Final

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

Marine Corps Base, Camp Lejeune, North Carolina

Appendices E through K Volume 2 of 4

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

APPENDIX

APPENDIX (Continued)

APPENDIX (Continued)

Appendix E
Test Boring and Well Construction Records

TEST BORING LOG LEGEND

SOIL DESCRIPTION

GRAIN SIZE IDENTIFICATION

NAME	SIZE LIMITS
Boulder	12" OR MORE
Cobbles	3" - 12"
Coarse Gravel	3/4" - 3"
Fine Gravel	4.76 mm (#4) - 3/4"
Coarse Sand	2 mm (#10) - 4.76 mm (#4)
Medium Sand	0.42 mm (#40) - 2 mm (#10)
Fine Sand	0.074 mm (#200)-0.42 mm (#40)
Silt	0.002 mm-0.074 mm (#200)
Clay	Less than 0.002 mm

RELATIVE DENSITY

NONCOHESIVE SOIL

TERM	SPT (Blows/ft)
Very Loose	Below 4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	OVER 50

COHESIVE SOILS

TERM	SPT (Blows/ft)
Very Soft	BELOW 2
Soft	2-4
Medium Stiff	4-8
Stiff	8-15
Very Stiff	15-30
Hard	OVER 30

MOISTURE	DESCRIPTIVE TERMS	
Dry -	Trace	0-10%
Damp	Little	10-20%
Moist	Some	20-35%
Wet	with = And	35-50%

ROCK DESCRIPTIONS

HARDNESS

Very Soft -	Easily gouged by knife, easily scratched by fingernail, easily broken by hand
Soft -	Gouged by knife, scratched by fingernail, difficult to break by hand, powders with hammer
Medium Hard -	Easily scratched by knife, easily broken with hammer
Hard -	Difficult to scratch, breaks with hammer
Very Hard -	Difficult to break, rings when struck

WEATHERING

Decomposed	-	Soft to Very soft, bedding and fractures indistinct, no cementation.
Highly Weathered	-	Very soft to soft, with medium hard relict rock fragments: little to moderate cementation. Vugs, openings in bedding and fractures (may be filled).
Weathered	-	Soft to medium hard. Good cementation, bedding and fractures are pronounced. Uniformly stained.
Slightly Weathered	-	Medium hard. Fractures pronounced, non-uniform staining, bedding distinct.
Fresh	-	Medium hard to hard. No staining. Fractures may be present. Bedding may or may not be indistinct.

BEDDING AND FRACTURES:

SPACING	BEDDING	FRACTURES
	Indistinct	
LESS THAN 1/2" (1 cm)	Laminated	Fissile
1/2" to 1" (1cm-3cm)	Very Thin	Very Close
1" TO 4" (3cm-10cm)	Thin	Close
4" TO 1' (10cm-30cm)	Moderate	Moderate
1' TO 3' (30 cm-1m)	Thick	Wide
3' TO 10' (1m-3m)	Massive	Very Wide

CONTACTS:

_____ = DEFINITE

_ _ _ _ _ = INDEFINITE

. . . . . = GRADATIONAL

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash (Roller Bit)
C = Core
P = Piston
N = No Sample Taken

ABBREVIATIONS

HS = Hollow Stem
NP = Non Plastic
-PL = Below the Plastic Limit
PL = At the Plastic Limit
+PL = Above the Plastic Limit
+LL = Above the Liquid Limit
SPT = Standard Penetration Test
RQD = Rock Quality Designation

E.1
Sites 6 and 82 - Shallow Wells

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Storage Lot 201 South, Camp Lejeune RI/FS
CTO NO.: 19133 BORING NO.: 6GW9
COORDINATES: EAST: 2502278.8 NORTH: 343595.0
ELEVATION: SURFACE: 18.6 TOP OF PVC CASING: 21.11

RIG: ATV Mobile B-53									
	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	TOP OF CASING WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		3 1/4" ID 8 1/4" ID		9/24/92	20	Overcast		
LENGTH	2.0'		5.0'		9/25/92		Cloudy, 70°s	9.26	24 hrs.
TYPE	STD		HSA		9/30/92		Sunny, 70°s	9.08	144 hrs.
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Soil samples collected 9/24/92. Casing set on 9/25/92. Type II Monitoring Well installed to 19.1' below ground surface.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	2.5 stick up	5.3
Well Screen	4"	Schedule 40 PVC, 10 slot	5.3	18.7

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
2.0	S-1	0.8/2 4%	1 1 1 1		1.2	**SILT**, trace sand fine grained (ML); grey; very loose; dry **SILT**,trace SAND fine grained (ML); yellow loose; dry	Top of Bentonite 1.0'	13.1
4.0	S-2	1.25/2 63%	3 3 5 5		1.25	**SILT** and **SAND**, fine (ML); yellow; medium dense; dry to damp	Top of Sand 3.0'	
6.0	S-3	1.6/2 83%	4 6 6 3		1.3	**SAND**, fine some silt (SM); white; medium dense; wet mottled orange	Top of Screen 5.3'	
						5.5' Water at 6.0'		
8.0	S-4	1.25/2 63%	8 11 15 17		1.25		Water at 9.26' TOC on 9/25/92	
10.0	A-N							
						Match to Sheet 2		

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Tom Cramer BORING NO.: 6GW9 SHEET 1 OF 2

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Storage Lot 201 South, Camp Lejeune RI/FS

S.O. NO.: 19133 BORING NO.: 6GW9

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1		
12								
13.0	A-N					**SAND**, fine grained and **SILT**(SM); white; medium dense; wet	Sand pack No. 2 sand	
14		2.0/2	2			**SAND**, fine grained and **SILT** (SM); light grey; medium dense; wet; yellow streaks		
15.0	S-5	100%	6 10 14		1.35			
16								
17	A-N						Bottom of screen at 18.7'	
18								
19		2.0/2	8 7				Bottom of Well at 19.1'	
20.0	S-6	100%	7 8			End of Boring at 20.0'		-1.4
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: Kenneth A. Tua

DRILLER: Tom Cramer BORING NO.: 6GW9 SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 6, Lot 201 South, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW10
COORDINATES: EAST: 25022630.7 NORTH: 343548.1
ELEVATION: SURFACE: 17.2 TOP OF PVC CASING: 19.88

RIG: B-47	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8"ID		3 1/4" ID 8 1/4" ID		9-23-92	18'		5	
LENGTH	2'		5'						
TYPE	STD		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Advanced boring to 18.5'collecting split-spoon samples. Installed a Type II monitoring well at 18'.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	2.7 stickup	3.8
Well Screen	4"	Schedule 40 PVC, 10 slot	3.8	17.5

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
1	S-1	.5/2.0 25%	1 3 4 7			**SAND**, fine, little silt(SM); brown; loose; damp	2.7' of stick-up Cement Top of Bentonite 1.0'	
2								
3	S-2	2.0/2.0 100%	3 4 5 7			**SAND**, fine, trace silt (SM); yellow; loose; damp	Top of Sand 2.0' No. 2 Sand 2.0'	
4							Top of Screen 3.9'	
5	S-3	1.66/2.0 83%	5 4 8 8			**SAND**, fine, little silt (SM); gray; medium dense; damp to wet, water	Water at TOC on 9-25-92	
6								
7								
8								
9	AN							
10								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Tom Cramer BORING NO.: 6GW10 SHEET 1 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 6, Lot 201 South, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW10

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11–12	S-4	2.0 / 2.0 / 100%	3 / 5 / 22 / 29			**SAND**, fine, little silt (SM); white; medium dense; wet, flowing sand		
12–16	AN							
16–18	S-5	2.0 / 2.0 / 100%	3 / 10 / 22 / 29			**SAND**, fine, little silt (SM); white; dense; wet, flowing sand		
18	AN					18.5'	Bottom of screen at 17.5'	
19–30						End of Boring at 18.5'	Bottom of Well at 18.0' End of Boring at 18.5'	

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Tom Cramer BORING NO.: 6GW10 SHEET 2 OF 2

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Storage Lot 203, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW11
COORDINATES: EAST: 2502247.0 NORTH: 347386.6
ELEVATION: SURFACE: 32.4 TOP OF PVC CASING: 35.05

RIG: B-53	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	TOC WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8"		3 1/4" ID 8 1/4" ID		10-10-92	0-19	Cool, muggy		
LENGTH	2'		5'		10-12-92	--	Sunny, 70°s	17.81	48 hrs.
TYPE	STD		HSA		10-26-92	--	Cloudy, 70°s	18.16	384 hrs.
HAMMER WT.	140#				11-07-92	--	Cloudy, 50°s	18.47	672 hrs.
FALL	30"								
STICK UP									

REMARKS: Advanced boring to 19.5'collecting split-spoon samples. Installed a Type II monitoring well at 18.7'.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	2. 6 stickup	4.0
Well Screen	4"	Schedule 40 PVC, 10 slot	4.0	18.4

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
1	S-1	2.0/2.0 100%	5 11 19 13		0.9	**SAND**, medium grained, trace gravel, trace silt (SM); grey; dense; damp	Top of Bentonite 1.0'	
2								
3	S-2	1.7/2.0 85%	8 8 7 8		0.8	**SAND**, coarse grained, little silt (SM); black; medium dense; moist	Top of Sand 2.5'	
4							Top of Screen 4.0'	
5	S-3	1.6/2.0 80%	4 1 3 4		0.7	**SAND**, medium grained, little silt (SM); brown; loose; wet, water table at 4'		
6								
7								
8								
9	AN							
10								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: James S. Culp
DRILLER: Chad Chism BORING NO.: 6GW11 SHEET 1 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 6, Storage Lot 203, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW11

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11–12	S-4	0.7 / 2.0 — 35%	5 6 7 12			**SAND**, medium grained, little silt (SM); grey; medium dense; wet		
13–16	AN							
16						16.5'		15.9
17						**SANDY CLAY** (SC); grey; very dense; saturated		14.8
17–18						17.6'		
18–19	S-5	2.0 / 2.0 — 100%	10 15 22 26			**SAND**, medium grained, little silt (SM); brown; very dense; wet	Bottom of screen at 18.4' Bottom of Well at 18.7' End of Boring at 19.5'	
19						19.5'		12.9
20–30						End of Boring at 19.5'		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: James S. Culp
DRILLER: Chad Chism BORING NO.: 6GW11 SHEET 2 OF 2

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Lot 201 South, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW12
COORDINATES: EAST: 2502207.4 NORTH: 344288.1
ELEVATION: SURFACE: 17.0 TOP OF PVC CASING: 18.29

RIG: B-53									
	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8"ID		3 1/4" ID 8 1/4" ID		9-24-92	18'		4'	
LENGTH	2'		5'						
TYPE	STD		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Advanced boring to 18.5'collecting split-spoon samples. Installed a Type II monitoring well at 18'.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	1.3 stickup	3.8
Well Screen	4"	Schedule 40 PVC, 10 slot	3.8	17.6

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
1	S-1	1.25/2.0 63%	2 3 3 3			SAND, fine, and SILT(SM), organics; light gray; loose; damp	2.5' of stick-up Cement Top of Bentonite 1.0'	
2								
3	S-2	1.62/2.0 82%	3 7 12 14			SAND, fine, and SILT(SM); light gray; medium dense; moist 5.5 sand, fine, little silt Water	Top of Sand 2.4' No. 2 Sand 2.0' Top of Screen 3.8'	
4								
5	S-3	1.16/2.0 58%	8 13 18 25			SAND, fine, trace silt (SM); white; wet	Water table at TOC on 9-26-92	
6								
7								
8								
9	AN							
10								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Tom Cramer BORING NO.: 6GW12 SHEET 1 OF 2

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Lot 201 South, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW12

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11–12	S-4	1.08 54%	6 4 4 4			**SAND**, fine, and **SILT** (SM); light gray; loose; wet		
13–16	AN							
17–18	S-5	1.66 2.0 83%	6 8 7 9			**SAND**, fine, some silt, little clay (SM); gray/ green; medium dense; wet	Bottom of screen at 17.6'	
18	AN					18.5'		
19–30						End of Boring at 18.5'	Bottom of Well at 18.0' End of Boring at 18.5'	

DRILLING CO.: Hardin Huber, Inc.
DRILLER: Tom Cramer
BAKER REP.: Kenneth A. Tua
BORING NO.: 6GW12
SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 6, Lot 201 South, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW13
COORDINATES: EAST: 2502444.9 NORTH: 344291.7
ELEVATION: SURFACE: 18.1 TOP OF PVC CASING: 20.10

RIG: B-53	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8"ID		3 1/4" ID 8 1/4" ID		9-24-92	18'		4'	
LENGTH	2'		5'						
TYPE	STD		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Advanced boring to 18.5'collecting split-spoon samples. Installed a Type II monitoring well at 18'.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	2.0 stickup	3.8
Well Screen	4"	Schedule 40 PVC, 10 slot	3.8	17.6

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
1	S-1	.91/2.0 45%	6 3 8 5			**SAND**, fine, little silt(SM), organics; light gray; medium dense; dry	2.0' of stick-up Cement Top of Bentonite 1.0'	
2								
3	S-2	1.66/2.0 83%	2 3 4 4			**SAND**, fine, organics; (SM) black; loose; moist	Top of Sand 2.0' No. 2 Sand Pack	
4						Water	Top of Screen 3.8'	
5	S-3	1.33/2.0 67%	4 5 8 11			**SAND**, fine, some silt (SM); light brown; medium dense; wet	Water table at TOC on 9-26-92	
6								
7								
8								
9	AN							
10								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Tom Cramer BORING NO.: 6GW13 SHEET 1 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 6, Lot 201 South, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW13

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11–12	S-4	2.0 / 2.0 100%	4 5 4 5			**SAND**, fine, some silt (SM); gray/ green; loose; wet		
13–16	AN							
16–18	S-5	2.0 / 2.0 100%	1 1 1 1			**SAND**, fine, little silt, trace clay (SM); gray/ green; loose; wet	Bottom of screen at 17.6'	
18	AN					18.5'		
19–30						End of Boring at 18.5'	Bottom of Well at 18.0' End of Boring at 18.5'	

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Tom Cramer BORING NO.: 6GW13 SHEET 2 OF 2

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Storage Lot 201 East, Camp Lejeune RI/FS
CTO NO.: 19133 BORING NO.: 6GW14
COORDINATES: EAST: 2502823.2 NORTH: 344497.9
ELEVATION: SURFACE: 25.5 TOP OF PVC CASING: 28.49

RIG: ATV Mobile B-53	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		3 1/4" ID 8 1/4" ID		10/6/92	0.0 - 24.0	Cool, Sunny		
LENGTH	2.0'		5.0'		10/9/92	--	Cloudy, Rainy, 70°s	10.91	72 hrs.
TYPE	STD		HSA		10/26/92	--	Cloudy, 70°s	11.50	480 hrs.
HAMMER WT.	140#				11/7/92	--	Cloudy, 50°s	11.90	792 hrs.
FALL	30"								
STICK UP									

REMARKS: Advanced boring to 23.0'. Type II Monitoring Well installed to 22.0'

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	3.0 Stickup	7.5
Well Screen	4"	Schedule 40 PVC, 10 slot	7.5	21.7

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm	Visual Description	Well Installation Detail	Elevation
1						**GRASS** and organic material to 6"	0.5'	25
2	2.0	S-1	1.3/2 65%	3 3 4 5		1	**SAND**, medium to fine grained; trace silt (SM); grey; loose; damp	
3								
4	4.0	S-2	1.5/2 75%	6 4 4 6		8	**SAND**, medium to fine grained; trace silt (SM); light grey; loose; damp	Top of Bentonite 3.25'
5								
6	6.0	S-3	1.2/2 60%	2 5 5 7		7	**SAND**, medium to fine grained; trace silt(SM) ; yellow white; medium dense; damp	Top of Sand 5.0'
7								
8	8.0	S-4	1.6/2 80%	7 8 9 10		1	**SAND**, medium to fine grained; trace silt (SM); white; medium dense; wet. Water Table at 8.0'	Top of Screen 7.5'
9								
10	10.0	S-5	1.6/2 80%	17 18 16 17		0	**SAND**, medium to fine grained; trace silt(SM) ; white; dense; wet	
							Match to Sheet 2	

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: James S. Culp
DRILLER: Chad Chism BORING NO.: 6GW14 SHEET 1 OF 2

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Storage Lot 201 East, Camp Lejeune RI/FS

S.O. NO.: 19133 BORING NO.: 6GW14

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1		
12	A/N							
13.0								
14	S-6	2.0	5 11 9 7			SAND, medium to fine grained; trace silt(SM) ; white medium dense; wet		
15.0		45%						
16	A/N							
17 20.0								
18								
19								
20								
21	S-7	2.0	12 5 3 6			SAND, medium to fine grained; trace silt (SM); white; loose; wet	Bottom of screen at 21.7'	
22 22.0		100%					Bottom of Well at 22.0'	3.5
23						End of Boring at 23.0'	End of Boring at 23.0'	
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: James S. Culp

DRILLER: Chad Chism BORING NO.: 6GW14 SHEET 2 OF 2

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Storage Lot 203, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW15
COORDINATES: EAST: 2503135.9 NORTH: 347699.8
ELEVATION: SURFACE: 26.1 TOP OF PVC CASING: 29.07

RIG: B-53	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	TOC WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8"		3 1/4" ID 8 1/4" ID		10-10-92	0-19	Cool, muggy		
LENGTH	2'		5'		10-12-92	--	Sunny, 70°s	10.79	48 hrs.
TYPE	STD		HSA		10-26-92	--	Cloudy, 70°s	11.09	384 hrs.
HAMMER WT.	140#				11-07-92	--	Cloudy, 50°s	11.27	720 hrs.
FALL	30"								
STICK UP									

REMARKS: Advanced boring to 20.5' with hollow-stem augers; Installed a Type II monitoring well at 20'.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	2. 9 stickup	5.4
Well Screen	4"	Schedule 40 PVC, 10 slot	5.4	19.7

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
1	S-1	1.6/2.0 80%	2 4 7 7			**SILT**, some sand, medium grained (ML/SM); brown; stiff; damp 1.2	Top of Bentonite 1.5'	24.9
2						**SAND**, fine grained, little silt; grey; loose; damp		
3	S-2	1.8/2.0 90%	4 3 1 4			**SAND**, fine grained, little silt (SM); grey; loose; damp	Top of Sand 3.0'	
4								
5	S-3	1.4/2.0 70%	6 8 7 6			**SAND**, medium to fine grained, little silt (SM); white; medium dense; moist to wet, water table at 7'	Top of Screen 5.4'	
6								
7	S-4	1.8/2.0 90%	3 7 8 10					
8								
9								
10								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: James S. Culp
DRILLER: Chad Chism BORING NO.: 6GW15 SHEET 1 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 6, Wooded Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW15

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11	AN							
12						SAND, fine grained, little silt (SM); grey; loose; wet	12.5'	13.6
13	S-5	2.0/2.0 100%	WOH 2 4 5			SILT, trace clay, trace sand (ML); grey; medium stiff; wet	13.1'	13.0
14						SAND, fine grained, little silt(SM); grey; loose; wet		
15								
16	AN							
17								
18							Bottom of screen at 19.7'	
19	S-6	2.0/2.0 100%	5 7 5 12			SAND, medium grained, little silt (SM); grey; medium dense; wet	Bottom of Well at 20.0' End of Boring at 20.5'	
20								
21						End of Boring at 20.5'		5.6
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: James S. Culp
DRILLER: Chad Chism BORING NO.: 6GW15 SHEET 2 OF 2

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Storage Lot 201, North RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW16
COORDINATES: EAST: 2502472.2 NORTH: 346417.1
ELEVATION: SURFACE: 24.9 TOP OF PVC CASING: 27.63

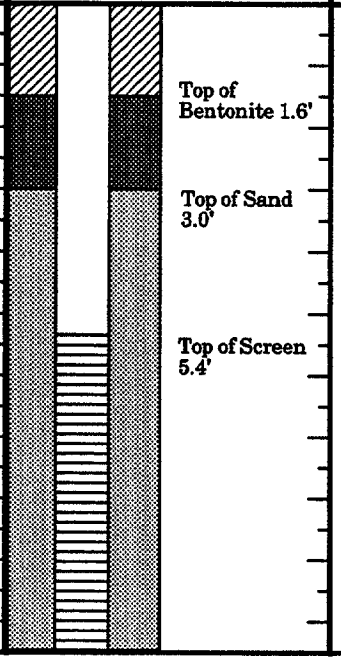
RIG: B-53	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8"ID		3 1/4" ID 8 1/4" ID		10-11-92	0 - 20	Cool, humid		
LENGTH	2'		5'		10-12-92	--	Sunny, 70°s	7.35	24 hrs.
TYPE	STD		HSA		10-26-92	--	Cloudy, 70°s	8.05	360 hrs.
HAMMER WT.	140#				11-7-92	--	Cloudy, 50°s	8.48	576 hrs.
FALL	30"								
STICK UP									

REMARKS:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	2.5	5.4
Well Screen	4"	Schedule 40 PVC, 10 slot	5.4	19.8

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description
1	S-1	1.6/2.0 80%	2 3 4 7			SAND, medium to fine grained, little silt(SM); brown; loose; damp
3	S-2	2.0/2.0 100%	7 8 9 9			SAND, medium to fine grained, little silt(SM); brown; medium dense; damp
5	S-3	1.7/2.0 85%	7 8 10 12			SAND, medium to fine grained, little silt(SM); brown; medium dense; moist
7	S-4	1.5/2.0 75%	7 11 10 12			SAND, medium to fine grained, little silt(SM); white; medium dense; wet, groundwater encountered at 6.0'
9	A-N					



DRILLING CO.: Hardin Huber, Inc. BAKER REP.: James S. Culp
DRILLER: Chad Chism BORING NO.: 6GW16 SHEET 1 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 6, Seorage Lot 201 North, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW16

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11	A-N					SAND, fine grained, little silt(SM); white; medium dense, wet		
12								
13	S-5	2.0/2.0 100%	5 13 14 16					
14								
15	A-N							
16								
17								
18								
19	S-6	2.0/2.0 100%	11 9 9 9			SAND, fine grained, little silt(SM); white; medium dense, wet		
20						20.0' End of Boring at 20.0'	Bottom of screen at 19.8' Bottom of Well at 20.0' End of Boring at 20.5'	4.9
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Hardin Huber, Inc.
DRILLER: Chad Chism
BAKER REP.: James S, Culp
BORING NO.: 6GW16
SHEET 2 OF 2

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Storage Lot 201 East, Camp Lejeune RI/FS
CTO NO.: 19133 BORING NO.: 6GW17
COORDINATES: EAST: 2503149.0 NORTH: 344918.9
ELEVATION: SURFACE: 25.7 TOP OF PVC CASING: 28.10

RIG:	ATV Mobile B-53								
	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	TOC WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		3 1/4" ID 8 1/4" ID		9/25/92	18.5	Overcast, 70°s		
LENGTH	2.0'		5.0'		9/30/92		Sunny, 70°s	7.82	120 hrs.
TYPE	STD		HSA		10/10/92		Sunny, 70°s	7.52	360 hrs.
HAMMER WT.	140#				10/26/92		Cloudy, 70°s	8.18	744 hrs.
FALL	30"				11/7/92		Cloudy, 50°s	8.64	1032 hrs.
STICK UP									

REMARKS: Adv. boring to 18.5' taking contin. split spoon samples to the water table, then at. 5.0' intervals. Type II Monitoring Well installed to 17.6'

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	3.0' stickup	2.3
Well Screen	4"	Schedule 40 PVC, 10 slot	2.3	17.1

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
2.0	S-1	1.33/2.0 65%	2 2 2 3			**SAND**, fine grained, little silt (SM); grey; dry **SILT and FINE SAND** (SM); black grey to black brown; medium stiff	Top of Bentonite 0.5' Top of Sand 1.5' Top of Screen 2.3'	
4.0	S-2	1.5/2.0 75%	3 4 6 7		0	**SAND**, fine little silt (SM); light brown to light grey; medium dense; damp	Sand pack No. 2 silica sand	
6.0	S-3	1.83/2.0 92%	8 9 10 12		0	**SILT and SAND**; fine light grey; very stiff; moist wet	Water at 4.75'	
10.0	A-N					Match to Sheet 2	Measured water level @ 8.18' TOC on 10-26-92	

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: D. J. Martin
DRILLER: Chad Chism BORING NO.: 6GW17 SHEET 1 OF 2

Baker
Baker Environmental, Inc

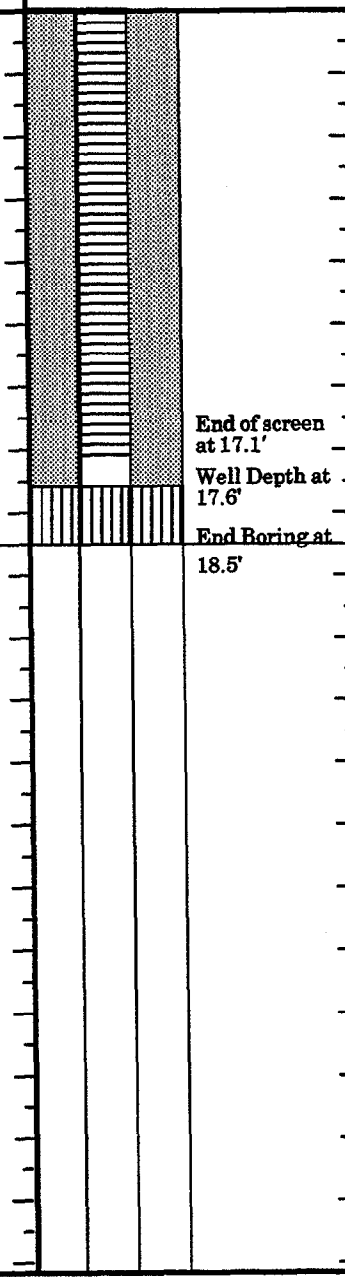
TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Storage Lot 201 East, Camp Lejeune RI/FS
S.O. NO.: 19133 BORING NO.: 6GW17

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
FID = Flamionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	FID (ppm)	Visual Description
						Continued from Sheet 1
11	S-4	1.67/2.0 84%	11 12 10 12			SAND,fine little silt (SM); light grey to buff; medium dense; wet
12.0						
13						
14	A-N					
15						
15.5						
16	S-5	1.5/2.0 75%	10 11 13 11			SAND,fine little silt (SM); buff; medium dense; wet two 1" lenses of silt and fine sand at 16.5' and 17'
17						
17.5						
18	A/N					End of Boring at 18.5'
18.5						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						



Well Installation Detail

Elevation

DRILLING CO.: Hardin-Huber, Inc.
DRILLER: Chad Chism
BAKER REP.: D. J. Martin
BORING NO.: 6GW17
SHEET 2 OF 2

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Storage Lot 201 East, Camp Lejeune RI/FS
CTO NO.: 19133 BORING NO.: 6GW18
COORDINATES: EAST: 2503287.7 NORTH: 345650.0
ELEVATION: SURFACE: 26.5 TOP OF PVC CASING: 29.70

RIG: ATV Mobile B-53	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	TOC WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		3 1/4" ID 8 1/4" ID		9/25/92	19.5	Overcast, 70°s		
LENGTH	2.0'		5.0'		9/30/92		Sunny, 70°s	8.58	120 hrs.
TYPE	STD		HSA		10/10/92		Sunny, 70°s	8.34	2640 hrs.
HAMMER WT.	140#				10/26/92		Cloudy, 70°s	7.99	744 hrs.
FALL	30"				11/7/92		Cloudy, 50°s	9.58	1032 hrs.
STICK UP									

REMARKS: Adv. boring to 19.5' taking contin. split spoon samples to the water table, then at. 5.0' intervals. Type II Monitoring Well installed to 18.5'

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	1.9' stickup	4.3
Well Screen	4"	Schedule 40 PVC, 10 slot	4.3	18.1

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	FID (ppm)	Visual Description	Well Installation Detail	Elevation
1	S-1	1.58/2.0 79%	2 7 8 4			Topsoil **SAND**, fine grained, little silt (SM); light grey; medium dense; dry	Cement/ Bentonite to surface Top of Bentonite 1.0'	25.1'
2						**SILT**, some fine sand (ML); brown; stiff; damp		24.0'
3	S-2	1.5/2.0 75%	7 9 8 9		0	**SAND**, little silt (SM); light brown; medium dense	Top of Sand 2.0' No. 2 silica sand	
4							Top of Screen 3.9'	
5	S-3	1.83/2.0 92%	7 9 8 10			**SAND**, fine grained, little silt; light grey; medium dense; moist, wet	Water at 5.0'	
6								
7	S-4	1.25/2.0 63%	12 9 11 13		0	**SAND**, fine little silt (SM); light grey; medium dense	Water table measured @ 7.99' TOC on 10-26-92	
8								
9	A-N							
10								

Match to Sheet 2

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: D. J. Martin
DRILLER: Chad Chism BORING NO.: 6GW18 SHEET 1 OF 2

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Storage Lot 201 East, Camp Lejeune RI/FS
S.O. NO.: 19133 BORING NO.: 6GW18

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
FID = Flamionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	FID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 1		
11	A-N					SAND, fine grained, little silt (SM); light yellow grey; loose; wet		
12 12.0								
13	S-5	1.5/2.0	3 4 4 5					
14 14.0		75%						
15								
16	A-N					SAND, fine grained, little silt (SM);beige; medium dense; wet		
17							Bottom of screen at 18.1'	
18	S-6	2.0/2.0	4 8 13 10				Bottom of Well at 18.5'	
19 19.0		100%					Boring Depth at 19.5'	
	A-N					End of Boring at 19.5'		7.0'
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: D. J. Martin
DRILLER: Chad Chism BORING NO.: 6GW18 SHEET 2 OF 2

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Storage Lot 201 East, Camp Lejeune RI/FS
CTO NO.: 19133 BORING NO.: 6GW19
COORDINATES: EAST: 2502961.2 NORTH: 346211.7
ELEVATION: SURFACE: 25.2 TOP OF PVC CASING: 27.95

RIG:	ATV Mobile B-53								
	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		3 1/4" ID 8 1/4" ID		10/6/92	0.0-20.0	Cool, Sunny		
LENGTH	2.0'		5.0'		10/10/92	--	Sunny, 70°s	6.74	96 hrs.
TYPE	STD		HSA		10/26/92	--	Cloudy, 70°s	7.49	480 hrs.
HAMMER WT.	140#				11/7/92	--	Cloudy, 50°s	7.90	768 hrs.
FALL	30"					--			
STICK UP									

REMARKS: Advanced borehole to 20' with 3¼" HSA; overdrilled borehole 8.25" HSA to 20.5', a Type II monitoring well was installed.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	2.7	5.2
Well Screen	4"	Schedule 40 PVC	5.2	19.2

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	FID (ppm)	Visual Description	Well Installation Detail	Elevation
2.0	S-1	1.6/2.0 80%	2 3 4 9		0	**SAND**, medium to fine grained; trace silt (SM); grey; loose; damp, trace organic	Top of Bentonite 1.6'	
4.0	S-2	1.7/2.0 85%	6 10 10 12		0	**SAND**, medium to fine grained; trace silt (SM); grey; medium dense; damp	Top of Sand 3.0'	
6.0	S-3	1.4/2.0 70%	7 11 11 15		0	**SAND**, medium to fine grained; trace silt (SM); brown; medium dense; moist, trace organics	Top of Screen 5.2'	
8.0	S-4	1.5/2.0 75%	11 13 16 16		1	**SAND**, medium to fine grained; trace silt (SM); brown; medium dense; wet, trace organics	Water table at 6.0'	
10.0	A-N							

Match to Sheet 2

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: James S. Culp
DRILLER: Chad Chism BORING NO.: 6GW19 SHEET 1 OF 2

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Storage Lot 201 East, Camp Lejeune RI/FS
S.O. NO.: 19133 BORING NO.: 6GW19

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
FID = Flameionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	FID (ppm)	Visual Description	Well Installation Detail	Elevation
11 — 11.0	A-N					Continued from Sheet 1		
12 — 13.0	S-5	2.0 / 100%	4 4 11 8			SAND, medium to fine grained; trace silt (SM); white; medium dense; wet		
16 — 18.0	A-N							
19 — 20.0	S-6	2.0 / 100%	10 10 8 12		0	SAND, medium to fine grained, trace silt (SM); grey; medium dense; wet	Bottom of screen at 19.3' / Bottom of Well at 20.0' / Boring Depth at 20.5'	5.2
20						End of Boring at 20.5'		

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: James S. Culp
DRILLER: Chad Chism BORING NO.: 6GW19 SHEET 2 OF 2

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Storage Lot 201 East, Camp Lejeune RI/FS
CTO NO.: 19133 BORING NO.: 6GW20
COORDINATES: EAST: 2502084.6 NORTH: 346424.3
ELEVATION: SURFACE: 22.5 TOP OF PVC CASING: 25.08

RIG: ATV Mobile B-53	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		3 1/4" ID 8 1/4" ID		10/8/92	0.0-24.0	Sunny, 70°s		
LENGTH	2.0'		5.0'		10/10/92		Sunny, 70°s	5.45	48 hrs.
TYPE	STD		HSA		10/26/92		Cloudy, 70°s	6.28	432 hrs.
HAMMER WT.	140#				11/7/92		Cloudy, 50°s	6.67	720 hrs.
FALL	30"								
STICK UP									

REMARKS: Adv. borehole to 24' w/3¼" ID HSA; borehole overdrill. 5'-flow. sands; overdrilled borehole 8¼"ID HSA. Type II Monitor. Well inst. to 19'

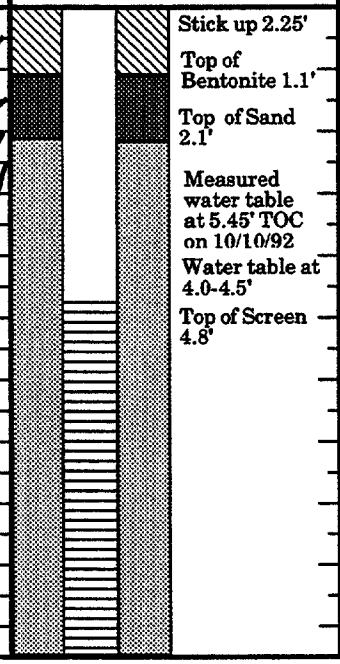
SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	2.25 stick up	4.8
Well Screen	4"	Schedule 40 PVC, 10 slot	4.8	19.4

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description
2.0	S-1	1.1 55%	1 2 3 4		1.6	Grass and organic material to 6"; brown-grey; dry **SAND**, fine grained; little organic material, trace silt (SM); brown-grey; loose; dry
4.0	S-2	1.6 80%	7 9 11 13		1.2	silty-organics (ML); brown to dark brown; dry **SAND**, fine grained, trace silt, trace organics (SM); brown to dark brown; medium dense; dry to damp
6.0	S-3	2.0 100%	13 9 9 18		1	**SAND**, fine grained, trace silt (SM); grey-brown; medium dense; wet
10.0	A-N					

Match to Sheet 2

Well Installation Detail



Elevation: 22.0, 21.0, 20.5, 20.0

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: Richard E. Bonelli
DRILLER: Chad Chism BORING NO.: 6GW20 SHEET 1 OF 2

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Storage Lot 201 East, Camp Lejeune RI/FS

S.O. NO.: 19133 BORING NO.: 6GW20

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11.0	A-N					Continued from Sheet 1		
11 – 13.0	S-4	1.4 70%	5 7 8 10		1.0	**SAND**, fine grained, trace to little silt (SM); grey-brown to light greenish white; medium dense; wet	Sand pack No. 2 sand	
13 – 19.0	S-5	1.6 80%	9 11 13 13		1.0	**SAND**, fine grained; trace to little silt (SM); light greenish white; medium dense; wet	Bottom of screen at 19.4' Bottom of Well at 19.7'	
19 – 24						End of Boring at 24.0' Overdrilled borehole because of flowing sand conditions	Borehole advance to 24.0' because of flowing sands	-1.5

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: Richard E. Bonelli

DRILLER: Chad Chism BORING NO.: 6GW20 SHEET 2 OF 2

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Storage Lot 201 East, Camp Lejeune RI/FS
CTO NO.: 19133 BORING NO.: 6GW21
COORDINATES: EAST: 2501666.8 NORTH: 346734.8
ELEVATION: SURFACE: 27.9 TOP OF PVC CASING: 30.30

RIG: Mobile B-61	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		3 1/4" ID 8 1/4" ID		9/24/92	24	Clear, 75°		
LENGTH	2.0'		5.0'		9/25/92		Sunny, 70°s	12.70	24 hrs.
TYPE	STD		HSA		9/30/92		Sunny, 70°s	12.82	144 hrs.
HAMMER WT.	140#				10/10/92		Sunny, 70°s	12.94	384 hrs.
FALL	30"				10/26/92		Cloudy, 70°s	13.30	768 hrs.
STICK UP					11/7/92		Cloudy, 50°s	13.63	1056 hrs.

REMARKS: Advanced borehole to 24' taking contin. split spoon samples to the water table, then at 5' intervals. Monitoring well installed @ 22.5'

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	2.4 stick up	7.5
Well Screen	4"	Schedule 40 PVC 10 slot	7.5	22

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	FID (ppm)	Visual Description	Well Installation Detail	Elevation
1	S-1	1.33	3			SILT AND SAND (SM); black grey; dry		
2 2.0		67%	2 2			SAND, fine grained little silt (SM); light grey to brown at tip; very loose; damp		
3	S-2	1.67	3 3					
4 4.0		84%	2 2			SAND, fine grained (SM); light brown; loose; damp		
5	S-3	1.5	2 3				Top of Bentonite 4.5'	
6 6.0		75%	2 4			SAND, fine grained (SM); light brown; loose; damp	Top of Sand 6.0' No. 2 silica sand	
7	S-4	1.5	3 4			) (SM); light brown; medium dense; damp		
8 8.0		75%	7 10				Top of Screen 8.0'	
9	S-5	1.67	6 7		0	SILT AND SAND, fine grained (ML); brown, little silt; medium; nonplastic	Measured water table at 13.30' TOC on 10/26/92	19.5 19.0
10 10.0		84%	10 11			SAND, fine grained, little silt (SM); buff; dense; damp		
						Match to Sheet 2		

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: D. J. Martin
DRILLER: Chad Chism BORING NO.: 6GW21 SHEET 1 OF 2

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Storage Lot 201 East, Camp Lejeune RI/FS
S.O. NO.: 19133 BORING NO.: 6GW21

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
FID = Flameionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	FID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 1		
11	S-6	1.0	7 11 12 11			SAND, fine grained, little silt (SM); buff; medium dense; moist,wet	Water at 11.0'	
12.0		50%						
13	A-N							
14.0								
15	S-7	2.0	7 8 10 11		0	SAND, fine grained little silt (SM); buff; medium dense; wet		
16.0		100%						
17	A-N					SAND, fine to medium grained sand trace clay, coarse sand (SC); buff; medium dense; wet		
22.0							Bottom of screen at 22.0' Bottom of Well at 22.5'	
23	S-8	2.0	9 11 13 15					
24.0		100%				End of Boring at 24.0'		3.9
25								
26								
27								
28								
29								
30								

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: D. J. Martin
DRILLER: Chad Chism BORING NO.: 6GW21 SHEET 2 OF 2

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Storage Lot 201 East, Camp Lejeune RI/FS
CTO NO.: 19133 BORING NO.: 6GW22
COORDINATES: EAST: 2502408.8 NORTH: 345918.6
ELEVATION: SURFACE: 24.5 TOP OF PVC CASING: 24.13

RIG:	Mobile B-61								
	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		3 1/4" ID 8 1/4" ID		9/24/92	20	Clear, 75°		
LENGTH	2.0'		5.0'		9/30/92		Sunny, 70°s	6.32	144 hrs.
TYPE	STD		HSA		10/13/92		Sunny, 70°s	5.38	456 hrs.
HAMMER WT.	140#				10/26/92		Cloudy, 70°s	5.84	768 hrs.
FALL	30"				11/7/92		Cloudy, 50°s	N/A	N/A
STICK UP									

REMARKS: Advanced borehole to 20' taking contin. split spoon samples to the water table, then at 5' intervals. Monitoring well installed @ 19.5'

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	Flush Mount	4.7
Well Screen	4"	Schedule 40 PVC 10 slot	4.7	19.0

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	FID (ppm)	Visual Description	Well Installation Detail	Elevation
1 – 2 / 2.0	S-1	1.0 / 50%	13 13 11 13			**SAND**, fine to medium grained, little silt, trace fine gravel (SM); brown to black grey to grey; medium dense; dry	Cement; Top of Bentonite 2.0'	
3 – 4 / 4.0	S-2	1.58 / 79%	6 7 7 10			**SAND**, fine grained, little silt (SM); light brown; medium dense; damp	Top of Sand 3.0'	
5 – 6 / 6.0	S-3	1.5 / 75%	5 4 6 7		0	**SAND**, fine grianed, AND SILT (SM); light grey; medium dense; moist	Top of Screen 4.5'; Sand pack No. 2 silica sand	
7 – 8 / 8.0	S-4	1.5 / 75%	7 12 15 22			**SAND**, fine grained, some silt (SM) fine grained sand, little silt; light grey, buff; medium dense; moist, wet	Water at 7.0'	
9 – 10 / 10.0	S-5	1.67 / 84%	6 11 22 26		0	fine grained sand, little silt (SM); buff; dense; wet	Measured water table at 5.84' TOC on 10/26/92	

Match to Sheet 2

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: D. J. Martin
DRILLER: Chad Chism BORING NO.: 6GW22 SHEET 1 OF 2

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Storage Lot 201 East, Camp Lejeune RI/FS
S.O. NO.: 19133 BORING NO.: 6GW22

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
FID = Flameionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	FID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 1		
11								
12	A-N							
13								
14.0								
14								
15	S-6	2.0	4 7 8 14			**SAND**, fine grained, little silt (SM); light grey; medium dense; wet		
16.0		100%						
16								
17	A-N							
18.0								
18								
19	S-7	2.0	8 8 11 12			**SAND**, fine grained, little silt (SM); light grey; medium dense; wet	Bottom of screen at 19.0'	
20.0		100%				End of Boring at 20.0'	Bottom of Well at 19.5'	4.5
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: D. J. Martin
DRILLER: Chad Chism BORING NO.: 6GW22 SHEET 2 OF 2

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Storage Lot 203, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW23
COORDINATES: EAST: 2502652.4 NORTH: 346870.5
ELEVATION: SURFACE: 24.5 TOP OF PVC CASING: 26.96

RIG: B-53

	SPLIT SPOON	CASING	AUGERS	CORE BARREL
SIZE (DIAM.)	1 7/8"		3 1/4" ID 8 1/4" ID	
LENGTH	2'		5'	
TYPE	STD		HSA	
HAMMER WT.	140#			
FALL	30"			
STICK UP				

DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
10-12-92	0-23	Cool, wet		
10-13-92	--	Sunny, 70°s	7.07	24 hrs.
10-26-92	--	Cloudy, 70°s	7.56	312 hrs.
11-07-92	--	Cloudy, 50°s	7.93	624 hrs.

REMARKS: Advanced boring to 23.5' taking continuous split spoon samples to the water table, then at 5' intervals. Type II monitoring well installed at 23'.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	2. 5 stickup	8.4
Well Screen	4"	Schedule 40 PVC, 10 slot	8.4	22.7

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
1	S-1	1.7/2.0 85%	2 2 3 4			**SAND**, fine grained, little silt (SM); grey brown; loose; damp		
3	S-2	1.6/2.0 80%	4 7 6 7			**SAND**, medium grained, little silt(SM); grey; medium dense; moist	Top of Bentonite 3.0'	
5	S-3	1.6/2.0 80%	4 5 5 5			**SAND**, medium grained, little silt(SM); grey; medium dense; moist	Top of Sand 5.0'	
7	S-4	2.0/2.0 100%	6 7 3 4			**SAND**, medium to fine grained, little silt(SM); grey; medium dense; wet, groundwater at 7.0'		
9	S-5	2.0/2.0 100%	5 7 9 11			**SAND**, medium to fine grained, little silt (SM); grey; medium dense; wet	Top of Screen 8.4'	
10								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: James S. Culp
DRILLER: Chad Chism BORING NO.: 6GW23 SHEET 1 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker

Baker Environmental, Inc.

PROJECT: Site 6, Wooded Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW23

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11	AN							
12								
13	S-6	2.0 / 2.0	2 3 4 8			SAND, medium to fine grained, little silt (SM); grey; loose; wet		
14		100%						
15								
16								
17	AN							
18								
19								
20	S-7	2.0 / 2.0	2 3 3 2			SAND, medium to fine grained, little silt (SM); grey; loose; wet		
21		100%						
22	AN						Bottom of screen at 22.7'	
23						23.5'	Bottom of Well at 23.0'	
24						End of Boring at 23.5'	End of Boring at 23.5'	1.0
25								
26								
27								
28								
29								
30								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: James S. Culp
DRILLER: Chad Chism BORING NO.: 6GW23 SHEET 2 OF 2

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Storage Lot 201, North RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW25
COORDINATES: EAST: 2503376.6 NORTH: 346718.9
ELEVATION: SURFACE: 32.1 TOP OF PVC CASING: 34.30

RIG: B-53	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8"ID		3 1/4" ID 8 1/4" ID		10-07-92	0 - 24	Ptly cldy, cool		
LENGTH	2'		5'		10-26-92	--	Cloudy, 70°s	11.88	456 hrs.
TYPE	STD		HSA		11-7-92	--	Cloudy, 50°s	12.24	744 hrs.
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	2.5	8.9
Well Screen	4"	Schedule 40 PVC, 10 slot	8.9	23.2

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
1	S-1	1.4/2.0 70%	2 2 3 4			**SAND**, medium to fine grained, trace silt(SM); brown; loose; damp, trace roots		
3	S-2	1.7/2.0 85%	5 5 7 8			**SAND**, medium to fine grained, little silt(SM); brown; medium dense; damp		
5	S-3	1.5/2.0 75%	8 16 16 18			**SAND**, medium to fine grained, little silt(SM); brown; medium dense; damp	Top of Bentonite 4.2'	
7	S-4	1.7/2.0 85%	9 10 15 16			**SAND**, medium to fine grained, trace silt(SM); white; medium dense; damp	Top of Sand 6.0'	
9	S-5	1.6/2.0 80%	10 12 14 14			**SAND**, medium to fine grained, little silt(SM); white; medium dense; damp	Top of Screen 9.0'	
10								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: James S. Culp
DRILLER: Chad Chism BORING NO.: 6GW25 SHEET 1 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 6, Seorage Lot 201 North, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW25

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11–12	S-6	1.3 / 2.0 65%	9 11 13 15			SAND, medium to fine grained, trace silt(SM); white; medium dense, wet, water table at 10'		
13–17	A-N							
18–19	S-7	2.0 / 2.0 100%	15 20 26 30			SAND, medium to fine grained, trace silt(SM); white; dense, wet		
20–22	A-N							
23–24	S-8	2.0 / 2.0 100%	4 5 7 8			SAND, medium to fine grained, trace silt(SM); white to tan; medium dense, wet		
24						24.0'	Bottom of screen at 23.2' Bottom of Well at 23.5' End of Boring at 24.0'	8.1
25–30						End of Boring at 24.0'		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: James S. Culp
DRILLER: Chad Chism BORING NO.: 6GW25 SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 6, Storage Lot 203, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW26
COORDINATES: EAST: 2501797.0 NORTH: 347577.1
ELEVATION: SURFACE: 20.9 TOP OF PVC CASING: 23.66

RIG: B-53	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8"		3 1/4" ID 8 1/4" ID		10-09-92	20	Rain		
LENGTH	2'		5'		10-11-92	--	Sunny, 70°s	9.94	24 hrs.
TYPE	STD		HSA		10-26-92	--	Cloudy, 70°s	10.28	408 hrs.
HAMMER WT.	140#				11-07-92	--	Cloudy, 50°s	10.53	696 hrs.
FALL	30"								
STICK UP									

REMARKS: Boring advanced to 21'. Type II monitoring well installed at 20'.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	2. 7 stickup	5.0
Well Screen	4"	Schedule 40 PVC, 10 slot	5.0	19.7

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
1	S-1	1.66/2.0 83%	3 1 4 8		.9	**ORGANICS**,sand-fine and silt (SM); black, lt. brown; very loose; dry, motled orange	Top of Bentonite 1.4'	
3	S-2	1.83/2.0 92%	10 9 11 9		1.0	**SAND**, fine and silt (SM); tan; medium dense; dry	Top of Sand 3.0'	
5	S-3	1.75/2.0 88%	10 9 8 7		.9	**SAND**, fine and silt, trace clay, (SM); tan; medium dense; damp	Top of Screen 5.0'	
7	S-4	1.58/2.0 79%	16 9 15 16		.8	**SAND**, fine some silt; tan to white; medium dense; damp		
9	S-5	1.5/2.0 75%	4 9 10 11		1.0	**SAND**, fine and silt (SM); white; medium dense; wet, water at 8'		
10								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Chad Chism BORING NO.: 6GW26 SHEET 1 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 6, Wooded Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW26

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11–15	A-N							
15–17	S-6	2.0 / 2.0 100%	9 10 16 17			**SAND**, fine little silt with bands sand fine and clay (SM); orange gray; medium dense; wet		
17–19	A-N							
19–21	S-7	2.0 / 2.0 100%	10 11 12 9			**SAND**, fine trace silt; orange(SM); medium dense; wet	Bottom of screen at 19.7' Bottom of Well at 20.0' End of Boring at 20.0'	
21						21.0' End of Boring at 20.0'		-0.1
22–30								

DRILLING CO.: Hardin Huber, Inc.
DRILLER: Chad Chism
BAKER REP.: Kenneth A. Tua
BORING NO.: 6GW26
SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 6, Wooded Area, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW28S
COORDINATES: EAST: 2502820.2 NORTH: 348555.9
ELEVATION: SURFACE: 27.6 TOP OF PVC CASING: 30.20

RIG: B-53

	SPLIT SPOON	CASING	AUGERS	CORE BARREL
SIZE (DIAM.)	1 3/8"		3 1/4" ID 8 1/4" ID	
LENGTH	2'		5'	
TYPE	STD		HSA	
HAMMER WT.	140#			
FALL	30"			
STICK UP				

DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
10-09-92	0-32	Warm muggy		
10-11-92	--	Sunny, 70°s	21.34	24 hrs.
10-26-92	--	Cloudy, 70°s	21.63	408 hrs.
11-07-92	--	Cloudy, 50°s	21.84	696 hrs.

REMARKS: Advanced boring to 32.5' taking continuous split spoon samples to the water table, then at 5' intervals. Type II monitoring well installed at 32'.

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	2. 5 stickup	17.5
Well Screen	4"	Schedule 40 PVC, 10 slot	17.5	37.5

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
1	S-1	1.5/2.0 75%	1 2 1 1			**SAND**, fine grained, little silt (SM); grey; loose; damp		
2								
3	S-2	1.4/2.0 70%	2 4 7 9			**SAND**, fine grained, little silt (SM); grey; loose; damp 3.0'	Top of Grout 3.0'	24.6
4								
5	S-3	1.4/2.0 70%	6 8 10 10			**SILT**, trace sand (ML); brown; very stiff; damp		
6						6.6'		
7	S-4	1.7/2.0 65%	7 5 5 8			**SAND**, medium to fine grained, little silt(SM); brown; medium dense; damp		21.0
8								
9	S-5	1.2/2.0 60%	6 7 9 8			**SAND**, medium to fine grained, little silt (SM); white to tan; medium dense; moist, iron staining		
10								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: James S. Culp
DRILLER: Chad Chism BORING NO.: 6GW28S SHEET 1 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 6, Wooded Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW28S

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11-12	S-6	1.8/2.0 90%	5 14 14 13			**SAND**, medium to fine grained, little silt (SM); white; medium dense; moist, iron staining		15.6
						12.0'		
13-14	S-7	1.8/2.0 90%	7 8 10 10			**SAND**, medium to fine grained, little silt (SM); grey; medium dense; moist, iron staining	13.3' Top of bentonite	
15-16	S-8	2.0/2.0 100%	10 14 20 22			**SAND**, medium grained, little clay(SC); grey; dense; moist, iron staining	15.0' Top of sand	12.4
						15.2'		
17-18	S-9	1.8/2.0 90%	14 14 12 13			**SAND**, medium grained, little silt(SM); grey; medium dense; moist, iron staining	17.5' Top of screen	
19-20	S-10	1.6/2.0 80%	12 14 17 8			**SAND**, medium sand, little silt (SM); grey; dense; wet, water table at 18'		
21-25	A-N							
						23.5'		4.1
26-27	S-11	2.0/2.0 100%	3 3 3 4			**SAND**, medium grained, little clay, little silt (SM/SC); brown; loose; wet		
28-30								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: James S. Culp
DRILLER: Chad Chism BORING NO.: 6GW28S SHEET 2 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 6, Wooded Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW28S

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
31	S-12	2.0 2.0 100%	5 3 6 5			**SAND**, medium grained, little silt (SM); grey; loose; wet, iron staining 32.0'	Bottom of screen at 31.5' Bottom of Well at 32.0' End of Boring at 32.5'	-4.4
32						End of Boring at 32'		
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								
47								
48								
49								
50								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: James S. Culp
DRILLER: Chad Chism BORING NO.: 6GW28S SHEET 3 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 6, Wooded Area, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW30
COORDINATES: EAST: 2503661.8 NORTH: 349477.7
ELEVATION: SURFACE: 9.9 TOP OF PVC CASING: 12.60

RIG: B-53	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	TOC WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8"		3 1/4" ID 8 1/4" ID		10-10-92	0-21	Cool, muggy		
LENGTH	2'		5'		10-26-92	--	Cloudy, 70°s	6.07	384 hrs.
TYPE	STD		HSA		11-07-92	--	Cloudy, 50°s	6.05	696 hrs.
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Advanced boring to 21' with hollow-stem augers; Installed a Type II monitoring well at 20'.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	2. 7 stickup	5.3
Well Screen	4"	Schedule 40 PVC, 10 slot	5.3	19.7

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description
1–2	S-1	1.4/2.0 70%	2 5 5 5		0.9	**SANDY SILT** (SM); brown; medium dense; damp, trace of roots (0.65) **SAND**, medium grained little silt(SM) ; brown; medium dense; (2.0)
3–4	S-2	1.5/2.0 75%	9 6 10 11		0.7	**SAND**, fine grained, trace silt(SM); grey; medium dense; damp (3.6) **SILT**,(ML); grey; stiff; damp (4.0)
5–6	S-3	1.5/2.0 75%	7 10 2 2		0.6	
7–8	S-4	1.4/2.0 70%	9 6 7 9		0.7	**SAND**, fine grained, little silt (SM); grey; medium dense; wet, water table at 7'
9–10						

Well Installation Detail: Top of Bentonite 1.50' (9.25); Top of Sand 3.0' (7.9); Top of Screen 5.3' (6.3); (5.9)

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: James S. Culp
DRILLER: Chad Chism BORING NO.: 6GW30 SHEET 1 OF 2

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Wooded Area, RI/FS, Camp Lejeune

S.O. NO.: 19133 BORING NO.: 6GW30

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11–14	AN							
15–16	S-5	1.9/2.0 95%	2 3 2 2			SAND, medium grained, trace silt (SM); grey; loose; wet		
17–19	AN							
20–21	S-6	2.0/2.0 100%	5 7 5 12			SAND, medium grained, trace silt (SM); grey; loose; wet 21.0'		
22–30						End of Boring at 21.0'	Bottom of screen at 19.7' Bottom of Well at 20.0' End of Boring at 21'	-11.0

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: James S. Culp

DRILLER: Chad Chism BORING NO.: 6GW30 SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker
Baker Environmental, Inc

PROJECT: Site 6 Camp Lejeune RI/FS
CTO NO.: 19133 BORING NO.: 6GW31
COORDINATES: EAST: 2501915.3 NORTH: 347070
ELEVATION: SURFACE: 27.8 TOP OF PVC CASING: 30.26

RIG:	ATV Mobile B-53								
	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	TOC WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		3 1/4" ID 8 1/4" ID		3/2/93	14.0	Cloudy, Cool		
LENGTH	2.0'		5.0'		4/1/93			11.34	720Hrs.
TYPE	SS		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: ID reached 3-2-93. Continuous split spoon samples taken to 14.0' HNu background is 1.8 ppm.

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	2.0	Schedule 40 PVC	2.5 Stickup	11.4
Well Screen	2.0	Schedule 40 PVC No. 10 Slot	11.4	26.6

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm	Visual Description	Well Installation Detail	Elevation
2.0	* S-1	.8/2 40%	2 5 7 9		BG	SAND, fine grained with trace silt; brown to dark gray; medium dense; dry, orange,yellow, staining present	2.5' stick up	25.8
4.0	* S-2	1.5/2 95%	5 6 9 14		3.0	SAND, fine grained; dark gray to brown; medium dense; moist		
6.0	* S-3	1.6/2 80%	7 11 12 13		30.0	light brown to dark gray; medium dense; damp, slight hydrocarbon odor		
8.0	* S-4	1.4/2 70%	5 8 8 7		2.0	SAND, fine to medium grained; light gray; medium dense; damp to moist, gray banding and streaks	Top of Bentonite 7.4'	21.8
10.0	* S-5	1.7/2 85%	3 5 9 10		30.0	SAND, medium grained; brown to gray; medium dense	Top of Sand 9.4'	19.8

Match to Sheet 2

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: J.E. Zimmerman
DRILLER: Jay Corrin BORING NO.: 6GW31

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6 Camp Lejeune RI/FS
S.O. NO.: 19133 BORING NO.: 6GW31

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 1		
11	**	1.7/2	5 10 11 16		16.0	SAND, medium grained; gray to brownish gray; medium dense; moist to wet, dark gray streaking throughout	Top of screen 11.4'	
12 – 12.0	S-6	85%						
13		1.32	5 11 12 16		20.0	dark gray to yellowish brown; medium dense; wet, dark gray streaking (bottom)		
14 – 14.0	S-7	65%						
15								
16	A-N							
17 – 17.0								
18		1.4/2	6 15 11 15			SAND, fine grained, trace silt (SM); dark gray; medium dense; wet		
19 – 19.0	S-8	70%						
20								
21	A-N							
22 – 22.0								
23		1.5/2	9 7 6 10			SAND, fine to medium grained; trace silt (SM); brown gray; medium dense; wet		
24 – 24.0	S-9	75%						
25								
26 – 26.0	A-N						Bottom of screen at 26.6'	
27		1.5/2	6 10 13 16			SAND, fine grained, trace silt (SM); brown gray; medium dense; wet	Bottom of Well at 27'	0.8'
27.5	S-10	75%					End of Boring at 27.5'	0.3'
28						End of Boring at 27.5'		
29								
30								

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: J.E. Zimmerman
DRILLER: Jay Corrin BORING NO.: 6GW31 SHEET 2 OF 2

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 82 Camp Lejeune RI/FS
S.O. NO.: 19133-SRN
BORING NO.: 6GW32
COORDINATES: EAST: 2502604.5
NORTH: 348796.5
ELEVATION: SURFACE: 19.6
TOP OF PVC CASING: 21.79

RIG: R40	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1-3/8" ID		3-1/4" ID 8-1/4" ID		3-6-93	27.0	Clear, Cool		
LENGTH	2.0'		5.0'		4-1-93	0		14.29	792 hrs.
TYPE	Std.		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: ID reached 3-6-93. Well set 3-6-93. Continuous split spoon samples take to 18.0'. 5' centers from 23 to 25'. HNu background is .7 ppm.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	2.0"	Schedule 40 PVC	2.5 stickup	11.3
Well Screen	2.0"	Schedule 40 PVC, 10 slot	11.3	26.6

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
1	S-1	1.0	2 2 3 3		7.0	**HUMUS**, root and plant material; dark brown to light brown; loose; damp (1.0')	2.5' of stickup	
2 2.0		50%				**SAND**, fine grained with some silt (SM) (2.0')		15.6'
3	S-2	2.0	2 3 4 5		20.0	**SAND**, fine grained with trace silt (SM); light brown to brown; loose; moist		
4 4.0		100%				(4.0')		
5	S-3	1.6	4 6 6 9		13.0	**SAND**, fine grained (SM); light brown; medium dense; moist		
6 6.0		80%						
7	S-4	1.8	5 7 9		2.4	**SAND**, fine grained (SM); brown; medium dense; moist, brownish yellowish banding (8.0')	Top of bentonite 7.0'	
8 8.0		90%						11.6'
9	S-5	1.4	7 8 8 9		45.0	**SAND**, fine to medium grained with trace clay (sc); brown to light gray; medium dense; moist, brownish yellowish banding		
10 10.0		70%				Match to Sheet 2	Top of sand 10.0'	

DRILLING CO.: Hardin Huber, Inc.
DRILLER: Jay Corrin
BAKER REP.: J.E. Zimmerman
BORING NO.: 6GW32
SHEET 1 OF 2

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 82 Camp Lejeune RI/FS
S.O. NO.: 19133-SRN BORING NO.: 6GW32

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11	* S-6	1.4	4 7 7 6		100.0	Continued from Sheet 1 **SAND**, fine to medium grained (SM); light gray; medium dense; moist	No. 2 sand Top of screen at 11.3'	
12 12.0		70%						
13	** S-7	1.8	5 7 7 7		100.0	**SAND**, fine to medium grained (SM); light gray; medium dense; moist to wet, water table at 13.0'		
14 14.0		90%				14.0'		5.6'
15	S-8	1.8	3 3 9 10		75.0	**SAND**, medium grained (SM); light gray; medium dense; wet	Measured water level at 14.29' TOC on 4-1-93	
16 16.0		90%						
17	*** S-9	2.0	4 5 5 6		35.0	**SAND**, medium grained (SM); light gray; loose; wet		
18 18.0		100%						
19								
20								
21								
22								
23						**SAND**, medium grained (SM); brown; medium dense; wet, banding: dark brown, orange and light green		
24	S-10	1.5	6 5 6 6		24.0	* Sample collected due to high HNu reading #6-GW-32-06		
25 25.0		75%				** Sample collected #6-GW-32-07	Bottom of screen at 26.6'	
26						*** Duplicate and mslmsd samples collected #6-GW-32-09		
27						27.0'	Bottom of well at 27.0'	-7.4'
28						End of Boring at 27.0'		
29								
30								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: J.E. Zimmerman
DRILLER: Jay Corrin BORING NO.: 6GW32 SHEET 2 OF 2

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 82 Camp Lejeune RI/FS
S.O. NO.: 19133-SRN
BORING NO.: 6GW33
COORDINATES: EAST: 2503091.8
NORTH: 348382.3
ELEVATION: SURFACE: 20.0
TOP OF PVC CASING: 22.42

RIG: R40	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1-3/8" ID		3-1/4" ID 8-1/4" ID		3-3-93	22.0	Ovct, lt. rain		
LENGTH	2.0'		5.0'		4-1-93	0		7.04	696 hrs.
TYPE	55		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: TD reached 3-3-93. Well set 3-3-93. Continuous split spoon samples take to 12'; 5' centers from 15' to 22'. HNu background is 2.5 ppm.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	2.0"	Schedule 40 PVC	2.5 stickup	6.2
Well Screen	2.0"	Schedule 40 PVC - 10 slot	6.2	21.6

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
1	S-1	.9			BG	**HUMUS** and root material with sand, fine grained and some silt (SM); dark brown to brown; loose; damp	2.5 stickup	
2 2.0		45%				2.0'		18.0'
3	S-2	1.4			4.5	**SAND**, fine grained with little silt (SM); brown to yellow orange brown; medium dense; damp, oxidation streaks are present	Top of bentonite 3.0'	
4 4.0		70%				4.0'		16.0'
5	S-3	1.2			5.2	**CLAYEY SILT(CL)**; grayish orange to gray; medium dense; damp; trace yellow staining oxidation streaks	Top of sand 4.5'	
6 6.0		60%				5.0' **SAND**, trace silt (SM); gray 6.0'		15.0'
7	* S-4	1.5			25.0	**SAND**, medium grained; gray to brownish purple; medium dense; moist, yellow orange streaking throughout	Top of screen 6.2' Measured water level at 7.04' TOC on 4-1-93	14.0'
8 8.0		75%						
9	S-5	1.3			17.0	**SAND**, medum grained (SM); brown; medium dense; wet, water table at 8.5'	No. 2 sand	
10 10.0		65%				Match to Sheet 2		

DRILLING CO.: Hardin Huber, Inc.
DRILLER: Jay Corrin
BAKER REP.: J.E. Zimmerman
BORING NO.: 6GW33
SHEET 1 OF 2

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 82 Camp Lejeune RI/FS
S.O. NO.: 19133-SRN BORING NO.: 6GW33

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11	** S-6	1.8	4 4 3 2		20.0	Continued from Sheet 1 **SAND**, medium grained with trace SMall quartz gravel (SW); brown to orangish gray; loose; wet		8.0'
12 12.0		90%						
13								
14								
15								
16	S-7	1.9	5 5 6 6		8.0	**SAND**, medium grained (SM); brown to orangish gray to gray; medium dense; wet		
17 17.0		95%						
18								
19								
20								
21	S-8	1.8	3 3 4 7		15.0	**SAND**, medium grained (SM); brown to gray to grayish green; loose; wet, occasional oxidation streaks	Bottom of screen at 21.6' Bottom of well at 22.0'	-2.0'
22 22.0		90%						
23						End of Boring at 22.0' Notes: * Sample #6-GW-33-04 collected ** Sample #6-GW-33-06 collected		
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: J.E. Zimmerman
DRILLER: Jay Corrin BORING NO.: 6GW33 SHEET 2 OF 2

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 82 Camp Lejeune RI/FS
S.O. NO.: 19133-SRN
BORING NO.: 6GW34
COORDINATES: EAST: 2503412.4
NORTH: 348356.5
ELEVATION: SURFACE: 29.0
TOP OF PVC CASING: 32.01

RIG: R40	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1-3/8" ID		3-1/4" ID 8-1/4" ID		3-3-93	22.0	Ovct. rain, 60		
LENGTH	2.0'		5.0'		3-5-93	22-36	Ptly. cldy., 50		
TYPE	55		HSA		4-1-93	0		17.00	648 hrs.
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: TD reached 3-5-93. Well set 3-5-93. Continuous split spoon samples taken to 22', 5' centers from 22' to 35'. HNu background is .9 ppm.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	2.0"	Schedule 40	2.5 stickup	19.3
Well Screen	2.0"	0.10 inch slots	19.3	34.6

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
1	S-1	1.4	5 5 7 9			**HUMUS**, with root material; dark brown to light brown; medium dense; damp, orange staining — 1.0'	2.5' stickup	28.0'
2 2.0		70%				**SAND**, fine grained with some silt (SM); light brown — 2.0'		27.0'
3	S-2	1.8	3 3 4 6			**SAND**, fine grained with little silt (SM); brown to light brown; loose; damp, orange staining — 4.0'		25.0'
4 4.0		90%						
5	S-3	1.7	5 5 7 8			**SILTY SAND** (SM); brown to yellow brown to gray; medium dense; damp		
6 6.0		85%						
7	S-4	2.0	8 9 8 11			**SAND** fine grained (SM); brown to to light brown to gray; medium dense; damp, orange staining — 8.0'		21.0'
8 8.0		100%						
9	S-5	1.4	5 5 7 9			**SAND** fine to medium grained (SM); orange brown to light gray; medium dense damp — 10.0'		19.0'
10 10.0		70%				Match to Sheet 2		

DRILLING CO.: Hardin Huber, Inc.
DRILLER: Jay Corrin
BAKER REP.: J.E. Zimmerman
BORING NO.: 6GW34

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 82 Camp Lejeune RI/FS
S.O. NO.: 19133-SRN BORING NO.: 6GW34

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11	S-6	1.5	7 8 9 10			Continued from Sheet 1 **SAND**, fine grained (SM); gray to brown (reddish tint); medium dense; damp		
12 12.0		75%				12.0'		17.0'
13	S-7	1.4	9 10 11 11			**SAND**, fine to medium grained (SM); reddish brown to light gray; medium dense; damp to moist		
14 14.0		70%				14.0'		15.0'
15	S-8	1.4	4 6 6 8			**SAND**, fine to medium grained with trace clay (SC); brown to brownish orange gray; medium dense; moist	Top of bentonite 15.0'	
16 16.0		70%				16.0'	Measured water level at 17.0' TOC on 4-1-93	13.0'
17	S-9	1.9	4 4 5 6			**SAND**, medium grained (SM); light grayish brown; loose; moist to wet, orange oxidation streaking	Top of sand 17.5'	
18 18.0		95%					No. 2 Sand	
19	* S-10	1.7	4 6 8 16			**SAND**, medium grained (SM); grayish to orange brown; medium dense; wet	Top of Screen 19.3'	
20 20.0		85%						
21	S-11	2.0	5 8 11 15			**SAND**, medium grained (SM); orange brown to light gray; medium dense; wet, water table at 22.0'		
22 22.0		100%						
23	** S-12	1.6	14 11 12 14		12.0	**SAND**, medium grained (SM); light brown to light gray; medium dense; wet		
24 24.0		80%						
25	S-13	1.8	6 7 7 8		BG	**SAND**, medium grained (SM); light gray to orangish yellow; medium dense; wet		
26 26.0		90%						
27								
28								
29						**SAND**, medium grained (SM); light gray; medium dense; wet		
30	S-14	1.3	5 5			Match to Sheet 3		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: J.E. Zimmerman
DRILLER: Jay Corrin BORING NO.: 6GW34 SHEET 2 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 82 Camp Lejeune RI/FS
S.O. NO.: 19133-SRN BORING NO.: 6GW34

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
31 — 31.0		65%	7 8		1.8	Continued from Sheet 2 Light gray; medium dense; wet, orange staining		
32								
33								
34							Bottom of screen at 34.6'	
35	S-15	1.8	6 6 4		6.2		Bottom of well at 35.0'	-6.0'
36 — 36.0		90%	2			**SAND**, medium grained; orange; medium dense; wet, yellow staining 36.0'		-7.0'
37						End of Boring at 36.0'		
38						Notes:		
39						* Sample #6-GW-34-10 collected		
40						** Sample # 6-GW-34-12 collected		
41								
42								
43								
44								
45								
46								
47								
48								
49								
50								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: J.E. Zimmerman
DRILLER: Jay Corrin BORING NO.: 6GW34 SHEET 3 OF 3

E.2
Sites 6 and 82 - Deep Wells

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Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Wooded Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1D
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: 32.8 TOP OF PVC CASING: 35.31

RIG: B-80	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	TOC WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		3 1/4" ID		10-7-92	57	Clear and mild		
LENGTH	2.0'		5.0'		10-8-92	57 - 117	Sunny, 50°s		
TYPE	Std		HSA		10-26-92	--	Cloudy, 70°s	23.07	456 hrs
HAMMER WT.	140#				11-7-92	--	Cloudy, 50°s	23.32	720 hrs
FALL	30"								
STICK UP									

REMARKS: Advanced boring to 16' using 3 1/4" augers. 7 7/8" mud rotary to final depth taking split spoon samples every 5'. Type II monitoring well installed to 112.5.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Sch 40 PVC	2.3 stickup	102.7
Well Screen	4"	Sch 40 PVC, 10 slot	102.7	111.7

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
1							Cement	
2							Top of Cement/ bentonite mixture at 2'	
3								
4	A-N							
5								
6							Cement/ bentonite mixture consisted of 5% bentonite with portland cement	
7								
8								
9								
10						Match to Sheet 2		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW1D SHEET 1 OF 7

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Wooded Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 1		
11–12	A-N					SAND-fine, some silt(SM); brown; medium dense; dry, mottled orange		
						12.5'		
13–14	S-1	1.58/2.0 79%	6 11 11 15		0	CLAY, some sand-fine(CL); gray		20.3'
						13.5'		19.3'
15–16	S-2	1.42/2.0 71%	6 8 6 7		0	SAND-fine, little silt(SM); medium dense; brown, water at 16'		
17–18	S-3	1.33/2.0 67%	2 2 3 6		0	4"SAND-fine, trace silt; light gray; loose; wet SAND-fine, little silt(SM); dark brown; white streaks Converted to mud rotary drilling		
19–20	S-4	1/2 50%	4 4 3 4		0	SAND-fine, little silt(SM); dark brown; loose; wet SILT, trace sand-fine (ML); dark brown; medium dense	Measured water level at 23.01' on 10-26-92	
						20.3'		12.5'
21–22	S-5	1.33/2.0 67%	3 5 9 10		0	SAND-fine, trace silt(SM); white; wet		
23–24	R-N							
						2"CLAY, trace sand-fine(CL); gray; medium dense; wet		
						25.2'		7.6'
25–26	S-6	1.08/2.0 54%	5 9 14 15		0	SAND-fine, trace silt(SM); brown; medium dense; mottled orange		
27–28	R-N							
29–30						Match to Sheet 3		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW1D SHEET 2 OF 7

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Wooded Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 2		
31–32	S-7	1.75/2.0 88%	5 4 4 5		0	SAND-fine, trace silt(SM); green; loose;wet		
33–35	R-N							
36–37	S-8	1.08/2.0 54%	15 27 27 32		0	SAND-fine, trace silt(SM); gray; very dense; wet, green spots		
38–40	R-N							
41–42	S-9	1.5/2.0 75%	7 12 11 12		0	SAND-fine, little silt(SM); light gray, green; medium dense; wet		
43–45	R-N					45.0'		-12.2
46–47	S-10	2.0/2.0 100%	5 12 20 22		0	SAND-fine, some silt, little clay(SM); gray; dense; wet		
48–50	R-N					46.4' LIMESTONE FRAGMENTS/MUD, some sand-fine, some shell fragments		-13.6
						Match to Sheet 4		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW1D SHEET 3 OF 7

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Wooded Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 3		
51-52	S-11	2.0/2.0 100%	7 5 7 9		0	**SAND**-fine and **SILT**, some clay(SM); blue gray; medium dense; moist		
53-54	R-N							
55						**SAND**-fine and **SILT**, little clay(SM); blue gray; medium dense; wet; split spoon refusal		
						55.5		-22.7
56	S-12	2.0/2.0 100%	16 20 50/5"		0	LIMESTONE FRAGMENTS: white 56.0		-23.2
57						End of Boring at 57.0' on 10-7-92		
58-59	R-N							
60								
61-62	S-13	1.42/2.0	21 32 48 29		0	**SAND**-fine, little silt, trace limestone fragments(SM); gray; very dense; wet		
63-64	R-N							
65						65.0		-32.2
66-67	S-14		50/5"		0	**SANDY LIMESTONE FRAGMENTS**, some silt; gray; very dense; wet; split spoon refusal		
68-69	R-N							
70						Match to Sheet 5		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW1D SHEET 4 OF 7

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Wooded Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 4		
71	S-15	.33/2.0 17%	50/5"		0	**LIMESTONE FRAGMENTS**, trace shell fragments, trace silt; gray; very dense; wet; split spoon refusal 71.0'		-38.2
72						**SAND** -fine, some silt(SM)		
73	R-N							
74								
75								
76	S-16	.17/2.0 8%	50/4"		0	**SAND** -fine, some silt, trace shell fragments(SM); gray; very dense; wet; split spoon refusal		
77								
78	R-N							
79								
80								
81	S-17	.42/2.0 21%	100/5"		0	**SAND** -fine, little silt, trace shell fragments(SM); gray; very dense; wet; split spoon refusal		
82								
83	R-N							
84								
85								
86	S-18	1.5/2.0 75%	28 38 50/5"		0	**SAND** -fine, little silt, trace shell fragments(SM); gray; very dense; wet; split spoon refusal		
87								
88	R-N							
89								
90						Match to Sheet 6		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW1D SHEET 5 OF 7

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Wooded Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 5		
91	S-19	.25/2.0 13%	50/5"		0	**SAND**-fine, some silt, trace shell fragments(SM); gray; very dense; wet; split spoon refusal		
92								
93	R-N							
94								
95						95.0'		
96	S-20	.17/2.0 8%	50/5"		0	**SAND**-fine, little silt, little limestone fragments, trace shell fragments(SM); gray; very dense; wet; split spoon refusal	Top of Bentonite 96.0'	-62.2
97								
98	R-N							
99								
100							Top of sand 99.5'	
101	S-21	.33/2.0 17%	40 50 3"		0	**SAND**-fine, little silt, trace shell fragments(SM); gray; very dense; wet; no recovery on first attempt to sample; split spoon refusal		
102								
103	R-N						Top of screen 102.7'	-69.9
104								
105						105.0'		-72.2
106	S-22	1.33/2.0 67%	26 47 50/4"		0	**SAND**-fine, some silt, trace clay, trace shell fragments(SM); gray; very dense; wet; split spoon refusal		
107								
108	R-N							
109								
110						Match to Sheet 7		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW1D SHEET 6 OF 7

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, Wooded Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 6		
111	S-23	1.16 / 2.0 58%	37 30 30 45		0	**LIMESTONE FRAGMENTS/LIMEY MUD,** trace shell fragments; white; very dense; wet	End of screen 111.7' End of Well 112.5'	-78.9
112								
113							End of Boring at 117'	
114								
115						115.0'		-82.2
116	S-24		20 28 50/5"		0	**LIMEY MUD,** some clay, trace silt, trace shell fragments; white; very dense; wet; split spoon refusal		
117						117.0'		-84.2
118						End of Boring at 117.0'		
119								
120								
121								
122								
123								
124								
125								
126								
127								
128								
129								
130								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW1D SHEET 7 OF 7

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, East of Aney Green Road, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW2D
COORDINATES: EAST: 2503683.9 NORTH: 347122.4
ELEVATION: SURFACE: 35.1 TOP OF PVC CASING: 37.61

RIG: B-80

	SPLIT SPOON	CASING	AUGERS	CORE BARREL
SIZE (DIAM.)	1 3/8" ID		3 1/4" ID	
LENGTH	2.0'		5.0'	
TYPE	Std		HSA	
HAMMER WT.	140#			
FALL	30"			
STICK UP				

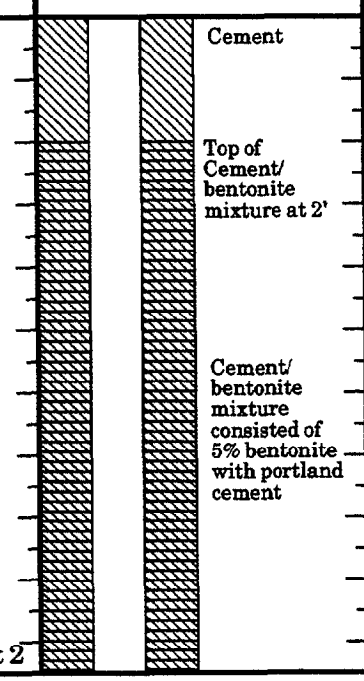
DATE	PROGRESS (FT)	WEATHER	TOC WATER DEPTH (FT)	TIME
10-10-92	0 - 29	Sunny		
10-13-92	29 - 87	Warm		
10-14-92	87 - 122	Clear and cool		
10-26-92	--	Cloudy, 70°s	22.15	288 hrs
11-7-92	--	Cloudy, 50°s	22.27	576 hrs

REMARKS: Advanced boring to 12' using 3 1/4" augers. 7 7/8" mud rotary wing bit to final depth taking split spoon samples every 5'. Type III monitoring well installed to 119'.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Sch 40 PVC	2.5 stickup	108.1
Well Screen	4"	Sch 40 PVC, 10 slot	108.1	118.1

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description
1						
2						
3						
4	A-N					
5						
6						
7						
8						
9	S-1	2.0 / 2.0 100%	12 12 22 24		0	SAND-fine, little silt, trace clay-NP(SM); brown, white brown white; dense; dry, mottle orange
10						Match to Sheet 2



Elevation

DRILLING CO.: Hardin Huber,Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW2D SHEET 1 OF 7

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, East of Aney Green Road, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW2D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 1		
11-12	S-2	1.5/2.0 79%	10 21 20 15		0	**SAND**-fine, some silt(SM); white; dense; moist, mottled orange Water at 12'		
13-14	S-3	1.17/2.0 58%	4 5 16 18		0	**SAND**-fine, some silt(SM); yellow; medium dense; wet Converted to mud rotary drilling		
15	R-N							
16-17	S-4	1.25/2.0 63%	4 5 19 17		0	**SAND**-fine, trace silt(SM); white; medium dense; wet		
18-19	R-N						Measured water level at 22.15' on 10-26-92	
20-21	S-5	.67/2.0 33%	18 27 50/5"		0	**SAND**-fine, trace silt(SM); white; very dense; wet		
22-23	R-N							
24-25						25.0'		10.0
26	S-6	2.0/2.0 100%	1 4 3 5		0	**CLAY**, some sand(CL); white; medium stiff; wet, PL	Outer 8" steel casing installed at 26'	
27						27.0'		8.1
28-29	S-7	2.0/2.0 100%	8 15 24 36		0	**SAND**-fine, little silt, trace clay - NP(SM); white; dense; wet		
29						29.0'		6.1
30	R-N					End of Boring at 29.0' on 10-10-92 Match to Sheet 3		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW2D SHEET 2 OF 7

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, East of Aney Green Road, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW2D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 2		
31–32	S-8	1.08 / 2.0 54%	16 19 18 20		0	**SAND**-fine, some silt(SM); white; very dense; wet		
33–34	R-N							
35						35.0'		0.1
36–37	S-9	1.66 / 2.0 83%	3 5 11 12		0	**SAND**-fine and **CLAY**(SC); light gray; medium dense; wet		
38–39	R-N							
40–41	S-10	1.42 / 2.0 71%	6 11 15 20		0	**SAND**-fine, some clay(SC); light green; dense; wet		
42–43	R-N							
44–45						45.0'		-9.9
46–47	S-11	.83 / 2.0 42%	17 25 29 22		0	**SAND**-fine, little silt, trace clay(SM); light green; very dense; wet		
48–49	R-N							
50						Match to Sheet 4		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW2D SHEET 3 OF 7

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, East of Aney Green Road, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW2D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
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Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 3		
51	S-12	1.17 / 2.0 58%	9 30 32 22		0	**SAND**-fine, some silt, trace clay - NP(SM); light gray; very dense; wet, green patches		
52								
53	R-N							
54								
55								
56	S-13	2.0 / 2.0 100%	2 2 3 4		0	**SAND**-fine and **SILT**, trace clay - NP(SM); yellow; wet		
57								
58	R-N							
59								
60								
61	S-14	1.08 / 2.0 54%	17 19 22 20		0	**SAND**-fine and **SILT**(SM); yellow		
62								
63	R-N							
64								
65								
66	S-15	2.0 / 2.0 100%	7 8 6 5		0	**SAND**-fine, some silt; green **SAND**-fine and **SILT**(SM); light brown; wet		
67								
68	R-N							
69								
70						Match to Sheet 5		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW2D SHEET 4 OF 7

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, East of Aney Green Road, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW2D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description Continued from Sheet 4	Well Installation Detail	Elevation
71	S-16	1.25/2.0 63%	4 12 19 18		0	**SAND** -fine, some silt(SM); light gray; dense; wet		
72								
73	N-R							
74								
75								
76	S-17	2.0/2.0 100%	29 50/4"		0	**SAND** -fine, little silt(SM); light gray; very dense; wet; split spoon refusal		
77								
78	N-R							
79								
80								
81	S-18	2.0/2.0 100%	50/4"		0	**SAND** -fine, some silt(SM); gray; very dense; wet; split spoon refusal		
82								
83	N-R							
84								
85								
86	S-19	2.0/2.0 100%	50/5"		0	**SAND** -fine, some silt(SM); gray; very dense; wet; split spoon refusal 87.0'		
87								
88	N-R					End of Boring at 87.0' on 10-13-92 Match to Sheet 6		
89								
90								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW2D SHEET 5 OF 7

Baker
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TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, East of Aney Green Road, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW2D

SAMPLE TYPE
S = Split Spoon A = Auger
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D = Denison P = Piston
N = No Sample

DEFINITIONS
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RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 5		
91–92	S-20	.54/2.0 27%	49/50/3"		0	SAND-fine, some silt(SM); light gray; very dense; wet; split spoon refusal		
93–94–95	R-N							
96–97	S-21	1.17/2.0 58%	26/50/5"		0	SAND-fine, some silt, trace shell fragments(SM); green; very dense; wet; split spoon refusal		
98–99–100	R-N							
101–102	S-22	.33/2.0 17%	50/5"		0	SAND-fine, some silt, trace shell fragments(SM); light green; very dense; wet, split spoon refusal	Top of Bentonite 101.0'	
103–104–105	R-N							
106–107	S-23	.42/2.0 21%	49/50/3"		0	SAND-fine, some silt(SM); light green; very dense; wet; split spoon refusal	Top of sand 105.0'	
108–109–110	R-N					Match to Sheet 7	Top of screen 108.1'	-73

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW2D SHEET 6 OF 7

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, East of Aney Green Road, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW2D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 6		
111	S-24	1.42/2.0 71%	15 20 50/5"		0	**SILT**, some sand-fine, trace shell fragments(SM); green; dense;wet, split spoon refusal		
112								
113	R-N							
114								
115						115.0'		-79.9
116	S-25	1.75/2.0 88%	30 16 16 33		0	**LIMESTONE FRAGMENTS**, trace silt, trace sand-fine; green; dense;wet		
117								
118	R-N						Bottom of screen 118.1'	-83
119							Bottom of Well 119.0'	-83.9
120								
121	S-26	2.0/2.0 100%	27 17 46 50/4"		0	**LIMESTONE FRAGMENTS/LIMEY MUD**, trace shell fragments, trace clay - NP; white; very dense; wet		
122						122.0'	End of Boring at 122.0'	-86.9
						End of Boring at 122.0'		
123								
124								
125								
126								
127								
128								
129								
130								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW2D SHEET 7 OF 7

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW7D
COORDINATES: EAST: 2502011.0 NORTH: 344326.3
ELEVATION: SURFACE: 17.4 TOP OF PVC CASING: 20.08

RIG: B-80

	SPLIT SPOON	CASING	AUGERS	CORE BARREL
SIZE (DIAM.)	1 3/8" ID		3 1/4" ID	
LENGTH	2.0'		5.0'	
TYPE	Std		HSA	
HAMMER WT.	140#			
FALL	30"			
STICK UP				

DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
10-6-92	0 - 107	Clear and cold	4	
10-26-92	--	Cloudy, 70°s	10.89	480 hrs
11-7-92	--	Cloudy, 50°s	8.94	768 hrs

REMARKS: Advanced boring to 12' using 3 1/4" augers to sample. Then used mud rotary with 11" wing bit to final depth Type II monitoring well installed at 100.5'.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Sch 40 PVC	3' stickup	90.5
Well Screen	4"	Sch 40 PVC, 10 slot	90.5	99.5

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
1	S-1	1.42/2.0 71%	2 4 5 6		1.6	SAND-fine, little silt(SM); light gray; loose; dry	Cement	
2								
3	S-2	1.5/2.0 75%	5 7 6 5		1.7	SAND-fine and SILT(SM); light gray; medium dense; damp Water at 4'	Top of Cement/ bentonite mixture at 2'	
4						4.0'		
5	S-3	.75/2.0 38%	1 1 3 3		1.0	SAND-fine, little silt(SM); brown; very loose; wet		13.4
6						6.0'	Cement/ bentonite mixture consisted of 5% bentonite with portland cement	11.4
7	S-4	1.58/2.0 79%	1 1 4 3		.9	SAND-fine, little silt, trace clay(SM); brown; medium stiff; wet		
8								
9	A-N				NR			
10						Match to Sheet 2		

DRILLING CO.: Hardin Huber,Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW7D SHEET 1 OF 6

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW7D

SAMPLE TYPE
S = Split Spoon A = Auger
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R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
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Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 1		
11–12	S-4	2.0 / 2.0 = 100%	4 1 1 1		.9	10.5' **SAND**-fine and **CLAY**, little silt(SC); green; wet	Measured water level at 10.89' on 10-26-92	6.9
13–14	R-N					Converted to mud rotary drilling		
15–16–17	S-5	1.25 / 2.0 = 63%	1 1 4 2		.9	**SAND**-fine, trace silt(SM); white; loose; wet		
18–19–20	R-N							
21–22	S-6	.91 / 2.0 = 46%	3 4 6 7		1.0	**SAND**-fine, trace silt(SM); light gray; loose; wet		
23–24–25	R-N							
26–27	S-7	.83 / 2.0 = 42%	8 9 10 3		.9	**SAND**-fine, trace silt(SM); green; medium dense; wet		
28–29–30	R-N					Match to Sheet 3		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW7D SHEET 2 OF 6

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW7D

SAMPLE TYPE
S = Split Spoon A = Auger
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R = Air Rotary C = Core
D = Denison P = Piston
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Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 2		
31–32	S-8	1.08/2.0 54%	10 10 17 11		.9	SAND-fine, trace silt(SM); green; medium dense; wet		
33–35	R-N							
36–37	S-9	2.0/2.0 100%	2 1 1 1		.8	SAND-fine, some silt, little clay -plastic(SM); green; very loose; wet		
38–40	R-N							
41–42	S-10	1.17/2.0 58%	12 13 22 23		.8	SAND-fine, trace silt(SM); green gray; dense; wet		
43–45	R-N							
46–47	S-11	1.0/2.0 50%	20 39 44 40		.7	SAND-fine, trace silt; green; very dense; wet		
48–50	R-N					Match to Sheet 4		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW7D SHEET 3 OF 6

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW7D

SAMPLE TYPE
S = Split Spoon A = Auger
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R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

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Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID - Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 3		
51	S-12	.67/2.0 33%	50/5"		.7	**SAND**-fine, little silt(SM); green; very dense; wet, split spoon refusal		
52								
53	R-N							
54								
55						54.5'		-37.1
56	S-13	2.0/2.0 100%	23 32 48 52		.6	**SAND**-fine, little silt, trace shell fragments(SM); green; very dense; wet		
57								
58	R-N							
59								
60								
61	S-14	2.0/2.0 100%	10 23 37 50/4"			**SAND**-fine, trace silt, trace shell fragments(SM); green; very dense; moist, split spoon refusal		
62								
63	R-N							
64								
65								
66	S-15	.25/2.0 13%	50/5"			**SAND**-fine, trace silt(SM); gray green; very dense; wet, split spoon refusal		
67								
68	R-N							
69								
70						Match to Sheet 5		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW7D SHEET 4 OF 6

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW7D

SAMPLE TYPE
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T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

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RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 4		
71–72	S-16	.42/2.0 21%	34 50/5"			**SAND** -fine, trace silt, trace shell fragments(SM); green gray; very dense; wet, split spoon refusal		
73–74	N-R							
75–76	S-17	.33/2.0 17%	42 50/4"			**SAND** -fine, trace silt, trace shell fragments(SM); green gray; very dense; wet; split spoon refusal		
77–79	N-R							
80–81	S-18	.42/2.0 21%	50/5"			**SAND** -fine, trace silt, trace shell fragments(SM); green gray; very dense; wet; split spoon refusal		
82–84	N-R						Top of Bentonite at 83.0'	
85						85.0'		-67.6
86–87	S-19	1.33/2.0 67%	19 43 50/5"			**SAND** -fine and **LIMESTONE FRAGMENTS**, some silt, trace shell fragments; green gray; very dense; wet; split spoon refusal	Top of Sand at 86.5'	
88–89	N-R							
90						Match to Sheet 6		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW7D SHEET 5 OF 6

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW7D

SAMPLE TYPE
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Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 5		
91–92	S-20	1.17/2.0 59%	20 22 30 35			**LIMESTONE FRAGMENTS/ LIMEY MUD**, some sand-fine, trace shell fragments; white; very dense; wet	Top of screen 90.5'	-73.1
93–94	R-N							
95–96	S-21	1.08/2.0 54%	24 28 50/5"			**LIMESTONE FRAGMENTS/ LIMEY MUD**, trace shell fragments; white; very dense; wet, split spoon refusal		
97–98	R-N							
99–100							Bottom of Screen 99.5'	-82.1
101–102	S-22	1.25/2.0 63%	27 48 50/5"			**SAND**-fine, trace limestone fragments/ mud, trace shell fragments; green; very dense; wet, split spoon refusal	End of Well at 100.5'	-83.1
103–104	R-N					104.5'		
105–106	S-23	83% 42%	27 50/5"			**SAND**-fine, trace silt(SM); green; very dense; wet; split spoon refusal		-87.1
107						107.0'	End of Boring at 107'	-89.6
108–110						End of Boring at 107.0'		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW7D SHEET 6 OF 6

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6,Wooded Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW27D
COORDINATES: EAST: 2502377.6 NORTH: 348248.2
ELEVATION: SURFACE: 22.5 TOP OF PVC CASING: 24.47

RIG: B-80

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		3 1/4" ID		10-11-92	0 - 16	Rain/ cool		
LENGTH	2.0'		5.0'		10-12-92	16 - 112	Clear/ cool		
TYPE	Std		HSA		10-26-92	--	Cloudy, 70's	15.35	336 hrs
HAMMER WT.	140#				11-7-92	--	Cloudy, 50's	15.17	624 hrs
FALL	30"								
STICK UP									

REMARKS: Advanced boring to 16' using 3 1/4" augers. 7 7/8" mud rotary wing bit to final depth taking split spoon samples every 5'. Type II monitoring well installed at 110'.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Sch 40 PVC	1.9 stickup	100.1
Well Screen	4"	Sch 40 PVC, 10 slot	100.1	109.1

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (PPM)	Visual Description	Well Installation Detail	Elevation
1	A-N						Cement	
2							Top of Cement/ bentonite mixture at 2'	
3								
4								
5								
6							Cement/ bentonite mixture consisted of 5% bentonite with portland cement	
7								
8								
9								
10						Match to Sheet 2		

DRILLING CO.: Hardin Huber,Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW27D SHEET 1 OF 7

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW27D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 1		
11-12	S-1	1.25/2.0 63%	4 4 12 14		0	CLAY-plastic, some sand-fine(CL); gray to orange; medium dense; damp		
						12.0'		10.5
13-14	S-2	1.33/2.0 67%	5 5 10 22		0	SAND-fine, some silt, trace clay-non plastic(SM); yellow; medium dense; wet, mottled orange		
15-16	S-3	1.5/2.0 75%	12 16 20 22		0			
						16.0'		
17-18	R-N					End of Boring at 16.0' on 10-11-92 Converted to mud rotary drilling		
19-20							Measured water level at 15.35' on 10-26-92	
						20.0'		
21-22	S-4	2.0/2.0 100%	9 10 6 5		0	CLAY-plastic, sand-fine, trace silt,(CL); gray; medium dense; wet		2.5
						20.3'		2.2
23-24	R-N							
25-26	S-5	1.08/2.0 54%	10 15 17 18		0	SAND-fine, little silt, trace clay - plastic(SM); light gray; dense; wet		
27-28	R-N							
29-30						Match to Sheet 3		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW27D SHEET 2 OF 7

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW27D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 2		
31–32	S-6	1.0/2.0 50%	7 9 15 12		0	**SAND**-fine, little clay-NP, trace silt(SM); light brown; medium dense; wet, mottled orange		
33–34	R-N							
35–36	S-7	1.0/2.0 50%	7 11 24 28		0	**SAND**-fine, some silt(SM); gray; dense; wet		
37–38	R-N							
39–40								
41–42	S-8	.92/2.0 46%	7 19 21 25		0	**SAND**-fine and **SILT**(SM); light gray; dense; wet, banded brown		
43–44	R-N							
45						45.0'		-22.5
46–47	S-9	2.0/2.0 100%	6 13 37 18		0	CLAY(CL) 45.3' / **SAND**-fine, some clay, trace silt; green black; dense; wet		-22.8
48–49	R-N							
50						Match to Sheet 4		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW27D SHEET 3 OF 7

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW27D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 3		
51	S-10	1.16/2.0 58%	11 15 20 50/2"		0	SAND-fine, some silt(SM); light gray green; dense; wet, split spoon refusal		
52								
53	R-N							
54								
55								
56	S-11	.58/2.0 29%	27 50/2"		0	SAND-fine and SILT, trace shell fragments(SM); white; very dense; wet, split spoon refusal		
57								
58	R-N							
59								
60								
61	S-12	.17/2.0 8%	50/5"		0	SAND-fine, some silt(SM); green; very dense; wet, split spoon refusal		
62								
63	R-N							
64								
65								
66	S-13	.33/2.0 17%	50/3"		0	SAND-fine, little silt(SM); green; very dense; wet, split spoon refusal		
67								
68	R-N							
69								
70						Match to Sheet 5		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW27D SHEET 4 OF 7

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW27D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 4		
71–72	S-14	.42/2.0 21%	50/4"		0	**SAND** -fine, some silt, trace shell fragments(SM); light green; very dense; wet, split spoon refusal		
73–74	N-R							
75–76	S-15	.67/2.0 33%	39 50/2"		0	**SAND** -fine and **SILT**, trace shell fragments(SM); light green; very dense; wet, split spoon refusal		
77–79	N-R							
80–81	S-16	.58/2.0 29%	28 50/2"		0	**SAND** -fine, some silt, trace shell fragments(SM); light green; very dense; wet; split spoon refusal		
82–84	N-R							
85–86	S-17	.42/2.0 21%	50/4"		0	**SAND** -fine, some silt, trace shell fragments(SM); light green; very dense; wet; split spoon refusal		
87–90	N-R					Match to Sheet 6		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW27D SHEET 5 OF 7

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW27D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
						Continued from Sheet 5	
91	S-18	.42/2.0 21%	50/5"		0	**SAND**-fine, some silt, trace shell fragments(SM); light green; very dense; wet, orange spots, split spoon refusal	
92							
93	R-N				NR		
94							
95						**SAND**-fine, some silt, little shell fragments(SM); green; dense; wet, split spoon refusal 95.2'	
96	S-19	2.0/2.0 100%	19 20 27 32		0	**SILT**, little sand-fine, trace clay-NP(ML)	
97							
98	R-N				NR		
99							
100						100'	
101	S-20	1.42/2.0 71%	11 19 21 26		0	**LIMESTONE FRAGMENTS** and **LIMEY MUD**, trace silt, trace shell fragments; white; dense; wet	
102							
103	R-N				NR		
104							
105							
106	S-21	1.5/2.0 75%	25 50/3"		0	**LIMESTONE FRAGMENTS** and **LIMEY MUD**, trace clay NP, trace shell fragments; white; very dense; wet, split spoon refusal	
107							
108	R-N				MR		
109	S-22	1.5/2.0 75%	19 33 40 25		0		
110						Match to Sheet 7	

Well Installation Detail:
Top of Bentonite 94.5' -72.7
Top of sand 97.0'
Top of screen 100.1' -77.5
Bottom of screen 109.1' -86.6
Bottom of Well 110' -87.5

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 6GW27D SHEET 6 OF 7

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS, Camp Lejeune

S.O. NO.: 19133 BORING NO.: 6GW27D

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 6		
111	R-N							
112						112.0'		
						End of Boring at 112.0'	End of Boring at 112.0'	-89.5
113								
114								
115								
116								
117								
118								
119								
120								
121								
122								
123								
124								
125								
126								
127								
128								
129								
130								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua

DRILLER: Brian VanDoren BORING NO.: 6GW27D SHEET 7 OF 7

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6,Wooded Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW28D
COORDINATES: EAST: 2502767.0 NORTH: 348604.3
ELEVATION: SURFACE: 28.7 TOP OF PVC CASING: 31.74

RIG: B-80	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		3 1/4" ID		10-20-92	0 - 114.5	Cool		
LENGTH	2.0'		5.0'		10-26-92	--	Cloudy, 70°s	22.05	144 hrs
TYPE	Std		HSA		11-07-92	--	Cloudy, 50°s	22.10	432 hrs
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Advanced boring to 22' using 3 1/4" augers. Completed borehole 7 7/8" mud rotary wing bit taking split spoon samples every 5'. Type II monitoring well installed to 114.5'.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Sch 40 PVC	1.9 stickup	104.7
Well Screen	4"	Sch 40 PVC, 10 slot	104.7	113.6

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (PPM)	Visual Description	Well Installation Detail	Elevation
1	S-1	1.6/2.0 80%	2 2 2 2			**SAND**, fine grained, little silt(SM); brown; loose; dry		
3	S-2	1.0/2.0 50%	2 2 3 3			**SAND**-fine grained, little silt(SM); brown; loose; dry		
4						**Note:** trace silt; trace clay	Bentonite/ portland cement mixture. Mixture consisted of 5% bentonite	
5	S-3	1.4/2.0 70%	7 9 10 11			**SAND**, medium grained, trace silt, trace clay (SM); brown; medium dense; damp		
6						6.5'		
7	S-4	1.8/2.0 90%	5 6 12 13			**SAND**(fine grained) some clay; (ML); brown; medium dense; damp		22.2
8						8.7'		
9	S-5	1.9/2.0 95%	3 14 9 12			**SAND**, fine grained, trace silt (SM); white; medium dense; damp		20.2
10						Match to Sheet 2		

DRILLING CO.: Hardin Huber,Inc. BAKER REP.: J. Culp
DRILLER: C. Chism BORING NO.: 6GW28D SHEET 1 OF 7

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW28D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PIE = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 1		
11–12	S-6	2.0/2.0 100%	12 10 11 9			**SAND**, fine grained, trace silt (SM); white; medium dense; damp		
13–14	S-7	2.0/2.0 100%	12 10 4 9			**SAND**, fine grained, little silt, trace clay (SM); grey; medium dense; damp		
15–16	S-8	2.0/2.0 100%	9 10 12 16			**SAND**, fine grained, little silt, (SM); grey; medium dense; damp		
17–18	S-9	2.0/2.0 100%	9 10 12 8			**SAND**, fine grained, little silt, (SM); grey; medium dense; damp, iron staining		
19–20	S-10	1.7/2.0 85%	10 14 12 16			**SAND**, fine grained, little silt, (SM); grey; medium dense; moist, iron staining		
21–22	S-11	1.6/2.0 80%	9 10 14 12			**SAND**, fine grained, little silt, (SM); grey; medium dense; wet, groundwater at 20'		
23–25	R-N					Converted to mud rotary drilling at 22'		
26–27	S-12	1.1/2.0 55%	7 6 6 6			**SAND**, fine grained, little silt (SM); brown; medium dense; wet		
28–30	R-N					Match to Sheet 3		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: J. Culp
DRILLER: C. Chism BORING NO.: 6GW28D SHEET 2 OF 7

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW28D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 2		
31	S-13	2.0/2.0 100%	6 6 6 5			**SAND**, fine grained, some silt (SM); brown; medium dense; wet		
32								
33	R-N							
34								
35								
36	S-14	1.0/2.0 50%	10 4 10 13			**SAND**, fine grained, little silt (SM); brown, medium dense; wet, iron staining		
37								
38	R-N					**Note:** Shell fragments encountered between 37' to 40'		
39								
40								
41	S-15	2.0/2.0 100%	7 7 22 50/.3			**SAND**, fine grained, some silt, trace clay (SM); green; medium dense; wet, shell fragments, spoon refusal		
42								
43	R-N							
44								
45								
46	S-16	1.0/2.0 50%	44 50/1			**SAND**, fine grained, little silt, trace clay (SM); green; very dense; wet, spoon refusal, sand nodules		
47								
48	R-N							
49								
50						Match to Sheet 4		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: J. Culp
DRILLER: C. Chism BORING NO.: 6GW28D SHEET 3 OF 7

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW28D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 3		
51–52	S-17	0.4/2.0 20%	50/.3			**SAND**, fine grained, some silt, trace clay, some limestone fragments, trace shell fragments; green; very dense; wet, spoon refusal		
						52.5'		-23.8
53–54	R-N					Note: Cuttings from 50' - 55' indicate shell fragments		
55–56	S-18	0.8/2.0 40%	150/.5			**SHELL FRAGMENTS**, some sand, trace silt; grey green; very dense; wet, spoon refusal		
57–58	R-N							
59–60								
61–62	S-19	0.3/2.0 15%	150/.3			**SHELL FRAGMENTS**, some sand, trace silt; grey green; very dense; wet, spoon refusal		
63–64	R-N							
65–66	S-20	0.4/2.0 20%	100/.4			**SHELL FRAGMENTS**, some sand, trace silt; grey; very dense; wet, spoon refusal		
						66.0'		-37.3
67–68	R-N					**SAND**, fine grained, trace shell fragments, little silt (SM); grey; very dense; wet, spoon refusal		
69–70						Match to Sheet 5		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: J. Culp
DRILLER: C. Chism BORING NO.: 6GW28D SHEET 4 OF 7

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW28D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 4		
71	S-21	0.5/2.0 25%	100/.5			**SAND**, fine grained, little silt (SM); grey; very dense; wet, spoon refusal		
72								
73	R-N							
74								
75								
76	S-22	0.3/2.0 15%	100/.3			**SAND**, fine grained, little silt, trace shell fragments (SM); grey; very dense; wet, spoon refusal		
77								
78	R-N							
79								
80								
81	S-23	2.0/2.0 100%	10 15 20 22			**SAND**, fine grained, some shell fragments, little silt, trace clay (SM); grey green; dense; wet		
82								
83	R-N							
84								
85								
86	S-24	0.8/2.0 40%	66/50/.1			**SAND**, fine grained, little shell fragments, little silt (SM); grey green; very dense; wet, spoon refusal		
87								
88	R-N							
89								
90						Match to Sheet 6		

DRILLING CO.: Hardin Huber, Inc.
DRILLER: C. Chism
BAKER REP.: J. Culp
BORING NO.: 6GW28D
SHEET 5 OF 7

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW28D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 5		
91–92	S-25	0.3/2.0 15%	100/.4			**SAND**, fine grained, little silt, trace shell fragments (SM); grey green; very dense; wet, spoon refusal		
93–94	R-N							
95–96	S-26	0.4/2.0 20%	100/.5			**SAND**, fine grained, little silt, trace shell fragments (SM); grey green; very dense; wet, spoon refusal	95 ft. top of bentonite	
97–98	R-N							
99–100	S-27	1.0/2.0 50%	22 30 50/.4			**SAND**, fine grained, little silt, little shell fragments, trace clay (SM); grey green; very dense; wet, spoon refusal	99 ft. top of sand	
101–102	R-N							
103–104	S-28	2.0/2.0 100%	19 35 42 43			**SAND**, fine grained, little silt, little shell fragments, trace clay (SM); grey green; very dense; wet	104.7 ft. top of screen	-76
105–106						106.0'		-77.3
107–108	R-N					**LIMESTONE FRAGMENTS**, little sand, trace clay, trace shell fragments; white; very dense; wet		
109–110						Match to Sheet 7		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: J. Culp
DRILLER: C. Chism BORING NO.: 6GW28D SHEET 6 OF 7

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW28D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 6		
111						**LIMESTONE** fragments, trace sand, trace shell fragments, trace clay; white; very dense; wet, spoon refusal 111.5'		
112						**SAND**, fine grained, little silt, trace clay(SM); white; very dense; wets, spoon refusal		-82.8
113								
114	R-N						Bottom of screen 113.6'	-84.9
115						115.0'	Bottom of Well 114.5'	-85.8
						End of Boring at 115.0'	End of Boring at 115.0'	-86
116								
117								
118								
119								
120								
121								
122								
123								
124								
125								
126								
127								
128								
129								
130								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: J. Culp
DRILLER: C. Chism BORING NO.: 6GW28D SHEET 7 OF 7

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1DA (Well)
COORDINATES: EAST: 2503316.1 NORTH: 348258.1
ELEVATION: SURFACE: 32.7 TOP OF PVC CASING: 35.23

RIG: B-80									
	SPLIT SPOON	CASING	AUGERS	ROTARY DRILL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8"ID	10"		6	4-13-93	0-236.5			
LENGTH	2'	20'							
TYPE	Std.	Steel							
HAMMER WT.	140 Lbs.								
FALL	30"								
STICK UP									

REMARKS: Grouted in 20 feet of 10" diameter steel casing; boring advanced to 236.5. Installed a 2-inch stainless steel well.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	2"	Stainless Steel	2.5 Stickup	220
Well Screen	2"	Stainless Steel #10 Slot	220	229.6

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
121						See boring log "6GW1DA - Boring" for soil description from 0 to 125'	2.5' stick-up	
122								
123								
124								
125	125.0	A-N						
126	126.5	S-1	1.5 100%	16 32 51		3.2	**SAND**, medium to coarse, trace silt, shells, (SP); green; very dense; wet	
127								
128		A-N						
129								
130	130.0						Match to Sheet 2	

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Royce Keenan BORING NO.: 6GW1DA (Well) SHEET 1 OF 7

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 6, RI./FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1DA (Well)

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
131	S-2	2	21 22 37 48		1.4	Continued from Sheet 1 **SAND**, medium to coarse, trace silt, shells, (SP); green-gray; very dense; wet		
132 132.0		100%						
133	R-N							-100.3'
134								
135 135.0								
136	S-3	1.4	10 12 20 15		1.7	**SAND**, medium to coarse, trace silt, shells, (SP); green; dense; wet		
137 137.0		71%						
138	R-N							
139								
140 140.0								-107.3'
141 141.0	S-4	1.0 100%	53 61		9.5	**SAND**, medium to coarse, some shells, (SP); gray; very dense; wet		
142	R-N							
143								
144								-111.3'
145 145.0						**SAND**, , fine to coarse, trace silt, fine to coarse gravel sized cement sand/shells, (SW); gray; very dense; wet		
146 146.5	S-5	.92 100%	38 51/4		40			
147								
148	R-N							
149						149.0'		-116.3'
150 150.0						Match to Sheet 3		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Royce Keenan BORING NO.: 6GW1DA (Well) SHEET 2 OF 7

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1DA (Well)

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
150.8	S-6	.67 80%	38 514		5	Continued from Sheet 2 **SAND**, fine to coarse, and fine to coarse gravel sized cemented sand, trace shells, (SW & GW); gray; very dense; wet		
155.0	R-N							
157.0	S-7	1.0 50%	33 35 45 20		2	**SAND**, fine to coarse, and fine to coarse gravel sized cemented sand, trace shells, (SW & GW); gray; very dense; wet		
165.0	R-N							-129.3'
166.5	S-8	1.2 78%	43 29 31		0.5	**SAND**, fine to medium trace silt, clay, shells, (SP); green-gray; very dense; wet		
	R-N					Match to Sheet 4		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Royce Keenan BORING NO.: 6GW1DA-Well SHEET 3 OF 7

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1DA (Well)

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
171						Continued from Sheet 3		
172	R-N							
173								
174								
175								
175.0								
176	S-9	1.5 100%	12 23 36		2	**SAND**, fine to medium trace silt, clay, shells, (SP); green-gray; very dense; wet		
176.5								
177							Bentonite/ grout slurry	
178								
171								
180	R-N							
181						**SAND**, fine to medium, trace silt, clay, shells, (SP); green-gray; very dense; wet		
182								
183								
184								
185.0								
185	S-10	1.5 100%	23 31 45		1.5	**SAND**, fine to medium, trace silt, clay, shells, (SP); green-gray; very dense; wet		
186.0								
187								
188	R-N							
189							Top of Bentonite 190'	
190						Match to Sheet 5		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Royce Keenan BORING NO.: 6GW1DA-Well SHEET 4 OF 7

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1DA (Well)

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
191						Continued from Sheet 4		
192	R-N							-159.3'
193								
194								
195 195.0								
196	S-11	1.7	20 20 25 27		2	**SAND**, fine to coarse and gravel, fine to coarse, trace clay, silt, shells, (SW & GW); gray; dense; wet		
197 197.0		00%						
198								
199								
200	R-N							
201								
202								-169.3'
203								
204								
205 205.0								
205.8	S-12	.67 80%	53 88/4		--	**SAND**, fine to medium, trace silt, clay, shells, (SP); gray-green; very dense; wet		
206								
207	R-N							
208								
209								
210						Match to Sheet 6		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Royce Keenan BORING NO.: 6GW1DA-Well SHEET 5 OF 7

Baker

Baker Environmental, Inc

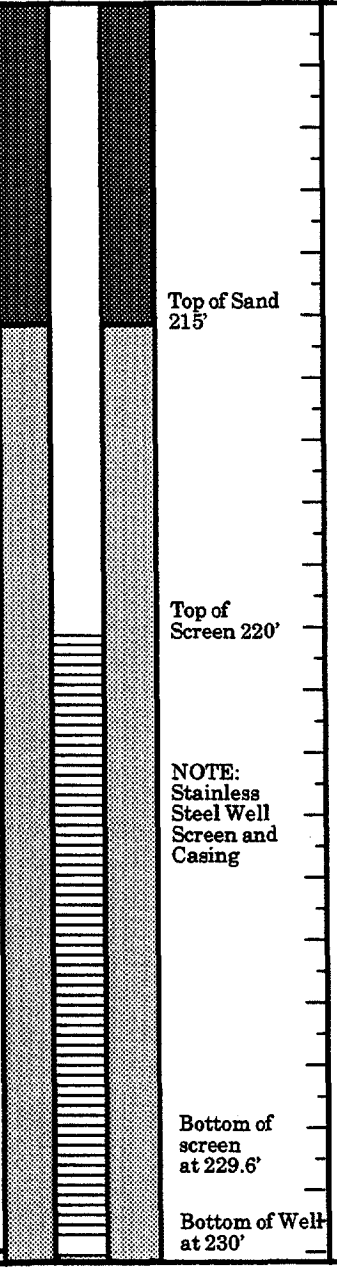
TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1DA (Well)

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description
						Continued from Sheet 5
211						
212						
213	R-N					
214						
215						
215.0						
215.9	S-13	.5 / 59%	68 / 71/5		0	SAND, fine to medium, some silt, trace clay, (SM); gray-green; very dense; wet
216						
217						
218						
219						
220	R-N					
221						
222						
223						
224						SAND, fine to medium, silty, trace clay, (SM); gray; very dense; wet
225						
225.0						
226	S-14	1.5 / 100%	13 / 27 / 51		–	
226.5						
227						
228	R-N					
229						
230						



Elevation
-178.3'
-189.3'
-197.3'

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Royce Keenan BORING NO.: 6GW1DA (Well) SHEET 6 OF 7

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1DA (Well)

SAMPLE TYPE
S = Split Spoon A = Auger
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N = No Sample

DEFINITIONS
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RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
231						Continued from Sheet 6		
232								
233	R-N							
234								
235	235.0							
236	S-15	1.5 100%	10 12 45		--	CLAY, fine sandy (CL); gray; hard; moist		
236.5								-203.8'
237						Bottom of Boring at 236.5 feet	Bottom of Boring at 236.5'	
238								
239								
240								
241								
242								
243								
244								
245								
246								
247								
248								
249								
250								

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Royce Keenan BORING NO.: 6GW1DA-Well SHEET 7 OF 7

Baker

Baker Environmental, Inc.

TEST BORING RECORD

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1DA (Boring)
COORDINATES: EAST: NA NORTH: NA
ELEVATION: SURFACE: NA TOP OF STEEL CASING: NA

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"O.D.		3 1/4"ID		4-3-93	127			
LENGTH	2'		5'						
TYPE	Std.		H.S.						
HAMMER WT.	140 Lbs.								
FALL	30"								
STICK UP									

REMARKS:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
1	S-1	2	6 6 10 10		1	4" **TOP SOIL**, sand, fine to coarse, trace organics;black;dry	
2 2.0		100%					
3	S-2	1.7	6 5 7 7		0	**SAND**, fine to coarse, trace silt, (SW);gray;medium dense;dry	
4 4.0		83%					
5	S-3	2	3 3 4 4		0	**SAND**, , fine to medium, trace silt, (SP);lt. tan brown, mottled; loose to medium dense; damp	
6 6.0		100%					
7	S-4	2	4 4 4 5		0		
8 8.0		100%					
9	S-5	2	5 6 6 7		0		
10 10.0		100%				Match to Sheet 2	

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian VanDoren BORING NO.: 6GW1DA (Boring) SHEET 1 OF 7

Baker

Baker Environmental, Inc.

TEST BORING RECORD

PROJECT: RI./FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1DA (Boring)

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
11	S-6	2 / 100%	10 10 10 15		0	Continued from Sheet 1 **SAND**, fine to medium, trace silt, (SP);lt. tan brown, mottled; loose to medium dense; damp	
12.0							
13	S-7	2 / 100%	10 10 10 15		0		
14.0						**SAND**, fine to medium,clayey, (SC);rust brown; wet	
15	R-N						
15.0							
16	S-8	2 / 100%	1 1 1 3		0	**CLAY**, fine to medium sandy, (C1);trace sand at 16 ft.; black;soft;wet	
17.0							
18	R-N					**CLAY**, trace fine sand, (C1); brown with orange, red, yellow streaks; wet, driller says black clayey peat at 19 ft.	
19							
20.0						**SAND**, fine to medium, trace silt, (SP);lt. gray; medium dense; moist	
21	S-9	1.1 / 54%	10 12 18 23		0		
22.0							
22	R-N					**SAND**, fine to coarse, (SW);lt. gray; moist	
23							
24							
25.0						**SAND**, , fine to coarse, gray clay lenses, (SW);tan; dense; wet	
25	S-10	1.3 / 67%	12 24 24 28		0		
26							
27.0							
27	R-N					**SAND**, fine to coarse, (SW); tan mottled rusty at 27';wet	
28							
29							
30						Match to Sheet 3	
30.0							

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian VanDoren BORING NO.: 6GW1DA (Boring) SHEET 2 OF 7

TEST BORING RECORD

Baker Environmental, Inc.

PROJECT: RI./FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1DA (Boring)

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
31	S-11	1.2	5 5 10 15		5	Continued from Sheet 2 SAND,fine to medium, clay lenses, (SP); tan rust mottled; medium dense;wet	
32 32.0		58%				SAND, fine to coarse; trace coarse white sand, (SW); rusty-orange;wet	
33	R-N					SAND, fine to coarse; thin gray clay lenses, (SW); tan; medium dense;wet	
34 35 35.0							
36	S-12	1.0	8 10 17 21		2	SAND, fine to coarse; trace silt, (SW); rust orange;wet	
37 37.0		50%					
38	R-N						
39 40 40.0							
41	S-13	.67	5 5 5 6		5.8	SAND, fine to coarse; trace silt, (SW); 1" block silty clay layer at 40 ft.;black to dark gray; medium dense;wet	
42 42.0		33%					
43	R-N						
44 45 45.0							
46	S-14	1.2	3 3 2 5		10	SAND, fine to coarse; trace silt, trace clay at 45.8 ft, (SW); 3" gray fine to coarse sandy clay layer at 46 ft., damp; black; loose; wet	
47 47.0		58%					
48	R-N						
49 50 50.0						Match to Sheet 4	

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian VanDoren BORING NO.: 6GW1DA (Boring) SHEET 3 OF 7

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI./FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1DA (Boring)

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
51	S-15	1.5 108%	12 10 65		5	Continued from Sheet 3 **SAND**, fine to medium, trace silt, clay, shells, (SP); dark gray; very dense; wet	
51.0							
52	R-N						
53							
54							
55.0						**CLAY**, fine to coarse sandy, trace shells, (C1); gray; stiff; damp	
55	S-16	2 100%	5 8 10 12		4.6		
57.0							
57	R-N						
58							
59							
60.0							
60	S-17	1.2 58%	5 1 1 5		23	**SAND**, fine to coarse, trace fine to coarse gravel sized cemented sandy shells, trace silt, shells, (SW); gray; loose; wet	
62.0							
62	R-N						
63							
64							
65.0							
65	S-18	1.7 51/9	69 23 28		40	**SAND**, fine to coarse, and gravel, fine, trace silt, shells, fine to coarse gravel sized cemented sand, (SW & GP); gray; very dense; wet	
66	87%						
67	R-N						
68							
69							
70.0						Match to Sheet 5	
70							

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian VanDoren BORING NO.: 6GW1DA (Boring) SHEET 4 OF 7

Baker

Baker Environmental, Inc.

TEST BORING RECORD

PROJECT: RI./FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1DA (Boring)

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
71.0	S-19	.67 67%	28 51		50	Continued from Sheet 4	
71						**SAND**, fine to coarse, trace shell fragments (SW); gray; very dense; wet	
72	R-N						
73							
74							
75.0							
75	S-20	.67 67%	33 68		20		
76.0						**SAND**, fine to coarse, trace shell fragments (SW); gray; very dense; wet	
76							
77	R-N						
78						**SAND**, fine to coarse, trace shell fragments (SW); gray; very dense; wet	
79							
80.0							
80	S-21	.58 58%	46 51		6.2		
81.0							
81	R-N						
82							
83							
84							
85.0							
85	S-22	2 100%	15 18 24 24		39	**SAND**, fine to coarse, some shells, trace silt, (SW); gray; dense; wet	
86							
87.0							
87	R-N						
88							
89							
90.0						Match to Sheet 6	
90							

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian VanDoren BORING NO.: 6GW1DA (Boring) SHEET 5 OF 7

TEST BORING RECORD

Baker Environmental, Inc.

PROJECT: RI./FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1DA (Boring)

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
90.5	S-23	0.4 83%	74			Continued from Sheet 5	
91						**SAND**, fine to coarse, trace shells , silt, (sW); gray; very dense; wet	
92							
93	R-N						
94							
95	95.0						
95.9	S-24	.92 100%	28 51/5		60	**SAND**, fine to coarse, trace shells , silt, (SW); gray; very dense; wet	
96							
97							
98	R-N						
99							
100	100.0						
101	101.2 S-25	1 80%	28 48 51/3		80	**SAND**, fine to coarse, trace shells , silt, (SW); gray; very dense; wet	
102							
103	R-N						
104						**SAND**, fine to coarse,some silt, trace clay, (SM); gray-green; very dense; moist	
105	105.0.						
106	105.9 S-26	.83 90%	28 51/5				
107							
108	R-N						
109							
110	110.0					**SAND**, fine to coarse and gravel fine to coarse, trace dolomitized shells, clay, silt, (SW&GW); gray; ver. dense; wet	

Match to Sheet 7

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian VanDoren BORING NO.: 6GW1DA (Boring) SHEET 6 OF 7

Baker

Baker Environmental, Inc.

TEST BORING RECORD

PROJECT: RI./FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1DA (Boring)

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
110.5	S-27	0.5 100%	51		100	Continued from Sheet 6	
111						**SAND**, fine to medium, trace clay, (SP); gray-green; very dense; moist	
112							
	R-N						
113							
114							
115							
115.0							
	S-28	1.9	7 8 17		46	**CLAY**, fine to coarse sandy trace shells, (C1); medium brown; moist	
116							
116.9		100%	51/5			**SAND**, fine to coarse, some clay, trace silt, shells; (SC); medium brown; very dense; wet	
117							
	R-N						
118							
119							
120							
120.0							
	S-29	2	20 24 24		60		
121							
122.0		100%	25				
122							
123							
	R-N						
124							
125							
	S-30	2	11 11 15		70		
126							
127.0		100%	28				
127							
128						Bottom of Boring at 127 feet. Ground surface caved - loss of circulation - boring grouted.	
129							
130							

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian VanDoren BORING NO.: 6GW1DA (Boring) SHEET 7 OF 7

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6MW3D
COORDINATES: EAST: 2504439.8 NORTH: 347695.5
ELEVATION: SURFACE: 34.2 TOP OF PVC CASING: 35.18

RIG: B-80	SPLIT SPOON	CASING	AUGERS	ROTARY DRILL	DATE	PROGRESS (FT)	WEATHER	TOC WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		3 1/4" ID	6"	3-20-93	0 to 12			
LENGTH	2'		5'		3-31-93	12 to 201.5			
TYPE	STD		HSA		4-1-93	--		16.92	24 hrs.
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Augered to 10', then switched to mud rotary with 5' sampling intervals from 15' to 201.5' deep

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	2"	Schedule 40 PVC	2.1 Stick Up	97.5
Well Screen	2"	Schedule 40 PVC Slotted-No. 10 slotted	97.5	117.6

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description	Well Installation Detail	Elevation
0.0	S-1	1.5/2 75%	2 3 3 3			2" black top soil at surface, **SAND**, fine to medium, trace clay, silt, (SP). rust colored mottled at 1.5'; tan; loose; damp to moist	2.1' stick up	
2.0								
	S-2	1.7/2 83%	9 6 9 9					31.2
4.0						**SAND**; fine to medium, trace silt, (SP).; light gray; medium dense; wet at 4'		30.2
	S-3	2.0/2 100%	7 7 8 7			**SAND**; fine to coarse trace silt, (SW).; light gray; medium dense; wet		
6.0								
	S-4	2.0/2 100%	6 4 5 4			**SAND**; fine to coarse trace silt, (SW).; light gray; medium dense; wet		
8.0								
	A-N							
10.0						Match to Sheet 2		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6MW3D SHEET 1 OF 11

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6MW3D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
OVA = Organic Vapor Analyzer

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description	Well Installation Detail	Elevation
11	S-5	2.0/2 100%	3 5 6 8			Continued from Sheet 1 **SAND**; fine to coarse trace silt, (SW).; light gray; medium dense; wet		
12 12.0								22.2'
13	R-N					Trace clay bottom 4"		
14						6" **CLAY**, trace fine sand layer 15' to 15.5'; dark gray; moist		
15 15.0								
16 16.0	S-6	1.5/2 100%	2 2 2			**SAND**, fine to medium some clay, trace silt, (SC); dark gray; soft; moist		
17	R-N							
18						Interlayered dark gray **CLAY**, trace fine sand (CL), with dark gray sand, fine to medium, some clay (sc); soft; wet		
19								
20 20.0								
21	S-7	2.0/2 100%	1 1 1 2					
22 22.0								
23	R-N							
24						Interlayered dark gray **CLAY**, trace fine sand (CL), with dark gray sand, fine to medium, some clay (sc); soft; wet		
25 25.0								
26	S-8	2.0/2 100%	2 1 4 4			Two **silty** fine **sand** lenses up to 1" thick at approximately 25.5'; dark gray; medium stiff; wet		
27 27.0								
28	R-N							
29								5.2'
30 30.0						Match to Sheet 3		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6MW3D SHEET 2 OF 11

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6MW3D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
OVA = Organic Vapor Analyzer

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description	Well Installation Detail	Elevation
31						Continued from Sheet 2		
31.5	S-9	.67 44%	20 22 21			**SAND**, fine to coarse, trace silt, (SW).; light gray; dense; wet		
32								
33	R-N							
34								
35.0								0.8'
36								
36.5	S-10	1 67%	18 25 25			**SAND**, fine to medium, trace silt, (SP).; medium gray; dense; wet		
37								
38	R-N							
39								
40.0						**SAND**, fine to medium, trace silt, (SP).; medium gray; dense; wet		
41								
41.5	S-11	1.1 73%	15 22 23			Trace clay (SP).; medium gray; dense; wet		
42								
43	R-N							
44								
45.0						Trace clay (SP).; medium gray; dense; wet		
46								
46.5	S-12	.58 39%	23 25 38			Thin ≈1/8" green **silty clay** lenses; medium gray; very dense; wet		
47								
48	R-N							
49								
50								
50.0						Match to Sheet 4		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6MW3D SHEET 3 OF 11

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6MW3D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
OVA = Organic Vapor Analyzer

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description	Well Installation Detail	Elevation
51	S-13	0.5 33%	15 18 12		4.6	Continued from Sheet 3		
51.5						Thin ≈1/8" green silty clay lenses; medium gray; very dense; wet; dark gray; medium dense; wet		
52								
53	R-N							
54								-19.8'
55.0								
55						SAND, fine to coarse, clayey, trace shells, (SC).; medium gray; very dense; damp		
56	S-14	1.5 100%	14 18 38		5.0			
56.5								
57	R-N							
58								-23.8'
59								
60.0								
60						SAND, fine to coarse and gravel fine to coarse (dolomite), trace dolomitized shells, silt, (SW & GW); gray; very dense; wet; split-spoon refusal		
60.8	S-15	0.5 60%	31 51/4		2.9			
61								
62	R-N							
63								
64								
65.0								
65								-30.8'
66	S-16	0.5 33%	16 16 15		1.1	SAND, fine to coarse trace shells, silt, (SW).; gray; dense; wet		
66.5								
67								
68	R-N							
69								
70						Match to Sheet 5		
70.0								

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6MW3D SHEET 4 OF 11

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6MW3D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
OVA = Organic Vapor Analyzer

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description	Well Installation Detail	Elevation
71 — 71.5	S-17	0.5 33%	23 25 25		4.5	Continued from Sheet 4 **SAND**, fine to coarse trace shells, silt, (SW).; gray; dense; wet		
72 — 75.0	R-N							
75 — 75.5	S-18	0.5 100%	75		3.0	**SAND**, fine to coarse trace shells, silt, (SW).; gray; dense; wet	Bentonite/ grout slurry	
76 — 80.0	R-N							
80 — 80.5	S-19	0.5 100%	68		0.2	**SAND**, fine to coarse trace shells, silt, (SW).; gray; dense; wet		
81 — 85.0	R-N							-48.8'
85 — 86.5	S-20	1.5 100%	14 19 28		0.3	**SAND**, fine to coarse and gravel, fine, trace shells, silt, clay (SW & GW); gray; dense; moist	Top of bentonite 88.0'	-53.8'
87 — 90.0	R-N					Match to Sheet 6		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6MW3D SHEET 5 OF 11

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6MW3D

SAMPLE TYPE
S = Split Spoon A = Auger
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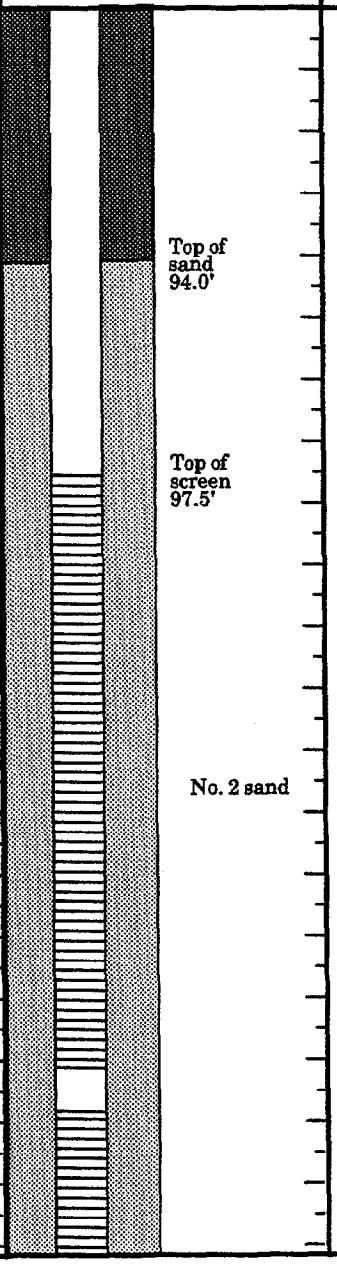
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
OVA = Organic Vapor Analyzer

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description
90.8	S-21	.58 70%	48 51/4		1.1	Continued from Sheet 5
	R-N					**SAND**, fine to coarse,trace, silt, shells, (SW); gray; very dense; wet
95.0						
95.5	S-22	0.5 100%	80		0.5	**SAND**, fine to coarse,trace, silt, shells, (SW); gray; very dense; wet
	R-N					
100						
101	S-23	.83 83%	48 60		2.1	**SAND**, fine to coarse,trace, silt, shells, (SW); gray; very dense; wet
	R-N					
105						
106.4	S-24	1.3 89%	38 45 51/5		0.7	**SAND**, fine to medium,trace, silt, clay, shells, (SP); gray; very dense; wet
	R-N					
110						Match to Sheet 7



DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6MW3D SHEET 6 OF 11

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6MW3D

SAMPLE TYPE
S = Split Spoon A = Auger
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R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
OVA = Organic Vapor Analyzer

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description	Elevation
111	S-25	1.5	65		1.5	Continued from Sheet 6	
111.5		100%	35 42			**SAND**, fine to coarse , and trace gravel, fine,, dolomitized shells, silt, clay, (SW & GP).; gray; very dense; wet	
112							
113		R-N					
114							
115							
115.0							
116	S-26	0.5	13		3.2	**SAND**, fine to coarse , and trace gravel, fine, dolomitized shells, silt, clay, (SW & GP).; gray; very dense; wet; some gravel, fine; light gray; dense; wet	
116.5		33%	15 32				
117							
118		R-N					
119							
120							
120.0							
121	S-27	1.5	17		1.2	**SAND**, fine to coarse, and gravel, fine to coarse, trace fossils, silt, clay, dolomitized shells, (SW & GW); light gray; dense; wet	
121.5		100%	19 23				
122							
123		R-N					
124							
125							
125.0							
126	S-28	1.5	17		2.0	**SAND**, fine to coarse some silt, trace shells, (SM).; green-gray; very dense; wet	
126.5		100%	20 31				
127							
128		R-N					
129							
130						Match to Sheet 8	
130.0							

Well Installation Detail:
- Bottom of screen at 117.6'
- Bottom of well at 118' — -84.8'
- Bentonite/ grout slurry — -89.8'
- -94.8'

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6MW3D SHEET 7 OF 11

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6MW3D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
OVA = Organic Vapor Analyzer

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description	Well Installation Detail	Elevation
131	S-29	1.5 100%	24 38 42		6.5	Continued from Sheet 7		
131.5						**SAND**, fine to coarse, some shells, trace silt, dolomitized shells, (SW).; green-gray; very dense		
132								
133								
134								
135	R-N							-100.8'
136								
137								
138								
139								
140								
140.0	S-30	.83 100%	32 51/4		5.1	Sand, fine to coarse, trace shells, silt, (SW); gray; very dense; split-spoon refusal		
140.8								
141								
142								
143								
144	R-N							
145								
146								
147								-112.8'
148								
149								
150						Match to Sheet 9		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6MW3D SHEET 8 OF 11

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6MW3D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
OVA = Organic Vapor Analyzer

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description	Well Installation Detail	Elevation
150.5	S-31	0.5 100%	110		4.7	Continued from Sheet 8		
151						**SAND**, fine to coarse, trace shells, silt,fine to coarse gravel sized cemented sand and shells, dolomitized shells, (SW).; gray; very dense; wet		
152								
153								
154	R-N							
155								
156								
157								-122.8'
158								
159								
160.0						**SAND**, fine to medium, trace silt, shells, (SP).; green-gray; very dense; moist		
160								
160.9	S-32	.67 80%	38 51/5		3.2			
161								
162								
163								
164	R-N							
165								
166								
167								-132.2'
168								
169								
170 170.0						Match to Sheet 10		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6MW3D SHEET 9 OF 11

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6MW3D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
OVA = Organic Vapor Analyzer

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description	Well Installation Detail	Elevation
170.8	S-33	0.5 60%	45 51/4		1.5	Continued from Sheet 9		
171						**SAND**, fine to coarse, trace shells, silt, (SW).; gray; very dense; wet; split-spoon refusal		
172								
173								
174	R-N							
175								
176								-141.8'
177								
178								
179								
180	180.0							
181	S-34	1.0 100%	38 47 51/3		2.3	**SAND**, fine to medium, trace silt, clay, shells, (SP).; green-gray; very dense; moist; split-spoon refusal		
181.3								
182								
183								
184								
185	R-N							
186								-151.8'
187								
188								
189								
190						Match to Sheet 11		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6MW3D SHEET 10 OF 11

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6MW3D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
OVA = Organic Vapor Analyzer

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description	Well Installation Detail	Elevation
190.8	S-35	0.5 60%	75 51/3		1.5	Continued from Sheet 10		
191						**SAND**, fine to medium, trace fine to coarse gravel sized limestone, fragmenting silt, (SP).; green-gray; very dense; wet; split-spoon refusal		
192								
193	R-N							
194								
195								
196								-161.8'
197								
198								
199								
200	200.0							
201	S-36	.83 55%	22 38 45		2.1	**SAND**, fine to medium, some silt, (SM).; green-gray; very dense; wet	End of Boring at 201.5'	-167.8'
201.5								
202						Bottom of boring at 201.5'		
203								
204								
205								
206								
207								
208								
209								
210								

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6MW3D SHEET 11 OF 11

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW15D (Well)
COORDINATES: EAST: 2503106.7 NORTH: 347682.4
ELEVATION: SURFACE: 25.2 TOP OF PVC CASING: 28.0

RIG: B-80	SPLIT SPOON	CASING	AUGERS	ROTARY DRILL	DATE	PROGRESS (FT)	WEATHER	TOC WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2.0" ID	10"		6"	4-6-93	160			
LENGTH	2.0'	20'	5.0'						
TYPE	Std	Steel	HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Boring advanced to 110 ft.f - no samples collected - see 6GW15D (Boring) for soil description - Well set at 155 ft.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	2"	Sch 40 PVC	2.3 stickup	145
Well Screen	2"	Sch 40 PVC, 10 slot	145	154.6

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
111		1.7	21					
112	112.0	S-1 83%	21 30 36		7	**SAND**, fine to coarse and gravel, fine, trace silt, clay, dolomitized shells, fine to coarse gravel sized cemented sand, (SW GP); gray; very dense; wet		
113		R-N						
114								
115	115.0							
116		2	19					
117	117.0	S-2 100%	10 19 30		3	**SAND**, fine to coarse, some fine gravel, trace clay, silt, dolomitized shells, (SW); gray medium dense; wet		
118								
119								-93.8'
120	120.0					Match to Sheet 2		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: V. Richey
DRILLER: Brian VanDoren BORING NO.: 6GW15D (Well) SHEET 1 OF 3

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW15D (Well)

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 6		
121-122	S-3	2 / 100%	10 15 28 20		1	**SAND** fine to coarse, trace shells, clay, fine to coarse, gravel sized cemented sand (SW); gray/green; dense; wet		
123-130	R-N						125.0' Grout/ bentonite slurry	-102.8'
131-132	S-4	2 / 100%	13 20 28 35		1	**SAND** fine to coarse, trace shells, clay, fine to coarse, gravel size cemented sand (SW);green; dense; wet		
133-140	R-N						135.0' Top of bentonite at 139'	-112.8'

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: V. Richey
DRILLER: Brian VanDoren BORING NO.: 6GW15D (Well) SHEET 2 OF 3

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: RI/FS Camp Lejeune

S.O. NO.: 19133 BORING NO.: 6GW15D (Well)

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 6		
141 – 141.4	S-5	1.7 / 100%	25 / 45 / 50/5		0.1-0.3	**SAND** medium to coarse, trace silt, shells, cemented sand fragmentry (SP); green/gray; very dense; wet	Top of sand at 141'	
142 – 150.0	R-N						Top of screen at 145'	
150 – 150.8	S-6	.9 / 100%	0.9 / 50/3	45	0.1	**SAND** medium to coarse, trace silt, shells, cemented sand fragmentry (SP); green/gray; very dense; wet	No. 2 sand	
151 – 155.8	R-N						Bottom of screen at 154.5'	
155 – 156.4	S-7	1.7 / 100%	23 / 41 / 50/5		0.3	**SAND** medium to coarse, trace silt, shells, cemented sand fragmentry (SP), some silt, (SM); green/gray; very dense; wet	Bottom of well at 155'	
157 – 160	R-N					Bottom of Boring at 160.0'		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: V. Richey

DRILLER: Brian VanDoren BORING NO.: 6GW15D (Well) SHEET 3 OF 3

Baker

Baker Environmental, Inc.

TEST BORING RECORD

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW15D (Boring)
COORDINATES: EAST: NA NORTH: NA
ELEVATION: SURFACE: NA TOP OF STEEL CASING: NA

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		3 1/4"ID		3-29-93	30			
LENGTH	2.0'		5'		3-31-93	22			
TYPE	Std.		H.S.						
HAMMER WT.	140 Lbs.								
FALL	30"								
STICK UP									

REMARKS: Augered to 12 ft. then switched to mud rotary with 5 ft. sampling intervals. Boring was abandoned at 2 ft. - grout to surface.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
1		2	3			**SAND**, fine to coarse, trace silt, trace organics 0 to 6" (SW), large piece of wood in sample causing refusal; brown; loose; damp	
2 2.0	S-1	100%	5 5 7		0		
2.8	S-2	.67 80%	7 51/4		0		
3 4.0							
4							
5		.17	4			Note: only 2" recovery. Clay, fine to coarse, sandy, (CL); gray; medium stiff; wet	
6 6.0	S-3	89%	8 8 10		0		
7						**SAND**, fine to coarse (SW); brown; wet	
8						**SAND**, fine to coarse, trace silt (SW); dark brown; medium dense; wet	
9	A-N						
10 10.0						Match to Sheet 2	

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian VanDoren BORING NO.: 6GW1DA (Boring) SHEET 1 OF 4

TEST BORING RECORD

Baker Environmental, Inc.

PROJECT: RI./FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW1DA (Boring)

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
						Continued from Sheet 1	
11	S-5	1.5 75%	5 4 3 2		0	**SAND** fine, some silt(SM); brown; medium dense; dry, mottled orange	
12.0							
12	S-6	.67 33%	5 5 6 10		0.4	**SAND** fine, little silt(SM); medium dense; brown, water at 16'	
14.0							
14	R-N						
20.0							
20	S-7	1.8 92%	6 3 1 3		0.3	2" **SAND**, fine to coarse, trace white coarse sand layer at 20 ft.; rust brown; wet 5" clayey, fine to coarse, sand layer at 20.5 ft.; black; wet **SAND** fine to coarse, trace silt; tan; loose; wet 4" clayey, fine to coarse, sand layer at 25 ft.; black; wet	
22.0							
22	R-N						
25.0							
25	S-8	1.0 50%	4 8 12 16		0.2	**SAND** fine to coarse (SW); rusty sand; medium dense; wet	
27.0							
27	R-N						
30.0						Match to Sheet 3	

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian VanDoren BORING NO.: 6GW15D (Boring) SHEET 2 OF 4

Baker

Baker Environmental, Inc.

TEST BORING RECORD

PROJECT: RI./FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW15D (Boring)

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
						Continued from Sheet 2	
31	S-9	.83 42%	13 14 15 13		0.3	**SAND** fine to coarse, (SW); rusty brown; medium dense; wet	
32							
33	R-N						
34							
35							
36	S-10	.75 37%	7 21 26 23		1.4	**SAND** fine to coarse, (SW); rusty brown; dense; wet	
37							
38	R-N						
39							
40							
41	S-11	.83 42%	14 15 15 21		3.4	**SAND** fine to coarse, trace silt (SW); rusty brown, mottled tan; medium dense; wet	
42							
43	R-N						
44							
45							
46	S-12	1.7 83%	8 7 5 10		5-7	**SAND** fine to coarse, trace silt (SW); dark gray; medium dense; wet	
47							
48	R-N					Bottom 8", sand, fine to medium, trace clay, silt, (SP); dark gray; wet	
49							
50						Match to Sheet 4	

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian VanDoren BORING NO.: 6GW15D (Boring) SHEET 3 OF 4

Baker

Baker Environmental, Inc.

TEST BORING RECORD

PROJECT: RI./FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW15D (Boring)

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
						Continued from Sheet 3	
51	S-13	.83 42%	5 6 8 5		5-7	**SAND** fine to coarse, trace silt, (SW); tan; medium dense; wet **SAND** fine to coarse, trace silt, (SW);gray; wet	
52.0							
52						Bottom of boring at 52 ft. Borehole was grouted from 52 ft.	
53							
54							
55							
56							
57							
58							
59							
60							
61							
62							
63							
64							
65							
66							
67							
68							
69							
70							

DRILLING CO.: Hardin-Huber
DRILLER: Brian VanDoren
BAKER REP.: V. Richey
BORING NO.: 6GW15D (Boring)
SHEET 4 OF 4

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW30D
COORDINATES: EAST: 2503668.7 NORTH: 349456.3
ELEVATION: SURFACE: 9.9 TOP OF PVC CASING: 11.90

RIG: B-80									
	SPLIT SPOON	CASING	AUGERS	ROTARY BORING	DATE	PROGRESS (FT)	WEATHER	TOC WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2" O.D.		3 1/4" ID	8"	3-2-93	10			
LENGTH	2'		5'		3-3-93	92			
TYPE	STD		HS		3-4-93	59.9			
HAMMER WT.	140#				4-1-93	--		1.79	672 Hrs.
FALL	30"								
STICK UP									

REMARKS: Augered to 10' then switched to mud rotary drilling with a 5' sampling interval.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	2"	Schedule 40 PVC	1.4	90.0
Well Screen	2"	Schedule 40 PVC #10 Slotted	90.0	99.6

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
0	S-1	1.3/2 67%	3 3 6 8			**SAND**, fine to medium, trace silt, (SP); tan; loose; moist	1.4' stick-up	
2.0	S-2	2.0/2 100%	6 10 12 9			**SAND**, fine to coarse, trace wood fragments, fine gravel, (SW); light gray; medium dense; moist		7.4
4.0	S-3	1.3/2 67%	3 2 2 1			6' tan fine to medium sand at 4.5 to 5.0' **SAND**, fine to coarse, trace clay, wood, roots, wet at 6.5' (SW); black; loose; moist	Grout/ Bentonite slurry	5.9
6.0	S-4	2.0/2 100%	4 7 9 16			**SAND**, coarse, trace of fine to medium sand, wood, (SP); light tan; medium dense; wet		3.4
8.0	S-5	2.0/2 100%	8 7 8 8			**SAND**, fine to coarse, trace silt, (SW), clayey sand layer at 9.5'; light gray; medium dense; wet		1.9
10.0						Match to Sheet 2		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW30D SHEET 1 OF 9

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW30D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1		
12	R-N							
13								
14								
15						top 4" brown fine to coarse sand		
15.0								
16	S-6	1.0/2 67%	8 41 56 5			**SAND**,fine to coarse and fine to coarse gravel and rock fragments, trace silt. (SW and GW); gray; very dense; wet		
16.5								
17								
18	R-N							
19						Driller says gravelly to ≈ 20'		
20								
20.0								-10.1
21	S-7	1.3 87%	18 28 40			**SAND**, fine to coarse, trace silt, (SW); gray; very dense; wet		
21.5								
22								
23	R-N							
24								
25								
25.0								
	S-8	.67 89%	28 51/3			**SAND**, fine to coarse, trace silt, (SW); gray; very dense; wet; split-spoon refusal		
25.7								
26								
27								
28	R-N							
29								-19.1
30						Match to Sheet 3		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW30D SHEET 2 OF 9

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW30D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 2		
30.9	S-9	0.5 54%	28 51/5			SAND, fine to medium, trace silt, (SP); gray; very dense; wet		
31								
32								
33	R-N							
34								-25.1
35.0								
35						SAND, fine to coarse, trace silt, fine gravel, shells, (SW); gray; very dense; wet; split-spoon refusal		
35.9	S-10	.67 72%	38 51/5					
36								
37								
38	R-N							
39								
40.0								
40						SAND, fine to coarse, trace silt, shells, (SW); gray; very dense; wet; split-spoon refusal		
40.8	S-11	.67 80%	36 51/4					
41								
42								
43	R-N							
44								
45.0								
45						SAND, fine to coarse, trace silt, shells, (SW); gray; very dense; wet; split-spoon refusal		
45.75	S-12	.67 89%	29 50/3					
46								
47								
48	R-N							
49								
50						Match to Sheet 4		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW30D SHEET 3 OF 9

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW30D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 3		
50.4	S-13	.58 64%	38 50/5			**SAND**, fine to coarse, trace silt, shells, (SW); gray; very dense; wet; split-spoon refusal		
55.0	R-N							-44.1
55.4	S-14	.42/100%	51/5			**SAND**, fine to coarse, some silt, trace shells, (SM); gray; very dense; wet; split-spoon refusal		
60.0	R-N							-49.1
61.4	S-15	1.25 89%	14 18 50/3			**SAND**, fine to coarse, trace clay, silt, shells, (SW); gray; very dense; wet; split-spoon refusal		
65.0	R-N							-55.1
65.25	S-16	1.25 100%	38 40 50/3			**SAND**, fine to coarse, trace silt, shells, (SW); gray; very dense; wet; split-spoon refusal		
	R-N					Match to Sheet 5		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW30D SHEET 4 OF 9

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW30D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 4		
71	S-17	1.2 100%	40 45 50/2			**SAND**, fine to coarse, trace silt, clay, shells, (SW); gray; very dense; wet; split-spoon refusal		
71.2								
72	R-N							
73								
74								
75								
75.0								
75.2	S-18	.25/100%	50/3			**SAND**, fine to coarse, trace clay, silt, shells, (SW); gray; very dense; wet; split-spoon refusal	Top of bentonite 76.5'	
76								
77	R-N							
78								-68.4
79						**SAND**, fine to coarse, trace clay, silt, shells, (SW); gray; very dense; wet; split-spoon refusal		
80								
80.0								
80.4	S-19	.42/100%	50/5					
81								
82	R-N						Top of sand at 83'	
83								
84								
85								-75.1
85.0								
86	S-20	1.3 100%	18 38 50/4			**SAND**, fine to coarse, and fine to coarse gravel (limestone fragments), some clay, trace silt, shells, (SCQ GC);gray; very dense; wet		
86.3								
87	R-N							
88								
89								
90						Match to Sheet 6		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW30D SHEET 5 OF 9

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW30D

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Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 5		
91	S-21	1.25 100%	18 20 50/3			**SAND**, fine to coarse, and fine to coarse gravel (limestone fragments), some clay, trace silt, shells, (SCQ GC);gray; very dense; split-spoon refusal		
91.25								
92								
93	R-N							
94								
95								
95.0								
96	S-22	1.25 100%	NA			**SAND**, fine to coarse, and fine to coarse gravel (limestone fragments), some clay, trace silt, shells, (SCQ GC);gray; split-spoon refusal		
96.25								
97								
98	R-N						Bottom of screen at 99.6'	
99								
100							Bottom of well at 100'	
100.0								
101	S-23	1.9 53%	17 18 40 50/5			**SAND**, fine to coarse, and fine to coarse gravel (limestone fragments), some clay, trace silt, shells, (SCQ GC);gray; very dense; split-spoon refusal		-92.1
101.9								
102						End for 3-3-93		
103	R-N							
104								
105							Backfilled boring to 100' with grout/ bentonite slurry	
105.0								
106	S-24	1.4 100%	17 38 50/5			**SAND**, fine to coarse, some silt, trace clay, shells, (SM);gray; very dense; wet; split-spoon refusal		
106.4								
107								
108	R-N							
109								
110						Match to Sheet 7		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW30D SHEET 6 OF 9

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW30D

SAMPLE TYPE
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Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 6		
111	S-25	1.2 87%	40 45 50/4			**SAND**, fine to coarse, some silt, trace fine to coarse gravel, shells, (SM);gray; very dense; wet		
111.3						3" dark gray to black coarse sand, trace shells layer 111 to 111.3'		
112								
113	R-N							
114								
115								-105.1
115.0	S-26	0.5 100%	125			**SAND**, fine to coarse, (SW);gray; very dense; wet		
115.5								
116								
117								
118	R-N							
119								
120.0	S-27	0.25 50%	125			**SAND**, fine to coarse, (SW);gray; very dense; wet		
120								
120.5								
121								
122								
123	R-N							
124								
125								
126								
127								
128								
129								
130						Match to Sheet 8		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW30D SHEET 7 OF 9

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW30D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 7		
130.25	S-28	.25 100%	200/3			**SAND**, fine to coarse, (SW);gray; very dense; wet; split-spoon refusal		
131								
132								
133								
134	R-N							
135								
136								
137								-38.0
138								
139								
140.0								
140								
140.4	S-29	1.3 100%	48 48 50/4			**SAND**, fine to coarse, trace clay, fine gravel, shells, (SW);gray-green; very dense; moist to wet; split-spoon refusal		
141								
142								
143								
144								
145	R-N							
146								
147								
148								
149								
150						Match to Sheet 9		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW30D SHEET 8 OF 9

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW30D

SAMPLE TYPE
S = Split Spoon A = Auger
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D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 8		
151	S-30	1.25 100%	38 42 50/3			**SAND**, fine to coarse, trace silt, shells, (SW);brown-green; very dense; wet; split-spoon refusal		
151.3								
152								
153								
154								
155	R-N							
156								
157								
158								
159								
160								
160.0								
161	S-31	1.3 70%	28 37 48 51/5			**SAND**, fine to coarse, trace silt, shells, (SW);brown-green; very dense; split-spoon refusal		
161.9						End of Boring at 161.9' - 3/4/93		
162								
163								
164								
165								
166								
167								
168								
169								
170								

DRILLING CO.: Hardin-Huber
DRILLER: Brian Van Doren

BAKER REP.: V. Richey
BORING NO.: 6GW30D

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW35D
COORDINATES: EAST: 2501142.5 NORTH: 349341.6
ELEVATION: SURFACE: 12.0 TOP OF PVC CASING: 14.29

RIG: B-80									
	SPLIT SPOON	CASING	AUGERS	ROTARY BORING	DATE	PROGRESS (FT)	WEATHER	TOC WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2" O.D.		3 1/4" ID	6"	3-5-93	8			
LENGTH	2'		5'		3-6-93	107.5			
TYPE	STD		HS		3-7-93	85.5			
HAMMER WT.	140#				4-1-93			5.18	600 Hrs.
FALL	30"								
STICK UP									

REMARKS: Augered to 8' then switched to mud rotary drilling with a 5' sampling intervals.

SAMPLE TYPE
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D = Denison P = Piston
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WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	2"	Schedule 40 PVC	+2.3	90.0
Well Screen	2"	Schedule PVC #10 Slotted	90.0	100.0

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
0	S-1	2.0	9 11 6 5			**SAND**, fine to medium, trace silt, clay, (SP); brown; medium dense; damp		
2.0		100%				6" black clayey sand layer 1.5' to 2'		
	S-2	2.0	3 2 2 3			**SAND**, fine to coarse, clayey (SC); brown; damp		9.0'
4.0		100%				**CLAY**, fine to coarse sandy, (CL); brown-gray mottled; soft; moist		
	S-3	2.0	1 2 2 2					
6.0		100%						5.5'
	S-4	2.0	1 1 4 8			**SAND**, fine and silt, trace clay, (SP and ML); dark gray; loose; wet		
8.0		100%						3.0'
	A-N							
10.0						Match to Sheet 2		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW35D SHEET 1 OF 11

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW35D

SAMPLE TYPE
S = Split Spoon A = Auger
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D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 1		
11		2.0	WOR			**CLAY**, fine to coarse sand, trace wood fragments, (CL); black; soft; wet		
12 12.0	S-5	100%	12 2 3			**SAND**, fine to coarse, clayey, trace wood fragments, (SC); dark brown; soft; wet		1.0'
13	R-N							-1.0'
14 15 15.0						**SAND**, fine to coarse, trace silt, (SW); gray; medium dense; wet		
16		2.0	4					
17 17.0	S-6	100%	8 8 10			8" **SAND**, fine to medium, some clay layer at 17.3'; gray; wet		
18 19 20 20.0	R-N							
21		1.2	6			8" **SAND**, fine to medium, some clay layer at 17.3'; gray; wet		
22 22.0	S-7	58%	8 10 13					
23 24 25 25.0	R-N							
26		2.0	13			**SAND**, fine to coarse, clayey, trace shells, (SC); gray; damp		-13.5'
27 27.0	S-8	100%	5 7 12			**SAND**, fine to coarse, clayey, trace shells, silt, fine gravel, (SC); gray; dense; damp		-14.5'
28		2.0	7					
29 29.0	S-9	100%	15 19 39			Match to Sheet 3		
30								

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW35D SHEET 2 OF 11

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW35D

SAMPLE TYPE
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RQD = Rock Quality Designation (%)
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Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 2		
31	S-10	1.3	12 13 41 22			**SAND**, fine to coarse and fine gravel, trace silt, shells, (SW and GP); gray; very dense; wet		
32		67%						
32.0								
33	R-N							
34								
35								
35.0	S-11	0.5	57					
35.5		100%						
36	R-N							
37								
38								-26.0'
39								
40								
40.0						**SAND**, fine to coarse, trace silt, shells, (SW); gray; very dense; wet		
41	S-12	1.7	25 27 31 49					
42		83%						
42.0	R-N							
43								
44								31.5'
45								
45.0	S-13	.42	51/5			**SAND**, fine to coarse, trace silt, shells, (SW); gray; very dense; wet; split-spoon refusal		
45.4		100%						
46	R-N							
47								
48								
49								
50						Match to Sheet 4		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW35D SHEET 3 OF 11

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW35D

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Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 3		
50.5	S-14	.42 83%	58			**SAND**, fine to coarse, trace silt, shells, (SW); gray; very dense; wet; split-spoon refusal		
55.0	R-N							
55.4	S-15	.17 40%	100/5			**SAND**, fine to coarse, trace silt, shells, (SW); gray; very dense; wet; split-spoon refusal		
60.0	R-N							-46.0'
62.0	S-16	NA	13 25 48 46			**SAND**, fine to coarse, some shells, trace fine gravel, silt, (SW); gray; very dense; wet		
65.0	R-N							-52.0'
65.5	S-17	.25 50%	64			**SAND**, fine to coarse, trace silt, shells, (SW); gray; very dense; wet		
	R-N					Match to Sheet 5		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW35D SHEET 4 OF 11

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW35D

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Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 4		
71								
72								
73	R-N							
74								
75								
75.0								
75.4	S-19	.12 14%	36 50/5			**SAND**, fine to coarse, trace silt, shells, (SW); gray; very dense; wet		
76								
77							Bentonite/ grout slurry	
78	R-N							
79								
80								
80.0								
80.8	S-20	.83 100%	63 51/4			**SAND**, fine to coarse, trace silt, shells, (SW), some shells at 80.5'; gray; very dense; wet		
81								
82								
83	R-N							-71.0'
84								
85								
85.0								
86			63 38			**SAND**, fine to coarse and dolomitized shells, trace silt, clay, (SW); gray; very dense; wet		
87	S-21	1.7 83%	29 31				Top of Bentonite at 87.0'	
87.0								
88							Top of Sand at 90.0'	
89	R-N							-76.5'
90						Match to Sheet 6		
85.0								

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW35D SHEET 5 OF 11

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW35D

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PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 5		
91	S-22	0.5	13 16 38 50/4			**SAND**, fine to coarse, some clay, trace fine gravel, silt, dolomitized shells, (SC); gray; very dense; wet; split-spoon refusal		
91.8		27%						
92								
93	R-N							
94								
95							Top of screen at 95.0'	
95.0								
96	S-23	1.5	13 18 24			**SAND**, fine to coarse, some clay, trace fine gravel, silt, dolomitized shells, (SC); gray; dense; wet		
96.5		100%						
97								
98	R-N							
99								
100							No. 2 Sand	
100.0								
101	S-24	1.5	11 11 16			**SAND**, fine to coarse, some clay, trace fine gravel, silt, dolomitized shells, (SC); gray; medium dense; wet		
101.9		100%						
102								
103	R-N						Bottom of screen at 104.6'	-89.0'
104								
105							Bottom of well at 105'	
105.0								
106	S-25	1.5	18 24 26			**SAND**, fine to coarse, trace clay, silt, shells, (SW); gray-brown; dense; wet		
106.5		100%						
107								
108	R-N							-96.5'
109								
110						Match to Sheet 7		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW35D SHEET 6 OF 11

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: RI/FS Camp Lejeune

S.O. NO.: 19133 BORING NO.: 6GW35D

SAMPLE TYPE

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PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 6		
111	S-26	1.5 100%	29 40 29			**SAND**, fine to coarse, some fine gravel, trace clay, silt, shells, (SW); gray; very dense; wet		
111.5								
112								
113	R-N							
114								
115								
115.0	S-27	0.5 100%	125			**SAND**, fine to coarse, trace fine gravel, trace clay, silt, shells, (SW); gray; very dense; wet		
115.5								
116								
117								
118	R-N							
119								-106.5'
120						**SAND**, fine to coarse, trace silt, shells, (SW); gray; very dense; wet		
120.0								
120.9	S-28	0.25 27%	72 86/5					
121								
122								
123	R-N							
124								
125								
125.0								
126	S-29	0.67 89%	115 86/3			**SAND**, fine to coarse, trace silt, shells, (SW); gray; very dense; wet		
120.8								
127								
128	R-N							
129								
130						Match to Sheet 8		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey

DRILLER: Brian Van Doren BORING NO.: 6GW35D SHEET 7 OF 11

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW35D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 7		
130.4	S-30	.33 100%	151/4			**SAND**, fine to coarse, trace silt, shells, (SW); gray; very dense; wet		
131								
132								
133								
134								
135								
136								
136	R-N							
137								-125'
138								
139								
140.0								
140						**SAND**, fine to coarse, trace silt, (SW); brown-green; very dense; moist		
141	S-31	1.0 100%	18 20 31					
141.5								
142								
143								
144	R-N							
145								
146								
147								
148								
149								
150						Match to Sheet 9		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW35D SHEET 8 OF 11

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW35D

SAMPLE TYPE
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Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 8		
151 151.0	S-32	1.0 100%	21 57			**SAND**, fine to coarse, some silt, (SM); brown-green; very dense; wet		
152								
153								
154								
155	R-N							
156								-144.5'
157								
158								
159								
160 160.0								
161 161.5	S-33	1.5 100%	17 21 23			**SAND**, fine to coarse, trace silt, clay, (SW); green; dense; wet		
162								
163								
164	R-N							
165								
166								
167								
168								
169								
170								

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW35D SHEET 9 OF 11

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW35D

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S = Split Spoon A = Auger
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Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
170.6	S-34	.75 100%	98 52/3			Continued from Sheet 8 **SAND**, fine to coarse, trace silt, clay, (SW); green; very dense; wet; split-spoon refusal		
171								
172								
173								
174	R-N							
175								
176								
177								-165.0'
178								
179								
180	180.0					**SAND**, fine to medium, trace silt, clay, (SP); green; very dense; moist		
181	S-35	1.2 78%	15 21 35					
181.5								
182								
183								
184								
185	R-N							
186								
187								
188								
189								
190								

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW35D SHEET 10 OF 11

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW35D

SAMPLE TYPE

S = Split Spoon A = Auger
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R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS

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Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 8		
191								
192								
193								
194								
195	R-N							
196								
197								
198								
199								
200								
200.0								
	S-36	1.0 100%	37 66			SAND, fine to medium, trace silt, clay, (SP); green; very dense; moist		
201.0								-189.0'
201								
202								
203	R-N					End of Boring at 201.0'		
204								
205								
206								
207								
208								
209								
210								

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW35D SHEET 11 OF 11

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW36D
COORDINATES: EAST: 2502172.0 NORTH: 350206.7
ELEVATION: SURFACE: 15.6 TOP OF PVC CASING: 17.61

RIG: B-80									
	SPLIT SPOON	CASING	AUGERS	ROTARY DRILL	DATE	PROGRESS (FT)	WEATHER	TOC WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		3 1/4" ID	6"	3-18-93	0 to 116.5			
LENGTH	2'		5'		3-19-93	116.5 to 201.5			
TYPE	STD		HSA		4-1-93			5.18	312 hrs.
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Augered to 10', then mud rotary drill with 5' sampling interval from 15' to 201.5' deep

SAMPLE TYPE
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D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	2"	Schedule 40 PVC	2.5 Stick Up	75.3
Well Screen	2"	Schedule 40 PVC Slotted No. 10	75.3	94.6

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description	Well Installation Detail	Elevation
0.0	S-1	0.5/2 25%	2 3 3 3			**SAND**, fine to medium, trace silt, (SP).; brown; loose; moist	2.5' stick up	
2.0								
	S-2	0.5/2 25%	2 4 3 3			4" **SAND**, fine to medium, trace silt, layer at 2', (SP).; gray; loose; moist		
4.0								11.6
	S-3	0.6/2 33%	4 4 5 6			**SAND**, fine to medium, trace silt, (SP).; light gray with iron staining at 7'; loose; moist, wet at 6'	Measured water level at 5.18' TOC on 4-1-93	
6.0								
	S-4	1.0/2 50%	4 5 5 6					
8.0								
	A-N							6.6'
10.0						Match to Sheet 2		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW36D SHEET 1 OF 11

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW36D

SAMPLE TYPE
S = Split Spoon A = Auger
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D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
OVA = Organic Vapor Analyzer

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1		
	S-5	1.2/2	3 3 3 4			**SAND**, fine to medium trace silt, (SP).; tan; brown mottled; loose; wet		
12 — 12.0		58%						2.6'
13	R-N							
14						**SAND**, fine to coarse, (SW).; brown; medium dense; wet		
15 — 15.0								
16	S-6	.92/2	7 8 8 10			4" **SAND**, fine to medium, trace silt layer at 15.5'; light gray; wet		
17 — 17.0		46%						
18	R-N					**SAND**, fine to coarse, calcium carbonate cemented, trace fossils, shells, (SW).; gray; very dense; wet		
19								-1.9'
20 — 20.0								
21 — 21.0	S-7	1.0 100%	26 53					
22	R-N							
23								-5.5'
24								
25 — 25.0								
26 — 26.5	S-8	1.3 89%	11 13 16			**SAND**, fine to coarse, trace silt, (SW).; medium gray; medium dense; wet 4" silty clay layer at 26'; gray; wet		
27	R-N							
28								
29								-12.4'
30 — 30.0						Match to Sheet 3		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW36D SHEET 2 OF 11

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW36D

SAMPLE TYPE
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Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
OVA = Organic Vapor Analyzer

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description	Well Installation Detail	Elevation
31	S-9	1.0 67%	6 8 10			Continued from Sheet 2 **SAND**, fine to coarse, some clay, trace shells, slot, (SC).; gray; medium dense; moist		
31.5								
32	R-N							
33								-17.4'
34								
35								
35.0								
36	S-10	1.0 70%	26 34 50/5			**SAND**, fine to coarse and dolomitized shells, some fine to coarse gravel sized cemented SAND and fossils, trace silt, (SW).; gray; very dense; wet		
36.4								
37	R-N							
38								
39								
40								
40.0								
41	S-11	1.0 100%	25 51			**SAND**, fine to coarse and dolomitized shells, some fine to coarse gravel sized cemented SAND and fossils, trace silt, (SW).; gray; very dense; wet		
41.0								
42	R-N							
43								
44								-28.4'
45								
45.0								
46	S-12	.08 89%	28 50			**SAND**, fine to coarse, some shells, trace silt, (SW).; gray; very dense; wet		
46.0								
47	R-N							-31.4'
48								
49								
50						Match to Sheet 4		
50.0								

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW36D SHEET 3 OF 11

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW36D

SAMPLE TYPE
S = Split Spoon A = Auger
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D = Denison P = Piston
N = No Sample

DEFINITIONS
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RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
OVA = Organic Vapor Analyzer

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description	Well Installation Detail	Elevation
51	S-13	0.25 25%	50 56			Continued from Sheet 3		
51.0						SAND, fine to coarse, trace shells, (SW).; gray; very dense; wet		
52								
53	R-N							
54								
55.0								
55	S-14	0	38			No Recovery		
55.8		0	60/4					
56								
57	R-N							
58								
59								
60.0								
60	S-15	.92	74			SAND, fine to coarse, trace shells, (SW).; gray; very dense; wet		
60.9		92%	70/5		6.3			
61								
62	R-N						Top of Bentonite 62'	-46.4
63								
64								
65.0								
65		.67	13					
66	S-16	47%	53 50/5		1.1	SAND, fine to coarse, trace fine to coarse gravel, silt, shells, (SW).; gray; very dense; wet	Top of Sand 66'	
66.4								
67								
68	R-N							
69								
70						Match to Sheet 5		
70.0								

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW36D SHEET 4 OF 11

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW36D

SAMPLE TYPE
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D = Denison P = Piston
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DEFINITIONS
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RQD = Rock Quality Designation (%)
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Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
OVA = Organic Vapor Analyzer

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description	Well Installation Detail	Elevation
70.8	S-17	0.0 0%	56 50/4			Continued from Sheet 4		
71						No Recovery		
72	R-N							
73								
74								
75	75.0							
76	S-18 76.0	.67 67%	45 132		5.3	**SAND**, fine to coarse trace shells, (SW).; gray; very dense; wet	Top of Screen 75.3'	
77	R-N							
78								
79								
80	80.0							
81	S-19 81.0	0 0	42 58			No Recovery		
82	R-N							
83								-67.4'
84								
85	85.0							
86	S-20 86.5	.25 17%	16 15 21			**SAND**, fine to coarse trace shells, silt, clay, (SW).; gray; dense; wet		
87	R-N							
88								-72.4'
89								
90	90.0					Match to Sheet 6		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW36D SHEET 5 OF 11

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW36D

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Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
OVA = Organic Vapor Analyzer

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description	Well Installation Detail	Elevation
91						Continued from Sheet 5		
91.0	S-21	..83 83%	27 70		1.9	**SAND**, fine to coarse, and gravel, fine to coarse, trace clay, silt, shells, (SW & GW).; gray; very dense; wet		
92								
93	R-N						Bottom of Screen at 94.6'	
94								-78.4'
95.0							Bottom of Well at 95.0'	
95								
96.5	S-22	1.5 100%	11 14 20		0	**SAND**, fine to coarse and gravel, fine, trace silt, clay, shells, dolomitized shells, (SW & GP).; gray; dense; wet		
97								
98	R-N							-82.4'
99								
100.0								
100								
101.5	S-23	.83 55%	12 22 24		1.9	**SAND**, fine to coarse, trace fine gravel, shells, silt, clay, (SW).; gray; dense; wet		
102								
103	R-N							-87.4'
104								
105.0								
105								
106.5	S-24	1.0 67%	49 27 21		1.9	**SAND**, fine to coarse and gravel, fine, some shells, silt, (SW & GP).; gray; dense; wet		
107								
108	R-N							
109								
110.0								
110						Match to Sheet 7		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW36D SHEET 6 OF 11

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW36D

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Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
OVA = Organic Vapor Analyzer

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description	Well Installation Detail	Elevation
111	S-25	0	15			Continued from Sheet 6		
111.5		0%	20 25			No Recovery		-95.9'
112	R-N							
113								
114								
115								
115.0						**SAND**, fine to coarse, trace fine gravel, silt, clay, dolomitized shells, (SW).; gray; very dense; wet		
116	S-26	1.5	22		0			-100.4'
116.5		100%	31 29					
117	R-N							
118								
119								
120								
120.0								
121	S-27	.75	54		4.8	**SAND**, fine to coarse, and gravel, fine to coarse, trace fossils, silt, clay, dolomitized shells, (SW & GW); light gray; dense; wet		
120.9		82%	55/5					
122	R-N							
123								
124								
125								
126								
127								
128								
129								
130						Match to Sheet 8		130.0'
130.0								

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW36D SHEET 7 OF 11

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW36D

SAMPLE TYPE
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Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
OVA = Organic Vapor Analyzer

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description	Well Installation Detail	Elevation
130.5	S-28	0.6 100%	153			Continued from Sheet 7		
131						**SAND**, fine to coarse, some shells, trace silt, dolomitized shells, (SW).; green-gray; very dense		
132								
133								
134								
135	R-N							-119.4'
136								
137								
138								
139								
140.0								-124.4'
140.5	S-29	0.5 100%	188		0	**SAND**, fine to coarse, trace shells, silt, (SW).; gray; very dense		
141								
142								
143								
144	R-N							
145								
146								
147								-131.4'
148								
149								
150						Match to Sheet 9		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW36D SHEET 8 OF 11

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW36D

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Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
OVA = Organic Vapor Analyzer

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description	Well Installation Detail	Elevation
151	S-30	1.5 100%	18 28 50		0	Continued from Sheet 8		
151.5						**SAND**, fine to coarse, trace shells, silt,fine to coarse gravel sized cemented sand and shells, dolomitized shells, (SW).; gray; very dense; wet		
152								
153								
154	R-N							
155								
156								
157								
158								-142.4'
159						**SAND**, fine to medium, trace silt, shells, (SP).; green-gray; very dense; moist		
160								
160.0								
161	S-31	.17 11%	12 17 21					
161.5								
162								
163	R-N							
164								
165								
166								
167								
168								-152.4'
169								
170						Match to Sheet 10		
170.0								

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW36D SHEET 9 OF 11

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW36D

SAMPLE TYPE
S = Split Spoon A = Auger
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R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

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SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
OVA = Organic Vapor Analyzer

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description	Well Installation Detail	Elevation
171	S-32	.83 59%	20 40 51/5			Continued from Sheet 9 **SAND**, fine to medium, trace silt, shells, clay; green-gray; very dense; moist		
171.4								
172								
173								
174								
175	R-N							
176								
177								
178								
179								
180								
180.0								
181	S-33	1.0 .67	42 37 53		8.8	**SAND**, fine to medium, trace silt, shells, clay; green-gray; very dense; moist		
181.5								
182								
183								
184								
185	R-N							
186								
187								
188								
189								
190						Match to Sheet 11		

DRILLING CO.: Hardin-Huber
DRILLER: Brian Van Doren
BAKER REP.: V. Richey
BORING NO.: 6GW36D
SHEET 10 OF 11

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW36D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
OVA = Organic Vapor Analyzer

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	OVA (ppm)	Visual Description	Well Installation Detail	Elevation
191	S-34	1.3	13		0	Continued from Sheet 10		
191.5		89%	21 37			**SAND**, fine to medium, trace silt, shells, clay; green-gray; very dense; moist		
192								
193								
194	R-N							
195								
196								
197								
198								
199								-182.9'
200	200.0							
201	S-35	1.3	22		0	**SAND**, fine to medium, clayey, trace silt (SC); green; very dense; moist	Bottom of Boring at 201.5'	
191.5		100%	48 51/4					-185.9'
202						Bottom of boring at 201.5'		
203								
204								
205	R-N							
206								
207								
208								
209								
210								

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW36D SHEET 11 OF 11

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6 RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW37D
COORDINATES: EAST: 2501612.5 NORTH: 347972.1
ELEVATION: SURFACE: 14.0 TOP OF PVC CASING: 15.96

RIG: B-80	SPLIT SPOON	CASING	AUGERS	ROTARY BORING	DATE	PROGRESS (FT)	WEATHER	TOC WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" I.D.		3 1/4" ID	6"	3-9-93	111.5	Warm, sunny		
LENGTH	2'		5'		4-1-93	--	--	6.90	552 hrs
TYPE	STD		HS						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Augered to 10',began mud rotary drilling with a 5' sampling interval from 10' to 111.5'.

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	2"	Schedule 40 PVC	1.7 stick up	76.1
Well Screen	2"	Schedule 40 PVC #10 Slotted	76.1	94.6

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
1	S-1	2.0/2 100%	3 3 6 8			**TOPSOIL**; black	1.7' stick up	
2 2.0						**SAND**, fine to coarse, (SW); tan to brown; loose; damp		
3	S-2	2.0/2 100%	6 10 12 9					
4 4.0								
5	S-3	2.0/2 100%	3 2 2 1			Mottled rust; wet at 5.5'		
6 6.0								8.0'
7	S-4	2.0/2 100%	4 7 9 16			**SAND**, fine to coarse, trace silt, (SW); light tan to white; medium dense; wet		
8 8.0								
9	A-N					Advanced augers to 10' converted to mud rotary		
10 10.0						Match to Sheet 2		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW37D SHEET 1 OF 7

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6 RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW37D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 1		
11	S-5	1.7/2	3			**SAND**, fine to coarse, trace silt, (SW); light tan to white; loose dense; wet		
12 12.0		83%	5 4 4					
13	R-N							
14								
15 15.0								1.0'
16	S-6	1.5	5			**SAND**, fine to coarse, trace silt, (SW); light gray; medium dense; wet		
16.5		100%	8 8					
17	R-N							
18								
19								
20 20.0								-6.0'
21	S-7	1.5	6			**SAND**, coarse, (SP); gray; medium dense		
21.5		100%	6 6					-7.5'
22	R-N							
23								
24								
25 25.0								
26	S-8	1.7	9			**SAND**, fine to coarse, trace silt, (SW); black; medium dense; wet		
27 27.0		83%	3 12 14			2" black silty clay layer at 25.5'		
28	R-N							
29								
30 30.0						Match to Sheet 3		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW37D SHEET 2 OF 7

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6 RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW37D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 2		
31	S-9	1.7	7 4 4 5			SAND, fine to coarse, some silt, (SM); black; loose; wet		
32 32.0		83%				3" black fine to coarse sand and clay, trace silt, shell, damp layer at 31.7'		-18'
33	R-N							
34								-21'
35 25.0						SAND, fine to coarse and gravel, fine, trace silt, shells (SW and GP); gray; very dense; wet		
36	S-10	1.7	25 34 38 25					
37 37.0		83%						
38	R-N							
39								-25'
40 40.0						SAND, fine to coarse, trace fine gravel, silt, shells, clay, (SW); gray; very dense; wet; split spoon refusal		
41	S-11	1.5	28 40 44 50/3					
42 41.8		86%						
43	R-N							
44								
45 45.0								
46	S-12	1.5	10 37 38			SAND, fine to coarse, trace fine gravel, silt, shells, clay, (SW); gray; very dense		
46.5		100%						
47	R-N							
48								
49								
50 50.0						Match to Sheet 4		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW37D SHEET 3 OF 7

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 6 RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW37D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 3		
50.5	S-13	0.5 100%	60			**SAND**, fine to coarse, trace silt, shells, (SW); gray; very dense; wet		
51								
52	R-N							
53							Bentonite/ grout Slurry	
54								-33'
55.0						**SAND**, fine to coarse, some silt, trace shells, (SM); gray; very dense; wet		
55								
55.4	S-14	0.7 72%	42 50/5		8.4			
56								
57	R-N							
58								
59								-38'
60.0						**SAND**, fine to coarse, some silt (SM); medium gray; very dense; wet		
60								
60.4	S-15	.42 100%	53/5		1.7			
61								
62	R-N							
63								
64								
65.0								
65								
66.5	S-16	1.0 67%	17 17 38		7.6	**SAND**, fine to medium, trace shells, clay, silt, (SP); medium gray; very dense; wet		
66								
67								
68	R-N						Top of Bentonite at 70'	
69								
70.0						Match to Sheet 5		
70								

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW37D SHEET 4 OF 7

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6 RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW37D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 4		
70.7	S-17	0.5 100%	30 50/3		8.6	**SAND**, fine to coarse, trace silt, clay, shells, (SW); gray; very dense; wet; split-spoon refusal		
71								
72								
73	R-N						Top of sand at 73'	
74								
75.0								
75.8	S-18	.58 78%	30 51/3		6.1	**SAND**, fine to coarse, trace silt, shells, (SW); gray-green; very dense; wet; split-spoon refusal		
76							Top of screen at 76.1'	
77								
78	R-N							
79								
80.0								
80.9	S-19	.83 90%	43 57/5		18.5	**SAND**, fine to coarse, trace silt, shells, (SW); gray-green; very dense; wet; split-spoon refusal	No. 2 sand	
81								
82								
83	R-N							
84								
85.0								
86.5	S-20		21 30 29			No Recovery		
87								
88	R-N							
89								
85.0								
90						Match to Sheet 6		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW37D SHEET 5 OF 7

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 6 RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW37D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 5		
91	S-21	1.4 94%	25 35 42		1.8	**SAND**, fine to coarse, and gravel, fine, trace clay, silt, shells, dolomitized shells, (SW and GP);gray; very dense; wet		
91.5								
92	R-N							
93								
94								
95							Bottom of screen at 94.6'	-80.8'
95.0								
96	S-22	1.3 89%	30 37 33		0.9	**SAND**, fine to coarse, and gravel, fine, trace clay, silt, shells, dolomitized shells, (SW and GP);gray; very dense; wet	Bottom of well at 95'	-81'
96.5								
97	R-N							
98								
99								
100								
100.0								
101	S-23	1.9 53%	17 18 40 50/5			**SAND**, fine to coarse, and gravel, fine, trace clay, silt, shells, dolomitized shells, (SW and GP);gray; dense; wet		
101.9								
102	R-N							
103								
104								
105								-91'
105.0								
106	S-24	1.5 100%	10 13 12			**SAND**, fine to medium, trace silt, clay, shells, (SP);gray-green; medium dense; wet		
106.5								
107	R-N							
108								
109								
110								
110.0						Match to Sheet 7		

DRILLING CO.: Hardin-Huber BAKER REP.: V. Richey
DRILLER: Brian Van Doren BORING NO.: 6GW37D SHEET 6 OF 7

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 6 RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 6GW37D

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 6		
111	S-25	1.5 100%	29 28 30		0	**SAND**, fine to coarse, and gravel, fine, trace silt, clay, dolomitized shells, (SW and GP); gray; very dense; wet		-97.5'
111.5						End of Boring at 111.5'		
112								
113								
114								
115								
116								
117								
118								
119								
120								
121								
122								
123								
124								
125								
126								
127								
128								
129								
130								

DRILLING CO.: Hardin-Huber
DRILLER: Brian Van Doren

BAKER REP.: V. Richey
BORING NO.: 6GW37D

E.3
Site 9 - Wells

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 9 Fire Training Area, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 9GW4
COORDINATES: EAST: 2503095.1 NORTH: 342209.5
ELEVATION: SURFACE: 28.3 TOP OF PVC CASING: 30.70

RIG: B-53									
	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	TOC WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8"		3 1/4" ID 8 1/4" ID		9-23-92	21.3	Cldy and rain		
LENGTH	2'		5'		9-26-92	--	Cloudy, 70°s	9.29	72 hrs.
TYPE	STD		HSA		9-30-92	--	Sunny, 70°s	9.20	168 hrs.
HAMMER WT.	140#				10-10-92	--	Sunny, 70°s	8.73	408 hrs.
FALL	30"				10-26-92	--	Cloudy, 60°s	6.69	792 hrs.
STICK UP									

REMARKS: Soil boring advanced 21' and Type II monitoring well installed to 21' below ground surface.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	2.4 stickup	6.3
Well Screen	4"	Schedule 40 PVC, 10 slot	6.3	20.3

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
1	S-1	1.67/2.0 84%	3 5 10 11		1.5	**SILT**, some sand-fine(SM); black; loose; dry, organics — 1.0'		27.3
2						**SAND**-fine, trace silt(SM); brown — 2.0'		26.3
3	S-2	1.83/2.0 92%	3 4 4 5		3.0	**SILT & SAND**-fine(SM); black; loose; dry — 4.0'	Top of Bentonite at 2.3'	
4							Top of Sand 4'	24.3
5	S-3	1.75/2.0 88%	3 4 4 5		1.7	**SAND**-fine, trace silt(SM); light gray; loose; damp, mottled orange		
6								
7	S-4	2.0/2.0 100%	7 10 14 15		1.7	**SAND**-fine, trace silt(SM); gray; medium dense; moist Water — 8.0'	Top of screen 6.3'	
8								
9	S-5	2.0/2.0 100%	9 12 17 13		1.8	**SAND**-fine, trace silt(SM); light gray; medium dense; wet	Water at 9.29' TOC on 9-26-92	20.3
10								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Tom Cramer BORING NO.: 9GW4 SHEET 1 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker

Baker Environmental, Inc.

PROJECT: Site 9, Fire Training Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 9GW4

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11–14	A-N							
15–16	S-6	1.84/2.0 92%	1 2 3 3		1.7	SAND-fine and SILT(SM); light gray; very loose; wet	Sand Pack #2 Sand	
17–18	A-N							
19						18.5'		9.8
20–21	S-7	2.0/2.0 100%	2 4 6 10		1.8	SAND-fine and CLAY(SC); white; medium stiff; wet 21.0'	Bottom of screen at 20.3' Bottom of well at 21' Boring Depth 21.3'	7.3
22–30						End of Boring at 21'		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Tom Cramer BORING NO.: 9GW4 SHEET 2 OF 2

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 9, Fire Training Area, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 9GW5
COORDINATES: EAST: 2502680.6 NORTH: 343047.5
ELEVATION: SURFACE: 28.0 TOP OF PVC CASING: 30.81

RIG: Mobile B-61

	SPLIT SPOON	CASING	AUGERS	CORE BARREL
SIZE (DIAM.)	1 3/8"		3 1/4" ID 8 1/4" ID	
LENGTH	2'		5'	
TYPE	STD		HSA	
HAMMER WT.	140#			
FALL	30"			
STICK UP				

DATE	PROGRESS (FT)	WEATHER	TOC WATER DEPTH (FT)	TIME
9-22-92	19.5	P.Sunny, 80°s		
9-26-92	--	Cloudy, 80°s	10.10	96 hrs.
9-30-92	--	Sunny, 70°s	10.24	192 hrs.
10-10-92	--	Sunny, 70°s	10.16	432 hrs.
10-26-92	--	Cloudy, 60°s	10.81	416 hrs.

REMARKS: Advanced boring to 19.5' taking continuous split spoon samples to the water table, then at 5' intervals. Type II monitoring well installed at 18.9'. DO=DIDDO

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	2.81 stickup	4.2
Well Screen	4"	Schedule 40 PVC, 10 slot	4.2	18.5

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)
1	S-1	1.5/2.0 75%	3 4 5 5		
3	S-2	1.5/2.0 75%	3 3 3 4		
5	S-3	1.58/2.0 79%	3 3 5 6		0
7	S-4	1.42/2.0 71%	4 7 8 9		1
9	A-N				

Visual Description

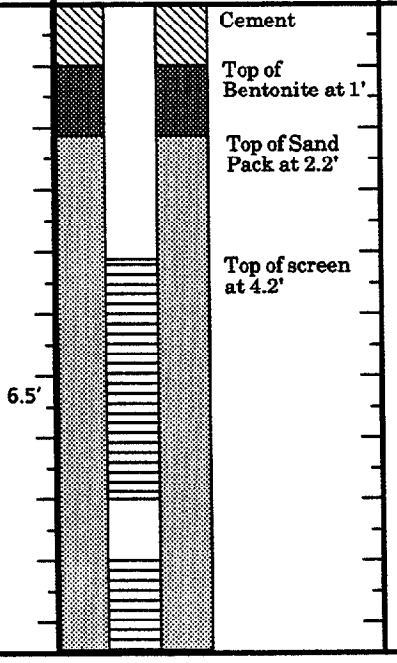
SAND, fine, little silt(SM); gray to buff to light brown at tip; loose; dry

SAND, fine, (SM); light brown to tan; loose; damp

(SM), except 2.5" lense of silt and fine sand 4" from tip of split spoon; light brown to brown; loose; moist

SAND, fine, little silt(SM); buff; medium dense, water at 6.5'

Well Installation Detail



Elevation

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: D.J. Martin
DRILLER: C. Chism BORING NO.: 9GW5 SHEET 1 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 9, Fire Training Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 9GW5

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11								
12	A-N							
13						13.0'		15.0
14	S-5	1.67/2.0 83%	2 2 2 7			SILT and FINE SAND, trace clay(SM); light gray with orange mottling; very loose; wet, slightly plastic	#2 Silica Sand	
15								
16	A-N							
17						17.0'		11.0
18	S-6	2.0/2.0 100%	WOR/6" 3 3 5			CLAY and SILT, trace medium to fine sand in partings(ML); buff to gray; soft; wet, plastic 18.5'	Bottom of screen at 18.5'	9.5
19	A-N					ORGANIC SILT & CLAY(OL); black; medium stiff; wet, top 9" of the split spoon contained a 2" & 3" wood particles, non plastic 19.5'	Bottom of Well at 18.3' End of Boring at 19.5'	8.5
20						End of Boring at 19.5'		
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: D.J. Martin
DRILLER: C. Chism BORING NO.: 9GW5 SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 9 Fire Training Area, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 9GW6
COORDINATES: EAST: 2502624.3 NORTH: 342476.6
ELEVATION: SURFACE: 28.7 TOP OF PVC CASING: 31.31

RIG: Mobile B-61

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	TOC WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8"		3 1/4" ID 8 1/4" ID		9-23-92	20.2	Ptly cldy, 85°		
LENGTH	2'		5'		9-26-92	--	Cloudy, 80°s	10.19	72 hrs.
TYPE	STD		HSA		9-30-92	--	Sunny, 70°s	10.30	168 hrs.
HAMMER WT.	140#				10-10-92	--	Sunny, 70°s	10.41	408 hrs.
FALL	30"				10-26-92	--	Cloudy, 60°s	11.25	792 hrs.
STICK UP									

REMARKS: Advanced boring to 20.2' taking continuous split spoon samples to the water table, then at 5' intervals. Type II monitoring well installed at 19.7'. DO=DIDDO

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	2.6 stickup	4.9
Well Screen	4"	Schedule 40 PVC, 10 slot	4.9	19.3

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
1	S-1	1.08/2.0 54%	7 5 3 3			SILT & FINE SAND, little fine gravel(SM); gray to brown; medium stiff; dry	Cement	
2						2.0'	Top of Bentonite at 1.9'	26.7
3	S-2	1.17/2.0 58%	2 3 5 6			FINE SAND, little silt(SM); light brown; loose; damp 2.7' SILT, little fine sand(SM-OL)(organic); black; stiff; non plastic 4.0'	Top of Sand at 2.9'	26.0
4								24.7
5	S-3	1.42/2.0 71%	2 6 8 9		0	FINE SAND, little silt(SM); light gray; damp 4.6' ORGANIC SILT, some fine sand(OL-SM); black brown; stiff; non plastic 6.0'	Top of screen at 4.9'	24.1
6								22.7
7	S-4	1.75/2.0 87%	2 5 8 9			FINE SAND, little silt(SM); brown to buff; medium dense; moist, water at 7' 7.0'		21.7
8						FINE SAND, little silt(SM); light gray; medium dense; wet	Measured water table at 10.19' on 9-26-92	
9	S-5	1.33/2.0 66%	3 6 10 12		0		Sand Pack #2 Silica sand	
10								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: D.J. Martin
DRILLER: C. Chism BORING NO.: 9GW6 SHEET 1 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 9, Fire Training Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 9GW6

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11–15	A-N					**CLAY**, some silt, trace fine sand in partings(CL); light gray; medium stiff; wet, plastic		
15						15.6'		
16	S-6	2.0 / 2.0	2 3			**SILT**, some fine sand, trace clay (ML); non plastic		13.1
17		100%	6 10					
17–18	A-N							
18						18.0'		10.7
18						CLAY, some silt(CL); light gray; plastic 18.5'		10.2
19	S-7	1.83 / 2.0	1 2 3			FINE SAND, little silt(SM); light gray with orange mottling; loose; wet 19.5'	Bottom of screen at 19.3' Well depth at 19.7'	9.2
20		91%	4			FINE SAND & ORGANIC SILT, trace wood fragments(SM); wet 20.2'	Boring depth at 20.5'	8.2
21–30						End of Boring at 20.2'		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: D.J. Martin
DRILLER: C. Chism BORING NO.: 9GW6 SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 9, Fire Training Area, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 9GW7S
COORDINATES: EAST: 2502626.6 NORTH: 343260.5
ELEVATION: SURFACE: 26.2 TOP OF PVC CASING: 28.76

RIG: Mobile B-61	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	TOC WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8"		3 1/4" ID 8 1/4" ID		9-23-92	22.0	Overcast, 85°		
LENGTH	2'		5'		9-26-92	--	Cloudy, 80°s	10.99	72 hrs.
TYPE	STD		HSA		9-30-92	--	Sunny, 70°s	11.13	168 hrs.
HAMMER WT.	140#				10-10-92	--	Sunny, 70°s	10.97	408 hrs.
FALL	30"				10-26-92	--	Cloudy, 60°s	11.69	792 hrs.
STICK UP									

REMARKS: Advanced boring to 22' taking continuous split spoon samples to the water table, then at 5' intervals. Type II monitoring well installed at 21.5'. DO=DIDDO

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	2.5 stickup	7.1
Well Screen	4"	Schedule 40 PVC, 10 slot	7.1	21

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
1	S-1	1.25/2.0 63%	1 2 2 3			**SAND**, fine, little silt(SM); light gray to yellow brown at tip; very loose; dry	Cement	
2								
3	S-2	1.83/2.0 92%	2 2 3 5			**SAND**, fine (SM); light brown to buff; loose; damp	Top of Bentonite at 3'	
4								
5	S-3	1.67/2.0 84%	3 5 6 7			**SAND**, fine (SM); light brown to buff; medium dense; damp, color also brown mottled	Top of Sand at 5'	
6						6.0'	Sand Pack #2 Silica Sand	20.2
7	S-4	1.83/2.0 92%	4 5 5 6		0	**SILT** and **FINE SAND**(SM); light brown to buff; stiff; damp, color also orange mottled	Top of screen at 7.1'	
8								
9	S-5	1.83/2.0 92%	3 2 2 7		0	**SILT**, some sand(SM); brown with gray mottling; soft; moist, water at 9.25' 9.25'	Measuted water table at 10.99' on 9-26-92	17.0
10						**SAND**, fine,some silt(SM); light gray; loose; wet		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: D.J. Martin
DRILLER: C. Chism BORING NO.: 9GW7S SHEET 1 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker

Baker Environmental, Inc.

PROJECT: Site 9, Fire Training Area, RI/FS, Camp Lejeune

S.O. NO.: 19133 BORING NO.: 9GW7S

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11–14	A-N							
14–16	S-6	2.0 / 2.0 100%	7 28 32 49			SAND(SM); light gray; very dense; wet		
16–20	A-N							
20–22	S-7	2.0 / 2.0 100%	7 20 19 18			SAND(SM) fine ; light gray; very dense; wet		
22–30						End of Boring at 22.0'	22.0' Bottom of screen at 21' Well depth at 21.5' Boring depth at 22'	4.2

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: D.J. Martin

DRILLER: C. Chism BORING NO.: 9GW7S SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 9, Fire Training Area, RI/FS Camp Lejeune
S.O. NO.: 19133 BORING NO.: 9GW8
COORDINATES: EAST: 2502806.0 NORTH: 343010.2
ELEVATION: SURFACE: 26.0 TOP OF PVC CASING: 28.39

RIG: Mobile B-61	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	TOC WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8"		3 1/4" ID 8 1/4" ID		9-23-92	19.0	Overcast, 85°		
LENGTH	2'		5'		9-26-92	--	Cloudy, 80°s	7.85	72 hrs.
TYPE	STD		HSA		9-30-92	--	Sunny, 70°s	7.93	168 hrs.
HAMMER WT.	140#				10-10-92	--	Sunny, 70°s	7.94	408 hrs.
FALL	30"				10-26-92	--	Cloudy, 60°s	8.65	792 hrs.
STICK UP									

REMARKS: Advanced boring to 19' taking continuous split spoon samples to the water table, then at 5' intervals. Type II monitoring well installed at 18.4'. DO=DIDDO

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Schedule 40 PVC	2.4 stickup	3.5
Well Screen	4"	Schedule 40 PVC, 10 slot	3.5	18

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
1	S-1	1.25/2.0 62%	1 1 1 3			SAND, fine, little silt, little organic rich material(SM); dark gray; very dry 0.5'	Cement	25.5
2						SAND, fine, little silt(SM); light gray; loose	Top of Bentonite at 1'	
3	S-2	1.83/2.0 91%	3 3 4 6		0	SAND, fine ,little silt(SM); brown to light brown; loose; damp	Top of Sand at 2'	
4							Top of screen at 3.5'	
5	S-3	1.83/2.0 91%	4 4 5 7			SAND, fine (SM); light gray; moist Water at 5.5'	Sand Pack #2 Silica Sand	
6						SAND, fine,some silt(SM); gray; loose; wet		
7	S-4	1.33/2.0 66%	4 4 3 4		0			
8								
9	A-N						Measuted water level at 7.85' on 9-26-92	
10								

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: D.J. Martin
DRILLER: C. Chism BORING NO.: 9GW8 SHEET 1 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 9, Fire Training Area, RI/FS, Camp Lejeune
S.O. NO.: 19133-59-SRN BORING NO.: 9GW8

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
11–12	S-5	1.67/2.0 83%	7 8 13 13			**SAND**, fine, little silt(SM); medium dense; wet		
13–16	A-N							
17–18	S-6	2.0/2.0 100%	3 3 4 4			**SAND**, fine, little silt(SM); gray; loose; wet		
18–19	A-N					17.6' **SILT**, some fine sand, trace clay in stringers(SM); gray with orange mottling; medium stiff; wet, non plastic 19.0'	Bottom of screen at 18' Well depth at 18.4' Boring depth at 19'	8.4 7.0
20–30						End of Boring at 19.0'		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: D.J. Martin
DRILLER: C. Chism BORING NO.: 9GW8 SHEET 2 OF 2

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 9, Fire Training Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 9GW7D
COORDINATES: EAST: 250263.1 NORTH: 343275.0
ELEVATION: SURFACE: 26.6 TOP OF PVC CASING: 29.10

RIG: B-80

	SPLIT SPOON	CASING	AUGERS	CORE BARREL
SIZE (DIAM.)	1 3/8" ID		4 1/4" ID	
LENGTH	2.0'		5.0'	
TYPE	Std		HSA	
HAMMER WT.	140#			
FALL	30"			
STICK UP				

DATE	PROGRESS (FT)	WEATHER	TOC WATER DEPTH (FT)	TIME
9-25-92	0 - 12	Ovcst and cool		
9-27-92	12 - 110	Rain		
9-30-92	--	Sunny, 70°s	13.56	72 hrs
10-26-92	--	Cloudy, 60°s	18.40	696 hrs

REMARKS: Boring advanced with 4 1/4" ID HSA to 12'; converted to mud rotary and advanced boring to 110'. installed a Type II monitoring well at 116'.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Well Casing	4"	Sch 40 PVC	2.5' stickup	100
Well Screen	4"	Sch 40 PVC, 10 slot	100	109

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
1							Cement	
2							Top of Cement/ bentonite mixture at 2'	
3								
4	A-N							
5								
6							Cement/ bentonite mixture consisted of 5% bentonite with portland cement	
7								
8						**SAND**-fine and **SILT**(SM); yellow; medium dense; damp to wet		
9	S-1	1.25 / 2.0 63%	3 2 11 15			Water 9.5'		17.1
10						Match to Sheet 2		

DRILLING CO.: Hardin Huber,Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 9GW7D SHEET 1 OF 6

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 9, Fire Training Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 9GW7D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 1		
11–12	S-2	1.08/2.0 54%	5 8 11 13			**SAND**-fine and **SILT**(SM); yellow to gray; medium dense; wet 12.0'	Measured water level at 13.56' on 9-30-92	
13–15	R-N					End of Boring at 12.0' on 9-25-92 Converted to mud rotary		
16–17	S-3	1.33/2.0 67%	16 26 19 27			**SAND**-fine, trace silt, shell fragments(SM); white; dense; wet		
18–19	R-N							
20						20.0'		6.6
21–22	S-4	1.27/2.0 83%	5 9 15 19			**12"SAND**-fine, some clay, trace silt(SC); gray; medium dense; wet 21.0' **8"SAND**-fine, little clay, trace silt, trace shell fragments(SC); gray 22.0'		5.6 4.6
23–25	R-N							
26–27	S-5	1.08/2.0 54%	12 13 11 14			**SAND**-fine, trace silt, trace clay(SM); gray; medium dense; wet		
28–30	R-N					Match to Sheet 3		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 9GW7D SHEET 2 OF 6

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 9, Fire Training Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 9GW7D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 2		
31–32	S-6	1.08/2.0 54%	5 5 6 6			**SAND**-fine, little silt, trace clay(SM); gray; medium dense; wet		
33–34	R-N					33.0'		-6.4
35–36	S-7	.83/2.0 42%	4 9 11 14			**SAND**-fine, little silt(SM); gray green; medium dense; wet		
37–38	R-N							
39–40	S-8	.83/2.0 42%	7 9 14 17			**SAND**-fine, trace silt(SM); gray; medium dense; wet		
41–42	R-N							
43–44	S-9	1.25/2.0 63%	11 12 21 27			**SAND**-fine, little to some silt(SM); gray; dense; wet		
45–46	R-N							
47–48								
49–50						Match to Sheet 4		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 9GW7D SHEET 3 OF 6

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 9, Fire Training Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 9GW7D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 3		
51	S-10	1.5/2.0 75%	22 50			**SILT**, some clay, little sand-fine; green gray; very dense; wet		-24.4
52						51.0'		
53	R-N							
54								
55						55.0'		-28.4
56	S-11	5/2.0 25%	20 31 32 35			**SAND**-fine and **SILT**(SM); green gray; very dense; wet		
57								
58	R-N							
59								
60						60.0'		-33.4
61	S-12	1.3/2.0 67%	10 16 17 32			**SAND**-fine, little silt, trace clay(SM); green gray; dense; wet		
62								
63	R-N							
64						64.5'		-37.9
65								
66	S-13	.66/2.0 33%	31 50/3"			**SAND**-fine, little silt, trace shell fragments(SM); green gray; very dense; wet, split spoon refusal		
67								
68	R-N							
69								
70						Match to Sheet 5		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 9GW7D SHEET 4 OF 6

Baker

Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 9, Fire Training Area, RI/FS, Camp Lejeune

S.O. NO.: 19133 BORING NO.: 9GW7D

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
						Continued from Sheet 4		
71	S-14	1.67/2.0 83%	32 39 39 50			**SAND** -fine, some silt, little shell fragments(SM); green gray; very dense; wet		
72								
73	N-R							
74								
75								
76	S-15	1.5/2.0 75%	35 42 50/5"			**SAND** -fine, little silt, little shell fragments; green gray; very dense; wet; split spoon refusal		
77								
78	N-R							
79								
80								
81	S-16	.25/2.0 12%	50/5"			**SAND** -fine, little silt, little shell fragments(SM); green gray; very dense; wet; split spoon refusal		
82								
83	N-R							
84								
85								
86	S-17	1.25/2.0 63%	36 50/4"			**SAND** -fine, some silt, little shell fragments; green gray; very dense; wet; split spoon refusal		
87								
88	N-R							
89								
90						Match to Sheet 6		

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua

DRILLER: Brian VanDoren BORING NO.: 9GW7D SHEET 5 OF 6

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 9, Fire Training Area, RI/FS, Camp Lejeune
S.O. NO.: 19133 BORING NO.: 9GW7D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
						Continued from Sheet 5	
91-92	S-18	1.83/2.0 92%	50/3"			**SAND**-fine, some silt, trace shell fragments(SM); green gray; very dense; wet, split spoon refusal	
93-94	R-N						
95-96	S-19	1.67/2.0 83%	100/6"			**SAND**-fine, some silt, trace shell fragments(SM); green gray; very dense; wet, split spoon refusal 96.0'	-69.4
97						**6"LIMESTONE FRAGMENTS & SHELL FRAGMENTS**, some sand-fine 96.5'	-69.9
98-99	S-20	.75/2.0 38%	50/4"			**LIMESTONE FRAGMENTS**, some shell fragments and sand-fine; gray; very dense; wet, split spoon refusal	
100-101	R-N						
102-103	S-21	2.0/2.0 100%	17 24 23 25			**LIMESTONE FRAGMENTS**, some clay, trace shell fragments; gray; dense; wet	
104-105	R-N						
106-107						107.0'	-80.4
108-109	S-22	1.25/2.0 63%	19 23 26 50/3"			**SAND**-fine, some silt, trace shell fragments(SM); gray; dense; wet; split spoon refusal	
110	R-N					End of Boring at 110.0'	-83.4

Top of Bentonite at 93'
Top of Sand Pack at 98.5'
Sand Pack #2 Sand
Top of Screen at 100'
Bottom of Screen 109'
End of Boring and Well at 110'

DRILLING CO.: Hardin Huber, Inc. BAKER REP.: Kenneth A. Tua
DRILLER: Brian VanDoren BORING NO.: 9GW7D SHEET 6 OF 6

Appendix F
North Carolina DEHNR Well Construction Permit

NORTH CAROLINA

ENVIRONMENTAL MANAGEMENT COMMISSION

DEPARTMENT OF ENVIRONMENT, HEALTH AND NATURAL RESOURCES

RALEIGH, NORTH CAROLINA

PERMIT FOR THE CONSTRUCTION OF A WELL OR WELL SYSTEM

In accordance with the provisions of Article 7, Chapter 87, North Carolina General Statutes, and other applicable Laws, Rules and Regulations.

PERMISSION IS HEREBY GRANTED TO

United States Marine Corps

FOR THE CONSTRUCTION OF 28 monitoring wells, which will be exposed to the Surficial Aquifer, and which will be located at Sites 6, 9, 48, and 69, Marine Corp Base, Camp Lejeune, Onslow County, in accordance with the application dated August 11, 1992, and in conformity with specifications and supporting data, all of which are filed with the Department of Environment, Health and Natural Resources and are considered a part of this Permit.

This Permit is for well construction only, and does not waive any provisions or requirements of the Water Use Act of 1967, or any other applicable laws or regulations. Well construction shall be in compliance with the North Carolina Well Construction Regulations and Standards.

This Permit will be effective from the date of its issuance until February 22, 1993, and shall be subject to other specified conditions, limitations, or exceptions as follows:

1. The well(s) shall be located and constructed as shown on the attachments submitted as part of the permit application.

2. This permit does not imply that you will be eligible for reimbursement of any costs associated with well installation from the Leaking petroleum Underground Storage Tank Trust Fund.

If any requirements or limitations of this Permit are unacceptable, you have the right to an adjudicatory hearing upon written request within 30 days. The request must be in the form of a written petition, conforming to Chapter 150B of the North Carolina General Statutes, and filed with the Office of Administrative Hearings, Post Office Drawer 27447, Raleigh, North Carolina 27611-7447. Unless such demand is made, this permit is final and binding.

Permit issued this the 21st day of August 1992.

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

Rick Shiver

Rick Shiver, P.G., ACTING REGIONAL SUPERVISOR
Division of Environmental Management
By Authority of the Environmental Management Commission

PERMIT NO. 66-0276-WM-0294

RSS/BAR/lfc
cc: Thomas Morris
Perry Nelson
WiRO-GWS
GWPERMIT\WM0294.AUG
08/20/92

Appendix G
Field Well Development Records

G.1
Sites 6 and 82 - Shallow Wells

FIELD WELL DEVELOPMENT RECORD

Baker
Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 6

CTO NO.: 19133 WELL NO.: 6-GW-9

DATE: October 8, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START	0830
TIME FINISH	0912
INITIAL WATER LEVEL (FT)	8.8' from Toc
TOTAL WELL DEPTH (TD)	19.29'
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	8.44 gal.
BOREHOLE DIAMETER (INCHES)	8.25"
BOREHOLE VOLUME	36.11 gal.
AMOUNT OF WATER ADDED DURING DRILLING	—
DEVELOPMENT METHOD	Pump - Surge
PUMP TYPE	Centrifugal
TOTAL TIME (A)	42 min
AVERAGE FLOW (GPM)(B)	2.6
TOTAL ESTIMATED WITHDRAWAL AxB =	110
HNU/OVA READING	-

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
0830	0	4.65	18.5	98	19.7	Tan, Opague
0840	36.1	5.00	19.3	105	20.2	Lt. Tan, Translucent
0900	72.2	5.15	19.2	103	20.1	Tan, Opague
0912	110	5.20	19.3	108	20.5	V. Lt. Tan, Translucent

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 6

CTO NO.: 19133 WELL NO.: 6-GW-10

DATE: October 8, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START	0940
TIME FINISH	1023
INITIAL WATER LEVEL (FT)	7.12' from TOC
TOTAL WELL DEPTH (TD)	17.54'
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	8.40 gal.
BOREHOLE DIAMETER (INCHES)	8.25"
BOREHOLE VOLUME	36.1 gal.
AMOUNT OF WATER ADDED DURING DRILLING	—
DEVELOPMENT METHOD	Pump - Surge
PUMP TYPE	Centrifugal
TOTAL TIME (A)	43 min
AVERAGE FLOW (GPM)(B)	2.56
TOTAL ESTIMATED WITHDRAWAL AxB =	110
HNU/OVA READING	—

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
0940	0	5.23	20.7	122	21.9	Lt. Brown, Opague
0952	35.9	5.35	20.5	103	21.5	Lt. Brown, Opague
1008	71.8	5.62	21.2	112	22.1	Md. Brown, Opague
1023	110	5.57	21.1	109	22.1	Lt. Tan, Translucent

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker Environmental, Inc.

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 6

CTO NO.: 19133 WELL NO.: 6-GW-11

DATE: October 12, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START	1700
TIME FINISH	1757
INITIAL WATER LEVEL (FT)	17.8' from TOC
TOTAL WELL DEPTH (TD)	18.3'
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	1.9 gal.
BOREHOLE DIAMETER (INCHES)	8.25"
BOREHOLE VOLUME	8.15 gal.
AMOUNT OF WATER ADDED DURING DRILLING	—
DEVELOPMENT METHOD	Pump - Surge
PUMP TYPE	Centrifugal
TOTAL TIME (A)	57 min
AVERAGE FLOW (GPM)(B)	.44
TOTAL ESTIMATED WITHDRAWAL AxB =	25 gal.
HNU/OVA READING	—

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1700	0	6.26	26.3	202	27.9	Md. Brown, Opaque
1715	8.15	6.23	23.9	221	25.2	V. Lt. Brown, semi-translucent
1737	16.3	6.17	23.4	219	25.1	Lt. Brown, semi-translucent
1757	25	6.35	26.5	239	27.8	V. Lt. Brn/Orange, Trans.

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker
Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 6
CTO NO.: 19133 WELL NO.: 6-GW-12
DATE: October 8, 1992
GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START	1740
TIME FINISH	1855
INITIAL WATER LEVEL (FT)	5.74' from TOC
TOTAL WELL DEPTH (TD)	18.0'
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	9.2 gal.
BOREHOLE DIAMETER (INCHES)	8.25"
BOREHOLE VOLUME	39.4 gal.
AMOUNT OF WATER ADDED DURING DRILLING	-
DEVELOPMENT METHOD	Pump - Surge
PUMP TYPE	Centrifugal
TOTAL TIME (A)	1 hr. 15 min
AVERAGE FLOW (GPM)(B)	1.57
TOTAL ESTIMATED WITHDRAWAL AxB =	118
HNU/OVA READING	-

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1740	0	6.24	21.8	118	23.0	Md. Brown, Opaque
1750	39.4	5.73	21.7	112	23.0	Dk. Brown, Opaque
1830	78.8	6.70	22.8	230	24.1	Md. Brown, Opaque
1855	118	6.10	21.9	117	23.2	Lt. Brown, Translucent

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker
Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 6
CTO NO.: 19133 WELL NO.: 6-GW-13
DATE: October 9, 1992
GEOLOGIST/ENGINEER: R. E. Bonelli

TIME START	0925
TIME FINISH	1047
INITIAL WATER LEVEL (FT)	6.44' from Toc
TOTAL WELL DEPTH (TD)	19.74'
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	8.65 gal.
BOREHOLE DIAMETER (INCHES)	8.25"
BOREHOLE VOLUME	37.0 gal.
AMOUNT OF WATER ADDED DURING DRILLING	-
DEVELOPMENT METHOD	Pump- Surge
PUMP TYPE	Centrifugal
TOTAL TIME (A)	1hr. 22 min.
AVERAGE FLOW (GPM)(B)	1.5
TOTAL ESTIMATED WITHDRAWAL AxB =	125
HNU/OVA READING	-

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
0925	0	6.91	21.8	175	22.0	Lt. Brown - Turbid
1000	37.0	6.85	22.6	310	23.0	Lt. Brown - Turbid
1027	74.0	6.85	22.9	302	23.0	Lt. Brown - Slightly Turbid
1047	125	6.88	22.6	298	23.0	Lt. Gray - Clear

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 6

CTO NO.: 19133 WELL NO.: 6-GW-14

DATE: October 9, 1992

GEOLOGIST/ENGINEER: R.E. Bonelli

TIME START	1120
TIME FINISH	1156
INITIAL WATER LEVEL (FT)	10.91' from TOC
TOTAL WELL DEPTH (TD)	22.0
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	8.9 gal.
BOREHOLE DIAMETER (INCHES)	8.25"
BOREHOLE VOLUME	37.9 gal.
AMOUNT OF WATER ADDED DURING DRILLING	–
DEVELOPMENT METHOD	Pump - Surge
PUMP TYPE	Centrifugal
TOTAL TIME (A)	36 min
AVERAGE FLOW (GPM)(B)	3.5
TOTAL ESTIMATED WITHDRAWAL AxB =	126
HNU/OVA READING	–

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1120	0	6.93	22.6	285	24.0	Lt. Gray/Brown, Slightly Turbid
1140	37.9	6.21	22.3	65	23.0	Lt. Gray/Brn., Slightly Turbid
1156	75.8	6.08	22.5	65	23.0	Lt. Brown, Slightly Turbid
1206	126	6.72	22.6	85	23.0	Lt. Brown/Gray.

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker Environmental, Inc.

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 6

CTO NO.: 19133 WELL NO.: 6-GW-15

DATE: October 12, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START	1145
TIME FINISH	1255
INITIAL WATER LEVEL (FT)	10.79' from TOC
TOTAL WELL DEPTH (TD)	19.7'
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	7.5 gal.
BOREHOLE DIAMETER (INCHES)	8.25"
BOREHOLE VOLUME	32.0
AMOUNT OF WATER ADDED DURING DRILLING	—
DEVELOPMENT METHOD	Pump - Surge
PUMP TYPE	Centrifugal
TOTAL TIME (A)	1 hr. 10 min
AVERAGE FLOW (GPM)(B)	1.8
TOTAL ESTIMATED WITHDRAWAL AxB =	128 gal.
HNU/OVA READING	—

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1145	0	6.70	26.9	695	27.0	Dk. Brown/Gray, V. Opaque
1200	32	6.77	24.4	650	26.0	Dk. Brown/Gray, V. Opaque Foam
1227	64	6.65	23.0	600	24.1	Dk. Brown/Gray, Froth
1239	96	6.79	22.1	680	23.8	Dk. Brown/Gray, Froth
1255	128	6.92	22.7	700	23.7	Dk Brown/Gray, Froth
	165					Extra Volume, no Δ

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times
- Little to no change during development appeared V. Opaque

FIELD WELL DEVELOPMENT RECORD

Baker Environmental, Inc.

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 6

CTO NO.: 19133 WELL NO.: 6-GW-16

DATE: October 12, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START	1525
TIME FINISH	1612
INITIAL WATER LEVEL (FT)	7.35' from TOC
TOTAL WELL DEPTH (TD)	17.5
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	8.2 gal.
BOREHOLE DIAMETER (INCHES)	8.25"
BOREHOLE VOLUME	35.0 gal.
AMOUNT OF WATER ADDED DURING DRILLING	-
DEVELOPMENT METHOD	Pump - Surge
PUMP TYPE	Centrifugal
TOTAL TIME (A)	47 min.
AVERAGE FLOW (GPM)(B)	2.3
TOTAL ESTIMATED WITHDRAWAL AxB =	110
HNU/OVA READING	-

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1525	0	6.17	21.1	185	22.5	Lt. Brown/Gray, Opaque
1538	35	5.14	21.7	165	22.8	V. Lt. Brn./Gray, semi-trans.
1551	70	5.55	22.4	175	23.2	Lt. Gray, semi-translucent
1612	110	5.13	22.2	158	23.2	Translucent

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker
Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 6

CTO NO.: 19133 WELL NO.: 6-GW-17

DATE: October 10, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START	0814
TIME FINISH	0850
INITIAL WATER LEVEL (FT)	8.34' from TOC
TOTAL WELL DEPTH (TD)	20.25'
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	9.62 gal.
BOREHOLE DIAMETER (INCHES)	8.25"
BOREHOLE VOLUME	42.5 gal.
AMOUNT OF WATER ADDED DURING DRILLING	-
DEVELOPMENT METHOD	Pump - Surge
PUMP TYPE	Centrifugal
TOTAL TIME (A)	36 min
AVERAGE FLOW (GPM)(B)	3.5
TOTAL ESTIMATED WITHDRAWAL AxB =	128
HNU/OVA READING	

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
0814	0	4.75	18.2	153	19.1	Lt. Tan, Opaque
0820	42.5	4.75	18.7	101	19.8	V. Lt. Tan, Opaque
0833	85	4.25	19.1	97	20.2	Lt. Tan, Opaque
0850	128	4.55	20.2	151	20.9	V. Lt. Brown, Translucent

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 6

CTO NO.: 19133 WELL NO.: 6-GW-18

DATE: October 10, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START	0914
TIME FINISH	0945
INITIAL WATER LEVEL (FT)	8.34' from TOC
TOTAL WELL DEPTH (TD)	20.2'
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	9.6 gal.
BOREHOLE DIAMETER (INCHES)	8.25
BOREHOLE VOLUME	41.1 gal.
AMOUNT OF WATER ADDED DURING DRILLING	-
DEVELOPMENT METHOD	Pump - Surge
PUMP TYPE	Centrifugal
TOTAL TIME (A)	36 min.
AVERAGE FLOW (GPM)(B)	3.42
TOTAL ESTIMATED WITHDRAWAL AxB =	123
HNU/OVA READING	-

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
0914	0	5.63	20.6	52	21.5	Md. Brown, Opague
0923	41.1	5.20	20.7	48	21.6	Lt. Brown, semi-translucent
0932	82.2	5.06	20.7	38	21.8	Lt. Brown, Opague
0945	123	5.11	20.8	39	21.9	Lt. Tan

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 6

CTO NO.: 19133 WELL NO.: 6-GW-19

DATE: October 10, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START	1005
TIME FINISH	1055
INITIAL WATER LEVEL (FT)	6.74' from TOC
TOTAL WELL DEPTH (TD)	19.7'
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	10.0 gal.
BOREHOLE DIAMETER (INCHES)	8.25"
BOREHOLE VOLUME	43.0 gal.
AMOUNT OF WATER ADDED DURING DRILLING	-
DEVELOPMENT METHOD	Pump - Surge
PUMP TYPE	Centrifugal
TOTAL TIME (A)	50 min.
AVERAGE FLOW (GPM)(B)	2.6
TOTAL ESTIMATED WITHDRAWAL AxB =	130 gal.
HNU/OVA READING	-

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1005	0	5.40	22.4	97	23.1	Dk. Brown, Opaque
1015	43	5.17	21.2	61	22.3	Md. Brown, Opaque
1038	86	4.86	22.1	80	23.1	Md. Brown, Opaque
1055	130	4.76	21.1	71	22.2	Lt. Brown, Translucent

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 6

CTO NO.: 19133 WELL NO.: 6-GW-20

DATE: October 10, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock / P.A. Monday

TIME START

TIME FINISH: 1716

INITIAL WATER LEVEL (FT): 5.52' from TOC

TOTAL WELL DEPTH (TD): 19.25'

WELL DIAMETER (INCHES): 4"

CALCULATED WELL VOLUME: 10.32 gal.

BOREHOLE DIAMETER (INCHES): 8.25"

BOREHOLE VOLUME: 44.1 gal.

AMOUNT OF WATER ADDED DURING DRILLING: -

DEVELOPMENT METHOD: Pump - Surge

PUMP TYPE: Centrifugal

TOTAL TIME (A): -

AVERAGE FLOW (GPM)(B): -

TOTAL ESTIMATED WITHDRAWAL AxB = 133 gal.

HNU/OVA READING: -

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1230	0	-	-	-	-	-
1250	44.1	5.20	22.5	112	24.0	= Semi-translucent
1700	88.2	4.75	21.4	89	22.4	Lt. Gray, Translucent
1716	133	4.60	21.0	89	22.1	Lt. Gray, Translucent

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times
- Pump was replaced after 1st volume due to failure

FIELD WELL DEVELOPMENT RECORD

Baker
Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 6

CTO NO.: 19133 WELL NO.: 6-GW-21

DATE: October 10, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START: 1745

TIME FINISH: 1820

INITIAL WATER LEVEL (FT): 12.94' from TOC

TOTAL WELL DEPTH (TD): 23.4'

WELL DIAMETER (INCHES): 4"

CALCULATED WELL VOLUME: 8.4 gal.

BOREHOLE DIAMETER (INCHES): 8.25"

BOREHOLE VOLUME: 36.1 gal.

AMOUNT OF WATER ADDED DURING DRILLING: —

DEVELOPMENT METHOD: Pump - Surge

PUMP TYPE: Centrifugal

TOTAL TIME (A): 35 min

AVERAGE FLOW (GPM)(B): 3.1

TOTAL ESTIMATED WITHDRAWAL AxB =: 110

HNU/OVA READING: -

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1745	0	5.57	22.1	58	23.0	Md. Brown, Opaque
1755	36.1	5.33	21.3	59	22.2	Lt. Tan, Translucent
1808	72.2	4.35	19.7	53	20.9	Md. Brown, Translucent
1820	110	4.37	19.7	58	20.8	Lt. Tan, Translucent

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker Environmental, Inc.

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 6

CTO NO.: 19133 WELL NO.: 6-GW-22

DATE: October 13, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START	0810
TIME FINISH	0907
INITIAL WATER LEVEL (FT)	5.38' from Toc
TOTAL WELL DEPTH (TD)	19.5'
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	8.57 gal.
BOREHOLE DIAMETER (INCHES)	8.25"
BOREHOLE VOLUME	36.7 gal.
AMOUNT OF WATER ADDED DURING DRILLING	-
DEVELOPMENT METHOD	Pump - Surge
PUMP TYPE	Centrifugal
TOTAL TIME (A)	57 min
AVERAGE FLOW (GPM)(B)	1.9
TOTAL ESTIMATED WITHDRAWAL AxB =	110
HNU/OVA READING	-

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
0810	0	5.78	17.6	177	18.5	Md. Brown/Gray, Opaque
0830	36.7	5.51	23.4	177	23.9	Md. Brown, Opaque
0855	73.4	5.50	23.1	152	23.5	Lt. Brown, Opaque
0907	110	5.39	21.7	172	22.0	Lt. Brown, Opaque
	165					Extra Volume, Translucent
						-

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 6

CTO NO.: 19133 WELL NO.: 6-GW-23

DATE: October 13, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START: 0945

TIME FINISH: 1025

INITIAL WATER LEVEL (FT): 7.07' from TOC

TOTAL WELL DEPTH (TD): 22.5'

WELL DIAMETER (INCHES): 4"

CALCULATED WELL VOLUME: 11.5 gal.

BOREHOLE DIAMETER (INCHES): 8.25"

BOREHOLE VOLUME: 49.3 gal.

AMOUNT OF WATER ADDED DURING DRILLING: -

DEVELOPMENT METHOD: Pump - Surge

PUMP TYPE: Centrifugal

TOTAL TIME (A): 40 min

AVERAGE FLOW (GPM)(B): 3.7

TOTAL ESTIMATED WITHDRAWAL AxB = : 148

HNU/OVA READING: -

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
0945	0	5.94	24.6	170	25.1	V. Lt. Tan, semi-translucent
0958	49.3	5.58	23.2	108	23.8	V. Lt. Tan, semi-translucent
1011	98.6	5.50	23.3	101	24.1	V. Lt. Tan, Translucent
1025	148	5.57	23.0	100	24.5	Clear

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 6

CTO NO.: 19133 WELL NO.: 6-GW-25

DATE: October 11, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START	0800
TIME FINISH	0912
INITIAL WATER LEVEL (FT)	11.56' from TOC
TOTAL WELL DEPTH (TD)	23.5'
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	8.94 gal.
BOREHOLE DIAMETER (INCHES)	8.25"
BOREHOLE VOLUME	38.25 gal.
AMOUNT OF WATER ADDED DURING DRILLING	-
DEVELOPMENT METHOD	Pump - Surge
PUMP TYPE	Centrifugal
TOTAL TIME (A)	1 hr. 12 min.
AVERAGE FLOW (GPM)(B)	1.6
TOTAL ESTIMATED WITHDRAWAL AxB =	115
HNU/OVA READING	-

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
0800	0	6.11	17.0	118	18.0	Lt. Brown, Opaque
0815	38.25	5.50	19.6	81	20.9	V. Lt. Brown, Translucent
0845	76.5	5.28	21.0	68	21.1	Lt. Tan, Translucent
0912	115	5.22	21.4	63	22.6	Clear
						-

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker Environmental, Inc.

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 6

CTO NO.: 19133 WELL NO.: 6-GW-26

DATE: October 11, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START	1155
TIME FINISH	1320
INITIAL WATER LEVEL (FT)	9.94 from Toc
TOTAL WELL DEPTH (TD)	19.5
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	8.3 gal.
BOREHOLE DIAMETER (INCHES)	8.25"
BOREHOLE VOLUME	35.3 gal.
AMOUNT OF WATER ADDED DURING DRILLING	-
DEVELOPMENT METHOD	Pump - Surge
PUMP TYPE	Centrifugal
TOTAL TIME (A)	1 hr. 25 min.
AVERAGE FLOW (GPM)(B)	2.07
TOTAL ESTIMATED WITHDRAWAL AxB =	176.5
HNU/OVA READING	-

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1155	0	6.21	28.7	208	28.2	Orange/Brown, Opaque
1212	35.3	5.89	24.1	239	25.3	Orange/Brown, Opaque
1232	70.6	6.04	22.3	259	23.8	Md. Brown, Opaque
1250	105.9	6.10	23.6	248	24.9	Md. Orange, semi-translucent
1305	141.2	6.00	22.6	240	23.0	Md. Orange, semi-translucent
1320	176.5	6.02	22.8	245	24.9	Orange tint, Translucent

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 6

CTO NO.: 19133 WELL NO.: 6-GW-285

DATE: October 11, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START	0955
TIME FINISH	1110
INITIAL WATER LEVEL (FT)	21.34' from TOC
TOTAL WELL DEPTH (TD)	31.48'
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	8.32 gal.
BOREHOLE DIAMETER (INCHES)	8.25"
BOREHOLE VOLUME	35.6 gal.
AMOUNT OF WATER ADDED DURING DRILLING	-
DEVELOPMENT METHOD	Pump - Surge
PUMP TYPE	Centrifugal
TOTAL TIME (A)	1 hr. 15 min.
AVERAGE FLOW (GPM)(B)	1.5
TOTAL ESTIMATED WITHDRAWAL AxB =	110
HNU/OVA READING	-

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
0955	0	6.34	20.1	181	21.0	Lt. Tan, semi-translucent
1007	35.6	6.05	21.6	159	23.0	Lt. Brown
1050	71.2	6.02	22.5	148	23.0	Lt. Brown
1110	110	5.95	21.2	144	21.8	Lt. Tan, Translucent

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker
Baker Environmental, Inc.

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 6

CTO NO.: 19133 WELL NO.: 6-GW-30

DATE: October 12, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START	1012
TIME FINISH	1107
INITIAL WATER LEVEL (FT)	5.53' from TOC
TOTAL WELL DEPTH (TD)	19.37'
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	10.7 gal.
BOREHOLE DIAMETER (INCHES)	8.25"
BOREHOLE VOLUME	45.7 gal.
AMOUNT OF WATER ADDED DURING DRILLING	—
DEVELOPMENT METHOD	Pump - Surge
PUMP TYPE	Centrifugal
TOTAL TIME (A)	55 min.
AVERAGE FLOW (GPM)(B)	2.5
TOTAL ESTIMATED WITHDRAWAL AxB =	137
HNU/OVA READING	-

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1012	0	6.76	19.8	204	21.1	Dk. Gray, Opague
1030	45.7	6.08	21.7	146	23.2	Lt. Gray, Opague
1048	91.4	5.96	21.7	126	23.7	Md.-Lt. Gray, Opague
1107	137.1	5.88	22.7	125	24.2	Lt. Gray, semi-translucent

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times

Baker

Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Camp Lejeune RI/FS
CTO NO.: 1933 WELL NO.: 6-GW31
DATE: 3/2/93
GEOLOGIST/ENGINEER: J. E. Zimmerman

TIME START	1640
TIME FINISH	1740
WATER LEVEL (FT)	12.5
TOTAL WELL DEPTH (TD)	27.4
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	35 gallons
BOREHOLE VOLUME	105 gallons
DEVELOPMENT METHOD	Air Lift
PUMP TYPE	Compressor
TOTAL TIME (A)	1 hour
AVERAGE FLOW (GPM)(B)	~~10.5~~ 1.75
TOTAL ESTIMATED WITHDRAWL AxB =	105 gallons
(HNU)/OVA READING	No elevated readings

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (uohms)	TEMP (°C)	COLOR AND TURBIDITY
1640	0	8.40	16.4	375	16.0	very cloudy / brown
1707	35	9.03	17.4	275	16.5	very cloudy / brown
1725	70	9.03	17.1	300	16.5	cloudy / lite brown
1740	105	7.50	17.1	300	16.5	cloudy / lite brown

OBSERVATIONS/NOTES

Development satisfied criteria for pH, specific conductivity and temperature. An adequate volume of water was removed.

Baker

Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Camp Lejeune RI/FS
CTO NO.: 19133 WELL NO.: 6-GW32
DATE: 3-8-93
GEOLOGIST/ENGINEER: J.E. Zimmerman

TIME START: 1440
TIME FINISH: 1520
WATER LEVEL (FT): 15.0
TOTAL WELL DEPTH (TD): 29.1
WELL DIAMETER (INCHES): 2"
CALCULATED WELL VOLUME: ———
BOREHOLE VOLUME: 9.2(3) 27.6 gal
DEVELOPMENT METHOD: ~~Lift~~ Air lift
PUMP TYPE: Hand Surging
TOTAL TIME (A): 40 min
AVERAGE FLOW (GPM)(B): 1.25 gpm
TOTAL ESTIMATED WITHDRAWL AxB = 50 gallons
HNU/OVA READING: No elevated readings

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (uohms)	TEMP (°C)	COLOR AND TURBIDITY
1440	0	7.15	22.1	310	22	Brown / very cloudy
1448	10.0	7.54	20.5	350	20	Brown / very cloudy
1456	20.0	7.54	18.9	330	19	Brown / very cloudy
1504	30.0	7.77	18.7	320	18	Brown / very cloudy
1512	40.0	7.65	19	320	18	Brown / very cloudy
1520	50.0	7.50	19	320	19	Brown / very cloudy

OBSERVATIONS/NOTES

Development satisfied criteria for pH, specific conductivity and temperature. An adequate volume of water was removed. No level "C" protection was needed due to non-elevated HNu background readings. Background readings were .8ppm

Baker

Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Camp Lejeune RI/FS
CTO NO.: 1913 3 WELL NO.: 6-GW 33
DATE: 3-7-93
GEOLOGIST/ENGINEER: J. E. Zimmerman

TIME START	1600
TIME FINISH	1700
WATER LEVEL (FT)	8.17
TOTAL WELL DEPTH (TD)	24.2
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	———
BOREHOLE VOLUME	10.4(3) 31.4 gal
DEVELOPMENT METHOD	~~Lift~~ Air lift
PUMP TYPE	Hand Surging
TOTAL TIME (A)	1 hr
AVERAGE FLOW (GPM)(B)	.8 gpm
TOTAL ESTIMATED WITHDRAWL AxB =	50 gallons
(HNU)/OVA READING	No elevated readings

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (uohms)	TEMP (°C)	COLOR AND TURBIDITY
1600	0	5.12	15.5	50	16	lite Brown / little cloudy
1617	12.5	5.16	14.9	50	16	Grey / very cloudy
1630	25.0	5.19	14.9	60	16	Grey / very cloudy
1647	37.5	5.12	14.6	60	16	Grey / very cloudy
1700	50.0	5.12	14.8	60	16	Grey / very cloudy

OBSERVATIONS/NOTES

Development satisfied criteria for pH, specific conductivity and temperature. An adequate volume of water was removed. No level "C" protection was needed due to non-elevated HNu background readings. Background readings were .4 ppm.

Baker

Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Camp Lejeune RI/FS
CTO NO.: 19133 WELL NO.: 6-GW-34
DATE: 3-7-93
GEOLOGIST/ENGINEER: J.E. Zimmerman

TIME START	1417
TIME FINISH	1525
WATER LEVEL (FT)	17.85
TOTAL WELL DEPTH (TD)	37.3
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	—
BOREHOLE VOLUME	12.6(3) 38 gal
DEVELOPMENT METHOD	~~rest~~ Air lift
PUMP TYPE	Centrifical/hand Surging
TOTAL TIME (A)	1 hr 8 min
AVERAGE FLOW (GPM)(B)	.8 gpm
TOTAL ESTIMATED WITHDRAWL AxB =	50 gallons
(HNU)/OVA READING	No elevated readings

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (uohms)	TEMP (°C)	COLOR AND TURBIDITY
1417	0	5.50	18	100	17	Brown / very cloudy
1432	12.5	5.36	18	100	17	Brown / very cloudy
1447	25.0	5.25	17.7	100	17	Brown / very cloudy
1503	37.5	5.22	17.8	100	17	Brown / very cloudy
1525	50.0	5.21	17.6	100	17	Brown / very cloudy

OBSERVATIONS/NOTES

Development satisfied criteria for pH, specific conductivity and temperature. An adequate volume of water was removed. No level "C" protection was needed due to non-elevated HNu background readings. Background readings were .6 ppm

G.2
Sites 6 and 82 - Deep Wells

FIELD WELL DEVELOPMENT RECORD

Baker
Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS
CTO NO.: 19133 WELL NO.: 6-GW-1D
DATE: October 21, 1992
GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START: 1505
TIME FINISH: 1645
INITIAL WATER LEVEL (FT): 23.82' from TOC
TOTAL WELL DEPTH (TD): 112.5'
WELL DIAMETER (INCHES): 4"
CALCULATED WELL VOLUME: 56.6 gal.
BOREHOLE DIAMETER (INCHES): 11"
BOREHOLE VOLUME: 112.2 gal.
AMOUNT OF WATER ADDED DURING DRILLING: —
DEVELOPMENT METHOD: Compressed Air w/ Filtering System
PUMP TYPE: —
TOTAL TIME (A): 1 hr. 40 min.
AVERAGE FLOW (GPM)(B): 3.87
TOTAL ESTIMATED WITHDRAWAL AxB = : 387.2
HNU/OVA READING:

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1505	0	9.07	19.4	—	—	Gray/Brown, Opague
1530	60.5	8.03	20.0	550	21.1	Gray/Brown, Opague
1545	121	8.10	18.5	595	20.0	Md. Brown
1620	242	8.02	18.2	—	—	Lt. Brown, semi-translucent
1645	387	—	—	—	—	Translucent/Clear

OBSERVATIONS/NOTES

* Heavy organic/chemical odor encountered during development.
* After 165 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker
Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS
CTO NO.: 19133 WELL NO.: 6-GW-2D
DATE: October 23, 1992
GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START: 1358
TIME FINISH: 1455
INITIAL WATER LEVEL (FT): 21.86' from TOC
TOTAL WELL DEPTH (TD): 119.0
WELL DIAMETER (INCHES): 4"
CALCULATED WELL VOLUME: 62.4 gal.
BOREHOLE DIAMETER (INCHES): 11"
BOREHOLE VOLUME: 122.7 gal.
AMOUNT OF WATER ADDED DURING DRILLING: —
DEVELOPMENT METHOD: Compressed Air w/ Filtering System
PUMP TYPE: —
TOTAL TIME (A): 57 min.
AVERAGE FLOW (GPM)(B): 4.67
TOTAL ESTIMATED WITHDRAWAL AxB = : 266 gal.
HNU/OVA READING:

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1358	0	10.74	18.3	293	19.1	Brown/Gray, Opaque
1415	133	8.46	17.9	221	19.2	Lt. Gray, semi-translucent
1455	266	8.19	18.3	241	19.8	V. Lt. Gray/Tan, Clear

OBSERVATIONS/NOTES

* After 185 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker
Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS
CTO NO.: 19133 WELL NO.: 6-GW-7D
DATE: October 21, 1992
GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START: 0830
TIME FINISH: 1000
INITIAL WATER LEVEL (FT): 10.19' from TOC
TOTAL WELL DEPTH (TD): 100.5'
WELL DIAMETER (INCHES): 4"
CALCULATED WELL VOLUME: 56.3 gal.
BOREHOLE DIAMETER (INCHES): 11"
BOREHOLE VOLUME: 116.2 gal.
AMOUNT OF WATER ADDED DURING DRILLING: —
DEVELOPMENT METHOD: Compressed Air w/ Filtering System
PUMP TYPE: —
TOTAL TIME (A): 1 hr. 30 min.
AVERAGE FLOW (GPM)(B): 3.7
TOTAL ESTIMATED WITHDRAWAL AxB = 331
HNU/OVA READING: —

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
0830	0	8.27	16.6	194	17.5	Lt. Gray, translucent
0840	60.2	8.35	17.2	302	17.9	Brown/Gray, Opague
0903	120.3	8.37	17.4	302	18.2	Lt. Gray, semi-trans.
0943	240.6	8.20	18.0	291	18.1	V. Lt. Gray, semi-trans
1000	330.8	8.20	17.9	285	19.2	V. Lt. Gray, Translucent

OBSERVATIONS/NOTES

* After 145 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS

CTO NO.: 19133 WELL NO.: 6-GW-28D

DATE: October 23, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START	0915
TIME FINISH	1055
INITIAL WATER LEVEL (FT)	20.97' from TOC
TOTAL WELL DEPTH (TD)	114.5
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	62.77 gal.
BOREHOLE DIAMETER (INCHES)	11"
BOREHOLE VOLUME	129.1 gal.
AMOUNT OF WATER ADDED DURING DRILLING	—
DEVELOPMENT METHOD	Compressed Air w/ Filtering System
PUMP TYPE	—
TOTAL TIME (A)	1 hr. 10 min
AVERAGE FLOW (GPM)(B)	4.7
TOTAL ESTIMATED WITHDRAWAL AxB =	330
HNU/OVA READING	45-60 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
0915	0	6.74	16.6	148	17.2	Translucent
1015	134.25	8.04	16.4	229	17.9	Brown/Gray, semi-translucent
1055	268.5	8.14	16.4	258	17.8	Translucent
	330					

OBSERVATIONS/NOTES

* After 165 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker
Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS

CTO NO.: 19133 WELL NO.: 6-GW-27D

DATE: October 22, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START	1145
TIME FINISH	1420
INITIAL WATER LEVEL (FT)	16.21' from TOC
TOTAL WELL DEPTH (TD)	110'
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	60.5 gal.
BOREHOLE DIAMETER (INCHES)	11"
BOREHOLE VOLUME	116.1 gal.
AMOUNT OF WATER ADDED DURING DRILLING	—
DEVELOPMENT METHOD	Compressed Air w/ Filtering System
PUMP TYPE	—
TOTAL TIME (A)	2 hr. 35 min.
AVERAGE FLOW (GPM)(B)	2.48
TOTAL ESTIMATED WITHDRAWAL AxB =	385
HNU/OVA READING	

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1145	0	8.17	17.7	-	-	Brown/Gray, Opaque
1400	258.8	7.88	17.8	-	-	V. Lt. Gray, semi-translucent
1420	385.6	7.72	17.5	-	-	V. Lt. Gray, translucent

OBSERVATIONS/NOTES

* After 165 gallons surged well 10 times.
* Conductivity meter was inoperable
* Development was performed using Level-C health and safety protection, due to suspected contamination

Baker

Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Camp Lejeune RI/FS
CTO NO.: 19133 WELL NO.: 6-GW10A
DATE: 4-19-93
GEOLOGIST/ENGINEER: J.E. Zimmerman

TIME START	1400
TIME FINISH	1700
WATER LEVEL (FT)	55.66
TOTAL WELL DEPTH (TD)	230.0
WELL DIAMETER (INCHES)	2.0
CALCULATED WELL VOLUME	174.34 × .163 = 28.41
BOREHOLE VOLUME	-NA-
DEVELOPMENT METHOD	Air Lift
PUMP TYPE	Air Compressor
TOTAL TIME (A)	3 hrs
AVERAGE FLOW (GPM)(B)	.27(gpm)
TOTAL ESTIMATED WITHDRAWL	AxB = 50.0
(HNU/OVA READING	Background 1.0 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (uohms)	TEMP (°C)	COLOR AND TURBIDITY
1410	2.0	9.66	20.2	550	20.0	Brown / very silty
1428	15.0	9.52	20.0	550	20.0	Brown / very silty
1443	25.0	9.28	21.0	500	21.0	Brown / very silty
1600	40.0	9.11	21.8	500	21.0	Brown / very silty
1700	50.0	9.20	21.5	500	21.0	Brown / very silty

OBSERVATIONS/NOTES

Criteria satisfied for well development (pH, conductivity and temperature). An adequate volume of water was removed. Point source * HNU was drummed development water (.9ppm)

Baker

Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: 19133 CAMP LEJEUNE RI/FS
CTO NO.: 19133 WELL NO.: MW-30
DATE: 3-31-93
GEOLOGIST/ENGINEER: P. MONDAY

TIME START	0835.
TIME FINISH	
WATER LEVEL (FT)	17.61
TOTAL WELL DEPTH (TD)	118.0
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	16.36 GAL/VOL.
BOREHOLE VOLUME	173.34 GAL/VOL.
DEVELOPMENT METHOD	AIR COMPRESSOR.
PUMP TYPE	NA.
TOTAL TIME (A)	
AVERAGE FLOW (GPM)(B)	
TOTAL ESTIMATED WITHDRAWL AxB =	
HNU/OVA READING	

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (uohms)	TEMP (°C)	COLOR AND TURBIDITY
0855	35	8.47	18.9°C	402	19°C	TURBID / LT-GRAY-BR.
0920	70	8.23	23.9°C	350	23.5°C	LESS TURBID / LT-GRAY.
1015	110	8.44	28.0°C	330	26°C	SLIGHTLY TURBID / VERY LT.
1048	145	8.58	26.2	320	27°C	SLIGHTLY TURBID - LESS GR. THAN
1113	180	8.49	25.3	310	26°C	SAME AS ABOVE
1138	215	8.45	25.4	295	25°C	LESS TURBID - VERY LESS
	250					

OBSERVATIONS/NOTES

20 FT SCREEN, 22 FT SAND + 2 FT BENTONITE = 24 FT.

24 FT X 1.469 GAL/FT. = 35.26 GAL + 16.36 GAL = 51.6 GAL/VOL.

Baker

Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Camp Lejeune RI/FS
CTO NO.: 19133 WELL NO.: 6-GW15D
DATE: 4-19-93
GEOLOGIST/ENGINEER: J.E. Zimmerman

TIME START	0900
TIME FINISH	1159
WATER LEVEL (FT)	12.2
TOTAL WELL DEPTH (TD)	155.0
WELL DIAMETER (INCHES)	2.0
CALCULATED WELL VOLUME	142.8 X .163 = 23.27
BOREHOLE VOLUME	-NA-
DEVELOPMENT METHOD	Air Lift
PUMP TYPE	Air Compressor
TOTAL TIME (A)	2 hr 59 min
AVERAGE FLOW (GPM)(B)	.1 (gpm)
TOTAL ESTIMATED WITHDRAWL AxB =	18.5 gallons
(HNU) OVA READING	Background .6 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (uohms)	TEMP (°C)	COLOR AND TURBIDITY
0904	2.0	9.44	18.2	300	18.0	Brown / very silty
0927	15.0	5.91	16.0	700	16.0	Brown / very silty
1110	17.0	10.0	16.0	500	16.0	Brown / very silty
1140	18.0	10.1	16.0	500	16.0	Brown / very silty
1159	18.5	10.0	16.0	500	16.0	Brown / very silty

OBSERVATIONS/NOTES

Criteria satisfied for well development (pH, conductivity and temperature). An adequate volume of water was removed. Point source *HNu was drummed development water (1.3 ppm).

Baker

Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Camp Lejeune RI/FS
CTO NO.: 1913 3 WELL NO.: 6-GW300
DATE: 3-8-93
GEOLOGIST/ENGINEER: J.E. Zimmerman

TIME START: 0820
TIME FINISH: 1213
WATER LEVEL (FT): 1.5
TOTAL WELL DEPTH (TD): 102
WELL DIAMETER (INCHES): 2"
CALCULATED WELL VOLUME: —
BOREHOLE VOLUME: 68.5(3) 205.6 gal
DEVELOPMENT METHOD: ~~Bail~~ Air lift
PUMP TYPE: air Compressor
TOTAL TIME (A): 3 hr 57 min
AVERAGE FLOW (GPM)(B): .18 gpm
TOTAL ESTIMATED WITHDRAWL AxB = 45 gallons
HNU/OVA READING: No elevated readings

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (uohms)	TEMP (°C)	COLOR AND TURBIDITY
0820	0	11.80	14.1	200	14	lite Brown / little silty
0955	25.0	9.33	21.8	200	21	lite Brown / little silty
1130	40.0	9.28	22	220	21	clear / very little silt
1213	45.0	9.30	21.6	210	21	clear / very little silt

OBSERVATIONS/NOTES

Development satisfied criteria for pH, specific conductivity and temperature. An adequate volume of water was removed. No level "C" protection was needed due to non-elevated Hnu back-ground readings. Background readings ranged from 1.6 to 2.2 ppm.

Baker

Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Lantdiv Clean Program
CTO NO.: 0133 WELL NO.: 6-GW35
DATE: 3-16-93
GEOLOGIST/ENGINEER: Ted L. Panagi

TIME START	9:30
TIME FINISH	11:10
WATER LEVEL (FT)	5' 10"
TOTAL WELL DEPTH (TD)	109.0"
WELL DIAMETER (INCHES)	2 inches
CALCULATED WELL VOLUME	
BOREHOLE VOLUME	485 gallons
DEVELOPMENT METHOD	Air Purge
PUMP TYPE	Air
TOTAL TIME (A)	
AVERAGE FLOW (GPM)(B)	
TOTAL ESTIMATED WITHDRAWL AxB =	
HNU/OVA READING	1.0 ppm = BG

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (uohms)	TEMP (°C)	COLOR AND TURBIDITY
9:35	15	11.43	15.1	435	15.0	Gray & Turbid
9:40	20	12.47	15.2	2,000	17.0	Milky white
9:50	25	12.47	16.5	2800	17.0	milky white
10:05	30	12.48	16.4	1980	17.8	Slight milky white
10:20	32	12.46	16.8	1850	19.0	Slightly milky white
10:40	34	12.50	16.9	1850	18.0	Very Slight milky
11:00	35	12.26	18.6	1330	19.5	" " "
11:10	36	12.60	17.5	1350	18.0	" " "

OBSERVATIONS/NOTES Well has slow recovery

Baker

Baker Environmental, Inc

FIELD WELL DEVELOPMENT RECORD

PROJECT: Lantdiv Clean Program

CTO NO.: 0133 WELL NO.: 6-GW37

DATE: 3-16-93

GEOLOGIST/ENGINEER: Ted L. Fanay

TIME START 14:15	DEVELOPMENT DATA						
TIME FINISH 15:40	TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (uohms)	TEMP (°C)	COLOR AND TURBIDITY
WATER LEVEL (FT) 4' 9"	2:20	20	8.67	17.9°	550	18.0	Brown & Turbid
TOTAL WELL DEPTH (TD) 98.6	2:25	60	8.20	17.5	430	18.5	Brown & Turbid
WELL DIAMETER (INCHES) 2 inches	2:35	115	8.10	17.5	387	18.0	" "
CALCULATED WELL VOLUME	2:40	170	8.27	17.6	310	18.3	" "
	3:20	200	8.36	~~17.~~ 17.5	230	18.5	~~Slightly~~ cloudy
BOREHOLE VOLUME 2420 gal	3:25	275	8.16	18.2	320	18.5	sligthly cloudy
	3:30	325	8.14	18.2	330	18.5	" "
DEVELOPMENT METHOD Air Purge	3:33	360	8.11	18.3	320	18.5	clear
	3:36	400	8.09	18.1	320	18.5	clear
PUMP TYPE Air	3:37	425	8.05	18.1	325	18.5	clear
TOTAL TIME (A)	3:39	450	8.07	17.2	320	18.5	clear
AVERAGE FLOW (GPM)(B) 12 gal/min							
TOTAL ESTIMATED WITHDRAWL AxB =							
(HNU)/OVA READING 1.0 ppm = BG							

OBSERVATIONS/NOTES

Well produces copious amounts of water

G.3
Site 9 - Wells

FIELD WELL DEVELOPMENT RECORD

Baker
Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 9

CTO NO.: 19133 WELL NO.: 9-GW-4

DATE: October 6, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START: 1545

TIME FINISH: 1700

INITIAL WATER LEVEL (FT): 8.76' from TOC

TOTAL WELL DEPTH (TD): 20.18'

WELL DIAMETER (INCHES): 4"

CALCULATED WELL VOLUME: 8.96 gal.

BOREHOLE DIAMETER (INCHES): 8.25"

BOREHOLE VOLUME: 38.1 gal.

AMOUNT OF WATER ADDED DURING DRILLING: —

DEVELOPMENT METHOD: Pump - Surge

PUMP TYPE: Centrifugal

TOTAL TIME (A): 1 hr. 15 min

AVERAGE FLOW (GPM)(B): 2.09

TOTAL ESTIMATED WITHDRAWAL AxB = : 115 gal.

HNU/OVA READING: —

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1545	0	4.97	20.4	200	21.0	Lt. Brown/white, Opague
1605	38	4.47	20.6	158	21.0	Lt. Brown/white, Opague
1640	76	4.72	20.2	160	21.0	Semi - Translucent
1700	115	-	-	-	-	Semi - Translucent

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times
- Initial pump setting caused well to run dry. Flow rate adjustment made.

FIELD WELL DEVELOPMENT RECORD

Baker
Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 9
CTO NO.: 19133 WELL NO.: 9-GW-5
DATE: October 7, 1992
GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START	0925
TIME FINISH	1022
INITIAL WATER LEVEL (FT)	10.19' from TOC
TOTAL WELL DEPTH (TD)	18.41'
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	7.16 gal.
BOREHOLE DIAMETER (INCHES)	8.25"
BOREHOLE VOLUME	30.4 gal.
AMOUNT OF WATER ADDED DURING DRILLING	—
DEVELOPMENT METHOD	Pump - Surge
PUMP TYPE	Centrifugal
TOTAL TIME (A)	57 min.
AVERAGE FLOW (GPM)(B)	1.93
TOTAL ESTIMATED WITHDRAWAL AxB =	110
HNU/OVA READING	—

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
0925	0	6.49	23.2	303	25.0	Dk. Brown/Gray, Opaque
0945	31	6.44	23.2	302	25.0	V. Lt. Brown, Translucent
1005	62	6.39	25.4	312	26.1	Lt. Brown, Translucent
1022	110	6.45	26.7	339	28.0	Clear

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 9

CTO NO.: 19133 WELL NO.: 9-GW-6

DATE: October 7, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START: 0803

TIME FINISH: 0900

INITIAL WATER LEVEL (FT): 10.14' from TOC

TOTAL WELL DEPTH (TD): 19.5'

WELL DIAMETER (INCHES): 4"

CALCULATED WELL VOLUME: 7.74 gal.

BOREHOLE DIAMETER (INCHES): 8.25"

BOREHOLE VOLUME: 32.9 gal.

AMOUNT OF WATER ADDED DURING DRILLING: —

DEVELOPMENT METHOD: Pump - Surge

PUMP TYPE: Centrifugal

TOTAL TIME (A): 57 min

AVERAGE FLOW (GPM)(B): 1.9

TOTAL ESTIMATED WITHDRAWAL AxB = : 110 gal.

HNU/OVA READING: —

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
0803	0	6.88	21.4	258	22.5	Dk. Brown, Opaque
0812	33	6.45	20.6	191	22.7	Md. Brown, Opaque
0830	66	6.81	22.7	219	24.1	Dk. Brown, Opaque
0900	110	6.89	25.0	261	26.5	Lt. Brown, Translucent

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 9

CTO NO.: 19133 WELL NO.: 9-GW-7S

DATE: October 7, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START: 1100

TIME FINISH: 1237

INITIAL WATER LEVEL (FT): 11.14' from TOC

TOTAL WELL DEPTH (TD): 21.19'

WELL DIAMETER (INCHES): 4"

CALCULATED WELL VOLUME: 8.2 gal.

BOREHOLE DIAMETER (INCHES): 8.25"

BOREHOLE VOLUME: 34.9

AMOUNT OF WATER ADDED DURING DRILLING: -

DEVELOPMENT METHOD: Pump - Surge

PUMP TYPE: Centrifugal

TOTAL TIME (A): 1 hr. 37 min.

AVERAGE FLOW (GPM)(B): 1.15

TOTAL ESTIMATED WITHDRAWAL AxB = : 110 gal.

HNU/OVA READING: -

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1100	0	6.47	29.0	142	28.5	Lt. Brown, Opaque
1132	35	6.17	27.1	132	28.5	V. Lt. Brown, Translucent
1225	70	5.86	24.2	120	25.0	Lt. Brown, Translucent
1237	110	5.84	23.0	122	24.6	V. Lt., Clear

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker
Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS

CTO NO.: 19133 WELL NO.: 9-GW-7D

DATE: October 20, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START	1510
TIME FINISH	1645
INITIAL WATER LEVEL (FT)	15.24' from TOC
TOTAL WELL DEPTH (TD)	110'
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	63 gal.
BOREHOLE DIAMETER (INCHES)	11"
BOREHOLE VOLUME	101.5 gal.
AMOUNT OF WATER ADDED DURING DRILLING	—
DEVELOPMENT METHOD	Compressed Air w/ Filtering System
PUMP TYPE	—
TOTAL TIME (A)	1 hr. 35 min
AVERAGE FLOW (GPM)(B)	3.4
TOTAL ESTIMATED WITHDRAWAL AxB =	323 gal.
HNU/OVA READING	-

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1510	0	11.75	19.0	108	20.1	Translucent
1530	134.5	8.30	19.3	323	20.2	V. Lt. Brown, translucent
1615	269.5	8.54	19.4	339	20.7	V. Lt. Brown, translucent
1645	323	8.25	19.1	340	20.3	Clear

OBSERVATIONS/NOTES

* After 165 gallons surged well 10 times

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: MCB Camp Lejeune, NC - RI/FS - Site 9

CTO NO.: 19133 WELL NO.: 9-GW-8

DATE: October 6, 1992

GEOLOGIST/ENGINEER: T. F. Trebilcock

TIME START	1740
TIME FINISH	1816
INITIAL WATER LEVEL (FT)	7.72' from Toc
TOTAL WELL DEPTH (TD)	18.42'
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	8.63 gal.
BOREHOLE DIAMETER (INCHES)	8.25"
BOREHOLE VOLUME	36.75 gal.
AMOUNT OF WATER ADDED DURING DRILLING	—
DEVELOPMENT METHOD	Pump - Surge
PUMP TYPE	Centrifugal
TOTAL TIME (A)	36 min
AVERAGE FLOW (GPM)(B)	*2.2 to 3.4
TOTAL ESTIMATED WITHDRAWAL AxB =	110 gal
HNU/OVA READING	—

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1740	0	5.7	22.1	99	22	Lt. Brown, Opaque
1750	36.75	5.41	22	107	22.8	Lt. Brown, Opaque
1802	74	5.94	21.9	110	22.1	Lt. Brown, Opaque
1816	110	5.74	21.1	112	22	Translucent

OBSERVATIONS/NOTES

- After 55 gallons surged well 10 times
* Flow rate fluctuated

Appendix H
Drum Logs

Baker

Baker Environmental, Inc

Drum No. D001

Project Location CAMP LEJEUNE Project No. 19133

Project Manager RPW Telephone (919) 451-1725

Logger KEN MARTIN Sampler PAM KJM TFT

Weather OVERCAST 70°F Date 11/5/92 Time 1020

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☒ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T			X					X	1"
M	X					X	X		1"
B	X					X			4"

pH 6 PID 0.5 ppm

Rad Meter 0.01 mr/hr

Other FID = 1 PPM LEL/O2 = BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: NO LABEL INFO

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A-Air W-Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T	X		X			X			S	—	6	I	—	—	—	—	—	7180°F
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANLYSES ALL SAMPLES WERE CONSIDERED TO BE ~~A TOP~~ SINGLE LAYER

PCB Conc. NA ppm Flash Point >82 °C

Data Reviewer MDB/KJM Compatibility Comp. Bulk No. 6-B05

Field Reviewer KJM/PAM

Baker

Baker Environmental, Inc.

Drum No. D002

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM TFT

Weather OVERCAST 70°F **Date** 11/5/92 **Time** 1032

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel ☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☒ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

	Physical State					Color	Clarity			Layer Thickness
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T		X					X			12
M		X					X	X		12
B		X			X	BR		X		12

pH ~~1 PPM~~ PID 0.5 ppm

Rad Meter 0.01 mr/hr

Other FID = 1 PPM LEL/O2 = BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: MISSING LARGE BUNG UNKNOWN

LABORATORY COMPATIBILITY ANALYSES

	Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T		X				BR	X		X	S	—	6	I	—	—	—	—	—	7/80
M																			
B																			

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE ~~FOR~~ SINGLE LAYER

PCB Conc. NA ppm **Flash Point** >82 °C

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6-B02

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. D003

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 481-1725

Logger KJM **Sampler** PAM KJM TFT

Weather OVERCAST 70°F **Date** 11/5/92 **Time** 1036

Drum Type: ☐ Fiber ☒ Poly-Lined ☐ Steel ☐ Ring Top ☐ Poly ☐ Closed Top ☐ Stainless Steel ☐ Overpacked ☐ Nickel

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☒ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X					X			3
M	X					X			3
B	X			X	BR			X	1

pH ____ **PID** 0.5 ppm

Rad Meter 0.02 mr/hr

Other FID= 1 PPM LEL/O2= BG

MFG Name DREW CHEMICAL CORP.

Chemical Name UNKNOWN

Additional Information: YELLOW TINT MISSING SMALL BUNG 89-049 091 5 EA HANDWRITTEN ON TOP 10" OF MATERIAL

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A-Air W-Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T	X					X			S	—	7	I	—	—	—	—	—	7180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYER ~~(KJM)~~

PCB Conc. NA ppm **Flash Point** >82 °C

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6-804

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. D004

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM

Weather OVERCAST 70'S **Date** 11/5/92 **Time** 1047

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☒ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

	Physical State					Color	Clarity			Layer Thickness
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T		X					X			12
M		X				ORANGE	X	X		12
B		X				ORANGE		X		12

pH 5 **PID** 0.4 **ppm**

Rad Meter 0.2 **mr/hr**

Other FID = 1 PPM LEL/O_2 = BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: NO LABEL INFORMATION SMALL (PIN HOLE) RUST HOLES IN TOP OF DRUM

LABORATORY COMPATIBILITY ANALYSES

	Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A-Air W-Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C (or °F)
T		X					X			S	—	5	I	—	—	—	—	—	>180
M																			
B																			

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYOR ~~(TOP)~~ KM

PCB Conc. NA **ppm** **Flash Point** >82 **°C**

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6-B01

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. D005

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** KJM PAM TFT

Weather OVERCAST 70'S **Date** 11/5 **Time** 1056

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel ☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☒ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

	Physical State					Color	Clarity			Layer Thickness
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T		X	X							3
M		X								3
B		X								2

pH 6 **PID** 22.2 **ppm**

Rad Meter ____ **mr/hr**

Other FID = 20 PPM LEL/O_2 = BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: HANDWRITTEN ON TOP 88-049 DR-3 MAY BE LESS THAN 3"

LABORATORY COMPATIBILITY ANALYSES

	Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A-Air W-Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T		X					X			S	—	6	I	—	—	—	—	—	7180
M																			
B																			

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYER (TKJM)

PCB Conc. NA **ppm** **Flash Point** > 82 **°C**

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6-B03

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. D006

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 481-1725

Logger KJM **Sampler** PAM KJM TET

Weather OVERCAST MID 70'S **Date** 11/5/92 **Time** 1110

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel ☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☒ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

	Physical State					Color	Clarity			Layer Thickness
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T		X						X		4
M		X						X		8
B		X	X					X		12

pH ____ PID 0.5 ppm

Rad Meter 0.01 mr/hr

Other FID = 1 PPM LEL/O2 = BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: A LOT OF DEBRIS PRESENT MISSING LID LUBE OIL STENCILED ON SIDE (TRIPLE RINSED)

3/4 LIQUID W/ SOLIDIFIED-EMULSIFIED LAYER ON TOP BLACK-ORANGE COLOR

LABORATORY COMPATIBILITY ANALYSES

	Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A-Air W-Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T		X					X	X		S	—	7	I	—	—	—	—	—	>180
M																			
B																			

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYER ~~KJM~~

PCB Conc. NA ppm **Flash Point** >82 °C

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6-B03

Field Reviewer KJM / PAM

Baker
Baker Environmental, Inc.

Drum No. D467

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 481-1725

Logger KJM **Sampler** PAM KJM TFT

Weather OVERCAST MID 70'S **Date** 11/5/92 **Time** 1115

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☒ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

	Physical State					Color	Clarity			Layer Thickness
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T		X						X		4
M		X	X					X		4
B		X	X					X		10

pH 7 PID 0.5 ppm

Rad Meter 0.01 mr/hr

Other FID = 1 PPM LEL/O2 = BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: A LOT OF DEBRIS PRESENT
NO LID 1/2 LIQUID W/ DEBRIS (BRAKE FLUID CAN WIRE etc)
LEAKAGE AT BOTTOM OF DRUM HAS SOLIDIFIED / EMULSIFIED

LABORATORY COMPATIBILITY ANALYSES

	Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T		X	X				X	X		S	—	7	I	—	—	—	—	—	>180
M																			
B																			

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE BE SINGLE LAYER.

PCB Conc. NA ppm **Flash Point** >82 °C

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6-B03

Field Reviewer KJM / PAM

Baker
Baker Environmental, Inc

Drum No. D468

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager R-P. W **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM

Weather OVERCAST 70'S **Date** 11/5/92 **Time** 1100

Drum Type: ☐ Fiber ☐ Steel ☒ Poly ☐ Stainless Steel ☐ Nickel ☐ Poly-Lined ☐ Ring Top ☐ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☐ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☒ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☒ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X						X		~2
M	X					X			~2
B	X					X			2

pH 6 PID 1.4 ppm

Rad Meter 0.01 mr/hr

Other FID = 2 PPM LEL/O2 = BG

MFG Name VALVOLINE

Chemical Name UNKNOWN

Additional Information: 5 GAL BUCKET VALVO ON SIDE. TOP HAS POURING SPOUT. ~1/2 FULL

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T	X					X		X	S	—	6	I	—	—	—	—	—	>180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYER

PCB Conc. NA ppm **Flash Point** > 82 °C

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6-B02

Field Reviewer KJM / PAM

Baker
Baker Environmental, Inc

Drum No. D009

Project Location CAMP LEJEUNE Project No. 19133

Project Manager RPW Telephone (919) 451-1725

Logger KJM Sampler PAM KJM

Weather OVERCAST 70'S Date 11/5/92 Time 1326

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☒ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X						X		8
M	X						X		8
B	X						X		8

pH 6 PID 0.3 ppm

Rad Meter 0.1 mr/hr

Other FID = 1 PPM LEL/O2 = BG

MFG Name OCTAGON PROCESS INC.

Chemical Name UNKNOWN

Additional Information: DLA400-87-D-008, LOT F-18981-B, OCTAGON PROCESS INC (STENCILED ON SIDE) ~3/4 FULL
EDGEWATER NJ 07020 ETHYLENE GLYCOL - STAMPED ON SIDE OF DRUM

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T	X					X			5	—	6	I	—	—	—	—	—	>180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYER

PCB Conc. NA ppm Flash Point >82 °C

Data Reviewer MDB/KJM Compatibility Comp. Bulk No. 6-802

Field Reviewer KJM / PAM

Baker
Baker Environmental, Inc

Drum No. D010

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 481-1725

Logger KJM **Sampler** PAM KJM

Weather OVERCAST 70'S **Date** 11/5/92 **Time** 1332

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☒ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X					X			12
M	X					X			12
B	X					X			12

pH 6 **PID** 0.2 ppm

Rad Meter 0.2 mr/hr

Other F.I.D = 0.6 LEL/O_2 = BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: NO LABEL INFO

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C (or °F)
T	X					X			S	—	6	I	—	—	—	—	—	7180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYER

PCB Conc. NA ppm **Flash Point** 782 °C

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6-801

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. D 016

Project Location CAMP LEJEUNE Project No. 19133

Project Manager RPW Telephone (919) 451-1725

Logger KJM Sampler PAM KJM

Weather OVERCAST 70'S Date 11/5/92 Time 1338

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☒ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X		X		ORANGE		X		2
M	X				ORANGE	X			12
B	X				ORANGE	X			12

pH 7 PID 1.1 ppm

Rad Meter 0.1 mr/hr

Other FID= 2 LEL\O2= BG

MFG Name UNKNOWN

Chemical Name LUBRICATING OIL

Additional Information: OE/HDO-30 LUBRICATING OIL INTERNAL COMBUSTION, ENGINE, TACTICAL SERVICE MIL-L-2104D 1 APRIL 83, 9150-00-189-6729 GLOBULES FLOATING ON TOP LAYER

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C (or °F)
T	X					X			S	—	7	I	—	—	—	—	—	>180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYER

PCB Conc. NA ppm Flash Point >82 °C

Data Reviewer MDB / KJM Compatibility Comp. Bulk No. 6-803

Field Reviewer KJM / PAM

Baker
Baker Environmental, Inc.

Drum No. D012

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM TFT

Weather OVERCAST 70'S **Date** 11/5 **Time** 1355

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☒ 3/4 ☒ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X				BROWN			X	2
M	X				BROWN			X	12
B	X				BROWN			X	12

pH 6 PID 284 ppm

Rad Meter 0.2 mr/hr

Other FID = 1000 LEL\O2 = BG

MFG Name UNKNOWN

Chemical Name LUBRICATING OIL

Additional Information: OE\HDO-30 LUBRICATING OIL, INTERNAL COMBOSTION ENGINE TACTICAL SERVICE MIL-L-2104D 1 APRIL 1983 LOCATED AT DIESEL TANKS BLDG 821

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T	X				BROWN			X	I	-	6	S	-	-	-	-	-	>180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYER

PCB Conc. NA ppm **Flash Point** >82 °C

Data Reviewer MDB/KJM **Compatibility Comp. Bulk No.** 6-B06

Field Reviewer KJM/PAM

Baker

Baker Environmental, Inc.

Drum No. D #13

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM TFT

Weather OVERCAST 70'S **Date** 11/5/92 **Time** 1417

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel ☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☒ 3/4 ☐ 1/2 ☒ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X				BR			X	6
M	X				BR			X	6
B	X				BR			X	6

pH 6 PID 0.7 ppm

Rad Meter 0.2 mr/hr

Other FID = 0 LEL/O_2 = BG

MFG Name UNKNOWN

Chemical Name LUBRICATING OIL

Additional Information: LUBRICATING OIL INTERNAL COMBUSTION ENGINE 81 JAN 26 ON RACK ON ITS SIDE VALVE ON TOP

OIL

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C (or °F)
T	X				BROWN			X	I	-	6	S	-	-	-	-	-	>180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYER

PCB Conc. NA ppm **Flash Point** >82 °C

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6-B07

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. D 014

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager R PW **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM

Weather OVERCAST 70'S **Date** 11/5/92 **Time** 1430

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel ☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☒ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X					X			12
M	X					X			12
B	X					X			12

pH 6 **PID** 320 ppm

Rad Meter 0.2 mr/hr

Other FID = 1000 LEL/O₂ = BG

MFG Name UNKNOWN

Chemical Name WHITE KEROSENE

Additional Information: WHITE KEROSENE STAMPED ON TOP AND SIDE

VALVE ON TOP DRUM SEVERELY DAMAGED

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A-Air W-Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C (or °F)
T	X					X			I	—	6	S	—	—	—	—	—	7180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYER

PCB Conc. NA ppm **Flash Point** 782 °C

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6-B06

Field Reviewer KJM / PAM

Baker
Baker Environmental, Inc

Drum No. D Ø 15

Project Location CAMP LEJEUNE Project No. 19133

Project Manager R P W Telephone (919) 451- 1725

Logger KJM Sampler PAM KJM

Weather OVERCAST. Date 11-5-92 Time 1445.

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☒ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X					X	X		2"
M	X					X	X		12"
B	X					X	X		12"

pH 6 PID 170.00 ppm

Rad Meter 0.0 mr/hr

Other FID = 500 LEL/O2 = BACKGROUND

MFG Name UNKNOWN

Chemical Name KEROSENE

Additional Information: APPEARS TO BE KEROSENE STENCILED ON SIDE

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T	X					X			I	—	6	S	—	—	—	—	—	7180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYER

PCB Conc. NA ppm Flash Point > 82 °C

Data Reviewer MDB/KJM Compatibility Comp. Bulk No. 6-B06

Field Reviewer KJM/PAM

Baker
Baker Environmental, Inc.

Drum No. D016

Project Location: CAMP LEJEUNE Project No.: 19133

Project Manager: RPW Telephone: (919) 481-1725

Logger: KJM Sampler: PAM KJM FFT

Weather: P. CLOUDY 60'S Date: 11/6/92 Time: 0752

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☒ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

	Physical State					Color	Clarity			Layer Thickness
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T		X					X			12
M		X					X			12
B		X					X			12

pH 5 PID 0.3 ppm

Rad Meter 0.3 mr/hr

Other FID = 0.5 LEL\O2 = BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: MISSING LARGE BUNG NO LABEL INFO SUSPECTED TO BE RAIN H2O

LABORATORY COMPATIBILITY ANALYSES

	Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T		X					X			S	—	5	I	—	—	—	—	—	7180
M																			
B																			

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYER

PCB Conc. NA ppm Flash Point 782 °C

Data Reviewer MDB / KJM Compatibility Comp. Bulk No. 6-B04

Field Reviewer KJM / PAM

Baker
Baker Environmental, Inc.

Drum No. D017

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM TFT

Weather P. CLOUDY 60'S **Date** 11/6/92 **Time** 0758

Drum Type: ☐ Fiber ☐ Poly-Lined ☐ Steel ☐ Ring Top ☒ Poly ☒ Closed Top ☐ Stainless Steel ☐ Overpacked ☐ Nickel

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☒ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

	Physical State					Color	Clarity			Layer Thickness
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T		X					X			8
M		X					X			4
B		X			X	ORANGE		X	X	4

pH 6 PID 0.4 ppm

Rad Meter 0.1 mr/hr

Other FID= 0.5 PPM LEL/O_2= BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: NO LABEL INFO: DRUM IS UPSIDE DOWN W 1/3 OF BOTTOM OPEN

LABORATORY COMPATIBILITY ANALYSES

	Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T		X					X			S	—	6	I	—	—	—	—	—	7180
M																			
B																			

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYER

PCB Conc. NA ppm **Flash Point** 782 °C

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6-B02

Field Reviewer KJM / PAM

Baker
Baker Environmental, Inc.

Drum No. D018

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM TFT

Weather P. CLOUDY 60's **Date** 11/6/92 **Time** ~~0750~~ 0810

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☒ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

	Physical State					Color	Clarity			Layer Thickness
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T		X					X			KW 2
M		X				KW	X	KW		KW 1
B		X			KW		X			KW 1

pH 7 **PID** 0.4 ppm

Rad Meter 0.2 mr/hr

Other FID= 0.3 LEL/O_2= BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: DRUM HAS SIGNS OF BULGING (STENCILED ON TOP) TRIPLE RINSED 080488

LABORATORY COMPATIBILITY ANALYSES

	Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A-Air W-Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T		X					X			S	—	7	I	—	—	—	—	—	7180
M																			
B																			

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYER

PCB Conc. NA ppm **Flash Point** 782 °C

Data Reviewer MDB/KJM **Compatibility Comp. Bulk No.** 6-B04

Field Reviewer KJM/PAM

Baker
Baker Environmental, Inc.

Drum No. D # 19

Project Location CAMP LEJEUNE Project No. 19133

Project Manager RPW Telephone (919) 481-1725

Logger KJM Sampler PAM KJM TFT

Weather P. CLOUDY 60'S Date 11/6/92 Time 8758

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☒ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X				AQUA			X	2
M	X				AQUA			X	1
B	X				AQUA			X	1

pH 8 PID 0.4 ppm

Rad Meter 0.3 mr/hr

Other FID = 0.5 LEL/O_2 = BG

MFG Name FROSTVAESKE

Chemical Name UNKNOWN

Additional Information: FROSTVAESKE S-750 6850-25-120-5901
1983 PRODUCT N.R. 9688

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T	X				AQUA			X	S	—	8	I	—	+	—	—	—	7/80
M																		
B																		

* THIS SAMPLE WAS NOT SENT FOR ANALYSES → NOT ENOUGH SAMPLE

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYER

PCB Conc. NA ppm Flash Point >82 °C

Data Reviewer MDB / KJM Compatibility Comp. Bulk No. ____

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. D020

Project Location: CAMP LEJEUNE Project No.: 19133

Project Manager: RPW Telephone: (919) 451-1725

Logger: KJM Sampler: PAM KJM TFT

Weather: P. CLOUDY Date: 11/6/92 Time: _____

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other _____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☒ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

RCRA MT

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T									
M									
B									

pH _____ PID 0.7 ppm

Rad Meter 0.3 mr/hr

Other FID = 0.3 LEL/O2 = BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: NO LABEL INFO. MT LESS THAN 1"

RCRA MT

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T																		
M																		
B																		

Comments: _____

PCB Conc. _____ ppm Flash Point _____ °C

Data Reviewer _____ Compatibility Comp. Bulk No. _____

Field Reviewer _____

Baker
Baker Environmental, Inc.

Drum No. D021

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** KJM PAM

Weather P. CLOUDY 60'S **Date** 11/6/92 **Time** _____

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other _____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☒ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

RCRA MT

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T									
M									
B									

pH _____ PID 0.4 ppm

Rad Meter 0.3 mr/hr

Other FID = 0.3 LEL/O_2 = BG

MFG Name UNKNOWN

Chemical Name LUBRICATING OIL

RCRA MT

Additional Information: LUBRICATING OIL INTERNAL COMBUSTION (ETC) 1 APRIL 83

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T																		
M																		
B																		

Comments: _____

PCB Conc. _____ ppm **Flash Point** _____ °C

Data Reviewer _____ **Compatibility Comp. Bulk No.** _____

Field Reviewer _____

Baker
Baker Environmental, Inc.

Drum No. D022

Project Location: CAMP LEJEUNE | Project No.: 19133

Project Manager: RPW | Telephone: (919) 451-1725

Logger: KJM | Sampler: PAM KJM TFT

Weather: P. CLOUDY 60'S | Date: 11/6/92 | Time: 0840

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☒ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X					X			2
M	X					X			2
B	X					X			2

pH 5 | PID 0,4 ppm

Rad Meter 0,3 mr/hr

Other FID = 0,2 LEL/O2 = BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: NO LABEL INFO (ENTIRE DRUM RUSTY)

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T	X					X			S	—	5	I	—	—	—	—	—	>180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED.

PCB Conc. NA ppm | Flash Point >82 °C

Data Reviewer MDB / KJM | Compatibility Comp. Bulk No. 6-B04

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. D023

Project Location CAMP LEJEUNE Project No. 19133

Project Manager RPW Telephone (919) 451-1725

Logger KJM Sampler PAM KJM

Weather P. CLOUDY 60'S Date 11/6/92 Time

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1 ☐ <1/4 ☒ MT ☒

Drum Condition: Good ☐ Fair ☐ Poor ☒ RCRA MT

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T									
M									
B									

pH _____ PID _____ ppm

Rad Meter _____ mr/hr

Other FID= LEL\O2=

MFG Name UNKNOWN

Chemical Name UNKNOWN

Less THAN 1" RCRA MT

Additional Information: DRUM SEVERELY DENTED/RUSTED NO LABEL INFO

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T																		
M																		
B																		

Comments: _____

PCB Conc. _____ ppm Flash Point _____ °C

Data Reviewer _____ Compatibility Comp. Bulk No. _____

Field Reviewer _____

Baker
Baker Environmental, Inc

Drum No. D024

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM TFT

Weather P. CLOUDY 60'S **Date** 11/6/92 **Time** 0927

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☒ <1/4 ☒ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X						X		2
M	X						X		1
B	X						X		1

pH 5 **PID** 0.4 ppm

Rad Meter 0.3 mr/hr

Other FID = 0.2 LEL/O_2 = BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: NO LABEL INFO COMPLETELY RUSTED (NEAR INFLATABLE RAFTS)

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C (or °F)
T	X					X			S	—	5	I	—	—	—	—	—	>180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm **Flash Point** > 82 °C

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6-B01

Field Reviewer KJM / PAM

Baker
Baker Environmental, Inc.

Drum No. D025

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM

Weather P. CLOUDY 60'S **Date** 11/6/92 **Time** 0913

Drum Type: ☒ Fiber ☐ Poly-Lined ☐ Steel ☐ Ring Top ☒ Poly ☐ Closed Top ☐ Stainless Steel ☐ Overpacked ☐ Nickel

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☒ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X					X			2
M	X					X			2
B	X					X			2

pH 5 **PID** 0.3 ppm

Rad Meter 0.3 mr/hr

Other FID= 0.2 LEL/O2= BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: CORROSIVE LABEL GREEN FIBER/POLY DRUM

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T	X					X			5	—	5	I	—	—	—	—	—	7180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm **Flash Point** > 82 °C

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6-B04

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc

Drum No. D026

Project Location CAMP LEJEUNE Project No. 19133

Project Manager RPW Telephone (919) 451-1725

Logger KJM Sampler PAM KJM TFT

Weather P. CLOUDY 60'S Date 11/6/92 Time 0919

Drum Type: ☐ Fiber ☐ Steel ☒ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☐ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☒ <1/4 ☒ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

RCRA MT

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T									
M									
B									

pH ____ PID ~~0.3~~ ppm

Rad Meter ~~0.3~~ mr/hr

Other FID= LEL/O2=

MFG Name UNKNOWN

Chemical Name UNKNOWN

RCRA MT

Additional Information: NO BUNG ON TOP OF DRUM, LID IS TAPED ON

SUSPECTED CORROSIVE

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T																		
M																		
B																		

Comments: ____

PCB Conc. ____ ppm Flash Point ____ °C

Data Reviewer ____ Compatibility Comp. Bulk No. ____

Field Reviewer ____

Baker

Baker Environmental, Inc.

Drum No. D027

Project Location: CAMP LEJEUNE Project No.: 19133

Project Manager: RPW Telephone: (919) 451-1725

Logger: KJM Sampler: PAM KJM TFT

Weather: P. CLOUDY 60'S Date: 11/6/92 Time: 0919

Drum Type: ☐ Fiber ☐ Steel ☒ Poly ☐ Stainless Steel ☐ Nickel; ☐ Poly-Lined ☐ Ring Top ☐ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☒ <1/4 ☒ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

	Physical State					Color	Clarity			Layer Thickness
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T		X							X	1
M		X							X	2
B		X							X	1

pH 5 PID 0.3 ppm

Rad Meter 0.3 mr/hr

Other FID= 0.3 LEL/O2= BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: MISSING LARGE BUNG CONTAMINATED OIL STENCILED ON THE SIDE.

LABORATORY COMPATIBILITY ANALYSES

	Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T		X				BROWN			X	S	—	5	S	—	—	—	—	—	7180
M																			
B																			

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED.

PCB Conc. NA ppm Flash Point >82 °C

Data Reviewer MDB / KJM Compatibility Comp. Bulk No. 6-B05

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. D028

Project Location: CAMP LEJEUNE Project No.: 19133

Project Manager: RPW Telephone: (919) 481-1725

Logger: KJM Sampler: PAM KJM TFT

Weather: P. Cloudy 60's Date: 11/6/92 Time: _____

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel ☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other _____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☒ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

RCRA MT

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T									
M									
B									

pH _____ PID 5.3 ppm

Rad Meter 0.3 mr/hr

Other FID = 0.5 LEL/O2 = BG

MFG Name BATTLEFIELD AMERICAN, INC

Chemical Name LUBRICATING OIL

Additional Information: RCRA MT LUBRICATING OIL ~~for~~ BATCH - A-629-86 TEST DATE 1/86

DIELECTRIC FLUID CERTIFIED TO HAVE LESS THAN 50 PPM PCBS

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T																		
M																		
B																		

Comments: _____

PCB Conc. _____ ppm Flash Point _____ °C

Data Reviewer _____ Compatibility Comp. Bulk No. _____

Field Reviewer _____

Baker

Baker Environmental, Inc.

Drum No. D029

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM TFT

Weather P. CLOUDY 60'S **Date** 11/6/92 **Time** _____

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other _____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☒ <1/4 ☒ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

RCRA MT

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T									
M									
B									

pH _____ **PID** _____ ppm

Rad Meter _____ mr/hr

Other FID= LEL/O2=

MFG Name BATTLEFIELD AMERICAN, INC.

Chemical Name LUBRICATING OIL

RCRA MT

Additional Information: LUBRICATING OIL INTERNAL COMBUSTION, GRADE 30

81 JAN 26 AND 81 APRIL 8 CERTIFIED TO CONTAIN LESS THAN 50 PPM PCBS

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T																		
M																		
B																		

Comments: _____

PCB Conc. _____ ppm **Flash Point** _____ °C

Data Reviewer _____ **Compatibility Comp. Bulk No.** _____

Field Reviewer _____

Baker

Baker Environmental, Inc.

Drum No. D030

Project Location: CAMP LEJEUNE Project No.: 19133

Project Manager: RPW Telephone: (919) 451-1725

Logger: KJM Sampler: PAM KJM TFT

Weather: P. CLOUDY 60'S Date: 11/6/92 Time:

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☒ <1/4 ☒ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

RCRA MT

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T									
M									
B									

pH _____ PID _____ ppm

Rad Meter _____ mr/hr

Other FID = LEL/O2 =

MFG Name BATTLEFIELD AMERICAN, INC.

Chemical Name LUBRICATING OIL

RCRA MT

Additional Information: LUBRICATING OIL INTERNAL COMBUSTION / APRIL 83

CERTIFIED TO CONTAIN LESS THAN 50 PPM PCBS

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T																		
M																		
B																		

Comments: _____

PCB Conc. _____ ppm Flash Point _____ °C

Data Reviewer _____ Compatibility Comp. Bulk No. _____

Field Reviewer _____

Baker
Baker Environmental, Inc.

Drum No. D031

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM

Weather P. CLOUDY 60'S **Date** 11/6/92 **Time** 1248

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☒ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X							X	5"
M	X							X	15"
B	X			X	ORANGE			X	2

pH 5 **PID** 0.6 ppm

Rad Meter 0.4 mr/hr

Other FID = 0.5 LEL/O2 = BG

MFG Name UNKNOWN

Chemical Name LUBRICATING OIL

Additional Information: LUBRICATING OIL INTERNAL COMBUSTION GRADE 10W/30
81 JAN 26

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T	X					X			S	—	5	I	—	—	—	—	—	7180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm **Flash Point** 782 °C

Data Reviewer MDB/KJM **Compatibility Comp. Bulk No.** 6-B01

Field Reviewer KJM/PAM

Baker
Baker Environmental, Inc.

Drum No. D032

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM TFT

Weather P. CLOUDY 60'S **Date** 11/6/92 **Time** 1253

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☒ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

	Physical State					Color	Clarity			Layer Thickness
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T		X						X		5
M		X						X		15
B		X			X	ORANGE		X		2

pH 6 **PID** 0.3 ppm

Rad Meter 0.4 mr/hr

Other FID = 0.2 LEL|O2 = BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: TRIPLE RINSE STENCILED ON THE SIDE NO OTHER LABEL INFO

LABORATORY COMPATIBILITY ANALYSES

	Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C (°F)
T		X					X			S	—	6	I	—	—	—	—	—	7180
M																			
B																			

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm **Flash Point** >82 °C

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6-B02

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. D033

Project Location: CAMP LEJEUNE | Project No.: 19133

Project Manager: RPW | Telephone: (919) 451-1725

Logger: KJM | Sampler: PAM KJM TFT

Weather: P. CLOUDY 60's | Date: 11/6/92 | Time: 1254

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel ☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☒ 1/2 ☒ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X							X	6
M	X							X	6
B	X				BR			X	6

pH 6 | PID 0.4 ppm

Rad Meter 0.3 mr/hr

Other FID = 0.2 LEL/O2 = BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: 1" USED OIL" STENCILED ON TOP DRUM IS LYING ON ITS SIDE BOTTOM IS CRUSHED W/ SEVERAL BULLET LIKE HOLES IN BOTTOM.

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T	X					X			S	—	6	I	—	—	—	—	—	7180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm | Flash Point >82 °C

Data Reviewer MDB / KJM | Compatibility Comp. Bulk No. 6-B02

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. D034

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM TFT

Weather P. CLOUDY 60'S **Date** 11/6/92 **Time** 1303

Drum Type: ☐ Fiber ☐ Poly-Lined ☐ Steel ☐ Ring Top ☒ Poly ☒ Closed Top ☐ Stainless Steel ☐ Overpacked ☐ Nickel

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☒ <1/4 ☒ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X							X	1
M	X							X	1
B	X							X	1

pH 6 **PID** 0.4 ppm

Rad Meter 0.3 mr/hr

Other FID= NA LEL/O2= BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: "EMPTY TRIPLE RINSE 8336" STENCILED ON SIDE

LUBRICATING OIL GEAR 12 OCT 1976

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T	X					X			SOLEM	—	6	I	—	—	—	—	—	>180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm **Flash Point** >82 °C

Data Reviewer MDB/KJM **Compatibility Comp. Bulk No.** 6-B02

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. D035

Project Location: CAMP LEJEUNE Project No.: 19133

Project Manager: RPW Telephone: (919) 451-1725

Logger: KJM Sampler: PAM KJM TFT

Weather: P. CLOUDY 60'S Date: 11/6/92 Time: _____

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel ☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other _____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☒ <1/4 ☐ MT ☒ RCRA MT.

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T									
M									
B									

pH _____ PID .4 ppm

Rad Meter .1 mr/hr

Other FID = N/A LEL/O2 = BACKGROUND.

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: RCRA MT UNLEADED + TRIPLE RINSE STAMPED ON SIDE.

*WHEN DRUM WAS SET UPRIGHT EFFERVESENCE — INITIATED - & BOILING SOUND

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T																		
M																		
B																		

Comments: _____

PCB Conc. _____ ppm Flash Point _____ °C

Data Reviewer _____ Compatibility Comp. Bulk No. _____

Field Reviewer _____

Baker

Baker Environmental, Inc.

Drum No. D036

Project Location CAMP LEJEUNE Project No. 19133

Project Manager RPW Telephone (919) 451-1725

Logger KJM Sampler PAM · KJM

Weather P. CLOUDY 60's Date 11/6/92 Time 1315

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☒ 3/4 ☐ 1/2 ☐ 1/4 ☒ <1/4 ☒ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

RCRA MT

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T									
M									
B									

pH ____ PID 0.4 ppm

Rad Meter 0.5 mr/hr

Other FID= LEL/O2= BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: "TRIPLE RINSE" RCRA MT STAMPED ON SIDE NO OTHER INFORMATION

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T																		
M																		
B																		

Comments: ____

PCB Conc. ____ ppm Flash Point ____ °C

Data Reviewer ____ Compatibility Comp. Bulk No. ____

Field Reviewer ____

Baker
Baker Environmental, Inc.

Drum No. D037

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM

Weather P. CLOUDY 60'S **Date** 11/6/92 **Time** 1317

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☒ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X					X			12
M	X					X			12
B	X					X			12

pH 5 **PID** 0.5 **ppm**

Rad Meter 0.2 **mr/hr**

Other FID= NA LEL/O2= BG

MFG Name UNKNOWN

Chemical Name HYDRAULIC FLUID

Additional Information: HYDRAULIC FLUID PETRO BASE. TYPE II SHELF LIFE ITEM WARNING THIS FLUID MAY CONTAINS TRICRESYL PHOSPHATE PRODUCES PARALYSIS IF TAKEN INTERNALLY NOT DRUM HAS CRACK AT CHIME AROUND SMALL BUNG

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C (or °F)
T	X					X			S	—	5	I	—	—	—	—	—	7180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA **ppm** **Flash Point** > 82 **°C**

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6-B04

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. D038

Project Location: CAMP LEJEUNE Project No.: 19133

Project Manager: RPW Telephone: (919) 451-1725

Logger: KJM Sampler: PAM KJM TFT

Weather: P. CLOUDY TO 60'S Date: 11/6/92 Time: 1324

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel; ☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☒ plus<1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☐

	Physical State					Color	Clarity			Layer Thickness
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T		X				RED			X	1
M		X					X			2
B		X					X			2

pH 6 PID 54 ppm

Rad Meter 0.2 mr/hr

Other FID= NA LEL/O2= BG

MFG Name UNKNOWN

Chemical Name HYDRAULIC FLUID

Additional Information: HYDRAULIC FLUID. PETRO BASD TYPE II SHELF LIFE ITEM THIS FLUID MAY CONTAIN TRICRESYL-PHOSPHATE PRODUCES PARALYSIS IF TAKEN INTERNALLY.

LABORATORY COMPATIBILITY ANALYSES

	Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C (or °F)
T		X					X			P S	—	6	P S	—	—	—	—	—	7180
M																			
B																			

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm Flash Point >82 °C

Data Reviewer MDB / KJM Compatibility Comp. Bulk No. 6-B05

Field Reviewer KJM / PAM

Baker
Baker Environmental, Inc.

Drum No. D039

Project Location: CAMP LEJEUNE Project No.: 19133
Project Manager: RPW Telephone: (919) 451-1725
Logger: KJM Sampler: PAM KJM TFT
Weather: P. CLOUDY 60'S Date: 11/6/92 Time: 1339

Drum Type: ☐ Fiber ☐ Poly-Lined ☐ Steel ☐ Ring Top ☒ Poly ☒ Closed Top ☐ Stainless Steel ☐ Overpacked ☐ Nickel

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☒ <1/4 ☒ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X			X			X		1
M	X					X			1
B	X					X			1

pH ~ 6 PID 0.7 ppm
Rad Meter 0.1 mr/hr
Other FID = NA LEL/O2 = BG

MFG Name UNKNOWN
Chemical Name UNKNOWN

Additional Information: NO LABEL INFO.

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T	X					X			PS	—	6	PS	—	—	—	—	—	>180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm Flash Point > 82 °C

Data Reviewer MDB / KJM Compatibility Comp. Bulk No. 6-B05

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. D040

Project Location CAMP LEJEUNE Project No. 19133

Project Manager RPW Telephone (919) 451-1725

Logger KJM Sampler PAM KJM TFT

Weather P. CLOUDY 60'S Date 11/6/92 Time 1343

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel ☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☒ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X						X		6
M	X						X		10
B	X			X			X		2

pH 6 PID 0.5 ppm

Rad Meter 0.3 mr/hr

Other FID= LEL/O2= BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: LID WAS CUT OFF 2 SHEARED LIDS INSIDE DRUM MAY CONTAIN RAIN WATER

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C (or °F)
T	X					X			S	—	6	I	—	—	—	—	—	>180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm Flash Point > 82 °C

Data Reviewer MDB / KJM Compatibility Comp. Bulk No. 6-B03

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. D041

Project Location CAMP LEJEUNE Project No. 19133

Project Manager RPW Telephone (919) 451-1725

Logger KJM Sampler PAM KJM

Weather P. CLOUDY 60'S Date 11/6/92 Time 1347

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☒ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X		X				X		2
M	X					X			5
B	X					X			5

pH 6 PID 0.5 ppm

Rad Meter 0.1 mr/hr

Other FID= NA LEL/O2= BG

MFG Name UNKNOWN

Chemical Name LUBRICATING OIL

Additional Information: OIL GLOBULES ON TOP
MISSING LARGE BUNG LUBRICATING OIL GEAR MULTIPURPOSE
12 OCT 1976 AMD 2, 7 APRIL 1981

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T	X					X			PS	—	6	PS	—	—	—	—	—	>180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm Flash Point >82 °C

Data Reviewer MDB / KJM Compatibility Comp. Bulk No. 6-B05

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. D042

Project Location: CAMP LEJEUNE | Project No.: 19133

Project Manager: RPW | Telephone: (919) 451-1725

Logger: KJM | Sampler: PAM KJM

Weather: P. CLOUDY 60'S | Date: 11/6/92 | Time: 1351

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☒ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X					X			12
M	X					X			12
B	X					X			12

pH 5 PID .2 ppm

Rad Meter .2 mr/hr

Other FID = NA LEL/O2 = BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: NO LABEL INFORMATION

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T	X					X			S	—	5	I	—	—	—	—	—	>180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm | Flash Point >82 °C

Data Reviewer MDB / KJM | Compatibility Comp. Bulk No. 6-B04

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc

Drum No. D043

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM

Weather P. CLOUDY 60'S **Date** 11/6/92 **Time** 1358

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel ☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☒ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

	Physical State					Color	Clarity			Layer Thickness
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T		X		X				X		2
M		X					X			1
B		X					X			1

pH 5 PID .4 ppm

Rad Meter .5 mr/hr

Other FID= NA LEL/O2= BG

MFG Name UNKNOWN

Chemical Name LUBRICATING OIL

Additional Information: LUBRICATING OIL INTERNAL COMBUSTION ENGINE GRADE 10W30 MISSING BOTH BUNGS

LABORATORY COMPATIBILITY ANALYSES

	Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T		X					X			P S	—	5	P S	—	—	—	—	—	>180
M																			
B																			

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm **Flash Point** >82 °C

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6-1305

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. D044

Project Location: CAMP LEJEUNE Project No.: 19133

Project Manager: RPW Telephone: (919) 451-1725

Logger: KJM Sampler: PAM KJM

Weather: P. CLOUDY 60's Date: 11/6/92 Time: 1406

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel; ☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☒ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X							X	2
M	X							X	2
B	X						X	X	2

pH 5 PID 0.4 ppm

Rad Meter 0.1 mr/hr

Other FID= LEL/O2= BG

MFG Name UNKNOWN

Chemical Name LUBRICATING OIL

Additional Information: LUBRICATING OIL INTERNAL COMBUSTION ENGINE

MISSING BOTH BUNGS

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C (or °F)
T	X				ORANGE	X		X	S	—	5	I	—	—	—	—	—	>180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm Flash Point >82 °C

Data Reviewer MDB/KJM Compatibility Comp. Bulk No. 6-B01

Field Reviewer KJM/PAM

Baker
Baker Environmental, Inc.

Drum No. D045

Project Location: CAMP LEJEUNE Project No.: 19133
Project Manager: RPW Telephone: (919) 451-1725
Logger: KJM Sampler: PAM KJM
Weather: P. CLOUDY 60's Date: 11/6/92 Time:

Drum Type: ☐ Fiber ☐ Poly-Lined ☐ Steel ☐ Ring Top ☒ Poly Closed Top ☐ Stainless Steel ☐ Overpacked ☐ Nickel

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☒ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

RCRA MT

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T									
M									
B									

pH ____ PID ____ ppm

Rad Meter ____ mr/hr

Other FID = LEL/O2 =

MFG Name UNKNOWN

Chemical Name LUBRICATING OIL

RCRA MT

Additional Information: LUBRICATING OIL INTERNAL COMBUSTION ENGINE 1 APRIL 1983

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T																		
M																		
B																		

Comments: ____

PCB Conc. ____ ppm Flash Point ____ °C

Data Reviewer ____ Compatibility Comp. Bulk No. ____

Field Reviewer ____

Baker

Baker Environmental, Inc.

Drum No. D046

Project Location: CAMP LEJEUNE Project No.: 19133

Project Manager: RPW Telephone: (919) 451-1725

Logger: KJM Sampler: PAM KJM

Weather: P. Cloudy 60's Date: 11/6/92 Time: _____

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other _____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☒ MT ☐ RCRA MT

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T									
M									
B									

pH _____ PID 1.8 ppm

Rad Meter 0.1 mr/hr

Other FID = LEL/O2 = BG

MFG Name UNKNOWN

Chemical Name GRADE 80 LUBE OIL

Additional Information: RCRA MT GRADE 80 LUBE OIL ENG.

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T																		
M																		
B																		

Comments: _____

PCB Conc. _____ ppm Flash Point _____ °C

Data Reviewer _____ Compatibility Comp. Bulk No. _____

Field Reviewer _____

Baker

Baker Environmental, Inc.

Drum No. D047

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM

Weather P. CLOUDY 60'S **Date** 11/6/92 **Time** 1412

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☒ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X					X			12
M	X					X			12
B	X						X		12

pH 5 **PID** 0.4 ppm

Rad Meter 0.1 mr/hr

Other FID= NA LEL/O2= BG

MFG Name UNKNOWN

Chemical Name DIESEL FUEL

Additional Information: DIESEL FUEL STENCILED ON SIDE MISSING LARGE BUNG. VALVE INSTALLED AT SMALL BUNG

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C (or °F)
T	X					X			S	—	5	I	—	—	—	—	—	>180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm **Flash Point** > 82 °C

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6-B01

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. D048

Project Location CAMP LEJEUNE Project No. 19133

Project Manager RPW Telephone (919) 451-1725

Logger KJM Sampler PAM KJM

Weather P. CLOUDY 60's Date 11/6/92 Time

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☒ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

RCRA MT

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T									
M									
B									

pH _____ PID _____ ppm

Rad Meter _____ mr/hr

Other FID= LEL/O2=

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: NO LABEL INFO; RCRA MT

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T																		
M																		
B																		

Comments: _____

PCB Conc. _____ ppm Flash Point _____ °C

Data Reviewer _____ Compatibility Comp. Bulk No. _____

Field Reviewer _____

Baker

Baker Environmental, Inc

Drum No. D049

Project Location CAMP LEJEUNE Project No. 19133

Project Manager RPW Telephone (919) 451-1725

Logger KJM Sampler PAM KJM

Weather P. CLOUDY 60's Date 11/6/92 Time

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☒ MT ☒
RCRA empty

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T									
M									
B									

pH _____ PID 750.0 ppm

Rad Meter .2 mr/hr

Other FID= NA LEL/O2= BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

UNIQUE BUNG CONFIGURATION RCRA MT

Additional Information: UNKNOWN ATTENTION THIS CONTAINER HAZARDOUS WHEN EMPTY. EMPTY CONTAINERS MAY CONTAIN EXPLOSIVE VAPORS OR DANGEROUS RESIDUES DO NOT CUT PUNCTURE OR WELD ON OR NEAR CONTAINER

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T																		
M																		
B																		

Comments: _____

PCB Conc. _____ ppm Flash Point _____ °C

Data Reviewer _____ Compatibility Comp. Bulk No. _____

Field Reviewer _____

Baker
Baker Environmental, Inc

Drum No. D050

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM

Weather P. CLOUDY 60'S **Date** 11/7/92 **Time** 1025

Drum Type: ☐ Fiber ☒ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☐ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☐ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other 1 QT CANS

Drum Contents: Amount Full ☒ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X				WHITE			X	2
M	X				WHITE			X	2
B	X				WHITE			X	2

pH 5 **PID** 150 ppm

Rad Meter 0.3 mr/hr

Other FID = 5 LEL/O2 = BG

MFG Name

Chemical Name POLISHING COMPOUND

Additional Information: FLASH POINT 91 OF
~500 1QT CANS — POLISHING COMPOUND FLAMMABLE LIQUID
MFG 6-84 ORM-D FLASH POINT OF 91°F ON CANS

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T	X				WHITE			X	PS	—	5	PS	—	—	—	—	—	7 180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm **Flash Point** > 82 °C

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6-B06

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. D051

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM TFT

Weather P. CLOUDY 60'S **Date** 11/6/92 **Time** 1636

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel ☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☒ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

	Physical State					Color	Clarity			Layer Thickness
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T		X				LT BR			X	2
M		X				LT BR			X	2
B		X				LT BR			X	2

pH 6 **PID** 3.1 ppm

Rad Meter 0.3 mr/hr

Other FID= ND LEL/O2= BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: SOUTH LOT 201

LABORATORY COMPATIBILITY ANALYSES

	Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T		X				Brown			X	I	—	6	S	—	—	—	—	—	>180
M																			
B																			

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm **Flash Point** >82 °C

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6-B07

Field Reviewer KJM / PAM

Baker
Baker Environmental, Inc

Drum No. D052

Project Location: CAMP LEJEUNE Project No.: 19133
Project Manager: RPW Telephone: (919) 451-1725
Logger: KJM Sampler: PAM KJM
Weather: P. CLOUDY 60'S Date: 11/6/92 Time: 1655

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☒ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

	Physical State					Color	Clarity			Layer Thickness
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T		X					X			2
M		X					X			2
B		X					X			2

pH 6 PID 238+ ppm
Rad Meter 0.2 mr/hr
Other FID= NA LEL/O2= 60% 18%

MFG Name: UNKNOWN
Chemical Name: UNKNOWN

Additional Information: LOT 201 SOUTH VOLATILIZED RAPIDLY

LABORATORY COMPATIBILITY ANALYSES

	Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T		X					X			I	—	6	S	—	—	—	—	—	>180
M																			
B																			

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm Flash Point > 82 °C

Data Reviewer: MDB / KJM Compatibility Comp. Bulk No.: 6-B06

Field Reviewer: KJM / PAM

Baker
Baker Environmental, Inc

Drum No. D053

Project Location CAMP LEJEUNE Project No. 19133

Project Manager RPW Telephone (919) 451-1725

Logger KJM Sampler PAM KJM

Weather P. CLOUDY 60's Date 11/6/92 Time 1705

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☐ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☒ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X				GR BL			X	2
M	X				GR BL			X	2
B	X				GR BL			X	2

pH 5 PID NA ppm

Rad Meter 0.3 mr/hr

Other FID = NA LEL/O2 = BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: LOT 201 SOUTH OIL ODOR

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T	X				BROWN			X	I	—	5	S	—	—	—	—	—	>180°F
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm Flash Point 782 °C

Data Reviewer MDB / KJM Compatibility Comp. Bulk No. 6-B07

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. D054

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM

Weather P. Cloudy 50's **Date** 11/7/92 **Time** 0735

Drum Type: ☐ Fiber ☐ Poly-Lined ☐ Steel ☒ Ring Top ☐ Poly ☐ Closed Top ☐ Stainless Steel ☐ Overpacked ☐ Nickel

Drum Size: 85 ☐ 55 ☐ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☒ Other ____

Drum Contents: Amount Full ☒ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X		X		BR			X	6
M	X		X		BR			X	6
B	X		X		BR			X	6

pH 5 PID 304 ppm

Rad Meter 0.2 mr/hr

Other FID = 60 LEL/O2 = BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: LOT 201 SOUTH/WEST NEAR RAIL ROAD TRACKS

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T	X		X		Brown			X	I	—	5	S	—	—	—	—	—	140
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm **Flash Point** ~~78~~ 60 °C

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6-B08

Field Reviewer KJM / PAM

Baker
Baker Environmental, Inc

Drum No. D055

Project Location: CAMP LEJEUNE Project No.: 19133
Project Manager: RPW Telephone: (919) 451-1725
Logger: KJM Sampler: PAM KJM
Weather: P. CLOUDY 50'S Date: 11/7/92 Time: 0803

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☐ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☐ 42 ☐ 30 ☐ 16 ☐ 10 ☒ 5 ☐ Other ____

Drum Contents: Amount Full ☒ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T		X			WH			X	6
M		X			WH			X	5
B		X			WH			X	5

pH 13 PID 0.7 ppm
Rad Meter 0.2 mr/hr
Other FID= 0 LEL/O2= BG

MFG Name PENNSYLVANIA SALT MFG PHILADELPHIA, PA
Chemical Name PONY-4-128 — US ARMY ACCOUNT DECONTAMINATING AGENT

Additional Information: DECONTAMINATING AGENT (SOUTH OF LOT 203)

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C (or °F)
T		X			WHITE			X	I	—	13	I	—	+	—	+	+	7180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm Flash Point 782 °C

Data Reviewer MDB / KJM Compatibility Comp. Bulk No. 6-B10

Field Reviewer KJM / PAM

Baker
Baker Environmental, Inc.

Drum No. D056

Project Location CAMP LEJEUNE Project No. 19133

Project Manager RPW Telephone (919) 451-1725

Logger KJM Sampler PAM KJM

Weather P. CLOUDY 50's Date 11/7/92 Time ~~0822~~ 0933

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☒ Ring Top ☐ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☐ 42 ☒ 30 ☒ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☐ 1/4 ☒ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T		X			WH			X	2
M	~~X~~	X			WH			X	2
B	~~X~~	X			WH			X	2

pH 4 PID ~~.5~~ ppm

Rad Meter ~~.2~~ .02 mr/hr mr/hr

Other FID = 0 LEL/O2 = BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: RAVINE AREA SUSPECTED TO CONTAIN WHITE SOLID WHITE CRYSTALLINE SOLID

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C (or °F)
T		X			WHITE			X	I	—	4	I	—	—	—	—	—	7180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm Flash Point > 82 °C

Data Reviewer MDB / KJM Compatibility Comp. Bulk No. 6-B11

Field Reviewer KJM / PAM

Baker
Baker Environmental, Inc.

Drum No. D057

Project Location: CAMP LEJEUNE | Project No.: 19133
Project Manager: RPW | Telephone: (919) 451-1725
Logger: KJM | Sampler: PAM KJM
Weather: P. CLOUDY 50's | Date: 11/7/92 | Time: 0945

Drum Type: ☐ Fiber ☒ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☐ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☐ 42 ☐ 30 ☒ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☒ 1/2 ☐ 1/4 ☒ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X						X		2
M	X						X		2
B	X						X		2

pH 6 | PID .5 ppm
Rad Meter .2 μr/hr mr/hr
Other FID = 0 LEL/O2 = BG

MFG Name: UNKNOWN
Chemical Name: UNKNOWN

Additional Information: RAVINE SUSPECTED OIL MATERIAL

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C (or °F)
T	X					X			S	—	6	I	—	—	—	—	—	7180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm | Flash Point 782 °C

Data Reviewer: MDB/KJM | Compatibility Comp. Bulk No.: 6-B03

Field Reviewer: KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. ~~58~~ D058

Project Location: CAMP LEJEUNE | Project No.: 19133

Project Manager: RPW | Telephone: (919) 451-1725

Logger: KJM | Sampler: PAM KJM

Weather: P. CLOUDY 50'S | Date: 11/7/91 | Time: 0927

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel ☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☐ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☒ Other ____

Drum Contents: Amount Full ☒ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T		X			GR BL			X	4
M		X			GR BL			X	4
B		X			GR BL			X	4

pH 5 | PID 1.2 ppm

Rad Meter .2 uR/hr mr/hr

Other FID= 0 LEL/O2= BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: COMPOUND RUST PREVENTOR USA 2-82 (25 lbs)

STOCK # 14-C-326 (~ 75 CONTAINERS)

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T		X			BROWN			X	I	—	5	P S	—	—	—	—	—	>180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm | Flash Point 182 °C

Data Reviewer MDB / KJM | Compatibility Comp. Bulk No. 6-B11

Field Reviewer KJM / PAM

Baker
Baker Environmental, Inc.

Drum No. D059

Project Location CAMP LEJEUNE Project No. 19133

Project Manager RPW Telephone (919) 451-1725

Logger KJM Sampler PAM KJM

Weather P. CLOUDY 50's Date 11/7/92 Time ~~EW 0955~~

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☐ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☐ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☒ Other _____

Drum Contents: Amount Full ☒ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T									
M									
B									

pH _____ PID _____ ppm

Rad Meter _____ mr/hr

Other FID= LEL/O2=

MFG Name UNKNOWN

Chemical Name UNKNOWN

~~RCRA~~

Additional Information: NEAR RAVINE ADJACENT TO DRUMS IN THE GROUND - CONTAINED NUTS/BOLTS IN BURLAP SACKS NO SAMPLE TAKEN

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T																		
M																		
B																		

Comments: _____

PCB Conc. _____ ppm Flash Point _____ °C

Data Reviewer _____ Compatibility Comp. Bulk No. _____

Field Reviewer _____

Baker
Baker Environmental, Inc.

Drum No. D060

Project Location CAMP LEJEUNE. **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM

Weather P. CLOUDY 50's **Date** 11/7/92 **Time** 1000

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☒ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☐ Other ____

Drum Contents: Amount Full ☒ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

	Physical State					Color	Clarity			Layer Thickness
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T		X					X			12
M		X					X			12
B		X			X		X	X		12

pH 6 PID 4.7 ppm

Rad Meter .2 MR/HR mr/hr

Other FID= 0 LEL/O2= BG

MFG Name SHELL OIL

Chemical Name UNKNOWN

9250
LUBE OIL

Additional Information: SHELL OIL LOCATED NEAR TEST PIT BY RAVINE MISSING BOTH BUNGS

LABORATORY COMPATIBILITY ANALYSES

	Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
	Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T		X					X			5	—	6	I	—	—	—	—	—	>180
M																			
B																			

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm **Flash Point** >82 °C

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6-B03

Field Reviewer KJM / PAM

Baker

Baker Environmental, Inc.

Drum No. D061

Project Location CAMP LEJEUNE **Project No.** 19133

Project Manager RPW **Telephone** (919) 451-1725

Logger KJM **Sampler** PAM KJM

Weather P. CLOUDY 50's **Date** 11/7/92 **Time** 0852

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☐ Ring Top ☒ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☐ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☒ Other ____

Drum Contents: Amount Full ☐ 3/4 ☒ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T		X			BR			X	6
M		X			BR			X	6
B		X			BR			X	6

CONTAINER SAMPLED ALONG ROADWAY

pH 5 **PID** 447 ppm

Rad Meter 0.2 mr/hr

Other FID = 460 LEL/O2 = BG

MFG Name UNKNOWN

Chemical Name UNKNOWN

Additional Information: FLINSTONE 2 - 5 GALLON CONTAINERS ALONG ROADWAY LEADING TO RAVINE 5 GALLON CONTAINER IN RAVINE AREA LEAKING

BLACK SUBSTANCE LEAKING FROM SIDE TO SOIL

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T		X			BROWN			X	I	—	5	S	—	—	—	—	—	140
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm **Flash Point** ~ 60 °C

Data Reviewer MDB / KJM **Compatibility Comp. Bulk No.** 6 - B08

Field Reviewer KJM / PAM

Baker
Baker Environmental, Inc.

Drum No. D062

Project Location: CAMP LEJEUNE Project No.: 19133
Project Manager: RPW Telephone: (919) 451-1725
Logger: KJM Sampler: PAM KJM
Weather: P. CLOUDY 50'S Date: 11/7/92 Time: 1015

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel
☐ Poly-Lined ☒ Ring Top ☐ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☐ 42 ☐ 30 ☐ 16 ☐ 10 ☐ 5 ☒ Other ____

Drum Contents: Amount Full ☒ 3/4 ☐ 1/2 ☐ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T	X						X		6
M	X						X		6
B	X						X		6

pH 5 PID 0.5 ppm
Rad Meter 0.3 mr/hr
Other FID= 0.1 LEL/O2= BG

MFG Name UNKNOWN
Chemical Name MSD ?

Additional Information: LOCATED IN LOT 203 NEAR POLISHING COMPOUND
BATCH NUMBER 850074

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T	X					X			S	—	5	I	—	—	—	—	—	>180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm Flash Point >82 °C

Data Reviewer MDB / KJM Compatibility Comp. Bulk No. 6-B01

Field Reviewer KJM / PAM

Baker
Baker Environmental, Inc.

Drum No. D-063

Project Location: CAMP LEJEUNE Project No.: 19133
Project Manager: RPW Telephone: (919) 451-1725
Logger: KJM Sampler: PAM KJM
Weather: P. CLOUDY 50's Date: 11/7/92 Time: 0822

Drum Type: ☐ Fiber ☐ Steel ☐ Poly ☐ Stainless Steel ☐ Nickel; ☐ Poly-Lined ☐ Ring Top ☐ Closed Top ☐ Overpacked

Drum Size: 85 ☐ 55 ☐ 42 ☐ 30 ☐ 16 ☐ 10 ☒ 5 ☐ Other ____

Drum Contents: Amount Full ☐ 3/4 ☐ 1/2 ☒ 1/4 ☐ <1/4 ☐ MT ☐

Drum Condition: Good ☐ Fair ☐ Poor ☒

Physical State					Color	Clarity			Layer Thickness
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Inches
T		X						X	2
M		X						X	2
B		X						X	2

pH 12 PID 0.0 ppm
Rad Meter 0.3 mr/hr
Other FID = 0 LEL/O2 = BG

MFG Name: UNKNOWN
Chemical Name: UNKNOWN

Additional Information: SOUTH OF LOT 203 WOODED AREA
WHITE CRYSTALLINE SOLID

LABORATORY COMPATIBILITY ANALYSES

Physical State					Color	Clarity			Water Sol.	React.	pH	Hex. Sol.	Per.	Oxid.	CN	Sul.	Biel-Stein	Flash Point
Layers	Liquid	Solid	Gel	Sludge	Use Std. Colors	Clear	Cloudy	Opaque	Sol. S or I Density	A - Air W - Water	Std. Unit	S or I	+ or -	+ or -	+ or -	+ or -	+ or -	°C or °F
T		X			WHITE			X	I	—	12	I	—	—	—	—	—	>180
M																		
B																		

Comments: NOTE FOR THE PURPOSE OF LAB ANALYSES ALL SAMPLES WERE CONSIDERED TO BE SINGLE LAYERED

PCB Conc. NA ppm Flash Point 782 °C

Data Reviewer: MDB / KJM Compatibility Comp. Bulk No.: 6-B09

Field Reviewer: KJM / PAM

Summary of Compatibility Analyses

SUMMARY OF COMPATIBILITY ANALYSES

BATCH NO. 6-B01

Base Neutral Liquid with Solids #1

Water soluble
pH = 5.0

D004, D024, D031, D044, D047, D062, D010-(no solids)

BATCH NO. 6-B02

Base Neutral Liquid with Solids #2

Water Soluble
pH = 6.0

D002, D009, D017, D032, D033, D034, D008-(oil w/water)

BATCH NO. 6-B03

Base Neutral Liquid with Solids #3

Water soluble
pH = 6-7

D005, D006, D007, D040, D057, D060, D011-(oil w/water)

BATCH NO. 6-B04

Base Neutral Liquid #1

Water Soluble
pH = 5-7

D003, D016, D018, D022, D025, D037, D042

BATCH NO. 6-B05

Combustible Liquid #1

Hexane and Water Soluble
pH = 4
100-200°F

D001, D027, D038, D039, D041, D043

BATCH NO. 6-B06

Flammable Liquid #1

Hexane Soluble
pH = 5
70-140°F

D012, D014, D015, D050, D052

BATCH NO. 6-B07

Combustible Liquid #2

Hexane Soluble
pH = 4
100-200°F

D013, D051, D053

BATCH NO. 6-B08

Flammable Solid #1

Hexane Soluble
pH = 5
< 70°F

D054, D061

BATCH NO. 6-B09

Corrosive Solid #1

pH = 12
> 180°F

D063

BATCH NO. 6-B10

Corrosive Solid #2

pH = 13
> 180°F
Strong oxidizer and sulfide

D055

BATCH NO. 6-B11

Base Neutral Solid #1

pH = 3
> 180°F

D056, D058

Appendix I
Compatibility Data Sheets

COMPATIBILITY DATA SHEET

Sample No: D001 Laboratory No: 6-B05 Phase: _____

Description:

Container: GLASS

Number of Phases: 1 (2) 3 ____

Physical Appearance: OIL W/LIQUID

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water PARTIAL	FM	(Yes)	(No)
	Hexane		Yes	(No)
pH		<4	(4-10) 6	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific Between 100-200		<70	(>180) PAM
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density			(< 1)	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)
WATER CONTENT			<1%	(>1%)

CLASSIFICATION: COMBUSTIBLE LIQUID #1

Analyst: KJM/PAM Date: 11/7/92

PID HEADSPACE = BG ppm

BG = .7ppm.

6"

COMPATIBILITY DATA SHEET

Sample No: D002 Laboratory No: 6-B02 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID w/SOLID

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	~~(No)~~ P.P.M
	Hexane		Yes	(No)
pH		<4	(4-10) 6	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific_____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density			< 1	> 1 ≈ 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)
WATER CONTENT			<1%	(>1%)

CLASSIFICATION: BASE NEUTRAL LIQUID w/ SOLIDS #2

Analyst: KJM/PAM Date: 11/7/92

PID HEADSPACE BG PPM

FULL

COMPATIBILITY DATA SHEET

Sample No: 0003 Laboratory No: 6-B04 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (YELLOW TINT)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane		Yes	(No)
pH		<4	(4-10) 7	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific _____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density			< 1	> 1 ≈ 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)
WATER CONTENT			<1%	(>1%)

CLASSIFICATION: BASE NEUTRAL LIQUID #1

Analyst: KJM/PAM Date: 11/7/92.

PID HEADSPACE BG PPM.

1/4

COMPATIBILITY DATA SHEET

Sample No: 0004 Laboratory No: 6-301 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID W/ SOLIDS → ROST. COLORLESS.

PARAMETER		RESULTS	
Air Reactive		Yes	(No)
Water Reactive		Yes	(No)
Solubility	Water	(Yes)	No
	Hexane	Yes	(No)
pH	<4	(4-10) 5	>10
Bielstein (chlorinated organics)		Yes	(No)
Flashpoint	specific _____	<70	(>180)
Oxidizer		Yes	(No)
Peroxide		Yes	(No)
Density		< 1	> 1 ≈ 1
Reactivity	Sulfide	Yes	(No)
	Cyanide	Yes	(No)
WATER CONTENT		<1%	(>1%)

CLASSIFICATION: BASE NEUTRAL LIQUID W/ SOLIDS #1

Analyst: KJM/PAM Date: 11/7/92.

PID HEADSPACE 5.5 ppm.

FULL

COMPATIBILITY DATA SHEET

Sample No: D005 Laboratory No: 6-B03 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID W/SOLID GARNISH TINT BR

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane		Yes	(No)
pH		<4	(4-10) 6	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific_____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density			< 1	> 1 ≈1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)

WATER CONTENT <1% (>1%)

CLASSIFICATION: BASE NEUTRAL LIQUID W/SOLIDS #3

PID HEADSPACE 7 PPM

Analyst: KJM/PAM. Date: 11/7/92

COMPATIBILITY DATA SHEET

Sample No: 0006 Laboratory No: 6-B03 Phase: _____

Description:

Container: 1 GLASS

Number of Phases: 1 (2) 3 ____

Physical Appearance: LIQUID (COLORLESS) W/SOLID (BROWN)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	~~(No)~~ P.P.M.
	Hexane		Yes	(No)
pH		<4	(4-10)	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific_____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density			< 1	> 1 ≈ 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)

WATER CONTENT <1% (>1%)

CLASSIFICATION: BASE NEUTRAL LIQUID W/ SOLIDS #3

PID HEADSPACE BG PPM

Analyst: KJM/PAM Date: 4/7/82

3/4

COMPATIBILITY DATA SHEET

Sample No: 0007 Laboratory No: 6-803 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (COLORLESS) W/SOLID (GRAY)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane		Yes	(No)
pH		<4	(4-10) 7	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific _____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density			< 1	> 1 ≈1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)
WATER CONTENT			<1%	(>1%)

CLASSIFICATION: BASE NEUTRAL LIQUID W/SOLIDS #3

PID HEADSPACE = BG PPM

Analyst: KJM/PAM Date: 11/7/92

COMPATIBILITY DATA SHEET

Sample No: D008 Laboratory No: 6-B02 Phase: _____

Description:

Container: GLASS

Number of Phases: 1 (2) 3 ____

Physical Appearance: OIL (YELLOW) W/ LIQUID (COLORLESS)

PARAMETER		RESULTS	
Air Reactive		Yes	(No)
Water Reactive		Yes	(No)
Solubility	Water / PARTIAL COIL LIKE SUBSTANCE FLOATS	(Yes)	No
	Hexane	Yes	(No)
pH	<4	(4-10) 6	>10
Bielstein (chlorinated organics)		Yes	(No)
Flashpoint	specific _____	<70	(>180)
Oxidizer		Yes	(No)
Peroxide		Yes	(No)
Density	≃ 1 ¢	< 1	> 1
Reactivity	Sulfide	Yes	(No)
	Cyanide	Yes	(No)
WATER CONTENT		<10%	(>10%)

CLASSIFICATION: BASE NEUTRAL LIQUID W/ SOLIDS #2

PID HEADSPACE = BG PPM
BG = 1.0 PPM.

Analyst: KJM/PAM Date: 11/7/92

COMPATIBILITY DATA SHEET

Sample No: D009 Laboratory No: 6-B02 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (COLORLESS) W/ SOLID (ORANGE)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane		Yes	(No)
pH		<4	(4-10) 6	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific _____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density		≈1	< 1	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)
WATER CONTENT			<1%	(>1%)

CLASSIFICATION: BASE NEUTRAL LIQUID W/ SOLIDS #2

PID HEADSPACE = BG PPM

Analyst: KTM/PAM. Date: 11/7/92

COMPATIBILITY DATA SHEET

Sample No: D010 Laboratory No: 6-B01 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID COLORLESS

PARAMETER		RESULTS	
Air Reactive		Yes	(No)
Water Reactive		Yes	(No)
Solubility	Water	(Yes)	No
	Hexane	Yes	(No)
pH	~~<4~~ pH = 1 RCM	(4-10) 6	>10
Bielstein (chlorinated organics)		Yes	(No)
Flashpoint	specific _____	<70	(>180)
Oxidizer		Yes	(No)
Peroxide		Yes	(No)
Density	≈ 1	< 1	> 1
Reactivity	Sulfide	Yes	(No)
	Cyanide	Yes	(No)

WATER CONTENT <1% (71%)

CLASSIFICATION: BASE NEUTRAL ~~FOR CORROSIVE~~ LIQUID W/ SOLIDS #1

PID HEADSPACE = BG PPM

Analyst: KJM/PAM Date: 11/7/92

COMPATIBILITY DATA SHEET

Sample No: 0011 Laboratory No: 6-803 Phase: _____

Description:

Container: GLASS

Number of Phases: 1 (2) 3 ____

Physical Appearance: OIL (yellow) w/ LIQUID (colorless)

PARAMETER		RESULTS	
Air Reactive		Yes	(No)
Water Reactive		Yes	(No)
Solubility	Water PARTIAL - OIL FLOATS AND O FORMS GLOBULES, LIQUID - MIXES W/WATER	(Yes)	No
	Hexane	Yes	(No)
pH	<4	(4-10) 7	>10
Bielstein (chlorinated organics)		Yes	(No)
Flashpoint	specific _____	<70	(>180)
Oxidizer		Yes	(No)
Peroxide		Yes	(No)
Density	LIQUID ≈ 1	(OIL = < 1)	> 1
Reactivity	Sulfide	Yes	(No)
	Cyanide	Yes	(No)
WATER CONTENT		<1%	(>1%)

CLASSIFICATION: BASE NEUTRAL LIQUID W/ SOLIDS #3

PID HEADSPACE = BG PPM

Analyst: KJM/PAM. Date: 11/7/92

COMPATIBILITY DATA SHEET

Sample No: D012 Laboratory No: 6-B06 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (DK. BROWN)

PARAMETER		RESULTS	
Air Reactive		Yes	(No)
Water Reactive		Yes	(No)
Solubility	Water	Yes	(No)
	Hexane - SOLUTION TURNED BR.	(Yes)	No
pH	<4	(4-10) 6	>10
Bielstein (chlorinated organics)		Yes	(No)
Flashpoint specific BETWEEN 100 & 200		<70	>180
Oxidizer		Yes	(No)
Peroxide		Yes	(No)
Density		(< 1)	> 1
Reactivity	Sulfide	Yes	(No)
	Cyanide	Yes	(No)
WATER CONTENT		<1%	(>1%)

CLASSIFICATION: ~~COMBUSTIBLE LIQUID #2~~ KM FLAMMABLE LIQUID #1

PID HEAD SPACE = 23 PPM

Analyst: KJM/PAM Date: 11/7/92

COMPATIBILITY DATA SHEET

Sample No: ~~D012~~ D013 P.M.   Laboratory No: ~~6-B06~~ 6-B07   Phase: ______

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (DK. BROWN) [OIL]

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		Yes	(No)
	Hexane		(Yes)	No
pH		<4	(4-10) 6	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific BETWEEN 100 AND 200		<70	>180
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density			(< 1)	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)

WATER CONTENT (<1%) >1%

CLASSIFICATION: COMBUSTIBLE LIQUID #2

PID HEADSPACE = 1.0PPM

BG = .5

Analyst: KJM/PAM   Date: 1/8/92.

1/2

COMPATIBILITY DATA SHEET

Sample No: 0014 Laboratory No: 6-806 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (COLORLESS)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		Yes	(No)
	Hexane		(Yes)	No
pH		<4	(4-10) %	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific BETWEEN 100 AND 200		<70	>180
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density			(< 1)	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)
WATER CONTENT			(< 1%)	71%

CLASSIFICATION: ~~BENZENE~~ KM LIQUID #2 FLAMMABLE LIQUID #1

PID HEADSPACE = 102PPM.

Analyst: KJM/PAM Date: 11/8/92

FULL

COMPATIBILITY DATA SHEET

Sample No: D015 Laboratory No: 6-806 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (COLORLESS)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		Yes	(No)
	Hexane		(Yes)	No
pH		<4	(4-10) 6	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific BETWEEN 100 AND 200		<70	>180
Oxidizer			Yes	(NO)
Peroxide			Yes	(No)
Density			(<1)	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)

WATER CONTENT (<1%) 71%

CLASSIFICATION: ~~COMBUSTIBLE LIQUID #2~~ KM FLAMMABLE LIQUID #1

PID HEADSPACE = 202 PPM

Analyst: KJM/PAM Date: 11/18/92

COMPATIBILITY DATA SHEET

Sample No: D016 Laboratory No: 6-B04 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (COLORLESS)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane		Yes	(No)
pH		<4	(4-10) 5	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific _____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density		≈ 1	< 1	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)

WATER CONTENT. <1% (>1%)

CLASSIFICATION: BASE NEUTRAL LIQUID #1

PID HEADSPACE = BG PPM

BG = 1.3 PPM

Analyst: KJM/PAM Date: 11/8/92

FULL

COMPATIBILITY DATA SHEET

Sample No: D017 Laboratory No: 6-B02 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (COLORLESS) W/ SOLID (ORANGE)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane		Yes	(No)
pH		<4	(4-10) 6	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific_____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density		≈ 1	< 1	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)

WATER CONTENT <1% (>10%)

CLASSIFICATION: BASE NEUTRAL LIQUID W/ SOLIDS #2

PID HEADSPACE = 86 PPM

Analyst: KJM/PAM Date: 11/8/92

COMPATIBILITY DATA SHEET

Sample No: 0018 Laboratory No: G-B04 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (COLORLESS)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane		Yes	(No)
pH		<4	(4-10) 7	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific _____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density		≈1	< 1	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)

WATER CONTENT <1% (>1%)

CLASSIFICATION: BASE NEUTRAL LIQUID #1

PID HEADSPACE = BG PPM

BG = 1.1 PPM

Analyst: KJM/PAM Date: 11/8/92

4"

COMPATIBILITY DATA SHEET

Sample No: D019 Laboratory No: _____ Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (AQUA BLUE) w/SOLID (WHITE)

PARAMETER			RESULTS	
Air Reactive		* WAS NOT SENT TO LAB FOR ANALYSIS.	Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane	ALCOHOL TEST (YES)	Yes	(No)
pH		<4	(4-10) 8	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific _____		<70	(>180)
Oxidizer			(Yes)	No
Peroxide			Yes	(No)
Density		≈1	< 1	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)

WATER CONTENT <1% (>1%)

CLASSIFICATION: ~~OXIDIZER~~ OXIDIZER

PID HEADSPACE = BG PPM

Analyst: KJM/PAM Date: 11/18/92

COMPATIBILITY DATA SHEET

Sample No: D022 Laboratory No: 6-B04 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (colorless)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane		Yes	(No)
pH		<4	(4-10) 5	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific _____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density		≈1	< 1	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)

WATER CONTENT <1% (>1%)

CLASSIFICATION: BASE NEUTRAL LIQUID #1

PID HEADSPACE = BG PPM

BG = .7 PPM

Analyst: RJM / PAM Date: 11/8/92

6"

COMPATIBILITY DATA SHEET

Sample No: D024 Laboratory No: 6-B01 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (colorless) w/ solid (BROWN)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane		Yes	(No)
pH		<4	(4-10) 5	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific _____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density		≈ 1	< 1	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)

CLASSIFICATION: BASE NEUTRAL LIQUID w/ SOLIDS #1

PID HEAD SPACE = BG PPM

Analyst: KJM/PAM Date: 11/6/92

4"

COMPATIBILITY DATA SHEET

Sample No: D025 Laboratory No: 6-B04 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (COLORLESS)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane		Yes	(No)
pH		<4	(4-10) 5	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific _____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density		≈1	< 1	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)
WATER CONTENT			<1%	(7%)

CLASSIFICATION: BASE NEUTRAL LIQUID #1

PID HEADSPACE = BG PPM

Analyst: KJM/PAM Date: 11/8/92

6"

COMPATIBILITY DATA SHEET

Sample No: 0027 Laboratory No: 6-B05 Phase: _____

Description:

Container: GLASS

Number of Phases: 1 (2) 3 ____

Physical Appearance: OIL (BK. BROWN) W/LIQUID (BROWN)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water PARTIAL OIL = NO	(LIQUID = Yes)		No
	Hexane PARTIAL LIQUID = NO	(OIL = Yes)		No
pH		<4	(4-10) 5	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific BETWEEN 100 TO 200		<70	>180
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density		LIQUID ≈ 1 (OIL < 1)		> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)

WATER CONTENT <1% (71%)

CLASSIFICATION: COMBUSTIBLE LIQUID #1

PID HEADSPACE = 1.0 PPM

Analyst: KJM/PAM Date: 11/8/92

4"

COMPATIBILITY DATA SHEET

Sample No: D031 Laboratory No: 6-B01 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (COLORLESS) W/ SOLID (ORANGE)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane		Yes	(No)
pH		<4	(4-10) 5	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific _____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density		≈1	< 1	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)

WATER CONTENT <1% (>1%)

CLASSIFICATION: BASE NEUTRAL LIQUID W/ SOLIDS #1

PID HEADSPACE = BG PPM

Analyst: KJM/PAM Date: 11/18/92

COMPATIBILITY DATA SHEET

Sample No: D032 Laboratory No: 6-B02 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (COLORLESS) W/ SOLID (ORANGE)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane		Yes	(No)
pH		<4	(4-10) 6	>10
Bielstein (chlorinated organics)			Yes	(NO)
Flashpoint	specific _____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density		≈1	< 1	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)
WATER CONTENT			<10	(>10%)

CLASSIFICATION: BASE NEUTRAL LIQUID W/ SOLIDS #2

PID HEAD SPACE = 86 PPM

Analyst: KJM/PAM Date: 11/18/92

COMPATIBILITY DATA SHEET

Sample No: 0033 Laboratory No: 6-B02 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (COLORLESS) W/ SOLID (ORANGE)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane		Yes	(No)
pH		<4	(4-10) 6	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific _____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density		≈ 1	< 1	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)
WATER CONTENT			<1%	(>1%)

CLASSIFICATION: BASE NEUTRAL LIQUID W/ SOLIDS #2

PID HEADSPACE = BG PPM

Analyst: KTM/PAM Date: 11/18/92

COMPATIBILITY DATA SHEET

Sample No: D034 Laboratory No: 6-B02 Phase: _____

Description:

Container: GLASS

Number of Phases: ① 2 3 ____

Physical Appearance: LIQUID (COLORLESS) w/ SOLID (BROWN

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane		Yes	(No)
pH		<4	(4-10) 6	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific _____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density		≈1	< 1	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)

WATER CONTENT <1% (71%)

CLASSIFICATION: BASE NEUTRAL LIQUID W/SOLIDS #2

PID HEADSPACE = BG PPM

Analyst: KJM/PAM Date: 11/8/92

3"

COMPATIBILITY DATA SHEET

Sample No: D037 Laboratory No: 6-B04 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (COLORLESS)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane		Yes	(No)
pH		<4	(4-10) 5	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific_____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density		≈1	< 1	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)
WATER CONTENT			<1%	(>1%)

CLASSIFICATION: BASE NEUTRAL LIQUID #1

PID HEAD SPACE = BG PPM

Analyst: KTM/PAM Date: 11/8/92

FULL

COMPATIBILITY DATA SHEET

Sample No: D038 Laboratory No: 6-B05 Phase: _____

Description:

Container: GLASS

Number of Phases: 1 (2) 3 ____

Physical Appearance: OIL (RED) W/LIQUID (COLORLESS)

PARAMETER		RESULTS	
Air Reactive		Yes	(No)
Water Reactive		Yes	(No)
Solubility	Water PARTIAL LIQUID =	Yes	(No = OIL)
	Hexane PARTIAL OIL =	Yes	No = LIQUID
pH	<4	(4-10) 6	>10
Bielstein (chlorinated organics)		Yes	(No)
Flashpoint	specific BETWEEN 100 AND 200	<70	>180
Oxidizer		Yes	(No)
Peroxide		Yes	(No)
Density PARTIAL	LIQUID ≈ 1	(< 1 = OIL)	> 1
Reactivity	Sulfide	Yes	(No)
	Cyanide	Yes	(No)
WATER CONTENT		<1%	(>1%)

CLASSIFICATION: COMBUSTIBLE LIQUID #1

PID HEAD SPACE = 9.2 PPM

Analyst: KJM/PAM Date: 11/8/92

5"

COMPATIBILITY DATA SHEET

Sample No: D039 Laboratory No: 6-B05 Phase: _____

Description:

Container: GLASS

Number of Phases: 1 (2) 3 ____

Physical Appearance: ~~SOL~~ OIL (GRAY) w/LIQUID (COLORLESS)

PARAMETER		RESULTS	
Air Reactive		Yes	(No)
Water Reactive		Yes	(No)
Solubility	Water LIQUID =	Yes	No = OIL
	Hexane PARTIAL OIL =	(Yes)	No
	LIQUID = NO		
pH	<4	(4-10) 6	>10
Bielstein (chlorinated organics)		Yes	(No)
Flashpoint	specific BETWEEN 100 AND 200	<70	>180
Oxidizer		Yes	(No)
Peroxide		Yes	(No)
Density	OIL =	(< 1)	> 1
	LIQUID ≥ 1		
Reactivity	Sulfide	Yes	(No)
	Cyanide	Yes	(No)

WATER CONTENT <1% (>1%)

CLASSIFICATION: COMBUSTIBLE LIQUID #1

PID HEAD SPACE = 3.2 PPM

Analyst: KJM/PAM Date: 11/8/92

COMPATIBILITY DATA SHEET

Sample No: D040 Laboratory No: 6-B03 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (colorless) w/ SOLID (ORANGE)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane		Yes	(No)
pH		<4	(4-10) 6	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific _____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density		≈ 1	< 1	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)
WATER CONTENT			<1%	(71%)

CLASSIFICATION: BASE NEUTRAL LIQUID W/ SOLIDS #3

PID HEADSPACE = BG PPM

Analyst: KJM/PAM Date: 11/8/92

COMPATIBILITY DATA SHEET

Sample No: P041 Laboratory No: 6-B05 Phase: _____

Description:

Container: GLASS

Number of Phases: 1 (2) 3 ____

Physical Appearance: OIL (DK BROWN) W/LIQUID (COLORLESS)

PARAMETER		RESULTS	
Air Reactive		Yes	(No)
Water Reactive		Yes	(No)
Solubility	Water	LIQUID = Yes	No = OIL
	Hexane	OIL = Yes	No = LIQUID
pH		<4	(4-10) 6
			>10
Bielstein (chlorinated organics)		Yes	No
Flashpoint	specific Between 100 AND 200	<70	>180
Oxidizer		Yes	(No)
Peroxide		Yes	(No)
Density	LIQUID ≈ 1	OIL = < 1	> 1
Reactivity	Sulfide	Yes	(No)
	Cyanide	Yes	(No)
WATER CONTENT		<1%	(>1%)

CLASSIFICATION: COMBUSTIBLE LIQUID #1

PID HEADSPACE = 4.7 ppm

Analyst: KJM/PAM Date: 11/8/92.

1/2 12 PM

COMPATIBILITY DATA SHEET

Sample No: D042 Laboratory No: 6-B04 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (COLORLESS)

PARAMETER		RESULTS	
Air Reactive		Yes	(No)
Water Reactive		Yes	(No)
Solubility	Water	(Yes)	No
	Hexane	Yes	(No)
pH	<4	(4-10) 5	>10
Bielstein (chlorinated organics)		Yes	(No)
Flashpoint	specific _____	<70	(>180)
Oxidizer		Yes	(No)
Peroxide		Yes	(No)
Density	≈1	< 1	> 1
Reactivity	Sulfide	Yes	(No)
	Cyanide	Yes	(No)
WATER CONTENT.		<1%	(>1%)

CLASSIFICATION: BASE NEUTRAL LIQUID #1

PID HEAD SPACE = BG PPM

Analyst: KJM/PAM Date: 11/8/92

FULL

COMPATIBILITY DATA SHEET

Sample No: D043 Laboratory No: 6-B05 Phase: _____

Description:

Container: GLASS

Number of Phases: 1 (2) 3 ____

Physical Appearance: OIL (BROWN) W/LIQUID (COLORLESS)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water	LIQUID =	Yes	No = OIL
	Hexane	OIL =	Yes	No = LIQUID
pH		<4	(4-10) 5	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific BETWEEN 100 TO 200		<70	>180
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density		OIL = LIQUID ≈ 1	< 1	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)
WATER CONTENT			<1%	(>1%)

CLASSIFICATION: COMBUSTIBLE LIQUID #1

PID HEADSPACE 1.2 PPM.

Analyst: KJM/PAM Date: 11/8/92

4"

COMPATIBILITY DATA SHEET

Sample No: 0044 Laboratory No: 6-B01 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) ~~2~~ P.A.M. 3 ____

Physical Appearance: LIQ. (COLORLESS) W/ SOLID (ORANGE & GRAY)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane		Yes	(No)
pH		<4	(4-10) 5	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific_____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density		≈1	< 1	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)
WATER CONTENT			<1%	(>1%)

CLASSIFICATION: BASE NEUTRAL LIQUID W/ SOLIDS #1

PID HEADSPACE = BG PPM

Analyst: KJM/PAM Date: 11/8/92

COMPATIBILITY DATA SHEET

Sample No: 0047 Laboratory No: 6-B01 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (COLORLESS) W/SOLID (ORANGE)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane		Yes	(No)
pH		<4	(4-10)	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific _____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density		≈1	< 1	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)
WATER CONTENT			<1%	(7%)

CLASSIFICATION: BASE NEUTRAL LIQUID W/ SOLIDS #1

PID HEAD SPACE = BG PPM

Analyst: KJM/PAM Date: 11/8/92

FULL

COMPATIBILITY DATA SHEET

Sample No: 0050 Laboratory No: 6-B06 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (MILKY WHITE)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water PARTIAL		Yes	~~(No)~~ P.E. ppm
	Hexane		(Yes)	No
pH		<4	(4-10) 5	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific BETWEEN 100 AND 200.		<70	>180
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density	PARTIAL - SOME OF THE MATERIAL FLOATS, SOME SINKS		< 1	> 1
Reactivity	Sulfide		Yes	(NO)
	Cyanide		Yes	(NO)

WATER CONTENT <1% (71%)

CLASSIFICATION: ~~COMBUSTIBLE LIQUID #2~~ FLAMMABLE LIQUID #1

PID HEADSPACE = 231.0 PPM

Analyst: KJM/PAM Date: 11/8/92

FULL

COMPATIBILITY DATA SHEET

Sample No: D051 Laboratory No: 6-B07 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: OIL (CARMEL [WHITE/BROWN])

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		Yes	(No)
	Hexane		(Yes)	No
pH		<4	(4-10) 6	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific BETWEEN 100 AND 200		<70	>180
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density			(< 1)	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)
WATER CONTENT			(<1%)	>1%

CLASSIFICATION: COMBUSTIBLE LIQUID #2

PID HEADSPACE = 5.7 PPM

Analyst: KTM/PAM Date: 11/8/92.

6" < 1/4

COMPATIBILITY DATA SHEET

Sample No: D052 Laboratory No: 6-B06 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (COLORLESS) & SOLID (ORANGE)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		Yes	(No)
	Hexane		(Yes)	No
pH		<4	(4-10) 6	>10
Bielstein (chlorinated organics)			(Yes)	No
Flashpoint	specific FLAMMABLE		(<70)	>180
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density			(< 1)	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)

WATER CONTENT (21%) >1%

CLASSIFICATION: FLAMMABLE LIQUID* ~~SOLIDS #2~~ KW

PID HEADSPACE = 249 PPM

Analyst: KTM/PAM Date: 11/8/92

6" < 1/4

COMPATIBILITY DATA SHEET

Sample No: D053 Laboratory No: 6-B07 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: OIL (BROWN TINTS OF GREEN & RED)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		Yes	(No)
	Hexane		(Yes)	No
pH		<4	(4-10) 5	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific Between 100 AND 200		<70	>180
Oxidizer			Yes	(No)
Peroxide ~			Yes	(No)
Density			(< 1)	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)
WATER CONTENT			(<1%)	>1%

CLASSIFICATION: COMBUSTIBLE LIQUID #2

PID - HEADSPACE = 6.4 PPM

Analyst: KJM/PAM Date: 11/18/92

6" < 1/4

COMPATIBILITY DATA SHEET

Sample No: 0054 Laboratory No: 6-B08 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: OIL (BROWN

PARAMETER		RESULTS	
Air Reactive		Yes	(No)
Water Reactive		Yes	(No)
Solubility	Water	Yes	(No)
	Hexane	(Yes) FORMED WHITE THEN BROWN PRECIPATATE	No
pH		<4 (4-10) 5	>10
Bielstein (chlorinated organics)		Yes	(NO)
Flashpoint	specific FLAMMABLE	(<70)	>180
Oxidizer		Yes	(No)
Peroxide		Yes	(No)
Density		(< 1)	> 1
Reactivity	Sulfide	Yes	(No)
	Cyanide	Yes	(No)

WATER CONTENT (<1%) >1%

CLASSIFICATION: FLAMMABLE SOLID #1

PID HEADSPACE = 256 PPM.

Analyst: KJM/PAM Date: 11/8/92

COMPATIBILITY DATA SHEET

Sample No: P055 Laboratory No: 6-B10 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: SOLID (WHITE POWDER)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water	~~Yes~~ PAM	~~(Yes)~~	(No)
	Hexane		Yes	(No)
pH		<4	4-10	(>10) 13
Bielstein (chlorinated organics)			(Yes)	No
Flashpoint	specific_____		<70	(>180)
Oxidizer			(Yes)	No
Peroxide			Yes	(No)
Density		~~~1~~ PAM	< 1	(> 1)
Reactivity	Sulfide		(Yes)	No
	Cyanide		Yes	(No)

WATER CONTENT (<1%) 7%

CLASSIFICATION: CORROSIVE SOLID #2 OXIDIZER SULFIDE

PID HEAD SPACE = BG PPM

Analyst: KIM/PAM Date: 11/8/92

COMPATIBILITY DATA SHEET

Sample No: 0056 Laboratory No: 6-B11 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: SOLID (white CRYSTALS)

PARAMETER		RESULTS		
Air Reactive		Yes	(No)	
Water Reactive		Yes	(No)	
Solubility	Water	Yes	(No)	
	Hexane	Yes	(No)	
pH		<4	(4-10) 4	>10
Bielstein (chlorinated organics)		Yes	(No)	
Flashpoint	specific _____	<70		(>180)
Oxidizer		~~(Yes)~~ P.A.M.		(No)
Peroxide		Yes	(No)	
Density		< 1		(>1)
Reactivity	Sulfide	Yes	(No)	
	Cyanide	Yes	(No)	

WATER CONTENT (21%) 71%

CYSTALS MELT IN BOTH ACID & FLAME.

CLASSIFICATION: BASE NEUTRAL SOLID #1

PID HEADSPACE = 1.1 PPM.

Analyst: KJM/PAM Date: 11/8/92

COMPATIBILITY DATA SHEET

Sample No: D057 Laboratory No: 6-B03 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (COLORLESS) W/SOLID (GRAY)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane		Yes	(No)
pH		<4	(4-10) 6	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific _____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density		LIQUID 1	< 1	> 1 = SOLID
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)
WATER CONTENT			<1%	(71%)

CLASSIFICATION: BASE NEUTRAL LIQUID W/ SOLIDS #3

PID HEADSPACE = BG PPM

Analyst: KJM/PAM Date: 11/8/92

COMPATIBILITY DATA SHEET

Sample No: D058 Laboratory No: 6-B11 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: SOLID (DK BROWN / GREASE LIKE) HARDENED

PARAMETER		RESULTS	
Air Reactive		Yes	(No)
Water Reactive		Yes	(No)
Solubility	Water	Yes	(No)
	Hexane	Yes	No
pH		<4	(4-10) 5 >10
Bielstein (chlorinated organics)		Yes	(No)
Flashpoint	specific _____	<70	(>180)
Oxidizer		Yes	(No)
Peroxide		Yes	(No)
Density		(< 1)	> 1
Reactivity	Sulfide	Yes	(No)
	Cyanide	Yes	(No)

PARTIAL - LT BROWN - COLOR CHANGE TO THE HEXANE.

WATER CONTENT (<1%) >1%

CLASSIFICATION: BASE NEUTRAL SOLID #1

PID HEAD SPACE = 1.0 PPM

Analyst: KJM/PAM. Date: 11/8/92

COMPATIBILITY DATA SHEET

Sample No: D060 Laboratory No: 6-B03 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (COLORLESS) W/ SOLID (DK GRAY)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane		Yes	(No)
pH		<4	(4-10) 6	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific _____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density		≈1	< 1	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)
WATER CONTENT			<1%	(7%)

CLASSIFICATION: BASE NEUTRAL LIQUID W/ SOLIDS #3

PID HEADSPACE = BG PPM

Analyst: KJM/PAM Date: 11/8/92

FULL

COMPATIBILITY DATA SHEET

Sample No: D061 Laboratory No: 6808 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: SOLID GREASE / GRAY & BROWN INTERMIXED

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		Yes	(No)
	Hexane		(Yes)	No
pH		<4	(4-10) 5	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific FLAMMABLE		(<70)	>180
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density			(< 1)	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)
WATER CONTENT			(<1%)	>1%

CLASSIFICATION: FLAMMABLE SOLID #1

PID HEADSPACE = 257 PPM.

Analyst: KTM/PAM Date: 11/8/92.

COMPATIBILITY DATA SHEET

Sample No: D062 Laboratory No: 6-B01 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: LIQUID (COLORLESS) W/SOLID (ORANGE)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		(Yes)	No
	Hexane		Yes	(No)
pH		<4	(4-10) 5	>10
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific _____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density		≈1	< 1	> 1
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)

WATER CONTENT <1% (7%)

CLASSIFICATION: BASE NEUTRAL LIQUID W/ SOLIDS #1

PID - HEAD SPACE = BG PPM.

Analyst: KJM/PAM Date: 11/8/92

FULL 18"

COMPATIBILITY DATA SHEET

Sample No: 0063 Laboratory No: 6-809 Phase: _____

Description:

Container: GLASS

Number of Phases: (1) 2 3 ____

Physical Appearance: SOLID (CRYSTALINE/WHITE & BROWN)

PARAMETER			RESULTS	
Air Reactive			Yes	(No)
Water Reactive			Yes	(No)
Solubility	Water		Yes	(No)
	Hexane		Yes	(No)
pH		<4	4-10	(>10) 12
Bielstein (chlorinated organics)			Yes	(No)
Flashpoint	specific _____		<70	(>180)
Oxidizer			Yes	(No)
Peroxide			Yes	(No)
Density			< 1	(> 1)
Reactivity	Sulfide		Yes	(No)
	Cyanide		Yes	(No)

WATER CONTENT (2%) 71%

CLASSIFICATION: CORROSIVE SOLID #1

PID HEADSPACE = 8.6 PPM

Analyst: KJM/PAM Date: 11/8/92

Appendix J
Investigation-Derived Waste Summary and Recommendation

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

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

January 18, 1993

Commanding Officer
Atlantic Division
Naval Facilities Engineering Command
Building N-26, Naval Station
Norfolk, Virginia 23511-6287

Attn: Mr. Byron Brant, P.E.
Code 1823

Re: Contract N62470-89-D-4814
Navy CLEAN District III
Contract Task Order (CTO) 0133
Investigation-Derived Waste Summary and Recommendations

Dear Mr. Brant:

Investigation-derived wastes (IDW) were generated during the recent field investigations at Sites 6, 9, and 48 located at Marine Corps Base (MCB) Camp Lejeune and New River Marine Corps Air Station (MCAS) in Jacksonville, North Carolina. These IDW included soil cuttings and drilling mud (solids), well development and purge water, and decontamination fluids (liquids). Presently, the solids are being stored in five, 20 cubic yard roll-off boxes and the liquids are being stored in a tanker truck, steel tanks, and steel 55-gallon drums. Both the liquids and solids are being stored within Storage Lot 203 at Site 6. Table 1 provides a summary of the various IDW and estimated volumes.

On November 10, 1992, samples were collected from the various IDW streams for laboratory analysis. For the solids, a single composite sample (composed of three grab samples from each roll-off box) was submitted for analysis of full Toxicity Characteristic Leaching Procedure (TCLP) compounds and the Resource Conservation and Recovery Act (RCRA) hazardous waste characteristics of of ignitability, corrosivity, and reactivity. These analyses were selected based on soil disposal requirements.

Liquid wastes were first segregated into four groups prior to sampling. These groups are defined as follows:

- Group 1 - Potentially noncontaminated groundwater from Site 6 shallow wells, deep wells 6GW2D and 6GW7D, and all Site 9 and Site 48 wells.

- Group 2 - Potentially contaminated groundwater from Site 6 deep wells 6GW1D, 6GW27D, and 6GW28D.

- Group 3 - Excess water pumped from drums containing drilling mud and from roll-off boxes.

- Group 4 - Decontamination fluids consisting of Alconox soap solution, water, isopropanol alcohol, and 10 percent nitric acid.

Segregation of water was based on field observations and screening techniques (i.e., photoionization meter readings, odor and appearance). The four samples were analyzed for full Target Compound List (TCL) organics and Target Analyte List (TAL) inorganics in accordance with CLP protocols. These parameters are the same as those analyzed during the groundwater investigation.

Table 2 compares the analytical results against the contaminants applicable to identify the wastes as potentially hazardous by characteristic under RCRA for purposes of proper handling and disposal. Tables 3 and 4 summarize the organic and inorganic contaminants detected in the liquid IDW samples, respectively. The results provided on Tables 3 and 4 may be useful to the TSD to determine appropriate treatment and disposal options.

CONCLUSIONS AND RECOMMENDATIONS - SOLID IDW

Composite sample 6-RBC analysis from the roll-off boxes did not exhibit any contaminant at levels which exceed the regulatory level as defined by RCRA. Therefore, the soil is not a hazardous waste by characteristic.

Based on the analytical results of the IDW solids, several disposal alternatives are available. These alternatives include on-site disposal, off-site disposal in an "industrial" type landfill or treatment at a licensed treatment, storage, and disposal (TSD) facility. The most feasible option, however, is to return the solid wastes to the site. This alternative is acceptable (and encouraged) at Superfund sites per U. S. Environmental Protection Agency (EPA) Management of IDW Guidelines (see Attachment 1). If this option is approved, the soil could be disposed of within Storage Lot 203 where it is presently being stored.

CONCLUSIONS AND RECOMMENDATIONS - LIQUID IDW

Concentrations of several organics and inorganics were detected in all four water samples. Organic constituents detected included acetone, trichloroethene (TCE), 1,2-dichloroethene, 2-methylnaphthalene, bis (2-ethylhexyl) phthalate, and 4,4'-DDD. Inorganic constituents detected included 20 different metals and cyanide. Groups 1, 3, and 4 IDW liquids are not hazardous by characteristic; however, Groups 3 and 4 IDW liquids exhibited organic and inorganic contamination above drinking water standards (see Tables 3 and 4). Group 1 IDW liquids are considered "clean" since no contaminants were detected above Federal or State drinking water standards. Group 2 IDW liquids are hazardous since TCE levels exceed the RCRA regulatory level of 5.0 mg/l (see Table 2).

As discussed above, three of the four groups (approximately 3,200 gallons total from Groups 2, 3, and 4) contained organic and inorganic constituents. A recent telephone conversation with Mr. Thomas Morris, of the Camp Lejeune Environmental Management

Department (EMD), indicated that these wastes could not be discharged into any of the base wastewater treatment systems for disposal. Therefore, it is recommended that these wastes be removed from the site via a vacuum truck and transported to a licensed TSD facility. For Group 1 (approximately 5,000 gallons), which exhibited only low levels of acetone, the wastes can be transported to a base wastewater treatment system for disposal since these liquids are not hazardous, nor contain elevated levels of organics or inorganics. This activity can be performed during the next phase of the field investigation scheduled in February. Once this tanker has been emptied, it can be reused for storage of water generated during the expanded deep groundwater investigation.

Baker is currently obtaining estimates for transporting and disposing the IDWs. Because these costs are not included in the original estimate, a modification to the CTO budget will be necessary. Labor costs associated with coordinating and managing these efforts are not reflected in the current budget. Baker will begin efforts to dispose of these wastes upon written authorization to proceed.

If you have any questions, please do not hesitate to contact me at (412) 269-2016.

Sincerely,

BAKER ENVIRONMENTAL, INC.

Raymond P. Wattras

Raymond P. Wattras
Project Manager

RPW/REB/lmn
Attachments

cc: Mr. George Radford (MCB Camp Lejeune)
Ms. Lee Anne Rapp (w/o attachment)
Mr. Keith Simmons (w/o attachment)

TABLE 1

SUMMARY OF INVESTIGATION-DERIVED WASTES AND ESTIMATED VOLUMES

Sample Number	Medium	Group[1]	Quantities	Containment	Estimated Volume	Total Estimated Volume per Group
6-RBC	Solids	NA[2]	5	Roll-Off Boxes	90 cubic yards	90 cubic yards
6-WW1	Liquids	1	1 1 3[3]	Tanker Truck Steel Tank Steel 55-gallon Drums	5,000 gallons 500 gallons 140 gallons	5,640 gallons
6-WW2	Liquids	2	1 1	Steel Tank Steel Tank	1,000 gallons 500 gallons	1,500 gallons
6-WW3	Liquids	3	24	Steel 55-gallon Drums	1,100 gallons	1,100 gallons
6WW4	Liquids	4	11	Steel 55-gallon Drums	600 gallons	600 gallons

Notes: (1) Groups are defined for liquids by contamination potential and content.
Group 1 - potentially non-contaminated water
Group 2 - potentially contaminated water
Group 3 - excess water pumped from drums containing drilling mud
Group 4 - decontamination fluids
(2) NA - Not Applicable; roll-off box sample
(3) 55-gallon drums not filled to capacity.

TABLE 2

COMPARISON OF ANALYTICAL RESULTS AGAINST RCRA HAZARDOUS WASTE CHARACTERISTIC PARAMETERS

EPA HW No.	Contaminant	Regulatory Level (mg/L)	6-RBC(1) (mg/L)	6-WW1(2)(3) (mg/L)	6-WW2(2)(4) (mg/L)	6-WW3(2) (mg/L)	6-WW4(2)(5) (mg/L)
D004	Arsenic	5.0	0.04U	0.003U	0.005U	0.0513	0.0121
D005	Barium	100.0	0.264	0.0246	0.072	0.519	0.205
D018	Benzene	0.5	0.005U	0.1U	1.0U	0.01U	5.0U
D006	Cadmium	1.0	0.0026	0.0019U	0.002	0.0099U	0.006
D019	Carbon tetrachloride	0.5	0.005U	0.1U	1.0U	0.01U	5.0U
D020	Chlordane	0.03	0.00017U	0.00005U	0.00005U	0.00005U	0.00005U
D021	Chlorobenzene	100.0	0.005U	0.1U	1.0U	0.01U	5.0U
D022	Chloroform	6.0	0.005U	0.1U	1.0U	0.01U	5.0U
D007	Chromium	5.0	0.0055	0.0036U	0.0275	0.303	0.158
D026	Cresol	200.0	0.033U	NA	NA	NA	NA
D016	2,4-D	10.0	0.033U	NA	NA	NA	NA
D027	1,4-Dichlorobenzene	7.5	0.033U	0.01U	0.01U	0.01U	0.05U
D028	1,2-Dichloroethane	0.5	0.005U	0.1U	1.0U	0.01U	5.0U
D029	1,1-Dichloroethylene	0.7	0.005U	0.1U	1.0U	0.01U	5.0U
D030	2,4-Dinitrotoluene	0.13	0.033U	0.01U	0.01U	0.01U	0.05U
D012	Endrin	0.02	0.00033U	0.0001U	0.0001U	0.0001U	0.00001U
D031	Heptachlor (and its epoxide)	0.008	0.00017U	0.00005U	0.00005U	0.00005U	0.00005U
D032	Hexachlorobenzene	0.13	0.033U	0.01U	0.01U	0.01U	0.05U
D033	Hexachlorobutadiene	0.5	0.033U	0.01U	0.01U	0.01U	0.05U
D034	Hexachloroethane	3.0	0.033U	0.01U	0.01U	0.01U	0.05U
D008	Lead	5.0	0.022U	0.0033	0.0074U	0.242	0.12
D013	Lindane	0.4	0.00017U	0.00005U	0.00005U	0.00005U	0.00005U
D009	Mercury	0.2	0.00004U	0.00004U	0.00004U	0.00011	0.00022

TABLE 2

COMPARISON OF ANALYTICAL RESULTS AGAINST RCRA HAZARDOUS WASTE CHARACTERISTIC PARAMETERS

EPA HW No.	Contaminant	Regulatory Level (mg/L)	6-RBC(1) (mg/L)	6-WW1(2)(3) (mg/L)	6-WW2(2)(4) (mg/L)	6-WW3(2) (mg/L)	6-WW4(2)(5) (mg/L)
D014	Methoxychlor	10.0	0.0017U	0.0005U	0.0005U	0.0005U	0.0005U
D035	Methyl ethyl ketone	200.0	0.01U	0.1U	1.0U	0.01U	5.0U
D036	Nitrobenzene	2.0	0.033U	0.01U	0.01U	0.01U	0.05U
D037	Pentchlorophenol	100.0	0.083U	0.025U	0.025U	0.025U	0.12U
D038	Pyridine	5.0	0.033U	NA	NA	NA	NA
D010	Selenium	1.0	0.257	0.005U	0.005U	0.025U	0.025U
D011	Silver	5.0	0.002U	0.002U	0.002U	0.002U	0.002U
D039	Tetrachloroethylene	0.7	0.005U	0.1U	1.0U	0.01U	5.0U
D015	Toxaphene	0.5	0.017U	0.005U	0.005U	0.005U	0.005U
D040	Trichloroethylene (TCE)	0.5	0.005U	0.1U	13	0.11	5.0U
D041	2,4,5-Trichlorophenol	400.0	0.083U	0.025U	0.025U	0.025U	0.12U
D042	2,4,6-Trichlorophenol	2.0	0.033U	0.01U	0.01U	0.01U	0.05U
D017	2,4,5-TP (Silvex)	1.0	0.1U	NA	NA	NA	NA
D043	Vinyl Chloride	0.2	0.01U	0.1U	1.0U	0.01U	5.0U
D001	Ignitability	FP <120°	>200°F	NA	NA	NA	NA
D002	Corrosivity	pH ≤2 or ≥12.5	9.52	NA	NA	NA	NA
D003	Reactivity	40 CFR 261.23					
	Sulfide (mg/kg)		3.0U	NA	NA	NA	NA
	Cyanide (mg/kg)		0.6U	NA	NA	NA	NA

(1) Analyzed for Full TCLP and RCRA Hazardous Waste Characteristics.
(2) Samples analyzed for Full TCL Organics/TAL Inorganics per CLP procedures.
(3) Volatile organic fraction analyzed at 10x dilution.
(4) Volatile organic fraction analyzed at 100x dilution.
(5) Volatile organic fraction analyzed at 500x dilution.

U - Not detected at Contract Required Quantitation Limit (CRQL).
NA - Not Analyzed

TABLE 3

ORGANIC COMPOUNDS DETECTED IN INVESTIGATION DERIVED WASTE SAMPLES

Sample Number	Medium	Group	Volatile Organics			Semivolatile Organics		Pesticide Organics
			Acetone	Trichloro-ethene	1,2-Dichloro-ethene (total)	2-methyl-naphthalene	bis (2-ethylhexyl) phthalate	4,4'-DDD
6-WW1	Liquids	1	930	--	--	--	--	--
6-WW2	Liquids	2	--	13,000	--	--	--	--
6-WW3	Liquids	3	36	110	47	--	--	0.171
6WW4	Liquids	4	44,000	--	--	98	76	--

Notes: (1) -- Denotes not detected at Contract Required Quantitation Level (CRQL)

Results shown in micrograms per liter (µg/L).
Note: Only contaminants detected above CRQL are listed.

TABLE 4

INORGANIC COMPOUNDS DETECTED IN INVESTIGATION DERIVED WASTE SAMPLES

Sample Number	Medium	Group	Inorganic Constituents									
			Beryllium	Barium	Selenium	Aluminum	Arsenic	Cadmium	Calcium	Chromium	Copper	Iron
6-WW1	Liquids	1	--	--	--	5,140	--	--	36,200	--	--	2,630
6-WW2	Liquids	2	--	--	--	9,480	--	--	137,000	27.5	--	12,800
6-WW3	Liquids	3	7.2	519	--	112,000	51.3	9.9	825,000	303	83.1	92,100
6WW4	Liquids	4	--	205	--	87,100	12.1	6.0	39,800	158	76.2	233,000

Notes: (1) -- Denotes not detected at Contract Required Quantitation Level (CRQL)

Results shown in micrograms per liter (µg/L).
Note: Only contaminants detected above CRQL are listed.

TABLE 4 (Continued)

INORGANIC COMPOUNDS DETECTED IN INVESTIGATION DERIVED WASTE SAMPLES

Sample Number	Medium	Group	Inorganic Constituents										
			Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Sodium	Vanadium	Zinc	Cyanide	pH (S.U.)
6-WW1	Liquids	1	3.3	--	49.9	--	--	5,240	21,700	--	--	--	7.6
6-WW2	Liquids	2	7.4	5,150	172	--	--	6,320	16,800	--	81	--	7.6
6-WW3	Liquids	3	242	48,000	838	--	62.8	26,300	102,000	246	929	--	10.0
6WW4	Liquids	4	120	--	1,430	0.22	102	27,800	52,100	108	598	65.5	4.5

Notes: (1) -- Denotes not detected at Contract Required Quantitation Level (CRQL)

Results shown in micrograms per liter (µg/L).
Note: Only contaminants detected above CRQL are listed.

ATTACHMENT 1

GUIDE TO MANAGEMENT OF INVESTIGATION DERVIED WASTES

United States Environmental Protection Agency | Office of Solid Waste and Emergency Response | Publication: 9345.3-03FS April 1992

EPA

Guide to Management of Investigation-Derived Wastes

Office of Emergency and Remedial Response
Hazardous Site Control Division OS-220W

Quick Reference Fact Sheet

CERCLA field investigation activities (e.g., remedial investigation/feasibility studies and remedial designs) may result in the generation of waste materials that may pose a risk to human health and the environment. These investigation-derived wastes (IDW) may include drilling muds, cuttings, and purge water from test pit and well installation; purge water, soil, and other materials from collection of samples; residues (e.g., ash, spent carbon, well development purge water) from testing of treatment technologies and pump and treat systems; contaminated personal protective equipment (PPE); and solutions (aqueous or otherwise) used to decontaminate non-disposable protective clothing and equipment. The management of IDW must ensure protection of human health and the environment and comply with (or waive) regulatory requirements that are applicable or relevant and appropriate requirements (ARAR). **This fact sheet presents an overview of possible IDW management options, discusses the protectiveness requirements and ARARs associated with these options, and outlines general objectives established for IDW management under Superfund.**[1]

The general options for managing IDW (see **Highlight 1**) are collection and either (1) immediate disposal or (2) some type of interim management. Interim management may include storage or temporary measures. As discussed below, the specific option selected will depend on the type of waste produced, its relative threat to human health and the environment, and other site-specific conditions.

IDW MANAGEMENT REQUIREMENTS

When managing IDW, site managers are required to choose an option that: (1) is protective of human health and the environment and (2) complies with (or waives) ARARs, as described below.

Protectiveness

In determining if a particular management/disposal option is protective, site managers should consider the following:

- The contaminants, their concentrations, and total volume of IDW;
- Media potentially affected (e.g., ground water, soil) under management options;
- Location of the nearest population(s) and the likelihood and/or degree of site access;
- Potential exposures to workers; and
- Potential for environmental impacts.

As a general rule, it will be necessary to use best professional judgment, in light of the site-specific conditions, to determine whether an option is protective of human health and the environment. For example, a site manager may determine that storing IDW temporarily until the final action or returning IDW to its source is protective, based on knowledge that the material poses low risk and/or that the final action will address any risks posed by the wastes and there will be no unacceptable risks in the interim.

Alternatively, if the site includes or is near residential areas, the site is unsecured, and/or contaminants appear to be present at unacceptable levels, it may not be protective to return excavated soil to the source. Storing IDW in containers in an on-site, secure location, or sending it off site immediately may be more appropriate.

Site managers also need to consider the potential effects of IDW management-related activities on environmental media. For example, pouring contaminated purge water on the ground around a well may not be prudent, because such an action could mobilize any hazardous constituents present in the soil or introduce contaminants into clean soil.

Compliance with ARARs

Remedial Investigation/Feasibility Study (RI/FS) and Remedial Design (RD) actions must comply with ARARs "to the extent practicable, considering the exigencies of the situation" (NCP, 55 FR 8756, emphasis added); therefore, it generally will not be necessary to obtain a waiver if an ARAR cannot be attained during these actions. If a site manager determines that, based on site-

[1] Management of treatability study and treatment pilot wastes is discussed in Guide for Conducting Treatability Studies Under CERCLA, Interim Final, December 1989, EPA/540/2-89/058. Information on management of IDW generated during Preliminary Assessments and Site Investigations is provided in Management of Investigation-Derived Waste During Site Investigations, May 1990, EPA/540/G-91/009.

Highlight 1: IDW MANAGEMENT OPTIONS

Type of IDW	Generation Processes*	Management Options
Soil	• Well/test pit installation • Borehole drilling • Soil sampling	• Return to boring, pit, or source immediately after generation • Spread around boring, pit, or source within the AOC+ • Consolidate in a pit (within the AOC) • Send to on-site TDU+ • Send to TDU off site immediately • Store for future treatment and/or disposal
Sludges/sediment	• Sludge pit/sediment sampling	• Return to boring, pit, or source immediately after generation • Send to on-site TDU • Send to TDU off site immediately • Store for future treatment and/or disposal
Aqueous liquids (ground water, surface water, drilling fluids, other wastewaters)	• Well installation/development • Well purging during sampling • Ground water discharge during pump tests • Surface water sampling	• Discharge to surface water • Pour onto ground close to well (non-hazardous waste) • Send to on-site TDU • Send to off-site commercial treatment unit • Send to POTW+ • Store for future treatment and/or disposal
Decontamination fluids	• Decontamination of PPE+ and equipment	• Send to on-site TDU • Evaporate (for small amounts of low contamination organic fluids) • Send to TDU off site immediately • Store for future treatment and/or disposal
Disposable PPE	• Sampling procedures or other on-site activities	• Send to on-site TDU • Place in on-site industrial dumpster • Send to TDU off site immediately • Store for future treatment and/or disposal

* The generation processes listed here are provided as examples. IDW may also be produced as a result of activities not listed here.

\+ AOC: Area of Contamination (AOCs at a site may not yet have been identified at the time of the RI/FS); TDU: Treatment/disposal Unit; POTW: Publicly Owned Treatment Works; PPE: Personal Protective Equipment

pecific factors, compliance with an ARAR is practicable but an RAR waiver is warranted for an RI/FS or RD action, an interim action waiver may be available if the final remedy will attain the ARAR. An action memorandum should be prepared for the waiver, the state given an opportunity to comment, and the decision document placed in the administrative record.

Potential ARARs for IDW at CERCLA sites include regulations under the Resource Conservation and Recovery Act (RCRA) (including both Federal and State underground injection control (UIC) regulations), the Clean Water Act (CWA), the Clean Air Act (CAA), the Toxic Substances Control Act (TSCA), and other State environmental laws. How these various requirements may direct or influence IDW management decisions is described below.

Resource Conservation and Recovery Act (RCRA). Certain sections of the RCRA Subtitle C hazardous waste regulations (e.g., land disposal restrictions and storage restrictions) may be ARARs for IDW should RCRA hazardous waste be identified at a site. (Note that RCRA may be relevant and appropriate even if the IDW is not a RCRA hazardous waste.) A waste is hazardous under RCRA if it is listed as such in 40 CFR 261.31 - 261.33 or if it exhibits one of four characteristics: ignitability, corrosivity, reactivity, or toxicity.

Site managers should not assume that a waste considered to pose a potential risk at a CERCLA site is a listed or characteristic CRA hazardous waste. **Until there is positive evidence (records, st results, other knowledge of waste properties) that the IDW is a RCRA hazardous waste, site managers should manage it in a protective manner (but not necessarily in accordance with Subtitle C requirements).** Business records or facility processes should be examined to determine whether RCRA listed wastes were generated and are present in the IDW. For characteristic wastes, site managers should rely on testing results or on knowledge of the material's properties. If best professional judgment and available information indicate that, for protectiveness reasons (or because RCRA requirements are relevant and appropriate), IDW is best managed as a "hazardous waste," management in accordance with Subtitle C requirements is prudent, regardless of whether it is known to be a RCRA waste.

If aqueous liquid IDW is considered a RCRA hazardous waste, the site manager should determine whether the Domestic Sewage Exclusion (DSE) applies to the discharge of that IDW to a POTW. The RCRA DSE exempts domestic sewage and any mixture of domestic sewage and other wastes that passes through a sewer system to a POTW for treatment from classification as a solid waste and, therefore, as a RCRA hazardous waste (40 CFR 261.4).

- Land Disposal Restrictions

If IDW is determined to be a RCRA hazardous waste and subject to the land disposal restrictions (LDRs), "land disposal" of the IDW will be prohibited unless specified treatment standards are met (see Superfund LDR Guides #5 and #7, Determining When LDRs Are Applicable to CERCLA Response Actions and Determining When LDRs Are Relevant and Appropriate to CERCLA Response Actions, OSWER Directive 9347.3-05FS and 9347.3-08FS, June 1989 and December 1989 and the NCP, 55 FR 8759, March 8, 1990). "Land disposal" occurs when wastes from different AOCs are consolidated into one AOC; when wastes are moved outside an AOC (for treatment or storage) and returned to the same or a different AOC; or when wastes are excavated, placed in a separate hazardous waste management unit such as an incinerator or tank within the AOC, and then redeposited into the AOC.

Storing IDW in a container ("a portable device in which a material is stored, transported, treated, disposed of, or otherwise handled" (40 CFR 260.10)) within the AOC and then returning it to its source, however, is allowable without meeting the specified LDR treatment standards. Under the definition of "hazardous waste management unit" (40 CFR 260.10), EPA states that "a container alone does not constitute a unit; the unit includes the containers and the land or pad upon which they are placed." Therefore, returning IDW that has been stored in containers (not tanks or other RCRA-regulated units) within the AOC to its source does not constitute land disposal, as long as containers are not managed in such a manner as to constitute a RCRA storage unit as defined in 40 CFR 260.10. In addition, sampling and direct replacement of wastes within an AOC do not constitute land disposal.

- Storage

Subtitle C outlines the storage requirements for RCRA hazardous wastes. Under RCRA, "storage" is defined as "the holding of hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere" (40 CFR 260.10).

On-site Superfund actions are only required to comply with the substantive standards of other laws (see 40 CFR 300.5, definitions of applicable or relevant and appropriate requirements). Superfund sites are also exempt from permit requirements under CERCLA §121(e). Therefore, site managers are not required to comply with administrative requirements triggered by RCRA storage deadlines (e.g., contingency planning, inspections, recordkeeping). Generally equivalent administrative activities are undertaken at Superfund sites, however, under existing Superfund management practices.

Site managers storing known RCRA hazardous waste must comply with the substantive, technical requirements of 40 CFR Parts 264 and 265 Subparts I (containers), J (tanks), and L (waste piles), to the extent practicable. (See **Highlight 2** for a summary of these technical requirements for each type of unit). In addition, the ground-water monitoring requirements of 40 CFR Parts 264 and 265 Subpart F are potential ARARs, and to the extent they are determined to be ARARs at a site, they should be attained to the extent practicable (or waived). (In many cases, ground-water monitoring conducted during the RI/FS will provide protection equivalent to the Subpart F requirements.)

[NOTE: Under the LDRs, restricted RCRA hazardous waste may not be stored at a site unless the storage is solely for the purpose of accumulating sufficient quantities of the waste to facilitate proper disposal, treatment, or recovery (see 40 CFR 268.50). **Generally, storing IDW until a final disposal option is**

Highlight 2:
EXAMPLES OF RCRA TECHNICAL STORAGE REQUIREMENTS*

RCRA storage requirements, applicable to both less-than-90-days generators and permitted or interim status storage facilities, may include the following substantive requirements:

Containers **40 CFR 264 Subpart I and 265 Subpart I**

- Containers must be in good condition
- Wastes must be compatible with container
- Container must be closed during storage
- Container storage areas must have a containment system that can contain 10 percent of the volume of containers or of the largest container
- Spilled or leaked waste must be removed from the collection area as necessary to prevent overflow

Tanks **40 CFR 264 Subpart J and 265 Subpart J**

- Tanks must have a secondary containment system that includes a liner, a vault, a double-walled tank, or an equivalent device (applies only to certain tanks)

Waste Piles **40 CFR 264 Subpart L and 265 Subpart L**

- Waste piles must have a liner and a leachate collection and removal system
- Owners/operators must have a run-on control system to prevent flow onto the active portion of the pile during peak discharge from at least a 25-year storm
- Owners/operators must have a run-off management system to collect and control at least the water volume resulting from a 24-hour, 25-year storm

* This is a partial list of substantive requirements. For more detail, see 40 CFR Part 264 and 265.

selected in a Record of Decision (ROD) and implemented during the remedial action is allowable storage under the RCRA LDR storage prohibition.]

- Recordkeeping and Manifesting

If hazardous wastes are sent off site, the site manager must comply with both administrative and substantive elements of the RCRA generator requirements of 40 CFR Part 262 and LDR notification and certification requirements of Part 268. (For example, a site manager must prepare an LDR notification and certification when restricted wastes are sent off site to a land disposal facility.) These standards include requirements such as manifests for shipping waste that list all hazardous waste listings and characteristics applicable to the waste (see 40 CFR 262.11), packaging and transport requirements, and recordkeeping requirements.

If the LDRs are applicable, the following information should be collected and available before the removal of wastes to an off-site disposal facility: EPA hazardous waste number, LDR treatment standards, manifest number for the waste shipment, and waste analysis data.

- Underground Injection Control (UIC) Program

Under the UIC regulations, RCRA hazardous wastes may be injected into Class I permitted wells. In some cases, hazardous liquids, such as extracted ground water from pump and treat operations, may be injected into a Class IV UIC well. For example, ground water contaminated with RCRA hazardous wastes may be injected into Class IV permitted wells if it is part of a CERCLA response action or a RCRA corrective action and if it has been treated to "substantially reduce hazardous constituents prior to such injection..." (RCRA § 3020(b)). (See Applicability of Land Disposal Restrictions to RCRA and CERCLA Ground Water Treatment Reinjection, OSWER Directive #9234,1-06, December 1989.)

- Non-RCRA Hazardous Wastes

Some non-RCRA hazardous waste may be subject to management requirements under Subtitle D of RCRA as solid wastes. Subtitle D regulates disposal of solid waste in facilities such as municipal landfills. Therefore, non-RCRA hazardous IDW, such as decontaminated PPE or equipment, may need to be disposed of in a Subtitle D facility (depending on State requirements).

Clean Water Act (CWA). Discharges of aqueous IDW to surface water and publicly owned treatment works (POTWs) may be required to comply with CWA Federal, State, and local requirements. Requirements to be met may include water quality criteria, pre-treatment standards, State water quality standards, and NPDES permit conditions. Direct discharges to on-site waters are subject only to substantive requirements, while discharges to POTWs and other off-site discharges must comply with both substantive and administrative CWA requirements (including permitting requirements). (See Guide to Discharging CERCLA Aqueous Wastes to POTWs, June 1991 and CERCLA Compliance with the CWA and SDWA, #9234.2-06FS, January 1991.)

Toxic Substances Control Act (TSCA). If IDW contains PCBs, TSCA treatment and/or disposal requirements may apply during its management. TSCA requirements regulate the disposal of material contaminated with PCBs at concentrations of 50 ppm or greater as found on site (i.e., based on sample analysis and not the PCB concentration of the source material {e.g., transformer fluid}). (See PCB Guidance Manual, EPA/540/G-90/007, August 1990.) In addition, TSCA storage requirements may apply that limit the time that PCBs may be stored to one year. Furthermore, if PCB materials are mixed with a RCRA hazardous waste, they may be regulated by the LDR California list prohibitions. (See RCRA sections 3004(d)(2)(D) and (E).)

Department of Transportation (DOT) requirements. Where IDW will be disposed of off site or transported on public roads to a site,

T requirements for containerizing, labeling, and transporting rdous materials and substances may apply.

State requirements. Promulgated State regulations that are legally enforceable, timely identified, and more stringent than Federal regulations may be potential ARARs for IDW managed on site. Substantive requirements of State law that may be ARARs for IDW management include State water quality standards, direct discharge limits, and RCRA requirements (including underground injection control regulations) promulgated in a State with an authorized RCRA hazardous waste management program (as well as programs authorized by State laws). Off-site, substantive and administrative requirements of State law may apply.

Off-Site Policy. In addition to complying with requirements of Federal and State laws, all off-site disposal of wastes must comply with CERCLA section 121(d)(3) and the CERCLA Off-Site Policy (OSWER Directive No. 9834.11 (November 13, 1987)). The Off-Site Policy establishes criteria for selecting an appropriate treatment, storage, or disposal facility (TSDF), including release criteria for all facilities that receive wastes from CERCLA-authorized or funded response actions. In addition, receiving facilities must be in compliance with all "applicable laws."

Before shipping wastes off site, approval should be obtained for the proposed disposal facility from EPA's Regional Off-Site Policy Coordinator. In addition, EPA has adopted a policy for Superfund wastes shipped out of State that written notification should be vided to receiving States (OSWER Directive 9330.2-07, ptember 14, 1989).

GENERAL OBJECTIVES FOR IDW MANAGEMENT

In addition to the two requirements of protectiveness and compliance with ARARs to the extent practicable (on site) or compliance with applicable law (off site), EPA has identified two general objectives that Superfund site managers should consider when managing IDW: (1) minimization of IDW generation; and (2) management of IDW consistent with the final remedy for the site. The extent to which these objectives can be achieved is highly dependent on site-specific circumstances.

IDW Minimization

Site managers should strive to minimize the generation of IDW to reduce the need for special storage or disposal requirements that may result in substantial additional costs yet provide little or no reduction in site risks relative to the final remedial action. Generation of IDW can be minimized through proper planning of all remedial activities that may generate IDW, as well as through use of screening information from the site inspection. The potential problems of managing IDW should be a factor in choosing an investigative method. Site managers may wish to consider techniques such as replacing solvent-based cleaners with aqueous-based cleaners for decontamination of equipment, reuse of uipment (where it can be decontaminated), limitation of traffic etween clean and hot zones, and drilling methods and sampling techniques that generate little waste. Examples of such techniques include using gridding techniques to minimize the number of test pits or using soil borings instead of test pits. Alternative drilling and subsurface sampling methods may include the use of small diameter boreholes, as well as borehole testing methods such as a core penetrometer instead of coring. Site managers should also be careful to keep hazardous wastes separate from nonhazardous wastes.

Management Consistent with Final Remedy

Most IDW (with the exception of non-indigenous IDW) generated during the course of an investigation are intrinsic elements of the site. If possible, IDW should be considered part of the site and should be managed with other wastes from the site, consistent with the final remedy. This will avoid the need for separate treatment and/or disposal arrangements.

Because early planning for IDW management can prevent unnecessary costs and the use of treatment or disposal capacity, IDW management should be considered as early as possible during the remedial process. A key decision to be made is whether the waste will best be treated/disposed of immediately or addressed with the final remedy. If addressed with the final remedy, IDW volumes should be considered in the FS. In addition, when IDW is stored on site, it should be managed as part of the first remedial action/operable unit that addresses the affected media.

SELECTION OF IDW DISPOSAL OPTIONS

The following sections present the Agency's presumptions for IDW management that have been established based on the above considerations. The actual option selected should be based upon best professional judgment and should take into account the following factors:

- The type and quantity of IDW generated (sludge/soil, aqueous liquid, non-indigenous IDW);
- Risk posed by managing the IDW on site (e.g., based on site access controls, contaminant concentrations);
- Compliance with ARARs, to the extent practicable (on site);
- IDW minimization; and
- Whether the final remedy is anticipated to be an off-site or on-site remedy (or this information is unknown) and whether IDW can be managed consistent with the final remedy.

Off-site Final Remedies

If a site manager believes that the final remedy will involve off-site disposal of wastes, EPA's presumption is to manage the IDW as part of the remedial action addressing the waste/medium. Thus, until the final action, the IDW may be stored (e.g., drummed, covered waste pile) or returned to its source. However, the management option selected should also take into account any protectiveness concerns, ARARs, and other relevant site-specific factors (e.g., weather, storage space, and public concern/ perceptions).

There are several potential reasons why it may be advisable to store IDW until the final action. First, because wastes at the site will be shipped off site eventually, returning IDW (especially sludges and soil) to its source would require that it be excavated again. Thus, site managers may consider it practical to containerize IDW as soon as it is generated. Second, storing IDW in containers may be more protective than returning it to its source. Third, because off-site actions may trigger such requirements as the LDRs, temporary storage will eliminate the need to meet these additional requirements until the final remedy.

In some cases, circumstances may lead site managers to choose to return the IDW to its source. This may be appropriate if it is determined that returning IDW to the source is protective and that storage at the site is not possible or practicable (i.e., given State or community concerns). In other cases, long-term storage may not be protective, and immediate off-site disposal may be a better option.

Off-site Remedy

Example: A site involves volatile organic RCRA hazardous wastes that will likely be sent off site for final treatment and disposal. Site conditions are such that temporary storage of IDW is considered protective until the remedial action begins. Because off-site disposal will trigger RCRA disposal requirements such as the LDRs and immediate containerization would be more protective than redepositing into the source area at the time of sampling, the site manager decides to containerize the IDW (and comply with RCRA substantive technical tank and container standards) until the final action is initiated.

On-site Final Remedies (or Final Management in an Unknown Location)

When final management of wastes is likely to occur on site, the management presumptions vary depending on the type of IDW produced.

Sludge/soil

Generally, the Agency expects sludge or soil IDW will be returned to its source if short-term protectiveness is not an issue. The reason behind this presumption is that IDW that may pose a risk to human health and the environment in the long term will be addressed by the final action. **Storage of RCRA hazardous IDW in containers within the AOC prior to returning it to the source will not trigger the LDRs, as long as the containers are not managed in such a way as to constitute a RCRA storage unit as defined in 40 CFR 260.10.** Therefore, it may be possible to store IDW temporarily before redisposing of it. However, EPA believes that, in many cases, returning sludges and soils to their source immediately will be protective and will avoid potentially increased costs and requirements associated with storage. Site-specific decisions on how to manage sludge and soil IDW may ultimately vary from the presumption based on protectiveness, ARARs, and/or community concerns.

Sludge/Soil

Example 1: The soil at a site contains wastes that are expected to be stabilized on site during the final remedial action. The site manager determines that sending soil IDW off site is not cost-effective, because off-site disposal would involve testing and transport costs for a relatively small amount of waste. Instead, knowing that the site is secure and that redisposing the waste at the source will not increase site risk or violate ARARs, the site manager decides to return soil IDW to the source area from which it originated.

Example 2: A site manager determines that returning highly contaminated PCB wastes to the ground at a site is not protective because of the potential risks associated with the material; instead, the site manager chooses to drum the waste and send it off site (in compliance with TSCA). (Off-site disposal may occur immediately or at a later date.)

Example 3: Soil IDW contaminated with a RCRA hazardous waste is generated from a soil boring. The site manager decides to put the IDW back into the borehole immediately after generation, but ensures that site risks will not be increased (e.g., the contaminated soil will not be replaced at a greater depth than where it was originally so that it will not contaminate "clean" areas) and that the contamination will be addressed in the final remedy.

Aqueous liquids

EPA has not established a presumption for the management of aqueous liquid IDW (e.g., ground water). Site managers should determine the most appropriate disposal option for aqueous liquids on a site-specific basis. Parameters to consider, especially in making the protectiveness decision, include the volume of IDW, the contaminants present in the ground water, the presence of contaminants in the soil at the site, whether the ground or surface water is a drinking water supply, and whether the ground-water plume is contained or moving. Special disposal/handling may be needed for drilling fluids because they may contain significant solid components. Examples of aqueous liquid management decisions considering these factors are presented in the box on the next page.

Non-indigenous IDW

Non-indigenous IDW (e.g., sampling materials, disposable PPE, decontamination fluids) should be stored until the final remedy or disposed of immediately. If contaminated, such waste may not be disposed of onto the ground because such an action would add contamination that was not present when activities began at the site (e.g., solvents used for decontamination). If non-indigenous IDW is contaminated with RCRA hazardous waste, it must be managed in accordance with RCRA Subtitle C requirements. Otherwise, site

Aqueous Liquids

Example 1: A site manager has large volumes of ground water IDW and does not know if it is contaminated. Pouring this IDW on the ground would not be protective, because it may contaminate previously uncontaminated soil or may mobilize contaminants that are present in the soil. Therefore, the site manager stores the water in a mobile tank until a determination is made as to whether the water and soil are contaminated or until the final action.

Example 2: IDW is generated from the sampling of background, upgradient wells. Because there are no community concerns or evidence of any soil contamination from other sources, the site manager decides to pour this presumably uncontaminated IDW on the ground around the well.

Example 3: Purge water from a deep aquifer is known to be contaminated with a RCRA hazardous waste. At this site, if this water were poured on the ground, it could contaminate a previously uncontaminated shallow aquifer that is a potential drinking water source and would have to comply with the LDRs. The site manager decides to containerize the water within the AOC and store it until the final remedy.

nagers may generally dispose of it in an on-site dumpster (for PPE).

Non-indigenous IDW

Example 1: Disposable PPE (e.g., gloves, shoe covers) becomes contaminated with RCRA hazardous waste during the field investigation. The site manager containerizes and disposes of this IDW in compliance with RCRA Subtitle C requirements.

Example 2: Disposable equipment becomes contaminated during a field investigation. The site manager decontaminates them and sends them to a Subtitle D facility.

COMMUNITY CONCERNS

Residents of communities near a CERCLA site, local governments, or States may have concerns about certain disposal methods or long-term storage of IDW at the site. As with all CERCLA activities, site managers should evaluate community concerns regarding disposal of IDW in deciding what action to take. For example, if a community is concerned about the direct discharge of IDW water to surface water on site, site managers may want to consider sending the water to a POTW, if one is located nearby. In some instances, it may be appropriate to prepare fact sheets, include options in other community relations documents, or explain IDW management decisions at public meetings prior to actions.

TOXICITY CHARACTERISTICS LEACHING PROCEDURE (TCLP)

VOLATILE ORGANICS TARGET ANALYTES

Client: Baker Environmental

Client ID: 6-RBC

Date Sampled: 11/10/92

Laboratory ID: 920611-01

Date TCLP Performed: 11/12/92

Concentration in: ug/L (ppb)

Date Leachate Analyzed: 11/14/92

Target Analyte	Sample Concentration	Method Reporting Limit
Benzene	ND	5
Carbon tetrachloride	ND	5
Chlorobenzene	ND	5
Chloroform	ND	5
1,2-Dichloroethane	ND	5
1,1-Dichloroethylene	ND	5
Methylethylketone	ND	10
Tetrachloroethylene	ND	5
Trichloroethylene	ND	5
Vinyl chloride	ND	10

ND = Not detected

Reported by:_____

Approved by:_____

TOXICITY CHARACTERISTICS LEACHING PROCEDURE (TCLP)

SEMIVOLATILE ORGANICS TARGET ANALYTES

Client: Baker Environmental

Client Sample ID: 6-RBC

Laboratory ID: 920611-01

Concentration in: ug/L (ppb)

Date Sampled: 11/11/92

Date TCLP Performed: 11/12/92

Date Leachate Extracted: 11/16/9

Date Extract Analyzed: 11/17/92

Target Analyte	Sample Concentration	Method Reporting Limits
Pyridine	ND	33
2,4-Dinitrotoluene	ND	33
Hexachlorobenzene	ND	33
Hexachloro-1,3-butadiene	ND	33
Hexachloroethane	ND	33
Nitrobenzene	ND	33
1,4-Dichlorobenzene	ND	33
Methylphenols (total)	ND	33
Pentachlorophenol	ND	83
2,4,5-Trichlorophenol	ND	83
2,4,6-Trichlorophenol	ND	33

ND = Not detected

Reported by:_____ Approved by:_____

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

6-RBC

Name: CEIMIC CORP Contract: BAKER

Lab Code: CEIMIC Case No.: 19133 SAS No.: SDG No.: 6-RBC

Matrix: (soil/water) WATER Lab Sample ID: 920611-01

Sample wt/vol: 300.0 (g/mL) ML Lab File ID:

% Moisture: decanted: (Y/N) Date Received: 11/11/92

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/16/92

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 11/17/92

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.17	U
76-44-8	Heptachlor	0.17	U
1024-57-3	Heptachlor epoxide	0.17	U
72-20-8	Endrin	0.33	U
72-43-5	Methoxychlor	1.7	U
5103-71-9	Chlordane	0.17	U
8001-35-2	Toxaphene	17	U

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

ORGANOCHLORINE HERBICIDES

EPA Method 8150

Client: Baker Environmental

Client ID: 6-RBC

Laboratory ID: 920611-01

Date Sample Received: 11/11/92

Date Sample Prepared: 11/12/92

Date Sample Analyzed: 11/21/92

Concentration in: ug/L (ppb)

Target Analyte	Sample Concentration	Method Reporting Limits
2,4-D	ND	33
2,4,5-TP (Silvex)	ND	10

ND = Not detected

Reported by: X.S.

Approved by: Henry Schmidt

INORGANIC ANALYTES

Client: Baker Environmental

Client ID: 6-RBC

Laboratory ID: 920611-01

Date Sample Received: 11/11/92

Date Sampled: 11/10/92

Target Analyte	Result	Units	Method Reporting Limit	Date Analyzed
Flashpoint	NC	°F	200	11/19/92
pH	9.52	S.U	---	11/11/92
Reactive Sulfide	ND	mg/kg (ppm)+	3	11/11/92
Reactive Cyanide	ND	mg/kg (ppm)+	0.6	11/18/92

NC = No combustion
ND = Not detected

+ Reported on a dry weight basis, % solids = 77.7

Reported by: Jeffrey D. Maymon

Approved by: Catherine Marsh

Appendix K
Dose Response Calculations and Spreadsheets

S.O. No. CTO - 0133 Camp Lejeune

Subject: Soil Ingestion

Sheet No. 1 of 2

Drawing No.

Computed by MDB Checked By DCJ Date 3/21/93

Baker

Purpose: Estimate exposure / risk from ingestion of surface soil

$$\text{Intake}_{(mg/Kg\text{-}day)} = \frac{C \times CF \times EF \times ED \times IR}{BW \times AT_c \text{ or } AT_{nc}}$$

Where:

C = contaminant concentration in surface soil ($^{mg}/_{Kg}$)

CF = conversion factor ($^{Kg}/_{mg}$)

EF = exposure frequency ($^{day}/_{yr}$)

ED = exposure duration (yr)

IR = ingestion rate ($^{mg}/_{day}$)

BW = body weight (Kg)

AT_c = averaging time carcinogens (days)

AT_{nc} = averaging time noncarcinogens (days)

Risk:

Carcinogens = Intake (mg/Kg-day) x CSF $(mg/Kg\text{-}day)^{-1}$

Noncarcinogens = Intake (mg/Kg-day) / RfD (mg/Kg-day)

Example Carcinogen: 4,4'-DDD

$$\text{Intake}_{(mg/Kg\text{-}day)} = \frac{0.0156\frac{mg}{Kg} \times 100\frac{mg}{day} \times 350\frac{day}{yr} \times 30\,yr \times 1.0E\text{-}6\frac{Kg}{mg}}{70\,Kg \times 25,550\,days}$$

Baker

$$= 9.2\,E\text{-}09$$

$$Risk = 9.2\,E\text{-}09 \frac{mg}{Kg\text{-}day} \times 2.4\,E\text{-}01 \frac{mg}{Kg\text{-}day}^{-1} = 2.2\,E\text{-}09$$

Example Noncarcinogen: 4,4'-DDT

$$Intake\ (mg/Kg\text{-}day) = \frac{0.136 \frac{mg}{Kg} \times 100 \frac{mg}{day} \times 350 \frac{day}{yr} \times 30\,yr \times 1.0E\text{-}6 \frac{Kg}{mg}}{70\,Kg \times 10{,}950\,days}$$

$$= 1.86\,E\text{-}07$$

$$Risk = \frac{1.86\,E\text{-}07\ mg/Kg\text{-}day}{5.00E\text{-}04\ mg/Kg\text{-}day} = 3.73\,E\text{-}04$$

SOIL INGESTION EXPOSU. .SSESSMENT
SITE 6 LOT 201 GRIDS A B AND C - CHILD RESIDENT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

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 = exposure frequency for child (days/yr)	350
ED = exposure duration for child (yr)	6
IR = soil ingestion rate for child (mg/day)	200
BW = body weight for child (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (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 (years)	Days per year (days/yr)	Carc Dose (mg/kg/day) Child	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child
Dieldren	0.0074	350	6	1E-06	200	15	70	365	8.11E-09	1.60E+01	1.30E-07	1.65
4,4'-DDD	0.0156	350	6	1E-06	200	15	70	365	1.71E-08	2.40E-01	4.10E-09	0.05
4,4'-DDE	0.0452	350	6	1E-06	200	15	70	365	4.95E-08	3.40E-01	1.68E-08	0.21
4,4'-DDT	0.136	350	6	1E-06	200	15	70	365	1.49E-07	3.40E-01	5.07E-08	0.64
Aroclor 1260	0.036	350	6	1E-06	200	15	70	365	3.95E-08	7.70E+00	3.04E-07	3.86
1,4-Dichlorobenzene	0.038	350	6	1E-06	200	15	70	365	4.16E-08	2.40E-02	9.99E-10	0.01
Chrysene	0.088	350	6	1E-06	200	15	70	365	9.64E-08	7.30E+00	7.04E-07	8.96
Benzo(b)fluoranthene	0.16	350	6	1E-06	200	15	70	365	1.75E-07	7.30E+00	1.28E-06	16.28
Arsenic	2.8	350	6	1E-06	200	15	70	365	3.07E-06	1.75E+00	5.37E-06	68.32
TOTAL											7.86E-06	100.00

Contaminant	Concentration Noncarcinogen (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 Noncarc Time (years)	Days per year (days/yr)	Noncarc Dose (mg/kg/day) Child	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
Dieldren	0.0074	350	6	1E-06	200	15	6	365	9.46E-08	5.00E-05	1.89E-03	0.62
4,4'-DDT	0.136	350	6	1E-06	200	15	6	365	1.74E-06	5.00E-04	3.48E-03	1.15
Fluoranthene	0.094	350	6	1E-06	200	15	6	365	1.20E-06	4.00E-02	3.00E-05	0.01
Pyrene	0.099	350	6	1E-06	200	15	6	365	1.27E-06	3.00E-02	4.22E-05	0.01
Total PCBs	0.036	350	6	1E-06	200	15	6	365	4.60E-07	7E-05	6.58E-03	2.17
Arsenic	2.8	350	6	1E-06	200	15	6	365	3.58E-05	3.00E-04	1.19E-01	39.38
Cadmium	0.8	350	6	1E-06	200	15	6	365	1.02E-05	5.00E-04	2.05E-02	6.75
Chromium	12.1	350	6	1E-06	200	15	6	365	1.55E-04	5.00E-03	3.09E-02	10.21
Manganese	46.4	350	6	1E-06	200	15	6	365	5.93E-04	5.00E-03	1.19E-01	39.15
Zinc	39	350	6	1E-06	200	15	6	365	4.99E-04	3.00E-01	1.66E-03	0.55
TOTAL											3.03E-01	100.00

FILE: SI201.WQ2

SOIL INGESTION EXPOSURE ASSESSMENT
SITE 6 LOT 201 GRIDS A B AND C - ADULT RESIDENT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

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 = exposure frequency for adults (days/yr)	350
ED = exposure duration for adults (yr)	30
IR = soil ingestion rate for adults (mg/day)	100
BW = body weight for adult (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

Note: Inputs are scenario and site specific

Contaminant	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 Time (years)	Days per year (days/yr)	Carc Dose (mg/kg/day) Adult	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult
Dieldren	0.0074	350	30	1E-06	100	70	70	365	4.34E-09	1.60E+01	6.95E-08	1.65
4,4'-DDD	0.0156	350	30	1E-06	100	70	70	365	9.16E-09	2.40E-01	2.20E-09	0.05
4,4'-DDE	0.0452	350	30	1E-06	100	70	70	365	2.65E-08	3.40E-01	9.02E-09	0.21
4,4'-DDT	0.136	350	30	1E-06	100	70	70	365	7.98E-08	3.40E-01	2.71E-08	0.64
Aroclor 1260	0.036	350	30	1E-06	100	70	70	365	2.11E-08	7.70E+00	1.63E-07	3.86
1,4-Dichlorobenzene	0.036	350	30	1E-06	100	70	70	365	2.23E-08	2.40E-02	5.35E-10	0.01
Chrysene	0.088	350	30	1E-06	100	70	70	365	5.17E-08	7.30E+00	3.77E-07	8.96
Benzo(b)fluoranthene	0.16	350	30	1E-06	100	70	70	365	9.39E-08	7.30E+00	6.86E-07	16.28
Arsenic	2.8	350	30	1E-06	100	70	70	365	1.64E-06	1.75E+00	2.88E-06	68.32
TOTAL											4.21E-06	100.00

Contaminant	Concentration Noncarcinogen (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 Noncarc Time (years)	Days per year (days/yr)	Noncarc Dose (mg/kg/day) Adult	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Dieldren	0.0074	350	30	1E-06	100	70	30	365	1.01E-08	5.00E-05	2.03E-04	0.62
4,4'-DDT	0.136	350	30	1E-06	100	70	30	365	1.86E-07	5.00E-04	3.73E-04	1.15
Fluoranthene	0.094	350	30	1E-06	100	70	30	365	1.29E-07	4.00E-02	3.22E-06	0.01
Pyrene	0.099	350	30	1E-06	100	70	30	365	1.36E-07	3.00E-02	4.52E-06	0.01
Total PCBs	0.036	350	30	1E-06	100	70	30	365	4.93E-08	7E-05	7.05E-04	2.17
Arsenic	2.8	350	30	1E-06	100	70	30	365	3.84E-06	3.00E-04	1.28E-02	39.38
Cadmium	0.8	350	30	1E-06	100	70	30	365	1.10E-06	5.00E-04	2.19E-03	6.75
Chromium	12.1	350	30	1E-06	100	70	30	365	1.66E-05	5.00E-03	3.32E-03	10.21
Manganese	46.4	350	30	1E-06	100	70	30	365	6.36E-05	5.00E-03	1.27E-02	39.15
Zinc	39	350	30	1E-06	100	70	30	365	5.34E-05	3.00E-01	1.78E-04	0.55
TOTAL											3.25E-02	100.00

FILE: SI201.WQ1

SOIL INGESTION EXPOS[illegible]ASSESSMENT
SITE 6 LOT 201 GRIDS A B AND C - WORKER
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

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 = exposure frequency for worker (days/yr)	250
ED = exposure duration for worker (yr)	25
IR = soil ingestion rate for worker (mg/day)	100
BW = body weight for worker (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	25
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

Note: Inpute are scenario and site specific

Contaminant	Concentration Carcinogen (mg/kg)	Exposure Frequency (days/yr) Worker	Exposure Duration (yr) Worker	Conversion Factor (kg/mg)	Ingestion Rate (mg/day) Worker	Body Weight (kg) Worker	Average Carc Time (years)	Days per year (days/yr)	Carc Dose (mg/kg/day) Worker	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Worker	Percent Carcinogenic Risk Worker
Dieldren	0.0074	250	25	1E-06	100	70	70	365	2.59E-09	1.60E+01	4.14E-08	1.65
4,4'-DDD	0.0156	250	25	1E-06	100	70	70	365	5.45E-09	2.40E-01	1.31E-09	0.05
4,4'-DDE	0.0452	250	25	1E-06	100	70	70	365	1.58E-08	3.40E-01	5.37E-09	0.21
4,4'-DDT	0.136	250	25	1E-06	100	70	70	365	4.75E-08	3.40E-01	1.62E-08	0.64
Aroclor 1260	0.036	250	25	1E-06	100	70	70	365	1.26E-08	7.70E+00	9.69E-08	3.86
1,4-Dichlorobenzene	0.038	250	25	1E-06	100	70	70	365	1.33E-08	2.40E-02	3.19E-10	0.01
Chrysene	0.088	250	25	1E-06	100	70	70	365	3.08E-08	7.30E+00	2.24E-07	8.96
Benzo(b)fluoranthene	0.16	250	25	1E-06	100	70	70	365	5.59E-08	7.30E+00	4.08E-07	16.28
Arsenic	2.8	250	25	1E-06	100	70	70	365	9.78E-07	1.75E+00	1.71E-06	68.32
TOTAL											2.51E-06	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Exposure Frequency (days/yr) Worker	Exposure Duration (yr) Worker	Conversion Factor (kg/mg)	Ingestion Rate (mg/day) Worker	Body Weight (kg) Worker	Average Noncarc Time (years)	Days per year (days/yr)	Noncarc Dose (mg/kg/day) Worker	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Worker	Percent Noncarcinogenic Risk Worker
Dieldren	0.0074	250	25	1E-06	100	70	25	365	7.24E-09	5.00E-05	1.45E-04	0.62
4,4'-DDT	0.136	250	25	1E-06	100	70	25	365	1.33E-07	5.00E-04	2.66E-04	1.15
Fluoranthene	0.094	250	25	1E-06	100	70	25	365	9.20E-08	4.00E-02	2.30E-06	0.01
Pyrene	0.099	250	25	1E-06	100	70	25	365	9.69E-08	3.00E-02	3.23E-06	0.01
Total PCBs	0.036	250	25	1E-06	100	70	25	365	3.52E-08	7E-05	5.03E-04	2.17
Arsenic	2.8	250	25	1E-06	100	70	25	365	2.74E-06	3.00E-04	9.13E-03	39.38
Cadmium	0.8	250	25	1E-06	100	70	25	365	7.83E-07	5.00E-04	1.57E-03	6.75
Chromium	12.1	250	25	1E-06	100	70	25	365	1.18E-05	5.00E-03	2.37E-03	10.21
Manganese	46.4	250	25	1E-06	100	70	25	365	4.54E-05	5.00E-03	9.08E-03	39.15
Zinc	39	250	25	1E-06	100	70	25	365	3.82E-05	3.00E-01	1.27E-04	0.55
TOTAL											2.32E-02	100.00

FILE NAME: SI201.WQ3

SOIL INGESTION EXPO. ...SSESSMENT
SITE 6 LOT 203 OPEN STORAGE AREA, DDT AND PCB GRID - CHILD RESIDENT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

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 = exposure frequency for adult (days/yr)	350
ED = exposure duration for adult (yr)	6
IR = soil ingestion rate for adult(mg/day)	200
BW = body weight for adult (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (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 (years)	Days per year (days/yr)	Carc Dose (mg/kg/day) Child	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child
Dieldren	0.0057	350	6	1E-06	200	15	70	365	6.25E-09	1.60E+01	9.99E-08	0.66
4,4'-DDD	0.0062	350	6	1E-06	200	15	70	365	6.79E-09	2.40E-01	1.63E-09	0.01
4,4'-DDE	0.0248	350	6	1E-06	200	15	70	365	2.72E-08	3.40E-01	9.24E-09	0.06
4,4'-DDT	0.0416	350	6	1E-06	200	15	70	365	4.56E-08	3.40E-01	1.55E-08	0.10
Aroclor 1260	0.1815	350	6	1E-06	200	15	70	365	1.99E-07	7.70E+00	1.53E-06	10.13
1,4-Dichlorobenzene	0.16	350	6	1E-06	200	15	70	365	1.75E-07	2.40E-02	4.21E-09	0.03
Benzo(a)anthracene	0.239	350	6	1E-06	200	15	70	365	2.62E-07	7.30E+00	1.91E-06	12.64
Chrysene	0.231	350	6	1E-06	200	15	70	365	2.53E-07	7.30E+00	1.85E-06	12.22
Benzo(b)fluoranthene	0.27	350	6	1E-06	200	15	70	365	2.96E-07	7.30E+00	2.16E-06	14.28
Benzo(k)fluoranthene	0.235	350	6	1E-06	200	15	70	365	2.58E-07	7.30E+00	1.88E-06	12.43
ndeno(1,2,3-cd)pyrene	0.227	350	6	1E-06	200	15	70	365	2.49E-07	7.30E+00	1.82E-06	12.01
Benzo(a)pyrene	0.241	350	6	1E-06	200	15	70	365	2.64E-07	7.30E+00	1.93E-06	12.75
Arsenic	1	350	6	1E-06	200	15	70	365	1.10E-06	1.75E+00	1.92E-06	12.68
TOTAL											1.51E-05	100.00

Contaminant	Concentration Noncarcinogen (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 Noncarc Time (years)	Days per year (days/yr)	Noncarc Dose (mg/kg/day) Child	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
Dieldren	0.0057	350	6	1E-06	200	15	6	365	7.29E-08	5.00E-05	1.46E-03	0.68
Endrin	0.0054	350	6	1E-06	200	15	6	365	6.90E-08	5.40E-03	1.28E-05	0.01
4,4'-DDT	0.0416	350	6	1E-06	200	15	6	365	5.32E-07	5.00E-04	1.06E-03	0.50
Fluoranthene	0.25	350	6	1E-06	200	15	6	365	3.20E-06	4.00E-02	7.99E-05	0.04
Pyrene	0.254	350	6	1E-06	200	15	6	365	3.25E-06	3.00E-02	1.08E-04	0.05
Total PCBs	0.1815	350	6	1E-06	200	15	6	365	2.32E-06	7E-05	3.32E-02	15.48
Arsenic	1	350	6	1E-06	200	15	6	365	1.28E-05	3.00E-04	4.26E-02	19.90
Barium	10.4	350	6	1E-06	200	15	6	365	1.33E-04	7.00E-02	1.90E-03	0.89
Cadmium	0.9	350	6	1E-06	200	15	6	365	1.15E-05	5.00E-04	2.30E-02	10.75
Chromium	5.6	350	6	1E-06	200	15	6	365	7.16E-05	5.00E-03	1.43E-02	6.69
Manganese	36.4	350	6	1E-06	200	15	6	365	4.65E-04	5.00E-03	9.31E-02	43.47
Zinc	78.2	350	6	1E-06	200	15	6	365	1.00E-03	3.00E-01	3.33E-03	1.56
TOTAL											2.14E-01	100.00

FILE NAME: SI203.WQ2

SOIL INGESTION EXPOSURE ASSESSMENT
SITE 6 LOT 203 OPEN STORAGE AREA, DDT AND PCB GRID - ADULT RESIDENT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

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 = exposure frequency for adult (days/yr)	350
ED = exposure duration for adult (yr)	30
IR = soil ingestion rate for adult(mg/day)	100
BW = body weight for adult (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

Note: Inputs are scenario and site specific

Contaminant	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 Time (years)	Days per year (days/yr)	Carc Dose (mg/kg/day) Adult	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Worker
Dieldren	0.0057	350	30	1E-06	100	70	70	365	3.35E-09	1.60E+01	5.35E-08	0.66
4,4'-DDD	0.0062	350	30	1E-06	100	70	70	365	3.64E-09	2.40E-01	8.74E-10	0.01
4,4'-DDE	0.0248	350	30	1E-06	100	70	70	365	1.46E-08	3.40E-01	4.95E-09	0.06
4,4'-DDT	0.0416	350	30	1E-06	100	70	70	365	2.44E-08	3.40E-01	8.30E-09	0.10
Aroclor 1260	0.1815	350	30	1E-06	100	70	70	365	1.07E-07	7.70E+00	8.20E-07	10.13
1,4-Dichlorobenzene	0.16	350	30	1E-06	100	70	70	365	9.39E-08	2.40E-02	2.25E-09	0.03
Benzo(a)anthracene	0.239	350	30	1E-06	100	70	70	365	1.40E-07	7.30E+00	1.02E-06	12.64
Chrysene	0.231	350	30	1E-06	100	70	70	365	1.36E-07	7.30E+00	9.90E-07	12.22
Benzo(b)fluoranthene	0.27	350	30	1E-06	100	70	70	365	1.59E-07	7.30E+00	1.16E-06	14.28
Benzo(k)fluoranthene	0.235	350	30	1E-06	100	70	70	365	1.38E-07	7.30E+00	1.01E-06	12.43
Indeno(1,2,3-cd)pyrene	0.227	350	30	1E-06	100	70	70	365	1.33E-07	7.30E+00	9.73E-07	12.01
Benzo(a)pyrene	0.241	350	30	1E-06	100	70	70	365	1.41E-07	7.30E+00	1.03E-06	12.75
Arsenic	1	350	30	1E-06	100	70	70	365	5.87E-07	1.75E+00	1.03E-06	12.68
TOTAL											8.10E-06	100.00

Contaminant	Concentration Noncarcinogen (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 Noncarc Time (years)	Days per year (days/yr)	Noncarc Dose (mg/kg/day) Adult	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Worker
Dieldren	0.0057	350	30	1E-06	100	70	30	365	7.81E-09	5.00E-05	1.56E-04	0.68
Endrin	0.0054	350	30	1E-06	100	70	30	365	7.40E-09	5.40E-03	1.37E-06	0.01
4,4'-DDT	0.0416	350	30	1E-06	100	70	30	365	5.70E-08	5.00E-04	1.14E-04	0.50
Fluoranthene	0.25	350	30	1E-06	100	70	30	365	3.42E-07	4.00E-02	8.56E-06	0.04
Pyrene	0.254	350	30	1E-06	100	70	30	365	3.48E-07	3.00E-02	1.16E-05	0.05
Total PCB	0.1815	350	30	1E-06	100	70	30	365	2.49E-07	7E-05	3.55E-03	15.48
Arsenic	1	350	30	1E-06	100	70	30	365	1.37E-06	3.00E-04	4.57E-03	19.90
Barium	10.4	350	30	1E-06	100	70	30	365	1.42E-05	7.00E-02	2.04E-04	0.89
Cadmium	0.9	350	30	1E-06	100	70	30	365	1.23E-06	5.00E-04	2.47E-03	10.75
Chromium	5.6	350	30	1E-06	100	70	30	365	7.67E-06	5.00E-03	1.53E-03	6.69
Manganese	36.4	350	30	1E-06	100	70	30	365	4.99E-05	5.00E-03	9.97E-03	43.47
Zinc	78.2	350	30	1E-06	100	70	30	365	1.07E-04	3.00E-01	3.57E-04	1.56
TOTAL											2.29E-02	100.00

FILE NAME: SI203.WQ1

SOIL INGESTION EXPOSU[illegible]SSESSMENT
SITE 6 LOT 203 OPEN STORAGE AREA, DDT AND PCB GRID - WORKER
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

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 = exposure frequency for worker (days/yr)	250
ED = exposure duration for worker (yr)	25
IR = soil ingestion rate for worker (mg/day)	100
BW = body weight for worker (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	25
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/kg)	Exposure Frequency (days/yr) Worker	Exposure Duration (yr) Worker	Conversion Factor (kg/mg)	Ingestion Rate (mg/day) Worker	Body Weight (kg) Worker	Average Carc Time (years)	Days per year (days/yr)	Carc Dose (mg/kg/day) Worker	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Worker	Percent Carcinogenic Risk Worker
Dieldren	0.0057	250	25	1E-06	100	70	70	365	1.99E-09	1.60E+01	3.19E-08	0.66
4,4'-DDD	0.0062	250	25	1E-06	100	70	70	365	2.17E-09	2.40E-01	5.20E-10	0.01
4,4'-DDE	0.0248	250	25	1E-06	100	70	70	365	8.67E-09	3.40E-01	2.95E-09	0.06
4,4'-DDT	0.0416	250	25	1E-06	100	70	70	365	1.45E-08	3.40E-01	4.94E-09	0.10
Aroclor 1260	0.1815	250	25	1E-06	100	70	70	365	6.34E-08	7.70E+00	4.88E-07	10.13
1,4-Dichlorobenzene	0.16	250	25	1E-06	100	70	70	365	5.59E-08	2.40E-02	1.34E-09	0.03
Benzo(a)anthracene	0.239	250	25	1E-06	100	70	70	365	8.35E-08	7.30E+00	6.10E-07	12.64
Chrysene	0.231	250	25	1E-06	100	70	70	365	8.07E-08	7.30E+00	5.89E-07	12.22
Benzo(b)fluoranthene	0.27	250	25	1E-06	100	70	70	365	9.44E-08	7.30E+00	6.89E-07	14.28
Benzo(k)fluoranthene	0.235	250	25	1E-06	100	70	70	365	8.21E-08	7.30E+00	5.99E-07	12.43
Indeno(1,2,3-cd)pyrene	0.227	250	25	1E-06	100	70	70	365	7.93E-08	7.30E+00	5.79E-07	12.01
Benzo(a)pyrene	0.241	250	25	1E-06	100	70	70	365	8.42E-08	7.30E+00	6.15E-07	12.75
Arsenic	1	250	25	1E-06	100	70	70	365	3.49E-07	1.75E+00	6.12E-07	12.68
TOTAL											4.82E-06	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Exposure Frequency (days/yr) Worker	Exposure Duration (yr) Worker	Conversion Factor (kg/mg)	Ingestion Rate (mg/day) Worker	Body Weight (kg) Worker	Average Noncarc Time (years)	Days per year (days/yr)	Noncarc Dose (mg/kg/day) Worker	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Worker	Percent Noncarcinogenic Risk Worker
Dieldren	0.0057	250	25	1E-06	100	70	25	365	5.58E-09	5.00E-05	1.12E-04	0.68
Endrin	0.0054	250	25	1E-06	100	70	25	365	5.28E-09	5.40E-03	9.78E-07	0.01
4,4'-DDT	0.0416	250	25	1E-06	100	70	25	365	4.07E-08	5.00E-04	8.14E-05	0.50
Fluoranthene	0.25	250	25	1E-06	100	70	25	365	2.45E-07	4.00E-02	6.12E-06	0.04
Pyrene	0.254	250	25	1E-06	100	70	25	365	2.49E-07	3.00E-02	8.28E-06	0.05
Total PCBs	0.1815	250	25	1E-06	100	70	25	365	1.78E-07	7E-05	2.54E-03	15.48
Arsenic	1	250	25	1E-06	100	70	25	365	9.78E-07	3.00E-04	3.26E-03	19.90
Barium	10.4	250	25	1E-06	100	70	25	365	1.02E-05	7.00E-02	1.45E-04	0.89
Cadmium	0.9	250	25	1E-06	100	70	25	365	8.81E-07	5.00E-04	1.76E-03	10.75
Chromium	5.6	250	25	1E-06	100	70	25	365	5.48E-06	5.00E-03	1.10E-03	6.69
Manganese	36.4	250	25	1E-06	100	70	25	365	3.56E-05	5.00E-03	7.12E-03	43.47
Zinc	78.2	250	25	1E-06	100	70	25	365	7.65E-05	3.00E-01	2.55E-04	1.56
TOTAL											1.64E-02	100.00

FILE NAME: SI203.WQ3

SOIL INGESTION EXPOSURE A. ...ENT
SITE 6 WOOD AND RAVINE AREA - CHILD RESIDENT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

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 = exposure frequency for child (days/yr)	350
ED = exposure duration for child (yr)	6
IR = soil ingestion rate for child (mg/day)	200
BW = body weight for child (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (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 (years)	Days per year (days/yr)	Carc Dose (mg/kg/day) Child	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child
Dieldren	0.0069	350	6	1E-06	200	15	70	365	7.58E-09	1.60E+01	1.21E-07	0.84
4,4'-DDD	0.006	350	6	1E-06	200	15	70	365	6.58E-09	2.40E-01	1.58E-09	0.01
4,4'-DDE	0.0208	350	6	1E-06	200	15	70	365	2.28E-08	3.40E-01	7.75E-09	0.05
4,4'-DDT	0.0283	350	6	1E-06	200	15	70	365	3.10E-08	3.40E-01	1.05E-08	0.07
Aroclor 1260	0.063	350	6	1E-06	200	15	70	365	6.90E-08	7.70E+00	5.32E-07	3.71
1,4-Dichlorobenzene	0.074	350	6	1E-06	200	15	70	365	8.11E-08	2.40E-02	1.95E-09	0.01
Chrysene	0.2109	350	6	1E-06	200	15	70	365	2.31E-07	7.30E+00	1.69E-06	11.76
Benzo(a)anthracene	0.2181	350	6	1E-06	200	15	70	365	2.39E-07	7.30E+00	1.74E-06	12.16
Benzo(b)fluoranthene	0.2131	350	6	1E-06	200	15	70	365	2.34E-07	7.30E+00	1.70E-06	11.89
Benzo(k)fluoranthene	0.1969	350	6	1E-06	200	15	70	365	2.16E-07	7.30E+00	1.58E-06	10.98
Benzo(a)pyrene	0.2101	350	6	1E-06	200	15	70	365	2.30E-07	7.30E+00	1.68E-06	11.72
Indeno(1,2,3-cd)pyrene	0.2118	350	6	1E-06	200	15	70	365	2.32E-07	7.30E+00	1.69E-06	11.81
Dibenz(a,h)anthracene	0.2008	350	6	1E-06	200	15	70	365	2.20E-07	7.30E+00	1.61E-06	11.20
Arsenic	1.03	350	6	1E-06	200	15	70	365	1.13E-06	1.75E+00	1.98E-06	13.77
TOTAL											1.43E-05	100.00

Contaminant	Concentration Noncarcinogen (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 Noncarc Time (years)	Days per year (days/yr)	Noncarc Dose (mg/kg/day) Child	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
Dieldren	0.0069	350	6	1E-06	200	15	6	365	8.82E-08	5.00E-05	1.76E-03	1.28
Endrin	0.0041	350	6	1E-06	200	15	6	365	5.24E-08	3.00E-04	1.75E-04	0.13
4,4'-DDT	0.0283	350	6	1E-06	200	15	6	365	3.62E-07	5.00E-04	7.24E-04	0.53
Anthracene	0.2	350	6	1E-06	200	15	6	365	2.56E-06	3.00E-01	8.52E-06	0.01
Fluoranthene	0.2215	350	6	1E-06	200	15	6	365	2.83E-06	4.00E-02	7.08E-05	0.05
Phenol	0.16	350	6	1E-06	200	15	6	365	2.05E-06	6.00E-01	3.41E-06	0.00
Pyrene	0.2346	350	6	1E-06	200	15	6	365	3.00E-06	3.00E-02	1.00E-04	0.07
Total PCBs	0.063	350	6	1E-06	200	15	6	365	8.05E-07	7E-05	1.15E-02	8.37
Arsenic	1.03	350	6	1E-06	200	15	6	365	1.32E-05	3.00E-04	4.39E-02	31.94
Barium	21.9	350	6	1E-06	200	15	6	365	2.80E-04	7.00E-02	4.00E-03	2.91
Cadmium	0.57	350	6	1E-06	200	15	6	365	7.29E-06	5.00E-04	1.46E-02	10.61
Chromium	2.7	350	6	1E-06	200	15	6	365	3.45E-05	5.00E-03	6.90E-03	5.02
Manganese	17.3	350	6	1E-06	200	15	6	365	2.21E-04	5.00E-03	4.42E-02	32.19
Vanadium	4.7	350	6	1E-06	200	15	6	365	6.01E-05	7.00E-03	8.59E-03	6.25
Zinc	20.6	350	6	1E-06	200	15	6	365	2.63E-04	3.00E-01	8.78E-04	0.64
TOTAL											1.37E-01	100.00

FILE NAME: SIWR.WQ2

SOIL INGESTION EXPOSURE ASSESSMENT
SITE 6 WOOD AND RAVINE AREA - ADULT RESIDENT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

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 = exposure frequency for adults (days/yr)	350
ED = exposure duration for adults (yr)	30
IR = soil ingestion rate for adults (mg/day)	100
BW = body weight for adult (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

Note: Inputs are scenario and site specific

Contaminant	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 Time (years)	Days per year (days/yr)	Carc Dose (mg/kg/day) Adult	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult
Dieldren	0.0069	350	30	1E-06	100	70	70	365	4.05E-09	1.60E+01	6.48E-08	0.84
4,4'-DDD	0.006	350	30	1E-06	100	70	70	365	3.52E-09	2.40E-01	8.45E-10	0.01
4,4'-DDE	0.0208	350	30	1E-06	100	70	70	365	1.22E-08	3.40E-01	4.15E-09	0.05
4,4'-DDT	0.0283	350	30	1E-06	100	70	70	365	1.66E-08	3.40E-01	5.65E-09	0.07
Aroclor 1260	0.063	350	30	1E-06	100	70	70	365	3.70E-08	7.70E+00	2.85E-07	3.71
1,4-Dichlorobenzene	0.074	350	30	1E-06	100	70	70	365	4.34E-08	2.40E-02	1.04E-09	0.01
Chrysene	0.2109	350	30	1E-06	100	70	70	365	1.24E-07	7.30E+00	9.04E-07	11.76
Benzo(a)anthracene	0.2181	350	30	1E-06	100	70	70	365	1.28E-07	7.30E+00	9.35E-07	12.16
Benzo(b)fluoranthene	0.2131	350	30	1E-06	100	70	70	365	1.25E-07	7.30E+00	9.13E-07	11.89
Benzo(k)fluoranthene	0.1969	350	30	1E-06	100	70	70	365	1.16E-07	7.30E+00	8.44E-07	10.98
Benzo(a)pyrene	0.2101	350	30	1E-06	100	70	70	365	1.23E-07	7.30E+00	9.00E-07	11.72
Indeno(1,2,3-cd)pyrene	0.2118	350	30	1E-06	100	70	70	365	1.24E-07	7.30E+00	9.08E-07	11.81
Dibenz(a,h)anthracene	0.2008	350	30	1E-06	100	70	70	365	1.18E-07	7.30E+00	8.61E-07	11.20
Arsenic	1.03	350	30	1E-06	100	70	70	365	6.05E-07	1.75E+00	1.06E-06	13.77
TOTAL											7.68E-06	100.00

Contaminant	Concentration Noncarcinogen (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 Noncarc Time (years)	Days per year (days/yr)	Noncarc Dose (mg/kg/day) Adult	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Dieldren	0.0069	350	30	1E-06	100	70	30	365	9.45E-09	5.00E-05	1.89E-04	1.28
Endrin	0.0041	350	30	1E-06	100	70	30	365	5.62E-09	3.00E-04	1.87E-05	0.13
4,4'-DDT	0.0283	350	30	1E-06	100	70	30	365	3.88E-08	5.00E-04	7.75E-05	0.53
Anthracene	0.2	350	30	1E-06	100	70	30	365	2.74E-07	3.00E-01	9.13E-07	0.01
Fluoranthene	0.2215	350	30	1E-06	100	70	30	365	3.03E-07	4.00E-02	7.59E-06	0.05
Phenol	0.16	350	30	1E-06	100	70	30	365	2.19E-07	6.00E-01	3.65E-07	0.00
Pyrene	0.2346	350	30	1E-06	100	70	30	365	3.21E-07	3.00E-02	1.07E-05	0.07
Total PCBs	0.063	350	30	1E-06	100	70	30	365	8.63E-08	7E-05	1.23E-03	8.37
Arsenic	1.03	350	30	1E-06	100	70	30	365	1.41E-06	3.00E-04	4.70E-03	31.94
Barium	21.9	350	30	1E-06	100	70	30	365	3.00E-05	7.00E-02	4.29E-04	2.91
Cadmium	0.57	350	30	1E-06	100	70	30	365	7.81E-07	5.00E-04	1.56E-03	10.61
Chromium	2.7	350	30	1E-06	100	70	30	365	3.70E-06	5.00E-03	7.40E-04	5.02
Manganese	17.3	350	30	1E-06	100	70	30	365	2.37E-05	5.00E-03	4.74E-03	32.19
Vanadium	4.7	350	30	1E-06	100	70	30	365	6.44E-06	7.00E-03	9.20E-04	6.25
Zinc	20.6	350	30	1E-06	100	70	30	365	2.82E-05	3.00E-01	9.41E-05	0.64
TOTAL											1.47E-02	100.00

FILE NAME: SIWR.WQ1

SOIL INGESTION EXPOSURE ASSESSMENT
SITE 6 WOOD AND RAVINE AREA - WORKER
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

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 = exposure frequency for worker (days/yr)	250
ED = exposure duration for worker (yr)	25
IR = soil ingestion rate for worker (mg/day)	100
BW = body weight for worker (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	25
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/kg)	Exposure Frequency (days/yr) Worker	Exposure Duration (yr) Worker	Conversion Factor (kg/mg)	Ingestion Rate (mg/day) Worker	Body Weight (kg) Worker	Average Carc Time (years)	Days per year (days/yr)	Carc Dose (mg/kg/day) Worker	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Worker	Percent Carcinogenic Risk Worker
Dieldren	0.0069	250	25	1E-06	100	70	70	365	2.41E-09	1.60E+01	3.86E-08	0.84
4,4'-DDD	0.006	250	25	1E-06	100	70	70	365	2.10E-09	2.40E-01	5.03E-10	0.01
4,4'-DDE	0.0208	250	25	1E-06	100	70	70	365	7.27E-09	3.40E-01	2.47E-09	0.05
4,4'-DDT	0.0283	250	25	1E-06	100	70	70	365	9.89E-09	3.40E-01	3.36E-09	0.07
Aroclor 1260	0.063	250	25	1E-06	100	70	70	365	2.20E-08	7.70E+00	1.70E-07	3.71
1,4-Dichlorobenzene	0.074	250	25	1E-06	100	70	70	365	2.59E-08	2.40E-02	6.21E-10	0.01
Chrysene	0.2109	250	25	1E-06	100	70	70	365	7.37E-08	7.30E+00	5.38E-07	11.76
Benzo(a)anthracene	0.2181	250	25	1E-06	100	70	70	365	7.62E-08	7.30E+00	5.56E-07	12.16
Benzo(b)fluoranthene	0.2131	250	25	1E-06	100	70	70	365	7.45E-08	7.30E+00	5.44E-07	11.89
Benzo(k)fluoranthene	0.1969	250	25	1E-06	100	70	70	365	6.88E-08	7.30E+00	5.02E-07	10.98
Benzo(a)pyrene	0.2101	250	25	1E-06	100	70	70	365	7.34E-08	7.30E+00	5.36E-07	11.72
Indeno(1,2,3-cd)pyrene	0.2118	250	25	1E-06	100	70	70	365	7.40E-08	7.30E+00	5.40E-07	11.81
Dibenz(a,h)anthracene	0.2008	250	25	1E-06	100	70	70	365	7.02E-08	7.30E+00	5.12E-07	11.20
Arsenic	1.03	250	25	1E-06	100	70	70	365	3.60E-07	1.75E+00	6.30E-07	13.77
TOTAL											4.57E-06	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Exposure Frequency (days/yr) Worker	Exposure Duration (yr) Worker	Conversion Factor (kg/mg)	Ingestion Rate (mg/day) Worker	Body Weight (kg) Worker	Average Noncarc Time (years)	Days per year (days/yr)	Noncarc Dose (mg/kg/day) Worker	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Worker	Percent Noncarcinogenic Risk Worker
Dieldren	0.0069	250	25	1E-06	100	70	25	365	6.75E-09	5.00E-05	1.35E-04	1.28
Endrin	0.0041	250	25	1E-06	100	70	25	365	4.01E-09	3.00E-04	1.34E-05	0.13
4,4'-DDT	0.0283	250	25	1E-06	100	70	25	365	2.77E-08	5.00E-04	5.54E-05	0.53
Anthracene	0.2	250	25	1E-06	100	70	25	365	1.96E-07	3.00E-01	6.52E-07	0.01
Fluoranthene	0.2215	250	25	1E-06	100	70	25	365	2.17E-07	4.00E-02	5.42E-06	0.05
Phenol	0.16	250	25	1E-06	100	70	25	365	1.57E-07	6.00E-01	2.61E-07	0.00
Pyrene	0.2346	250	25	1E-06	100	70	25	365	2.30E-07	3.00E-02	7.65E-06	0.07
Total PCBs	0.063	250	25	1E-06	100	70	25	365	6.16E-08	7E-05	8.81E-04	8.37
Arsenic	1.03	250	25	1E-06	100	70	25	365	1.01E-06	3.00E-04	3.36E-03	31.94
Barium	21.9	250	25	1E-06	100	70	25	365	2.14E-05	7.00E-02	3.06E-04	2.91
Cadmium	0.57	250	25	1E-06	100	70	25	365	5.58E-07	5.00E-04	1.12E-03	10.61
Chromium	2.7	250	25	1E-06	100	70	25	365	2.64E-06	5.00E-03	5.28E-04	5.02
Manganese	17.3	250	25	1E-06	100	70	25	365	1.69E-05	5.00E-03	3.39E-03	32.19
Vanadium	4.7	250	25	1E-06	100	70	25	365	4.60E-06	7.00E-03	6.57E-04	6.25
Zinc	20.6	250	25	1E-06	100	70	25	365	2.02E-05	3.00E-01	6.72E-05	0.64
TOTAL											1.05E-02	100.00

FILE NAME: SIWR.WQ3

S.O. No. CTO-0135 Camp Lejeune

Subject: Dermal Contact with Surface Soil

Sheet No. 1 of 2

Drawing No.

Computed by MDB Checked By DCS Date 3/21/93

Baker

Purpose: Estimate exposure/risk from dermal contact with surface soil

$$\text{Intake } (\text{mg/Kg-day}) = \frac{C \times CF \times SA \times AF \times Abs \times EF \times ED}{BW \times AT_c \text{ or } AT_{nc}}$$

Where:

C = contaminant concentration in surface soil (mg/Kg)

CF = conversion factor (Kg/mg)

SA = surface area available for contact ($\frac{cm^2}{event}$)

AF = soil to skin adherence factor ($\frac{mg}{cm^2}$)

Abs = fraction absorbed (percent)

EF = exposure frequency (day/yr)

ED = exposure duration (yr)

BW = body weight (kg)

AT_c = averaging time carcinogen (days)

AT_{nc} = averaging time noncarcinogen (days)

Risk:

Carcinogen = Intake (mg/Kg-day) x CSF $(mg/Kg\text{-day})^{-1}$

Noncarcinogen = Intake (mg/Kg-day) / RfD (mg/Kg-day)

S.O. No. CTO-0133

Subject: Dermal Contact with Surface Soil

Sheet No. 2 of 2

Drawing No.

Computed by MDB Checked By DCS Date 3/21/93

Baker

Example Carcinogen: 4,4'-DDD

$$\text{Intake (mg/kg-day)} = \frac{0.0156\ \frac{mg}{Kg} \times 1E\text{-}06\ \frac{Kg}{mg} \times 5300\ \frac{cm^2}{event} \times 1.0\ \frac{mg}{cm^2} \times 0.05\% \times 350\ \frac{event}{yr} \times 30\ yr}{70\ Kg \times 25,550\ days}$$

$$= 2.4\ E\ 10^{-8}$$

$$\text{Risk} = 2.4\ E\text{-}08\ \frac{mg}{Kg\text{-}day} \times 2.4\ E\text{-}01\ \frac{mg}{Kg\text{-}day} = 5.8\ E\text{-}09$$

Example Noncarcinogen: 4,4'-DDT

$$\text{Intake (mg/kg-day)} = \frac{0.136\ \frac{mg}{Kg} \times 1.0E\text{-}06\ \frac{Kg}{mg} \times 5300\ \frac{cm^2}{evt} \times 1.0\ \frac{mg}{cm^2} \times 0.05\% \times 350\ \frac{evt}{yr} \times 30\ yr}{70\ Kg \times 10,950\ days}$$

$$= 4.9\ E\text{-}07$$

$$\text{Risk} = \frac{4.9\ E\text{-}07\ \frac{mg}{Kg\text{-}day}}{5.0\ E\text{-}04\ \frac{mg}{Kg\text{-}day}} = 9.9\ E\text{-}04$$

DERMAL CONTACT EXPO[illegible] ASSESSMENT
SITE 6 LOT 201 AREAS A B AND C - CHILD RESIDENT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

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)	1800
AF = soil to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless)	Specific
EF = child exposure frequency (events/yr)	350
ED = child expsosure 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

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (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 (years)	Days per year (day/year)	Carc Dose (mg/kg/day) Child	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child
Dieldren	0.0074	1E-06	1800	1	0.05	350	6	15	70	365	3.65E-09	1.60E+01	5.84E-08	5.13
4,4'-DDD	0.0156	1E-06	1800	1	0.05	350	6	15	70	365	7.69E-09	2.40E-01	1.85E-09	0.16
4,4'-DDE	0.0452	1E-06	1800	1	0.05	350	6	15	70	365	2.23E-08	3.40E-01	7.58E-09	0.67
4,4'-DDT	0.136	1E-06	1800	1	0.05	350	6	15	70	365	6.71E-08	3.40E-01	2.28E-08	2.00
Aroclor 1260	0.036	1E-06	1800	1	0.03	350	6	15	70	365	1.07E-08	7.70E+00	8.20E-08	7.20
1,4-Dichlorobenzene	0.038	1E-06	1800	1	0.05	350	6	15	70	365	1.87E-08	2.40E-02	4.50E-10	0.04
Chrysene	0.088	1E-06	1800	1	0.05	350	6	15	70	365	4.34E-08	7.30E+00	3.17E-07	27.82
Benzo(b)fluoranthene	0.046	1E-06	1800	1	0.05	350	6	15	70	365	2.27E-08	7.30E+00	1.66E-07	14.54
Arsenic	2.8	1E-06	1800	1	0.01	350	6	15	70	365	2.76E-07	1.75E+00	4.83E-07	42.44
TOTAL													1.14E-06	100.00

Contaminant	Concentration Noncarcinogen (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 Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day) Child	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
Dieldren	0.0074	1E-06	1800	1	0.05	350	6	15	6	365	4.26E-08	5.00E-05	8.52E-04	2.80
4,4'-DDT	0.136	1E-06	1800	1	0.05	350	6	15	6	365	7.82E-07	5.00E-04	1.56E-03	5.14
Fluoranthene	0.094	1E-06	1800	1	0.05	350	6	15	6	365	5.41E-07	4.00E-02	1.35E-05	0.04
Pyrene	0.099	1E-06	1800	1	0.05	350	6	15	6	365	5.70E-07	3.00E-02	1.90E-05	0.06
TOTAL PCBs	0.036	1E-06	1800	1	0.03	350	6	15	6	365	1.24E-07	7E-05	1.78E-03	5.84
Arsenic	2.8	1E-06	1800	1	0.01	350	6	15	6	365	3.22E-06	3.00E-04	1.07E-02	35.31
Cadmium	0.8	1E-06	1800	1	0.01	350	6	15	6	365	9.21E-07	5.00E-04	1.84E-03	6.05
Chromium	12.1	1E-06	1800	1	0.01	350	6	15	6	365	1.39E-05	5.00E-03	2.78E-03	9.15
Manganese	46.4	1E-06	1800	1	0.01	350	6	15	6	365	5.34E-05	5.00E-03	1.07E-02	35.11
Zinc	39	1E-06	1800	1	0.01	350	6	15	6	365	4.49E-05	3.00E-01	1.50E-04	0.49
TOTAL													3.04E-02	100.00

DERMAL CONTACT EXP[illegible] ASSESSMENT
SITE 6 LOT 201 AREAS A B AND C - ADULT RESIDENT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

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)	5300
AF = soil to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless)	Specific
EF = adult exposure frequency (events/yr)	350
ED = adult expsosure duration (years)	30
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
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

Contaminant	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 (years)	Days per year (day/year)	Carc Dose (mg/kg/day) Adult	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult
Dieldren	0.0074	1E-06	5300	1	0.05	350	30	70	70	365	1.15E-08	1.60E+01	1.84E-07	5.13
4,4'-DDD	0.0156	1E-06	5300	1	0.05	350	30	70	70	365	2.43E-08	2.40E-01	5.82E-09	0.16
4,4'-DDE	0.0452	1E-06	5300	1	0.05	350	30	70	70	365	7.03E-08	3.40E-01	2.39E-08	0.67
4,4'-DDT	0.136	1E-06	5300	1	0.05	350	30	70	70	365	2.12E-07	3.40E-01	7.19E-08	2.00
Aroclor 1260	0.036	1E-06	5300	1	0.03	350	30	70	70	365	3.36E-08	7.70E+00	2.59E-07	7.20
1,4-Dichlorobenzene	0.038	1E-06	5300	1	0.05	350	30	70	70	365	5.91E-08	2.40E-02	1.42E-09	0.04
Chrysene	0.088	1E-06	5300	1	0.05	350	30	70	70	365	1.37E-07	7.30E+00	9.99E-07	27.82
Benzo(b)fluoranthene	0.046	1E-06	5300	1	0.05	350	30	70	70	365	7.16E-08	7.30E+00	5.22E-07	14.54
Arsenic	2.8	1E-06	5300	1	0.01	350	30	70	70	365	8.71E-07	1.75E+00	1.52E-06	42.44
TOTAL													3.59E-06	100.00

Contaminant	Concentration Noncarcinogen (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 Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day) Adult	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Dieldren	0.0074	1E-06	5300	1	0.05	350	30	70	30	365	2.69E-08	5.00E-05	5.37E-04	2.80
4,4'-DDT	0.136	1E-06	5300	1	0.05	350	30	70	30	365	4.94E-07	5.00E-04	9.87E-04	5.14
Fluoranthene	0.094	1E-06	5300	1	0.05	350	30	70	30	365	3.41E-07	4.00E-02	8.53E-06	0.04
Pyrene	0.099	1E-06	5300	1	0.05	350	30	70	30	365	3.59E-07	3.00E-02	1.20E-05	0.06
TOTAl PCBs	0.036	1E-06	5300	1	0.03	350	30	70	30	365	7.84E-08	7E-05	1.12E-03	5.84
Arsenic	2.8	1E-06	5300	1	0.01	350	30	70	30	365	2.03E-06	3.00E-04	6.78E-03	35.31
Cadmium	0.8	1E-06	5300	1	0.01	350	30	70	30	365	5.81E-07	5.00E-04	1.16E-03	6.05
Chromium	12.1	1E-06	5300	1	0.01	350	30	70	30	365	8.78E-06	5.00E-03	1.76E-03	9.15
Manganese	46.4	1E-06	5300	1	0.01	350	30	70	30	365	3.37E-05	5.00E-03	6.74E-03	35.11
Zinc	39	1E-06	5300	1	0.01	350	30	70	30	365	2.83E-05	3.00E-01	9.44E-05	0.49
TOTAL													1.92E-02	100.00

FILE NAME: DC201.WQ1

DERMAL CONTACT EXPOSURE ASSESSMENT
SITE 6 LOT 201 AREAS A B AND C - WORKER
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

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 = worker exposed skin surface area (cm2)	4300
AF = soil to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless)	Specific
EF = worker exposure frequency (events/yr)	250
ED = worker expsosure duration (years)	25
BW = worker body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	25
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

Contaminant	Concentration Carcinogen (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Worker	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Worker	Exposure Duration (yrs) Worker	Body Weight (kg) Worker	Average Carc Time (years)	Days per year (day/year)	Carc Dose (mg/kg/day) Worker	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Worker	Percent Carcinogenic Risk Worker
Dieldren	0.0074	1E-06	4300	1	0.05	250	25	70	70	365	5.56E-09	1.60E+01	8.90E-08	5.13
4,4'-DDD	0.0156	1E-06	4300	1	0.05	250	25	70	70	365	1.17E-08	2.40E-01	2.81E-09	0.16
4,4'-DDE	0.0452	1E-06	4300	1	0.05	250	25	70	70	365	3.40E-08	3.40E-01	1.15E-08	0.67
4,4'-DDT	0.136	1E-06	4300	1	0.05	250	25	70	70	365	1.02E-07	3.40E-01	3.47E-08	2.00
Aroclor 1260	0.036	1E-06	4300	1	0.03	250	25	70	70	365	1.62E-08	7.70E+00	1.25E-07	7.20
1,4-Dichlorobenzene	0.038	1E-06	4300	1	0.05	250	25	70	70	365	2.86E-08	2.40E-02	6.85E-10	0.04
Chrysene	0.088	1E-06	4300	1	0.05	250	25	70	70	365	6.61E-08	7.30E+00	4.83E-07	27.82
Benzo(b)fluoranthene	0.046	1E-06	4300	1	0.05	250	25	70	70	365	3.46E-08	7.30E+00	2.52E-07	14.54
Arsenic	2.8	1E-06	4300	1	0.01	250	25	70	70	365	4.21E-07	1.75E+00	7.36E-07	42.44
TOTAL													1.73E-06	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Worker	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Worker	Exposure Duration (yrs) Worker	Body Weight (kg) Worker	Average Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day) Worker	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Worker	Percent Noncarcinogenic Risk Worker
Dieldren	0.0074	1E-06	4300	1	0.05	250	25	70	25	365	1.56E-08	5.00E-05	3.11E-04	2.80
4,4'-DDT	0.136	1E-06	4300	1	0.05	250	25	70	25	365	2.86E-07	5.00E-04	5.72E-04	5.14
Fluoranthene	0.094	1E-06	4300	1	0.05	250	25	70	25	365	1.98E-07	4.00E-02	4.94E-06	0.04
Pyrene	0.099	1E-06	4300	1	0.05	250	25	70	25	365	2.08E-07	3.00E-02	6.94E-06	0.06
TOTAL PCBS	0.036	1E-06	4300	1	0.03	250	25	70	25	365	4.54E-08	7E-05	6.49E-04	5.84
Arsenic	2.8	1E-06	4300	1	0.01	250	25	70	25	365	1.18E-06	3.00E-04	3.93E-03	35.31
Cadmium	0.8	1E-06	4300	1	0.01	250	25	70	25	365	3.37E-07	5.00E-04	6.73E-04	6.05
Chromium	12.1	1E-06	4300	1	0.01	250	25	70	25	365	5.09E-06	5.00E-03	1.02E-03	9.15
Manganese	46.4	1E-06	4300	1	0.01	250	25	70	25	365	1.95E-05	5.00E-03	3.90E-03	35.11
Zinc	39	1E-06	4300	1	0.01	250	25	70	25	365	1.64E-05	3.00E-01	5.47E-05	0.49
TOTAL													1.11E-02	100.00

FILE NAME: DC201.WQ3

DERMAL CONTACT EXPO[illegible] ASSESSMENT
SITE 6 LOT 203 AREAS OPEN STORAGE AREA, PCB AND DDT GRID - CHILD RESIDENT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

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)	1800
AF = soil to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless)	Specific
EF = child exposure frequency (events/yr)	350
ED = child expsosure duration (years)	6
BW = child body weight (kg)	70
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

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (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 (years)	Days per year (day/year)	Carc Dose (mg/kg/day) Child	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child
Dieldren	0.0057	1E-06	1800	1	0.05	350	6	70	70	365	6.02E-10	1.60E+01	9.64E-09	0.77
4,4'-DDD	0.062	1E-06	1800	1	0.05	350	6	70	70	365	6.55E-09	2.40E-01	1.57E-09	0.13
4,4'-DDE	0.0248	1E-06	1800	1	0.05	350	6	70	70	365	2.62E-09	3.40E-01	8.91E-10	0.07
4,4'-DDT	0.0416	1E-06	1800	1	0.05	350	6	70	70	365	4.40E-09	3.40E-01	1.49E-09	0.12
Aroclor 1260	0.1815	1E-06	1800	1	0.03	350	6	70	70	365	1.15E-08	7.70E+00	8.86E-08	7.07
1,4-Dichlorobenzene	0.16	1E-06	1800	1	0.05	350	6	70	70	365	1.69E-08	2.40E-02	4.06E-10	0.03
Chrysene	0.231	1E-06	1800	1	0.05	350	6	70	70	365	2.44E-08	7.30E+00	1.78E-07	14.22
Benzo(a)anthracene	0.239	1E-06	1800	1	0.05	350	6	70	70	365	2.53E-08	7.3	1.84E-07	14.72
Benzo(b)fluoranthene	0.27	1E-06	1800	1	0.05	350	6	70	70	365	2.85E-08	7.30E+00	2.08E-07	16.63
Benzo(k)fluoranthene	0.235	1E-06	1800	1	0.05	350	6	70	70	365	2.48E-08	7.3	1.81E-07	14.47
Benzo(a)pyrene	0.241	1E-06	1800	1	0.05	350	6	70	70	365	2.55E-08	7.3	1.86E-07	14.84
ndeno(1,2,3-cd)pyrene	0.227	1E-06	1800	1	0.05	350	6	70	70	365	2.40E-08	7.3	1.75E-07	13.98
Arsenic	1	1E-06	1800	1	0.01	350	6	70	70	365	2.11E-08	1.75E+00	3.70E-08	2.95
TOTAL													1.25E-06	100.00

Contaminant	Concentration Noncarcinogen (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 Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day) Child	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
Dieldren	0.0057	1E-06	1800	1	0.05	350	6	70	6	365	7.03E-09	5.00E-05	1.41E-04	2.49
Endrin	0.0054	1E-06	1800	1	0.05	350	6	70	6	365	6.66E-09	0.0003	2.22E-05	0.39
4,4'-DDT	0.0416	1E-06	1800	1	0.05	350	6	70	6	365	5.13E-08	5.00E-04	1.03E-04	1.82
Fluoranthene	0.2502	1E-06	1800	1	0.05	350	6	70	6	365	3.08E-07	4.00E-02	7.71E-06	0.14
Pyrene	0.254	1E-06	1800	1	0.05	350	6	70	6	365	3.13E-07	0.03	1.04E-05	0.19
Total PCB	0.1815	1E-06	1800	1	0.03	350	6	70	6	365	1.34E-07	7E-05	1.92E-03	34.01
Arsenic	1	1E-06	1800	1	0.01	350	6	70	6	365	2.47E-07	3.00E-04	8.22E-04	14.57
Barium	10.4	1E-06	1800	1	0.01	350	6	70	6	365	2.56E-06	0.07	3.66E-05	0.65
Cadmium	0.9	1E-06	1800	1	0.01	350	6	70	6	365	2.22E-07	5.00E-04	4.44E-04	7.87
Chromium	5.6	1E-06	1800	1	0.01	350	6	70	6	365	1.38E-06	5.00E-03	2.76E-04	4.90
Manganese	36.4	1E-06	1800	1	0.01	350	6	70	6	365	8.98E-06	5.00E-03	1.80E-03	31.83
Zinc	78.2	1E-06	1800	1	0.01	350	6	70	6	365	1.93E-05	3.00E-01	6.43E-05	1.14
TOTAL													5.64E-03	100.00

FILE NAME: DC203.WQ2

DERMAL CONTACT EXPOSURE / ...MENT
SITE 6 LOT 203 AREAS OPEN STORAGE AREA, PCB AND DDT GRID - ADULT RESIDENT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

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)	5300
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)	30
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
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

Contaminant	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 (years)	Days per year (day/year)	Carc Dose (mg/kg/day) Adult	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult
Dieldren	0.0057	1E-06	5300	1	0.05	350	30	70	70	365	8.87E-09	1.60E+01	1.42E-07	0.77
4,4'-DDD	0.062	1E-06	5300	1	0.05	350	30	70	70	365	9.65E-08	2.40E-01	2.31E-08	0.13
4,4'-DDE	0.0248	1E-06	5300	1	0.05	350	30	70	70	365	3.86E-08	3.40E-01	1.31E-08	0.07
4,4'-DDT	0.0416	1E-06	5300	1	0.05	350	30	70	70	365	6.47E-08	3.40E-01	2.20E-08	0.12
Aroclor 1260	0.1815	1E-06	5300	1	0.03	350	30	70	70	365	1.69E-07	7.70E+00	1.30E-06	7.07
1,4-Dichlorobenzene	0.16	1E-06	5300	1	0.05	350	30	70	70	365	2.49E-07	2.40E-02	5.97E-09	0.03
Chrysene	0.231	1E-06	5300	1	0.05	350	30	70	70	365	3.59E-07	7.30E+00	2.62E-06	14.22
Benzo(a)anthracene	0.239	1E-06	5300	1	0.05	350	30	70	70	365	3.72E-07	7.30E+00	2.71E-06	14.72
Benzo(b)fluoranthene	0.27	1E-06	5300	1	0.05	350	30	70	70	365	4.20E-07	7.30E+00	3.07E-06	16.63
Benzo(k)fluoranthene	0.235	1E-06	5300	1	0.05	350	30	70	70	365	3.66E-07	7.30E+00	2.67E-06	14.47
Benzo(e)pyrene	0.241	1E-06	5300	1	0.05	350	30	70	70	365	3.75E-07	7.30E+00	2.74E-06	14.84
Indeno(1,2,3-cd)pyrene	0.227	1E-06	5300	1	0.05	350	30	70	70	365	3.53E-07	7.30E+00	2.58E-06	13.98
Arsenic	1	1E-06	5300	1	0.01	350	30	70	70	365	3.11E-07	1.75E+00	5.45E-07	2.95
TOTAL													1.84E-05	100.00

Contaminant	Concentration Noncarcinogen (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 Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day) Adult	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Dieldren	0.0057	1E-06	5300	1	0.05	350	30	70	30	365	2.07E-08	5.00E-05	4.14E-04	2.49
Endrin	0.0054	1E-06	5300	1	0.05	350	30	70	30	365	1.96E-08	0.0003	6.53E-05	0.39
4,4'-DDT	0.0416	1E-06	5300	1	0.05	350	30	70	30	365	1.51E-07	5.00E-04	3.02E-04	1.82
Fluoranthene	0.2502	1E-06	5300	1	0.05	350	30	70	30	365	9.08E-07	4.00E-02	2.27E-05	0.14
Pyrene	0.254	1E-06	5300	1	0.05	350	30	70	30	365	9.22E-07	0.03	3.07E-05	0.19
TOTAL PCB	0.1815	1E-06	5300	1	0.03	350	30	70	30	365	3.95E-07	7E-05	5.65E-03	34.01
Arsenic	1	1E-06	5300	1	0.01	350	30	70	30	365	7.26E-07	3.00E-04	2.42E-03	14.57
Barium	10.4	1E-06	5300	1	0.01	350	30	70	30	365	7.55E-06	0.07	1.08E-04	0.65
Cadmium	0.9	1E-06	5300	1	0.01	350	30	70	30	365	6.53E-07	5.00E-04	1.31E-03	7.87
Chromium	5.6	1E-06	5300	1	0.01	350	30	70	30	365	4.07E-06	5.00E-03	8.13E-04	4.90
Manganese	36.4	1E-06	5300	1	0.01	350	30	70	30	365	2.64E-05	5.00E-03	5.29E-03	31.83
Zinc	78.2	1E-06	5300	1	0.01	350	30	70	30	365	5.69E-05	3.00E-01	1.90E-04	1.14
TOTAL													1.66E-02	100.00

FILE NAME: DC203.WQ1

DERMAL CONTACT EXPOSURE ASSESSMENT
SITE 6 LOT 203 AREAS OPEN STORAGE AREA, PCB AND DDT GRID - WORKER
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

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 = worker exposed skin surface area (cm2)	4300
AF = soil to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless)	Specific
EF = worker exposure frequency (events/yr)	250
ED = worker expsosure duration (years)	25
BW = worker body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	25
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

Contaminant	Concentration Carcinogen (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Worker	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Worker	Exposure Duration (yrs) Worker	Body Weight (kg) Worker	Average Carc Time (years)	Days per year (day/year)	Carc Dose (mg/kg/day) Worker	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Worker	Percent Carcinogenic Risk Worker
Dieldren	0.0057	1E-06	4300	1	0.05	250	25	70	70	365	4.28E-09	1.60E+01	6.85E-08	0.77
4,4'-DDD	0.062	1E-06	4300	1	0.05	250	25	70	70	365	4.66E-08	2.40E-01	1.12E-08	0.13
4,4'-DDE	0.0248	1E-06	4300	1	0.05	250	25	70	70	365	1.86E-08	3.40E-01	6.34E-09	0.07
4,4'-DDT	0.0416	1E-06	4300	1	0.05	250	25	70	70	365	3.13E-08	3.40E-01	1.06E-08	0.12
Aroclor 1260	0.1815	1E-06	4300	1	0.03	250	25	70	70	365	8.18E-08	7.70E+00	6.30E-07	7.07
1,4-Dichlorobenzene	0.16	1E-06	4300	1	0.05	250	25	70	70	365	1.20E-07	2.40E-02	2.89E-09	0.03
Chrysene	0.231	1E-06	4300	1	0.05	250	25	70	70	365	1.74E-07	7.30E+00	1.27E-06	14.22
Benzo(a)anthracene	0.239	1E-06	4300	1	0.05	250	25	70	70	365	1.80E-07	7.3	1.31E-06	14.72
Benzo(b)fluoranthene	0.27	1E-06	4300	1	0.05	250	25	70	70	365	2.03E-07	7.30E+00	1.48E-06	16.63
Benzo(k)fluoranthene	0.235	1E-06	4300	1	0.05	250	25	70	70	365	1.77E-07	7.3	1.29E-06	14.47
Benzo(a)pyrene	0.241	1E-06	4300	1	0.05	250	25	70	70	365	1.81E-07	7.3	1.32E-06	14.84
Indeno(1,2,3-cd)pyrene	0.227	1E-06	4300	1	0.05	250	25	70	70	365	1.71E-07	7.3	1.25E-06	13.98
Arsenic	1	1E-06	4300	1	0.01	250	25	70	70	365	1.50E-07	1.75E+00	2.63E-07	2.95
TOTAL													8.91E-06	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Worker	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Worker	Exposure Duration (yrs) Worker	Body Weight (kg) Worker	Average Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day) Worker	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Worker	Percent Noncarcinogenic Risk Worker
Dieldren	0.0057	1E-06	4300	1	0.05	250	25	70	25	365	1.20E-08	5.00E-05	2.40E-04	2.49
Endrin	0.0054	1E-06	4300	1	0.05	250	25	70	25	365	1.14E-08	0.0003	3.79E-05	0.39
4,4'-DDT	0.0416	1E-06	4300	1	0.05	250	25	70	25	365	8.75E-08	5.00E-04	1.75E-04	1.82
Fluoranthene	0.2502	1E-06	4300	1	0.05	250	25	70	25	365	5.26E-07	4.00E-02	1.32E-05	0.14
Pyrene	0.254	1E-06	4300	1	0.05	250	25	70	25	365	5.34E-07	0.03	1.78E-05	0.19
TOTAL PCBS	0.1815	1E-06	4300	1	0.03	250	25	70	25	365	2.29E-07	7E-05	3.27E-03	34.01
Arsenic	1	1E-06	4300	1	0.01	250	25	70	25	365	4.21E-07	3.00E-04	1.40E-03	14.57
Barium	10.4	1E-06	4300	1	0.01	250	25	70	25	365	4.38E-06	0.07	6.25E-05	0.65
Cadmium	0.9	1E-06	4300	1	0.01	250	25	70	25	365	3.79E-07	5.00E-04	7.57E-04	7.87
Chromium	5.6	1E-06	4300	1	0.01	250	25	70	25	365	2.36E-06	5.00E-03	4.71E-04	4.90
Manganese	36.4	1E-06	4300	1	0.01	250	25	70	25	365	1.53E-05	5.00E-03	3.06E-03	31.83
Zinc	78.2	1E-06	4300	1	0.01	250	25	70	25	365	3.29E-05	3.00E-01	1.10E-04	1.14
TOTAL													9.62E-03	100.00

FILE NAME: DC203.WQ3

DERMAL CONTACT EXPOSURE ASSESSMENT
SITE 6 WOODS AND RAVINE - CHILD RESIDENT
REMEDIAL INVESTIGATION CTO 0133
MCB CAMP LEJEUNE, NORTH CAROLINA

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)	1800
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

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (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 (years)	Days per year (day/year)	Carc Dose (mg/kg/day) Child	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child
Dieldren	0.0089	1E-06	1800	1	0.05	350	6	15	70	365	3.40E-09	1.60E+01	5.44E-10	0.01
4,4'-DDD	0.006	1E-06	1800	1	0.05	350	6	15	70	365	2.96E-09	2.40E-01	7.10E-10	0.01
4,4'-DDE	0.0208	1E-06	1800	1	0.05	350	6	15	70	365	1.03E-08	3.40E-01	3.49E-09	0.06
4,4'-DDT	0.0283	1E-06	1800	1	0.05	350	6	15	70	365	1.40E-08	3.40E-01	4.75E-09	0.08
Aroclor 1260	0.063	1E-06	1800	1	0.03	350	6	15	70	365	1.86E-08	7.70E+00	1.44E-07	2.57
1,4-Dichlorobenzene	0.1862	1E-06	1800	1	0.05	350	6	15	70	365	9.18E-08	2.40E-02	2.20E-09	0.04
Chrysene	0.2109	1E-06	1800	1	0.05	350	6	15	70	365	1.04E-07	7.30E+00	7.59E-07	13.57
Benzo(a)anthracene	0.2181	1E-06	1800	1	0.05	350	6	15	70	365	1.08E-07	7.30E+00	7.85E-07	14.03
Benzo(b)fluoranthene	0.2131	1E-06	1800	1	0.05	350	6	15	70	365	1.05E-07	7.30E+00	7.67E-07	13.71
Benzo(k)fluoranthene	0.1969	1E-06	1800	1	0.05	350	6	15	70	365	9.71E-08	7.30E+00	7.09E-07	12.67
Benzo(a)pyrene	0.2101	1E-06	1800	1	0.05	350	6	15	70	365	1.04E-07	7.30E+00	7.56E-07	13.52
Indeno(1,2,3-cd)pyrene	0.2118	1E-06	1800	1	0.05	350	6	15	70	365	1.04E-07	7.30E+00	7.62E-07	13.63
Dibenz(a,h)anthracene	0.2008	1E-06	1800	1	0.05	350	6	15	70	365	9.90E-08	7.30E+00	7.23E-07	12.92
Arsenic	1.03	1E-06	1800	1	0.01	350	6	15	70	365	1.02E-07	1.75E+00	1.78E-07	3.18
TOTAL													5.60E-06	100.00

Contaminant	Concentration Noncarcinogen (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 Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day) Child	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
Dieldren	0.0089	1E-06	1800	1	0.05	350	6	15	6	365	3.97E-08	5.00E-05	7.94E-04	6.57
Endrin	0.0041	1E-06	1800	1	0.05	350	6	15	6	365	2.36E-08	3.00E-04	7.86E-05	0.65
4,4'-DDT	0.0283	1E-06	1800	1	0.05	350	6	15	6	365	1.63E-07	5.00E-04	3.26E-04	2.70
Anthracene	0.2	1E-06	1800	1	0.05	350	6	15	6	365	1.15E-06	3.00E-01	3.84E-06	0.03
Fluoranthene	0.2215	1E-06	1800	1	0.05	350	6	15	6	365	1.27E-06	4.00E-02	3.19E-05	0.26
Phenol	0.16	1E-06	1800	1	0.05	350	6	15	6	365	9.21E-07	6.00E-01	1.53E-06	0.01
Pyrene	0.2346	1E-06	1800	1	0.05	350	6	15	6	365	1.35E-06	3.00E-02	4.50E-05	0.37
TOTAL PCBS	0.063	1E-06	1800	1	0.03	350	6	15	6	365	0.00E+00	7E-05	0.00E+00	0.00
Arsenic	1.03	1E-06	1800	1	0.01	350	6	15	6	365	1.19E-06	3.00E-04	3.95E-03	32.70
Barium	21.9	1E-06	1800	1	0.01	350	6	15	6	365	2.52E-05	3.00E-01	8.40E-05	0.70
Cadmium	0.57	1E-06	1800	1	0.01	350	6	15	6	365	6.56E-07	5.00E-04	1.31E-03	10.86
Chromium	2.7	1E-06	1800	1	0.01	350	6	15	6	365	3.11E-06	5.00E-03	6.21E-04	5.14
Manganese	17.3	1E-06	1800	1	0.01	350	6	15	6	365	1.99E-05	5.00E-03	3.98E-03	32.95
Venadium	4.7	1E-06	1800	1	0.01	350	6	15	6	365	5.41E-06	7.00E-03	7.73E-04	6.40
Zinc	20.6	1E-06	1800	1	0.01	350	6	15	6	365	2.37E-05	3.00E-01	7.90E-05	0.65
TOTAL													1.21E-02 1.52E-02	100.00

3.11E-03

FILE NAME: DCWR.WQ2

DERMAL CONTACT EXPOSURE ASSESSMENT
SITE 6 WOODS AND RAVINE - ADULT RESIDENT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

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)	5300
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)	30
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
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

Contaminant	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 (years)	Days per year (day/year)	Carc Dose (mg/kg/day) Adult	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult
Dieldren	0.0069	1E-06	5300	1	0.05	350	30	70	70	365	1.07E-08	1.60E+01	1.72E-09	0.01
4,4'-DDD	0.006	1E-06	5300	1	0.05	350	30	70	70	365	9.33E-09	2.40E-01	2.24E-09	0.01
4,4'-DDE	0.0208	1E-06	5300	1	0.05	350	30	70	70	365	3.24E-08	3.40E-01	1.10E-08	0.06
4,4'-DDT	0.0283	1E-06	5300	1	0.05	350	30	70	70	365	4.40E-08	3.40E-01	1.50E-08	0.08
Aroclor 1260	0.063	1E-06	5300	1	0.03	350	30	70	70	365	5.88E-08	7.70E+00	4.53E-07	2.57
1,4-Dichlorobenzene	0.1862	1E-06	5300	1	0.05	350	30	70	70	365	2.90E-07	2.40E-02	6.95E-09	0.04
Chrysene	0.2109	1E-06	5300	1	0.05	350	30	70	70	365	3.28E-07	7.30E+00	2.40E-06	13.57
Benzo(a)anthracene	0.2181	1E-06	5300	1	0.05	350	30	70	70	365	3.39E-07	7.30E+00	2.48E-06	14.03
Benzo(b)fluoranthene	0.2131	1E-06	5300	1	0.05	350	30	70	70	365	3.32E-07	7.30E+00	2.42E-06	13.71
Benzo(k)fluoranthene	0.1969	1E-06	5300	1	0.05	350	30	70	70	365	3.06E-07	7.30E+00	2.24E-06	12.67
Benzo(a)pyrene	0.2101	1E-06	5300	1	0.05	350	30	70	70	365	3.27E-07	7.30E+00	2.39E-06	13.52
Indeno(1,2,3-cd)pyrene	0.2118	1E-06	5300	1	0.05	350	30	70	70	365	3.30E-07	7.30E+00	2.41E-06	13.63
Dibenz(a,h)anthracene	0.2008	1E-06	5300	1	0.05	350	30	70	70	365	3.12E-07	7.30E+00	2.28E-06	12.92
Arsenic	1.03	1E-06	5300	1	0.01	350	30	70	70	365	3.20E-07	1.75E+00	5.61E-07	3.18
TOTAL													1.77E-05	100.00

Contaminant	Concentration Noncarcinogen (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 Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day) Adult	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Dieldren	0.0069	1E-06	5300	1	0.05	350	30	70	30	365	2.50E-08	5.00E-05	5.01E-04	5.13
Endrin	0.0041	1E-06	5300	1	0.05	350	30	70	30	365	1.49E-08	3.00E-04	4.96E-05	0.51
4,4'-DDT	0.0283	1E-06	5300	1	0.05	350	30	70	30	365	1.03E-07	5.00E-04	2.05E-04	2.11
Anthracene	0.2	1E-06	5300	1	0.05	350	30	70	30	365	7.26E-07	3.00E-01	2.42E-06	0.02
Fluoranthene	0.2215	1E-06	5300	1	0.05	350	30	70	30	365	8.04E-07	4.00E-02	2.01E-05	0.21
Phenol	0.16	1E-06	5300	1	0.05	350	30	70	30	365	5.81E-07	6.00E-01	9.68E-07	0.01
Pyrene	0.2346	1E-06	5300	1	0.05	350	30	70	30	365	8.52E-07	3.00E-02	2.84E-05	0.29
Total PCBs	0.063	1E-06	5300	1	0.03	350	30	70	30	365	1.37E-07	7E-05	1.96E-03	20.09
Arsenic	1.03	1E-06	5300	1	0.01	350	30	70	30	365	7.48E-07	3.00E-04	2.49E-03	25.55
Barium	21.9	1E-06	5300	1	0.01	350	30	70	30	365	1.59E-05	7.00E-02	2.27E-04	2.33
Cadmium	0.57	1E-06	5300	1	0.01	350	30	70	30	365	4.14E-07	5.00E-04	8.28E-04	8.48
Chromium	2.7	1E-06	5300	1	0.01	350	30	70	30	365	1.96E-06	5.00E-03	3.92E-04	4.02
Manganese	17.3	1E-06	5300	1	0.01	350	30	70	30	365	1.26E-05	5.00E-03	2.51E-03	25.75
Vanadium	4.7	1E-06	5300	1	0.01	350	30	70	30	365	3.41E-06	7.00E-03	4.87E-04	5.00
Zinc	20.6	1E-06	5300	1	0.01	350	30	70	30	365	1.50E-05	3.00E-01	4.99E-05	0.51
TOTAL													9.76E-03	100.00

FILE NAME: DCWR.WQ1

DERMAL CONTACT EXPOSURE . MENT
SITE 6 WOODS AND RAVINE - WORKER
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

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 = worker exposed skin surface area (cm2)	4300
AF = soil to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless)	Specific
EF = worker exposure frequency (events/yr)	250
ED = worker exposure duration (years)	25
BW = worker body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	25
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

Contaminant	Concentration Carcinogen (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Worker	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Worker	Exposure Duration (yrs) Worker	Body Weight (kg) Worker	Average Carc Time (years)	Days per year (day/year)	Carc Dose (mg/kg/day) Worker	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Worker	Percent Carcinogenic Risk Worker
Dieldren	0.0069	1E-06	4300	1	0.05	250	25	70	70	365	5.18E-09	1.60E-01	8.29E-10	0.01
4,4'-DDD	0.008	1E-06	4300	1	0.05	250	25	70	70	365	4.51E-09	2.40E-01	1.08E-09	0.01
4,4'-DDE	0.0208	1E-06	4300	1	0.05	250	25	70	70	365	1.56E-08	3.40E-01	5.31E-09	0.06
4,4'-DDT	0.0283	1E-06	4300	1	0.05	250	25	70	70	365	2.13E-08	3.40E-01	7.23E-09	0.08
Aroclor 1260	0.063	1E-06	4300	1	0.03	250	25	70	70	365	2.84E-08	7.70E+00	2.19E-07	2.57
1,4-Dichlorobenzene	0.1862	1E-06	4300	1	0.05	250	25	70	70	365	1.40E-07	2.40E-02	3.36E-09	0.04
Chrysene	0.2109	1E-06	4300	1	0.05	250	25	70	70	365	1.58E-07	7.30E+00	1.16E-06	13.57
Benzo(a)anthracene	0.2181	1E-06	4300	1	0.05	250	25	70	70	365	1.64E-07	7.30E+00	1.20E-06	14.03
Benzo(b)fluoranthene	0.2131	1E-06	4300	1	0.05	250	25	70	70	365	1.60E-07	7.30E+00	1.17E-06	13.71
Benzo(k)fluoranthene	0.1969	1E-06	4300	1	0.05	250	25	70	70	365	1.48E-07	7.30E+00	1.08E-06	12.67
Benzo(a)pyrene	0.2101	1E-06	4300	1	0.05	250	25	70	70	365	1.58E-07	7.30E+00	1.15E-06	13.52
Indeno(1,2,3-cd)pyrene	0.2118	1E-06	4300	1	0.05	250	25	70	70	365	1.59E-07	7.30E+00	1.16E-06	13.63
Dibenz(a,h)anthracene	0.2008	1E-06	4300	1	0.05	250	25	70	70	365	1.51E-07	7.30E+00	1.10E-06	12.92
Arsenic	1.03	1E-06	4300	1	0.01	250	25	70	70	365	1.55E-07	1.75E+00	2.71E-07	3.18
TOTAL													8.52E-06	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Worker	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Worker	Exposure Duration (yrs) Worker	Body Weight (kg) Worker	Average Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day) Worker	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Worker	Percent Noncarcinogenic Risk Worker
Dieldren	0.0069	1E-06	4300	1	0.05	250	25	70	25	365	1.45E-08	5.00E-05	2.90E-04	5.13
Endrin	0.0041	1E-06	4300	1	0.05	250	25	70	25	365	8.63E-09	3.00E-04	2.88E-05	0.51
4,4'-DDT	0.0283	1E-06	4300	1	0.05	250	25	70	25	365	5.95E-08	5.00E-04	1.19E-04	2.11
Anthracene	0.2	1E-06	4300	1	0.05	250	25	70	25	365	4.21E-07	3.00E-01	1.40E-06	0.02
Fluoranthene	0.2215	1E-06	4300	1	0.05	250	25	70	25	365	4.66E-07	4.00E-02	1.16E-05	0.21
Phenol	0.16	1E-06	4300	1	0.05	250	25	70	25	365	3.37E-07	6.00E-01	5.61E-07	0.01
Pyrene	0.2346	1E-06	4300	1	0.05	250	25	70	25	365	4.94E-07	3.00E-02	1.65E-05	0.29
TOTAL PCBS	0.063	1E-06	4300	1	0.03	250	25	70	25	365	7.95E-08	7E-05	1.14E-03	20.09
Arsenic	1.03	1E-06	4300	1	0.01	250	25	70	25	365	4.33E-07	3.00E-04	1.44E-03	25.55
Berium	21.9	1E-06	4300	1	0.01	250	25	70	25	365	9.21E-06	7.00E-02	1.32E-04	2.33
Cadmium	0.57	1E-06	4300	1	0.01	250	25	70	25	365	2.40E-07	5.00E-04	4.80E-04	8.48
Chromium	2.7	1E-06	4300	1	0.01	250	25	70	25	365	1.14E-06	5.00E-03	2.27E-04	4.02
Manganese	17.3	1E-06	4300	1	0.01	250	25	70	25	365	7.28E-06	5.00E-03	1.46E-03	25.75
Vanadium	4.7	1E-06	4300	1	0.01	250	25	70	25	365	1.98E-06	7.00E-03	2.82E-04	5.00
Zinc	20.6	1E-06	4300	1	0.01	250	25	70	25	365	8.67E-06	3.00E-01	2.89E-05	0.51
TOTAL													5.65E-03	100.00

FILE NAME: DCWR.WQ3

S.O. No. CTO-0133 Camp Lejeune

Subject: Particulate Inhalation

Baker

Sheet No. 1 of 2

Drawing No.

Computed by MDB Checked By DCS Date 3/23/93

Purpose: Estimate exposure/risk from inhalation of particulates

$$\text{Intake (mg/Kg-day)} = \frac{C \times EF \times ED \times ET \times IR \times 1/PEF}{BW \times AT_c \text{ or } AT_{nc}}$$

Where:

C = contaminant concentration in surface soil ($^{mg}/_{Kg}$)

EF = exposure frequency ($^{day}/_{yr}$)

ED = exposure duration

ET = exposure time ($^{hr}/_{day}$)

IR = inhalation rate ($^{m^3}/_{hr}$)

$^1/_{PEF}$ = Particulate emission factor ($^{m^3}/_{Kg}$) (Cowherd)

BW = body weight (Kg)

AT_c = averaging time carcinogen (day)

AT_{nc} = averaging time noncarcinogen (day)

Risk:

Carcinogen = Intake ($^{mg}/_{Kg\text{-day}}$) x CSF ($^{mg}/_{Kg\text{-day}}$)$^{-1}$

Noncarcinogen = Intake ($^{mg}/_{Kg\text{-day}}$) / RfD ($^{mg}/_{Kg\text{-day}}$)

Example Carcinogen: Dieldren

$$\text{Intake (mg/Kg-day)} = \frac{0.01\ \frac{mg}{Kg} \times 350\ \frac{day}{yr} \times 30\ yr \times 16\ \frac{hr}{day} \times 0.83\ \frac{m^3}{hr} \times \frac{1}{5 \times 10^8\ \frac{m^3}{Kg}}}{70\ Kg \times 25{,}550\ days}$$

Baker

$= 1.56\ E-12$

$$Risk = 1.56\ E-12\ (mg/Kg\text{-}day) \times 1.6\ E+01\ mg/Kg\text{-}day^{-1} = 2.49\ E-11$$

Example Noncarcinogen: Manganese

$$Intake\ (mg/Kg\text{-}day) = \frac{53.\frac{mg}{Kg} \times 350\ \frac{day}{yr} \times 30\ yr \times 16\ \frac{hr}{day} \times 0.83\ \frac{m^3}{hr} \times \frac{1}{5 \times 10^8\ \frac{m^3}{Kg}}}{70\ Kg \times 10{,}950\ days}$$

$= 1.93\ E-08$

$$Risk = \frac{1.93\ E-08\ \frac{mg}{Kg\text{-}day}}{4.00\ E-04\ \frac{mg}{Kg\text{-}day}} = 6.81\ E-05$$

PARTICULATE INHALATION EXPOSURE ASSESSMENT
SITE 6 LOT 201 AREAS A B AND C - CHILD
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

Intake from the inhalation of particulates is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * ET * 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/hr)	0.43
EF = child exposure frequency (days/yr)	350
ED = child exposure duration (years)	6
ET = child exposure time (hr/day)	24
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)	Cowherd

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Carc Time (years)	Days per year (day/year)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Conrtribution to Risk
Dieldren	0.01	5.0E+08	350	0.43	6	24	15	70	365	8.37E-13	1.60E+01	1.34E-11	0.02
4,4'-DDT	0.14	5.0E+08	350	0.43	6	24	15	70	365	1.54E-11	3.40E-01	5.23E-12	0.01
Arsenic	2.80	5.0E+08	350	0.43	6	24	15	70	365	3.17E-10	5.00E+01	1.58E-08	21.43
Cadmium	0.80	5.0E+08	350	0.43	6	24	15	70	365	9.05E-11	6.30E+00	5.70E-10	0.77
Chromium	12.10	5.0E+08	350	0.43	6	24	15	70	365	1.37E-09	4.20E+01	5.75E-08	77.78
TOTAL												7.39E-08	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
1,4-Dichlorobenzene	0.04	5.0E+08	350	0.43	6	24	15	6	365	5.01E-11	8.00E-01	6.27E-11	0.00
Manganese	46.40	5.0E+08	350	0.43	6	24	15	6	365	6.12E-08	4.00E-04	1.53E-04	100.00
TOTAL												1.53E-04	100.00

FILE NAME:PI201.WQ2

PARTICULATE INHALATI[illegible]POSURE ASSESSMENT
SITE 6 LOT 201 AREAS A B AND C - ADULT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

Intake from the inhalation of particulates is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * ET * 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/hr)	0.83
EF = adult exposure frequency (days/yr)	350
ED = adult exposure duration (years)	30
ET = adult exposure time (hr/day)	16
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = day per year (day/yr)	365
PEF = particulate emission factor (m3/kg)	Cowherd

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Carc Time (years)	Days per year (day/year)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Contribution to Risk
Dieldren	0.01	5.0E+08	350	0.83	30	16	70	70	365	1.15E-12	1.60E+01	1.85E-11	0.02
4,4'-DDT	0.14	5.0E+08	350	0.83	30	16	70	70	365	2.12E-11	3.40E-01	7.21E-12	0.01
Arsenic	2.80	5.0E+08	350	0.83	30	16	70	70	365	4.37E-10	5.00E+01	2.18E-08	21.43
Cadmium	0.80	5.0E+08	350	0.83	30	16	70	70	365	1.25E-10	6.30E+00	7.86E-10	0.77
Chromium	12.10	5.0E+08	350	0.83	30	16	70	70	365	1.89E-09	4.20E+01	7.92E-08	77.78
TOTAL												1.02E-07	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
1,4-Dichlorobenzene	0.04	5.0E+08	350	0.83	30	16	70	30	365	1.38E-11	8.00E-01	1.73E-11	0.00
Manganese	46.40	5.0E+08	350	0.83	30	16	70	30	365	1.69E-08	4.00E-04	4.22E-05	100.00
TOTAL												4.22E-05	100.00

FILE NAME: PI201.WQ1

PARTICULATE INHALATION EXPOSURE ASSESSMENT
SITE 6 LOT 201 AREAS A B AND C - WORKER
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

Intake from the inhalation of particulates is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * ET * 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/hr)	1.25
EF = worker exposure frequency (days/yr)	250
ED = worker exposure duration (years)	25
ET = worker exposure time (hr/day)	24
BW = worker body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	25
DY = day per year (day/yr)	365
PEF = particulate emission factor (m3/kg)	Cowherd

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Carc Time (years)	Days per year (day/year)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Conrtribution to Risk
Dieldren	0.01	5.0E+08	250	1.25	25	24	70	70	365	1.55E-12	1.60E+01	2.48E-11	0.02
4,4'-DDT	0.14	5.0E+08	250	1.25	25	24	70	70	365	2.85E-11	3.40E-01	9.70E-12	0.01
Arsenic	2.80	5.0E+08	250	1.25	25	24	70	70	365	5.87E-10	5.00E+01	2.94E-08	21.43
Cadmium	0.80	5.0E+08	250	1.25	25	24	70	70	365	1.68E-10	6.30E+00	1.06E-09	0.77
Chromium	12.10	5.0E+08	250	1.25	25	24	70	70	365	2.54E-09	4.20E+01	1.07E-07	77.78
TOTAL												1.37E-07	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
1,4-Dichlorobenzene	0.04	5.0E+08	250	1.25	25	24	70	25	365	2.23E-11	8.00E-01	2.79E-11	0.00
Manganese	46.40	5.0E+08	250	1.25	25	24	70	25	365	2.72E-08	4.00E-04	6.81E-05	100.00
TOTAL												6.81E-05	100.00

FILE NAME: PI201.WQ3

PARTICULATE INHALATION EXPOSURE ASSESSMENT
SITE 6 LOT 203 OPEN STORAGE AREA, DDT AND PCB GRID - CHILD
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

Intake from the inhalation of particulates is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * ET * 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/hr)	0.43
EF = child exposure frequency (days/yr)	350
ED = child exposure duration (years)	6
ET = child exposure time (hr/day)	24
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)	Cowherd

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Carc Time (years)	Days per year (day/year)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Contribution to Risk
Dieldren	0.01	5.0E+08	350	0.43	6	24	15	70	365	6.45E-13	1.60E+01	1.03E-11	0.03
4,4'-DDT	0.04	5.0E+08	350	0.43	6	24	15	70	365	4.70E-12	3.40E-01	1.60E-12	0.00
Arsenic	1.00	5.0E+08	350	0.43	6	24	15	70	365	1.13E-10	5.00E+01	5.65E-09	17.18
Cadmium	0.90	5.0E+08	350	0.43	6	24	15	70	365	1.02E-10	6.30E+00	6.41E-10	1.95
Chromium	5.60	5.0E+08	350	0.43	6	24	15	70	365	6.33E-10	4.20E+01	2.66E-08	80.83
TOTAL												3.29E-08	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
1,4-Dichlorobenzene	0.16	5.0E+08	350	0.43	6	24	15	6	365	2.11E-10	8.00E-01	2.64E-10	0.00
Manganese	36.40	5.0E+08	350	0.43	6	24	15	6	365	4.80E-08	4.00E-04	1.20E-04	100.00
TOTAL												1.20E-04	100.00

FILE NAME: PI203.WQ2

PARTICULATE INHALATION EXPOSURE ASSESSMENT
SITE 6 LOT 203 OPEN STORAGE AREA, DDT AND PCB GRID - ADULT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

Intake from the inhalation of particulates is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * ET * 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/hr)	0.83
EF = adult exposure frequency (days/yr)	350
ED = adult exposure duration (years)	30
ET = adult exposure time (hr/day)	16
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = day per year (day/yr)	365
PEF = particulate emission factor (m3/kg)	Cowherd

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Carc Time (years)	Days per year (day/year)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Contribution to Risk
Dieldren	0.01	5.0E+08	350	0.83	30	16	70	70	365	8.89E-13	1.60E+01	1.42E-11	0.03
4,4'-DDT	0.04	5.0E+08	350	0.83	30	16	70	70	365	6.49E-12	3.40E-01	2.21E-12	0.00
Arsenic	1.00	5.0E+08	350	0.83	30	16	70	70	365	1.56E-10	5.00E+01	7.80E-09	17.18
Cadmium	0.90	5.0E+08	350	0.83	30	16	70	70	365	1.40E-10	6.30E+00	8.84E-10	1.95
Chromium	5.60	5.0E+08	350	0.83	30	16	70	70	365	8.73E-10	4.20E+01	3.67E-08	80.83
TOTAL												4.54E-08	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
1,4-Dichlorobenzene	0.16	5.0E+08	350	0.83	30	16	70	30	365	5.82E-11	8.00E-01	7.28E-11	0.00
Manganese	36.40	5.0E+08	350	0.83	30	16	70	30	365	1.32E-08	4.00E-04	3.31E-05	100.00
TOTAL												3.31E-05	100.00

FILE NAME: PI203.WQ1

PARTICULATE INHALATI[illegible]POSURE ASSESSMENT
SITE 6 LOT 203 OPEN STORAGE AREA, DDT AND PCB GRID - WORKER
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

Intake from the inhalation of particulates is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * ET * 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/hr)	1.25
EF = worker exposure frequency (days/yr)	250
ED = worker exposure duration (years)	25
ET = worker exposure time (hr/day)	24
BW = worker body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	25
DY = day per year (day/yr)	365
PEF = particulate emission factor (m3/kg)	Cowherd

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Carc Time (years)	Days per year (day/year)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Conrtribution to Risk
Dieldren	0.01	5.0E+08	250	1.25	25	24	70	70	365	1.20E-12	1.60E+01	1.91E-11	0.03
4,4'-DDT	0.04	5.0E+08	250	1.25	25	24	70	70	365	8.72E-12	3.40E-01	2.97E-12	0.00
Arsenic	1.00	5.0E+08	250	1.25	25	24	70	70	365	2.10E-10	5.00E+01	1.05E-08	17.18
Cadmium	0.90	5.0E+08	250	1.25	25	24	70	70	365	1.89E-10	6.30E+00	1.19E-09	1.95
Chromium	5.60	5.0E+08	250	1.25	25	24	70	70	365	1.17E-09	4.20E+01	4.93E-08	80.83
TOTAL												6.10E-08	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
1,4-Dichlorobenzene	0.16	5.0E+08	250	1.25	25	24	70	25	365	9.39E-11	8.00E-01	1.17E-10	0.00
Manganese	36.40	5.0E+08	250	1.25	25	24	70	25	365	2.14E-08	4.00E-04	5.34E-05	100.00
TOTAL												5.34E-05	100.00

FILE NAME: PI203.WQ3

PARTICULATE INHALATION EXPOSURE ASSESSMENT
SITE 6 WOOD AND RAVINE AREA - CHILD
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

Intake from the inhalation of particulates is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * ET * 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/hr)	0.43
EF = child exposure frequency (days/yr)	350
ED = child exposure duration (years)	6
ET = child exposure time (hr/day)	24
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)	Cowherd

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Carc Time (years)	Days per year (day/year)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Contribution to Risk
Dieldren	0.01	5.0E+08	350	0.43	6	24	15	70	365	7.80E-13	1.60E+01	1.25E-11	0.07
4,4'-DDT	0.03	5.0E+08	350	0.43	6	24	15	70	365	3.20E-12	3.40E-01	1.09E-12	0.01
Arsenic	1.03	5.0E+08	350	0.43	6	24	15	70	365	1.16E-10	5.00E+01	5.82E-09	30.54
Cadmium	0.57	5.0E+08	350	0.43	6	24	15	70	365	6.45E-11	6.30E+00	4.06E-10	2.13
Chromium	2.70	5.0E+08	350	0.43	6	24	15	70	365	3.05E-10	4.20E+01	1.28E-08	67.26
TOTAL												1.91E-08	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
1,4-Dichlorobenzene	0.07	5.0E+08	350	0.43	6	24	15	6	365	9.76E-11	8.00E-01	1.22E-10	0.00
Manganese	17.30	5.0E+08	350	0.43	6	24	15	6	365	2.28E-08	4.00E-04	5.71E-05	100.00
TOTAL												5.71E-05	100.00

FILE NAME: PIWR.WQ2

PARTICULATE INHALATIC OSURE ASSESSMENT
SITE 6 WOOD AND RAVINE AREA - ADULT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

Intake from the inhalation of particulates is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * ET * 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/hr)	0.83
EF = adult exposure frequency (days/yr)	350
ED = adult exposure duration (years)	30
ET = adult exposure time (hr/day)	16
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = day per year (day/yr)	365
PEF = particulate emission factor (m3/kg)	Cowherd

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Carc Time (years)	Days per year (day/year)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Conrtribution to Risk
Dieldren	0.01	5.0E+08	350	0.83	30	16	70	70	365	1.08E-12	1.60E+01	1.72E-11	0.07
4,4'-DDT	0.03	5.0E+08	350	0.83	30	16	70	70	365	4.41E-12	3.40E-01	1.50E-12	0.01
Arsenic	1.03	5.0E+08	350	0.83	30	16	70	70	365	1.61E-10	5.00E+01	8.03E-09	30.54
Cadmium	0.57	5.0E+08	350	0.83	30	16	70	70	365	8.89E-11	6.30E+00	5.60E-10	2.13
Chromium	2.70	5.0E+08	350	0.83	30	16	70	70	365	4.21E-10	4.20E+01	1.77E-08	67.26
TOTAL												2.63E-08	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
1,4-Dichlorobenzene	0.07	5.0E+08	350	0.83	30	16	70	30	365	2.69E-11	8.00E-01	3.37E-11	0.00
Manganese	17.30	5.0E+08	350	0.83	30	16	70	30	365	6.29E-09	4.00E-04	1.57E-05	100.00
TOTAL												1.57E-05	100.00

FILE NAME: PIWR.WQ1

PARTICULATE INHALATIC /OSURE ASSESSMENT
SITE 6 WOOD AND RAVINE AREA - WORKER
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

Intake from the inhalation of particulates is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * ET * 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/hr)	1.25
EF = worker exposure frequency (days/yr)	250
ED = worker exposure duration (years)	25
ET = worker exposure time (hr/day)	8
BW = worker body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	25
DY = day per year (day/yr)	365
PEF = particulate emission factor (m3/kg)	Cowherd

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Carc Time (years)	Days per year (day/year)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Conrtribution to Risk
Dieldren	0.01	5.0E+08	250	1.25	25	8	70	70	365	4.82E-13	1.60E+01	7.72E-12	0.07
4,4'-DDT	0.03	5.0E+08	250	1.25	25	8	70	70	365	1.98E-12	3.40E-01	6.72E-13	0.01
Arsenic	1.03	5.0E+08	250	1.25	25	8	70	70	365	7.20E-11	5.00E+01	3.60E-09	30.54
Cadmium	0.57	5.0E+08	250	1.25	25	8	70	70	365	3.98E-11	6.30E+00	2.51E-10	2.13
Chromium	2.70	5.0E+08	250	1.25	25	8	70	70	365	1.89E-10	4.20E+01	7.93E-09	67.26
TOTAL												1.18E-08	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
1,4-Dichlorobenzene	0.07	5.0E+08	250	1.25	25	8	70	25	365	1.45E-11	8.00E-01	1.81E-11	0.00
Manganese	17.30	5.0E+08	250	1.25	25	8	70	25	365	3.39E-09	4.00E-04	8.46E-06	100.00
TOTAL												8.46E-06	100.00

FILE NAME: PIWR.WQ3

S.O. No. CTO-0133 Camp Lejeune

Subject: Groundwater Ingestion

Sheet No. 1 of 2

Drawing No.

Computed by MDB Checked By DCS Date 3/20/93

Baker

Purpose: Estimate exposures/risks from ingestion of groundwater

$$\text{Intake}_{(mg/kg\text{-}day)} = \frac{C \times IR_w \times EF \times ED}{BW \times AT_c \text{ or } AT_{nc}}$$

where:

C = contaminant concentration in groundwater (mg/ℓ)

IR_w = daily water ingestion rate (ℓ/day)

EF = exposure frequency (day/year)

ED = exposure duration (yr)

BW = body weight (kg)

AT_c = averaging time for carcinogens (days)

AT_{nc} = averaging time for noncarcinogens (days)

Risk =

Carcinogen = Intake ($mg/kg\text{-}day$) x CSF ($mg/kg\text{-}day)^{-1}$

Noncarcinogen = Intake ($mg/kg\text{-}day$) / RfD ($mg/kg\text{-}day$)

Example Carcinogen: Vinyl Chloride

$$\text{Intake}\,(mg/kg\text{-}day) = \frac{0.0016\,\frac{mg}{\cancel{\ell}} \times 2\,\frac{\cancel{\ell}}{\cancel{day}} \times 350\,\frac{\cancel{day}}{\cancel{yr}} \times 30\,\cancel{yr}}{70\,kg \times 25{,}550\,day}$$

$$= 1.88E\text{-}05$$

S.O. No. CTO - 0133 Camp Lejeune

Subject: Groundwater Ingestion

Sheet No. 2 of 2

Drawing No.

Computed by MDB Checked By DCJ Date 3/20/93

Baker

$$Risk = 1.88\,E\text{-}05 \frac{mg}{Kg\text{-}day} \times 1.9E0 \frac{mg}{Kg\text{-}day}^{-1} = 3.6\,E\text{-}05$$

Example Noncarcinogen: Ethylbenzene

$$Intake\ (mg/Kg\text{-}day) = \frac{0.0008 \frac{mg}{\ell} \times 2 \frac{\ell}{day} \times 350 \frac{day}{yr} \times 30\ yr}{70\ Kg \times 10{,}950\ days}$$

$$= 2.19\,E\text{-}05$$

$$Risk = \frac{2.19\,E\text{-}05 \frac{mg}{Kg\text{-}day}}{1.0\,E\text{-}01 \frac{mg}{Kg\text{-}day}} = 2.2\,E\text{-}04$$

GROUNDWATER INGESTION E ASSESSMENT
SITE 6 AND 9 CHILD RESIDENT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

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

Note: Inputs are scenario and site specific

Contaminant	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 (years)	Days per year (day/yr)	Carc Dose (mg/kg-day) Child	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child
Bromodichloromethane	0.0006	1	350	6	15	70	365	3.29E-06	6.20E-02	2.04E-07	0.121
1,2-Dichloroethane	0.0006	1	350	6	15	70	365	3.29E-06	9.10E-02	2.99E-07	0.177
1,1 Dichloroethene	0.0006	1	350	6	15	70	365	3.29E-06	6.00E-01	1.97E-06	1.169
1,1,2,2-Tetrachloroethane	0.0017	1	350	6	15	70	365	9.32E-06	2.00E-01	1.86E-06	1.104
1,1,2-Trichloroethene	0.0005	1	350	6	15	70	365	2.74E-06	5.70E-02	1.56E-07	0.093
Trichloroethene	0.014	1	350	6	15	70	365	7.67E-05	1.10E-02	8.44E-07	0.500
Tetrachloroethene	0.0021	1	350	6	15	70	365	1.15E-05	5.20E-02	5.98E-07	0.355
Vinyl Chloride	0.0016	1	350	6	15	70	365	8.77E-06	1.90E+00	1.67E-05	9.875
Arsenic	0.00467	1	350	6	15	70	365	2.56E-05	1.75E+00	4.48E-05	26.546
Beryllium	0.0043	1	350	6	15	70	365	2.36E-05	4.30E+00	1.01E-04	60.060
TOTAL										1.69E-04	100.00

Contaminant	Concentration Noncarcinogen (mg/l)	Ingestion Rate (L/day) Child	Exposure Frequency (day/year) Child	Exposure Duration (year) Child	Body Weight (kg) Child	Average Noncarc Time (years)	Days per year (day/yr)	Noncarc Dose (mg/kg-day) Child	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Child	Percent Noncarcionogenic Risk Child
Bromodichloromethane	0.0006	1	350	6	15	6	365	3.84E-05	2.00E-02	1.92E-03	0.06
Chlorobenzene	0.0021	1	350	6	15	6	365	1.34E-04	2.00E-02	6.71E-03	0.23
1,1-Dichloroethene	0.0006	1	350	6	15	6	365	3.84E-05	9.00E-03	4.26E-03	0.14
T-1,2-Dichloroethene	0.0051	1	350	6	15	6	365	3.26E-04	2.00E-02	1.63E-02	0.55
1,1,2,2-Tetrachloroethane	0.0017	1	350	6	15	6	365	1.09E-04	3.00E-02	3.62E-03	0.12
Tetrachloroethene	0.0021	1	350	6	15	6	365	1.34E-04	1.00E-02	1.34E-02	0.45
1,1,2-Trichloroethane	0.0005	1	350	6	15	6	365	3.20E-05	4.00E-03	7.99E-03	0.27
Ethylbenzene	0.0008	1	350	6	15	6	365	5.11E-05	1.00E-01	5.11E-04	0.02
Total Xylenes	0.0007	1	350	6	15	6	365	4.47E-05	2.00E+00	2.24E-05	0.00
Phenol	0.0054	1	350	6	15	6	365	3.45E-04	6.00E-01	5.75E-04	0.02
Arsenic	0.0047	1	350	6	15	6	365	2.99E-04	3.00E-04	9.95E-01	33.48
Barium	0.1388	1	350	6	15	6	365	8.74E-03	7.00E-02	1.25E-01	4.20
Beryllium	0.0006	1	350	6	15	6	365	3.52E-05	5.00E-03	7.03E-03	0.24
Chromium (IV)	0.0467	1	350	6	15	6	365	2.98E-03	5.00E-03	5.96E-01	20.07
Manganese	0.0453	1	350	6	15	6	365	2.90E-03	5.00E-03	5.79E-01	19.49
Mercury	0.0001	1	350	6	15	6	365	5.11E-06	3.00E-04	1.70E-02	0.57
Nickel	0.0104	1	350	6	15	6	365	6.62E-04	2.00E-02	3.31E-02	1.11
Vanadium	0.0607	1	350	6	15	6	365	3.89E-03	7.00E-03	5.54E-01	18.64
Zinc	0.0471	1	350	6	15	6	365	3.01E-03	3.00E-01	1.00E-02	0.34
TOTAL										3.0	100.00

FILE NAME: GW201.WQ3

GROUNDWATER INGESTION EXPOSURE ASSESSMENT
OPERABLE UNIT NO 2 ADULT RESIDENT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

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

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/l)	Ingestion Rate (L/day) Adult	Exposure Frequency (day/year) Adult	Exposure Duration (year) Adult	Body Weight (kg) Adult	Average Carc Time (years)	Days per year (day/yr)	Carc Dose (mg/kg-day) Adult	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult
Bromodichloromethane	0.0006	2	350	30	70	70	365	7.05E-06	6.20E-02	4.37E-07	0.121
1,2-Dichloroethane	0.0006	2	350	30	70	70	365	7.05E-06	9.10E-02	6.41E-07	0.177
1,1-Dichloroethene	0.0006	2	350	30	70	70	365	7.05E-06	6.00E-01	4.23E-06	1.169
1,1,2,2-Tetrachloroethane	0.0017	2	350	30	70	70	365	2.00E-05	2.00E-01	3.99E-06	1.104
1,1,2-Trichloroethane	0.0005	2	350	30	70	70	365	5.87E-06	5.70E-02	3.35E-07	0.093
Trichloroethene	0.014	2	350	30	70	70	365	1.64E-04	1.10E-02	1.81E-06	0.500
Tetrachloroethene	0.0021	2	350	30	70	70	365	2.47E-05	5.20E-02	1.28E-06	0.355
Vinyl Chloride	0.0016	2	350	30	70	70	365	1.88E-05	1.90E+00	3.57E-05	9.875
Arsenic	0.00467	2	350	30	70	70	365	5.48E-05	1.75E+00	9.60E-05	26.546
Beryllium	0.0043	2	350	30	70	70	365	5.05E-05	4.30E+00	2.17E-04	60.060
TOTAL										3.61E-04	100.00

Contaminant	Concentration Noncarcinogen (mg/l)	Ingestion Rate (L/day) Adult	Exposure Frequency (day/year) Adult	Exposure Duration (year) Adult	Body Weight (kg) Adult	Average Noncarc Time (years)	Days per year (day/yr)	Noncarc Dose (mg/kg-day) Adult	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcionogenic Risk Adult
Bromodichloromethane	0.0006	2	350	30	70	30	365	1.64E-05	2.00E-02	8.22E-04	0.06
Chlorobenzene	0.0021	2	350	30	70	30	365	5.75E-05	2.00E-02	2.88E-03	0.23
1,1-Dichloroethene	0.0006	2	350	30	70	30	365	1.64E-05	9.00E-03	1.83E-03	0.14
T-1,2-Dichloroethene	0.0051	2	350	30	70	30	365	1.40E-04	2.00E-02	6.99E-03	0.55
1,1,2,2-Tetrachloroethane	0.0017	2	350	30	70	30	365	4.66E-05	3.00E-02	1.55E-03	0.12
Tetrachloroethene	0.0021	2	350	30	70	30	365	5.75E-05	1.00E-02	5.75E-03	0.45
1,1,2-Trichloroethane	0.0005	2	350	30	70	30	365	1.37E-05	4.00E-03	3.42E-03	0.27
Ethylbenzene	0.0008	2	350	30	70	30	365	2.19E-05	1.00E-01	2.19E-04	0.02
Total Xylenes	0.0007	2	350	30	70	30	365	1.92E-05	2.00E+00	9.59E-06	0.00
Phenol	0.0054	2	350	30	70	30	365	1.48E-04	6.00E-01	2.47E-04	0.02
Arsenic	0.0047	2	350	30	70	30	365	1.28E-04	3.00E-04	4.26E-01	33.48
Barium	0.1368	2	350	30	70	30	365	3.75E-03	7.00E-02	5.35E-02	4.20
Beryllium	0.0006	2	350	30	70	30	365	1.51E-05	5.00E-03	3.01E-03	0.24
Chromium (IV)	0.0467	2	350	30	70	30	365	1.28E-03	5.00E-03	2.56E-01	20.07
Manganese	0.0453	2	350	30	70	30	365	1.24E-03	5.00E-03	2.48E-01	19.49
Mercury	0.0001	2	350	30	70	30	365	2.19E-06	3.00E-04	7.31E-03	0.57
Nickel	0.0104	2	350	30	70	30	365	2.84E-04	2.00E-02	1.42E-02	1.11
Vanadium	0.0607	2	350	30	70	30	365	1.66E-03	7.00E-03	2.37E-01	18.64
Zinc	0.0471	2	350	30	70	30	365	1.29E-03	3.00E-01	4.30E-03	0.34
TOTAL										1.3	100.00

GROUNDWATER INGESTION EX. ...E ASSESSMENT
SITE 6 AND 9 WORKER
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

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)	250
ED = adult exposure duration (yr)	25
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	25
DY = days per year (day/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/l)	Ingestion Rate (L/day) Worker	Exposure Frequency (day/year) Worker	Exposure Duration (year) Worker	Body Weight (kg) Worker	Average Carc Time (years)	Days per year (day/yr)	Carc Dose (mg/kg-day) Worker	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Worker	Percent Carcinogenic Risk Worker
Bromodichloromethane	0.0006	2	250	25	70	70	365	4.19E-06	6.20E-02	2.60E-07	0.121
1,2-Dichloroethane	0.0008	2	250	25	70	70	365	4.19E-06	9.10E-02	3.82E-07	0.177
1,1-Dichloroethene	0.0006	2	250	25	70	70	365	4.19E-06	6.00E-01	2.52E-06	1.169
1,1,2,2-Tetrachloroethane	0.0017	2	250	25	70	70	365	1.19E-05	2.00E-01	2.38E-06	1.104
1,1,2-Trichloroethene	0.0005	2	250	25	70	70	365	3.49E-06	5.70E-02	1.99E-07	0.093
Trichloroethene	0.014	2	250	25	70	70	365	9.78E-05	1.10E-02	1.08E-06	0.500
Tetrachloroethene	0.0021	2	250	25	70	70	365	1.47E-05	5.20E-02	7.63E-07	0.355
Vinyl Chloride	0.0016	2	250	25	70	70	365	1.12E-05	1.90E+00	2.12E-05	9.875
Arsenic	0.00467	2	250	25	70	70	365	3.26E-05	1.75E+00	5.71E-05	26.546
Beryllium	0.0043	2	250	25	70	70	365	3.01E-05	4.30E+00	1.29E-04	60.060
TOTAL										2.15E-04	100.00

Contaminant	Concentration Noncarcinogen (mg/l)	Ingestion Rate (L/day) Worker	Exposure Frequency (day/year) Worker	Exposure Duration (year) Worker	Body Weight (kg) Worker	Average Noncarc Time (years)	Days per year (day/yr)	Noncarc Dose (mg/kg-day) Worker	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Worker	Percent Noncarcinogenic Risk Worker
Bromodichloromethane	0.0006	2	250	25	70	25	365	1.17E-05	2.00E-02	5.87E-04	0.06
Chlorobenzene	0.0021	2	250	25	70	25	365	4.11E-05	2.00E-02	2.05E-03	0.23
1,1-Dichloroethene	0.0006	2	250	25	70	25	365	1.17E-05	9.00E-03	1.30E-03	0.14
T-1,2-Dichloroethene	0.0051	2	250	25	70	25	365	9.98E-05	2.00E-02	4.99E-03	0.55
1,1,2,2-Tetrachloroethane	0.0017	2	250	25	70	25	365	3.33E-05	3.00E-02	1.11E-03	0.12
Tetrachloroethene	0.0021	2	250	25	70	25	365	4.11E-05	1.00E-02	4.11E-03	0.45
1,1,2-Trichloroethene	0.0005	2	250	25	70	25	365	9.78E-06	4.00E-03	2.45E-03	0.27
Ethylbenzene	0.0008	2	250	25	70	25	365	1.57E-05	1.00E-01	1.57E-04	0.02
Total Xylenes	0.0007	2	250	25	70	25	365	1.37E-05	2.00E+00	6.85E-06	0.00
Phenol	0.0054	2	250	25	70	25	365	1.06E-04	6.00E-01	1.76E-04	0.02
Arsenic	0.0047	2	250	25	70	25	365	9.14E-05	3.00E-04	3.05E-01	33.48
Barium	0.1368	2	250	25	70	25	365	2.68E-03	7.00E-02	3.82E-02	4.20
Beryllium	0.0006	2	250	25	70	25	365	1.08E-05	5.00E-03	2.15E-03	0.24
Chromium (IV)	0.0487	2	250	25	70	25	365	9.13E-04	5.00E-03	1.83E-01	20.07
Manganese	0.0453	2	250	25	70	25	365	8.87E-04	5.00E-03	1.77E-01	19.49
Mercury	0.0001	2	250	25	70	25	365	1.57E-06	3.00E-04	5.22E-03	0.57
Nickel	0.0104	2	250	25	70	25	365	2.03E-04	2.00E-02	1.01E-02	1.11
Vanadium	0.0607	2	250	25	70	25	365	1.19E-03	7.00E-03	1.70E-01	18.64
Zinc	0.0471	2	250	25	70	25	365	9.21E-04	3.00E-01	3.07E-03	0.34
TOTAL										0.9	100.00

FILE NAME: GW201.WQ2

S.O. No. CTO- ϕ 133

Subject: Camp Lejeune

Dermal Contact with Groundwater Sheet No. 1 of 2

Drawing No.

Computed by MDB Checked By EFH Date 4/6/93

4/6/93

Baker

Purpose: Estimate exposure / risk from dermal contact with groundwater

$$\text{Intake} = \frac{C \times SA \times PC \times ET \times EF \times ED \times CF}{BW \times AT \text{ or } AT_{nc}}$$

(mg/Kg-day)

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 (day/yr)

ED = exposure duration (yr)

CF = conversion factor ($1L / 1000\ cm^3$)

BW = body weight (Kg)

AT_c = averaging time carcinogen (days)

AT_{nc} = averaging time noncarcinogen (days)

Risk:

Carcinogen = Intake (mg/Kg-day) × CSF $(mg/Kg\text{-day})^{-1}$

Noncarcinogen = Intake (mg/Kg-day) / RfD (mg/Kg-day)

S.O. No. CTO-ϕ133

Subject: Camp Lejeune

Dermal Contact with Groundwater Sheet No. 2 of 2

Drawing No.

Computed by MDB Checked By Date 4/6/93

Baker

Example Carcinogen: Vinyl Chloride

$$\text{Intake (mg/Kg-day)} = \frac{0.0016\ \frac{mg}{\ell} \times 18{,}150\ cm^2 \times 7.3E\text{-}3\ \frac{cm}{hr} \times 0.25\ \frac{hr}{day} \times 350\ \frac{day}{yr} \times 30\ yr \times \frac{\ell}{1000\ cm^3}}{70\ Kg \times 25{,}550\ days}$$

$$= 3.11\ E\text{-}07$$

$$\text{Risk} = 3.11E\text{-}07\ \frac{mg}{Kg\text{-}day} \times 1.9E{+}00\left[\frac{mg}{Kg\text{-}day}\right]^{-1} = 5.91\ E\text{-}07$$

Example Noncarcinogen: Chlorobenzene

$$\text{Intake (mg/Kg-day)} = \frac{.0021\ \frac{mg}{\ell} \times 18{,}150\ cm^2 \times 4.1E\text{-}02\ \frac{cm}{hr} \times 0.25\ \frac{hr}{day} \times 350\ \frac{day}{yr} \times 30\ yr \times \frac{\ell}{1000\ cm^3}}{70\ Kg \times 10{,}950\ days}$$

$$= 5.35\ E\text{-}06$$

$$\text{Risk} = 5.35\ E\text{-}06\ mg/Kg\text{-}day \Big/ 2.0\ E\text{-}02\ mg/kg\text{-}day = 2.7\ E\text{-}04$$

GROUNDWATER DERMAL CONTAC ASSESSMENT
SITE 6 AND 9 CHILD
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

Dermal Contact from groundwater is calculated 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)	7880
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

Note: Inputs are site and scenario specific

Contaminant	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 (years)	Days per Year (days)	Carc Dose (mg/kg-day) Child	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child
Bromodichloromethane	0.0006	7880	5.80E-03	0.25	350	6	0.001	15	70	365	3.76E-08	6.20E-02	2.33E-09	0.15
1,2-Dichloroethane	0.0006	7880	5.30E-03	0.25	350	6	0.001	15	70	365	3.43E-08	9.10E-02	3.12E-09	0.20
1,1-Dichloroethene	0.0006	7880	1.60E-02	0.25	350	6	0.001	15	70	365	1.04E-07	6.00E-01	6.22E-08	3.94
1,1,2,2-Tetrachloroethane	0.0017	7880	9.00E-03	0.25	350	6	0.001	15	70	365	1.65E-07	2.00E-01	3.30E-08	2.09
1,1,2-Trichloroethane	0.0005	7880	8.40E-03	0.25	350	6	0.001	15	70	365	4.53E-08	5.70E-02	2.58E-09	0.16
Trichloroethene	0.014	7880	2.00E-01	0.25	350	6	0.001	15	70	365	3.02E-05	1.10E-02	3.32E-07	21.06
Tetrachloroethene	0.0021	7880	4.00E-01	0.25	350	6	0.001	15	70	365	9.07E-06	5.20E-02	4.72E-07	29.97
Vinyl Chloride	0.0016	7880	7.30E-03	0.25	350	6	0.001	15	70	365	1.28E-07	1.90E+00	2.40E-07	15.18
Arsenic	0.00467	7880	1.50E-03	0.25	350	6	0.001	15	70	365	7.56E-08	1.75E+00	1.32E-07	8.38
Beryllium	0.0043	7880	1.50E-03	0.25	350	6	0.001	15	70	365	6.96E-08	4.30E+00	2.99E-07	18.97
TOTAL													1.58E-06	100.00

Contaminant	Concentration Noncarcinogen (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	Average Noncarc Time (years)	Days per Year (days)	Noncarc Dose (mg/kg-day) Child	Reference Dose (mg/kg-day)	Noncarc Risk Child	Percent Noncarcinogenic Risk Child
Bromodichloromethane	0.0006	7880	5.80E-03	0.25	350	6	0.001	15	6	365	4.39E-07	2.00E-02	2.19E-05	0.11
Chlorobenzene	0.0021	7880	4.10E-02	0.25	350	6	0.001	15	6	365	1.08E-05	2.00E-02	5.42E-04	2.66
1,1-Dichloroethane	0.0006	7880	1.60E-02	0.25	350	6	0.001	15	6	365	1.21E-06	9.00E-03	1.34E-04	0.66
cis-1,2-Dichloroethene	0.0051	7880	1.00E-02	0.25	350	6	0.001	15	6	365	6.42E-06	2.00E-02	3.21E-04	1.58
1,1,2,2-Tetrachloroethane	0.0017	7880	9.00E-03	0.25	350	6	0.001	15	6	365	1.93E-06	2.00E-01	9.63E-06	0.05
Tetrachloroethene	0.0021	7880	3.70E-01	0.25	350	6	0.001	15	6	365	9.79E-06	1.00E-02	9.79E-03	48.06
1,1,2-Trichloroethane	0.0005	7880	8.40E-03	0.25	350	6	0.001	15	6	365	5.29E-07	4.00E-03	1.32E-04	0.65
Ethylbenzene	0.0008	7880	7.40E-02	0.25	350	6	0.001	15	6	365	7.46E-06	1.00E-01	7.46E-05	0.37
Total Xylenes	0.0007	7880	8.00E-02	0.25	350	6	0.001	15	6	365	7.05E-06	2.00E+00	3.53E-06	0.02
Phenol	0.0054	7880	8.20E-02	0.25	350	6	0.001	15	6	365	5.58E-05	6.00E-01	9.29E-05	0.46
Arsenic	0.0047	7880	1.50E-03	0.25	350	6	0.001	15	6	365	8.88E-07	3.00E-04	2.96E-03	14.53
Barium	0.1368	7880	1.50E-03	0.25	350	6	0.001	15	6	365	2.59E-05	7.00E-02	3.69E-04	1.81
Beryllium	0.0006	7880	1.50E-03	0.25	350	6	0.001	15	6	365	1.13E-07	5.00E-03	2.27E-05	0.11
Chromium	0.0467	7880	2.00E-03	0.25	350	6	0.001	15	6	365	1.18E-05	5.00E-03	2.35E-03	11.55
Manganese	0.0453	7880	1.50E-03	0.25	350	6	0.001	15	6	365	8.56E-06	5.00E-03	1.71E-03	8.41
Mercury	0.0001	7880	1.50E-03	0.25	350	6	0.001	15	6	365	1.89E-08	3.00E-04	6.30E-05	0.31
Nickel	0.0104	7880	1.50E-03	0.25	350	6	0.001	15	6	365	1.96E-06	2.00E-02	9.82E-05	0.48
Vanadium	0.0607	7880	1.50E-03	0.25	350	6	0.001	15	6	365	1.15E-05	7.00E-03	1.64E-03	8.04
Zinc	0.0471	7880	1.50E-03	0.25	350	6	0.001	15	6	365	8.90E-06	3.00E-01	2.97E-05	0.15
TOTAL													2.04E-02	100.00

FILE NAME: DCGW69.WQ3

GROUNDWATER DERMAL CONTACT ASSESSMENT
OPERABLE UNIT NO. 2 ADULT RESIDEN...
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

Dermal Contact from groundwater is calculated 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)	18150
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

Contaminant	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)	Days per Year (days)	Carc Dose (mg/kg-day) Adult	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult
Bromodichloromethane	0.0006	18150	5.80E-03	0.25	350	30	0.001	70	70	365	9.27E-08	6.20E-02	5.75E-09	0.02
1,2-Dichloroethane	0.0006	18150	5.30E-03	0.25	350	30	0.001	70	70	365	8.47E-08	9.10E-02	7.71E-09	0.03
1,1-Dichloroethene	0.0006	18150	1.60E-02	0.25	350	30	0.001	70	70	365	2.56E-07	6.00E-01	1.53E-07	0.60
1,1,2,2-Tetrachloroethane	0.0017	18150	9.00E-03	0.25	350	30	0.001	70	70	365	4.08E-07	2.00E-01	8.15E-08	0.32
1,1,2-Trichloroethane	0.0005	18150	8.40E-03	0.25	350	30	0.001	70	70	365	1.12E-07	5.70E-02	6.38E-09	0.02
Trichloroethene	0.014	18150	2.00E-01	0.25	350	30	0.001	70	70	365	7.46E-05	2.00E-01	1.49E-05	
Tetrachloroethene	0.0021	18150	4.00E-01	0.25	350	30	0.001	70	70	365	2.24E-05	4.00E-01	8.95E-06	
Vinyl Chloride	0.0016	18150	7.30E-03	0.25	350	30	0.001	70	70	365	3.11E-07	1.90E+00	5.91E-07	2.29
Arsenic	0.00467	18150	1.50E-03	0.25	350	30	0.001	70	70	365	1.67E-07	1.75E+00	3.27E-07	1.27
Beryllium	0.0043	18150	1.50E-03	0.25	350	30	0.001	70	70	365	1.72E-07	4.30E+00	7.39E-07	2.87
TOTAL													2.58E-05	7.41

Contaminant	Concentration Noncarcinogen (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	Average Noncarc Time (years)	Days per Year (days)	Noncarc Dose (mg/kg-day) Adult	Reference Dose (mg/kg-day)	Noncarc Risk Adult	Percent Noncarcinogenic Risk Adult
Bromodichloromethane	0.0006	18150	5.80E-03	0.25	350	30	0.001	70	30	365	3.16E-07	2.00E-02	1.08E-05	0.11
Chlorobenzene	0.0021	18150	4.10E-02	0.25	350	30	0.001	70	30	365	5.35E-06	2.00E-02	2.68E-04	2.66
1,1-Dichloroethene	0.0006	18150	1.60E-02	0.25	350	30	0.001	70	30	365	5.97E-07	9.00E-03	6.63E-05	0.66
1,2-Dichloroethene	0.0051	18150	1.00E-02	0.25	350	30	0.001	70	30	365	3.17E-06	2.00E-02	1.59E-04	1.58
1,1,2,2-Tetrachloroethane	0.0017	18150	9.00E-03	0.25	350	30	0.001	70	30	365	9.51E-07	2.00E-01	4.76E-06	0.05
Tetrachloroethene	0.0021	18150	3.70E-01	0.25	350	30	0.001	70	30	365	4.83E-05	1.00E-02	4.83E-03	48.06
1,1,2-Trichloroethane	0.0005	18150	8.40E-03	0.25	350	30	0.001	70	30	365	2.61E-07	4.00E-03	6.53E-05	0.65
Ethylbenzene	0.0008	18150	7.40E-02	0.25	350	30	0.001	70	30	365	3.68E-06	1.00E-01	3.68E-05	0.37
Total Xylenes	0.0007	18150	8.00E-02	0.25	350	30	0.001	70	30	365	3.48E-06	2.00E+00	1.74E-06	0.02
Phenol	0.0054	18150	9.20E-02	0.25	350	30	0.001	70	30	365	2.75E-05	6.00E-01	4.59E-05	0.46
Arsenic	0.0047	18150	1.50E-03	0.25	350	30	0.001	70	30	365	4.38E-07	3.00E-04	1.46E-03	14.53
Barium	0.1368	18150	1.50E-03	0.25	350	30	0.001	70	30	365	1.28E-05	7.00E-02	1.82E-04	1.81
Beryllium	0.0005	18150	1.50E-03	0.25	350	30	0.001	70	30	365	5.59E-08	5.00E-03	1.12E-05	0.11
Chromium	0.0467	18150	2.00E-03	0.25	350	30	0.001	70	30	365	5.81E-06	5.00E-03	1.16E-03	11.55
Manganese	0.0453	18150	1.50E-03	0.25	350	30	0.001	70	30	365	4.22E-06	5.00E-03	8.45E-04	8.41
Mercury	0.0001	18150	1.50E-03	0.25	350	30	0.001	70	30	365	9.32E-09	3.00E-04	3.11E-05	0.31
Nickel	0.0104	18150	1.50E-03	0.25	350	30	0.001	70	30	365	9.70E-07	2.00E-02	4.85E-05	0.48
Vanadium	0.0607	18150	1.50E-03	0.25	350	30	0.001	70	30	365	5.66E-06	7.00E-03	8.08E-04	8.04
Zinc	0.0471	18150	1.50E-03	0.25	350	30	0.001	70	30	365	4.39E-06	3.00E-01	1.46E-05	0.15
TOTAL													1.00E-02	100.00

GROUNDWATER DERMAL CONTACT ASSESSMENT
SITE 6 AND 9 WORKER
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

Dermal Contact from groundwater is calculated 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 = worker skin surface available for contact (cm2)	18150
PC = contaminant specific dermal permeability (cm/hr)	Specific
ET = worker exposure time (hours/day)	0.25
EF = worker exposure frequency (days/yr)	250
ED = worker exposure duration (years)	25
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = worker body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	25
DY = days per year (days)	365

Note: Inputs are site and scenario specific

Contaminant	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)	Days per Year (days)	Carc Dose (mg/kg-day) Adult	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult
Bromodichloromethane	0.0006	18150	5.80E-03	0.25	250	25	0.001	70	70	365	5.52E-08	6.20E-02	3.42E-09	0.15
,2-Dichloroethane	0.0006	18150	5.30E-03	0.25	250	25	0.001	70	70	365	5.04E-08	9.10E-02	4.59E-09	0.20
,1-Dichloroethene	0.0006	18150	1.60E-02	0.25	250	25	0.001	70	70	365	1.52E-07	6.00E-01	9.13E-08	3.94
,1,2,2-Tetrachloroethane	0.0017	18150	9.00E-03	0.25	250	25	0.001	70	70	365	2.43E-07	2.00E-01	4.85E-08	2.09
,1,2-Trichloroethane	0.0005	18150	8.40E-03	0.25	250	25	0.001	70	70	365	6.66E-08	5.70E-02	3.80E-09	0.16
richloroethene	0.014	18150	2.00E-01	0.25	250	25	0.001	70	70	365	4.44E-05	1.10E-02	4.88E-07	21.06
etrachloroethene	0.0021	18150	4.00E-01	0.25	250	25	0.001	70	70	365	1.33E-05	5.20E-02	6.93E-07	29.87
inyl Chloride	0.0016	18150	7.30E-03	0.25	250	25	0.001	70	70	365	1.85E-07	1.90E+00	3.52E-07	15.18
rsenic	0.00467	18150	1.50E-03	0.25	250	25	0.001	70	70	365	1.11E-07	1.75E+00	1.94E-07	8.39
eryllium	0.0043	18150	1.50E-03	0.25	250	25	0.001	70	70	365	1.02E-07	4.30E+00	4.40E-07	18.97
OTAL													2.32E-06	100.00

Contaminant	Concentration Noncarcinogen (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	Average Noncarc Time (years)	Days per Year (days)	Noncarc Dose (mg/kg-day) Adult	Reference Dose (mg/kg-day)	Noncarc Risk Adult	Percent Noncarcinogenic Risk Adult
Bromodichloromethane	0.0006	18150	5.80E-03	0.25	250	25	0.001	70	25	365	1.55E-07	2.00E-02	7.73E-06	0.11
Chlorobenzene	0.0021	18150	4.10E-02	0.25	250	25	0.001	70	25	365	3.82E-06	2.00E-02	1.91E-04	2.66
,1-Dichloroethene	0.0006	18150	1.60E-02	0.25	250	25	0.001	70	25	365	4.26E-07	9.00E-03	4.74E-05	0.66
-1,2-Dichloroethene	0.0051	18150	1.00E-02	0.25	250	25	0.001	70	25	365	2.26E-06	2.00E-02	1.13E-04	1.58
,1,2,2-Tetrachloroethane	0.0017	18150	9.00E-03	0.25	250	25	0.001	70	25	365	6.79E-07	2.00E-01	3.40E-06	0.05
etrachloroethene	0.0021	18150	3.70E-01	0.25	250	25	0.001	70	25	365	3.45E-05	1.00E-02	3.45E-03	48.06
,1,2-Trichloroethane	0.0005	18150	8.40E-03	0.25	250	25	0.001	70	25	365	1.86E-07	4.00E-03	4.66E-05	0.65
thylbenzene	0.0008	18150	7.40E-02	0.25	250	25	0.001	70	25	365	2.63E-06	1.00E-01	2.63E-05	0.37
otal Xylenes	0.0007	18150	8.00E-02	0.25	250	25	0.001	70	25	365	2.49E-06	2.00E+00	1.24E-06	0.02
henol	0.0054	18150	8.20E-02	0.25	250	25	0.001	70	25	365	1.97E-05	6.00E-01	3.28E-05	0.46
rsenic	0.0047	18150	1.50E-03	0.25	250	25	0.001	70	25	365	3.13E-07	3.00E-04	1.04E-03	14.53
arium	0.1368	18150	1.50E-03	0.25	250	25	0.001	70	25	365	9.11E-06	7.00E-02	1.30E-04	1.81
eryllium	0.0006	18150	1.50E-03	0.25	250	25	0.001	70	25	365	4.00E-08	5.00E-03	7.99E-06	0.11
hromium	0.0467	18150	2.00E-03	0.25	250	25	0.001	70	25	365	4.15E-06	5.00E-03	8.29E-04	11.55
anganese	0.0453	18150	1.50E-03	0.25	250	25	0.001	70	25	365	3.02E-06	5.00E-03	6.03E-04	8.41
ercury	0.0001	18150	1.50E-03	0.25	250	25	0.001	70	25	365	6.66E-09	3.00E-04	2.22E-05	0.31
ickel	0.0104	18150	1.50E-03	0.25	250	25	0.001	70	25	365	6.93E-07	2.00E-02	3.46E-05	0.48
anadium	0.0607	18150	1.50E-03	0.25	250	25	0.001	70	25	365	4.04E-06	7.00E-03	5.77E-04	8.04
inc	0.0471	18150	1.50E-03	0.25	250	25	0.001	70	25	365	3.14E-06	3.00E-01	1.05E-05	0.15
OTAL													7.18E-03	100.00

File Name: DCGW69.WQ2

S.O. No. CTO-0133 Camp Lejeune

Subject: Surface Water Ingestion

Sheet No. 1 of 2

Drawing No.

Computed by MDB Checked By DCS Date 5/20/93

Baker

Purpose: Estimate exposure/risk from ingestion of surface water

$$\text{Intake}_{(mg/Kg\text{-}day)} = \frac{C \times IR \times ET \times EF \times ED}{BW \times AT_c \text{ or } AT_{nc}}$$

Where:

C = contaminant concentration in surface water (mg/ℓ)

IR = ingestion rate (ℓ/hour)

ET = exposure time (hour/event)

EF = exposure frequency (event/yr)

ED = exposure duration (yr)

BW = body weight (Kg)

AT_c = averaging time carcinogen (yr)

AT_{nc} = averaging time noncarcinogen (yr)

Risk =

Carcinogen = Intake (mg/Kg-day) x CSF $(mg/Kg\text{-}day)^{-1}$

Noncarcinogen = Intake (mg/Kg-day) / RfD (mg/Kg-day)

Example Carcinogen: Vinyl Chloride

$$\text{Intake (mg/Kg-day)} = \frac{0.006 \frac{mg}{\ell} \times 0.05 \frac{\ell}{hr} \times 2.6 \frac{hr}{evt} \times 7 \frac{evt}{yr} \times 30\ yr}{70\ Kg \times 25,550\ day}$$

$$= 9.16E\text{-}08$$

S.O. No. CTO-0133 Camp Lejeune

Subject: Surface Water Ingestion

Sheet No. 2 of 2

Drawing No.

Computed by MDB Checked By DCS Date 3/20/93

$$Risk = 9.16\,E\text{-}08 \frac{mg}{Kg\text{-}day} \times 1.9\,E0 \frac{mg}{Kg\text{-}day}^{-1} = 1.74\,E\text{-}07$$

Example Noncarcinogen: Tetrachloroethene

$$Intake(mg/kg\text{-}day) = \frac{0.004 \frac{mg}{\cancel{\ell}} \times 0.05 \frac{\cancel{\ell}}{\cancel{hr}} \times 2.6 \frac{\cancel{hr}}{\cancel{evt}} \times 7 \frac{\cancel{evt}}{\cancel{yr}} \times 30 \cancel{yr}}{70\,Kg \times 10{,}950\,days}$$

$$= 1.42\,E\text{-}07$$

$$Risk = \frac{1.42\,E\text{-}07 \frac{mg}{Kg\text{-}day}}{1.0\,E\text{-}02 \frac{mg}{Kg\text{-}day}} = 1.42\,E\text{-}05$$

SURFACE WATER INGESTION . . . RE ASSESSMENT
SITE 6 ADOLESCENT WALLACE CREEK
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

The intake from the ingestion of surface water is calculated as follows:

Intake (mg/kg-day) = Cw * CR * ET * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:		INPUT
Cw = contaminant concentration in surface water (mg/l)		
CR = contact rate (Liter/hour)		0.05
ET = adolescent exposure time (hours/event)		2.6
EF = adolescent exposure frequency (events/yr)		7
ED = adolescent exposure duration (yrs)		9
BW = adolescent body weight (kg)		45
ATc = averaging time for carcinogen (yr)		70
ATnc = averaging time for noncarcinogen (yr)		9
DY = days per year (days)		365
CSF = cancer slope factor (mg/kg-day)-1	specific	
RfD = reference dose (mg/kg-day)	specific	

Note: inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/l)	Contact Rate (l/hour)	Exposure Time (hrs/event) Adolescent	Exposure Frequency (events/yr) Adolescent	Exposure Duration (years) Adolescent	Body Weight (kg) Adolescent	Average Carc Time (years)	Days per Year (days)	Carc Dose (mg/kg-day) Adolescent	Cancer Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adolescent	Percent Carcinogenic Risk Adolescent
Vinyl Chloride	0.006	0.05	2.6	7	9	45	70	365	4.27E-08	1.90E+00	8.12E-08	81.90
Arsenic	0.00144	0.05	2.6	7	9	45	70	365	1.03E-08	1.75E+00	1.80E-08	18.10
TOTAL											9.92E-08	100.00

Contaminant	Concentration Noncarcinogen (mg/l)	Contact Rate (l/hour)	Exposure Time (hrs/event) Adolescent	Exposure Frequency (events/yr) Adolescent	Exposure Duration (years) Adolescent	Body Weight (kg) Adolescent	Average Noncarc (years)	Days per Year (days)	Noncarc Dose (mg/kg-day) Adolescent	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adolescent	Percent Noncarcinogenic Risk Adolescent
T-1,2-Dichloroethene	0.0111	0.05	2.6	7	9	45	9	365	6.15E-07	2.00E-02	3.07E-05	2.81
Tetrachloroethene	0.004	0.05	2.6	7	9	45	9	365	2.22E-07	1.00E-02	2.22E-05	2.02
Toluene	0.003	0.05	2.6	7	9	45	9	365	1.66E-07	2.00E-01	8.31E-07	0.08
Arsenic	0.00144	0.05	2.6	7	9	45	9	365	7.98E-08	3.00E-04	2.66E-04	24.27
Barium	0.01251	0.05	2.6	7	9	45	9	365	6.93E-07	7.00E-02	9.90E-06	0.90
Cadmium	0.00182	0.05	2.6	7	9	45	9	365	1.01E-07	5.00E-04	2.02E-04	18.40
Chromium	0.00239	0.05	2.6	7	9	45	9	365	1.32E-07	5.00E-03	2.65E-05	2.42
Manganese	0.01501	0.05	2.6	7	9	45	9	365	8.32E-07	5.00E-03	1.66E-04	15.18
Mercury	0.00014	0.05	2.6	7	9	45	9	365	7.76E-09	3.00E-04	2.59E-05	2.36
Nickel	0.04513	0.05	2.6	7	9	45	9	365	2.50E-06	2.00E-02	1.25E-04	11.41
Vanadium	0.0244	0.05	2.6	7	9	45	9	365	1.35E-06	7.00E-03	1.93E-04	17.62
Zinc	0.1499	0.05	2.6	7	9	45	9	365	8.30E-06	3.00E-01	2.77E-05	2.53
TOTAL											1.10E-03	100.00

FILE NAME: SWI.WQ2

SURFACE WATER INGESTION EX[illegible]E ASSESSMENT
SITE 6 ADULT WALLACE CREEK
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

The intake from the ingestion of surface water is calculated as follows:

Intake (mg/kg-day) = Cw * CR * ET * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:		INPUT
Cw = contaminant concentration in surface water (mg/l)		
CR = contact rate (Liter/hour)		0.05
ET = adult exposure time (hours/event)		2.6
EF = adult exposure frequency (events/yr)		7
ED = adult exposure duration (yrs)		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 (days)		365
CSF = cancer slope factor (mg/kg-day)-1	specific	
RfD = reference dose (mg/kg-day)	specific	

Note: inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/l)	Contact Rate (l/hour)	Exposure Time (hrs/event) Adult	Exposure Frequency (events/yr) Adult	Exposure Duration (years) Adult	Body Weight (kg) Adult	Average Carc Time (years)	Days per Year (days)	Carc Dose (mg/kg-day) Adult	Cancer Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult
Vinyl Chloride	0.006	0.05	2.6	7	30	70	70	365	9.16E-08	1.90E+00	1.74E-07	81.90
Arsenic	0.00144	0.05	2.6	7	30	70	70	365	2.20E-08	1.75E+00	3.85E-08	18.10
TOTAL											2.12E-07	100.00

Contaminant	Concentration Noncarcinogen (mg/l)	Contact Rate (l/hour)	Exposure Time (hrs/event) Adult	Exposure Frequency (events/yr) Adult	Exposure Duration (years) Adult	Body Weight (kg) Adult	Average Noncarc (years)	Days per Year (days)	Noncarc Dose (mg/kg-day) Adult	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
1,1,2-Dichloroethene	0.0111	0.05	2.6	7	30	70	30	365	3.95E-07	2.00E-02	1.98E-05	3.43
Tetrachloroethene	0.004	0.05	2.6	7	30	70	30	365	1.42E-07	1.00E-02	1.42E-05	2.47
Toluene	0.003	0.05	2.6	7	30	70	30	365	1.07E-07	2.00E-01	5.34E-07	0.09
Arsenic	0.00144	0.05	2.6	7	30	70	30	365	5.13E-08	3.00E-04	1.71E-04	29.65
Barium	0.01251	0.05	2.6	7	30	70	30	365	4.46E-07	7.00E-02	6.37E-06	1.10
Cadmium	0.00182	0.05	2.6	7	30	70	30	365	6.48E-08	5.00E-04	1.30E-04	22.48
Chromium	0.00239	0.05	2.6	7	30	70	30	365	8.51E-08	5.00E-03	1.70E-05	2.95
Manganese	0.01501	0.05	2.6	7	30	70	30	365	5.35E-07	5.00E-03	1.07E-04	18.54
Mercury	0.00014	0.05	2.6	7	30	70	30	365	4.99E-09	3.00E-04	1.66E-05	2.88
Nickel	0.04513	0.05	2.6	7	30	70	30	365	1.61E-06	2.00E-02	8.04E-05	13.94
Vanadium	0.00244	0.05	2.6	7	30	70	30	365	8.69E-08	7.00E-03	1.24E-05	2.15
Zinc	0.01499	0.05	2.6	7	30	70	30	365	5.34E-07	3.00E-01	1.78E-06	0.31
TOTAL											5.77E-04	100.00

FILE NAME: SWI.WQ1

SURFACE WATER INGESTION E. E ASSESSMENT
SITE 6 ADOLESCENT BEAR HEAD CREEK
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

The intake from the ingestion of surface water is calculated as follows:

Intake (mg/kg-day) = Cw * CR * ET * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:		INPUT
Cw = contaminant concentration in surface water (mg/l)		
CR = contact rate (Liter/hour)		0.05
ET = adolescent exposure time (hours/event)		2.6
EF = adolescent exposure frequency (events/yr)		7
ED = adolescent exposure duration (yrs)		9
BW = adolescent body weight (kg)		45
ATc = averaging time for carcinogen (yr)		70
ATnc = averaging time for noncarcinogen (yr)		9
DY = days per year (days)		365
CSF = cancer slope factor (mg/kg-day)-1	specific	
RfD = reference dose (mg/kg-day)	specific	

Note: inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/l)	Contact Rate (l/hour)	Exposure Time (hrs/event) Adolescent	Exposure Frequency (events/yr) Adolescent	Exposure Duration (years) Adolescent	Body Weight (kg) Adolescent	Average Carc Time (years)	Days per Year (days)	Carc Dose (mg/kg-day) Adolescent	Cancer Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adolescent	Percent Carcinogenic Risk Adolescent
	0	0.05	2.6	7	9	45	70	365	0.00E+00	1.00E-05	0.00E+00	ERR
	0	0.05	2.6	7	9	45	70	365	0.00E+00	0.00E+00	0.00E+00	ERR
	0	0.05	2.6	7	9	45	70	365	0.00E+00	1.00E-05	0.00E+00	ERR
TOTAL											0.00E+00	ERR

Contaminant	Concentration Noncarcinogen (mg/l)	Contact Rate (l/hour)	Exposure Time (hrs/event) Adolescent	Exposure Frequency (events/yr) Adolescent	Expsosure Duration (years) Adolescent	Body Weight (kg) Adolescent	Average Noncarc (years)	Days per Year (days)	Noncarc Dose (mg/kg-day) Adolescent	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adolescent	Percent Noncarcinogenic Risk Adolescent
Barium	0.02609	0.05	2.6	7	9	45	9	365	1.45E-06	7.00E-02	2.06E-05	5.15
Chromium	0.00381	0.05	2.6	7	9	45	9	365	2.11E-07	5.00E-03	4.22E-05	10.52
Manganese	0.02314	0.05	2.6	7	9	45	9	365	1.28E-06	5.00E-03	2.56E-04	63.90
Mercury	0.00005	0.05	2.6	7	9	45	9	365	2.77E-09	3.00E-04	9.23E-06	2.30
Nickel	0.01834	0.05	2.6	7	9	45	9	365	1.02E-06	2.00E-02	5.08E-05	12.66
Vanadium	0.00255	0.05	2.6	7	9	45	9	365	1.41E-07	7.00E-03	2.02E-05	5.03
Zinc	0.00958	0.05	2.6	7	9	45	9	365	5.31E-07	3.00E-01	1.77E-06	0.44
TOTAL											4.01E-04	100.00

FILE NAME: SWI.WQ4

SURFACE WATER INGESTION E[illegible]E ASSESSMENT
SITE 6 ADULT BEAR HEAD CREEK
REMEDIAL INVESTIGATION CTO 0133
MCB CAMP LEJEUNE, NORTH CAROLINA

The intake from the ingestion of surface water is calculated as follows:

Intake (mg/kg-day) = Cw * CR * ET * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:		INPUT
Cw = contaminant concentration in surface water (mg/l)		
CR = contact rate (Liter/hour)		0.05
ET = adult exposure time (hours/event)		2.6
EF = adult exposure frequency (events/yr)		7
ED = adult exposure duration (yrs)		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 (days)		365
CSF = cancer slope factor (mg/kg-day)-1	specific	
RfD = reference dose (mg/kg-day)	specific	

Note: inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/l)	Contact Rate (l/hour)	Exposure Time (hrs/event) Adult	Exposure Frequency (events/yr) Adult	Exposure Duration (years) Adult	Body Weight (kg) Adult	Average Carc Time (years)	Days per Year (days)	Carc Dose (mg/kg-day) Adult	Cancer Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult
	0	0.05	2.6	7	30	70	70	365	0.00E+00	1.00E-05	0.00E+00	ERR
	0	0.05	2.6	7	30	70	70	365	0.00E+00	0.00E+00	0.00E+00	ERR
	0	0.05	2.6	7	30	70	70	365	0.00E+00	1.00E-05	0.00E+00	ERR
TOTAL											0.00E+00	ERR

Contaminant	Concentration Noncarcinogen (mg/l)	Contact Rate (l/hour)	Exposure Time (hrs/event) Adult	Exposure Frequency (events/yr) Adult	Expsosure Duration (years) Adult	Body Weight (kg) Adult	Average Noncarc (years)	Days per Year (days)	Noncarc Dose (mg/kg-day) Adult	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Barium	0.02609	0.05	2.6	7	30	70	30	365	9.28E-07	7.00E-02	1.33E-05	5.15
Chromium	0.00381	0.05	2.6	7	30	70	30	365	1.36E-07	5.00E-03	2.71E-05	10.52
Manganese	0.02314	0.05	2.6	7	30	70	30	365	8.24E-07	5.00E-03	1.65E-04	63.90
Mercury	0.00005	0.05	2.6	7	30	70	30	365	1.78E-09	3.00E-04	5.94E-06	2.30
Nickel	0.01834	0.05	2.6	7	30	70	30	365	6.53E-07	2.00E-02	3.27E-05	12.66
Vanadium	0.00255	0.05	2.6	7	30	70	30	365	9.08E-08	7.00E-03	1.30E-05	5.03
Zinc	0.00958	0.05	2.6	7	30	70	30	365	3.41E-07	3.00E-01	1.14E-06	0.44
TOTAL											2.58E-04	100.00

FILE NAME: SWI.WQ3

S.O. No. CTO-0133 Camp Lejeune

Subject: Surface Water Dermal Contact

Sheet No. 1 of 2

Drawing No.

Computed by MDB Checked By DCS Date 3/20/93

Baker

Purpose: Estimate exposure/risk from dermal contact with surface water

$$\text{Intake}_{(mg/kg\text{-}day)} = \frac{C \times SA \times PC \times ET \times EF \times ED \times CF}{BW \times AT_c \text{ or } AT_{nc}}$$

Where:

C = contaminant concentration in surface water (mg/ℓ)

SA = exposed surface area for contact (cm^2)

PC = permeability constant (cm/hr)

ET = exposure time (hr/day)

EF = exposure frequency (day/yr)

ED = exposure duration (yr)

CF = conversion factor (ℓ/cm^3)

BW = body weight (kg)

AT_c = averaging time carcinogen (days)

AT_{nc} = averaging time noncarcinogen (days)

Risk =

Carcinogen = Intake ($mg/kg\text{-}day$) × CSF ($mg/kg\text{-}day)^{-1}$

Noncarcinogen = Intake ($mg/kg\text{-}day$) / RfD ($mg/kg\text{-}day$)

Example Carcinogen: Vinyl Chloride

$$\text{Intake}_{(mg/kg\text{-}day)} = \frac{0.006\ \frac{mg}{\ell} \times 17500\ cm^2 \times 7.3E\text{-}03\ \frac{cm}{hr} \times 2.6\ \frac{hr}{day} \times 7\ \frac{day}{yr} \times 30\ yr \times \frac{1\ \ell}{1000\ cm^3}}{70\ kg \times 25{,}550\ days}$$

$$= 2.34E\text{-}07$$

S.O. No. CTO-0133 Camp Lejeune

Subject: Surface Water Dermal Contact

Sheet No. 2 of 2

Drawing No.

Computed by MDB Checked By DCS Date 3/20/93

$$\text{Risk} = 2.34\text{E-}07 \frac{mg}{Kg\text{-}day} \times 1.9\text{E}0 \frac{mg}{Kg\text{-}day}^{-1} = 4.5\text{E-}07$$

Example Noncarcinogen: Tetrachloroethene

$$\text{Intake (mg/kg-day)} = \frac{0.004 \frac{mg}{\ell} \times 17{,}500\ cm^2 \times 3.7\text{E-}01 \frac{cm}{hr} \times 2.6 \frac{hr}{day} \times 7 \frac{day}{yr} \times 30 yr \times \frac{1\ell}{1000 cm^3}}{70\ Kg \times 10{,}950\ days}$$

$$= 1.84\text{E-}05 \frac{mg}{Kg\text{-}day}$$

$$\text{Risk} = \frac{1.84\text{E-}05 \frac{mg}{Kg\text{-}day}}{1.0\text{E-}02 \frac{mg}{Kg\text{-}day}} = 1.84\text{E-}03$$

SURFACE WATER DERMAL CONTACT EXPOSURE ASSESSMENT
SITE 6 WALLACE CREEK - ADOLESCENT
MCB CAMP LEJEUNE, NORTH CAROLINA

The intake from dermal contact with surface water is calculated 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 = adolescent skin surface available for contact (cm2)	13800
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = adolescent exposure time (hours/day)	2.6
EF = adolescent exposure frequency (days/yr)	7
ED = adolescent exposure duration (years)	9
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = adolescent body weight (kg)	45
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = days per year (days)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

Note: Inputs are site and scenario specific

Contaminant	Concentration Carcinogen (mg/l)	Surface Area (cm2) Adolescent	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Adolescent	Exposure Frequency (days/yr) Adolescent	Exposure Duration (years) Adolescent	Volumetric Conversion (L/m3)	Body Weight (kg) Adolescent	Averaging Carc Time (years)	Days per Year (days)	Carc Dose (mg/kg-day) Adolescent	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adolescent	Percent Carcinogenic Risk Adolescent
Vinyl Chloride	0.006	13800	7.3E-03	2.6	7	9	0.001	45	70	365	8.81E-08	1.90E+00	1.64E-07	95.66
Arsenic	0.00144	13800	1.5E-03	2.6	7	9	0.001	45	70	365	4.25E-09	1.75E+00	7.43E-09	4.34
TOTAL													1.71E-07	100.00

Contaminant	Concentration Noncarcinogen (mg/l)	Surface Area (cm2) Adolescent	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Adolescent	Exposure Frequency (days/yr) Adolescent	Exposure Duration (years) Adolescent	Volumetric Conversion (L/m3)	Body Weight (kg) Adolescent	Average Noncarc Time (years)	Days per Year (days)	Noncarc Dose (mg/kg-day) Adolescent	Reference Dose (mg/kg-day)	Noncarc Risk Adolescent	Percent Noncarcinogenic Risk Adolescent
1-1,2-Dichloroethene	0.0111	13800	1.0E-02	2.6	7	9	0.001	45	9	365	1.70E-06	2.00E-02	8.49E-05	2.98
Tetrachloroethene	0.004	13800	3.7E-01	2.6	7	9	0.001	45	9	365	2.26E-05	1.00E-02	2.26E-03	79.42
Toluene	0.003	13800	1.0E+00	2.6	7	9	0.001	45	9	365	4.59E-05	2.00E-01	2.29E-04	8.05
Arsenic	0.00144	13800	1.5E-03	2.6	7	9	0.001	45	9	365	3.30E-08	3.00E-04	1.10E-04	3.86
Barium	0.01251	13800	1.5E-03	2.6	7	9	0.001	45	9	365	2.87E-07	7.00E-02	4.10E-06	0.14
Cadmium	0.00182	13800	1.0E-03	2.6	7	9	0.001	45	9	365	2.78E-08	5.00E-04	5.57E-05	1.95
Chromium	0.00239	13800	2.0E-03	2.6	7	9	0.001	45	9	365	7.31E-08	5.00E-03	1.46E-05	0.51
Manganese	0.01501	13800	1.5E-03	2.6	7	9	0.001	45	9	365	3.44E-07	5.00E-03	6.89E-05	2.42
Mercury	0.00014	13800	1.0E-03	2.6	7	9	0.001	45	9	365	2.14E-09	3.00E-04	7.14E-06	0.25
Nickel	0.04513	13800	1.0E-04	2.6	7	9	0.001	45	9	365	6.90E-08	2.00E-02	3.45E-06	0.12
Vanadium	0.00244	13800	1.5E-03	2.6	7	9	0.001	45	9	365	5.60E-08	7.00E-03	8.00E-06	0.28
Zinc	0.01499	13800	6.0E-04	2.6	7	9	0.001	45	9	365	1.38E-07	3.00E-01	4.58E-07	0.02
TOTAL													2.85E-03	100.00

FILE NAME: SWDC.WQ2

SURFACE WATER DERMAL CON POSURE ASSESSMENT
SITE 6 WALLACE CREEK - ADULT
MCB CAMP LEJEUNE, NORTH CAROLINA

The intake from dermal contact with surface water is calculated 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)	17500
PC = contaminant specific dermal permeability (cm/hr)	Specific
ET = adult exposure time (hours/day)	2.6
EF = adult exposure frequency (days/yr)	7
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
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

Note: Inputs are site and scenario specific

Contaminant	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)	Days per Year (days)	Carc Dose (mg/kg-day) Adult	Slope Factor (mg/kg day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult
Vinyl Chloride	0.008	17500	7.3E-03	2.6	7	30	0.001	70	70	365	2.34E-07	1.90E+00	4.45E-07	95.66
Arsenic	0.00144	17500	1.5E-03	2.6	7	30	0.001	70	70	365	1.15E-08	1.75E+00	2.02E-08	4.34
TOTAL													4.65E-07	100.00

Contaminant	Concentration Noncarcinogen (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	Average Noncarc Time (years)	Days per Year (days)	Noncarc Dose (mg/kg-day) Adult	Reference Dose (mg/kg-day)	Noncarc Risk Adult	Percent Noncarcinogenic Risk Adult
1-1,2-Dichloroethene	0.0111	17500	1.0E-02	2.6	7	30	0.001	70	30	365	1.38E-06	2.00E-02	6.92E-05	2.98
Tetrachloroethene	0.004	17500	3.7E-01	2.6	7	30	0.001	70	30	365	1.84E-05	1.00E-02	1.84E-03	79.42
Toluene	0.003	17500	1.0E+00	2.6	7	30	0.001	70	30	365	3.74E-05	2.00E-01	1.87E-04	8.05
Arsenic	0.00144	17500	1.5E-03	2.6	7	30	0.001	70	30	365	2.69E-08	3.00E-04	8.98E-05	3.86
Barium	0.01251	17500	1.5E-03	2.6	7	30	0.001	70	30	365	2.34E-07	7.00E-02	3.34E-06	0.14
Cadmium	0.00182	17500	1.0E-03	2.6	7	30	0.001	70	30	365	2.27E-08	5.00E-04	4.54E-05	1.95
Chromium	0.00239	17500	2.0E-03	2.6	7	30	0.001	70	30	365	5.96E-08	5.00E-03	1.19E-05	0.51
Manganese	0.01501	17500	1.5E-03	2.6	7	30	0.001	70	30	365	2.81E-07	5.00E-03	5.61E-05	2.42
Mercury	0.00014	17500	1.0E-03	2.6	7	30	0.001	70	30	365	1.75E-09	3.00E-04	5.82E-06	0.25
Nickel	0.04513	17500	1.0E-04	2.6	7	30	0.001	70	30	365	5.63E-08	2.00E-02	2.81E-06	0.12
Vanadium	0.00244	17500	1.5E-03	2.6	7	30	0.001	70	30	365	4.56E-08	7.00E-03	6.52E-06	0.28
Zinc	0.01499	17500	6.0E-04	2.6	7	30	0.001	70	30	365	1.12E-07	3.00E-01	3.74E-07	0.02
TOTAL													2.32E-03	100.00

FILE NAME: SWDC.WQ1

SURFACE WATER DERMAL CONTAC ASSESSMENT
SITE 6 BEAR HEAD CREEK - ADOLES.
MCB CAMP LEJEUNE, NORTH CAROLINA

The intake from dermal contact with surface water is calculated 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 = adolescent skin surface available for contact (cm2)	13800
PC = contaminant specific dermal permeability (cm/hr)	Specific
ET = adolescent exposure time (hours/day)	2.6
EF = adolescent exposure frequency (days/yr)	7
ED = adolescent exposure duration (years)	9
CF = volumetric conversion factor for water (1 liter/1000 cm3)	0.001
BW = adolescent body weight (kg)	45
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = days per year (days)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

Note: Inputs are site and scenario specific

Contaminant	Concentration Carcinogen (mg/l)	Surface Area (cm2) Adolescent	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Adolescent	Exposure Frequency (days/yr) Adolescent	Exposure Duration (years) Adolescent	Volumetric Conversion (L/m3)	Body Weight (kg) Adolescent	Averaging Carc Time (years)	Days per Year (days)	Carc Dose (mg/kg-day) Adolescent	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adolescent	Percent Carcinogenic Risk Adolescent
	0	13800	0.0E+00	2.6	7	9	0.001	45	70	365	0.00E+00	0.00E+00	0.00E+00	ERR
	0	13800	0.0E+00	2.6	7	9	0.001	45	70	365	0.00E+00	0.00E+00	0.00E+00	ERR
TOTAL													0.00E+00	ERR

Contaminant	Concentration Noncarcinogen (mg/l)	Surface Area (cm2) Adolescent	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Adolescent	Exposure Frequency (days/yr) Adolescent	Exposure Duration (years) Adolescent	Volumetric Conversion (L/m3)	Body Weight (kg) Adolescent	Average Noncarc Time (years)	Days per Year (days)	Noncarc Dose (mg/kg-day) Adolescent	Reference Dose (mg/kg-day)	Noncarc Risk Adolescent	Percent Noncarcinogenic Risk Adolescent
Barium	0.02609	13800	1.5E-03	2.6	7	9	0.001	45	9	365	5.98E-07	7.00E-02	8.55E-06	5.68
Chromium	0.00391	13800	2.0E-03	2.6	7	9	0.001	45	9	365	1.17E-07	5.00E-03	2.33E-05	15.47
Manganese	0.02314	13800	1.5E-03	2.6	7	9	0.001	45	9	365	5.31E-07	5.00E-03	1.06E-04	70.48
Mercury	5E-05	13800	1.0E-03	2.6	7	9	0.001	45	9	365	7.65E-10	3.00E-04	2.55E-06	1.69
Nickel	0.01834	13800	1.0E-04	2.6	7	9	0.001	45	9	365	2.80E-08	2.00E-02	1.40E-06	0.93
Vanadium	0.00255	13800	1.5E-03	2.6	7	9	0.001	45	9	365	5.85E-08	7.00E-03	8.36E-06	5.55
Zinc	0.00958	13800	6.0E-04	2.6	7	9	0.001	45	9	365	8.79E-08	3.00E-01	2.93E-07	0.19
TOTAL													1.51E-04	100.00

SURFACE WATER DERMAL CONTAC E ASSESSMENT
SITE 6 BEAR HEAD CREEK - ADULT
MCB CAMP LEJEUNE, NORTH CAROLINA

The intake from dermal contact with surface water is calculated 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)	17500
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = adult exposure time (hours/day)	2.6
EF = adult exposure frequency (days/yr)	7
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
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

Note: Inputs are site and scenario specific

Contaminant	Concentration Carcinogen (mg/l)	Surface Area (cm2) Adolescent	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Adolescent	Exposure Frequency (days/yr) Adolescent	Exposure Duration (years) Adolescent	Volumetric Conversion (L/m3)	Body Weight (kg) Adolescent	Averaging Carc Time (years)	Days per Year (days)	Carc Dose (mg/kg-day) Adolescent	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adolescent	Percent Carcinogenic Risk Adolescent
	0	17500	0.0E+00	2.6	7	30	0.001	70	70	365	0.00E+00	0.00E+00	0.00E+00	ERR
	0	17500	0.0E+00	2.6	7	30	0.001	70	70	365	0.00E+00	0.00E+00	0.00E+00	ERR
TOTAL													0.00E+00	ERR

Contaminant	Concentration Noncarcinogen (mg/l)	Surface Area (cm2) Adolescent	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Adolescent	Exposure Frequency (days/yr) Adolescent	Exposure Duration (years) Adolescent	Volumetric Conversion (L/m3)	Body Weight (kg) Adolescent	Average Noncarc Time (years)	Days per Year (days)	Noncarc Dose (mg/kg-day) Adolescent	Reference Dose (mg/kg-day)	Noncarc Risk Adolescent	Percent Noncarcinogenic Risk Adolescent
Barium	0.02609	17500	1.5E-03	2.6	7	30	0.001	70	30	365	4.88E-07	7.00E-02	6.97E-06	5.68
Chromium	0.00381	17500	2.0E-03	2.6	7	30	0.001	70	30	365	9.50E-08	5.00E-03	1.90E-05	15.47
Manganese	0.02314	17500	1.5E-03	2.6	7	30	0.001	70	30	365	4.33E-07	5.00E-03	8.65E-05	70.48
Mercury	5E-05	17500	1.0E-03	2.6	7	30	0.001	70	30	365	6.23E-10	3.00E-04	2.08E-06	1.69
Nickel	0.01834	17500	1.0E-04	2.6	7	30	0.001	70	30	365	2.29E-08	2.00E-02	1.14E-06	0.93
Vanadium	0.00255	17500	1.5E-03	2.6	7	30	0.001	70	30	365	4.77E-08	7.00E-03	6.81E-06	5.55
Zinc	0.00958	17500	6.0E-04	2.6	7	30	0.001	70	30	365	7.17E-08	3.00E-01	2.39E-07	0.19
TOTAL													1.23E-04	100.00

S.O. No. CTO-0133 Camp Lejeune

Subject: Sediment Ingestion

Sheet No. 1 of 2

Drawing No.

Computed by MDB Checked By DCS Date 3/20/93

Baker

Purpose: Estimate exposure/risk from ingestion of sediment

$$\text{Intake } (\text{mg/Kg-day}) = \frac{C \times IR \times CF \times EF \times ED}{BW \times AT_c \text{ or } AT_{nc}}$$

Where:

C = contaminant concentration in sediment (mg/Kg)

IR = sediment ingestion rate (mg/day)

CF = conversion factor (Kg/mg)

EF = exposure frequency (day/yr)

ED = exposure duration (yr)

BW = body weight (Kg)

AT_c = averaging time for carcinogens (days)

AT_{nc} = averaging time for noncarcinogens (days)

Risk =

Carcinogen = Intake (mg/Kg-day) x CSF $(\text{mg/Kg-day})^{-1}$

Noncarcinogen = Intake (mg/Kg-day) / RfD (mg/Kg-day)

Example Carcinogen: 4,4'-DDE

$$\text{Intake (mg/kg-day)} = \frac{0.0195 \frac{mg}{Kg} \times 50 \frac{mg}{day} \times 1.0E\text{-}6 \frac{Kg}{mg} \times 7 \frac{day}{yr} \times 30 yr}{70 Kg \times 25{,}550 \text{ days}}$$

$$= 1.14\ E\text{-}10$$

S.O. No. CTO-0133 Camp Lejeune

Subject: Sediment Ingestion

Sheet No. 2 of 2

Drawing No.

Computed by MDB Checked By DCS Date 3/20/93

Baker

$$Risk = 1.14\,E\text{-}10 \frac{mg}{kg\text{-}day} \times 3.4\,E\text{-}01 \frac{mg}{kg\text{-}day}^{-1} = 3.9\,E\text{-}11$$

Example Noncarcinogen: 4,4'-DDT

$$Intake\,(mg/kg\text{-}day) = \frac{0.0229 \frac{mg}{kg} \times 50 \frac{mg}{day} \times 1.0E\text{-}6 \frac{kg}{mg} \times 7 \frac{day}{yr} \times 30\,yr}{70\,kg \times 10{,}950\,days}$$

$$= 3.14\,E\text{-}10$$

$$Risk = \frac{3.14\,E\text{-}10 \frac{mg}{kg\text{-}day}}{5.0\,E\text{-}04 \frac{mg}{kg\text{-}day}} = 6.3\,E\text{-}07$$

SEDIMENT INGESTION EXPOSU. ESSMENT
SITE 6 WALLACE CREEK - ADOLESCENT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

Intake from ingestion of sediment is calculated as follows:

Intake (mg/kg day) = C * IR * CF * EF * ED/ 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 = exposure frequency for adolescent (days/yr)	7
ED = exposure duration for adolescent (yr)	9
IR = soil ingestion rate for adolescent (mg/day)	50
BW = body weight for adolescent (kg)	45
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/kg)	Exposure Frequency (days/yr) Adolescent	Exposure Duration (yr) Adolescent	Ingestion Rate (mg/day) Adolescent	Conversion Factor (kg/mg)	Body Weight (kg) Adolescent	Average Carc Time (years)	Days per year (days/yr)	Carc Dose (mg/kg/day) Adolescent	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Adolescent	Percent Carcinogenic Risk Adolescent
Dieldren	0.0048	7	9	50	1E-06	45	70	365	1.32E-11	1.60E+01	2.10E-10	0.41
4,4'-DDD	0.0309	7	9	50	1E-06	45	70	365	8.47E-11	2.40E-01	2.03E-11	0.04
4,4'-DDE	0.0195	7	9	50	1E-06	45	70	365	5.34E-11	3.40E-01	1.82E-11	0.04
4,4'-DDT	0.0229	7	9	50	1E-06	45	70	365	6.27E-11	3.40E-01	2.13E-11	0.04
Arcoclor 1260	0.3037	7	9	50	1E-06	45	70	365	8.32E-10	7.70E+00	6.41E-09	12.47
Benzo(a)anthracene	0.21	7	9	50	1E-06	45	70	365	5.75E-10	7.30E+00	4.20E-09	8.18
Chrysene	0.23	7	9	50	1E-06	45	70	365	6.30E-10	7.30E+00	4.60E-09	8.96
Benzo(b)fluoranthene	0.42	7	9	50	1E-06	45	70	365	1.15E-09	7.30E+00	8.40E-09	16.35
Benzo(a)pyrene	0.609	7	9	50	1E-06	45	70	365	1.67E-09	7.30E+00	1.22E-08	23.67
Arsenic	2.46	7	9	50	1E-06	45	70	365	6.74E-09	1.75E+00	1.18E-08	22.96
Beryllium	0.3	7	9	50	1E-06	45	70	365	8.22E-10	4.30E+00	3.53E-09	6.88
TOTAL											5.14E-08	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Exposure Frequency (days/yr) Adolescent	Exposure Duration (yr) Adolescent	Ingestion Rate (mg/day) Adolescent	Conversion Factor (kg/mg)	Body Weight (kg) Adolescent	Average Noncarc Time (years)	Days per year (days/yr)	Noncarc Dose (mg/kg/day) Adolescent	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Adolescent	Percent Noncarcinogenic Risk Adolescent
Dieldren	0.0048	7	9	50	1E-06	45	9	365	1.02E-10	5.00E-05	2.05E-06	0.48
4,4'-DDT	0.0229	7	9	50	1E-06	45	9	365	4.88E-10	5.00E-04	9.76E-07	0.23
T-1,2-Dichloroethene	0.031	7	9	50	1E-06	45	9	365	6.61E-10	2.00E-02	3.30E-08	0.01
Toluene	0.005	7	9	50	1E-06	45	9	365	1.07E-10	2.00E-01	5.33E-10	0.00
Total Xylenes	0.0816	7	9	50	1E-06	45	9	365	1.74E-09	2.00E+00	8.69E-10	0.00
Fluoranthene	0.461	7	9	50	1E-06	45	9	365	9.82E-09	4.00E-02	2.46E-07	0.06
Pyrene	0.4568	7	9	50	1E-06	45	9	365	9.73E-09	3.00E-02	3.24E-07	0.08
TOTAL PCBS	0.3037	7	9	50	1E-06	45	9	365	6.47E-09	7E-05	9.25E-05	21.54
Arsenic	2.46	7	9	50	1E-06	45	9	365	5.24E-08	3.00E-04	1.75E-04	40.71
Barium	17.65	7	9	50	1E-06	45	9	365	3.76E-07	7.00E-02	5.37E-06	1.25
Beryllium	0.3	7	9	50	1E-06	45	9	365	6.39E-09	5.00E-03	1.28E-06	0.30
Chromium	6.97	7	9	50	1E-06	45	9	365	1.49E-07	5.00E-03	2.97E-05	6.92
Manganese	17.68	7	9	50	1E-06	45	9	365	3.76E-07	5.00E-03	7.53E-05	17.54
Nickel	3.34	7	9	50	1E-06	45	9	365	7.12E-08	2.00E-02	3.56E-06	0.83
Vanadium	12.82	7	9	50	1E-06	45	9	365	2.73E-07	7.00E-03	3.90E-05	9.09
Zinc	58.93	7	9	50	1E-06	45	9	365	1.26E-06	3.00E-01	4.19E-06	0.98
TOTAL											4.29E-04	100.00

SEDIMENT INGESTION EXPOSU[illegible]ESSMENT
SITE 6 WALLACE CREEK - ADULT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

Intake from ingestion of sediment is calculated as follows:

Intake (mg/kg-day) = C * IR * CF * EF * ED/ BW * ATG 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 = exposure frequency for adults (days/yr)	7
ED = exposure duration for adults (yr)	30
IR = soil ingestion rate for adults (mg/day)	50
BW = body weight for adult (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/kg)	Exposure Frequency (days/yr) Adult	Exposure Duration (yr) Adult	Ingestion Rate (mg/day) Adult	Conversion Factor (kg/mg)	Body Weight (kg) Adult	Average Carc Time (years)	Days per year (days/yr)	Carc Dose (mg/kg/day) Adult	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult
Dieldren	0.0048	7	30	50	1E-06	70	70	365	2.82E-11	1.60E+01	4.51E-10	0.41
4,4'-DDD	0.0309	7	30	50	1E-06	70	70	365	1.81E-10	2.40E-01	4.35E-11	0.04
4,4'-DDE	0.0195	7	30	50	1E-06	70	70	365	1.14E-10	3.40E-01	3.89E-11	0.04
4,4'-DDT	0.0229	7	30	50	1E-06	70	70	365	1.34E-10	3.40E-01	4.57E-11	0.04
Arcoclor 1260	0.3037	7	30	50	1E-06	70	70	365	1.78E-09	7.70E+00	1.37E-08	12.47
Benzo(a)anthracene	0.21	7	30	50	1E-06	70	70	365	1.23E-09	7.30E+00	9.00E-09	8.18
Chrysene	0.23	7	30	50	1E-06	70	70	365	1.35E-09	7.30E+00	9.86E-09	8.96
Benzo(b)fluoranthene	0.42	7	30	50	1E-06	70	70	365	2.47E-09	7.30E+00	1.80E-08	16.35
Benzo(a)pyrene	0.606	7	30	50	1E-06	70	70	365	3.57E-09	7.30E+00	2.61E-08	23.67
Arsenic	2.46	7	30	50	1E-06	70	70	365	1.44E-08	1.75E+00	2.53E-08	22.96
Beryllium	0.3	7	30	50	1E-06	70	70	365	1.76E-09	4.30E+00	7.57E-09	6.88
TOTAL											1.10E-07	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Exposure Frequency (days/yr) Adult	Exposure Duration (yr) Adult	Ingestion Rate (mg/day) Adult	Conversion Factor (kg/mg)	Body Weight (kg) Adult	Average Noncarc Time (years)	Days per year (days/yr)	Noncarc Dose (mg/kg/day) Adult	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Dieldren	0.0048	7	30	50	1E-06	70	30	365	6.58E-11	5.00E-05	1.32E-06	0.48
4,4'-DDT	0.0229	7	30	50	1E-06	70	30	365	3.14E-10	5.00E-04	6.27E-07	0.23
T-1,2-Dichloroethene	0.031	7	30	50	1E-06	70	30	365	4.25E-10	2.00E-02	2.12E-08	0.01
Toluene	0.005	7	30	50	1E-06	70	30	365	6.85E-11	2.00E-01	3.42E-10	0.00
Total Xylenes	0.0816	7	30	50	1E-06	70	30	365	1.12E-09	2.00E+00	5.59E-10	0.00
Fluoranthene	0.461	7	30	50	1E-06	70	30	365	6.32E-09	4.00E-02	1.58E-07	0.06
Pyrene	0.4568	7	30	50	1E-06	70	30	365	6.26E-09	3.00E-02	2.09E-07	0.08
TOTAL PCBS	0.3037	7	30	50	1E-06	70	30	365	4.16E-09	7E-05	5.94E-05	21.54
Arsenic	2.46	7	30	50	1E-06	70	30	365	3.37E-08	3.00E-04	1.12E-04	40.71
Barium	17.65	7	30	50	1E-06	70	30	365	2.42E-07	7.00E-02	3.45E-06	1.25
Beryllium	0.3	7	30	50	1E-06	70	30	365	4.11E-09	5.00E-03	8.22E-07	0.30
Chromium	6.97	7	30	50	1E-06	70	30	365	9.55E-08	5.00E-03	1.91E-05	6.92
Manganese	17.66	7	30	50	1E-06	70	30	365	2.42E-07	5.00E-03	4.84E-05	17.54
Nickel	3.34	7	30	50	1E-06	70	30	365	4.58E-08	2.00E-02	2.29E-06	0.83
Vanadium	12.82	7	30	50	1E-06	70	30	365	1.76E-07	7.00E-03	2.51E-05	9.09
Zinc	58.93	7	30	50	1E-06	70	30	365	8.07E-07	3.00E-01	2.69E-06	0.98
TOTAL											2.76E-04	100.00

FILE NAME: SDI.WQ1

SEDIMENT INGESTION EXPOSU[illegible]ESSMENT
SITE 6 BEAR HEAD CREEK - ADOLESCENT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

Intake from ingestion of sediment is calculated as follows:

Intake (mg/kg-day) = C * IR * CF * EF * ED/ 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 = exposure frequency for adolescent (days/yr)	7
ED = exposure duration for adolescent (yr)	9
IR = soil ingestion rate for adolescent (mg/day)	50
BW = body weight for adolescent (kg)	45
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/kg)	Exposure Frequency (days/yr) Adolescent	Exposure Duration (yr) Adolescent	Ingestion Rate (mg/day) Adolescent	Conversion Factor (kg/mg)	Body Weight (kg) Adolescent	Average Carc Time (years)	Days per year (days/yr)	Carc Dose (mg/kg/day) Adolescent	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Adolescent	Percent Carcinogenic Risk Adolescent
4,4'-DDD	0.0284	7	9	50	1E-06	45	70	365	8.05E-11	2.40E-01	1.93E-11	0.07
4,4'-DDE	0.0345	7	9	50	1E-06	45	70	365	9.45E-11	3.40E-01	3.21E-11	0.12
4,4'-DDT	0.0135	7	9	50	1E-06	45	70	365	3.70E-11	3.40E-01	1.26E-11	0.05
Arcoclor 1260	0.1506	7	9	50	1E-06	45	70	365	4.13E-10	7.70E+00	3.18E-09	12.12
Benzene	0.005	7	9	50	1E-06	45	70	365	1.37E-11	2.90E-02	3.97E-13	0.00
Benzo(b)fluoranthene	0.096	7	9	50	1E-06	45	70	365	2.63E-10	7.30E+00	1.92E-09	7.33
Benzo(a)pyrene	0.5285	7	9	50	1E-06	45	70	365	1.45E-09	7.30E+00	1.06E-08	40.34
Arsenic	1.3	7	9	50	1E-06	45	70	365	3.56E-09	1.75E+00	6.23E-09	23.78
Beryllium	0.36	7	9	50	1E-06	45	70	365	9.86E-10	4.30E+00	4.24E-09	16.18
TOTAL											2.62E-08	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Exposure Frequency (days/yr) Adolescent	Exposure Duration (yr) Adolescent	Ingestion Rate (mg/day) Adolescent	Conversion Factor (kg/mg)	Body Weight (kg) Adolescent	Average Noncarc Time (years)	Days per year (days/yr)	Noncarc Dose (mg/kg/day) Adolescent	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Adolescent	Percent Noncarcinogenic Risk Adolescent
4,4'-DDT	0.0135	7	9	50	1E-06	45	9	365	2.88E-10	5.00E-04	5.75E-07	0.16
Tetrachloroethene	0.0522	7	9	50	1E-06	45	9	365	1.11E-09	1.00E-02	1.11E-07	0.03
Ethylbenzene	0.0544	7	9	50	1E-06	45	9	365	1.16E-09	1.00E-01	1.16E-08	0.00
Total Xylenes	0.0711	7	9	50	1E-06	45	9	365	1.52E-09	2.00E+00	7.58E-10	0.00
Pyrene	0.076	7	9	50	1E-06	45	9	365	1.62E-09	3.00E-02	5.40E-08	0.02
TOTAL PCBS	0.1506	7	9	50	1E-06	45	9	365	3.21E-09	7E-05	4.58E-05	12.77
Arsenic	1.3	7	9	50	1E-06	45	9	365	2.77E-08	3.00E-04	9.23E-05	25.72
Barium	23.4	7	9	50	1E-06	45	9	365	4.99E-07	7.00E-02	7.12E-06	1.98
Beryllium	0.36	7	9	50	1E-06	45	9	365	7.67E-09	5.00E-03	1.53E-06	0.43
Cadmium	1.31	7	9	50	1E-06	45	9	365	2.79E-08	5.00E-04	5.58E-05	15.55
Chromium	8.66	7	9	50	1E-06	45	9	365	1.85E-07	5.00E-03	3.69E-05	10.28
Manganese	17.15	7	9	50	1E-06	45	9	365	3.65E-07	5.00E-03	7.31E-05	20.35
Vanadium	14.19	7	9	50	1E-06	45	9	365	3.02E-07	7.00E-03	4.32E-05	12.03
Zinc	34.66	7	9	50	1E-06	45	9	365	7.39E-07	3.00E-01	2.46E-06	0.69
TOTAL											3.59E-04	100.00

FILE NAME: SDI.WQ4

SEDIMENT INGESTION EXPOSURE ASSESSMENT
SITE 6 BEAR HEAD CREEK - ADULT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

Intake from ingestion of sediment is calculated as follows:

Intake (mg/kg-day) = C * IR * CF * EF * ED/ 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 = exposure frequency for adult (days/yr)	7
ED = exposure duration for adult (yr)	30
IR = soil ingestion rate for adult (mg/day)	50
BW = body weight for adult (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/kg)	Exposure Frequency (days/yr) Adult	Exposure Duration (yr) Adult	Ingestion Rate (mg/day) Adult	Conversion Factor (kg/mg)	Body Weight (kg) Adult	Average Carc Time (years)	Days per year (days/yr)	Carc Dose (mg/kg/day) Adult	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Adolescent	Percent Carcinogenic Risk Adult
4,4'-DDD	0.0294	7	30	50	1E-06	70	70	365	1.73E-10	2.40E-01	4.14E-11	0.07
4,4'-DDE	0.0345	7	30	50	1E-06	70	70	365	2.03E-10	3.40E-01	6.89E-11	0.12
4,4'-DDT	0.0135	7	30	50	1E-06	70	70	365	7.93E-11	3.40E-01	2.69E-11	0.05
Arcoclor 1260	0.1506	7	30	50	1E-06	70	70	365	8.84E-10	7.70E+00	6.81E-09	12.12
Benzene	0.005	7	30	50	1E-06	70	70	365	2.94E-11	2.90E-02	8.51E-13	0.00
Benzo(b)fluoranthene	0.096	7	30	50	1E-06	70	70	365	5.64E-10	7.30E+00	4.11E-09	7.33
Benzo(a)pyrene	0.5285	7	30	50	1E-06	70	70	365	3.10E-09	7.30E+00	2.27E-08	40.34
Arsenic	1.3	7	30	50	1E-06	70	70	365	7.63E-09	1.75E+00	1.34E-08	23.78
Beryllium	0.96	7	30	50	1E-06	70	70	365	2.11E-09	4.30E+00	9.09E-09	16.18
TOTAL											5.62E-08	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Exposure Frequency (days/yr) Adult	Exposure Duration (yr) Adult	Ingestion Rate (mg/day) Adult	Conversion Factor (kg/mg)	Body Weight (kg) Adult	Average Noncarc Time (years)	Days per year (days/yr)	Noncarc Dose (mg/kg/day) Adult	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
4,4'-DDT	0.0135	7	30	50	1E-06	70	30	365	1.85E-10	5.00E-04	3.70E-07	0.16
Tetrachloroethene	0.0522	7	30	50	1E-06	70	30	365	7.15E-10	1.00E-02	7.15E-08	0.03
Ethylbenzene	0.0544	7	30	50	1E-06	70	30	365	7.45E-10	1.00E-01	7.45E-09	0.00
Total Xylenes	0.0711	7	30	50	1E-06	70	30	365	9.74E-10	2.00E+00	4.87E-10	0.00
Pyrene	0.076	7	30	50	1E-06	70	30	365	1.04E-09	3.00E-02	3.47E-08	0.02
TOTAL PCBS	0.1506	7	30	50	1E-06	70	30	365	2.06E-09	7E-05	2.95E-05	12.77
Arsenic	1.3	7	30	50	1E-06	70	30	365	1.78E-08	3.00E-04	5.94E-05	25.72
Barium	23.4	7	30	50	1E-06	70	30	365	3.21E-07	7.00E-02	4.58E-06	1.98
Beryllium	0.36	7	30	50	1E-06	70	30	365	4.93E-09	5.00E-03	9.86E-07	0.43
Cadmium	1.31	7	30	50	1E-06	70	30	365	1.79E-08	5.00E-04	3.59E-05	15.55
Chromium	8.66	7	30	50	1E-06	70	30	365	1.19E-07	5.00E-03	2.37E-05	10.28
Manganese	17.15	7	30	50	1E-06	70	30	365	2.35E-07	5.00E-03	4.70E-05	20.35
Vanadium	14.19	7	30	50	1E-06	70	30	365	1.94E-07	7.00E-03	2.78E-05	12.03
Zinc	34.66	7	30	50	1E-06	70	30	365	4.75E-07	3.00E-01	1.58E-06	0.69
TOTAL											2.31E-04	100.00

FILE NAME: SDI.WQ3

S.O. No. CTO-0133 Camp Lejeune

Subject: Sediment Dermal Contact

Sheet No. 1 of 2

Drawing No.

Computed by MDB Checked By Date 3/20/93

Baker

Purpose: Estimate exposure/risk from dermal contact with sediment

$$\text{Intake (mg/kg-day)} = \frac{C \times CF \times SA \times AF \times Abs \times EF \times ED}{BW \times AT_c \times AT_{nc}}$$

Where:

C = contaminant concentration in sediment ($^{mg}/_{kg}$)

CF = conversion factor ($^{kg}/_{mg}$)

SA = surface available for contact ($^{cm^2}/_{event}$)

AF = sediment to skin adherence factor ($^{mg}/_{cm^2}$)

Abs = fraction absorbed (no units)

EF = exposure frequency ($^{event}/_{yr}$)

ED = exposure duration (yr)

BW = body weight (kg)

AT_c = averaging time carcinogen (days)

AT_{nc} = averaging time noncarcinogen (days)

Risk =

Carcinogen = Intake (mg/kg-day) x CSF $(mg/kg\text{-day})^{-1}$

Noncarcinogen = Intake (mg/kg-day) / RfD (mg/kg-day)

Example Carcinogen: 4,4'-DDE

$$\text{Intake (mg/kg-day)} = \frac{0.0195 \frac{mg}{kg} \times 1.0E\text{-}6 \frac{kg}{mg} \times 3700 \frac{cm^2}{evt} \times 1 \times 1 \frac{mg}{cm^2} \times 7 \frac{evt}{yr} \times 30 yr}{70 kg \times 25{,}550 day}$$

Baker

$$= 8.5\ E\text{-}09$$

$$\text{Risk} = 8.5\ E\text{-}09\ \frac{mg}{Kg\text{-}day} \times 3.4\ E\text{-}01\ \frac{mg}{Kg\text{-}day}^{-1} = 2.9\ E\text{-}09$$

Example Noncarcinogen: 4,4'-DDT

$$\text{Intake (mg/Kg-day)} = \frac{0.0229\ mg \times 1.0E\text{-}6\ Kg \times 3700\ cm^2 \times 1 \times 1\ mg \times 7\ cm \times 30\ yr}{Kg \quad mg \quad cm \quad cm^2 \quad yr}$$

$$70\ Kg \times 10{,}950\ days$$

$$= 2.3\ E\text{-}08$$

$$\text{Risk} = \frac{2.3\ E\text{-}08\ \frac{mg}{Kg\text{-}day}}{5.0\ E\text{-}04\ \frac{mg}{Kg\text{-}day}} = 4.6\ E\text{-}05$$

SEDIMENT DERMAL CONTACT RE ASSESSMENT
SITE 6 WALLACE CREEK - ADOLESCENT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

The intake from dermal contact to sediment is calculted 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)	1.00E-06
SA = adolescent exposed skin surface area (cm2)	3700
AF = sediment to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless) (contaminant specific)	100
EF = adolescent exposure frequency (events/yr)	7
ED = adolescent expsosure duration (years)	9
BW = adolescent body weight (kg)	45
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
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

Contaminant	Concentration Carcinogen (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Adolescent	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Adolescent	Exposure Duration (yrs) Adolescent	Body Weight (kg) Adolescent	Average Carc Time (years)	Days per year (day/year)	Carc Dose (mg/kg/day) Adolescent	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adolescent	Percent Carcinogenic Risk Adolescent
Dieldren	0.0049	1E-06	3700	1	1	7	9	45	70	365	9.73E-10	1.60E+01	1.56E-08	0.41
4,4'-DDD	0.0309	1E-06	3700	1	1	7	9	45	70	365	6.26E-09	2.40E-01	1.50E-09	0.04
4,4'-DDE	0.0195	1E-06	3700	1	1	7	9	45	70	365	3.95E-09	3.40E-01	1.34E-09	0.04
4,4'-DDT	0.0229	1E-06	3700	1	1	7	9	45	70	365	4.64E-09	3.40E-01	1.58E-09	0.04
Aroclor 1260	0.3037	1E-06	3700	1	1	7	9	45	70	365	6.16E-08	7.70E+00	4.74E-07	12.47
Benzo(a)anthracene	0.21	1E-06	3700	1	1	7	9	45	70	365	4.26E-08	7.30E+00	3.11E-07	8.17
Chrysene	0.23	1E-06	3700	1	1	7	9	45	70	365	4.66E-08	7.30E+00	3.40E-07	8.95
Benzo(b)fluoranthene	0.42	1E-06	3700	1	1	7	9	45	70	365	8.52E-08	7.30E+00	6.22E-07	16.35
Benzo(a)pyrene	0.6088	1E-06	3700	1	1	7	9	45	70	365	1.23E-07	7.30E+00	9.01E-07	23.70
Arsenic	2.46	1E-06	3700	1	1	7	9	45	70	365	4.99E-07	1.75E+00	8.73E-07	22.95
Beryllium	0.3	1E-06	3700	1	1	7	9	45	70	365	6.08E-08	4.30E+00	2.62E-07	6.88
TOTAL													3.80E-06	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Adolescent	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Adolescent	Exposure Duration (yrs) Adolescent	Body Weight (kg) Adolescent	Average Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day) Adolescent	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adolescent	Percent Noncarcinogenic Risk Adolescent
Dieldren	0.0049	1E-06	3700	1	1	7	9	45	9	365	7.57E-09	5.00E-05	1.51E-04	0.48
4,4'-DDT	0.0229	1E-06	3700	1	1	7	9	45	9	365	3.61E-08	5.00E-04	7.22E-05	0.23
T-1,2-Dichloroethene	0.031	1E-06	3700	1	1	7	9	45	9	365	4.89E-08	2.00E-02	2.44E-06	0.01
Toluene	0.005	1E-06	3700	1	1	7	9	45	9	365	7.88E-09	2.00E-01	3.94E-08	0.00
Total Xylenes	0.0816	1E-06	3700	1	1	7	9	45	9	365	1.29E-07	2.00E+00	6.43E-08	0.00
Fluoranthene	0.4617	1E-06	3700	1	1	7	9	45	9	365	7.28E-07	4.00E-02	1.82E-05	0.06
Pyrene	0.4568	1E-06	3700	1	1	7	9	45	9	365	7.20E-07	3.00E-02	2.40E-05	0.08
TOTAL PCB	0.3037	1E-06	3700	1	1	7	9	45	9	365	4.79E-07	7E-05	6.84E-03	21.54
Arsenic	2.46	1E-06	3700	1	1	7	9	45	9	365	3.88E-06	3.00E-04	1.29E-02	40.71
Barium	17.65	1E-06	3700	1	1	7	9	45	9	365	2.78E-05	7.00E-02	3.96E-04	1.25
Beryllium	0.3	1E-06	3700	1	1	7	9	45	9	365	4.73E-07	5.00E-03	9.46E-05	0.30
Chromium	6.97	1E-06	3700	1	1	7	9	45	9	365	1.10E-05	5.00E-03	2.20E-03	6.92
Manganese	17.66	1E-06	3700	1	1	7	9	45	9	365	2.78E-05	5.00E-03	5.57E-03	17.54
Nickel	3.34	1E-06	3700	1	1	7	9	45	9	365	5.27E-06	2.00E-02	2.63E-04	0.83
Vanadium	12.92	1E-06	3700	1	1	7	9	45	9	365	2.02E-05	7.00E-03	2.89E-03	9.09
Zinc	58.93	1E-06	3700	1	1	7	9	45	9	365	9.29E-05	3.00E-01	3.10E-04	0.98
TOTAL													3.18E-02	100.00

FILE NAME: SDDC.WQ2

SEDIMENT DERMAL CONTACT RISK ASSESSMENT
SITE 6 WALLACE CREEK - ADULT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

The intake from dermal contact to sediment is calculted 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)	1.00E-06
SA = adult exposed skin surface area (cm2)	3700
AF = sediment to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless) (contaminant specific)	100
EF = adult exposure frequency (events/yr)	7
ED = adult exposure duration (years)	30
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
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

Contaminant	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 (years)	Days per year (day/year)	Carc Dose (mg/kg/day) Adult	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult
Dieldren	0.0048	1E-06	3700	1	1	7	30	70	70	365	2.09E-09	1.60E+01	3.34E-08	0.41
4,4'-DDD	0.0309	1E-06	3700	1	1	7	30	70	70	365	1.34E-08	2.40E-01	3.22E-09	0.04
4,4'-DDE	0.0195	1E-06	3700	1	1	7	30	70	70	365	8.47E-09	3.40E-01	2.88E-09	0.04
4,4'-DDT	0.0229	1E-06	3700	1	1	7	30	70	70	365	9.95E-09	3.40E-01	3.38E-09	0.04
Aroclor 1260	0.3037	1E-06	3700	1	1	7	30	70	70	365	1.32E-07	7.70E+00	1.02E-06	12.47
Benzo(a)anthracene	0.21	1E-06	3700	1	1	7	30	70	70	365	9.12E-08	7.30E+00	6.66E-07	8.17
Chrysene	0.23	1E-06	3700	1	1	7	30	70	70	365	9.99E-08	7.30E+00	7.29E-07	8.95
Benzo(b)fluoranthene	0.42	1E-06	3700	1	1	7	30	70	70	365	1.82E-07	7.30E+00	1.33E-06	16.35
Benzo(a)pyrene	0.6088	1E-06	3700	1	1	7	30	70	70	365	2.64E-07	7.30E+00	1.93E-06	23.70
Arsenic	2.46	1E-06	3700	1	1	7	30	70	70	365	1.07E-06	1.75E+00	1.87E-06	22.95
Beryllium	0.3	1E-06	3700	1	1	7	30	70	70	365	1.30E-07	4.30E+00	5.60E-07	6.88
TOTAL													8.15E-06	100.00

Contaminant	Concentration Noncarcinogen (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 Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day) Adult	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Dieldren	0.0048	1E-06	3700	1	1	7	30	70	30	365	4.87E-09	5.00E-05	9.73E-05	0.48
4,4'-DDT	0.0229	1E-06	3700	1	1	7	30	70	30	365	2.32E-08	5.00E-04	4.64E-05	0.23
T-1,2-Dichloroethene	0.031	1E-06	3700	1	1	7	30	70	30	365	3.14E-08	2.00E-02	1.57E-06	0.01
Toluene	0.005	1E-06	3700	1	1	7	30	70	30	365	5.07E-09	2.00E-01	2.53E-08	0.00
Total Xylenes	0.0816	1E-06	3700	1	1	7	30	70	30	365	8.27E-08	2.00E+00	4.14E-08	0.00
Fluoranthene	0.4617	1E-06	3700	1	1	7	30	70	30	365	4.68E-07	4.00E-02	1.17E-05	0.06
Pyrene	0.4568	1E-06	3700	1	1	7	30	70	30	365	4.63E-07	3.00E-02	1.54E-05	0.08
TOTAL PCBS	0.3037	1E-06	3700	1	1	7	30	70	30	365	3.08E-07	7E-05	4.40E-03	21.54
Arsenic	2.46	1E-06	3700	1	1	7	30	70	30	365	2.49E-06	3.00E-04	8.31E-03	40.71
Barium	17.65	1E-06	3700	1	1	7	30	70	30	365	1.79E-05	7.00E-02	2.56E-04	1.25
Beryllium	0.3	1E-06	3700	1	1	7	30	70	30	365	3.04E-07	5.00E-03	6.08E-05	0.30
Chromium	6.97	1E-06	3700	1	1	7	30	70	30	365	7.07E-06	5.00E-03	1.41E-03	6.92
Manganese	17.66	1E-06	3700	1	1	7	30	70	30	365	1.79E-05	5.00E-03	3.58E-03	17.54
Nickel	3.34	1E-06	3700	1	1	7	30	70	30	365	3.39E-06	2.00E-02	1.69E-04	0.83
Vanadium	12.82	1E-06	3700	1	1	7	30	70	30	365	1.30E-05	7.00E-03	1.86E-03	9.09
Zinc	58.93	1E-06	3700	1	1	7	30	70	30	365	5.97E-05	3.00E-01	1.99E-04	0.98
TOTAL													2.04E-02	100.00

FILE NAME: SDDC.WQ1

SEDIMENT DERMAL CONTACT RISK ASSESSMENT
SITE 6 BEAR HEAD CREEK - ADOLESCENT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

The intake from dermal contact to sediment is calculted 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)	1.00E-06
SA = adolescent exposed skin surface area (cm2)	3700
AF = sediment to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless) (contaminant specific)	100
EF = adolescent exposure frequency (events/yr)	7
ED = adolescent expsosure duration (years)	9
BW = adolescent body weight (kg)	45
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
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

Contaminant	Concentration Carcinogen (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Adolescent	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Adolescent	Exposure Duration (yrs) Adolescent	Body Weight (kg) Adolescent	Average Carc Time (years)	Days per year (day/year)	Carc Dose (mg/kg/day) Adolescent	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adolescent	Percent Carcinogenic Risk Adolescent
4,4'-DDD	0.0294	1E-06	3700	1	1	7	9	45	70	365	5.96E-09	2.40E-01	1.43E-09	0.07
4,4'-DDE	0.0345	1E-06	3700	1	1	7	9	45	70	365	6.99E-09	3.40E-01	2.38E-09	0.12
4,4'-DDT	0.0135	1E-06	3700	1	1	7	9	45	70	365	2.74E-09	3.40E-01	9.31E-10	0.05
Aroclor 1260	0.1506	1E-06	3700	1	1	7	9	45	70	365	3.05E-08	7.70E+00	2.35E-07	12.13
Benzene	0.005	1E-06	3700	1	1	7	9	45	70	365	1.01E-09	2.90E-02	2.94E-11	0.00
Benzo(b)fluoranthene	0.096	1E-06	3700	1	1	7	9	45	70	365	1.95E-08	7.30E+00	1.42E-07	7.33
Benzo(a)pyrene	0.528	1E-06	3700	1	1	7	9	45	70	365	1.07E-07	7.30E+00	7.81E-07	40.31
Arsenic	1.3	1E-06	3700	1	1	7	9	45	70	365	2.64E-07	1.75E+00	4.61E-07	23.79
Beryllium	0.36	1E-06	3700	1	1	7	9	45	70	365	7.30E-08	4.30E+00	3.14E-07	16.19
TOTAL													1.94E-06	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Adolescent	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Adolescent	Exposure Duration (yrs) Adolescent	Body Weight (kg) Adolescent	Average Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day) Adolescent	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adolescent	Percent Noncarcinogenic Risk Adolescent
4,4'-DDT	0.0135	1E-06	3700	1	1	7	9	45	9	365	2.13E-08	5.00E-04	4.26E-05	0.16
Tetrachloroethene	0.003	1E-06	3700	1	1	7	9	45	9	365	4.73E-09	1.00E-02	4.73E-07	0.00
Ethylbenzene	0.0544	1E-06	3700	1	1	7	9	45	9	365	8.58E-08	1.00E-01	8.58E-07	0.00
Total Xylenes	0.0711	1E-06	3700	1	1	7	9	45	9	365	1.12E-07	2.00E+00	5.61E-08	0.00
Pyrene	0.076	1E-06	3700	1	1	7	9	45	9	365	1.20E-07	3.00E-02	3.99E-06	0.02
TOTAL PCBS	0.1506	1E-06	3700	1	1	7	9	45	9	365	2.37E-07	7E-05	3.39E-03	12.77
Arsenic	1.3	1E-06	3700	1	1	7	9	45	9	365	2.05E-06	3.00E-04	6.83E-03	25.72
Barium	23.4	1E-06	3700	1	1	7	9	45	9	365	3.69E-05	7.00E-02	5.27E-04	1.98
Beryllium	0.36	1E-06	3700	1	1	7	9	45	9	365	5.68E-07	5.00E-03	1.14E-04	0.43
Cadmium	1.31	1E-06	3700	1	1	7	9	45	9	365	2.07E-06	5.00E-04	4.13E-03	15.55
Chromium	8.66	1E-06	3700	1	1	7	9	45	9	365	1.37E-05	5.00E-03	2.73E-03	10.28
Manganese	17.15	1E-06	3700	1	1	7	9	45	9	365	2.70E-05	5.00E-03	5.41E-03	20.36
Vanadium	14.19	1E-06	3700	1	1	7	9	45	9	365	2.24E-05	7.00E-03	3.20E-03	12.03
Zinc	34.66	1E-06	3700	1	1	7	9	45	9	365	5.47E-05	3.00E-01	1.82E-04	0.69
TOTAL													2.66E-02	100.00

FILE NAME: SDDC.WQ4

SEDIMENT DERMAL CONTACT : E ASSESSMENT
SITE 6 BEAR HEAD CREEK - ADULT
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

The intake from dermal contact to sediment is calculted 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)	1.00E-06
SA = adult exposed skin surface area (cm2)	3700
AF = sediment to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless) (contaminant specific)	100
EF = adult exposure frequency (events/yr)	7
ED = adult expsosure duration (years)	30
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
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

Contaminant	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 (years)	Days per year (day/year)	Carc Dose (mg/kg/day) Adult	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult
4,4'-DDD	0.0294	1E-06	3700	1	1	7	30	70	70	365	1.28E-08	2.40E-01	3.07E-09	0.07
4,4'-DDE	0.0345	1E-06	3700	1	1	7	30	70	70	365	1.50E-08	3.40E-01	5.10E-09	0.12
4,4'-DDT	0.0135	1E-06	3700	1	1	7	30	70	70	365	5.86E-09	3.40E-01	1.99E-09	0.05
Aroclor 1260	0.1506	1E-06	3700	1	1	7	30	70	70	365	6.54E-08	7.70E+00	5.04E-07	12.13
Benzene	0.005	1E-06	3700	1	1	7	30	70	70	365	2.17E-09	2.90E-02	6.30E-11	0.00
Benzo(b)fluoranthene	0.096	1E-06	3700	1	1	7	30	70	70	365	4.17E-08	7.30E+00	3.04E-07	7.33
Benzo(a)pyrene	0.528	1E-06	3700	1	1	7	30	70	70	365	2.29E-07	7.30E+00	1.67E-06	40.31
Arsenic	1.3	1E-06	3700	1	1	7	30	70	70	365	5.65E-07	1.75E+00	9.88E-07	23.79
Beryllium	0.36	1E-06	3700	1	1	7	30	70	70	365	1.56E-07	4.30E+00	6.73E-07	16.19
TOTAL													4.15E-06	100.00

Contaminant	Concentration Noncarcinogen (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 Noncarc Time (years)	Days per year (day/year)	Noncarc Dose (mg/kg/day) Adult	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
4,4'-DDT	0.0135	1E-06	3700	1	1	7	30	70	30	365	1.37E-08	5.00E-04	2.74E-05	0.16
Tetrachloroethene	0.003	1E-06	3700	1	1	7	30	70	30	365	3.04E-09	1.00E-02	3.04E-07	0.00
Ethylbenzene	0.0544	1E-06	3700	1	1	7	30	70	30	365	5.51E-08	1.00E-01	5.51E-07	0.00
Total Xylenes	0.0711	1E-06	3700	1	1	7	30	70	30	365	7.21E-08	2.00E+00	3.60E-08	0.00
Pyrene	0.076	1E-06	3700	1	1	7	30	70	30	365	7.70E-08	3.00E-02	2.57E-06	0.02
TOTAL PCBS	0.1506	1E-06	3700	1	1	7	30	70	30	365	1.53E-07	7E-05	2.18E-03	12.77
Arsenic	1.3	1E-06	3700	1	1	7	30	70	30	365	1.32E-06	3.00E-04	4.39E-03	25.72
Barium	23.4	1E-06	3700	1	1	7	30	70	30	365	2.37E-05	7.00E-02	3.39E-04	1.98
Beryllium	0.36	1E-06	3700	1	1	7	30	70	30	365	3.65E-07	5.00E-03	7.30E-05	0.43
Cadmium	1.31	1E-06	3700	1	1	7	30	70	30	365	1.33E-06	5.00E-04	2.66E-03	15.55
Chromium	8.66	1E-06	3700	1	1	7	30	70	30	365	8.78E-06	5.00E-03	1.76E-03	10.28
Manganese	17.15	1E-06	3700	1	1	7	30	70	30	365	1.74E-05	5.00E-03	3.48E-03	20.36
Vanadium	14.19	1E-06	3700	1	1	7	30	70	30	365	1.44E-05	7.00E-03	2.05E-03	12.03
Zinc	34.66	1E-06	3700	1	1	7	30	70	30	365	3.51E-05	3.00E-01	1.17E-04	0.69
TOTAL													1.71E-02	100.00

S.O. No. CTO-0133 Camp Lejeune

Subject: Fish Ingestion

Sheet No. 1 of 2

Drawing No.

Computed by MDB Checked By RFH Date 4/6/93
4/6/93

Baker

Purpose: Estimate exposure/risk from ingestion of fish

$$\text{Intake (mg/Kg-day)} = \frac{C \times IR \times Fi \times EF \times ED \times CF}{BW \times AT_c \text{ or } AT_{nc}}$$

Where:

C = contaminant concentration in fish (mg/Kg)

IR = ingestion rate (Kg/meal)

Fi = fraction ingested from contaminated source (unitless) 10% or 100%

EF = Exposure frequency (meals/yr)

ED = exposure duration (years)

BW = body weight (Kg)

AT_c = averaging time carcinogen (day)

AT_{nc} = averaging time noncarcinogen (day)

CF = conversion factor ($L/1000cm^3$)

Risk

Carcinogen = Intake (mg/Kg-day) x CSF (mg/Kg-day)$^{-1}$

Noncarcinogen = Intake (mg/Kg-day) / RfD (mg/Kg-day)

Example Carcinogen: PCB-1260

$$\text{Intake (mg/Kg-day)} = \frac{1.0\ mg/\cancel{Kg} \times 0.284\ \cancel{Kg}/meal \times 1.0 \times 48\ meal/\cancel{yr} \times 30\ \cancel{yr}}{70\ \cancel{Kg} \times 25,550\ days}$$

Baker

$= 2.29E-04$ ✓

$$Risk = 2.29E-0 \ mg/Kg\text{-}day \times 7.7E+00 \ (mg/Kg\text{-}day)^{-1} = 1.76E-03$$

Example Noncarcinogen: Endrin

$$\text{Intake (mg/Kg-day)} = \frac{0.0138 \frac{mg}{Kg} \times 0.284 \frac{Kg}{meal} \times 1.0 \times 48 \frac{meal}{yr} \times 30 \ yr}{70 \ Kg \times 10{,}950 \ days}$$

$= 7.36E-06$

$$Risk\ (HI) = \frac{7.36E-06 \ mg/Kg\text{-}day}{3.00E-04 \ mg/Kg\text{-}day} = 2.45E-02$$

FISH INGESTION EXPOSURE A[illegible]ENT
SITE 6 WALLACE AND BEAR HEAD CREEKS
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA

Intake (mg/kg-day) = CF * IR * FI * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CF = contaminant concentration in fish (mg/kg)	
IR = adult ingestion rate (kg/meal)	0.284
FI = fraction ingested from contaminated source (unitless)	100
EF = adult exposure frequency (meals/yr)	48
ED = adult exposure duration (years)	30
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (years)	70
ATnc = averaging time for noncarcinogen (years)	30
DY = days per year (days/yr)	365

Note: Inputs are scenario and site specific

Contaminant	Concentration Carcinogen (mg/kg)	Ingestion Rate (kg/meal) Adult	Fraction Ingestion (%)	Exposure Frequency (meals/yr) Adult	Exposure Duration (years) Adult	Body Weight (kg) Adult	Average Carc Time (years)	Days per year (days/yr)	Carc Dose (mg/kg-day) Adult	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult
4,4'-DDE	0.274	0.284	1	48	30	70	70	365	6.27E-05	3.40E-01	2.13E-05	1.19
4,4'-DDD	0.0431	0.284	1	48	30	70	70	365	9.86E-06	2.40E-01	2.37E-06	0.13
4,4'-DDT	0.0097	0.284	1	48	30	70	70	365	2.22E-06	3.40E-01	7.54E-07	0.04
PCB 1260	1	0.284	1	48	30	70	70	365	2.29E-04	7.70E+00	1.76E-03	98.47
Beryllium	0.003	0.284	1	48	30	70	70	365	6.86E-07	4.30E+00	2.95E-06	0.16
TOTAL											1.79E-03	100.00

Contaminant	Concentration Noncarcinogen (mg/kg)	Ingestion Rate (kg/meal) Adult	Fraction Ingestion (%)	Exposure Frequency (meals/yr) Adult	Exposure Duration (years) Adult	Body Weight (kg) Adult	Average Noncarc Time (years)	Days per year (days/yr)	Noncarc Dose (mg/kg-day) Adult	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Endrin	0.0138	0.284	1	48	30	70	30	365	7.36E-06	3.00E-04	2.45E-02	0.32
4,4'-DDT	0.0097	0.284	1	48	30	70	30	365	5.18E-06	5.00E-04	1.04E-02	0.13
TOTAL PCBS	1	0.284	1	48	30	70	30	365	5.34E-04	7E-05	7.62E+00	98.52
Beryllium	0.003	0.284	1	48	30	70	30	365	1.60E-06	5.00E-03	3.20E-04	0.00
Cadmium	0.028	0.284	1	48	30	70	30	365	1.49E-05	5.00E-04	2.99E-02	0.39
Zinc	27.99	0.284	1	48	30	70	30	365	1.49E-02	3.00E-01	4.98E-02	0.64
TOTAL											7.74E+00	100.00