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ESE

ENVIRONMENTAL SCIENCE
AND ENGINEERING, INC.

January 8, 1985

ESE No. 84 222 0200 1130

Commanding General
Marine Corps Base
Office of Assistant Chief of
Staff Facilities
ATTN: R.E. Alexander
Bldg. 1, Holcomb Boulevard
Camp Lejeune, North Carolina 28542

7

RE: Contract No. N62470-83-C-6106, Confirmation Study, Marine Corps Base, Camp Lejeune, North Carolina

Dear Bob:

Enclosed are the well construction forms for the fifty five ground water monitoring wells installed at Camp Lejeune. Item 18 of the form (Water Quality) was completed using the specific conductance data collected during well sampling activities and the following guideline:

Specific Conductance (micromhos/centimeter)	Water Quality
0 - 400	Good
401 - 700	Fair
greater than 700	Poor

These forms will need to be forwarded to the State of North Carolina Department of Natural Resources & Community Development.

Please do not hesitate to call me at (904) 332-3318 if you have any questions regarding these forms.

Sincerely,

Russ Bowen

Russell V. Bowen, P.E.
Project Manager

RVB/ags

enclosures

cc: Bruce McMaster (ESE), w/o enclosure
Cherryl Barnett (NAVFAC), w/enclosure

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD — DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS, Ltd. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: MIDWAY PARK County: ONSLOW

MAIN SERVICE ROAD, CAMP LEJEUNE Quadrangle No. CAMP LEJEUNE

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE

3. ADDRESS: OFFICE OF AS/C FACILITIES, CAMP LEJEUNE, N.C. 28540

4. TOPOGRAPHY: draw, valley, slope, hilltop (flat) (circle one)

5. USE OF WELL: H_2O Sampling DATE: 7-5-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 21.78 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

	Depth		Inside Dia.	Wall thick. or weight/ft.	type
From	0	to 7.32 ft	2"	Sch 40	PVC

10. GROUT:

	Depth		Material	Method
From	0	to 5.32 ft	sand-cement (2:1)	poured

11. SCREEN:

	Depth		Dia.	Type & Opening
From	7.32	to 21.78 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

	Depth		Size	Material
From	6.32	to 21.78 ft		Silica Sand
	5.32	6.32		Bentonite

13. WATER ZONES (depth): 8.1 — 21.78

FROM TOP OF CASING (TOC)

14. STATIC WATER LEVEL: 8.1 ft. above/below top of casing

Casing is 2.5 ft. above land surface ELEV: 92.33' *

15. YIELD (gpm): 8.5 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 8.8 ft.

after 1 hours at 8.5 gpm.

17. CHLORINATION: Type NA Amount

18. WATER QUALITY: POOR TEMPERATURE (°F) 71.5°

19. PERMANENT PUMP: Date Installed NA

Type Capacity (gpm) HP

Make Intake Depth

Airline Depth

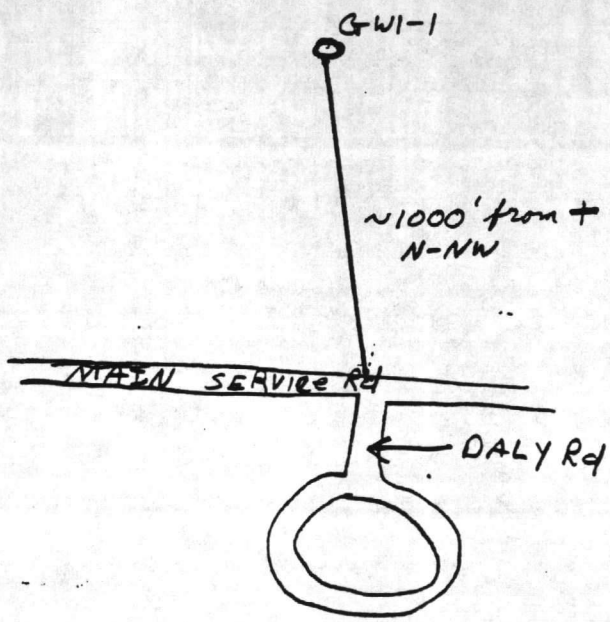
DRILLING LOG GW1-1

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS classification)
0	1.5	SM
1.5	3.0	SM-SC
3.0	7.5	SC-SM
7.5	10.5	SM
15.	16	SM-SC
16.	16.5	limestone marl LS
20.	20.5	SM
20.5	20.8	stiff clay lens
20.8	21.5	limestone marl
21.5	26.5	SP
21.5	26.5	SM

If additional space is needed, use back of form

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes

21. REMARKS * ALL ELEVATIONS ARE BASED ON A 100.0 FT. REFERENCE DATUM ELEVATION

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

R J Kinsela-Vromberg 12/17/84

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 10/1/80

Submit original to Division of Environmental Management and copy to well owner

UOCIVU-CLEJ-00075-3.13-112185

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, Ltd. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: MIDWAY PARK County: ONSLOW
   MAIN SERVICE ROAD, CAMP LEJEUNE Quadrangle No. CAMP LEJEUNE
   (Road, Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, N.C. 28542
4. TOPOGRAPHY: draw, valley, slope, hilltop, (flat) (circle one)
5. USE OF WELL: H_2O Sampling DATE: 7-5-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: Well 21.95' RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO
9. CASING:

	Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0	to 9.8 ft	2"	Sch 40	PVC

10. GROUT:

	Depth	Material	Method
From 0	to 15.23 ft	sand-cement (2:1)	poured

11. SCREEN:

	Depth	Dia.	Type & Opening
From 12	to 21.95 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

	Depth	Size	Material
From 15.23	to 21.95 ft		Silica Sand
16.23	15.23		Bentonite

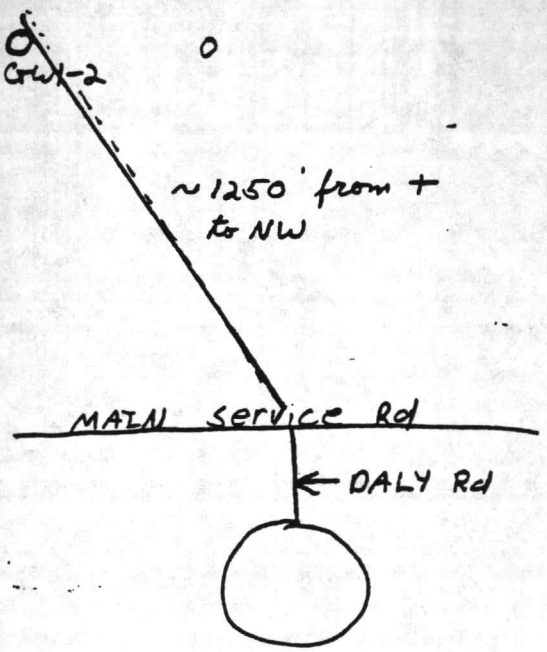
13. WATER ZONES (depth): 9.7 - 21.95' (TDC)
14. STATIC WATER LEVEL: 9.7 ft. above / below top of casing
    Casing is 2.6 ft. above land surface ELEV: 94.38'
15. YIELD (gpm): 6 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 9.8 ft.
    after 1 hours at 6 gpm.
17. CHLORINATION: Type NA Amount
18. WATER QUALITY: POOR TEMPERATURE (°F) 71°
19. PERMANENT PUMP: Date Installed NA
    Type Capacity (gpm) HP
    Make Intake Depth
    Airline Depth

DRILLING LOG GW1-2

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS classification)
0	1.5	SP-SM
1.5	7.5	SM
7.5	8.0	SM-SC
8.0	9.0	SC
9.0	10.5	SM
15.0	16.5	SM-SC
15.5	16.5	limestone marl

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes
21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

RJ Vanderhoomberg 12/17/84
SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

DOC NO. CLW-00015-5.13-11/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD

DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS, Ltd. REG. NO. 191 WELL CONSTRUCTION PERMIT NO. ______

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: MIDWAY PARK County: ONSLOW

MAIN SERVICE RD. CAMP LEJEUNE Quadrangle ~~No.~~ CAMP LEJEUNE
(Road,Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, N.C. 28540

4. TOPOGRAPHY: draw, valley, slope, hilltop (flat) (circle one)

5. USE OF WELL: H2O Sampling DATE: 7-5-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 29.96 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO ______

9. CASING:

Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0 to 15 ft	2"	Sch 40	PVC

10. GROUT:

Depth	Material	Method
From 0 to 11.75 ft	sand-cement (2:1)	poured

11. SCREEN:

Depth	Dia.	Type & Opening
From 15 to 29.96 ft	2"	Sch 40 PVC
		.010 slot

12. GRAVEL:

Depth	Size	Material
From 13.5 to 29.96 ft		silica Sand
11.75 13.5		Bentonite

13. WATER ZONES (depth): 16 — 29.96' (TOC)

14. STATIC WATER LEVEL: 16.0 ft. above / below top of casing

Casing is 2.4 ft. above land surface ELEV: 100.0'

15. YIELD (gpm): 7.5 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 16.25 ft.

after 1 hours at 7.5 gpm.

17. CHLORINATION: Type NA Amount —

18. WATER QUALITY: FAIR TEMPERATURE (°F) 77

19. PERMANENT PUMP: Date Installed NA

Type ______ Capacity ______ (gpm) HP ______

Make ______ Intake Depth ______

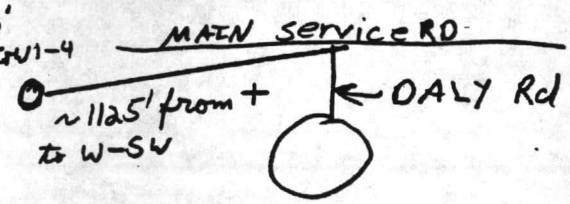
Airline Depth ______

DRILLING LOG GW1-4

DEPTH FROM TO	FORMATION DESCRIPTION (USCS Classification)
0 – 20.0	SM
20 – 21.5	SC-SM
30.0 – 31.5	SM

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes

21. REMARKS ______

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

R J Kinsky Fromberger 12-17-84
SIGNATURE OF CONTRACTOR OF AGENT DATE

GW-1 Revised 10/1/80

Submit original to Division of Environmental Management and copy to well owner

UU-NO-LCCJ-0005-3.13-11121185

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, Ltd. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: MIDWAY PARK County: ONSLOW

MAIN SERVICE RD. CAMP LEJEUNE Quadrangle No. CAMP LEJEUNE
(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, N.C. 28540

4. TOPOGRAPHY: draw, valley, slope, hilltop (flat) circle one)

5. USE OF WELL: H_2O Sampling DATE: 7-5-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 29.48 RIG TYPE OR METHOD: H.S.A

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

	Depth From	Depth To	Inside Dia.	Wall thick. or weight/ft.	type
	0	15.02 ft	2"	Sch 40	PVC

10. GROUT:

	Depth From	Depth To	Material	Method
	0	13.02 ft	Sand-cement (6:1)	poured

11. SCREEN:

	Depth From	Depth To	Dia.	Type & Opening
	15.02	14.4 ft	2"	Sch 40 PVC
				.010 Slot

12. GRAVEL:

	Depth From	Depth To	Size	Material
	14.02	29.48 ft		Silica Sand
	13.02	14.02		Bentonite

13. WATER ZONES (depth): 14.0 - 27.48' (TOC)

14. STATIC WATER LEVEL: 14.0 ft. above / below top of casing
Casing is 2.5 ft. above land surface ELEV: 98.27'

15. YIELD (gpm): 4.5 METHOD OF TESTING: Pumped

16. PUMPING WATER LEVEL: 16 ft.
after 2 hours at 4.5 gpm.

17. CHLORINATION: Type NA Amount

18. WATER QUALITY: FAIR TEMPERATURE (°F) 79

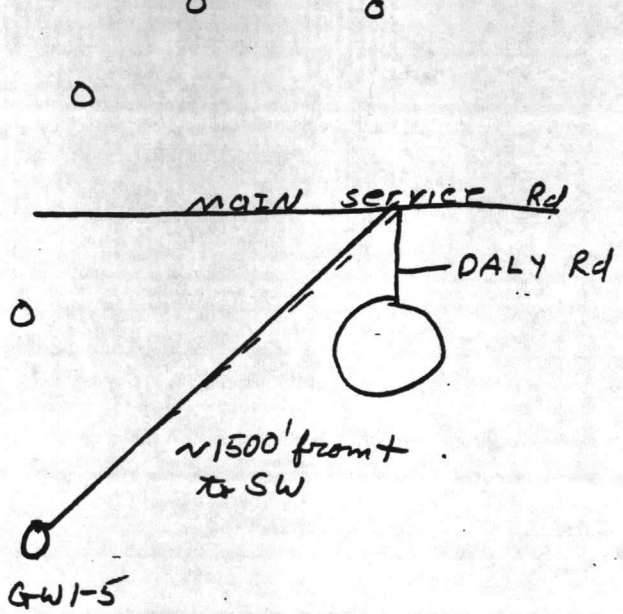
19. PERMANENT PUMP: Date Installed NA
Type Capacity (gpm) HP
Make Intake Depth
Airline Depth

DRILLING LOG GW1-5

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	1.5	SM
1.5	3.0	SM-SC
3.0	3.65	SM

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? n/a

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

R. Neale-Nemberger 12-18-84
SIGNATURE OF CONTRACTOR OF AGENT DATE

GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, Ltd. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: MIDWAY PARK County: ONSLOW

MAIN SERVICE RD., CAMP LEJEUNE Quadrangle No. CAMP LEJEUNE
(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C. 28540

4. TOPOGRAPHY: draw, valley, slope, hilltop (flat) circle one)

5. USE OF WELL: H_2O Sampling DATE: 7-5-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 29.42 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

Depth From	to	Inside Dia.	Wall thick. or weight/ft.	type
0	14.94 ft	2"	Sch 40	PVC

10. GROUT:

Depth From	to	Material	Method
0	11.9 ft	sand-cement (2:1)	poured

11. SCREEN:

Depth From	to	Dia.	Type & Opening
14.94	29.42 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

Depth From	to	Size	Material
13.6	29.42 ft		Silica Sand
11.9	13.6		Bentonite

13. WATER ZONES (depth): 15.6 — 29.42' (TOC)

14. STATIC WATER LEVEL: 15.6 ft. above/below top of casing
Casing is 2.58 ft. above land surface ELEV: 103.39'

15. YIELD (gpm): 5 METHOD OF TESTING: Pumped

16. PUMPING WATER LEVEL: 15.8 ft.
after 1 hours at 5 gpm.

17. CHLORINATION: Type NA Amount

18. WATER QUALITY: Good TEMPERATURE (°F) 71

19. PERMANENT PUMP: Date Installed NA
Type Capacity (gpm) HP
Make Intake Depth
Airline Depth

20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

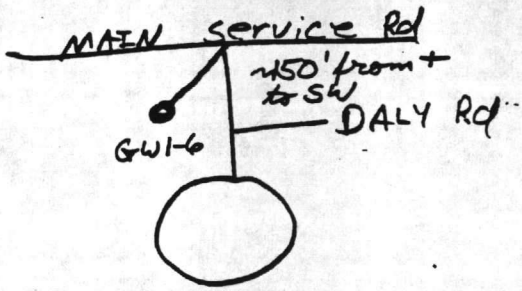
RJ Wade Mountcastle 12-17-84
SIGNATURE OF CONTRACTOR OF AGENT DATE

DRILLING LOG GW1-6

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	16.5	SM
20.	21.5	CL
25.	31.5	SM

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

DOC NO: CLEJ-00073-5.15 1/4/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD — DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS, Ltd. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: MIDWAY PARK County: ONSLOW

HOLCOMB BLVD, CAMP LEJEUNE Quadrangle Not: CAMP LEJEUNE

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE DRILLING LOG GW2-1

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, N.C. 28540

4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)

5. USE OF WELL: H_2O Sampling DATE: 7-4-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 22.47' RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

	Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0	to 8.01 ft	2"	Sch 40	PVC

10. GROUT:

	Depth	Material	Method
From 0	to 6.01 ft	sand-cement (2:1)	poured

11. SCREEN:

	Depth	Dia.	Type & Opening
From 8.01	to 22.47 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

	Depth	Size	Material
From 7.01	to 22.47 ft		Silica Sand
6.01	7.01		Bentonite

13. WATER ZONES (depth): 8.0 — 22.47 (TOC)

14. STATIC WATER LEVEL: 8.0 ft. above / below top of casing

Casing is 20 ft. above land surface ELEV: —

15. YIELD (gpm): 4.5 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 9.0 ft.

after 1.5 hours at 4.5 gpm.

17. CHLORINATION: Type NA Amount

18. WATER QUALITY: GOOD TEMPERATURE (°F) 71

19. PERMANENT PUMP: Date Installed NA

Type Capacity (gpm) HP

Make Intake Depth

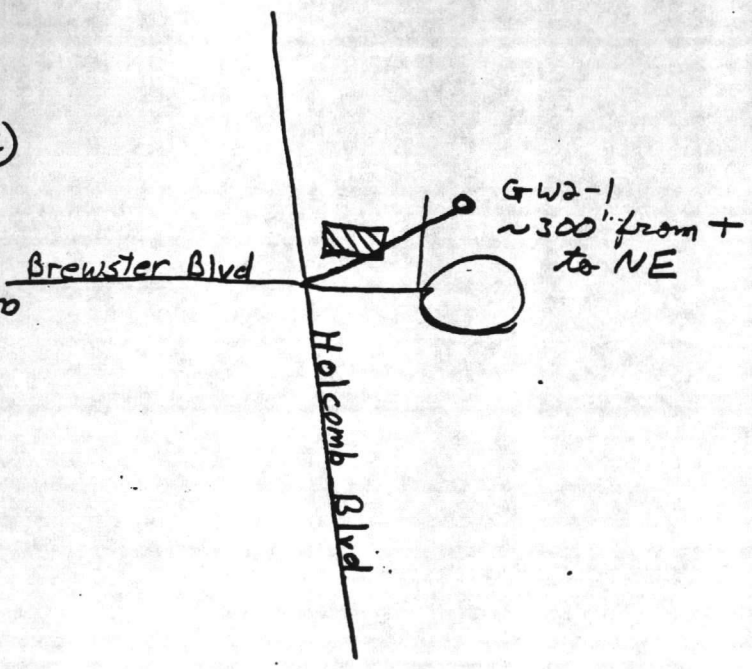
Airline Depth

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	4.5	SM
4.5	6.0	SM-SC
6.0	16.5	SM
16.5	21.5	SC
21.0	23.0	SP
23	24.5	SM

If additional space is needed, use back of form

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? Yes

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

R. M. Hinsley Mombelger 12-17-84

SIGNATURE OF CONTRACTOR OF AGENT DATE

GW-1 Revised 10/1/80 — Submit original to Division of Environmental Management and copy to well owner

UOC NO.: LLEW-0001S-5.13-1/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, LTd. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: MIDWAY PARK County: ONSLOW
   PINEY GREEN RD. CAMP LEJEUNE Quadrangle No: CAMP LEJEUNE
   (Road, Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, N.C. 28540
4. TOPOGRAPHY: draw, valley, slope, hilltop (flat) circle one)
5. USE OF WELL: H2O Sampling DATE: 7-5-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 22.17' RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO
9. CASING:

	Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0	to 7.71 ft	2"	Sch 40	PVC

10. GROUT:

	Depth	Material	Method
From 0	to 5.71 ft	sand-cement (2:1)	poured

11. SCREEN:

	Depth	Dia.	Type & Opening
From 7.71	to 22.17 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

	Depth	Size	Material
From 6.71	to 22.17 ft		silica sand
5.71	6.71		Bentonite

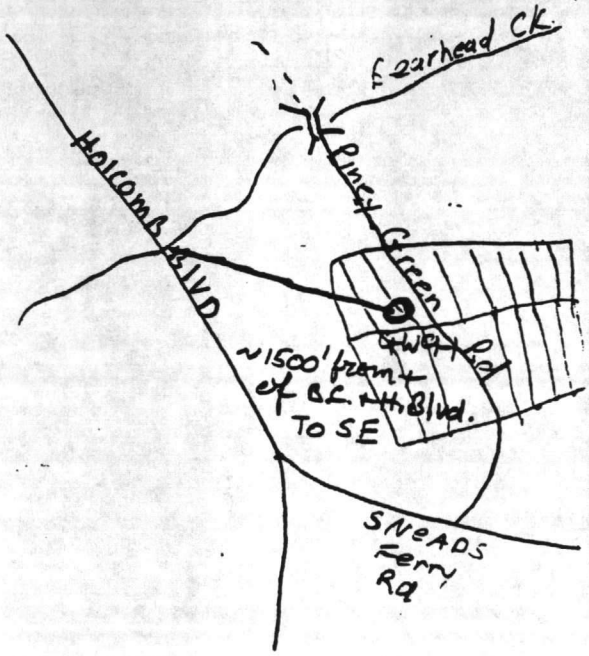
13. WATER ZONES (depth): 9.7 — 22.17' (TOC)
14. STATIC WATER LEVEL: 9.7 ft. above/below top of casing
    Casing is 2.3 ft. above land surface ELEV: 103.6'
15. YIELD (gpm): 8.0 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 10.80 ft.
    after .75 hours at 8 gpm.
17. CHLORINATION: Type NA Amount
18. WATER QUALITY: POOR TEMPERATURE (°F) 71
19. PERMANENT PUMP: Date Installed NA
    Type Capacity (gpm) HP
    Make Intake Depth
    Airline Depth

DRILLING LOG GW9-1

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS classification)
0	23.5'	SM

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? N/A
21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

RJ Kinsley-Nordberg 12-17-84
SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 10/1/80

Submit original to Division of Environmental Management and copy to well owner

VOC NO : CLCU-00015-5.13-11/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, Ltd REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: MIDWAY PARK County: ONSLOW
   PINEY GREEN LD, CAMP LEJEUNE Quadrangle No. CAMP LEJEUNE
   (Road, Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE NC 1285 ya
4. TOPOGRAPHY: draw, valley, slope, hilltop, (flat) (circle one)
5. USE OF WELL: H2O Sampling DATE: 7-5-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 18.46 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO
9. CASING:

	Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0	to 4 ft	2"	Sch 40	PVC

10. GROUT:

	Depth	Material	Method
From 0	to 2 ft	Sand-cement (6:1)	poured

11. SCREEN:

	Depth	Dia.	Type & Opening
From 4	to 18.46 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

	Depth	Size	Material
From 3	to 18.46 ft		Silica Sand
2	3		Bentonite

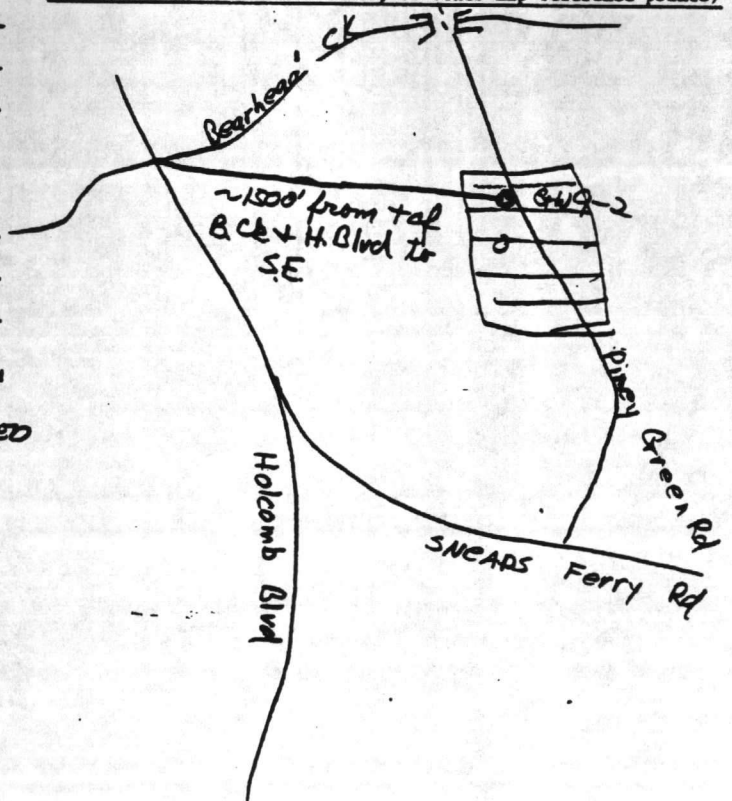
13. WATER ZONES (depth): 9.5 — 18.46' (TOC)
14. STATIC WATER LEVEL: 9.5 ft. above/below top of casing
    Casing is 2.5 ft. above land surface ELEV: 100.0'
15. YIELD (gpm): 7.5 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 9.75 ft.
    after ½ hours at 7.5 gpm.
17. CHLORINATION: Type NA Amount —
18. WATER QUALITY: GOOD TEMPERATURE (°F) 73
19. PERMANENT PUMP: Date Installed NA
    Type ____ Capacity ____ (gpm) HP ____
    Make ____ Intake Depth ____
    Airline Depth ____
20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? ofs
21. REMARKS ____

DRILLING LOG GW9-2

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	21.5	SM

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

R J Kingsley Thornberg 12-17-84
SIGNATURE OF CONTRACTOR OF AGENT DATE

GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

UOC IW: CLOW -0005 -5.13 - IW1185

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, Ltd REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: MIDWAY PARK County: ONSLOW
   HOLCOMB BLVD, CAMP LEJEUNE Quadrangle No. CAMP LEJEUNE
   (Road, Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE DRILLING LOG GW21-1
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, NC.
4. TOPOGRAPHY: draw, valley, slope, hilltop, flat, circle (circle one) 28540
5. USE OF WELL: H2O Sampling DATE: 7-4-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 23.35 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO
9. CASING:

	Depth		Inside Dia.	Wall thick. or weight/ft.	type
From	0	to 8.97 ft	2"	Sch 40	PVC

10. GROUT:

	Depth		Material	Method
From	0	to 5.5 ft	Sand-cement 6:0	pouring

11. SCREEN:

	Depth		Dia.	Type & Opening
From	8.97	to 23.35 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

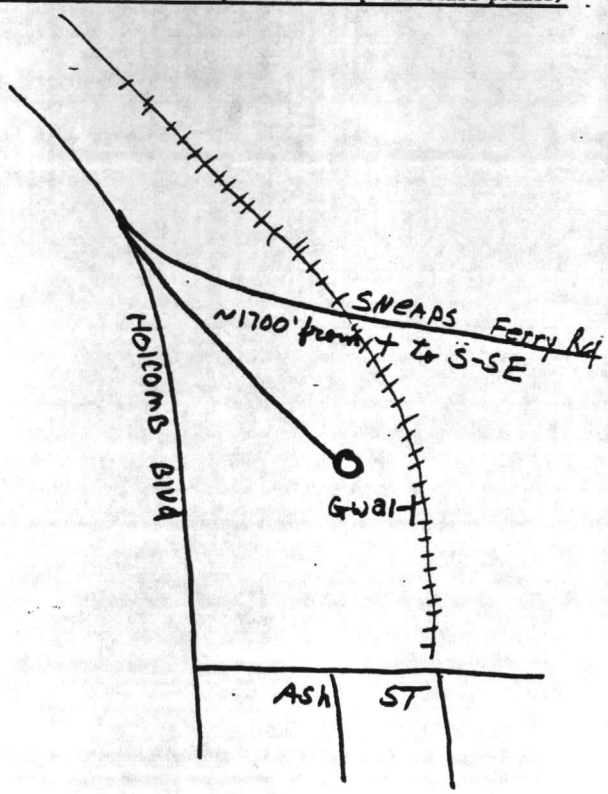
	Depth		Size	Material
From	7.35	to 23.35 ft		Silica Sand
	5.5	7.35		Bentonite

13. WATER ZONES (depth): 11 — 23.35' (TOC)
14. STATIC WATER LEVEL: 11.0 ft. above/below top of casing
    Casing is 1.17 ft. above land surface ELEV: 103.23'
15. YIELD (gpm): 7.5 METHOD OF TESTING:
16. PUMPING WATER LEVEL: 11.3 ft.
    after 3/4 hours at 7.5 gpm.
17. CHLORINATION: Type NA Amount —
18. WATER QUALITY: FAIR TEMPERATURE (°F) 75
19. PERMANENT PUMP: Date Installed NA
    Type Capacity (gpm) HP
    Make Intake Depth
    Airline Depth
20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? Yes
21. REMARKS

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	1.5	GM
1.5	3	ML
3	7.5	CL
7.5	9.0	SC-SM
15	25.0	SM

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

RJ Kinsley-Hornberger 12-17-84
SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

UOC NO: CLEJ-00075 - 3.13 - 1121 185

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, Ltd - REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: MIDWAY PARK County: ONSLOW

ASH ST. CAMP LEJEUNE Quadrangle No. CAMP LEJEUNE
(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE NC. 28540

4. TOPOGRAPHY: draw, valley, slope, hilltop (flat) circle one)

5. USE OF WELL: H₂O Sampling DATE: 7-6-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 20.38 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0 to 5.9 ft	2"	Sch 40	PVC

10. GROUT:

Depth	Material	Method
From 0 to 2.42 ft	Sand-cement (2:1)	poured

11. SCREEN:

Depth	Dia.	Type & Opening
From 5.9 to 20.38 ft	2"	Sch 40 PVC
		.010 Slot

12. GRAVEL:

Depth	Size	Material
From 4.58 to 20.38 ft		Silica Sand
2.42 4.58		Bentonite

13. WATER ZONES (depth): 10.5 — 20.38' (TOC)

14. STATIC WATER LEVEL: 10.5 ft. above / below top of casing
Casing is 2.5 ft. above land surface ELEV: 102.99'

15. YIELD (gpm): 4 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 11.5 ft.
after 1.5 hours at 4 gpm.

17. CHLORINATION: Type NA Amount —

18. WATER QUALITY: Poor TEMPERATURE (°F) 71

19. PERMANENT PUMP: Date Installed NA
Type ____ Capacity ____ (gpm) HP ____
Make ____ Intake Depth ____
Airline Depth ____

20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? Yes

21. REMARKS ____

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

R J Kucsla-Nromberger 12-17-84
SIGNATURE OF CONTRACTOR OF AGENT DATE

GW-1 Revised 10/1/80

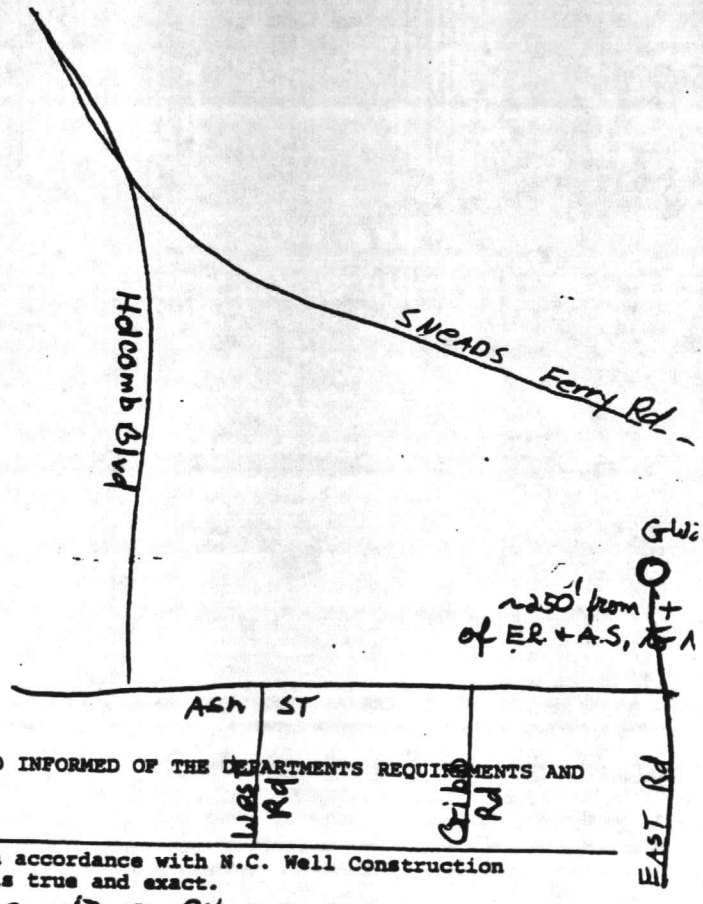
Submit original to Division of Environmental Management and copy to well owner

DRILLING LOG GW22-1

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	1.75	SM
1.75	3.0	CL
3	4	CL
4	5.25	GM
5.25	21.5	SM

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



GW-22-2 - ONSLOW - U.S. - 1/01/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, Ltd REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: MIDWAY PARK County: ONSLOW
   ASH ST., CAMP LEJEUNE (Road, Community or Subdivision and Lot No.) Quadrangle CAMP LEJEUNE
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE DRILLING LOG GW22-2
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, N.C. 28542
4. TOPOGRAPHY: draw, valley, slope, hilltop (flat) (circle one)
5. USE OF WELL: H_2O Sampling DATE: 7-6-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 21.00 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO
9. CASING:

	Depth From	Depth to	Inside Dia.	Wall thick. or weight/ft.	type
	0	6.54	2"	Sch 40	PVC

10. GROUT:

	Depth From	Depth to	Material	Method
	0	4.59 ft	sand-cement (2:1)	poured

11. SCREEN:

	Depth From	Depth to	Dia.	Type & Opening
	6.54	21.00 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

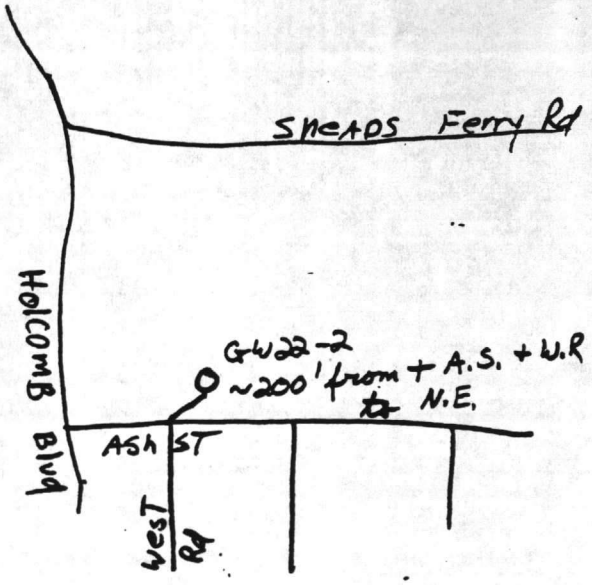
Depth From	Depth to	Size	Material
5.0	21.0 ft		Silica Sand
4.0	5.0		Bentonite

13. WATER ZONES (depth): 9.6 — 21.0' (TOC)
14. STATIC WATER LEVEL: 9.6 ft. above/below top of casing
    Casing is 2.5 ft. above land surface ELEV: 100.06'
15. YIELD (gpm): 5 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 9.9 ft.
    after 3/4 hours at 5 gpm.
17. CHLORINATION: Type NA Amount
18. WATER QUALITY: FAIR TEMPERATURE (°F) 71
19. PERMANENT PUMP: Date Installed NA
    Type Capacity (gpm) HP
    Make Intake Depth
    Airline Depth

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	6.0	SM
6.0	8.5	SM-SC
8.5	9.0	SM
9.0	10.0	SM-SC
10.0	10.5	SM
15.0	16.5	SM-SC
20	21.5	SM

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes
21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

R J Kimley Nomberger 12-17-84
SIGNATURE OF CONTRACTOR OF AGENT DATE

GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

WRC NO. CLEW - 0001 - 5.13 - 11/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD

DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS, Ltd. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: MIDWAY PARK County: ONSLOW

LOUIS RD. CAMP LEJEUNE Quadrangle No.: CAMP LEJEUNE

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, N.C.

4. TOPOGRAPHY: draw, valley, slope, hilltop, (flat) circle one) 2.25%D

5. USE OF WELL: H_2O Sampling DATE: 7-7-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 20.27 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

DRILLING LOG GW24-1

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	1.75	SM
1.75	3.0	ML
3.0	4.5	SM
4.5	21.5	SM

9. CASING:

Depth From	to	Inside Dia.	Wall thick. or weight/ft.	type
~	5.85 ft	2"	Sch 40	PVC

10. GROUT:

Depth From	to	Material	Method
0	3.27 ft	Sand-cement (2:1)	poured

11. SCREEN:

Depth From	to	Dia.	Type & Opening
5.85	20.27 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

Depth From	to	Size	Material
4.41	20.27 ft		Silica Sand
3.27	4.41		Bentonite

13. WATER ZONES (depth): 9.7 — 20.27 (TOC)

14. STATIC WATER LEVEL: 9.7 ft. above/below top of casing

Casing is 2.7 ft. above land surface ELEV: 91.1'

15. YIELD (gpm): 7.5 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 9.8 ft.

after 1 hours at 7.5 gpm.

17. CHLORINATION: Type NA Amount —

18. WATER QUALITY: GOOD TEMPERATURE (°F) 67

19. PERMANENT PUMP: Date Installed NA

Type Capacity (gpm) HP

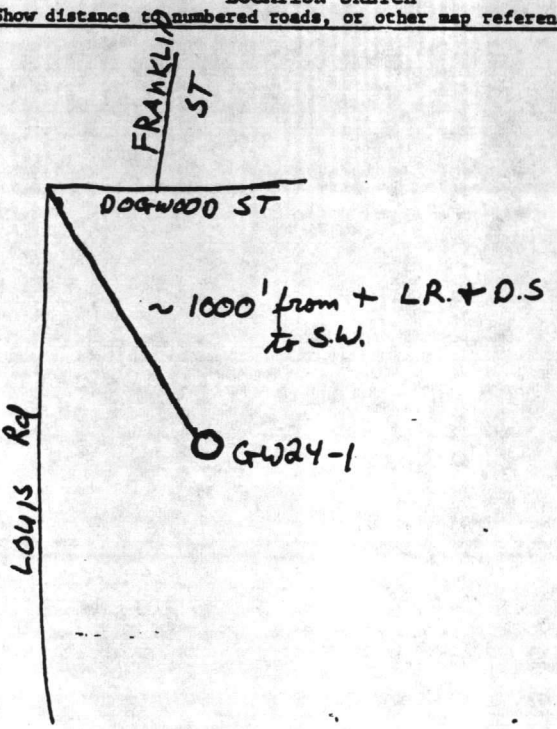
Make Intake Depth

Airline Depth

If additional space is needed, use back of form

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? Yes

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

R. J. Kinsley Vonberg 12-17-84

SIGNATURE OF CONTRACTOR OF AGENT DATE

GW-1 Revised 10/1/80

Submit original to Division of Environmental Management and copy to well owner

UOC NO · CLEJ-0005 - 3.15 - 11/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, Ltd · REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: MIDWAY PARK County: ONSLOW
   LOUIS RD., CAMP LEJEUNE Quadrangle No. CAMP LEJEUNE
   (Road, Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, N.C. 28540
4. TOPOGRAPHY: draw, valley, (slope), hilltop, flat (circle one)
5. USE OF WELL: H₂O Sampling DATE: 7-7-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 19.42 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO
9. CASING:

	Depth		Inside Dia.	Wall thick. or weight/ft.	type
From	0	to 4.99 ft	2"	Sch 40	PVC

10. GROUT:

	Depth		Material	Method
From	0	to 1.72 ft	sand-cement (2:1)	poured

11. SCREEN:

	Depth		Dia.	Type & Opening
From	4.99	to 19.42 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

	Depth		Size	Material
From	2.67	to 19.42 ft		Silica Sand
	1.72	2.67		Bentonite

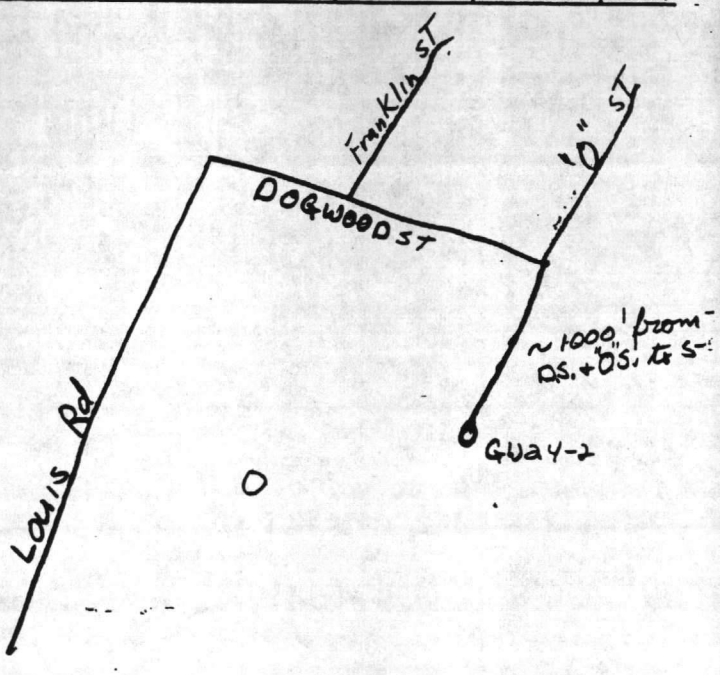
13. WATER ZONES (depth): —
    3.6 - 19.42' (TOC)
14. STATIC WATER LEVEL: 3.6 ft. above / below top of casing
    Casing is 2.5 ft. above land surface ELEV: 16.51'
15. YIELD (gpm): 8.0 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 3.6 ft.
    after 1 hours at 8.0 gpm.
17. CHLORINATION: Type NA Amount
18. WATER QUALITY: GOOD TEMPERATURE (°F) 71
19. PERMANENT PUMP: Date Installed NA
    Type Capacity (gpm) HP
    Make Intake Depth
    Airline Depth
20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes
21. REMARKS

DRILLING LOG GW24-2

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	0-21.5	SM

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

RJ Kirk-Mongeon 12-17-84
SIGNATURE OF CONTRACTOR OF AGENT DATE

GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, LTD. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: MIDWAY PARK County: ONSLOW
DOGWOOD ST, CAMP LEJEUNE Quadrangle No. CAMP LEJEUNE
(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, N.C. 28540
4. TOPOGRAPHY: draw, (valley), slope, hilltop, flat (circle one)
5. USE OF WELL: H_2O Sampling DATE: 7-7-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 19.80 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO

DRILLING LOG GW24-3

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	3.5	SM
3.5	4.5	SM-SC
4.5	16.5	SM
16.5	20.0	GM

9. CASING:

Depth From	to	ft	Inside Dia.	Wall thick. or weight/ft.	type
0	5.3	ft	2"	Sch 40	PVC

10. GROUT:

Depth From	to	ft	Material	Method
0	3.25	ft	Sand Cement (2:1)	poured

If additional space is needed, use back of form

11. SCREEN:

Depth From	to	ft	Dia.	Type & Opening
5.3	19.8	ft	2"	Sch 40 PVC .010 Slot

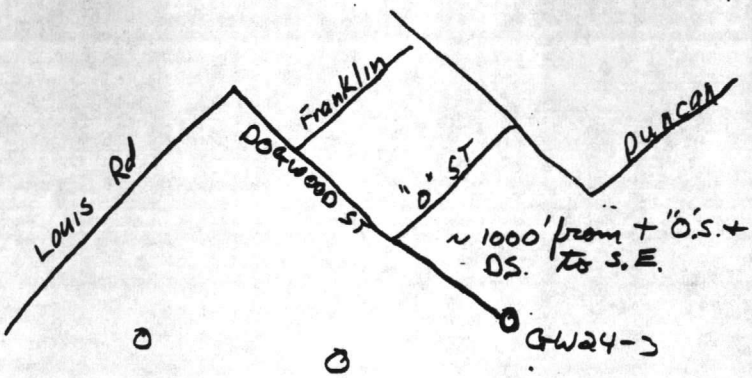
12. GRAVEL:

Depth From	to	ft	Size	Material
4.3	19.8	ft		Silica Sand
3.25	4.3			Bentonite

13. WATER ZONES (depth): 5.1 — 19.8' (TOC)

14. STATIC WATER LEVEL: 5.1 ft. above/below top of casing
Casing is 3.5 ft. above land surface ELEV: 88.8'
15. YIELD (gpm): 5-5 METHOD OF TESTING: Pumped
16. PUMPING WATER LEVEL: 5.3 ft.
after 3/4 hours at 5.5 gpm.
17. CHLORINATION: Type NA Amount
18. WATER QUALITY: POOR TEMPERATURE (°F) 68
19. PERMANENT PUMP: Date Installed NA
Type Capacity (gpm) HP
Make Intake Depth
Airline Depth

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? n/a
21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

SIGNATURE OF CONTRACTOR OF AGENT DATE

GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD

DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS, LTD. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: MIDWAY PARK County: ONSLOW

DUNCAN ST., CAMP LEJEUNE Quadrangle No. CAMP LEJEUNE

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C. 28540

4. TOPOGRAPHY: draw, valley, slope, hilltop (flat) (circle one)

5. USE OF WELL: H_2O Sampling DATE: 7-7-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 21.37 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

From	to	Depth	Inside Dia.	Wall thick. or weight/ft.	type
0	6.9	ft	2"	Sch 40	PVC

10. GROUT:

From	to	Depth	Material	Method
0	4.9	ft	sand-cement (2:1)	poured

11. SCREEN:

From	to	Depth	Dia.	Type & Opening
6.9	21.37	ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

From	to	Depth	Size	Material
5.9	21.3	ft		Silica Sand
4.9	5.9			Bentonite

13. WATER ZONES (depth): 8.5 — 21.37' (TOC)

14. STATIC WATER LEVEL: 8.5 ft. above/below top of casing

Casing is 3.10 ft. above land surface ELEV: 91.41'

15. YIELD (gpm): 7 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 8.7 ft.

after 3/4 hours at 7 gpm.

17. CHLORINATION: Type NA Amount

18. WATER QUALITY: GOOD TEMPERATURE (°F) 67

19. PERMANENT PUMP: Date Installed NA

Type Capacity (gpm) HP

Make Intake Depth

Airline Depth

20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? n/a

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

R. J. Linsley-Vromberg 12/19/84

SIGNATURE OF CONTRACTOR OF AGENT DATE

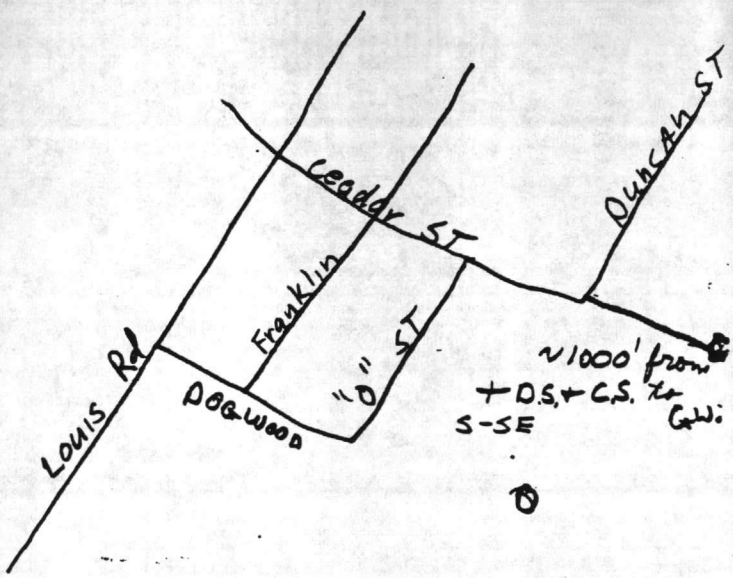
DRILLING LOG GW24-4

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS classification)
0	1.5	SM
1.5	6	SM-SC
60	235	SM

If additional space is needed, use back of form

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)



GW-1 Revised 10/1/80

Submit original to Division of Environmental Management and copy to well owner

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, Ltd REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: MIDWAY PARK County: ONSLOW
O STREET, CAMP LEJEUNE Quadrangle No. CAMP LEJEUNE
(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, N.C. 28540

4. TOPOGRAPHY: draw, valley, slope, hilltop (flat) circle one)

5. USE OF WELL: H_2O Sampling DATE: 7-7-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 22.37 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

	Depth	Inside Dia.	Wall thick. or weight/ft.	type
From	0 to 7.9 ft	2"	Sch 40	PVC

10. GROUT:

	Depth	Material	Method
From	0 to 5.9 ft	Sand-cement (2:1)	poured

11. SCREEN:

	Depth	Dia.	Type & Opening
From	7.9 to 22.37 ft	2"	Sch 40 PVC
			.010 slot

12. GRAVEL:

	Depth	Size	Material
From	6.5 to 22.37 ft		Silica Sand
	4.5 6.5		Bentonite

13. WATER ZONES (depth): 12.4 – 22.37' (TOC)

14. STATIC WATER LEVEL: 12.4 ft. above/below top of casing
Casing is 2.1 ft. above land surface ELEV: 100.0'

15. YIELD (gpm): 7.5 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 12.5 ft.
after 1 hours at 7.5 gpm.

17. CHLORINATION: Type NA Amount

18. WATER QUALITY: GOOD TEMPERATURE (°F) 68

19. PERMANENT PUMP: Date Installed NA
Type Capacity (gpm) HP
Make Intake Depth
Airline Depth

20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

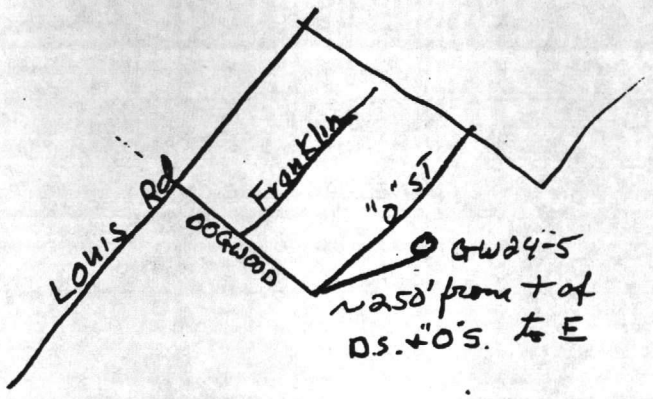
RJ Christ Thornberg 12/18/84
SIGNATURE OF CONTRACTOR OF AGENT DATE

DRILLING LOG GW24-5

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	0.5	Topsoil
0.5	7.5	SM
7.5	9.0	SM-SC
9.0	10.5	SM
15.0	16.5	SM-SC
20.0	24.5	SM

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



GW-1 Revised 10/1/80

Submit original to Division of Environmental Management and copy to well owner

DOC NO. CLEJ - 00073 - 3.15 11/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD

DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS, Ltd. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

   Nearest Town: MIDWAY PARK County: ONSLOW

   RIVER RD. CAMP LEJEUNE Quadrangle ~~No.~~ CAMP LEJEUNE
   (Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, N.C. 28540

4. TOPOGRAPHY: draw, (valley), slope, hilltop, flat (circle one)

5. USE OF WELL: H_2O Sampling DATE: 7-7-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 19.21 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

DRILLING LOG GW28-1

DEPTH FROM	TO	FORMATION DESCRIPTION (USGS Classification)
0	3.0	SM
3.0	6.0	GM
6.0	16.5	SM

If additional space is needed, use back of form

9. CASING: Depth / Inside Dia. / Wall thick. or weight/ft. / type

   From 0 to 4.68 ft 2" Sch 40 PVC

10. GROUT: Depth / Material / Method

    From 0 to 2.17 ft sand-cement (2:1) poured

11. SCREEN: Depth / Dia. / Type & Opening

    From 4.68 to 19.21 ft 2" Sch 40 PVC .010 Slot

12. GRAVEL: Depth / Size / Material

    From 3.92 to 19.21 ft Silica Sand

    2.17 3.92 Bentonite

13. WATER ZONES (depth): 4.6 — 19.21' (TOC)

14. STATIC WATER LEVEL: 4.6 ft. above/below top of casing

    Casing is 2.38 ft. above land surface ELEV: [illegible]

15. YIELD (gpm): 8.5 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 4.6 ft.

    after 3/4 hours at 8.5 gpm.

17. CHLORINATION: Type NA Amount —

18. WATER QUALITY: FAIR TEMPERATURE (°F) 71

19. PERMANENT PUMP: Date Installed NA

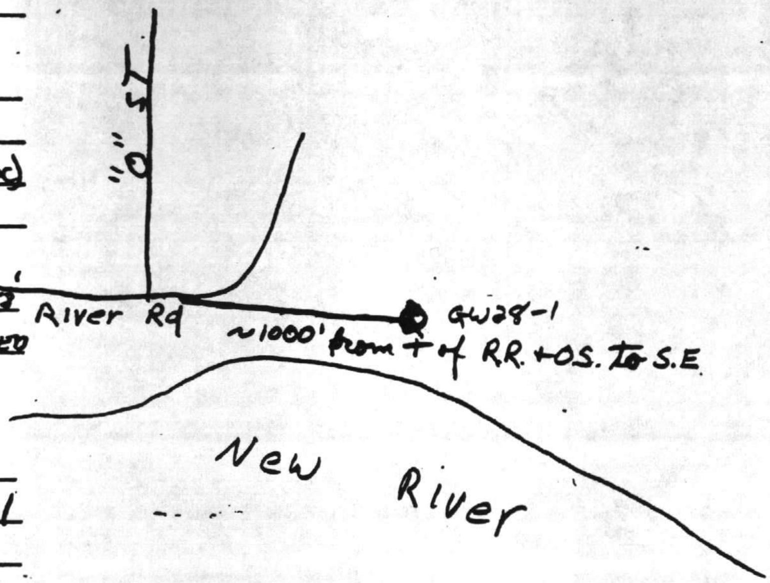
    Type ______ Capacity ______ (gpm) HP ______

    Make ______ Intake Depth ______

    Airline Depth ______

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? NA

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

[signature] 12-18-84

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

UOC NO : CLEW-0005-5.13-11/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS Consultants, Ltd. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: MIDWAY PARK County: ONSLOW
   River Rd. CAMP LEJEUNE Quadrangle No. CAMP LEJEUNE
   (Road, Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, CAMP LEJEUNE MARINE CORPS BASE
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C. 28542
4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)
5. USE OF WELL: H2O Sampling DATE: 7-7-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 19.47 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO
9. CASING:

	Depth		Inside Dia.	Wall thick. or weight/ft.	type
From	0	to 5.01 ft	2"	Sch 40	PVC

10. GROUT:

	Depth		Material	Method
From	0	to 2 ft	sand-cement (6:1)	poured

11. SCREEN:

	Depth		Dia.	Type & Opening
From	5.01	to 19.47 ft	2"	Sch 40 PVC .010 Slot

12. GRAVEL:

	Depth		Size	Material
From	3.0	to 19.47 ft		Silica Sand
2.00	3.0			Bentonite

13. WATER ZONES (depth): 2.8 — 19.47' (TOC)
14. STATIC WATER LEVEL: 2.8 ft. above / below top of casing
    Casing is 2.5 ft. above land surface ELEV: 99.98
15. YIELD (gpm): 8.5 METHOD OF TESTING: Pumped
16. PUMPING WATER LEVEL: 2.9 ft.
    after 3/4 hours at 8.5 gpm.
17. CHLORINATION: Type NA Amount —
18. WATER QUALITY: Poor TEMPERATURE (°F) 73
19. PERMANENT PUMP: Date Installed NA
    Type ____ Capacity ____ (gpm) HP ____
    Make ____ Intake Depth ____
    Airline Depth ____
20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes
21. REMARKS ____

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

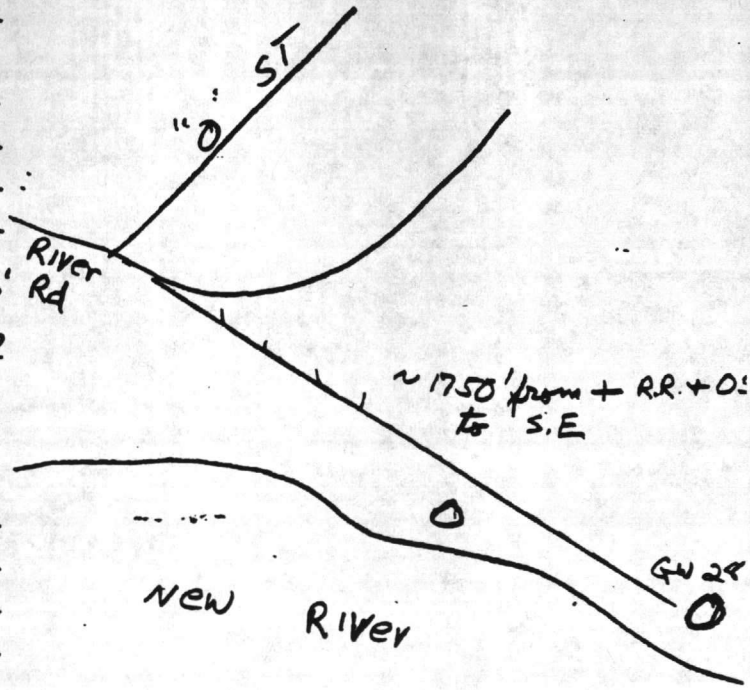
R J Kucsler Mombeyga 12-18-84
SIGNATURE OF CONTRACTOR OR AGENT DATE

DRILLING LOG GW28-2

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	16.0	SM
16.0	16.5	SW
19.5	20.0	SM
20.0	21.0	woody peat

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



GW-1 Revised 10/1/80

Submit original to Division of Environmental Management and copy to well owner

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD

DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS LTD. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: MIDWAY PARK County: ONSLOW

RIVER RD. CAMP LEJEUNE Quadrangle No. CAMP LEJEUNE

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C. 28540

4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)

5. USE OF WELL: H₂O Sampling DATE: 7-7-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 18.57 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

From	to	Depth	Inside Dia.	Wall thick. or weight/ft.	type
0	4.1	ft	2"	Sch 40	PVC

10. GROUT:

From	to	Depth	Material	Method
0	3.11	ft	Sand-cement (2:1)	poured

11. SCREEN:

From	to	Depth	Dia.	Type & Opening
4.1	18.57	ft	2"	Sch 40 PVC .010 Slot

12. GRAVEL:

From	to	Depth	Size	Material
3.11	18.57	ft		Silica Sand
2.11	3.11			Bentonite

13. WATER ZONES (depth): 3.5 — 18.57 (TOC)

14. STATIC WATER LEVEL: 3.5 ft. above / below top of casing

Casing is 2.5 ft. above land surface ELEV: 99.8'

15. YIELD (gpm): 3.5 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 5.5 ft.

after 1½ hours at 3.5 gpm.

17. CHLORINATION: Type NA Amount —

18. WATER QUALITY: GOOD TEMPERATURE (°F) 78

19. PERMANENT PUMP: Date Installed NA

Type ____ Capacity ____ (gpm) HP ____

Make ____ Intake Depth ____

Airline Depth ____

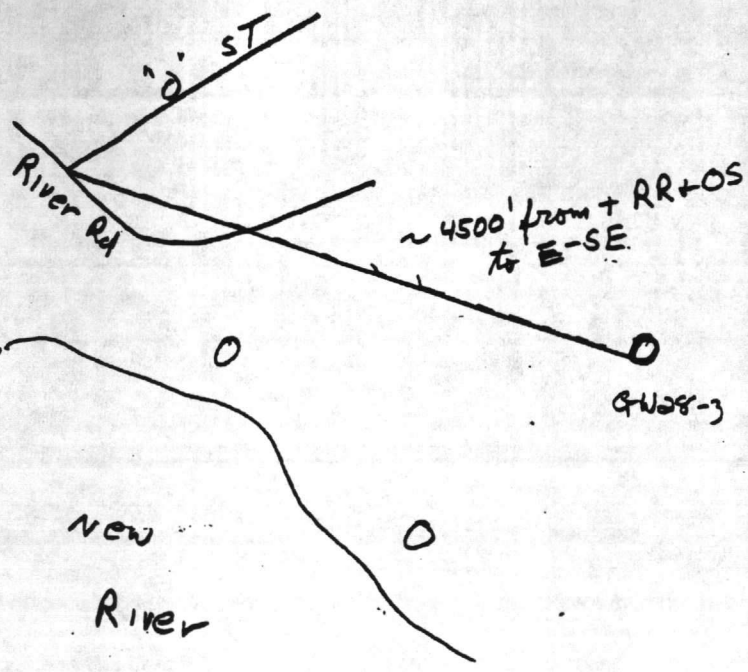
DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	3.0	SM
3.0	4.0	SM-SC
4.0	5.5	wood + other organics
5.5	6.0	SM-SC
6.0	7.5	peat
6.5	20.5	SM

DRILLING LOG GW28-3

If additional space is needed, use back of form

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes

21. REMARKS ____

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

R. Wesley Mowbray 12-18-84

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 10/1/80

Submit original to Division of Environmental Management and copy to well owner

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR SES Consultants, Ltd. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: MIDWAY PARK County: ONSLOW
   SNEADS FERRY RD., CAMP LEJEUNE Quadrangle No. CAMP LEJEUNE
   (Road, Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, N.C. 28540
4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)
5. USE OF WELL: H_2O Sampling DATE: 7-6-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 20.57 RIG TYPE OR METHOD: H.S.A
8. FORMATION SAMPLES COLLECTED: YES ✓ NO
9. CASING:

	Depth		Inside Dia.	Wall thick. or weight/ft.	type
From	0	to 6.11 ft	2"	Sch 40	PVC

10. GROUT:

	Depth		Material	Method
From	0	to 4.11 ft	Sand cement (2:1)	poured

11. SCREEN:

	Depth		Dia.	Type & Opening
From	6.11	to 20.57 ft	2"	Sch 40 PVC .010 Slot

12. GRAVEL:

	Depth		Size	Material
From	5.11	to 20.57 ft		Silica Sand
	4.11	5.11		Bentonite

13. WATER ZONES (depth): 10.2 — 20.57' (TOC)
14. STATIC WATER LEVEL: 10.2 ft. above / below top of casing
    Casing is 2.5 ft. above land surface ELEV: —
15. YIELD (gpm): 5 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 10.8 ft.
    after 1.5 hours at 5 gpm.
17. CHLORINATION: Type NA Amount —
18. WATER QUALITY: GOOD TEMPERATURE (°F) 71
19. PERMANENT PUMP: Date Installed NA
    Type ____ Capacity ____ (gpm) HP ____
    Make ____ Intake Depth ____
    Airline Depth ____
20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? n/a
21. REMARKS ____

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

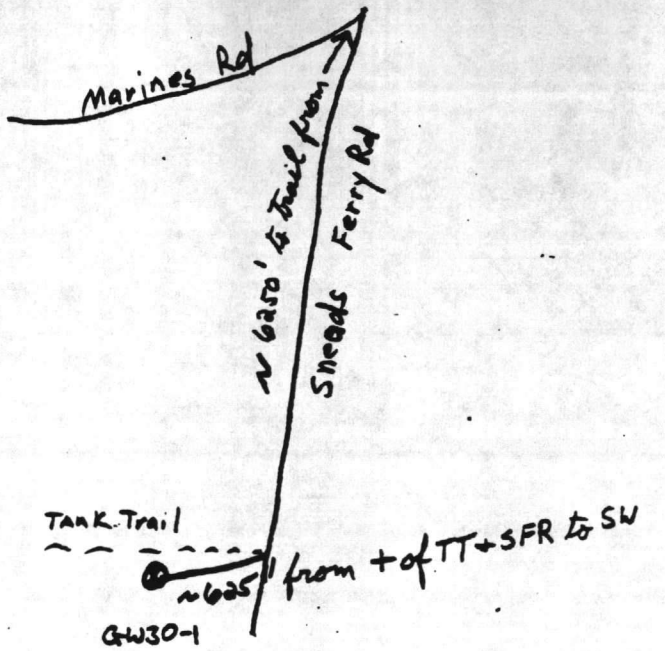
R. Wesley Thomberger 12-18-84
SIGNATURE OF CONTRACTOR OR AGENT DATE

DRILLING LOG GW30-1

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS classification)
0	21.5	SM

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS Consultants Ltd. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: JACKSONVILLE County: ONSLOW
   "G" STREET, CAMP LEJEUNE Quadrangle No. JACKSONVILLE SOUTH
   (Road, Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C. 28540
4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)
5. USE OF WELL: H_2O Sampling DATE: 7-31-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 21.00 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO
9. CASING:

	Depth	Inside Dia.	Wall thick. or weight/ft.	type
From	0 to 6.5 ft	2"	Sch 40	PVC

10. GROUT:

	Depth	Material	Method
From	0 to 3.42 ft	sand-cement (2:1)	poured

11. SCREEN:

	Depth	Dia.	Type & Opening
From	6.5 to 21.00 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

	Depth	Size	Material
From	5.33 to 21.00 ft		Silica Sand
	3.42 5.33		Bentonite

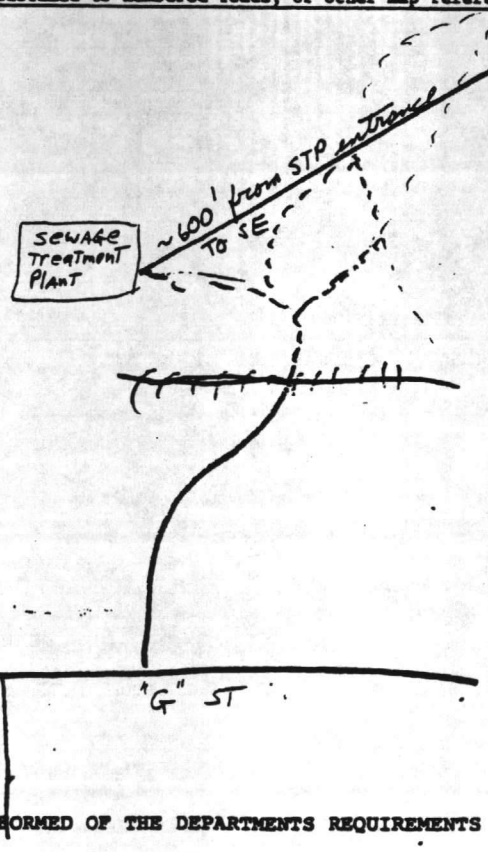
13. WATER ZONES (depth): 5.0 – 21.0' (ToC)
14. STATIC WATER LEVEL: 5.0 ft. above / below top of casing
    Casing is 2.5 ft. above land surface ELEV: 99.89'
15. YIELD (gpm): 8.0 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 5.0 ft.
    after 3½ hours at 8.0 gpm.
17. CHLORINATION: Type NA Amount
18. WATER QUALITY: GOOD TEMPERATURE (°F) 67
19. PERMANENT PUMP: Date Installed NA
    Type Capacity (gpm) HP
    Make Intake Depth
    Airline Depth

DRILLING LOG GW36-1

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	1.5	SM
1.5	3.0	SM-SC
3.0	6.0	SM
6.0	7.5	SM-SC
7.5	10.5	CL
15.0	21.5	SM

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? n/a
21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

RJ Mueller-Thomberg 12-18-84
SIGNATURE OF CONTRACTOR OF AGENT DATE

GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, Ltd, REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: JACKSONVILLE County: ONSLOW

"G" STREET, CAMP LEJEUNE Quadrangle No. JACKSONVILLE SOUTH
(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, N.C. 28540

4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)

5. USE OF WELL: H2O Sampling DATE: 7-31-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 20.88 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

	Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0	to 6.4 ft	2"	Sch 40	PVC

10. GROUT:

	Depth	Material	Method
From 0	to 2.83 ft	sand-cement (6:1)	poured

11. SCREEN:

	Depth	Dia.	Type & Opening
From 6.4	to 20.88 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

	Depth	Size	Material
From 4.92	to 20.88 ft		Silica Sand
2.83	4.92		Bentonite

13. WATER ZONES (depth): 5.0 – 20.88' (TOC)

14. STATIC WATER LEVEL: 5.0 ft. above / below top of casing
Casing is 2.5 ft. above land surface ELEV: 100.0'

15. YIELD (gpm): 7.0 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 5.2 ft.
after 3 hours at 7.0 gpm.

17. CHLORINATION: Type NA Amount

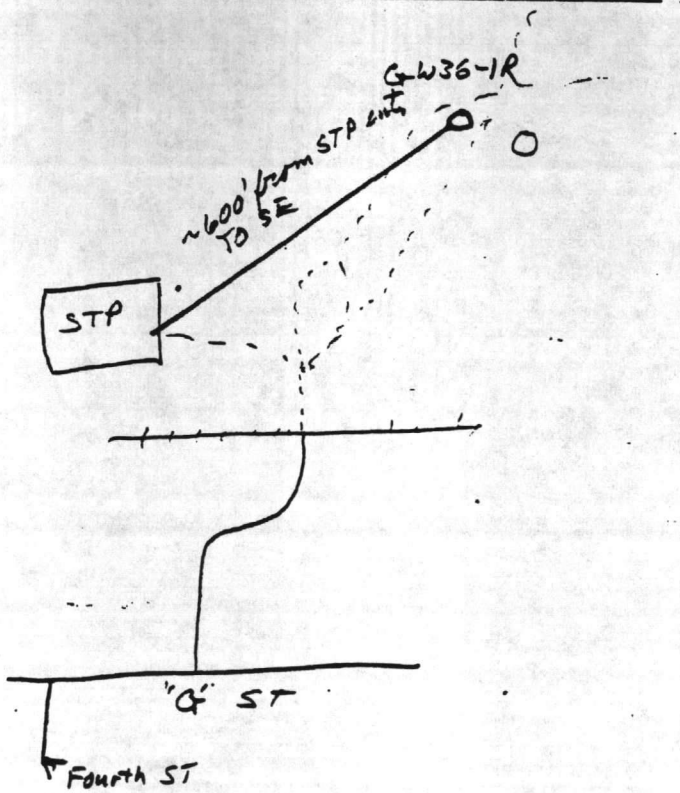
18. WATER QUALITY: GOOD TEMPERATURE (°F) 67

19. PERMANENT PUMP: Date Installed NA
Type Capacity (gpm) HP
Make Intake Depth
Airline Depth

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Class.)
0	1.5	SM
1.5	3.	SM-SC
3.	6.	SM
6.	7.5	SM-SC
7.5	10.5	CL
10.	21.5	SM

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

SIGNATURE OF CONTRACTOR OR AGENT DATE 12-18-84

GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS Ltd, REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: JACKSONVILLE County: ONSLOW
   G" STREET, CAMP LEJEUNE Quadrangle No. JACKSONVILLE SOUTH
   (Road, Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE
3. ADDRESS: OFFICE OF A/E FACILITIES, CAMP LEJEUNE, N.C. 28540
4. TOPOGRAPHY: draw, valley, slope, hilltop, (flat) circle one)
5. USE OF WELL: H_2O Sampling DATE: 7-31-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 19.92 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO
9. CASING:

Depth From	Depth To	Inside Dia.	Wall thick. or weight/ft.	type
0	5.48 ft	2"	Sch 40	PVC

10. GROUT:

Depth From	Depth To	Material	Method
0	2.27 ft	sand-cement (2:1)	poured

11. SCREEN:

Depth From	Depth To	Dia.	Type & Opening
5.48	19.92 ft	2"	Sch 40 PVC .010 Slot

12. GRAVEL:

Depth From	Depth To	Size	Material
4.42	19.92 ft		Silica Sand
2.27	4.42		Bentonite

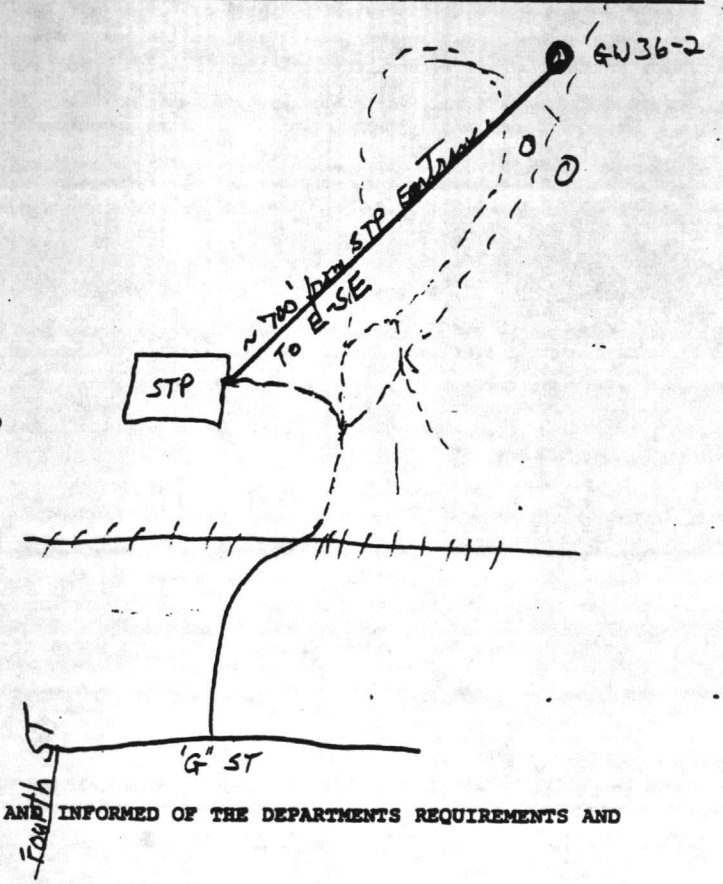
13. WATER ZONES (depth): 4.8 - 19.92' (TOC)
14. STATIC WATER LEVEL: 4.8 ft. above/below top of casing
    Casing is 2.5 ft. above land surface ELEV: 100.03'
15. YIELD (gpm): 8.0 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 5.0 ft.
    after 3/4 hours at 8.0 gpm.
17. CHLORINATION: Type NA Amount
18. WATER QUALITY: POOR TEMPERATURE (°F) 66
19. PERMANENT PUMP: Date Installed NA
    Type Capacity (gpm) HP
    Make Intake Depth
    Airline Depth
20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes
21. REMARKS

DRILLING LOG GW36-2

DEPTH FROM	DEPTH TO	FORMATION DESCRIPTION (USCS Classification)
0	1.5	SM
1.5	3.0	S.C - SM
3.0	6.0	SM
5.5	6.0	SC - SM
6.0	9.25	CL
9.25	21.5	SM

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

RJ Kinsley Mowbray 12-18-84
SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, Ltd. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: JACKSONVILLE County: ONSLOW

"G" STREET, CAMP LEJEUNE Quadrangle No. JACKSONVILLE SOUTH

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C. 28540

4. TOPOGRAPHY: draw, valley, slope, hilltop, (flat) circle one)

5. USE OF WELL: H.O Sampling DATE: 7-31-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 18.79 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

	Depth		Inside Dia.	Wall thick. or weight/ft.	type
From	0	to 4.31 ft	2"	Sch 40	PVC

10. GROUT:

	Depth		Material	Method
From	0	to 1.84 ft	Sand-cement (2:1)	poured

11. SCREEN:

	Depth		Dia.	Type & Opening
From	4.31	to 18.79 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

	Depth		Size	Material
From	2.92	to 18.79 ft		Silica Sand
	1.84	2.92		Bentonite

13. WATER ZONES (depth): 4.9 - 18.79' (TOC)

14. STATIC WATER LEVEL: 4.9 ft. above/below top of casing

Casing is 2.5 ft. above land surface ELEV: 100.17'

15. YIELD (gpm): 8 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 4.9 ft.

after 3/4 hours at 8 gpm.

17. CHLORINATION: Type NA Amount

18. WATER QUALITY: FAIR TEMPERATURE (°F) 65

19. PERMANENT PUMP: Date Installed NA

Type Capacity (gpm) HP

Make Intake Depth

Airline Depth

20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes

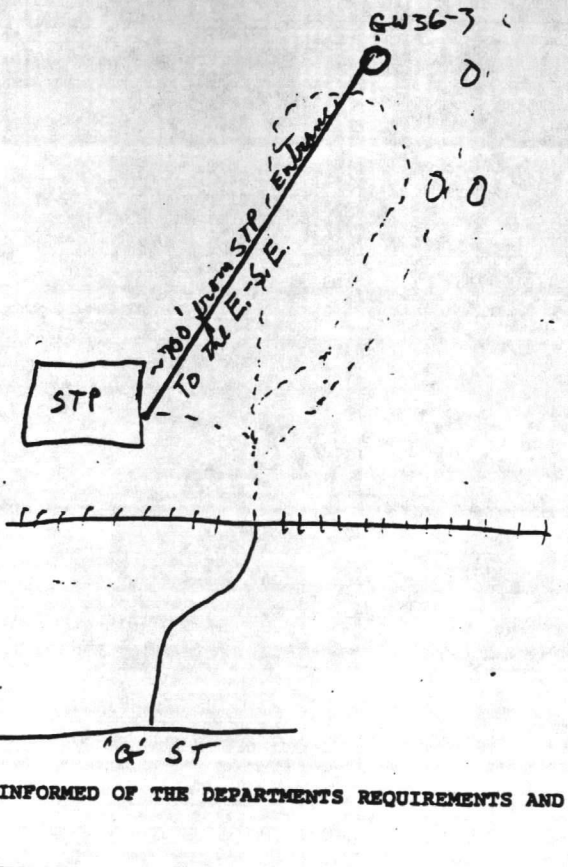
21. REMARKS

DRILLING LOG GW36-3

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	1.5	ML-CL
1.5	6.25	CL, SL
6.25	16.5	SM
20.	21.5	CL-ML

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

SIGNATURE OF CONTRACTOR OR AGENT DATE 12-4-84

GW-1 Revised 10/1/80

Submit original to Division of Environmental Management and copy to well owner

DOC NO: CLEJ-0005-3.13-11/21/05

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD — DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS, Ltd. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: JACKSONVILLE County: ONSLOW

G" STREET, CAMP LEJEUNE Quadrangle No. JACKSONVILLE SOUTH

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C. 28540

4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)

5. USE OF WELL: H_2O Sampling DATE: 7-31-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 19.67 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0 to 5.2 ft	2"	Sch 40	PVC

10. GROUT:

Depth	Material	Method
From 0 to 4.21 ft	sand-cement (2:1)	poured

11. SCREEN:

Depth	Dia.	Type & Opening
From 5.2 to 19.67 ft	2"	Sch 40 PVC

12. GRAVEL:

Depth	Size	Material
From 4.21 to 19.67 ft		Silica Sand
3.21 4.21		Bentonite

13. WATER ZONES (depth): 5.7 - 19.67' (TOC)

14. STATIC WATER LEVEL: 5.7 ft. above/below top of casing

Casing is 2.5 ft. above land surface ELEV: 105.65'

15. YIELD (gpm): 4.5 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 6.25 ft.

after 1 hours at 4.5 gpm.

17. CHLORINATION: Type NA Amount

18. WATER QUALITY: FAIR TEMPERATURE (°F) 68

19. PERMANENT PUMP: Date Installed NA

Type Capacity (gpm) HP

Make Intake Depth

Airline Depth

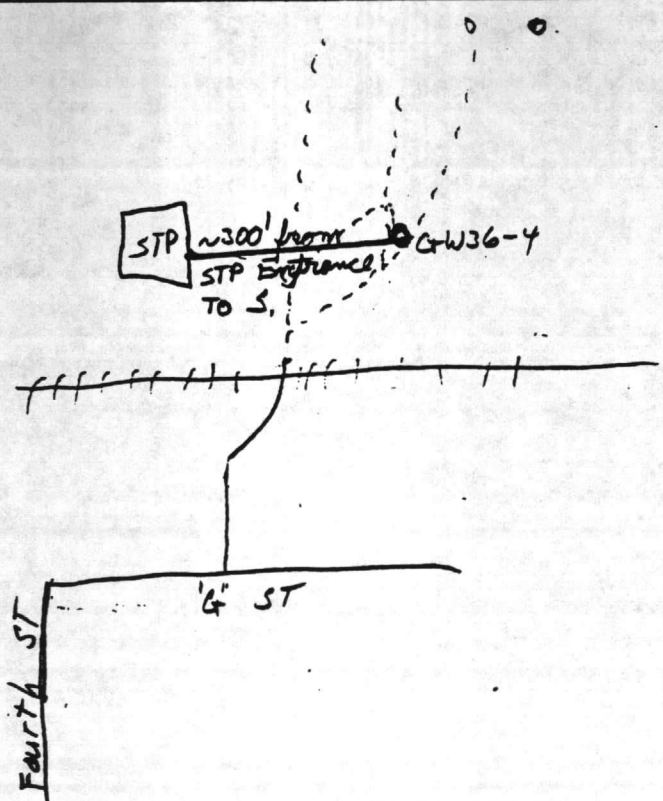
DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	6.0	SM
6.0	7.5	SM-SC
7.5	10.5	SM
13.5	14.0	SW
14.	15.	SM-SC
17.5	20.	SM

DRILLING LOG GW36-4

If additional space is needed, use back of form

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

R. Kinsle Mowbray 12-18-84

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 10/1/80

Submit original to Division of Environmental Management and copy to well owner

DOC NO · CLCU-00075-3.13-1P1185

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD

DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS, LTD REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: JACKSONVILLE County: ONSLOW

US 17 CAMP LEJEUNE Quadrangle No. JACKSONVILLE SOUTH

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C. 28542

4. TOPOGRAPHY: draw, valley, slope, hilltop (flat) (circle one)

5. USE OF WELL: H_2O Sampling DATE: 8-1-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 20.17 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

	Depth	Inside Dia.	Wall thick. or weight/ft.	type
From ^	to 6.7 ft	2"	Sch 40	PVC

10. GROUT:

	Depth	Material	Method
From 0	to 3.7 ft	Sand-cement (2:1)	poured

11. SCREEN:

	Depth	Dia.	Type & Opening
From 6.7	to 20.17 ft	2"	Sch 40 PVC .010 Slot

12. GRAVEL:

	Depth	Size	Material
From 4.7	to 20.17 ft		Silica Sand
3.7	4.7		Bentonite

13. WATER ZONES (depth): 7.0 — 20.17' (TOC)

14. STATIC WATER LEVEL: 7.0 ft. above/below top of casing

Casing is 2.5 ft. above land surface ELEV: 103.55'

15. YIELD (gpm): 5 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 7.4 ft.

after 65 hours at 5 gpm.

17. CHLORINATION: Type NA Amount —

18. WATER QUALITY: GOOD TEMPERATURE (°F) 70

19. PERMANENT PUMP: Date Installed NA

Type ____ Capacity ____ (gpm) HP ____

Make ____ Intake Depth ____

Airline Depth ____

20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? n/a

21. REMARKS ____

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

SIGNATURE OF CONTRACTOR OR AGENT — DATE 12-18-84

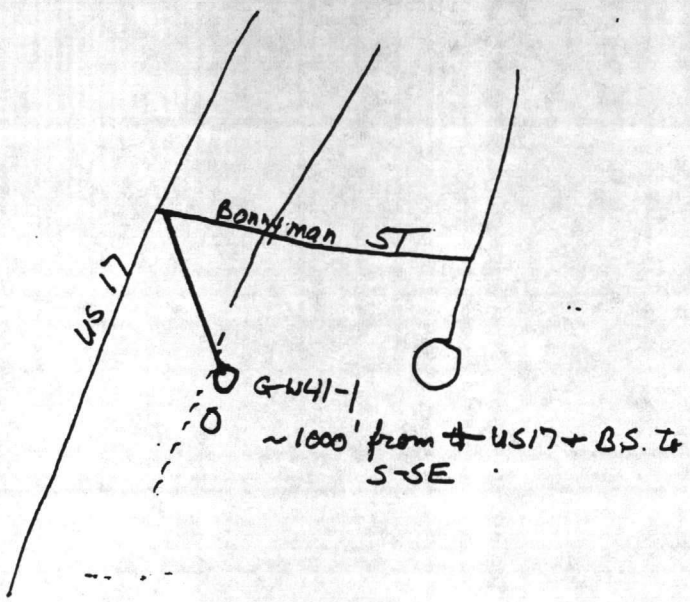
DRILLING LOG GW41-1

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	10.0	SM
10.0	10.5	SM-SC
13.5	45.	SM
20.	21.5	SM

If additional space is needed, use back of form

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)



CW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

DOC NO: CLCW-0005-5.10-7/91/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD

DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS, Ltd REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: JACKSONVILLE County: ONSLOW

US 17 CAMPLEJEUNE Quadrangle No. JACKSONVILLE SOUTH

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, N.C. 28540

4. TOPOGRAPHY: draw, valley, slope, hilltop (flat) (circle one)

5. USE OF WELL: H_2O Sampling DATE: 7-16-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 18.04 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0 to 3.56 ft	2"	Sch 40	PVC

10. GROUT:

Depth	Material	Method
From 0 to 1.42 ft	sand-cement (2:1)	poured

11. SCREEN:

Depth	Dia.	Type & Opening
From 3.56 to 18.04 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

Depth	Size	Material
From 2.92 to 18.04 ft		Silica Sand
1.42 2.92		Bentonite

13. WATER ZONES (depth): 9.12 — 18.04' (TOC)

14. STATIC WATER LEVEL: 9.12 ft. above/below top of casing

Casing is 2.5 ft. above land surface ELEV: 103.58'

15. YIELD (gpm): 7.5 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 9.2 ft.

after 1 hours at 7.5 gpm.

17. CHLORINATION: Type NA Amount

18. WATER QUALITY: GOOD TEMPERATURE (°F) 70

19. PERMANENT PUMP: Date Installed NA

Type Capacity (gpm) HP

Make Intake Depth

Airline Depth

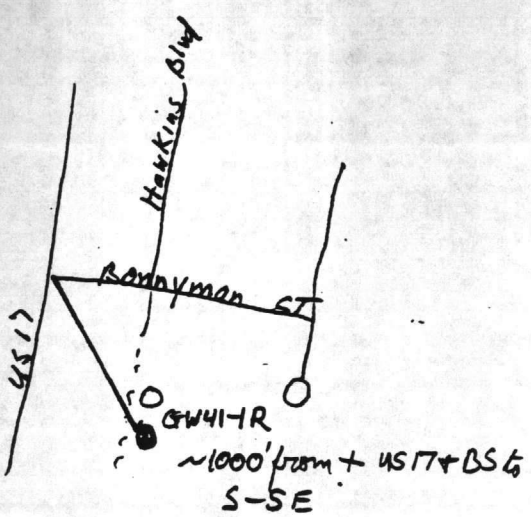
DRILLING LOG GW41-1R

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS classification)
0	10.0	SM
10	10.5	SM-SC
13.5	15.	SM
20.	21.5	SM

If additional space is needed, use back of form

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? Yes

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

R. Kenneth Vromberger 12-18-84

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 10/1/80

Submit original to Division of Environmental Management and copy to well owner

UOC NO : ULEJ-00075 -3.13 -1121185

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD

DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS, Ltd REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: JACKSONVILLE County: ONSLOW

US 17 CAMP GEIGER Quadrangle No. JACKSONVILLE SOUTH

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES,

4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)

5. USE OF WELL: H2O Sampling DATE: 7-16-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 19.96 RIG TYPE OR METHOD: H-S-A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

	Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0	to 5.48 ft	2"	Sch 40	PVC

10. GROUT:

	Depth	Material	Method
From 0	to 2.83 ft	Sand-cement (3:1)	poured

11. SCREEN:

	Depth	Dia.	Type & Opening
From 5.48	to 19.96 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

	Depth	Size	Material
From 4.52	to 19.96 ft		Silica Sand
2.83	4.52		Bentonite

13. WATER ZONES (depth): 6.21 – 19.96' (TOC)

14. STATIC WATER LEVEL: 6.21 ft. above / below top of casing

Casing is 2.5 ft. above land surface ELEV: 95.66'

15. YIELD (gpm): 8 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 6.35 ft.

after 3/4 hours at 8 gpm.

17. CHLORINATION: Type NA Amount

18. WATER QUALITY: POOR TEMPERATURE (°F) 71

19. PERMANENT PUMP: Date Installed NA

Type Capacity (gpm) HP

Make Intake Depth

Airline Depth

20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

RJ Kucklinski Mombeyer 12-18-84

SIGNATURE OF CONTRACTOR OF AGENT DATE

Submit original to Division of Environmental Management and copy to well owner

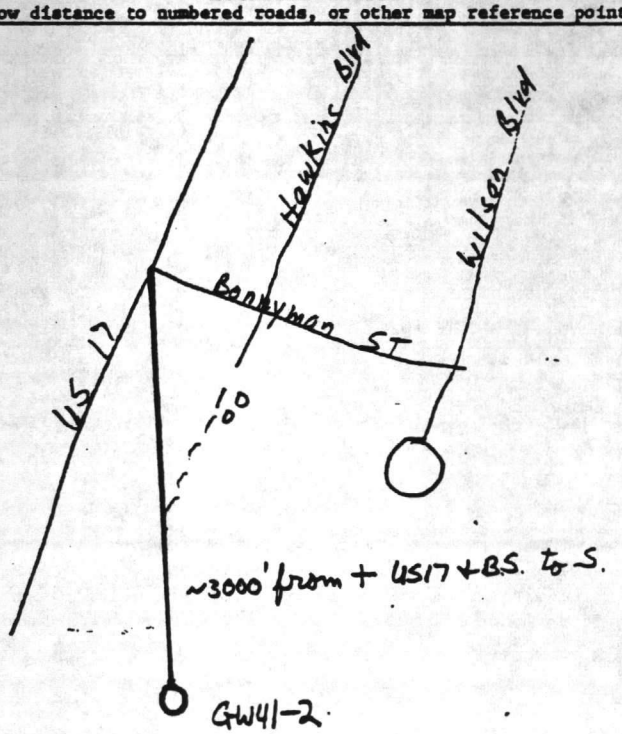
DRILLING LOG GW41-2

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	.75	SM
.75	1.25	ML
1.25	1.75	CL
1.75	4.25	SM
4.25	4.5	SC-SM
4.5	21.5	SM

If additional space is needed, use back of form

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)



DOC NO: CLEJ-00075-3.13 - 11/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD

DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS Ctd REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: JACKSONVILLE County: ONSLOW

US 17, CAMP LEJEUNE Quadrangle No: JACKSONVILLE SOUTH

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C. 28542

4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)

5. USE OF WELL: H₂O Sampling DATE: 7-16-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 19.31 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

	Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0	to 4.83 ft	2"	Sch 40	PVC

10. GROUT:

	Depth	Material	Method
From 0	to 267 ft	Sand-cement (2:1)	poured

11. SCREEN:

	Depth	Dia.	Type & Opening
From 4.83	to 19.31 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

	Depth	Size	Material
From 383	to 19.31 ft		Silica Sand
267	383		Bentonite

13. WATER ZONES (depth): 12.7 — 19.31' (TOC)

14. STATIC WATER LEVEL: 12.7 ft. above / below top of casing

Casing is 2.5 ft. above land surface ELEV: 100.0'

15. YIELD (gpm): 8 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 12.8 ft.

after 3/4 hours at 8 gpm.

17. CHLORINATION: Type NA Amount

18. WATER QUALITY: GOOD TEMPERATURE (°F) 72

19. PERMANENT PUMP: Date Installed NA

Type Capacity (gpm) HP

Make Intake Depth

Airline Depth

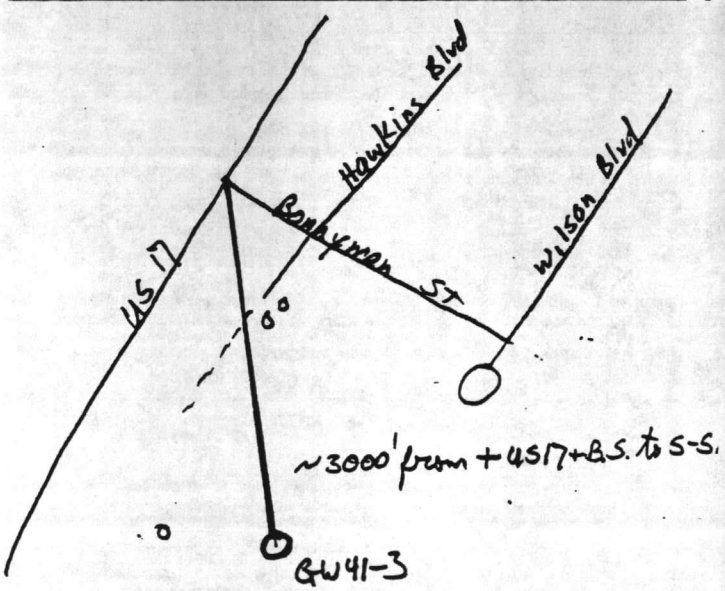
DRILLING LOG GW41-3

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	9.0	SM
9.0	9.25	SC-SM
9.25	15	ML
15	16.5	SM
20	21.5	SM

If additional space is needed, use back of form

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? n/a

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

Daniel Mromberg 12-18-84

SIGNATURE OF CONTRACTOR OR AGENT DATE

Submit original to Division of Environmental Management and copy to well owner

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

DOC NO: CLE

WELL RECORD

DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

00075 - 3.13 - 1/21/85

DRILLING CONTRACTOR STS CONSULTANTS LTD REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: JACKSONVILLE County: ONSLOW

US 17, CAMP LEJEUNE Quadrangle No: JACKSONVILLE SOUTH

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, NC. 28542

4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)

5. USE OF WELL: H2O Sampling DATE: 7-17-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 19.67 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

	Depth		Inside Dia.	Wall thick. or weight/ft.	type
From	0	to 5.19 ft	2"	Sch 40	PVC

10. GROUT:

	Depth		Material	Method
From	0	to 2.67 ft	sand-cement (6:1)	poured

11. SCREEN:

	Depth		Dia.	Type & Opening
From	5.19	to 19.67 ft	2"	Sch 40 PVC .010 Slot

12. GRAVEL:

	Depth		Size	Material
From	3.75	to 19.67 ft		Silica Sand
	2.67	3.75		Bentonite

13. WATER ZONES (depth): 7.09 — 19.67 (TOC)

14. STATIC WATER LEVEL: 7.09 ft. above/below top of casing

Casing is 2.5 ft. above land surface ELEV: 92.82'

15. YIELD (gpm): 4 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 8.60 ft.

after 1.75 hours at 4 gpm.

17. CHLORINATION: Type NA Amount —

18. WATER QUALITY: FAIR TEMPERATURE (°F) 70

19. PERMANENT PUMP: Date Installed NA

Type ____ Capacity ____ (gpm) HP ____

Make ____ Intake Depth ____

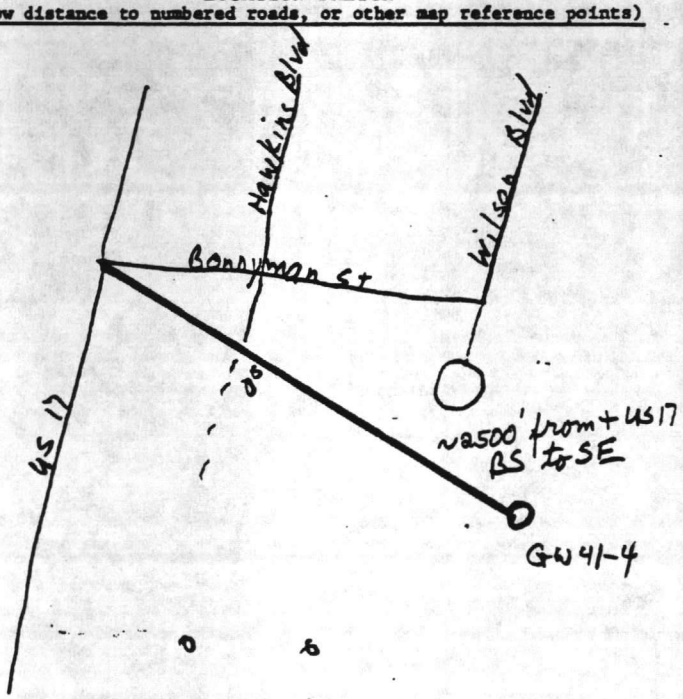
Airline Depth ____

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	7.25	SM
7.25	7.5	OL
7.5	10.5	SM
15.	16.5	SC-SM
20.	21.5	SC-SM

If additional space is needed, use back of form

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? n/a

21. REMARKS ____

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

RJ Kunz Mombeyer 12-8-84

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 10/1/80

Submit original to Division of Environmental Management and copy to well owner

LOC NO: CLtJ-00075-3.13-1/21/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, Ltd REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: JACKSONVILLE County: ONSLOW
   CAMPBELL ST. CAMP LEJEUNE Quadrangle No. JACKSONVILLE SOUTH
   (Road, Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C.
4. TOPOGRAPHY: draw, valley, slope, hilltop, (flat) circle one)
5. USE OF WELL: H2O Sampling DATE: 8-1-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 19.47 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO
9. CASING:

	Depth		Inside Dia.	Wall thick. or weight/ft.	type
From	0	to 5.01 ft	2"	Sch 40	PVC

10. GROUT:

	Depth		Material	Method
From	0	to 3.01 ft	sand-cement (2:1)	poured

11. SCREEN:

	Depth		Dia.	Type & Opening
From	5.01	to 19.47 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

	Depth		Size	Material
From	3.5	to 19.47 ft		Silica Sand
	2.5	3.5		Bentonite

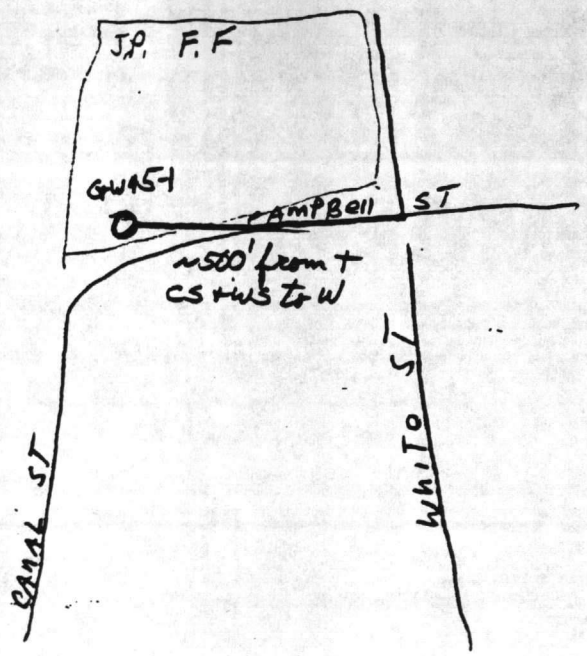
13. WATER ZONES (depth): 3 — 19.47' (TOC)
14. STATIC WATER LEVEL: 3.0 ft. above / below top of casing
    Casing is 2.5 ft. above land surface ELEV: 98.99
15. YIELD (gpm): 4 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 4.0 ft.
    after 1 hours at 4 gpm.
17. CHLORINATION: Type NA Amount
18. WATER QUALITY: FAIR TEMPERATURE (°F) 68
19. PERMANENT PUMP: Date Installed NA
    Type Capacity (gpm) HP
    Make Intake Depth
    Airline Depth
20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes
21. REMARKS

DRILLING LOG GW45-1

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	1.5	SM
1.5	3.0	SM-SC
3.0	16.5	ML
20	21.5	SM

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

SIGNATURE OF CONTRACTOR OF AGENT DATE 12/8/87

GW-1 Revised 10/1/80

Submit original to Division of Environmental Management and copy to well owner

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD — DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

LOC NO: CLEJ 00075 - 3.13 - 1/21/85

DRILLING CONTRACTOR STS CONSULTANTS Ltd. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: JACKSONVILLE County: ONSLOW

CAMPBELL ST., CAMP LEJEUNE Quadrangle No. JACKSONVILLE SOUTH

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, N.C. 28540

4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)

5. USE OF WELL: H_2O Sampling DATE: 84-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 18.47 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

	Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0	to 4.01 ft	2"	Sch 40	PVC

10. GROUT:

	Depth	Material	Method
From 0	to 2.00 ft	sand-cement (3:1)	poured

11. SCREEN:

	Depth	Dia.	Type & Opening
From 4.01	to 18.47 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

	Depth	Size	Material
From 3.01	to 18.47 ft		Silica Sand
2.00	3.01		Bentonite

13. WATER ZONES (depth): 3.4 — 18.47' (TOC)

14. STATIC WATER LEVEL: 3.4 ft. above/below top of casing

Casing is 2.5 ft. above land surface ELEV: 100.61'

15. YIELD (gpm): 4.5 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 4.8 ft.

after 3/4 hours at 4.5 gpm.

17. CHLORINATION: Type NA Amount —

18. WATER QUALITY: POOR TEMPERATURE (°F) 73

19. PERMANENT PUMP: Date Installed NA

Type ____ Capacity ____ (gpm) HP ____

Make ____ Intake Depth ____

Airline Depth ____

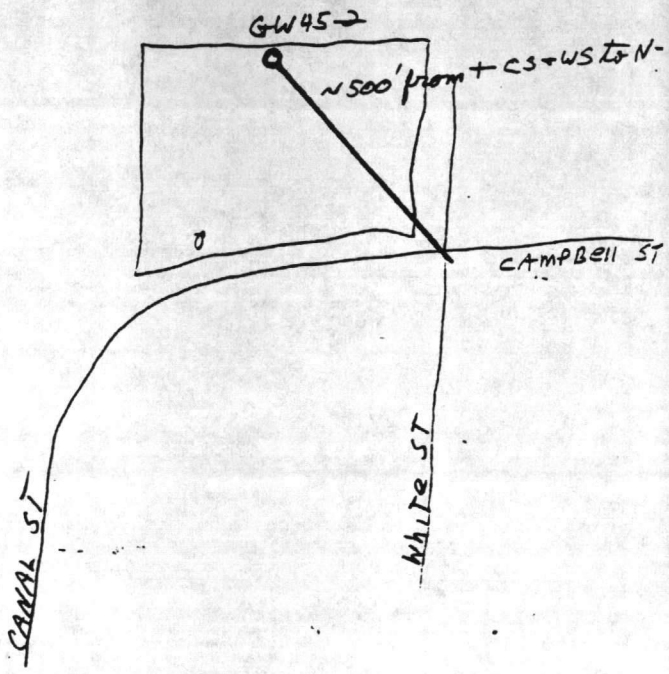
DRILLING LOG GW45-2

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS classification)
0	4.0	SM
4.0	10.5	ML
15.	16.0	SM-SC
16.	16.5	SM
20	21.5	SM

If additional space is needed, use back of form

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes

21. REMARKS ____

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

D Neal Vromberger 12-18-84

SIGNATURE OF CONTRACTOR OF AGENT DATE

GW-1 Revised 10/1/80

Submit original to Division of Environmental Management and copy to well owner

UOC NO. CLEU-0005 -5.0 -191105

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD

DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS Ltd REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: JACKSONVILLE County: ONSLOW

CAMPBELL RD., CAMP LEJEUNE Quadrangle No. JACKSONVILLE SOUTH

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL MARINE CORP BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE NC 28542

4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)

5. USE OF WELL: H,O Sampling DATE: 8-1-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 19.04 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

	Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0	to 4.92 ft	2"	Sch 40	PVC

10. GROUT:

	Depth	Material	Method
From 0	to 2.42 ft	Sand-cement (2:1)	poured

11. SCREEN:

	Depth	Dia.	Type & Opening
From 4.92	to 19.04 ft	2"	Sch 40 PVC .010 Slot

12. GRAVEL:

	Depth	Size	Material
From 3.5	to 19.04 ft		Silica Sand
2.42	3.5		Bentonite

13. WATER ZONES (depth): 5.6 - 19.04 ' (ToC)

14. STATIC WATER LEVEL: 5.6 ft. above / below top of casing

Casing is 2.5 ft. above land surface ELEV: 100.0'

15. YIELD (gpm): 4.5 METHOD OF TESTING: Pumped

16. PUMPING WATER LEVEL: 6.3 ft.

after 1 hours at 4.5 gpm.

17. CHLORINATION: Type NA Amount

18. WATER QUALITY: GOOD TEMPERATURE (°F) 77

19. PERMANENT PUMP: Date Installed NA

Type Capacity (gpm) HP

Make Intake Depth

Airline Depth

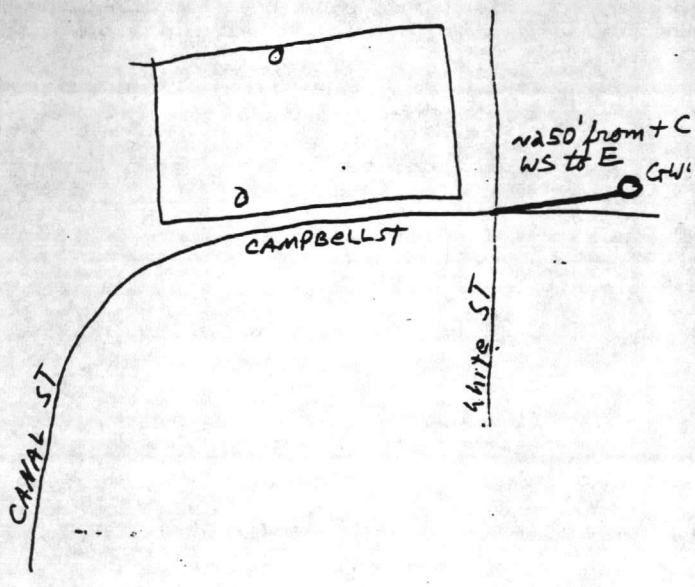
DRILLING LOG GW45-3

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	3.25	CL
3.25	4.5	SM
4.5	7.5	CL
7.5	9.5	CH
9.5	21.5	SM

If additional space is needed, use back of form

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? Yes

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

R. Thomas Mromberg 12-18-84

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 10/1/80

Submit original to Division of Environmental Management and copy to well owner

DOC NO: CLEJ-0005-G.13 - 11/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, Ltd REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: JACKSONVILLE County: ONSLOW
   PERIMETER RD, CAMP LEJEUNE Quadrangle No. JACKSONVILLE SOUTH
   (Road, Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE DRILLING LOG GW54-1
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C 28540
4. TOPOGRAPHY: draw, valley, (slope) hilltop, flat (circle one)
5. USE OF WELL: H_2O Sampling DATE: 7-16-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 19.37 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO
9. CASING:

	Depth From	Depth To	Inside Dia.	Wall thick. or weight/ft.	type
	0	4.91 ft	2"	Sch 40	PVC

10. GROUT:

	Depth From	Depth To	Material	Method
	0	2.91 ft	sand-cement (2:1)	poured

11. SCREEN:

	Depth From	Depth To	Dia.	Type & Opening
	4.91	19.37 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

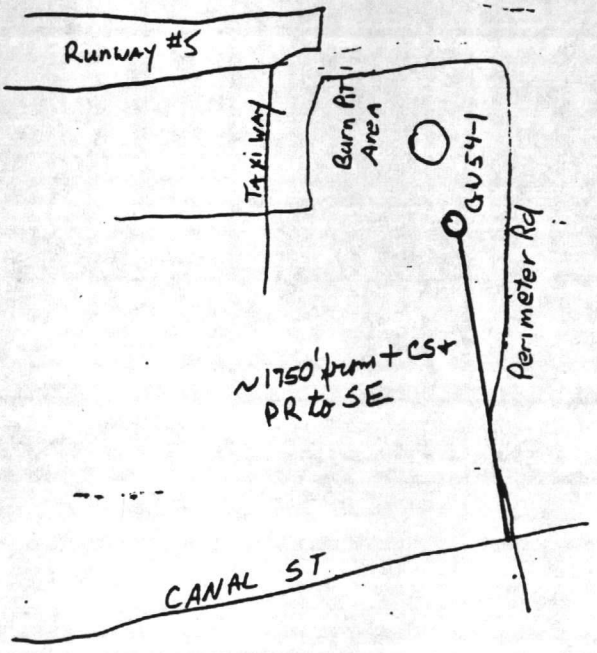
	Depth From	Depth To	Size	Material
	3.91	19.37 ft		Silica Sand
	2.91	3.91		Bentonite

13. WATER ZONES (depth): 9.0 — 19.37' (TOL)
14. STATIC WATER LEVEL: 9.0 ft. above / below top of casing
    Casing is 2.5 ft. above land surface ELEV: —
15. YIELD (gpm): 5 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 10.0 ft.
    after 1 hours at 5 gpm.
17. CHLORINATION: Type NA Amount
18. WATER QUALITY: GOOD TEMPERATURE (°F) 72
19. PERMANENT PUMP: Date Installed NA
    Type Capacity (gpm) HP
    Make Intake Depth
    Airline Depth
20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? Yes
21. REMARKS

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	9.0	SM
9.0	10.0	SP
10.0	20.0	SM

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

SIGNATURE OF CONTRACTOR OR AGENT 12-18-84 DATE

Division of Environmental Management and copy to well owner

DOC NO: CLEJ-0007-3.13-1/2/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 – RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS Ltd REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: SNEADS FERRY County: ONSLOW
   RANGE NO. CAMP LEJEUNE Quadrangle No: SNEADS FERRY
   (Road, Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE DRILLING LOG GW68-1
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C. 28540
4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)
5. USE OF WELL: H_2O Sampling DATE: 8-2-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 20.36 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO
9. CASING:

Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0 to 5.88 ft	2"	Sch 40	PVC

10. GROUT:

Depth	Material	Method
From 0 to ft	sand-cement (2:1)	poured

11. SCREEN:

Depth	Dia.	Type & Opening
From 5.88 to 20.36 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

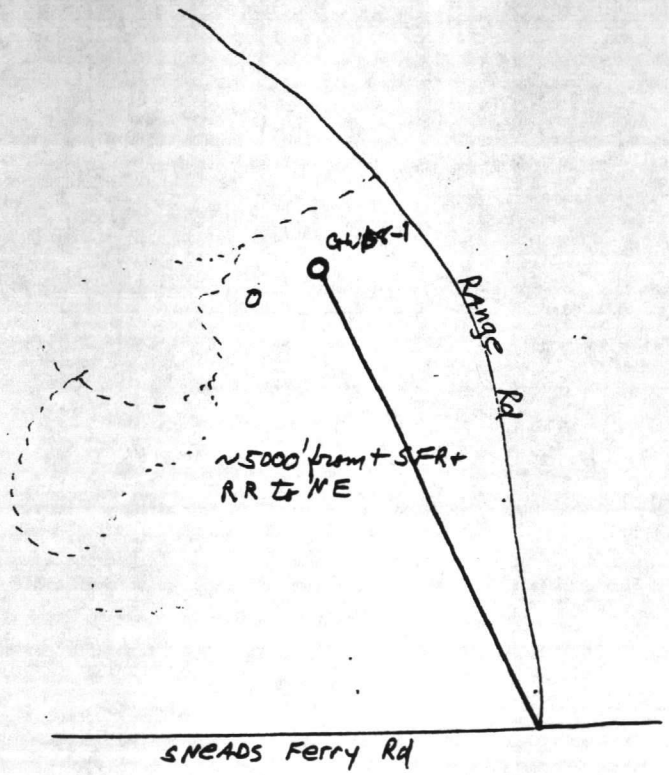
Depth	Size	Material
From 4.29 to 20.36 ft		Silica Sand
2.63 4.29		Bentonite

13. WATER ZONES (depth): 2.8 – 20.36' (TOC)
14. STATIC WATER LEVEL: 2.8 ft. above / below top of casing
    Casing is 2.5 ft. above land surface ELEV: 97.37'
15. YIELD (gpm): 7.5 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 2.9 ft.
    after 3/4 hours at 7.5 gpm.
17. CHLORINATION: Type NA Amount
18. WATER QUALITY: GOOD TEMPERATURE (°F) 75
19. PERMANENT PUMP: Date Installed NA
    Type Capacity (gpm) HP
    Make Intake Depth
    Airline Depth

FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	3.0	SM
3.0	5.5	SM-SC
5.5	7.5	CL
7.5	21.5	CL

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes
21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

[signature] 12-18-84
SIGNATURE OF CONTRACTOR OF AGENT DATE

Doc No: CLEJ. 0075-3.13-1/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, LTD REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: SNEADS FERRY County: ONSLOW
   RANGE RD, CAMP LEJEUNE Quadrangle No. SNEADS FERRY
   (Road, Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, N.C. 28542
4. TOPOGRAPHY: draw, valley, slope, hilltop, (flat) (circle one)
5. USE OF WELL: H2O Sampling DATE: 7-17-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 20.42 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO
9. CASING:

Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0 to 5.94 ft	2"	Sch 40	PVC

10. GROUT:

Depth	Material	Method
From 0 to 3.83 ft	sand-cement (2:1)	poured

11. SCREEN:

Depth	Dia.	Type & Opening
From 5.94 to 20.42 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

Depth	Size	Material
From 4.63 to 20.42 ft		Silica Sand
2.83 4.63		Bentonite

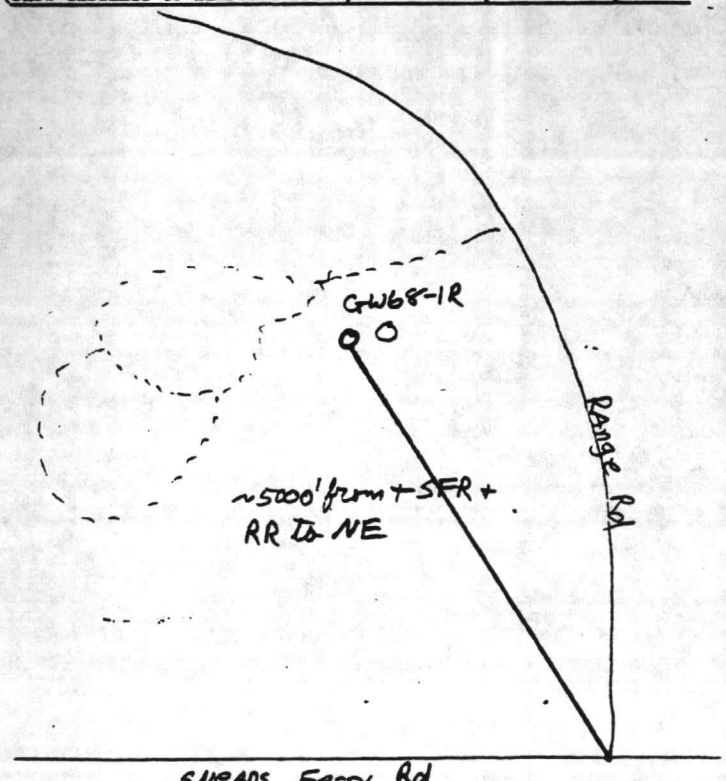
13. WATER ZONES (depth): 8.67 - 20.42 '(TOC)
14. STATIC WATER LEVEL: 8.67 ft. above / below top of casing
    Casing is 2.5 ft. above land surface ELEV: 97.83
15. YIELD (gpm): 7.5 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 8.9 ft.
    after 3 hours at 7.5 gpm.
17. CHLORINATION: Type NA Amount
18. WATER QUALITY: GOOD TEMPERATURE (°F) 78
19. PERMANENT PUMP: Date Installed NA
    Type Capacity (gpm) HP
    Make Intake Depth
    Airline Depth
20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes
21. REMARKS

DRILLING LOG GW68-1R

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Class.)
0	3.	SM
3	5.5	SM-SC
5.5	7.5	CL
7.5	26.5	CL

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

RJ Kucera Monberg 12-18-84
SIGNATURE OF CONTRACTOR OR AGENT DATE

Submitted to Division of Environmental Management and copy to well owner

WDC NO: CLEJ-0007-3.13-1/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD

DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS LTD. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: SNEADS FERRY County: ONSLOW

RANGE RD. CAMP LEJEUNE Quadrangle No: SNEADS FERRY

(Road, Community of Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL MARINE CORP BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C. 28542

4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)

5. USE OF WELL: H_2O Sampling DATE: 8-2-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 21.07 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

	Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0	to 6.61 ft	2"	Sch 40	PVC

10. GROUT:

	Depth	Material	Method
From 0	to 4.61 ft	sand-cement (1:1)	poured

11. SCREEN:

	Depth	Dia.	Type & Opening
From 6.61	to 21.07 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

	Depth	Size	Material
From 4.61	to 21.07 ft		Silica Sand
4.61	4.61		Bentonite

13. WATER ZONES (depth): 15.9 — 21.07' (TOC)

14. STATIC WATER LEVEL: 15.9 ft. above/below top of casing

Casing is 2.5 ft. above land surface ELEV: 69.37'

15. YIELD (gpm): 2 METHOD OF TESTING: Pumped

16. PUMPING WATER LEVEL: 20 ft.

after 2 hours at 2 gpm.

17. CHLORINATION: Type NA Amount

18. WATER QUALITY: Good TEMPERATURE (°F) 65

19. PERMANENT PUMP: Date Installed NA

Type Capacity (gpm) HP

Make Intake Depth

Airline Depth

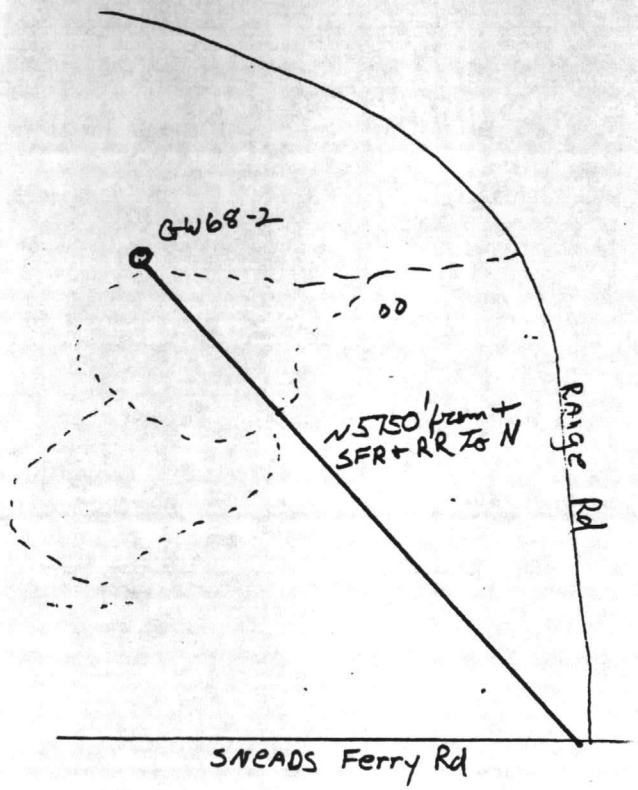
DRILLING LOG GW68-2

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	3.5	SM
3.5	10.3	SM-SC
15.	16.5	SM-SC
20.	21.5	SM

If additional space is needed, use back of form

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

SIGNATURE OF CONTRACTOR OF AGENT DATE 12-18-84

GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

ONSLOW - GW0015 - 7/17/84

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD — DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS LTD, REG. NO. 191 — WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: SNEADS FERRY — County: ONSLOW

RANGE ROAD, CAMP LEJEUNE — Quadrangle No.: SNEADS FERRY

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C. 28540

4. TOPOGRAPHY: draw, valley, (slope), hilltop, flat (circle one)

5. USE OF WELL: H.O Sampling — DATE: 7-17-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 20.99 — RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0 to 6.46 ft	2"	Sch 40	PVC

10. GROUT:

Depth	Material	Method
From 0 to 3.83 ft	sand-cement (2:1)	poured

11. SCREEN:

Depth	Dia.	Type & Opening
From 6.46 to 20.99 ft	2"	Sch 40 PVC .010 Slot

12. GRAVEL:

Depth	Size	Material
From 5.44 to 20.99 ft		Silica Sand
3.83 5.44		Bentonite

13. WATER ZONES (depth): 20.37 — 20.84' (TOC)

14. STATIC WATER LEVEL: 20.37 ft. above/below top of casing

Casing is 2.5 ft. above land surface ELEV: 69.32

15. YIELD (gpm): 0.5 METHOD OF TESTING: BAILED

16. PUMPING WATER LEVEL: 20.75 ft.

after 2 hours at 0.5 gpm.

17. CHLORINATION: Type NA Amount

18. WATER QUALITY: Good TEMPERATURE (°F) 65

19. PERMANENT PUMP: Date Installed NA

Type Capacity (gpm) HP

Make Intake Depth

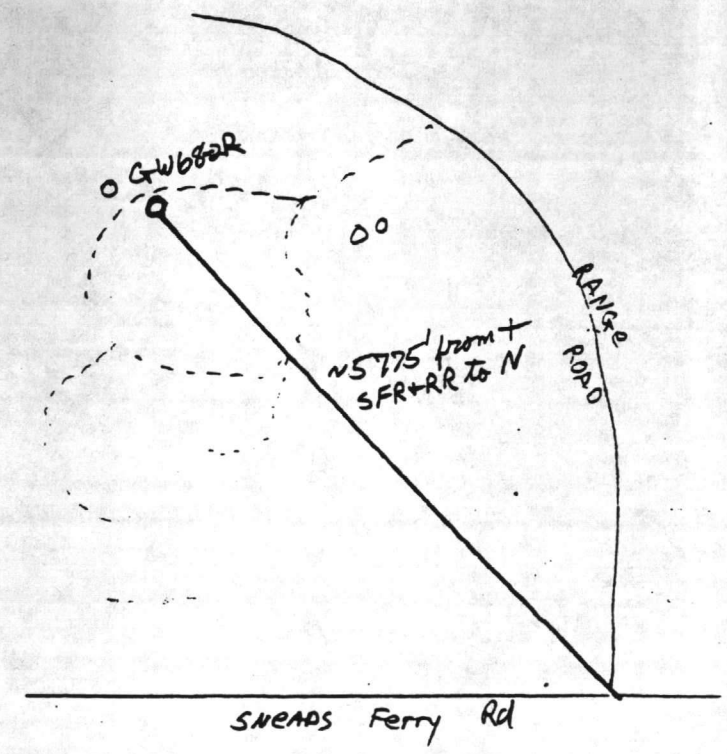
Airline Depth

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Class.)
0	3.5	SM
3.5	10.5	SM-SC
15.	16.5	SM-SC
20.	21.5	SM

If additional space is needed, use back of form

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

RJ Kinsley-Nordberg — 12-8-84

SIGNATURE OF CONTRACTOR OF AGENT — DATE

GW-1 Revised 10/1/80 — Submit original to Division of Environmental Management and copy to well owner

UOC NO. CLCW-0005-U.13-11/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, Ltd REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: SNEADS FERRY County: ONSLOW
   RANGE ROAD, CAMP LEJEUNE Quadrangle No. SNEADS FERRY
   (Road, Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE DRILLING LOG GW68-3
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C. 28540
4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)
5. USE OF WELL: H2C Sampling DATE: 8-2-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 19.77 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	4.5	SM
4.5	6.0	SC-SM
6.0	16.5	SM
20.	21.5	CL

9. CASING:

	Depth		Inside Dia.	Wall thick. or weight/ft.	type
From	0	to 5.29 ft	2"	Sch 40	PVC

10. GROUT:

	Depth		Material	Method
From	0	to 2.79 ft	sand-cement (2:1)	poured

If additional space is needed, use back of form

11. SCREEN:

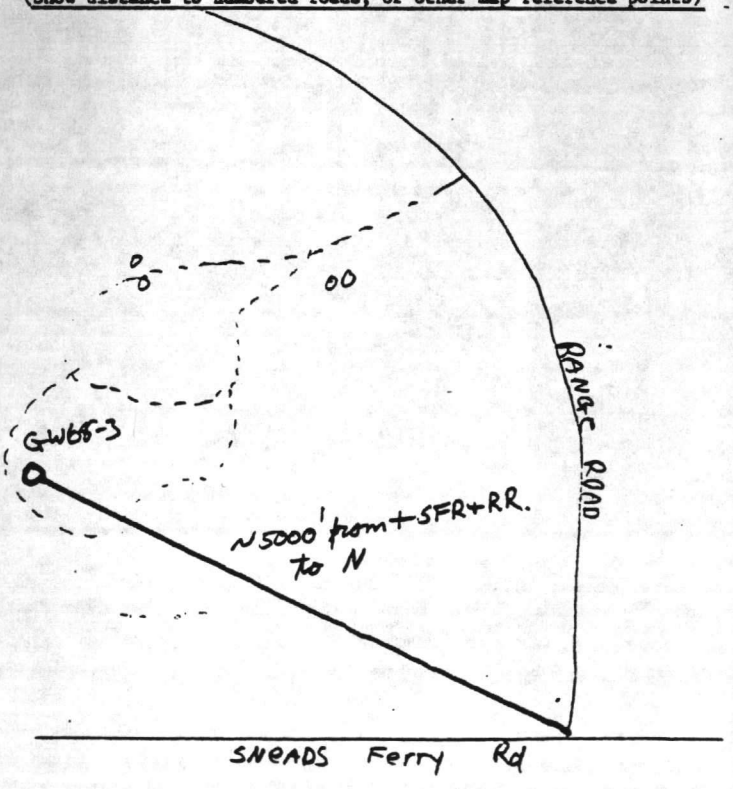
	Depth		Dia.	Type & Opening
From	5.29	to 19.77 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

	Depth		Size	Material
From	4.10	to 19.77 ft		Silica Sand
	2.79	4.10		Bentonite

13. WATER ZONES (depth): 19.15 - 19.77 (TOC)
14. STATIC WATER LEVEL: 19.15 ft. above/below top of casing
    Casing is 2.5 ft. above land surface ELEV: 7.38'
15. YIELD (gpm): 0.5 METHOD OF TESTING: BAILED
16. PUMPING WATER LEVEL: 19.25 ft.
    after 2 hours at 0.5 gpm.
17. CHLORINATION: Type NA Amount
18. WATER QUALITY: GOOD TEMPERATURE (°F) 70
19. PERMANENT PUMP: Date Installed NA
    Type Capacity (gpm) HP
    Make Intake Depth
    Airline Depth

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? Yes
21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

R D Kennedy Vroomberger 12-13-84
SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

Doc No. ECEW-0005 -8.19 -11/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, LTD REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: SNEADS FERRY County: ONSLOW
   RANGE RD., CAMP LEJEUNE Quadrangle No. SNEADS FERRY
   (Road, Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE DRILLING LOG GW68-3R
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C. 28542
4. TOPOGRAPHY: draw, valley, slope, hilltop flat (circle one)
5. USE OF WELL: H_2O Sampling DATE: 7-17-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 18.21 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	4.5	SM
4.5	6.0	SC-SM
6.0	16.5	SM
20.	21.5	CL

9. CASING:

	Depth		Inside Dia.	Wall thick. or weight/ft.	type
From	0	to 3.73 ft	2"	Sch 40	PVC

10. GROUT:

	Depth		Material	Method
From	0	to 1.58 ft	sand cement (2:1)	poured

If additional space is needed, use back of form

11. SCREEN:

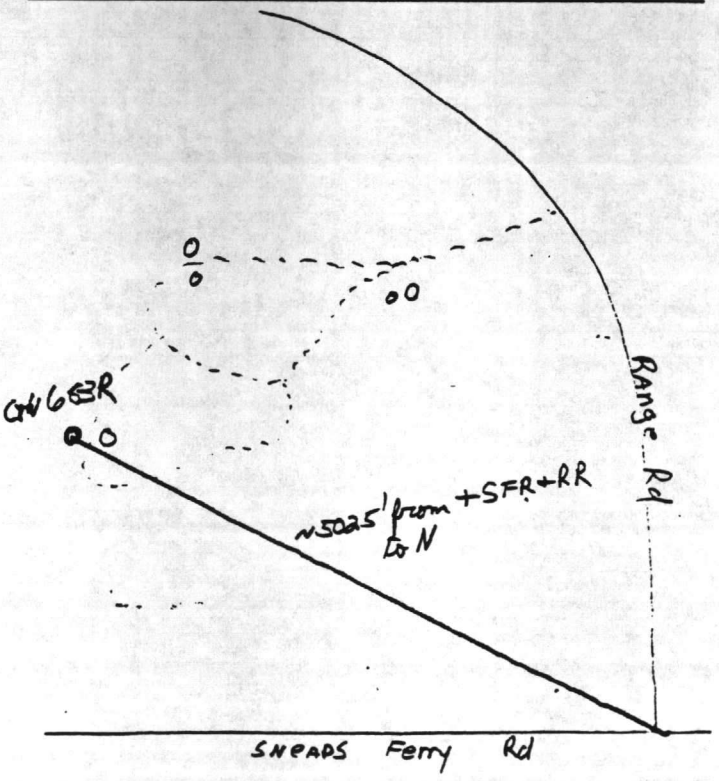
	Depth		Dia.	Type & Opening
From	3.73	to 18.21 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

	Depth		Size	Material
From	2.71	to 18.21 ft		Silica Sand
	1.58	2.71		Bentonite

13. WATER ZONES (depth): 19.14 — 20.14 ' (TOC)
14. STATIC WATER LEVEL: 19.14 ft. above/below top of casing
    Casing is 2.5 ft. above land surface ELEV: 77.45'
15. YIELD (gpm): — METHOD OF TESTING: BAILER
16. PUMPING WATER LEVEL: 1 ft. Column
    after 2 hours at — gpm.
17. CHLORINATION: Type NA Amount
18. WATER QUALITY: good TEMPERATURE (°F) 70
19. PERMANENT PUMP: Date Installed NA
    Type Capacity (gpm) HP
    Make Intake Depth
    Airline Depth

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes
21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

M J Kingle Mondays 12-18-84
SIGNATURE OF CONTRACTOR OF AGENT DATE

GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

LOC NO: ONSL-00015-3.13-1/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, Ltd REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: SNEADS FERRY County: ONSLOW
   RT 210 CAMP LEJEUNE Quadrangle No. SNEADS FERRY
   (Road, Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE DRILLING LOG GW69-1
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C. 28542
4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)
5. USE OF WELL: H2O Sampling DATE: 7-18-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 21.04 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	5.5	SM
5.5	6.0	CL
6.0	7.5	SM
7.5	8.5	SC-SM
8.5	21.5	CL

9. CASING:

	Depth		Inside Dia.	Wall thick. or weight/ft.	type
From	0	to 6.5 ft	2"	Sch 40	PVC

10. GROUT:

	Depth		Material	Method
From	0	to 4.29 ft	Sand-cement (6:1)	poured

11. SCREEN:

	Depth		Dia.	Type & Opening
From	6.5	to 21.04 ft	2"	Sch 40 PVC .010 Slot

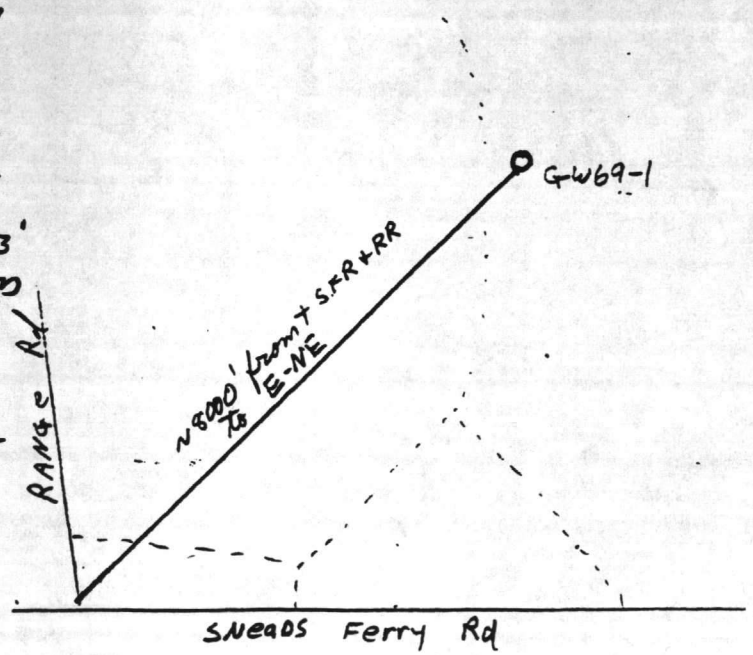
12. GRAVEL:

	Depth		Size	Material
From	5.42	to 21.04 ft		Silica Sand
	4.29	5.42		Bentonite

13. WATER ZONES (depth): 8.93 — 21.04' (TOC)
14. STATIC WATER LEVEL: 8.93 ft. above/below top of casing
    Casing is 2.5 ft. above land surface ELEV: 94.33'
15. YIELD (gpm): 4 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 10.8 ft.
    after 1 hours at 4 gpm.
17. CHLORINATION: Type NA Amount
18. WATER QUALITY: GOOD TEMPERATURE (°F) 75
19. PERMANENT PUMP: Date Installed NA
    Type Capacity (gpm) HP
    Make Intake Depth
    Airline Depth

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes
21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

RJ Kucinski-Pronberger 12-18-84
SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

NCENR · Land ... 5.15 · 1/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD — DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS Consultants Ltd REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: SNEADS FERRY County: ONSLOW

NC 210, CAMP LEJEUNE Quadrangle No. SNEADS FERRY

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE DRILLING LOG GW69-2

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C. 28542

4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)

5. USE OF WELL: H.O Sampling DATE: 7-18-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 20.42 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	8.75	SM
8.75	9.0	SC-SM
9.0	21.5	CL

9. CASING:

Depth From	to	ft	Inside Dia.	Wall thick. or weight/ft.	type
0	5.99	ft	2"	Sch 40	PVC

10. GROUT:

Depth From	to	ft	Material	Method
0	3.67	ft	Sand cement (2:1)	poured

If additional space is needed, use back of form

11. SCREEN:

Depth From	to	ft	Dia.	Type & Opening
5.99	20.42	ft	2"	Sch 40 PVC

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)

STONE BAY

12. GRAVEL:

Depth From	to	ft	Size	Material
4.77	20.42	ft		Silica Sand
3.67	4.77			Bentonite

13. WATER ZONES (depth): 8.3 — 20.42' (TOC)

14. STATIC WATER LEVEL: 8.3 ft. above / below top of casing

Casing is 2.5 ft. above land surface ELEV: 99.23'

15. YIELD (gpm): 3 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 11.5 ft.

after 1 hours at 3 gpm.

17. CHLORINATION: Type NA Amount

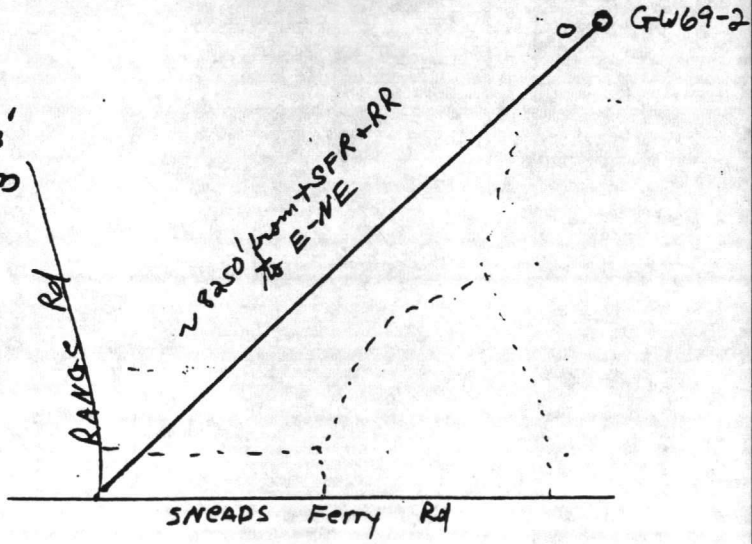
18. WATER QUALITY: GOOD-FAIR TEMPERATURE (°F)

19. PERMANENT PUMP: Date Installed NA

Type Capacity (gpm) HP

Make Intake Depth

Airline Depth



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

SIGNATURE OF CONTRACTOR OF AGENT — DATE 12-18-84

GW-1 Revised 10/1/80

Submit original to Division of Environmental Management and copy to well owner

DOC NO. CLOW-0005-J.13-1/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS Ltd. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: SNEADS FERRY County: ONSLOW
   RT 210, CAMP LEJEUNE Quadrangle No. SNEADS FERRY
   (Road, Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORPS BASE DRILLING LOG GW69-3
3. ADDRESS: OFFICE OF A/E FACILITIES, CAMP LEJEUNE N.C.
4. TOPOGRAPHY: draw, valley, slope, (hilltop), flat (circle one)
5. USE OF WELL: H_2O Sampling DATE: 7-18-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 20.35 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Classification)
0	10.5	SM
15	16.5	CL
20.	21.5	CL

9. CASING:

Depth From	to	Inside Dia.	Wall thick. or weight/ft.	type
0	5.87 ft	2"	Sch 40	PVC

10. GROUT:

Depth From	to	Material	Method
0	3.71 ft	sand-cement (4:1)	poured

If additional space is needed, use back of form

11. SCREEN:

Depth From	to	Dia.	Type & Opening
5.87	20.35 ft	2"	Sch 40 PVC .010 slot

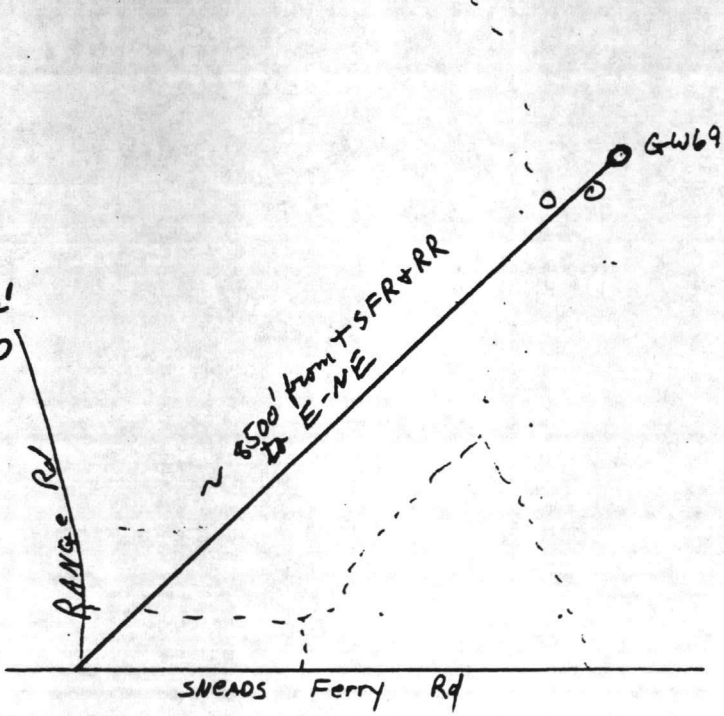
12. GRAVEL:

Depth From	to	Size	Material
4.7	20.35 ft		Silica Sand
3.71	4.7		Bentonite

13. WATER ZONES (depth): 7.4 — 20.35' (TOC)
14. STATIC WATER LEVEL: 7.4 ft. above/below top of casing
    Casing is 2.5 ft. above land surface ELEV: 98.52'
15. YIELD (gpm): 3.5 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 18.0 ft.
    after 1 hours at 3.5 gpm.
17. CHLORINATION: Type NA Amount
18. WATER QUALITY: GOOD TEMPERATURE (°F)
19. PERMANENT PUMP: Date Installed NA
    Type Capacity (gpm) HP
    Make Intake Depth
    Airline Depth

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)

STONE BAY



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes
21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

SIGNATURE OF CONTRACTOR OR AGENT 12-18-84 DATE

GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

WOC NO-CLOW-MW15-0.13-1/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
WELL RECORD — DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS, Ltd. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: SNEADS FERRY County: ONSLOW
   RT 210, CAMP LEJEUNE Quadrangle No.: SNEADS FERRY
   (Road, Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE
3. ADDRESS: OFFICE OF A/S FACILITIES, CAMP LEJEUNE N.C. 28540
4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)
5. USE OF WELL: H_2O Sampling DATE: 7-18-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 20.25 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO
9. CASING:

	Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0 to 5.77 ft		2"	Sch 40	PVC

10. GROUT:

	Depth	Material	Method
From 0 to 3.5 ft		Sand-cement (2:1)	poured

11. SCREEN:

	Depth	Dia.	Type & Opening
From 5.77 to 20.25 ft		2"	Sch 40 PVC .010 Slot

12. GRAVEL:

	Depth	Size	Material
From 4.54 to 20.25 ft			Silica Sand
3.5 4.54			Bentonite

13. WATER ZONES (depth): 8.94 – 20.25 (TOC)
14. STATIC WATER LEVEL: 8.94 ft. above / below top of casing
    Casing is 2.5 ft. above land surface ELEV: 102.51
15. YIELD (gpm): 3.0 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 11.0 ft.
    after 1 hours at 3.0 gpm.
17. CHLORINATION: Type NA Amount
18. WATER QUALITY: GOOD TEMPERATURE (°F) 80
19. PERMANENT PUMP: Date Installed NA
    Type Capacity (gpm) HP
    Make Intake Depth
    Airline Depth
20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? Yes
21. REMARKS

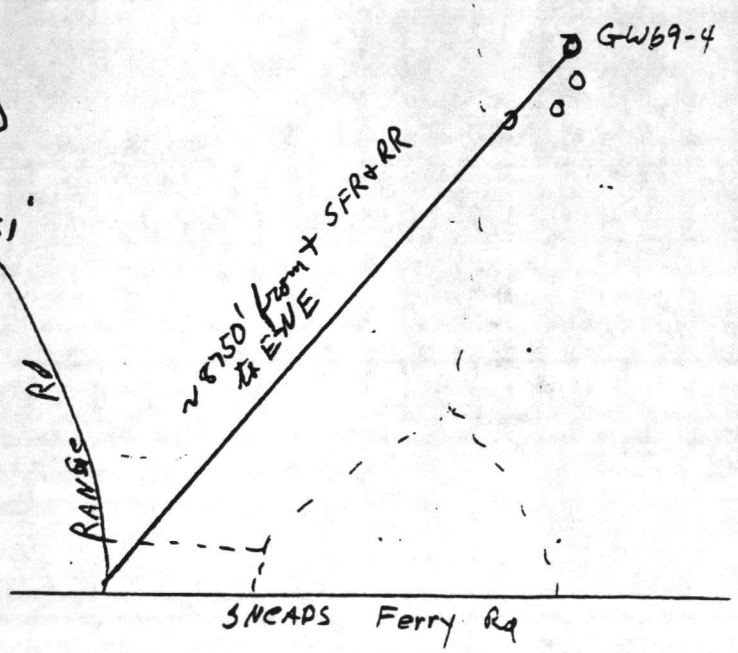
I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

Kenneth Mombarg 12-18-84
SIGNATURE OF CONTRACTOR OF AGENT DATE

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Class.)
0	8.5	SM
8.5	9.25	SC-SM
9.25	16.5	SM
20	21.5	ML

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



Submit original to Division of Environmental Management and copy to well owner

DOC NO: CLEW-00015-D.13-1/18/00

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 – RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, Ltd REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: SNEADS FERRY County: ONSLOW
   NT 210, CAMP LEJEUNE Quadrangle No. SNEADS FERRY
   (Road, Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE DRILLING LOG GW69-5
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, N.C.
4. TOPOGRAPHY: draw, valley, slope, (hilltop), flat (circle one)
5. USE OF WELL: H_2O Sampling DATE: 7-18-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 20.98 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO
9. CASING:

From	to	Depth	Inside Dia.	Wall thick. or weight/ft.	type
0	6.5 ft		2"	Sch 40	PVC

10. GROUT:

From	to	Depth	Material	Method
0	3.71 ft		sand-cement 6:0	poured

11. SCREEN:

From	to	Depth	Dia.	Type & Opening
6.5	20.98 ft		2"	Sch 40 PVC .010" slot

12. GRAVEL:

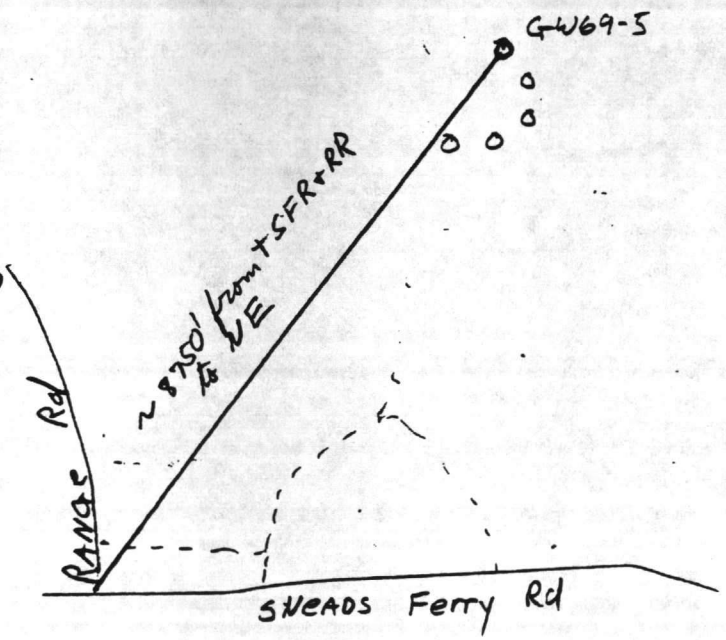
From	to	Depth	Size	Material
5.33	20.98 ft			Silica Sand
3.71	5.33			Bentonite

13. WATER ZONES (depth): 11.45 – 20.98' (TOC)
14. STATIC WATER LEVEL: 11.45 ft. above / below top of casing
    Casing is 3.5 ft. above land surface ELEV: 96.68'
15. YIELD (gpm): 3 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 15.0 ft.
    after 1¾ hours at 3 gpm.
17. CHLORINATION: Type NA Amount
18. WATER QUALITY: GOOD TEMPERATURE (°F) 73
19. PERMANENT PUMP: Date Installed NA
    Type Capacity (gpm) HP
    Make Intake Depth
    Airline Depth

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Class.)
0	5.5	SM
5.5	6.	SC-SM
6.0	10.25	SM
10.25	10.5	SC-SM
15.	16.5	CL
20.	21.5	CL

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? n/a
21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

SIGNATURE OF CONTRACTOR OF AGENT 12-18-84 DATE

Submit original to Division of Environmental Management and copy to well owner

DOC NO: CLEJ-00013-3.10-11/21/03

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD

DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS, Ltd. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: SNEADS FERRY County: ONSLOW
   RT 210, CAMP LEJEUNE Quadrangle No. SNEADS FERRY
   (Road,Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, N.C.
4. TOPOGRAPHY: draw, valley, slope, (hilltop) flat (circle one)
5. USE OF WELL: H_2O Sampling DATE: 7-17-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 30.83 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO
9. CASING:

Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0 to 16.37 ft	2"	Sch 40	PVC

10. GROUT:

Depth	Material	Method
From 0 to 14.37 ft	sand-cement (1:1)	poured

11. SCREEN:

Depth	Dia.	Type & Opening
From 16.37 to 30.83 ft	2"	Sch 40 PVC
		.010 slot

12. GRAVEL:

Depth	Size	Material
From 15.37 to 30.83 ft		Silica Sand
14.37 15.37		Bentonite

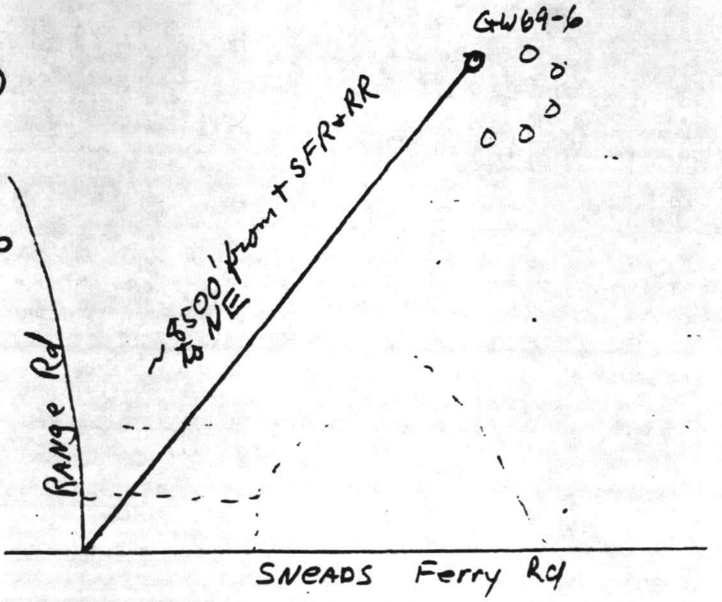
13. WATER ZONES (depth): 27.75 - 30.83' (TOC)
14. STATIC WATER LEVEL: 27.75 ft. above/below top of casing
    Casing is 2.5 ft. above land surface ELEV: 91.2'
15. YIELD (gpm): 2 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 29.0 ft.
    after 1 3/4 hours at 2 gpm.
17. CHLORINATION: Type NA Amount
18. WATER QUALITY: FAIR TEMPERATURE (°F) 65
19. PERMANENT PUMP: Date Installed NA
    Type Capacity (gpm) HP
    Make Intake Depth
    Airline Depth

DRILLING LOG GW69-6

DEPTH FROM TO	FORMATION DESCRIPTION (USCS Class.)
0 - 3.0	SM
3.0 - 6.0	ML
6.0 - 10.5	SM
15. - 16.5	ML
20. - 21.5	CL
25. - 26.5	CL
30. - 31.5	SM

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? NA
21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

RJ Knoll Mornburger 12-18-84
SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 10/1/80

Submit original to Division of Environmental Management and copy to well owner

UIC NO: UCEJ-00075-8.13-1/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD

DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS, LTD REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: SNEADS FERRY County: ONSLOW

NT 210, CAMP LEJEUNE Quadrangle No. SNEADS FERRY

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C. 28540

4. TOPOGRAPHY: draw, valley (slope) hilltop, flat (circle one)

5. USE OF WELL: H2O Sampling DATE: 7-17-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 20.69 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0 to 6.21 ft	2"	Sch 40	PVC

10. GROUT:

Depth	Material	Method
From 0 to 2.71 ft	sand-cement (6:1)	poured

11. SCREEN:

Depth	Dia.	Type & Opening
From 6.21 to 20.69 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

Depth	Size	Material
From 5.08 to 20.69 ft		Silica Sand
2.71 5.08		Bentonite

13. WATER ZONES (depth): —

17.7 - 20.69' (TOC)

14. STATIC WATER LEVEL: 17.7 ft. above/below top of casing

Casing is 2.0 ft. above land surface ELEV: 79.81

15. YIELD (gpm): 1.5 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 19.0 ft.

after 2 hours at 1.5 gpm.

17. CHLORINATION: Type NA Amount

18. WATER QUALITY: GOOD TEMPERATURE (°F) 65

19. PERMANENT PUMP: Date Installed NA

Type Capacity (gpm) HP

Make Intake Depth

Airline Depth

DRILLING LOG GW69-7

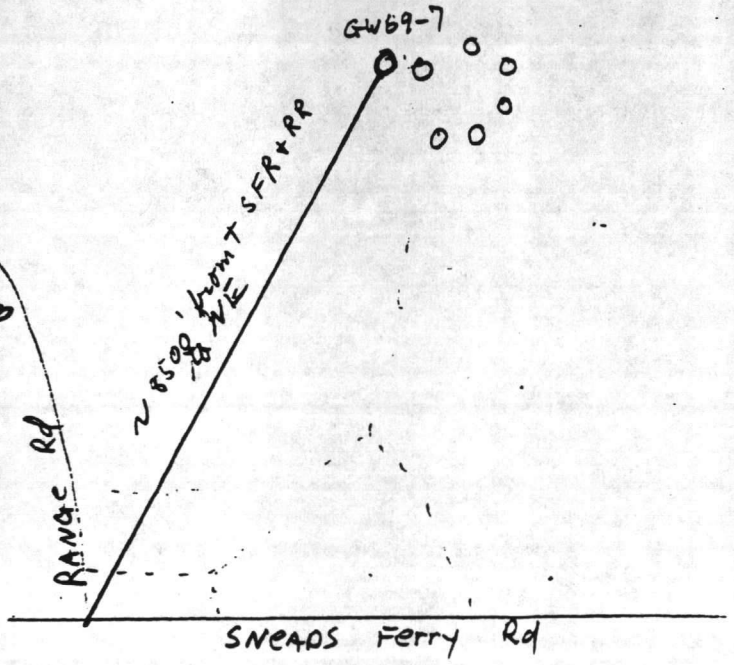
DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Class.)
0	3.0	SM
3.0	4.5	SC-SM
4.5	6.0	SM
6.0	8.0	SC-SM
8.0	9.0	SM
9.	10.5	CL
15.	16.5	CL
20.	21.5	SM

If additional space is needed, use back of form

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)

STONE BAY



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

R J Kucinski Mromberg 12-18-84

SIGNATURE OF CONTRACTOR OF AGENT DATE

GW-1 Revised 10/1/80

Submit original to Division of Environmental Management and copy to well owner

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS Consultants, Ltd. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: Sneads Ferry County: Onslow
   NT 210, Camp Lejeune Quadrangle No. Sneads Ferry
   (Road, Community or Subdivision and Lot No.)
2. OWNER: Commanding General, Marine Corp Base DRILLING LOG GW69-8
3. ADDRESS: Office of AC/S Facilities, Camp Lejeune N.C. 28542
4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)
5. USE OF WELL: H_2O Sampling DATE: 7-17-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 20.4 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO
9. CASING:

From	To	Depth	Inside Dia.	Wall thick. or weight/ft.	type
0	5.92	ft	2"	Sch 40	PVC

10. GROUT:

From	To	Depth	Material	Method
0	3.35	ft	Sand Cement (6:1)	poured

11. SCREEN:

From	To	Depth	Dia.	Type & Opening
5.92	20.4	ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

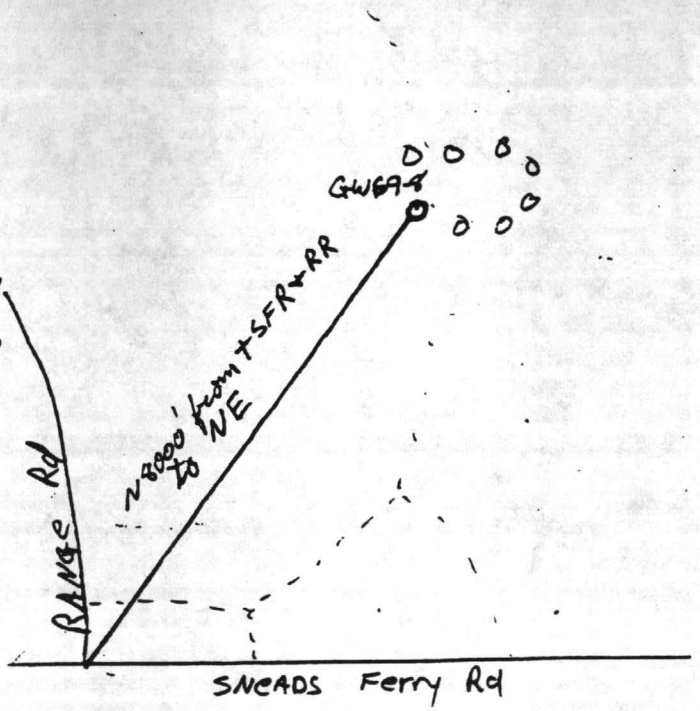
From	To	Depth	Size	Material
4.63	20.4	ft		Silica Sand
3.35	4.63			Bentonite

13. WATER ZONES (depth): 10.52 — 20.4' (TOC)
14. STATIC WATER LEVEL: 10.52 ft. above / below top of casing
    Casing is 2.5 ft. above land surface ELEV: 97.03'
15. YIELD (gpm): / METHOD OF TESTING: Pumped
16. PUMPING WATER LEVEL: 18.0 ft.
    after 2.5 hours at / gpm.
17. CHLORINATION: Type NA Amount —
18. WATER QUALITY: Good TEMPERATURE (°F) 73
19. PERMANENT PUMP: Date Installed NA
    Type Capacity (gpm) HP
    Make Intake Depth
    Airline Depth

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Class.)
0	3.25	SM
3.25	8.5	SC-SM
8.5	9.	CL
9.	10.5	ML
15.	16.5	SC-SM
20.	21.5	SC-SM

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes
21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

R. Thomas Moomaw 12-18-84
SIGNATURE OF CONTRACTOR OF AGENT DATE

GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

LOC NO.: CLW-0073 - 0.5 - 11/21/03

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD — DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS, LTD REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: SNEADS FERRY County: ONSLOW

COURTHOUSE RD CAMP LEJEUNE Quadrangle No. NEW RIVER INLET

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE DRILLING LOG GW73-1

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C. 28540

4. TOPOGRAPHY: draw, valley, slope, hilltop (flat) (circle one)

5. USE OF WELL: H_2O Sampling DATE: 7-6-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 19.57 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Class.)
0	16.5	SM
20.	21.5	ML

9. CASING:

Depth From	to	Inside Dia.	Wall thick. or weight/ft.	type
0	5.11 ft	2"	Sch 40	PVC

10. GROUT:

Depth From	to	Material	Method
0	3.11 ft	sand cement (2:1)	poured

If additional space is needed, use back of form

11. SCREEN:

Depth From	to	Dia.	Type & Opening
5.11	19.57 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

Depth From	to	Size	Material
4.11	19.57 ft		Silica Sand
3.11	4.11		Bentonite

13. WATER ZONES (depth): 4.3 - 19.57' (TOC)

14. STATIC WATER LEVEL: 4.3 ft. above / below top of casing

Casing is 2.5 ft. above land surface ELEV: 100.73'

15. YIELD (gpm): 10 METHOD OF TESTING: PUMPING

16. PUMPING WATER LEVEL: 4.4 ft.

after 1 hour$ at 10 gpm.

17. CHLORINATION: Type NA Amount

18. WATER QUALITY: GOOD TEMPERATURE (°F) 73

19. PERMANENT PUMP: Date Installed NA

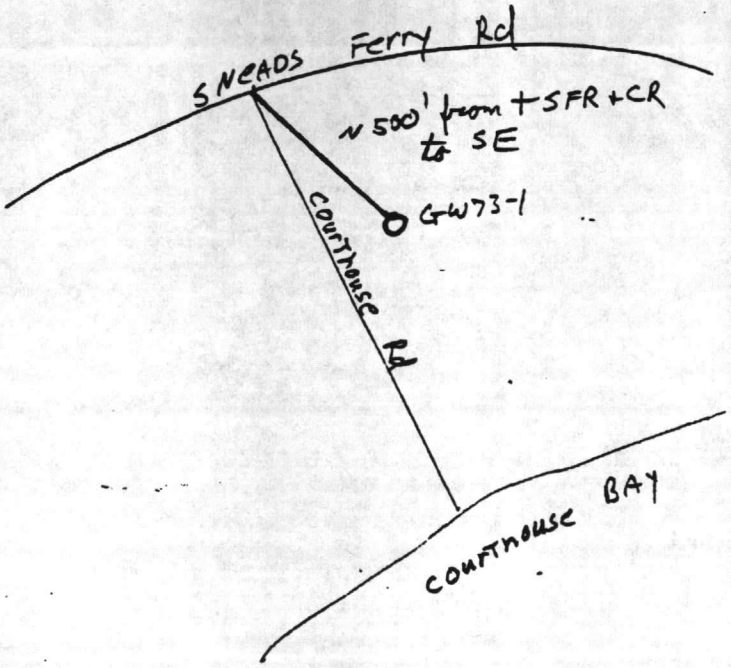
Type Capacity (gpm) HP

Make Intake Depth

Airline Depth

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

RJ Kinsley Mowbray 12-18-84

SIGNATURE OF CONTRACTOR OF AGENT DATE

GW-1 Revised 10/1/80

Submit original to Division of Environmental Management and copy to well owner

DOC NO · CLEJ-00015-3.10-01181105

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, Ltd REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: SNEADS FERRY County: ONSLOW
COURTHOUSE RD, CAMP LEJEUNE Quadrangle ~~No.~~ NEW RIVER INLET
(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C.
4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)
5. USE OF WELL: H_2O Sampling DATE: 7-6-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 19.42 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO

DRILLING LOG GW73-2

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Class.)
0	-.5	SM
.5	-1.25	ML
1.25	-9.0	SM
9.0	-9.25	CL
15.	-16.	SM
16.	-16.5	CH
20.	-21.5	CH

9. CASING:

Depth From	to	Inside Dia.	Wall thick. or weight/ft.	type
0	4.99 ft	2"	Sch 40	PVC

10. GROUT:

Depth From	to	Material	Method
0	2.75 ft	sand-cement (2:1)	poured

If additional space is needed, use back of form

11. SCREEN:

Depth From	to	Dia.	Type & Opening
4.99	19.42 ft	2"	Sch 40 PVC .010 slot

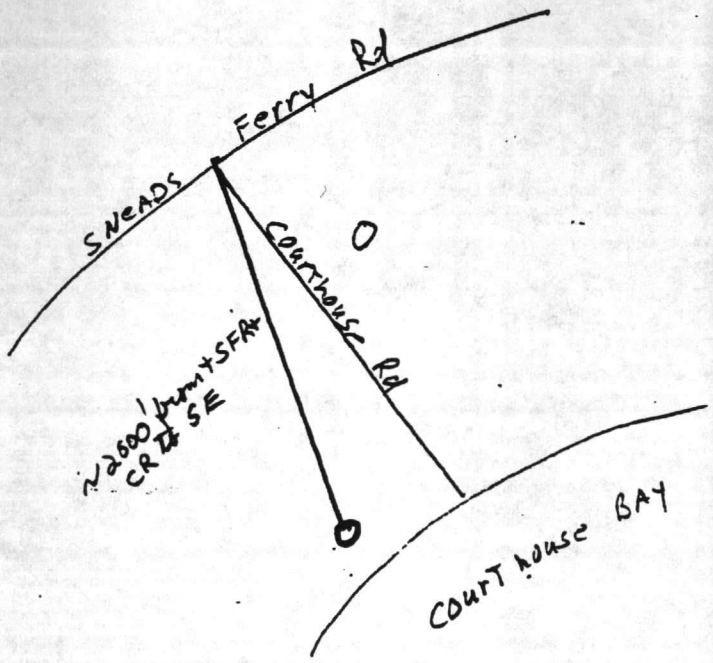
12. GRAVEL:

Depth From	to	Size	Material
3.85	19.42 ft		Silica Sand
2.75	3.85		Bentonite

13. WATER ZONES (depth): 3.1 - 19.42' (TOC)

14. STATIC WATER LEVEL: 3.1 ft. above/below top of casing
Casing is 2.5 ft. above land surface ELEV: 100.0
15. YIELD (gpm): 7 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 3.40 ft.
after 2 hours at 7 gpm.
17. CHLORINATION: Type NA Amount —
18. WATER QUALITY: GOOD TEMPERATURE (°F) 70
19. PERMANENT PUMP: Date Installed NA
Type Capacity (gpm) HP
Make Intake Depth
Airline Depth

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes
21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

RD Mark Vromberg 12-18-84
SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

WOC NO : CLEW -00015 - 0.13 - 11/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD — DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS, LTD REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: SNEADS FERRY County: ONSLOW

COURT HOUSE RD CAMP LEJEUNE Quadrangle No. NEW RIVER INLET

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MAIN CORP BASE DRILLING LOG GW73-3

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C.

4. TOPOGRAPHY: draw, valley, slope, hilltop (flat) (circle one)

5. USE OF WELL: H_2O Sampling DATE: 7-6-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 19.67 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0 to 5.19 ft	2"	Sch 40	PVC

10. GROUT:

Depth	Material	Method
From 0 to 2.17 ft	sand cement (2:1)	poured

11. SCREEN:

Depth	Dia.	Type & Opening
From 5.19 to 19.67 ft	2"	Sch 40 PVC .010 Slot

12. GRAVEL:

Depth	Size	Material
From 4.08 to 19.67 ft		Silica Sand
2.17 4.08		Bentonite

13. WATER ZONES (depth): 4.9 — 19.67 (TOC)

14. STATIC WATER LEVEL: 4.9 ft. above/below top of casing

Casing is 2.5 ft. above land surface ELEV: 98.04

15. YIELD (gpm): 7 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 5.2 ft.

after 2 hours at 7 gpm.

17. CHLORINATION: Type NA Amount

18. WATER QUALITY: FAIR TEMPERATURE (°F) 73

19. PERMANENT PUMP: Date Installed NA

Type Capacity (gpm) HP

Make Intake Depth

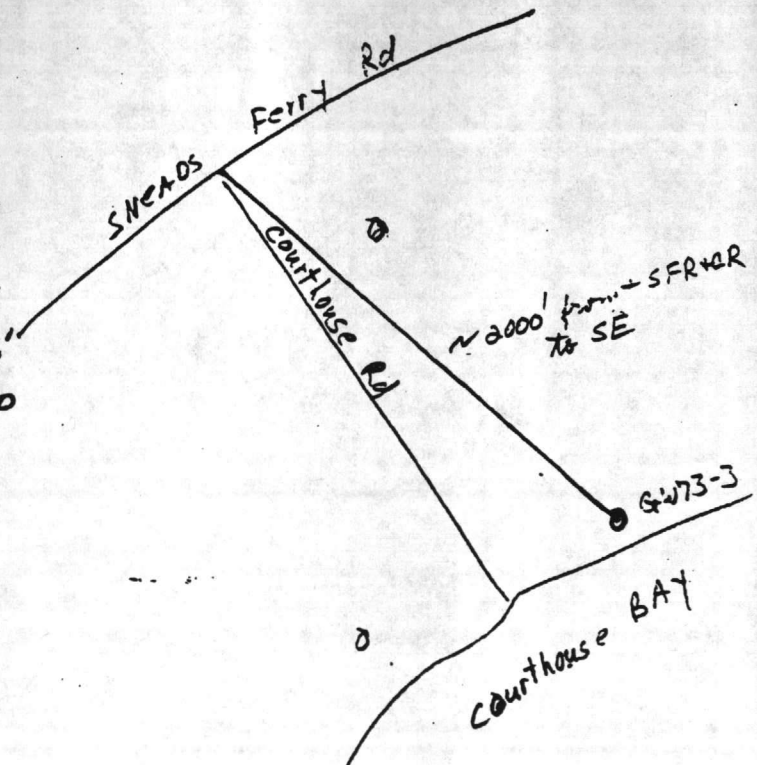
Airline Depth

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Class.)
0	1.0	SM
1.0	1.25	SM
1.25	10.5	SM
15.0	16.5	CL
20.0	21.5	CL

If additional space is needed, use back of form

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

RO Kruck Thornburg 12-18-84

SIGNATURE OF CONTRACTOR OF AGENT DATE

GW-1 Revised 10/1/80 — Submit original to Division of Environmental Management and copy to well owner

NOC 100 · CLOW -0015 - B.15 - 1/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD

DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS LTD REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: SNEADS FERRY County: ONSLOW

COURTHOUSE RD., CAMP LEJEUNE Quadrangle Nor NEW RIVER INLET

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE

3. ADDRESS: OFFICE OF A/S FACILITIES, CAMP LEJEUNE NC 28542

4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)

5. USE OF WELL: H₂O Sampling DATE: 7-6-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 20.0 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

	Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0 to 3.54 ft		2"	Sch 40	PVC

10. GROUT:

	Depth	Material	Method
From 0 to 3.54 ft		sand-cement (6:1)	poured

11. SCREEN:

	Depth	Dia.	Type & Opening
From 5.54 to 20.0 ft		2"	Sch 40 PVC .010 slot

12. GRAVEL:

	Depth	Size	Material
From 4.54 to 20.0 ft			Silica Sand
3.54 4.54			Bentonite

13. WATER ZONES (depth): 3.4 — 20.0' (TOC)

14. STATIC WATER LEVEL: 3.4 ft. above / below top of casing

Casing is 2.5 ft. above land surface ELEV: 94.22'

15. YIELD (gpm): 9 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 3.4 ft.

after 2 hours at 9 gpm.

17. CHLORINATION: Type NA Amount

18. WATER QUALITY: FAIR TEMPERATURE (°F) 71

19. PERMANENT PUMP: Date Installed NA

Type Capacity (gpm) HP

Make Intake Depth

Airline Depth

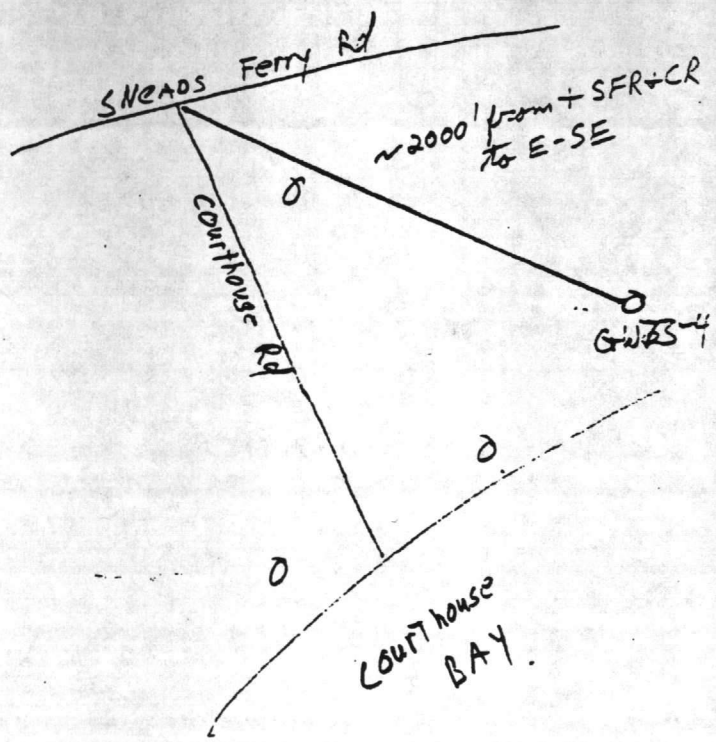
DRILLING LOG GW73-4

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Class.)
0	1.0	SM
1.0	3.0	SM-SC
3.0	7.0	SM
7.0	7.5	Peat
7.5	16.5	SM
20.	21.5	ML

If additional space is needed, use back of form

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

RJ Lewis Mowbray 12-18-84

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 10/1/80

Submit original to Division of Environmental Management and copy to well owner

NUC 190 · CLEW -0005 -5.10 - 1/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, LTD. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: MIDWAY PARK County: ONSLOW
   HOLCOMB BLVD CAMP LEJEUNE Quadrangle No. CAMP LEJEUNE
   (Road, Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, N.C. 28542
4. TOPOGRAPHY: draw, valley, slope, hilltop, (flat) (circle one)
5. USE OF WELL: H2O Sampling DATE: 7-4-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 21.42 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO
9. CASING:

From	To	Depth	Inside Dia.	Wall thick. or weight/ft.	type
0	6.96	ft	2"	Sch 40	PVC

10. GROUT:

From	To	Depth	Material	Method
0	4.96	ft	Sand-cement (2:1)	poured

11. SCREEN:

From	To	Depth	Dia.	Type & Opening
6.96	21.42	ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

From	To	Depth	Size	Material
5.0	21.42	ft		Silica Sand
4.0	5.0			Bentonite

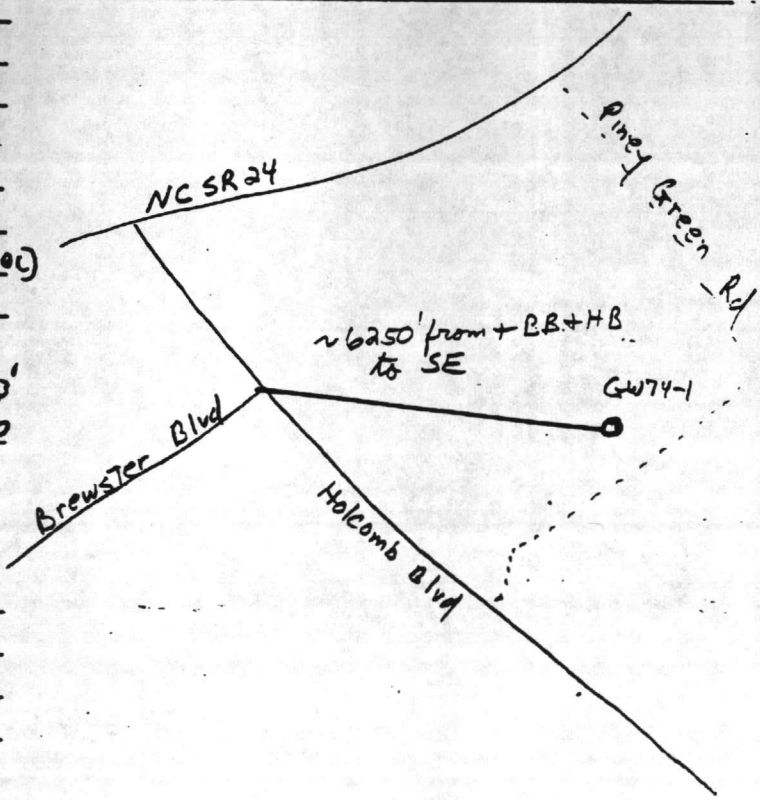
13. WATER ZONES (depth): 7.0 — 21.42' (TOC)
14. STATIC WATER LEVEL: 7.0 ft. above / below top of casing
    Casing is 2.5 ft. above land surface ELEV: 100.13'
15. YIELD (gpm): 7 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 7.2 ft.
    after 1 hours at 7 gpm.
17. CHLORINATION: Type NA Amount
18. WATER QUALITY: GOOD TEMPERATURE (°F) 59
19. PERMANENT PUMP: Date Installed NA
    Type Capacity (gpm) HP
    Make Intake Depth
    Airline Depth

DRILLING LOG GW74-1

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Class.)
0	20.0	SM
20.	21	SC
23.	24.5	SM

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes
21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

[signature] 12-8-84
SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

DOCUMENT CONTROL NO. - 0.10 - 1/21/85

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD — DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS, LTD. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: MIDWAY PARK County: ONSLOW

HOLCOMB BLVD. CAMP LEJEUNE Quadrangle No. CAMP LEJEUNE

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE DRILLING LOG GW74-2

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C.

4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)

5. USE OF WELL: H_2O Sampling DATE: 7-4-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 23.96 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Class.)
0	3.0	SM
3.	6.0	SP
6.	26.5	SM

9. CASING:

Depth From	to	Inside Dia.	Wall thick. or weight/ft.	type
0	9.5 ft above	2"	Sch 40	PVC

10. GROUT:

Depth From	to	Material	Method
0	4.5 ft	sand-cement (2:1)	poured

If additional space is needed, use back of form

11. SCREEN:

Depth From	to	Dia.	Type & Opening
9.5	23.96 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

Depth From	to	Size	Material
6.5	23.96 ft		Silica Sand
4.5	6.5		Bentonite

13. WATER ZONES (depth): 9.1 - 23.96' (Toc)

14. STATIC WATER LEVEL: 9.1 ft. above/below top of casing

Casing is 2.5 ft. above land surface ELEV: 100.0'

15. YIELD (gpm): 8 METHOD OF TESTING: PUMPED

16. PUMPING WATER LEVEL: 9.0 ft.

after 2 hours at 8 gpm.

17. CHLORINATION: Type NA Amount

18. WATER QUALITY: GOOD TEMPERATURE (°F) 80

19. PERMANENT PUMP: Date Installed NA

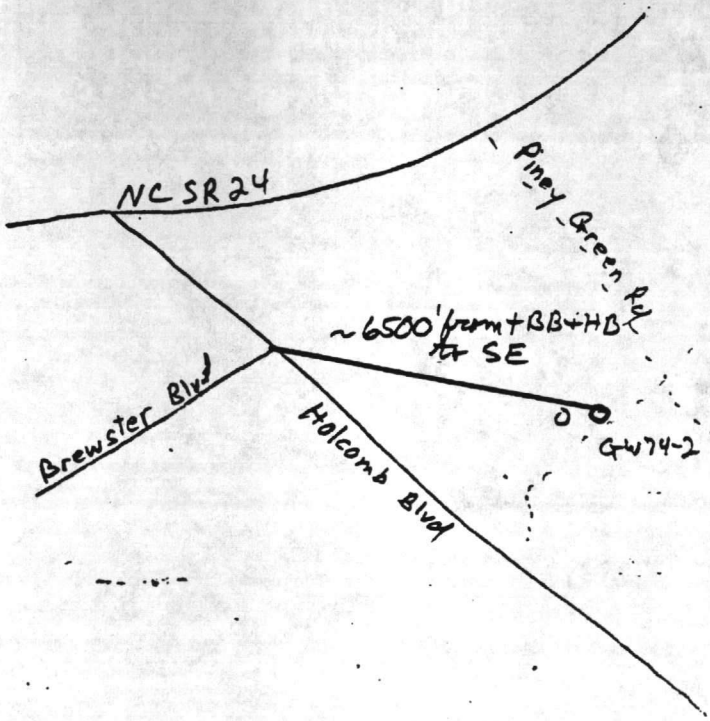
Type Capacity (gpm) HP

Make Intake Depth

Airline Depth

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

R O Lunsford Mowbray 12-18-84

SIGNATURE OF CONTRACTOR OF AGENT DATE

GW-1 Revised 10/1/80 — Submit original to Division of Environmental Management and copy to well owner

DOC NO. CLEJ-00013-3.13-11/21/83

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD

DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

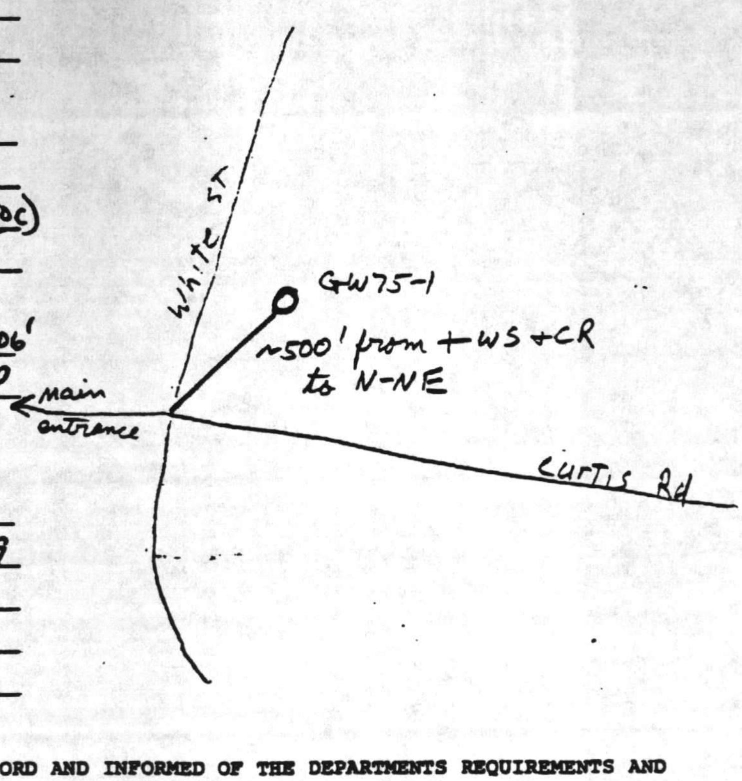
DRILLING CONTRACTOR STS CONSULTANTS, Ltd REG. NO. 191 WELL CONSTRUCTION PERMIT NO. ____

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: JACKSONVILLE, County: ONSLOW
   WHITE ST. CAMP LEJEUNE Quadrangle ~~No.~~ JACKSONVILLE SOUTH
   (Road,Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE — DRILLING LOG GW75-1
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C.
4. TOPOGRAPHY: draw,valley,slope,hilltop,(flat)(circle one)
5. USE OF WELL: H2O Sampling DATE: 7-16-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 20.12 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO ____
9. CASING: Depth / Inside Dia. / Wall thick. or weight/ft. / type
   From 0 to 5.64 ft 2" Sch 40 PVC
10. GROUT: Depth / Material / Method
   From 0 to 2.42 ft sand: cement (2:1) poured
11. SCREEN: Depth / Dia. / Type & Opening
   From 5.64 to 20.12 ft 2" Sch 40 PVC .010 slot
12. GRAVEL: Depth / Size / Material
   From 4.58 to 20.12 ft Silica Sand
   2.42 4.58 Bentonite
13. WATER ZONES (depth): 7.25 − 20.12' (TOC)
14. STATIC WATER LEVEL: 7.05 ft. above/below top of casing
   Casing is 1.88 ft. above land surface ELEV: 108.06'
15. YIELD (gpm): 7.5 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 7.0 ft.
   after 1 hours at 7.5 gpm.
17. CHLORINATION: Type NA Amount ____
18. WATER QUALITY: GOOD TEMPERATURE (°F) 79
19. PERMANENT PUMP: Date Installed NA
   Type ____ Capacity ____ (gpm) HP ____
   Make ____ Intake Depth ____
   Airline Depth ____
20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? N/A
21. REMARKS ____

DEPTH FROM TO	FORMATION DESCRIPTION (USCS Class)
0-1.0	SM
1.0-1.5	SM-SC
1.5-3.0	SM
3.-4.	SC
4.0-4.5	SM
4.5-10.5	SC
15.-16.5	SC-SM
20.-21.5	SC-SM

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

[signature] 12-18-84
SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 10/1/80

Submit original to Division of Environmental Management and copy to well owner

VOC NU · CLW 0005 0.10 - 1/21/10

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT

WELL RECORD — DIVISION OF ENVIRONMENTAL MANAGEMENT

P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS Ltd, REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: JACKSONVILLE County: ONSLOW

CURTIS RD., CAMP LEJEUNE Quadrangle No: CAMP LEJEUNE

(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE DRILLING LOG GW75-2

3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE NC

4. TOPOGRAPHY: draw, valley, slope, hilltop (flat) (circle one)

5. USE OF WELL: H_2O Sampling DATE: 7-16-84

6. DOES THIS WELL REPLACE AN EXISTING WELL? NO

7. TOTAL DEPTH: 20.37 RIG TYPE OR METHOD: H.S.A.

8. FORMATION SAMPLES COLLECTED: YES ✓ NO

9. CASING:

Depth	Inside Dia.	Wall thick. or weight/ft.	type
From 0 to 5.89 ft	2"	Sch 40	PVC

10. GROUT:

Depth	Material	Method
From 0 to 2.79 ft	sand-cement (2:1)	poured

11. SCREEN:

Depth	Dia.	Type & Opening
From 5.89 to 20.37 ft	2"	Sch 40 PVC .010 slot

12. GRAVEL:

Depth	Size	Material
From 4.17 to 20.37 ft		Silica Sand
2.79 4.17		Bentonite

13. WATER ZONES (depth): 8.0 - 20.37' (TOC)

14. STATIC WATER LEVEL: 8.0 ft. above/below top of casing

Casing is 2.5 ft. above land surface ELEV: 111.75'

15. YIELD (gpm): 8.5 METHOD OF TESTING: Pumped

16. PUMPING WATER LEVEL: 8.0 ft.

after 1 hours at 8.5 gpm.

17. CHLORINATION: Type NA Amount

18. WATER QUALITY: Good TEMPERATURE (°F) 80

19. PERMANENT PUMP: Date Installed NA

Type Capacity (gpm) HP

Make Intake Depth

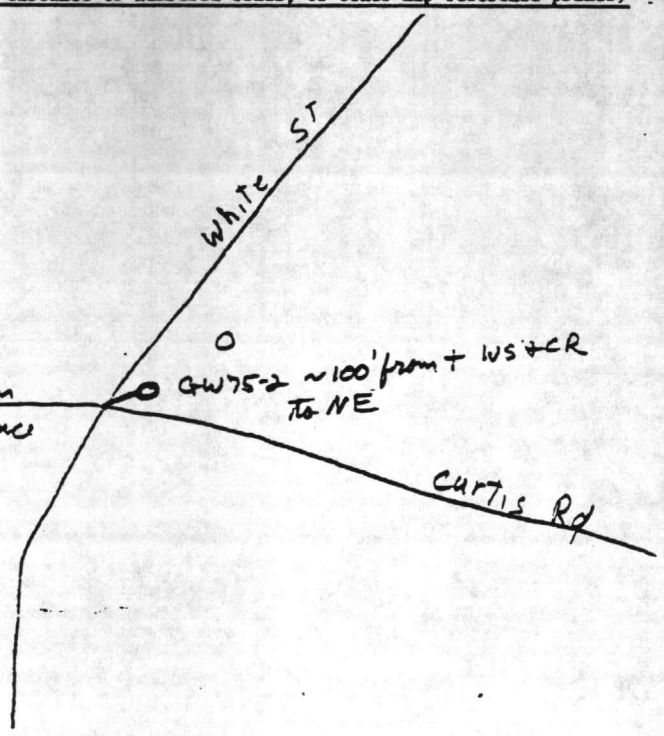
Airline Depth

FROM	TO	FORMATION DESCRIPTION (USCS Class.)
0	1.5	SM
1.5	4.5	SC-SM
4.5	16.5	SM
20.	21.5	SC-SM

If additional space is needed, use back of form

LOCATION SKETCH

(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes

21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

R. Mike Mombeyer 12-18-84

SIGNATURE OF CONTRACTOR OF AGENT DATE

GW-1 Revised 10/1/80 — Submit original to Division of Environmental Management and copy to well owner

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

WELL RECORD

DRILLING CONTRACTOR STS CONSULTANTS, LTD. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: JACKSONVILLE County: ONSLOW
CURTIS RD, CAMP LEJEUNE Quadrangle No. JACKSONVILLE SOUTH
(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C. 28540
4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)
5. USE OF WELL: H_2O Sampling DATE: 7-16-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 19.00 RIG TYPE OR METHOD: H.S.A
8. FORMATION SAMPLES COLLECTED: YES ✓ NO

DRILLING LOG GW75-3

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Class.)
0	3.0	SM
3.	4.5	SM-SC
4.5	21.5	SM
21.5		SM-SC

9. CASING:

	Depth		Inside Dia.	Wall thick. or weight/ft.	type
From	0	to 4.54 ft	2"	Sch 40	PVC

10. GROUT:

	Depth		Material	Method
From	0	to 2.54 ft	sand-cement (6:1)	poured

If additional space is needed, use back of form

11. SCREEN:

	Depth		Dia.	Type & Opening
From	4.54	to 19.0 ft	2"	Sch 40 PVC .010 Slot

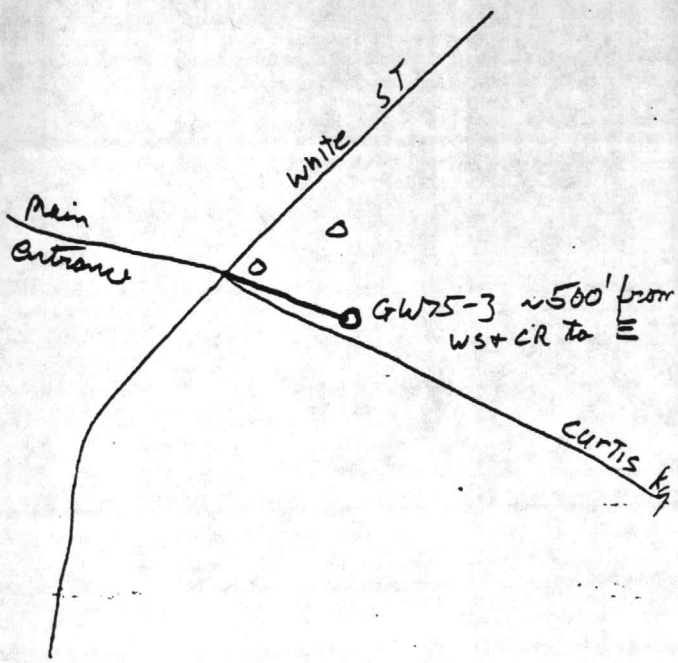
12. GRAVEL:

	Depth		Size	Material
From	3.54	to 19.0 ft		Silica Sand
	2.54	3.54		Bentonite

13. WATER ZONES (depth): 9.16 - 19.0 (TOC)

14. STATIC WATER LEVEL: 9.16 ft. above / below top of casing
Casing is 2.5 ft. above land surface ELEV: 112.04'
15. YIELD (gpm): 8.5 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 9.1 ft.
after 1 hours at 8.5 gpm.
17. CHLORINATION: Type NA Amount
18. WATER QUALITY: GOOD TEMPERATURE (°F) 76
19. PERMANENT PUMP: Date Installed NA
Type Capacity (gpm) HP
Make Intake Depth
Airline Depth

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? N/A
21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

R. Mark Mromberg 12-18-84
SIGNATURE OF CONTRACTOR OF AGENT DATE

GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
WELL RECORD — DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS, LTD. REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: JACKSONVILLE County: ONSLOW
   CURTIS RD, CAMP LEJEUNE Quadrangle No. JACKSONVILLE SOUTH
   (Road, Community or Subdivision and Lot No.)
2. OWNER: COMMANDING GENERAL, MARINE CORP BASE
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE N.C.
4. TOPOGRAPHY: draw, valley, slope, hilltop, flat (circle one)
5. USE OF WELL: H2O Sampling DATE: 7-16-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 21.0 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO
9. CASING:

From	to	ft	Depth Inside Dia.	Wall thick. or weight/ft.	type
0	6.5	ft	2"	Sch 40	PVC

10. GROUT:

From	to	ft	Material	Method
0	4.0	ft	sand-cement (2:1)	poured

11. SCREEN:

From	to	ft	Dia.	Type & Opening
6.5	21.0	ft	2"	Sch 40 PVC .010 Slot

12. GRAVEL:

From	to	ft	Size	Material
5.5	21.0	ft		Silica Sand
4.0	5.5			Bentonite

13. WATER ZONES (depth): 4.74 - 21.0' (TOC)
14. STATIC WATER LEVEL: 4.74 ft. above / below top of casing
    Casing is 2.5 ft. above land surface ELEV: 100.0
15. YIELD (gpm): 9.0 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 4.7 ft.
    after 1 hours at 9.0 gpm.
17. CHLORINATION: Type NA Amount —
18. WATER QUALITY: GOOD TEMPERATURE (°F) 66
19. PERMANENT PUMP: Date Installed NA
    Type ____ Capacity ____ (gpm) HP ____
    Make ____ Intake Depth ____
    Airline Depth ____
20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes
21. REMARKS ____

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

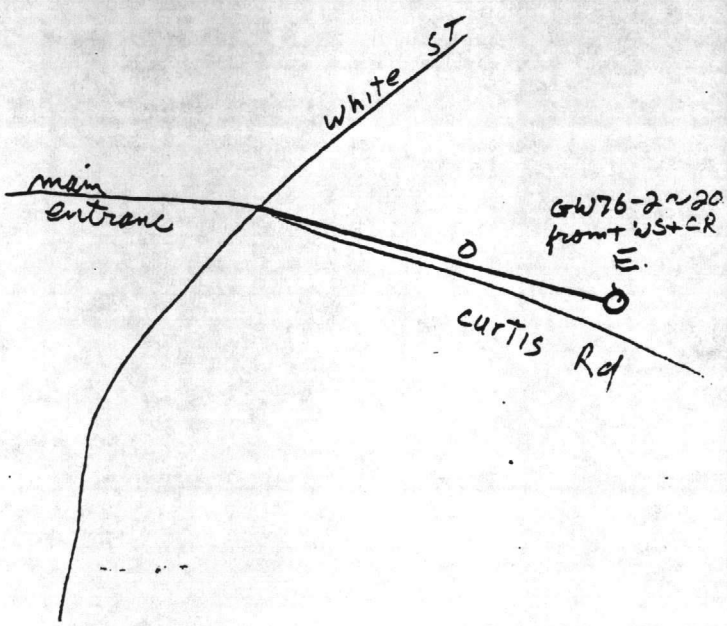
RJ Kniel Mombeyer 12-18-84
SIGNATURE OF CONTRACTOR OF AGENT DATE

DRILLING LOG GW76-2

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Class.)
0	1.75	SM
1.75	6.75	CL
6.5	7.0	ML
7.0	21.5	SM

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



GW-1 Revised 10/1/80 — Submit original to Division of Environmental Management and copy to well owner

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT
WELL RECORD
DIVISION OF ENVIRONMENTAL MANAGEMENT
P. O. Box 27687 — RALEIGH, N.C. 27611 919-733-2020

DRILLING CONTRACTOR STS CONSULTANTS, LTD REG. NO. 191 WELL CONSTRUCTION PERMIT NO.

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: JACKSONVILLE County: ONSLOW
CURTIS RD CAMP LEJEUNE Quadrangle No: JACKSONVILLE SOUTH
(Road, Community or Subdivision and Lot No.)

2. OWNER: COMMANDING GENERAL, MARINE CORP BASE
3. ADDRESS: OFFICE OF AC/S FACILITIES, CAMP LEJEUNE, N.C. 28540
4. TOPOGRAPHY: draw, valley, slope, hilltop, (flat) circle one)
5. USE OF WELL: H₂O Sampling DATE: 7-16-84
6. DOES THIS WELL REPLACE AN EXISTING WELL? NO
7. TOTAL DEPTH: 18.29 RIG TYPE OR METHOD: H.S.A.
8. FORMATION SAMPLES COLLECTED: YES ✓ NO

DRILLING LOG 76-1

DEPTH FROM	TO	FORMATION DESCRIPTION (USCS Class.)
0	4.75	CL
4.75	21.5	SM

9. CASING:

From	to	ft	Depth	Inside Dia.	Wall thick. or weight/ft.	type
0	3.81	ft		2"	Sch 40	PVC

10. GROUT:

From	to	ft	Depth	Material	Method
0		ft		Sand-cement (2:1)	poured

11. SCREEN:

From	to	ft	Depth	Dia.	Type & Opening
3.81	18.29	ft		2"	Sch 40 PVC .010 slot

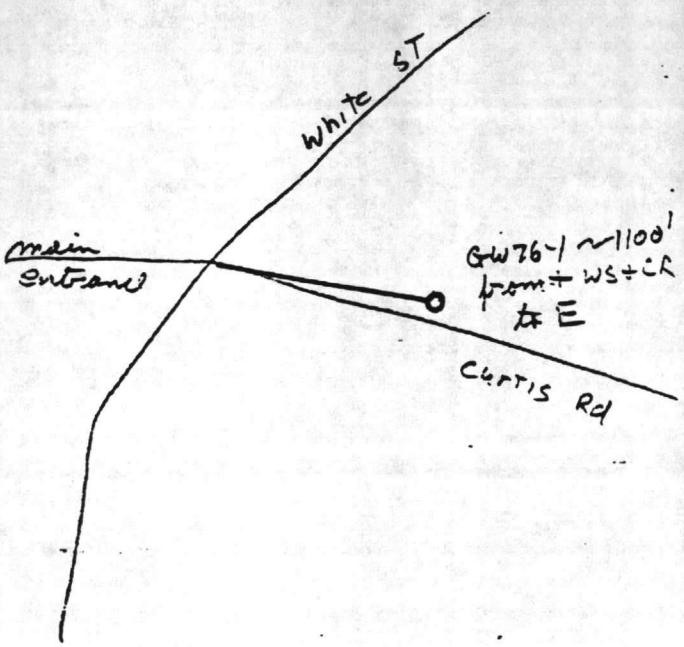
12. GRAVEL:

From	to	ft	Depth	Size	Material
2.25	18.29	ft			Silica Sand
1.95	2.25				Bentonite

13. WATER ZONES (depth): 9.29 - 18.29' (FOG)
14. STATIC WATER LEVEL: 9.29 ft. above/below top of casing
Casing is 2.5 ft. above land surface ELEV: 108.54'
15. YIELD (gpm): 7.5 METHOD OF TESTING: PUMPED
16. PUMPING WATER LEVEL: 9.25 ft.
after 2 hours at 7.5 gpm.
17. CHLORINATION: Type NA Amount —
18. WATER QUALITY: GOOD TEMPERATURE (°F) 75
19. PERMANENT PUMP: Date Installed NA
Type Capacity (gpm) HP
Make Intake Depth
Airline Depth

If additional space is needed, use back of form

LOCATION SKETCH
(Show distance to numbered roads, or other map reference points)



20. HAS THE OWNER BEEN PROVIDED A COPY OF THIS RECORD AND INFORMED OF THE DEPARTMENTS REQUIREMENTS AND RECOMMENDATIONS? yes
21. REMARKS

I do hereby certify that this well was constructed in accordance with N.C. Well Construction Regulations and Standards and that this well record is true and exact.

R J Kinsley Mowbray 12-18-84
SIGNATURE OF CONTRACTOR OF AGENT DATE

GW-1 Revised 10/1/80 Submit original to Division of Environmental Management and copy to well owner

Doc No: CLEJ-0005-3.13-1/21/85

1 February 1991

To: Stephanie Del Re Johnson
From: Laurie Boucher

Subj: CAMP LEJEUNE SITE MANAGEMENT PLAN, SITES 76 AND "A"

1. I was looking over the Camp Lejeune IR Site Summary Report (SSR) and noticed a few discrepancies between the recommendations contained therein and the proposed Site Management Plan as discussed a few weeks ago. Specifically:

a) Site 76 (MCAS Curtis Road Site). This site was allegedly used as a drum disposal area at one time. However, the SSR indicates that buried metallic objects were not detected during the geophysical survey which was conducted, and analytes of interest were not detected during both the 1984/1986 groundwater sampling efforts. The SSR makes the recommendation that no further investigations are warranted at this site. EPA, in their November 1990 response to the SSR, did not argue with this recommendation. Based on this data, the Site Management Plan probably does not need to address Site 76 at this time.

b) Site "A" (MCAS Officers' Housing Area). The groundwater, surface water, and sediment samples analyzed at Site "A" did not indicate any contaminants related to the tentatively identified wastes (i.e. hospital wastes). The SSR recommends no further action. You mentioned that ATSDR expressed notable concern over this site. What is their basis of concern?

2. I'll give you a call Monday morning to discuss these two sites.

Sits A & 76
see 1.01
① Add

05/27/87

SITE INSPECTION REPORT

ABC One Hour Cleaners
NC D024644494
2127 Lejeune Boulevard
Jacksonville, NC 28540

27 May 1987

By

Cheryl A. McMorris, Environmental Chemist
NC Solid and Hazardous Waste Management Branch
Environmental Health Section
CERCLA Unit

ENCL: (2)

EXECUTIVE SUMMARY

ABC One Hour Cleaners is located at 2127 Lejeune Boulevard, Jacksonville, North Carolina in Onslow County. The site consist of three buildings joined to form one complex, situated on an acre of land.

The company has been operating as a dry cleaners at the site since 1954. Tetrachloroethylene (TCE) has been used at the facility to dry clean clothes since operations began. The solvent is stored in a 250-gallon above ground tank in the rear building of the complex. Spent tetrachloroethylene is reclaimed through a filtration-distillation process in the building. Still bottoms generated from the recycling process are the only known hazardous waste generated at the site. Reportedly, "all" spent tetrachloroethylene is recycled on the site. The still bottom waste has been transported off site for disposal by Safety-Kleen for the past two years. Prior to that, the waste was disposed of on the site, sometimes it was used to fill pot holes. A septic tank-soil absorption system (ST-SAS) is also located in this rear building complex. The ST-SAS consists of an underground concrete tank with a concrete lid, situated within four feet of the TCE tank. ABC One Hour Cleaners has always used the ST-SAS for the disposal of wastewater.

In 1984, the U.S. Marine Corps collected samples from 40 community supply wells. Organic contaminants were detected in three wells that were located near two off-base dry cleaning facilities. Since both cleaners, ABC One Hour Cleaners and Glam-O-Rama Dry Cleaners, were potential sources, the Marine Corps requested assistance from North Carolina Department of Natural Resources and Community Development (NRCD). In addition to the three community wells, NRCD drilled three monitoring wells to help conduct a groundwater pollution study to define the source of contamination. Tetrachloroethylene was detected in all six wells. However, TCE levels were significantly higher in a monitoring well at the ABC site (12,000 ppb) and two community wells southeast of the site (1580 and 132 ppb) than TCE levels detected in a monitoring well at the Glam-O-Rama site (2.2 ppb). In addition, TCE odor was detected in the formation from 0-15 feet at the monitoring well on the ABC One Hour Cleaners site. Inspection of the area where TCE is stored shows that TCE can and does enter the septic tank-soil absorption system. Groundwater flow in the vicinity of the site is southeast. From the study NRCD was able to conclude that ABC One Hour Cleaners was the source of tetrachloroethylene contamination to groundwater.

Trichloroethene, 1,2-trans dichloroethylene, vinyl chloride, benzene, and toluene were also detected at low levels in some of the wells. It is not yet known if the source of these contaminants is tetrachloroethylene. There have been suggestions that the technical grade tetrachloroethylene used by the cleaners contains some of these contaminants and the contaminants entered groundwater through the ST-SAS, as did TCE. Evidence is inconclusive concerning theories of the microbial degradation of tetrachloroethylene in soil to generate these compounds. It has also been stated that the compounds, detected at such low levels as these were, are not uncommon to groundwater and should be addressed only because the elevated levels of TCE need to be addressed.

The three contaminated community wells were part of the Tarawa Terrace well field, which furnish drinking water to 6274 people in the area. In February 1985 the two highest contaminated wells were disconnected from the system. A water line from the Holcomb Boulevard System was connected to the Tarawa Terrace system to supplement the water supply. Within a three mile radius of the site there are several community well systems, including Tarawa Terrace, serving groundwater to approximately 13,452 residents.

BACKGROUND

Location

The site is located at 2127 Lejeune Boulevard, Jacksonville, North Carolina, in Onslow County. The coordinates are: latitude: 34° 44' 25"; Longitude: 077° 21' 50" (Appendix A, Map 1).

Site Layout

ABC One Hour Cleaners is housed in two buildings that have been joined to form one; additional improvements have been made to the buildings. Located approximately 25 feet behind the buildings is a smaller building which houses the septic tank system, two dry cleaning machines, a 250 gallon tank containing tetrachloroethylene and equipment used in the spent tetrachloroethylene recycling process. The buildings are located on an acre plot in a business district of Jacksonville (Appendix C, Ref. 1, Appendix A, Map 1). South of the site is the Seaboard Coastline Railroad tracks. Approximately 4400 feet southeast of the site is Northeast Creek, which flows in a southwestwardly direction to New River. Camp Lejeune Marine Corps Base is located south of the site (Appendix A, Map 1).

Ownership History

The site at 2127 Lejeune Boulevard was originally owned by Walter Morgan who constructed the buildings. In 1954 Mr. Morgan leased the buildings to Milton Melts of ABC One Hour Cleaners. Around 1957 Mr. Melts purchased the buildings and improvements from Mr. Morgan. Prior to ABC One Hour Cleaners, one of the buildings housed a liquor store; it is unknown what type of business was housed in the other building (Appendix C, Ref. 1).

Site Use History

ABC One Hour Cleaners has been operating at this site since 1954. The only known hazardous substances used at the facility is tetrachloroethylene, which is used to dry clean clothes. The solvent is stored in a 250 gallon above ground tank in a building situated approximately 25 feet behind the main buildings. Also located in this building is a septic tank-soil absorption system, two dry cleaning machines, and equipment used for recycling spent tetrachloroethylene. Spent tetrachloroethylene is reclaimed by a filtration-distillation process. This process generates still bottoms which have been disposed off-site for approximately two years. Prior to that, the still bottom waste was disposed of on the site (Appendix C, Ref. 1).

Permit and Regulatory History

There have been no environmentally related permits obtained for the site (Appendix C, Ref. 2).

Remedial Actions to Date

In July 1984 the U.S. Marine Corps discovered organic contaminants in three of eight wells that are part of the Tarawa Terrace well-field. Because there were two potential sources for the contaminants, ABC One Hour Cleaners and Glam-O-Rama Dry Cleaners, the Marine Corps requested assistance from North Carolina Department of Natural Resources and Community Development (NRCD). NRCD drilled additional wells to help conduct a groundwater pollution study to define the source of contamination. ABC One Hour Cleaners was found to be the source (Appendix C, Ref. 3).

The contaminated wells are part of a community well system which furnish drinking water to 6274 people in the area. In February 1985 the two highest contaminated wells were disconnected from the system. A water line from the Holcomb Boulevard System was connected to the Tarawa Terrace system to supplement the water supply (Appendix C, Ref. 3,19,26).

Summary Trip Report

ABC One Hour Cleaners has not been inspected by CERCLA Unit personnel. Most information pertaining to the site was obtained from CERCLA Unit files.

ENVIRONMENTAL SETTING

Topography

Onslow County lies in the Coastal Plain province. The land surface is a plain which slopes gently eastward to the Atlantic Ocean at an overall rate of less than 3 feet per mile. This plain is relatively flat in the broad interstream areas, but is broken by low escarpments adjacent to the stream valleys (Appendix C, Ref. 4). The site's facility slope is approximately .5% toward the southeast. There is a 30 ft. drop in the elevation between the southeast corner of the site and Northeast Creek. This drop occurs over a horizontal distance of roughly 4400 feet. The terrain average slope is therefore estimated at .68% toward the southeast (Appendix A, Map 1).

Surface Waters

The nearest surface water to the site is Northeast Creek. Northeast Creek is approximately 4400 feet southeast of the site and flows in a southwestwardly direction to New River (Appendix A, Map 1). Northeast Creek is classified as a SC-Sw waterway and New River is classified as a SB-Sw waterway, which means they are protected for recreational activities. Within three miles of the site swimming, water skiing, boating and fishing (recreational and commercial) occurs on both water bodies (Appendix C, Ref. 11 & 12).

Geology and Soils

The oldest formation penetrated by a water well in Onslow County is the Peedee. It is not known to crop out but lies within 30 feet of the surface in some valleys northwest of Richlands. Coastward the Peedee is more deeply buried, lying under a wedge of Castle Hayne limestone that thickens toward the coast. The Castle Hayne is exposed at many places along New River between Richlands and Jacksonville. The Yorktown formation overlies the Castle Hayne. A thin layer of sand and clay - chiefly sand of Pleistocene age conceals the older formations in the interstream areas (Appendix C, Ref. 4).

Soils of the area belong to the Onslow fine sandy soil association. Most of the surface comprises large flat to slightly undulating areas with the natural surface drainage of the county very poor (Appendix C, Ref. 5). The soil layer is believed to be relatively permeable with a hydraulic conductivity ranging between 10^{-3} and 10^{-5}cm/sec (Appendix C, Ref. 6 & 7).

Groundwater

There are three aquifers in Onslow County; the surficial aquifer, the Tertiary limestone aquifer, and the Peedee aquifer. Of the three only two aquifers, the surficial and Tertiary limestone, furnish water to the wells in the area. In this area, water contained in the Peedee aquifer is brackish, making it unsuitable for drinking water (Appendix C, Ref. 8, 4, pg. 67). The surficial aquifer can be as shallow as 1 ft. bls (Appendix C, Ref. 4, pg. 72, well #55). The Tertiary limestone aquifer is approximately 58 ft. bls (Appendix C, Ref. 4, pg. 69, well #54). There are no continuous confining layers separating the surficial aquifer from the Tertiary limestone aquifers (Appendix C, Ref. 3,8,4, pg. 69).

Northeast Creek is located approximately 4400 feet southeast of the site. Although the creek transects a three mile radius of the site, it is not considered a groundwater divide. The deepest part of the creek is only 9 ft. deep (Appendix A, Map 1). As stated before, wells in the area receive groundwater from the surficial and Tertiary limestone aquifer. The Tertiary limestone aquifer is approximately 58 ft. bls (Appendix C, Ref. 4, pg. 69). Therefore, Northeast Creek is not a discontinuity for the much deeper Tertiary Limestone aquifer.

Within a three mile radius of the site there are several community well systems serving groundwater to approximately 13,452 residents (Appendix C, Ref. 21). One of the community systems, the Tarawa Terrace, which serves approximately 6274 residents was sampled by NRCD in 1985 (Appendix C, Ref. 19). Organic solvent contamination was found in three of the eight wells. The wells are split between the surficial and Tertiary limestone aquifers, which could possibly mean that both of the aquifers are contaminated. ABC One Hour Cleaners was realized as the source of contamination after extensive groundwater studies by NRCD (Appendix C, Ref. 3).

Climate and Meteorology

In the Onslow County area, average temperatures range from 45°F in January to 79°F in July. The mean annual wind speed is 12 miles per hour and the prevailing wind is from the south (Appendix C, Ref. 9). Mean annual precipitation is 56 inches per year with mean evaporation 42 inches per year. The net precipitation of the Jacksonville area is 14 inches per year. The one year 24-hour rainfall is 3.5 inches. Thunderstorms occur approximately 40 to 60 days each year (Appendix C, Ref. 7 & 9).

Land Use

Land use in the area of the site is primarily residential. The site is located in the city of Jacksonville, a densely populated urban area (Appendix A, Map 1).

Population Distribution

The population living within a 1, 2, and 3 mile radius of the site is approximately 2759, 4811, and 13,452 persons, respectively (Appendix C, Ref. 10).

Water Supply

Groundwater is the only water supply source for residents within a three mile radius of the site. Groundwater is obtained from both the surficial and Tertiary limestone aquifers. There are no continuous confining layers between these two aquifers (Appendix C, Ref. 3,4,8). Since there are no surface water distribution lines in the city of Jacksonville, groundwater is the sole source of drinking water for the 13,452 residents within three miles of the site (Appendix C, Ref. 13,14,15,20,21). There are no surface water supply intakes in Onslow County. The nearest surface water reservoir is located on the Cape Fear River in Pender County, approximately 55 miles southwest of the site (Appendix C, Ref. 16).

Critical Habitats

There are no critical habitats of endangered species within a three mile radius of the site. However, alligators, a federally listed species, were sited within three miles of the site on Scales Creek (Appendix C, Ref. 17).

There are however estuary wetlands within three miles of the site. These wetlands are located approximately 3200 ft. southeast of the site on Northeast Creek. The wetlands are greater than three acres (Appendix A, Map 1, Appendix C, Ref. 8,19).

WASTE TYPES AND QUANTITIES

Waste Quantities

The exact quantity of tetrachloroethylene that was released into the septic tank-soil absorption system on the site is unknown. The quantity of still bottoms, deposited on the site which were generated through the spent tetrachloroethylene recycling process, is unknown also. The facility is classified as a small generator under RCRA and generates less than 1,000 kg/month of hazardous waste (Appendix C, Ref. 1,18).

Waste Disposal Methods and Locations

ABC One Hour Cleaners uses and has always used tetrachloroethylene to dry clean clothes. Tetrachloroethylene is kept in a 250 gallon tank inside a building located directly behind the main buildings. Spent tetrachloroethylene is recycled in this building by a filtration-distillation process. The still bottoms generated through the recycling process are picked up by Safety-Kleen and disposed of off-site. From 1954 to about 1984/85 the still bottoms were disposed of on the site. Pot holes on the site were once filled with these still bottoms (Appendix C, Ref. 1).

Located in the area of the tetrachloroethylene tank is the septic tank-soil absorption system. This system has always been used for the disposal of sewage and wastewater generated at the site. The system consists of an underground concrete tank with a concrete lid and is situated within four feet of the tetrachloroethylene tank. An inspection by NRCD of the building in which the tetrachloroethylene is stored, used and recycled has shown that solvent releases enter the septic tank (Appendix C, Ref. 1,3).

Waste Type

The only known hazardous waste generated at the facility is spent tetrachloroethylene, which is recycled, and the still bottoms generated by the recycling process (Appendix C, Ref. 1,3).

LABORATORY DATA

In April 1985, NRCD began a groundwater pollution investigation at the site, per the request of the U.S. Marine Corps. Three wells from the Tarawa Terrace well field along with three NRCD monitoring wells were sampled. Tetrachloroethylene was detected in all six wells. TCE levels were significantly higher in a monitoring well at the site and two community wells southeast of the site than TCE levels found in a monitoring well at the Glam-O-Rama site (another dry cleaners in the area) (Table 1, Appendix C, Ref. 3). Groundwater flow in the area of the site is southeast (Appendix C, Ref. 3). From the study, NRCD was able to conclude that ABC One Hour Cleaners was the source of tetrachloroethylene contamination to groundwater.

Trichloroethylene, 1,2-trans dichloroethylene, vinyl chloride, benzene, and toluene were also detected at low levels in some of the wells (Table 1, Appendix C, Ref. 3). It is not yet known if the source of these contaminants is tetrachloroethylene. There have been suggestions that the technical grade TCE used by the cleaners contains some of these contaminants, and the contaminants entered groundwater via the septic tank as did TCE (Appendix C, Ref. 27). Evidence is inconclusive concerning theories of the microbial degradation of TCE in soil to generate these compounds (Appendix C, Ref. 22,27). It has also been stated that the compounds, detected at such low levels as these were, are not uncommon to groundwater and should be addressed only because the elevated levels of TCE need to be addressed (Appendix C, Ref. 22).

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SUMMARY OF LABORATORY ANALYSES

Wells sampled in 1985 by NRCD
Table 1

Well No.	1	1	1	1	2	2	2	2	3	4	5	6
Dates Sampled	1/16	2/19	4/9	9/25	1/16	2/19	3/11	9/25	9/25	9/25	9/25	9/
Parameters (ug/l)												
Tetrachloroethylene	1580	64	630	1100	132	26	41	4	0.43	2.2	4.9	12
Trichloroethylene	57	--	18	---	---	53	---	---	---	---	0.98	2.
1,2-trans-Dichloroethylene	92	---	1.4	---	---	---	---	---	---	---	---	--
Vinyl Chloride	27	---	---	---	---	---	---	---	---	---	---	--
Toluene	---	---	---	---	---	---	---	---	---	2.3	---	--
Benzene	---	---	---	---	---	---	---	---	---	---	2.3	--

Well Number	Sample Location
1	Community well approx. 975 ft. southeast of site.
2	Community well approx. 1575 ft. southeast of site.
3	Community well approx. 950 ft. southeast of site (At the Glam-O-Rama Dry Cleaning site).
4	NRCD monitoring well approx. 425 ft. southeast of site.
5	NRCD monitoring well at ABC One Hour Dry Cleaning site.
---	Not detected.

TOXICOLOGICAL/CHEMICAL CHARACTERISTICS
of
Tetrachloroethylene

perchloroethylene (tetrachloroethylene)
$Cl_2C:CCl_2$.
Properties: Colorless liquid; ether-like odor. Extremely stable. Resists hydrolysis. Sp. gr. (20/20° C) 1.625; b.p. 121° C; f.p. −22.4° C; weight 13.46 lb/gal (26° C); refractive index 1.5029 (25° C); flash point, none. Miscible with alcohol, ether, and oils, in all proportions. Insoluble in water. Nonflammable.
Derivation: (a) By chlorination of hydrocarbons, and pyrolysis of the carbon tetrachloride also formed; (b) from acetylene and chlorine via trichloroethylene.
Method of purification: Distillation.
Grades: Purified; technical; U.S.P., as tetrachloroethylene; spectrophotometric.
Containers: Drums; tank cars.
Hazard: Moderately toxic. Irritant to eyes and skin. Tolerance, 100 ppm in air.
Uses: Dry-cleaning solvent; vapor-degreasing solvent; drying agent for metals and certain other solids; vermifuge; heat-transfer medium; mfg. of fluorocarbons.

From: The Condensed Chemical Dictionary, Tenth Edition, Revised by Gessner G. Hawley. Van Nostrand Reinhold Company, NY, 1981.

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05/27/87

TOXICOLOGICAL/CHEMICAL CHARACTERISTICS
of
Tetrachloroethylene

From: Dangerous Properties of Industrial Materials, Sixth Edition, N. Irving Sax. Van Nostrand Reinhold Company, NY, 1984.

1,1,2,2-TETRACHLOROETHYLENE

CAS RN: 127184 NIOSH #: KX 3850000

mf C_2Cl_4; mw: 165.82

Colorless liquid, chloroform-like odor. mp: −23.35°, bp: 121.20°, flash p: none, d: 1.6311 @ 15°/4°, vap. press: 1.8 mm @ 22°, vap. d: 5.83.

SYNS:

CARBON BICHLORIDE
CARBON DICHLORIDE
CZTEROCHLOROETYLEN (POLISH)
[illegible]-PER
ETHYLENE TETRACHLORIDE
HC-04580
PERCHLOORETHYLEEN, PER (DUTCH)
PERCHLORAETHYLEN, PER (GERMAN)
PERCHLORETHYLENE, PER (FRENCH)
PERCHLOROETHYLENE
PERCLENE
PERCLOROETILENE (ITALIAN)
TETRACHLOORETHEEN (DUTCH)
TETRACHLORAETHEN (GERMAN)
TETRACHLOROETHYLENE (DOT)
TETRACLOROETENE (ITALIAN)

TOXICITY DATA: 3

CODEN:

scu-rat TCLo:1000 ppm/24H (14D preg/1-22D preg)	APTOD9 19,A21,80
scu-rat TCLo:1000 ppm/24H (1-22D preg)	APTOD9 19,A21,80
scu-rat TCLo:900 ppm/7H (7-13D preg)	TJADAB 19,41A,79
scu-rat TCLo:300 ppm/7H (6-15D preg)	TXAPA9 32,84,75
ihl-mus TCLo:300 ppm/7H (6-15D preg)	TXAPA9 32,84,75
skn-rbt 810 mg/24H SEV	JETOAS 9,171,76
eye-rbt 162 mg MLD	JETOAS 9,171,76
mmo-sat 50 uL/plate	NIOSH* 5AUG77
mma-sat 200 uL/plate	NIOSH* 5AUG77
orl-mus TDLo:195 gm/kg/50W-I:CAR	NCITR* NCI-CG-TR-13,77
orl-mus TD:240 gm/kg/62W-I:CAR	NCITR* NCI-CG-TR-13,77
ihl-hmn TCLo:96 ppm/7H:SYS	NTIS** PB257-185
ihl-man TCLo:280 ppm/2H:EYE	AMIHBC 5,566,52
ihl-man TCLo:600 ppm/10M:CNS	AMIHBC 5,566,52
orl-rat LD50:8850 mg/kg	NPIRI* 1,96,74
ihl-rat LCLo:4000 ppm/4H	JOCMA7 4,262,62
orl-mus LD50:8100 mg/kg	NTIS** PB257-185
ihl-mus LCLo:23000 mg/m3/2H	AHBAAM 116,131,36
ipr-mus LD50:4700 mg/kg	NTIS** PB257-185
orl-dog LDLo:4000 mg/kg	AJHYA2 9,430,29
ipr-dog LD50:2100 mg/kg	TXAPA9 10,119,67
ivn-dog LDLo:85 mg/kg	QJPPAL 7,205,34
orl-cat LDLo:4000 mg/kg	AJHYA2 9,430,29
orl-rbt LDLo:5000 mg/kg	AJHYA2 9,430,29
scu-rbt LDLo:2200 mg/kg	QJPPAL 7,205,34

Aquatic Toxicity Rating: TLm96: 100-10 ppm WQCHM* 3,-,74. Carcinogenic Determination: Animal Positive IARC** 20,491,79.

TLV: Air: 50 ppm (skin) DTLVS* 4,325,80. *Toxicology Review:* AJMEAZ 38,409,65; 27ZTAP 3,139,69. OSHA Standard: Air: TWA 100 ppm; CL 200; Pk 300/5M/3H (SCP-J) FEREAC 39,23540,74. DOT: ORM-A, Label: None FEREAC 41,57018,76. Occupational Exposure to Tetrachloroethylene recm std: Air: TWA 50 ppm; CL 100 ppm/15M NTIS**. NCI Carcinogenesis Bioassay Completed; Results Positive: Mouse (NCITR* NCI-CG-TR-13,77). NCI Carcinogenesis Bioassay Completed; Results Negative: Rat (NCITR* NCI-CG-TR-13,77). Currently Tested by NTP for Carcinogenesis by Standard Bioassay Protocol as of December 1980."NIOSH Manual of Analytical Methods" VOL 1 127, VOL 3 S335. NIOSH Current Intelligence Bulletin 20, 1978. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8E No: 05780146-Followup Sent

THR: MOD via inhal, oral, scu, ipr and dermal routes. HIGH via ivn route. Not corrosive or dangerously acutely reactive, but toxic by inhal, by prolonged or repeated contact with the skin or mu mem, or when ingested by mouth. The liquid can cause injuries to the eyes; however, with proper precautions it can be handled safely. The symptoms of acute intoxication from this material are the result of its effects upon the nervous system.

Exposures to higher conc than 200 ppm cause irr, lachrymation and burning of the eyes and irr of the nose and throat. There may be vomiting, nausea, drowsiness, an attitude of irresponsibility, and even an appearance resembling alcoholic intoxication. This material also acts as an anesthetic, through the inhalation of excessive amounts within a short time. The symptoms of fatal intoxication are irritation of the eyes, nose and throat, then fullness in the head, mental confusion; there may be headache stupefaction, nausea and vomiting, personnel suffering from subacute poisoning may suffer from such symptoms as headache, fatigue, nausea, vomiting, mental confusion and temporary blurring of the vision. This can occur when inadequate ventilation results in concentrations higher than 200 ppm, or where the vapor conc are intermittently high due to faulty handling of the material, or when an individual fails to take adequate precautionary measures.

This material can cause dermatitis, particularly after repeated or prolonged contact with the skin. The dermatitis is preceded by a reddening and burning and more rarely, a blistering of the skin. In any event, the skin becomes rough and dry, due largely to the removal of skin oils by material. The skin then cracks easily and is readily susceptible to infection. Upon ingestion it causes irr of the gastrointestinal tract, which, in turn, causes nausea, vomiting, diarrhea and bloody stools. However, such effects are usually less severe than the effects of swallowing similar amounts of other chlorinated hydrocarbons. An exper CARC. MUT data.

It may be handled in the presence or absence of air, water, and light with any of the common construction materials at temp. up to 140°C. This material is extremely stable and resists hydrolysis. A common air contaminant. Reacts violently with Ba, Be, Li; N_2O_4; metals; NaOH.

Disaster Hazard: Dangerous; when heated to decomp it emits high tox fumes of chlorides.

For further information see Perchloroethylene Vol. 1, No. 2 of *DPIM Report.*

Appendix A

Maps

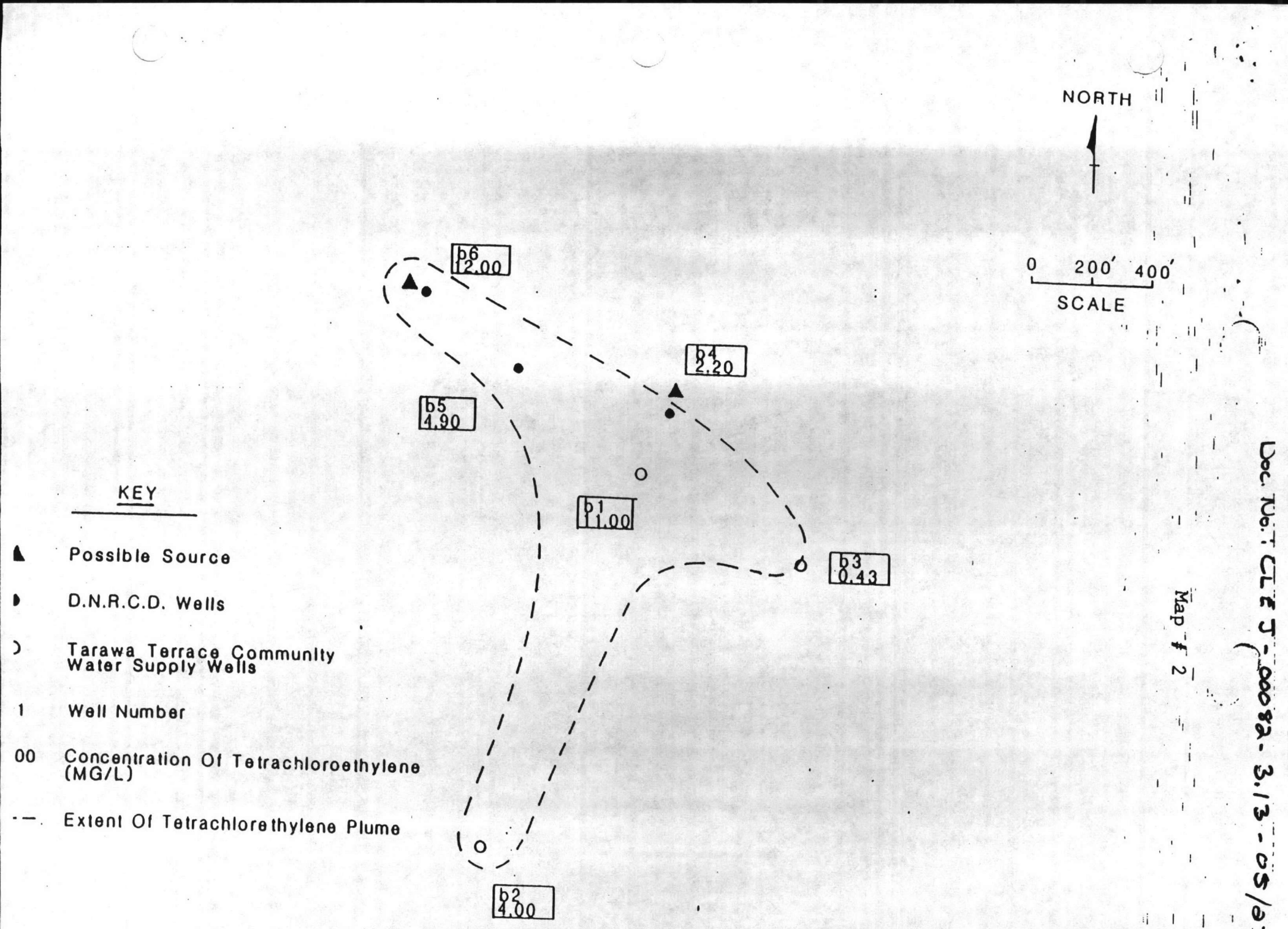

Figure 4: Map That Shows The Concentration Of Tetrachloroethylene

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Map # 2

CLEJ-00414-03.13-04/01/92

E 642 - 1

Hole Size 10" (to 100

Screen Size 6" (100-210') Mat'l PVC

asing Size 6" to 100' Mat'l PVC

Geologist David Breatlinger

Date Start 3/26 Finish 3/27

Contractor ESE

Driller James Davis

Filter Materials Coarse Sand

Grout Type Cement (Porter)

Development

Static Water Level 12.75 ± .25

Top of Well Elevation

Drill Type Rotary (10 and 6)" tricone bits

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0-5			silty fine sand (30% fines) organic material abundant		
5-10		Clay is tan color	silty & clayey fine sand clay very abundant, less organics		
10-15		Clay is tan color	silty clay - silty v. fine sandy clay much more clay than 5-10		
15-20		Clay is Blue-Grey in color	very silty clay. little/no sand		
20-25			Same as 15-20		
25-30			less clay & very silty fine sandy clay		
30-35			Very sandy silty clay - very silty sandy clay		
35-40			very clayey silty fine sand less 10% coarse sand		
40-45			silty clayey fine sand coarse material 10%		
45-50			silty very fine sand with 30% coarse material		
50-60			very silty fine sand 30% shells + cemented clastics 70%		

CLEJ-00414-03.13-04/01/92

WELL FACT SHEET

Well No. 642-1 Date 3/27 Start 3/26 Finish 3/27

Total Depth of Boring Prior to Well Installation 210' 1097

Diameter of Boring 10" to 100' 6" to 210'

Water Level ~13' BLS

Total Length of Well at Installation 202.5

Height of Well Above Ground Level 2.5

Total Depth of Well Below Ground Level 200'

Total Length of Screen	100'	from	100'	BGL to	200'	BGL
Total Length of Riser	102.5	from	100	BGL to	2.5	AGL
Sand Heave. Total Interval	—	from	—	BGL to	—	BGL
Filter Pack Total Interval	104	from	96'	BGL to	200	BGL
Bentonite Seal Total Interval	5	from	91'	BGL to	96'	BGL
Grout Total Interval	[redacted]	from	0	BGL to	[redacted] 92'	BGL
Protective Casing Total Interval	5'	from	2.3	BGL to	2.7	AGL

Well Screen Dia. 2" Schedule 40 Slot Size 0.010

Well Riser Dia. 2" Schedule 40

Filter Material 20-30 silica

Seal Bentonite pellets

Backfill natural sand to 72' Cement ✓ Bentonite ____ Water ____

Protective Casing Dia. 4 Material steel

Well Development

Date 3/30 Time 0915 Start 0930 Complete 1300

Water Level at Start ____ Finish ____

Conductivity Start ____ Finish ____

Water Color Start cloudy gray Finish slt cloudy

Bail Start ____ Finish ____

Surge Start ____ Finish ____

Pump Start ____ Finish ____ Volume ____

Type Centrifugal Rate ____

CLEJ-00414-03.13-04/01/92

Hole Size _____ E 642-2

Screen Size _____ Mat'l _____ Filter Materials _____

asing Size _____ Mat'l _____ Grout Type _____

Geologist _____ Development _____

Date Start 3/28 87 Finish 3/30/87 Static Water Level _____

Contractor _____ Top of Well Elevation _____

Driller _____ Drill Type _____

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
100-125		Original Limestone →	Shelly and cemented Clay, fine silty sand, sand is dark gray in color, cemented and hard, clay found at [illegible]		
125-[illegible]			[illegible]		
[illegible]			[illegible] fine sand and [illegible] peas [illegible] Clay peas light brown in color.		
175-200			Very fine [illegible] fines gray [illegible] Very little Coarse material.		
			Well Complete 500 pm 3/30		

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E 642 - 2

Hole Size 10" to 100', 6" to 200'

Screen Size 2" Mat'l PVC

Casing Size 6" to 100', 2" to 200' Mat'l PVC

Geologist David Brentlinger

Date Start 3/28/87 Finish 3/30

Contractor ESE

Driller Davis; James Davis

Filter Materials Silica Sand 100-200

Grout Type Portland #1

Development

Static Water Level —

Top of Well Elevation 10' ± 2'

Drill Type Tri Comb. Rotary

10" to 100' 5 7/8" to 200'

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0-25			Silty clayey fine sand, sand white in color, clay clumps, grey in color		
25-50			very coarse sandy silty clayey formation 35' otherwise, silty clayey very fine sand coarse material sand rock - color dark grey - grey		
50-75			very fine sand with silty clay throughout little to no coarse material sand at 55' - 75', formations are grey-white		
75-[illegible]			fine silty sand with shells and cemented clastics more shells + clastics 90' 10' (90-100'). Coarse sand grains throughout grey color & lower sand grains clear - white [illegible]		
	Comments:		642-2 has overall, less clay than 642-1: the 1st 100' hole closes badly especially at (60-70)'		

CLEJ-00414-03.13-04/01/92

WELL FACT SHEET

Well No. 62-2 Date 3/31 Start 3/28 Finish 3/30

Total Depth of Boring Prior to Well Installation 204'

Diameter of Boring 10" to 100' 6" to 204'

Water Level ~ 15' BGS

Total Length of Well at Installation 202.5

Height of Well Above Ground Level ~ 2.5

Total Depth of Well Below Ground Level 200'

Total Length of Screen	100'	from	100	BGL to	200	BGL
Total Length of Riser	102.5 ~~205~~	from	100	BGL to	2.5	AGL
Sand Heave. Total Interval	—	from	—	BGL to	—	BGL
Filter Pack Total Interval	105.5	from	94.5	BGL to	200	BGL
Bentonite Seal Total Interval	5.5	from	~~190~~ 194.5	BGL to	~~195~~ 94.5	BGL
Grout Total Interval	84	from	0	BGL to	84	BGL
Protective Casing Total Interval	5'	from	2.3	BGL to	2.7	AGL

Well Screen Dia. 2" Schedule 40 Slot Size 0.010

Well Riser Dia. 2" Schedule 40

Filter Material 20-30 silica sand

Seal Bentonite Pellets

Backfill natural soil to 84' BGS Cement ✓ Bentonite ____ Water ____

Protective Casing Dia. 4" Material Steel

Well Development

Date 4/1 Time 1300 Start 1145 Complete 1600

Water Level at Start ____ Finish ____

Conductivity Start ____ Finish ____

Water Color Start gray black Finish sl cloudy gray

Bail Start ____ Finish ____

Surge Start ____ Finish ____

Pump Start ____ Finish ____ Volume ____

Type Centr. Submersible Rate ____

CLEJ-00414-03.13-04/01/92

Boring No. HPGW [illegible] A16C SHEET ____ OF ____

6/18/87
onsite 700 Am ; drilling begins 715
Problem
10:00 Am Pump ; breaks down ; hole 60'

6/15/87 (HPGW24-3)
On site 0700 Am Drillers arrive 0730
Rig set up and drilling 0815 ; (40' hole clean in) :
0930 - Rig's Rods clogged . Helper gets water
1030 - Drilling Resumes
1130 - Drill breaks down ; Mud pump broke rear rear pump ; get from [illegible] start up Tuesday ?

6/16/87 (HPGW 24-3)
On site 0830 . Drillers arrive 0900 begin working on rig . Drilling Begins 1200 pm . 1430 drilling stops at 150' begin pulling Rods. 130'-1500 1500 Screen + casing into hole, at 70' hole closes , casing stuck , after 1 hour driller pulls casing + screen out ; 1630 off post.

6/17/87
On site 0700 Drilling begins 0800 ; hole closed badly overnight . Driller trys to get the casing but fails at 1045 . 1200 pm after 1hr break driller sets 25' casing (temporary) casing in place 1350 ; driller begins drilling past casing and by 1600 bores down to 150' , pulls out and finally gets Screen + casing in hole 1630 ; off post 1700

DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 198

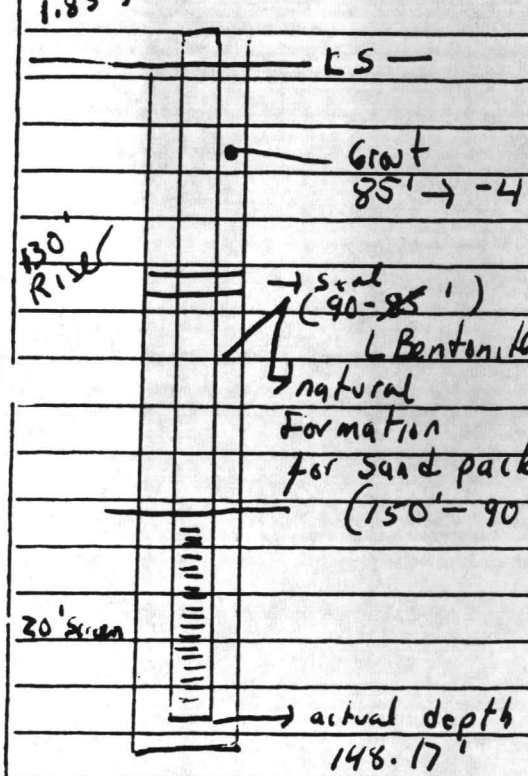
CLEJ-00414-03.13-04/01/92

Boring No. _____ **ATEC** SHEET _____ OF _____

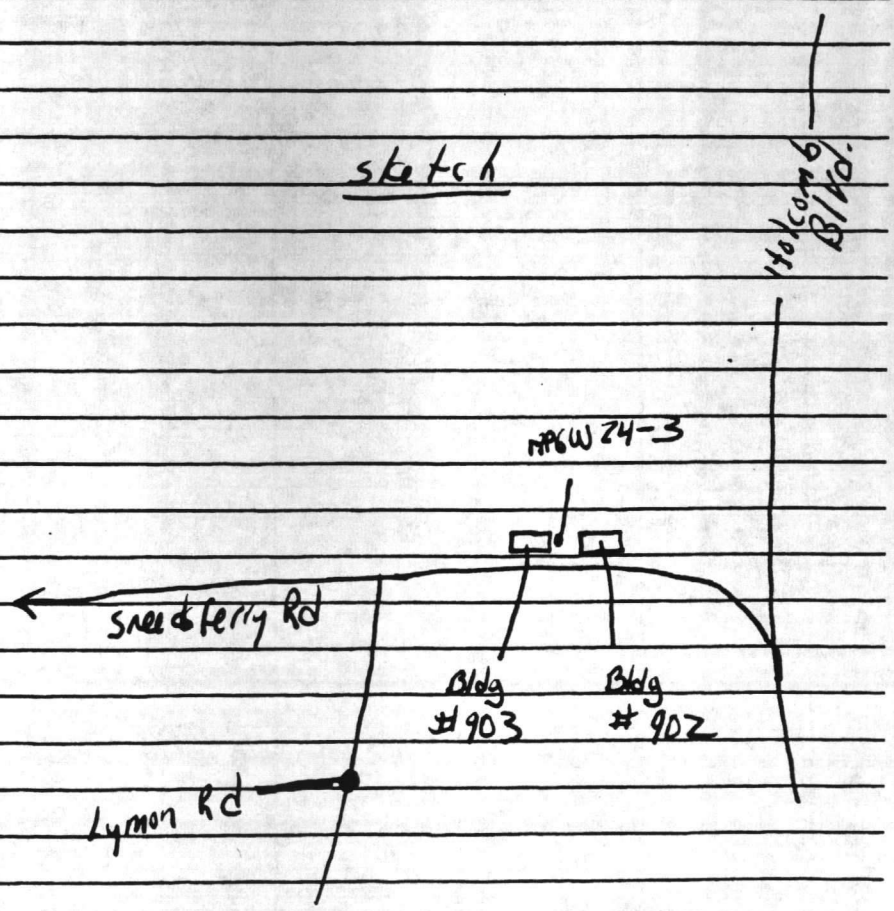
6/18/87 HPGW24-3

On site 0730, drillers arrive 0800: Begin pulling casing 0830 (hole caves to 90') Bentonite (90→80) cement portion ± 1 to LS well complete 1130. Drillers Breaking down - heading to next hole.

Comments: Strong chemical smell at 50' Broke down consistency of drill mud!



sketch



7/1/87
DATE

Daniel A. Brattlyss
SIGNED

SOURCE: Environmental Science and Engineering, Inc., 198

CLEJ-00414-03.13-04/01/92

E HP6W24-3

Hole Size _____

Screen Size _____ Mat'l _____ Filter Materials _____

asing Size _____ Mat'l _____ Grout Type _____

ologist _____ Development _____

Date Start _____ Finish _____ Static Water Level _____

Contractor _____ Top of Well Elevation _____

Driller _____ Drill Type _____

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
140-145			Silty fine-med. Sand with less shells + Rocks, not much coarse sand		
145-150			same as above (140-145)		
150-155			Silty fine-med. Sand little shell + rock		

CLEJ-00414-03.13-04/01/92

E HP6W24-3

Hole Size _____

Screen Size _____ Mat'l _____ Filter Materials _____

asing Size _____ Mat'l _____ Grout Type _____

Geologist _____ Development _____

Date Start _____ Finish _____ Static Water Level _____

Contractor _____ Top of Well Elevation _____

Driller _____ Drill Type _____

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
105-110			Silty fine - V. fine sand with shells + rock fragments		
110-115			Silty fine sand and coarse sand with cemented clastics, shells Coarse sand angular, clear		
115-120			med. sand, 50% semi cemented clastics (grey) and fossils, shells		
120-125			same as above (115-120)		
125-130			silty fine sand with lots of shells + fossils, coarse rounded sand		
130-135			same as above (125-130)		
135-140			silty med sand (grey) with cemented clastics loosely filled of sand		

CLEJ-00414-03.13-04/01/92

E HP24-3

Hole Size _____

Screen Size _____ Mat'l _____ Filter Materials _____

asing Size _____ Mat'l _____ Grout Type _____

Geologist _____ Development _____

Date Start _____ Finish _____ Static Water Level _____

Contractor _____ Top of Well Elevation _____

Driller _____ Drill Type _____

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
60 - 70	Sand Silt Rock	68-70'	Silty fine - med Sand, V. little clay, Coarse sand well rounded & small size; cemented clastics limestone & shells	very	hard
70 - 75			Rock (cincemented clastics) shells and coarse sand (well rounded). fine silty sand (74-75)' with less rock and shells		
75 - 80			fine sand with [illegible]		
	soft	Soft Rock (1'2')	fine silty sand; Rock (80→84)' silty fine sand		
[illegible] - 90			Silty very fine sand with small shells and rounded V. coarse sand pebbles		
90 - 95			Silty med. Sand with mine shells and coarse sand + pebbles		
95 - 100			Same as above (90-95)		
100 - 105		100-103	Silty fine sand		
		103-105	solid cemented [illegible]		
			Silty fine [illegible]		

CLEJ-00414-03.13-04/01/92

E HPCW 24-3

Hole Size 5"
Screen Size 2" Mat'l PVC
asing Size 2" Mat'l PVC
Geologist David Brentlinger
Date Start 6/10/87 Finish 6/18/87
Contractor ESE
Driller Don Sweeting (ATEC)

Filter Materials Natural formation
Grout Type Portland #1
Development Bailer
Static Water Level 11.90' BGL
Top of Well Elevation 1.81'; 150' TOC
Drill Type Rotary - Mud

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0-10			silty fine sand with organic matter top 5', some clay layers		
10-15			silty fine sand and organic clay throughout.		
15-20			silty fin - med. sand with coarse sand + pebbles bottom 3'		
[illegible]-[illegible]			coarse sand TOP 5', silty clayey fine sand		
30-[illegible]			silty fine sand		
35-40			silty med sand with clay layers (clay brown with coarse sand)		
40-50			same as above (35-40) little/no coarse material		
50-60			silty med.-coarse sand. Rock at 58' (cemented clastics + shells).		

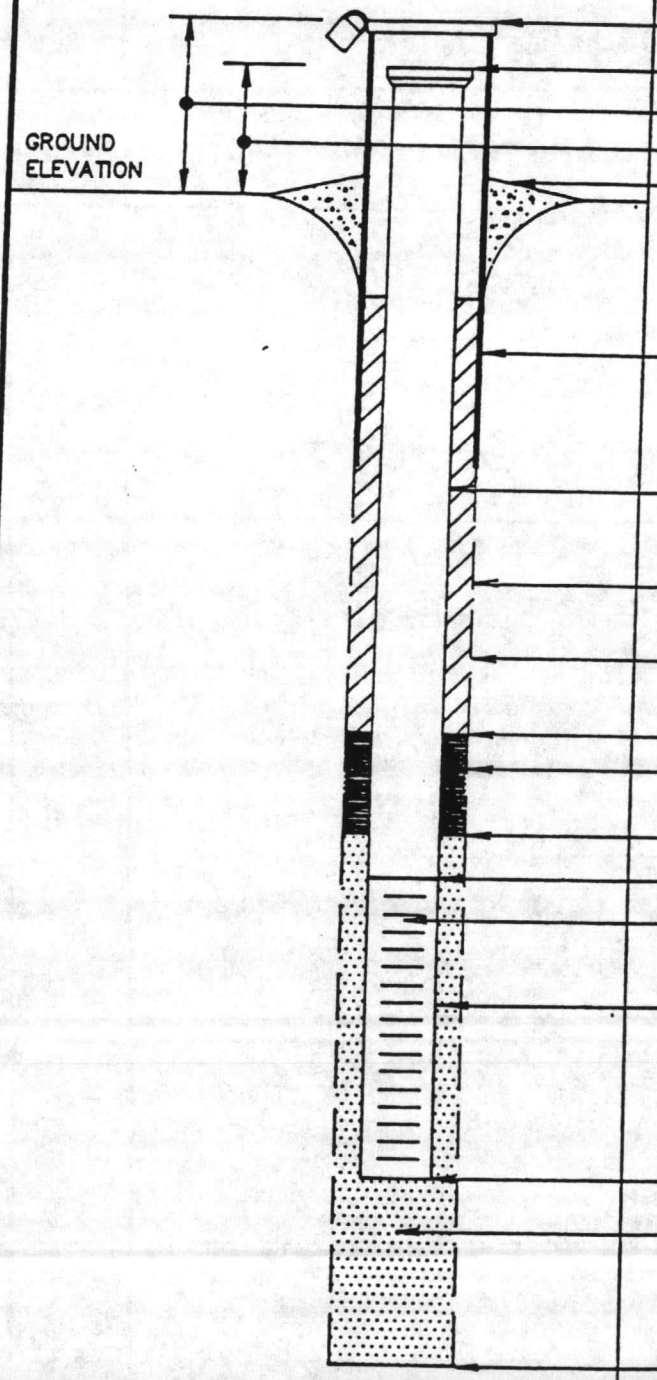
CLEJ-00414-03.13-04/01/92

OVERBURDEN MONITORING WELL SHEET

WELL NO. HP-GW24-2

PROJECT Camp Legeune - HP1A
PROJECT NO. 49-GW136 BORING NO. HP-GW24-2
ELEVATION DATE 6/8/87 - 6/9/87
FIELD GEOLOGIST David Brentlinger (ESE)

DRILLER ATEC
DRILLING METHOD Mud Rotary
DELVELOPMENT METHOD Bailing



ELEVATION OF TOP OF SURFACE CASING: 34.35'
ELEVATION OF TOP OF RISER PIPE: 33.73'
STICK-UP TOP OF SURFACE CASING: 3.5c'
STICK-UP RISER PIPE: 2.88'
TYPE OF SURFACE SEAL: concrete

I.D. OF SURFACE CASING:
TYPE OF SURFACE CASING: Carbon steel

RISER PIPE I.D. 2"
TYPE OF RISER PIPE: Schedule 40 PVC

BOREHOLE DIAMETER: 5"

TYPE OF BACKFILL: Portland #1 Cement

ELEVATION/DEPTH TOP OF SEAL: 45.59'
TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 51.59'
ELEVATION/DEPTH TOP OF SCREEN: 56.59'
TYPE OF SCREEN: Schedule 40 PVC
SLOT SIZE X LENGTH: .010" x 20'
TYPE OF SAND PACK: coarse sand

ELEVATION/DEPTH BOTTOM OF SCREEN: 76.59'
ELEVATION/DEPTH BOTTOM OF SAND PACK:
TYPE OF BACKFILL BELOW OBSERVATION WELL:

ELEVATION/DEPTH OF HOLE 80' ± 1'

NOT TO SCALE

OVBDMW.DWG

WELL FACT SHEET

Well No. HP6W24-2 Date 6/9/87 Start 6/8/87 Finish 6/9/87

Total Depth of Boring Prior to Well Installation 80' ± 1'

Diameter of Boring 5"

Water Level 14.67 (TOC 0800 6/9/87)

Total Length of Well at Installation 79.90'

Height of Well Above Ground Level 3.31'

Total Depth of Well Below Ground Level 76.59'

Total Length of Screen	20'	~~76.59'~~	from	76.59'	BGL to	56.59' BGL
Total Length of Riser		59.90	from	56.59'	BGL to	3.31' AGL
Sand Heave. Total Interval			from	3	BGL to	BGL
Filter Pack Total Interval	25'	~~51.59~~	from	~~51.59~~ 76.59'	BGL to	51.59' BGL
Bentonite Seal Total Interval	3'		from	51.59'	BGL to	48.59' BGL
Grout Total Interval	48'	~~51.00'~~	from	48.59'	BGL to	0.59' BGL
Protective Casing Total Interval			from		BGL to	AGL

Well Screen Dia. 2" Schedule 40 Slot Size 0.01

Well Riser Dia. 2" Schedule 40

Filter Material Coarse Sand

Seal Bentonite

Backfill Concrete (Cement X) Bentonite Water

Protective Casing Dia. Material

Well Development

Date 6/10/87 Time ~~1315~~ 1315 Start 1330 6/10/87 Complete 1730 6/13/87

Water Level at Start 14.67' TOC Finish 75.00' TOC after bail

Conductivity Start ——— Finish ———

Water Color Start turbid grey Finish Clear

(Bail) Start 6/10/87 Finish 6/13/87

Surge Start ——— Finish ———

Pump Start 6/10/87 Finish 6/15/87 Volume 185.0 gallons

Type Bailer (PVC Sch. 40) Rate 0.15 gpm

LAB

Boring No. HPGW24-C ATEC SHEET 01 OF 04

on site and Ready 1:45 PM 6/8/87 (Start – 6/8/87, Finish – 6/9/87)

Drilling Stops 300 PM, hole closing, Mud Pump Casing down

HPGW24-2

On site 700 Am 6/9/87

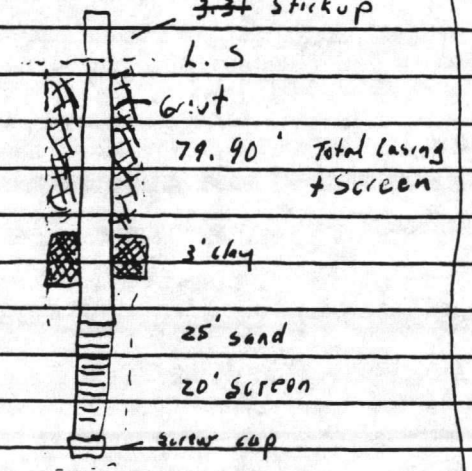
Well Drilling complete – 1030 lunch 1130 - 100 PM

Casing + Screen in – 1038

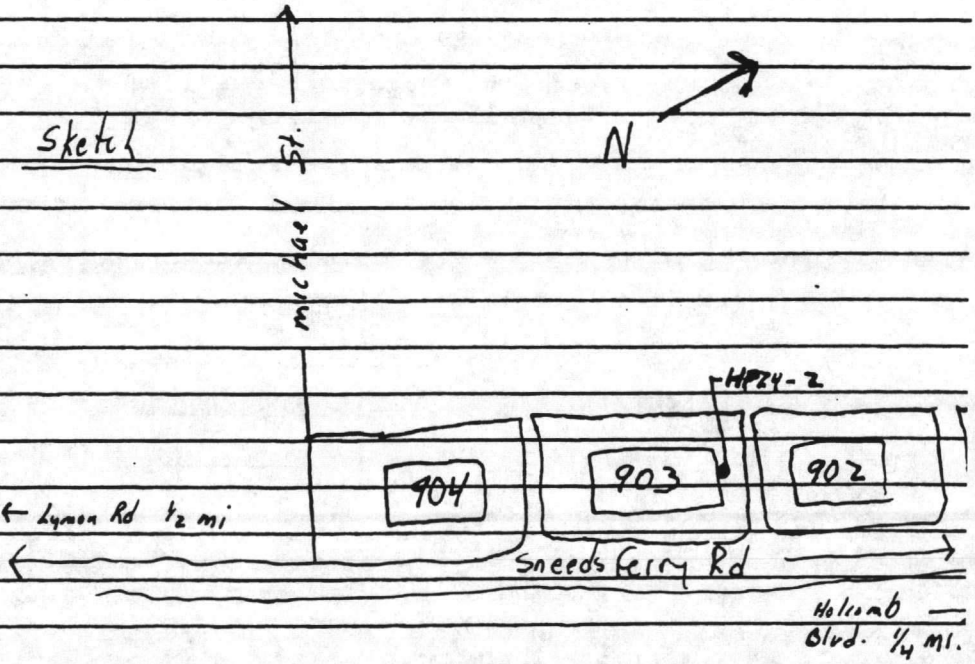
Well Complete – 2:30

Comments: Drillers worked very well, hole remained open during casing installation (soft fine sand most of hole)

Well Profile



Sketch



6/8/87
DATE

David A. Brittingham
SIGNED

SOURCE: Environmental Science and Engineering, Inc., 198

CLEJ-00414-03.13-04/01/92

Hole Size _____ E _____

Screen Size _____ Mat'l _____ Filter Materials _____

asing Size _____ Mat'l _____ Grout Type _____

G-logist _____ Development _____

Date Start _____ Finish _____ Static Water Level _____

Contractor _____ Top of Well Elevation _____

Driller _____ Drill Type _____

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT
50 - 55			Silty Sand - fine Sandy silt with clay + small shells		
55 - 60			Clayey Silty fine sand mostly fine sand some med.-coarse sand with small clastics (shells)		
60 - 65			same as above 55-60 more shells		
65 - 70		hard layer	Silty med sand with coarse sand and uncemented clastics + cemented (lots of shells)	Rock	
70 - 75		semi lithified limestone	same as above 70-75	Rock	

Comments:

Rock layer is not very hard, driller went through easily.

CLEJ-00414-03.13-04/01/92

Hole Size 5" E

Screen Size 2" Mat'l PVC Filter Materials Coarse Sand

asing Size 2" Mat'l PVC Grout Type #1 Portland

Geologist David Brentlinger Development Bailed (184 gallons)

Date Start 6/8/87 Finish 6/9/87 Static Water Level ~~4.67 TOC~~ 11.42

Contractor ESE Top of Well Elevation ~~3.34~~ 3.25 ↓ stick

Driller ATEC & Associates (Don Sweeting) Drill Type Rotary - Mud

79.40 TOC

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT
0 - 5			Silty Fine Sand		
5 - 10			Silty fine sand		
10 - 15			Silty Fine Sand		
15 - 20			Silty very fine sand		
20 - 25			very fine sand		
25 - 30			very fine sand, some coarse sand, white fines, coarse material well rounded		
30 - 35			very fine sand same as above		
35 - 40			very ~~fine~~ silty - clayey fine sand		
40 - 50			same as above 35 - 40 with more clay in peds		

CLEJ-00414-03.13-04/01/92

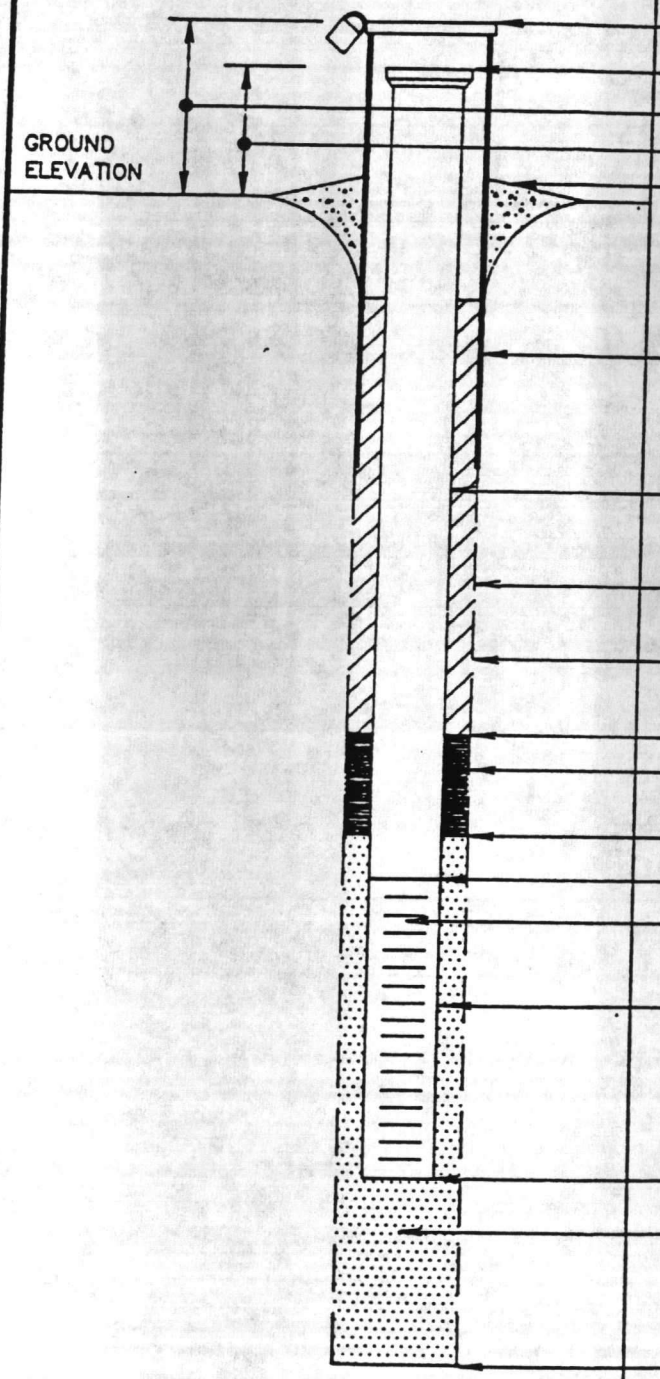
OVERBURDEN MONITORING WELL SHEET

WELL NO. HP-GW17-3

PROJECT Camp Lejeune - ITP/A
PROJECT NO. 49-02036
ELEVATION
FIELD GEOLOGIST David Breitlinger (ESE)

BORING NO. HP-GW17-3
DATE 7/15/97 - 7/17/97

DRILLER Davis Drilling Co.
DRILLING METHOD Mud Rotary
DELVELOPMENT METHOD Bailing



ELEVATION OF TOP OF SURFACE CASING: _____
ELEVATION OF TOP OF RISER PIPE: _____
STICK-UP TOP OF SURFACE CASING: _____
STICK-UP RISER PIPE: _____
TYPE OF SURFACE SEAL: concrete

I.D. OF SURFACE CASING: 3"
TYPE OF SURFACE CASING: Carbon steel

RISER PIPE I.D. 2"
TYPE OF RISER PIPE: Schedule 40 PVC

BOREHOLE DIAMETER: 6

TYPE OF BACKFILL: Portland #1 Cement

ELEVATION/DEPTH TOP OF SEAL: 115'
TYPE OF SEAL: Bentonite Pellets

DEPTH TOP OF SAND PACK: 125'
ELEVATION/DEPTH TOP OF SCREEN: 130'
TYPE OF SCREEN: Schedule 40 PVC.
SLOT SIZE X LENGTH: 0.010" x 20'
TYPE OF SAND PACK: Medium Sand

ELEVATION/DEPTH BOTTOM OF SCREEN: 150'
ELEVATION/DEPTH BOTTOM OF SAND PACK: _____
TYPE OF BACKFILL BELOW OBSERVATION WELL: _____
ELEVATION/DEPTH OF HOLE 152'

NOT TO SCALE

OVBDMW.DWG

1

CLEJ-00414-03.13-04/01/92

WELL FACT SHEET

Well No. MPGW 17-3 Date 7/20/87 Start 7/15/87 Finish 7/16/87

Total Depth of Boring Prior to Well Installation 152'

Diameter of Boring 6"

Water Level 15.50 ± (¼")

Total Length of Well at Installation 150' (152.5 with stick-up)

Height of Well Above Ground Level 2.50'

Total Depth of Well Below Ground Level 150'

Total Length of Screen	20'	from	150	BGL to	130	BGL
Total Length of Riser	132.5	from	130	BGL to	2.5	AGL
Sand Heave. Total Interval		from		BGL to		BGL
Filter Pack Total Interval	25'	from	150	BGL to	125	BGL
Bentonite Seal Total Interval	10'	from	125	BGL to	115	BGL
Grout Total Interval	110	from	115	BGL to	05	BGL
Protective Casing Total Interval	4'	from	1.0	BGL to	3.0	AGL

Well Screen Dia. 2" Schedule #40 Slot Size 001"

Well Riser Dia. 2" Schedule #40

Filter Material Med. Sand

Seal Bentonite Pellets

Backfill Cement ✓ Bentonite Water

Protective Casing Dia. 3" Material Steel

Well Development

Date 7/19/87 Time 0800 Start 0800 (7/19) Complete 1400 (7/20)

Water Level at Start 15.65 Finish 32'

Conductivity Start — Finish —

Water Color Start — Finish —

Bail Start 0800 (7/19) Finish 1400 (7/20)

Surge Start — Finish —

Pump Start — Finish — Volume —

Type — Rate —

Boring No. HP6W 17-3 SHEET ____ OF ____

Davis

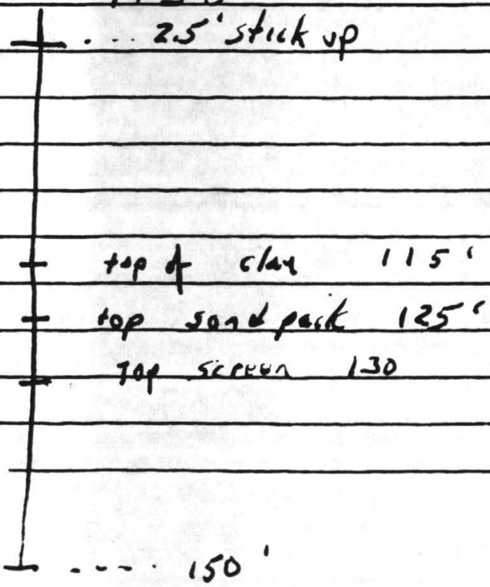
7/15/87 0800

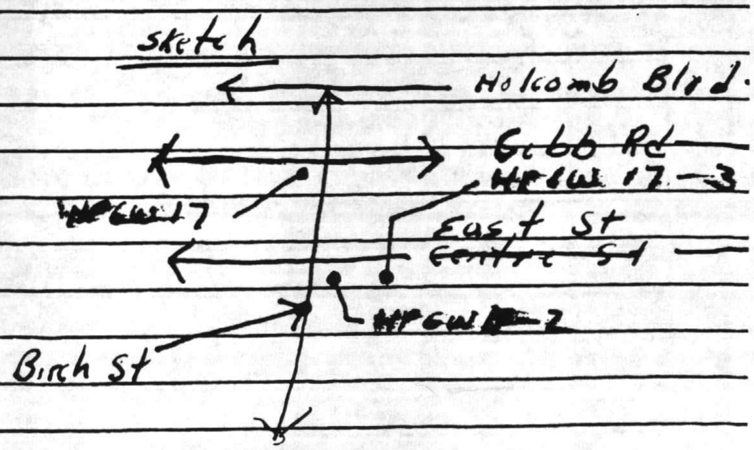
Arrive on site, drillers organizing - working on rig. 0900 mud is made, drilling begins. Drilling complete 1215; driller attempts to place temporary casing 1230, driller cannot get casing past 75', Driller pulls casing out 1300, attempts to wash out hole and thunderstorms set in 1315 and general rain follows until 1400. Call it off till morning.

DAB

7/16 [illegible] 0700 drillers on site + drill out hole, takes all morning to set 6" casing [illegible] grouting casing until 1300, driller [illegible] to stay onsite, painting of unpainted wells done remainder of day, driller goes to town and gets supplies while helper paint.

7/17/87 On site 0700; drillers begin drilling out grout from casing; setting 2" PVC casing [illegible]. Well installed 1100, grouted and complete 1130.





DATE ____ SIGNED ____

SOURCE: Environmental Science and Engineering, Inc., 19

Boring No. _____ SHEET _____ OF _____

HPGW 17-3 ATEC

6/26/87

Drillers on site 0930; discuss items on next wells till 1000, 1000 Drillers begin to gather materials for grouting hole which is lost and to be grouted to land surface. Weather slows drillers down. Finish grouting hole 1245 PM, break for lunch. Drillers Return 1355, too late to start Next hole HPGW 9-2, I get driller to move rig to HPGW 9-2 and also tell him to get everything over there and be ready to drill 0700 on monday. I go to HPGW 24-3 to bail 25 gallons of 1430

Materials Used: 200 4" threaded PVC pipe was ordered and 50' was used and remained in hole. no sand or bentonite was used, only clay for mud.

DATE _____ SIGNED _____

SOURCE: Environmental Science and Engineering, Inc., 198

Boring No. HP6W 17-__ ATEC SHEET ____ OF ____

Onsite HP6W 17-3 0700 6/22/87
Beginning of well development of HP6W 17-2

Drillers arrive 0830 set up at HP6W 17-3 1000
Break to go to town Back at 1300 (2hrs O.T.)
work top 10' go to lunch 1330. Drillers Return 1500 Can't finish hole, have drill rods that are too small for the bit. have new rods in the morning. Begin to clean up bailing materials And meet with Flelc Acosta at Airstation 1600.

HP6W 17-3 6/23/87
On site 0800, drillers not arrived, beginning to bail 17-2. Drillers arrive 0900, Parts for Rig won't be in till 1200, Meet back at 130-200; go to bail HP6W 17-3. (Drillers do not Return).

HP6W 17-3 6/24/87
On site at 0800 drillers arrive 0900 Drilling 0930. Problem 1030, down until 1130. Lunch 1300-1400; Rest of afternoon, there seem to be problems pulling rods (Sub piece and threads of new rods not working) 20' of rod out of ground by 1542. ; 60' remains in hole. 1630 drill rods out, driller attempts to set casing, gets down to 45' hole bac- caves, driller quits 1715 off pos 1730.

HP6W17-3 6/25/87
Drillers arrive 0930; have to make fitting for psc be back (gone to town 10:00); drillers return 1130 get drill rig circulating at 1200, lunch break till 100, drillers cant get 4" casing up-down they try till 300. Hole lost. Drillers quit 300 PM

DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 198

CLEJ-00414-03.13-04/01/92

E HPGW 17-3

Hole Size

Screen Size Mat'l Filter Materials

asing Size Mat'l Grout Type

Geologist Development

Date Start Finish Static Water Level

Contractor Top of Well Elevation

Driller Drill Type

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT
110-115.0			Same as Above 105-110		
115.0-120.0			Cemented clastics w sand and shells; little no fines		
120.0-125.0			Same as Above 115-120		
125.0-130.0			Silty fine to med sand		
130.0-135.0			Same as Above (125-130).		
135.0-140.0			Same as Above (125-130)		
140.0-145.0			Silty fine sand		
145.0-150.0			Silty fine Sand		

CLEJ-00414-03.13-04/01/92

E HPGW 17-3

Hole Size

Screen Size Mat'l Filter Materials

asing Size Mat'l Grout Type

Geologist Development

Date Start Finish Static Water Level

Contractor Top of Well Elevation

Driller Drill Type

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
75.0 - 80.0			silty fine sand		
80.0 - 85.0			silty fine sand		
85.0 - 90.0			silty fine sand with light clay peds		
90.0 - 95.0			Coarse sand and shells with some well rounded pebbles and clay peds		
95.0 - 100.0		95-97	Rock layer (Hard!)		
			silty med. sand some coarse sand + pebbles		
100.0 - 105.0			silty med sand and shells, some cemented clasts on bottom		
105.0 - 110.0			cemented clasts with shells and coral sand		

CLEJ-00414-03.13-04/01/92

E HPGW 17-3

Hole Size

Screen Size Mat'l Filter Materials

asing Size Mat'l Grout Type

Geologist Development

Date Start Finish Static Water Level

Contractor Top of Well Elevation

Driller Drill Type

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
40.0 - 45.0			Silty med. Sand		
45.0 - 50.0			silty med sand with clay layers little/no coarse material		
50.0 - 55.0			Silty fine - med. sand		
55.0 - 60.0			Silty fine sand to 58' 58' coarse sand, stells semi - cemented clastics		
60.0 - 65.0		Rock 64' ↓ 70'	Cemented clasts		
65.0 - 70.0			cemented clasts less dense after 68' lots of stells, pebbles		
70.0 - 75.0			Silty med- coarse sand little/no stells or fine sand loose - [illegible]		

CLEJ-00414-03.13-04/01/92

Hole Size 6" E HP6W 17-3

Screen Size 2" Mat'l PVC Filter Materials

asing Size 2" Mat'l PVC Grout Type Portland #1

Geologist David Brentlinger Development Bailor 1" PVC

Date Start ~~6/22/87~~ 7/16/87 Finish 7/17/87 Static Water Level ~~15.17 2.50~~ 12.

Contractor ESE Top of Well Elevation ~~3 12.67~~ 15.1

Driller ~~HZC & Associates~~ Drill Type Rotary Mud

Davis Drilling (Clayton Davis)

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0.0-5.0			Silty clayey fine sand, much organic matter		
5.0-10.0			Silty fine sandy clay clay dark brown - black		
10.0-15.0			same as above (5-10)		
15.0-20.0			Silty fine - med sand coarse sand - gravel some clay upper parts Pebbles well rounded		
20.0-25.0			Silty clayey med sand little fine coarse sand organic matter 24-25'		
25.0-30.0			Silty fine sand some med.-coarse material		
30.0-35.0			Silty fine - med Sand with Clay layers Course sand well rounded		
35.0-40.0			med. - Coarse sand - pebbles some silt - fine sand light grey Clay peds with well rounded pebbles		

CLEJ-00414-03.13-04/01/92

WELL FACT SHEET

Well No. HP6W17-2 Date 6/24/87 Start 6/22/87 Finish 6/24/87

Total Depth of Boring Prior to Well Installation 80.0'

Diameter of Boring 5"

Water Level 10' (± 1')

Total Length of Well at Installation 74' (± 0.25') (73.33 BGL)

Height of Well Above Ground Level 2.67'

Total Depth of Well Below Ground Level 73.33

Total Length of Screen	~~49.33~~ 73.33	from	73.33' BGL	to	53.33 BGL
Total Length of Riser	49.33'	from	53.33' BGL	to	2.67 AGL
Sand Heave. Total Interval	Natural formation	from	73.33' BGL	to	48.33 BGL
Filter Pack Total Interval	None	from	____ BGL	to	____ BGL
Bentonite Seal Total Interval	5'	from	48.33' BGL	to	43.00' BGL
Grout Total Interval	42.50'	from	43.00' BGL	to	0.50' BGL
Protective Casing Total Interval	____	from	____ BGL	to	____ AGL

Well Screen Dia. 2" Schedule 40 Slot Size 0.01

Well Riser Dia. 2" Schedule 40

Filter Material Natural formation (silty med sand)

Seal Bentonite

Backfill Portland #1 Cement ✓ Bentonite ____ Water ____

Protective Casing Dia. ____ Material ____

Well Development

Date 6/22/87 Time 0700 Start 0700 (6/22) Complete 1400 (6/24)

Water Level at Start 15.33' TOC Finish 37.00' TOC

Conductivity Start ____ Finish ____

Water Color Start turbid Finish clear

Bail Start ____ Finish ____

Surge Start ____ Finish ____

Pump Start 6/22 Finish 6/24 Volume ~~260~~ 260 gallons

Type PVC pipe Rate ½ gpm

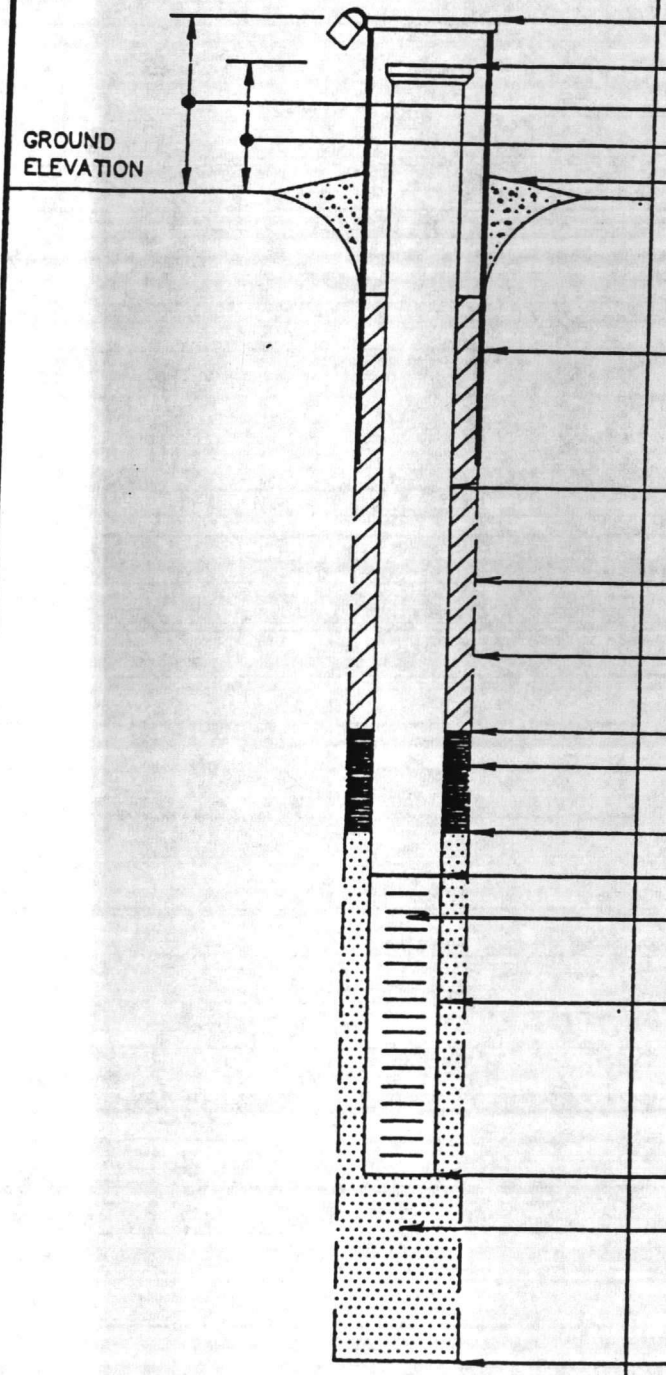
CLEJ-00414-03.13-04/01/92

OVERBURDEN MONITORING WELL SHEET

WELL NO. HP-GW17-2

PROJECT Camp Lejeune - HP1A
PROJECT NO. 49-C2E-6
ELEVATION
FIELD GEOLOGIST David Brentlinger (ESE)
BORING NO. HP-GW17-2
DATE 6/18/87 - 6/24/87

DRILLER ATEC
DRILLING METHOD Mud Rotary
DELVELOPMENT METHOD PVC Bailer



ELEVATION OF TOP OF SURFACE CASING: 32.49'
ELEVATION OF TOP OF RISER PIPE: 32.15'
STICK-UP TOP OF SURFACE CASING: 2.8c'
STICK-UP RISER PIPE: 2.46'
TYPE OF SURFACE SEAL: concrete

I.D. OF SURFACE CASING:
TYPE OF SURFACE CASING: Carbon steel

RISER PIPE I.D. 2"
TYPE OF RISER PIPE: Schedule 40 PVC

BOREHOLE DIAMETER: 5"

TYPE OF BACKFILL: Portland #1 Cement

ELEVATION/DEPTH TOP OF SEAL: 43'
TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 48 33'
ELEVATION/DEPTH TOP OF SCREEN: 53 33'
TYPE OF SCREEN: Schedule 40 PVC
SLOT SIZE X LENGTH: 0.010" x 20'
TYPE OF SAND PACK: natural formation (silty medium sand)

ELEVATION/DEPTH BOTTOM OF SCREEN: 7333'
ELEVATION/DEPTH BOTTOM OF SAND PACK:
TYPE OF BACKFILL BELOW OBSERVATION WELL:

ELEVATION/DEPTH OF HOLE 80'

NOT TO SCALE

OVBDMW.DWG

Boring No. _____ ATEC SHEET ____ OF ____

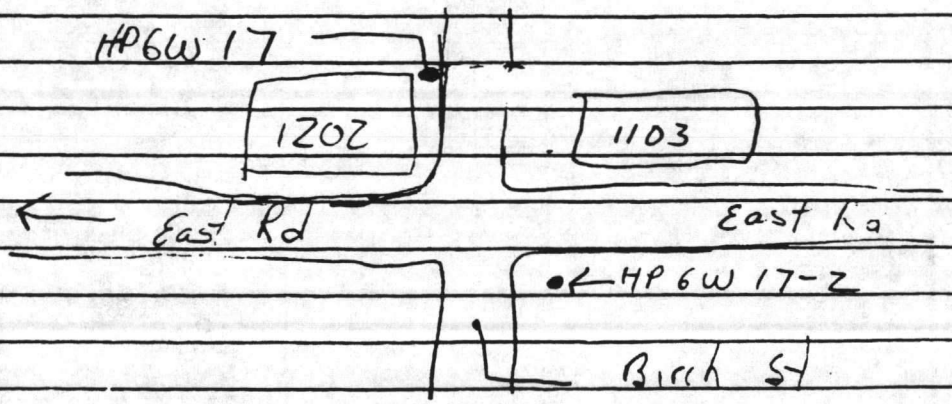
HPGW 17-2 6/18/87

on site 1230 ; Set up and Drilling 1300 . 1430 well drilled ; Rods out. Driller works for casing (for about 20 minutes) meanwhile hole body closes, driller attempts to get casing in by force, successful in doing so at a depth of about 74', however hole has closed to 30' LS and cannot [illegible] to 30'. Hole must be Re-drilled. End of day ; off Post at 1630

HPGW17-2 6/19/87

[illegible] 0800 drillers give [illegible] for other Rig at TI, Back on site 0830 [illegible] Attempt to layer a Cement slurry at 50' LS to seal the well; they are successful and then attempt to grout a Bentonite-Cement slurry from 40' to LS ; they are successful [illegible] this completes Day End off post [illegible].

sketch



DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 198

CLEJ-00414-03.13-04/01/92

E HPGW 17-2

Hole Size

Screen Size Mat'l

asing Size Mat'l

Geologist

Date Start Finish

Contractor

Driller

Filter Materials

Grout Type

Development

Static Water Level

Top of Well Elevation

Drill Type

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
50-55			Silty clayey Med Sand with well Rounded coarse Sand grains + Pebbles		
55-60			Same as above (50-55)		
60-65			Med. Sand [illegible] Coarse Sand + Pebbles well rounded		
65-70			Coarse, Rounded Sand + Pebbles with same [illegible]		
70-75			[illegible]		
75-80			Same as above (70-75)		

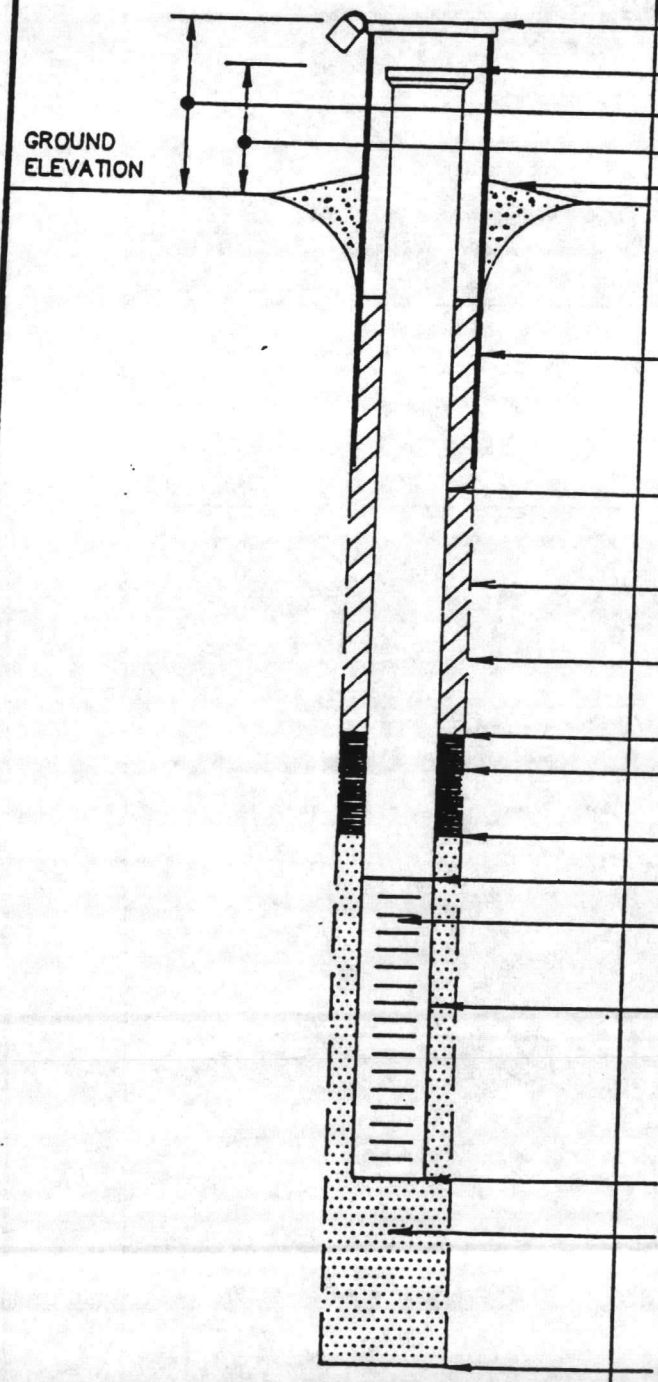
CLEJ-00414-03.13-04/01/92

OVERBURDEN MONITORING WELL SHEET

WELL NO. HP-GW9-3

PROJECT Camp Lejeune - HP1A
PROJECT NO. 49-C2C36 BORING NO. HP-GW9-3
ELEVATION DATE 7/17/87 - 7/18/87
FIELD GEOLOGIST David Brentlinger (ESE)

DRILLER Davis Drilling Co.
DRILLING METHOD Mud Rotary
DEVELOPMENT METHOD Bailing



ELEVATION OF TOP OF SURFACE CASING: 27.26'
ELEVATION OF TOP OF RISER PIPE: 27.02'
STICK-UP TOP OF SURFACE CASING: 2.49'
STICK-UP RISER PIPE: 2.25'
TYPE OF SURFACE SEAL: Concrete

I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: Carbon steel

RISER PIPE I.D. 2"
TYPE OF RISER PIPE: Schedule 40 PVC

BOREHOLE DIAMETER: 10" (0-100') 6" (100-152')

TYPE OF BACKFILL: Portland # 1 Cement

ELEVATION/DEPTH TOP OF SEAL: 100'
TYPE OF SEAL: Bentonite Pellets

DEPTH TOP OF SAND PACK: 105'
ELEVATION/DEPTH TOP OF SCREEN: 130'
TYPE OF SCREEN: Schedule 40 PVC
SLOT SIZE X LENGTH: 0.01" x 20'
TYPE OF SAND PACK: Medium Sand

ELEVATION/DEPTH BOTTOM OF SCREEN: 150'
ELEVATION/DEPTH BOTTOM OF SAND PACK:
TYPE OF BACKFILL BELOW OBSERVATION WELL:

ELEVATION/DEPTH OF HOLE 152'

NOT TO SCALE

OVBDMW.DWG

CLEJ-00414-03.13-04/01/92

WELL FACT SHEET

Well No. HPEW 9-3 Date 7/20/87 Start 7/19/87 Finish 7/20/87

Total Depth of Boring Prior to Well Installation 152'

Diameter of Boring (10" 25 → 104', 6" 104 - 152')

Water Level 16.50' TOC

6" 5 7/8 bit from 100'-150'

Total Length of Well at Installation 152.50

Height of Well Above Ground Level 2.50

Total Depth of Well Below Ground Level 150.00

Total Length of Screen	~~20~~ 20'	from	150'	BGL to	130'	BGL
Total Length of Riser	132'	from	130.	BGL to	2.5	AGL
Sand Heave. Total Interval	45'	from	150	BGL to	105	BGL
Filter Pack Total Interval		from		BGL to		BGL
Bentonite Seal Total Interval	5'	from	105'	BGL to	100'	BGL
Grout Total Interval	100'	from	100	BGL to	0.00	BGL
Protective Casing Total Interval		from		BGL to		AGL

Well Screen Dia. 2" Schedule #40 Slot Size 0.01"

Well Riser Dia. 2" Schedule #40

Filter Material Med Sand

Seal Bentonite Pellets 0.25"

Backfill Cement Bentonite Water

Protective Casing Dia. 4" Material Steel

Well Development

Date 7/19/87 Time 0800 Start 0800 7/19 Complete 1700 7/20

Water Level at Start 16.50 TOC Finish 40' TOC

Conductivity Start Finish

Water Color Start turbid grey Finish Clear

Bail Start Finish

Surge Start — Finish —

Pump Start — Finish — Volume —

Type — Rate —

Add 375 gals using 0.75 gal bailer at rate of 1 gpm

Cent Pump will Not work!

LAB

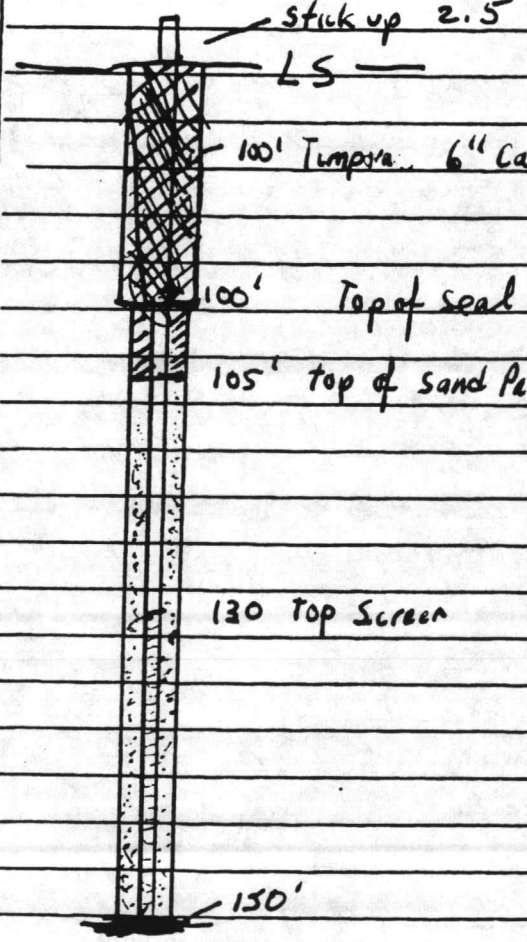
CLEJ-00414-03.13-04/01/92

Boring No. HP6W 9-3 DAVIS SHEET ____ OF ____

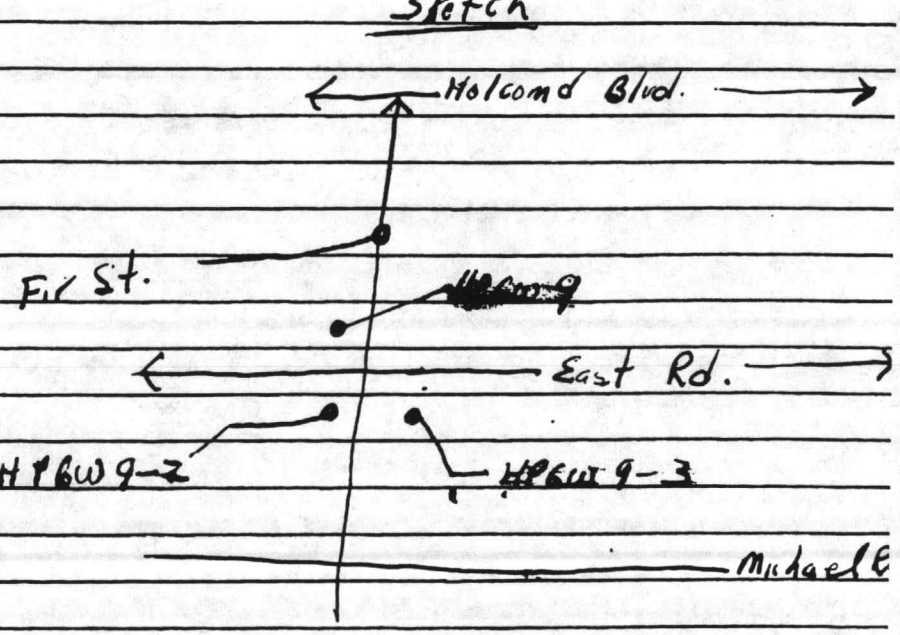
On site 7/17/87 at 1150; drillers take 1 hr to set up and begin drilling at 1300. Hole bored to 105' at 1600, driller wastes out and begins to set 6" Casing 1615. Well grated at 1730; Driller clean-up.

7/18/87

On site HP6W 9-3 0700, driller gets to 152' at 1030 sand pack + seal at 1100; Driller grouts hole, finish at 12:00.



Sketch



0-100' 10" hole
100-152' 6" hole

7/18/87
DATE

SIGNED

SOURCE: Environmental Science and Engineering, Inc., 198

CLEJ-00414-03.13-04/01/92

Hole Size _____ _____ E MP6009-3

Screen Size _____ Mat'l _____ Filter Materials _____

asing Size _____ Mat'l _____ Grout Type _____

G logist _____ Development _____

Date Start _____ Finish _____ Static Water Level _____

Contractor _____ Top of Well Elevation _____

Driller _____ Drill Type _____

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
135-140			Silty Fine sand and shells, some med-coarse sand.		
140-145			Silty Clayey med. Sand with no shells		
145-150			Silty Clayey fine-med. Sand		

CLEJ-00414-03.13-04/01/92

E HPGW 9-3

Hole Size

Screen Size Mat'l

asing Size Mat'l

G logist

Date Start Finish

Contractor

Driller

Filter Materials

Grout Type

Development

Static Water Level

Top of Well Elevation

Drill Type

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
100-105			Same as 90-95 less shells, more sand		
105-110			Silty med Sand with shells, little/no clastics		
110-120			Silty fine - med sand		
120-125			Same as 110-120		
125-130			Same as 110-120		
130-135			Silty med sand with some cemented clasts + shells		

CLEJ-00414-03.13-04/01/92

E HPGW9-3

Hole Size

Screen Size Mat'l

asing Size Mat'l

G logist

Date Start Finish

Contractor

Driller

Filter Materials

Grout Type

Development

Static Water Level

Top of Well Elevation

Drill Type

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
70-75			Rock + shells little to no sand or fines		
75-80			silty med. sand and shells, lots of fossils (teeth, bones...)		
80-85			Med. Sand with shells cemented clastics 20% some clay throughout		
85-90			fine - med sand More shells and more cemented clastics than 80-85		
90-95			Cemented Clastics little/no fines + sand lots of shells		
95-100			same as above 90-95		

CLEJ-00414-03.13-04/01/92

E HP6W9-3

Hole Size

Screen Size Mat'l Filter Materials

asing Size Mat'l Grout Type

G logist Development

Date Start Finish Static Water Level

Contractor Top of Well Elevation

Driller Drill Type

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
40-45			Same as Above 35-40		
45-50			silty Fine - med sand little/no Clay		
50-55			Fine - med sandy marl Cemented Clastics 50% lots of shells.		
55-60			Cemented Clastics - shells less sand than 50-55		
60-65			Silty med. - clay with less sand little cement		
65-70			Silty fine sand with Some Rock + Shells		
			Si		

CLEJ-00414-03.13-04/01/92

Hole Size 10" (0-1[illegible] E HPGW 9-3
Screen Size 2" Mat'l PVC Filter Materials Med-Coarse Sand
Casing Size 2" Mat'l PVC Grout Type #1 Portland
Geologist David Brentlinger Development Bailer
Date Start 7/17/97 Finish 7/18 Static Water Level ~~15.50~~ - 12.83
Contractor ESE Top of Well Elevation 15.50'
Driller Davis Drilling Co. (Clayton Davis) Drill Type Mud-Rotary

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0-15			Silty fine sand with 50% clay throughout top 4' Road Fill		
15-20			Silty Clayey fine-med. Sand		
20-25			Silty fine-med Sand (more fines than sand), Clay layers.		
25-30			Silty med. Sand little/no Clay sand very Angular		
30-35			Fine sandy Clay		
35-40			Silty fine sand with clay layers 10% med. Sand		

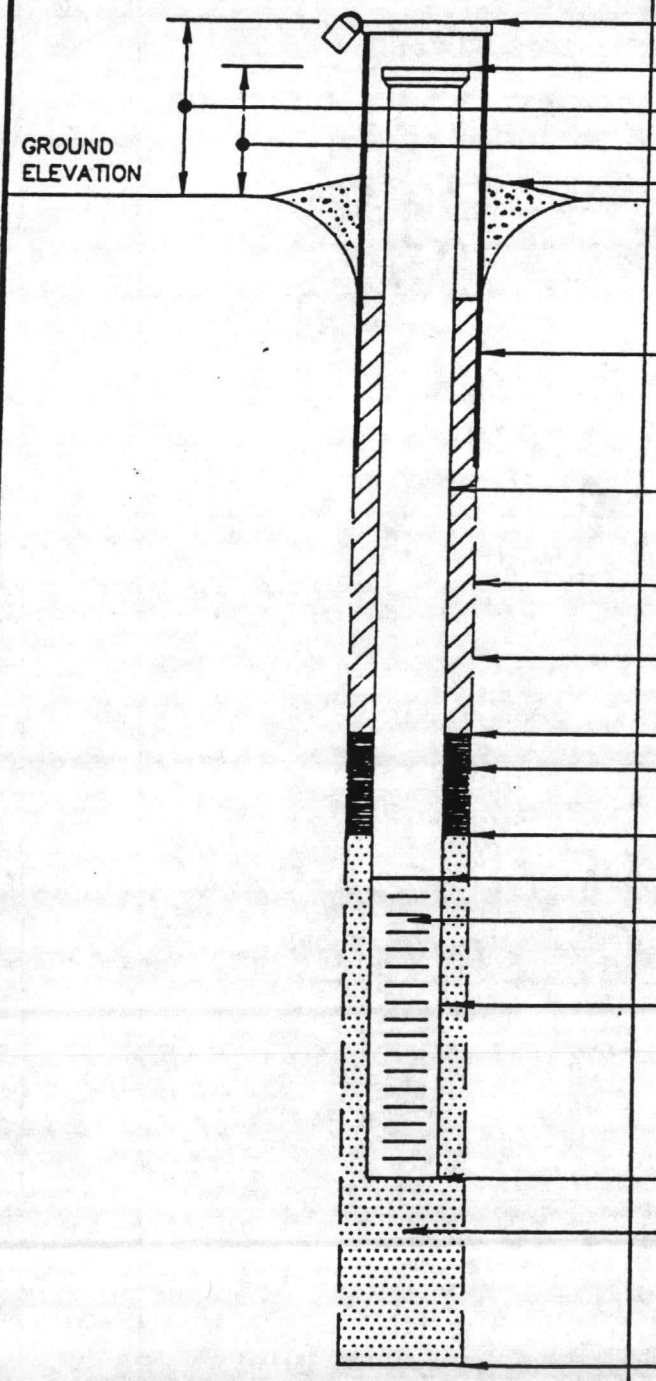
CLEJ-00414-03.13-04/01/92

OVERBURDEN
MONITORING WELL SHEET

WELL NO. HP-GW9-2

PROJECT Camp Lejeune - HP1A
PROJECT NO. 49-C2C3C BORING NO. HP-GW9-2
ELEVATION _____ DATE 6/29/87 - 6/30/87
FIELD GEOLOGIST David Brentlinger

DRILLER ATEC
DRILLING METHOD Mud Rotary
DELVELOPMENT METHOD Centrifugal pump + Bailing



ELEVATION OF TOP OF SURFACE CASING: 28.16'
ELEVATION OF TOP OF RISER PIPE: 27.48'
STICK-UP TOP OF SURFACE CASING: 2.54'
STICK-UP RISER PIPE: 1.92'
TYPE OF SURFACE SEAL: concrete

I.D. OF SURFACE CASING: 5"
TYPE OF SURFACE CASING: Carbon steel

RISER PIPE I.D. 2"
TYPE OF RISER PIPE: Schedule 40 PVC

BOREHOLE DIAMETER: 5"

TYPE OF BACKFILL: Portland #1 cement

ELEVATION/DEPTH TOP OF SEAL: 45.29
TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 52.29
ELEVATION/DEPTH TOP OF SCREEN: 55.29'
TYPE OF SCREEN: Schedule 40 PVC
SLOT SIZE X LENGTH: 0.010" x 20'
TYPE OF SAND PACK: Medium sand

ELEVATION/DEPTH BOTTOM OF SCREEN: 75.29'
ELEVATION/DEPTH BOTTOM OF SAND PACK: _____
TYPE OF BACKFILL BELOW OBSERVATION WELL: _____
ELEVATION/DEPTH OF HOLE 80'

NOT TO SCALE

OVBDMW.DWG

WELL FACT SHEET

Well No. HP6W 9-2 Date 7/1/87 Start ~~7~~ 6/30 Finish 6/30

Total Depth of Boring Prior to Well Installation (79-80)'

Diameter of Boring 5"

Water Level 10.5'

Total Length of Well at Installation ~~75.29'~~ 77.79

Height of Well Above Ground Level 2.50'

Total Depth of Well Below Ground Level ~~77.79~~ 75.29

Total Length of Screen	20'	from	75.29'	BGL to	55.29	BGL
Total Length of Riser	55.29	from	55.29	BGL to	2.50	AGL
Sand Heave. Total Interval		from		BGL to		BGL
Filter Pack Total Interval	25.00'	from	75.29	BGL to	50.29	BGL
Bentonite Seal Total Interval	5'	from	50.29	BGL to	45.29	BGL
Grout Total Interval	43'	from	45.29	BGL to	2.29	BGL
Protective Casing Total Interval		from		BGL to		AGL

Well Screen Dia. 2" Schedule #40 Slot Size 0.01"

Well Riser Dia. 2" Schedule #40

Filter Material Mod Sand.

Seal Bentonite

Backfill Portland #1 Cement ✓ Bentonite ____ Water ____

Protective Casing Dia. ____ Material ____

Well Development

Date 7/1/87 Time 1000 Start ~~[illegible]~~ 7/1 Complete 7/2

Water Level at Start 15.90 TOC Finish ____

Conductivity Start ✓ Finish ✓

Water Color Start Muddy Brown Finish Clear

0.43 gpm ← (Bail) 130 gal Start 7/1 ~~1000~~ 0800 Finish 7/1 ~~1600~~ 1500

Surge Start ____ Finish ____

(Pump) Start 7/2/87 (0800) Finish 7/2 (~~0800~~ 1300) Volume 7/2 1200

55 gal
80 gal

Type Cent. Rate (.3-.4 gpm)

total purged 2

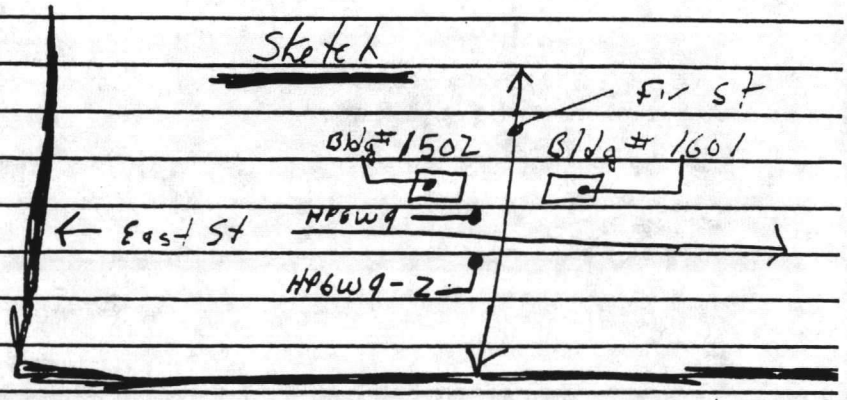
CLEJ-00414-03.13-04/01/92

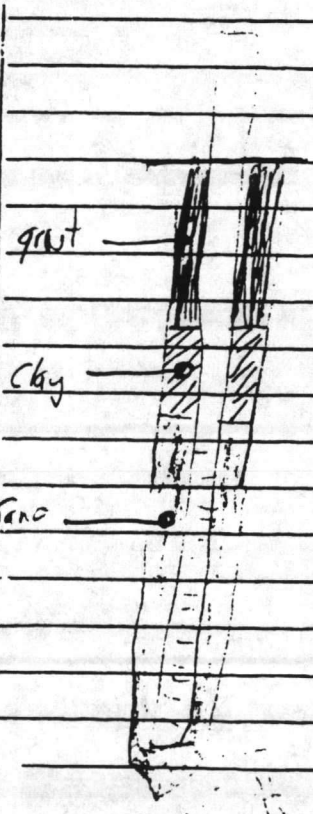
Boring No. HP6W9-2 NICU SHEET ____ OF ____

On site 0800, Drillers arrive 0815 set up and drilling 0900, driller needs more water and runs out of gas at 0930, at 1030 drillers goes to get water returns 1100 and Resumes drilling ! ft depth of 60' Rods get clogged (1 hr delay) 1400 rods unclogged 1500 drilling again, 80' drilled 1600 Screen + Casing in 1630, Sand pack and seal in 1645, grouted and complete 1715; drillers clean up 1730.

6/30/87 0800 14.58' TOC
stick-up ~ 2.50'
static ~ 12.33' BGL
BW ~ 70.00' TOC

Sketch





55.29' Riser
(75' Bentonite, 50' grout)

77.79' total length TOC
74.00' DBW

20' of Screen
(25' of pack)

sediment

DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 198

CLEJ-00414-03.13-04/01/92

Hole Size 5" | E HPGW 9-2

Screen Size 2" | Mat'l PVC | Filter Materials

asing Size 2" | Mat'l PVC | Grout Type Portland #1

Geologist David Brantlinger | Development

Lace Start 6/29/87 | Finish 6/29/87 | Static Water Level —

Contractor ESE | Top of Well Elevation

Driller Sanford Sweeting (ATEC) | Drill Type

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
40-45			Silty fine-med sand some coarse, angular sand throughout		
45-50			Same as above (40-45)		
50-55			Coarse sand, shells and cemented clastics, sand well rounded.		
55-60			Coarse well-rounded pebbles and sand, shells and uncemented clastics.		
60-65			Cemented clastics little/no sand or shells		
65-70			Same as (60-65)		
70-75			Same as above (65-70)		

CLEJ-00414-03.13-04/01/92

Hole Size 5 ⅞"

Screen Size 2" Mat'l PVC

asing Size Mat'l PVC

G logist David Brentlinger

Date Start 6/29/87 Finish 6/29

Contractor ATEC

Driller Sweeting

E HPGW 9-2

Filter Materials Med. Sand

Grout Type Portland #1

Development Cent. Pump

Static Water Level ~~15.90' TOC~~ 13.6

Top of Well Elevation 2.25'

Drill Type Rotary-Mud

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0-5			Silty fine-very fine sand. little/no organic material		
5-10			same as above (0-5)		
10-15			same as above (0-5)		
15-20			Silty fine sand with light grey clay peds		
20-25			Silty fine-med. sand with light grey clay peds		
25-30			silty fine sand little/no clay or coarse material		
30-35			Silty med. sand little/no coarse sand		
35-40			Silty med sand		

CLEJ-00414-03.13-04/01/92

E 642-1

Hole Size _____

Screen Size _____ Mat'l _____ Filter Materials _____

asing Size _____ Mat'l _____ Grout Type _____

Geologist _____ Development _____

Date Start _____ Finish _____ Static Water Level _____

Contractor _____ Top of Well Elevation _____

Driller _____ Drill Type _____

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
60-70		Silt/Sand 50%	very silty very fine Sand 50% Shells + Cemented Clastics 50% less 10% clay		
70-80		Silt/Sand 50%	very silty very fine Sand 60% Shells + Cemented Clastics 30% 10% coarse rounded Sand 10%		
80-100			Same as above (70-80) with more shells than clastic cement.		
	1045/AM		Quit Drilling, Cement 6" casing in place		
100-125			very silty very fine shelly sand with 10% coarse Sand (fines Grey in color)		
125-150			Same as above (100-125)		
150-175			Shelly fine-med sand with Clay fines Grey-blue in color Sand		
175-200			very fine Sand + Shells with some Clay, fines are blue grey in color less shells than above (150-175)		
	Final drilling Hole 945 AM				

CLEJ-00414-03.13-04/01/92

WELL FACT SHEET

Well No. HPGW24-3 Date 7/1/87 Start 6/19 Finish 7/1

Total Depth of Boring Prior to Well Installation 155'

Diameter of Boring 5"

Water Level 10.5'

Total Length of Well at Installation 150'

Height of Well Above Ground Level 1.83'

Total Depth of Well Below Ground Level 148.17' → 148.17

Total Length of Screen	20'	from	~~150~~'	BGL to	128.17	BGL
Total Length of Riser	130' ~~128.17~~'	from	128.17'	BGL to	1.83'	AGL
Sand Heave. Total Interval	NONE	from	—	BGL to	—	BGL
Filter Pack Total Interval	NONE	from	—	BGL to	—	BGL
Bentonite Seal Total Interval	5-7'	from	90'	BGL to	84'	BGL
Grout Total Interval	80'	from	84'	BGL to	Z	BGL
Protective Casing Total Interval		from		BGL to		AGL

Well Screen Dia. 2" Schedule #40 Slot Size 0.01"

Well Riser Dia. 2" Schedule #40

Filter Material Natural Formation (s.lt Fine - Med. Sand)

Seal Bentonite Pellets

Backfill Portland #1 Cement ✓ Bentonite ____ Water ____

Protective Casing Dia. ____ Material ____

Well Development

Date 6/19 Time 1600 pm Start 6/19 Complete 7/1

Water Level at Start 14.07' TOC Finish 13.67' TOC

Conductivity Start — Finish —

Water Color Start — Finish —

Bail all Start 6/19 Finish 7/1

Surge Start — Finish —

Pump Start — Finish — Volume 300 gal

Type — Rate —

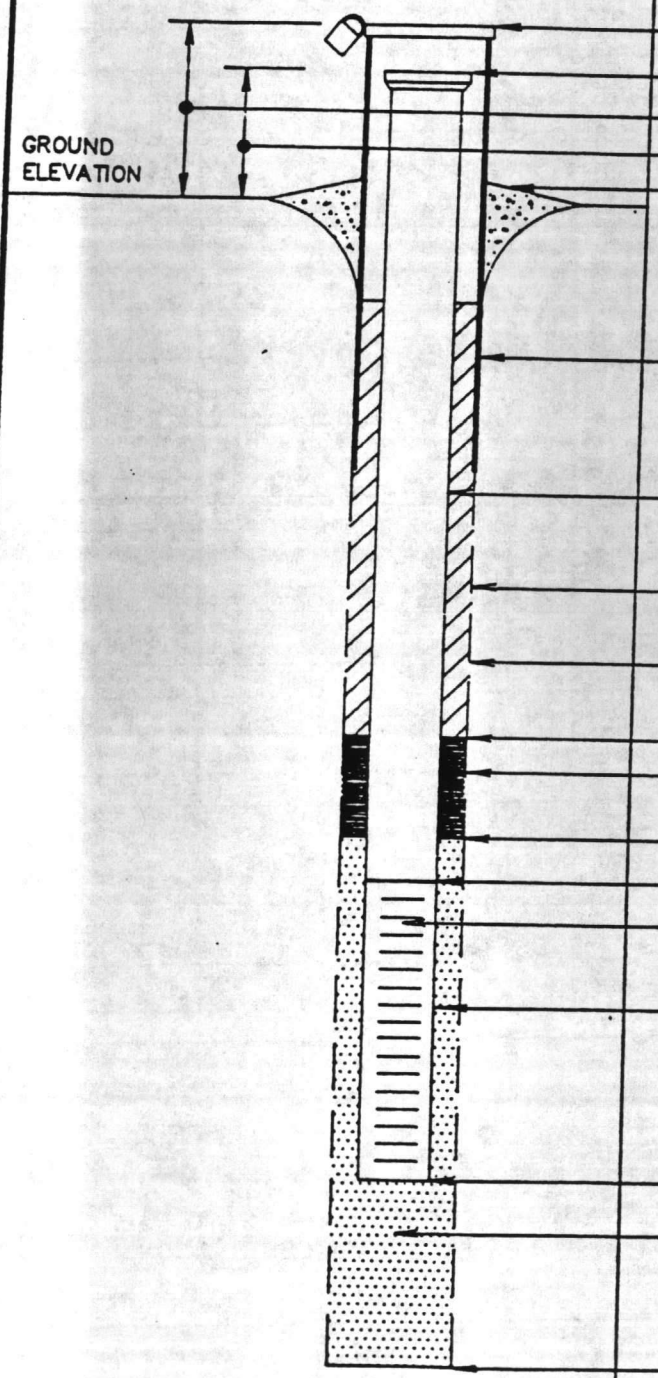
CLEJ-00414-03.13-04/01/92

OVERBURDEN MONITORING WELL SHEET

WELL NO. HP-GW24-3

PROJECT Camp Lejeune - HP1A
PROJECT NO. 49-GW036 BORING NO. HP-GW24-3
ELEVATION DATE 6/10/87 - 7/1/87
FIELD GEOLOGIST David Brentlinger (FSC)

DRILLER ATEC
DRILLING METHOD mud Rotary
DELVELOPMENT METHOD Bailing



ELEVATION OF TOP OF SURFACE CASING: 32.92'
ELEVATION OF TOP OF RISER PIPE: 32.50'
STICK-UP TOP OF SURFACE CASING: 2.36'
STICK-UP RISER PIPE: 2.24'
TYPE OF SURFACE SEAL: concrete

I.D. OF SURFACE CASING:
TYPE OF SURFACE CASING: carbon steel

RISER PIPE I.D. 2"
TYPE OF RISER PIPE: Schedule 40 PVC

BOREHOLE DIAMETER: 5'

TYPE OF BACKFILL: Portland #1 Cement

ELEVATION/DEPTH TOP OF SEAL: 84'
TYPE OF SEAL: Bentonite Pellets

DEPTH TOP OF SAND PACK: 90'
ELEVATION/DEPTH TOP OF SCREEN: 108.17'
TYPE OF SCREEN: Schedule 40 PVC
SLOT SIZE X LENGTH: .010" x 20'
TYPE OF SAND PACK: Natural formation (silty fine sand)

ELEVATION/DEPTH BOTTOM OF SCREEN: 148.17'
ELEVATION/DEPTH BOTTOM OF SAND PACK:
TYPE OF BACKFILL BELOW OBSERVATION WELL:

ELEVATION/DEPTH OF HOLE 155'

NOT TO SCALE

OVBDMW.DWG

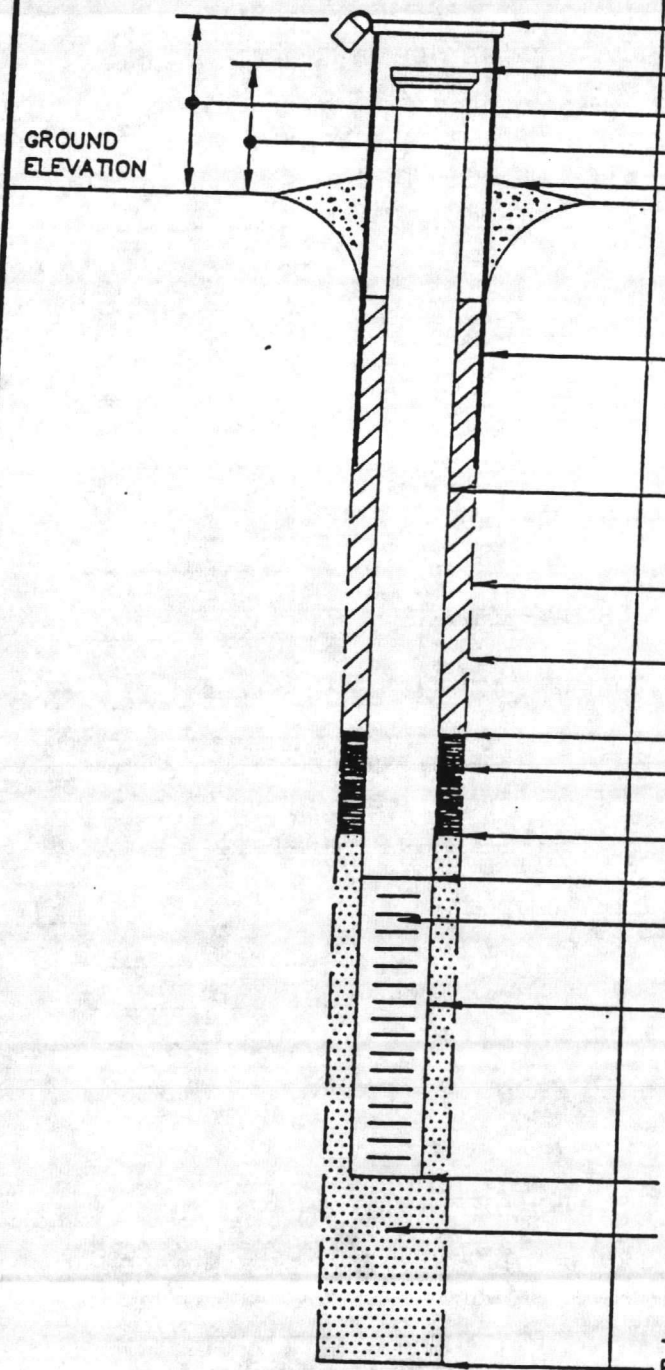
CLEJ-00414-03.13-04/01/92

OVERBURDEN MONITORING WELL SHEET

WELL NO. HP-GW30-2

PROJECT Camp Lejeune - HTA
PROJECT NO. 41-02056 BORING NO. HP-GW30-2
ELEVATION DATE
FIELD GEOLOGIST Tom M. Fleming

DRILLER Environmental Monitoring & Testing
DRILLING METHOD Mud-Rotary
DELVELOPMENT METHOD Air Lift



ELEVATION OF TOP OF SURFACE CASING: 32.03
ELEVATION OF TOP OF RISER PIPE: 29.75
STICK-UP TOP OF SURFACE CASING: 2.07
STICK-UP RISER PIPE: Flushmount -0.21
TYPE OF SURFACE SEAL: Concrete

I.D. OF SURFACE CASING: 8"
TYPE OF SURFACE CASING: Carbon Steel

RISER PIPE I.D. 4"
TYPE OF RISER PIPE: Schedule 40 PVC

BOREHOLE DIAMETER: 10"

TYPE OF BACKFILL: Concrete

ELEVATION/DEPTH TOP OF SEAL: [illegible]
TYPE OF SEAL: Bentonite Pellets

DEPTH TOP OF SAND PACK: [illegible]
ELEVATION/DEPTH TOP OF SCREEN: 65'
TYPE OF SCREEN: Schedule 40 PVC
SLOT SIZE X LENGTH: 0.010" x 10'
TYPE OF SAND PACK: Coarse Silica Sand

Note: 3' sump/end cap

ELEVATION/DEPTH BOTTOM OF SCREEN: 78'
ELEVATION/DEPTH BOTTOM OF SAND PACK:
TYPE OF BACKFILL BELOW OBSERVATION WELL:

ELEVATION/DEPTH OF HOLE 83'

NOT TO SCALE

OVBDMW.DWG

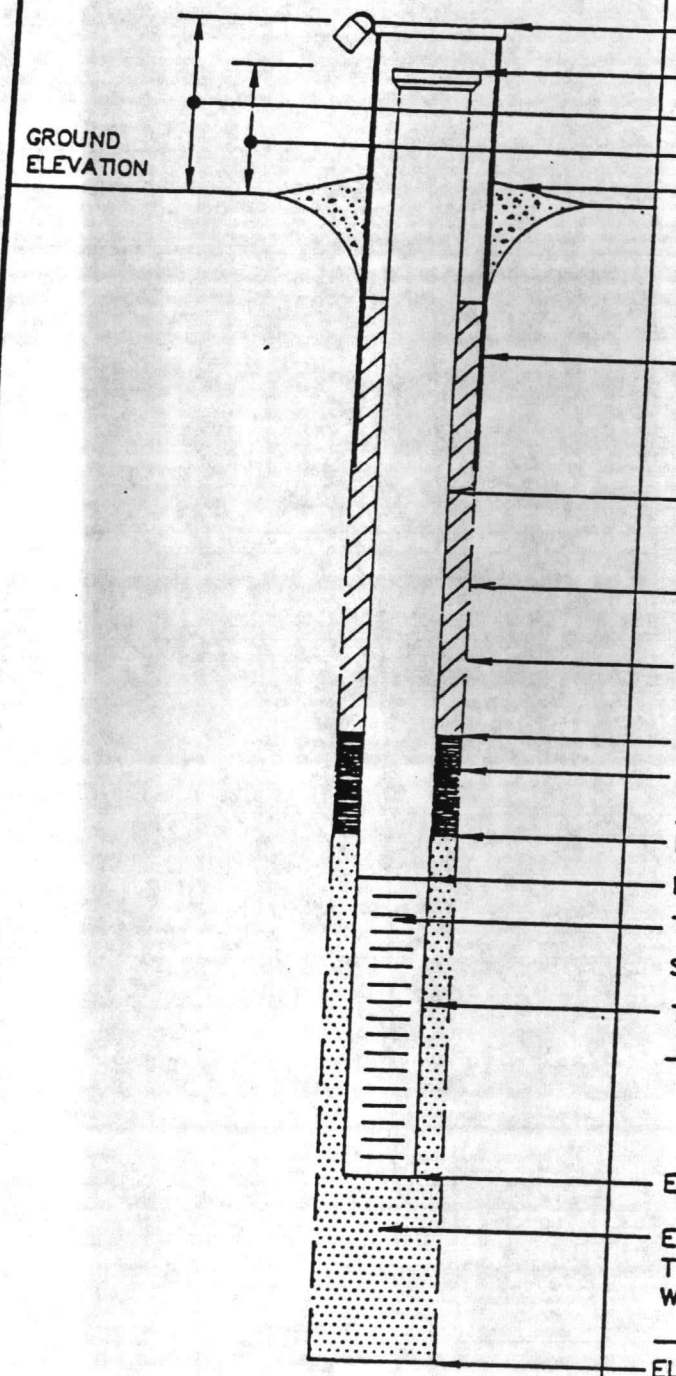
CLEJ-00414-03.13-04/01/92

OVERBURDEN MONITORING WELL SHEET

WELL NO. HP-GW30-3

PROJECT Camp Lejeune - HPIA
PROJECT NO. 42-02[illegible]
ELEVATION
FIELD GEOLOGIST Paul F. Feinberg
BORING NO. HP-GW30-3
DATE

DRILLER [illegible]
DRILLING METHOD Mud-Rotary
DELVELOPMENT METHOD Air Lift



ELEVATION OF TOP OF SURFACE CASING: 30.00
ELEVATION OF TOP OF RISER PIPE: 29.72
STICK-UP TOP OF SURFACE CASING: 0.04
STICK-UP RISER PIPE: Flushmount -0.24
TYPE OF SURFACE SEAL: Concrete

I.D. OF SURFACE CASING: 8"
TYPE OF SURFACE CASING: Carbon Steel

RISER PIPE I.D. 4"
TYPE OF RISER PIPE: Schedule 40 PVC

BOREHOLE DIAMETER: 12"

TYPE OF BACKFILL: Concrete

ELEVATION/DEPTH TOP OF SEAL: 132'
TYPE OF SEAL: Volclay Pellets

DEPTH TOP OF SAND PACK: 136'
ELEVATION/DEPTH TOP OF SCREEN: 140'
TYPE OF SCREEN: Schedule 40 PVC
SLOT SIZE X LENGTH: 0.010" x 10'
TYPE OF SAND PACK: Coarse silica sand

Note: 3' sump/[illegible]

ELEVATION/DEPTH BOTTOM OF SCREEN: 153'
ELEVATION/DEPTH BOTTOM OF SAND PACK:
TYPE OF BACKFILL BELOW OBSERVATION WELL:

ELEVATION/DEPTH OF HOLE 153'

NOT TO SCALE

OVBOMW.DWG

CLEJ-00414-03.13-04/01/92

FIELD BORING LOG

BORING NO. HPGW31-2/3

Project No. 4902036	Project Name Camp Lejeune Hadnot Point - Monitoring Wells		Page 1 of 4
Contractor ESE, Inc.	Driller Environmental Monitoring & Testing	Date started 12-12-90	completed 12-17-90
Method Mud Rotary	Casing Size 4"	HNU 11.7/10.2	Protection Level D
Ground El. 20.52' / 21.44'	Soil Drilled	▼ ___ below ground	Total Depth 93' / 158'
Logged by Paul M. Feinberg	Checked by	Date	

Sample No.	Depth in Feet	Blows per 6"	Pen. Rec.	Description	HNU jar	Comments on Advance of Boring	Monitoring HNU	Monitoring LEL
				f-m silty sand, trace pebbles (brown) [SM]		ONM cal	Background ~32ppm	
	9 - 11		5'/5"					
	15			f-m silty sand, little pebbles (gray tan) [SM]			BG	
	19' - 24'		5'/2"	f-c clayey sand, trace pebbles (gray tan) [SC] cohesive				
	24 - 27'		5'/1'"	clayey f-m silty sand [SC] cohesive (gray tan)				
	27 - 34'		5'/20"	0"-12" f-m silty sand (gray tan) [SM]			BG	
	34 - 39'			12"-16" clayey silty sand, some pebbles (gray tan) [SC]				
	39' - 44'			16"-20" f-m silty sand, some pebbles (gray tan) [SM]				
			5'/6"	f-m silty sand, little clay somewhat cohesive (gray tan) [SM]			BG	
			-/0"					

CLEJ-00414-03.13-04/01/92

BORING LOG

BORING NO. HPGWSI-2

Project No. 4902036	Project Name Camp Lejeune Hadnot Point - Monitoring Wells		Page 2 of 4
Contractor ESC, Inc.	Driller Environmental Monitoring & Testing	Date started 12-12-90	completed 12-17-90
Method Mud Rotary	Casing Size 4"	HNU 11.7/10.2	Protection Level D
Ground El. 20.52'/20.44'	Soil Drilled	▼ ___ below ground	Total Depth 83'/158'
Logged by Paul M Feinberg	Checked by	Date	

Sample No.	Depth in Feet	Blows per 6"	Pen. Rec.	Description	HNU jar	Comments on Advance of Boring	Monitorin HNU	LEL
	44							
	44'-49'		5'/5"	f-m silty sand, trace pebbles (gray tan) [SM]			BG	
	49'-54'		5'/3"					
	50			f-m silty sand [SM] (dark gray)				
	54'-59'		5'/60"					
	60			upper ⅓ f-m silty sand (dark gray)				
	59'-64'		5'/44"	lower ⅔ peat [PT]				
	64'-69'		5'/5"	peat / f-m silty sand, little shells (med gray) [PT]				
	70							
	69'-74'		5'/12"	f-m silty sand & "shelly" limestone pcs (med gray) [SM]		"shelly" = fossiliferous		
	74'-79'		5'/2"	shelly limestone (2 pcs.)		Note presumably sand washed out. ∴ Most of interval may consist of sand		
	80							
	79'-84'		5'/<1"	f-m silty sand, trace shell material. (med. gray) [SM]		We change shoes again on core barrel in attempt to assist recovery.	BG	
	84'-89'		5'/14"	f-m silty sand, trace shell material. (med. gray) [SM]			BG	

F

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BORING NO. HPG-31-2/5

Project No. 4732036	Project Name Camp Lejeune Hadnot Point - Monitoring Wells		Page 3 of 4
Contractor ESE, Inc.	Driller Environmental Monitoring & Testing	Date started 12-12-90	completed 12-17-90
Method Mud Rotary	Casing Size 4"	HNU 11.7/10.2	Protection Level D
Ground El. 2652/2644'	Soil Drilled	▼ ___ below ground	Total Depth 93'/158'
Logged by Paul H. Feinberg	Checked by	Date	

Sample No.	Depth in Feet	Blows per 6"	Pen. / Rec.	Description	HNU jar	Comments on Advance of Boring	Monitoring HNU	Monitoring LEL
	90 93' - 94'		5'/55"	f-m silty sand, trace shells [SM]			BG 30ppm	
	94 - 99'		5'/44"	upper 2½' peat f-m silty sand, little shells, some shelly limestone [SM] med. gray			BS	
	99' - 104'		5'/	upper 2" shelly limestone pcs f-m silty sand, little shells [SM] med. gray				
	104 - 109		5'/24"	upper 2" shelly limestone pcs middle f-m silty sand lower 1" f-m silty sand & shells [SM] med gray lowest 2" shelly limestone pc.				
	109' - 114'		5'/	upper 8" shelly limestone pcs lower 10' f-m silty sand & shell material [SM] med gray				
	111 - 116		5'/2"	f-m silty sand, little shells [SM] med gray				
	116 - 119'		3'/<1"	pcs of shell material				
	119' - 124		5'/<1"	pcs of shell material.				
	124 - 129'		5'/<1"	f-m silty sand [SM] med gray				
	129 - 134'		5'/14"	f-m silty sand, little shells [SM] med. gray				
	134 - 139'		5'/33"	f-m silty sand, little shells [SM] med. gray				

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BORING LOG

BORING NO. HPGW 3-2/

Project No. 4992376	Project Name Camp Lejeune Hadnot Point - Monitoring Wells		Page 4 of 4
Contractor ESE, Inc.	Driller Environmental Monitoring & Testing	Date started 12-12-90	completed 12-17-90
Method Mud Rotary	Casing Size 4"	HNU 11.7/10.2	Protection Level D
Ground El. 20.52'/20.44	Soil Drilled	▼ ___ below ground	Total Depth 85'/158
Logged by Paul M. Fenning	Checked by	Date	

Sample No.	Depth in Feet	Blows per 6"	Pen. / Rec.	Description	HNU jar	Comments on Advance of Boring	Monitorin HNU	LEL
	140							
	159'-144'		5'/36	F-c silty sand, little shell [SM] (med. gray)				
				Note: black particulate matter permeate entire core.				
			5'/	m-f silty sand, tr. shell material [SM] Note: clay component - cohesive.				
				Sampling completed at 149'.				
				Borehole reamed to 158'				

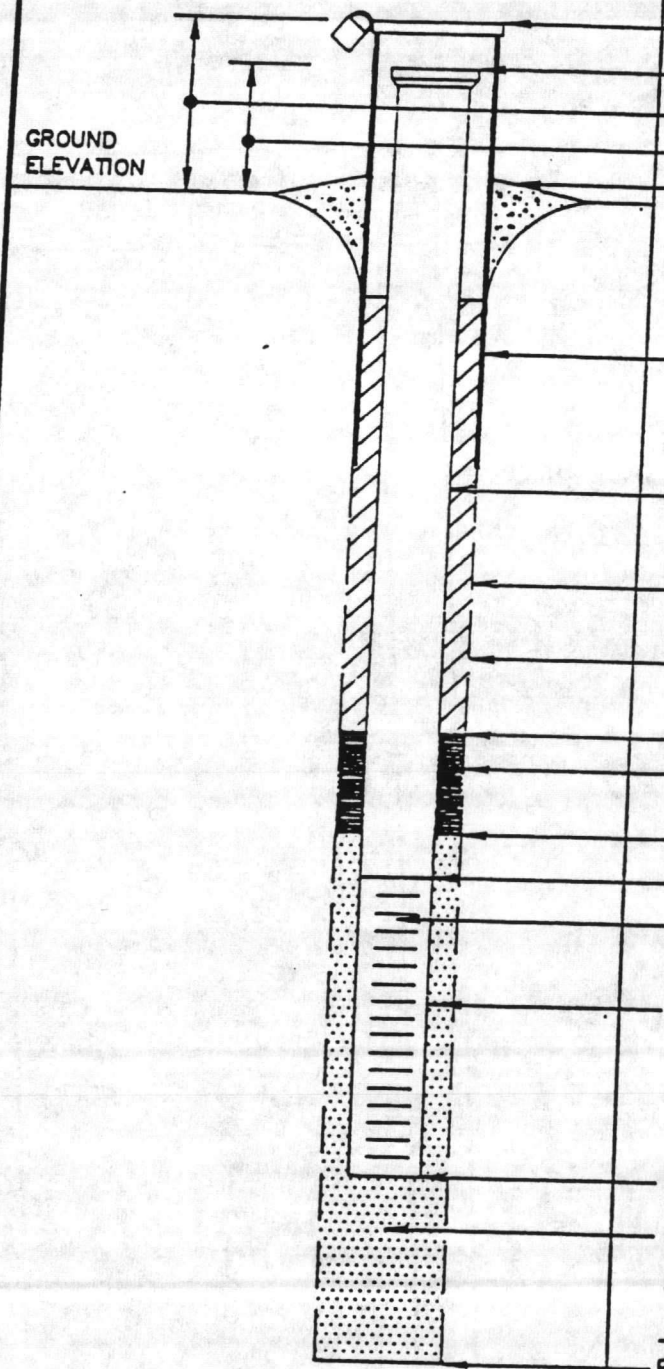
CLEJ-00414-03.13-04/01/92

OVERBURDEN MONITORING WELL SHEET

WELL NO. HP-GW31-2

PROJECT Cap Lejeune - HPIA
PROJECT NO. 4[illegible]
ELEVATION
FIELD GEOLOGIST Paul M. Feeney
BORING NO. HP-GW31-2
DATE

DRILLER Environmental Monitoring & Testing
DRILLING METHOD Mud Rotary
DELVELOPMENT METHOD Air Lift



ELEVATION OF TOP OF SURFACE CASING: 26.52
ELEVATION OF TOP OF RISER PIPE: 26.23
STICK-UP TOP OF SURFACE CASING: 0.06
STICK-UP RISER PIPE: Flushmount -0.29
TYPE OF SURFACE SEAL: Concrete

I.D. OF SURFACE CASING: 8"
TYPE OF SURFACE CASING: [illegible]

RISER PIPE I.D. 4"
TYPE OF RISER PIPE: Schedule 40 PVC

BOREHOLE DIAMETER: [illegible]

TYPE OF BACKFILL: Concrete

ELEVATION/DEPTH TOP OF SEAL: 60'8"
TYPE OF SEAL: Bentonite Pellets

DEPTH TOP OF SAND PACK: 62'11"
ELEVATION/DEPTH TOP OF SCREEN: 65'
TYPE OF SCREEN: Schedule 40 PVC
SLOT SIZE X LENGTH: .010 x 10'
TYPE OF SAND PACK: Coarse silica sand

Note: 3' sump/drop
ELEVATION/DEPTH BOTTOM OF SCREEN: 78'
ELEVATION/DEPTH BOTTOM OF SAND PACK:
TYPE OF BACKFILL BELOW OBSERVATION WELL:

ELEVATION/DEPTH OF HOLE 85'

NOT TO SCALE

OVBDMW.DWG

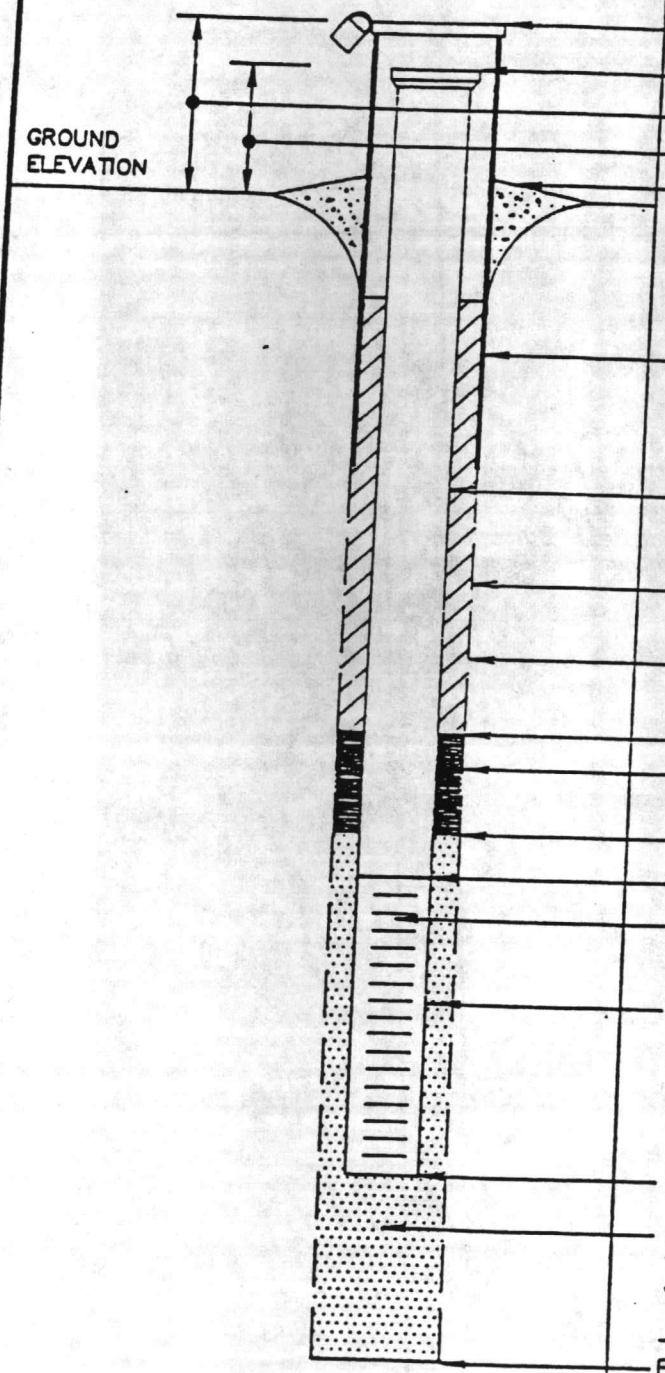
CLEJ-00414-03.13-04/01/92

OVERBURDEN MONITORING WELL SHEET

WELL NO. HP-GW31-3

PROJECT Camp Lejeune - HP A
PROJECT NO. 42-02536 BORING NO. HP-GW31-3
ELEVATION DATE
FIELD GEOLOGIST Paul M Fenters

DRILLER Environmental Monitoring & Testing
DRILLING METHOD Mud-Rotary
DELVELOPMENT METHOD Air Lift



ELEVATION OF TOP OF SURFACE CASING: 26.55
ELEVATION OF TOP OF RISER PIPE: 25.98
STICK-UP TOP OF SURFACE CASING: 0.11
STICK-UP RISER PIPE: Flushmount -0.46
TYPE OF SURFACE SEAL: Concrete

I.D. OF SURFACE CASING: 8"
TYPE OF SURFACE CASING: Carbon Steel

RISER PIPE I.D. 4"
TYPE OF RISER PIPE: Schedule 40 PVC

BOREHOLE DIAMETER: 10"

TYPE OF BACKFILL: Concrete

ELEVATION/DEPTH TOP OF SEAL: 133'
TYPE OF SEAL: Bentonite Pellets

DEPTH TOP OF SAND PACK: 136.5'
ELEVATION/DEPTH TOP OF SCREEN: 140'
TYPE OF SCREEN: Schedule 40 PVC
SLOT SIZE X LENGTH: 0.010" x 10'
TYPE OF SAND PACK: Commercial Sand

Note: 3' sump/end cap

ELEVATION/DEPTH BOTTOM OF SCREEN: 153'
ELEVATION/DEPTH BOTTOM OF SAND PACK:
TYPE OF BACKFILL BELOW OBSERVATION WELL:

ELEVATION/DEPTH OF HOLE 158'

NOT TO SCALE

OVBDMW.DWG

CLEJ-00414-03.13-04/01/92

FIELD BORING LOG

BORING NO. HPGW32-2

Project No. 4902036	Project Name Camp Lejeune Hadnot Point - Monitoring Wells	Page 1 of 4
Contractor ESE, Inc.	Driller Environmental Monitoring & Testing	Date started 12-18-91 completed 12-20-90
Method Mud Rotary	Casing Size 4"	HNU 11.7/10.2 Protection Level D
Ground El. 27.01'/27.28'	Soil Drilled	▼ ___ below ground Total Depth 83'/157'
Logged by Paul M. Feinberg	Checked by	Date

Sample No.	Depth in Feet	Blows per 6"	Pen. Rec.	Description	HNU jar	Comments on Advance of Boring	Monitoring HNU	LEL
							Background = 2.6 ppm	
	9 - 14'		5'/22"	Upper 4" clayey silty sand, [SC] some pebbles next 5" silty sand [SM] med gray next 5" silty clay [ML] next 5" peat brown [Pt] lowest 3" peat & silty clay brown [Pt + SC]			Background = 2.6 ppm	
	14 - 19'		5'/29"	Upper 7" peat & silty clayey sand dark brown dense silty sand & med gray little wood chips med gray & dark brown [Pt & SC]			3.6	
	19 - 24'		5'/22"	Upper 7" silty sand, little clay [SM] light gray lower 5" dense silty clayey sand [SC] med gray		diesel smell	10.2 ppm 1.0 ppm 3.6 ppm	
	24 - 29'		5'/7"	silty, f-m sandy clay [SC] med gray			3.4	
	29 - 34'		5'/12"	f-m silty sand & clay med gray [SC]			4.0 ppm	
	34 - 39'		5'/<1"	wood chips light brown				
40	39 - 44'		5'/<1"	wood chips orangey-brown				
	44 - 45½'		12'/3½"	shelly limestone pcs med gray		shelly = Foram Fossils	5.4 ppm	
	45½ - 49'		3½'/9"	same as above light gray			5.4 ppm	

CLEJ-00414-03.13-04/01/92

BORING LOG

BORING NO. HPG-032 SD

Project No. 4902036	Project Name Camp Lejeune Hadnot Point		Page 2 of 4
Contractor ESE, Inc	Driller Environmental Monitoring & Testing	Date started 12-18-91	completed 12-20-91
Method Mud Rotary	Casing Size 4"	HNU 11.7/10.2	Protection Level D
Ground El. 27.0'/27.28	Soil Drilled	▼ ___ below ground	Total Depth
Logged by Paul M. Feinberg	Checked by	Date	

Sample No.	Depth in Feet	Blows per 6"	Pen. Rec.	Description	HNU jar	Comments on Advance of Boring	Monitorin HNU	LEL
	5' 49'-54'		5'/18'	Upper 4" shelly limestone pcs (med gray) middle 5" f-m silty sand [SM] shelly limestone, little clay (cohesive) lower 9" f-m silty sand, little clay, [SM] trace organic material (probably from seashell)			BG - 3-ppm BG	
	54'-59'		5'/2'	silty clayey sand, [SC] some shelly limestone (med gray)				
	59'-64'		5'/4'	Upper 1/3 f-m silty sand, little [SM] shell/organic material Below 1/3, shell material increases to near 35%- This continues to half-way point of core Lower half - fossiferous limestone, little f-m silty sand (med gray)				
	64'-67'		5'/1'	shelly limestone, little m-f silty sand (med. gray)				
	67'-74'		5'/6'	shelly limestone, little f-m silty sand (med gray)				
	74'-79'		5'/<1"	shelly limestone				
			5'/<1'	f-m silty sand, trace particles of shell material [SM] (med gray)				
	84'-89'		5'/2'	f-m silty sand [SM] (med gray)				
	89'-94'		5'/42'	f-m silty sand, trace shell material Some semi-consolidated [SM] (med. gray)			BG 3-ppm	
	94'-97'		3'/25'	f-m silty sand, little shell material (med gray) some semi-consolidated. [SM]			BG 3-ppm	

CLEJ-00414-03.13-04/01/92

BORING NO. HDGW32-3/S

Project No. 4902036	Project Name Camp Lejeune Hadnot Point		Page 3 of 4
Contractor ESE, Inc.	Driller Environmental Monitoring & Testing	Date started 12-18-91	completed 12-20-90
Method Mud Rotary	Casing Size 4"	HNU 11.7/10.2	Protection Level D
Ground El. 27.01'/27.23	Soil Drilled	▼ ___ below ground	Total Depth 83'/157
Logged by Paul M. Feinberg	Checked by	Date	

Sample No.	Depth in Feet	Blows per 6"	Pen. Rec.	Description	HNU jar	Comments on Advance of Boring	Monitorin HNU	LEL
	100 97'-102'		5'/ No samp					
	104'-109'		5'/9"	shelly limestone, (med gray) little f-m silty fine sand (blue-gray)				
	110 109'-114'		5'/17"	f-m silty sand, little shell material [SM] (light gray tan)				
	114'-119'		5'/17"	f-m silty sand, little shell material [SM] (light gray tan)				
	120 119'-124'		5/20	f-m silty sand trace shell material [SM] (light gray tan)			Pos	
	124'-127'		5'/8"	f-c silty sand, trace shell material [SM] (gray tan)				
	130 129'-134'		5'/3"	same material as previously [SM] (gray)				
	134'-139'		5'/8"	f-c silty sand, some shell material [SM] (gray)			BG	
	140 139-141½		2½'/25"	f-c silty sand, trace shells lowest 6" shelly limestone pcs [SM] (light gray)			BG BG	
	144'-149'		5'/34"	f-m silty sand, trace shell material [SM] (gray)				

Sampling Completed at 149'. Borehole reamed to 157'.

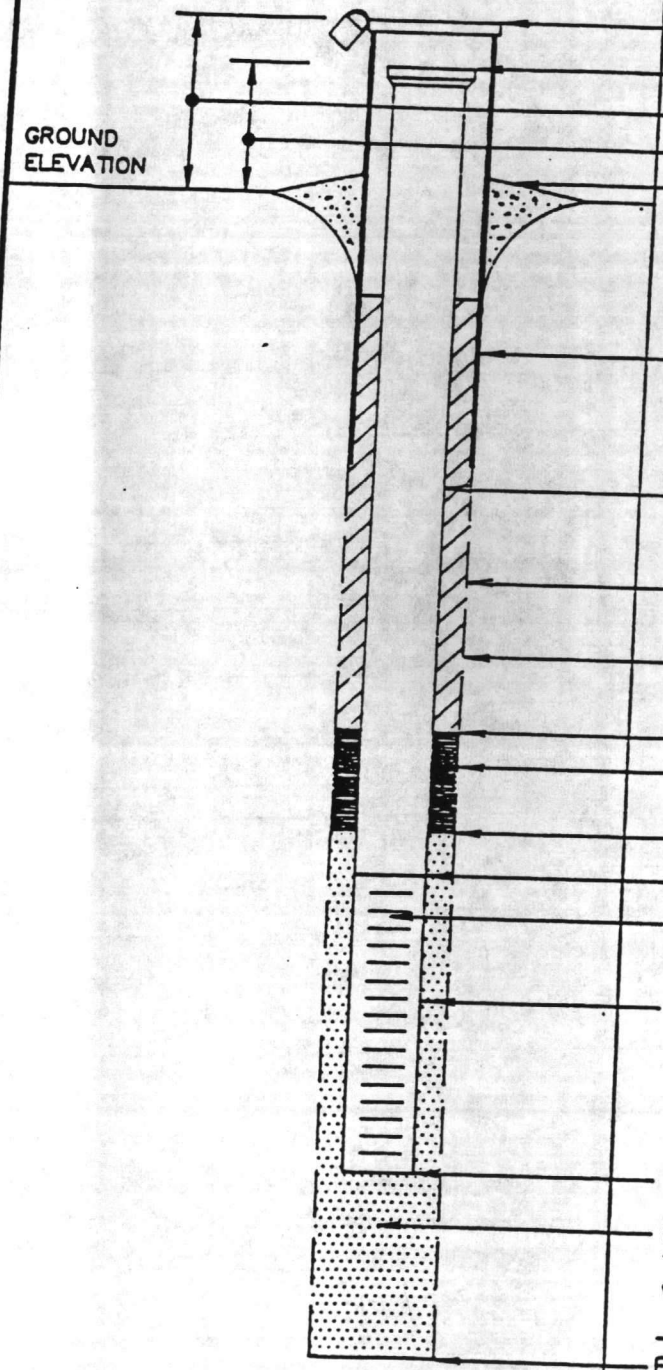
CLEJ-00414-03.13-04/01/92

OVERBURDEN MONITORING WELL SHEET

WELL NO. HP-GW32-2

PROJECT Camp Lejeune
PROJECT NO. 49-72.03G
BORING NO. HP-GW32 2
ELEVATION
DATE
FIELD GEOLOGIST Paul M Fenning

DRILLER Environmental Monitoring Testing
DRILLING METHOD Mud-Rotary
DELVELOPMENT METHOD Air Lift



ELEVATION OF TOP OF SURFACE CASING: 27.05
ELEVATION OF TOP OF RISER PIPE: 26.77
STICK-UP TOP OF SURFACE CASING: 0.04
STICK-UP RISER PIPE: Flushmount -0.24
TYPE OF SURFACE SEAL: Concrete

I.D. OF SURFACE CASING: 8"
TYPE OF SURFACE CASING: [illegible]

RISER PIPE I.D. 4
TYPE OF RISER PIPE: Sched 40 PVC

BOREHOLE DIAMETER: 10"

TYPE OF BACKFILL: Bentonite

ELEVATION/DEPTH TOP OF SEAL: 57'
TYPE OF SEAL: Bentonite Pellets

DEPTH TOP OF SAND PACK: 61'
ELEVATION/DEPTH TOP OF SCREEN: 64'
TYPE OF SCREEN: Sched 40 PVC
SLOT SIZE X LENGTH: 0.010 x 10'
TYPE OF SAND PACK: Coarse silica sand

ELEVATION/DEPTH BOTTOM OF SCREEN: 77'
ELEVATION/DEPTH BOTTOM OF SAND PACK:
TYPE OF BACKFILL BELOW OBSERVATION WELL:

ELEVATION/DEPTH OF HOLE 83'

NOT TO SCALE

OVBDMW.DWG

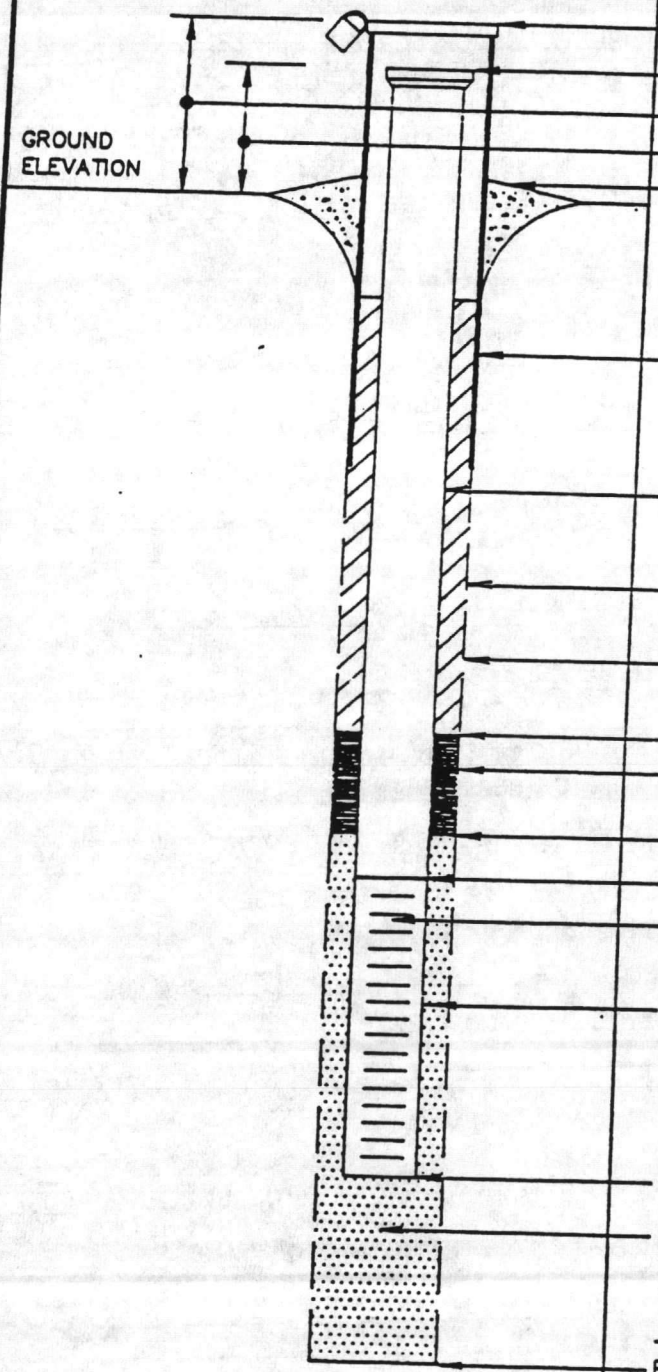
CLEJ-00414-03.13-04/01/92

OVERBURDEN MONITORING WELL SHEET

WELL NO. HP-GW32 3

PROJECT Camp Lejeune - HP:A
PROJECT NO. 4[illegible]
ELEVATION
FIELD GEOLOGIST Paul N. Feinberg
BORING NO. HP-GW32-3
DATE

DRILLER Environmental Monitoring & Testing
DRILLING METHOD Mud Rotary
DELVELOPMENT METHOD Air Lift



ELEVATION OF TOP OF SURFACE CASING: 27.35
ELEVATION OF TOP OF RISER PIPE: 27.11
STICK-UP TOP OF SURFACE CASING: 0.07
STICK-UP RISER PIPE: Flushmount -0.17
TYPE OF SURFACE SEAL: concrete

I.D. OF SURFACE CASING: 8"
TYPE OF SURFACE CASING: carbon steel

RISER PIPE I.D. 4
TYPE OF RISER PIPE: Schedule 40 PVC

BOREHOLE DIAMETER: 10"

TYPE OF BACKFILL: cuttings

ELEVATION/DEPTH TOP OF SEAL: 133'
TYPE OF SEAL: Bentonite Pellets

DEPTH TOP OF SAND PACK: 137½'
ELEVATION/DEPTH TOP OF SCREEN: 140'
TYPE OF SCREEN: Schedule 40 PVC
SLOT SIZE X LENGTH: 0.010 x 10'
TYPE OF SAND PACK: coarse silica sand

Note: 3' sump/end cap

ELEVATION/DEPTH BOTTOM OF SCREEN: 153'
ELEVATION/DEPTH BOTTOM OF SAND PACK:
TYPE OF BACKFILL BELOW OBSERVATION WELL:

ELEVATION/DEPTH OF HOLE 157'

NOT TO SCALE

OVBOMW.DWG

CLEJ-00414-03.13-04/01/92

FIELD BORING LOG

BORING NO. HPGW30-2/

Project No. 4902036	Project Name Camp Lejeune Hadnot Point - Monitoring Wells		Page 1 of 4
Contractor ESE, Inc.	Driller Environmental Monitoring & Testing	Date started 12-5-90	completed 12-7-90
Method Mud Rotary	Casing Size 4"	HNU 11.7/10.2	Protection Level D
Ground El. 29.96 / 29.96'	Soil Drilled	▼ ___ below ground	Total Depth 83' / 160
Logged by Paul M. Feinberg	Checked by	Date	

Sample No.	Depth in Feet	Blows per 6"	Pen. Rec.	Description	HNU jar	Comments on Advance of Boring	Monitoring HNU	Monitoring LEL
							(OVM)	
	2½ - 15½'		5'/15"	Silty clayey m. sand [SM] more silt than clay. (med gray)		OVM = 0.0ppm Note: OVM function erratically. Consiveness similar to clay Not very dense	0.0 BH	
10								
	13½ - 18½		5'/5'	Same as above [SM]			0.0 BH	
20	18½ - 22½		4'/3'	Upper 1½' Same material as above [SM]				
				Lower 1½' dense silty clayey med. sand (black) [SM]		Note: peat-like material at bottom tip.		
	22½ - 27½		5'/≈5'	Low density "peat" (black) wood chips at bottom. [Pt]		Low spec. grav., but densely packed		
30	27½ - 29½		2'/10"	Silty-clayey f-m grained [Pt] "peat-like" material. (black) Trace stems visible throughout.				
	29½ - 34½'		5'/37"	f-m-c sand & "peat-like" material Stem/plant-wood material permeates. [Pt] (Light gray to med gray Black)				
	34½ - 36½'							
40			2'/12"	c-vc gravel-size carbonate material. [SM] (gray-white)				
	36½' - 41½'		5'/1"	Lg. pcs gravel-size clastic carbonate. [GW] gray white				

CLEJ-00414-03.13-04/01/92

FIELD BORING LOG

BORING NO. HPGW3J-2/S

Project No. 4902036	Project Name Camp Lejeune Hadnot Point Monitoring Wells		Page 2 of 4
Contractor ESE, Inc.	Driller Environmental Monitoring & Testing	Date started 12-5-90	completed 12-7-90
Method Mud Rotary	Casing Size 4"	HNU 11.7/10.2	Protection Level D
Ground El. 29.96 / 29.96'	Soil Drilled	▼ ___ below ground	Total Depth 93' / 93'
Logged by Paul M. Fenoerg	Checked by	Date	

Sample No.	Depth in Feet	Blows per 6"	Pen. Rec.	Description	HNU jar	Comments on Advance of Boring	Monitoring HNU	Monitoring LEL
	40' 41½'-44'		2½'/20"	clastic carbonate shells [GW] gray white				
	44 - 44½'		05'/					
	44½'-46½'		2'/20"	same material as previously [GW]				
	46½'-47½'		3'/	same material as previously				
	50 49½'-51'		1½'/13"	same material as previously				
	51'-56'		4'/4"	silty clayey f-grained material Seems to be dense, clayey silt, Trace shells dark brown [ML]				
	56'-61'		5'/12"	Upper 12" m sand dark brown trace shell material [SM] Lower 4" f-m clayey dense silt, little f-m sand [ML] dark brown				
	60 61'-62'		1'/5"	f-grained "peat-like" material compact. med gray [Pt]				
	62'-67'		5'/56"	dense "peat"-like material w/ shells. med gray [Pt] Lowest 8" - clastic carbonate rock. med gray				
	70 67'-69'		2'/11"	clastic carbonate w/ shells med gray [GM] Note: "peat-like" matrix is more prevalent in upper 5".				
	69'-74' 80 79'-81'		5'/30"	f-m silty sand, trace shells very dense; med gray [SM] Lowest inch is clastic carbonate. med gray				
			6"/32"	f-m silty sand med gray [SM]				

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F

BORING NO. HPSW22-2/3

Project No. 4902036	Project Name Camp Lejeune Hadnot Point - Monitoring Wells		Page 3 of 4
Contractor ESE, Inc.	Driller Environmental Monitoring & Testing	Date started 12-5-90	completed 12-7-90
Method Mud Rotary	Casing Size 4"	HNU 11.7/10.2	Protection Level D
Ground El. 29.96' / 29.96	Soil Drilled	▼ ___ below ground	Total Depth 93' / 93'
Logged by Paul M. Feinberg	Checked by	Date	

Sample No.	Depth in Feet	Blows per 6"	Pen. Rec.	Description	HNU jar	Comments on Advance of Boring	Monitoring HNU	Monitoring LEL
	84'-89'		5'/3'	f-m silty sand (med. gray) trace shell material [SM]			0.2 ppm	
	89-94'		5'/4'	f-m silty sand, trace shells (med. gray) [SM]		Note: Upper 12" has some very dense nodules of compacted sand		
	94'-99'		5'/1.9'	f-m silty sand, little shells (med gray) [SM]				
	99'-104'		5'/12"	f-c silty sand, trace shell material (med. gray) [SM]		Note: Bottom 3' very compact, like rock. Also coarser grains in lower 6".		
	104'-109'		5'/54"	f-m silty sand & shell material partially consolidated (light med gray) [SM]				
	109'-114'		5'/32"	Upper 16" f-m silty sand, some shell material, some dense clusters [SM] (light med gray) Lower 16" f-m silty sand, trace shell material [SM] (light med. gray)				
	114'-119'		5'/12"	f-c silty sand, trace shell material [SM] (light med gray)				

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BORING NO. HP-GW32-2/3

Project No. 492036	Project Name Camp Lejeune Hadnot Point - Monitoring Wells		Page 4 of 4
Contractor ESE, Inc.	Driller Environmental Monitoring Testing	Date started 12-5-90	completed 12-7-90
Method Mud Rotary	Casing Size 4	HNU 11.7/10.2	Protection Level D
Ground El. 27.96 / 27.96'	Soil Drilled	▼ ___ below ground	Total Depth 83' / 160'
Logged by Tom M. Fendorf	Checked by	Date	

Sample No.	Depth in Feet	Blows per 6"	Pen. Rec.	Description	HNU jar	Comments on Advance of Boring	Monitorin HNU	LEL
	124 - 127'		5'/20"	f-m silty sand, trace shell material [SM] (medium gray)			0.0ppm	
	129 - 134'		5'/20"	f-m silty sand, trace shell material [SM] (med. gray)				
	134 - 139'		5'/33"	Upper 12" f-m silty sand [SM] (med gray) Lower 8" f-c silty sand [SM] (med gray)				
	139 - 144'		5'/-	f-m silty sand [SM] (med. gray)				
	144 - 147'		1'/2"	f-c silty sand [SM] (med. gray)			0.0ppm	
	147 - 149'			f-c silty sand, [SM] (med. gray) little shell			0.0ppm	
	150'			Sampling completed at 149'. Borehole reamed to 160'				

APPENDIX E

MONITOR WELL DEVELOPMENT LOGS

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HPGW 1 Date: 11/21/86 Time: _____

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 24' Stickup: 2.5'

WATER LEVEL

Held: _____

Cut: _____

DTW: -23.04' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: _____

DTW Top of Casing: _____

Column of Water in Well: _____

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	_____
Column of Water or Length of A.S. (whichever is less)	X	_____
Volume of Annular Space	=	3.22
Gallons per foot of Casing	=	_____
Column of Water	X	_____
Volume of Casing	=	0.71
Total Volume (Volume of A.S. + Volume of Casing)	=	3.93
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	19.66

Method of Purging (pump, bailer, etc.): Bailed

APPROXIMATE FLOW RATE : _____

TOTAL DEVELOPMENT TIME: —

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT : _____

DTW : _____ Top of Casing

Bailed 11/21 + 11/24 Total purged ~20 gal

NOTES:

Signed/ DEVELOPER JW+DB Date: 11/25/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HPGW2 Date: 11/21/86 Time: _____

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 24' Stickup: 2.5'

WATER LEVEL

Held: _____

Cut: _____

DTW: -21.40' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: _____

DTW Top of Casing: _____

Column of Water in Well: _____

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	_____
Column of Water or Length of A.S. (whichever is less)	X	_____
Volume of Annular Space	=	4.66
Gallons per foot of Casing	=	_____
Column of Water	X	_____
Volume of Casing	=	1.04
Total Volume (Volume of A.S. + Volume of Casing)	=	5.70
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	28.5 gal

Method of Purging (pump, bailer, etc.): Bailed

APPROXIMATE FLOW RATE: —

TOTAL DEVELOPMENT TIME: —

WATER LEVEL - 24 HRS AFTER DEVELOPMENT: Bailed 11/21, 11/25 for total of ~29 gal

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES:

Signed/ DEVELOPER JW & DB Date: 11/25/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HPGW3 Date: 11/21/86 Time: ____

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 24' Stickup: 2.5'

WATER LEVEL

Held: ____

Cut: ____

DTW: -21.67' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: ____

DTW Top of Casing: ____

Column of Water in Well: ____

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	____
Column of Water or Length of A.S. (whichever is less)	X	____
Volume of Annular Space	=	4.56
Gallons per foot of Casing	=	____
Column of Water	X	____
Volume of Casing	=	1.01
Total Volume (Volume of A.S. + Volume of Casing)	=	5.57
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	27.85

Method of Purging (pump, bailer, etc.): bailed

APPROXIMATE FLOW RATE: —

TOTAL DEVELOPMENT TIME: —

WATER LEVEL - 24 HRS AFTER DEVELOPMENT: Bailed 11/21 + 11/24 for total of ~28 gal

HELD: ____

CUT: ____

DTW: ____ Top of Casing

NOTES:

Signed/ DEVELOPER JW + DB Date: 11/25/86

Signed/Reviewer: ____ Date: ____

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HPGW4 Date: 11/24/86 Time: _____

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 24' Stickup: 2.5'

WATER LEVEL

Held: _____

Cut: _____

DTW: -20.58 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: _____

DTW Top of Casing: _____

Column of Water in Well: _____

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	
Column of Water or Length of A.S. (whichever is less)	X	
Volume of Annular Space	=	3.91
Gallons per foot of Casing	=	
Column of Water	X	
Volume of Casing	=	0.87
Total Volume (Volume of A.S. + Volume of Casing)	=	4.78
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	23.90

Method of Purging (pump, bailer, etc.): bailed

APPROXIMATE FLOW RATE: — Bailed 11/24 for total of 24 gallons

TOTAL DEVELOPMENT TIME: —

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES:

Signed/ DEVELOPER JW + DB Date: 11/25/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HRGW5 Date: 11/24/86 Time: _____

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 24' Stickup: 2.5'

WATER LEVEL

Held: _____

Cut: _____

DTW: -18.63' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: _____

DTW Top of Casing: _____

Column of Water in Well: _____

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	_____
Column of Water or Length of A.S. (whichever is less)	X	_____
Volume of Annular Space	=	6.76
Gallons per foot of Casing	=	_____
Column of Water	X	_____
Volume of Casing	=	1.50
Total Volume (Volume of A.S. + Volume of Casing)	=	8.26
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	41.3 gal

Method of Purging (pump, bailer, etc.): bailed

APPROXIMATE FLOW RATE: — Bailed 11/24 for total of 42 gallons

TOTAL DEVELOPMENT TIME: —

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES:

Signed/DEVELOPER: for JW + DB Date: 11/25/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

-WR85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HPGW 6 Date: 11/24/86 Time: 1010.

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 24' Stickup: 2.5'

WATER LEVEL

Held: -20.00'

Cut: 1.25'

DTW: -18.75' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 28.00'

DTW Top of Casing: 18.75'

Column of Water in Well: 9.25'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	9.25
Volume of Annular Space	=	2.90
Gallons per foot of Casing	=	0.1632
Column of Water	X	9.25
Volume of Casing	=	1.51
Total Volume (Volume of A.S. + Volume of Casing)	=	4.41
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	22 gal

Method of Purging (pump, bailer, etc.): Discontinuous pumping & continuous pump 2 gal

APPROXIMATE FLOW RATE: ~0.25 gal/minute

TOTAL DEVELOPMENT TIME: — Total purged volume = ~22g

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES: Water muddy @ onset; pumped continuously @ very low flow rate; water clean upon completion of development

Signed/DEVELOPER [signature] Date: 11/24/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

5.

R85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HPGW7 Date: 11/24/86 Time: 1028

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 24' Stickup: 2.5'

WATER LEVEL

Held: -18.00'

Cut: -1.17'

DTW: -16.83' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 28.00'

DTW Top of Casing: -16.83'

Column of Water in Well: 11.17'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	11.17
Volume of Annular Space	=	4.36
Gallons per foot of Casing	=	0.1632
Column of Water	X	11.17
Volume of Casing	=	1.82
Total Volume (Volume of A.S. + Volume of Casing)	=	6.18
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	31 gal

Method of Purging (pump, bailer, etc.): Discontinuous + continuous pumping -

APPROXIMATE FLOW RATE: ~1 gal/min

3 gal
3 gal
6 gal
25 gal
31 total

TOTAL DEVELOPMENT TIME: —

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES: Water muddy @ onset; ~ 12" sediment inside casing @ onset; water + casing clear upon completion of development

Signed/DEVELOPER: Mark Jordan Date: 11/24/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

Temporary # 4

WELL DEVELOPMENT FORM

Well Number: HPGW8 Date: 11/9/86 Time: 1432

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: _____ Stickup: _____

WATER LEVEL

Held: _____

Cut: _____

DTW: -15.83' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: _____

DTW Top of Casing: _____

Column of Water in Well: _____

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	_____
Column of Water or Length of A.S. (whichever is less)	X	_____
Volume of Annular Space	=	8.51
Gallons per foot of Casing	=	_____
Column of Water	X	_____
Volume of Casing	=	1.89
Total Volume (Volume of A.S. + Volume of Casing)	=	10.40
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	52 gal

Method of Purging (pump, bailer, etc.): _____

APPROXIMATE FLOW RATE: 1.9 gpm

TOTAL DEVELOPMENT TIME: 29 MIN. (55 gal)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES:

Signed/ DEVELOPER JW Date: 11/19/86

Signed/ Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

VR85.1/SAMPFORM.1
03/15/85

Temporary # 11

WELL DEVELOPMENT FORM

Well Number: HPGW9 Date: 11/10/86 Time: 1108.

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: _____ Stickup: _____

WATER LEVEL

Held: _____

Cut: _____

DTW: -18.13 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: _____

DTW Top of Casing: _____

Column of Water in Well: _____

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	_____
Column of Water or Length of A.S. (whichever is less)	X	_____
Volume of Annular Space	=	6.79
Gallons per foot of Casing	=	_____
Column of Water	X	_____
Volume of Casing	=	1.51
Total Volume (Volume of A.S. + Volume of Casing)	=	8.30
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	41.5 gal

Method of Purging (pump, bailer, etc.): _____

APPROXIMATE FLOW RATE: ~2.0 gal/min

TOTAL DEVELOPMENT TIME: 29 min. (58 gal)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES:

Signed/DEVELOPER JW Date: 11/19/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HPGW10 Date: 11/24/86 Time: 1040

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 24' Stickup: 2.5'

WATER LEVEL

Held: -16.00'

Cut: 1.00'

DTW: -15.00' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 28.00'

DTW Top of Casing: -15.00'

Column of Water in Well: 13.00'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	13.00
Volume of Annular Space	=	5.07
Gallons per foot of Casing	=	0.1632
Column of Water	X	13.00
Volume of Casing	=	2.12
Total Volume (Volume of A.S. + Volume of Casing)	=	7.19
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	36 gal

Method of Purging (pump, bailer, etc.): Continuous pumping

APPROXIMATE FLOW RATE: ~3 gal/minute @ low throttle

TOTAL DEVELOPMENT TIME: 15 minutes (~45 gal)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES: Water muddy @ onset; ~12" of sand in casing @ onset; water & casing clean upon completion of development

Signed/DEVELOPER [signature] Date: 11/24/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HPGW#11 Date: 11/24/86 Time: 1050

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 24' Stickup: 2.5'

WATER LEVEL

Held: -17.00'

Cut: 0.93'

DTW: -16.07' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 28.00'

DTW Top of Casing: 16.07'

Column of Water in Well: 11.93'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	11.93
Volume of Annular Space	=	4.65
Gallons per foot of Casing	=	0.1632
Column of Water	X	11.93
Volume of Casing	=	1.95
Total Volume (Volume of A.S. + Volume of Casing)	=	6.60
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	33 gal

Method of Purging (pump, bailer, etc.): Discontinuous pumping & continuous pumping

APPROXIMATE FLOW RATE: ~0.9 gal/min

5 gal
2
3
+25
35 gal total

TOTAL DEVELOPMENT TIME: —

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES: Water muddy @ onset, cleared up quickly - Will pump continuously @ low throttle at low flow rates (see above)

Signed/DEVELOPER [signature] Date: 11/24/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HPGW12 Date: 11/21/86 Time: 0930

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 24' Stickup: 2.5'

WATER LEVEL

Held: -1500'

Cut: 0.80'

DTW: -14.20' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 28.00'

DTW Top of Casing: -14.20'

Column of Water in Well: 13.80'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	13.80
Volume of Annular Space	=	5.38
Gallons per foot of Casing	=	0.1632
Column of Water	X	13.80
Volume of Casing	=	2.25
Total Volume (Volume of A.S. + Volume of Casing)	=	7.63
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	38.2 gal

Method of Purging (pump, bailer, etc.): Continuous pumping

APPROXIMATE FLOW RATE: ~2 gal/min @ low throttle

TOTAL DEVELOPMENT TIME: 20 minutes (~40 gal)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES: Water muddy @ onset of development, ~6" sediment @ base of casing; water & casing clean upon completion of development.

Signed/DEVELOPER Mark J Jacobson Date: 11/21/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HPGW13 Date: 11/24/86 Time: 0950.

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 24' Stickup: 2.5'

WATER LEVEL

Held: -16.00'

Cut: 1.50'

DTW: -14.50' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 28.00'

DTW Top of Casing: 14.50'

Column of Water in Well: 13.50'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	13.50
Volume of Annular Space	=	5.27
Gallons per foot of Casing	=	0.1632
Column of Water	X	13.50
Volume of Casing	=	2.20
Total Volume (Volume of A.S. + Volume of Casing)	=	7.47
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	37.4 gal

Method of Purging (pump, bailer, etc.): Continuous pumping

APPROXIMATE FLOW RATE: ~1.5 gal/min

TOTAL DEVELOPMENT TIME: 30 minutes (~45 gal)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES: Water muddy @ onset of development, ~6" of sediment in casing @ onset; water & casing clean upon completion of development

Signed/DEVELOPER [signature] Date: 11/24/86

Signed/Reviewer: _____ Date: _____

R85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HPGW14 Date: 11/9/86 Time: 1207

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: _____ Stickup: _____

WATER LEVEL

Held: _____

Cut: _____

DTW: -13.31 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: _____

DTW Top of Casing: _____

Column of Water in Well: _____

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	_____
Column of Water or Length of A.S. (whichever is less)	X	_____
Volume of Annular Space	=	10.60
Gallons per foot of Casing	=	_____
Column of Water	X	_____
Volume of Casing	=	2.36
Total Volume (Volume of A.S. + Volume of Casing)	=	12.96
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	64.80 gal

Method of Purging (pump, bailer, etc.): _____

APPROXIMATE FLOW RATE: 1.2 gpm

TOTAL DEVELOPMENT TIME: 55 MIN (66 gal)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES:

Signed/ DEVELOPER JW Date: 11/19/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

Temporary #10

WELL DEVELOPMENT FORM

Well Number: HPGW15 Date: 11/10/86 Time: 1004

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: _____ Stickup: _____

WATER LEVEL

Held: _____

Cut: _____

DTW: -14.71 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: _____

DTW Top of Casing: _____

Column of Water in Well: _____

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	_____
Column of Water or Length of A.S. (whichever is less)	X	_____
Volume of Annular Space	=	9.27
Gallons per foot of Casing	=	_____
Column of Water	X	_____
Volume of Casing	=	2.06
Total Volume (Volume of A.S. + Volume of Casing)	=	11.33
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	56.6 gal

Method of Purging (pump, bailer, etc.): _____

APPROXIMATE FLOW RATE: 1.2 gpm

TOTAL DEVELOPMENT TIME: 47 MIN. (56 gal)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES:

Signed/ DEVELOPER JW Date: 11/19/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HPEW16 Date: 11/21/86 Time: 0940

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 24' Stickup: 2.5'

WATER LEVEL

Held: - 16.00'

Cut: 1.46'

DTW: -14.54' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 28.00'

DTW Top of Casing: -14.54'

Column of Water in Well: 13.46'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	13.46
Volume of Annular Space	=	5.25
Gallons per foot of Casing	=	0.1632
Column of Water	X	13.46
Volume of Casing	=	2.20
Total Volume (Volume of A.S. + Volume of Casing)	=	7.45
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	37.3 gal

Method of Purging (pump, bailer, etc.): Continuous pumping

APPROXIMATE FLOW RATE: ~1 gal/min.

TOTAL DEVELOPMENT TIME: 40 minutes (~40 gal)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES: Water muddy @ onset; relatively clear upon completion of development

Signed/ DEVELOPER Mark [illegible] Date: 11/21/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

Temporary ~~of~~ IC

WELL DEVELOPMENT FORM

Well Number: HPGW17 Date: 11/10/86 Time: 0920

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: _____ Stickup: _____

WATER LEVEL

Held: _____

Cut: _____

DTW: -13.58' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: _____

DTW Top of Casing: _____

Column of Water in Well: _____

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	_____
Column of Water or Length of A.S. (whichever is less)	X	_____
Volume of Annular Space	=	10.47
Gallons per foot of Casing	=	_____
Column of Water	X	_____
Volume of Casing	=	2.33
Total Volume (Volume of A.S. + Volume of Casing)	=	12.79
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	63.9 gal

Method of Purging (pump, bailer, etc.): _____

APPROXIMATE FLOW RATE: 1.85 gpm

TOTAL DEVELOPMENT TIME: 36 min. (67 gal)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES:

Signed/ DEVELOPER [signature] JW Date: 11/19/86

Signed/ Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HPGW18 Date: 11/21/86 Time: 0950

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 24' Stickup: 2.5'

WATER LEVEL

Held: -15.00'

Cut: 1.50'

DTW: -13.50' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 28.00'

DTW Top of Casing: -13.50'

Column of Water in Well: 14.50'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	14.50
Volume of Annular Space	=	5.66
Gallons per foot of Casing	=	0.1632
Column of Water	X	14.50
Volume of Casing	=	2.37
Total Volume (Volume of A.S. + Volume of Casing)	=	8.03
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	40.2 gal

Method of Purging (pump, bailer, etc.): Continuous pumping

APPROXIMATE FLOW RATE: ~5 gal/min @ high throttle

TOTAL DEVELOPMENT TIME: 20 [redacted] minutes (~ 80 gallons)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES: Very muddy @ onset, approx 12" fine gr. sand inside casing @ onset; neither casing or water came clear during development - sand being pulled thru screen by pump.

Signed/DEVELOPER [signature] Date: 11/21/86

Signed/Reviewer: [signature] Date: _____

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HPGW24 Date: 11/21/86 Time: 1005

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 24' Stickup: 2.5'

WATER LEVEL

Held: -11.00'

Cut: 1.67'

DTW: -9.33' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 28.00'

DTW Top of Casing: 9.33'

Column of Water in Well: 18.67'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	18.67
Volume of Annular Space	=	7.28
Gallons per foot of Casing	=	0.1632
Column of Water	X	18.67
Volume of Casing	=	3.05
Total Volume (Volume of A.S. + Volume of Casing)	=	10.33
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	51.7 gal

Method of Purging (pump, bailer, etc.): Continuous pumping

APPROXIMATE FLOW RATE: ~1 gal/min

TOTAL DEVELOPMENT TIME: 55 minutes (~55 gal)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES: Water quite muddy @ onset of development
clear upon completion

Signed/DEVELOPER [signature] Date: 11/21/86

Signed/Reviewer: _____ Date: _____

WR85.1/SAMPFORM.1
03/15/85

Temporary #9

WELL DEVELOPMENT FORM

Well Number: HPGW19 Date: 11/9/86 Time: 1131

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: _____ Stickup: _____

WATER LEVEL

Held: _____

Cut: _____

DTW: -11.58' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: _____

DTW Top of Casing: _____

Column of Water in Well: _____

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	_____
Column of Water or Length of A.S. (whichever is less)	X	_____
Volume of Annular Space	=	7.10
Gallons per foot of Casing	=	_____
Column of Water	X	_____
Volume of Casing	=	1.58
Total Volume (Volume of A.S. + Volume of Casing)	=	8.68
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	43.4 gal

Method of Purging (pump, bailer, etc.): _____

APPROXIMATE FLOW RATE: 2.6 gpm

TOTAL DEVELOPMENT TIME: 28 min. (73 gal)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES:

Signed/DEVELOPER: JW Date: 11/19/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

-WR85.1/SAMPFORM.1
03/15/85

Temporary #1

WELL DEVELOPMENT FORM

Well Number: HPGW20 Date: 11/9/86 Time: 0838

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: _____ Stickup: _____

WATER LEVEL

Held: _____

Cut: _____

DTW: -10.67' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: _____

DTW Top of Casing: _____

Column of Water in Well: _____

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	_____
Column of Water or Length of A.S. (whichever is less)	X	_____
Volume of Annular Space	=	12.54
Gallons per foot of Casing	=	_____
Column of Water	X	_____
Volume of Casing	=	2.79
Total Volume (Volume of A.S. + Volume of Casing)	=	15.33
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	76.6 gal

Method of Purging (pump, bailer, etc.): _____

APPROXIMATE FLOW RATE: 2.6 gpm

TOTAL DEVELOPMENT TIME: 40 min (104 gal)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES:

Signed/ DEVELOPER JW Date: 11/19/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

VR85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HPGW21 Date: 11/20/86 Time: 1625

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 24' Stickup: 2.5'

WATER LEVEL

Held: -15.00'

Cut: 1.25'

DTW: -13.75' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 28.00'

DTW Top of Casing: 13.75'

Column of Water in Well: 14.25'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	x	14.25
Volume of Annular Space	=	5.56
Gallons per foot of Casing	=	0.1632
Column of Water	x	14.25
Volume of Casing	=	2.33
Total Volume (Volume of A.S. + Volume of Casing)	=	7.89
Number of Volumes to be Evacuated	x	5
Total Volume to be Evacuated	=	39.5 gal

Method of Purging (pump, bailer, etc.): Continuous pumping (slow rate) and discontinuous (surge) pumpin

APPROXIMATE FLOW RATE: << 0.5 gal/min

TOTAL DEVELOPMENT TIME: —

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

14 gal total @ 1715 11/20

11/21: 4 gal
5 gal
5 gal

14 gal tot
ON 11/21@ 160

11/24 5 gal
5
2

12 tota
11/24
@150

NOTES: Water muddy @ onset; slightly cloudy @ completion due to prolonged development period.

Signed/ DEVELOPER: [signature] Date: 11/24/86

Signed/Reviewer: _____ Date: _____

TOTAL = 40 gal

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

Temporary #1

WELL DEVELOPMENT FORM

Well Number: HPGW22 Date: 11/7/86 Time: 1500

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: _____ Stickup: _____

WATER LEVEL

Held: _____

Cut: _____

DTW: -10.67 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: _____

DTW Top of Casing: _____

Column of Water in Well: _____

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	_____
Column of Water or Length of A.S. (whichever is less)	X	_____
Volume of Annular Space	=	10.44
Gallons per foot of Casing	=	_____
Column of Water	X	_____
Volume of Casing	=	2.32
Total Volume (Volume of A.S. + Volume of Casing)	=	12.76
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	63.8 gal

Method of Purging (pump, bailer, etc.): _____

APPROXIMATE FLOW RATE: ~1 gal/min

TOTAL DEVELOPMENT TIME: — (63 gal)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES:

Signed/ DEVELOPER JW Date: 11/19/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

Temporary #14

WELL DEVELOPMENT FORM

Well Number: HPGWR3 Date: 11/8/86 Time: 1032

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: _____ Stickup: _____

WATER LEVEL

Held: _____

Cut: _____

DTW: -13.58 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: _____

DTW Top of Casing: _____

Column of Water in Well: _____

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	_____
Column of Water or Length of A.S. (whichever is less)	X	_____
Volume of Annular Space	=	9.67
Gallons per foot of Casing	=	_____
Column of Water	X	_____
Volume of Casing	=	2.15
Total Volume (Volume of A.S. + Volume of Casing)	=	11.82
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	59.10

Method of Purging (pump, bailer, etc.): _____

APPROXIMATE FLOW RATE: ~1 gpm

TOTAL DEVELOPMENT TIME: — (62 gal)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES:

Signed/ DEVELOPER JW Date: 11/19/86

Signed/Reviewer: _____ Date: _____

Temporary #15

WELL DEVELOPMENT FORM

Well Number: HPGW25 Date: 11/18/86 Time: 1000

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: _____ Stickup: _____

WATER LEVEL

Held: _____

Cut: _____

DTW: -11.50' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: _____

DTW Top of Casing: _____

Column of Water in Well: _____

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	_____
Column of Water or Length of A.S. (whichever is less)	X	_____
Volume of Annular Space	=	11.88
Gallons per foot of Casing	=	_____
Column of Water	X	_____
Volume of Casing	=	2.64
Total Volume (Volume of A.S. + Volume of Casing)	=	14.52
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	72.60

Method of Purging (pump, bailer, etc.): _____

APPROXIMATE FLOW RATE: ~1.2 gpm

TOTAL DEVELOPMENT TIME: ~ (73 gal)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES:

Signed/ DEVELOPER JW Date: 11/19/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92 WR85.1/SAMPFORM.1
03/15/85

TEMPORARY #[redacted]8 WELL DEVELOPMENT FORM

Well Number: HPGW26 Date: 11/9/86 Time: 1028
Boring Diameter: 6" Well Casing Diameter: 2"
Annular Space Length: _____ Stickup: _____

WATER LEVEL

Held: _____
Cut: _____
DTW: ~20.46 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: _____
DTW Top of Casing: _____
Column of Water in Well: _____

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	_____
Column of Water or Length of A.S. (whichever is less)	X	_____
Volume of Annular Space	=	4.13
Gallons per foot of Casing	=	_____
Column of Water	X	_____
Volume of Casing	=	0.92
Total Volume (Volume of A.S. + Volume of Casing)	=	5.04
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	25 gal

Method of Purging (pump, bailer, etc.): _____

APPROXIMATE FLOW RATE: 1.2 gpm

TOTAL DEVELOPMENT TIME: 28 MIN. (34 gal)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____
CUT: _____
DTW: _____ Top of Casing

NOTES:

Signed/DEVELOPER JW Date: 11/19/86
Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HPGW27 Date: 11/20/86 Time: 0930

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 24' Stickup: 2.5'

WATER LEVEL

Held: -10.00'

Cut: 1.10'

DTW: -8.90' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 28.00'

DTW Top of Casing: - 8.90

Column of Water in Well: 19.10'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	19.10
Volume of Annular Space	=	7.45
Gallons per foot of Casing	=	0.1632
Column of Water	X	19.10
Volume of Casing	=	3.12
Total Volume (Volume of A.S. + Volume of Casing)	=	10.57
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	52.9 gal

Method of Purging (pump, bailer, etc.): _____

APPROXIMATE FLOW RATE: ~8 gal/min (@ low thru flow)

TOTAL DEVELOPMENT TIME: 10 min. (~80 gal)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES: Water muddy @ onset, ~12" sediment in casing @ onset, water & casing clear upon completion of development

Signed/DEVELOPER Mark [illegible] Date: 11/20/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HPGW28 Date: 11/20/86 Time: 1010

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 24' Stickup: 2.5'

WATER LEVEL

Held: -8.00'

Cut: -1.52'

DTW: -6.48' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 28.00'

DTW Top of Casing: -6.48'

Column of Water in Well: 21.52'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	21.52
Volume of Annular Space	=	8.39
Gallons per foot of Casing	=	0.1632
Column of Water	X	21.52
Volume of Casing	=	3.51
Total Volume (Volume of A.S. + Volume of Casing)	=	11.9
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	59.5 gal

Method of Purging (pump, bailer, etc.):

APPROXIMATE FLOW RATE: ~7.5 gal/min @ low throttle

TOTAL DEVELOPMENT TIME: 10 min (~75 gal)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD:

CUT:

DTW: Top of Casing

NOTES: Water very muddy @ onset, odorous (sulfur?) ~12" sediment inside casing @ onset; casing cleaned but water sl. cloudy + sl. odorous @ completion of development

Signed/DEVELOPER: Mark J. Anderson Date: 11/20/86

Signed/Reviewer: Date:

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HPGW29 Date: 11/20/86 Time: 1540

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 24' Stickup: 2.5'

WATER LEVEL

Held: -23.00'

Cut: - 0.70'

DTW: -22.30' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 28.00'

DTW Top of Casing: 22.30'

Column of Water in Well: 5.70'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	5.70
Volume of Annular Space	=	2.22
Gallons per foot of Casing	=	0.1632
Column of Water	X	5.70
Volume of Casing	=	0.93
Total Volume (Volume of A.S. + Volume of Casing)	=	3.15
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	15.75 gal

Method of Purging (pump, bailer, etc.): Discontinuous pumping

APPROXIMATE FLOW RATE: ~ 5 gal / 10 minutes

TOTAL DEVELOPMENT TIME: 35 minutes (>15 gal)

RELATIVELY QUICK RECHARGE

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES: Water muddy @ onset; clean upon completion of development

Signed/ DEVELOPER [signature] Date: 11/20/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

-WR85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HPGW30 Date: 11/20/86 Time: 1100

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 24' Stickup: 2.5'

WATER LEVEL

Held: -12.00'

Cut: 1.15'

DTW: -10.85' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 28.00'

DTW Top of Casing: -10.85'

Column of Water in Well: 17.15'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	17.15
Volume of Annular Space	=	6.69
Gallons per foot of Casing	=	0.1632
Column of Water	X	17.15
Volume of Casing	=	2.80
Total Volume (Volume of A.S. + Volume of Casing)	=	9.49
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	47.5 gal

Method of Purging (pump, bailer, etc.): Continuous pumping - water flow discontinuous

APPROXIMATE FLOW RATE: SLOW ~ 0.5 gal/min

TOTAL DEVELOPMENT TIME: 1 hr. 45 min (~ 48 gal)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES: Very slow pumping; water muddy @ onset; relatively clean upon completion of development

Signed/DEVELOPER [signature] Date: 11/20/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HPGW31 Date: 11/20/86 Time: 1330

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 24' Stickup: 2.5

WATER LEVEL

Held: -21.00'

Cut: 1.10'

DTW: -19.90' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 28.00'

DTW Top of Casing: -19.90'

Column of Water in Well: 8.10'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	8.10
Volume of Annular Space	=	3.16
Gallons per foot of Casing	=	0.1632
Column of Water	X	8.10
Volume of Casing	=	1.32
Total Volume (Volume of A.S. + Volume of Casing)	=	4.49
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	22.4 gal

Method of Purging (pump, bailer, etc.): Discontinuous pumping

APPROXIMATE FLOW RATE: ~0.3 gal/min

TOTAL DEVELOPMENT TIME: 1 hour 15 min (~23 gal)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES: Muddy @ onset; water clear @ completion of development - SLOW WELL

Signed/ DEVELOPER [signature] Date: 11/20/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

WR85.1/SAMPFORM.1
03/15/85

WELL DEVELOPMENT FORM

Well Number: HPGW32 Date: 11/20/86 Time: 1445

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 24' Stickup: 2.5'

WATER LEVEL

Held: -10.00'

Cut: 0.67'

DTW: -9.33' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 28.00'

DTW Top of Casing: -9.33

Column of Water in Well: 18.67'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	18.67
Volume of Annular Space	=	7.28
Gallons per foot of Casing	=	0.1632
Column of Water	X	18.67
Volume of Casing	=	3.05
Total Volume (Volume of A.S. + Volume of Casing)	=	10.33
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	57.7 gal

Method of Purging (pump, bailer, etc.): Continuous pumping

APPROXIMATE FLOW RATE: ~3 gal/min

TOTAL DEVELOPMENT TIME: 20 min (~60 gal)

WATER LEVEL - 24 HRS AFTER DEVELOPMENT:

HELD: _____

CUT: _____

DTW: _____ Top of Casing

NOTES: Water v. muddy @ onset; CASING had ~2" of sediment (predominantly mud) @ onset; water + CASING clear upon completion of development

Signed/DEVELOPER Mark [signature] Date: 11/20/86

Signed/Reviewer: _____ Date: _____

CLEJ-00414-03.13-04/01/92

WELL DEVELOPMENT RECORD

CLIENT LANTDIV - Camp Lejeune

JOB # 49-02036 - 0140

WELL # HPGW4-2

FIELD PERSONNEL Paul Feinberg

DATE	TIME STARTED	TIME STOPPED	~~GALS. REMOVED~~ TIME SAMPLED	~~TURBIDITY (NU)~~ COLOR	~~DEPTH TO WATER~~ CLARITY	pH	COND.
12-13-90	≈ 0800		Prior to development (≈0810)	muddy brown	OPAQUE	8.0	402
"			≈1 hr into development (≈0900)	cloudy, white	transparent	8.5	286
"		≈ 1000	≈2hr into development (≈1000)	cloudy, white	transparent	8.5	275

CLEJ-00414-03.13-04/01/92

WELL DEVELOPMENT RECORD

CLIENT LANTDIV - Camp Lejeune

JOB # 49-02036 0140

WELL # HPGW4-3

FIELD PERSONNEL Paul Feinberg

DATE	TIME STARTED	TIME STOPPED	TIME SAMPLED ~~GALS. REMOVED~~	COLOR ~~TURBIDITY~~ (NU)	CLARITY ~~DEPTH TO WATER~~	pH	COND.
12-19-90	≈ 0935		Pre-development (≈ 0945)	Light brown, cloudy	opaque	7.0	378
"			mid-development (≈ 1045)	No tint, slightly cloudy	transparent	8.1	300
"		≈ 1145	post-development (≈ 1145)	No tint, some minute amount of particulate matter	transparent	8.2	294

CLEJ-00414-03.13-04/01/92

Well Development — Well No. HPGW 9-2

Date 7/1/87 Time 0900

Well Installation Date 6/29/87 Screen length 20' ft

Depth of Well ~~77~~ 75.54 ft

Diameter of Well 5" inches

Method of Evacuation Cent. pump + Bailer

Depth from which well was pumped 130 gallons build a top ft

Distance from top of pipe to ground 2.50' ft

	Before	After	24 hours After	
Held length	17.00	27.00'		ft
Wet length	1.10'	5.20'		ft
Distance to water	15.90'	21.80		ft
Depth to sediment	70.00'	74.00'		ft
Appearance of water	Muddy brown	Clear		
Approx. pumping rate	0.45	0.45		gpm

Characteristics of sediment Extremely Fine sand

Field Analyses	Before	Bucket No.___	Bucket No.___	After
pH	7.0	✓	✓	7.0
Conductivity	✓	✓	✓	✓
Temperature	✓	✓	✓	✓

No. of 2-1/2 gal buckets pumped 1 2 3 4 5 6 7 8 9 10 ___

Total well volume before pumping 16.60 gal

Total volume pumped ~~185~~ 210 gal

Sample collected - 1 cubitainer after pumping labeled ___

Description of surge technique ___

Read and Understood By:

David A. Bruttyn — Signed

___ — Signed

7/2/87 — Date

CLEJ-00414-03.13-04/01/92

Well Development Well No. HPGW 9-3

Date 7/19/87 Time 0800

Well Installation Date 7/18/87 Screen length 20' ft

Depth of Well 150' ft

Diameter of Well 2" inches

Method of Evacuation Bailer

Depth from which well was pumped bailed 75% from top ft

Distance from top of pipe to ground _____ ft

flushed out sediment with portable 1-2 HP from fire hydrant with water pipe

	Before	After 8hrs	24 hours After	
Held length	18.00'	18.00'	18.00'	ft
Wet length	3.00'	2.50'	2.67'	ft
Distance to water (toc)	15.00'	~~35.00~~ 15.50	15.33 – TOC	ft
Depth to sediment	147'	153.3 NONE	152.5	ft
Appearance of water	muddy brown	Clear		
Approx. pumping rate	1 gpm	1.0		gpm

WL = 12.78' BGL

Characteristics of sediment Drill mud, Ex fine silt + Sand

Field Analyses	Before	Bucket No.___	Bucket No.___	After
pH				
Conductivity				
Temperature				

No. of 2-1/2 gal buckets pumped 1 2 3 4 5 6 7 8 9 10 _____

Total well volume before pumping 27.26 gal

Total volume pumped 375 gal

Sample collected - 1 cubitainer after pumping labeled _____

Description of surge technique Washed well with water from fire hydrant through 1" water pipe (ABS)

Read and Understood By:

David A. Bruttyn
Signed

_____ _____
Signed Date

CLEJ-00414-03.13-04/01/92

Well Development — Well No. HPGW 17-2

Date 6/24/87 Time 1400

Well Installation Date 6/19/87 Screen length 20 ft

Depth of Well 75.0 ft

Diameter of Well 2.0 inches

Method of Evacuation Bailer ~ 1" PVC

Depth from which well was pumped From Top of Column ft

Distance from top of pipe to ground 2.67' ft

4" = 12.04 GL

	Before	After	48 hours After	
Held length	16.00	65.00	17.00	ft
Wet length	1.29	5.00	1.67	ft
Distance to water	14.08	60.00	15.33	ft
Depth to sediment	73.50	73.00	73.00	ft
Appearance of water	turbid	Clear	Clear	
Approx. pumping rate	½ gpm	½ gpm		gpm

Characteristics of sediment grey V. fine sand

Field Analyses	Before	Bucket No.___	Bucket No.___	After
pH	6.5-7.0			6.5-7.0
Conductivity				
Temperature				

No. of 2-1/2 gal buckets pumped 1 2 3 4 5 6 7 8 9 10 ____

Total well volume before pumping 16.88 gal

Total volume pumped 260 gal

Sample collected - 1 cubitainer after pumping labeled ____

Description of surge technique ____

David A. Bentley
Signed

Read and Understood By:

Signed

7/1/87
Date

Well Development — Well No. HPGW 17-3

Date 7/19/87 Time 1130

Well Installation Date 7/16/87 Screen length 20' ft

Depth of Well 150' ft

Diameter of Well 6" inches

Method of Evacuation Bailor 1" PVC

Depth from which well was pumped from Top of Column ft

Distance from top of pipe to ground 2.50' ft

* Well was flushed via fire Hydrant + water pipe quickly all sediment Removed DAB

	Before	30 min After	24 hours After	
Held length	18.00'	18.00'	18.00	ft
Wet length	2.83'	2.57'	2.75	ft
Distance to water (Ⓢ = 12.87 DBL)	15.17'	15.43'	15.25	ft
Depth to sediment	75.00'	75.00'	75.00	ft
Appearance of water	Clear	Clear	Clear	
Approx. pumping rate	1 gpm	1.0	gpm	

Characteristics of sediment ______

Field Analyses	Before	Bucket No.__	Bucket No.__	After
pH	6.5-7.0			6.5-7.0
Conductivity				
Temperature				

No. of 2-1/2 gal buckets pumped 1 2 3 4 5 6 7 8 9 10 ______

Total well volume before pumping 31.75 gal

Total volume pumped 360 gal

Sample collected - 1 cubitainer after pumping labeled ______

Description of surge technique ______

Read and Understood By:

Signed	Signed	Date
David A. Brittyns		7/20/87

CLEJ-00414-03.13-04/01/92

Well Development Well No. HPGW24-2

Date 6/10/87 Time 1130 Am

Well Installation Date 6/9/87 Screen length 20.0 ft

Depth of Well 79.90 (TOC) ft

Diameter of Well 5" bored inches

Method of Evacuation Bailer

Depth from which well was pumped 50% Top, 50% bottom ft

Distance from top of pipe to ground 3.25' ft

	Before	24hrs After	72hrs ~~24 hours~~ After	
Held length (TOC)	16.00'	18.00	18.00	ft
Wet length (TOC)	1.40'	2.67	3.25	ft
Distance to water (TOC)	14.60'	15.33	14.75	ft
Depth to sediment (TOC)	78.15'	78.00'	78.00	ft
Appearance of water	turbid gray	Clear		
Approx. pumping rate	0.15 gpm	0.15 gpm		gpm

$\bar{X}$ = 11.64 BGL

Characteristics of sediment Initial (gray), Final (gray fine sand)

Field Analyses	Before	Bucket No.___	Bucket No.___	After
pH	6.0-6.5	(Throughout →)		
Conductivity	N/A			
Temperature	N/A			

No. of 2-1/2 gal buckets pumped 1 2 3 4 5 6 7 8 9 10 ___

Total well volume before pumping 16.93 (volume + 45) gal (volume 10.43 gal. + 6.50 gal.)

Total volume pumped 184.0 gallons gal

Sample collected - 1 cubitainer after pumping labeled ___

Description of surge technique ___

DAB 6/15/87

Read and Understood By:

Paul A. Buttyan
Signed

Signed

6/17/87
Date

CLEJ-00414-03.13-04/01/92

Well Development — Well No. HPGW 24-3

Date 7/1/87 Time 0830

Well Installation Date 6/17/87 Screen length 20 ft

Depth of Well 148.17' BGL ft

Diameter of Well 5" inches

Method of Evacuation Bailer (PVC) 50% bailed air/bottom 50% bailed bottom

Depth from which well was pumped N/A ft

Distance from top of pipe to ground ~~+5~~ 1.83' ft

	Before	After (24hrs after)	72 hrs ~~24 hours~~ After	
Held length	16.00' TOC	15.00' TOC	15.00 TOC	ft
Wet length	1.13'	~~0.83~~	1.63	ft
Distance to water (BGL)	14.87'	13.17	13.37	ft
Depth to sediment	140.00'	145.00'	145.00'	ft
Appearance of water	muddy brown	Clear - slight grey	→ Clear	
Approx. pumping rate	0.15 gpm	0.15	gpm	0.15 gpm

11.97' = BGL

Characteristics of sediment Sediment very very fine silty sand (grey black)

Field Analyses — 10 gal ← Before — Bucket No. ___ — Bucket No. ___ — After → 300 gal

	Before	Bucket No. ___	Bucket No. ___	After
pH	6.5-7.0	/	/	6.5-7.0
Conductivity	/	/	/	/
Temperature	/	/	/	/

No. of 2-1/2 gal buckets pumped 1 2 3 4 5 6 7 8 9 10 ___

Total well volume before pumping ~~28.55~~ 37.13 gal

Total volume pumped 300 gal gal

Sample collected - 1 cubitainer after pumping labeled ___

Description of surge technique ___

David A. Bottyn
Signed

Read and Understood By:

___
Signed

7/1/87
Date