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MCB CAMP LEJUENE
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CHARACTERIZATION STEP REPORT FOR HADNOT POINT INDUSTRIAL AREA CONFIRMATION STUDY TO DETERMINE EXISTENCE AND POSSIBLE MIGRATION OF SPECIFIC CHEMICALS IN SITU MCB CAMP LEJEUNE NC

5/1/1988

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC

DOC.No.:CLEJ-00258-1.02-05/01/88

CHARACTERIZATION STEP REPORT FOR HADNOT POINT INDUSTRIAL AREA

CONFIRMATION STUDY TO DETERMINE EXISTENCE AND POSSIBLE MIGRATION OF SPECIFIC CHEMICALS IN SITU

MARINE CORPS BASE
Camp Lejeune, North Carolina

Contract No. N62470-83-C-6106

Prepared for:

NAVAL FACILITIES ENGINEERING COMMAND
Atlantic Division

Prepared by:

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
Gainesville, Florida

May 1988

DOC NO: CLEJ-00258-1.02-05/01/88

Boring No. HPGW1 (vacinity of Bldg 1707) Location Coordinates N _____

Hole Size 6" Slot 0.010" E _____

Screen Size 2" Mat'l Sch 40 PVC Filter Materials Silica Sand

Casing Size 2" Mat'l PVC Grout Type 1' Bentonite Seal

Geologist Paul Conrad Development _____

Date Start 10/31/86 Finish 10/31/86 Static Water Level 20.54'

Contractor Davis Drilling Co Top of Well Elevation 23.104'

Driller Charles Smith Drill Type Hollow Stem Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0-1.5			Peat, silt ~20%, dry, med. dense, non-plast, fibrous org. mtrl, color 10 YR 2/1 (black), sand ~5% upper 4" misc. grav. & sand from parking lot.	Pt	6-4-6
1.5-3			same as above Peat	Pt	4-5-6
3-4.5			at 3.75' the above grades to Silty Fine Sand, silt 25-30%, Clay 10-15%, v. slight plast, moist, med. dense, mottled color 10 YR 6/6 (brnish yllw) and 10 YR 5/2 (gryish brn). Clayey zones are gryish brn.	ML	5-5-5
4.5-6			Silty/clayey Fine Sand, silt 25-30%, clay 10-15%, moist, med. dense, v. slight plast., mottled color 10 YR 6/1 (gry) and 10 YR 6/6 (brnish yllw).	ML	4-4-6

Boring No. HPGW2 (near Bldg 608) Location Coordinates N
Hole Size 6" Slot E
Screen Size 2" Mat'l Schd. 40 PVC Filter Materials Silica Sand
Casing Size 2" Mat'l PVC Grout Type 1' Bentonite Seal
Geologist Paul Conrad Development
Date Start 11/4/86 Finish 11/4/86 Static Water Level 18.90'
Contractor Davis Drilling Co. Top of Well Elevation 21.40'
Driller Charles Smith Drill Type Hollow Stem Auger.

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0-1.5			Fine Sandy Peat, sand 5-10%, non-plast, moist, organic debris at top, color 10YR 2/1 (black) stains hands (oily?), loose.	Pt	3-2-3
1.5-3			Silty fine sand, silt 20-25%, non-plast, loose, moist, sand fairly uniform, color 10YR 7/2 (light gry) mottled w/ 10YR 7/8 (yllw)	SM	3-3-3
3-4.5			Silty Fine Sand, silt 20-25%, non-plast., med. dense, moist, color 10YR 6.5/6 (brnish yllw) mottled w/ 10YR 7/2 (light gry).	SM	4-4-[illegible]
4.5-6			Fine sand, silt 10-12%, med. dense, moist, non-plast, some clay ~5%, color unif. 10YR 8/1 (White), grains uniform.	SP	5-7-[illegible]

Boring No. HPGW2 Location Coordinates N

Hole Size Slot E

Screen Size Mat'l Filter Materials

Casing Size Mat'l Grout Type

Geologist Development

Date Start Finish 11/4/86 Static Water Level

Contractor Top of Well Elevation

Driller Drill Type

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
6-7.5			Silty fine sand, same as above	SP	5-7-5
7.5-9			Silty fine sand, v. loose, silt 5-10%, same as above, v. moist	SP	2-1-1
9-10.5			Clayey fine sand, v. loose, saturated, clay 35-40%, slight plast., uniform color 2.5Y 4/0 (dk gry)	ML	0-3-1
14-15.5			Clay, clean, massive, high plast, wet, uniform color 2.5Y 4/0 (dk grey)	CL	[illegible]

Boring No. HPGW2 | Location Coordinates N Page 3 of 4

Hole Size _____ Slot _____ | E _____

Screen Size _____ Mat'l _____ | Filter Materials _____

Casing Size _____ Mat'l _____ | Grout Type _____

Geologist _____ | Development _____

Date Start _____ Finish 11/4/86 | Static Water Level _____

Contractor _____ | Top of Well Elevation _____

Driller _____ | Drill Type _____

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
19-20.5			Clayey silty sand, silt 15-20%, clayey ~ 5-10%, mottled color sand: 10YR 8/1 (white) clay: 10YR 7/1.5 (light gray) silt: 10YR 6/7 ([illegible]) sand - loose, clay concentrated at 20.5', plast., soft.	SP	3-5-3
24-25.5			Silty fine sand, silt 12-15%, wet, med. dense, non-plast, color fairly uniform 9.5YR 6/8 (reddish yellow). at 25.5' grades to marle (color white).	SP/ Marle	10-12-[illegible]

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Boring No. HPGW2 SHEET 4 OF 4

11:5 Finished washing rig

10:50 am. Began drilling & sampling.

11:45 am Last spoon. Pulled augers → hole stayed open. Casing installed and silica sand poure Five 1 hundred lb. bags used. No unusual events.

12:00 Well complete. Began washing rig.

Standard well construction. Hole 27 feet.

[redacted]

[redacted] 4/86 DATE

[redacted] Paul D. Conrad SIGNED

SOURCE: Environmental Science and Engineering, Inc., 198

Boring No. HPGW3 ~~76~~ (near Bldg. 1711) Location Coordinates N

Hole Size 6" Slot 0.010" E

Screen Size 2" Mat'l Sched. 40 PVC Filter Materials Silica Sand

Casing Size 2" Mat'l PVC Grout Type 1' Bentonite Seal

Geologist Paul Conrad Development

Date Start 11/4/86 Finish 11/4/86 Static Water Level 19.17'

Contractor Davis Drilling Co. Top of Well Elevation 21.67'

Driller Charles Smith Drill Type Hollow Stem Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0-1.5			Fine Sandy silt, sand 25-30%, organic debris & misc. gravel, appears oily or Peaty, color 10YR 3/1 (v. dark gry), moist, non-plast, loose.	ML Pt	2-3-3
1.5-3			~~Fine Sandy~~ Peat, sand 5-10%, appears v. oily, stains hands, moist, non-plast, v. loose, color 10YR 2/1 (black), slight oil sheen when placed in water.	Pt	2-2-3
3-4.5			Silty fine sand, silt 30-35%, moist, loose, oily appearance, stains hands, non-plast., color 5Y 2.5/1 (Black).	SM	4-3-3
4.5-6			Silty fine sand, silt 30-35%, v. moist, v. loose, non-plast., stains hands, color 5Y 2.5/1 (black).	SM	2-2-1

Boring No. ~~16~~ HPGW3 | Location Coordinates N
Hole Size | Slot | E
Screen Size | Mat'l | Filter Materials
(sing Size | Mat'l | Grout Type
Geologist | Development
Date Start 11/4/86 | Finish 11/4/86 | Static Water Level
Contractor | Top of Well Elevation
Driller | Drill Type

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
6-7.5			Silty fine sand, silt 15-20%, sat'd, non-plast, fairly unif. sand, med. dense, color 10YR 5/2 (grayish brn), slight foul odor.	SM	5-8-12
7.5-9			Silty Fine Sand, silt 15-20%, foul odor (swamp gas?), color change to uniform 5GY 6/1 (greenish gy), non-plast, med. dense, sat'd.	SM	5-11-11
9-10.5			fine sandy clay, sand ~5%, plastic, sat'd, color unif. closest to N 4/0 (drk grey w/ grnish tint).	CH	2-1-2
14-15.5			Clay, clean, massive, high plast, wet, v. soft, unif. color 5GY 4.5/1 (drk greenish grey), foul odor not evident.	CH	0-1-0

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Boring No. ~~16~~ HPGW3 SHEET 3 OF 4

Depth (ft)	Lithology Color	USCS	SPT (BL/ft)
19-20.5	19'-19.75': Fine Sandy Clay, sand 15-20%, wet, low plast., color closest to 5Y 5/1 (grnish gry), soft.	CL	2-3-3
	19.75'-20.5': silty Fine Sand, silt 10-15%, non-plast., satd, color mottled 10YR 7/2 (light gry) and 10YR 6/8 (brnish yllw) 25%. Trace clay.	SM	
24-25.5	Silty Fine Sand, calcareous cemented, silt ~10%, shell-fragments ~20%, color 10YR 6/4 (light yllwish brn). v. moist, appears gravelly due to cementation.	SP	7-14-31

11/4/86
DATE

SIGNED

SOURCE: Environmental Science and Engineering, Inc., 198

Boring No. ~~16~~ HPGW3 SHEET 4 OF 4

4:30am Left for airport to take Mike Snar. (No Bkst. Br
8:00am Arrived Camp Lejeune. Met drillers.
8:45 Began Drilling & Sampling. No unusual events.
9:40 Well complete. *Truck back to W.W.T. area for water.
Washed rig. Began Well 17.

*Augurs pulled before silica sand poured. Hole stayed open.

Standard well construction. Hole depth 30'.

Note: At ~ 29' depth auger bit picked up rock (driller reported "hard drilling). Massive, hard silica/calc. (no acid) cementing large intact shell fragments (shells partially lithified). Possibly bedrock or float.

11/4/86 Paul D. Conrad
DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1986

Boring No. HPGW4 ~~7~~ (near Bldg. 1703) Location Coordinates N Page 1 of 7

Hole Size 6" Slot 0.010" E

Screen Size 2" Mat'l Schd. 40PVC Filter Materials Silica Sand

Casing Size 2" Mat'l PVC Grout Type 1' Bentonite Seal

Geologist Paul Conrad Development

Date Start 11/4/86 Finish 11/4/86 Static Water Level 18.08'

Contractor Davis Drilling Co. Top of Well Elevation 20.58'

Driller Charles Smith Drill Type Hollow Stem Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0-1.5			Peat, sand ~5%, non-plast., loose, s. moist, color 10YR 2/2 (v. drk. brown).	Pt	2-3-4
1.5-3			Silty Fine Sand, silt 30-35%, loose, s. moist, non-plast., color 10YR 4/2 (drk greyish brn) some lighter mottling.	ML	3-3-4
3-4.5			Silty Fine Sand, silt 15-20%, moist, med. dense, non-plast., color unif. 10YR 6/2.5 (light brnish gry), grains uniform.	SM	4-6-9
4.5-6			Clayey Fine Sand, clay ~5-10%, silt ~5%, med. dense, slight plast, unif color 10YR 7.5/1 (light gry).	ML	7-7-6

Boring No. ~~TX~~ HPGW4 | Location Coordinates N

Hole Size | Slot | E

Screen Size | Mat'l | Filter Materials

Casing Size | Mat'l | Grout Type

Geologist | Development

Date Start | Finish 11/4/86 | Static Water Level

Contractor | Top of Well Elevation

Driller | Drill Type

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
6-7.5			fine sandy clay, sand 15-20%, v. moist, v. soft, color unif. 5GY 5.5/1 (greenish gry).	ML	3-2-1
7.5-9			fine sandy clay, sand 10-15%, sat'd, v. soft, color unif. 5GY 5.5/1 (grnish gry).	ML	1-0-1
9-10.5			silty clayey fine sand, silt ~12%, clay ~12%, soft, sat'd, sand uniform, color uniform 5GY 5.5/1 (grnish gry).	ML	1-2-2
14-15.5			clay, clean, massive, high plast, soft, unif. color 5GY 5/1 (grnish grey).	CH	0-1-0

Doc NO: CLEJ-00258-1.02-05/01/88

3 of 4

Boring No. ~~TZ~~ HPGW4 Location Coordinates N

Hole Size Slot E

Screen Size Mat'l Filter Materials

using Size Mat'l Grout Type

Geologist Development

Date Start Finish 11/4/86 Static Water Level

Contractor Top of Well Elevation

Driller Drill Type

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
19-20.5			Marl, large shell fragments, one 30 mm x 10 mm rounded black gravel, overall color 10YR 6/8 (brnish yllow), silty ~20%, clayey ~10%, loose, sat'd.	Marl	2-3-4
24-25.5			Marl, same as above, more cemented, appears to be cherty cement but because softness is prob. calcitic. Sat'd., high % shells, Dense.	Marl	26-26-2[illegible]

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Boring No. ~~TX~~ HPGW4 SHEET 4 OF 4

— 20' Lunch Break. —

:15 pm Began drilling & sampling. Location selected by Bob & Alexander & Paul on 11/3/86. Too many utilities near 1704 (Bldg.).

1:55 pm Well complete. 6 100 lbs bags of silica sand used. Casing installed directly in the hole. No heaving. 1' bentonite. No unusual events.

Construction: Stick up - 2.5'
Bottom of casing at 24.5' (casing floated up, so 6" removed from top)
Hole - 27' deep.
Standard construction otherwise.

2:30 Left Location.

11/4/86 DATE

Paul D. Conrad SIGNED

SOURCE: Environmental Science and Engineering, Inc., 198

DOC NO: CLEJ-00258-1.02-05/01/88

Boring No. HPGW5 (near Bldg. 1606) Location Coordinates N Page 1 of 4

Hole Size 6" Slot 0.010" E

Screen Size 2" Mat'l Sch 40 PVC Filter Materials Silica Sand

Casing Size 2" Mat'l PVC Grout Type 1' Bentonite Seal

Geologist Paul Conrad Development

Date Start 11/4/86 Finish 11/4/86 Static Water Level 16.13'

Contractor Davis Drilling Co. Top of Well Elevation 18.63'

Driller Charles Smith Drill Type Hollow Stem Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0-1.5			Peat, sand ~5%, moist, non-plast, loose, organics, roots, color 10YR 3/1 (v.drk. gry).	Pt	2-3--
1.5-3			fine sandy silt, sand 15-20%, some roots, moist, non-plast, color 10YR 3/1 (v. drk gry); Loose	ML	3-5-5
3-4.5			fine sandy silt, sand ~10%, moist, non-plast., color, med. dense, color 10YR 3/1 (v. drk gry) w/ thin bands of 10YR 5/3 (brown).	ML	3-5--
4.5-6			fine sandy silt, sand 10-15%, moist, loose, non-plast., color 10YR 7/2 (light gry), some mottling of 10YR 7/6 (yllw).	ML	2-3-3

1986 - 2008
Ave WL depth 9.39 Min 6.3 Max 14.1

DOC NO: CLEJ-06258-1.02-05/01/88

Boring No. X HPGW5 Location Coordinates N
Hole Size Slot E
Screen Size Mat'l Filter Materials
Casing Size Mat'l Grout Type
Geologist Development
Date Start Finish 11/4/86 Static Water Level
Contractor Top of Well Elevation
Driller Drill Type

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
6-7.5			fine sandy silty clay, sand 5-10%, silt <5%, slight plast., moist, color 5Y 6.5/1 (gray), 5% mottled w/ 10YR 8/8 (yllw).	CL	1-2-1
7.5-9			fine sandy silty clay, sand 20-25%, silt ~15%, slight plast., v. moist, soft, color 10YR 7/2 (light gry), heavily mottled w/ 10YR 6/8 (brnish yllw).	CL	2-2-3
9-10.5			Silty fine sand. silt 12-15%, clay/sand 5-10%, non-plast. (except clays), loose, v. moist, color 10YR 7/2 (light gry), mottled w/ 10YR 6/8 (brnish yllw).	SM	3-5-5
14-15.5			Clay, clean, massive, high plast, wet, color 5GY 5.5/1 (greenish gry), soft.	CH	6-2-3

Boring No. X HP6W5 Location Coordinates N
Hole Size Slot E
Screen Size Mat'l Filter Materials
Casing Size Mat'l Grout Type
Geologist Development
Date Start Finish 11/4/86 Static Water Level
Contractor Top of Well Elevation
Driller Drill Type

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
19-20.5			Same description as above, med. stiff.	CH	3-3-[illegible]
24-25.5			silty fine sand, silt 10-15%, saturated. unif. sand grains, v. loose, color 2.5Y 6/4 (light yllwish brn), mottled w/ 7.5YR 5/6 (strong brn).	SM	2-2-2

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Boring No. ~~X~~ HPGW5 SHEET 4 OF 4

? Washing rig.

Began sampling & drilling.

3:35pm Drilling finished. Pulled all augers out. Hole open. Pouring silica sand.

3:40pm Well complete. Four 100 lb bags silica sand used.

Standard construction configuration. Hole 27' deep.

Dismantling augers and cleaning up.

4:30pm Left site.

11/4/86 Paul D. Conrad
DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

11.86 8.56 10.2

DOC NO: CLEJ-00258-1.02-03/01/88

Boring No. HP 6W 6
Hole Size 6" Slot 0.01
Screen Size 2" Mat'l PVC
Casing Size 2" Mat'l PVC
Geologist David Brentlinger
Date Start 11/18/86 Finish 11/18
Contractor ESE
Driller Davis

Location Coordinates N
E
Filter Materials Silica Sand
Grout Type Bentonite Pellets
Development —
Static Water Level 16.25'
Top of Well Elevation 18.75'
Drill Type Hollow Stem Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0.0-1.5			10YR 6.5/3 Pale- Very Pale Brown, Silty Fine Sand (silt 30%), Organic matter top 3", Loose, moist, non plastic	SM	3 4 7
1.5-3.0			2.5Y 5.5/4 light olive Brown, Silty Clayey Fine Sand, (silt + Clay 45%), loose - Slightly dense, moist, slightly plastic	SM/SC	7 2 4
3.0-4.5			10YR 6/4 light Yellow Brown Same as above (1.5-3.0)	SM/SC	3 4 7
4.5-6.0			10YR 6/8, Brown Yellow, Silty Clayey Fine Sand (silt + Clay 35%), non plastic, moist, slightly dense	SM	4 7 8
6.0-7.5			10YR 6.5/1 Grey - Light grey with Red oxide streaks throughout, clean clay, firm, dense, plastic, moist	CL	2 2 3

11.86 8.56 16.2

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Boring No. HP6W6 | Location Coordinates N ____
Hole Size ____ Slot ____ | E ____
Screen Size ____ Mat'l ____ | Filter Materials ____
Casing 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)
7.5-9.0			Same as above (6.0-7.5) Bottom 6" non plastic	CL	3 6 8
9.0-10.5			10YR 6.5/1 light grey, ultra fine - fine Sand with 10% silt, loose, moist, non plastic	SW	5 9 12
14.0-15.5			10YR 6.5/3, Pale - very Pale Brown, silty fine sand, (silt 15-20%) moist - wet, slightly dense, non plastic	SM	7 11 13
19.0-20.5			10YR 7/4.5 very Pale yellow - yellow, silty Sandy Clay (silt + Sand 70%), sticky, Plastic, wet, slightly dense	SC	12 13 8
24.0-25.5		24.0-24.80	10YR 7.5/1 light grey soft clean, very plastic clay wet, slightly dense	CL	5 7 9
		24.8-25.5	10YR 7.5/2 light grey - very pale white brown, wet, sticky med. Sandy Clay Sand 30%	SC	

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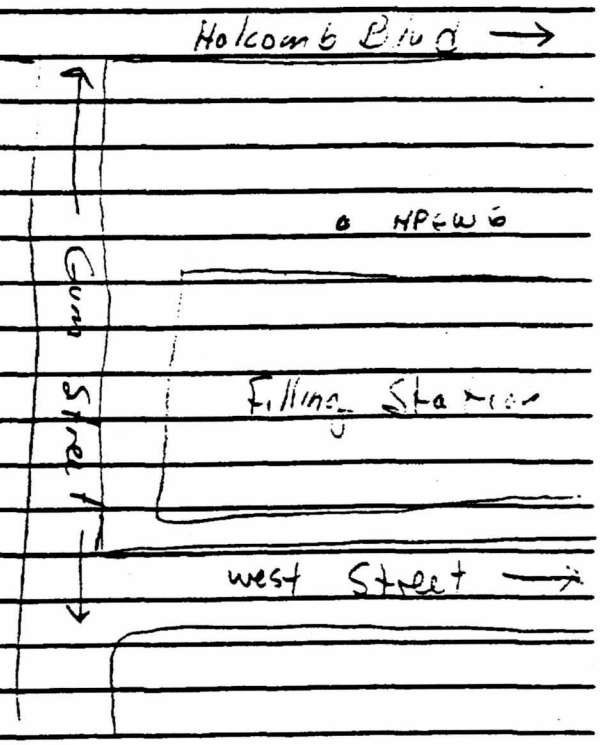
Boring No. HPGW 6 SHEET ____ OF ____

On Site 730 am 11/18/86
1st Spoon 735
1est Spoon 815
Well Complete 840

Standard Well Specs



DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Boring No. MW 7
Hole Size 6" Slot 0.01
Screen Size 2" Mat'l PVC
Casing Size 2" Mat'l PVC
Geologist David Brentlinger
Date Start 11/18/86 Finish 11/18
Contractor ESE
Driller Davis

Location Coordinates N
E
Filter Materials Silica Sand
Grout Type Bentonite Mortar
Development —
Static Water Level 14.33'
Top of Well Elevation 16.83'
Drill Type Hollow Stem Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
[illegible]			10YR 6.5/3 Pale - Very Pale Brown, Silty Fine Sand (Silt 30%), loose, moist, non plastic, organic matter top 6"	SM	6 10 10
1.5-3.0			10YR 5.5/4 Light Yellow Brown, Silty Fine Sandy Clay (Silt+Sand 40%), moist, slightly plastic, med. dense	SC	3 5 5
3.0-4.5		3.0-3.9	Same as above (1.5-3.0)		
		3.9-4.5	10YR 8/1 white ultra fine - fine Sand, loose, dry - moist, non plastic	SW	6 5 5
4.5-6.0		4.5-5.5	Same as above (3.9-4.5)		
		5.5-6.0	10YR 5.5/8 yellow brown - yellow, Silty Clayey Fine Sand (Clay + Silt 45%) Slightly plastic, moist, med. dense	SW/SM	8 10 8
6.0-7.5			2.5Y 6.5/4 light yellow brown - pale yellow, Silty Clayey Fine Sand (Silt+Clay 38%), moist Slightly dense, non plastic	SM	8 10 15

12.48 10.8 14.6

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Boring No. HPGW 7

Hole Size _____ Slot _____

Screen Size _____ Mat'l _____

Casing Size _____ Mat'l _____

Geologist _____

Date Start _____ Finish _____

Contractor _____

Driller _____

Location Coordinates N _____

E _____

Filter Materials _____

Grout Type _____

Development _____

Static Water Level _____

Top of Well Elevation _____

Drill Type _____

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
7.5-9.0			10YR 6.5/8 yellow brown - brown yellow, silty Clayey Fine Sand (silt + Clay 30%), moist, non plastic, slightly dense	SM	5 6 6
9.0-10.5			10YR 7.8/8, yellow, very silty ultra fine sand, (silt 30-40%), loose, moist non plastic	SM	8 7 6
14.0-15.5			10YR 6.5/4 very pale yellow Brown, Same as above (9.0-10.5) with more density	SM	9 12 15
19.0-20.5			2.5Y 8/2 white - pale yellow, silty fine - med. sand (silt 10-15%), wet, Slightly dense	SW	6 8 10
24.0-25.5			2.5Y 7.5/2 light grey - pale yellow, silty Clayey med. Sand (silt + Clay 40%), sticky and plastic in clay layers, wet, slightly dense	SM / SC	3 3 3

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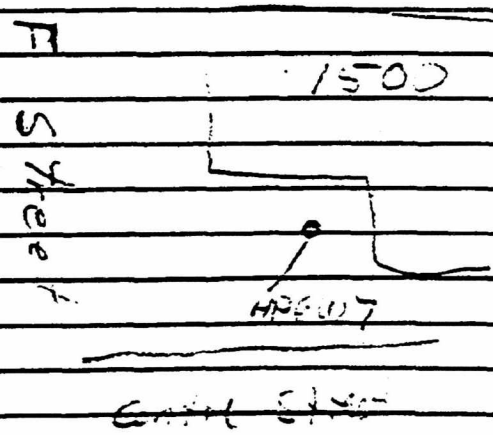
Boring No. HP 6W7 SHEET ____ OF ____

On Site 855 Am 11/18/86
1st Spoon 900
last Spoon 940
Well Complete 1040

Standard Well Specs



DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1986

Boring No. HPGW8 (near Bldg. 1500) Location Coordinates N Page 1 of 7

Hole Size 6" Slot 0.010 E

Screen Size 2" Mat'l PVC Filter Materials Silica Sand

Casing Size 2" Mat'l PVC Grout Type Bentonite Seal - 1'

Geologist Paul Conca Development

Date Start 11/6/86 Finish 11/6/86 Static Water Level 13.33

Contractor Davis Drilling Top of Well Elevation 15.83'

Driller Charlie Smith Drill Type Hollow Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0-1.5			Silty Fine Sand, silt 15-20%, moist, med. dense, non-plast., color mottled around 10YR 5/3 (brown). Top 2" black & organic.	SM	4-6-10
1.5-3			Silty Fine Sand, silt 12-17%, moist, loose, non-plast., color 2.5Y 6.5/4 (light yllwish brn) mottled w/ cleaner sand 2.5Y 8/2 (white), occ. clayey (soft) nodules (small).	SM	3-3-6
3-4.5			Silty Fine Sand, silt ~15-20%, ~3% clay, loose, non-plast, color uniform 2.5Y 6.5/2 (light gry), S. moist.	SM	5-4-4
4.5-6			Fine Sandy Clay, Sand 15-20%, med. stiff, moist, low plast, color 2.5Y 5.5/2 (light brnish gry), some mottling of 10YR 6/6 (brnish yllw), a small root in sample.	CL	2-4-6

Boring No. 4 HPGW8 | Location Coordinates N
Hole Size | Slot | E
Screen Size | Mat'l | Filter Materials
Casing Size | Mat'l | Grout Type
Geologist | Development
Date Start | Finish 10/6/86 | Static Water Level
Contractor | Top of Well Elevation
Driller | Drill Type

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
6-7.5			Fine Sand, silt 5-10%, fairly clean, s. moist, non-plast, med. dense, mottled color clean white and 10YR 7/2 (light grey) silty zones are light grey.	SP	5-6-10
7.5-9			Fine Sand, silt 10-12%, moist, non-plast, med. dense, color 2.5Y 7/2 (light grey), mottled with slightly lighter shade	SP	5-7-12
9-10.5			Silty Clayey Fine Sand, silt 12-15%, clay ~5-10%, moist, small soft clayey nodules (plast.), silty sand non-plast, med. dense, color mottled - 2.5Y 7/4 (pale yllw) ~85% 10YR 8/2 (white) ~5% 7.5YR 6/8 (reddish yllw) ~10%	ML	5-5-9
14-15.5			Peat, massive, saturated, fauldor not evident, fine sand 5-10%, trace fibrous wood fragments, non-plast, loose, color 10YR 2/1.5 (v. dark brown) uniform	Pt	3-3-5

Boring No. 4 HPGW8

Location Coordinates N

E

Hole Size Slot

Screen Size Mat'l

Filter Materials

Casing 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)
19-20.5			Silty Fine Sand, silt 15-20%, clay ~5%, non-plast, small soft clayey zones slightly plast., dense, sat'd., color unif. 5Y 6.5/2 (light olive gry).	SM	8-12-20
24-25.5			Fine Sand, silt 5-8%, unif. qtz grains, non-plast, med. dense, sat'd, color 2.5Y 7/2 (light gry) uniform.	SP	5-8-10

Doc No: CLEJ-00258-1.02-05/01/88

Boring No. 4 HPGW8 SHEET 4 OF 4

— Charlie drilling w/ helper hired yesterday (no exp.).

7:30 am Arrived at Camp Lejeune.
Prep'd. for drilling.

8:25 am Began drilling & sampling. Location moved from near Bldg. 1500 to 1481' to avoid buried utilities. App'd. by Bob Alexander

9:15 am Last spoon. Assembled Casing.
2 5' auger sections pulled out, pouring silica sand thru augers.

9:45 am Augers out. 1½ bags silica sand in hole.
Hole staying open.

10:00 am Well complete. 4+ bags (100 lb each) silica sand used. 1' Bentonite Seal placed.

Standard construction (27' hole, 25' casing below ground, 2.5' stick up, 5" point at casing bottom, bottom 20 ft. is screen).

Washing rig. Prepping for next hole.

4/6/86 Paul D. Conrad
DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1985

DOC. NO: CLEJ-00258-1.02-05/01/88

Boring No. HPGW9 ~~HP9~~ (near Bld. 1601)
Hole Size 6" Slot 0.010
Screen Size 2" Mat'l PVC
Casing Size 2" Mat'l PVC
Geologist Paul Conrad
Date Start 11/6/86 Finish
Contractor Davis Drilling
Driller Charlie Smith

Location Coordinates N
E
Filter Materials Silica Sand
Grout Type Bentonite Seal - 1'
Development
Static Water Level 15.63'
Top of Well Elevation 18.13'
Drill Type Hollow Stem Auger - 6"

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0-1.5			Top 8" - mixture Peat, clay, silt, organic debris, roots, misc. gravel.		3-4-4
			Silty Fine Sand, silt ~25%, non-plast, moist, color 10YR 5/3 (brown), trace mottling of 10YR 6/6 (brnish yellow), loose.	SM	
1.5-3			Silty Fine Sand, silt 20-25%, clay 3-5%, non-plast, s. moist, loose, color 10YR 5.5/4 (light yllwish brn) Trace mottling of 7.5YR 5/8 (strong brn), strong brown better cemented, several small frag's. of baked clay (float from sewer install'n?)	SM	3-4-4
3-4.5			Silty Fine Sand, silt 20-25%, clay-trace, non-plast., v. loose, s. moist, color 10YR 6/4 uniform. (light yllwish brn), sand uniform	SM	1-2-2
4.5-6			Silty Fine Sand silt 20-25%, clay ~5%, s. moist, loose, sand uniform, non-plast. (except clayey zones), color 10YR 6/4 (light yllwish brn).	SM	3-5-5

DOC NO: CLEJ-00258-1.02-05/01/88

Boring No. 11 HPGW9 Location Coordinates N

Hole Size Slot E

Screen Size Mat'l Filter Materials

Casing 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)
6-7.5			Silty Fine Sand, ~50% fairly clean loose sand, ~50% silty fine sand (~3% clay), med. dense, s. moist, mottled color 10YR 8/2 (white) and 10YR 6/6 (brnish yllw), silt in silty sand ~20-25%.	SM	3-5-8
7.5-9			Silty Fine Sand, silt ~20%, moist, med. dense, color 10YR 6/6 (brnish yllw), s. lighter mottling.	SM	5-7-5
9-10.5			Silty Fine Sand, moist, non-plast, med. dense, color 2.5Y 6/5 (light yllwish brn) mottled w/ lgt brnish gry and rdish yllw, cluster of fine black fibres noted (fragile) — old roots?	SM	5-6-9
~~14-15.5~~			Clayey Fine Sand, clay 5-10%, v. moist, v. strong fuel odor (resemble natural gas?) v. low to no plast, color change to unif. 5Y 8/1 (white), med. dense.	SP	6-9-13

DOC NO: CLEJ-00258-1.02-05/01/88

Boring No. H HPGW9 SHEET 3 OF 4

9-20.5 Fine Sand, ~5% fines, color 10YR 8/1 (white), saturated, v. foul odor (as above), uniform grain size, med. dense. 7-13-15

SP

24-25.5 Clayey fine Sand, clay ~5%, unif. grains, non-plast (slight in trace zones), v. foul odor (as above), med. dense, color 10YR 8/2 (white), uniform. 7-12-15

11/6/86
DATE

SIGNED

SOURCE: Environmental Science and Engineering, Inc.

DOC NO: CLEJ-00258-1.02-05/01/88

Boring No. 4 HPGW9 SHEET 4 OF 4

11:05 am Began drilling & sampling.

12:05 pm Last spoon. Began backing augers and pouring silica sand. Odor rising from hole. Casing installed. Odor resembles natural gas(?), solvents *

12:30 All augers out. Pouring sand. Hole open.

12:45 Bentonite in. Well complete.

Standard construction. Hole 27' deep. 4 bags silica sand used.

Driller back to W.W.T. plant to load up sand. Paul to Base Telephone to locate next site's cables. Also coordinate w/ other rig.

15 min. lunch Brk.

* Driller did not notice any drilling difficulty. Geologist found no metal shavings or other indications of hitting pipeline. Propane tank ~30' away, but odor not exactly like propane. Observed no change in propane tank gauge. Evident from soil gas results that the odor is probably from solvents.

Because of near completion of well and the odor level, judgement was made to quickly complete well.

11/6/86 Paul D. Conrad
DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1987

Geologist: Paul Conrad Driller: Charles Smith, Davis Drilling Co.
Date: 11/6/86 TOC - 15.00'
Well: ~~#3~~ (HPGW 10) static - 12.50'

Sheet 1 of 4.

Depth (ft)	Lithology & Color	USCS	SPT (blows/ft)
0-1.5	Top six inches. Peat w/ fine sand 10-15%, roots & organic debris, color 10YR 2/1 (black). Fine Sandy silt, sand 15-20%, high root content, non-plast, loose, color 10YR 4/2 (drk. grayish brn), moist.	Pt / ML	3-3-6
1.5-3	* Silty Fine Sand, silt ~10-15%, trace clay, color 10YR 6/4 (light yllwish brn), trace mottling of 10YR 6/8 (brnish yllw), s. moist, non-plast. (except trace clayey zones), med. dense.	SM	6-9-6
3-4.5	Same as above 2" Fine Sandy Clay bed at 4', sand 25-30%, low plast., moist, color 10YR 5.5/4 (light yllwish brn), mottled w/ blck zones 4-4.5': Silty Fine Sand, very light weight, (sand?), color 10YR 3.5/1 (drk gry), loose.	SM/CL	3-3-2
4.5-6	Silty Clayey Fine Sand, silt 10-15%, clay ~10%, v. slight plast. in clayey zones, otherwise non-plast., v. loose, moist, color mottled 10YR 5/3 (brwn) and 10YR 7/8 (yllw)	ML	1-1-1

HPGW10

6-7': Same as above. (ML)

5-7.5 7-7.5': Silty Fine Sand, silt ~12-15%, v. loose, (SM) 1-1-2
non-plast., moist. mottled → clear white 10%, 7.5YR 6/3 (reddish yllw) ~15%, and 2.5Y 6/4 (light yllwish brn)

7.5-9 Silty Fine Sand, silt ~15%, trace (SM) 2-2-2
clay, moist, mottled color, clean sand 10YR 8/1 (wht), silty sand 7.5YR 5/8 (strong brn) to white, v. loose.

9-10.5 Silty Fine Sand, silt 15-20%, loose, (SM) 2-4-5
same descript. as above except Strong brwn color dominant ~ 75%.

14-15.5 Peat, massive, v. soft, saturated, (Pt) 3-2-1
sand ~10%, color 10YR 2/1.5 (v. drk brn), stains hands, foul odor not evident, non-plast.

~~WELL 5~~ HP GW10 3 of 4

20-20.5 Silty Fine Sand, silt 15-20%, trace clay, sat'd, med. dense, grains uniform, unif. color 2.5Y 7/2 (light gry), occ sprinkling of strong brown or v. thinly bedded reddish yllw silts, v. slight plast. to none. SM 6-7-7

24-25.5 Silty V. Fine Sand, silt 15-20%, trace clay, sat'd., dense, grains uniform, color unif. 5Y 8/2 (white), non-plast. SM 12-20-[illegible]

~~NEW~~ HPGW10
11/6/86 Log

50 pm. Began drilling & sampling.

3:05 Last Spoon. Backing out inner tri-cone string, and then augurs. Assembling and installing casing.

3:30 All augers out. Hole open. No foul odor evident.

3:45 Well complete. 4 bags of silica sand used (100 lb. each). 1' bentonite placed.
Standard Construction. Hole 27' deep.
No unusual events.

4:15 Back at w.w.t. plant. Rig washed. Quit for day.

8:00 pm - 12:15 pm. Constructed master maps of Industrial Area, which included all soil gas and locations of the ~18 characterization wells. Maps hung on Beach house wall for Bob Gregory's use in siting new wells, and general reference purposes.

1/2 hour spent coordinating on well development.

Boring No. HPGW 11
Hole Size 6" Slot 0.01
Screen Size 2" Mat'l PVC
Casing Size 2" Mat'l PVC
Geologist David Brentlinger
Date Start 11/18/86 Finish 11/18
Contractor ESE
Driller Davis

Location Coordinates N
E
Filter Materials Silica Sand
Grout Type Bentonite Pellets
Development —
Static Water Level 13.57'
Top of Well Elevation 16.07'
Drill Type Hollow Stem Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0.0 - 1.5			2.5Y 6.5/6 yellow - olive yellow, silty fine sand (silt 25%), organic matter top 2", loose, moist, non plastic	SM	WOH
1.5 - 3.0			10YR 7.8/5.5 very pale brown yellow, silty fine sand (silt 10-15%), loose, moist, non plastic, Brown mottles throughout	SM	2 3 3
3.0 - 4.5			10YR 5.25/8 Brown yellow-yellow Brown, silty clayey fine sand (silt + clay 35%) slightly dense, moist, non plastic	SM	3 3 6
4.5 - 6.0			10YR 7.8/6, yellow, silty fine sand, (silt 30%) loose, moist, non plastic	SM	3 5 8
6.0 - 7.5			7.5YR 7/8, Red yellow, silty fine sand (silt 30%) loose, moist, non plastic	SM	4 5 8

Boring No. HP 6W 11 | Location Coordinates N ____ E ____

Hole Size ____ Slot ____

Screen Size ____ Mat'l ____ | Filter Materials ____

Casing 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)
7.5-9.0			7.5YR 5.25/8 Strong Brown, silty fine sand with 10% clay mottles throughout (silt 25%), slightly dense-moist, non plastic	SM	3 6 8
9.0-10.5		9.0-9.75	10YR 6.5/6 yellow Brown, silty clayey fine sand (silt + clay 40%), slightly dense, moist, non plastic	SC	15 8
		9.75-10.5	10YR 7.5/1 light grey white, silty fine sand (silt 10-15%) loose, dry-moist, non plastic	SW	8
14.0-15.5			10YR 5.25/3 Pale brown-brown silty fine sand (silt 25%), slightly dense, moist, non plastic	SM	15 8 13
19.0-20.5			10YR 5.5/4 Brown-light yellow Brown, same as above (14.0-15.5)	SM	14 8 8
24.0-25.5			10YR 7.25/4, very pale brown, clayey fine-med. sand (clay 40%), sticky plastic clay layers throughout, wet, slightly dense, 10% coarse material	SC SW	3 4 4

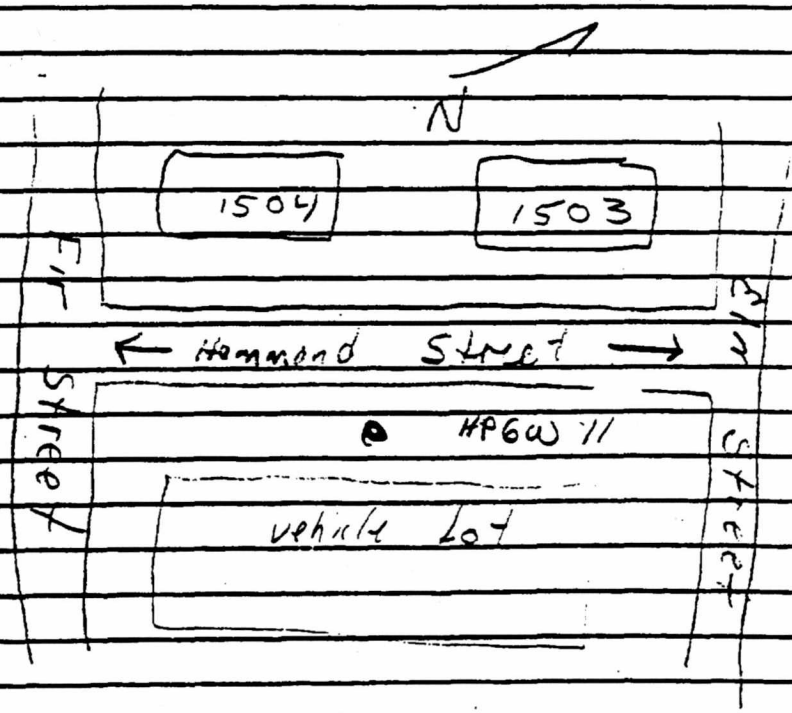
DOC NO: CLEJ-00258-1.02-05/01/88

Boring No. HP6W 11 SHEET ____ OF ____

11/18/86

On Site 1110 am
1st Spoon 1120
last Spoon 1220
Well Complete 110

Standard Well Specs



DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1986

DOC NO: CLEJ-00258-1.02-05/01/88

Boring No. HPGW 12
Hole Size 6" Slot 0.01
Screen Size 2" Mat'l PVC
Casing Size 2" Mat'l PVC
Geologist David Brentlinger
Date Start 11/18/86 Finish 11/18
Contractor ESE
Driller Davis

Location Coordinates N
E
Filter Materials Silica Sand
Grout Type Bentonite Pellets
Development —
Static Water Level 11.70'
Top of Well Elevation TB 14.20'
Drill Type Hollow Stem Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0.0-1.5			5Y 3.75/1, very dark grey, silty clayey fine sand, (silt + clay 40%), slightly dense moist, clay plastic	SM / SC	4 5 6
1.5-3.0			2.5Y 4.5/4 Brown-light olive Brown, silty fine sand with silty clay layers, (silt + clay 20-30%), slightly dense, clay is plastic, moist	SM	3 2 3
3.0-4.5			10YR 7.8/2, white-very pale Brown, silty fine sand, (silt 20%), loose, moist, non plastic	SM	3 3 6
4.5-6.0			10YR 7/7.5 very pale Brown-yellow, silty fine sand, (silt 20%), Bright Yellow Brown mottles throughout, moist, slightly dense, non plastic	SM	6 8 10
6.0-7.5			10YR 6/8 Brown Yellow, silty fine sand, (silt 35%), moist, slightly dense, non plastic	SM	7 9 9

DOC NO: CLEJ-00258-1.02-05/01/88

Boring No. HP GW 12 | Location Coordinates N ____
Hole Size ____ Slot ____ | E ____
Screen Size ____ Mat'l ____ | Filter Materials ____
Casing Size ____ Mat'l ____ | Grout Type ____
Geologist ____ | Development ____
Date Start ____ Finish ____ | Static Water Level ____
Contractor ____ | Top of Well Elevation ____
Driller ____ | Drill Type ____

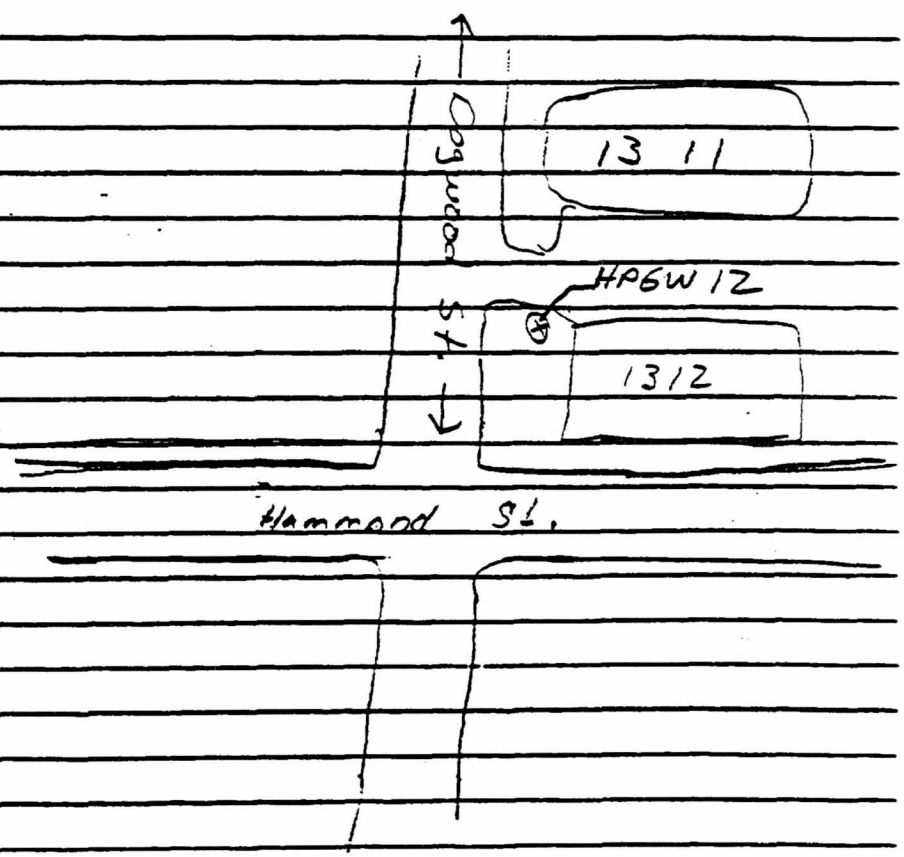
Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
7.5-9.0			Same as above (6.0-7.5)	SM	9 6 7
9.0-10.5			10 YR 7.5/2, Very Pale Brown, Silty Clayey Sand, (silt + clay 40%) Slightly plastic, moist-wet, Slight-mod. dense	SM / SC	7 3 6
14.0-15.5			10 YR 8/2 white-Very Pale Brown, Silty fine-med. Sand, (silt 10-15%), 10% coarse silt-matrix, Sand is wet, mod. dense, non plastic	SW	10 2 10
19.0-20.5			10YR 7.25/8, yellow, Med. Sand with (10-15%) Coarse material, loose, wet, non plastic	SW	11 10 6
24.0-24.5			10 YR 8/1 white Silty Clayey Med. Sand, (silt + Clay layers 25%), 10% Coarse Sand, wet, Clay plastic, mod. dense-dense	SC / SW	5 16 7

DGC NO: CLEJ-00258-1.02-05/01/88

Boring No. HP GW 12 SHEET ____ OF ____

On Site 135 pm 11/18
1st Spoon 140 pm
last Spoon 230 pm
Well Complete 330pm

Standard Well Specs



DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Boring No. HPGW 13
Hole Size 6" Slot 0.01
Screen Size 2" Mat'l PVC
Casing Size 2" Mat'l PVC
Geologist David Brentlinger
Date Start 11/17/86 Finish 11/17
Contractor ESE
Driller Davis

Location Coordinates N
E
Filter Materials Silica Sand
Grout Type Bentonite Pellets
Development —
Static Water Level 12.00
Top of Well Elevation 14.50'
Drill Type Hollow Stem Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0.0-1.5			10YR 5.5/3 Brown-Pale Brown, silty fine Sand (silt 30%), organic matter + Gravel (11 throughout, 40%), Mod. dense, moist, non plastic	SM	4 8 14
1.5-3.0			10YR 3.5/1 very dark grey, silty fine Sand with 10% grey mottles throughout slightly-dense, moist, non plastic	SM	6 4 6
3.0-4.5			5Y 5.5/2 light Olive Grey, silty fine Sandy Clay (silt + Sand 45%) slightly Plastic, slightly dense, moist	SC	6 3 3
4.5-6.0			2.5Y 5.6/4 light olive yellow Brown with oxide streaks throughout, silty sandy clay (silt + Sand 40%) slightly plastic, firm, dense, moist	SC/CL	2 3 6
6.0-7.5			2.5Y 5.6/4, light olive yellow Brown, silty Clay (silt 30%) firm + Dense, moist, plastic	CL	4 8 6

DOC. NO: CLEJ-06258-1.02-05/01/88

Boring No. HP GW 13 | Location Coordinates N
Hole Size | Slot | E
Screen Size | Mat'l | Filter Materials
Casing 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)
7.5-9.0			2.5Y 6.5/0, Grey Brown - light grey brown, silty clay same as above (6.0-7.5)	CL	3 3 5
9.0-10.5			2.5Y 6.5/4 pale Yellow - Light Yellow Brown, silty clay same as above (6.0-7.5), less dense	CL	2 2 2
14.0-15.5			10YR 8/3, Very Pale Brown, silty med. Sand, (silt 15-20%), wet, slightly dense, non plastic	SM/SW	2 2 4
19.0-20.5			5Y 4.5/1, grey-olive grey (green tint), silty med. Sand, (silt 20%), wet, loose, non plastic	SM/SW	2 2 0
24.0-25.5			2.5Y 4.5/0 grey Clean Medium Sand, wet, loose, non plastic	SW	2 1 4

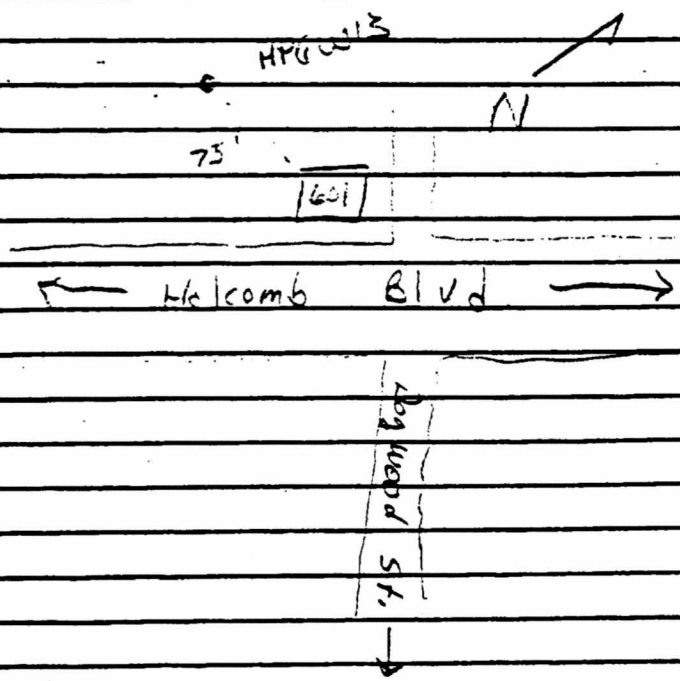
Doc No: CLEJ-062258-1.02-05/01/88

Boring No. HP GW 13 SHEET ____ OF ____

insite 120 PM 11/17/86

1st Spoon 130
last Spoon 120
Well Complete 250

Sample Specs



DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Doc NO: CLEJ-00258-1.02-05/01/88

Boring No. ~~MW~~ HPGW#14 (near Bldg. 1300) Location Coordinates N

Hole Size 6" Slot 0.010 E

Screen Size 2" Mat'l PVC Filter Materials Silica Sand

Casing Size 2" Mat'l PVC Grout Type 1' Bentonite Seal

Geologist Paul Conrad Development

Date Start 11/5/86 Finish 11/5/86 Static Water Level 10.81'

Contractor Davis Drilling Co. Top of Well Elevation ~~13.31~~ 13.31'

Driller Charlie Smith Drill Type Mobile 33

ATV - Hollow Stem Augers

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0-1.5			Peat, sand 5-10%, silty, roots & org. debris, s. less pt. at 1.5', color 10 YR 3/1.5 (v. drk brn), mottled w/ 2.5Y 6/4 (light yllwish brn), med. dense, s. moist., non-plast.	Pt	3-4-8
1.5-3			Fine Sandy silt, sand 15-20%, organics ~35-40%, some clay (trace), non-plast., s. moist, color 10YR 6.5/4 (light yllwish brown) mottled w/ 10 YR 3/1.5 (v. drk brn), loose density.	ML	4-4-3
3-4.5			fine sandy silty clay, sand 15-20%, silt 5-10%, s. moist, low plast., med stiff, color mottled 7.5 YR 5/8 (strong brn) and 10YR 6/4 (light yllwish brn), thin roots encountered.	CL	3-4-3
4.5-6			Fine Sand, silt ~3%, clay ~3%, unif. grains, moist, med. dense, color uniform 10 YR 7.5/2 (light gry to white).	SP	4-6-10

Doc NO: CLEJ-00258-1.02-05/01/88

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
P.O. Box ESE
GAINESVILLE, FLORIDA 32602-3053
(904) 332-3318 TWX 810-825-6310

JOB: ~~Boring #5~~ HPGW14 2 of 4
SHEET NO.: 11/5/86
CALCULATED BY: DATE:
CHECKED BY: DATE:

Depth (ft)	Lithology / Color	USCS	SPT (BL/FT)
6-7.5	Silty Fine Sand, silt 25-30%, clay ~5%, color mottles from 10YR 8/2 (white) to 10YR 6/8 (brnish yllw), non-plast., loose, moist.	SM	6-6-4
7.5-9	Clayey Fine Sand, clay 15-20%, moist, loose, non-plast. unless sat'd., color 10YR 7/2 (light grey), s. yllwish mottling.	ML	2-3-3
9-10.5	Fine Sandy Clay, sand 5-10%, silt-trace, plastic, moist, color 10YR 7/2 (light grey) with distinct black lines (5%) haloed by 7.5YR 5/8 (strong brown), soft.	CL	3-2-3
14-15.5	Peat, ~5% fine sand, saturated, s. foul odor, wood fragment (fibrous), v. soft, non-plast., color 10YR 2/1 (black)	Pt	1-0-1

Doc No: CLEJ-00258-1.02-05/01/88

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
P.O. Box ESE
GAINESVILLE, FLORIDA 32602-3053
(904) 332-3318 TWX 810-825-6310

JOB ~~Boring #5~~ HP6W14 3 of 4
SHEET NO. 11/5/86
CALCULATED BY _____ DATE _____
CHECKED BY _____ DATE _____
SCALE _____

		USCS	SPT (BL/FT)
19-20.5	Silty Fine Sand, silt ~15%, sand uniform, non-plast, sat'd, v. slight odor, color uniform 2.5Y 6.5/2 (light brnish gry).	SP	8-5-9
24-25.5	Clayey Sand, clay 5-10% (in small clusters), clr qtz grains, saturated, v. slight foul odor, non-plast (except clusters), med. dense, color 5Y 7/1 (light gry).	SC	6-9-15
	3" sandy clay layer at ~24.75', Plastic, (CH) color same as above, sand 0-5%.		

Boring No. B HPGW14 SHEET 4 OF 4

2:30pm New helper found. Travel to w.w.t. to get truck. Washed rig. Filled tank.

1:40 pm. Began sampling & drilling. Location between two paved roads (asphalt) - grass strip ~ 8' wide.

3:35pm Last spoon. Backed out 2 auger sects. (5') before pouring silica sand. Casing installed!

3:15 All augers out. Poured silica sand. Hydraulic fluid running from fitting when mast tilted over. Apparently none w/in 3 feet of hole.

Hole taking much sand. Fluid drilling mud consistency in annulus, probably due to in-situ clay. (see comment following)

3:25 Well complete. 5 bags sand used (100lb). Bentonite seal in place. Sand somewhat suspended in annulus when finished but not signif. Standard construction.

3:30 Began washing rig, etc.
4:00 Traveled back to w.w.t. area. End of day

11/5/86 DATE

Paul D. Conrad SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1986

Boring No. ~~GW 40~~ HPGW15 Location Coordinates N
Hole Size 6" Slot 0.01 E
Screen Size 2" Mat'l PVC Filter Materials Silica Sand
Casing Size 2" Mat'l PVC Grout Type Bentonite Pellets
Geologist David Brentlinger Development
Date Start 11/6/86 Finish 11/6 Static Water Level 12.21'
Contractor ESE Top of Well Elevation 14.71'
Driller Davis Drill Type Hollow Stem Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0.0-1.5		0.0'	Cement - Asphalt	/	/
1.5-3.0		1.9'	Cement - Asphalt		
		1.9-3.0'	10YR 6.5/3, light grey Brown, Silty fine sand (30% Silt), loose, dry-moist, non plastic	SM	13 22 24
3.0-4.5			2.5Y 6.5/8, olive yellow, silty fine Sand, (Silt 30%) loose, dry-moist, non plastic	SM	3 6 4
4.5-6.0			10YR 7/8+, yellow, Silty Clayey Sand (Silt + Clay 40%), loose-Slightly dense, slightly plastic	SM/SC	4 5 5

Boring No. ~~GW 10~~ HPGW15 Location Coordinates N _____

Hole Size _____ Slot _____ E _____

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)
6.0-7.5			10YR 7.5/6 yellow - light brown, Silty fine Sand (silt 10-15%), loose, moist	SC	6 8 8
7.5-9.0			10YR 7.5/8, yellow, silty fine Sand (silt 10-15%), Clay + Silty Sand top 6", moist, loose - slightly dense, non plastic	SW	8 8 7
9.0-10.5			2.5Y 7.5/2, light grey - pale yellow, silty fine Sand (silt 15-20%), loose, moist - wet, non plastic	SM	8 10 8
14.0-15.5			2.5Y 7.5/2, light grey, ultra fine sand with 30% uncemented clastics, wet, loose, non plastic	SW	0 0 3
19.0-20.5			10YR 7.5/1 light Grey, silty fine-med. Sand, wet, loose, non plastic (silt 10-15%)	SW	0 3 6

DOC NO: CLEJ-06258-1.02-05/01/88

Boring No. ~~GWLO~~ HPGW15 Location Coordinates N _____

Hole Size _____ Slot _____ E _____

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 _____

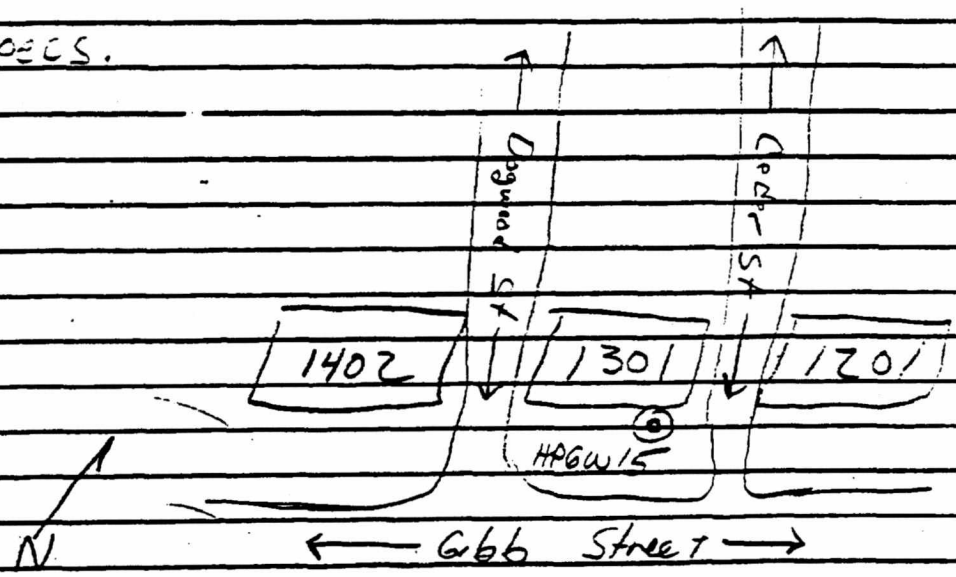
Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
24-25.5		24-24.9	10YR 7.5/1, light grey, medium-fine sand little/no silt, wet, loose	SW	0
		24.9-25.5	Same color as above (24-24.9), medium sand 40% coarse pebble and sand 60%		2 1

DOC NO: CLEJ-00258-1.02-05/01/88

Boring No. ~~GW 10~~ HP GW 15 SHEET ____ OF ____

On Site 930 am 11/6/86
1st Spoon 940
last Spoon 1040
Well finished 1055

Standard Well Specs.



DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Boring No. MPGW/6
Hole Size 6" Slot 0.01
Screen Size 2" Mat'l PVC
Casing Size 2" Mat'l PVC
Geologist David Gerstenberger
Date Start 11/19/86 Finish 11/19
Contractor ESE
Driller Davis

Location Coordinates N
E
Filter Materials Silica Sand
Grout Type Bentonite Chips
Development —
Static Water Level 12.04'
Top of Well Elevation 14.54'
Drill Type Hollow Stem Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0.0-1.5			10YR 3.25/1, Very Dark Grey, Silty Fine Sand (silt 30%) organic matter top 8", loose, moist, non plastic	SM	3 3 5
1.5-3.0			2.5Y 5/6, light Olive Brown, Silty Sandy Clay (silt + Sand 45%) Slightly Plastic, Moist, Slightly dense	SC	3 15 2
3.0-4.5			2.5Y 6/6 olive Yellow, Silty Clayey Fine Sand (silt + Clay 45%), non Plastic, moist, Slightly dense	SM/SC	3 12 3
4.5-6.0			10YR 6.75/4 Yellow - very Pale Yellow, Silty Fine Sand, (silt 30%), loose, moist, non plastic	SM	3 6 6
6.0-7.5	Alternating 2-3" layers throughout	50% each	10YR 8/8 yellow Silty fine Sand loose, moist, non plastic	SM	5 9 12
			10YR 8/1 white ultra fine sand, loose, moist, little to no silt	SW	

Boring No. HP6W16 | Location Coordinates N ____ E ____
Hole Size ____ Slot ____ | Filter Materials ____
Screen Size ____ Mat'l ____ | Grout Type ____
Casing Size ____ Mat'l ____ | Development ____
Geologist ____ | Static Water Level ____
Date Start ____ Finish ____ | Top of Well Elevation ____
Contractor ____ | Drill Type ____
Driller ____

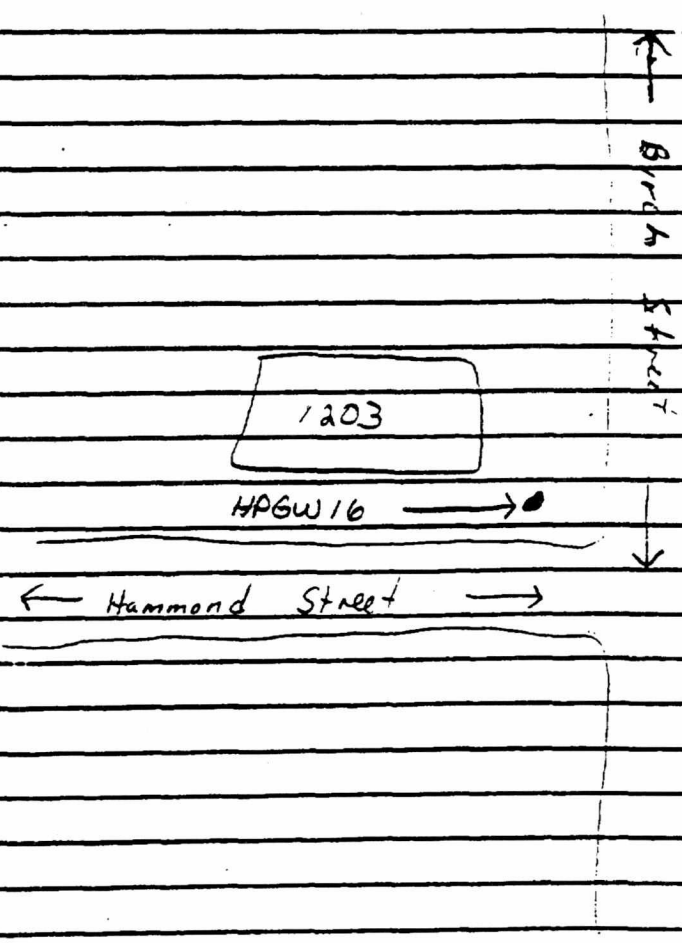
Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
7.5-9.0			10YR 7.5/6 Yellow - Very Pale Yellow, Silty Ultra Fine Sand (silt 20%), loose - slightly dense, moist, non plastic	SM/SW	9 12 13
9.0-10.5			Same as above (7.5-9.0) with less silt	SW	10 12 15
14.0-15.5			10YR 7.25/1 Light Grey White Silty Fine Sand, (Silt 25%), moist-wet, loose, non Plastic, 10% Clay layers	SM	6 6 4
19.0-20.5			10YR 5.5/8, Yellow Brown, silty fine-med. Sandy Clay, (Silt + Sand 45%) wet, sticky-Plastic, clay very plastic, Slightly dense	SC	3 6 10
24.0-25.5			10YR 7.5/1 white - light Grey, Silty Clayey fine-Med. Sand, (silt + Clay 45%) clay layers plastic, wet, Slightly dense	SC/SW	3 8 16

DOC NO: CLEJ-00258-1.02-05/01/88

Boring No. HPGW 16 SHEET ____ OF ____

on site 1050 11/19/86
1st Spoon 1100
2nd Spoon 1130
Well Capped 1150

Standard Well Specs
* there is no well point rather sliding cap at base of casing



DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1986

Doc No: CLEJ-00258-1.02-05/01/88

Boring No. ~~GW 12~~ HF(W)17
Hole Size 6"
Slot 0.01
Screen Size 2"
Mat'l PVC
asing Size 2"
Mat'l PVC
ologist David Brentlinger
Date Start 11/6/86
Finish 11/6
Contractor ESE
Driller Davis

Location Coordinates N
E
Filter Materials Silica Sand
Grout Type Bentonite Pellets
Development
Static Water Level 11.08'
Top of Well Elevation 13.58'
Drill Type Hollow Stem Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0.0-1.5			10YR 2.5/2, very dark brown, silty fine sand (silt 30%), organic matter top 6", loose-slightly dense, moist non plastic	SM	2 2 4
1.5-3.0			10YR 6/3, light yellow brown silty clayey fine sand, (silt + clay 40%), med. dense-loose, slightly plastic	SC/SM	5 6 6
3.0-4.5			Same as (1.5-3.0)	SC/SM	4 4 4
4.5-6.0			10YR 7.2/1 light grey, ultra fine-fine sand, (silt 30%) little/no silt bottom 6", moist, slightly dense	SM	3 4 3
6-7.5			10YR 7.8/1 light grey-white, silty fine sand (silt 30%), moist, loose-slightly dense, non plastic	SM	3 5 7

Boring No. ~~GW17~~ HPGW17 Location Coordinates N _____

Hole Size _____ Slot _____ E _____

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)
7.5-9.0			Same as (6-7.5)	SM	5 6 5
9.0-10.5			10Y 7.5/1 light grey, silty sandy Clay, (silt + sand 30%) wet, sticky, slightly plastic, mid. dense	SC	2 10 11
14.0-15.5			5Y 7.5/1 light grey, silty Clayey Sand (silt + Clay 45%), 20% Coarse Sand, loose, slightly plastic, wet,	SM/SC	4 4 8
19.0-20.5			2.5Y 6.5/2 light brown grey silty fine - med. Sand (silt 20%), wet, mod. dense - dense, non plastic, 20% Coarse Sand	SM	4 10 12
[illegible]0-25.5			10YR 7.5/1, light grey - white, silty medium Sand with 20% clay, silt 20%, loose - slightly dense, wet, clay mottles very plastic	SW/SM	2 3 5

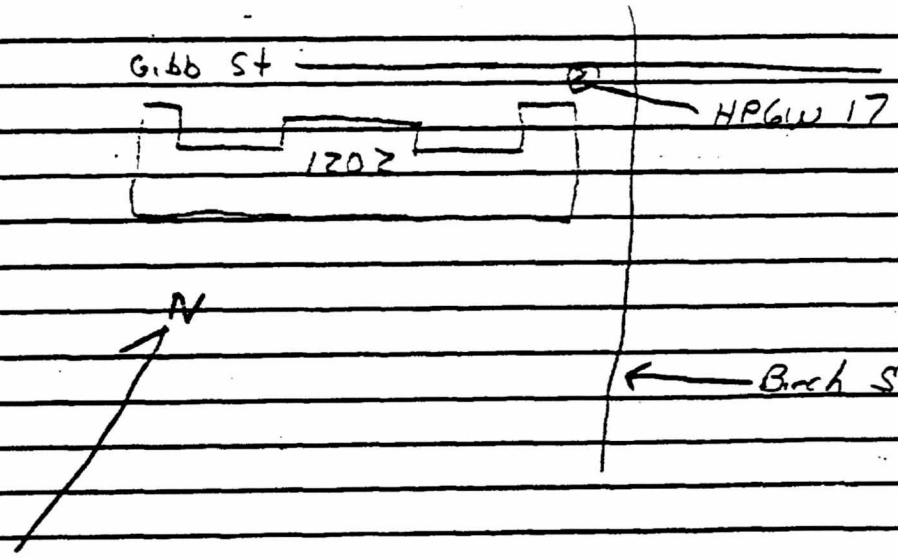
Doc No: CLEJ-00258-1.02-05/01/88

Boring No. ~~GW 12~~ HPGW17 SHEET ____ OF ____

On Site 12:00 PM 11/6/86

1st Spoon 1230
last Spoon 125
Well Complete 200

located at the corner of
Gibb and Birch Street



DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Boring No. HP 6w 18
Hole Size 6" Slot 0.01
Screen Size 2" Mat'l PVC
Casing Size 2" Mat'l PVC
Geologist David Brentlinger
Date Start 11/19/86 Finish 11/19
Contractor ESE
Driller Davis

Location Coordinates N
E
Filter Materials Silica Sand
Grout Type Bentonite Pellets
Development —
Static Water Level 11.00
Top of Well Elevation 13.50'
Drill Type Hollow Stem Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0.0-1.5			Roadside Gravel Fill		8 15 11
1.5-3.0			10YR 6.5/4 Light Yellow Brown, Silty Clayey Sand, (Clay + Silt 40%), moist, Plastic very dense	SC	8 10 12
3.0-4.5			10YR 7.5/3 Very Pale Brown, Silty Fine Sand, (Silt 40%), 10% Clay Mottles, moist, mod. dense, non plastic	SM	5 13 13
4.5-6.0			10YR 7.5/1 Light Grey, Silty Clayey Fine Sand, (Silt + Clay 40%), Bright Orange-Brown mottles throughout, moist, Slightly Plastic, Mod. dense	SM/SC	8 6 5
6.0-7.5	alternating layers throughout	50%	10YR 7/1 light grey Same as above (4.5-6.0)	SC	4 6 6
		50%	10YR 6/8, Brown Yellow, Silty Fine Sandy Clay Plastic, mod. dense, loose		

Doc No: CLEJ-00258-1.02-05/01/88

Boring No. HP 6W 18

Hole Size _____ Slot _____

Screen Size _____ Mat'l _____

Casing Size _____ Mat'l _____

Geologist _____

Date Start _____ Finish _____

Contractor _____

Driller _____

Location Coordinates N _____

E _____

Filter Materials _____

Grout Type _____

Development _____

Static Water Level _____

Top of Well Elevation _____

Drill Type _____

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
7.5-9.0			10YR 7.5/1 Light Grey, Silty Fine Sandy Clay (silt + sand 30%), Brown Yellow mottles throughout Plastic, mod. dense, moist	SC	2 3 10
9.0-10.5			10 YR 6.5/8 Yellow-Brown Yellow, Silty Clayey Fine-med. Sand (silt-clay 40%), moist, slightly plastic, slightly dense	SC/SM	7 7 8
14.0-15.5			10 YR 8/1 white Silty fine-med. Sand, (silt 30%), dense, moist, non plastic	SM	12 17 18
19.0-20.5			10 YR 8/1 white Fine-medium Sand, little to no silt, loose, wet, non plastic	SW	5 1 1
24.0-25.5			10YR 8/4.5 Very Pale Brown Yellow, Fine-medium Sand Little to no silt, wet, med. dense-dense, 10% Coarse material	SW	15 15 15

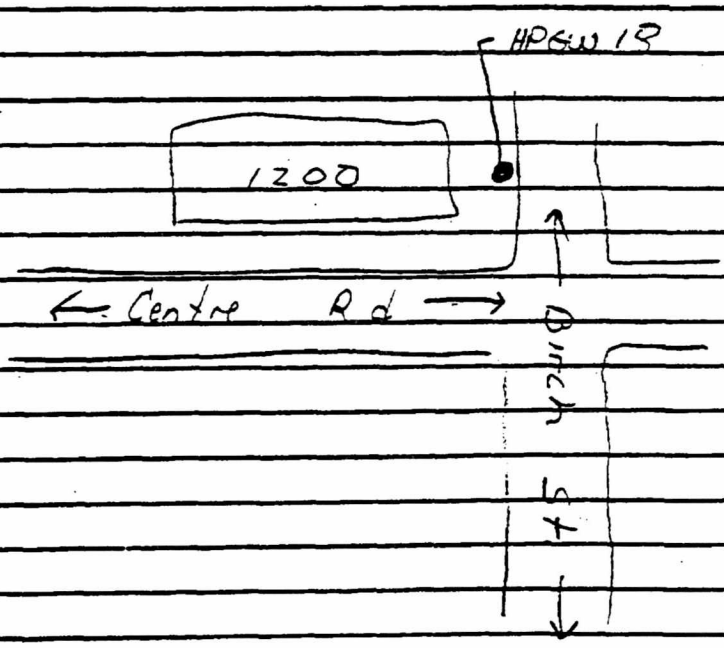
Doc NO: CLEJ-00258-1.02-05/01/88

Boring No. HPGW 18 SHEET ____ OF ____

On site 830 Am 11/19
1st Spoon 845
last Spoon 945 ← Problem with augers locking up
Well Complete 1040

Standard Well Specs

* no well point on base of casing rather a sliding cap!



DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

DOC NO: CLEJ-00258-1.02-05/01/88

Boring No. ~~GW 9~~ HPGW19
Hole Size 6"
Slot 0.01
Screen Size 2"
Mat'l PVC
(asing Size 2"
Mat'l PVC
ologist David Brentlinger
Date Start 11/6/86
Finish 11/6
Contractor ESE
Driller Davis

Location Coordinates N
E
Filter Materials Silica Sand
Grout Type Bentonite Pellets
Development
Static Water Level 9.08'
Top of Well Elevation 11.58'
Drill Type

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0.0-1.5			10YR 7.5/3 very pale Brown, Organic matter top 6", Silty Fine Sand, loose, moist silt 30%	SM	2 4 4
1.5-3.0			10YR 6.5/2, light Brown Grey Silty Fine Sand (Silt 25%), 10% clay, Clay mottles Slightly plastic, mod. dense, moist	SM / SC	2 6 3
3.0-4.5			10YR 5.5/1 grey - light grey, Silty Sandy Clay, (silt + Sand 30%), dense - mod. dense, Slightly plastic, moist	SC / CH	4 5 6
4.5-6.0			Same as above (3.0-4.5) less silt + Sand, Very Plastic	CH	3 4 5
6.0-7.5			Same as above 4.5-6.0	CH	3 4 3

Boring No. ~~GW 9~~ HP GW 19 Location Coordinates N _____

Hole Size _____ Slot _____ E _____

Screen Size _____ Mat'l _____ Filter Materials _____

Casing 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)
7.5-9.0			Same as above (4.5-6.0)	CH	2 3 2
9.0-10.5 water table 10'			10YR 5/1, gray silty clay, plastic, moist-wet mod. dense, Silt 40%,	ML	1 1 2
14.0-15.5			7.5YR 5.5/0, light grey-grey, silty clayey fine-medium sand, (25-30% silt + clay), clay mottles very sticky, mod. dense, wet	SM	14 7 8
19.0-20.5		19.0-19.5	Same as above (14.0-15.5)		8 5 4
		19.5-20.5	7.5YR 3.75/0 dark-very dark grey, very plastic wet, very sticky clay with 20% silt + sand	M.H	
24.0-25.5			2.5Y 2/-0, Black Dry-moist Organic clay with 20% silt, slightly Dense, slightly f[illegible]	OL	1 2 1

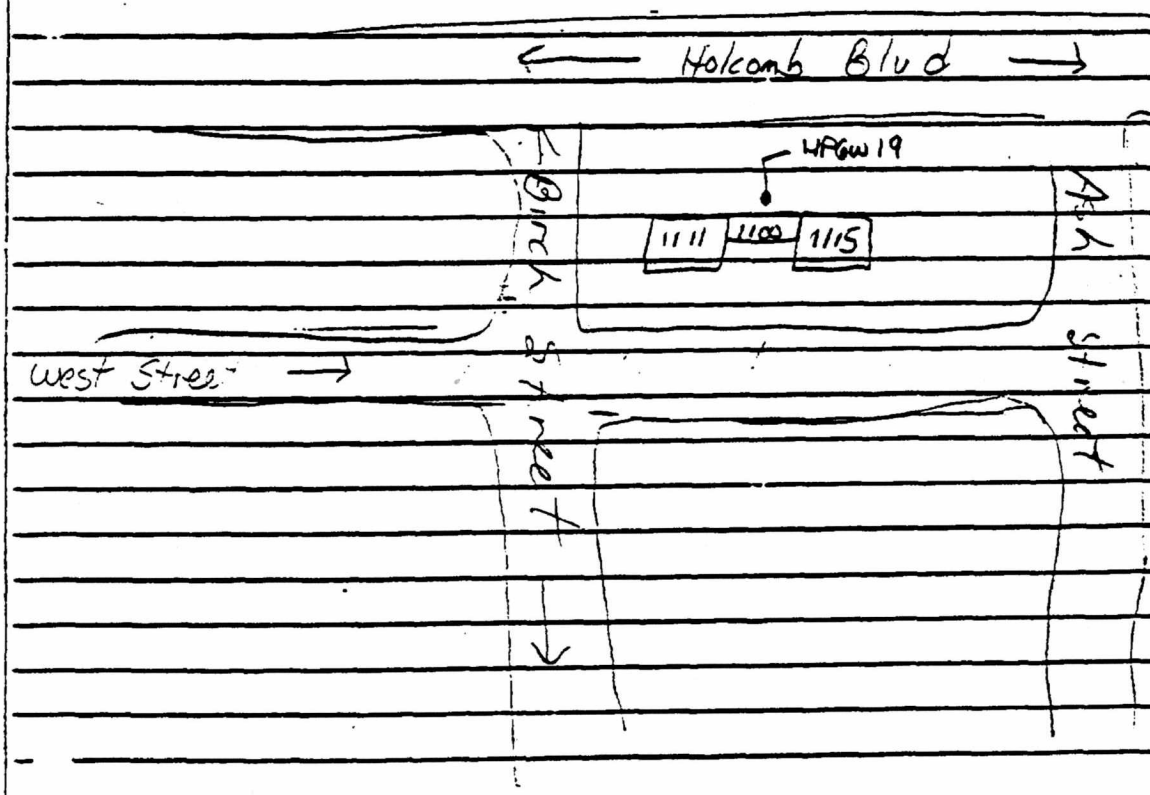
DGC NO: CLEJ-00258-1.02-05/01/88

Boring No. ~~GW 7~~ HPGW 19 SHEET ____ OF ____

11/6/86

on site 230 PM
1st Spoon 240 PM
last spoon 345 PM
Well complete 415 PM

Standard Well specs



DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Boring No. ~~GW 602~~ HP 6W20 Location Coordinates N _____

Hole Size 6" Slot 0.01 E _____

Screen Size 2" Mat'l PVC Filter Materials Silica Sand

Casing Size 2" Mat'l PVC Grout Type Bentonite Pellets

Geologist David Brentlinger Development _____

Date Start 11/6/86 Finish 11/6 Static Water Level 8.17

Contractor ESE Top of Well Elevation 10.67'

Driller Davis Drill Type Hollow Stem Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0.0-1.5			2.5Y 2.5/6 very dark grey-black, very dense Clay, organic mottles top 6", plastic, moist	CL/MH	1 2 1
1.5-3.0			10YR 5.5/1 grey-light grey, very dense-dense Clay, moist, Softer than above (0.0-1.0), v. Plastic	CH	2 3 5
3.0-4.5			10YR 6.5/1, light Grey, Silty Clayey Sand (silt+ Sand 40%), moist-wet, Plastic in Clay layers	SC	3 4 5
4.5-6.0			Very dense Clay Same as above (1.5-3.0), Bright yellow mottles	CH	4 6 7
6.0-7.5			7.5YR 6.5/2, Brown-light Brown, Silty Clayey Sand, Silt + Clay 40%, sticky, slightly Plastic, dense, moist	SC	4 6 7

DOC NO: CLEJ-00258-1.02-05/01/88

Boring No. ~~6W 602~~ HP 6W 20 Location Coordinates N _____

Hole Size _____ Slot _____ E _____

Screen Size _____ Mat'l _____ Filter Materials _____

(asing Size _____ Mat'l _____ Grout Type _____

eologist _____ 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)
7.5-9.0			10YR 7.5/1, light grey, silty clayey Sand, (silt+ Clay 40%), moist, slightly plastic, mod. dense, Coarse material 10%	SC	3 3 3
1.0-10.5 water table 10'			Same as above (7.5-9.0) with less Clay	SC / SM	3 4 6
14.0-15.5			10YR 4.25/1 grey-dark grey, very dense, massive Clay, Plastic, moist	CH	13 18 21
19.0-20.5			10YR 7.5/1, light grey, silty Clayey Sand (40% medium sand, 10% Coarse Sand), wet, slightly dense, Clay layers sticky + very plastic	SC / SM	2 6 7
1.0-25.5			2.5Y 4.5/0 grey-dark grey, silty med. Sand (silt 10-15%) wet, loose, non plastic	SW / SM	3 2 3

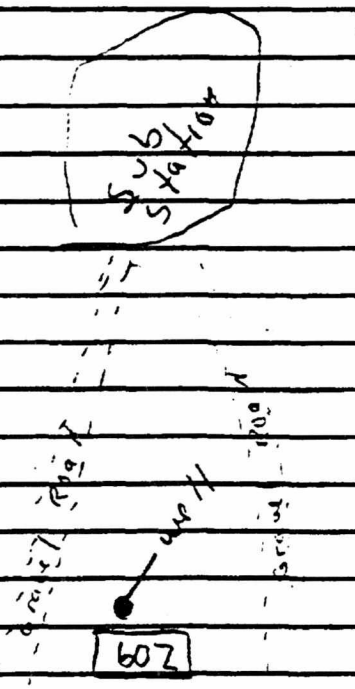
Doc No: CLEJ-00258-1.02-05/01/88

Boring No. ~~GW602~~ HPGW20 SHEET ____ OF ____

On Site 210 PM 11/5/86

1st Spoon 215
20 minute Break (320-340)
last spoon 340
Well Complete 350

Standard Well Specs



DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1985

DOC NO: CLEJ-00258-1.02-05/01/88

Boring No. HP GW 21

Hole Size 6" Slot 0.01

Screen Size 2" Mat'l PVC

Casing Size 2" Mat'l PVC

Geologist David Grentzinger

Date Start 11/19/86 Finish 11/19

Contractor ASE

Driller Davis

Location Coordinates N

E

Filter Materials Silica Sand

Grout Type Bentonite Pellets

Development –

Static Water Level 9.08

Top of Well Elevation 11.58'

Drill Type Hollow Stem Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0.0-1.5			Cement Fill + Gravel	/	6 6 6
1.5-3.0			2.5Y 2.5/8, Olive yellow-light olive Brown, silty fine sandy Clay, (silt + Sand 45%), Slightly Plastic, Mod. dense, moist	SM/SC	4 15 12
3.0-4.5			10YR 5/6, Yellow Brown, Silty Clayey Fine Sand (Clay + silt 45%), Non plastic slightly dense, moist	SC/SM	UTM 6
4.5-6.0			5YR 8/1 white - light grey, silty ultra fine - fine Sand, (silt 20-30%), loose, moist non plastic	SM	5 6 7
6.0-7.5			Same as Above (4.5-6.0)	SM	6 10 8
7.5-9.0			2.5Y 7/5.5 Yellow - Pale yellow, Silty fine Sandy Clay, (Silt + Sand ≈ 5%), [illegible]	SC	UTM 5

DOC NO: CLEJ-00258-1.02-05/01/88

Hole Size HPGW 21 Slot _____ E _____

Screen Size _____ Mat'l _____ Filter Materials _____

asing Size _____ Mat'l _____ Grout Type _____

logist _____ Development _____

D: Start _____ Finish _____ Static Water Level _____

Contractor _____ Top of Well Elevation _____

Driller _____ Drill Type _____

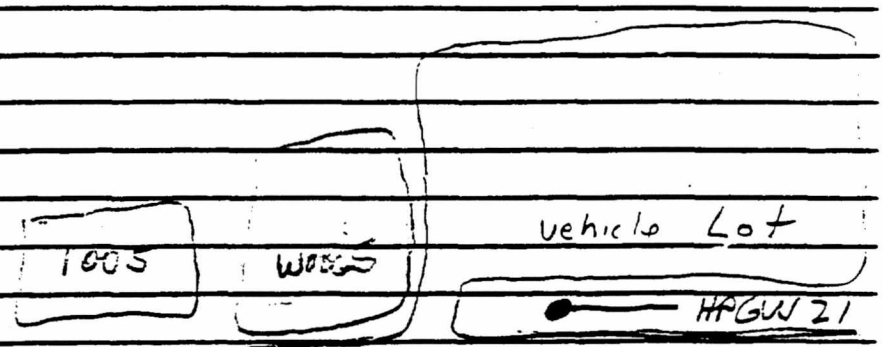
Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
9.0-10.5		9.0-10.0	10YR 8/1, white-light Grey, Silty fine sandy clay, wet same as above (7.5-9.0)	SC	3
		10.0-10.5	2.5Y 8/4, Yellow-Pale Yellow, Silty med. Sand (Silt 10-15%), wet, Slightly dense	SW	4 6
14.0-15.5			2.5Y 4/0, dark grey, very soft, sticky clay with 30% silt, plastic, wet not dense	CH	1 1 1
19.0-20.5			7.5YR 7/0, light Grey, Fine-med. Sand with 10% clay layers throughout, wet, Slightly dense, clay is plastic	SW	7 9 8
24.0-25.5			2.5Y 6/0, Light Grey, Sandy Silty marl, 50% Cemented Clastics, (Sand+silt 30%), Very dense, wet	GC	35 50-3"

Doc No: CLEJ-00258-1.02-05/01/88

Boring No. HPGW 21 SHEET ____ OF ____

On Site 1245 PM 11/19/21
1st Sample 1250
Last Sample 145
Well Completed 250

- Standard Well Specs
  - Flush mount well point
  on bottom of casing
  riser & slids -
  on Cap



DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1986

Doc No: CLEJ-00258-1.02-05/01/88

Boring No. ~~GW13~~ HPGW22 Location Coordinates N

Hole Size 6" Slot 0.01 E

Screen Size 2" Mat'l PVC Filter Materials Silica Sand

Casing Size 2" Mat'l PVC Grout Type Bentonite Pellet

Geologist David Brentlinger Development

Date Start 11/4/86 Finish 11/4 Static Water Level 8.17'

Contractor ESE Top of Well Elevation 10.67'

Driller Davis Drill Type Hollow Stem Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0.0-1.5			2.5Y 2.5/0, Black-dark grey silty fine sand (silt 25%) 20% organic matter, loose, moist, non plastic	SM	2 2 2
1.5-3.0			(lost sample ?) was not in spoon!		2 1 0
3.0-4.5			2.5YR 3.5/4 Reddish Brown silty fine sand (silt 30%) over 50% organic matter + Roots	SM	0 0 2
4.5-6.0			5Y 2.75/2 dark Red Brown silty fine sand, (silt 30%) organic matter 60%, loose moist, non plastic	SM	6 12 16
6.0-7.5			10YR 7.5/1 light grey-white, silty fine sand Tree roots 90% of sample, loose, moist, non plastic	SM	21 47 46

Doc No. CLEJ-00258-1.02-03/01/88

Boring No. ~~GW 13~~ HPGW 22 Location Coordinates N _____

Hole Size _____ Slot _____ E _____

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)
7.5-9.0			Same as above (6.0-7.5) with less Roots	SM	15 14 16
9.0-10.5			10YR 6.5/1, light grey silty fine sand, (silt 30%), organic matter 40% moist, loose, non plastic	SM	8 9 9
14.0-15.5		14.0-14.75	5YR 2.75, Black- very dark grey (red tint), silty sandy organic peat (organics 60%)	SM	4
		14.75-15.5	5Y 8/1 white (blue tint), silty sandy clay (silt + sand 25%), sticky, slightly plastic, moist	SC	6 8
19.0-20.5		Repetitive sand-silt-clay layers	10YR 6.5/2 Pale - very pale brown, silty sandy clay, silt + sand 30%, more sand than silt bottom 6", wet, plastic - v. plastic in clay layers, slightly dense	CH ↓ SC	7 5 8
24.0-25.5			10YR 2.5/1 very dark grey-black, silty sandy clay, slightly plastic wet, slightly dense clay soft silt + sand 30%	CH / SC	1 3 6

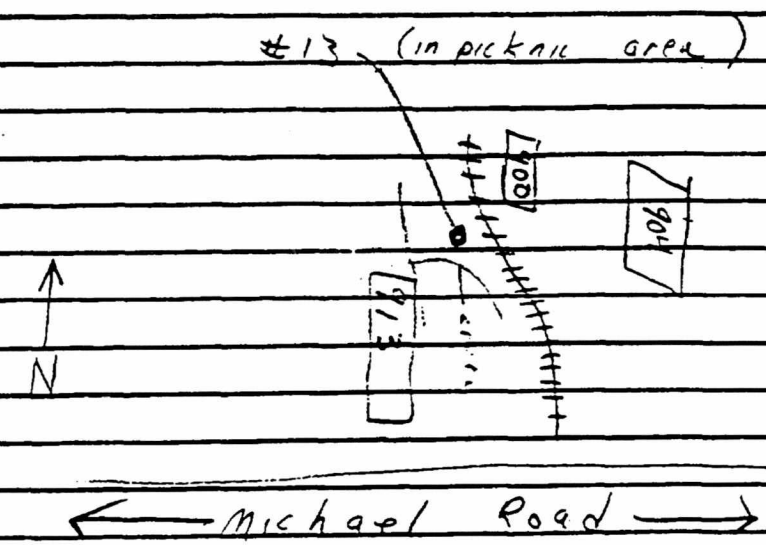
Doc NO: CLEJ-00258-1.02-05/01/88

Boring No. ~~GW 13~~ HPGW22 SHEET ____ OF ____

11/4/86

On Site 150 pm
First Spoon 210
last Spoon 305
Well Complete 325

Standard Well Specs



DATE ____ SIGNED ____

SOURCE: Environmental Science and Engineering, Inc., 1980

Doc No: CLEJ-00258-1.02-05/01/88

Boring No. ~~GW 14~~ HP GW23 Location Coordinates N

Hole Size 6" Slot 0.01 E

Screen Size 2" Mat'l PVC Filter Materials Silica Sand

Casing Size 2" Mat'l PVC Grout Type Bentonite Pellets

Geologist David Brentlinger Development

Date Start 11/5/86 Finish 11/6 Static Water Level 11.08'

Contractor ESE Top of Well Elevation 13.58'

Driller Davis Drill Type Hollow Stem Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0.0-1.5			10YR 6.5/4, Yellow - very Pale yellow, Silty fine Sand, little/No organic matter, Silt (25%) strong petroleum smell, loose, moist, mod. dense	SM	8 8 6
1.5-3.0			10YR 3.5/2, Grey Brown - Dark Grey Brown, Silty fine Sand, Silt 25%, Strong smell of petroleum, moist, mod. dense, non plastic, Gravel fill 10-15%	SM	8 8 6
3.0-4.5		3.0-4.0	Same as above (1.5-3.0)	SM ↓ Pt	2 3 4
		4.0-4.5	10YR, 2/1, Black, Silty Peat, moist, mod. dense - loose, organic matter 70%		
4.5-6.0			Same as above (4.0-4.5) more silt than above	Pt	5 6 5

Doc No: CLEJ-00258-1.02-05/01/88

Boring No. ~~GW 14~~ HP GW 23 Location Coordinates N

Hole Size Slot E

Screen Size Mat'l Filter Materials

asing Size Mat'l Grout Type

eologist 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)
6.0-7.5			7.5YR 3.5/3, Strong Brown, Silty fine Sand (Silt 30%), 10% Clay, Mod. dense, non plastic, moist-wet	SM	4 4 5
7.5-9.0			10YR 4.5/3 Silty Clayey Fine Sand (Silt + Clay 45%), Brown-Dark Brown, moist mod. dens, slightly plastic	SM ↓ SC	6 6 8
9.0-10.5			10YR 4.5/3, Brown-dark Brown, Silty fine Sand, (Silt 30%), moist-wet, mod. dense	SM	6 6 8
14.0-15.5			10YR 4.5/1, Grey-Dark Gray, Silty Clayey fine Sand, (Silt + Clay 20-30%), moist, sticky in clay layers, slightly plastic, slightly dense.	SM / SC	3 5 8
19.0-20.5		19.0-20.0	2.5YR 4.5/2, weak pale red Silty Clayey fine Sand, (Silt + Clay 40%), wet, slightly dense, slightly plastic	SC / SM	4 7 7
		20.0-20.5	Silty fine-Med. Sand, Same Color, loose, non plastic (Silt 10-15%)	SW	

Doc NO: CLEJ-00258-1.02-05/01/88

Boring No. ~~GW14~~ HPGW23 Location Coordinates N _____

Hole Size _____ Slot _____ E _____

Screen Size _____ Mat'l _____ Filter Materials _____

Casing 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)
24.0-25.5			10YR 7.5/1 white-light grey, silty fine-medium sand silt 10-15%, wet, loose, non plastic 10-15% coarse sand + pebbles	SW	3 3 5

Doc No: CLEJ-00258-1.02-05/01/88

Boring No. ~~GW 14~~ HPGW23 SHEET ____ OF ____

on site 400 PM 11/5/86

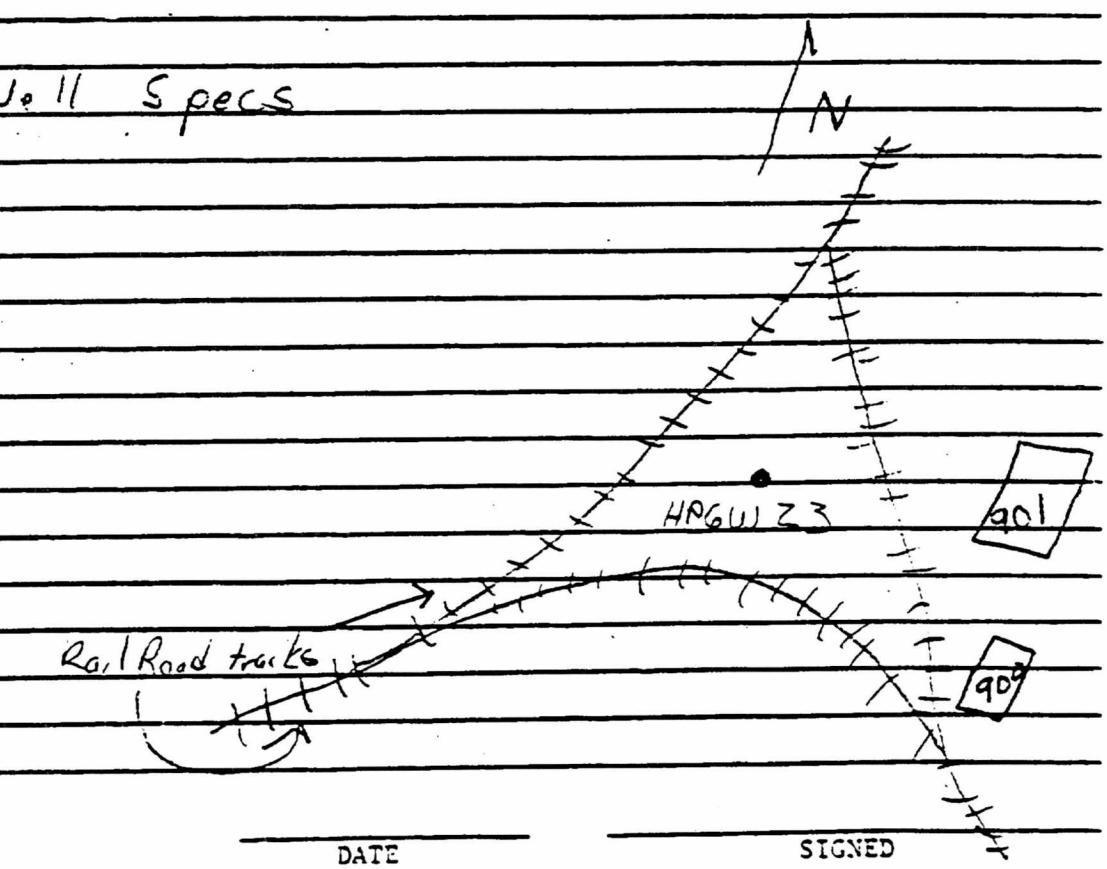
Continuous Spoon to 10'
Sampling out of 10' 420 PM

11/6/86

On Site 730 am

Re-Sampling begins 735
last Spoon 825
well Complete 845

Standard Well Specs



DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Doc No: CLEJ-00258-1.02-05/01/88

Boring No. HPGW 24
Hole Size 6" Slot 0.01
Screen Size 2" Mat'l PVC
asing Size 2" Mat'l PVC
ologist David Brentlinger
Date Start 11/13/86 Finish 11/12
Contractor ESE
Driller Davis

Location Coordinates N
E
Filter Materials Silica Sand
Grout Type Bentonite Pellets
Development
Static Water Level 6.83'
Top of Well Elevation 9.33'
Drill Type Hollow Stem Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0.0-1.5		0.0-0.75	10YR 2.5/1, Black, Silty fine Sand, 50% organic matter, saturated H_2O	SM	4
		0.75-1.5	10YR 6.5/3 Pale - Very Pale Brown Silty fine Sand (silt 25%), loose, wet, slightly dense		3 4
1.5-3.0			Same as (0.75-1.5) less wet	SM	4 8 6
3.0-4.5			10YR 5/3, light Brown with Black-grey Silty Clay mottles throughout, Silty fine Sand (silt 30%), moist, non-plastic, slightly dense	SM	5 9 7
4.5-6.0			10YR 4.5/2, Grey - dark grey Silty Clayey Sand, (silt+Clay 45%), slightly dense - med. dense, moist, slightly plastic	SC/SM	2 3 4
6.0-7.5			10YR 4.5/4 Yellow Brown - dark yellow Brown, Silty Clayey Sand, (silt+Clay 45%), slightly plastic - plastic, moist, slightly dense	SC/SM	3 4 7

Boring No. HP GW 24 | Location Coordinates N ____
Hole Size ____ Slot ____ | E ____
Screen Size ____ Mat'l ____ | Filter Materials ____
Casing Size ____ Mat'l ____ | Grout Type ____
Geologist ____ | Development ____
Date Start 11/12 Finish 11/12 | Static Water Level ____
Contractor ____ | Top of Well Elevation ____
Driller ____ | Drill Type ____

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
7.5-9.0			10YR 4/1, dark Grey, Silty Clayey Sand, (Silt + Clay 45%), Moist, Slightly plastic, mrd. dense - dense	SC / SM	5 10 26
9.0-10.5			10YR 6.5/1, Grey - light Grey, Silty Fine Sand (silt 10-15%) loose, slightly dense, moist - wet, Top 5" Black Silty Sand	SW	8 12 15
14.0-15.5			2.5Y 4.5/6 Grey - dark Grey, Silty Fine Sandy Clay (silt + sand 30%) sticky, slightly dense, slightly plastic, wet	SC	2 1 1
19.0-20.5			7YR 2/0, Black, Silty Organic Clay (organic matter 45%), firm, dense, moist, slightly plastic	ML / Pt	2 3 5
24.0-25.5			10YR 2.5/1 Black, Silty Sandy Peat (silt + sand 30%, dry, mod. dense	Pt	5 6 10

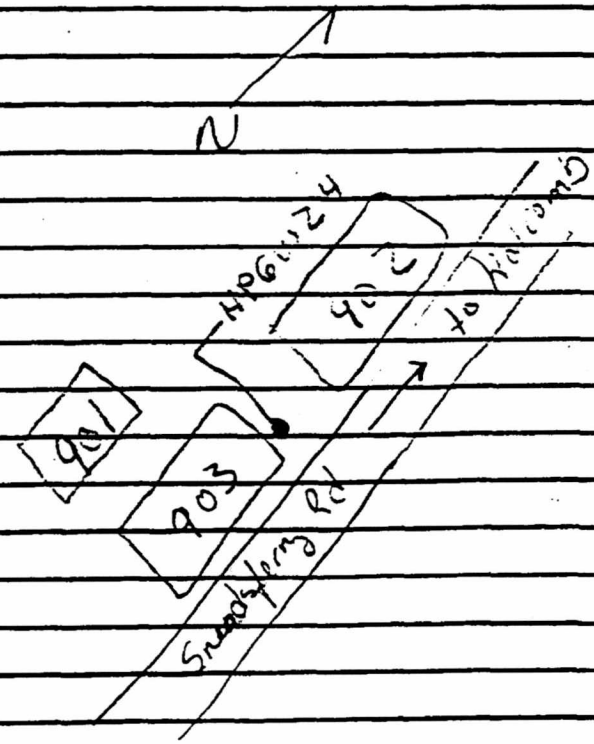
Doc No: CLEJ-00258-1.02-05/01/88

Boring No. HPGW24 SHEET ____ OF ____

On Site 1215 PM 11/12/86

1st Spoon 1220
last Spoon 120
Well Complete 150

Standard Well Specs



DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1986

DOC NO: CLEJ-00258-1.02-05/01/88

Boring No. ~~GW 15~~ HPGW25 Location Coordinates N

Hole Size 6" Slot 0.01 E

Screen Size 2" Mat'l PVC Filter Materials Silica Sand

Casing Size 2" Mat'l PVC Grout Type Bentonite Pellets

Geologist David Brentlinger Development

Date Start 11/5/86 Finish 11/5 Static Water Level 9.00'

Contractor Top of Well Elevation 11.50'

Driller Drill Type Hollow Stem Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0.0-1.5			2.5Y 7.5/4, Pale Yellow, Silty Fine Sand (Silt 25%) organic matter top 6", loose, moist, non plastic	SM	1 2 5
1.5-3.0			2.5Y 6.5/2, light Brown, Silty Fine Sand, (Silt 20%) loose, moist, non plastic	SM	5 5 6
3.0-4.5			2.5Y 7.5/2 white-pale yellow, silty fine Sand, Silt 10-15%, Bright Yellow mottles, loose, moist, non plastic	SM/SW	4 6 12
4.5-6.0			10YR 8.0/1, white silty fine Sand, (Silt 10-15%) loose, moist, non plastic	SW	8 16 12
6.0-7.5		6.0-7.0	Same as Above (4.5-6.0)		
		7.0-7.5	2.5Y 7.5/6, yellow Silty Clay (little sand) silt 30%, moist, med. dense, non plastic, sticky when wet	SW/ML	2 3 4

DOC NO: CLEJ-00258-1.02-05/01/88

Boring No. ~~GW 15~~ HPGW25 Location Coordinates N

Hole Size Slot E

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)
7.5-9.0			2.5Y 7.5/4 yellow, Silty fine-med. Sand, top 6" very silty Clay, silt (20%) moist, mod. dense, non plastic	SW/SM	4 8 6
.0-10.5			2.5Y 7.5/4 yellow, Silty Clayey med. Sand, (silt + Clay 30%) 3" of firm clay in middle of sample, slightly dense, plastic in clay layers, moist - wet	SC/SW	3 1 2
14.0-15.5		14.0-14.5	10YR 6/3 Silty Sandy Clay top 6"		
		14.5-15.5	7.5YR 7.5+/0 Grey-white, very firm Silty Clay, with Coarse Sand bottom 2", plastic - V. plastic, dense, wet	SC/CH	4 3 5
19.0-20.5			10YR 8/1, white, med. Sand with 30% clay, wet, slightly dense, plastic in clay mottles	SC	5 6 8

Doc NO: CLEJ-00258-1.02-05/01/88

Boring No. ~~GW 15~~ HPGW 25 Location Coordinates N

Hole Size Slot E

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)
24.0-25.5			Silty Medium-Coarse Sand. (10-15% silt), 20% clay layers throughout, slightly plastic, wet, loose - slightly dense	SW / SC	2 4 1
			10YR 8/1, white		

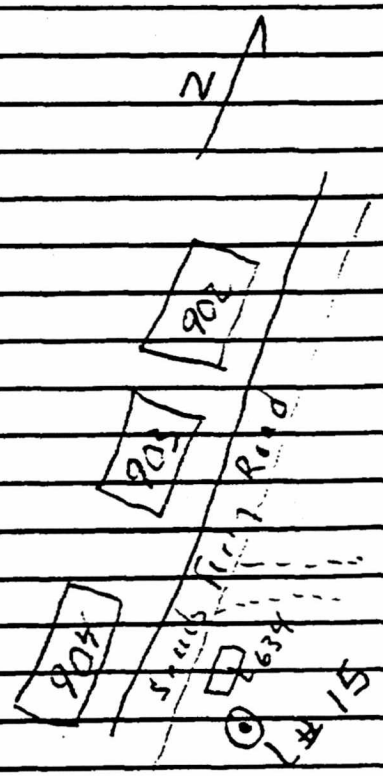
DOC NO: CLEJ-00258-1.02-05/01/88

Boring No. ~~GW 15~~ HPGW 25 SHEET _____ OF _____

On Site 930 a.m. 11/5/86

1st Spoon 945
last Spoon 1040
Well Complete 1115

Standard Well Specs



DATE _____ SIGNED _____

SOURCE: Environmental Science and Engineering, Inc., 1980

DOC NO: CLEJ-00258-1.02-05/01/88

Boring No. ~~GW #2~~ NPGW 26 Location Coordinates N

Hole Size 6" Slot 0.01 E

Screen Size 2" Mat'l PVC Filter Materials Silica Sand

Casing Size 2" Mat'l PVC Grout Type Bentonite Pellets

Geologist David Brantlinger Development

Date Start 11/5/86 Finish 11/5 Static Water Level 17.96'

Contractor ESE Top of Well Elevation 20.46'

Driller Davis Drill Type Hollow Stem Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0.0-1.5			5YR 2.8/1 Black - dark gray, silty fine sand, silt 25%, loose, moist non plastic, organic matter top 6"	SM	1 2
1.5-3.0			7.5YR 4.5/6 Strong Brown - Reddish Yellow silty fine sand (silt 20%), loose, moist	SM	2 2 3
3.0-4.5			7.5YR 5.5/2, Brown - Pink gray, silty fine sand (silt 20%, loose moist, non plastic	SM	3 4 5
4.5-6.0 water table 6'			7.5YR 5/2 Brown, silty fine sand, (silt 20%), 10% clay mottles, wet, slightly dense, non plastic	SM	3 5 5
6.0-7.5			7.5YR 8/0 white (blue tint), silty fine sand, (20% silt), 20% clay mottles, wet, clay very plastic, slightly dense	SM	1 1 2

DOC NO: CLEJ-00258-1.02-05/01/88

Boring No. ~~GW #8~~ HPGW26 Location Coordinates N _____

Hole Size _____ Slot _____ E _____

Screen Size _____ Mat'l _____ Filter Materials _____

Casing 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)
7.5-9.0			10YR 7.5/2, light grey-pale white, silty fine-med. sand, 45% silt + clay mottles, moist, slight plastic [illegible]	SM	- 5 6
9.0-10.5			10YR 6.25/1 grey-light grey, silty fine sand with 10-15% clay throughout. moist, non plastic-slight plastic	SM SC	4 9 11
14.0-15.5			very soft sticky clay 2.5Y 4.5/0 dark grey, very plastic, wet	MH / CH	3 1 2
19.0-20.5			5Y 5.5/2 olive-pale olive, silty clay with 10-15% medium-coarse sand layers, mod. dense, wet, plastic	SC / MH	4 4 4
24.0-25.5			5Y 5.5/1 grey-light grey, medium-coarse sand, 10-15% fines, loose, wet, non plastic	SW	5 5 6

Doc No: CLEJ-00258-1.02-05/01/88

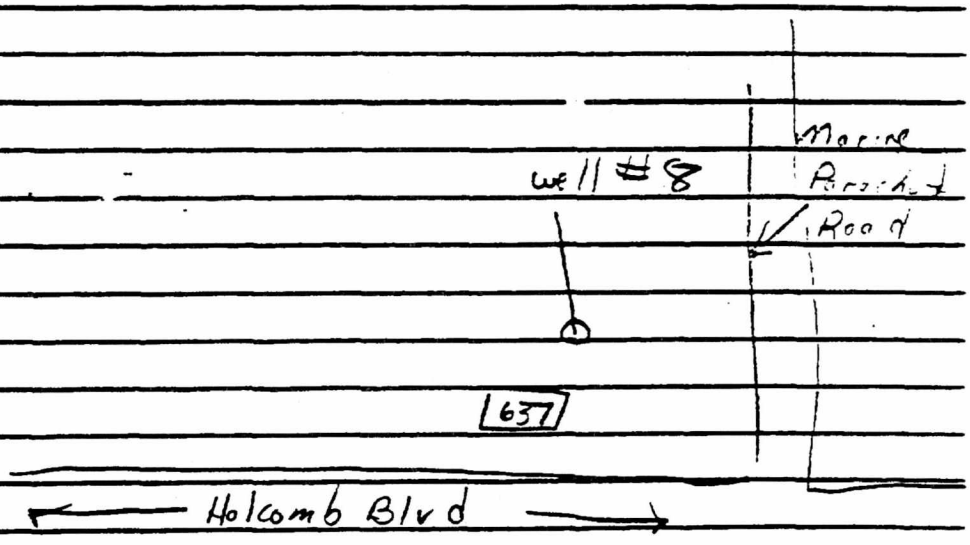
Boring No. ~~GW 8~~ HP 605 26 SHEET ____ OF ____

11/5/86

On Site 1215 pm

1st Spoon 1220
last Spoon 115
Well Completed 200

Standard Specs



DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

DOC NO: CLEJ-00258-1.02-05/01/88

Boring No. HPSW 29 | Location Coordinates N
Hole Size 6" | Slot 0.01 | E
Screen Size 2" | Mat'l PVC | Filter Materials Silica Sand
Casing Size 2" | Mat'l PVC | Grout Type Bentonite Pellets
Geologist David Brentlinger | Development —
Date Start 11/17/86 | Finish 11/17 | Static Water Level 19.8'
Contractor ESE | Top of Well Elevation 22.3'
Driller Davis | Drill Type Hollow Stem Auger

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0.0 - 1.5			10YR 5.5/4 yellow Brown, silty fine Sand with 30% Cement fill (silt 30%), organic matter 40%, slightly dense, moist, non plastic	SM	3 10 13
1.5 - 3.0		1.5 - 2.2	Same as above (0.0 - 1.5)		
		2.2 - 3.0	2.5Y 7/4, Pale Yellow - Yellow, firm silty Clay, silt 30%, dense, plastic, moist	SM / CL	10 11 11
3.0 - 4.5			10YR 6/8 Brown Yellow Silty Clayey fine Sand, (silt + clay 40%), mod. dense, non plastic, moist	SM / SC	9 10 12
4.5 - 6.0			Same as above (3.0 - 4.5) less silt	SC	9 10 8
6.0 - 7.5		6.0 - 6.5	Same as above (4.5 - 6.0)		
		6.5 - 7.5	10YR 7.5/4 very pale Brown, (silt 25%), loose, moist, non plastic, less clay	SC / SM	7 8 10

DOC NO: CLEJ-00258-1.02-05/01/88

Boring No. HPGW 29 Location Coordinates N

Hole Size Slot E

Screen Size Mat'l Filter Materials

ing Size Mat'l Grout Type

Ge ogist 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)
7.0 - 9.0			10YR 7.5/6 yellow silty fine sand, (silt 25%) slightly dense, non plastic, moist	SM	4 6 5
9.0 - 10.5			10YR 8/1 white silty fine sand, (silt 10-15%), loose, dry-moist, non plastic	SW	10 12 20
14.0 - 15.5			10YR 8/1 white silty fine sand with 10% clay layers (silt 15%), loose, moist, non-plastic	SM	9 7 11
19.0 - 20.5			10YR 7.5/6 yellow silty clayey sand, (silt + clay 40%), wet, slightly dense, slightly plastic	SC	5 7 10
24.0 - 25.5			10YR 5.75/8, yellow brown, silty fine - med. sand, (silt 10-15%), wet, slightly dense, non plastic, 3" clean medium sand on top	SW	7 7 8

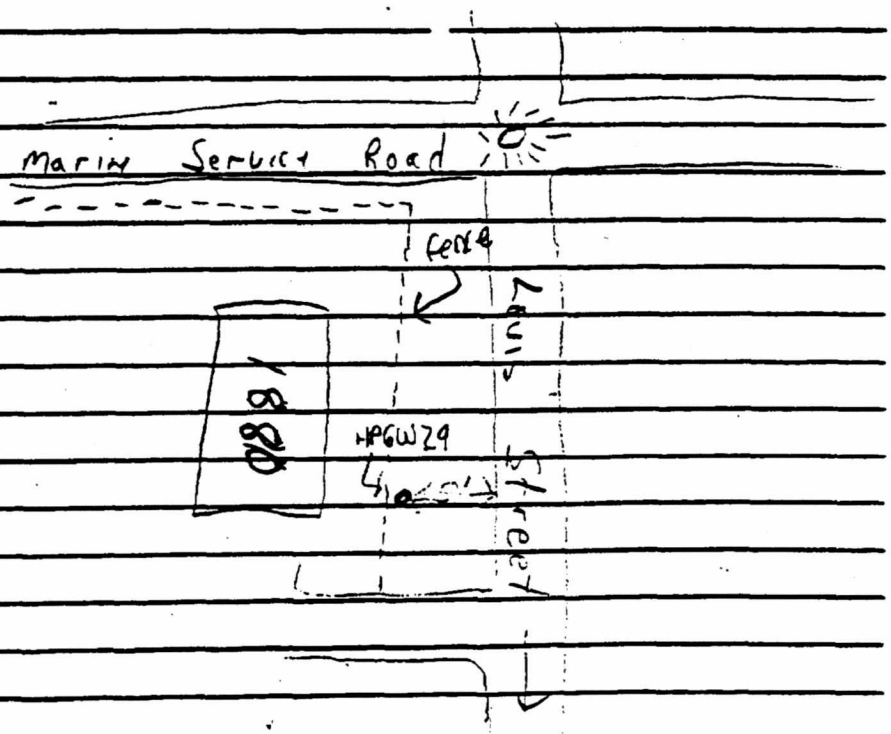
DOC NO: CLEJ-00258-1.02-05/01/88

Boring No. HPGW 29 SHEET ____ OF ____

onsite 930 Am 11/17/86

1st Spoon 935
Rain delay 1000
Drilling resumes 1115
last spoon 1130
Well Complete 1225

Standard Well Specs



DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Doc No: CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR: Davis Drilling Co.
DRILLER REGISTRATION NUMBER: Pending
STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135-WM-0141

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: Jacksonville, N.C. County: Onslow
   (Road, Community, or Subdivision and Lot No.)
2. OWNER: U.S. Navy
   ADDRESS: Camp Le Jeune, N.C. 28542
   (Street or Route No.) City or Town State Zip Code
3. DATE DRILLED: 10/31/86 USE OF WELL: monitor
4. TOTAL DEPTH: 25' CUTTINGS COLLECTED: ☒ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 20.54 FT. ☐ above ☒ below TOP OF CASING.
   TOP OF CASING IS 2.50' FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____
10. CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	+2.5'	-5.0 Ft.	2"	1/8"	PVC
		Ft.			
		Ft.			

11. GROUT:

	Depth From	Depth To	Material	Method
	0.0	-2.0 Ft.	Concrete	
	-2.0	-3.0 Ft.	Clay	

12. SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	-5.0	-25.0 Ft.	2" in.	0.01 in.	PVC
		Ft.	in.	in.	
		Ft.	in.	in.	

13. GRAVEL PACK:

	Depth From	Depth To	Size	Material
	-3.0	-25' Ft.	Coarse	Sand
		Ft.		

DRILLING LOG

Depth From - To	Formation Description
0.0 - 3.0	Sandy Peat
3.0 - 4.5	Silty Fine Sand
4.5 - 6.0	Silty Clayey Fine Sand
6.0 - 9.0	Silty Fine Sand
9.0 - 20.5	Clay
24.0 - 25.5	Silty Fine Sand

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See sketch attached to handout (2-5).

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 11/84

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

DOC NO: CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

[redacted] WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR: Davis Drilling Co.
DRILLER REGISTRATION NUMBER: Pending

STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135-WM-0...

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: Jacksonville, N.C.
   (Road, Community, or Subdivision and Lot No.)
   County: Onslow
2. OWNER: U.S. Navy
   ADDRESS: Camp Lejeune (Street or Route No.)
   City or Town: 28542 State: Zip Code
3. DATE DRILLED: 11/4/86 USE OF WELL: Monitor
4. TOTAL DEPTH: 25 CUTTINGS COLLECTED: ☒ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 18.90 FT. ☐ above ☒ below TOP OF CASING,
   TOP OF CASING IS 2.50 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____
10. CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	+2.5	-5.0	2"	1/8"	PVC

11. GROUT:

	Depth From	Depth To	Material	Method
	0.0	-2.0	Concrete	
	-2.0	-3.0	Clay	

12. SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	-5.0	-20'	2" in.	0.01 in.	PVC
			in.	in.	
			in.	in.	

13. GRAVEL PACK:

	Depth From	Depth To	Size	Material
	-3.0	-25'	Coarse	Sand

14. REMARKS: _____

Depth From	Depth To	DRILLING LOG Formation Description
0.0	1.5	Fine Silty Peat
1.5	4.5	Silty Fine Sand
4.5	6.0	Fine Sandy Silt
6.0	9.0	Silty Fine Sand
9.0	10.5	Clayey Fine Sand
14	15.5	Clay
19.0	20.5	Clayey Silty Sand
24	25.5	Silty Fine Sand

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See Sketch attached to (Fig 2-5).

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

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

GW-1 Revised 11/84

Doc NO: CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR: Davis Drilling Co.
DRILLER REGISTRATION NUMBER: Pending

STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135-WM-0141

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville, N.C.
(Road, Community, or Subdivision and Lot No.)
County: Onslow

2. OWNER: US Navy
ADDRESS: Camp LeJeune N.C. 28542
(Street or Route No.) City or Town State Zip Code

3. DATE DRILLED: 11/4/86 USE OF WELL: monitor
4. TOTAL DEPTH: 25' CUTTINGS COLLECTED ☑ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☑ No
6. STATIC WATER LEVEL: 19.17 FT. ☐ above ☑ below TOP OF CASING.
TOP OF CASING IS _____ FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____
10. CASING:

	Depth From	To	Diameter	Wall Thickness or Weight/Ft.	Material
	2.5	5.0	2"	1/8"	PVC

11. GROUT:

	Depth From	To	Material	Method
	0.0	2.0	Concrete	
	2.0	3.0	Clay	

12. SCREEN:

	Depth From	To	Diameter	Slot Size	Material
	5.0	25'	2"	0.01 in.	PVC

13. GRAVEL PACK:

	Depth From	To	Size	Material
	3.0	25'	Coarse	Sand

14. REMARKS:

Depth From	To	DRILLING LOG Formation Description
0.0	1.5	Fine Sandy Silt
1.5	3.0	Fine Sandy Peat
3.0	9.0	Silty Fine Sand
9.0	10.5	Fine Sandy Clay
14.0	15.5	Clay
19.0	20.5	Fine Sandy Clay and Fine Silty Sand
20.5	25'	Silty Fine Sand

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See sketch attached to fig (2.5)

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 11/84

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

DOC NO: CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Davis Drilling Co.
DRILLER REGISTRATION NUMBER Pending

STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135-WM-0141

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville, NC
(Road, Community, or Subdivision and Lot No.)
County: Onslow

2. OWNER US Navy
ADDRESS Camp LeJeune (Street or Route No.) NC (City or Town) (State) 28542 (Zip Code)

3. DATE DRILLED 11/4/86 USE OF WELL Monitor
4. TOTAL DEPTH 25' CUTTINGS COLLECTED ☒ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 18.08 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 2.5' FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____

10. CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	+2.5	-5.0	2"	1/4"	PVC

11. GROUT:

	Depth From	Depth To	Material	Method
	0.0	-2.0	Concrete	
	-2.0	-3.0	Clay	

12. SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	-5.0	-25	2"	0.01 in.	PVC
				in.	
				in.	

13. GRAVEL PACK:

	Depth From	Depth To	Size	Material
	-3.0	-25'	Coarse	Sand

DRILLING LOG

Depth From	Depth To	Formation Description
0.0	1.5	Silty Fine
1.5	4.5	Silty Fine Sand
4.5	6.0	Clayey Fine Sand
6.0	9.0	Fine Sandy Clay
9.0	10.5	Silty Clayey Fine Sand
14.0	15.5	Clay
19.0	25.5	Marl

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See sketch attached to Fig (2.5).

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

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

GW-1 Revised 11/84

Doc No: CLEJ-66258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Davis Drilling Co.
DRILLER REGISTRATION NUMBER Pending

STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135-WM-0141

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville, N.C. County: Onslow
(Road, Community, or Subdivision and Lot No.)

2. OWNER US Navy
ADDRESS Camp Lejeune N.C. 28542
(Street or Route No.) City or Town State Zip Code

3. DATE DRILLED 11/4/86 USE OF WELL monitor
4. TOTAL DEPTH 25' CUTTINGS COLLECTED ☑ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☑ No
6. STATIC WATER LEVEL: 16.13 FT. ☐ above ☑ below TOP OF CASING.
TOP OF CASING IS 2.5 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____

10. CASING:

	Depth From	To	Diameter	Wall Thickness or Weight/Ft.	Material
	+2.5	-5.0	2"	1/8"	PVC

11. GROUT:

	Depth From	To	Material	Method
	0.0	-2.0	Concrete	
	-2.0	-3.0	Clay	

12. SCREEN:

	Depth From	To	Diameter	Slot Size	Material
	-5.0	-25	2"	0.01	PVC

13. GRAVEL PACK:

	Depth From	To	Size	Material
	-3.0	-25	Coarse	Sand

DRILLING LOG

Depth From - To	Formation Description
0.0 - 1.5	Silty Peat
1.5 - 6.0	Fine Sandy Silt
6.0 - 9.0	Fine Sandy Silty Clay
9.0 - 10.5	Silty Fine Sand
14.0 - 15.5	Clay
19.0 - 20.5	Clay
24.0 - 25.5	Fine Silty Sand

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See sketch attached to Fig. (2-5).

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

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

GW-1 Revised 11/84

Doc. No: CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

[redacted]

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

DRILLING CONTRACTOR: Davis Drilling Co.
DRILLER REGISTRATION NUMBER: Pending
STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135-WM-0141

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville, N.C. County: Onslow
(Road, Community, or Subdivision and Lot No.)
2. OWNER: US Navy
ADDRESS: Camp LeJeune N.C. 28542
(Street or Route No.) City or Town State Zip Code
3. DATE DRILLED: 11/18/86 USE OF WELL: monitor
4. TOTAL DEPTH: 25' CUTTINGS COLLECTED: ☑ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☐ No
6. STATIC WATER LEVEL: 16.25 FT. ☐ above ☑ below TOP OF CASING.
TOP OF CASING IS 2.5 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____

10. CASING:

	Depth From	To	Diameter	Wall Thickness or Weight/Ft.	Material
	+2.5	-5.0	2"	1/8"	PVC

11. GROUT:

	Depth From	To	Material	Method
	0.0	-2.0	concrete	
	-2.0	-3.0	Clay	

12. SCREEN:

	Depth From	To	Diameter	Slot Size	Material
	-5.0	-25'	2"	0.01 in.	PVC

13. GRAVEL PACK:

	Depth From	To	Size	Material
	-3.0	-25	Coarse	Sand

14. REMARKS:

DRILLING LOG

Depth From - To	Formation Description
0.0 - 1.5	Silty Fine Sand
1.5 - 6.0	Silty Clayey Fine Sand
6.0 - 9.0	Clay
9.0 - 10.5	ultra Fine Sand
14.0 - 15.5	Silty Fine Sand
19.0 - 20.5	Silty Sandy Clay
24.0 - 24.8	Clay
24.8 - 25.5	Sandy Clay

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See Sketch attached to Fig. (2-5).

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

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

GW-1 Revised 11/84

Doc No: CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR: Davis Drilling Co.
DRILLER REGISTRATION NUMBER: Pending

STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135-WM-0141

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville, N.C.
(Road, Community, or Subdivision and Lot No.)
County:

2. OWNER: US Navy
ADDRESS: Camp Lejeune NC 28542
(Street or Route No.) City or Town State Zip Code

3. DATE DRILLED: 11/18/86 USE OF WELL: monitor
4. TOTAL DEPTH: 25' CUTTINGS COLLECTED: ☑ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☑ No
6. STATIC WATER LEVEL: 14.33 FT. ☐ above ☑ below TOP OF CASING,
TOP OF CASING IS 2.50 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____
10. CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	+2.5	-5.0	2"	1/8"	PVC

11. GROUT:

	Depth From	Depth To	Material	Method
	0.0	-2.0	Cement	
	-2.0	-3.0	Clay	

12. SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	-5.0	-25'	2"	0.01 in.	PVC

13. GRAVEL PACK:

	Depth From	Depth To	Size	Material
	-3.0	-25'	Coarse	Sand

14. REMARKS:

DRILLING LOG

Depth From	Depth To	Formation Description
0.0	3.9	Silty Fine Sand
3.9	5.5	Ultra Fine Sand
5.5	9.0	Silty Clayey Fine Sand
9.0	10.5	Very Silty Ultra Fine Sand
14.0	15.5	Very Silty Ultra Fine Sand
19.0	20.5	Silty Fine-Med. Sand
24.0	25.5	Silty Clayey Med. Sand

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See fig. (2-5)

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

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

GW-1 Revised 11/84

Doc No: CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR: Davis Drilling Co.
DRILLER REGISTRATION NUMBER: Pending
STATE WELL CONSTRUCTION PERMIT NUMBER: 06-035-WM-0141

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville, N.C. County: Onslow
(Road, Community, or Subdivision and Lot No.)

2. OWNER: US Navy
ADDRESS: Camp Lejeune (Street or Route No.)
City or Town: 28542 State: Zip Code:

3. DATE DRILLED: 11/6/86 USE OF WELL: monitor
4. TOTAL DEPTH: 25.5 CUTTINGS COLLECTED: ☑ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☑ No
6. STATIC WATER LEVEL: 13.33 FT. ☐ above ☑ below TOP OF CASING.
TOP OF CASING IS 2.5 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____

10. CASING:

From	To	Ft.	Diameter	Wall Thickness or Weight/Ft.	Material
+2.5	-5.0		2"	1/8"	PVC

11. GROUT:

From	To	Ft.	Material	Method
0.0	-2.0		Concrete	
-2.0	-3.0		Clay	

12. SCREEN:

From	To	Ft.	Diameter	Slot Size	Material
-5.0	-25		2"	0.01 in.	PVC

13. GRAVEL PACK:

From	To	Ft.	Size	Material
-3.0	-25		Coarse	Sand

14. REMARKS: _____

Depth From	Depth To	Formation Description
0.0	4.5	Silty Fine Sand
4.5	6.0	Fine Sandy Clay
6.0	9.0	Fine Sand
9.0	10.5	Silty Clayey Fine Sand
14.0	15.5	Peat
19.0	20.5	Silty Fine Sand
24.0	25.5	Fine Sand

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See Fig (2-5)

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 11/84

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

Doc. No: CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

[redacted]

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

DRILLING CONTRACTOR: Davis Drilling Co.
DRILLER REGISTRATION NUMBER: Pending

STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135-WM-0171

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville, N.C. County: Onslow
(Road, Community, or Subdivision and Lot No.)

2. OWNER: US Navy
ADDRESS: Camp LeJeune N.C. 28542
(Street or Route No.) City or Town State Zip Code

3. DATE DRILLED: 11/6/86 USE OF WELL: monitor
4. TOTAL DEPTH: 25.5' CUTTINGS COLLECTED: ☑ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☑ No
6. STATIC WATER LEVEL: 15.63 FT. ☐ above ☑ below TOP OF CASING.
TOP OF CASING IS 2.50 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____

10. CASING:

	Depth From	Depth To	Ft.	Diameter	Wall Thickness or Weight/Ft.	Material
	+2.5	-5.0		2"	1/2"	PVC

11. GROUT:

	Depth From	Depth To	Ft.	Material	Method
	0.0	-2.0		Concrete	
	-2.0	-3.0		Clay	

12. SCREEN:

	Depth From	Depth To	Ft.	Diameter	Slot Size	Material
	-5.0	-25'		2" in.	0.01 in.	PVC
				in.	in.	
				in.	in.	

13. GRAVEL PACK:

	Depth From	Depth To	Ft.	Size	Material
	-3.0	-25'		Coarse	Sand

14. REMARKS: _____

DRILLING LOG

Depth From	Depth To	Formation Description
0.0	10.5	Silty Fine Sand
14.0	15.5	Clayey Fine Sand
19.0	20.5	Fine Sand
24.0	25.5	Clayey Fine Sand

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See sketch attached to Fig. (2-5).

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 11/84

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

Doc No: CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

[redacted]

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

DRILLING CONTRACTOR: Davis Drilling Co.
DRILLER REGISTRATION NUMBER: Pending

STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135-WM-0141

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville, N.C. County: Onslow
(Road, Community, or Subdivision and Lot No.)
2. OWNER: US Navy
ADDRESS: Camp Lejeune NC 28542
(Street or Route No.) City or Town State Zip Code
3. DATE DRILLED: 11/6/86 USE OF WELL: monitor
4. TOTAL DEPTH: 25.5' CUTTINGS COLLECTED: ☑ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☑ No
6. STATIC WATER LEVEL: 12.50 FT. ☐ above ☑ below TOP OF CASING.
TOP OF CASING IS 2.50 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____
10. CASING:

	Depth From	To	Diameter	Wall Thickness or Weight/Ft.	Material
	+2.5	-5.0	2"	1/8"	PVC

11. GROUT:

	Depth From	To	Material	Method
	0.0	-2.0	Concrete	
	-2.0	-3.0	Clay	

12. SCREEN:

	Depth From	To	Diameter	Slot Size	Material
	-5.0	-25'	2"	0.01 in.	PVC

13. GRAVEL PACK:

	Depth From	To	Size	Material
	-3.0	-25'	Coarse	Sand

14. REMARKS: _____

DRILLING LOG

Depth From	To	Formation Description
0.0	1.5	Silty Fine Sand
1.5	3.0	Silty Fine Sand
3.0	4.5	Silty Fine Sand and Sandy Clay
4.5	6.0	Silty Clayey Fine Sand
6.0	10.5	Silty Fine Sand
14.0	15.5	Peat
19.0	20.5	Silty Fine Sand
24.0	25.5	Silty Fine Sand

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See Fig. (2-5)

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 11/84

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

DGC. NO'. CLEJ-00256-1.02 - 05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

[redacted]

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

DRILLING CONTRACTOR Davis Drilling Co.

DRILLER REGISTRATION NUMBER Pending

STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135-WM-0141

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: Jacksonville, N.C. County: Onslow
   (Road, Community, or Subdivision and Lot No.)
2. OWNER US Navy
   ADDRESS Camp LeJeune N.C. 28542
   (Street or Route No.) City or Town State Zip Code
3. DATE DRILLED 11/18/86 USE OF WELL monitor
4. TOTAL DEPTH 25.5' CUTTINGS COLLECTED ☒ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 13.57 FT. ☐ above ☒ below TOP OF CASING.
   TOP OF CASING IS 2.50 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____
10. CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	+2.5	-5.0	2"	1/8"	PVC

11. GROUT:

	Depth From	Depth To	Material	Method
	0.0	-2.0	Concrete	
	-2.0	-3.0	Clay	

12. SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	-5.0	-25.0	2"	0.01	PVC

13. GRAVEL PACK:

	Depth From	Depth To	Size	Material
	-3.0	-25'	Coarse	Sand

14. REMARKS: _____

Depth From - To	DRILLING LOG Formation Description
0.0 - 3.0	Silty Fine Sand
3.0 - 4.5	Silty Clayey Fine Sand
4.5 - 10.5	Silty Fine Sand
14.0 - 15.5	Silty Fine Sand
19.0 - 20.5	Silty Fine Sand
24.0 - 25.5	Clayey Fine-Med. Sand

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See Fig (2-5)

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 11/84

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

Doc No: CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

[redacted]

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

DRILLING CONTRACTOR: Davis Drilling Co.

DRILLER REGISTRATION NUMBER: Pending

STATE WELL CONSTRUCTION PERMIT NUMBER: 66-035-WM-0141

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: Jacksonville, N.C
   (Road, Community, or Subdivision and Lot No.)
   County:
2. OWNER: US Navy
   ADDRESS: Camp LeJeune N.C. 28542
   (Street or Route No.) City or Town State Zip Code
3. DATE DRILLED: 11/18/86 USE OF WELL: monitor
4. TOTAL DEPTH: 25.5' CUTTINGS COLLECTED: ☑ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☑ No
6. STATIC WATER LEVEL: 11.70 FT. ☐ above ☑ below TOP OF CASING.
   TOP OF CASING IS 2.50 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth):
9. CHLORINATION: Type _____ Amount _____
10. CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	+2.5	-5.0	2"	1/8"	PVC

11. GROUT:

	Depth From	Depth To	Material	Method
	0.0	-2.0	Concrete	
	-2.0	-3.0	Clay	

12. SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	-5.0	-25'	2"	0.01 in.	PVC

13. GRAVEL PACK:

	Depth From	Depth To	Size	Material
	-3.0	-25'	Coarse	Sand

14. REMARKS:

DRILLING LOG

Depth From - To	Formation Description
0.0 - 1.5	Silty Clayey Fine Sand
1.5 - 9.0	Silty Fine Sand
9.0 - 10.5	Silty Clayey Sand
14.0 - 15.5	Silty Fine-Med. Sand
19.0 - 20.5	Med - Coarse Sand
24.0 - 25.5	Silty Clayey Med. Sand

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See Fig. (2-5)

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 11/84

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

DOC NO: CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

[redacted]

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

DRILLING CONTRACTOR Davis Drilling Co.
DRILLER REGISTRATION NUMBER Pending

STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135-wm-0141

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville N.C. County: Onslow
(Road, Community, or Subdivision and Lot No.)

2. OWNER US Navy
ADDRESS Camp LeJeune N.C. 28542
(Street or Route No.) City or Town State Zip Code

3. DATE DRILLED 11/17/86 USE OF WELL monitor
4. TOTAL DEPTH 25.5' CUTTINGS COLLECTED ☑ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☑ No
6. STATIC WATER LEVEL: 12.00 FT. ☐ above ☑ below TOP OF CASING,
TOP OF CASING IS 2.50 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____
10. CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	12.5	-5.0	2"	1/8"	PVC

11. GROUT:

	Depth From	Depth To	Material	Method
	0.0	-2.0	Concrete	
	-2.0	-3.0	Clay	

12. SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	-5.0	-25'	2"	0.01	PVC

13. GRAVEL PACK:

	Depth From	Depth To	Size	Material
	-3.0	-25'	Coarse	Sand

14. REMARKS:

Depth From	Depth To	DRILLING LOG Formation Description
0.0	3.0	Silty Fine Sand
3.0	4.5	Silty Fine Sandy Clay
4.5	6.0	Silty Sandy Clay
6.0	10.5	Silty Clay
14.0	15.5	Silty Med. Sand
19.0	20.5	Silty Med. Sand
24.0	25.5	Med. Sand

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See Fig. (2-5)

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 11/84

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

DOC NO: CLEJ-06258-1.02 - 05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

[redacted]

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

DRILLING CONTRACTOR Davis Drilling Co.
DRILLER REGISTRATION NUMBER Pending

STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135-WM-0141

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville, N.C.
(Road, Community, or Subdivision and Lot No.)

County:

2. OWNER US Navy
ADDRESS Camp LeJeune NC
(Street or Route No.)
28542
City or Town State Zip Code

3. DATE DRILLED 11/5/86 USE OF WELL Monitor
4. TOTAL DEPTH 25.5' CUTTINGS COLLECTED ☑ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☑ No
6. STATIC WATER LEVEL: 10.81 FT. ☐ above ☑ below TOP OF CASING.
TOP OF CASING IS 2.50 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____

Depth From	To	DRILLING LOG Formation Description
0.0	1.5	Sandy Fill
1.5	3.0	Fine Sand - Silt
3.0	4.5	Fine Sandy Silty Clay
4.5	6.0	Fine Sand
6.0	7.5	Silty Fine Sand
7.5	9.0	Clayey Fine Sand
9.0	10.5	Fine Sandy Clay
14.0	15.5	Peat
19.0	20.5	Silty Fine Sand
24.0	25.5	Clayey Sand

If additional space is needed use back of form.

10. CASING:

	Depth From	To	Diameter	Wall Thickness or Weight/Ft.	Material
	+2.5	-5.0	2"	1/8"	PVC

11. GROUT:

	Depth From	To	Material	Method
	0.0	-2.0	Concrete	
	-2.0	-3.0	Clay	

12. SCREEN:

	Depth From	To	Diameter	Slot Size	Material
	-5.0	-25'	2"	0.01 in.	PVC

13. GRAVEL PACK:

	Depth From	To	Size	Material
	-3.0	-25'	Coarse	Sand

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See Fig. (2-5)

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 11/84

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

Doc NO: CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

[redacted] 15

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

DRILLING CONTRACTOR: Davis Drilling Co.
DRILLER REGISTRATION NUMBER: Pending

STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135 - WM - 0141

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville, N.C. County: Onslow
(Road, Community, or Subdivision and Lot No.)

2. OWNER: US Navy
ADDRESS: Camp Lejeune N.C. 28542
(Street or Route No.) City or Town State Zip Code

3. DATE DRILLED: 10/6/86 USE OF WELL: Monitor
4. TOTAL DEPTH: 25.5' CUTTINGS COLLECTED: ☑ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☑ No
6. STATIC WATER LEVEL: 12.21 FT. ☐ above ☑ below TOP OF CASING,
TOP OF CASING IS 0.00 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____
10. CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	0.0	-5.0	2"	1/8"	PVC

11. GROUT:

	Depth From	Depth To	Material	Method
	0.0	-2.0	Concrete	
	-2.0	-3.0	Clay	

12. SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	-5.0	-25'	2"	0.01 in.	PVC

13. GRAVEL PACK:

	Depth From	Depth To	Size	Material
	-3.0	-25'	Coarse	Sand

14. REMARKS: _____

Depth From	Depth To	DRILLING LOG Formation Description
0.0	1.9	Road Fill
1.9	4.5	Silty Fine Sand
4.5	6.0	Silty Clayey Sand
6.0	70.5	Silty Fine Sand
14.0	15.5	Ultra Fine Sand
19.0	20.5	Silty Fine-Med. Sand
24.0	25.5	Medium - Coarse Sand

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See Fig. (2-5)

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 11/84

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

DOC NO! CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

FIGURE 16.

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

DRILLING CONTRACTOR Davis Drilling Co.

DRILLER REGISTRATION NUMBER Pending

STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135-WM-0141

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville, N.C. County: Onslow
(Road, Community, or Subdivision and Lot No.)

2. OWNER US Navy
ADDRESS Camp LeJeune NC
(Street or Route No.) 28542
City or Town State Zip Code

3. DATE DRILLED 11/19/86 USE OF WELL Monitor

4. TOTAL DEPTH 25.5' CUTTINGS COLLECTED ☒ Yes ☐ No

5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No

6. STATIC WATER LEVEL: 12.04 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 2.5 FT. ABOVE LAND SURFACE

7. YIELD (gpm): _____ METHOD OF TEST _____

8. WATER ZONES (depth): _____

9. CHLORINATION: Type _____ Amount _____

10. CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	+2.5	-5.0	2"	1/8"	PVC

11. GROUT:

	Depth From	Depth To	Material	Method
	0.0	-2.0	Concrete	
	-2.0	-3.0	Clay	

12. SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	-5.0	-25'	2"	0.01 in.	PVC
			in.	in.	
			in.	in.	

13. GRAVEL PACK:

	Depth From	Depth To	Size	Material
	-3.0	-25'	Coarse	Sand

14. REMARKS: _____

DRILLING LOG

Depth From - To	Formation Description
0.0 - 1.5	Silty Fine Sand
1.5 - 3.0	Silty Sandy Clay
3.0 - 4.5	Silty Clayey Fine Sand
4.5 - 6.0	Silty Fine Sand
6.0 - 7.5	50% layers of Silty Fine and Silty U. Fine Sand
7.5 - 10.5	Silty ultra Fine Sand.
14.0 - 15.5	Silty Fine Sand
19.0 - 20.5	Silty Fine-Med Sand, Clay
24.0 - 25.5	Silty Clayey Fine - med. Sand.

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See Fig. (2-5)

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 11/84

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

DOC NO: CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

DRILLING CONTRACTOR: Davis Drilling Co.
DRILLER REGISTRATION NUMBER: Pending
STATE WELL CONSTRUCTION PERMIT NUMBER: 66-035-WM-0141

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville, N.C. County: Onslow
(Road, Community, or Subdivision and Lot No.)

2. OWNER: US Navy
ADDRESS: Camp LeJeune NC 28542
(Street or Route No.) City or Town State Zip Code

3. DATE DRILLED: 11/6/86 USE OF WELL: monitor
4. TOTAL DEPTH: 25.5' CUTTINGS COLLECTED: ☑ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☑ No
6. STATIC WATER LEVEL: 11.08 FT. ☐ above ☑ below TOP OF CASING.
TOP OF CASING IS 2.50 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____

10. CASING:

Depth From	To	Diameter	Wall Thickness or Weight/Ft.	Material
+2.5	-5.0 Ft.	2"	1/8"	PVC

11. GROUT:

Depth From	To	Material	Method
0.0	-2.0 Ft.	Concrete	
-2.0	-3.0 Ft.	Clay	

12. SCREEN:

Depth From	To	Diameter	Slot Size	Material
-5.0	-25' Ft.	2" in.	0.01 in.	PVC

13. GRAVEL PACK:

Depth From	To	Size	Material
-3.0	-25' Ft.	Coarse	Sand

14. REMARKS:

DRILLING LOG

Depth From	To	Formation Description
0.0	1.5	Silty Fine Sand
1.5	4.5	Silty Clayey Fine Sand
4.5	6.0	Ultra Fine Sand
6.0	9.0	Silty Fine Sand
9.0	10.5	Silty Sandy Clay
14.0	15.5	Silty Clayey Sand
19.0	20.5	Silty Fine-Med. Sand
24.0	25.5	Silty Med. Sand

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See Fig. (2-5)

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

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

GW-1 Revised 11/84

DOC NO: CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Davis Drilling Co.
DRILLER REGISTRATION NUMBER Pending
STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135-WM-01-11

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville, NC County: Onslow
(Road, Community, or Subdivision and Lot No.)
2. OWNER US Navy
ADDRESS Camp LeJeune NC 28542
(Street or Route No.) City or Town State Zip Code
3. DATE DRILLED 11/19/86 USE OF WELL Monitor
4. TOTAL DEPTH 25.5' CUTTINGS COLLECTED ☑ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☑ No
6. STATIC WATER LEVEL: 11.00 FT. ☐ above ☑ below TOP OF CASING,
TOP OF CASING IS 0.00 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____

DRILLING LOG

Depth From	To	Formation Description
0.0	1.5	Road Fill
1.5	3.0	Silty Clayey Sand
3.0	4.5	Silty Fine Sand
4.5	6.0	Silty Clayey Fine Sand
6.0	7.5	50% layers of Silty Fine Sand and Sandy Clay
7.5	9.0	Silty Fine Sandy Clay
9.0	10.5	Silty Clayey Fine-Med Sand
14.0	15.5	Silty Fine-Med. Sand
19.0	20.5	Fine-Med Sand
24.0	25.5	Fine-Med Sand

If additional space is needed use back of form.

10. CASING:

	Depth From	To	Diameter	Wall Thickness or Weight/Ft.	Material
	0.0	5.0 Ft.	2"	1/8"	PVC
		Ft.			
		Ft.			

11. GROUT:

	Depth From	To	Material	Method
	0.0	2.0 Ft.	Concrete	
	2.0	3.0 Ft.	Clay	

12. SCREEN:

	Depth From	To	Diameter	Slot Size	Material
	5.0	25' Ft.	2" in.	0.01 in.	PVC
		Ft.	in.	in.	
		Ft.	in.	in.	

13. GRAVEL PACK:

	Depth From	To	Size	Material
	3.0	25' Ft.	Coarse	Sand
		Ft.		

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See Fig. (2-5)

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

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

GW-1 Revised 11/84

Doc No: CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

DRILLING CONTRACTOR: Davis Drilling Co.
DRILLER REGISTRATION NUMBER: Pending
STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135-WM-0141

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville N.C. County: Onslow
(Road, Community, or Subdivision and Lot No.)
2. OWNER: US Navy
ADDRESS: Camp LeJeune (Street or Route No.) NC (City or Town) 28542 (State) (Zip Code)
3. DATE DRILLED: 11/6/86 USE OF WELL: monitor
4. TOTAL DEPTH: 25.5 CUTTINGS COLLECTED: ☑ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☑ No
6. STATIC WATER LEVEL: 9.08 FT. ☐ above ☑ below TOP OF CASING,
TOP OF CASING IS 2.50 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____
10. CASING:

Depth From	To	Diameter	Wall Thickness or Weight/Ft.	Material
+2.5	-5.0	2"	1/8"	PVC

11. GROUT:

Depth From	To	Material	Method
0.0	-2.0	Concrete	
-2.0	-3.0	Clay	

12. SCREEN:

Depth From	To	Diameter	Slot Size	Material
-5.0	-25'	2"	0.01 in.	PVC

13. GRAVEL PACK:

Depth From	To	Size	Material
-3.0	-25'	Coarse	Sand

14. REMARKS:

DRILLING LOG

Depth From - To	Formation Description
0.0 - 3.0	Silty Fine Sand
3.0 - 9.0	Silty Sandy Clay
9.0 - 10.5	Silty Clay
14.0 - 15.5	Silty Clayey Mud Sand
19.0 - 20.5	Clay
24.0 - 25.5	Organic Clay

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See Fig. (2-5)

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 11/84

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

Doc NO: CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Davis Drilling Co.
DRILLER REGISTRATION NUMBER Pending

STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135-WM-0141

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville, N.C. County: Onslow
(Road, Community, or Subdivision and Lot No.)

2. OWNER US Navy
ADDRESS Camp LeJeune NC 28542
(Street or Route No.) City or Town State Zip Code

3. DATE DRILLED 11/6/86 USE OF WELL Monitor
4. TOTAL DEPTH 25.5' CUTTINGS COLLECTED ☑ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☑ No
6. STATIC WATER LEVEL: 8.17 FT. ☐ above ☑ below TOP OF CASING,
TOP OF CASING IS 2.50 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____

DRILLING LOG

Depth From	Depth To	Formation Description
0.0	3.0	Clay
3.0	4.5	Silty Clayey Sand
4.5	6.0	Clay
6.0	10.5	Silty Clayey Sand
14.0	15.5	Clay
19.0	20.5	Silty Clayey Sand
24.0	25.5	Silty Med Sand

If additional space is needed use back of form.

10. CASING:

From	To	Ft.	Diameter	Wall Thickness or Weight/Ft.	Material
+2.5	-5.0		2"	40	PVC

11. GROUT:

From	To	Ft.	Material	Method
0.0	-2.0		Concrete	
-2.0	-3.0		Clay	

12. SCREEN:

From	To	Ft.	Diameter	Slot Size	Material
-5.0	-25		2" in.	0.01 in.	PVC
			in.	in.	
			in.	in.	

13. GRAVEL PACK:

From	To	Ft.	Size	Material
-3.0	-25		Coarse	Sand

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See Fig. (2-5)

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 11/84

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

Doc. No: CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

[redacted]

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

DRILLING CONTRACTOR: Davis Drilling Co.
DRILLER REGISTRATION NUMBER: Pending
STATE WELL CONSTRUCTION PERMIT NUMBER: 88-0135-WM-0141

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville, NC
County: Onslow
(Road, Community, or Subdivision and Lot No.)

2. OWNER: US Navy
ADDRESS: Camp LeJeune NC 28542
(Street or Route No.) City or Town State Zip Code

3. DATE DRILLED: 11/19/86 USE OF WELL: monitor
4. TOTAL DEPTH: 25.5' CUTTINGS COLLECTED: ☑ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☑ No
6. STATIC WATER LEVEL: 9.08 FT. ☐ above ☑ below TOP OF CASING,
TOP OF CASING IS 2.50 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____

10. CASING:

Depth From	To	Ft.	Diameter	Wall Thickness or Weight/Ft.	Material
+2.5	-5.0		2"	1/8"	PVC

11. GROUT:

Depth From	To	Ft.	Material	Method
0.0	-2.0		Concrete	
-2.0	-3.0		Clay	

12. SCREEN:

Depth From	To	Ft.	Diameter	Slot Size	Material
-5.0	-25'		2" in.	0.01 in.	PVC
			in.	in.	
			in.	in.	

13. GRAVEL PACK:

Depth From	To	Ft.	Size	Material
-3.0	-25		Coarse	Sand

14. REMARKS: _____

Depth From	To	Formation Description
0.0	1.5	Cement Fill
1.5	3.0	Silty Fine Sandy Clay
3.0	4.5	Silty Clayey Fine Sand
4.5	7.5	Silty Ultra Fine Sand
7.5	10.0	Silty Fine Sandy Clay
10.0	10.5	Silty Med. Sand
14.0	15.5	Soft Clay
19.0	20.5	Fine-Med Sand
24.0	25.5	Sandy Silty Marl

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See fig. (2-5)

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

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

GW-1 Revised 11/84

Doc No: CLEJ-GG258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

[redacted]

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

DRILLING CONTRACTOR: Davis Drilling Co.
DRILLER REGISTRATION NUMBER: Pending

STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135-WM-0171

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville, NC County: Onslow
(Road, Community, or Subdivision and Lot No.)

2. OWNER: US Navy
ADDRESS: Camp LeJeune NC 28542
(Street or Route No.) City or Town State Zip Code

3. DATE DRILLED: 11/4/86 USE OF WELL: Monitor

4. TOTAL DEPTH: 25.5' CUTTINGS COLLECTED: ☒ Yes ☐ No

5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No

6. STATIC WATER LEVEL: 8.17 FT. ☐ above ☒ below TOP OF CASING.
TOP OF CASING IS 2.50 FT. ABOVE LAND SURFACE.

7. YIELD (gpm): _____ METHOD OF TEST _____

8. WATER ZONES (depth): _____

9. CHLORINATION: Type _____ Amount _____

10. CASING:

Depth From	To	Ft.	Diameter	Wall Thickness or Weight/Ft.	Material
+2.5	-5.0		2"	1/8"	PVC

11. GROUT:

Depth From	To	Ft.	Material	Method
0.0	-2.0		Concrete	
-2.0	-3.0		Clay	

12. SCREEN:

Depth From	To	Ft.	Diameter	Slot Size	Material
-5.0	-25'		2"	0.01 in.	PVC

13. GRAVEL PACK:

Depth From	To	Ft.	Size	Material
-3.0	-25'		Coarse	Sand

DRILLING LOG

Depth From	To	Formation Description
8.0	-18.5	Silty Fine Sand
14.0	-15.5	50% Silty Sandy Peat
		50% Silty Sandy Clay
19.0	-20.5	Silty Sandy Clay
24.0	-25.0	Silty Sandy Clay

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See Fig. (2-5)

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

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

GW-1 Revised 11/84

DOC NO: CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

DRILLING CONTRACTOR: Davis Drilling Co.
DRILLER REGISTRATION NUMBER: Pending
STATE WELL CONSTRUCTION PERMIT NUMBER: 86-0135-WM-0141

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville, NC
County: Onslow
(Road, Community, or Subdivision and Lot No.)

2. OWNER: US Navy
ADDRESS: Camp LeJeune NC (Street or Route No.) 28542
City or Town / State / Zip Code

3. DATE DRILLED: 11/5/86 USE OF WELL: Monitor
4. TOTAL DEPTH: 25.5' CUTTINGS COLLECTED ☑ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☑ No
6. STATIC WATER LEVEL: 11.08 FT. ☐ above ☑ below TOP OF CASING,
TOP OF CASING IS 2.50 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____

10. CASING:

Depth From	To	Ft.	Diameter	Wall Thickness or Weight/Ft.	Material
+2.5	-5.0		2"	1/8"	PVC

11. GROUT:

Depth From	To	Ft.	Material	Method
0.0	-2.0		Cement	
-2.0	-3.0		Clay	

12. SCREEN:

Depth From	To	Ft.	Diameter	Slot Size	Material
-5.0	-25'		2" in.	0.01 in.	PVC
			in.	in.	
			in.	in.	

13. GRAVEL PACK:

Depth From	To	Ft.	Size	Material
-3.0	-25'		Coarse	Sand

14. REMARKS:

DRILLING LOG

Depth From - To	Formation Description
0.0 - 4.0	Silty Fine Sand
4.0 - 6.0	Silty Peat
6.0 - 7.5	Silty Fine Sand
7.5 - 9.0	Silty Clayey Fine Sand
9.0 - 10.5	Silty Fine Sand
14.0 - 15.5	Silty Clayey Fine Sand
19.0 - 20.5	Silty Clayey Fine Sand
24.0 - 25.5	Silty Fine - Med Sand

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See Frq. (2-5)

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT / DATE

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

GW-1 Revised 11/84

Doc. No: CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

[redacted]

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

DRILLING CONTRACTOR: Davis Drilling Co.
DRILLER REGISTRATION NUMBER: Pending
STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135-WM-0141

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville NC
County: Onslow
(Road, Community, or Subdivision and Lot No.)

2. OWNER: US Navy
ADDRESS: Camp LeJeune (Street or Route No.)
City or Town: State: Zip Code: 28542

3. DATE DRILLED: 11/12/86 USE OF WELL: Monitor
4. TOTAL DEPTH: 25.5' CUTTINGS COLLECTED: ☑ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☑ No
6. STATIC WATER LEVEL: 6.83 FT. ☐ above ☑ below TOP OF CASING.
TOP OF CASING IS 2.50 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____

Depth From	Depth To	DRILLING LOG Formation Description
0.0	4.5	Silty fine sand
4.5	9.0	Silty clayey sand
9.0	10.5	Silty fine sand
14.0	15.5	Silty fine sand-clay
19.0	20.5	Silty clay
24.0	25.5	Silty sandy fine

If additional space is needed use back of form.

10. CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	-2.5	-5.0	2"	1/8"	PVC

11. GROUT:

	Depth From	Depth To	Material	Method
	0.0	-2.0	Concrete	
	-2.0	-3.0	Clay	

12. SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	-5.0	-25'	2"	0.01 in.	PVC

13. GRAVEL PACK:

	Depth From	Depth To	Size	Material
	-3.0	-25'	Coarse	Sand

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See Fig. (2-5)

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT: _____ DATE: 2/11/87

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

GW-1 Revised 11/84

Doc No: CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

DRILLING CONTRACTOR: Davis Drilling Co.
DRILLER REGISTRATION NUMBER: Pending
STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135-WM-0171

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville, N.C.
(Road, Community, or Subdivision and Lot No.)
County: Onslow

2. OWNER: US Navy
ADDRESS: Camp Lejeune (Street or Route No.) NC (City or Town) 28542 (State) (Zip Code)

3. DATE DRILLED: 11/5/86 USE OF WELL: monitor
4. TOTAL DEPTH: 25.5' CUTTINGS COLLECTED: ☒ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 9.00 FT. ☐ above ☒ below TOP OF CASING.
TOP OF CASING IS 2.50 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____

10. CASING:

From	To	Diameter	Wall Thickness or Weight/Ft.	Material
+2.5	-5.0	2"	1/8"	PVC

11. GROUT:

From	To	Material	Method
0.0	-2.0	Cement	
-2.0	-3.0	Clay	

12. SCREEN:

From	To	Diameter	Slot Size	Material
-5.0	-25'	2"	0.01 in.	PVC

13. GRAVEL PACK:

From	To	Size	Material
-3.0	-25'	Coarse	Sand

14. REMARKS: _____

Depth From	To	DRILLING LOG Formation Description
0.0	7.0	Silty Fine Sand
7.0	9.0	Silty Clay
9.0	10.5	Silty Clayey Med. Sand
14.0	15.5	Silty Sandy Clay
19.0	20.5	Med. Sand
24.0	25.5	Silty Med-Coarse Sand

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See Fig. (2-5)

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT _____ DATE _____

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

GW-1 Revised 11/84

Doc No: CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

[redacted]

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

DRILLING CONTRACTOR: Davis Drilling Co.
DRILLER REGISTRATION NUMBER: Pending
STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135-WM-0141

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville N.C. County: Onslow
(Road, Community, or Subdivision and Lot No.)
2. OWNER: US Navy
ADDRESS: Camp LeJeune N.C. 28542
(Street or Route No.) City or Town State Zip Code
3. DATE DRILLED: 11/5/86 USE OF WELL: Monitor
4. TOTAL DEPTH: 25.5' CUTTINGS COLLECTED: ☒ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 17.96 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 2.5 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____

Depth From	To	DRILLING LOG (Formation Description)
0.0	7.5	Silty Fine Sand
7.5	9.0	Silty Fine-Med. Sand
9.0	10.5	Silty Fine Sand
14.0	15.5	Soft Clay
19.0	20.5	Silty Clay
24.0	25.5	Med.-Coarse Sand

If additional space is needed use back of form.

10. CASING:

Depth From	To	Diameter	Wall Thickness or Weight/Ft.	Material
+2.5	-5.0 Ft.	2"	1/8"	PVC
	Ft.			
	Ft.			

11. GROUT:

Depth From	To	Material	Method
0.0	-2.0 Ft.	Cement	
-2.0	-3.0 Ft.	Clay	

12. SCREEN:

Depth From	To	Diameter	Slot Size	Material
-5.0	-25' Ft.	2" in.	0.02 in.	PVC
	Ft.	in.	in.	
	Ft.	in.	in.	

13. GRAVEL PACK:

Depth From	To	Size	Material
-3.0	-25' Ft.	Coarse	Sand
	Ft.		

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See Fig. (2-5)

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

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

GW-1 Revised 11/84

Dee NO1 CLEJ-00258-1.02-05/01/88

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

[redacted]

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY	
Quad. No.	Serial No.
Lat.	Long. / Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

DRILLING CONTRACTOR: Davis Drilling Co
DRILLER REGISTRATION NUMBER: Pending
STATE WELL CONSTRUCTION PERMIT NUMBER: 66-0135-WM-0141

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Jacksonville, NC
County: Onslow
(Road, Community, or Subdivision and Lot No.)

2. OWNER: US Navy
ADDRESS: Camp LeJeune NC 28542
(Street or Route No.) City or Town State Zip Code

3. DATE DRILLED: 11/17/86 USE OF WELL: monitor
4. TOTAL DEPTH: 25.5' CUTTINGS COLLECTED: ☒ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 19.80 FT. ☐ above ☒ below TOP OF CASING.
TOP OF CASING IS 2.50 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____

10. CASING:

From	To	Diameter	Wall Thickness or Weight/Ft.	Material
+2.5	-5.0	2"	1/8"	PVC

11. GROUT:

From	To	Material	Method
0.0	-2.0	Concrete	
-2.0	-3.0	Clay	

12. SCREEN:

From	To	Diameter	Slot Size	Material
-5.0	-25'	2"	0.01 in.	PVC

13. GRAVEL PACK:

From	To	Size	Material
-3.0	-25	Coarse	Sand

14. REMARKS: _____

DRILLING LOG

Depth From - To	Formation Description
0.0 - 2.25	Silty Fine Sand
2.25 - 3.0	Silty Clay
3.0 - 6.5	Silty Clayey Fine Sand
6.5 - 10.5	Silty Fine Sand
14.0 - 15.5	Silty Fine Sand
19.0 - 20.5	Silty Clayey Sand
24.0 - 25.5	Silty Fine - Med. Sand

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

See sketch attached to Fig. (2-5)

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

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

GW-1 Revised 11/84

Soil samples for lithological interpretation were obtained using a split-spoon sampler during drilling. Each well was constructed using 2-inch inside-diameter (ID) Schedule 40 polyvinyl chloride (PVC) flush-threaded well screen and casing. All shallow monitor wells were installed to a depth of approximately 25 feet (ft) below land surface. Screen lengths of 20 ft (0.010-inch slot size) were used for each well. Filter sand (20- to 30-mesh silica sand) was installed with a tremie pipe around the well screen to a point approximately 2 ft above the top of the screen. In many of the wells, the shallow groundwater was within a few feet of the land surface. In these cases, the amount of filter sand above the top of the screen was less than the planned design. This allowed placement of the screen at or near the shallow groundwater surface to allow for capture of any potential contaminants whose density was less than that of water. The planned monitor well design called for the emplacement of a 5-ft bentonite seal (using bentonite pellets) on top of the filter pack materials. As discussed for the filter pack material, the closeness of the land surface to the shallow groundwater did not allow 5 ft of bentonite to be installed; the actual thickness was typically 1 ft. Bentonite-cement grout was placed on top of the bentonite seal and extended to the land surface. A 4-inch steel protective casing, with a locking cap, was placed into the grout. A concrete pad with three protective posts was installed at each monitor well location. Each well was clearly marked with a sign designating the well as a nonpotable well for groundwater monitoring purposes only.

After installation of each monitor well, the wells were developed by pumping or hand bailing, as appropriate. Development continued until the water was as clear and sediment free as practicable.

Each monitor well was surveyed for vertical control to a precision of at least 0.10 ft. This vertical control was established on a relative

basis; the elevation of each well within a group of monitor wells located at specific study sites within HPIA was established relative to all of the other wells in the group, rather than to mean sea level.

DOC NO: CLEJ-00258-1.02-05/01/88

Hole Size 5 ⅝" Slot 0.01 E HPGW 9-2

Screen Size 2" Mat'l PVC Filter Materials Med. Sand

asing Size Mat'l PVC Grout Type Portland #1

G logist David Brentlinger Development Cent. Pump

Date Start 6/29/87 Finish 6/29 Static Water Level ~~15.90' TOC~~ 13.65

Contractor ATEC Top of Well Elevation 2.25'

Driller Sweeting 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		

Hole Size 5" Slot 0.01" E HP6W 9-2

Screen Size 2" Mat'l PVC Filter Materials

asing Size 2" Mat'l PVC Grout Type Portland #1

Geologist David Brentlinger Development

Date 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)		

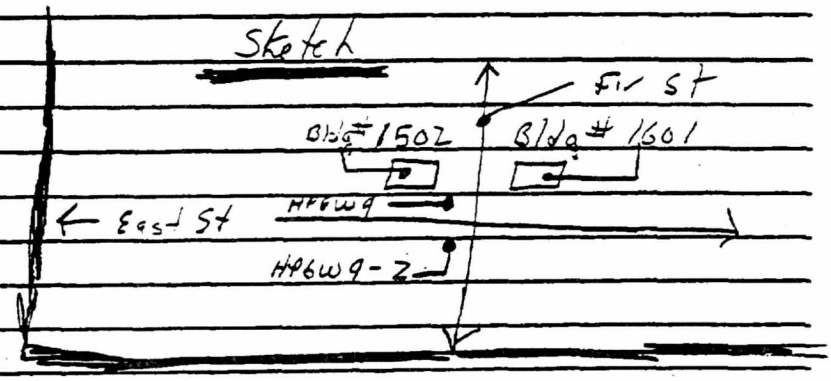
ATEC

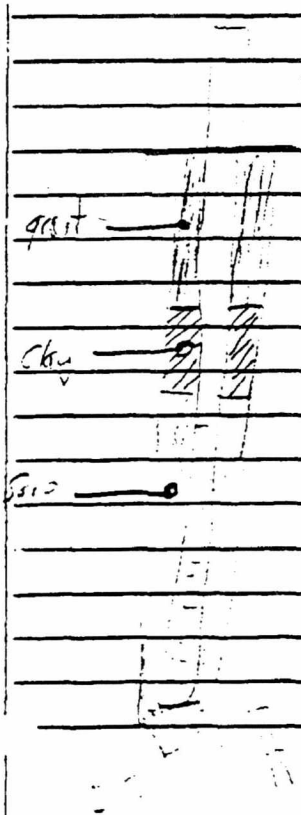
Boring No. HP6W 9-2 SHEET ____ OF ____

On site 0800 Drillers arrive 0815
set up and drilling 0900, drill
rods more [illegible] and run out of gas
at 0930, at 1020 drillers goes to get water
returns 1100 and Resumes drilling! At 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, grout and complete 1715; drillers
clean up - 1730.

6/30/87 0800 14.58' TOC
stick-up ~ 2.50'
static ~ 12.33' BGL
Elev ~ 70.00' TOC

Sketch





DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Doc. No: CLEJ-00258-1.02-05/01/88

WELL FACT SHEET

Well No. HPGW 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 ~~1600~~ 0800 Finish 7/1 ~~1600~~ 1500

Surge Start ____ Finish ____

Pump Start 7/2/87 (0900) Finish 7/2 (~~0400~~ 1300) Volume 7/2 1200

~~55 gal~~ 80 gal Type Cent. Rate (.3-.4 gpm)

Total purged 2

Doc No: CLEJ-00258-1.02-05/01/88

Hole Size 10" (0-100) Slot 0.01 E HPGW 9-3

Screen Size 2" Mat'l PVC Filter Materials Med-Coarse Sand

asing Size 2" Mat'l PVC Grout Type #1 Portland

G-logist David Brentlinger Development [illegible]

Date Start 7/17/97 Finish 7/18 Static Water Level [illegible] 12.83

Contractor ESE Top of Well Elevation 15.0[illegible]

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		

Hole Size _____ Slot _____ E [illegible]0-3

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)
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 less sand than 50-55		
60-65			Silty Med - [illegible] with less [illegible] little cement		
65-70			Silty fine sand with some Rock - [illegible]		

Hole Size _____ Slot _____ E _____

Screen Size _____ Mat'l _____ Filter Materials _____

Casing 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)
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		

Doc No: CLEJ-00258-1.02-05/01/88

Hole Size _____ Slot _____ 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)
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 Sand. [illegible]		

DOC NO: CLEJ-00258-1.02-05/01/88

Hole Size _____ Slot _____ E [illegible]

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 _____

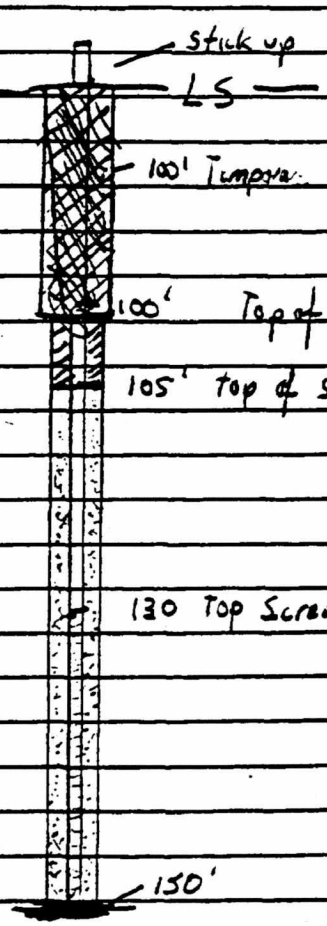
Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
135-140			Silty Fine sand and Shells, Some med-Coarse Sand.		
140-145			Silty Clayey Med. Sand with no shells		
145-150			Silty Clayey Fine-med. Sand		

Boring No. HPGW 9-3 **DAVIS** SHEET ____ OF ____

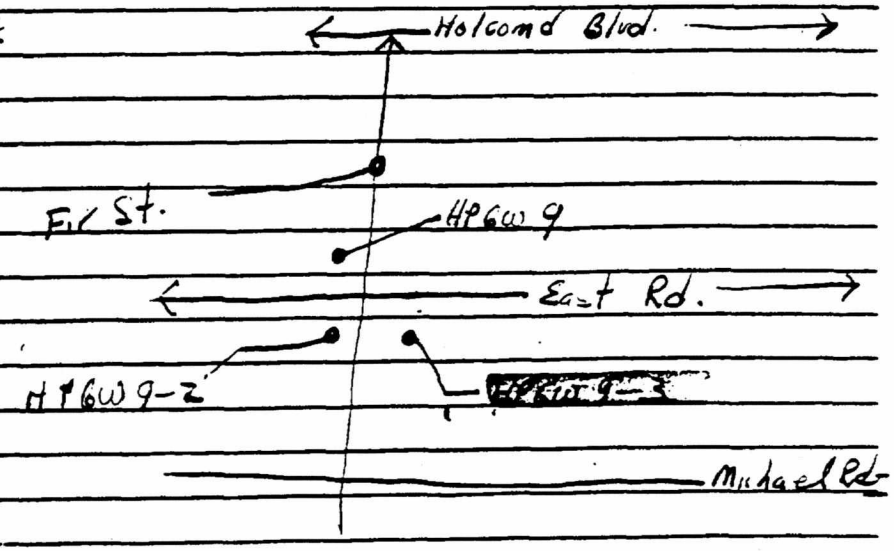
On site 7/17/87 at 1150; drillers take 1 hr to set up and begin drilling at 1300. Hole bored to 105' at 1600, driller wastes out and begins to set 6" Casing 1615. Well grouted at 1730; Driller clean-up.

7/18/87

On site HPGW 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., 1990

Materials used — (standard for 150 holes)

25 (80 pound) bags grout
12 (50 pound) bags med sand
3 bags of mud mix
1/2 bucket (5 gal) bentonite pellets

Doc No: CLEJ-00258-1.02-05/01/88

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'	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

Bailed 375 gals using 0.75 gal bailer at rate of 1 gpm

Bail Start Finish

Surge Start — Finish —

Pump Start — Finish — Volume —

Type — Rate —

Cent Pump will Not work!

DB

Hole Size 5" Slot 0.01 EHP176W-2

Screen Size 2" Mat'l PVC Filter Materials Natural formation

Casing Size 2" Mat'l PVC Grout Type Portland #1

Geologist David Brentlinger Development Bailer (PVC)

Date Start 6/18/87 Finish 6/19/87 Static Water Level 11.33' BGL

Contractor ESE Top of Well Elevation 2.67' ; 76' TOC

Driller ATEC (Don Sweeting) Drill Type Rotary - Mud

Depth (feet)	Sample	Sketch	Lithology, Color	USCS	SPT (BL/FT)
0-5			Top soil ~ organic matter with fine sand + silty clay		
5-10			same as above less organic		
10-20			silty clayey fine sand with (1-2)' of peat + organic clay dark - brown		
20-25			silty fine - med sand with less clay and organic matter		
25-30			silty clayey fine - medium sand Grey + Yellow Brown clay peds, well Rounded Coarse sand		
35-40			Same as above 25-30 more clay		
45-50			Silty fine - med sand		

Doc NO: CLEJ-00258-1.02-05/01/88

Hole Size _____ Slot _____ E HPGW 17-2

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)
50-55			Silty Clayey Med Sand with well Rounded coarse Sand grains + Pebbles		
55-60			Same as above (50-55)		
60-65			[illegible] Med. Sand [illegible] Coarse Sand + Pebbles [illegible]		
65-70			Coarse, Rounded Sand + Pebbles with Sand [illegible]		
70-75			[illegible]		
75-80			Same as above (70-75)		

DGE NO: CLEJ-00258-1.02-05/01/88

Boring No. _____ [redacted] SHEET 1 OF _____

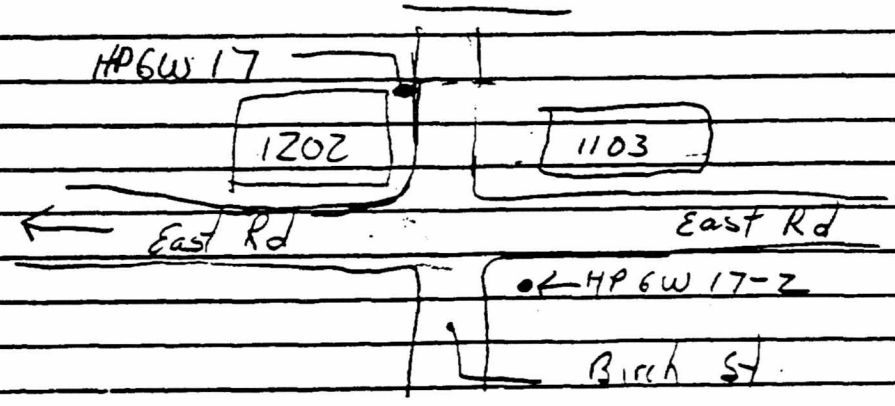
HPGW 17-2 6/18/87

on site 1230; Set up and drilling 1300. 1430 well drilled; Rods out. Driller waits for casing (for about 20 minutes) meanwhile hole badly closes, driller attempts to get casing in by force; successful in doing so and achieves depth of about 74', however hole has closed to 30' LS and sand pack is natural formation up to 30'. Hole must be Re-drilled. End of day; off Post at 1630

HPGW 17-2 6/19/87

on site 0800; drillers arrive 0930; must fix other Rig at 11; Back on site 1300; At 1350 drillers return; Attempt to inject a Bentonite slurry at 50' LS to seal the well; they are successfull and then attempt to inject a Bentonite-Cement grout from 40' to LS. they are successfull; hole is thus complete; Day Ends off post 1630.

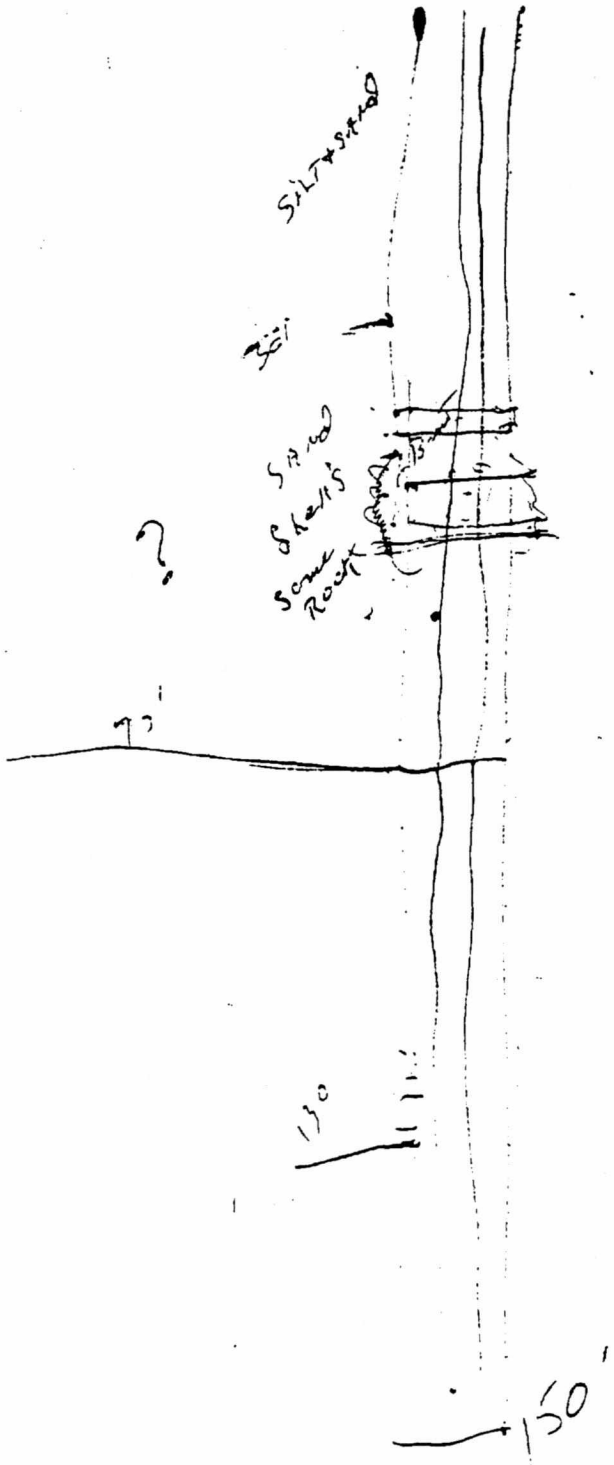
sketch



DATE _____ SIGNED _____

SOURCE: Environmental Science and Engineering, Inc., 1980

Doc No: CLEJ-00258-1.02-05/01/88



Doc No: CLEJ-00258-1.02-05/01/88

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 80.3'

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	~~73.33~~ 20.00'	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 1/2 gpm

Hole Size 6" Slot 0.01 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 [illegible]

Date Start ~~6/22/87~~ 7/16/87 Finish 7/17/87 Static Water Level 12.67

Contractor SSE Top of Well Elevation 15.17

Driller ~~HZC & Associates~~ Davis Drilling (Clayton Davis) Drill Type Rotary Mud

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 sand, Clay Clay dark brown - black		
10.0-15.0			Same as above (5-10)		
15.0-20.0			Silty fine - med sand coarse sand - [illegible] Some clay apple points Pebbles well rounded		
20.0-25.0			Silty Clayey med sand little fine coarse [illegible] organic matter 14-25'		
25.0-30.0			Silty fine sand some med.-coarse material		
30.0-35.0			Silty fine - med Sand with Clay layers [illegible]		
35.0-40.0			[illegible] light gray Clay pieces with well rounded [illegible]		

Doc No: CLEJ-00258-1.02-05/01/88

Hole Size _____ Slot _____ E HPGW 17-3

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, 5 layers semi - cemented layers		
60.0 - 65.0		Rock 64'	Cemented layers		
65.0 - 70.0		70'	cemented layers less dense after 68' lots of shells, rock		
70.0 - 75.0			Silty med. fine sand some [illegible]		

Doc NO: CLEJ-00258-1.02-05/01/88

Hole Size _____ Slot _____ E HP6W17-3

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 clays and coarse sand		

Doc NO1 CLEJ-00258-1.02-05/01/88

Hole Size _____ Slot _____ E HPGW 17-3

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)
110-115.0			Same as Above 105-110		
115.0-120.0			Cemented clastics w sand and silt; 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 found (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		

Doc NO: CLEJ-00258-1.02-05/01/88

Boring No. HP6W 17-3 ATSC 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 for 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 Flick 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
[illegible] pulling rods (sub piece are
Threaded new rods fit working) 20' of rod
[illegible] 1542; 80' remain in rod.
1630 drill rods out, driller attempts to sin
ing casing, gets down to 45' hole has -
[illegible] Driller quits 1715 [illegible] 1730.

HP6W17-3 6/25/87
Drillers arrive 0930; have to make fitting for
disc on 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., 1980

Materials used HPGW 17-3

* 15 (10') sections of Threaded PVC un used, 50' (5 sections) in hole.
* 5 bags of portland #1
* no sand
* 2-5 bags of clay for mud

materials used for HPGW 17-2

* No sand
* 2-4 bags of clay for mud
* 1 bag of bentonite for seal
* 4 bags of portland #1 for grout

materials used for HPGW 24-3

* NO sand
* 5 bags of clay for mud
* 8-10 bags of portland for grout
* $\frac{1}{3}$ bucket of Bentonite for seal

materials for HPGW 17-2

* 4 bags (100lbs) sand
* $\frac{1}{3}$ bucket bentonite for seal
* 4 bags portland #1 for grout

Doc No: CLEJ-00258-1.02-05/01/88

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. Wooder slews 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 haul 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., 1980

DOL No: CLEJ-00258-1.02-05/01/88

Boring No. HPGW 17-3 SHEET ____ OF ____

[redacted]

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.

OB

7/16/87 0700 drillers on site + drilling out hole. takes all morning to set 6" casing at 100'; Grouting casing until 1300; driller wants to stay onsite, painting of unpainted wells done remainder of day, driller goes to town and gets supplies while helpers paint.

7/17/87 On site 0700; drillers begin drilling out grout from casing; Setting 2" PVC casing 1000. Well installed 1400, grouted and complete 1130.

25' stick up

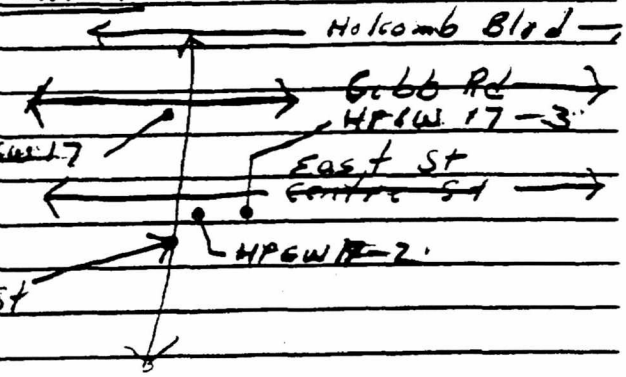
top of clay 115'

top sand pack 125'

top screen 130

150'

sketch



DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1986

DOC NO: CLEJ-00258-1.02-05/01/88

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 ±(1/4")

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 —

Hole Size 5" Slot 0.01 HPGW 24-2 E

Screen Size 2" Mat'l PVC Filter Materials Coarse Sand

Casing 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 BGL

Contractor ESE Top of Well Elevation ~~3.34~~ 3.25' stickup

Driller ATEC & Associates (Don Swelfinn) 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		

Doc No: CLEJ-00258-1.62-05/01/88

Hole Size _____ Slot _____ HPCW 24-2 E _____

Screen Size _____ Mat'l _____ Filter Materials _____

Casing 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)
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 easilly.

Boring No. HPGW24-2 [redacted] SHEET 01 OF 04

~~on-site~~ and Ready 1:45 PM 6/8/87

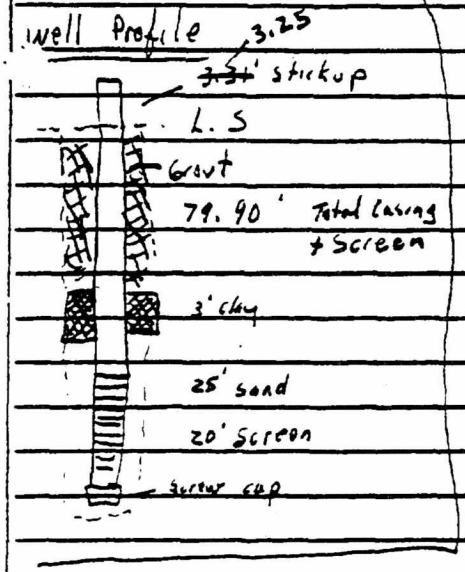
Start - 6/8/87
Finish - 6/9/87

Drilling Stops 300 PM, hole closing, mud pump breaking down

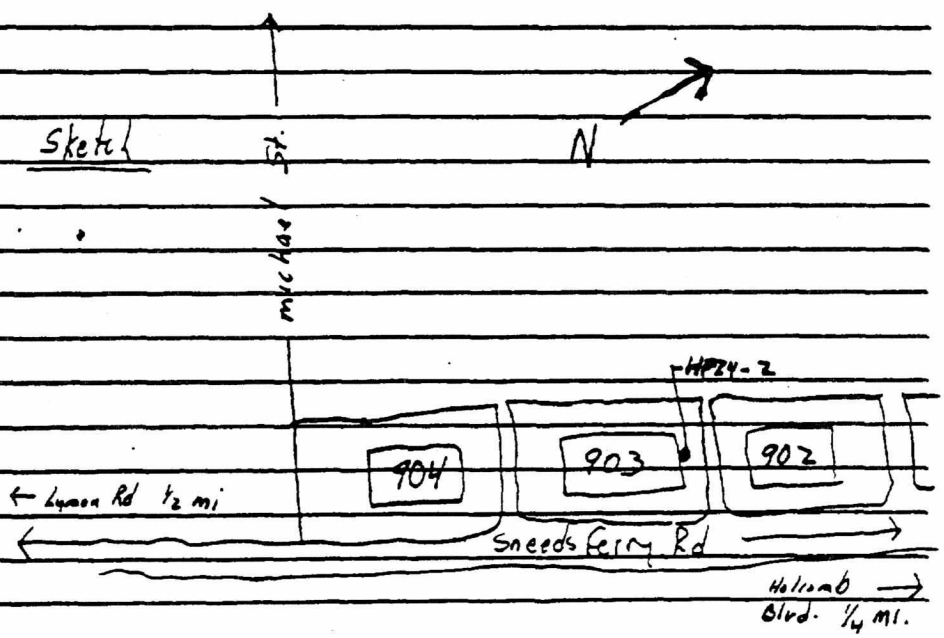
HPGW24-2
On site 700 Am 6/9/87
Well Drilling complete - 1030 lunch 1130 - 100 PM
Casing + Screen in - 1038
Well Complete - 2:30

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., 1980

DOC NO: CLEJ-00258-1.02-05/01/88

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'	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 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

Doc NO: CLEJ-00258-1.02-05/01/88

Hole Size 5" Slot 0.01 E HPCW 24-3

Screen Size 2" Mat'l PVC Filter Materials Natural formation

asing Size 2" Mat'l PVC Grout Type Portland #1

Geologist David Brentlinger Development Bailer

Date Start 6/10/87 Finish 6/18/87 Static Water Level 11.90' BGL

Contractor ESE Top of Well Elevation 1.81'; 150' TOC

Driller Don Sweeting (ATEC) 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 fine - med. sand with coarse sand + pebbles bottom 3'		
20-30			coarse sand top 5', silty clayey fine sand		
30-35			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).		

Hole Size _____ Slot _____ E HP24-3

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		Silty fine-med sand, v. little clay, coarse sand well rounded + small shells		
		68-70'	cemented clastics limestone + shells	very	Hard
70 - 75			Rock (uncemented clastics) shells and coarse sand (well rounded). fine silty sand (74-75)' with less rock and shells		
75 - 80			silty fine sand with yellow clay peds, less 10% coarse sand.		
80 - 85	Soft	Sand Rock (1'-2') Sand	fine silty sand; Rock layer (83→84)', silty fine sand		
85 - 90			silty very fine sand with small shells and rounded v. coarse sand pebbles		
90 - 95			silty med. sand with more shells and coarse sand + pebbles		
95 - 100			Same as above (90-95)		
100 - 105		100-103	silty fine sand		
		103-104	solid cemented layer		
		104-105	silty fine sand		

Doc No: CLEJ-00258-1.02-05/01/88

Hole Size _____ Slot _____ E HP6W24-3

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 - Vc 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 (gray) 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 (angular) with cemented clastics loosely filled of shells		

Doc No: CLEJ-00258-1.02-05/01/88

Hole Size _____ Slot _____ E 14P6W24-3

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		

Boring No. HPGW 24-3 [redacted] SHEET ____ OF ____

6/18/87
onsite 700 Am ; drilling begins 715
Problem
1030 Am Pump Breaks down ; hole 60'

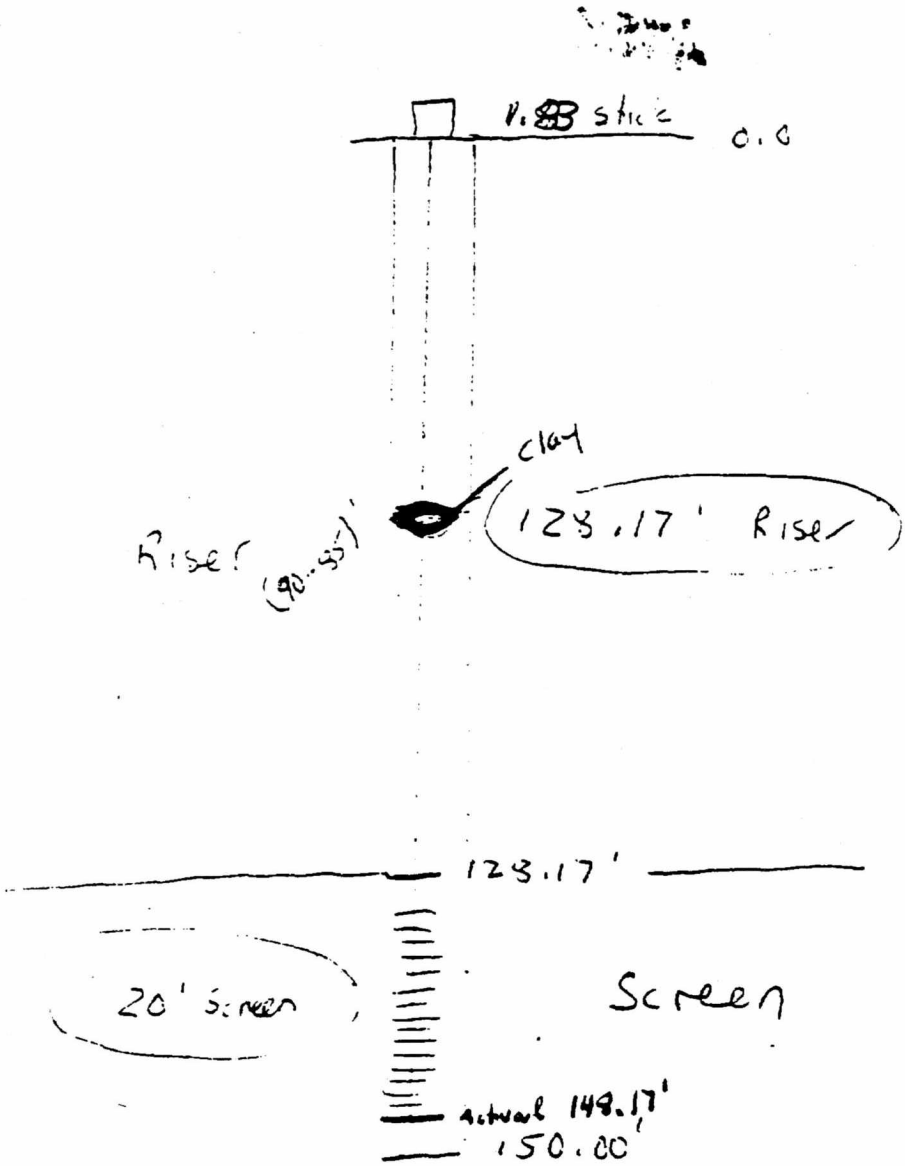
6/15/87 (HPGW 24-3)
On site 0700 Am Drillers arrive 0730
Rig set up and drilling 0815 ; (40' hole closed in) :
0930 - Rig's Rods clogged , Helper gets water
1030 - Drilling Resumes
1130 - Drill breaks down ; Mud pump broke
need new pump ; get from Raleigh
start up Tuesday ?

6/16/87 (HPGW 24-3)
On site 0830 drillers arrive
0900 begin working on rig , drilling Begins
1200 pm 1330 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
Onsite 0700 Drilling begins 0800 hole
Closed badly overnight driller trys to set the
casing but fails at 1045 . 1200 pm after 1hr break
driller sets 75' 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., 1987



148.17
Screen + Riser (BGL)

21.53
-150.00

DOC NO: CLEJ-00258-1.02-05/01/88

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	4	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 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

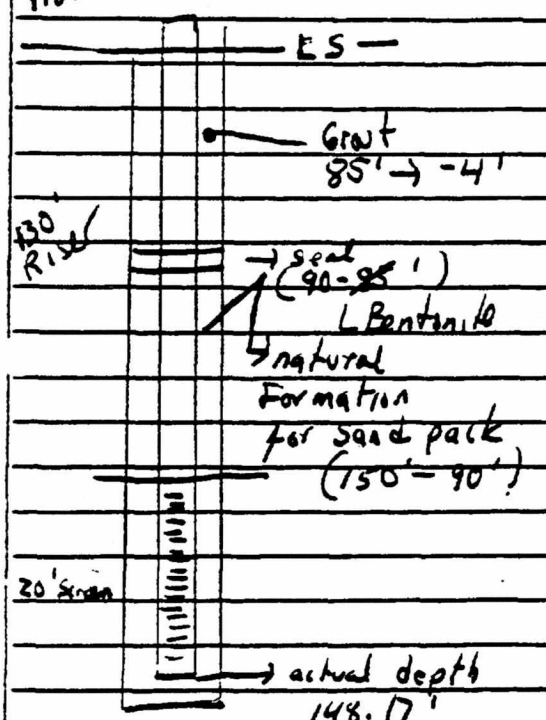
Type — Rate —

Boring No. _____ [redacted] SHEET _____ OF _____

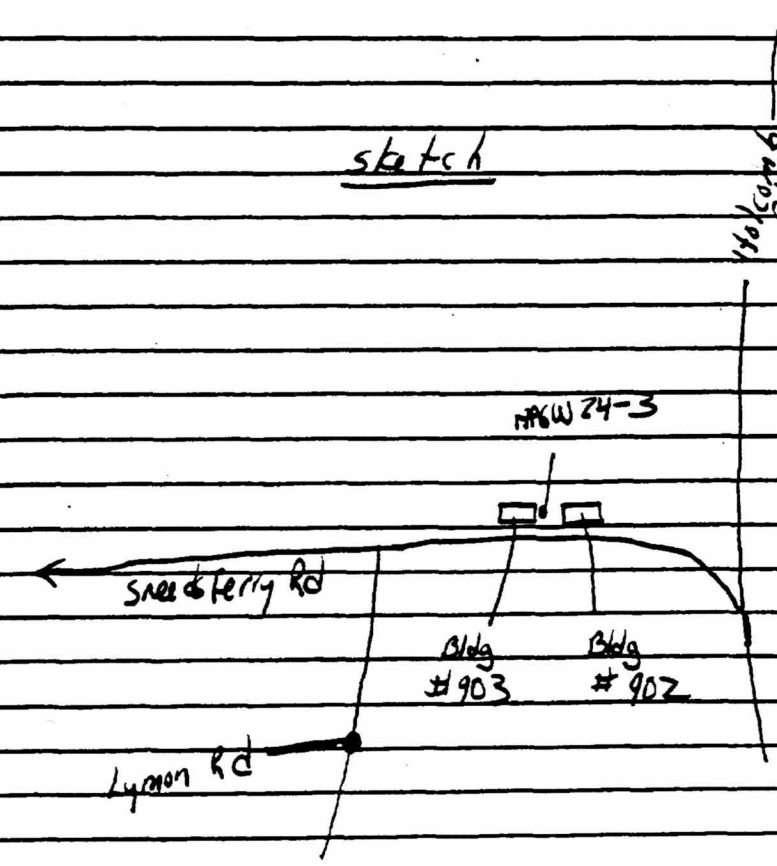
6/18/87 HPGW24-3

On site 0730, drillers arrive 0800. Begin pulling casing 0830 (hole caves to 90') Bentonite (90→80) cement portland #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

David A. Brutlyss SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1987

Each deep monitor well was constructed using 2-inch inside-diameter (ID) Schedule 40 polyvinyl chloride (PVC) flush-threaded well screen and casing. Screen lengths of 20 feet (ft) (0.010-inch slot size) were used for each well. Filter sand (20- to 30-mesh silica sand) was installed with a tremie pipe around the well screen to a point approximately 2 ft above the top of the screen. A bentonite seal, consisting of bentonite pellets, was placed on top of the filter pack material. The thickness of this seal was approximately 5 ft. Grout was pumped into the annulus above the bentonite seal, using a tremie pipe, to form a continuous seal from the bentonite to the land surface.

The Atec Associates rig was insufficiently sized to overcome major caving problems in two of the 150-ft wells. As a result, a larger drilling rig from Davis Drilling Co. was brought back to the site to install these two wells. Davis Drilling Co. drilled a 10-inch hole, using mud-rotary techniques, to a depth of 100 ft. Six-inch ID steel temporary casing was installed to 100-ft to prevent the upper portion of the boring from collapsing. A 6-inch hole was drilled from the bottom of the temporary casing to the design depth of the hole (150 ft). After well materials were installed, some caving of natural formation materials occurred around the well screen. The design intent of the deep monitor wells was not compromised by the use of natural filter materials versus the designed filter pack.

All descriptions of geologic materials in the deep borings were performed on drill cuttings brought to the surface by the drilling mud.

After installation of all downhole well materials, a 4-inch steel protective casing, with a locking cap, was placed into the grout. A concrete pad with three protective posts was installed at each monitor

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well location. Each well was clearly marked with a sign designating the well as a nonpotable well for groundwater monitoring purposes only.

Each deep monitor well was developed by pumping or hand bailing, as appropriate. Development continued until the water was as clear and sediment free as practicable.

The deep monitor wells were surveyed for vertical control to a precision of at least 0.10 ft. This vertical control was established on a relative basis; the elevation of each deep well was established relative to the shallow monitor wells adjacent to them.

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INDEX P

[illegible]

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Hole Size 10 to 100', 6" to 200' Slot 0.01

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

E 642-2

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 is sand mostly color dark grey - grey		
50-75			Very fine sand with silty Clay throughout little to no coarse material shells begin at about 70', formations are grey-white		
75-100			fine Silty Sand with shells and Cemented Clastics more shells + Clastics last 10' (90-100)'. Coarse sand grains 10% throughout, grey color of cement sand grains clear - white fines		
	Comments:		642-2 has overall, less Clay than 642-1; the 1st 100' of hole closes badly especially at (60-70)'		

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Hole Size _____ Slot _____ 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		Castlaine limestone → Chert ? question of material origin from hole	Shells and cemented clastics, fine silty sand, sand is dark grey in color, cement also dark grey, chert found at 125' (plugged the drill bit) chert red in color.		
125-150			Very fine silty sand (blue grey in color) shells and clastic cement possibly limestone. Coarse sand increasing		
150-175			Very fine sand and silt with clay peds, peds mixed with med. sand, shell + cement mix. Less common clay peds light brown in color.		
175-200			Very fine silty sand throughout little shell material, no cement, less [illegible], fines grey in color. Very little coarse material.		
			Well Complete 500 pm 3/30		

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WELL FACT SHEET

Well No. 642-2 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' 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	105 ~~[illegible]~~	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	~~[illegible]~~ 90	BGL to	~~[illegible]~~ 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 seal to 84' BLS 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 s/cloudy gray

Bail Start ____ Finish ____

Surge Start ____ Finish ____

Pump Start ____ Finish ____ Volume ____

Type Centr. Sub Rate ____

Hole Size 10" (to 100') Slot 0.01 E 642 - 1
Screen Size 6" (100-210') Mat'l PVC Filter Materials Coarse Sand
asing Size 6" to 100' Mat'l PVC Grout Type Cement (Porter)
Geologist David Brentlinger Development
Date Start 3/26 Finish 3/27 Static Water Level 12.75' ± 2.5
Contractor ESE Top of Well Elevation
Driller James Davis Drill Type Rotary
(10 and 6)" tricomb 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 of 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%		

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Hole Size _____ Slot _____ E 642-1

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		
	1045/4m		Quit Drilling, Cement 6" Casing in place		
100-125			very silty very fine shelly sand with 10-20% clay, 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, 10% coarse sand		
175-200			very fine sand + shells with some clay, fines are blue grey in color less shells than above (150-175)		
	Find drilling Hole 945 Am				

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WELL FACT SHEET

Well No. 6421 Date 3/27 Start 3/26 Finish 3/27

Total Depth of Boring Prior to Well Installation 210' 109

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] 72'	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 ____

APPENDIX F

Each boring was advanced to a depth of 100 feet (ft) below land surface by mud rotary using a 10-inch tri-cone roller bit. A 6-inch temporary polyvinyl chloride (PVC) surface casing was set to a depth of 100 ft to prevent the collapse of shallow sands into the borehole. The boring was then advanced to its completion depth (200 ft) by mud rotary using a 6-inch tri-cone bit. Lithologic samples were collected from the drilling fluid during borehole advancement. Each well was constructed using 2-inch inside-diameter (ID) Schedule PVC flush-threaded well casing and screen. Screen lengths of 100 ft (0.010-inch slot size) were used for each well. Filter sand (20- to 30-mesh silica sand) was installed around the well screen to a point approximately 2 ft above the top of the well screen. A 5-ft bentonite seal, composed of bentonite pellets, was placed on top of the filter pack. At this point, the temporary PVC casing was pulled from the borehole, and the natural sediments were allowed to collapse. The remaining annular space was then filled using neat cement tremied into place.

Initially, these wells were designated as temporary wells that were to be removed following completion of the aquifer testing program. After discussion with Naval Facilities Engineering Command, Atlantic Division (LANTDIV), the decision was made to complete these borings as permanent wells. Following this decision, 4-inch protective steel casings were placed around each well casing, and a concrete pad with three protective posts was installed.

After installation, each well was developed using a centrifugal pump. Development continued until the well was as clear and sediment free as practicable.

Each well was clearly marked with a sign designating the well as a nonpotable well for groundwater monitoring purposes only.

Doc NO: CLEJ-00258-1.02-05/01/88

APPENDIX F

Each boring was advanced to a depth of 100 feet (ft) below land surface by mud rotary using a 10-inch tri-cone roller bit. A 6-inch temporary polyvinyl chloride (PVC) surface casing was set to a depth of 100 ft to prevent the collapse of shallow sands into the borehole. The boring was then advanced to its completion depth (200 ft) by mud rotary using a 6-inch tri-cone bit. Lithologic samples were collected from the drilling fluid during borehole advancement. Each well was constructed using 2-inch inside-diameter (ID) Schedule PVC flush-threaded well casing and screen. Screen lengths of 100 ft (0.010-inch slot size) were used for each well. Filter sand (20- to 30-mesh silica sand) was installed around the well screen to a point approximately 2 ft above the top of the well screen. A 5-ft bentonite seal, composed of bentonite pellets, was placed on top of the filter pack. At this point, the temporary PVC casing was pulled from the borehole, and the natural sediments were allowed to collapse. The remaining annular space was then filled using neat cement tremied into place.

Initially, these wells were designated as temporary wells that were to be removed following completion of the aquifer testing program. After discussion with Naval Facilities Engineering Command, Atlantic Division (LANTDIV), the decision was made to complete these borings as permanent wells. Following this decision, 4-inch protective steel casings were placed around each well casing, and a concrete pad with three protective posts was installed.

After installation, each well was developed using a centrifugal pump. Development continued until the well was as clear and sediment free as practicable.

Each well was clearly marked with a sign designating the well as a nonpotable well for groundwater monitoring purposes only.

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Both observation wells, the pumped well (Water Supply Well 642), and an existing observation well (90-ft total depth) were surveyed to an accuracy of 0.01 ft by a surveyor registered in the State of North Carolina. This provided an accurate datum (mean sea level) from which to evaluate the drawdown resulting from the pump test.