnerable to extirpation from North Carolina.

S2 = Imperiled in North Carolina because of rarity (six to 20 occurrences or few remaining individuals) or because of other factors making it very vulnerable to extirpation in North Carolina.

S3 = Rare or uncommon in North Carolina (on the order of 21 to 100 occurrences).

S4 = Apparently secure in North Carolina, with many occurrences.

S5 = Demonstrably secure in North Carolina and essentially ineradicable under present conditions.

SU = Possibly in peril in North Carolina but status uncertain; need more information.

S? = Same as "G?".

A ranking involving two "S" numbers indicates a greater uncertainty or range of ranking. For instance, an "S2S3" rank indicates that the species may be an S2 or an S3, but that existing data do not allow that determination to be made.

ADDENDA

Rarity status codes (Endangered, Significantly Rare, etc.) are frequently revised as more information about the populations of individual species becomes known. This report uses the status codes that were in effect as of December 31, 1991. The following list contains status code changes--many resulting from this inventory--that have been made between December 31, 1991, and December 31, 1993.

codes
E - Endangered
T - Threatened
C2 - Candidate, level 2 (US)
3C - Candidate 3C (US) (taxon more abundant than previously known)
C - Candidate (NC)
SR - Significantly Rare
WL - Watch List
P - Proposed (e.g., PT = Proposed Threatened)

	Status 12-31-91		Status 12-31-93	
Species	US	NC	US	NC
Agalinis fasciculata	-	WL	-	-
Amaranthus pumilus	C2	T	T	T
Amphicarpum purshii	-	SR	-	WL
Andropogon capillipes	-	WL	-	-
Aristida palustris	-	SR	-	WL
Buchnera floridana	-	WL	-	-
Calamovilfa brevipilis	-	E	-	WL
Calopogon barbatus	-	WL	-	-
Carex chapmanii	C2	T	C2	C
Cynanchum angustifolium	-	WL	-	-
Eleocharis equisetoides		SR	-	WL
Eleocharis melanocarpa	-	C	-	WL
Gentiana autumnalis	-	WL	-	-
Helianthus heterophyllus	-	WL	-	-
Lysimachia loomisii	-	WL	-	-
Oxypolis ternata	C2	C	P3C	WL
Pleea tenuifolia	-	WL	-	-
Rhynchospora pallida	-	SR	-	WL
Sarracenia rubra ssp. rubra	-	WL	-	-
Scleria georgiana	-	C	-	SR
Scleria minor	-	SR	-	WL
Scleria reticularis	-	C	-	SR
Solidago gracillima	-	WL	-	SR
Solidago pulchra	C2	C	C2	E
Solidago species 1	-	-	-	WL
Sporobolus species 1	C2	T	-	WL
Xyris baldwiniana	-	WL	-	-

Cyperus dentatus. Specimens documented as C. dentatus at sites ME-2 and MF-2 subsequently have been determined to be C. lecontei (NC Significantly Rare).

Linum floridanum var. chrysocarpum. Specimens documented as this taxon at site LB-1 subsequently have been determined to be var. floridanum (no US or NC rare status).

Solidago species 1. This goldenrod appears to be new to science, and was discovered during the course of this survey. It is currently known only from Camp Lejeune, site HD-4.

The latest editions of the rare animal and plant lists published by the N.C. Natural Heritage Program should be consulted when using this report.

Table 9. Exemplary natural communities and endangered and rare animals and plants at Camp Lejeune by location; includes federal and state species status and UTM coordinates.

A = Animals; P = Plants

If UTM coordinates are not given for a particular community or species (excepting Picoides borealis), they are the same as the next set of coordinates above. In the case of P. borealis, it is listed at a site if the site occurs in or immediately adjacent to an RCW colony, but no coordinates are assigned to P. borealis itself. This list and its UTM coordinates should not be used as a basis for determining distribution of P. borealis in Camp Lejeune, as it is only a partial representation.

Location	Status US,NC	UTM Coordinates
COURTHOUSE BAY AREA		
CB-1		
P-Eleocharis melanocarpa	C	844290
TRAINING AREA E		
E-1		865236-949297
A-Charadrius melodus	T,T	893256
P-Amaranthus pumilus	C2,T	865236-949297
E-5		853233-863239
Brackish Marsh		860237
Upper Beach		856235
A-Charadrius melodus	T,T	854236, 855237
P-Amaranthus pumilus	C2,T	853233-863239
Baccharis angustifolia	WL	860237
Parietaria praetermissa	WL	
Solanum pseudogracile	WL	
TRAINING AREA F		
FA-1		878409
A-Picoides borealis	E,E	
P-Aristida palustris	SR	
Burmannia biflora	WL	
Panicum tenerum	SR	
Rhexia aristosa	C2,T	
Rhynchospora wrightiana	WL	
FA-4		
A-Aimophila aestivalis	C2,SC	882408
Picoides borealis	E,E	
P-Aristida palustris	SR	883407
Coelorachis rugosa	WL	
Dichanthelium erectifolium	SR	
Rhexia aristosa	C2,T	
Rhynchospora harperi	C	

Table 9 con't

FB-1		
A-Aimophila aestivalis	C2,SC	927411
Picoides borealis	E,E	
P-Amphicarpum purshii	SR	927413
Lysimachia loomisii	WL	
Panicum tenerum	SR	
Xyris difformis var. curtissii	WL	
FB-3		
Mesic Pine Flatwoods		937416
Pine/Scrub Oak Sandhill		
A-Aimophila aestivalis	C2,SC	936418, 937416
Picoides borealis	E,E	
P-Anthaenantia rufa	WL	937416
Gentiana autumnalis	WL	
Lysimachia loomisii	WL	
Pleea tenuifolia	WL	938415
Scleria minor	SR	937416
Tofieldia glabra	C2,C	939421
Xyris difformis var. curtissii	WL	938415
Xyris elliottii	SR	
FB-4		
Mesic Pine Flatwoods		939426
Pine/Scrub Oak Sandhill		
A-Picoides borealis		
P-Helianthus heterophyllus	WL	
Lysimachia loomisii	WL	
Rhynchospora harveyi	WL	
Rhynchospora pusilla	WL	
Scleria minor	SR	
FB-5		
Xeric Sandhill Scrub		922416
FC-2		
A-Picoides borealis	E,E	
P-Anthaenantia rufa	WL	922413
Helianthus heterophyllus	WL	
Lysimachia loomisii	WL	
Oxypolis ternata	C2,C	
FC-3		
Depression Meadow		918378
P-Aristida palustris	SR	
Bartonia verna	WL	
Burmannia biflora	WL	
Dichanthelium erectifolium	SR	
Litsea aestivalis	C2,C	
Muhlenbergia torreyana	3C,E	
Paspalum praecox	WL	
Rhexia aristosa	C2,T	
Rhynchospora tracyi	SR	

Table 9 con't

FD-1		
Cypress Savanna		904377
A-Falco peregrinus	E,E	901379
Picoides Borealis (adj.)	E,E	
P-Agalinis linifolia	SR	902377
Anthaenantia rufa	WL	
Aristida palustris	SR	
Bartonia verna	WL	
Burmannia biflora	WL	
Carex verrucosa	SR	
Coelorachis rugosa	WL	
Dichanthelium erectifolium	SR	
Dichanthelium species 1	C2,C	
Lobelia boykinii	C2,C	
Lysimachia loomisii	WL	
Muhlenbergia torreyana	3C,E	
Panicum tenerum	SR	
Paspalum praecox	WL	
Rhexia aristosa	C2,T	
Rhynchospora harperi	C	
Rhynchospora tracyi	SR	
Rhynchospora wrightiana	WL	
Scleria georgiana	C	
Spiranthes laciniata	C	
Xyris baldwiniana	WL	
FD-3		
A-Aimophila aestivalis	C2,SC	899377
Picoides borealis	E,E	
P-Carex verrucosa	SR	899378
Eleocharis equisetoides	SR	
FD-6		
A-Aimophila aestivalis	C2,SC	895383
TRAINING AREA G		
G-10-1		
A-Picoides borealis	E,E	
P-Lysimachia asperulifolia	E,E	929348
GA-1		
Depression Meadow		894359
A-Aimophila aestivalis	C2,SC	895360
P-Agalinis linifolia	SR	894359
Andropogon capillipes	WL	
Anthaenantia rufa	WL	
Aristida palustris	SR	
Burmannia biflora	WL	
Dichanthelium erectifolium	SR	
Eleocharis equisetoides	SR	
Eleocharis melanocarpa	C	
Gentiana autumnalis	WL	
Panicum tenerum	SR	

Table 9 con't

GA-1 con't		
Rhexia aristosa	C2,T	
Rhynchospora tracyi	SR	
Scleria georgiana	C	
GA-2		
Depression Meadow		896360
P-Agalinis linifolia	SR	
Andropogon capillipes	WL	
Aristida palustris	SR	
Burmannia biflora	WL	
Dichanthelium erectifolium	SR	
Panicum tenerum	SR	
Pleea tenuifolia	WL	
Rhexia aristosa	C2,T	
Rhynchospora wrightiana	WL	
Scleria georgiana	C	
GA-3		
Cypress Savanna		898359
P-Agalinis linifolia	SR	
Andropogon capillipes	WL	
Aristida palustris	SR	
Burmannia biflora	WL	
Carex verrucosa	SR	
Coelorachis rugosa	WL	
Dichanthelium erectifolium	SR	
Eleocharis equisetoides	SR	
Panicum tenerum	SR	
Paspalum praecox	WL	
Rhexia aristosa	C2,T	
Rhynchospora pusilla	WL	
Rhynchospora tracyi	SR	
Scleria georgiana	C	
GA-4		
Pine Savanna		899349
A-Picoides borealis	E,E	
P-Amphicarpum purshii	SR	898352
Asclepias pedicellata	C	
Dichanthelium erectifolium	SR	899350
Dionaea muscipula	3C,C-SC	898352
Gentiana autumnalis	WL	899350
Helianthus heterophyllus	WL	898352
Lysimachia loomisii	WL	
Oxypolis ternata	C2,C	
Pleea tenuifolia	WL	
Polygala brevifolia	WL	
Polygala hookeri	C	
Rhynchospora pallida	SR	
Sarracenia rubra ssp. rubra	3C,WL	
Solidago pulchra	C2,E	
Tofieldia glabra	C2,C	
Xyris baldwiniana	WL	

Table 9 con't

GA-5		
Depression Meadow		901361
A-Agalinis linifolia	SR	
Anthaenantia rufa	WL	
Aristida palustris	SR	
Burmannia biflora	WL	
Carex verrucosa	SR	
Dichanthelium erectifolium	SR	
Eleocharis equisetoides	SR	
Panicum tenerum	SR	
Paspalum praecox	WL	
Rhexia aristosa	C2,T	
Rhynchospora inundata	WL	
Rhynchospora tracyi	SR	
Xyris smalliana	WL	
GA-6		
A-Aimophila aestivalis	C2,SC	900355
Picoides borealis	E,E	
GA-7		
Pine/Scrub Oak Sandhill		896358
A-Aimophila aestivalis	C2,SC	
Picoides borealis	E,E	
GA-8		895364, 896365,
A-Aimophila aestivalis	C2,SC	897364
GB-2		
A-Picoides borealis	E,E	
P-Agalinis virgata	C	907376
GB-3		
A-Picoides borealis	E,E	
P-Calopogon barbatus	WL	929368
Dionaea muscipula	3C,C-SC	
Solidago pulchra	C2,E	
GB-4		
A-Picoides borealis	E,E	
P-Dionaea muscipula	3C,C-SC	931365
Rhynchospora pallida	SR	
Solidago pulchra	C2,E	
GB-5		
A-Picoides borealis	E,E	
P-Dionaea muscipula	3C,C-SC	932364
Solidago pulchra	C2,E	
Tofieldia glabra	C2,C	

Table 9 con't

GB-6		
A-Picoides borealis	E,E	
P-Amphicarpum purshii	SR	935364
Dionaea muscipula	3C,C-SC	
Solidago pulchra	C2,E	
GB-7		
A-Crotalus adamanteus	SR	940365
Picoides borealis	E,E	
P-Rhexia aristosa	C2,T	940364
Solidago pulchra	C2,E	
GB-8		
A-Picoides borealis	E,E	
A-Bartonia verna	WL	932368
Solidago pulchra	C2,E	
Tofieldia glabra	C2,C	
GC-1		
Small Depression Pond		946360
P-Agalinis linifolia	SR	
Aristida palustris	SR	
Coelorachis rugosa	WL	
Dichanthelium erectifolium	SR	
Eleocharis tricostata	WL	
Panicum tenerum	SR	
Paspalum praecox	WL	
Rhexia aristosa	C2,T	
Rhynchospora tracyi	SR	
GC-2		
Depression Meadow		949358
Pine/Scrub Oak Sandhill		948359
Small Depression Pond		948358
A-Aimophila aestivalis	C2,SC	948358, 949359
P-Agalinis linifolia	SR	949358
Aristida palustris	SR	
Burmannia biflora	SR	
Cladium mariscoides	SR	950357
Dichanthelium erectifolium	SR	948358
Eleocharis equisetoides	SR	
Ludwigia linifolia	SR	
Panicum tenerum	SR	
Paspalum praecox	WL	949358
Rhexia aristosa	C2,T	
Rhynchospora harperi	C	948358
Rhynchospora pusilla	WL	949358
Rhynchospora tracyi	SR	948358
Scleria georgiana	C	949358
GC-3		
A-Picoides borealis	E,E	
P-Amphicarpum purshii	SR	945342

Table 9 con't

GC-5		
A-Picoides borealis	E,E	
P-Eleocharis tricostata	WL	940345
Panicum tenerum	SR	
GC-6		
Depression Meadow		942358
P-Agalinis linifolia	SR	
Aristida palustris	SR	
Burmannia biflora	WL	
Coelorachis rugosa	WL	
Dichanthelium erectifolium	SR	
Litsea aestivalis	C2,C	
Panicum tenerum	SR	
Paspalum praecox	WL	
Rhexia aristosa	C2,T	
Rhynchospora wrightiana	WL	
Scleria georgiana	C	
GC-7		
Depression Meadow		942359
P-Aristida palustris	SR	
Litsea aestivalis	C2,C	
Panicum tenerum	SR	
Rhexia aristosa	C2,T	
Rhexia cubensis	SR	
Sarracenia rubra ssp. rubra	3C,WL	
GC-8		
Vernal Pool		947356
P-Rhexia aristosa	C2,T	
Rhexia cubensis	SR	
GC-9		
Depression Meadow		949356
P-Aristida palustris	SR	
Coelorachis rugosa	WL	
Rhexia aristosa	C2,T	
GC-10		
Depression Meadow		948356
P-Agalinis linifolia	SR	
Aristida palustris	SR	
Coelorachis rugosa	WL	
Eleocharis tricostata	WL	
Panicum tenerum	SR	
Paspalum praecox	WL	
Rhexia aristosa	C2,T	
Rhynchospora tracyi	SR	
Scleria georgiana	C	

Table 9 con't

GC-11		
A-Aimophila aestivalis	C2,SC	948368, 950366, 952365
Picoides borealis	E,E	
P-Andropogon capillipes	WL	949364
GC-12		
Streamhead Pocosin		944348
A-Aimophila aestivalis	C2,SC	944347, 945347, 945348, 945349
Picoides borealis	E,E	
P-Amphicarpum purshii	SR	944348
Dionaea muscipula	3C,C-SC	
Peltandra sagittifolia	SR	
Rhynchospora pallida	SR	
Solidago pulchra	C2,E	
Tofieldia glabra	C2,C	
GC-13		
A-Aimophila aestivalis	C2,SC	944345
Picoides borealis	E,E	
GC-14		
A-Aimophila aestivalis	C2,SC	949339
GD-1		
A-Aimophila aestivalis	C2,SC	937329, 938331
P-Amphicarpum purshii	SR	938326
Rhexia cubensis	SR	
GD-3		
P-Eleocharis vivipara (?)	WL	937335
Litsea aestivalis	C2,C	
Rhexia aristosa	C2,T	
Xyris smalliana	WL	
GD-4		
P-Dichanthelium erectifolium	SR	936336
Eleocharis melanocarpa	C	
Eleocharis tricostata	WL	
Rhexia aristosa	C2,T	
GD-5		
A-Picoides borealis (adj.)	E,E	
P-Agalinis linifolia	SR	921333
Dionaea muscipula	3C,C-SC	
Pleea tenuifolia	WL	
Rhynchospora pusilla	WL	
Solidago pulchra	C2,E	

Table 9 con't

GD-6		
P-Rhexia aristosa	C2,T	922332
Rhexia cubensis	SR	
Rhynchospora pusilla	WL	
Xyris baldwiniana	WL	
GD-7		
A-Aimophila aestivalis	C2,SC	929337, 930337
Picoides borealis	E,E	
GE-2		
Pine Savanna		918333
Wet Pine Flatwoods		
A-Aimophila aestivalis	C2,SC	919334, 920333, 920335
Picoides borealis	E,E	
P-Amphicarpum purshii	SR	918333
Dionaea muscipula	3C,C-SC	
Oxypolis ternata	C2,C	
Pleea tenuifolia	WL	
Polygala brevifolia	WL	
Rhynchospora pallida	SR	
Rhynchospora pusilla	WL	
Rhynchospora wrightiana	WL	
Solidago pulchra	C2,E	
Tofieldia glabra	C2,C	
GE-3		
Pine Savanna		907330
Wet Pine Flatwoods		
A-Aimophila aestivalis	C2,SC	908330
Picoides borealis	E,E	
P-Amphicarpum purshii	SR	907330
Calamovilfa brevipilis	3C,E	
Dionaea muscipula	3C,C-SC	
Gentiana autumnalis	WL	
Oxypolis ternata	C2,C	
Pleea tenuifolia	WL	
Rhynchospora pallida	SR	
Solidago pulchra	C2,E	
Tofieldia glabra	C2,C	
GE-4		
A-Aimophila aestivalis	C2,SC	905335
Picoides borealis	E,E	
GE-5		
A-Aimophila aestivalis	C2,SC	899337
Picoides borealis	E,E	

Table 9 con't

GF-1		
P-Agalinis fasciculata	WL	949331
Agalinis virgata	C	
Andropogon capillipes	WL	
Calopogon barbatus	WL	
Gentiana autumnalis	WL	
Tofieldia glabra	C2,C	
GF-3		
P-Rhexia aristosa	C2,T	906327
GF-4		
Small Depression Pond		907328
P-Rhexia aristosa	C2,T	
Rhynchospora inundata	WL	
GF-5		
P-Agalinis linifolia	SR	944326
Rhexia aristosa	C2,T	
Xyris baldwiniana	WL	
GF-6		
Pine Savanna		914327
Small Depression Pocosin		
Wet Pine Flatwoods		
A-Aimophila aestivalis	C2,SC	915327
Picoides borealis	E,E	
P-Calamovilfa brevipilis	3C,E	914327
Carex elliottii	WL	
Dionaea muscipula	3C,C-SC	
Lysimachia asperulifolia	E,E	
Polygala brevifolia	WL	
Rhynchospora pallida	SR	
Solidago pulchra	C2,E	
Tofieldia glabra	C2,C	
GF-7		
A-Aimophila aestivalis	C2,SC	901326
GF-8		
A-Sistrurus miliarius	SR	924325
GG-1		
Depression Meadow		934317
A-Dichanthelium erectifolium	SR	
Eleocharis equisetoides	SR	
Panicum tenerum	SR	
Rhexia aristosa	C2,T	
Rhexia cubensis	SR	
Rhynchospora inundata	WL	
Rhynchospora tracyi	SR	
Rhynchospora wrightiana	WL	

Table 9 con't

GH-2		
A-Malaclemys terrapin	C2,SC	944297
GI-2		
A-Crotalus adamanteus	SR	966347
TRAINING AREA H		
HA-3		
Depression Meadow		876335
A-Alligator mississippiensis	T	
Rana capito capito	C2,SC	876336
P-Aristida palustris	SR	876335
Burmannia biflora	WL	
Coelorachis rugosa	WL	
Dichanthelium erectifolium	SR	
Ludwigia linifolia	SR	
Rhexia aristosa	C2,T	
Rhynchospora harperi	C	
Rhynchospora nitens	WL	
Rhynchospora wrightiana	WL	
Scleria georgiana	C	
HA-5		
Depression Meadow		874336
P-Aristida palustris	SR	
Dichanthelium erectifolium	SR	
Ludwigia linifolia	SR	
Rhexia aristosa	C2,T	
Scleria georgiana	C	
HA-6		
Small Depression Pond		873334
P-Aristida palustris	SR	
Coelorachis rugosa	WL	
Dichanthelium erectifolium	SR	
Eleocharis tricostata	WL	
Rhexia aristosa	C2,T	
Rhynchospora harperi	C	
Rhynchospora nitens	WL	
Scleria reticularis	C	
HA-7		
Small Depression Pond		872334
P-Dichanthelium erectifolium	SR	
Ludwigia linifolia	SR	
Rhexia aristosa	C2,T	
Rhynchospora nitens	WL	
Scleria reticularis	C	
HA-8		
P-Coelorachis rugosa	WL	872333
Rhynchospora nitens	WL	
Scleria reticularis	C	

Table 9 con't

HA-9		
P-Scleria georgiana	C	871336
HA-10		
P-Scleria georgiana	C	870337
HA-11		
P-Ludwigia linifolia	SR	869338
Rhexia aristosa	C2,T	
Rhynchospora nitens	WL	
Scleria reticularis	C	
HA-12		
A-Rana capito capito	C2,SC	869335
HA-13		
A-Rana capito capito	C2,SC	870337
HB-1		
P-Carex elliottii	WL	876311
Dionaea muscipula	3C,C-SC	
Polygala brevifolia	WL	
HB-2		
Pond Pine Woodland		875319
Wet Pine Flatwoods		875321
A-Picoides borealis	E,E	
P-Amphicarpum purshii	SR	873324
Lysimachia asperulifolia	E,E	875319
Polygala brevifolia	WL	875322
Solidago pulchra	C2,E	
HB-3		
Small Depression Pond		878328
P-Agalinis linifolia	SR	
Amphicarpum purshii	SR	
Aristida palustris	SR	
Burmannia biflora	WL	
Dichanthelium erectifolium	SR	
Dionaea muscipula	3C,C-SC	
Ludwigia linifolia	SR	
Oxypolis ternata	C2,C	
Paspalum praecox	WL	
Rhexia aristosa	C2,T	
Rhynchospora harperi	C	
Solidago pulchra	C2,E	
HB-5		
Small Depression Pocosin		870322
Wet Pine Flatwoods		870320
A-Picoides borealis	E,E	

Table 9 con't

HB-5 con't		
P-Asclepias pedicellata	C	
Calopogon barbatus	WL	
Gentiana autumnalis	WL	
Solidago pulchra	C2,E	870322
Sporobolus species 1	C2,T	
HB-6		
A-Aimophila aestivalis	C2,SC	885323
Picoides borealis	E,E	
HC-1		
A-Crotalus adamanteus	SR	838325
HD-1		
P-Dichanthelium erectifolium	SR	878337
Rhexia aristosa	C2,T	
HD-2		
P-Aristida palustris	SR	876339
Burmannia biflora	WL	
Rhexia aristosa	C2,T	
HD-3		
Depression Meadow		871341
P-Aristida palustris	SR	
Burmannia biflora	WL	
Dichanthelium erectifolium	SR	
Eleocharis equisetoides	SR	
Eleocharis robbinsii	C	
Ludwigia linifolia	SR	
Myriophyllum laxum	C2,T	
Panicum tenerum	SR	
Rhexia aristosa	C2,T	
Rhynchospora harperi	C	
Rhynchospora inundata	WL	
Rhynchospora nitens	WL	
Rhynchospora pleiantha	C	
Rhynchospora tracyi	SR	
Scleria georgiana	C	
HD-4		
P-Agalinis fasciculata	WL	857351
Solidago species 1	SR	858350
HE-1		
Vernal Pool		893334
A-Picoides borealis	E,E	
P-Agalinis linifolia	SR	
Aristida palustris	SR	
Burmannia biflora	WL	
Rhexia aristosa	C2,T	

Table 9 con't

HE-2		
Vernal Pool		892334
A-Picoides borealis	E,E	
P-Agalinis linifolia	SR	
Aristida palustris	SR	
Bartonia verna	WL	
Burmannia biflora	WL	
Rhexia aristosa	C2,T	
Rhynchospora wrightiana	WL	
HE-3		
Depression Meadow		889332
A-Alligator mississippiensis	T	
Picoides borealis	E,E	
P-Aristida palustris	SR	
Dichanthelium erectifolium	SR	
Eleocharis equisetoides	SR	
Ludwigia linifolia	SR	
Panicum tenerum	SR	
Rhexia aristosa	C2,T	
Rhynchospora harperi	C	
Rhynchospora inundata	WL	
Rhynchospora tracyi	SR	
Scleria reticularis	C	
Xyris smalliana	WL	
HE-5		
Depression Meadow		896332
A-Picoides borealis	E,E	
P-Aristida palustris	SR	
Burmannia biflora	WL	
Eleocharis equisetoides	SR	
Panicum tenerum	SR	
Rhexia aristosa	C2,T	
Rhynchospora harperi	C	
Rhynchospora inundata	WL	
HE-6		
Small Depression Pond		882329
P-Burmannia biflora	WL	
Dichanthelium erectifolium	SR	
Eleocharis equisetoides	SR	
Panicum tenerum	SR	
Rhexia aristosa	C2,T	
Rhexia cubensis	SR	
Rhynchospora scirpoides	SR	
Rhynchospora tracyi	SR	
Rhynchospora wrightiana	WL	
HE-7		
P-Agalinis fasciculata	WL	880330
Rhexia aristosa	C2,T	
Rhynchospora nitens	WL	
Rhynchospora pusilla	WL	

Table 9 con't

HE-8		
P-Dionaea muscipula	3C,C-SC	883329
Paspalum praecox	WL	882328
HE-9		
A-Aimophila aestivalis	C2,SC	885324
Picoides borealis	E,E	
HE-10		
A-Aimophila aestivalis	C2,SC	890323
Picoides borealis	E,E	
HF-1		
Depression Meadow		900316
P-Agalinis linifolia	SR	
Aristida palustris	SR	
Coelorachis rugosa	WL	
Dichanthelium erectifolium	SR	
Eleocharis tricostata	WL	
Ludwigia linifolia	SR	
Panicum tenerum	SR	
Paspalum praecox	WL	
Rhexia aristosa	C2,T	
Rhynchospora tracyi	SR	
Rhynchospora wrightiana	WL	
Scleria georgiana	C	
Spiranthes laciniata	C	
Xyris smalliana	WL	
HF-2		
P-Amphicarpum purshii	SR	897318
Aristida palustris	SR	899316
Dichanthelium erectifolium	SR	
Eleocharis equisetoides	SR	
Rhexia aristosa	C2,T	
Rhynchospora inundata	WL	
Rhynchospora nitens	WL	
Rhynchospora pallida	SR	
Rhynchospora wrightiana	WL	
Sagittaria graminea var. chapmanii	WL	
HF-3		
P-Aristida palustris	SR	898318
Dichanthelium erectifolium	SR	
Eleocharis equisetoides	SR	
Paspalum praecox	WL	
Rhexia aristosa	C2,T	
Sagittaria graminea var. chapmanii	C	
HF-4		
P-Agalinis linifolia	SR	898319
Rhexia aristosa	C2,T	
Rhexia cubensis	SR	
Rhynchospora nitens	WL	
Sagittaria graminea var. chapmanii	C	

Table 9 con't

HF-5		
P-Carex elliottii	WL	896319
Rhexia cubensis	SR	
Rhynchospora pallida	SR	
HF-6		
A-Picoides borealis	E,E	
P-Rhexia aristosa	C2,T	894319
Rhynchospora pallida	SR	
HF-7		
Small Depression Pond		892318
A-Picoides borealis	E,E	
P-Eleocharis equisetoides	SR	
Rhynchospora inundata	WL	
Xyris smalliana	WL	
HF-8		
Small Depression Pond		896312
P-Agalinis linifolia	SR	
Amphicarpum purshii	SR	896311
Aristida palustris	SR	896312
Burmannia biflora	WL	
Dichanthelium erectifolium	SR	
Eleocharis elongata	C	
Eleocharis equisetoides	SR	
Eleocharis tricostata	WL	
Panicum tenerum	SR	
Rhexia aristosa	C2,T	
Rhexia cubensis	SR	
Rhynchospora inundata	WL	
Rhynchospora pleiantha	C	
HF-9		
A-Picoides borealis	E,E	
P-Amphicarpum purshii	SR	889313
HF-11		
Small Depression Pond		897309
A-Picoides borealis	E,E	
P-Agalinis linifolia	SR	
Coelorachis rugosa	WL	
Dichanthelium erectifolium	SR	
Eleocharis equisetoides	SR	
Panicum tenerum	SR	
Rhexia aristosa	C2,T	
Rhynchospora inundata	WL	
Scirpus etuberculatus	SR	
Spiranthes laciniata	C	
Sporobolus species 1 (part of HF-20)	C2,T	

Table 9 con't

HF-12		
Small Depression Pond		897308
A-Picoides borealis	E,E	
P-Eleocharis elongata	C	
Eleocharis equisetoides	SR	
HF-13		
Small Depression Pond		895309
A-Picoides borealis	E,E	
P-Carex verrucosa	SR	
Panicum tenerum	SR	
Rhexia aristosa	C2,T	
Rhynchospora inundata	WL	
Rhynchospora tracyi	SR	
HF-14		
P-Amphicarpum purshii	SR	894312
Rhexia aristosa	C2,T	
HF-15		
Small Depression Pond		894310
P-Asclepias pedicellata	C	
Eleocharis equisetoides	SR	
Litsea aestivalis	C2,C	
Scirpus etuberculatus	SR	
HF-16		
Small Depression Pond		892308
A-Picoides borealis (adj.)	E,E	
P-Panicum tenerum	SR	
Rhexia aristosa	C2,T	
Rhexia cubensis	SR	
Rhynchospora inundata	WL	
Rhynchospora scirpoides	SR	
HF-17		
Small Depression Pond		891306
A-Picoides borealis (adj.)	E,E	
P-Aristida palustris	SR	
Burmannia biflora	WL	
Dichanthelium erectifolium	SR	
Eleocharis equisetoides	SR	
Eleocharis robbinsii	C	
Panicum tenerum	SR	
Rhexia aristosa	C2,T	
Rhynchospora scirpoides	SR	
Rhynchospora tracyi	SR	
Rhynchospora wrightiana	WL	
Utricularia olivacea	T	
Xyris smalliana	WL	

Table 9 con't

HF-18		
A-Picoides borealis	E,E	
P-Agalinis linifolia	SR	898308
Coelorachis rugosa	WL	
Paspalum praecox	WL	
Rhexia aristosa	C2,C	
HF-19		
A-Picoides borealis	E,E	
P-Amphicarpum purshii	SR	897307
HF-20		
A-Picoides borealis	E,E	
P-Amphicarpum purshii	SR	897308
Solidago pulchra	C2,E	
Sporobolus species 1	C2,T	
HF-24		
P-Dionaea muscipula	3C,C-SC	900309
Rhynchospora pallida	SR	
HF-25		
P-Agalinis fasciculata	WL	904310
Andropogon capillipes	WL	
Burmannia biflora	WL	
Dionaea muscipula	3C,C-SC	
Paspalum praecox	WL	
Polygala brevifolia	WL	
Rhynchospora nitens	WL	
Rhynchospora pallida	SR	
Solidago pulchra	C2,E	
Tofieldia glabra	C2,C	
Xyris baldwiniana	WL	
TRAINING AREA I		
IA-1		
Small Depression Pond		886297
A-Picoides borealis	E,E	
P-Rhynchospora inundata	WL	
Rhynchospora scirpoides	SR	
IA-2		
P-Burmannia biflora	WL	890296
Eleocharis equisetoides	SR	
Eleocharis vivipara (?)	WL	
Panicum tenerum	SR	
Rhynchospora inundata	WL	
Rhynchospora scripoides	SR	
IA-3		
A-Picoides borealis	E,E	
P-Asclepias pedicellata	C	887298

Table 9 con't

IC-2		
A-Picoides borealis	E,E	
P-Eleocharis equisetoides	SR	875279
Rhynchospora inundata	WL	
IC-3		
Small Depression Pond		869280
P-Eleocharis equisetoides	SR	
Rhynchospora inundata	WL	
Xyris smalliana	WL	
IC-4		
Small Depression Pond		870280
P-Eleocharis equisetoides	SR	
Rhynchospora inundata	WL	
Sagittaria engelmanniana	WL	
Xyris smalliana	WL	
IC-7		
P-Eleocharis equisetoides	SR	862270
IC-9		
Maritime Evergreen Forest		851259-853257
Salt Marsh		
P-Cynanchum angustifolium	WL	
Iresine rhizomatosa	WL	
Sageretia minutiflora	3C,C	
IC-10		
Calcareous Coastal Fringe Forest		856262
P-Asplenium platyneuron		
var. bacculum-rubrum	WL	
Carex chapmanii	C2,T	
Cornus asperifolia	C	
Rhynchospora miliacea	WL	
IC-11		
P-Eleocharis montevidensis	SR	867259
IC-13		
A-Crotalus adamanteus	SR	862276
ID-1		
A-Micrurus fulvius	SR	875263
IE-2		
P-Dionaea muscipula	3C,C-SC	873291
Tofieldia glabra	C2,C	

TRAINING AREA J

JB-1		
P-Carex chapmanii	C2,T	819305
Carex floridana	WL	

Table 9 con't

TRAINING AREA K		
K-2-1		
A-Aimophila aestivalis	C2,SC	788357
KC-1		
A-Aimophila aestivalis	C2,SC	771377
Picoides borealis	E,E	
P-Buchnera floridana	WL	
Calamovilfa brevipilis	3C,E	772377
Dionaea muscipula	3C,C-SC	
Gentiana autumnalis	WL	
Pleea tenuifolia	WL	
Rhynchospora pallida	SR	
Solidago pulchra	C2,E	
KC-2		
A-Aimophila aestivalis	C2,SC	783368
KC-3		
A-Aimophila aestivalis	C2,SC	792373
KC-4		
Wet Pine Flatwoods		778369
A-Aimophila aestivalis	C2,SC	776372, 778374
Picoides borealis	E,E	
TRAINING AREA L		
LA-1		
P-Dionaea muscipula	3C,C-SC	724341
Pleea tenuifolia	WL	
Rhynchospora pusilla	WL	
Solidago pulchra	C2,E	
Xyris elliottii	SR	
LA-2		
A-Aimophila aestivalis	C2,SC	729343, 730345, 731342
Picoides borealis	E,E	
LB-1		
Pine Savanna		725317
Streamhead Pocosin		728317
A-Aimophila aestivalis	C2,SC	726317, 727317
Picoides borealis (adj.)	E,E	
P-Agalinis aphylla	C	725317
Agalinis fasciculata	WL	
Agalinis virgata	C	
Amphicarpum purshii	SR	
Andropogon capillipes	WL	
Asclepias pedicellata	C	
Bartonia verna	WL	

Table 9 con't

LB-1 con't		
Calamovilfa brevipilis	3C,E	
Calopogon barbatus	WL	
Dionaea muscipula	3C,C-SC	
Gentiana autumnalis	WL	
Oxypolis ternata	C2,C	
Pleea tenuifolia	WL	
Polygala brevifolia	WL	
Rhynchospora nitens	WL	
Rhynchospora pallida	SR	
Rhynchospora pusilla	WL	
Solidago pulchra	C2,E	
Sporobolus species 1	C2,T	
Tofieldia glabra	C2,C	
Xyris baldwiniana	WL	
Xyris difformis var. curtissii	WL	
Xyris elliottii	SR	
Xyris flabelliformis	C	
LB-3		726334-751320
Mesic Mixed Hardwood Forest		
Coastal Plain Small Stream Swamp		
A-Crotalus adamanteus	SR	747321
Picoides borealis	E,E	
P-Carex chapmanii	C2,T	731333
Carex granularis	WL	
Carex floridana	WL	
LB-4		
P-Carex elliottii	WL	747287
Polygala brevifolia	WL	
Solidago pulchra	C2,E	
LB-5		
A-Aimophila aestivalis	C2,SC	729324, 730324, 733323, 734321
Picoides borealis	E,E	
LC-1		753273
P-Agalinis fasciculata	WL	
Agalinis tenella	WL	
Andropogon capillipes	WL	
Dionaea muscipula	3C,C-SC	
Xyris difformis var. curtissii	WL	
Xyris elliottii	SR	
LC-2		747286-764282
A-Sistrurus miliarius	SR	754283
P-Andropogon capillipes	WL	752284
Carex elliottii	WL	
Dionaea muscipula	3C,C-SC	747286
Rhexia aristosa	C2,T	757282
Rhynchospora oligantha	C	752284
Xyris difformis var. curtissii	WL	757282

Table 9 con't

TRAINING AREA M		
MD-1		
P-Carex chapmanii	C2,T	751392
Carex granularis	WL	
Carex floridana	WL	
Scirpus lineatus	C	
Senecio glabellus	WL	
MD-2		
A-Accipiter cooperi	SC	768381
ME-1		
P-Oxypolis ternata	C2,C	730367
ME-2		
P-Cyperus lecontei (part of MF-2)	SR	742354
Gentiana autumnalis	WL	742352
Xyris flabelliformis	C	741357
ME-3		
A-Aimophila aestivalis	C2,SC	751362
P-Dionaea muscipula	3C,C-SC	
MF-1		
Wet Pine Flatwoods		778368
A-Picoides borealis	E,E	
P-Agalinis fasciculata	WL	
Andropogon capillipes	WL	
Calamovilfa brevipilis	3C,E	
Calopogon barbatus	WL	
Carex elliottii	WL	773368
Dionaea muscipula	3C,C-SC	778368
Gentiana autumnalis	WL	
Pleea tenuifolia	WL	
Polygala brevifolia	WL	
Solidago pulchra	C2,E	
MF-2		
P-Cyperus lecontei (into ME-2)	SR	744353-749355
Pleea tenuifolia	WL	749355
Solidago pulchra	C2,E	
Xyris difformis var. curtissii	WL	
N-1/BT-3 IMPACT AREA		
N-1		
A-Malaclemys terrapin	C2,SC	985322
TRAINING AREA Q		
QA-1		
P-Litsea aestivalis	C2,C	943390

Table 9 con't

QA-3		
Depression Meadow		946402
A-Picoides borealis	E,E	
P-Amphicarpum purshii	SR	946401
Anthaenantia rufa	WL	946402
Aristida palustris	SR	
Burmannia biflora	WL	
Coelorachis rugosa	WL	
Dichanthelium erectifolium	SR	
Dichanthelium species 1	C2,C	
Eleocharis equisetoides	SR	
Gentiana autumnalis	WL	946401
Lobelia boykinii	C2,C	946402
Muhlenbergia torreyana	3C,E	
Panicum tenerum	SR	
Paspalum praecox	WL	
Rhexia aristosa	C2,T	
Rhynchospora elliottii	WL	
Rhynchospora harperi	C	
Rhynchospora nitens	WL	946401
Rhynchospora tracyi	SR	946402
Scleria georgiana	C	
Spiranthes laciniata	C	
Xyris smalliana	WL	
QA-6		
P-Aristida palustris	SR	944392
Carex verrucosa	SR	
Panicum tenerum	SR	
Rhynchospora inundata	WL	
QA-7		
A-Crotalus adamanteus	SR	949418
P-Agalinis tenella	WL	948422
Carex chapmanii	C2,T	944424
Carex elliottii	WL	
Rhynchospora miliacea	WL	
Scirpus lineatus	C	
QB-2		
P-Anthaenantia rufa	WL	943375
Coelorachis rugosa	WL	
Dionaea muscipula	3C,C-SC	
Gentiana autumnalis	WL	
Paspalum praecox	WL	
Polygala brevifolia	WL	
Rhynchospora nitens	WL	
Rhynchospora oligantha	C	
Rhynchospora pallida	SR	
Scleria georgiana	C	
Scleria minor	SR	
Solidago gracillima	WL	
Solidago pulchra	C2,E	
Tofieldia glabra	C2,C	
Xyris baldwiniana	WL	

Table 9 con't

QB-3		
Vernal Pool		954361
A-Picoides borealis	E,E	
P-Andropogon capillipes	WL	
Eleocharis tricostata	WL	
Rhexia aristosa	C2,T	
Rhexia cubensis	SR	
Rhynchospora wrightiana	WL	
QB-4		
A-Heterodon simus	C2,SR	954369
QB-5		
A-Sistrurus miliarius	SR	955353
TRAINING AREA R		
RB-2		
Cypress-Gum Swamp		882417
Coastal Plain Small Stream Swamp		
P-Dryopteris ludoviciana	WL	
Ponthieva racemosa	SR	
Senecio glabellus	WL	

APPENDIX Q
TERRESTRIAL REFERENCE VALUES AND CDI ECOLOGICAL SPREADSHEETS

EQUATIONS USED TO CALCULATE CHRONIC DAILY INTAKE FOR THE WHITETAILED DEER
OPERABLE UNIT NO. 12 (SITE 3)
REMEDIAL INVESTIGATION, CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA

Food Source ingestion of: Iv=vegetation If=fish Im=mammals Iw=worms Ifr=fruit	Feeding Rate (I in kg/d)	Incidental Soil Ingestion (Is in kg/d)	Rate of Drinking Water Ingestion (Iw in l/d)	Rate of Worm Ingestion (Iwo in kg/d)	Rate of Fruit Ingestion (Ifr in kg/d)	Rate of Mammal Ingestion (Im in kg/d)	Rate of Vegetation Ingestion (Iv in kg/d)	Body Weight (BW) (kg)	Home Range Size (acres)	Contaminated Area (acres)	H Ratio	Equation Used to Calculate Total Exposure E=total exposure Cw=constituent conc. in water Cs=constituent conc. in soil Cwo=constituent conc. in worms Cfr=constituent conc. in fruit H=ratio of home range area to site area
Vegetation(Iv) 100 percent	1.600	0.019	1.100	NA	NA	NA	1.600	45.400	454.000	5	0.011	$E=\frac{(Cw)(Iw)+[(Cs)(Bv)(Iv)+(Cs)(Is)][H]}{BW}$

Contaminant of Concern	Soil to Plant Transfer Coefficient (Bv)	Constituent Concentration in Water (mg/l) (Cw)	Constituent Concentration in Soil (mg/kg) (Cs)	Constituent Concentration in Worms (mg/kg) (Cwo)	Constituent Concentration in Fruit (mg/kg) (Cfr)	Constituent Concentration in Mammals (mg/kg) (Cm)	Total Exposure (mg/kg/d)	TRV	RATIO
Chromium	0.008	NA	7.10	NA	NA	NA	5.25E-05	6.51E+00	8.07E-06
Zinc	1.500	NA	16.60	NA	NA	NA	9.74E-03	3.25E+00	2.99E-03
Acenaphthylene	0.165	NA	0.42	NA	NA	NA	2.91E-05	3.46E+00	8.41E-06
Anthracene	0.097	NA	0.60	NA	NA	NA	2.53E-05	8.71E+00	2.91E-06
Benzo(a)anthracene	0.020	NA	0.72	NA	NA	NA	8.67E-06	8.71E-02	9.95E-05
Benzo(b)fluoranthene	0.006	NA	1.01	NA	NA	NA	6.83E-06	8.71E-02	7.84E-05
Benzo(k)fluoranthene	0.012	NA	0.87	NA	NA	NA	7.84E-06	8.71E-02	9.00E-05
Benzo(ghi)perylene	0.007	NA	0.58	NA	NA	NA	4.16E-06	8.71E-02	4.78E-05
Benzo(a)pyrene	0.013	NA	0.72	NA	NA	NA	6.91E-06	8.71E-02	7.93E-05
Bis(2-ethylhexyl)phthalate	0.044	NA	0.09	NA	NA	NA	1.95E-06	4.89E-02	3.99E-05
Carbazole	0.550	NA	0.38	NA	NA	NA	8.29E-05	8.71E-02	9.51E-04
Chrysene	0.020	NA	0.84	NA	NA	NA	1.13E-05	8.71E-02	1.30E-04
Dibenz(a,h)anthracene	0.007	NA	0.44	NA	NA	NA	3.17E-06	8.71E-02	3.63E-05
Di-n-butylphthalate	0.038	NA	0.34	NA	NA	NA	6.57E-06	2.47E+01	2.66E-07
Fluoranthene	0.057	NA	0.87	NA	NA	NA	2.32E-05	1.09E+00	2.13E-05
Fluorene	0.145	NA	0.37	NA	NA	NA	2.25E-05	2.47E+00	9.12E-06
Indeno(1,2,3-cd)pyrene	0.007	NA	0.63	NA	NA	NA	4.43E-06	8.71E-02	5.08E-05
Phenanthrene	0.097	NA	0.46	NA	NA	NA	1.96E-05	8.10E+00	2.42E-06
Pyrene	0.033	NA	1.13	NA	NA	NA	1.97E-05	6.53E-01	3.02E-05
Ethylbenzene	0.548	NA	0.00	NA	NA	NA	4.34E-07	1.92E+00	2.26E-07
Toluene	1.065	NA	0.00	NA	NA	NA	8.96E-07	4.41E+00	1.90E-07
Xylenes	0.548	NA	0.01	NA	NA	NA	1.28E-06	3.54E+01	3.62E-08
								SUM	4.68E-03

ND - Not Detected
NA - Not Applicable

EQUATIONS USED TO CALCULATE CHRONIC DAILY INTAKE FOR THE EASTERN COTTONTAIL RABBIT
OPERABLE UNIT NO. 12 (SITE 3)
REMEDIAL INVESTIGATION, CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA

Food Source ingestion of: Iv=vegetation If=fish Im=mammals Iw=worms Ifr=fruit	Feeding Rate (I in kg/d)	Incidental Soil Ingestion (Is in kg/d)	Rate of Drinking Water Ingestion (Iw in l/d)	Rate of Worm Ingestion (Iwo in kg/d)	Rate of Fruit Ingestion (Ifr in kg/d)	Rate of Mammal Ingestion (Im in kg/d)	Rate of Vegetation Ingestion (Iv in kg/d)	Body Weight (BW) (kg)	Home Range Size (acres)	Contaminated Area (acres)	H Ratio	Equation Used to Calculate Total Exposure E=total exposure Cw=constituent conc. in water Cs=constituent conc. in soil Cwo=constituent conc. in worms Cfr=constituent conc. in fruit H=ratio of home range area to site area
Vegetation (Iv) 100 percent	0.237	0.006	0.119	NA	NA	NA	0.237	1.229	9.297	5	0.538	$E=\frac{(Cw)(Iw)+[(Cs)(Bv)(Iv)+(Cs)(Is)][H]}{BW}$

Contaminant of Concern	Soil to Plant Transfer Coefficient (Bv)	Constituent Concentration in Water (mg/l) (Cw)	Constituent Concentration in Soil (mg/kg) (Cs)	Constituent Concentration in Worms (mg/kg) (Cwo)	Constituent Concentration in Fruit (mg/kg) (Cfr)	Constituent Concentration in Mammals (mg/kg) (Cm)	Total Exposure (mg/kg/d)	TRV	RATIO
Chromium	0.008	NA	7.10	NA	NA	NA	2.32E-02	5.80E+01	4.00E-04
Zinc	1.500	NA	16.60	NA	NA	NA	2.62E+00	2.90E+01	9.04E-02
Acenaphthylene	0.165	NA	0.42	NA	NA	NA	8.32E-03	1.15E+01	7.23E-04
Anthracene	0.097	NA	0.60	NA	NA	NA	7.54E-03	2.90E+01	2.60E-04
Benzo(a)anthracene	0.020	NA	0.72	NA	NA	NA	3.24E-03	2.90E-01	1.12E-02
Benzo(b)fluoranthene	0.006	NA	1.01	NA	NA	NA	3.12E-03	2.90E-01	1.08E-02
Benzo(k)fluoranthene	0.012	NA	0.87	NA	NA	NA	3.22E-03	2.90E-01	1.11E-02
Benzo(ghi)perylene	0.007	NA	0.58	NA	NA	NA	1.87E-03	2.90E-01	6.43E-03
Benzo(a)pyrene	0.013	NA	0.72	NA	NA	NA	2.77E-03	2.90E-01	9.56E-03
Bis(2-ethylhexyl)phthalate	0.044	NA	0.09	NA	NA	NA	6.39E-04	1.63E-01	3.93E-03
Carbazole	0.550	NA	0.38	NA	NA	NA	2.26E-02	2.90E-01	7.80E-02
Chrysene	0.020	NA	0.94	NA	NA	NA	4.24E-03	2.90E-01	1.46E-02
Dibenz(a,h)anthracene	0.007	NA	0.44	NA	NA	NA	1.42E-03	2.90E-01	4.89E-03
Di-n-butylphthalate	0.038	NA	0.34	NA	NA	NA	2.20E-03	8.23E+01	2.67E-05
Fluoranthene	0.057	NA	0.87	NA	NA	NA	7.34E-03	3.63E+00	2.02E-03
Fluorene	0.145	NA	0.37	NA	NA	NA	6.50E-03	8.23E+00	7.90E-04
Indeno(1,2,3-cd)pyrene	0.007	NA	0.63	NA	NA	NA	1.99E-03	2.90E-01	6.86E-03
Phenanthrene	0.097	NA	0.46	NA	NA	NA	5.83E-03	2.70E+01	2.16E-04
Pyrene	0.033	NA	1.13	NA	NA	NA	6.73E-03	2.18E+00	3.09E-03
Ethylbenzene	0.548	NA	0.00	NA	NA	NA	1.19E-04	6.39E+00	1.86E-05
Toluene	1.065	NA	0.00	NA	NA	NA	2.26E-04	1.47E+01	1.54E-05
Xylenes	0.548	NA	0.01	NA	NA	NA	3.50E-04	1.18E+02	2.97E-06
								SUM	2.55E-01

ND - Not Detected
NA - Not Applicable

EQUATIONS USED TO CALCULATE CHRONIC DAILY INTAKE FOR THE BOBWHITE QUAIL
OPERABLE UNIT NO. 12 (SITE 3)
REMEDIAL INVESTIGATION, CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA

Food Source ingestion of: Iv=vegetation If=fish Im=mammals Iw=worms Ifr=fruit	Feeding Rate (I in kg/d)	Incidental Soil Ingestion (Is in kg/d)	Rate of Drinking Water Ingestion (Iw in l/d)	Rate of Worm Ingestion (Iwo in kg/d)	Rate of Fruit Ingestion (Ifr in kg/d)	Rate of Mammal Ingestion (Im in kg/d)	Rate of Vegetation Ingestion (Iv in kg/d)	Body Weight (BW) (kg)	Home Range Size (acres)	Contaminated Area (acres)	H Ratio	Equation Used to Calculate Total Exposure E=total exposure Cw=constituent conc. in water Cs=constituent conc. in soil Cwo=constituent conc. in worms Cfr=constituent conc. in fruit H=ratio of home range area to site area
Vegetation (Iv) 100%	0.013	0.001	0.019	NA	NA	NA	0.013	0.174	26.242	5	0.191	$E=\frac{(Cw)(Iw)+[(Cs)(Bv)(Iv)+(Cs)(Is)](H)}{BW}$

Contaminant of Concern	Soil to Plant Transfer Coefficient (Bv)	Constituent Concentration in Water (mg/l) (Cw)	Constituent Concentration in Soil (mg/kg) (Cs)	Constituent Concentration in Worms (mg/kg) (Cwo)	Constituent Concentration in Fruit (mg/kg) (Cfr)	Constituent Concentration in Mammals (mg/kg) (Cm)	Total Exposure (mg/kg/d)	TRV	RATIO
Chromium	0.008	NA	7.10	NA	NA	NA	0.009	1.53E+02	6.15E-05
Zinc	1.500	NA	16.60	NA	NA	NA	0.389	1.53E+02	2.54E-03
Acenaphthylene	0.165	NA	0.42	NA	NA	NA	0.002	4.76E+01	3.26E-05
Anthracene	0.097	NA	0.60	NA	NA	NA	0.002	1.20E+02	1.33E-05
Benzo(a)anthracene	0.020	NA	0.72	NA	NA	NA	0.001	1.20E+00	8.99E-04
Benzo(b)fluoranthene	0.006	NA	1.01	NA	NA	NA	0.001	1.20E+00	1.09E-03
Benzo(k)fluoranthene	0.012	NA	0.87	NA	NA	NA	0.001	1.20E+00	1.01E-03
Benzo(ghi)perylene	0.007	NA	0.58	NA	NA	NA	0.001	1.20E+00	6.41E-04
Benzo(a)pyrene	0.013	NA	0.72	NA	NA	NA	0.001	1.20E+00	8.46E-04
Bis(2-ethylhexyl)phthalate	0.044	NA	0.09	NA	NA	NA	0.000	2.30E+00	7.36E-05
Carbazole	0.350	NA	0.38	NA	NA	NA	0.004	1.20E+00	2.97E-03
Chrysene	0.020	NA	0.94	NA	NA	NA	0.001	1.20E+00	1.18E-03
Dibenz(a,h)anthracene	0.007	NA	0.44	NA	NA	NA	0.001	1.20E+00	4.88E-04
Di-n-butylphthalate	0.038	NA	0.34	NA	NA	NA	0.001	2.28E-01	2.66E-03
Fluoranthene	0.057	NA	0.87	NA	NA	NA	0.002	1.50E+01	1.20E-04
Fluorene	0.145	NA	0.37	NA	NA	NA	0.001	3.40E+01	3.67E-05
Indeno(1,2,3-cd)pyrene	0.007	NA	0.63	NA	NA	NA	0.001	1.20E+00	6.85E-04
Phenanthrene	0.097	NA	0.46	NA	NA	NA	0.001	1.12E+02	1.10E-05
Pyrene	0.033	NA	1.13	NA	NA	NA	0.002	8.99E+00	2.15E-04
Ethylbenzene	0.548	NA	0.00	NA	NA	NA	0.000	2.64E+01	7.06E-07
Toluene	1.085	NA	0.00	NA	NA	NA	0.000	6.06E+01	5.60E-07
Xylenes	0.548	NA	0.01	NA	NA	NA	0.000	4.87E+02	1.13E-07
								SUM	1.56E-02

ND - Not Detected
NA - Not Applicable

EQUATIONS USED TO CALCULATE CHRONIC DAILY INTAKE FOR THE RED FOX
OPERABLE UNIT NO. 12 (SITE 3)
REMEDIAL INVESTIGATION, CTO-0274
MCB CAMP LEJEUNE, NORTH CAROLINA

Food Source Ingestion of: fv=vegetation fi=fish im=mammals iw=worms ifr=fruit	Feeding Rate (I in kg/d)	Incidental Soil Ingestion (Is in kg/d)	Rate of Drinking Water Ingestion (Iw in l/d)	Rate of Worm Ingestion (Iwo in kg/d)	Rate of Fruit Ingestion (Ifr in kg/d)	Rate of Mammal Ingestion (Im in kg/d)	Rate of Vegetation Ingestion (Iv in kg/d)	Body Weight (BW) (kg)	Home Range Size (acres)	Contaminated Area (acres)	H Ratio	Equation Used to Calculate Total Exposure E=total exposure Cw=constituent conc. in water Cs=constituent conc. in soil Cwo=constituent conc. in worms Cfr=constituent conc. in fruit H=ratio of home range area to site area
Small Mammals m=80%	0.601	0.017	0.385	NA	NA	0.481	0.1201B	4.535	1245.4	5	0.004	$E=\frac{[Cw][Iw]+[(cm][(Im)+(Cs)(Bv)(Iv)+(Cs)(Is)][H]}{BW}$
Vegetation iv=20%	0.112 Small Mammal	0.00269 Small Mammal	0.0652 Small Mammal	NA	NA	NA	0.112 Small Mammal	0.3725 Small Mammal				$Cm=\frac{[[Cw][Iw]+[(Cs)(Bv)(Iv)+(Cs)(Is)](H)][Bb]}{BW}$
								Small Mammal	0.032	1	All AOCs	

Contaminant of Concern	Soil to Plant Transfer Coefficient (Bv)	Constituent Concentration in Water (mg/l) (Cw)	Constituent Concentration in Soil (mg/kg) (Cs)	Constituent Concentration in Worms (mg/kg) (Cwo)	Ingestion-to-tissue Biotransfer Factor (Bb)	Constituent Concentration in Mammals (mg/kg) (Cm)	Total Exposure (mg/kg/d)	TRV	RATIO
Chromium	0.008	NA	7.10	NA	5.50E-03	3.70E-04	1.12E-04	1.03E+00	1.09E-04
Zinc	1.500	NA	16.60	NA	1.00E-01	7.61E-01	2.22E-03	1.30E+00	2.47E-03
Acenaphthylene	0.165	NA	0.42	NA	3.16E-04	7.63E-06	1.38E-05	7.45E+00	1.85E-06
Anthracene	0.097	NA	0.60	NA	7.94E-04	1.74E-05	1.51E-05	1.88E+01	8.07E-07
Benzo(a)anthracene	0.020	NA	0.72	NA	1.26E-02	1.18E-04	1.22E-05	1.88E-01	6.50E-05
Benzo(b)fluoranthene	0.006	NA	1.01	NA	1.00E-01	9.05E-04	1.60E-05	1.88E-01	8.52E-05
Benzo(k)fluoranthene	0.012	NA	0.87	NA	3.16E-02	2.95E-04	1.42E-05	1.88E-01	7.57E-05
Benzo(ghi)perylene	0.007	NA	0.59	NA	7.94E-02	4.30E-04	9.31E-06	1.88E-01	4.96E-05
Benzo(a)pyrene	0.013	NA	0.72	NA	2.51E-02	2.02E-04	1.18E-05	1.88E-01	6.29E-05
Bis(2-ethylhexyl)phthalate	0.044	NA	0.09	NA	3.16E-03	5.85E-06	1.76E-06	1.06E-01	1.69E-05
Carbazole	0.550	NA	0.38	NA	2.51E-02	1.85E-03	2.86E-05	1.88E-01	1.52E-04
Chrysene	0.020	NA	0.94	NA	1.26E-02	1.55E-04	1.60E-05	1.88E-01	8.50E-05
Dibenz(a,h)anthracene	0.007	NA	0.44	NA	7.94E-02	3.27E-04	7.08E-06	1.88E-01	3.77E-05
Di-n-butylphthalate	0.036	NA	0.34	NA	3.98E-03	2.53E-05	6.46E-06	5.32E+01	1.21E-07
Fluoranthene	0.057	NA	0.87	NA	2.00E-03	4.24E-05	1.83E-06	2.35E+00	7.81E-06
Fluorene	0.145	NA	0.37	NA	3.98E-04	7.50E-06	1.12E-06	5.32E+00	2.11E-06
Indeno(1,2,3-cd)pyrene	0.007	NA	0.83	NA	6.31E-02	4.69E-04	9.95E-06	1.88E-01	5.30E-05
Phenanthrene	0.097	NA	0.46	NA	7.94E-04	1.34E-05	1.17E-05	1.75E+01	6.71E-07
Pyrene	0.033	NA	1.13	NA	5.01E-03	9.76E-05	2.09E-05	1.41E+00	1.48E-05
Ethylbenzene	0.548	NA	0.00	NA	3.98E-05	1.37E-08	1.46E-07	4.13E+00	3.54E-08
Toluene	1.085	NA	0.00	NA	1.26E-05	8.25E-09	2.56E-07	9.49E+00	2.70E-08
Xylenes	0.548	NA	0.01	NA	3.98E-05	4.04E-08	4.32E-07	7.62E+01	5.66E-09
								SUM	3.30E-03

ND - Not Detected
NA - Not Applicable

DERIVATION OF TERRESTRIAL REFERENCE VALUES
OPERABLE UNIT NO 12
SITE 3 - OLD CREOSATE PLANT
REMEDIAL INVESTIGATION, CTO-0274
MCB, CAMP LEJEUNE, NORTH CAROLINA

The following section discusses the procedures used to develop the terrestrial reference values (TRVs) used in the terrestrial portion of the ERA.

Most of the whitetailed deer, bobwhite quail, and cottontail rabbit TRVs for inorganic chemicals were derived from mineral tolerance values (MTLs) contained in the Mineral Tolerance of Domestic Animals (NAS, 1980). This book defines an MTL as "that dietary level that, when fed for a limited period, will not impair animal performance and should not produce unsafe residues in human food derived from the animal." (NAS, 1980) The values in this book were reported as mg mineral/kg feed. Therefore, these values were first converted to mg mineral/kg body weight-day using the following equation (Opresko et.al., 1993):

TRV = MTL * CR

where:

TRV = Terrestrial Reference Value (mg mineral/kg body weight-day)
MTL = Mineral Tolerance Value (mg mineral/kg food)
CR = consumption rate (kg food/kg body weight-day)

For the whitetailed deer TRVs derived from the cattle MTLs, a consumption rate of 0.05 kg food/kg body weight-day was used for the cow (O'Dell, 1971). Because the cattle MTL was developed primarily with cow studies that were conducted for less than 6 months, the new TRV was multiplied by 0.1 to account for subchronic to chronic uncertainty. The TRV for a cow then was adjusted to a TRV for a deer to account for differences in the body size using the following equation (Opresko et.al., 1993):

TRV (deer) = [TRV (cow)]*[bw (cow)/bw (deer)]^1/3

Where:

TRV (deer) = Deer Terrestrial Reference Value (mg mineral/kg body weight-day)
TRV (cow) = Cow Terrestrial Reference Value (mg mineral/kg body weight-day)
bw (cow) = body weight of a cow (100 kg)
bw (deer) = body weight of a deer (45.4 kg)

DERIVATION OF TERRESTRIAL REFERENCE VALUES
OPERABLE UNIT NO 12
SITE 3 - OLD CREOSATE PLANT
REMEDIAL INVESTIGATION, CTO-0274
MCB, CAMP LEJEUNE, NORTH CAROLINA

For the bobwhite quail TRVs derived from the poultry MTLs, a consumption rate of 0.41 kg food/kg body weight was calculated based on an average poultry weighing 0.5 kg, and the following allometric model (Nagy, 1987):

CR (birds) = 0.648 (bw)^0.651

Where:

CR (birds) = consumption rate for birds (kg food/kg body weight-day)

bw = body weight for an average bird (0.5 kg)

The TRV for poultry then was adjusted to a TRV for a bobwhite quail to account for differences in the body size using the same equation that was used to adjust the cow to the deer. The body weight used for the bobwhite quail was 0.174 kg.

For the cottontail rabbit TRVs derived from the rabbit MTLs, a consumption rate of 0.081 was calculated using the following equation:

CR (rabbit) = FR/bw

Where:

CR (rabbit) = consumption rate for rabbits (kg food/kg body weight-day)

FR = feeding rate of a cottontail rabbit (0.237 kg/day)

bw = body weight of a cottontail rabbit (1.229 kg)

The TRV (rabbit) was not adjusted for body size since a rabbit was used in the TRV calculation.

The following procedures were used for deriving TRV for the whitetailed deer, bobwhite quail, and cottontail rabbit when MTLs were not available, and for species that did not have MTLs. Their TRVs were determined using No Observed Adverse Effects Levels (NOAELs) or Lowest Observed Effects Levels (LOAELs). When available, the NOAEL or LOAEL from the Integrated Risk Information System (IRIS) was used in the TRV development. However, if a toxicity value was not available from IRIS, then one was obtained from various literature sources including Agency for Toxic Substances Registry Toxicological Profiles, Toxicological Benchmarks for Wildlife (Opresko *et.al.*, 1994) and published articles. Chemicals that only had diet concentration (as opposed to NOAELS) were converted to TRVs using the above equation and the appropriate consumption rates and body weights. The attached table contains the respective body weights used in the TRV adjustments.

As is presented in the attached table, toxicity data from many species were used to develop the TRVs. The attached table presents which animal was used to develop a particular TRV in parentheses. When possible, the chronic reproductive or developmental NOAEL value was used in the development of the TRV.

However, in some instances, only a subchronic NOAEL or a chronic or sub-chronic LOAEL for some chemicals were found in the literature. If a LOAEL was used, the number was divided by 10 as an uncertainty factor. If a subchronic value was used it also was divided by 10 as an uncertainty factor. Finally, toxicity values were not found for all the chemicals. Where possible, the toxicity or a similar chemical was used for these chemicals (i.e., using endrin for endrin aldehyde). The attached table identifies, in parentheses, which chemicals were used as surrogates.

TOXICITY DATA USED TO CALCULATE TERRESTRIAL REFERENCE VALUES
OPERABLE UNIT NO. 12
SITE 3 - OLD CREOSATE PLANT
REMEDIAL INVESTIGATION, CTO-0274
MCB, CAMP LEJEUNE, NORTH CAROLINA

Chemical		Cattle (mg/kg/day)		Poultry (mg/kg/day)		Rabbit (mg/kg/day)		Dog (mg/kg/day)		Rat (mg/kg/day)		Mouse (mg/kg/day)		Guinea Pig (mg/kg/day)		Mink (mg/kg/day)	
Aluminum		5	(1)	10	(1)	11.61	(1)	15	(1)	NA		1.93	(60)	NA		NA	
Antimony		NA		NA		4.06	(1)	NA		0.035	(12)	NA		NA		NA	
Arsenic		0.25	(1)	5.135	(61) Mallard	2.90	(1)	NA		NA		0.1261	(13)	NA		NA	
Barium		0.1	(1)	1	(1)	1.16	(1)	NA		0.25	(4)	NA		NA		NA	
Beryllium		NA		NA		NA		NA		0.54	(4)	NA		NA		NA	
Cadmium		0.0025	(1)	1.45	(63) Mallard	0.03	(1)	0.075	(14)	0.004	(15)	NA		NA		NA	
Chromium		5	(1)	50	(1)	58.03	(1)	NA		2.41	(5)	NA		NA		NA	
Cobalt		0.05	(1)	0.5	(1)	0.58	(1)	NA		NA		NA		NA		NA	
Copper		0.5	(1)	15	(1)	11.61	(1)	NA		NA		NA		NA		12.9	(17)
Iron		5	(1)	50	(1)	29.02	(1)	NA		NA		NA		NA		NA	
Lead		0.15	(1)	3.85	(65) A. kestral	1.74	(1)	NA		8	(6)	NA		NA		NA	
Manganese		1	(24)	100	(1)	23.21	(1)	NA		8.8	(66)	NA		NA		NA	
Mercury		0.01	(1)	0.1	(1)	0.12	(1)	NA		0.32	(18)	NA		NA		NA	
Nickel		0.25	(1)	15	(1)	2.90	(1)	25	(2)	5	(2)	NA		NA		NA	
Selenium		0.01	(1)	0.5	(67) Mallard	0.12	(1)	NA		0.04	(19)	NA		NA		NA	
Silver		NA		5	(1)	NA		NA		NA		0.181	(20)	NA		NA	
Thallium		NA		NA		NA		NA		0.023	(54)	NA		NA		NA	
Vanadium		0.25	(1)	11.38	(68) Mallard	0.06	(1)	NA		0.65	(58)	NA		NA		NA	
Zinc		2.5	(1)	50	(1)	29.02	(1)	1	(3)	160	(69)	NA		NA		NA	
Cyanide		NA		4.5	(21)	NA		0.375	(22)	10.8	(23)	NA		NA		NA	
Acenaphthene		NA		NA		NA		NA		17.5	(56)	NA		NA		NA	
Acenaphthylene		NA		NA		NA		NA		17.5	Acen.	NA		NA		NA	
Anthracene		NA		NA		NA		NA		NA		100	(33)	NA		NA	
Benzo(a)anthracene	(Benzo(a)pyrene	NA		NA		NA		NA		NA		1		NA		NA	
Benzo(b)fluoranthene	(Benzo(a)pyrene	NA		NA		NA		NA		NA		1		NA		NA	
Benzo(k)fluoranthene	(Benzo(a)pyrene	NA		NA		NA		NA		NA		1		NA		NA	
Benzo(ghi)perylene	(Benzo(a)pyrene	NA		NA		NA		NA		NA		1		NA		NA	
Benzo(g,h,i)perylene	(Benzo(a)pyrene	NA		NA		NA		NA		NA		1		NA		NA	
Benzo(a)pyrene		NA		NA		NA		NA		NA		1	(7)	NA		NA	
beta-BHC		NA		NA		NA		NA		5	(51)	NA		NA		NA	
Bis(2-ethylhexyl)phthalate		NA		1.11	(16) Ringed Dove	NA		NA		NA		NA		0.1833	(11)	NA	
Butylbenzylphthalate		NA		NA		NA		NA		15.9	(52)	NA		NA		NA	
Carbazole	(Benzo(a)pyrene	NA		NA		NA		NA		NA		1		NA		NA	
Chrysene	(Benzo(a)pyrene	NA		NA		NA		NA		NA		1		NA		NA	
Dibenzofuran	(Benzo(a)pyrene	NA		NA		NA		NA		NA		1		NA		NA	
Dibenz(a,h)anthracene	(Benzo(a)pyrene	NA		NA		NA		NA		NA		1		NA		NA	
Diethylphthalate		NA		NA		NA		NA		NA		4583	(53)	NA		NA	
Di-n-butylphthalate		NA		0.11	(16) Ringed Dove	NA		NA		125	(63)	NA		NA		NA	
Fluoranthene		NA		NA		NA		NA		NA		12.5	(8)	NA		NA	
Fluorene		NA		NA		NA		NA		12.5	(56)	NA		NA		NA	
Indeno(1,2,3-cd)pyrene	(Benzo(a)pyrene	NA		NA		NA		NA		NA		1		NA		NA	
2-Methylnaphthalene	(Naphthalene)	NA		NA		NA		NA		41		NA		NA		NA	
Naphthalene		NA		NA		NA		NA		41	(9)	NA		NA		NA	
Phenanthrene	(Naphthalene)	NA		NA		NA		NA		41		NA		NA		NA	
Phenol		NA		NA		NA		NA		6	(57)	NA		NA		NA	
Pyrene		NA		NA		NA		NA		NA		7.5	(10)	NA		NA	

TOXICITY DATA USED TO CALCULATE TERRESTRIAL REFERENCE VALUES
OPERABLE UNIT NO. 12
SITE 3 - OLD CREOSATE PLANT
REMEDIAL INVESTIGATION, CTO-0274
MCB, CAMP LEJEUNE, NORTH CAROLINA

Chemical		Cattle (mg/kg/day)		Poultry (mg/kg/day)		Rabbit (mg/kg/day)		Dog (mg/kg/day)		Rat (mg/kg/day)		Mouse (mg/kg/day)		Guinea Pig (mg/kg/day)	Mink (mg/kg/day)	
Aldrin		0.5	(24)	NA		NA		0.025	(77)	0.025	(77)	NA		NA	NA	
Alpha-chlordane	(Chlordane)	1	(24)	2.14	(70) Blackbird	NA		0.075	(48)	0.055	(49)	NA		NA	NA	
Gamma-chlordane	(Chlordane)	1	(24)	2.14	(70) Blackbird	NA		0.075	(48)	0.055	(49)	NA		NA	NA	
Dieldrin		0.5	(24)	0.03	(71) Mallard	NA		0.005	(25)	0.005	(25)	NA		NA	NA	
4,4'-DDD	(DDT)	NA		0.088	(DDT)	NA		NA		0.8	DDT	NA		NA	NA	
4,4'-DDE		NA		0.088	(24) Quail	NA		NA		0.8	(47)	NA		NA	NA	
4,4'-DDT		NA		0.088	(24) Quail	NA		NA		0.8	(47)	NA		NA	NA	
Endosulfan		NA		10	(72) Partridge	NA		0.57	(26)	0.6	(26)	NA		NA	NA	
Endosulfan II	(Endosulfan)	NA		10	(72) Partridge	NA		0.57	(26)	0.6	(26)	NA		NA	NA	
Endosulfan sulfate	(Endosulfan)	NA		10	(72) Partridge	NA		0.57	(26)	0.6	(26)	NA		NA	NA	
Endrin		NA		0.3	(73) Mallard	NA		0.025	(27)	0.25	(28)	NA		NA	NA	
Endrin aldehyde	(Endrin)	NA		0.3	(73) Mallard	NA		0.025	(27)	0.25	(28)	NA		NA	NA	
Endrin ketone	(Endrin)	NA		0.3	(73) Mallard	NA		0.025	(27)	0.25	(28)	NA		NA	NA	
Heptachlor		NA		NA		NA		NA		0.15	(45)	NA		NA	0.057	(29)
Heptachlor Epoxide		NA		NA		NA		0.000125	(24)	NA		NA		NA	NA	
Aroclor-1221		NA		NA		NA		NA		3.5	(30)	NA		NA	NA	
Aroclor-1232	(Aroclor-1242)	NA		0.41	(78) Owl	NA		NA		0.15	(31)	NA		NA	NA	
Aroclor-1260		NA		NA		NA		NA		0.005	(32)	NA		NA	NA	
Aroclor-1254		NA		0.18	(76) Pheasant	1	(75)	NA		NA		NA		NA	0.1	(50)
Aroclor-1248		NA		NA		0.28	(77)	NA		NA		0.13	(62)	NA	NA	
Methylene chloride		NA		NA		NA		NA		5.85	(34)	NA		NA	NA	
Carbon disulfide		NA		NA		1.1	(35)	NA		NA		NA		NA	NA	
1,1-Dichloroethene		NA		NA		NA		NA		28	(59)	NA		NA	NA	
1,2-Dichloroethene (total)		NA		NA		NA		NA		5	(44)	NA		NA	NA	
Chloroform		NA		NA		NA		30	(36)	38	(37)	NA		NA	NA	
2-Butanone		NA		NA		NA		NA		NA		NA		NA	NA	
1,1,1-Trichloroethane		NA		NA		NA		NA		1000	(38)	NA		NA	NA	
Trichloroethene		NA		NA		NA		NA		100	(39)	NA		NA	NA	
1,1,2-Trichloroethane		NA		NA		NA		NA		NA		0.39	(40)	NA	NA	
Benzene		NA		NA		NA		NA		0.1	(41)	NA		NA	NA	
Tetrachloroethene		NA		NA		NA		NA		1.4	(42)	NA		NA	NA	
Toluene		NA		NA		NA		NA		22.3	(38)	NA		NA	NA	
Ethylbenzene		NA		NA		NA		NA		9.71	(41)	NA		NA	NA	
Xylenes		NA		NA		NA		NA		179	(43)	NA		NA	NA	
Acetone		NA		NA		NA		NA		10	(46)	NA		NA	NA	

(1) NAS, 1980
(2) Ambrose, 1976
(3) Drinker et. al., 1927
(4) Schroder and Mitchner, 1975a,b
(5) Mackenzie, 1958
(6) Azar, 1973
(7) Mackenzie, 1981
(8) USEPA, 1988
(9) Schmall, 1955
(10) USEPA, 1989a
(11) Lamb, et.al., 1987
(12) Schroeder, 1976
(13) Schroeder and Mitchner, 1971
(14) Loser, 1977a,b
(15) Kopp, 1982
(16) Peakall, 1974
(17) Aulerich, 1982
(18) Fitzhugh, 1950
(19) Halverson, 1966
(20) Rungby, 1984
(21) Gomez, 1983, 1988
(22) USEPA, 1980
(23) Howard, 1955
(24) Ford, 1991
(25) Walker, 1969
(26) Hoechst, 1989
(27) Vesicol, 1969
(28) Treon, 1955
(29) Aulerich, 1990
(30) Wasserman, 1973
(31) Bruckner, 1974
(32) Byrne, 1988
(33) USEPA, 1989b
(34) Nat. Coffee Assos., 1982
(35) Hardin, 1981
(36) Heywood, 1979
(37) Jorgenson, 1985
(38) Lane, et.al., 1982
(39) NTP, 1985a
(40) White, 1985
(41) Wolf, 1956
(42) Buban, 1985
(43) NTP, 1986
(44) Quast, 1983
(45) Vesicol, 1955
(46) USEPA, 1986
(47) Fitzhugh, 1948
(48) WHO, 1984 and NRCC, 1975
(49) Vesicol, 1983
(50) Ringer, 1983
(51) Ito, 1975
(52) NTP, 1985b
(53) McClane and Hughs, 1980
(54) USEPA, 1986a
(55) USEPA, 1986b
(56) USEPA, 1989
(57) NTP, 1983
(58) Schroeder and Mitchner, 1970
(59) Nitchke, et.al., 1983
(60) Ondreicka, et.al., 1966
(61) USFWS, 1964
(62) Thomas, 1980
(63) White and Finely, 1978
(64) Smith, et.al., 1953
(65) Pattee, 1984
(66) Laskey, et.al., 1982
(67) Heinz, et.al., 1987
(68) White and Dieter, 1978
(69) Schlicker and Cox, 1968
(70) Stickel, e.al., 1983
(71) Nebeker, 1992
(72) Abiola, 1992
(73) Spann, et.al., 1986
(74) Dow, 1958
(75) Villeneuve, et.al., 1971
(76) Dahlgren, et.al., 1971
(77) FAO/WHO, 1978

BODY WEIGHTS FOR TERRESTRIAL REFERENCE VALUE CALCULATION
OPERABLE UNIT NO. 12
SITE 3 - OLD CREOSATE PLANT
REMEDIAL INVESTIGATION, CTO-0274
MCB, CAMP LEJEUNE, NORTH CAROLINA

Body Weight (kg)		
Cattle	100	(IT Corp, 1992)
Whitetailed Deer	45.4	(Dee, 1991)
Bobwhite Quail	0.0174	(USEPA, 1993)
Eastern Cottontail	1.2285	(USEPA, 1993)
Lab Rat	0.35	(USEPA, 1988)
Lab Dog	10	(USEPA, 1988)
Poultry	0.5	(IT Corp, 1992)
Red Fox	4.535	(Storm et.al., 1976)
Racoon	5.12	(USEPA, 1993)
Lab Mouse	0.03	(USEPA, 1988)
Guinea pig	0.86	(USEPA, 1988)
Mink	1	(USEPA, 1993)
Mallard Duck	1	(Heinze et.al., 1989)
Short-tailed Shrew	0.017	(Schlesinger and Potter, 1974)
Americal Kestral	0.13	(Pattee, 1984)
Blackbird	0.064	(Stickel, 1983)
Pheasant	1	(USEPA, 1993)
Ringed Dove	0.155	(Terres, 1980)
Screech Owl	0.181	(Dunning, 1984)
Partridge	0.4	(Abiola, 1992)

REGION IV TERRESTRIAL REFERENCE VALUE CALCULATION
OPERABLE UNIT NO. 12
SITE 3 - OLD CREOSATE PLANT
REMEDIAL INVESTIGATION, CTO-0274
MCB, CAMP LEJEUNE, NORTH CAROLINA

Chemical	Whitetailed Deer (mg/kg/day)	Bobwhite Quail (mg/kg/day)	Eastern Cottontail (mg/kg/day)	Red Fox (mg/kg/day)
Aluminum	6.51E+00 (ct)	3.06E+01 (bi)	1.16E+01 (rb)	1.95E+01 (dg)
Antimony	6.91E-03 (rt)	9.52E-02 (rt)	4.06E+00 (rb)	1.49E-02 (rt)
Arsenic	3.25E-01 (ct)	1.98E+01 (bi)	2.90E+00 (rb)	2.37E-02 (mo)
Barium	1.30E-01 (ct)	3.06E+00 (bi)	1.16E+00 (rb)	1.07E-01 (rt)
Beryllium	1.07E-01 (rt)	1.47E+00 (rt)	3.55E-01 (rt)	2.30E-01 (rt)
Cadmium	3.25E-03 (ct)	5.59E+00 (bi)	2.90E-02 (rb)	9.76E-02 (dg)
Chromium	6.51E+00 (ct)	1.53E+02 (bi)	5.80E+01 (rb)	1.03E+00 (rt)
Cobalt	6.51E-02 (ct)	1.53E+00 (bi)	5.80E-01 (rb)	3.75E-01 (rb)
Copper	6.51E-01 (ct)	4.59E+01 (bi)	1.16E+01 (rb)	7.80E+00 (mk)
Iron	6.51E+00 (ct)	1.53E+02 (bi)	2.90E+01 (rb)	1.88E+01 (rb)
Lead	1.95E-01 (ct)	7.52E+00 (bi)	1.74E+00 (rb)	3.41E+00 (rt)
Manganese	1.30E+00 (ct)	3.06E+02 (bi)	2.32E+01 (rb)	3.75E+00 (rt)
Mercury	1.30E-02 (ct)	3.06E-01 (bi)	1.20E-01 (rb)	1.36E-01 (rt)
Nickel	3.25E-01 (ct)	4.59E+01 (bi)	2.90E+00 (rb)	3.25E+01 (dg)
Selenium	1.30E-02 (ct)	1.93E+00 (bi)	1.20E-01 (rb)	1.70E-02 (rt)
Silver	1.58E-02 (mo)	1.53E+01 (bi)	5.25E-02 (mo)	3.40E-02 (mo)
Thallium	4.54E-03 (rt)	6.26E-02 (rt)	1.51E-02 (rt)	9.79E-03 (rt)
Vanadium	3.25E-01 (ct)	4.39E+01 (bi)	5.80E-02 (rb)	2.77E-01 (rt)
Zinc	3.25E+00 (ct)	1.53E+02 (bi)	2.90E+01 (rb)	1.30E+00 (dg)
Cyanide	2.13E+00 (rt)	1.38E+01 (bi)	7.11E+00 (rt)	4.88E-01 (dg)
Acenaphthene	3.46E+00 (rt)	4.76E+01 (rt)	1.15E+01 (rt)	7.45E+00 (rt)
Acenaphthylene	3.46E+00 (rt)	4.76E+01 (rt)	1.15E+01 (rt)	7.45E+00 (rt)
Anthracene	8.71E+00 (mo)	1.20E+02 (mo)	2.90E+01 (mo)	1.88E+01 (mo)
Benzo(a)anthracen	8.71E-02 (mo)	1.20E+00 (mo)	2.90E-01 (mo)	1.88E-01 (mo)
Benzo(b)fluoranthe	8.71E-02 (mo)	1.20E+00 (mo)	2.90E-01 (mo)	1.88E-01 (mo)
Benzo(k)fluoranthe	8.71E-02 (mo)	1.20E+00 (mo)	2.90E-01 (mo)	1.88E-01 (mo)
Benzo(ghi)perylene	8.71E-02 (mo)	1.20E+00 (mo)	2.90E-01 (mo)	1.88E-01 (mo)
Benzo(g,h,i)perylen	8.71E-02 (mo)	1.20E+00 (mo)	2.90E-01 (mo)	1.88E-01 (mo)
Benzo(a)pyrene	8.71E-02 (mo)	1.20E+00 (mo)	2.90E-01 (mo)	1.88E-01 (mo)
beta-BHC	9.88E-01 (rt)	1.36E+01 (rt)	3.29E+00 (rt)	2.13E+00 (rt)
Bis(2-ethylhexyl)ph	4.89E-02 (gp)	2.30E+00 (bi)	1.63E-01 (gp)	1.05E-01 (gp)
Butylbenzylphthalat	3.14E+00 (rt)	4.32E+01 (rt)	1.05E+01 (rt)	6.77E+00 (rt)
Carbazole	8.71E-02 (mo)	1.20E+00 (mo)	2.90E-01 (mo)	1.88E-01 (mo)
Chrysene	8.71E-02 (mo)	1.20E+00 (mo)	2.90E-01 (mo)	1.88E-01 (mo)
Dibenzofuran	8.71E-02 (mo)	1.20E+00 (mo)	2.90E-01 (mo)	1.88E-01 (mo)
Dibenz(a,h)anthrac	8.71E-02 (mo)	1.20E+00 (mo)	2.90E-01 (mo)	1.88E-01 (mo)
Diethylphthalate	3.99E+02 (mo)	5.50E+03 (mo)	1.33E+03 (mo)	8.60E+02 (mo)
Di-n-butylphthalate	2.47E+01 (rt)	2.28E-01 (bi)	8.23E+01 (rt)	5.32E+01 (rt)
Fluoranthene	1.09E+00 (mo)	1.50E+01 (mo)	3.63E+00 (mo)	2.35E+00 (mo)
Fluorene	2.47E+00 (rt)	3.40E+01 (rt)	8.23E+00 (rt)	5.32E+00 (rt)
Indeno(1,2,3-cd)py	8.71E-02 (mo)	1.20E+00 (mo)	2.90E-01 (mo)	1.88E-01 (mo)
2-Methylnaphthale	8.10E+00 (rt)	1.12E+02 (rt)	2.70E+01 (rt)	1.75E+01 (rt)
Naphthalene	8.10E+00 (rt)	1.12E+02 (rt)	2.70E+01 (rt)	1.75E+01 (rt)
Phenanthrene	8.10E+00 (rt)	1.12E+02 (rt)	2.70E+01 (rt)	1.75E+01 (rt)
Phenol	1.19E+00 (rt)	1.63E+01 (rt)	3.95E+00 (rt)	2.55E+00 (rt)
Pyrene	6.53E-01 (mo)	8.99E+00 (mo)	2.18E+00 (mo)	1.41E+00 (mo)

REGION IV TERRESTRIAL REFERENCE VALUE CALCULATION
OPERABLE UNIT NO. 12
SITE 3 - OLD CREOSATE PLANT
REMEDIAL INVESTIGATION, CTO-0274
MCB, CAMP LEJEUNE, NORTH CAROLINA

Chemical	Whitetailed Deer (mg/kg/day)	Bobwhite Quail (mg/kg/day)	Eastern Cottontail (mg/kg/day)	Red Fox (mg/kg/day)
Aldrin	6.51E-01 (ct)	6.80E-02 (rt)	1.65E-02 (rt)	3.25E-02 (dg)
Alpha-chlordane	1.30E+00 (ct)	3.30E+00 (bi)	3.62E-02 (rt)	9.76E-02 (dg)
Gamma-chlordane	1.30E+00 (ct)	3.30E+00 (bi)	3.62E-02 (rt)	9.76E-02 (dg)
Dieldrin	6.51E-01 (ct)	1.16E-01 (bi)	3.29E-03 (rt)	6.51E-03 (dg)
4,4'-DDD	1.58E-01 (rt)	8.80E-02 (bi)	5.26E-01 (rt)	3.41E-01 (rt)
4,4'-DDE	1.58E-01 (rt)	8.80E-02 (bi)	5.26E-01 (rt)	3.41E-01 (rt)
4,4'-DDT	1.58E-01 (rt)	8.80E-02 (bi)	5.26E-01 (rt)	3.41E-01 (rt)
Endosulfan	1.19E-01 (rt)	2.84E+01 (bi)	3.95E-01 (rt)	7.42E-01 (dg)
Endosulfan II	1.19E-01 (rt)	2.84E+01 (bi)	3.95E-01 (rt)	7.42E-01 (dg)
Endosulfan sulfate	1.19E-01 (rt)	2.84E+01 (bi)	3.95E-01 (rt)	7.42E-01 (dg)
Endrin	4.94E-02 (rt)	1.16E+00 (bi)	1.65E-01 (rt)	3.25E-02 (dg)
Endrin aldehyde	4.94E-02 (rt)	1.16E+00 (bi)	1.65E-01 (rt)	3.25E-02 (dg)
Endrin ketone	4.94E-02 (rt)	1.16E+00 (bi)	1.65E-01 (rt)	3.25E-02 (dg)
Heptachlor	2.96E-02 (rt)	4.08E-01 (rt)	9.87E-02 (rt)	6.39E-02 (rt)
Heptachlor epoxide	7.55E-05 (dg)	1.04E-03 (dg)	2.51E-04 (dg)	1.63E-04 (dg)
Aroclor-1221	6.91E-01 (rt)	9.52E+00 (rt)	2.30E+00 (rt)	1.49E+00 (rt)
Aroclor-1232	2.96E-02 (rt)	8.95E-01 (bi)	9.87E-02 (rt)	6.39E-02 (rt)
Aroclor-1260	9.88E-04 (rt)	1.36E-02 (rt)	3.29E-03 (rt)	2.13E-03 (rt)
Aroclor-1254	2.80E-02 (mk)	6.95E-01 (bi)	1.00E+00 (rb)	6.47E-01 (rb)
Aroclor-1248	1.13E-02 (mo)	1.56E-01 (mo)	2.80E-01 (rb)	1.81E-01 (rb)
Methylene chloride	1.16E+00 (rt)	1.59E+01 (rt)	3.85E+00 (rt)	2.49E+00 (rt)
Carbon disulfide	3.30E-01 (rb)	4.55E+00 (rb)	1.10E+00 (rb)	7.12E-01 (rb)
1,1-Dichloroethene	5.53E+00 (rt)	7.61E+01 (rt)	1.84E+01 (rt)	1.19E+01 (rt)
1,2-Dichloroethene	9.88E-01 (rt)	1.36E+01 (rt)	3.29E+00 (rt)	2.13E+00 (rt)
Chloroform	7.51E+00 (rt)	1.03E+02 (rt)	2.50E+01 (rt)	3.90E+01 (dg)
2-Butanone	NA	NA	NA	NA
1,1,1-Trichloroetha	1.98E+02 (rt)	2.72E+03 (rt)	6.58E+02 (rt)	4.26E+02 (rt)
Trichloroethene	1.98E+01 (rt)	2.72E+02 (rt)	6.58E+01 (rt)	4.26E+01 (rt)
1,1,2-Trichloroetha	3.40E-02 (mo)	4.68E-01 (mo)	1.13E-01 (mo)	7.32E-02 (mo)
Benzene	1.98E-02 (rt)	2.72E-01 (rt)	6.58E-02 (rt)	4.26E-02 (rt)
Tetrachloroethene	2.77E-01 (rt)	3.81E+00 (rt)	9.21E-01 (rt)	5.96E-01 (rt)
Toluene	4.41E+00 (rt)	6.06E+01 (rt)	1.47E+01 (rt)	9.49E+00 (rt)
Ethylbenzene	1.92E+00 (rt)	2.64E+01 (rt)	6.39E+00 (rt)	4.13E+00 (rt)
Xylenes	3.54E+01 (rt)	4.87E+02 (rt)	1.18E+02 (rt)	7.62E+01 (rt)
Acetone	1.98E+00 (rt)	2.72E+01 (rt)	6.58E+00 (rt)	4.26E+00 (rt)
2-Hexanone	NA	NA	NA	NA

Note: The following abbreviations indicate which species was used to develope the TRV
(ct) = cattle (rb) = rabbit
(rt) = rat (dg) = dog
(bi) = bird (mo) = mouse
(gp) = guin (mk) = mink

NA - No Data Available

REFERENCES FOR TERRESTRIAL REFERENCE VALUES

Abiola, F.A. 1992. "Ecotoxicity of Organochloride Insecticides: Effects of Endosulfan on Birds Reproduction and Evaluation of its Induction Effects in Partridge, *Perdix perdix*". L. Rev. Vet. Med. 143:443-450.

Agency for Toxic Substances and Disease Registry (ASTDR). 1994. Toxicological Profile for Selenium. Prepared by Clement Associates for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1993. Toxicological Profile for Endosulfan. Prepared by Clement Associates for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1993. Toxicological Profile for Total Xylenes - Draft. Prepared by Clement Associates for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1993. Toxicological Profile for Total Nitrophenols - Draft. Prepared by Clement Associates for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1991. Toxicological Profile for Arsenic - Draft. Prepared by Life Systems, Inc, for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1991. Toxicological Profile for Polychlorinated Biphenyls - Draft. Prepared by Syracuse Research Corporation for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1991. Toxicological Profile for Tetrachloroethylene- Draft. Prepared by Syracuse Research Corporation for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1991. Toxicological Profile for Benzene - Draft. Prepared by Clement Associates for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1991. Toxicological Profile for Beryllium - Draft. Prepared by Syracuse Research Corporation for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1991. Toxicological Profile for Cadmium - Draft. Prepared by Life Systems, Inc, for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1991. Toxicological Profile for Chromium - Draft. Prepared by Syracuse Research Corporation for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1991. Toxicological Profile for N-Nitrosodiphenylamine, Draft. Prepared by Clement Associates for the US Department of Health and Human Services.

REFERENCES FOR TERRESTRIAL REFERENCE VALUES

Agency for Toxic Substances and Disease Registry (ASTDR). 1991. Toxicological Profile for Cyanide - Draft. Prepared by Syracuse Research Corporation for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1991. Toxicological Profile for Chloroform - Draft. Prepared by Clement Associates for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1991. Toxicological Profile for Diethylphthalate - Draft. Prepared by Clement Associates for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1991. Toxicological Profile for Heptachlor/Heptachlor Epoxide - Draft. Prepared by Clement Associates for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1991. Toxicological Profile for Methylene Chloride - Draft. Prepared by Life Systems, Inc, for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1991. Toxicological Profile for Vinyl Chloride - Draft. Prepared by Clement Associates for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1989. Toxicological Profile for Copper - Draft. Prepared by Syracuse Research Corporation for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1989. Toxicological Profile for 1,1-Dichloroethene - Draft. Prepared by Clement Associates for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1989. Toxicological Profile for Endrin/Endrin Aldehyde - Draft. Prepared by Life Systems, Inc, for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1989. Toxicological Profile for Ethylbenzene - Draft. Prepared by Clement Associates for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1989. Toxicological Profile for Naphthalene/2-methynaphthalene - Draft. Prepared by Life Systems, Inc, for the US Department of Health and Human Services.

REFERENCES FOR TERRESTRIAL REFERENCE VALUES

Agency for Toxic Substances and Disease Registry (ASTDR). 1989. Toxicological Profile for Polycyclic Aromatic Hydrocarbons - Draft. Prepared by Clement Associates for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1989. Toxicological Profile for Silver - Draft. Prepared by Clement Associates for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1989. Toxicological Profile for 1,1-Dichloroethane - Draft. Prepared by Clement Associates for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1989. Toxicological Profile for 1,2-Dichloroethane. Prepared by Clement Associates for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1989. Toxicological Profile for 1,1-Dichloroethene. Prepared by Clement Associates for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1989. Toxicological Profile for Trichloroethylene. Prepared by Syracuse Research Corporation for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1988. Toxicological Profile for Mercury - Draft. Prepared by Clement Associates for the US Department of Health and Human Services

Agency for Toxic Substances and Disease Registry (ASTDR). 1988. Toxicological Profile for 1,1,2-Trichloroethane - Draft. Prepared by Clement Associates for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1988. Toxicological Profile for 1,1,1-Trichloroethane - Draft. Prepared by Syracuse Research Corporation for the US Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ASTDR). 1988. Toxicological Profile for Alpha, Beta, and gamma Isomers of Hexachlorocyclohexane - Draft. Prepared by Clement Associates for the US Department of Health and Human Services.

Alumot, E., E. Nachtomi, E. Mandel, et.al., 1976. "Tolerance and Acceptable Daily Intake of Chlorinated Fumigants in the Rat Diet". Food Cosmet. Toxicol. 14:105-110. Cited in ASTDR, 1989 (1,2-Dichloroethane).

Ambrose, A.M., D.S. Larson, J.R. Borzelleca and G.R. Hennigar, Jr. 1976. "Long-Term Toxologic Assessment of Nickel in Rats and Dogs". J. Food Science Technology. 13:181-187. Cited in IRIS, Accessed January 1995 (Nickel).

Aulerich, R.J., G.J. Bursian, and A.C. Napolitano. 1990. "Subacute Toxicity of Dietary Heptachlor to Mink (Mustela vison)". Arch. Environ. Contam. Toxicol 19(6):913-916. Cited in ASTDR, 1991

REFERENCES FOR TERRESTRIAL REFERENCE VALUES

(Heptachlor).

Aulerich, R.J., R.K., Ringer, M.R., Bleavins, et. al. 1982. "Effects of Supplemental Dietary Copper on Growth, Reproductive Performance and Kit Survival of Standard Dark Mink and the Acute Toxicity of Copper to Mink". J. Animal Sci. 55:337-343. Cited in ASDTR, 1989 (Copper).

Aulerich, R.J., and R.K., Ringer. 1980. "Toxicity of the Polychlorinated Biphenyl Aroclor-1016 to Mink". Environmental Research Laboratory, Office of Research and Development. Cited in Opresko, et.al., 1994.

Azar, A., H.J. Trochimowicz and M.E. Maxfield. 1973. "Review of Lead Studies in Animals Carried out at Haskell Laboratory - Two Year Feeding Study and Response to Hemorrhage Study". In Barth D., A. Berlin, R. Engel, P. Recht and J. Smeets, Ed. Environmental Health Aspects of Lead: Proceedings International Symposium; October 1972; Amsterdam, The Netherlands. Commission of the European Communities, Luxemberg. p. 199-208. Cited in IRIS, Accessed January 1995 (Lead).

Barnes, D.W., V.M. Sanders, K.L. White Jr., et.al. 1985. "Toxicology of Trans-1,2-Dichloroethylene in the Mouse". Drug. Chem. Toxicol. 8:373-392. Cited in IRIS Accessed After Jan. 1992 (Trans-1,2-Dichloroethylene).

Bleavins, M.R., C.S. Sisodia, and T.K. Mukkur. 1980. "The Effects of Methyl Mercury, Tetrethyl Lead, and Sodium Arsenite on the Humoral Immune Response in Mice". Toxicol. Appl. Pharmacol. 52:245-254. Cited in Opresko et.al., 1994.

Bornhauses, M. M.R. Nusch, and H. Greim. 1980. "Operant Behavior Performance Changes in Rats After Prenatal Methylmercury Exposure". Toxicol. Appl. Pharmacol. Cited in ASTDR, 1988 (Mercury).

Brown, D., K.R. Butterworth, I.F. Gaunt, P. Grasso, S.D. Gangolli. 1978. "Short-Term Oral Toxicity Study of Diethyl Phthalate in the Rat". Food Cosmet. Toxicol. 16:415-422. Cited in IRIS, Oct, 1992.

Bruckner, J.V., K.L. Khanna, and H.H. Cornish. 1974. Effect of Prolonged Ingestion of Polychlorinated Biphenyls on the Rat. Food Cosmet. Toxicol. 12:323. Cited in ASTDR, 1991 (PCBs).

Bruckner, J.V., W.F. MacKenzie, S. Muralidhara, R. Luthra, G.M. Kyle, and D. Acosta. 1986. "Oral Toxicity of Carbon Tetrachloride: Acute, Subacute, and Subchronic Studies in Rats". Fund. Appl. Toxicol. 6(1):16-34.

Buben, J.A., and E.J. O'Flaherty. 1985. "Delineation of the Role of Metabolism in the Hepatotoxicity of Trichloroethylene and Perchloroethylene: A Dose-Effect Study". Toxicol. Appl. Pharmacol. 78:105-122. Cited in ASTDR, 1991 (Tetrachloroethylene).

Byrne, J.J., J.P. Carbone, and M.G. Pepe. 1988. "Supression of Serum Adrenal Cortex Hormones by Chronic Low-Dose Polychlorobyphenyl of Polybromobiphenyl Treatments". Arch. Environ. Contam. Toxicol. 17:47-53. Cited in ASTDR, 1991 (PCBs).

REFERENCES FOR TERRESTRIAL REFERENCE VALUES

Cardy, R.H., W. Lijinski, and P.K. Hildebrant. 1979. "Neoplastic and Nonneoplastic Urinary Bladder Lesions Induced in Fischer 344 rats and B6C3F Hybrid Mice by N-Nitrosodiphenylamine." Ecotoxocol. Environ. Safety 3:29-37.

Carpenter, C.P., C.S. Weil, and H.F. Smyth, 1953. "Chronic Oral Toxicity of Di(2-ethylhexyl)phthalate for Rats and Guinea Pigs". Arch. Indust. Hyg. Occup. Med. 8:21 9-226. Cited in IRIS, Accessed Oct. 1994 (DEHP).

Chang, L.W., S. Yamaguchi, and J.A.W. Dudley. 1974. "Neurological Changes in Cats Following Long-Term Diet of Mercury Contaminated Tuna". Acta. Neuropathol. (Berlin) 27:171-176. Cited in ASTDR, 1988 (Mercury).

Chang, L.W., and H.A. Hartman. 1972. "Ultrastructural Studies of the Nervious System After Mercury Intoxication". Acta. Neuropathol. (Berlin) 20:122-138. Cited in ASTDR, 1988 (Mercury).

CIIT (Chemical Industry Institute of Toxicology). 1984. Ninty-day Inhalation Toxicity Study of Nitrobenzene in F344 Rats and B6C3F1 Mice. Research Triangle Park, NC. FYI-OTS-0874-0333.

Cody, T.E., S. Witherup, L. Hastings, K. Stemmes, and R.T. Christian. 1981. "1,3-Dinitrobenzene: Toxic Effects in Vivo and in Vitro". J. Toxicol. Environ. Health. 7(5): 829-847. Cited in IRIS, March 1995

Cox, G.E., D.E. Bailey, and K. Morgareidge. 1975. "Toxicity Studies in Rats with 2-Butanol Including Growth, Reproduction and Teratologic Observations". Food and Drug Research Laboratories, Inc., Waverly, NY, Report No. 91MR R 1673.

Dahlgren, R.B., R.L. Linder, and C.W. Carlson. 1972. "Polychlorinated Biphenyls: Their Effects on Penned Pheasants". Environ. Health Perspect. 1:89-101. Cited in Opresko et.al., 1994.

Dee, J.C. November, 1991. "Methodology For Assessing Potential Risks To Deer Populations: A Case Study at a Superfund Site". Paper presented at the 1991 Annual Meeting of the Society of Environmental Toxicology and Chemistry. Abstract No. 426.

Dikshith, T.S.S., R.B. Raizada, M.K. Srivastava, and B.S. Kaphalia. 1984. "Response of Rats to Repeated Oral Administration of Endosulfan". Ind. Health. 22:295-304. Cited in ASTDR 1993 (Endosulfan).

Domingo, J.L., J.L. Paternaia, J.M. Llobet, and J. Corbella. 1986. "Effects of Vanadium on Reproduction, Gestation, Parturition and Lactation in Rats upon Oral Administration". Life Sci. 39:819-824. Cited on Opresko et.al., 1994.

Dow Chemical Company. 1958. MRID No. 00061912. Available from USEPA, Write to FOI, USEPA, Washington, DC 20460 (Heptachlor Epoxide)

Drinker, K.P., P.K. Thompson, and M. Marsh. 1927. "An Investigation of the Effects of the Long-

REFERENCES FOR TERRESTRIAL REFERENCE VALUES

Continued Ingestion of Zinc, in the Form of Zinc Oxide, by Cats and Dogs, Together with Observations Upon the Excretion and the Storage of Zinc". Am. J. Physiol. 80:31. Cited in NAS, 1980.

Dunning, J.B., 1984. Body Weights of 686 Species of North American Birds. West. Bird Banding Assoc. Monogr. No. 1. Eldon Publ. Co. Cave Crk, AZ. Cited in Opresko, et.al., 1984.

Duer, R.S., M.S. Bercegeay, and L.M. Mayo. 1988. "Acute Exposures to p-Xylene and Toluene Alter Visual Information Processing". Neurotoxicol Teratol 10:147-153. Cited in ASTDR, 1990 (Total Xylenes).

Eisler, R. 1990. Chlordane Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review. U.S. Department of the Interior, Fish and Wildlife Service. Biological Report 85(1.21), July 1990.

Eisler, R. 1990. Cyanide Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review. U.S. Department of the Interior, Fish and Wildlife Service. Biological Report 85(1.23), July 1991.

FAO/WHO (Food Agriculture Organization/World Health Organization). 1978. "Evaluation of Some Pesticides in Food." Food and Agric, Organ. Plant Production and Protection Paper. Suppl. 10, Rome. Cited in Newell et.al., 1987.

Fitzhugh, O.G., A.A. Nelson, and E.P. Laug et.al. 1950 "Chronic Oral Toxicies of Mercuri-Phenyl and Mercuric Salts". Arch. Ind. Hyg. Med. 2:433-442. Cited in ASTDR, 1989 (Mercury).

Fitzhugh, O.G., 1948. "Use of DDT Insecticides on Food Products". Ind. Eng. Chem. 40:704-705.

Formigli, L., R. Scelsi, P. Poggi, C. Gregotti, A. DiNucci, E. Sabbioni, L. Gottardi, and L. Manzo. 1986. "Thallium-Induced Testicular Toxicity in the Rat". Environ. Res. 40:531-539.

Ford, K.L., F.M. Applehans, and R. Ober. 1991. "Development of Toxicity Reference Values for Terrestrial Wildlife". In HMC-Northeast '91 Conference Proceedings, Sponserec by the Hazardous Materials Control Research Institute. July 10-12, 1991.

Fucik, K.W., H.W. Armstrong, and J.M. Neff. 1977. "The Uptake of Napthalenes by the Clam Rangia cuneata, in the Vicinity of an Oil-Separator Platform in Trinity Bay, Texas". Proc. 1977 Oil Spill Conference. Washington DC: American Petroleum Institute. Cited in USEPA, 1981.

Gasaway, W.C., and I.O. Buss. 1972. "Zinc Toxicity in the Mallard". J. Widl. Manage. 36: 1107-1117.

Gerhart, J.M. 1986. "Ninety-day Oral Toxicity Study of Copoper Cyanide (CuCN) in Sprague-Dawley Rats". Prepared for the Dynamac Coporation, Rockville, MD by IIT Research Institute, Chicago, IL. IITRI Project No. LO6183, Study No. 3. Cited in ASTDR, 1991 (Cyanide).

Gomez, G., M.A. Aparicio, and C.C. Willhite. 1988. "Relationship Between Dietary Cassave Cyanide Levels and Broiler Performance". Nutr. Rep. Int. 37:63-75. Cited in Eisler, 1991 (Cyanide).

Gomez, G., M. Valdivieso, J. Santos, and C. Hoyos. 1983. "Evaluation of Cassava Root Meal Prepared

from Low- or High-Cyanide Containing Cultivars in Pig and Broiler Diets." Nutr. Rep. Int. 28:693-704. Cited in Eisler, 1991 (Cyanide).

Good, E.E., and G.W. Ware. 1969. "Effects of Insecticides on Reproduction in the Laboratory Mouse, IV. Endrin and Dieldrin". Toxicol. Appl. Pharmacol. 14:201-203.

Gross, W.G., and V.G. Heller. 1946. "Chromates in Animal Nutrition". J. Ind. Hyg. Toxicol. 28:52-56. Cited in IRIS, Accessed January 1995 (Chromium).

Halverson, A.W., I.S. Palmer and P.L. Guss. 1966. "Toxicity of Selenium to Post-Weanling Rats." Toxicol. Appl. Pharmacol". 9:477-484. Cited in IRIS, Accessed January 1995 (Selenium).

Hardin B.D., G.P. Bond, M.R. Sikor, F.D. Andrew, R.P. Beliles, and R.W. Niemeir. 1981. "Testing of Selected Worlplace Chemicals for Teratogenic Potential". Scand J. Work Environ. Health. 7(Suppl 4):66-75. Cited in HEAST, March 1994.

Harr, J.R., J.F. Bone, Tinsley, I.J., et. al. 1967. "Selenium Toxicity in Rats. II. Histopathology". In; Muth OH, Oldfield J.E., P.H., Weswig, ed. Selenium Biomed Proc 1st Int. Symp. Oregon State Univ. 1966. Vol. II, Westport, Conn: AVI Publishing Co. 153-178. Cited in ASTDR, 1989 (Selenium).

Hazelton Labs. 1988. Subchronic Toxicity Study in Rats with m-Xylene. Report by Hazelton Laboratories America, Inc., Rockville MD for Dyanamic Corporation, Rockville, MD. Unpublished. Cited in ASTDR, 1993 (Total Xylenes).

Health Effects Assessment Summary Tables (HEAST). 1994. USEPA, Office of Solid Waste and Emergency Response. EPA 540/R-94/020.

Heath, R., J. Spann, and J. Kreitzer. 1969. "Marked DDE Impairment of Mallard Reproduction in Controlled Studies". Nature 224:47-48. Cited in Newell, 1987.

Heinz, G.H.., D.J. Hoffman, and L.G. Gold. 1989. "Impaired Reproduction of Mallards Fed and Organic Form of Selenium". J. Wildl. Mgmt. 53: 418-428. Cited in Opresko, et.al., 1994.

Heinz, G.H., D.J. Hoffman, A.J. Krynitsky, and D.M.G. Weller. 1987. "Reproduction in Mallards Fed Selenium". Environ. Toxicol. Chem. 6:423-433.

Heywood, R., R.J. Sortwell, PRB Noel, et. al. 1979. "Safety Evaluation of Toothpaste Containing Chloroform, III. Long-term Study on Beagle Dogs". J. Environ Pathol Toxicol 2:835-851. Cited in ASTDR, 1991 (Chloroform).

Hoechst. 1989. "Endosulfan-Beta - Substance Technical (code HOE 02671 0O ZD96 0002): Testing for Toxicity by Repeated Oral Administration (1-year feeding study) to Beagle Dogs". Conducted by Hoechst Aktiengesellschaft, Frankfurt, Germany. Project No. 87.0643. Cited in ASTDR, 1993 (Endosulfan).

Howard, J.W., and R.F. Hanzal. 1955. "Chronic Toxicity for Rats of Food Treated with Hydrogen Cyanide". J. Agric. Food. Chem. 3:325-329.

Huff, J.E., J.K. Haseman, and D.M. DeMarini, et.al. 1989. "Multiple-Site Carcinogenicity of Benzene in

REFERENCES FOR TERRESTRIAL REFERENCE VALUES

Fischer 344 Rats and B6C3F1 Mice". Environ. Health. Perspect. 82:125-163. Cited in ASTDR, 1991 (Benzene).

Hulzebos, E.M., D.M.M. Adema, E.M. Dirven-van Breemen, L. Henzen, W.A. van Dis, H.A. Herbold, J.A. Hoekstra, R. Baerselman, and C.A.M van Genstel. 1993. "Phytotoxicity Studies with Lactuca sative in Soil and Nutrient Solution". Environmental Toxicology and Chemistry, 12:1079-1094.

IT Corporation. November, 1992. Baseline Risk Assessment, Weldon Springs Ordanance Works, Weldon Spring, Missouri. Prepared for the Department of Army Corps of Engineers, Kansas City District.

Ito N., H. Nagasaki, H. Aoe, et.al. 1975. "Development of Heptocellular Carcinomas in Rats Treated with Benzene Hexachloride". JNCI 54:801-805. Cited in ASTDR, 1988 (BHC).

Izushi F., and M. Ogata. 1990. "Hepatic and Muscle Injuries in Mice Treated with Heptachlor". Toxicol. Lett. 54:47-54.

Jeter, M.A., and G.K. Davis. 1954. "The Effects of Dietary Molybdenum Upon Growth, Hemoglibin, Reproduction, and Lactation in Rats." J. Nutr. 54:215-220. Cited in IRIS, August 1995

Jorgenson, T.A., E.F. Meierhenry, and C.J. Rushbrook, et.al. 1985. "Carcinogenicity of Chloroform in Drinking Water to Male Osborne-Mendel Rats and Female B6C3F$_1$ Mice". Fundam. Appl. Toxicol 5:760-769. Cited in ASTDR 1991 (Chloroform).

Kopp S.J., T. Glonek, H.M. Perry Jr. et.al., 1982. "Cardiovascular Actions of Cadmium at Environmental Exposure Levels." Science 217:837-839. Cited in ASTDR, 1991 (Cadmium).

Lamb, J.C., IV, R.E. Chapin, J. Teague, A.D. Lawton, and J.R. Reel. 1987. "Reproductive Effects of Four Phthalic Acid Esters in the Mouse". Toxicol. Appl. Pharmacol. 88:255-269.

Lane, R.W., B.L. Riddle, and J.F. Borzelleca. 1982. "Effects of 1,2-Dichloroethane and 1,1,1-Trichloroethane in Drinking Water on Reproduction and Development in Mice". Toxicol. Appl. Pharmacol. 63:409-421.

Lang, E.P., A.A. Nelson, O.G. Fitzhugh, and F.M. Kunze. 1950. "Liver Cell Alteration and DDT Storage in the Fat of the Rat Induced by Dietary Levels of 1-50 ppm DDT". J. Pharmacol. Exp. Thearp. 98:268-273. Cited in IRIS, Oct. 1994.

Laskey, J.W., G.L. Rehnberg, J.F. Hein, and S.D. Carter. 1982. "Effects of Chronic Manganese (MN_3O_4) Exposure on Selected Reproductive Parameters in Rats.: J. Toxicol. Environ. Health. 9:677-687. Cited in Opresko et.al., 1994.

Lee, C.C. et.al., 1976. Mammalian Toxicity of Munition Compounds, Phase II. Effects of Multiple Doses. Part III: 2,6-Dinitrotoluene." U.S. Army Medical Research and Development Command, Fort Detric, MD. Cited in HEAST, March 1994

Linder, R.E., T.B. Gaines, and R.D. Kimbrough. 1974. "The Effect of Polychlorinated Biphenyls on Rat

Reproduction". Food Cosmet. Toxicol. 12:63-77. Cited in ASTDR, 1991 (PCBs).

Loser E and D. Lorke. 1977. "Semichronic Oral Toxicity of Cadmium. I. Studies on Rats". Toxicology 7:215-224. Cited in ASTDR, 1992 (Cadmium).

MacKenzie, R.D., R.U. Byerrum, C.F. Decker, C.A. Hoppert and R.F. Langham. 1958. "Chronic Toxicity Studies. II. Hexavalent and Trivalent Chromium Administered in Drinking Water to Rats". Am. Med. Assoc. Arch. Ind. Health. 18:232-234. Cited in Chromium IRIS, Accessed January 1995.

MacKenzie, K.M., and D.M. Angevine. 1981. "Infertility in Mice Exposed in Utero to Benzo(a)pyrene. Biol". Reprod. 24:183-191. Cited in ASTDR, 1989 (PAHs).

McCauley, P.T., M. Robinson, L.W. Condie, et.al. Undated. "The Effects of Subacute and Subchronic Oral Exposure To Cis-1,2-Dichloroethylene in Rats. Health Effects Research Laboratory, USEPA, Cincinnati, Ohio. Cited in HEAST, March 1994.

McLane, M.A.R., and D.L. Hughes. 1980. "Reproductive Success of Screech Owls Fed Aroclor-1248". Arch Environ. Contam. Toxicol. 9:661-665. Cited in Opresko et.al., 1994.

Massie H.R., and V.R. Aiello. 1984. "Excessive Intake of Copper: Influence on Longevity and Cadmium Accumulation in Mice". Mech. Ageing. Dev. 26:195-203. Cited in ASTDR, 1989 (Copper).

National Academy of Sciences (NAS). 1980. Mineral Tolerance of Domestic Animals. National Research Council, Commission on Natural Resources, Committee on Animan Nutrition.

National Coffee Association (NCA). 1982. "24-Month Chronic Toxicity and Oncogenecity Study of Methylene Chloride in Rats". Final report. Prepared by Hazelton Labs. America, Inc., Vienna, VA (Unpublished), Cited in IRIS, Oct. 1994.

National Research Council of Canada (NRCC). 1975. Chlordane: its Effects on Canadian Ecosystems and its Chemistry. Nat. Res. Counc. Can. Publ. NRCC 14094. Cited in Eisler, 1990 (Chlordane).

Nawrot, P.S. and R.E. Staples. 1979. "Embryofetal Toxicity and Teratogenecity of Benzene and Toluene in the Mouse". Teratology, 19:41A

NCI. 1979. Bioassay of N-Nitrosodiphenylamine for Possible Carcinogenicity. Betheseda, MD: US Dept. of Health, Education, and Welfare, Public Health Service, National Institute of Health, National Cancer Institute. Division of Cancer Cause and Prevention. DHEW Publ (NIH) 79-1720. Cited in ASTDR, 1991 (N-Nitrosodiphenylamine).

NCI. 1978a. Bioassay of Technical-Grade Endrin for Possible Carcinogenicity. Betheseda, MD: National Cancer Institute. Division of Cancer Cause and Prevention. NCI-CG-TR 12. Cited in ASTDR, 1990 (Endrin).

NCI. 1978b. Bioassay of 1,1,2,2-Tetrachloroethane for Possible Carcinogenicity. Betheseda, MD: National Cancer Institute. Division of Cancer Cause and Prevention. NTIS PB277, 4537GA, DHEW/PUB/NIH-78-827. Cited in ASTDR, 1994 (Endrin).

REFERENCES FOR TERRESTRIAL REFERENCE VALUES

NCI. 1977. Bioassay of Heptachlor of Possible Carcinogenicity. CAS No. 76-44-8. Technical Report Series 9. Betheseda, MD: U.S. Department of Health, Education, and Welfare, National Institute of Health, National Cancer Institute. DHEW Publication (NIH) 77-809. Cited in ASTDR, 1991 (Heptachlor).

Nebeker, A.V., W.L. Griffis, T.W. Stutzman, G.S. Schuytema, L.A. Carey, and S.M. Scherer. 1992. "Effects of Aqueous and Dietary Exposure of Dieldrin on Survival, Growth and Bioconcentration in Mallard Ducklings". USEPA, Corvallis Environmental Research Laboratory. Environ. Chem. and Toxicol. 11:987-699.

Newell, A.J., D.W. Johnson, and L.A. Allen. 1987. Niagara River Biota Contamination Project: Fish Flesh Criteria for Piscivorous Wildlife. Division of Fish and Wildlife, Burear of Environmental Protection, NY Department of Environmental Conservation. Technical Report 87-3.

NTP. 1989. Toxicology and Carcinogenesis Studies of Toluene in F344/N Rats and B6C3F1 Mice. Technical Report Series No. 371. Research Triangle Park, NC. Cited in IRIS Accessed Oct. 1994. (Toluene).

NTP. 1988. Developmental Toxicity Evaluation of 1,1,1-Trichloroethane (CAS No. 71-55-6) Administered to CD Rats. Final report Part 1. National Toxicology Program, Research Triangle Park, NC. Cited in ASTDR, 1988 (1,1,1-Trichloroethane).

NTP. 1986a. NTP Technical Report on the Toxicological and Carcinogenesis of Xylenes (mixed) (60.2% m-Xylene, 13.6% p-Xylene, 17.0% Ethylbenzene, and 9.1% o-Xylene) in F344/N Rats and B6C3F1 Mice (Gavage Studies). US Department of Health and Human Services, National Institutes of Health, National Toxicology Program, Research Triangle Park, NC., NTP TR 327, NIH Publ. No 86-2583. Cited in IRIS Accessed Oct. 1994.

NTP. 1986b. NTP Technical Report Series No. 289. Toxicology and Carcinogenesis Studies of Benzene in F344/N Rats and B6C3F1 Mice (Gavage Studies). US Department of Health and Human Services, National Institutes of Health, National Toxicology Program, Research Triangle Park, NC., NIH Publ. No 86-2545. Cited in ASTDR, 1991 (Benzene).

NTP. 1985a. Trichloroethylene Reproduction and Fertility Assessment in CD-1 Mice when Administered in the Feed. National Toxicology Program, Department of Health and Human Services, National Institutes of Health, Bethesada, MD. Cited in ASTDR, 1989 (Trichloroethylene).

NTP. 1985b. Twenty-Six Week Subchronic Study and Modified Mating Trial in F344 Rats. Butyl Benzyl Phthalate. Final Report. Project No. 12307-02, -03. Hazelton Laboratories America, Inc. Unpublished Study. Cited in IRIS, Oct. 1992.

NTP. 1983a. Teratologic Evaluation of Phenol in CD Rats. Report Prepared by Research Triangle Institute, Research Triangle Park, NC. NTIS PB83-247726. Govt. Rep. Announce Index. 83(25):6247. Cited in HEAST, March 1994.

NTP. 1983b. Carcinogenic Studies of 1,1,1,2-Tetrachloroethane in F344/N Rats and B6C3F1 Mice.

REFERENCES FOR TERRESTRIAL REFERENCE VALUES

National Toxicology Program, Cited in HEAST, March 1994.

O'Dell, G.O., W.J. Miller, S.L. Moore, W.A. King, J.C. Ellers, and H. Jurecek. 1971. "Effect of Dietary Nickel Level on Excretion and Nickel Content of Tissues in Male Calves." Journal of Animal Science, 32:769-733. Cited in IT, 1992.

Ondreicka, R.E., E. Ginter, and J. Kortus. 1966. Chronic Toxicity of Aluminum in rats and Mice and its Effects on Phosphorus Metabolism." Brit. J. Indust. Med. 23:305-313. Cited in Opresko et.al., 1994.

Opresko, D.M., B.E. Sample, and G.W. Suter II. 1994. Toxicological Benchmarks for Wildlife, 1994 Revisions. Prepared for the US Department of Energy, Office of Environmental Restoration and Waste Management. September, 1994. ES/ER/TM-86/R1.

Pattee, O.H., 1984. "Eggshell Thickness and Reproduction in American Kestrals Exposed to Chronic Dietary Lead". Arch. Environ. Contam. Toxicol. 13:29-34.

Peakall, D.B., 1974. "Effects of di-N-butylphthalate and di-2-ethylhexylphthalate on the Eggs of Ring Doves". Bull. Environ. Contam. Toxicol. 12:698-702.

Piekacz, H. 1971. Effect of Dioctyl and Dibutyl Phthalates on the Organism of Rats after Oral Administration in Prolonged Experiment. II. Subacute and Chronic Toxicity. Rocz Panstw Zakl HIG 22(3):295-307. Cited in HEAST, November 1994.

Quast J.F., C.G. Humiston, C.E. Wade, et.al. 1983. "A Chronic Toxicity and Oncogenecity Study in Rats and Subchronic Toxicity Study in Dogs on Ingested Vinylidene Chloride". Fundam Appl. Toxicol 3(1):55-62. Cited in ASTDR, 1989 (1,1-Dichloroethene).

Ringer, R. 1983. "Toxicology of PCBs in Mink and Ferrets". In. F. D'Itri and M Kamrin (eds.), PCBs: Human and Environmental Hazards. Butterworth Pul., Woburn, MA. pp. 227-240. Cited in Newell et. al. 1987.

Roesijadi, G., J.W. Anderson, and J.W. Blaylock. "Uptake of Hydrocarbons from Marine Sediments Contaminated with Prudhoe Bay Crude Oil: Influence of Feeding Type of Test Species and Availability of Polycyclic Aromatic Hydrocarbons." J. Fish. Res. Board. Can. 35:608-614. Cited in USEPA, 1981.

Rogers, A.E. 1979. Nutrition. In:The Laboratory Rat, Volume I: Biology and Diseases, H.J. Baker, J.R. Lindsey and S.H. Weisbroth, Ed. Academic Press, New York. Cited in Manganese IRIS, Accessed January 1995.

Rosenfeld, I., and O.A. Beath. 1964. Selenium: Geobotany, Biochemistry, Toxicity and Nutrition. Academic Press, New York. p. 198-208.

Rungby, J., and G. Danscher. 1984. "Hypoactivity in Silver Exposed Mice." Acta. Pharmacol. et Toxicol. 55:398-401. Cited in ASTDR, 1989 (Silver).

Sanders, V.M., K.L. White Jr, G.M. Shopp Jr., and A.E. Munson. 1985. "Humoral and Cell-Mediated Immune Status of Mice Exposed to 1,1,2-Trichloroethane". Drug Chem Toxicol 8:357-372. Cited in IRIS Accessed Oct, 1988 (1,1,2-Trichloroethane).

REFERENCES FOR TERRESTRIAL REFERENCE VALUES

Schlicker, S.A. and D.H. Cox. 1968. "Maternal Dietary Zinc, and Development and Zinc, Iron, and Copper Contant of the Rat Fetus". J. Nutr. 95:287-294. Cited in Opresko et.al., 1994.

Schlesinger, W.H., and G.L. Potter. 1974. "Lead, Copper, and cadmium Concentrations in Small Mammals in the Hubbard Brook Experimental Forest". OKIOS. 25:148-152. Cited in Opresko et.al., 1994.

Schmal, D. 1955. "The Testing of Naphthalene and Anthracene for Carcinogenic Effects on Rats". Z. Krebsforsch 60:697-710. Cited in ASTDR, 1989 (Naphthalene)

Schroder, H.A. M. Mitchener, and A.P. Nasur. 1976. "Zirconium, Niobium, Antimony, Vanadium, and Lead in Rats". J. Nutr. 100:59-66. Cited in IRIS, Accessed Oct. 1994 (Antimony).

Schroder, H.A. and M. Mitchener. 1975a. "Life-term Effects of Mercury, Methyl Mercury and Nine Other Trace Metals on Mice." J. Nutr. 105:452-458. Cited in IRIS, Accessed January 1995 (Barium).

Schroder, H.A. and M. Mitchener. 1975b. "Life-term Studies in Rats: Effects of Aluminum, Barium, Beryllium and Tungsten." J. Nutr. 105:421-427. Cited in IRIS, Accessed January 1995 (Barium).

Schroder, H.A. and M. Mitchener. 1971. "Toxic Effects of Trace Elements on the Reproduction of Mice and Rats". Arch. Environ. Health 23:102-106. Cited in ASTDR, 1991 (Arsenic).

Schroder, H.A., M. Mitchener, and A.P. Nason. 1970. "Zirconium, Niobium, Antimony, and Lead in Rats: Life-Term Studies." J. Nutr. 100:59-69. Cited in HEAST, March 1994.

Smith, C.C. 1953. "Toxicity of Butyl Sterate, Bibutyl Sebacate, Dubutyl Phthalate, and Methoxyethyl Oleate". Arch. Hyg. Occup. Med. 7:310-318.

Smyth, H. Jr, C.P. Carpenter, C.S. Weil, et.al. 1962. "Range Finding Toxicity Data: List VI". Am. Indust. Hyg. Assoc. J. 23:95-107. Cited in ASTDR, 1989 (Ethylbenzene).

Spann, J.W., G.H. Heinz, and C.S. Hulse. 1986. "Reproduction and Health in Mallards Fed Endrin". Environ. Toxicol. Chem. 5:755-759.

Stickel, L.F., W.H. Stickel, R.A. Dryland, and D.L. Hughes. 1983. "Oxychlordane, HCS-3260, and Nonachlor in Birds: Lethal Residues and Loss Rates". J. Toxicol. Environ. Health. 12:611-622.

Storm, G.L., R.D. Andrews, R.L. Phillips, R.A. Bishop, D.B. Siniff, and J.R. Tester. 1976. "Morphology, Reproduction, Dispersal, and Mortality of Midwestern Red Fox Populations". Wildl. Monogr. Cited in Opresko et.al., 1994.

Street J.C., and R.P. Sharma. 1975. "Alteration of Induced Cellular and Humoral Immune responses by Pesticides and Chemicals of Environmental Concern: Quantitative Studies of Immunosuppression by DDT, Aroclor 1254, Carbaryl, Carbofuran, and Methylparathion". Toxicol. Appl. Pharmacol. 32:587-602. Cited in ASTDR, 1991 (PCBs).

Tainter, M.L., and W.E. Borley. 1938. "Influence of Vitamins and Dinitrophenol on the Production of Experimental Cataract". Arch. Ophthalmol 20:30-36. Cited in ASTDR, 1993 (Nitrophenols).

REFERENCES FOR TERRESTRIAL REFERENCE VALUES

Tainter, M.L., and D.A. Wood. 1934. "A Case of Fatal Dinitrophenol Poisoning". JAMA 102:1147. Cited in ASTDR, 1993 (Nitrophenols).

Tewe, O.O., and E. Pessu. 1982. "Performance and Nutrient Utilization in Growing Pigs Fed Cassava Peel Rations." Cited in Eisler,

Tewe, O.O., and J.H. Maner. 1981. "Long-Term and Carry-Over Effect of Dietary Inorganic Cyanide (KCN) in the Life Cycle Performance and Metabolism of Rats". Toxicol. Appl. Pharmacol. 58:1-7.

Thomas, P.T., and R.D. Hinsdill. 1980. Perinatal PCB Exposure and ite Effects on the Immune System of Young Rabbits". Drug Chem. Toxicol. 3:173-184. Cited in ASTDR, 1991 (PCBs).

Til, H.P., H.R. Immel, and V.J. Feron. 1983. Lifespan Oral Carcinogenicity Study of Vinyl Chloride in Rats. Final Report. Civo Institutes, TNO, Report No. V-93.285/291099. Cited in ASTDR, 1991 (Vinyl Chloride)

Tinsley, I.J, J.R. Harr, J.F. Bone et.al. 1967. "Selenium Toxicity in Rats. I. Growth and Longetivity". In: Muth OH, Oldfield J.E., P.H., Weswig, ed. Selenium Biomed Proc 1st Int. Symp. Oregon State Univ. 1966. Vol, II, Westport, Conn: AVI Publishing Co. 141-152. Cited in ASTDR, 1994 (Selenium).

Treon, J.F., F.P. Cleveland, and L. Cappel. 1955. "Toxicity of Endrin for Laboratory Animals." Agricultural and Food Chemistry 3:842-848. Cited in ASTDR, 1989 (Endrin)

USDOD. 1985. AD-A171-601. Department of Defense. Available form Defense Technical Center. Write to Documents, Cameron Station, Alexandria, VA, 22314. Cited in IRIS, March, 1995. (HMX)

USDOD. 1983a. AD-A168-637. Department of Defense. Available form Defense Technical Center. Write to Documents, Cameron Station, Alexandria, VA, 22314. Cited in IRIS, March, 1995. (TNT)

USDOD. 1983a. AD-A160-774. Department of Defense. Available form Defense Technical Center. Write to Documents, Cameron Station, Alexandria, VA, 22314. Cited in IRIS, March, 1995. (RDX)

USDOD. 1983b. AD-A157-002. Department of Defense. Available form Defense Technical Center. Write to Documents, Cameron Station, Alexandria, VA, 22314. Cited in IRIS, March, 1995. (TNT)

USEPA, 1993a. Great Lakes Water Quality Initiatives Criteria Documents for the Protection of Wildlife (Proposed). DDT, Mercury, 2,3,7,8-TCDD, PCBs. EPA/822/R-93-007. Office of Science and Technology, Washington, D.C. Cited in Opresko, et.al., 1994.

USEPA, U.S. Environmental Protection Agency. December 1993b. Wildlife Exposure Factors Handbook. Office of Research and Development. Washington, D.C. EPA/600/R-93/187a.

USEPA, 1989a. Mouse Oral Subchronic Study. Conducted by Toxicity Research Labs, LTD. Muskegon, MI. for the Office of Solid Waste. Cited in IRIS, After Jan. 1992.

USEPA, 1989b. Mouse Oral Subchronic Study with Acenaphthene. Conducted by Hazelton Laboratory Inc., for the Office of Solid Waste. Cited in IRIS, Sept. 1993.

REFERENCES FOR TERRESTRIAL REFERENCE VALUES

USEPA, 1989c. Ninty-Day Gavage Study in Albino Mice Using 2,4-Dimethylphenol. Study No. 410-2831. Prepared by Dynamac Corporation, Rockville, MD, for the Office of Solid Waste and Emergency responce, Washington, DC.

USEPA, 1988a. 13-Week Mouse Oral Subchronic Study. Prepared by Toxicity Research Labs, LTD. Muskegon, MI. for the Office of Solid Waste. Cited in IRIS, Jan. 1995.

USEPA, 1988b. Recommendations for and Documentation of Biological Values for Use in Risk Assessment. Environmental Criteria and Assessment Office, Cincinnati, OH. EPA/600/6-87/008. Cited in Opresko, et.al., 1994.

USEPA, 1987. Health and Environmental Effects Document for Chlorinated Cyclopentadienes. Prepared for the Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, Cincinnati, OH, for the Office of Solid Waste. Cited in HEAST, March 1994.

USEPA, 1986a. Ninty-day Gavage Study with Albino Rats using Acetone. Office of Solid Waste. Cited in HEAST, March 1994.

USEPA, 1986b. Subchronic (90 day) Toxicity of Thallium(I) Sulfate in Spragu-Dawley Rats. Final Report. Environmental Criteria and Assessment Office, Cincinnati, OH, for the Office of Solid Waste. Cited in HEAST, March 1994.

USEPA, 1981. An Exposure and Risk Assessment for Benzo(a)pyrene and Other Polycyclic Aromatic Hydrocarbons, Volume IV.

USEPA, 1980. Ambient Water Quality Criteria for Cyanides. USEPA. 440/5-80-037. Cited in Eisler, 1991.

U.S. Fish and Wildlife Service. 1964. Pesticide-Wildlife Studies, 1963: A Review of Fish and Wildlife Service Investigations During the Calander Year. FWS Circular 199.

Velsicol Chemical Company. 1969. MRID No. 00030198. Available from USEPA. Write to FOI, USEPA, Washington, DC, 20460. Cited in IRIS, Oct. 1992 (Endrin).

Velsicol Chemical Company. 1955. MRID No. 00062599. Available from USEPA. Write to FOI, USEPA, Washington, DC, 20460. Cited in IRIS, Oct. 1992 (Heptachlor).

Velsicol Chemical Company. 1983. MRID No. 00138591, 00144313. Available from USEPA. Write to FOI, USEPA, Washington, DC, 20460. Cited in IRIS, Oct. 1994 (Chlordane).

Villeneuve D.C., D.L. grant, and W.E.J. Phillips. 1972. "Modification of Pentobarbital Sleeping Times in Rats Following Chronic PCB Ingestion". Bull. Environ. Contam. Toxicol. 7:264-269. Cited in ASTDR, 1991 (PCBs).

Vreman, K., N.G. van der Veen, E.J. van der Molen, and W.G. de Ruig. 1986. "Transfer of Cadmium, Lead, Mercury and Arsenic form Feed into Milk and Various Tissues of Dairy Cows: Chemical and

REFERENCES FOR TERRESTRIAL REFERENCE VALUES

Pathological Data". Neth. J. Agricu. Sci. 34:129-144. Cited in Eisler, 1991 (Arsenic).

Walker, A.I.T., D.E. Stevenson, J. Robinson, R. Thorpe, and M. Roberts. 1969. "The Toxicology and Pharmacodynamics of Dieldrin (HEOD): Two-Year Oral Exposure to Rabbits and Dogs". Toxicol. Appl. Pharmacol. 15:345-373.

Wasserman, D. M., M. Cucos, et.al. 1973. "Function of Adrenal Gland-Zona Fasciculata in rats Receiving Polychlorinated Biphenyls". Environ Res. 6:334-338. Cited in ASTDR, 1991 (PCBs).

Wentink, G.H., T.J. Spierenburg, G.J. de Graaf, and A.C.A. van Exsel. 1985. A Case of Chronic Zinc Poisoning in Calves Fed with Zinc-Contaminated Rouphage. Veterinary Quarterly 7:153-157. Cited in Eisler, Ronald. 1990. Zinc Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review. U.S. Department of the Interior, Fish and Wildlife Service. Biological Report 85(1.23), July 1991.

Will, M.E., and G.W. Suter. 1994. Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects on Soil and Litter Invertebrates and Heterotrophic Process. Environmental Sciences Division, Oak Ridge National Laboratory. ES/ER/TM-126.

Will, M.E., and G.W. Suter. 1994. Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants. Environmental Sciences Division, Oak Ridge National Laboratory. ES/ER/TM-85/RI.

White, D.H., and M.P. Dieter. 1978. "Effects of Dietary Vanadium in Mallard Ducks". J. Toxicol. Environ. Health 4:43-50. Cited in Opresko et.al., 1994.

White K.L. Jr, and V.M. Sanders, D.W. Barnes, et.al. 1985. "Toxicology of 1,1,2-Trichloroethane in the Mouse". Drug Chem Toxicol 8:333-356. Cited in ASTDR, 1988 (1,1,2-Trichloroethane).

White, D.H., and M.T. Finley. 1978. "Uptake and Retention of Dietary Cadmium in Mallard Ducks". Environ. Res. 17:53-59

Wolf, M.A., V.K. Rowe, D.D. McCollister, et.al., 1956. "Toxicological Studies of Certain Alkylated Benzenes and Benzene." AMA Arch. Ind. Health. Cited in IRIS, Accessed Oct. 1992.

World Health Orginization (WHO). 1984. Chlordane. Environmental Health Criteria 34. World Health Orginization, Geneva, Switzerland. Cited in Eisler, Ronald. 1990.

NOTE: Some of the references in this list are not specifically referenced in the proceeding table. This reference list also includes other toxicity values not used in the development of the terrestrial reference values.