

Final

**Remedial Investigation Report
for Operable Unit No. 2
(Sites 6, 9, and 82)**

**Marine Corps Base, Camp Lejeune,
North Carolina**

Volume 2 of 2 Figures



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**

00720

Reference:
Contract
N62470-89-D-4

CTO-0133

August 1993

Baker

Baker Environmental

FOSTER WHEELER
FOSTER WHEELER ENVIRONMENTAL

WEST
MANAGERS DESIGNERS

Draft

Remedial Investigation Report
for Operable Unit No. 2
(Sites 6, 9, and 82)

Marine Corps Base, Camp Lejeune,
North Carolina

Volume 2 of 2 Figures



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Environmental Action Navy

00720

Reference:
Contract
N62470-89-D-4814

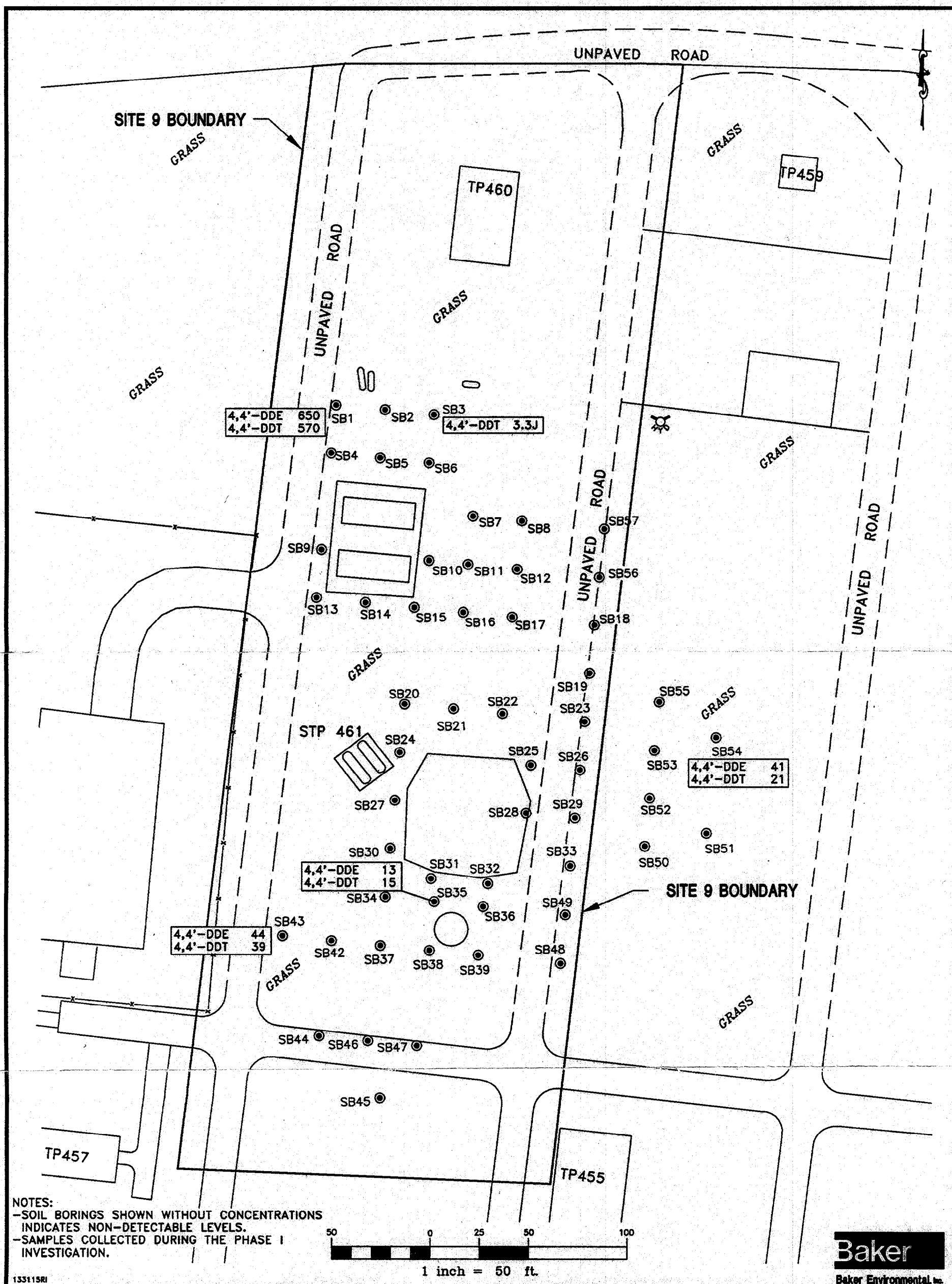
CTO-0133

June 1993

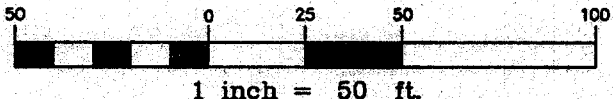


FOSTER WHEELER
FOSTER WHEELER ENVIRESPONSE, INC.





NOTES:
 -SOIL BORINGS SHOWN WITHOUT CONCENTRATIONS INDICATES NON-DETECTABLE LEVELS.
 -SAMPLES COLLECTED DURING THE PHASE I INVESTIGATION.



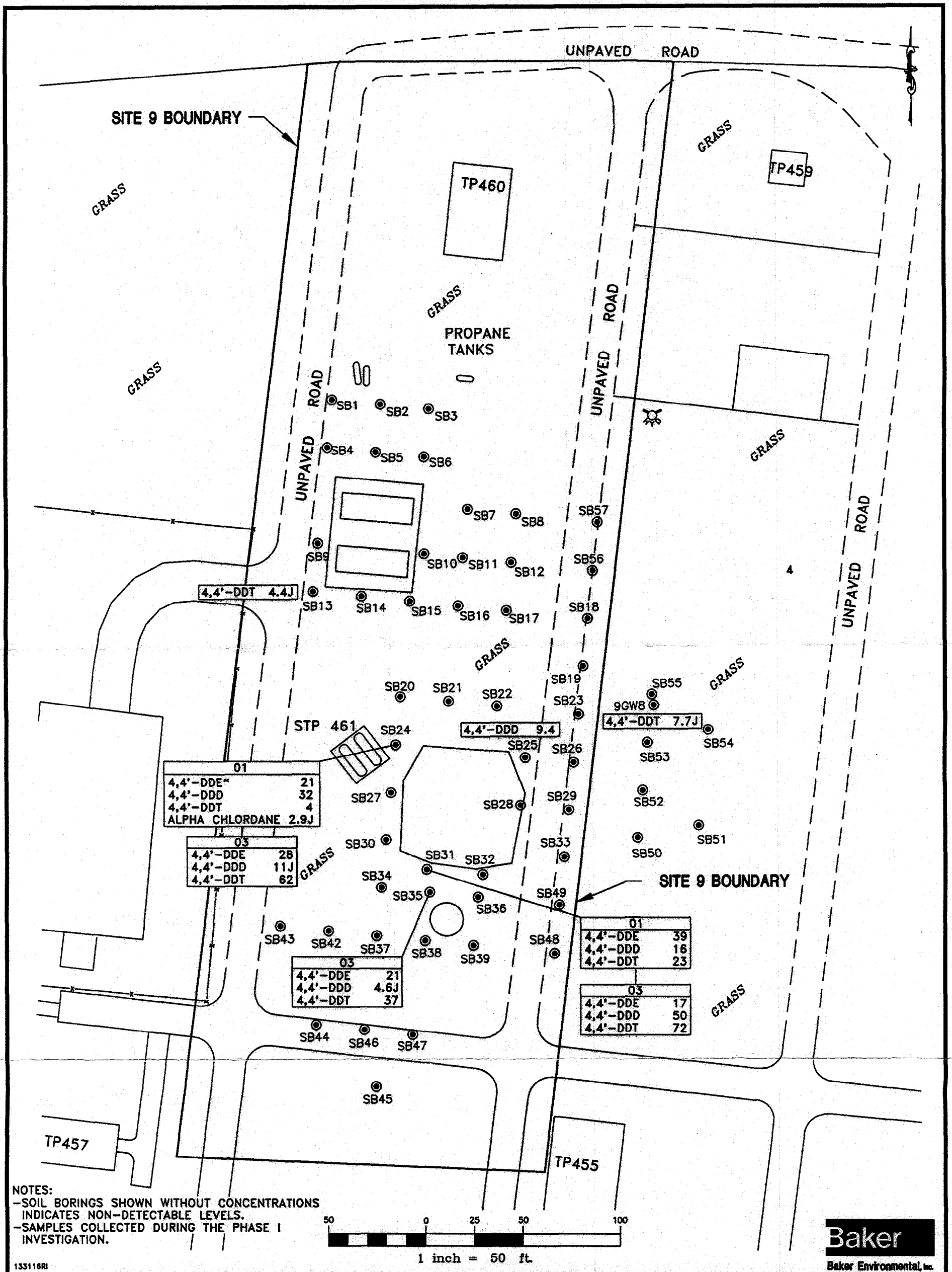
Baker
 Baker Environmental, Inc.

LEGEND	
SB1	SOIL BORING
●	
4,4'-DDT 3.3J	PESTICIDE DETECTED AND CONCENTRATION (ug/kg)

FIGURE 4-1
 POSITIVE DETECTIONS OF PESTICIDES IN
 SURFACE SOILS AT SITE 9
 REMEDIAL INVESTIGATION CTO-0133
 MARINE CORPS BASE CAMP LEJEUNE
 NORTH CAROLINA

SOURCE: LANTDIV, FEBRUARY 1992

00720 EB12



SITE 9 BOUNDARY

UNPAVED ROAD

GRASS

TP460

GRASS

TP459

GRASS

PROPANE TANKS

GRASS

SB1

SB2

SB3

SB4

SB5

SB6

UNPAVED ROAD

SB7

SB8

SB57

GRASS

SB9

SB10

SB11

SB12

SB56

4,4'-DDT 4.4J

SB13

SB14

SB15

SB16

SB17

SB18

GRASS

SB20

SB21

SB22

SB19

9GW8

4,4'-DDT 7.7J

STP 461

SB24

4,4'-DDD 9.4

SB25

SB26

SB53

GRASS

01	4,4'-DDE	21
	4,4'-DDD	32
	4,4'-DDT	4
	ALPHA CHLORDANE	2.9J

SB27

SB28

SB29

SB52

03	4,4'-DDE	28
	4,4'-DDD	11J
	4,4'-DDT	62

SB30

SB31

SB32

SB33

SB50

SB51

SITE 9 BOUNDARY

GRASS

SB34

SB35

SB36

SB37

01	4,4'-DDE	39
	4,4'-DDD	16
	4,4'-DDT	23

SB43

SB42

SB37

SB38

SB39

SB48

SB44

SB46

SB47

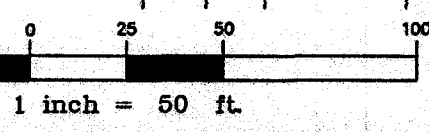
03	4,4'-DDE	17
	4,4'-DDD	50
	4,4'-DDT	72

GRASS

TP457

SB45

TP455



NOTES:
 -SOIL BORINGS SHOWN WITHOUT CONCENTRATIONS INDICATES NON-DETECTABLE LEVELS.
 -SAMPLES COLLECTED DURING THE PHASE I INVESTIGATION.

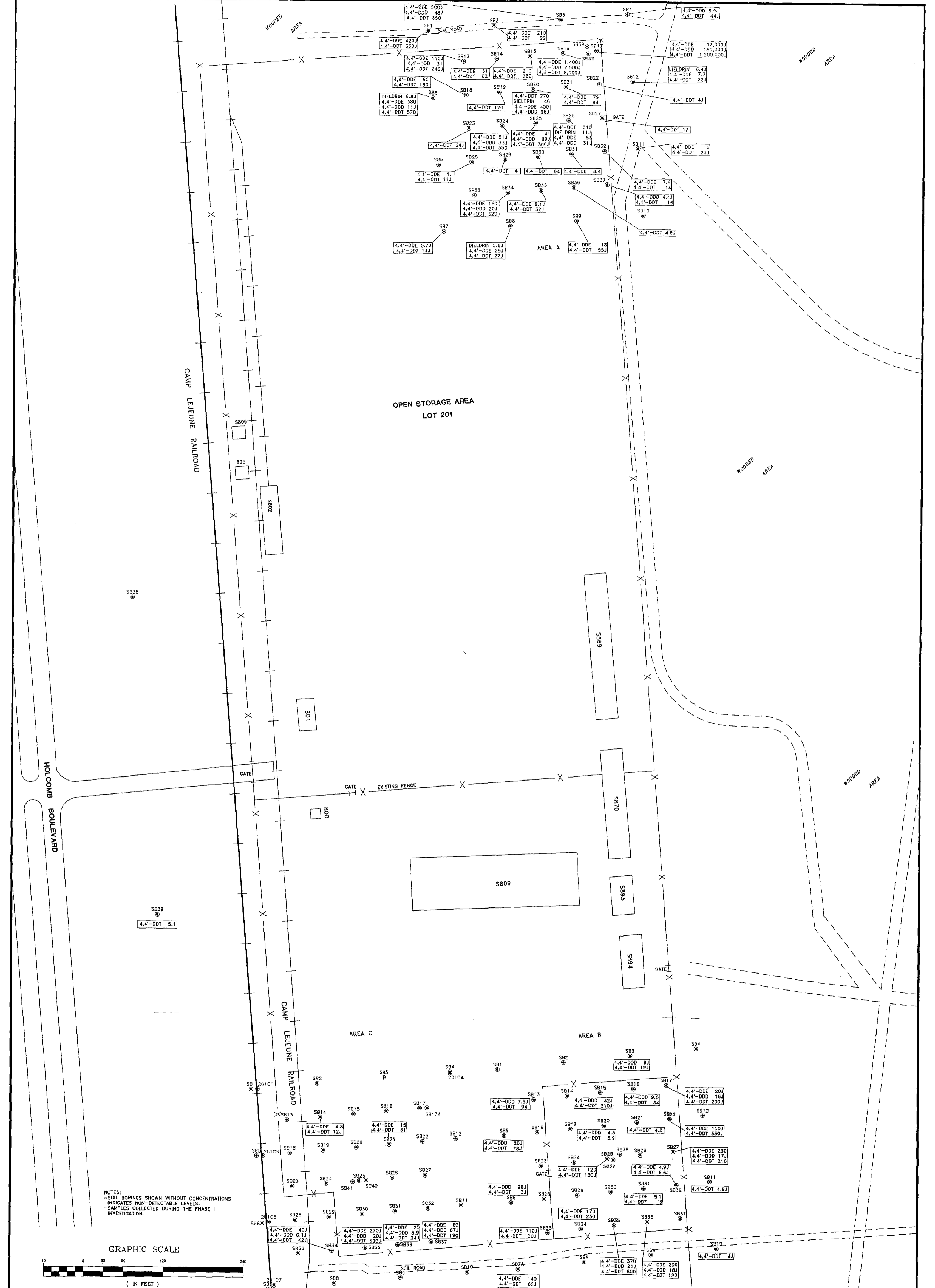
133116R

Baker

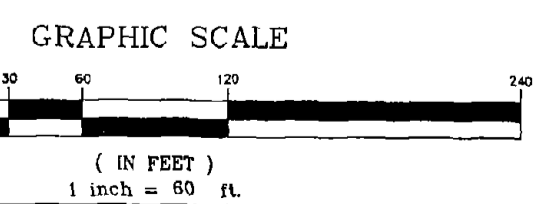
Baker Environmental, Inc.

LEGEND

- SB1 SOIL BORING
- 4,4'-DDT 7.7J PESTICIDE DETECTED AND CONCENTRATION (ug/kg)

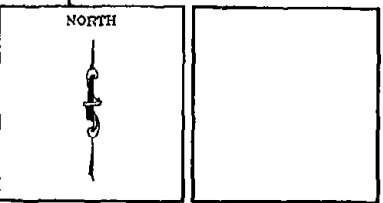


NOTES:
 - SOIL BORINGS SHOWN WITHOUT CONCENTRATIONS INDICATES NON-DETECTABLE LEVELS.
 - SAMPLES COLLECTED DURING THE PHASE I INVESTIGATION.

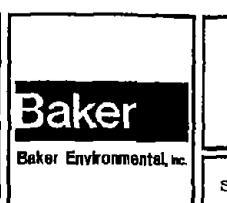


LEGEND
 SB1 - SOIL BORING
 4,4'-DDE 420J - PESTICIDE DETECTED AND CONCENTRATION (ug/kg)

DATE: JUNE 1993
 SCALE: 1" = 60'
 DRAWN: WJH/REL
 REVIEWED: RPW
 S.O.#: 19133-22-SRN
 CADD#: 133100RI



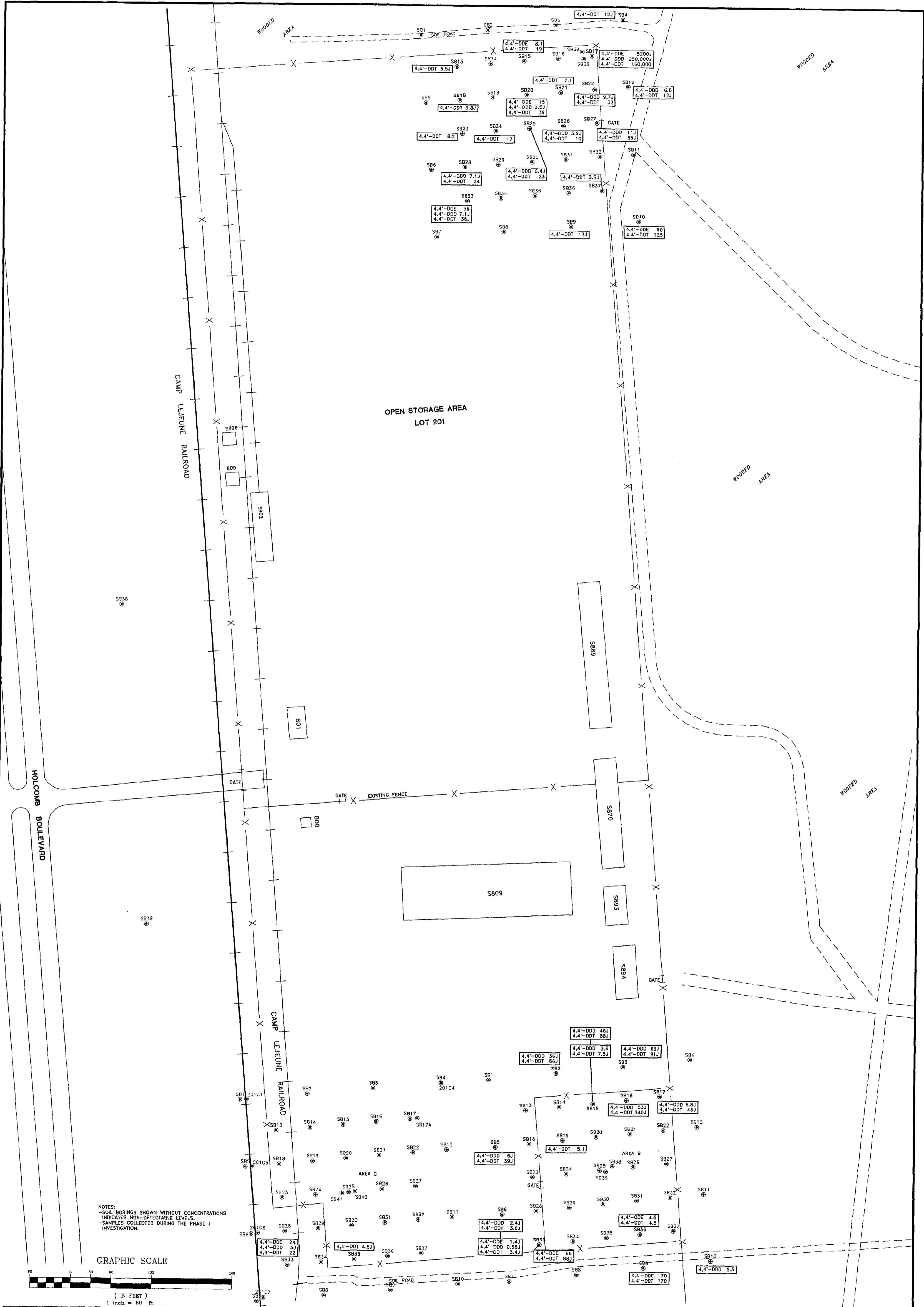
REMEDIAL INVESTIGATION CTO-0133
 MARINE CORPS BASE, CAMP LEJEUNE
 NORTH CAROLINA
 BAKER ENVIRONMENTAL, Inc.
 Coraopolis, Pennsylvania



POSITIVE DETECTIONS OF PESTICIDES
 IN SURFACE SOILS AT LOT 201
 SITE 6
 SCALE: 1" = 60' DATE: JUNE 1993

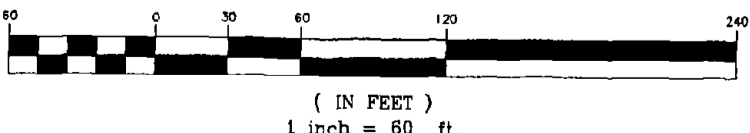
FIGURE No.
 4-3

SOURCE: LANTDIV, FEBRUARY 1992



NOTES:
 -SOIL BORINGS SHOWN WITHOUT CONCENTRATIONS INDICATES NON-DETECTABLE LEVELS.
 -SAMPLES COLLECTED DURING THE PHASE I INVESTIGATION.

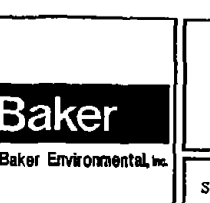
GRAPHIC SCALE



LEGEND
 SB1 - SOIL BORING
 4,4'-DDE 420J - PESTICIDE DETECTED AND CONCENTRATION (ug/kg)

DATE JUNE 1993
 SCALE 1" = 60'
 DRAWN WJH/REL
 REVIEWED RPW
 S.O.# 19133-22-SRN
 CADD# 133101RI

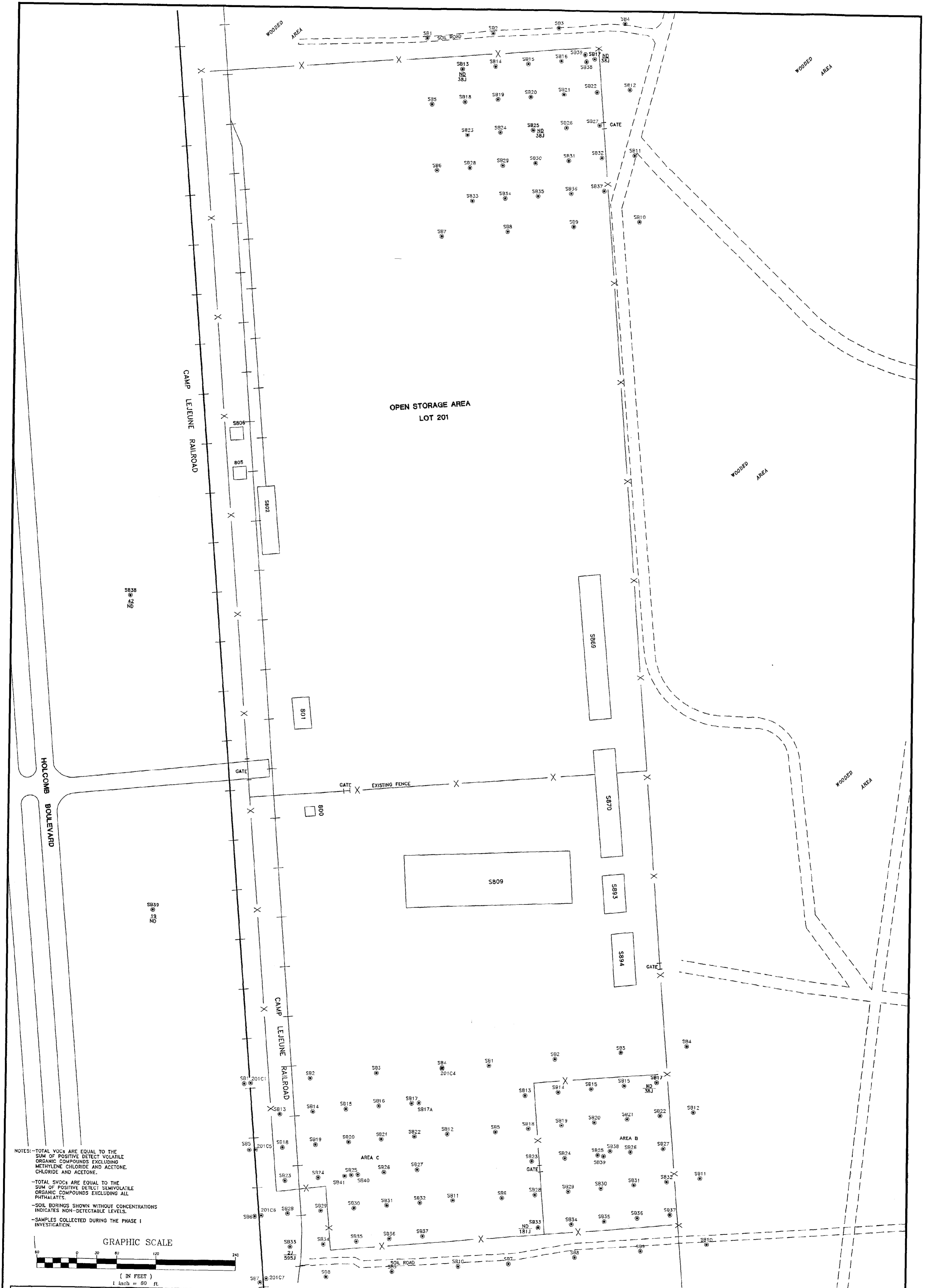
REMEDIAL INVESTIGATION CTO-0133
 MARINE CORPS BASE, CAMP LEJEUNE
 NORTH CAROLINA
 BAKER ENVIRONMENTAL, Inc.
 Coraopolis, Pennsylvania



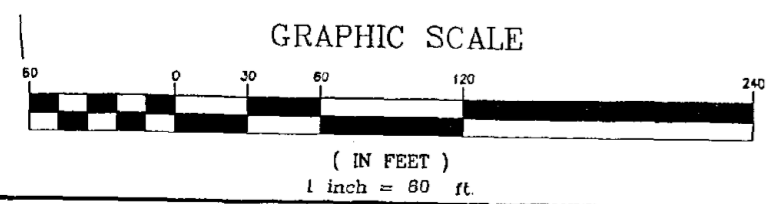
POSITIVE DETECTIONS OF PESTICIDES
 IN SUBSURFACE SOILS AT LOT 201
 SITE 6
 SCALE 1" = 60'
 DATE JUNE 1993

FIGURE No.
 4-4

SOURCE: LANTDIV, FEBRUARY 1992

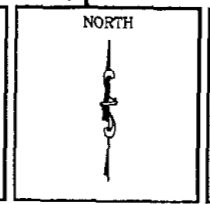


NOTES: -TOTAL VOCs ARE EQUAL TO THE SUM OF POSITIVE DETECT VOLATILE ORGANIC COMPOUNDS EXCLUDING METHYLENE CHLORIDE AND ACETONE, CHLORIDE AND ACETONE.
 -TOTAL SVOCs ARE EQUAL TO THE SUM OF POSITIVE DETECT SEMIVOLATILE ORGANIC COMPOUNDS EXCLUDING ALL PHTHALATES.
 -SOIL BORINGS SHOWN WITHOUT CONCENTRATIONS INDICATES NON-DETECTABLE LEVELS.
 -SAMPLES COLLECTED DURING THE PHASE I INVESTIGATION.

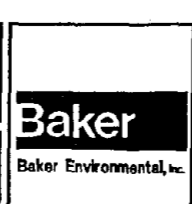


SB33 - SOIL BORING
 24 - TOTAL VOCs IN ug/kg
 SB5J - TOTAL SVOC IN ug/kg
 ND - CONCENTRATION NOT DETECTED

LEGEND
 DATE: JUNE 1993
 SCALE: 1" = 60'
 DRAWN: WJH/REL
 REVIEWED: RPW
 S.O.#: 19133-22-SRH
 CADD#: 133117RI



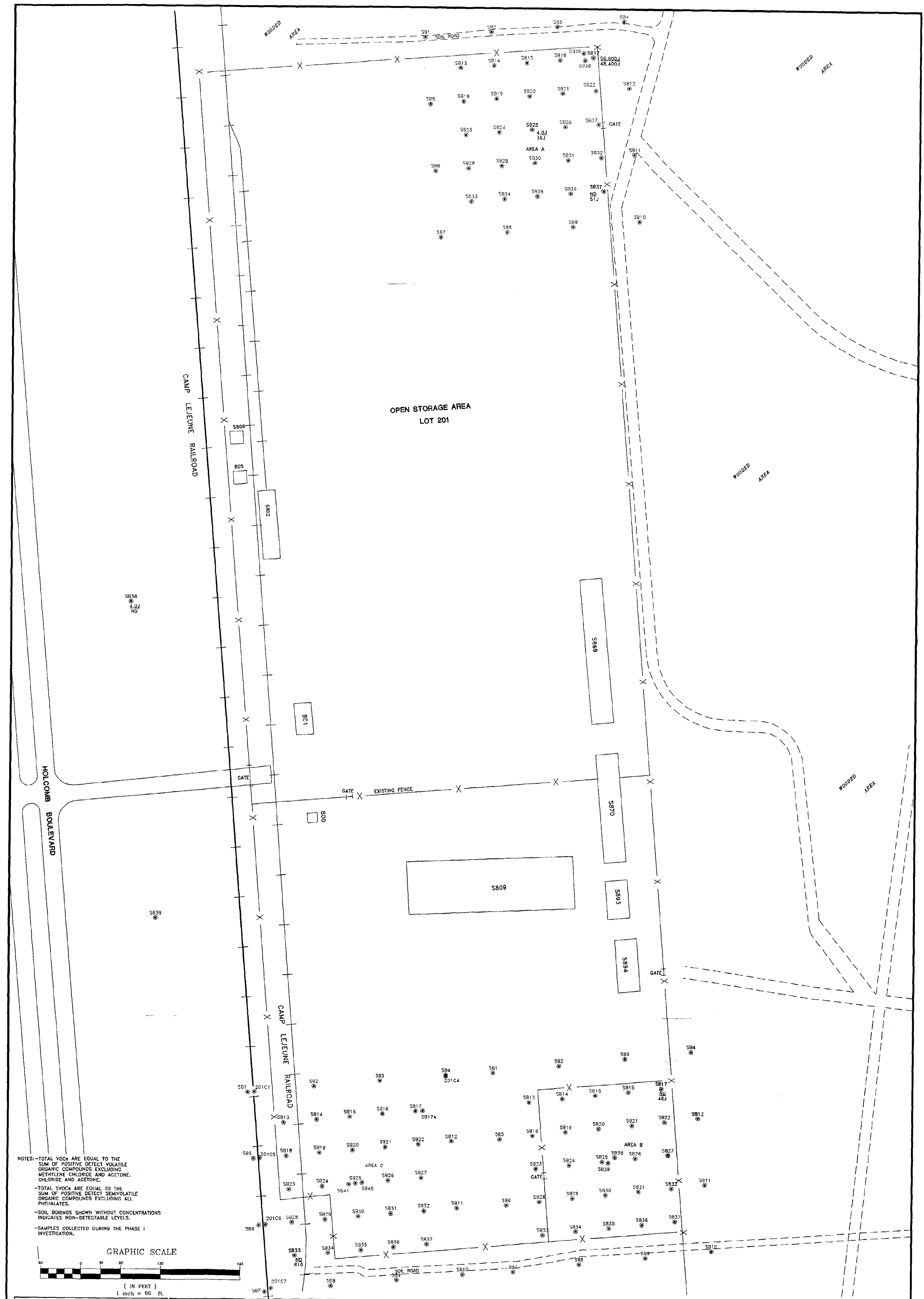
REMEDIAL INVESTIGATION CTO-0133
 MARINE CORPS BASE, CAMP LEJEUNE
 NORTH CAROLINA
 BAKER ENVIRONMENTAL, Inc.
 Coraopolis, Pennsylvania



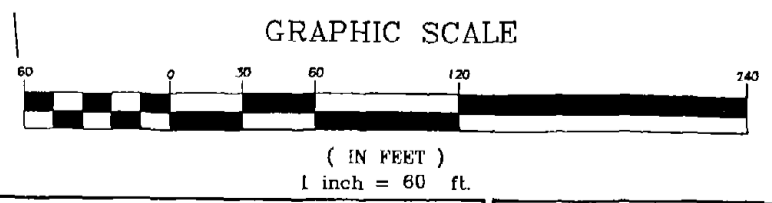
POSITIVE DETECTIONS OF VOCs AND SVOCs IN SURFACE SOILS AT LOT 201 SITE 6
 SCALE: 1" = 60'
 DATE: JUNE 1993

FIGURE No.
 4-5

SOURCE: LANTDIV, FEBRUARY 1992

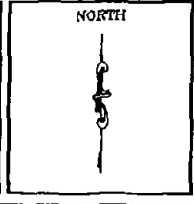


NOTES: -TOTAL VOCs ARE EQUAL TO THE SUM OF POSITIVE DETECT VOLATILE ORGANIC COMPOUNDS EXCLUDING METHYLENE CHLORIDE AND ACETONE, CHLORIDE AND ACETONE.
 -TOTAL SVOCs ARE EQUAL TO THE SUM OF POSITIVE DETECT SEMIVOLATILE ORGANIC COMPOUNDS EXCLUDING ALL PHTHALATES.
 -SOIL BORINGS SHOWN WITHOUT CONCENTRATIONS INDICATES NON-DETECTABLE LEVELS.
 -SAMPLES COLLECTED DURING THE PHASE I INVESTIGATION.



SB33 SOIL BORING
 56,800J - TOTAL VOCs IN ug/kg
 48,400J - TOTAL SVOC IN ug/kg
 ND - CONCENTRATION NOT DETECTED

DATE JUNE 1993
 SCALE 1" = 60'
 DRAWN WJH/REL
 REVIEWED RPW
 S.O.# 19133-22-SRN
 CADD# 133118R1



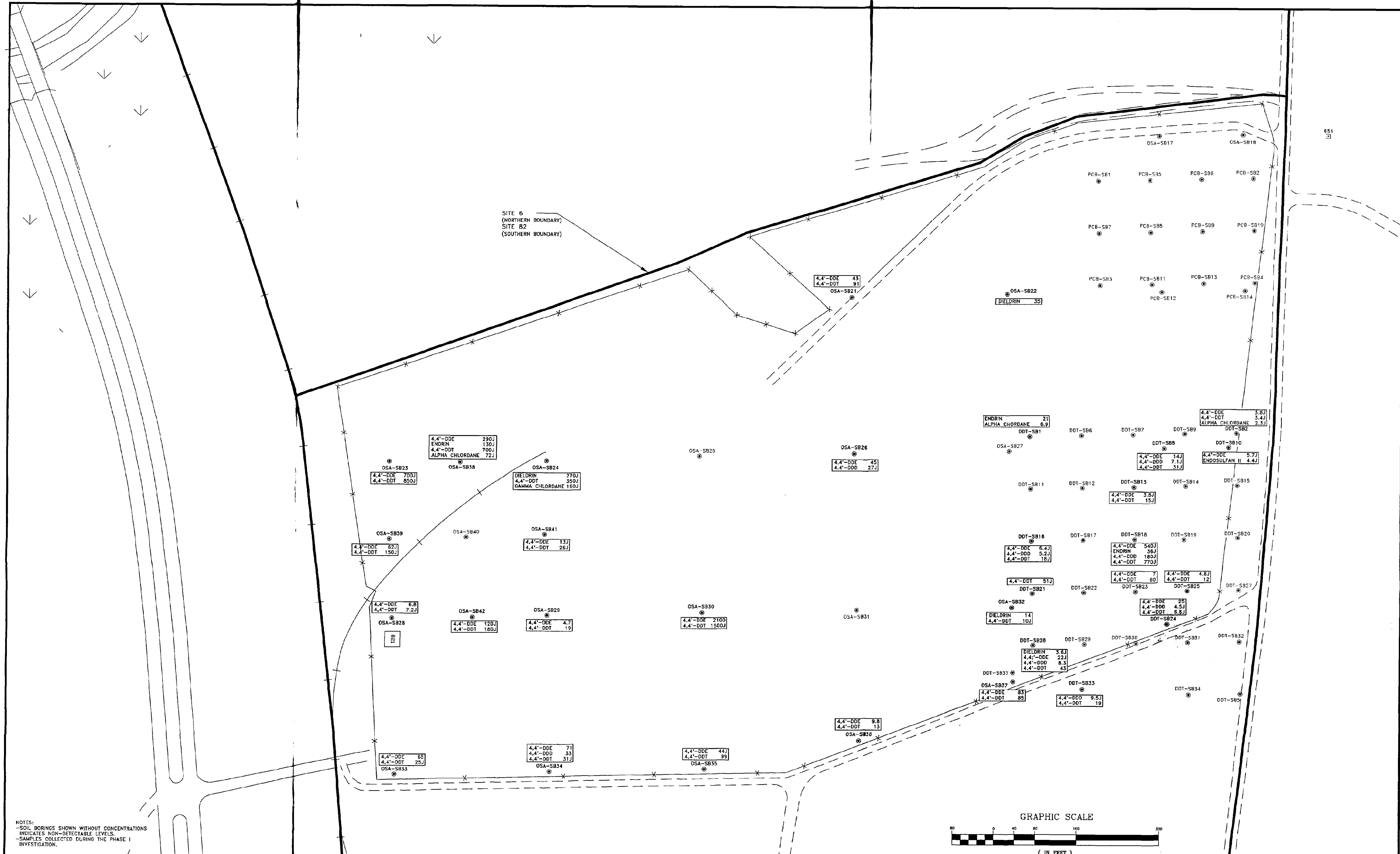
REMEDIAL INVESTIGATION CTO-0133
 MARINE CORPS BASE, CAMP LEJEUNE
 NORTH CAROLINA
 BAKER ENVIRONMENTAL, Inc.
 Coraopolis, Pennsylvania



POSITIVE DETECTIONS OF VOCs AND SVOCs IN SUBSURFACE SOILS AT LOT 201
 SITE 6
 SCALE 1" = 60'
 DATE JUNE 1993

FIGURE No.
 4-6

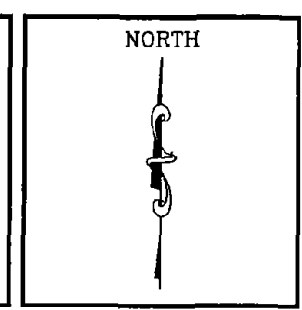
SOURCE: LANTDIV, FEBRUARY 1992



NOTES:
-SOIL BORINGS SHOWN WITHOUT CONCENTRATIONS INDICATES NON-DETECTABLE LEVELS.
-SAMPLES COLLECTED DURING THE PHASE I INVESTIGATION.

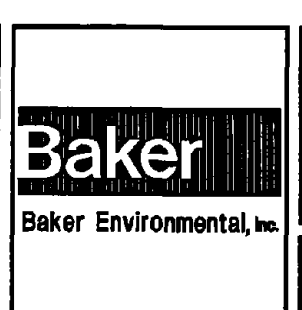
LEGEND	
DDT-SB1	SOIL BORING
ENDRIN 21	PESTICIDE DETECTED AND CONCENTRATION (ug/kg)
SOURCE: LANTDIV, FEBRUARY 1992	

DATE	JUNE 1993
SCALE	1" = 80'
DRAWN	REL
REVIEWED	RPW
S.O.#	9133-22-SRN
CADD#	133102RI



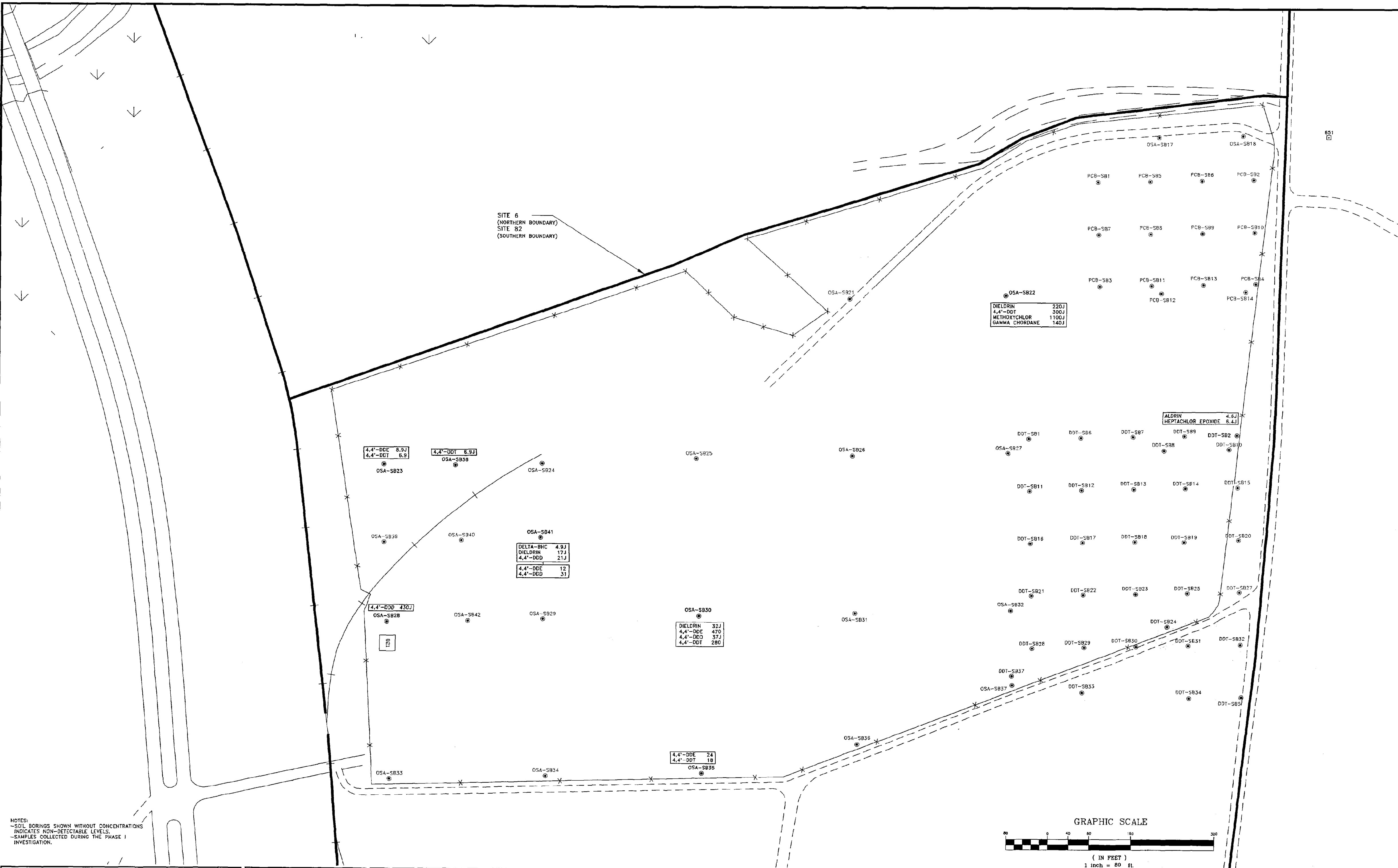
REMEDIAL INVESTIGATION CTO-0133
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

BAKER ENVIRONMENTAL, Inc.
Coraopolis, Pennsylvania

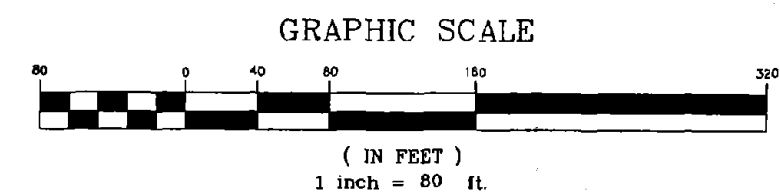


POSITIVE DETECTIONS OF PESTICIDES IN SURFACE SOILS AT LOT 203 SITE 6	
SCALE	1" = 80'
DATE	JUNE 1993

FIGURE No.
4-7

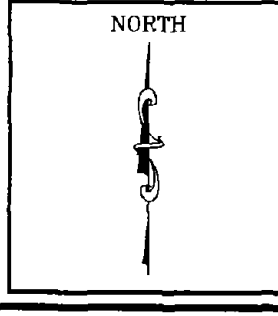


NOTES:
 -SOIL BORINGS SHOWN WITHOUT CONCENTRATIONS INDICATES NON-DETECTABLE LEVELS.
 -SAMPLES COLLECTED DURING THE PHASE I INVESTIGATION.



LEGEND	
OSA-SB28	SOIL BORING
4,4'-DDT 430J	PESTICIDE DETECTED AND CONCENTRATION (ug/kg)

DATE	JUNE 1993
SCALE	1" = 80'
DRAWN	REL
REVIEWED	RPW
S.O.#	19133-22-SRN
CADD#	133103RI



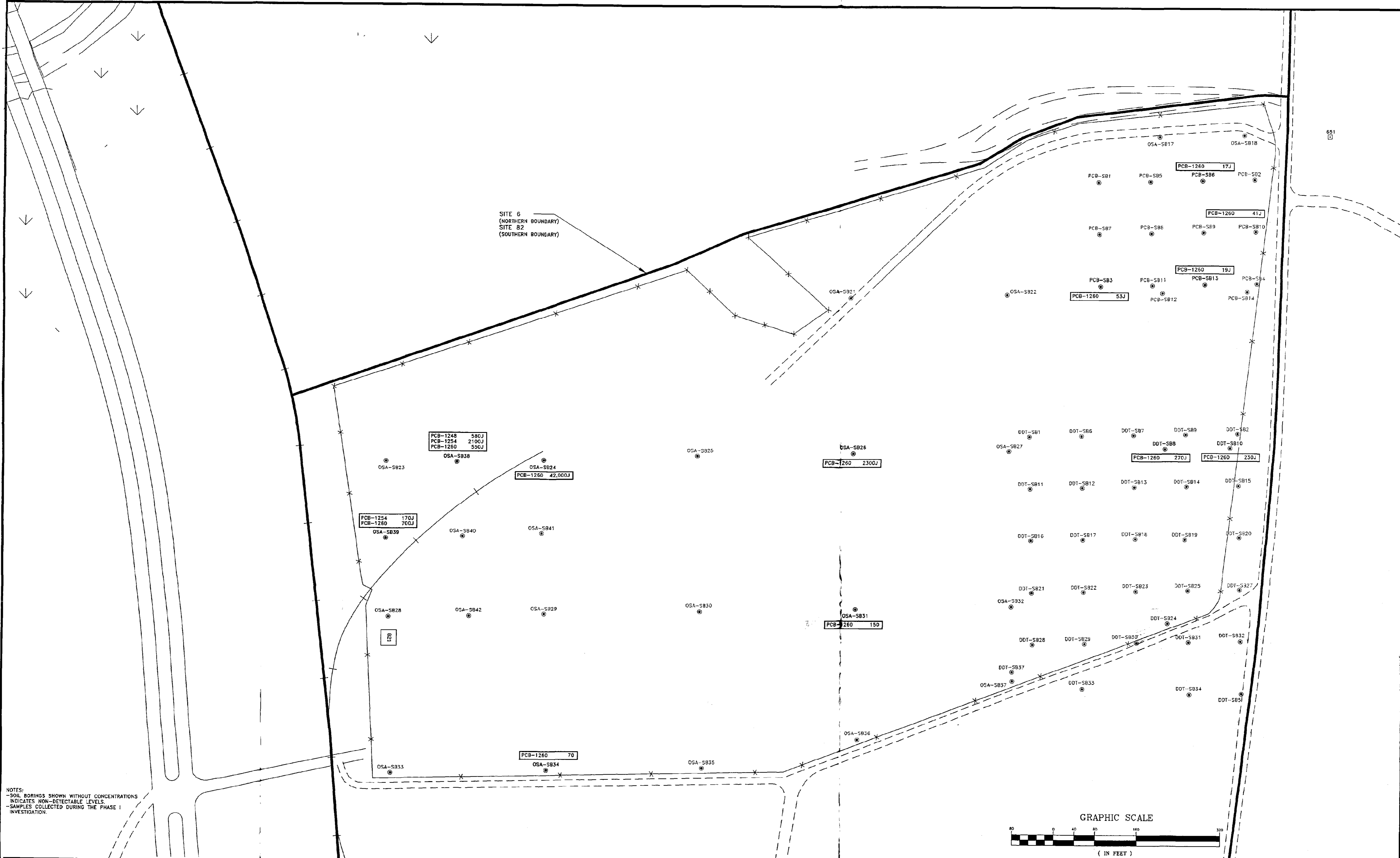
REMEDIAL INVESTIGATION CTO-0133
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

BAKER ENVIRONMENTAL, Inc.
 Coraopolis, Pennsylvania



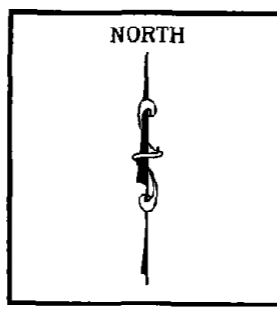
POSITIVE DETECTIONS OF PESTICIDES IN SUBSURFACE SOILS AT LOT 203 SITE 6	
SCALE	1" = 80'
DATE	JUNE 1993

FIGURE No.
4-8



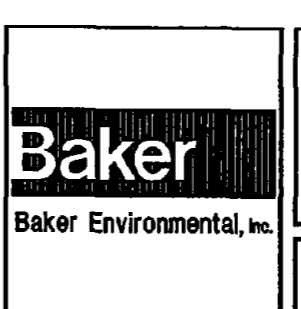
LEGEND	
PCB-SB3	SOIL BORING
PCB-1260 53J	PCB DETECTED AND CONCENTRATION (ug/kg)

DATE JUNE 1993
SCALE 1" = 80'
DRAWN REL
REVIEWED RPW
S.D.# 19133-22-SRN
C.A.D.# 133104RI



REMEDIAL INVESTIGATION CTO-0138
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

BAKER ENVIRONMENTAL, Inc.
Coraopolis, Pennsylvania

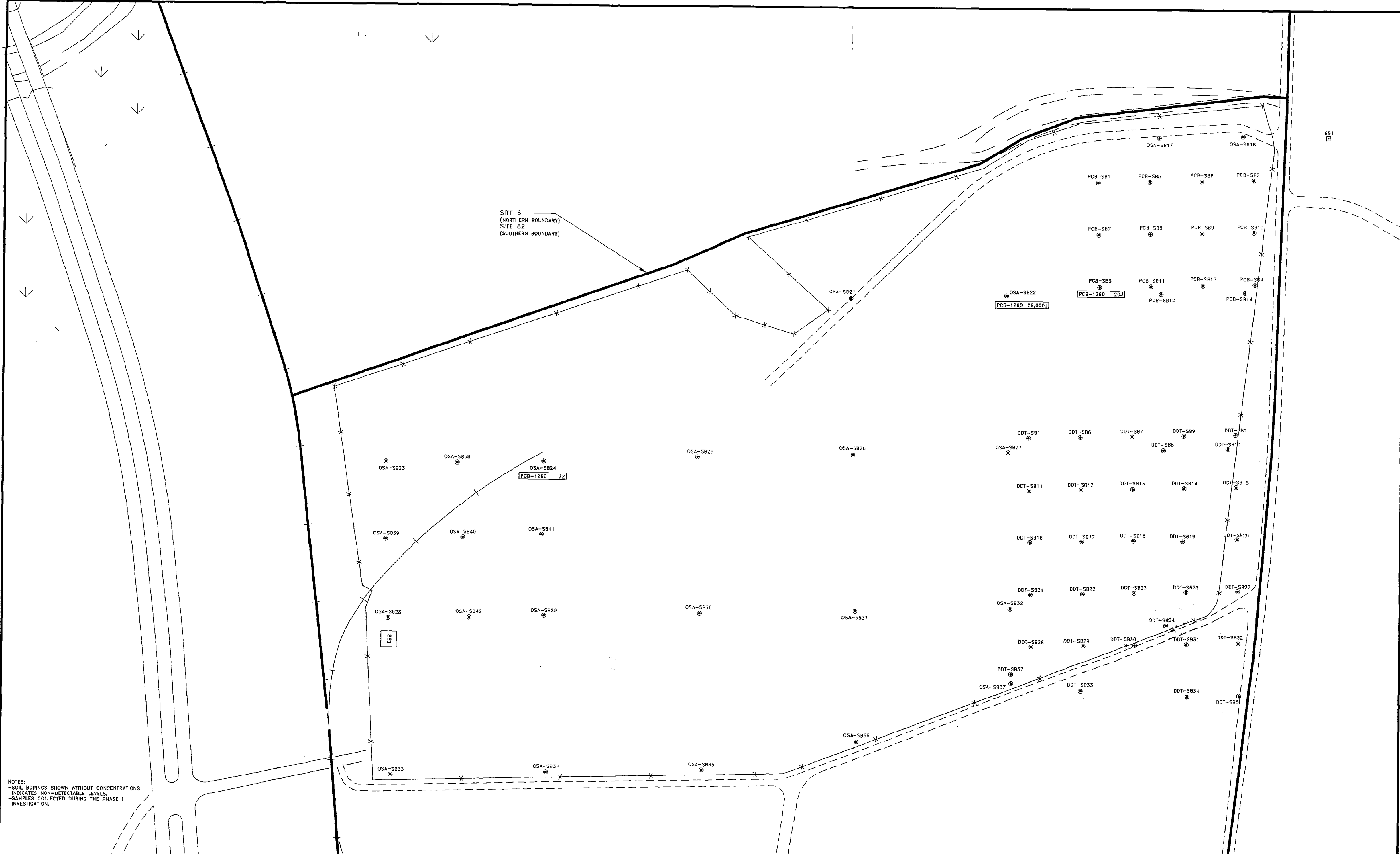


POSITIVE DETECTIONS OF PCBs IN
SURFACE SOILS AT LOT 203
SITE 6

SCALE 1" = 80'
DATE JUNE 1993

FIGURE No.
4-9

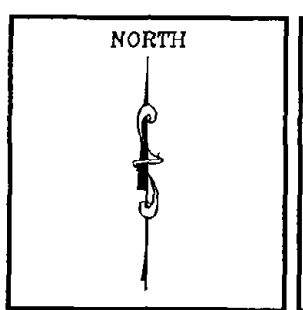
SOURCE: LANTDIV, FEBRUARY 1992



NOTES:
 -SOIL BORINGS SHOWN WITHOUT CONCENTRATIONS INDICATES NON-DETECTABLE LEVELS.
 -SAMPLES COLLECTED DURING THE PHASE I INVESTIGATION.

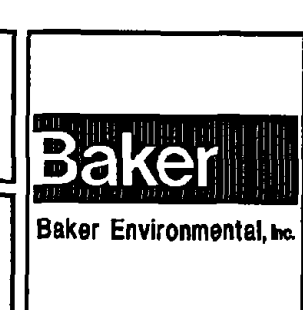
LEGEND	
PCB-SB5	SOIL BORING
PCB-1260 72	PCB DETECTED AND CONCENTRATION (ug/kg)

DATE JUNE 1993
 SCALE 1" = 80'
 DRAWN REL
 REVIEWED RPW
 S.O.# 19133-22-SRN
 CADD# 133105RI



REMEDIAL INVESTIGATION CTO-0133
 MARINE CORPS BASE, CAMP LEJEUNE
 NORTH CAROLINA

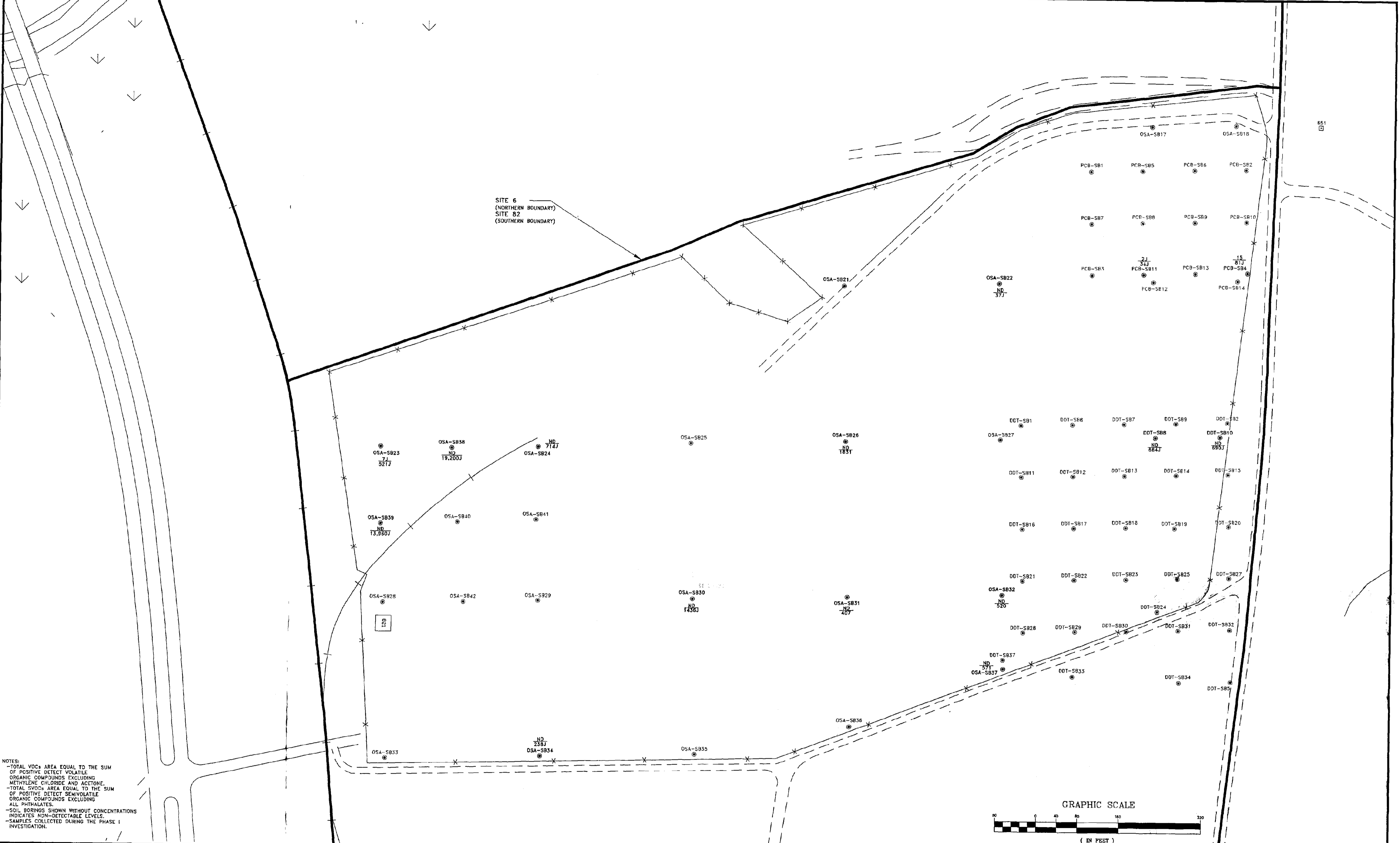
BAKER ENVIRONMENTAL, Inc.
 Coraopolis, Pennsylvania



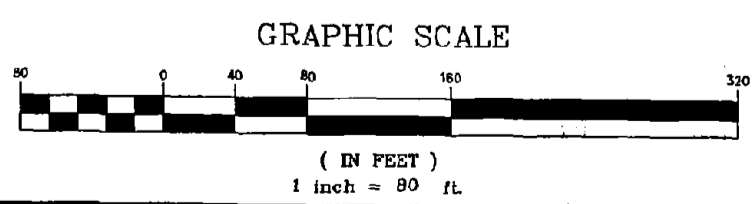
POSITIVE DETECTIONS OF PCBs IN
 SUBSURFACE SOILS AT LOT 203
 SITE 6

SCALE 1" = 80'
 DATE JUNE 1993

FIGURE No.
 4-10

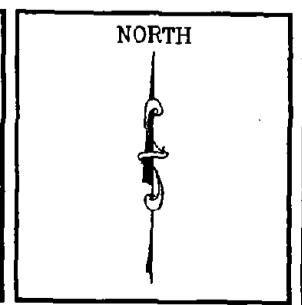


NOTES:
 -TOTAL VOCs AREA EQUAL TO THE SUM OF POSITIVE DETECT VOLATILE ORGANIC COMPOUNDS EXCLUDING METHYLENE CHLORIDE AND ACETONE.
 -TOTAL SVOCs AREA EQUAL TO THE SUM OF POSITIVE DETECT SEMIVOLATILE ORGANIC COMPOUNDS EXCLUDING ALL PHTHALATES.
 -SOIL BORINGS SHOWN WITHOUT CONCENTRATIONS INDICATES NON-DETECTABLE LEVELS.
 -SAMPLES COLLECTED DURING THE PHASE I INVESTIGATION.



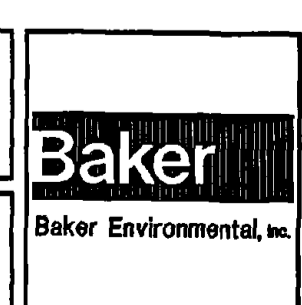
LEGEND	
OSA-SB23	SOIL BORING
7J	TOTAL VOCs IN ug/kg
521J	TOTAL SVOCs IN ug/kg
ND	CONCENTRATION NOT DETECTED

DATE JUNE 1993
 SCALE 1" = 80'
 DRAWN REL
 REVIEWED RPW
 S.O.# 19133-22-SRN
 CADD# 133119R1



REMEDIAL INVESTIGATION CTO-0133
 MARINE CORPS BASE, CAMP LEJEUNE
 NORTH CAROLINA

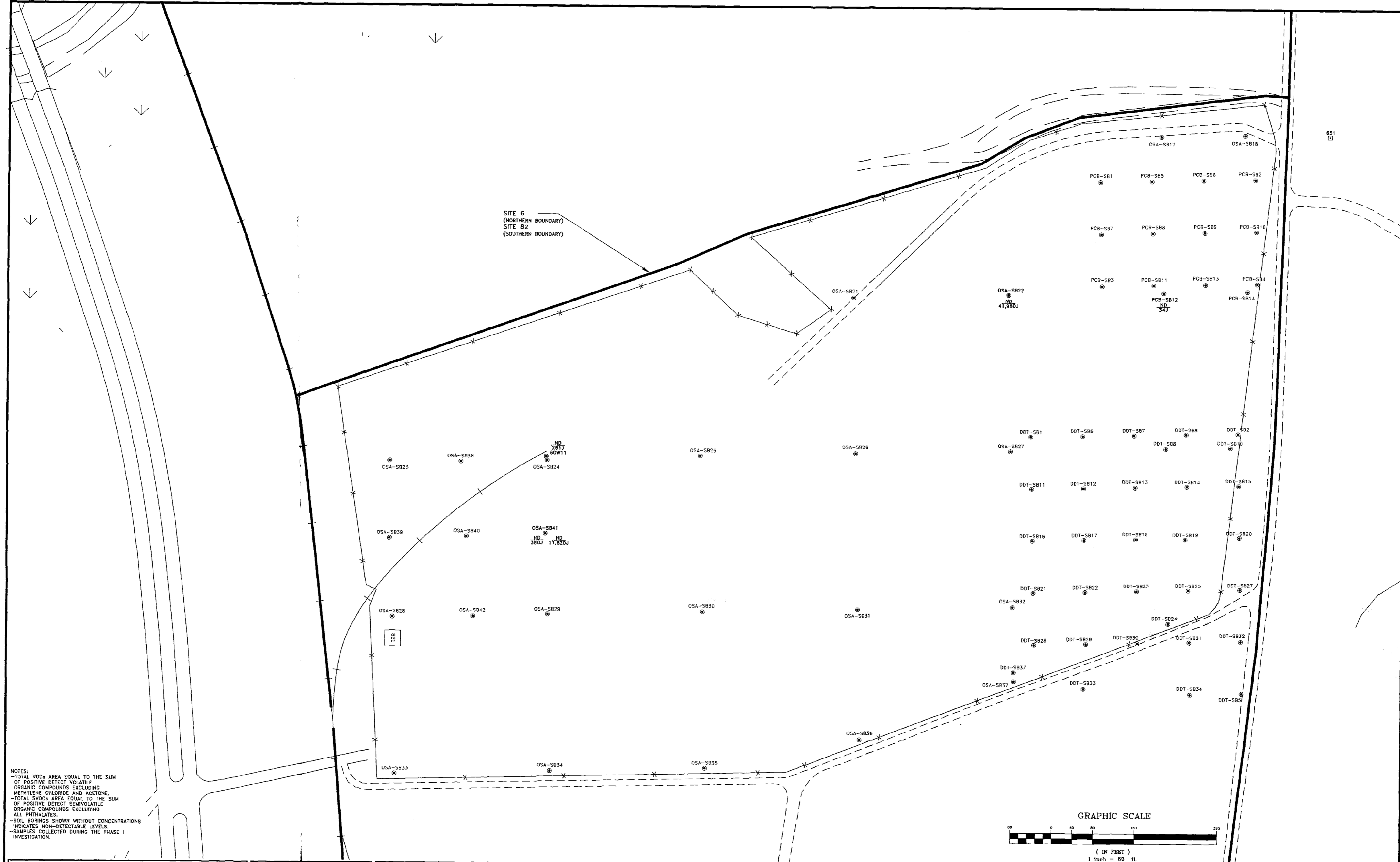
BAKER ENVIRONMENTAL, Inc.
 Coraopolis, Pennsylvania



POSITIVE DETECTIONS OF VOCs AND SVOCs IN SURFACE SOILS AT LOT 203 SITE 6

SCALE 1" = 80'
 DATE JUNE 1993

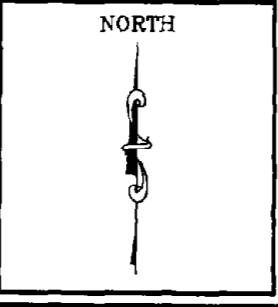
FIGURE No.
 4-11



NOTES:
 -TOTAL VOCs AREA EQUAL TO THE SUM OF POSITIVE DETECT VOLATILE ORGANIC COMPOUNDS EXCLUDING METHYLENE CHLORIDE AND ACETONE.
 -TOTAL SVOCs AREA EQUAL TO THE SUM OF POSITIVE DETECT SEMI-VOLATILE ORGANIC COMPOUNDS EXCLUDING ALL PHTHALATES.
 -SOIL BORINGS SHOWN WITHOUT CONCENTRATIONS INDICATES NON-DETECTABLE LEVELS.
 -SAMPLES COLLECTED DURING THE PHASE I INVESTIGATION.

LEGEND	
PCB-SB12	SOIL BORING
ND	TOTAL VOCs IN ug/kg
34J	TOTAL SVOCs IN ug/kg
ND	CONCENTRATION NOT DETECTED

DATE	JUNE 1993
SCALE	1" = 80'
DRAWN	REL
REVIEWED	RRW
S.O.#	15033-22-SRN
CADD#	135120RI



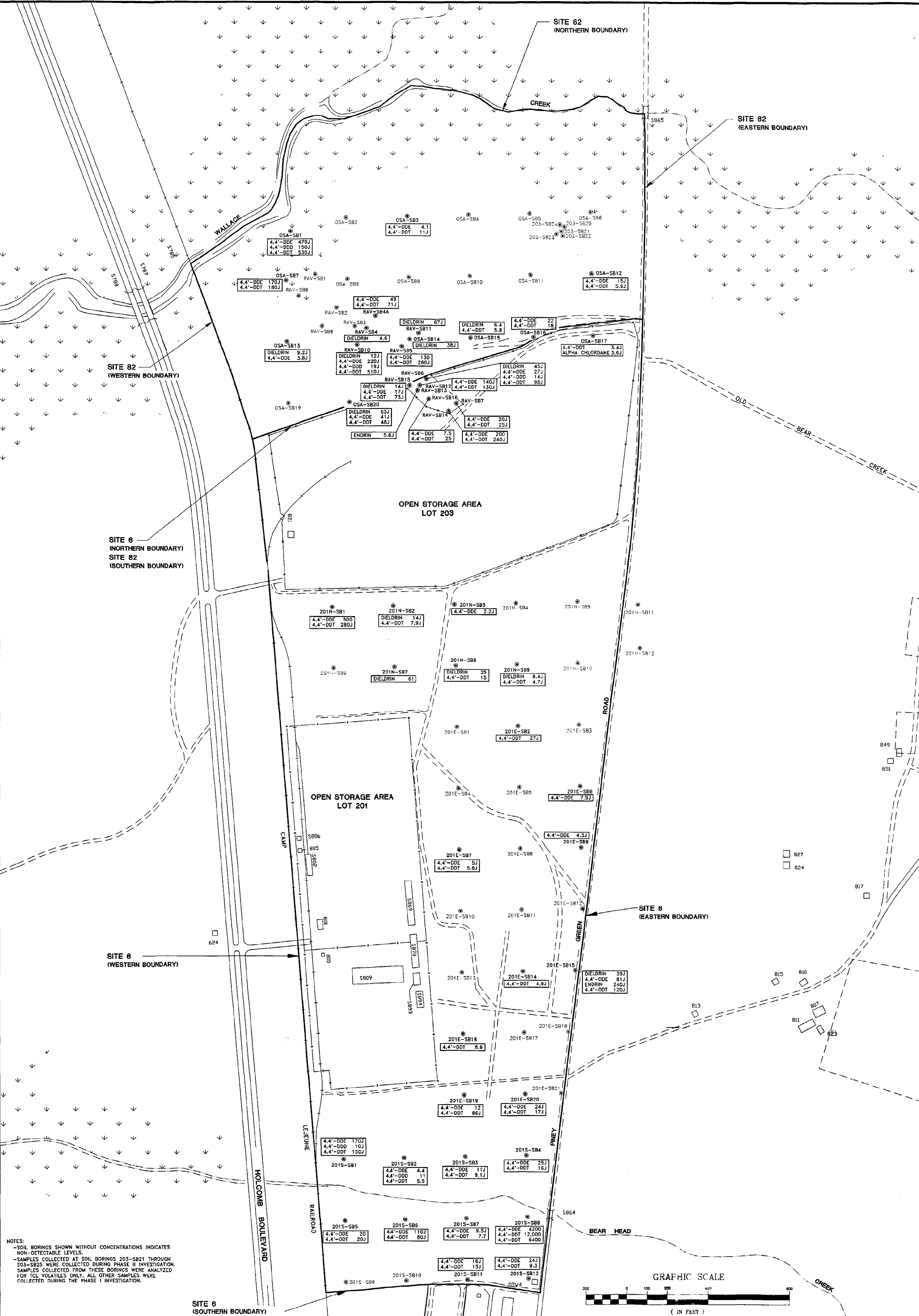
REMEDIAL INVESTIGATION CTO-0133
 MARINE CORPS BASE, CAMP LEJEUNE
 NORTH CAROLINA

BAKER ENVIRONMENTAL, Inc.
 Coraopolis, Pennsylvania

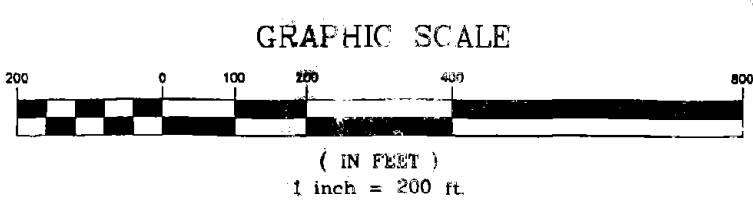


GRAPHIC SCALE (IN FEET) 1 inch = 80 ft	
SCALE	1" = 80'
DATE	APRIL 1993

FIGURE No.
 4-12

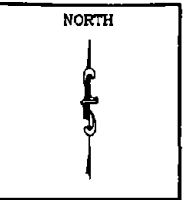


NOTES:
 -SOIL BORINGS SHOWN WITHOUT CONCENTRATIONS INDICATES NON-DETECTABLE LEVELS.
 -SAMPLES COLLECTED AT SOIL BORINGS 203-SB21 THROUGH 203-SB25 WERE COLLECTED DURING PHASE II INVESTIGATION. SAMPLES COLLECTED FROM THESE BORINGS WERE ANALYZED FOR TCL VOLATILES ONLY. ALL OTHER SAMPLES WERE COLLECTED DURING THE PHASE I INVESTIGATION.



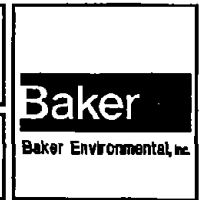
LEGEND	
●	SOIL BORING
4,4'-DDT 150J	PESTICIDE DETECTED AND CONCENTRATION (ug/kg)

DATE: JUNE 1993
 SCALE: 1" = 200'
 DRAWN: R.E.L.
 REVIEWED: RPW
 S.O.#: 19133-22-SRN
 CADD#: 133106RI



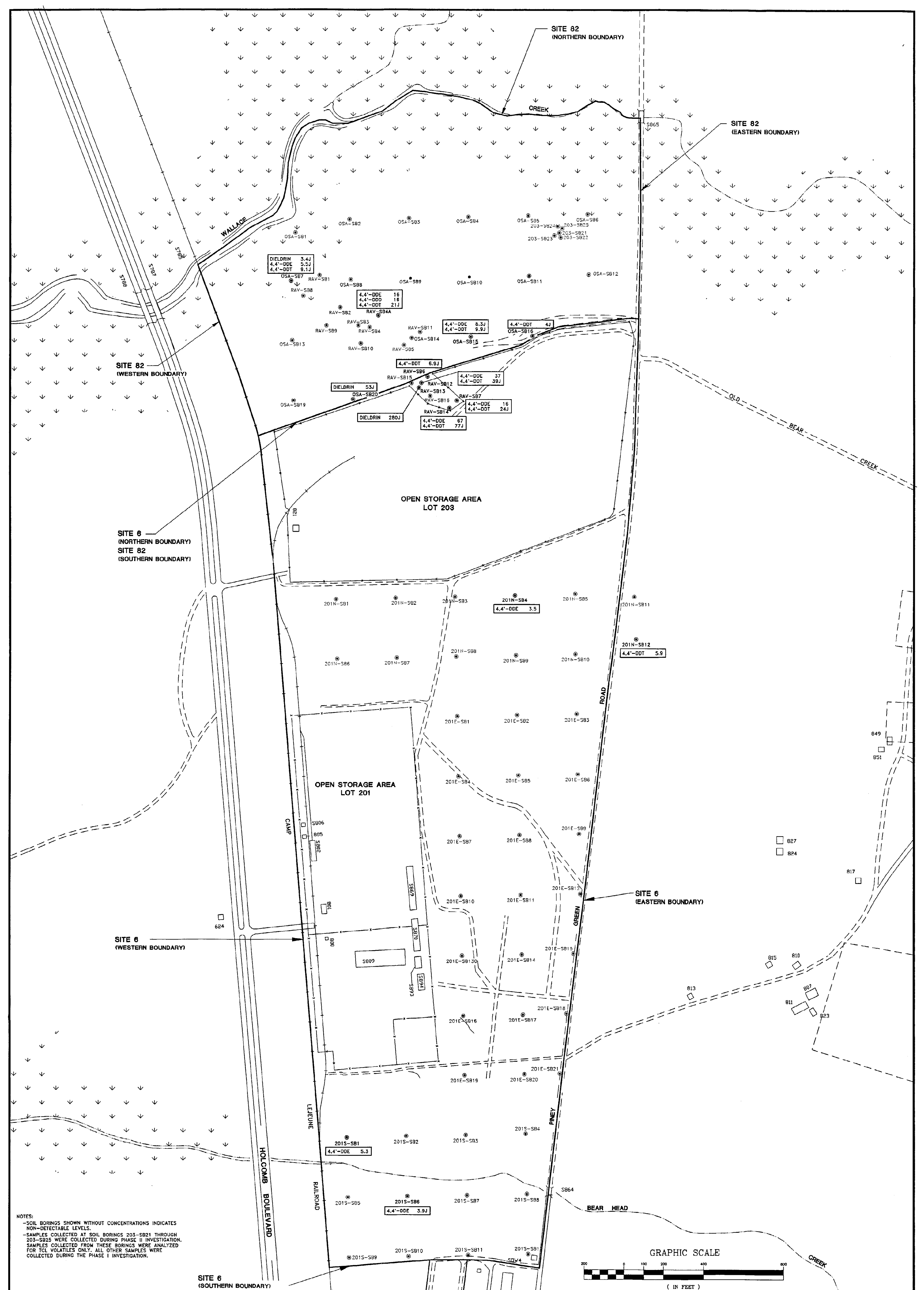
REMEDIAL INVESTIGATION CTO-0133
 MARINE CORPS BASE, CAMP LEJEUNE
 NORTH CAROLINA

BAKER ENVIRONMENTAL, Inc.
 Coraopolis, Pennsylvania



POSITIVE DETECTIONS OF PESTICIDES IN SURFACE SOILS AT WOODED AREAS, THE RAVINE AND SITE 82 SITES 6 AND 82

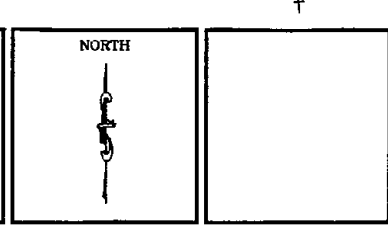
SCALE: 1" = 200' DATE: JUNE 1993



NOTES:
 -SOIL BORINGS SHOWN WITHOUT CONCENTRATIONS INDICATES NON-DETECTABLE LEVELS.
 -SAMPLES COLLECTED AT SOIL BORINGS 203-SB21 THROUGH 203-SB25 WERE COLLECTED DURING PHASE II INVESTIGATION. SAMPLES COLLECTED FROM THESE BORINGS WERE ANALYZED FOR TCL VOLATILES ONLY. ALL OTHER SAMPLES WERE COLLECTED DURING THE PHASE I INVESTIGATION.

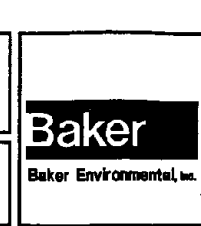
LEGEND	
●	SOIL BORING
4,4'-DDE 5.3	PESTICIDE DETECTED AND CONCENTRATION (ug/kg)

DATE: JUNE 1993
 SCALE: 1" = 200'
 DRAWN: R.E.L.
 REVIEWED: RPW
 S.O.#: 19133-22-SRN
 CADDY: 133107R1



REMEDIAL INVESTIGATION CTO-0133
 MARINE CORPS BASE, CAMP LEJEUNE
 NORTH CAROLINA

BAKER ENVIRONMENTAL, Inc.
 Coraopolis, Pennsylvania

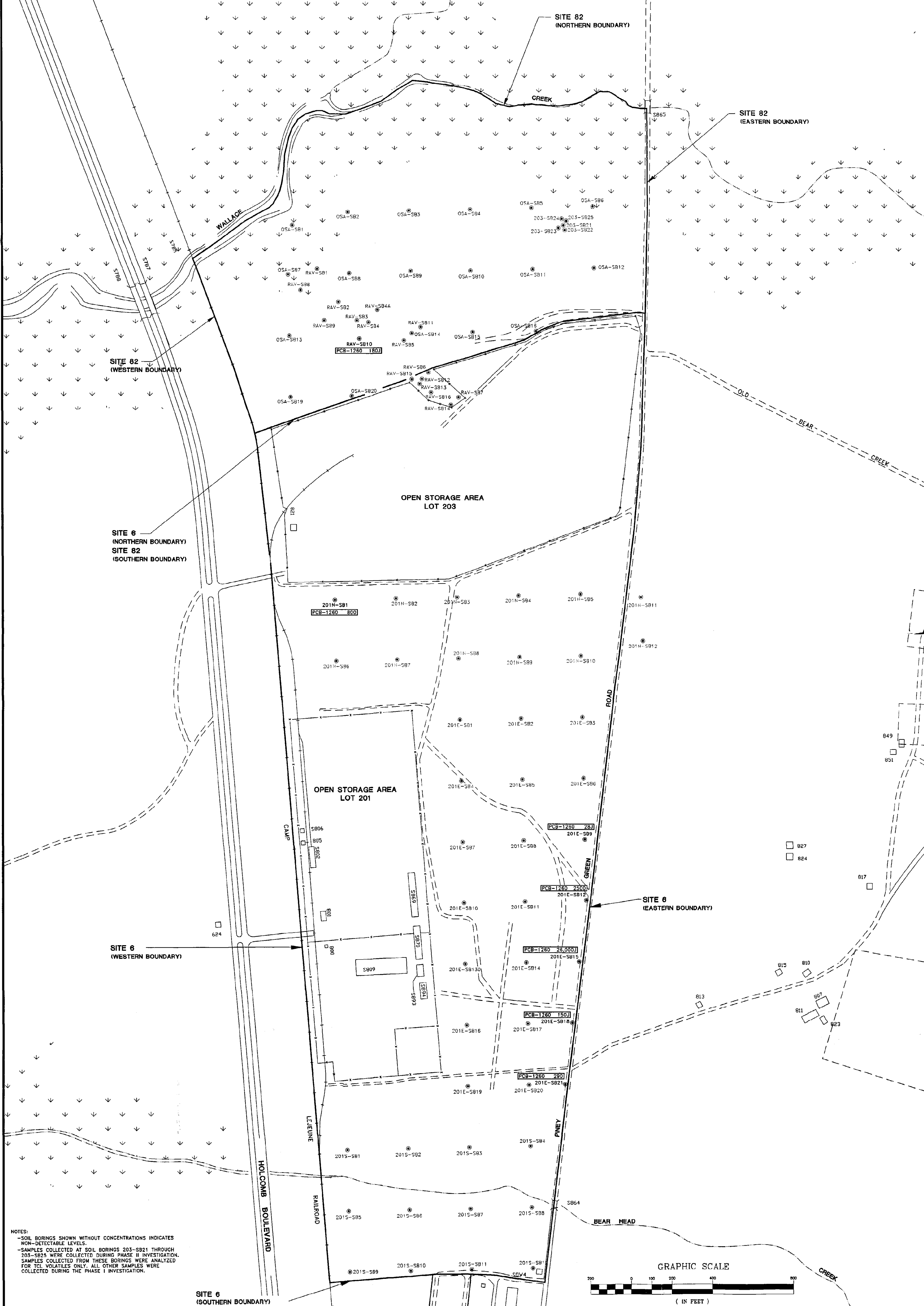


POSITIVE DETECTIONS OF PESTICIDES IN SUBSURFACE SOILS AT WOODED AREAS, THE RAVINE and SITE 82 SITES 6 and 82

SCALE: 1" = 200' DATE: JUNE 1993

FIGURE No.
 4-14

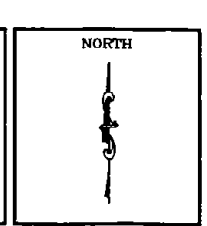
SOURCE: LANTON, FEBRUARY 1992



NOTES:
 -SOIL BORINGS SHOWN WITHOUT CONCENTRATIONS INDICATES NON-DETECTABLE LEVELS.
 -SAMPLES COLLECTED AT SOIL BORINGS 203-SB21 THROUGH 203-SB25 WERE COLLECTED DURING PHASE II INVESTIGATION.
 -SAMPLES COLLECTED FROM THESE BORINGS WERE ANALYZED FOR TCL VOLATILES ONLY. ALL OTHER SAMPLES WERE COLLECTED DURING THE PHASE I INVESTIGATION.

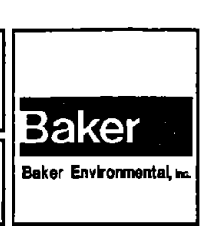
LEGEND	
● 201N-SB1	SOIL BORING
PCB-1260 800	PCB DETECTED AND CONCENTRATION (ug/kg)

DATE	JUNE 1993
SCALE	1" = 200'
DRAWN	R.E.L.
REVIEWED	RPW
S.O.#	19133-22-SRN
CADD#	133108RI



REMEDIAL INVESTIGATION CTO-0133
 MARINE CORPS BASE, CAMP LEJEUNE
 NORTH CAROLINA

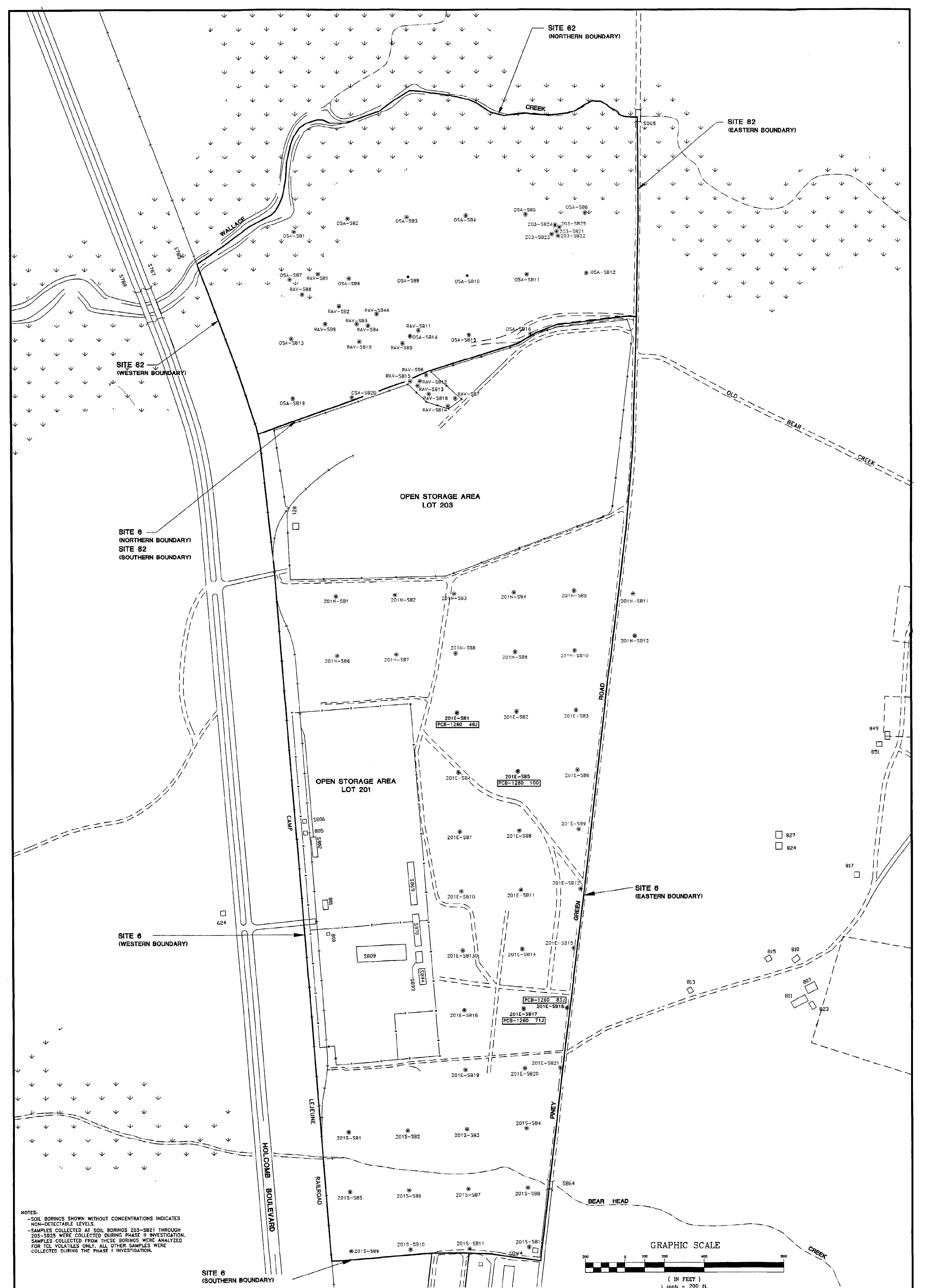
BAKER ENVIRONMENTAL, Inc.
 Coraopolis, Pennsylvania



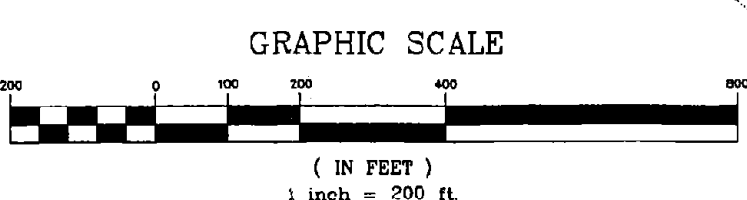
POSITIVE DETECTIONS OF PCBs IN SURFACE SOILS AT WOODED AREAS, the RAVINE and SITE 82 SITES 6 and 82

SCALE 1" = 200'

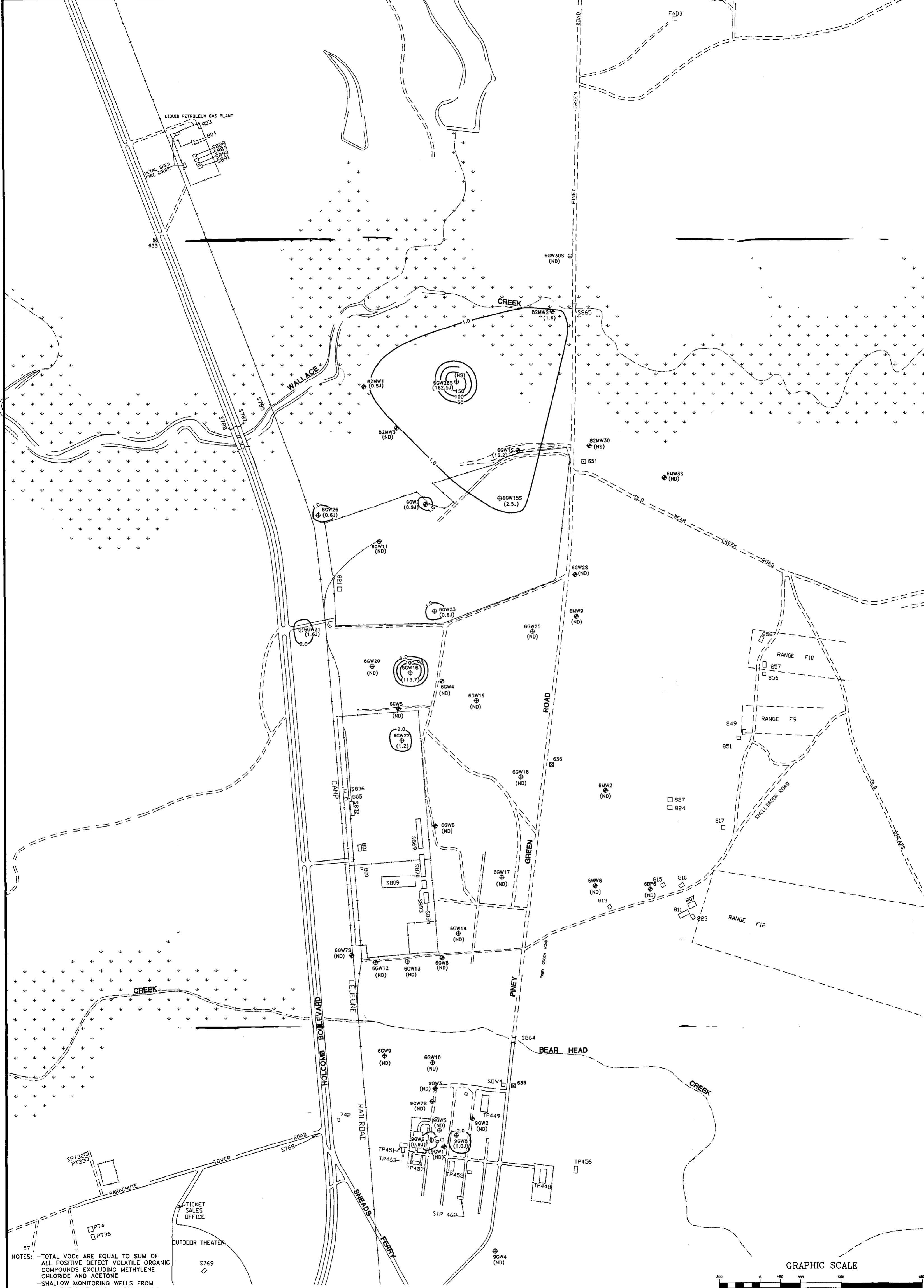
DATE JUNE 1993



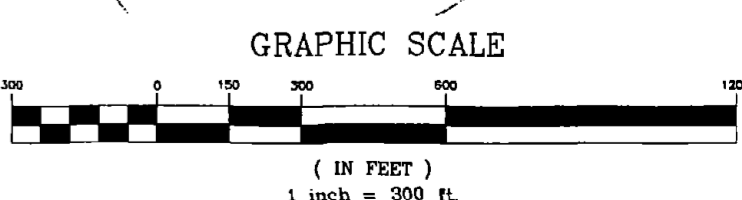
NOTES:
 -SOIL BORINGS SHOWN WITHOUT CONCENTRATIONS INDICATES NON-DETECTABLE LEVELS.
 -SAMPLES COLLECTED AT SOIL BORINGS 203-SB21 THROUGH 203-SB25 WERE COLLECTED DURING PHASE II INVESTIGATION. SAMPLES COLLECTED FROM THESE BORINGS WERE ANALYZED FOR TOL. VOLATILES ONLY. ALL OTHER SAMPLES WERE COLLECTED DURING THE PHASE I INVESTIGATION.



<p>LEGEND</p> <p>● 201E-SB1 SOIL BORING</p> <p>PCB-1260 46J PCB DETECTED AND CONCENTRATION (ug/kg)</p>	<p>DATE: JUNE 1993</p> <p>SCALE: 1" = 200'</p> <p>DRAWN: R.E.L.</p> <p>REVIEWED: RPW</p> <p>S.O.#: 19133-22-SRN</p> <p>CADD#: 133109RI</p>	<p>NORTH</p>	<p>REMEDIAL INVESTIGATION CTO-0133</p> <p>MARINE CORPS BASE, CAMP LEJEUNE</p> <p>NORTH CAROLINA</p> <p>BAKER ENVIRONMENTAL, Inc.</p> <p>Coraopolis, Pennsylvania</p>	<p>Baker</p> <p>Baker Environmental, Inc.</p>	<p>POSITIVE DETECTIONS OF PCBs IN</p> <p>SUBSURFACE SOILS AT</p> <p>WOODED AREAS, the RAVINE and SITE 82</p> <p>SITES 6 and 82</p> <p>SCALE: 1" = 200'</p> <p>DATE: JUNE 1993</p>	<p>FIGURE No.</p> <p>4-16</p>
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NOTES: -TOTAL VOCs ARE EQUAL TO SUM OF ALL POSITIVE DETECT VOLATILE ORGANIC COMPOUNDS EXCLUDING METHYLENE CHLORIDE AND ACETONE
 -SHALLOW MONITORING WELLS FROM OPERABLE UNIT No.2 SAMPLED FROM OCTOBER 20 - OCTOBER 25, 1992 DURING THE PHASE I INVESTIGATION (ROUND ONE DATA)

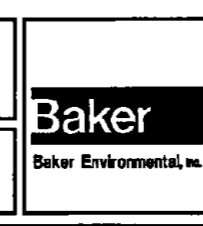


(113.7) TOTAL VOC CONCENTRATION (WELL SPECIFIC) IN ug/L
 (ND) VOCs NOT DETECTED
 (NS) WELL NOT SAMPLED
 -100- ESTIMATED TOTAL VOC ISOCONTOUR LINE (ug/L)
 6GW2 EXISTING SHALLOW MONITORING WELL
 6GW18 PHASE I SHALLOW MONITORING WELLS
 SOURCE: LANTDIV, FEBRUARY 1992

DATE: JUNE 1993
 SCALE: 1" = 300'
 DRAWN: R.E.L.
 REVIEWED: RPW
 S.O.#: 19133-22-SRN
 CADD#: 133123RI

REMEDIAL INVESTIGATION CTO-0133
 MARINE CORPS BASE, CAMP LEJEUNE
 NORTH CAROLINA

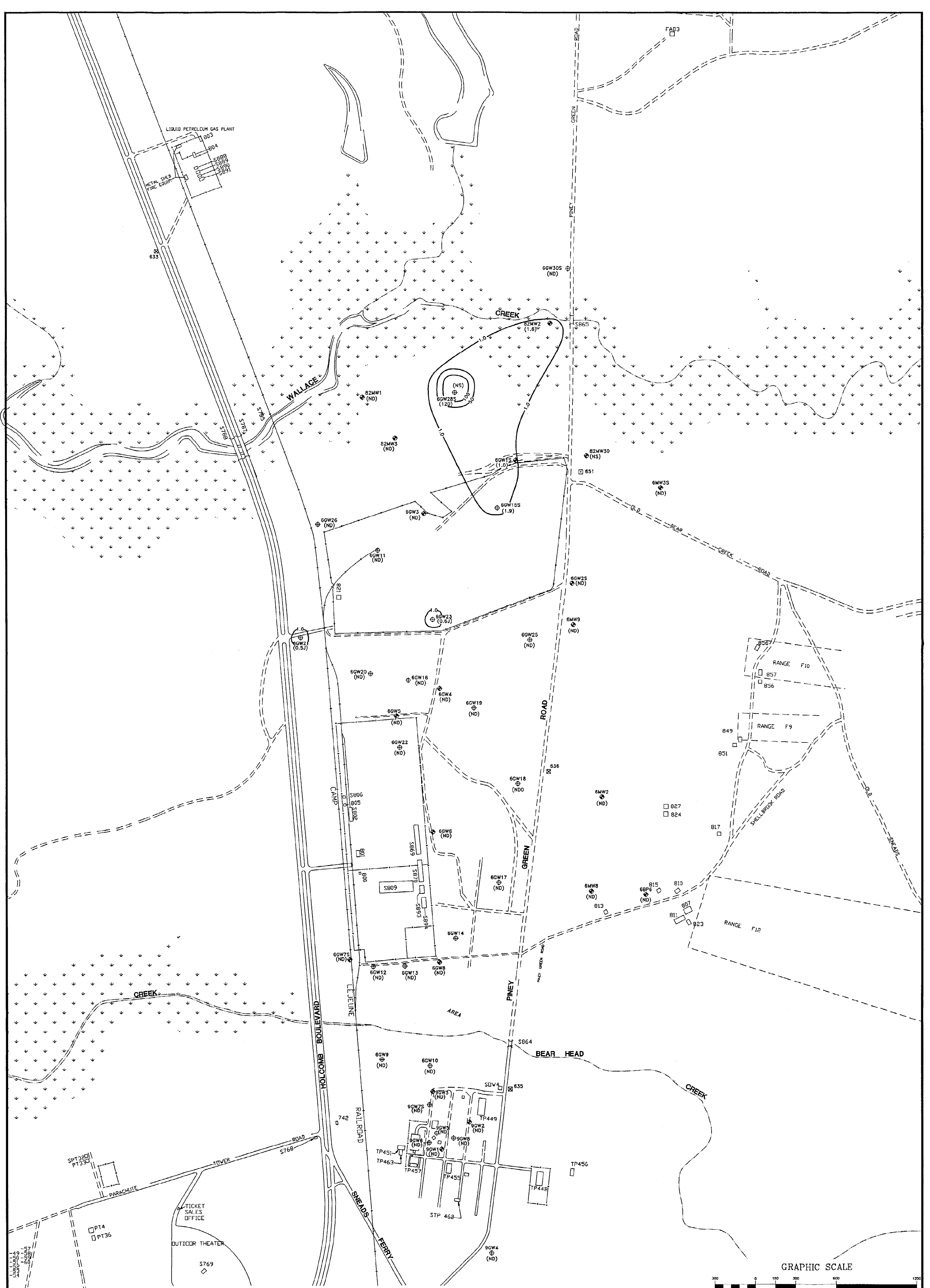
BAKER ENVIRONMENTAL, Inc.
 Coraopolis, Pennsylvania



TOTAL VOCs ISOCONCENTRATION MAP FOR SURFICIAL GROUNDWATER-PHASE I RESULTS OPERABLE UNIT No. 2

SCALE: 1" = 300' DATE: JUNE 1993

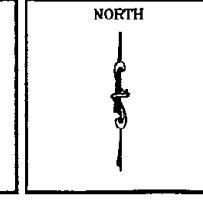
FIGURE No. 4-19



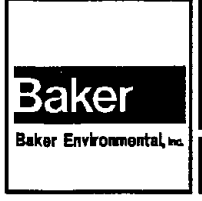
NOTE: SHALLOW MONITORING WELLS FROM OPERABLE UNIT No. 2 SAMPLED FROM OCTOBER 20 - OCTOBER 25, 1992 DURING THE PHASE I INVESTIGATION (ROUND ONE DATA)

LEGEND
 (120) TCE CONCENTRATION (WELL SPECIFIC) ug/L
 (ND) TCE NOT DETECTED
 (NS) WELL NOT SAMPLED
 -100- ESTIMATED TCE ISOCONTOUR LINE (ug/L)
 6GW2 EXISTING SHALLOW MONITORING WELL
 6GW18 PHASE I SHALLOW MONITORING WELL
 SOURCE: LANTDIV, FEBRUARY 1992

DATE: JUNE 1993
 SCALE: 1" = 300'
 DRAWN: R.E.L.
 REVIEWED: RPW
 S.O.#: 19133-22-SRN
 CADD#: 133124R1

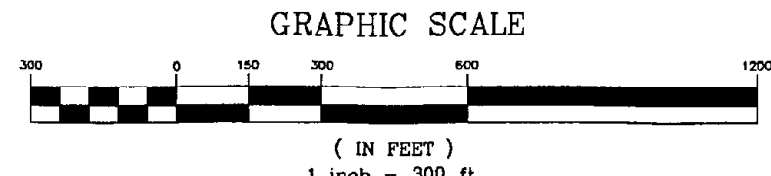


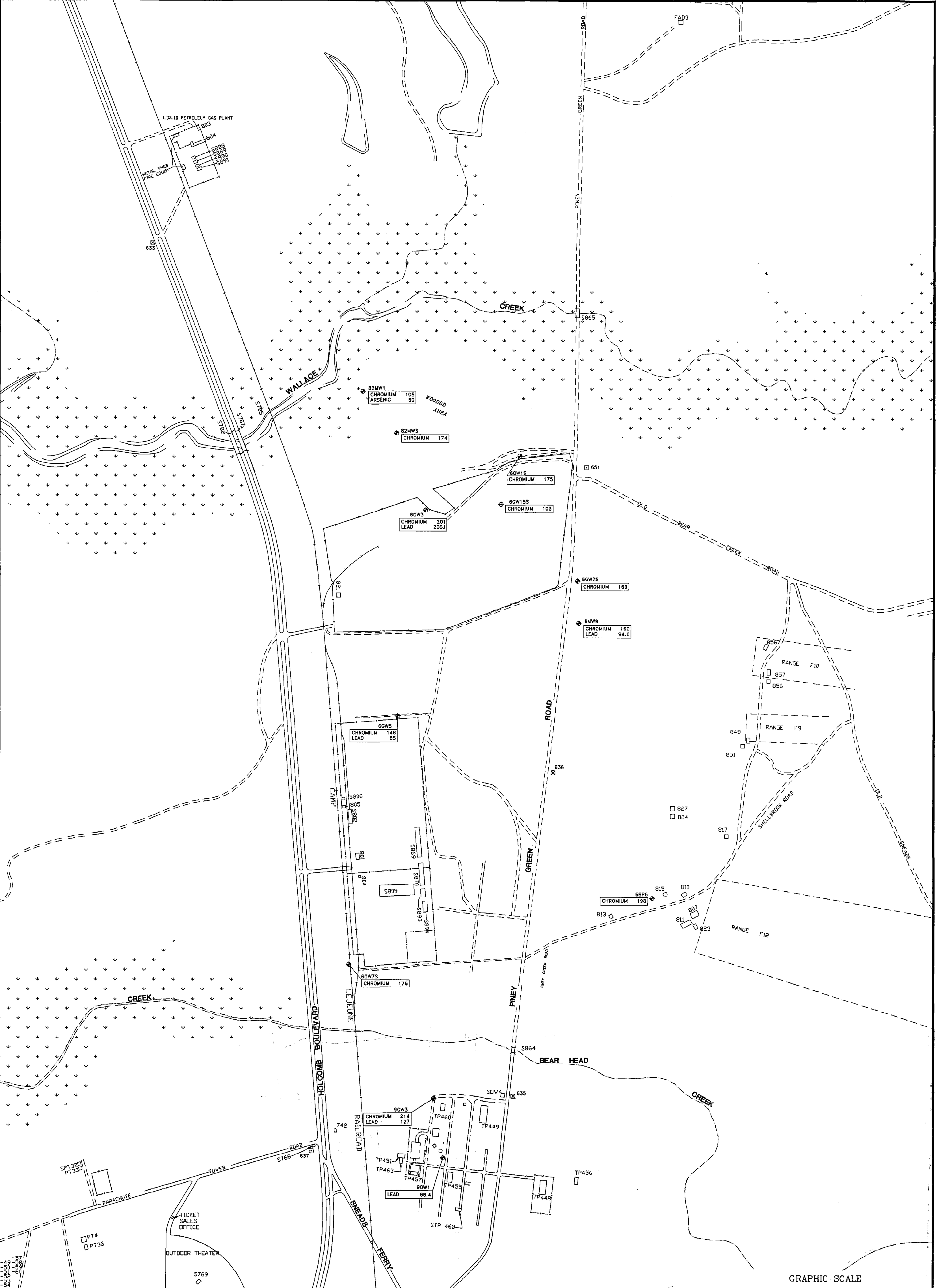
REMEDIAL INVESTIGATION CTO-0133
 MARINE CORPS BASE, CAMP LEJEUNE
 NORTH CAROLINA
 BAKER ENVIRONMENTAL, Inc.
 Coraopolis, Pennsylvania



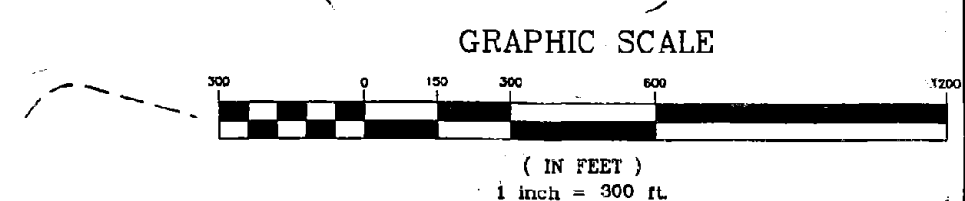
TCE ISOCONCENTRATION MAP
 FOR SURFICIAL GROUNDWATER-PHASE I RESULTS
 OPERABLE UNIT No. 2
 SCALE: 1" = 300' DATE: JUNE 1993

FIGURE No.
 4-20





NOTES: -ALL CONCENTRATIONS SHOWN IN ug/L.
 -SHALLOW MONITORING WELLS FROM OPERABLE UNIT No. 2 SAMPLED FROM OCTOBER 20 - OCTOBER 25, 1992 DURING THE PHASE I INVESTIGATION (ROUND ONE DATA)

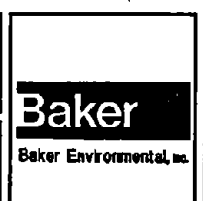


LEGEND
 6GW25 EXISTING SHALLOW MONITORING WELL
 6GW16 PHASE I SHALLOW MONITORING WELL

DATE: JUNE 1993
 SCALE: 1" = 300'
 DRAWN: R.E.L.
 REVIEWED: RPW
 S.O.#: 19135-22-SRN
 CADD#: 135125RI

REMEDIAL INVESTIGATION CTO-0133
 MARINE CORPS BASE, CAMP LEJEUNE
 NORTH CAROLINA

BAKER ENVIRONMENTAL, Inc.
 Coraopolis, Pennsylvania

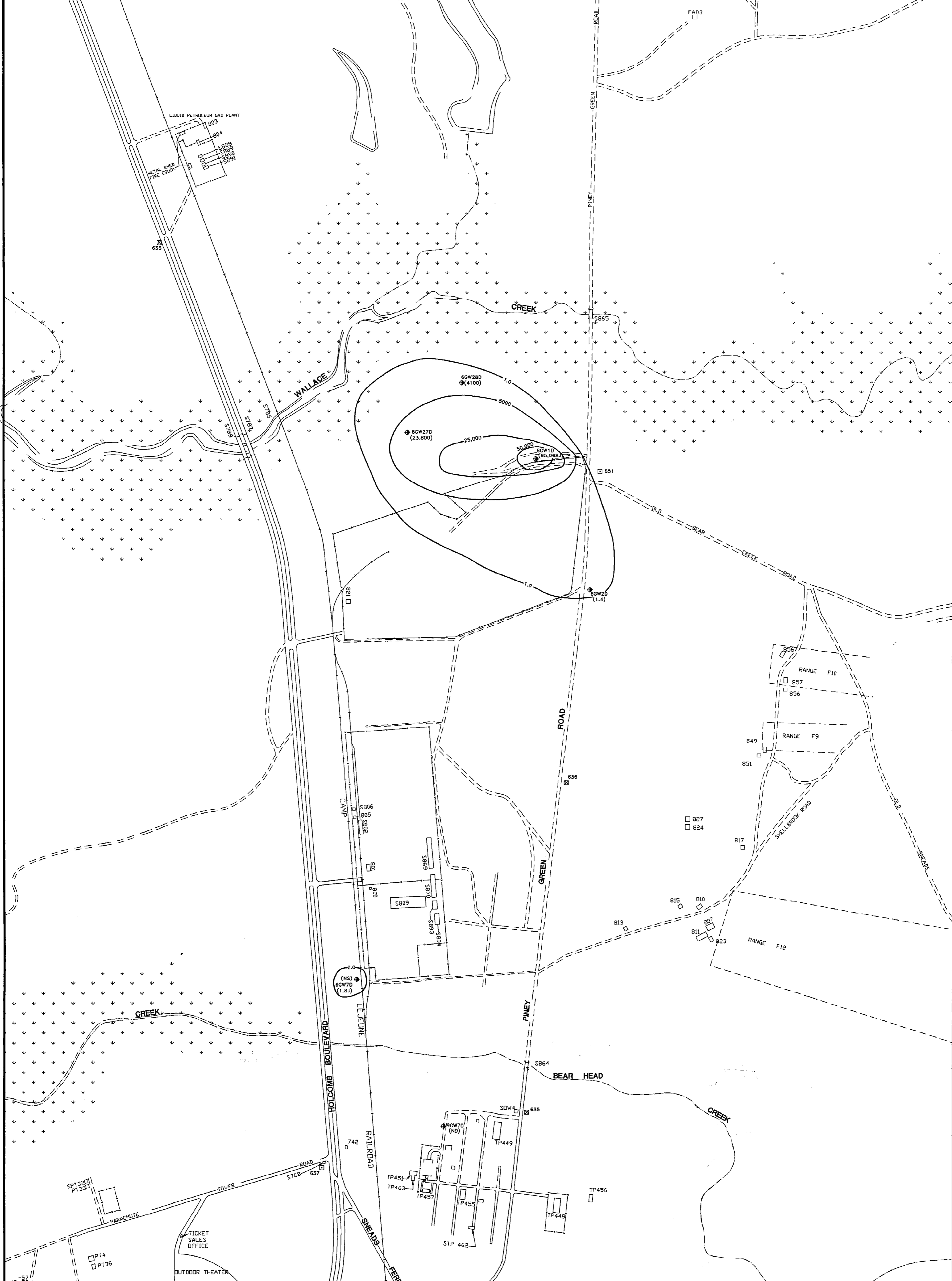


POSITIVE DETECTIONS OF TOTAL METALS ABOVE THE PRIMARY FEDERAL MCLs IN SURFICIAL GROUNDWATER-PHASE I RESULTS OPERABLE UNIT No. 2

SCALE: 1" = 300' DATE: JUNE 1993

FIGURE No. 4-21

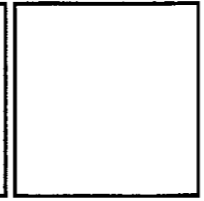
SOURCE: LANTDIV, FEBRUARY 1992



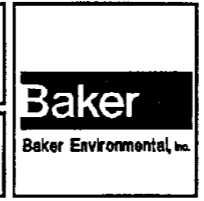
NOTES: -TOTAL VOCs AREA EQUAL TO SUM OF ALL VOLATILE ORGANIC COMPOUNDS EXCLUDING METHYLENE CHLORIDE AND ACETONE.
 -DEEP MONITORING WELLS FROM OPERABLE UNIT No. 2 SAMPLED ON NOVEMBER 3 and NOVEMBER 4, 1992 DURING THE PHASE I INVESTIGATION (ROUND ONE DATA)

LEGEND
 6GW70 PHASE I DEEP MONITORING WELL
 (1.8) TOTAL VOC CONCENTRATION (WELL SPECIFIC) IN ug/L.
 (ND) VOCs NOT DETECTED
 -2.0- ESTIMATED TOTAL VOC ISOCONTOUR LINE (ug/L)

DATE: JUNE 1993
 SCALE: 1" = 300'
 DRAWN: R.E.L.
 REVIEWED: RPW
 S.O.#: 19133-22-SRN
 CADD#: 133126RI

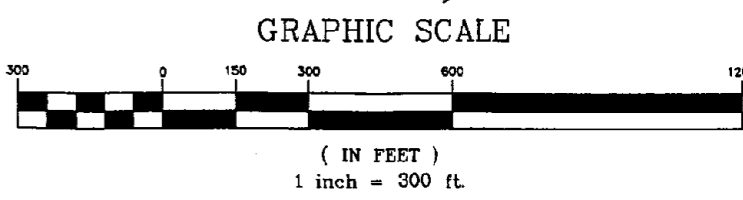


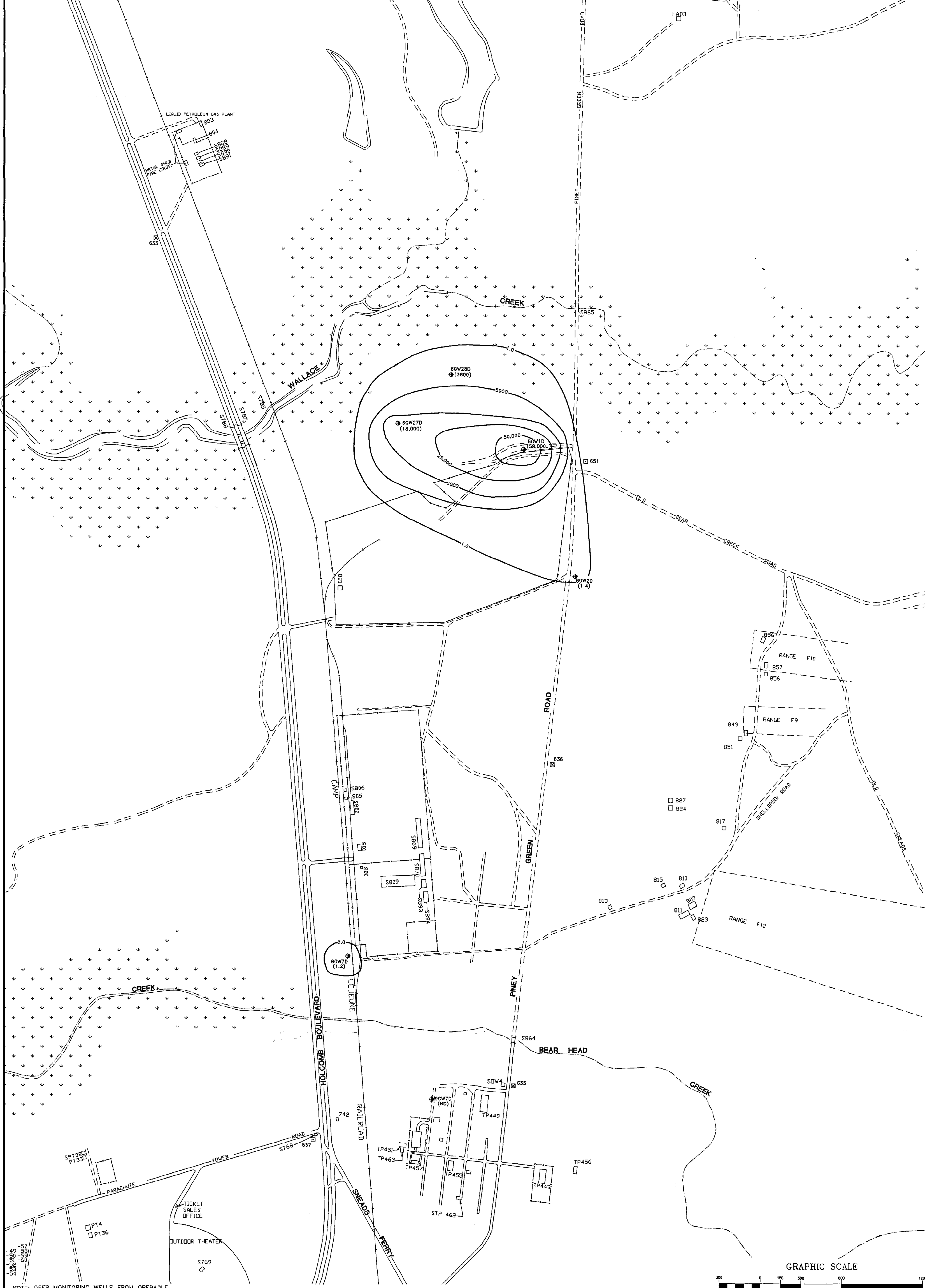
REMEDIAL INVESTIGATION CTO-0133
 MARINE CORPS BASE, CAMP LEJEUNE
 NORTH CAROLINA
 BAKER ENVIRONMENTAL, Inc.
 Coraopolis, Pennsylvania



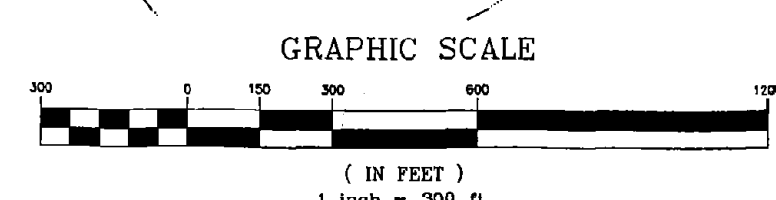
TOTAL VOCs ISOCONCENTRATION MAP FOR DEEP GROUNDWATER-PHASE I RESULTS OPERABLE UNIT No. 2
 SCALE: 1" = 300'
 DATE: JUNE 1993

FIGURE No.
 4-22



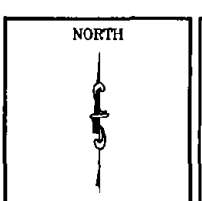


NOTE: DEEP MONITORING WELLS FROM OPERABLE UNIT No. 2 SAMPLED ON NOVEMBER 3 and NOVEMBER 4, 1992 DURING THE PHASE I INVESTIGATION (ROUND ONE DATA).



LEGEND
 6GW2D PHASE I DEEP MONITORING WELL
 (1.2) TCE CONCENTRATION (WELL SPECIFIC) IN ug/L
 (ND) TCE NOT DETECTED
 -1.0- ESTIMATED TCE ISOCONTOUR LINE (ug/L)

DATE: JUNE 1993
 SCALE: 1" = 300'
 DRAWN: R.E.L.
 REVIEWED: RPW
 S.O.#: 19133-22-SRN
 CADD#: 133127R1



REMEDIAL INVESTIGATION CTO-0133
 MARINE CORPS BASE, CAMP LEJEUNE
 NORTH CAROLINA

BAKER ENVIRONMENTAL, Inc.
 Coraopolis, Pennsylvania

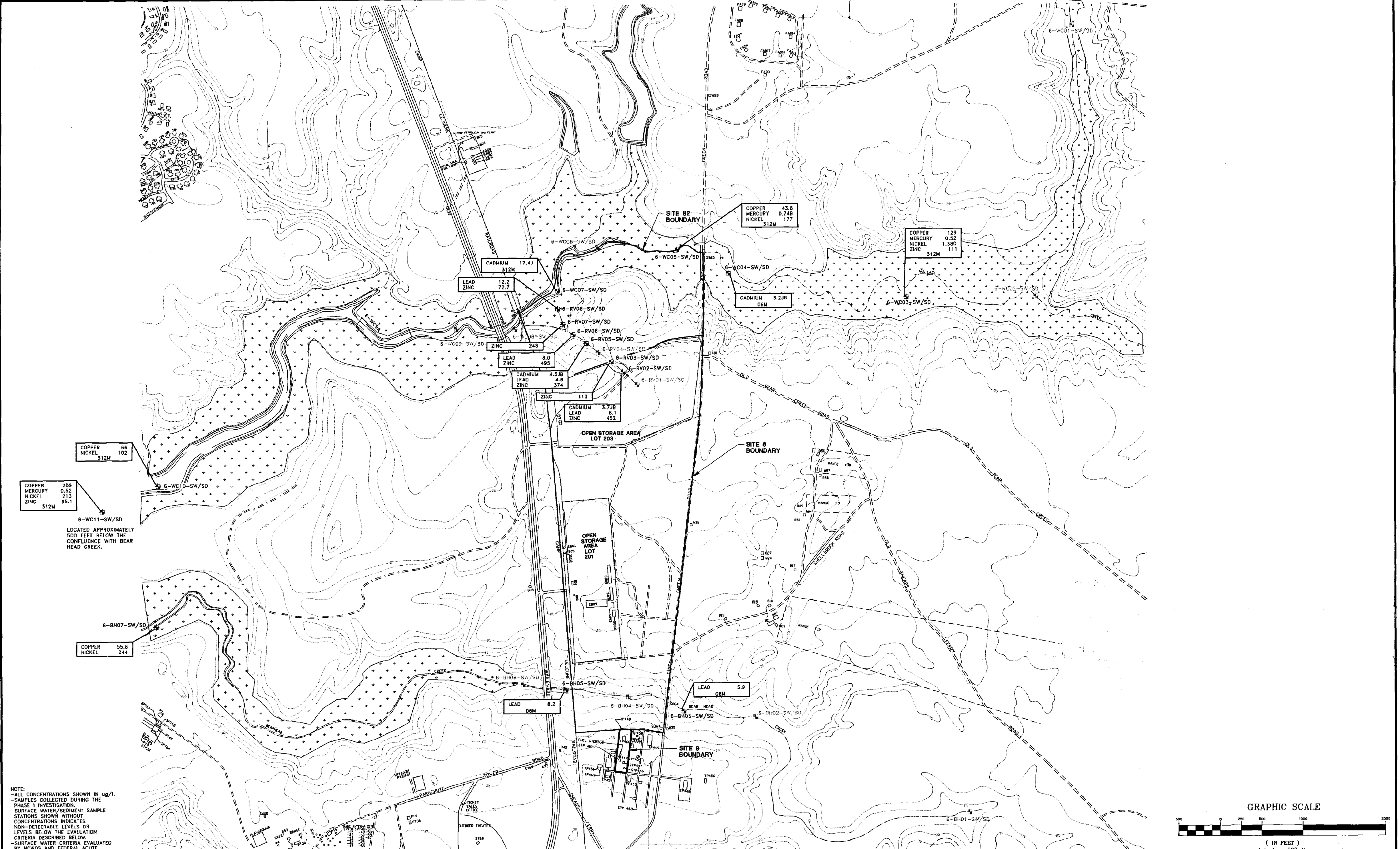


TCE ISOCONCENTRATION MAP
 FOR DEEP GROUNDWATER-PHASE I RESULTS
 OPERABLE UNIT No. 2

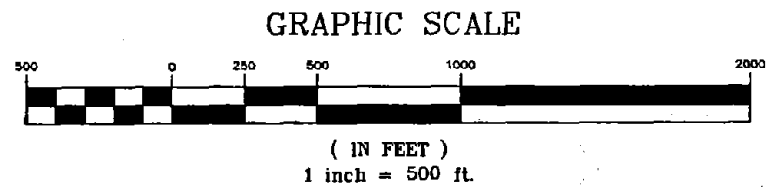
SCALE: 1" = 300'
 DATE: JUNE 1993

FIGURE No.
 4-23

SOURCE: LANTOM, FEBRUARY 1992

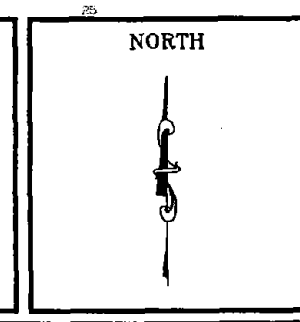


NOTE:
 -ALL CONCENTRATIONS SHOWN IN ug/l.
 -SAMPLES COLLECTED DURING THE PHASE I INVESTIGATION.
 -SURFACE WATER/SEDIMENT SAMPLE STATIONS SHOWN WITHOUT CONCENTRATIONS INDICATES NON-DETECTABLE LEVELS OR LEVELS BELOW THE EVALUATION CRITERIA DESCRIBED BELOW.
 -SURFACE WATER CRITERIA EVALUATED BY NCWQS AND FEDERAL ACUTE AND CHRONIC FRESHWATER AWQS.



LEGEND	
6-WC01-SW/SD	SURFACE WATER SAMPLE STATION
06M	SAMPLE COLLECTED FROM THE MIDDLE OF THE CREEK
312M	SAMPLE COLLECTED FROM SURFACE WATER/SEDIMENT INTERFACE

DATE	JUNE 1993
SCALE	1" = 500'
DRAWN	REL
REVIEWED	RPW
S.O.#	19133-22-SRN
CADD#	133155RI



REMEDIAL INVESTIGATION CTO-0133
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

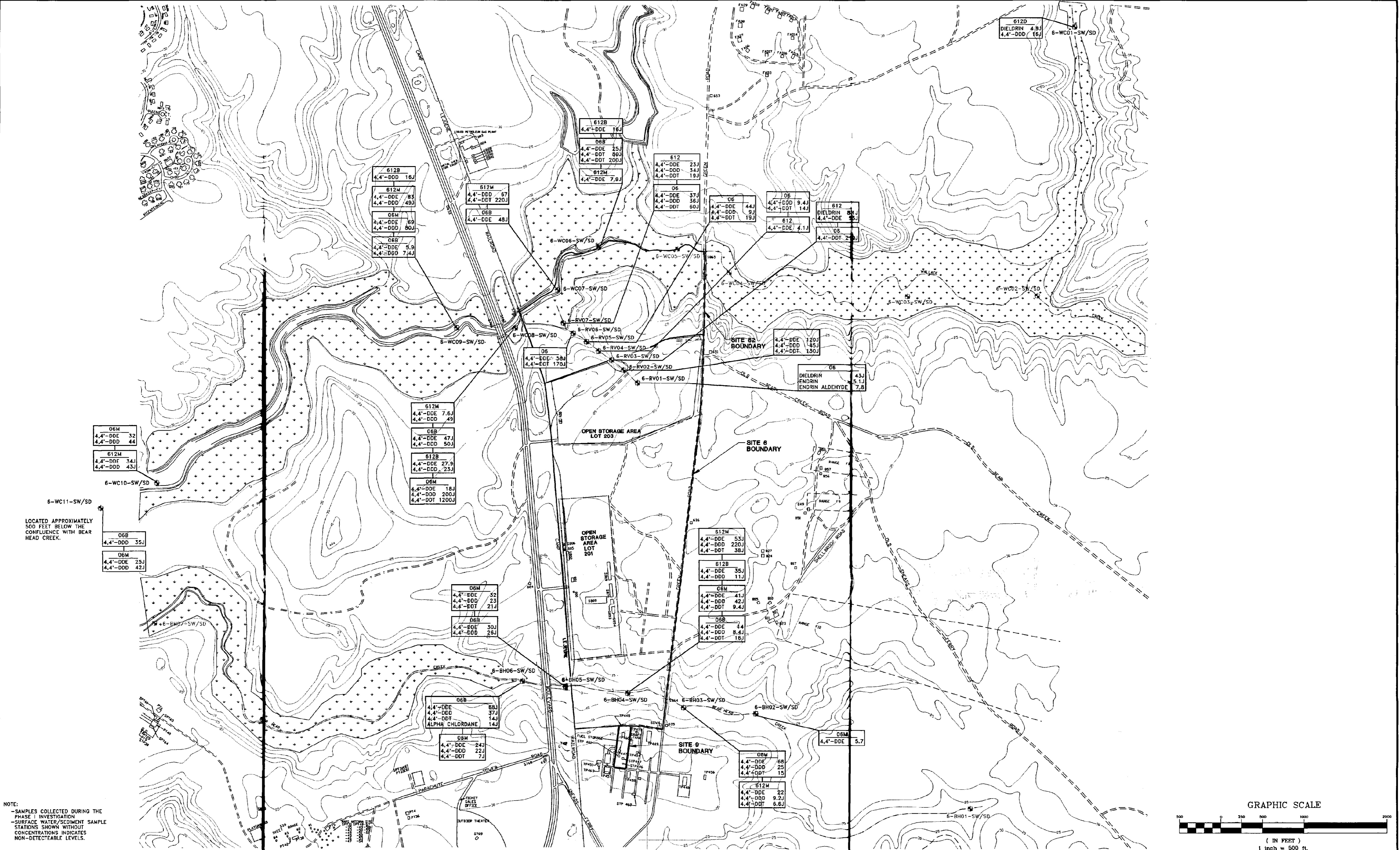
BAKER ENVIRONMENTAL, Inc.
 Coraopolis, Pennsylvania



INORGANIC CONTAMINANTS OF CONCERN WHICH EXCEED SURFACE WATER CRITERIA IN BEAR HEAD CREEK, WALLACE CREEK AND THE RAVINE SITE 6

 SCALE 1" = 500' DATE JUNE 1993

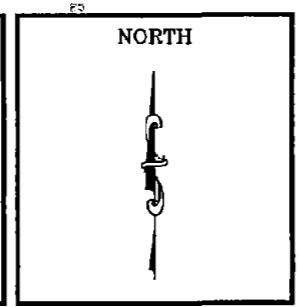
FIGURE No.
4-29



NOTE:
 -SAMPLES COLLECTED DURING THE PHASE I INVESTIGATION
 -SURFACE WATER/SEDIMENT SAMPLE STATIONS SHOWN WITHOUT CONCENTRATIONS INDICATES NON-DETECTABLE LEVELS.

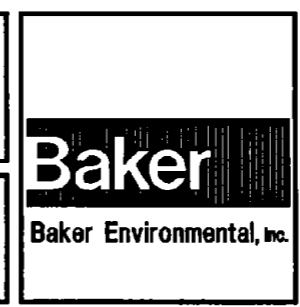
LEGEND	
BH02	- SEDIMENT SAMPLE STATION
06M	- SAMPLE LOCATION
4,4'-DDE 5.7	- PESTICIDE DETECTED AND CONCENTRATION (ug/kg)
06	- SAMPLE COLLECTED FROM THE TOP OF 6-INCHES OF SEDIMENT
M	- SAMPLE COLLECTED FROM MIDDLE OF CREEK
B	- SAMPLE COLLECTED FROM SOUTH BANK
312	- SAMPLE COLLECTED FROM SURFACE WATER/SEDIMENT INTERFACE
612	- SAMPLE COLLECTED FROM 6 TO 12 INCHES OF SEDIMENT

DATE: JUNE 1993
 SCALE: 1" = 500'
 DRAWN: WJH/REL
 REVIEWED: RPW
 S.#: 19133-22-SRN
 CAD#: 133110R1



REMEDIAL INVESTIGATION CTO-0133
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

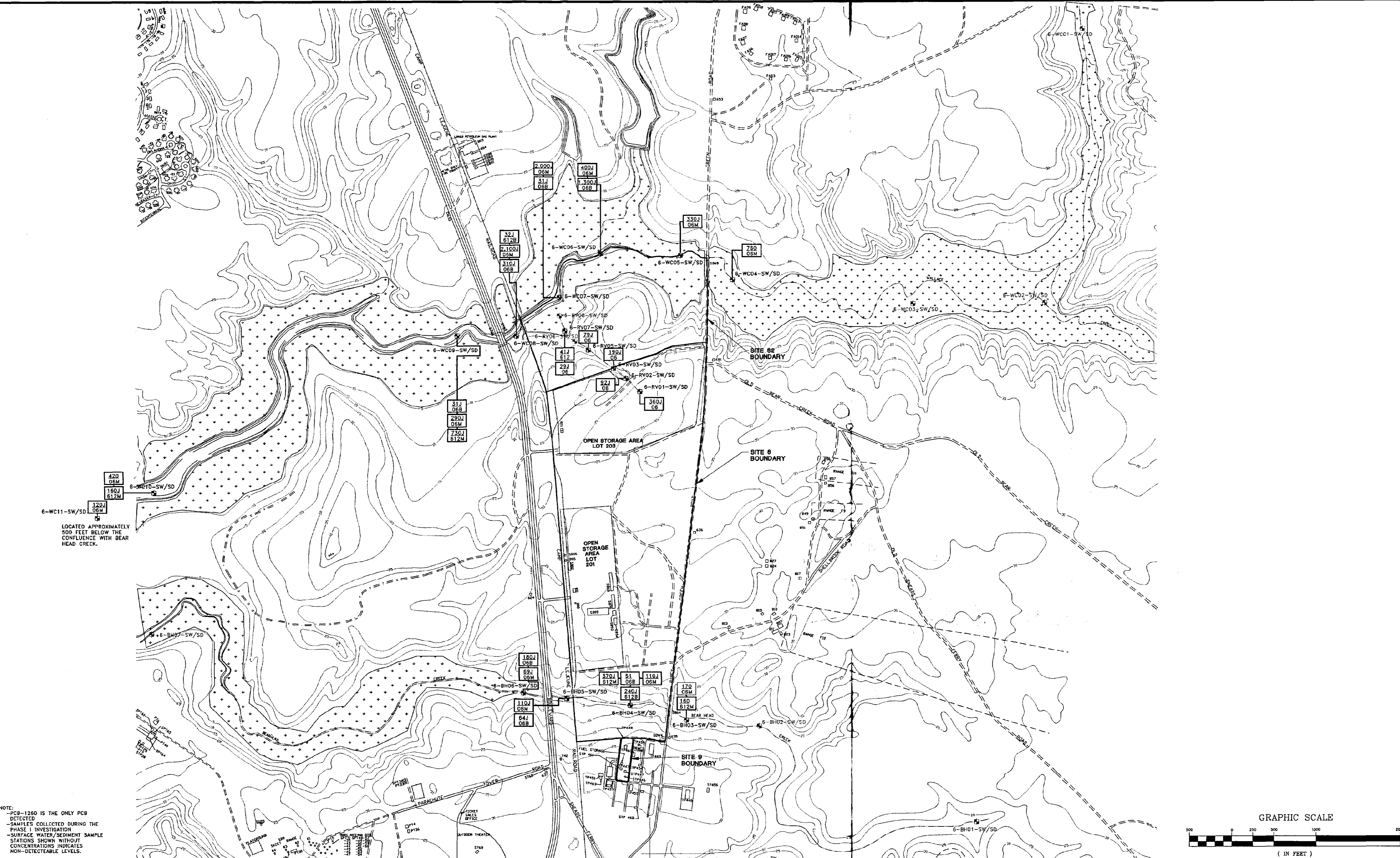
BAKER ENVIRONMENTAL, Inc.
 Coraopolis, Pennsylvania



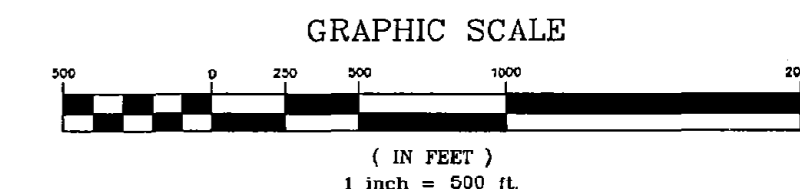
POSITIVE DETECTIONS OF PESTICIDES IN
 SEDIMENTS FROM BEAR HEAD CREEK,
 WALLACE CREEK, THE RAVINE AND
 SITE 6

SCALE: 1" = 500'
 DATE: JUNE 1993

FIGURE No.
4-30

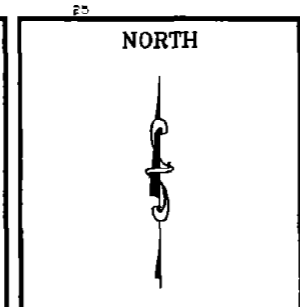


NOTE:
 -PCB-1260 IS THE ONLY PCB DETECTED
 -SAMPLES COLLECTED DURING THE PHASE 1 INVESTIGATION
 -SURFACE WATER/SEDIMENT SAMPLE STATIONS SHOWN WITHOUT CONCENTRATIONS INDICATES NON-DETECTABLE LEVELS.



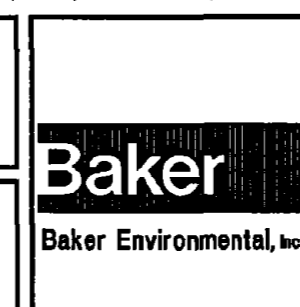
LEGEND	
BH5	SEDIMENT SAMPLE STATION
120	PCB-1260 CONCENTRATION IN ug/kg
06M	SAMPLE LOCATION
06	SAMPLE COLLECTED FROM THE TOP OF 6-INCHES OF SEDIMENT
M	SAMPLE COLLECTED FROM MIDDLE OF CREEK
B	SAMPLE COLLECTED FROM SOUTH BANK
312	SAMPLE COLLECTED FROM SURFACE WATER/SEDIMENT INTERFACE
612	SAMPLE COLLECTED FROM 6 TO 12 INCHES OF SEDIMENT

DATE JUNE 1993
 SCALE 1" = 500'
 DRAWN WJH/REL
 REVIEWED RPW
 S.O.# 19133-22-SRN
 CADD# 133111R1



REMEDIAL INVESTIGATION CTO-013
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

BAKER ENVIRONMENTAL, Inc.
 Coraopolis, Pennsylvania

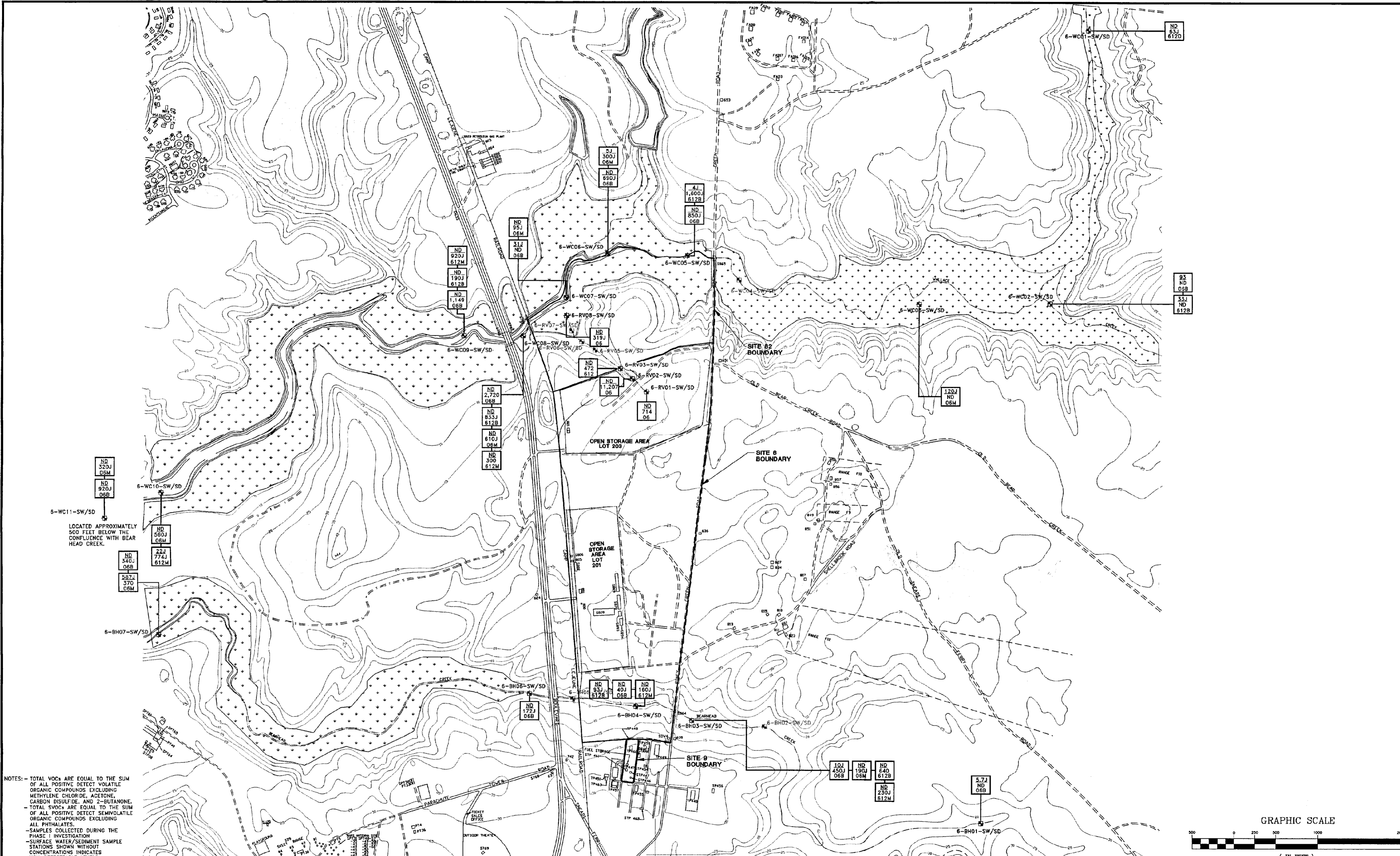


POSITIVE DETECTIONS OF PCBs IN
 SEDIMENTS FROM BEAR HEAD CREEK, WALLACE CREEK,
 THE RAVINE AND SITES 6 AND 82

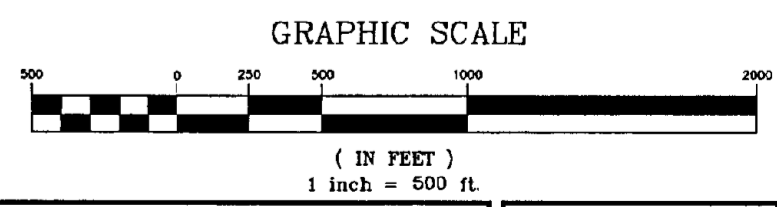
SCALE 1" = 500'
 DATE JUNE 1993

FIGURE No.
4-31

SOURCE: LANTDIV, FEBRUARY 1992

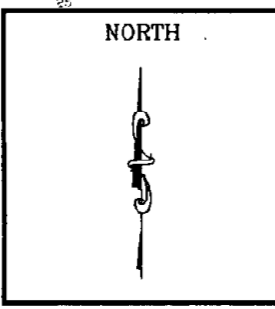


NOTES: - TOTAL VOCs ARE EQUAL TO THE SUM OF ALL POSITIVE DETECT VOLATILE ORGANIC COMPOUNDS EXCLUDING METHYLENE CHLORIDE, ACETONE, CARBON DISULFIDE, AND 2-BUTANONE.
 - TOTAL SVOCs ARE EQUAL TO THE SUM OF ALL POSITIVE DETECT SEMI-VOLATILE ORGANIC COMPOUNDS EXCLUDING ALL PHTHALATES.
 - SAMPLES COLLECTED DURING THE PHASE I INVESTIGATION
 - SURFACE WATER/SEDIMENT SAMPLE STATIONS SHOWN WITHOUT CONCENTRATIONS INDICATES NON-DETECTABLE LEVELS.



LEGEND	
BH7	- SEDIMENT SAMPLE STATION
58ZJ	- TOTAL VOCs IN ug/kg
370	- TOTAL SVOCs IN ug/kg
06	- SAMPLE COLLECTED FROM THE TOP OF 6-INCHES OF SEDIMENT
M	- SAMPLE COLLECTED FROM MIDDLE OF CREEK
B	- SAMPLE COLLECTED FROM SOUTH BANK
312	- SAMPLE COLLECTED FROM SURFACE WATER/SEDIMENT INTERFACE
612	- SAMPLE COLLECTED FROM 6 TO 12 INCHES OF SEDIMENT
SOURCE: LANDIV, FEBRUARY 1992	

DATE	JUNE 1993
SCALE	1" = 500'
DRAWN	WJH/REL
REVIEWED	RPW
S.O.#	19133-22-SRN
CADD#	133156R1



REMEDIAL INVESTIGATION CTO-0133
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

BAKER ENVIRONMENTAL, Inc.
 Coraopolis, Pennsylvania



POSITIVE DETECTIONS OF VOCs AND SVOCs IN
 SEDIMENTS FROM BEARHEAD CREEK,
 WALLACE CREEK, THE RAVINE AND
 SITES 6 AND 82

SCALE 1" = 500' DATE JUNE 1993

FIGURE No.
4-32

TR 1952C 01		TR 1952C 05	
VOCs	ND	VOCs	ND
TETRACHLOROETHENE	5	TETRACHLOROETHENE	40
SVOCs	ND	SVOCs	ND
PESTICIDES	ND	PESTICIDES	ND
METALS	101B	METALS	73.6B 167B
BARIUM		ARSENIC	
		BARIUM	

SITE 6
(NORTHERN BOUNDARY)
SITE 82
(SOUTHERN BOUNDARY)

TR 1964A 02		TR 1964A 04	
VOCs	ND	VOCs	ND
SVOCs	ND	SVOCs	ND
PESTICIDES	ND	PESTICIDES	ND
METALS		METALS	
BARIUM	3360	BARIUM	146B
CADMIUM	31.3	CADMIUM	3.7B
CHROMIUM	16.8B	LEAD	217
LEAD	1530		
SELENIUM	136B		

TR 1970D 01		TR 1970D 05	
VOCs	ND	VOCs	ND
SVOCs	ND	SVOCs	ND
PESTICIDES	ND	PESTICIDES	ND
METALS		METALS	
BARIUM	585	BARIUM	510
CADMIUM	23.2	CADMIUM	2.1B
CHROMIUM	9B	LEAD	2780
LEAD	820	SILVER	47

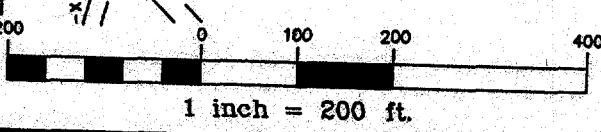
OPEN STORAGE AREA
LOT 203

GS 1960B 01	
VOCs	ND
SVOCs	ND
PESTICIDES	ND
METALS	
BARIUM	81.5B
CADMIUM	2.7B
CHROMIUM	3.7B
LEAD	31.2B

TR 1970C 02		TR 1970C 03	
VOCs	ND	VOCs	ND
TETRACHLOROETHENE	1J		
SVOCs	ND	SVOCs	ND
PESTICIDES	ND	PESTICIDES	ND
METALS		METALS	
BARIUM	150B	BARIUM	372
CADMIUM	3.3B	LEAD	53.2B
LEAD	70.4B		

GS 1960A 01		GS 1960A 02	
VOCs	ND	VOCs	ND
CHLOROFORM	200	CHLOROFORM	18
SVOCs	ND	SVOCs	ND
PESTICIDES	ND	PESTICIDES	ND
METALS		METALS	
BARIUM	161B	BARIUM	159B
LEAD	37.7B		
MERCURY	0.27B		

GS 1960D 02		GS 1960D 03	
VOCs	ND	VOCs	ND
CHLOROFORM	8	SVOCs	ND
SVOCs	ND	PESTICIDES	ND
PESTICIDES	ND	METALS	
METALS		METALS	
BARIUM	274	BARIUM	220
CADMIUM	5.7B	LEAD	209
CHROMIUM	17.8B		
LEAD	10,000		
SELENIUM	52.2B		



ROAD

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LEGEND

— TRANSECT

VOCs VOLATILE ORGANIC COMPOUNDS

SVOCs SEMIVOLATILE ORGANIC COMPOUNDS

ND NOT DETECTED

B REPORTED CONCENTRATION LESS THAN METHOD DETECTION LIMIT

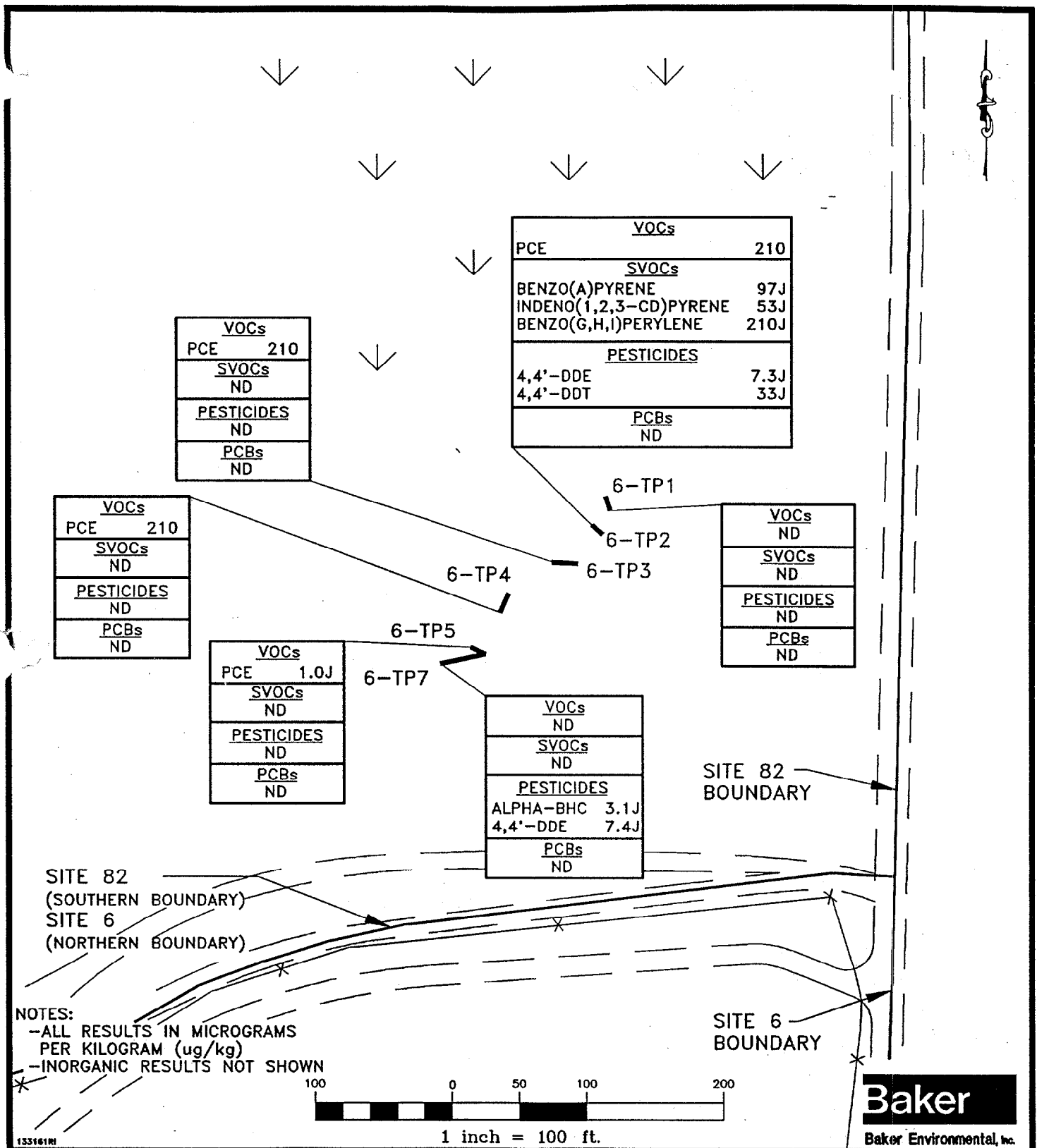
J ESTIMATED VALUE

-ALL RESULTS IN MICROGRAMS PER LITER (ug/L)

SOURCE: LANTDIV, FEBRUARY 1992

FIGURE 4-33
PHASE I TEST PIT RESULTS
SITE 6
REMEDIAL INVESTIGATION CTO-0133
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

00720F032



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LEGEND

- 6-TP1 TRANSECT
- VOCs VOLATILE ORGANIC COMPOUND
- SVOCs SEMIVOLATILE ORGANIC COMPOUND
- ND NOT DETECTED
- J ESTIMATED VALUE

FIGURE 4-34
PHASE II TEST PIT RESULTS
SITE 82
CTO-0133

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

FIGURE 6-1

CONCEPTUAL SITE MODEL
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

