Brown & Root *Services*

55 Jonspin Road / Wilmington, MA 01887-1020 / 978-658-7899 / Fax· 978-658-7870

C-NAVY-7-98-1209

Project Number 0288

July 17, 1998

Mr. Brian Helland
Remedial Project Manager
Northern Division
Naval Facilities Engineering Command
10 Industrial Highway, Mail Stop #82
Lester, Pennsylvania 19113

Reference: Contract No. N62472-90-D-1298, Navy (CLEAN), Contract Task Order No. 143, Tank Farms 4 and 5, NETC, Newport, Rhode Island

Subject: Tank Farm 4 Groundwater Monitoring Well Abandonment Summary Report, NETC-Newport

Dear Mr. Helland:

Enclosed for submittal is one copy of the Tank Farm 4 Groundwater Monitoring Well Abandonment Summary Report. Of the twenty-four wells designated to be abandoned, twenty wells were located and abandoned in accordance with RIDEM regulations, three wells were repaired and redeveloped, and one well could not be found. If you have any comments or questions on this transmittal, please contact me.

Very truly yours,

James R. Forrelli

James R. Forrelli, P.E.
Project Manager

JRF/rt

Enclosure

c: R. Roberge, NETC-Newport, Code 40E (w/enc. - 4)
J. Trepanowski, B&R Environmental (w/enc.)
G. Glenn, B&R Environmental (w/o enc.)
File 0288-3.2 w/o enc./0288-8.0 (w/enc.)

GROUNDWATER MONITORING WELL ABANDONMENT SUMMARY REPORT
TANK FARM 4
NETC - NEWPORT, RHODE ISLAND
CTO 143
JULY 1998

1.0 INTRODUCTION

This report presents the results of a monitoring well abandonment activities conducted by Brown & Root Environmental (B&R Environmental) at Tank Farm 4, located at Naval Education and Training Center (NETC) - Newport, Rhode Island. This work was performed under CTO143 in accordance with a Technical Direction memorandum dated April 16, 1998.

2.0 BACKGROUND

The location of NETC and Tank Farm 4 are depicted on Figure 1 and Figure 2. Tank Farm 4 monitoring well locations are presented on Figure 3. These monitoring wells were installed by B&R Environmental and other contractors during previous site investigations. Several monitoring wells were subsequently damaged during recent tank closure activities. Some wells had been covered during tank backfilling and final grading operations and were not visible.

An inventory was conducted in February 1998 to determine the condition of monitoring wells known to be located within the Tank Farm 4 site boundary following the completion of tank demolition activities by the RAC contractor. Background information, well inventory activities, observation, and conclusions/recommendations are presented in the well inventory report (B&R Environmental, March 1998). It was recommended that 24 damaged wells be abandoned.

The wells were abandoned in accordance with the Rhode Island Department of Environmental Management (RIDEM) Rules and Regulations for Groundwater Quality of Rhode Island Rules Number 12-100-006, August 1996, Appendix 1, Section 13.0.

3.0 WELL ABANDONMENT PROCEDURES AND SUMMARY

This section contains the general well abandonment procedure and a summary of the well abandonment activities. Where site conditions required deviation from the procedure, they are noted.

3.1 GROUNDWATER MONITORING WELL ABANDONMENT PROCEDURE

The general monitoring well abandonment procedure is described below.

1) The first step in the process was to locate buried wells if necessary. A surveyor under subcontract to B&R Environmental staked the locations of the monitoring wells covered by grading operations. An excavator was used to dig a exploratory pit at the well's surveyed location. Once the PVC riser was located, the pit was extended to a minimum depth of 4 feet below grade, and benched to allow the B&R Environmental representative to enter the pit and measure the well depth.

2) The second step was to seal the well screen interval with bentonite slurry. The bentonite slurry was pumped into the well using a hose or grout tube placed at the bottom of the well screen. Grout was pumped into the well until grout was observed discharging from the well riser.

3) The third step was to remove the well riser above the well screen seal to a minimum depth of 4 feet below ground surface, as required by RIDEM regulations.

4) In the final step the pit created by locating the well was backfilled and seeded.

3.2 MONITORING WELL ABANDONMENT ACTIVITIES SUMMARY

Between June 11, 1998 and June 26, 1998, B&R Environmental personal oversaw a drilling subcontractor performing the well abandonment activities. Groundwater monitoring well installation logs are presented in Appendix A.

Twenty of the scheduled 24 monitoring wells were abandoned. During well location and inspection it was determined that three wells, MW-418 (Tank 38), MW-408 (Tank 48), and MW-422 (Tank 48), were repairable. These three wells were repaired and redeveloped. One well, MW-120, located at Tank 43 could not be located. A trench 20 feet long , 8 feet wide, and 8 feet deep was excavated in an attempt to locate MW-120.

A summary of the well abandonment activities is presented on Table 1. This table presents the calculated volume of the screened interval of the well, assuming a porosity of 30 percent for the sand pack, and the solid well riser. After a well was located by excavating, the length of the well riser was determined by subtracting the screen length from the total measured depth of the well. The calculated and actual grout volumes are presented on the table.

Table 1 indicates that bentonite chips were added prior to grouting the 100 series wells at Tank 42, Tank 45, and Tank 48. The bentonite chips were added prior to grouting to prevent the grout from migrating into newly constructed replacement wells at these tanks.

Two monitoring wells, MW-416 (Tank 38) and MW-404 (Tank 48), had obstructions, and the total depth was not determined. At MW-416, grout was pumped into the riser and refilled when the grout settled. At MW-404, the riser was not observed, however the hole was located by the presence of a bailer rope. The hole was grouted and checked for settling prior to backfilling.

Wells MW-115, MW-114, MW-116, MW-411, MW-117, and MW-401 took less grout than the calculated volume. This discrepancy may have been caused by a plugged well screen because grout was observed flowing from the well riser during grout placement.

TABLE 1
WELL ABANDONMENT SUMMARY
GROUNDWATER MONITORING WELL ABANDONMENT
TANK FARM 4, NETC-NEWPORT, RHODE ISLAND

Location (Tank No/well)	Screen Interval Dia. (ft.)	Screen Length (ft.)	Riser Length (ft.)	Screen Volume (gallons)	Riser Volume (gallons)	Calculated Well Volume (gallons)	Actual Grout Volume (gallons)	Remarks
37								
MW-124	0.33	5	18.3	8.4	11.9	20.3	20	
38								
MW-125	0.33	5	15	8.4	9.8	18.2	20	
MW-416	0.16	5	NA	4.5	NA	NA	2	obstruction
MW-417	0.16	5	28.5	4.5	4.6	9.4	10	
MW-418	0.16	5	28.5	NA	NA	NA	NA	Well Repaired
39								
MW-115	0.33	5	28.6	8.4	18.6	27	22	
40								
MW-114	0.33	5	28.7	8.4	18.7	27.1	23	
41								
MW-116	0.33	5	24.4	8.4	15.9	24.3	19	
42								
MW-123	0.33	5	28.5	8.4	18.6	18.6	20	6' of bentonite chips added before grouting
MW-407	0.16	5	29.8	4.5	4.9	9.4	20	
MW-411	0.16	5	14.4	4.5	2.3	6.8	6	
MW-413	0.16	5	27.2	4.5	4.5	9	14	
43								
MW-120	0.33	5	NA	8.4	NA	NA	0	Not Found
44								
MW-117	0.33	5	17.4	8.4	11.3	19.7	13	
45								
MW-122	0.33	5	25.6	8.4	16.7	16.7	15	6' of bentonite chips added before grouting
46								
MW-121	0.33	5	25.3	8.4	16.5	24.9	40	

TABLE 1
WELL ABANDONMENT SUMMARY
GROUNDWATER MONITORING WELL ABANDONMENT
TANK FARM 4, NETC-NEWPORT, RHODE ISLAND

Location (Tank No/well)	Screen Interval Dia. (ft.)	Screen Length (ft.)	Riser Length (ft.)	Screen Volume (ft^3)	Riser Volume (gallons)	Calculated Well Volume (gallons)	Actual Grout Volume (gallons)	Remarks
47								
MW-118	0.33	5	27	8.4	17.6	26	25	
48								
MW-119	0.33	5	29.2	8.4	19.0	19.0	17	6' of bentonite chips added before grouting
MW-401	0.16	10	14.8	9.0	2.4	11.4	10	
MW-404	0.16	10	NA	NA	NA	NA	2	Obstruction, unable to determine depth
MW-408	0.16	5	NA	NA	NA	NA	NA	Well Repaired
MW-412	0.16	10	6	9.0	1.0	7.0	25	Screen broken
MW-422	0.16	5	NA	NA	NA	NA	NA	Well Repaired
CS								
MW-11	0.16	NA	17	NA	2.7	NA	4	PVC pulled up w/ protective casing. No well construction information available.

NOTES:

The calculations assume that the sand pack around the well screen has a porosity of 30 percent.

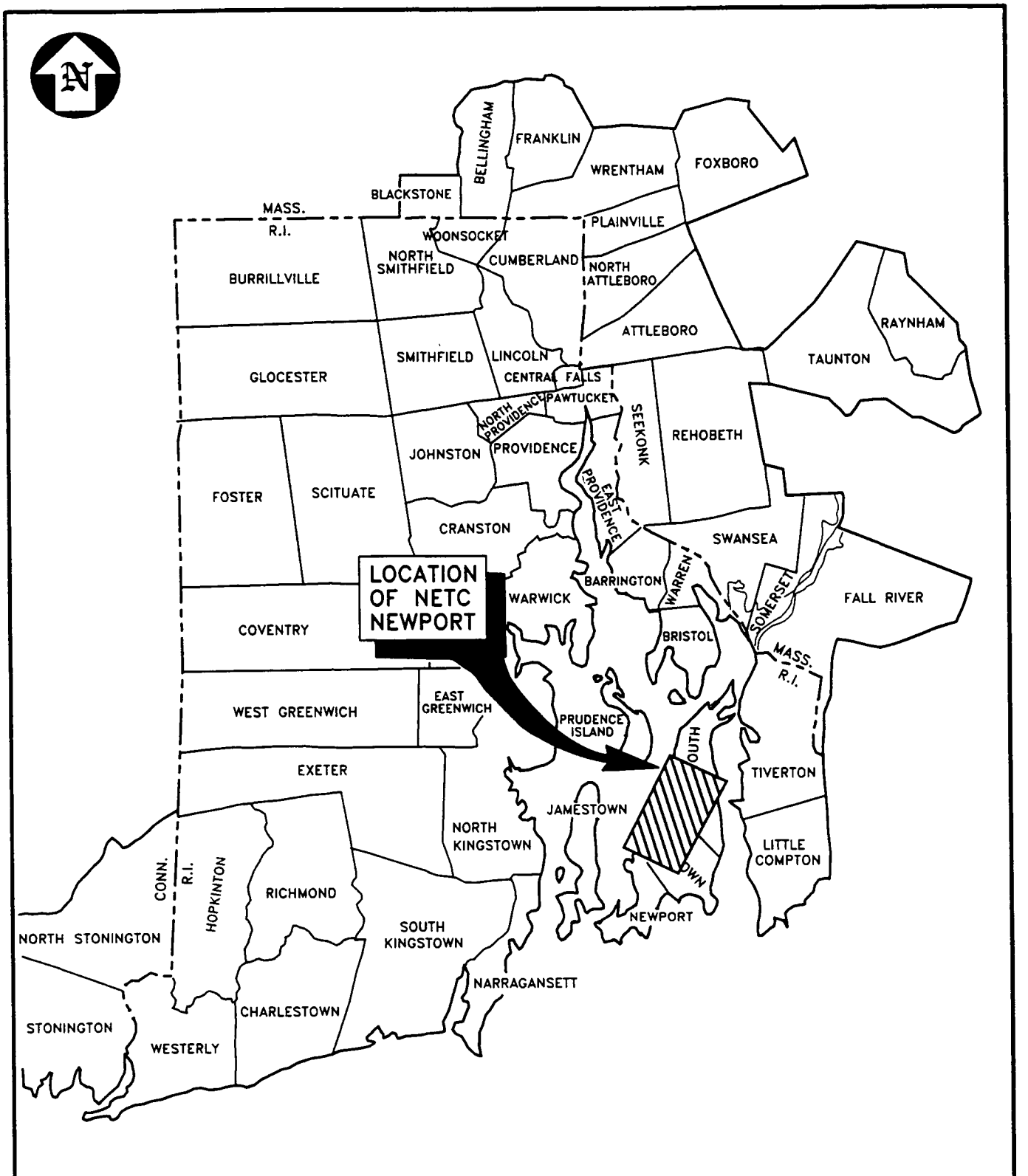
The calculations do not account for the volume of PVC material in the well. Both of these assumptions are expected to result in an over estimation of the grout volume.

The riser length was determined by subtracting the screen length from the total depth of the well after test pit activities.

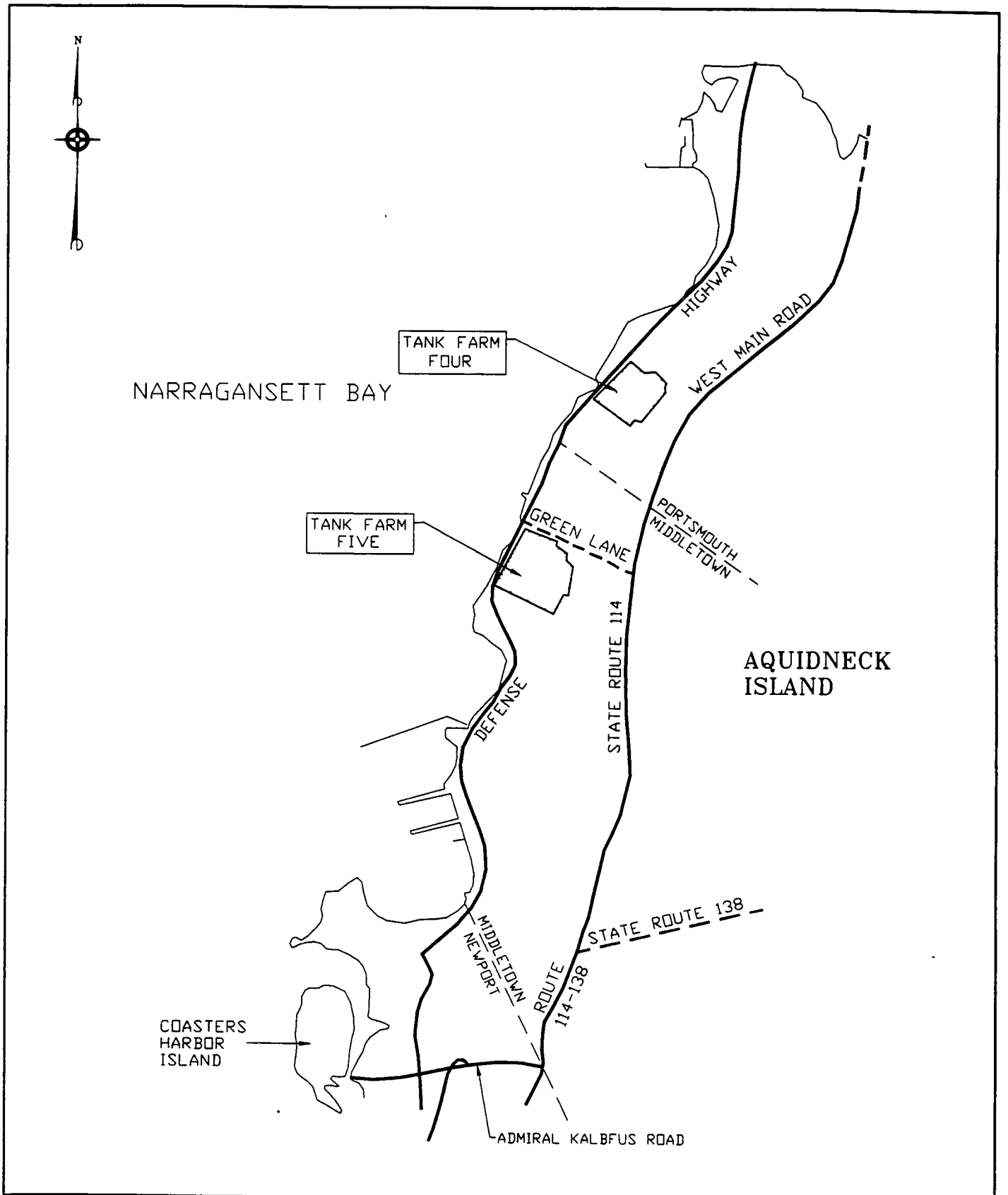
The screen length was assumed to be completely open.

MW-412: The well screen was broken, and filter pack material was in the well.

The calculated well volume for MW-123 (Tank 42), MW-122 (Tank 45), and MW-119 (Tank 48) is the riser volume because the screen interval was filled with bentonite chips.



NETC LOCUS MAP				FIGURE 1
NETC – NEWPORT, RI				Brown & Root Environmental
WELL ABANDONMENT SUMMARY				55 Jonspin Road Wilmington, MA 01887 (508)658-7899
DRAWN BY	J B HOLDEN/RGD	REV·	0	
CHECKED BY	J FORRELLI	DATE	JULY 9, 1998	
SCALE	NONE	PROJECT NO	0288	



TANK FARM 4 LOCATION MAP				FIGURE 2
NETC – NEWPORT, RI				Brown & Root Environmental
WELL ABANDONMENT SUMMARY				55 Jonspin Road Wilmington, MA 01887 (508)658-7899
DRAWN BY	J B. HOLDEN/RGD	REV	0	
CHECKED BY	J FORRELLI	DATE	JULY 15, 1998	
SCALE	APPROX. 4800 FT	PROJECT NO	0288	

LEGEND

MW-330 — INTACT MONITORING WELL LOCATION WITH IDENTIFIER

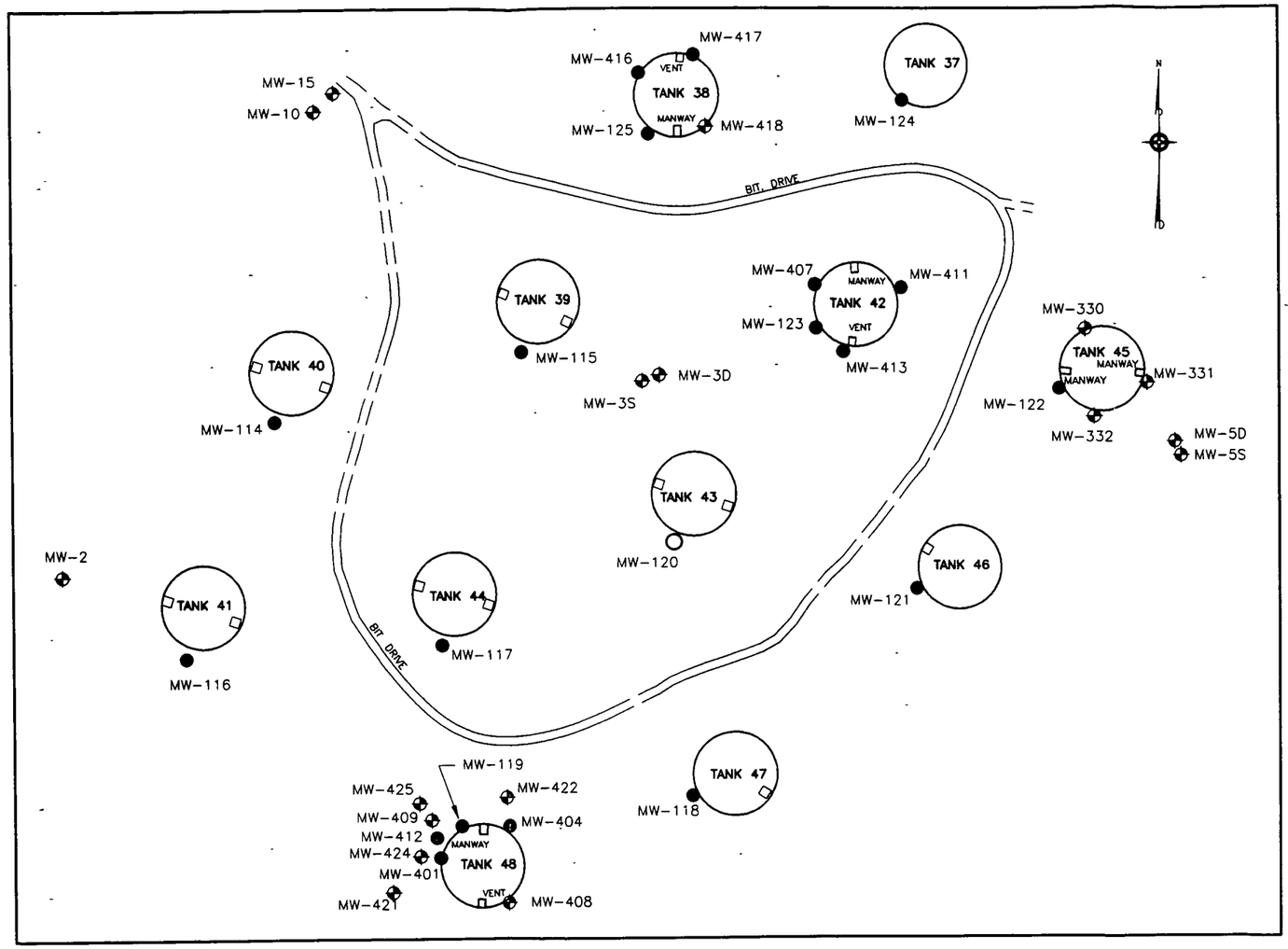
MW-114 — ABANDONED MONITORING WELL WITH IDENTIFIER

MW-120 — MONITORING WELL NOT LOCATED; NOT ABANDONED

GRAPHIC SCALE

0' 200' 400'

1 INCH = 200 FEET



NOTES:

1) BASE MAP FROM PLAN BY LOUIS FEDERICI & ASSOCIATES, 235 PROMENADE STREET, PROVIDENCE, RI & AVAILABLE PLANS.
2) BITUMINOUS DRIVE LOCATION FROM ABOVE PLAN & AVAILABLE PLANS AND IS TO BE CONSIDERED APPROXIMATE
3) ALL LOCATIONS TO BE CONSIDERED APPROXIMATE
4) PLAN NOT TO BE USED FOR DESIGN.
5) THE FOLLOWING MONITORING WELLS WERE REPAIRED: MW-418 (TANK 38), MW-408 (TANK 48), MW-422 (TANK 48)
6) MONITORING WELLS MW-4, MW-10, & MW-11 NOT SHOWN.
6) MONITORING WELLS INSTALLED DURING TANK FARM 4 SITE INVESTIGATION NOT SHOWN.

ABANDONED MONITORING WELL LOCATIONS		FIGURE 3
WELL ABANDONMENT – TANK FARM 4		Brown & Root Environmental
NETC–NEWPORT, RI		55 Jonspin Road Wilmington, MA 01887 (978)658-7899
DRAWN BY: D W. MACDOUGALL / RGD	REV.: 0	
CHECKED BY J HOLDEN	DATE. JULY 17, 1998	
SCALE: 1" = 200'	FILE NO DWG\NETC\WELL_AB\F3_TF4 DWG	

APPENDIX A

GROUNDWATER MONITORING WELL INSTALLATION LOGS

(TANK 37 WELL NO. MW-124 BORING NO. TF4-B-37)

OVERBURDEN WELL CONSTRUCTION LOG — **HALLIBURTON NUS ENVIRONMENTAL CORPORATION**

PROJECT: CTO 143 Tank Farms 4+5 — PAGE: 1 OF 1

PROJECT LOCATION: NETC - Newport

CLIENT: NAVFACENGCOM — WELL TF4- BORING NO.: MW 124

CONTRACTOR: EDI — DRILLER: S. LaMarche — BORING LOCATION: Tank 37 (TF4-B-37)

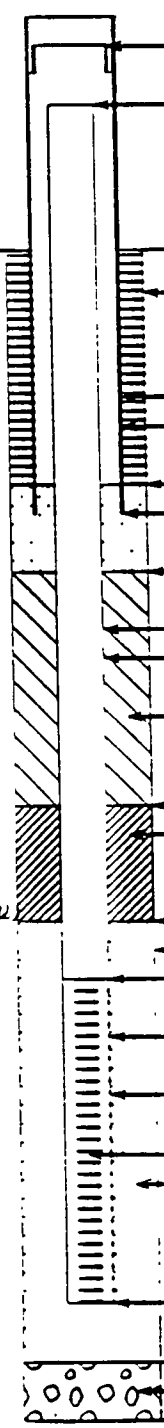
LOGGED BY: K. Jalbert — DATE: 11-16-94 + 11-17-94 — PROJECT NO.: 0288

CHECKED BY: — DATE:

ELEVATION TOP OF PROTECTIVE CASING: 90.34 MLW

ELEVATION TOP OF RISER PIPE: 90.04 MLW

GROUND ELEVATION: 88.3 MLW



General soil conditions (not to scale)

LENGTH OF PROTECTIVE CASING OR ROAD BOX ABOVE GROUND SURFACE	2.05
LENGTH OF RISER PIPE ABOVE GROUND SURFACE	1.74
TYPE OF SURFACE SEAL	Quikrete Concrete Mix
TYPE OF PROTECTIVE CASING	Steel
I.D. OF PROTECTIVE CASING	6 in
DEPTH BOTTOM OF SURFACE SEAL	3 FT
DEPTH BOTTOM OF CASING	2.95
DEPTH BOTTOM OF SAND DRAIN	4 FT
TYPE OF RISER PIPE	Schedule 40 PVC
I.D. AND O.D. OF RISER PIPE	4"/4 1/4 in
TYPE OF BACKFILL AROUND RISER PIPE	Bentonite Slurry/ Sand/ Chips
DEPTH TOP OF SEAL	28 FT
TYPE OF SEAL	Bentonite Chips
DEPTH BOTTOM OF SEAL	31 FT
DIAMETER OF BOREHOLE	10 1/4 in
DEPTH TOP OF PERVIOUS SECTION	34 ft
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
I.D AND O.D. OF PERVIOUS SECTION	4"/4 1/4"
TYPE OF OPENINGS	0.010 slots
TYPE OF BACKFILL AROUND PERVIOUS SECTION	#1 Silica Sand
DEPTH BOTTOM OF PERVIOUS SECTION	39 FT
DEPTH OF BACKFILL	39 FT
TYPE OF BACKFILL	Silica Sand
END OF BORING	40

Gravels "31 FT - increased sand + bentonite seal thickness to interval above gravels

Backfill to seal: 11-16
Bent. Grout to top: 11-17

Note: Barrel refusal to 39'10". Augers advanced to 40'

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

BROWN & ROOT ENVIRONMENTAL

PROJECT NAME:	PCA	PROJECT NO:	0288
PROJECT LOCATION:	NETC–Newport	WELL NO:	TF4–MW125
CLIENT:	NAVFAC	BORING NO:	TF4–B–38
CONTRACTOR:	EDI	DRILLER:	Ajay Caron
LOGGED BY:	T. Dorgan	DATE:	11/17/1994
CHECKED BY:	MSN	DATE:	4-30-96

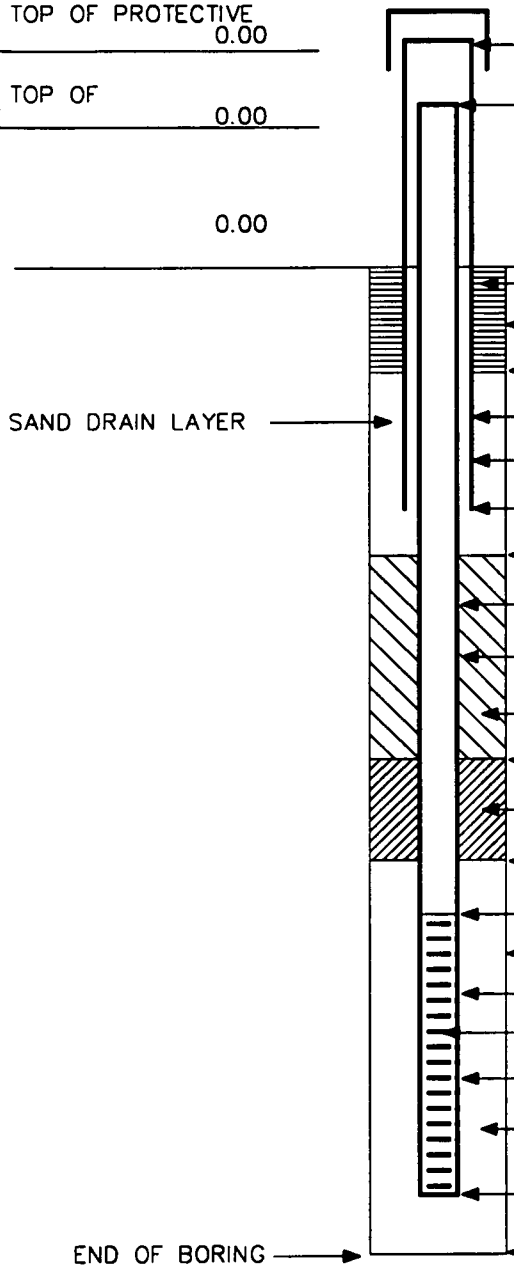
BORING LOCATION: Tank 38, Tank Farm 4

PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING: 0.00

ELEVATION TOP OF RISER PIPE: 0.00

GROUND ELEVATION: 0.00



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	2.90
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	2.67
TYPE OF SURFACE SEAL	Cement
DIA. SURFACE SEAL BGS (In)	9.000
DEPTH TO BOTTOM OF SURFACE SEAL (Ft)	2.00
I D. OF PROTECTIVE CASING (In.)	6.000
TYPE OF PROTECTIVE CASING	Steel
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	2.50
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	4.00
RISER PIPE (In.) I D.: 4.000 O.D.:	4.250
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Bent. grout/sand
DEPTH TOP OF SEAL (Ft.)	25.00
TYPE OF SEAL	Bent.Chips
DEPTH BOTTOM OF SEAL (Ft)	30.00
DEPTH TOP OF PERVIOUS SECTION (Ft.)	~~35~~ 33.00 MSN
DIAMETER OF BOREHOLE (In)	10.250
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.020 Slotted
PERVIOUS SECTION (In) I.D.: 4.000 O.D.:	4.250
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	Silica Sand
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	38.00
DEPTH BOTTOM OF FILTER PACK (Ft.)	39.00

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

ACAD: C:\temp\josh\MW_125

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

BROWN & ROOT ENVIRONMENTAL

PROJECT NAME:	SI Tank Farm 4	PROJECT NO:	0288
PROJECT LOCATION:	NETC–Newport	WELL NO:	MW416
CLIENT:	Nav Fac	BORING NO:	SB416
CONTRACTOR:	EDI	DRILLER:	S. Lamarche
LOGGED BY:	J Holden	DATE.	12/06/1995
CHECKED BY:	MSM	DATE:	4-24-96

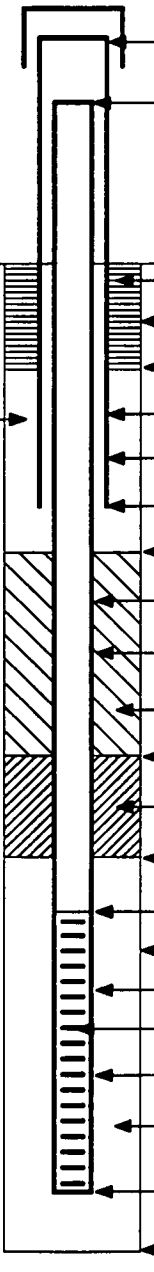
BORING LOCATION: Tank 38, downgradient

PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING 69.18

ELEVATION TOP OF RISER PIPE 68.96

GROUND ELEVATION 67.10



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	2.08
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	1.86
TYPE OF SURFACE SEAL	Cement
DIA. SURFACE SEAL BGS (In)	8.000
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	2.50
I D. OF PROTECTIVE CASING (In)	4.250
TYPE OF PROTECTIVE CASING	Steel
DEPTH BOTTOM OF PROTECTIVE CASING (Ft)	mit 3 ~~2~~.00
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	mit 3 ~~2~~.50
RISER PIPE (In) I.D.: 2.000 O.D.:	2.375
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Grout/Silica Sand
DEPTH TOP OF SEAL (Ft.)	26.00
TYPE OF SEAL	Bent.Chips
DEPTH BOTTOM OF SEAL (Ft.)	31.00
DEPTH TOP OF PERVIOUS SECTION (Ft.)	33.00
DIAMETER OF BOREHOLE (In.)	8.000
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.020 Slotted
PERVIOUS SECTION (In.) I.D.: 2.000 O.D.:	2.375
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	Silica Sand
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	38.00
DEPTH BOTTOM OF FILTER PACK (Ft.)	39.00

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

ACAD: C:\DWG\NETC\MW-TF4\MW_416

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

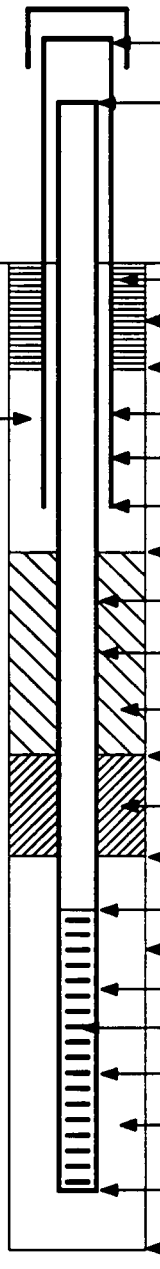
BROWN & ROOT ENVIRONMENTAL

PROJECT NAME:	SI Tank Farm 4	PROJECT NO:	0288
PROJECT LOCATION:	NETC-Newport	WELL NO:	MW417
CLIENT:	Nav Fac	BORING NO:	SB417
CONTRACTOR:	EDI	DRILLER:	A. Caron
LOGGED BY:	Tracy Dorgan	DATE:	12/06/1995
CHECKED BY:	MJH	DATE:	4-29-96
BORING LOCATION:	Tank 38 - North Side		
PAGE:	1 OF 1		

ELEVATION TOP OF PROTECTIVE CASING 71.43

ELEVATION TOP OF RISER PIPE 71.20

GROUND ELEVATION 68.40



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	3 ~~5~~.00 mjh
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	2.80
TYPE OF SURFACE SEAL	Cement
DIA. SURFACE SEAL BGS (In.)	mjh 8 ~~6~~.000
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	2.00
I.D. OF PROTECTIVE CASING (In.)	4.250
TYPE OF PROTECTIVE CASING	Steel Stick - Up
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	2.50
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	3.00
RISER PIPE (In.) I.D.: 2.000 O.D.:	2.375
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Silica Sand
DEPTH TOP OF SEAL (Ft.)	30.00
TYPE OF SEAL	Bent.Chips
DEPTH BOTTOM OF SEAL (Ft)	32.00
DEPTH TOP OF PERVIOUS SECTION (Ft.)	34.00
DIAMETER OF BOREHOLE (In.)	8.000
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.010 Slotted
PERVIOUS SECTION (In.) I.D.: 2.000 O.D.:	2.375
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	Silica Sand
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	39.00
DEPTH BOTTOM OF FILTER PACK (Ft.)	40.00

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

ACAD: C:\DWG\NETC\MW-TF4\MW_417

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

BROWN & ROOT ENVIRONMENTAL

PROJECT NAME:	SI Tank Farm 4	PROJECT NO:	0288
PROJECT LOCATION:	NETC–Newport	WELL NO:	MW418
CLIENT:	Nav Fac	BORING NO:	SB418
CONTRACTOR:	EDI	DRILLER:	A. Caron
LOGGED BY:	J. Holden	DATE:	12/07/1995
CHECKED BY:	MSN	DATE:	4-29-96

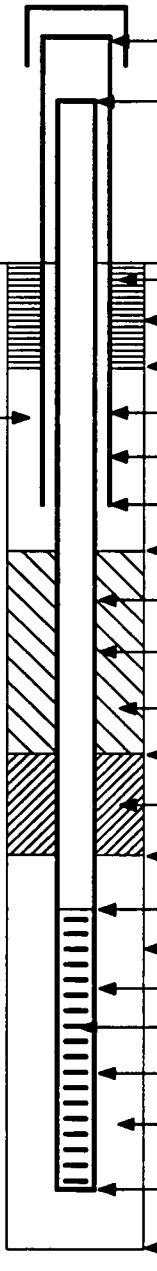
BORING LOCATION: Tank 38, downgradient

PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING 74.96

ELEVATION TOP OF RISER PIPE 74.77

GROUND ELEVATION 72.20



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	2.76
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	2.57
TYPE OF SURFACE SEAL	Cement
DIA. SURFACE SEAL BGS (In.)	8.000
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	2.00
I.D. OF PROTECTIVE CASING (In.)	4.250
TYPE OF PROTECTIVE CASING	Steel
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	2.00
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	2.50
RISER PIPE (In.) I.D.: 2.000 O.D.:	2.375
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Grout/Silica Sand
DEPTH TOP OF SEAL (Ft.)	31.00
TYPE OF SEAL	Bent.Chips
DEPTH BOTTOM OF SEAL (Ft.)	35.00
DEPTH TOP OF PERVIOUS SECTION (Ft.)	37.00
DIAMETER OF BOREHOLE (In.)	8.000
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.020 Slotted
PERVIOUS SECTION (In.) I.D.: 2.000 O.D.:	2.375
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	Silica Sand
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	42.00
DEPTH BOTTOM OF FILTER PACK (Ft.)	43.00

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

ACAD: C:\DWG\NETC\MW-TF4\MW_418

(TANK 39 WELL NO. MW-115 BORING NO. TF4-B-39)

OVERBURDEN WELL CONSTRUCTION LOG — **HALLIBURTON NUS ENVIRONMENTAL CORPORATION**

PROJECT: TF 4 & 5 - CTO 143 — PAGE: 1 OF 1

PROJECT LOCATION: NETC - Newport, RI

CLIENT: NAVFAC ENGCOM — WELL ~~BORING~~ NO.: MW-115 / TF4-B-39

CONTRACTOR: EDI — DRILLER: EDI - AJ Caron — BORING LOCATION: NETC - Newport

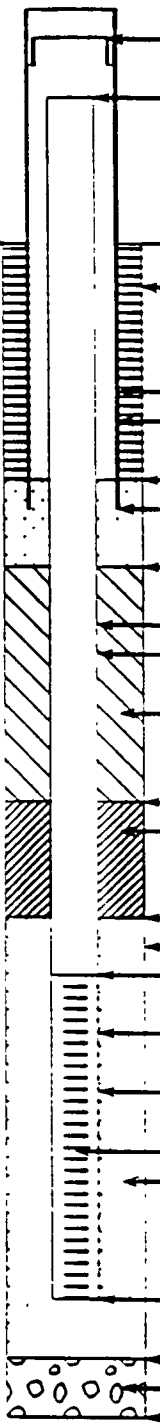
LOGGED BY: B Clever — DATE: 11-08-94 — PROJECT NO.: 0288

CHECKED BY: — DATE:

ELEVATION TOP OF PROTECTIVE CASING: 61.26 MLW

ELEVATION TOP OF RISER PIPE: 61.06 MLW

GROUND ELEVATION: 59.2 MLW



LENGTH OF PROTECTIVE CASING OR ROAD BOX ABOVE GROUND SURFACE	2.04 feet
LENGTH OF RISER PIPE ABOVE GROUND SURFACE	1.87 feet
TYPE OF SURFACE SEAL	Cement
TYPE OF PROTECTIVE CASING	Steel
I.D. OF PROTECTIVE CASING	6"
DEPTH BOTTOM OF SURFACE SEAL	2.5'
DEPTH BOTTOM OF CASING	3.0
DEPTH BOTTOM OF SAND DRAIN	4'
TYPE OF RISER PIPE	PVC / Sch. 40
I.D. AND O.D. OF RISER PIPE	4"/4.25"
TYPE OF BACKFILL AROUND RISER PIPE	Bentonite + Sand Grout
DEPTH TOP OF SEAL	31'
TYPE OF SEAL	Bentonite Chips
DEPTH BOTTOM OF SEAL	33'
DIAMETER OF BOREHOLE	10 1/4"
DEPTH TOP OF PERVIOUS SECTION	35'
TYPE OF PERVIOUS SECTION	Slotted PVC
I.D AND O.D. OF PERVIOUS SECTION	4"/4.25"
TYPE OF OPENINGS	0.010 inch
TYPE OF BACKFILL AROUND PERVIOUS SECTION	Sand
DEPTH BOTTOM OF PERVIOUS SECTION	40'
DEPTH OF BACKFILL	40'
TYPE OF BACKFILL	Sand
END OF BORING	41' 10"

General soil conditions (not to scale)

1-CENTRALIZER USED

TANK 40 WELL NO. MW-114 BORING NO. TF4-B-40

OVERBURDEN WELL CONSTRUCTION LOG — **HALLIBURTON NUS ENVIRONMENTAL CORPORATION**

PROJECT: CTO 143 — PAGE: 1 OF 1

PROJECT LOCATION: NETC Newport TF4+5

CLIENT: NAVFAC ENG/OM — ~~BORING~~ well NO.: TF4-MW114

CONTRACTOR: EDI — DRILLER: J. St George S. Lamarche — BORING LOCATION: TF4-B-40, Tank 40

LOGGED BY: K. Jarkut — DATE: 11/7/94 + 11/8/94 — PROJECT NO.: 0288 CTO 143

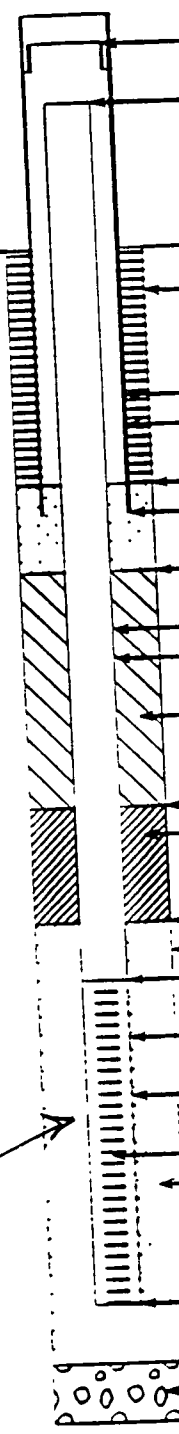
CHECKED BY: — DATE:

ELEVATION TOP OF PROTECTIVE CASING: ~~NAD~~ 53.62 MLW

ELEVATION TOP OF RISER PIPE: ~~NAD~~ 53.31 MLW

GROUND ELEVATION: ~~NAD~~ 51.8 MLW

(E8)



General soil conditions (not to scale)

1 centralizer - mid screen

LENGTH OF PROTECTIVE CASING OR ROAD BOX ABOVE GROUND SURFACE (22 in) (18.25 in)	1.9 FT
LENGTH OF RISER PIPE ABOVE GROUND SURFACE	~1.5 FT
TYPE OF SURFACE SEAL	Quikrete Concrete Mix
TYPE OF PROTECTIVE CASING	Steel
I.D. OF PROTECTIVE CASING	6 in
DEPTH BOTTOM OF SURFACE SEAL	2.5 FT
DEPTH BOTTOM OF CASING	3.1
DEPTH BOTTOM OF SAND DRAIN	4 FT
TYPE OF RISER PIPE	Schedule 40 PVC
I.D. AND O.D. OF RISER PIPE	4"/4¼"
TYPE OF BACKFILL AROUND RISER PIPE	Bent. Grout + Sand
DEPTH TOP OF SEAL	31 FT
TYPE OF SEAL	Bent. chips
DEPTH BOTTOM OF SEAL	33 FT
DIAMETER OF BOREHOLE	10¼ in
DEPTH TOP OF PERVIOUS SECTION	35 FT
TYPE OF PERVIOUS SECTION	Sched. 40 PVC
I.D AND O.D. OF PERVIOUS SECTION	4"/4¼"
TYPE OF OPENINGS	0.010 slots
TYPE OF BACKFILL AROUND PERVIOUS SECTION	#1 Sand
DEPTH BOTTOM OF PERVIOUS SECTION	40 FT
DEPTH OF BACKFILL	40 FT
TYPE OF BACKFILL	Sand
END OF BORING (Barrel Refusal)	41.8 FT

(TANK 41 WELL NO. MW-116 BORING NO TF4-B-41)

OVERBURDEN WELL CONSTRUCTION LOG — **HALLIBURTON NUS ENVIRONMENTAL CORPORATION**

PROJECT: CTT 143 — PAGE: 1 OF 1

PROJECT LOCATION: NETC- Newport

CLIENT: NAV FAC ENG COM — WELL TF4- ~~BORING NO.~~ MW 116 / TF4-B-41

CONTRACTOR: EDI — DRILLER: S. LaMarche — BORING LOCATION: Tank 41

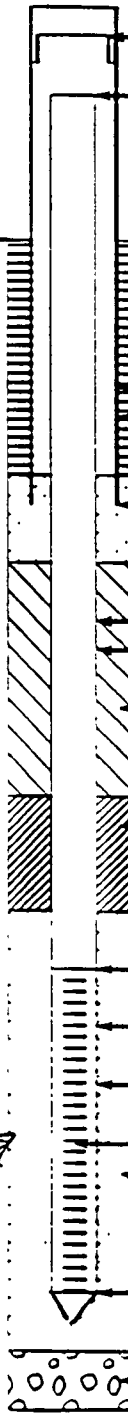
LOGGED BY: Jackut — DATE: 11/9/94 — PROJECT NO.: 0288

CHECKED BY: — DATE:

ELEVATION TOP OF PROTECTIVE CASING: ~~NAVD~~ 48.55 MLW

ELEVATION TOP OF RISER PIPE: ~~NAVD~~ 48.25 MLW

GROUND ELEVATION: ~~NAVD~~ 46.60 MLW



LENGTH OF PROTECTIVE CASING OR ROAD BOX ABOVE GROUND SURFACE	1.92 FT
LENGTH OF RISER PIPE ABOVE GROUND SURFACE	1.66 FT
TYPE OF SURFACE SEAL	Quikrete Concrete Mix
TYPE OF PROTECTIVE CASING	Steel
I.D. OF PROTECTIVE CASING	6 in
DEPTH BOTTOM OF SURFACE SEAL	2.8 FT
DEPTH BOTTOM OF CASING	3.08 FT
DEPTH BOTTOM OF SAND DRAIN	4 FT
TYPE OF RISER PIPE	Sched. 40 PVC
I.D. AND O.D. OF RISER PIPE	4"/4 1/4 in
TYPE OF BACKFILL AROUND RISER PIPE	Bent. Slurry + Sand + chips
DEPTH TOP OF SEAL	29 FT
TYPE OF SEAL	Bent. Chips
DEPTH BOTTOM OF SEAL	31 FT
DIAMETER OF BOREHOLE	10 1/4 in
DEPTH TOP OF PERVIOUS SECTION	33 FT
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
I.D AND O.D. OF PERVIOUS SECTION	4"/4 1/4 in
TYPE OF OPENINGS	0.010 slot
TYPE OF BACKFILL AROUND PERVIOUS SECTION	#1 sand
DEPTH BOTTOM OF PERVIOUS SECTION	38 FT
DEPTH OF BACKFILL	38 FT
TYPE OF BACKFILL	Sand
END OF BORING (Refusal w/ barrel sampler)	39'8"

General soil conditions (not to scale)

WT ~30'

Bed Rock @ ~39.5'

1 centralizer mid screen

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

BROWN & ROOT ENVIRONMENTAL

PROJECT NAME:	PCA	PROJECT NO:	0288
PROJECT LOCATION:	NETC–Newport	WELL NO:	TF4–MW123
CLIENT:	NAVFAC	BORING NO:	TF4–B–42
CONTRACTOR:	EDI	DRILLER:	Ajay Caron
LOGGED BY:	T. Dorgan	DATE:	11/16/1994
CHECKED BY:	M SDZ.	DATE:	4-30-96

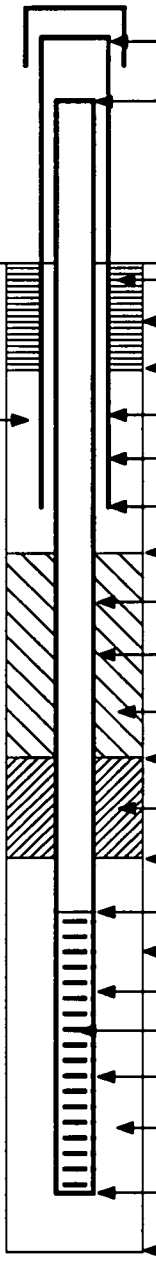
BORING LOCATION:
Tank 42
Tank Farm 4

PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING 0.00

ELEVATION TOP OF RISER PIPE 0.00

GROUND ELEVATION 0.00



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	2.40
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	1.95
TYPE OF SURFACE SEAL	Cement
DIA. SURFACE SEAL BGS (In)	9.000
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	2.00
I D. OF PROTECTIVE CASING (In.)	6.000
TYPE OF PROTECTIVE CASING	Steel
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	2.50
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	4.00
RISER PIPE (In.) I.D.: 4 000 O D.:	4 250
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Bent. grout/sand
DEPTH TOP OF SEAL (Ft)	26.00
TYPE OF SEAL	Bent.Chips
DEPTH BOTTOM OF SEAL (Ft.)	30.00
DEPTH TOP OF PERVIOUS SECTION (Ft.)	33.00
DIAMETER OF BOREHOLE (In.)	10.250
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.020 Slotted
PERVIOUS SECTION (In) I.D.: 4.000 O.D.:	4.250
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	Silica Sand
DEPTH BOTTOM OF PERVIOUS SECTION (Ft)	38.00
DEPTH BOTTOM OF FILTER PACK (Ft.)	39.00

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

ACAD: C:\temp\josh\MW_123

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

BROWN & ROOT ENVIRONMENTAL

PROJECT NAME:	SI Tank Farm 4	PROJECT NO:	0288
PROJECT LOCATION:	NETC–Newport	WELL NO:	MW–407
CLIENT	Nav Fac	BORING NO:	SB–407
CONTRACTOR:	EDI	DRILLER:	Ajay Caron
LOGGED BY:	T. Dorgan	DATE:	11/30/1995
CHECKED BY:	JM INA	DATE:	4-29-96

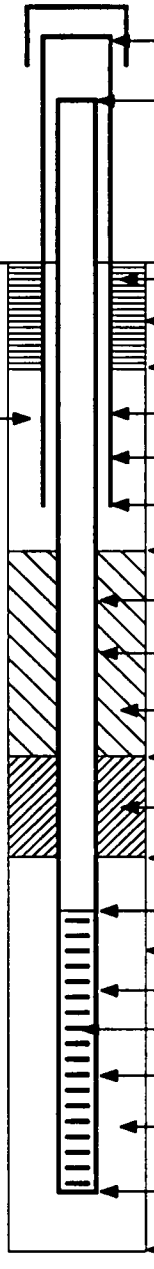
BORING LOCATION: Tank 42, downgradient

PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING 91.71

ELEVATION TOP OF RISER PIPE 91 58

GROUND ELEVATION 89.20



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	2.51
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	2.38
TYPE OF SURFACE SEAL	Cement
DIA. SURFACE SEAL BGS (In.)	8.000
DEPTH TO BOTTOM OF SURFACE SEAL (Ft)	2.00
I.D. OF PROTECTIVE CASING (In.)	4.250
TYPE OF PROTECTIVE CASING	Steel
DEPTH BOTTOM OF PROTECTIVE CASING (Ft)	2.50
DEPTH BOTTOM OF DRAIN LAYER (Ft)	3.00
RISER PIPE (In.) I D.: 2.000	O.D.: 2.375
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Volclay grout/sand
DEPTH TOP OF SEAL (Ft.)	28.00
TYPE OF SEAL	Bent.Chips
DEPTH BOTTOM OF SEAL (Ft)	30.00
DEPTH TOP OF PERVIOUS SECTION (Ft)	33.00
DIAMETER OF BOREHOLE (In)	8.000
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.020 Slotted
PERVIOUS SECTION (In.) I.D.: 2.000	O.D.: 2.375
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	Silica Sand
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	38.00
DEPTH BOTTOM OF FILTER PACK (Ft.)	39.25

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

ACAD: C:\DWG\NETC\MW-TF4\MW_407

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

BROWN & ROOT ENVIRONMENTAL

PROJECT NAME:	SI Tank Farm 4	PROJECT NO:	0288
PROJECT LOCATION:	NETC–Newport	WELL NO:	MW–411
CLIENT:	Nav Fac	BORING NO:	SB–411
CONTRACTOR:	EDI	DRILLER:	Ajay Caron
LOGGED BY:	T Dorgan	DATE:	12/04/1995
CHECKED BY:	MJN	DATE:	4-29-96

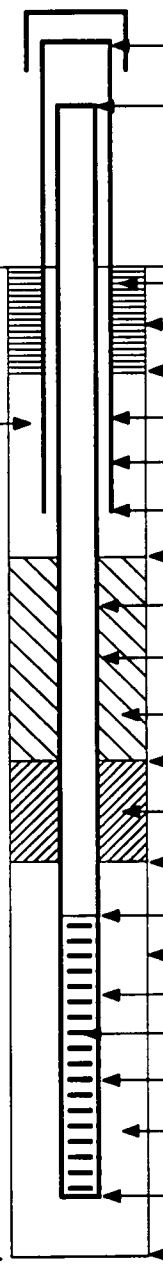
BORING LOCATION: Tank 42 upgradient

PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING 98.72

ELEVATION TOP OF RISER PIPE 98.15

GROUND ELEVATION 95.90



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	2.82
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	2.25
TYPE OF SURFACE SEAL	Cement
DIA. SURFACE SEAL BGS (In)	8.000
DEPTH TO BOTTOM OF SURFACE SEAL (Ft)	2.50
I.D OF PROTECTIVE CASING (In)	5 000
TYPE OF PROTECTIVE CASING	Steel
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	2.50
DEPTH BOTTOM OF DRAIN LAYER (Ft)	3.50
RISER PIPE (In.) I.D : 2.000 O D.:	2.375
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Grout/Silica Sand
DEPTH TOP OF SEAL (Ft.)	29.00
TYPE OF SEAL	Bent.Chips
DEPTH BOTTOM OF SEAL (Ft)	31.00
DEPTH TOP OF PERVIOUS SECTION (Ft.)	33.00
DIAMETER OF BOREHOLE (In.)	8.000
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.020 Slotted
PERVIOUS SECTION (In.) I.D.: 2.000 O.D.:	2.375
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	Silica Sand
DEPTH BOTTOM OF PERVIOUS SECTION (Ft)	38.00
DEPTH BOTTOM OF FILTER PACK (Ft.)	41.00

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

ACAD: C:\DWG\NETC\MW-TF4\MW_411

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

BROWN & ROOT ENVIRONMENTAL

PROJECT NAME:	SI Tank Farm 4	PROJECT NO:	0288
PROJECT LOCATION:	NETC–Newport	WELL NO:	MW413
CLIENT:	Nav Fac	BORING NO:	SB413
CONTRACTOR:	EDI	DRILLER:	Ajay Caron
LOGGED BY:	T. Dorgan	DATE:	12/05/1995
CHECKED BY:	MJM	DATE:	4-29-96

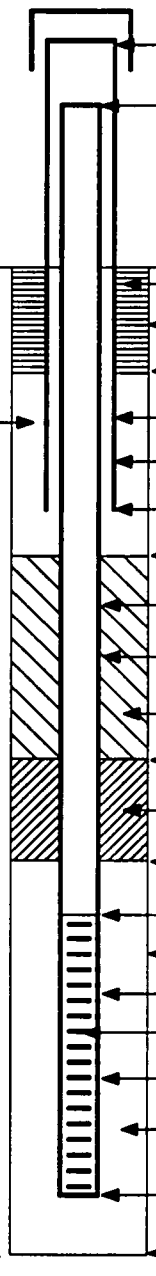
BORING LOCATION: Tank 42 crossgradient

PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING: 0.00

ELEVATION TOP OF RISER PIPE: 93.32

GROUND ELEVATION: 91.20



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	0.00
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	2.12
TYPE OF SURFACE SEAL	Cement
DIA. SURFACE SEAL BGS (In.)	8.000
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	2.00
I.D. OF PROTECTIVE CASING (In)	5.000
TYPE OF PROTECTIVE CASING	Steel
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	2.50
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	3.00
RISER PIPE (In.) I.D.: 2.000 O.D.:	2.375
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Grout/Silica Sand
DEPTH TOP OF SEAL (Ft.)	27.00
TYPE OF SEAL	Bent.Chips
DEPTH BOTTOM OF SEAL (Ft)	29.00 31.0
DEPTH TOP OF PERVIOUS SECTION (Ft.)	33.00 mill
DIAMETER OF BOREHOLE (In.)	8.000
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.010 Slotted
PERVIOUS SECTION (In) I.D.: 2.000 O D.:	2.375
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	Silica Sand
DEPTH BOTTOM OF PERVIOUS SECTION (Ft)	36.00
DEPTH BOTTOM OF FILTER PACK (Ft.)	39.33

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

ACAD: C:\DWG\NETC\MW-TF4\MW 413

(TANK 43 WELL NO. MW-120 BORING NO. TF4-B-43)

OVERBURDEN WELL CONSTRUCTION LOG

HALLIBURTON NUS ENVIRONMENTAL CORPORATION

PROJECT: TF4 & 5 - CTO 143

PAGE: 1 OF 1

PROJECT LOCATION: NETC - Newport, RI

120 RXC 11-11-94

CLIENT: NAVFAC ENGCOM

WELL ~~BORING~~ NO.: MW-~~119~~ / TF4-B43

CONTRACTOR: EDI

DRILLER: A.J. Caron

BORING LOCATION: NETC Newport

LOGGED BY: B Cleaver

DATE: 11-10-94

PROJECT NO.: 0288

CHECKED BY:

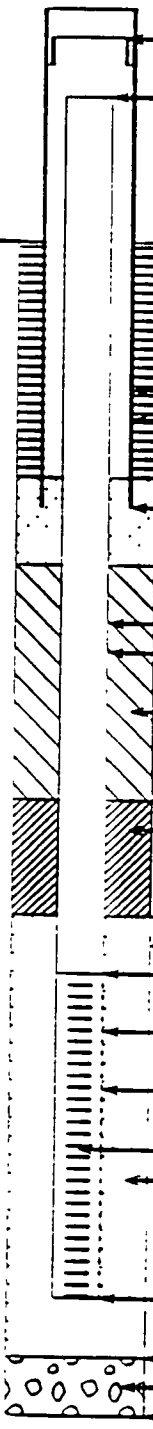
DATE:

ELEVATION TOP OF PROTECTIVE CASING: 80.49 MLW

ELEVATION TOP OF RISER PIPE: 80.17 MLW

GROUND ELEVATION: 78.6 MLW

(18)



General soil conditions (not to scale)

1 CENTRALIZER USED

LENGTH OF PROTECTIVE CASING OR ROAD BOX ABOVE GROUND SURFACE	~~1.10'~~ 1.90'
LENGTH OF RISER PIPE ABOVE GROUND SURFACE	~~1.55'~~ 1.53'
TYPE OF SURFACE SEAL	Concrete
TYPE OF PROTECTIVE CASING	Steel
I.D. OF PROTECTIVE CASING	6.25"
DEPTH BOTTOM OF SURFACE SEAL	2.5 feet
DEPTH BOTTOM OF CASING	3 feet
DEPTH BOTTOM OF SAND DRAIN	4 feet
TYPE OF RISER PIPE	Sch 40 PVC
I.D. AND O.D. OF RISER PIPE	4.0"/4.25"
TYPE OF BACKFILL AROUND RISER PIPE	Bentonite + Sand Grout
DEPTH TOP OF SEAL	29 feet
TYPE OF SEAL	Bentonite chips
DEPTH BOTTOM OF SEAL	31 feet
DIAMETER OF BOREHOLE	10.25 inches
DEPTH TOP OF PERVIOUS SECTION	33 feet
TYPE OF PERVIOUS SECTION	Sch. 40 PVC
I.D AND O.D. OF PERVIOUS SECTION	4.0"/4.25"
TYPE OF OPENINGS	0.010 slotted PVC
TYPE OF BACKFILL AROUND PERVIOUS SECTION	#1 Sand
DEPTH BOTTOM OF PERVIOUS SECTION	38 feet
DEPTH OF BACKFILL	38 feet
TYPE OF BACKFILL	#1 sand
END OF BORING	39'6"

3) (TANK 44 WELL NO. MW-117 BORING NO. TF4-B-44)

OVERBURDEN WELL CONSTRUCTION LOG — **HALLIBURTON NUS ENVIRONMENTAL CORPORATION**

PROJECT: TF485 - CTO143 — PAGE: 1 OF 1

PROJECT LOCATION: NETC - Newport, RI

CLIENT: NAVFACENGCOM — BORING NO.: MW-117 / TF4-B-44

CONTRACTOR: EDI — DRILLER: AJ Caron — BORING LOCATION: NETC - Newport

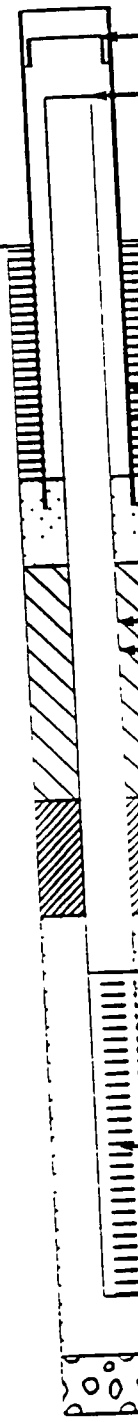
LOGGED BY: B. Chavez — DATE: 11/09/94 — PROJECT NO.: 0285

CHECKED BY: — DATE:

ELEVATION TOP OF PROTECTIVE CASING: 62.45 MLW

ELEVATION TOP OF RISER PIPE: 62.52 MLW

GROUND ELEVATION: 60.9 MLW



LENGTH OF PROTECTIVE CASING OR ROAD BOX ABOVE GROUND SURFACE	1.90 feet
LENGTH OF RISER PIPE ABOVE GROUND SURFACE	1.55 feet
TYPE OF SURFACE SEAL	Cement
TYPE OF PROTECTIVE CASING	Steel
I.D. OF PROTECTIVE CASING	6"
DEPTH BOTTOM OF SURFACE SEAL	2.5 feet
DEPTH BOTTOM OF CASING	3.0 feet
DEPTH BOTTOM OF SAND DRAIN	4 feet
TYPE OF RISER PIPE	PVC / Sch.40
I.D. AND O.D. OF RISER PIPE	4" / 4.25"
TYPE OF BACKFILL AROUND RISER PIPE	Bentonite + Sand Grout
DEPTH TOP OF SEAL	29 feet
TYPE OF SEAL	Bentonite chips
DEPTH BOTTOM OF SEAL	31 feet
DIAMETER OF BOREHOLE	10.25 inches
DEPTH TOP OF PERVIOUS SECTION	33 feet
TYPE OF PERVIOUS SECTION	Slotted PVC
I.D AND O.D. OF PERVIOUS SECTION	4" / 4.25"
TYPE OF OPENINGS	0.010 inch
TYPE OF BACKFILL AROUND PERVIOUS SECTION	Sand
DEPTH BOTTOM OF PERVIOUS SECTION	38 feet
DEPTH OF BACKFILL	38 feet
TYPE OF BACKFILL	Sand
END OF BORING	40 feet

General soil conditions (not to scale)

1 CENTRALIZER USED

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

BROWN & ROOT ENVIRONMENTAL

PROJECT NAME:	PCA	PROJECT NO:	0288
PROJECT LOCATION:	NETC–Newport	WELL NO:	TF4–MW122
CLIENT:	NAVFAC	BORING NO:	TF4–B–45
CONTRACTOR:	EDI	DRILLER:	S. LaMarche
LOGGED BY:	K.Jalkut	DATE:	11/15/1994
CHECKED BY:	MJN	DATE:	4-30-96

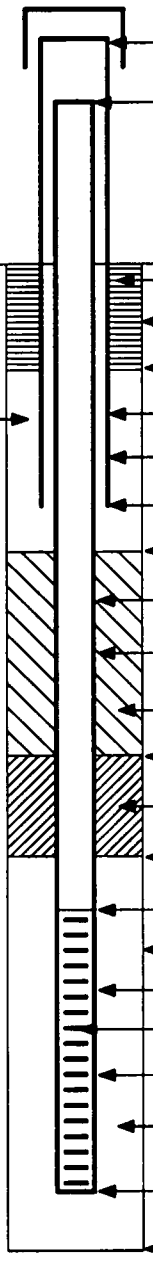
BORING LOCATION: Tank 45, Tank Farm 4

PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING: 0.00

ELEVATION TOP OF RISER PIPE: 0.00

GROUND ELEVATION: 0.00



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	1.75
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	1.41
TYPE OF SURFACE SEAL	Cement
DIA. SURFACE SEAL BGS (In.)	9.000
DEPTH TO BOTTOM OF SURFACE SEAL (Ft)	3.00
I.D. OF PROTECTIVE CASING (In.)	6.000
TYPE OF PROTECTIVE CASING	Steel
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	3.25
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	4.00
RISER PIPE (In.) I.D.: 4.000 O.D.:	4.250
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Bent. grout/sand
DEPTH TOP OF SEAL (Ft.)	30.00
TYPE OF SEAL	Bent.Chips
DEPTH BOTTOM OF SEAL (Ft)	32.00
DEPTH TOP OF PERVIOUS SECTION (Ft.)	34.00
DIAMETER OF BOREHOLE (In.)	10.250
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.020 Slotted
PERVIOUS SECTION (In.) I.D.: 4.000 O.D.:	4.250
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	Silica Sand
DEPTH BOTTOM OF PERVIOUS SECTION (Ft)	39.00
DEPTH BOTTOM OF FILTER PACK (Ft.)	40.00

GENERAL NOTE:

1 Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

ACAD: C:\temp\josh\MW_122

(TANK 46 WELL NO. MW-121 BORING NO. TF4-B-46)

OVERBURDEN WELL CONSTRUCTION LOG — **HALLIBURTON NUS ENVIRONMENTAL CORPORATION**

PROJECT: CTO-143-UST-RI — PAGE: 1 OF 1

PROJECT LOCATION: NETC NEWPORT NAVAL BASE — TANK FARM #5

CLIENT: US NAVY — WELL ~~BORING~~ NO.: MW-121

CONTRACTOR: ENVIRONMENTAL DRILLING INC — DRILLER: [illegible] — BORING LOCATION: UST 46 (TF4-B-46)

LOGGED BY: TRACY DOLGAN — DATE: 11-14-94 — PROJECT NO.: 0288

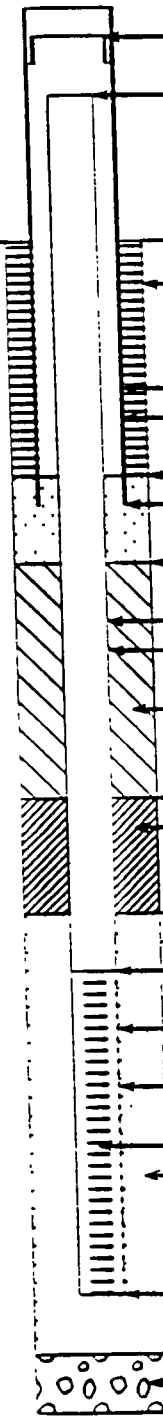
CHECKED BY: — DATE:

ELEVATION TOP OF PROTECTIVE CASING: 106.56 MLW

ELEVATION TOP OF RISER PIPE: 106.17 MLW

GROUND ELEVATION: 104.8 MLW

General soil conditions (not to scale)



LENGTH OF PROTECTIVE CASING OR ROAD BOX ABOVE GROUND SURFACE	1.70'
LENGTH OF RISER PIPE ABOVE GROUND SURFACE	1.30'
TYPE OF SURFACE SEAL	CEMENT
TYPE OF PROTECTIVE CASING	STEEL-STRK-UP
I.D. OF PROTECTIVE CASING	6"
DEPTH BOTTOM OF SURFACE SEAL	2.5'
DEPTH BOTTOM OF CASING	3'
DEPTH BOTTOM OF SAND DRAIN	4'
TYPE OF RISER PIPE	SCHED. 40 PVC
I.D. AND O.D. OF RISER PIPE	4" ID / 4.25" OD
TYPE OF BACKFILL AROUND RISER PIPE	VOLCLAY GROUT + SAND
DEPTH TOP OF SEAL	27'
TYPE OF SEAL	BENT CHIPS
DEPTH BOTTOM OF SEAL	30'
DIAMETER OF BOREHOLE	~10.25"
DEPTH TOP OF PERVIOUS SECTION	33'
TYPE OF PERVIOUS SECTION	SCHED. 40 PVC
I.D AND O.D. OF PERVIOUS SECTION	4" ID / 4.25" OD
TYPE OF OPENINGS	0.010 SLOTTED
TYPE OF BACKFILL AROUND PERVIOUS SECTION	#1 SAND
DEPTH BOTTOM OF PERVIOUS SECTION	38'
DEPTH OF BACKFILL	38'
TYPE OF BACKFILL	#1 SAND
END OF BORING	39.5'

(TANK 47 WELL NO. MW-118 BORING NO. TF4-B-47)

OVERBURDEN WELL CONSTRUCTION LOG — **HALLIBURTON NUS ENVIRONMENTAL CORPORATION**

PROJECT: CTO 143 — PAGE: 1 OF 1

PROJECT LOCATION: NETC Newport

CLIENT: NAVFAC ENG-COM — WELL ~~BORING~~ NO.: TF4-MW118 / -TF4-B-47

CONTRACTOR: EDI — DRILLER: S. LaMarche — BORING LOCATION: Tank 47 Farm 4

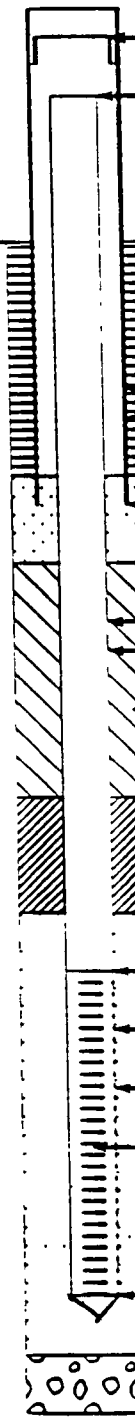
LOGGED BY: K Jaikut — DATE: 11/10/94 — PROJECT NO.: 0288

CHECKED BY: — DATE:

ELEVATION TOP OF PROTECTIVE CASING: 83.62 MLW

ELEVATION TOP OF RISER PIPE: 82.85 MLW

GROUND ELEVATION: 81.4 MLW



LENGTH OF PROTECTIVE CASING OR ROAD BOX ABOVE GROUND SURFACE	1.975'
LENGTH OF RISER PIPE ABOVE GROUND SURFACE	1.375'
TYPE OF SURFACE SEAL	Quikrete Concrete Mix
TYPE OF PROTECTIVE CASING	Steel
I.D. OF PROTECTIVE CASING	6 in
DEPTH BOTTOM OF SURFACE SEAL	3 FT
DEPTH BOTTOM OF CASING	
DEPTH BOTTOM OF SAND DRAIN	4 FT
TYPE OF RISER PIPE	Sched 40 PVC
I.D. AND O.D. OF RISER PIPE	4"/4 1/4"
TYPE OF BACKFILL AROUND RISER PIPE	Bentonite Slurry Sand Overlay
DEPTH TOP OF SEAL	28 FT
TYPE OF SEAL	Pelletized Chips
DEPTH BOTTOM OF SEAL	31 FT
DIAMETER OF BOREHOLE	10 1/4 in
DEPTH TOP OF PERVIOUS SECTION	33 FT
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
I.D AND O.D. OF PERVIOUS SECTION	4"/4 1/4"
TYPE OF OPENINGS	0.010 slots
TYPE OF BACKFILL AROUND PERVIOUS SECTION	#1 Sand
DEPTH BOTTOM OF PERVIOUS SECTION	38 FT
DEPTH OF BACKFILL	38 FT
TYPE OF BACKFILL	Sand-6 in
END OF BORING	Augered to 38.5' — 38'2"

General soil conditions (not to scale)

Use of pellet chips for seal to ensure slurry is above gravel layer

WT ~ 28 FT

Gravel 32-38'

Rock 38'8"

Centralizer mid screen

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

BROWN & ROOT ENVIRONMENTAL

PROJECT NAME:	PCA	PROJECT NO:	0288
PROJECT LOCATION:	NETC–Newport	WELL NO:	TF4–MW119
CLIENT:	NAVFAC	BORING NO:	TF4–B–48
CONTRACTOR:	EDI	DRILLER:	S. LaMarche
LOGGED BY:	K.Jalkut	DATE:	11/11/1994
CHECKED BY:	M SN	DATE:	4-30-96

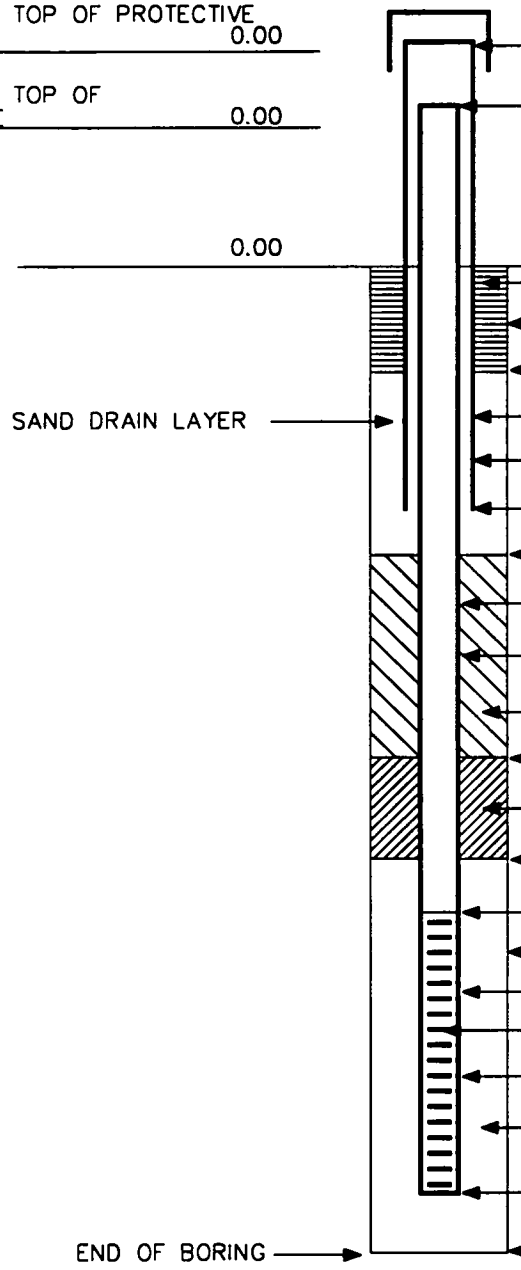
BORING LOCATION: Tank 48, Tank Farm 4

PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING: 0.00

ELEVATION TOP OF RISER PIPE: 0.00

GROUND ELEVATION: 0.00



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	2.00
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	1.65
TYPE OF SURFACE SEAL	Cement
DIA. SURFACE SEAL BGS (In.)	9.000
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	2.80
I.D. OF PROTECTIVE CASING (In.)	6.000
TYPE OF PROTECTIVE CASING	Steel
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	3.00
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	4.00
RISER PIPE (In.) I.D.: 4.000 O.D.:	4.250
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Bent. grout/sand
DEPTH TOP OF SEAL (Ft.)	29.50
TYPE OF SEAL	Bent.Chips
DEPTH BOTTOM OF SEAL (Ft)	31.50
DEPTH TOP OF PERVIOUS SECTION (Ft.)	33.50
DIAMETER OF BOREHOLE (In.)	10.250
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.020 Slotted
PERVIOUS SECTION (In.) I.D.: 4.000 O.D.:	4.250
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	Silica Sand
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	38.50
DEPTH BOTTOM OF FILTER PACK (Ft.)	39.67

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

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OVERBURDEN MONITORING WELL CONSTRUCTION LOG

BROWN & ROOT ENVIRONMENTAL

PROJECT NAME:	SI Tank Farm 4	PROJECT NO:	0288
PROJECT LOCATION:	NETC–Newport	WELL NO:	MW–401
CLIENT:	Nav Fac	BORING NO:	SB–401
CONTRACTOR:	EDI	DRILLER:	J. St. George
LOGGED BY:	J. Holden	DATE:	11/28/1995
CHECKED BY:	M. N.	DATE:	4-29-96

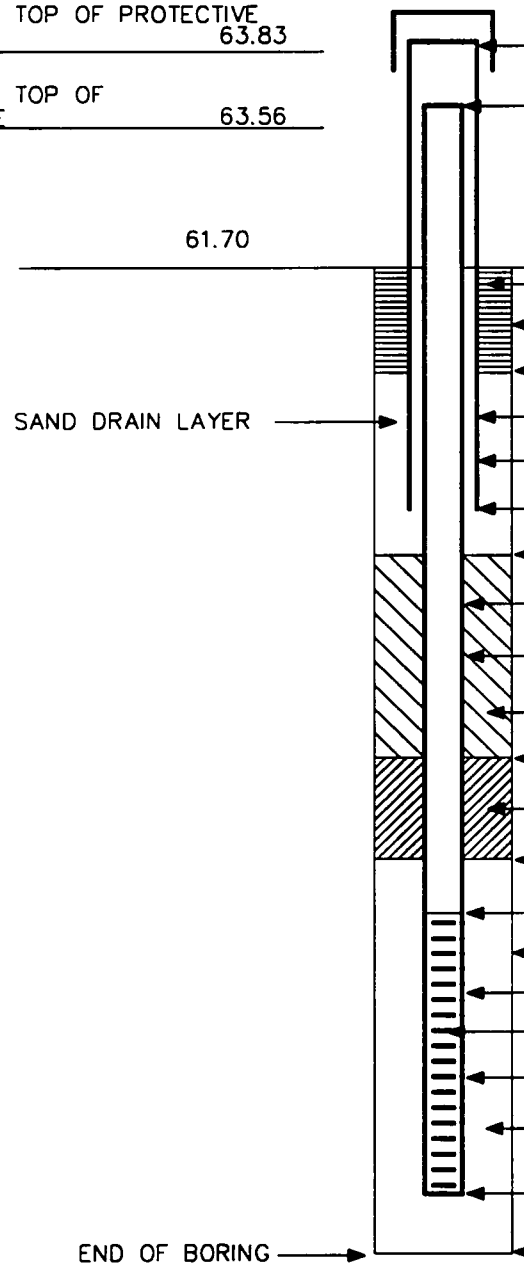
BORING LOCATION: Tank 48 downgradient

PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING 63.83

ELEVATION TOP OF RISER PIPE 63.56

GROUND ELEVATION 61.70



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	2.13
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	1.86
TYPE OF SURFACE SEAL	Cement
DIA. SURFACE SEAL BGS (In)	8.000
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	2.50
I D. OF PROTECTIVE CASING (In)	5.00 ~~Steel~~ mill
TYPE OF PROTECTIVE CASING	steel 5.000
DEPTH BOTTOM OF PROTECTIVE CASING (Ft)	3.00
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	3.83
RISER PIPE (In.) I D.: 2.000 O.D.:	2.375
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Grout/Silica Sand
DEPTH TOP OF SEAL (Ft.)	23.00
TYPE OF SEAL	Bent.Chips
DEPTH BOTTOM OF SEAL (Ft.)	25.00
DEPTH TOP OF PERVIOUS SECTION (Ft.)	27.00
DIAMETER OF BOREHOLE (In.)	8.000
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.020 Slotted
PERVIOUS SECTION (In) I.D.: 2.000 O.D.:	2.375
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	Silica Sand
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	37.00
DEPTH BOTTOM OF FILTER PACK (Ft.)	38.00

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

ACAD: C:\DWG\NETC\MW-TF4\MW_401

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

BROWN & ROOT ENVIRONMENTAL

PROJECT NAME:	SI Tank Farm 4	PROJECT NO:	0288
PROJECT LOCATION:	NETC-Newport	WELL NO:	MW-404
CLIENT:	Nav Fac	BORING NO:	SB-404
CONTRACTOR:	EDI	DRILLER:	J St. George
LOGGED BY:	J. Holden	DATE:	11/29/1995
CHECKED BY:	MJB	DATE:	4-29-96

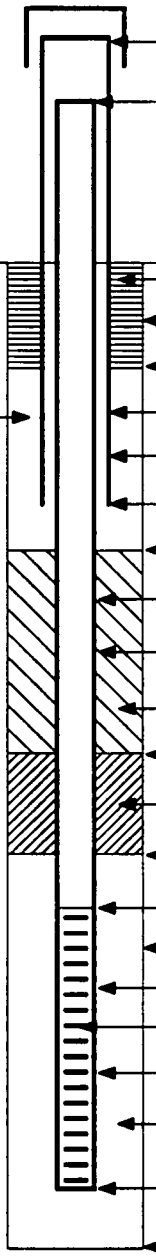
BORING LOCATION: Tank 48, cross gradient filter pack compromised

PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING 68.73

ELEVATION TOP OF RISER PIPE 68.55

GROUND ELEVATION 66.90



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	1.83
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	1.65
TYPE OF SURFACE SEAL	Cement
DIA. SURFACE SEAL BGS (In)	8.000
DEPTH TO BOTTOM OF SURFACE SEAL (Ft)	2.50
I.D. OF PROTECTIVE CASING (In.)	5.000
TYPE OF PROTECTIVE CASING	Steel
DEPTH BOTTOM OF PROTECTIVE CASING (Ft)	3.50
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	4.00
RISER PIPE (In.) I D.: 2.000 O.D.:	2.375
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Grout/Silica Sand
DEPTH TOP OF SEAL (Ft.)	32.00
TYPE OF SEAL	Bent.Chips
DEPTH BOTTOM OF SEAL (Ft)	34.00
DEPTH TOP OF PERVIOUS SECTION (Ft)	36.00
DIAMETER OF BOREHOLE (In.)	8.000
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.020 Slotted
PERVIOUS SECTION (In.) I.D.: 2.000 O.D.:	2.375
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	Silica Sand
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	41.00
DEPTH BOTTOM OF FILTER PACK (Ft.)	42.00

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

ACAD: C:\DWG\NETC\MW-TF4\MW_404

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

BROWN & ROOT ENVIRONMENTAL

PROJECT NAME:	SI Tank Farm 4	PROJECT NO:	0288
PROJECT LOCATION:	NETC-Newport	WELL NO:	MW-408
CLIENT:	Nav Fac	BORING NO:	SB-408
CONTRACTOR:	EDI	DRILLER:	J. St. George
LOGGED BY:	J. Holden	DATE:	11/30/1995
CHECKED BY:	MJN	DATE:	1-29-96

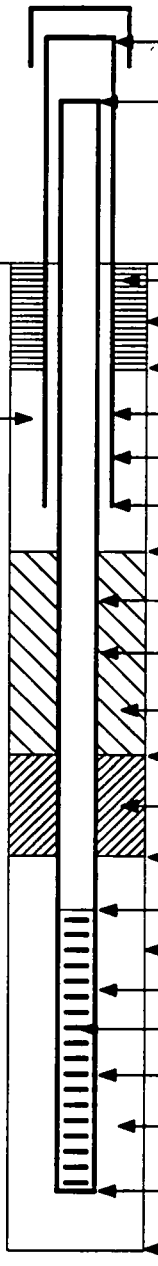
BORING LOCATION: Tank 48, upgradient

PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING 69.69

ELEVATION TOP OF RISER PIPE 69.49

GROUND ELEVATION 67.70



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	1.99
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	1.79
TYPE OF SURFACE SEAL	Cement
DIA. SURFACE SEAL BGS (In.)	8.000
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	2.50
I.D. OF PROTECTIVE CASING (In.)	4.250
TYPE OF PROTECTIVE CASING	Steel
DEPTH BOTTOM OF PROTECTIVE CASING (Ft)	3.50
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	4.00
RISER PIPE (In.) I.D.: 2.000 O.D.:	2.375
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Grout/Silica Sand
DEPTH TOP OF SEAL (Ft)	30.50
TYPE OF SEAL	Bent.Chips
DEPTH BOTTOM OF SEAL (Ft)	35.00
DEPTH TOP OF PERVIOUS SECTION (Ft.)	37.00
DIAMETER OF BOREHOLE (In.)	8.000
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.020 Slotted
PERVIOUS SECTION (In) I.D.: 2.000 O.D.:	2.375
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	Silica Sand
DEPTH BOTTOM OF PERVIOUS SECTION (Ft)	42.00
DEPTH BOTTOM OF FILTER PACK (Ft.)	43.00

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing indicates that Surveyed Ground Elevation Not Available.

ACAD: C:\DWG\NETC\MW-TF4\MW_408

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

BROWN & ROOT ENVIRONMENTAL

PROJECT NAME:	SI Tank Farm 4	PROJECT NO:	0288
PROJECT LOCATION:	NETC–Newport	WELL NO:	MW–412
CLIENT	Nav Fac	BORING NO:	SB–412
CONTRACTOR:	EDI	DRILLER:	S Lamarche
LOGGED BY:	J Holden	DATE.	12/04/1995
CHECKED BY:	MSD	DATE:	4-29-96

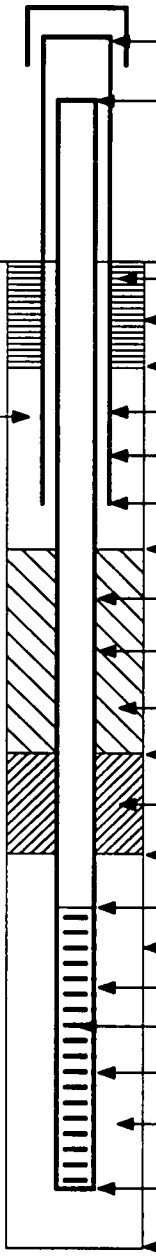
BORING LOCATION:
Tank 48, downgradient
15' from tank edge

PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING 62.98

ELEVATION TOP OF RISER PIPE 62.52

GROUND ELEVATION 60.80



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	2.18
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft)	1.72
TYPE OF SURFACE SEAL	Cement
DIA. SURFACE SEAL BGS (In)	8.000
DEPTH TO BOTTOM OF SURFACE SEAL (Ft)	2.50
I D. OF PROTECTIVE CASING (In)	4.250
TYPE OF PROTECTIVE CASING	Steel
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	3.00
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	3.50
RISER PIPE (In.) I.D.: 2 000 O.D.:	2.375
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Chips/Silica Sand
DEPTH TOP OF SEAL (Ft)	6.00
TYPE OF SEAL	Bent.Chips
DEPTH BOTTOM OF SEAL (Ft)	8.00
DEPTH TOP OF PERVIOUS SECTION (Ft.)	10.00
DIAMETER OF BOREHOLE (In)	8.000
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.020 Slotted
PERVIOUS SECTION (In.) I.D.: 2.000 O.D.:	2.375
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	Silica Sand
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	20.00
DEPTH BOTTOM OF FILTER PACK (Ft.)	21.00

GENERAL NOTE:

1. Entry of 0 00 for Ground Elevation, Elev Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

ACAD: C:\DWG\NETC\MW–TF4\MW_412

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

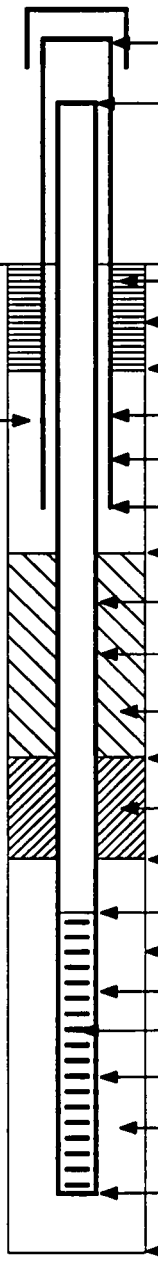
BROWN & ROOT ENVIRONMENTAL

PROJECT NAME:	SI Tank Farm 4	PROJECT NO:	0288
PROJECT LOCATION:	NETC–Newport	WELL NO:	MW422
CLIENT:	Nav Fac	BORING NO:	SB422
CONTRACTOR:	EDI	DRILLER:	Ajay Caron
LOGGED BY:	J. Holden	DATE:	12/11/1995
CHECKED BY:	MIDt	DATE:	4-29-96
BORING LOCATION:	Tank 48, ramp		
PAGE:	1 OF 1		

ELEVATION TOP OF PROTECTIVE CASING 67.24

ELEVATION TOP OF RISER PIPE 66.90

GROUND ELEVATION 64.90



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	2.34
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	2.00
TYPE OF SURFACE SEAL	Cement
DIA. SURFACE SEAL BGS (In.)	8.000
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	2.00
I.D. OF PROTECTIVE CASING (In.)	4.250
TYPE OF PROTECTIVE CASING	Steel
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	3.00
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	4.00
RISER PIPE (In.) I.D.: 2.000 O.D.:	2.375
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Chips/sand
DEPTH TOP OF SEAL (Ft.)	15.00
TYPE OF SEAL	Bent.Chips
DEPTH BOTTOM OF SEAL (Ft.)	17.00
DEPTH TOP OF PERVIOUS SECTION (Ft.)	19.00
DIAMETER OF BOREHOLE (In.)	8.000
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.020 Slotted
PERVIOUS SECTION (In.) I.D.: 2.000 O.D.:	2.375
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	Silica Sand
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	24.00
DEPTH BOTTOM OF FILTER PACK (Ft.)	25.00

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing indicates that Surveyed Ground Elevation Not Available.

ACAD: C:\DWG\NETC\MW-TF4\MW_422