BECHTEL NATIONAL INC.

CLEAN II TRANSMITTAL/DELIVERABLE RECEIPT

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Naval Facilities Engineering Command
Southwest Division
Mr. Richard Selby, Code 57CS1.RS
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1220 Pacific Highway
San Diego, CA 92132-5190

DATE: January 6, 1998
CTO #: 142
LOCATION: MCAS El Toro

FROM: D. J. Tedaldi, Ph.D., P.E., Project Manager

DESCRIPTION: Meeting Minutes, Site 24 Pilot Test Update - DTD December 17, 1997

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MEETING MINUTES

Meeting Subject: Site 24 Pilot Test Update	**Meeting Date**: December 17, 1997 **Meeting Time**: 10:00 AM **Meeting Place**: Conference Call **Meeting Notes Prepared By**: Patrick Brooks

Attendees: (*Part Time)

Navy	Bechtel	Other
Bernie Lindsey, RPM	Pat Brooks, CTOL	Glenn Kistner, U.S. EPA
	Tim Latas, Field Manager	Herb Levine, U.S. EPA
	Dante Tedaldi, PM	Tayseer Mahmoud, DTSC
		John Broderick, RWQCB

Additional Distribution:
- Theodore Johnson, DTSC
- Andy Piszkin, Navy
- Larry Vitale, RWQCB
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Pat Brooks reviewed the field work that had been accomplished since the last Site 24 Update meeting. The injection well observation well (24IN2OB2) has been repaired. Before sampling the well, it will be developed to remove any sediment introduced during filter pack placement. The EX6 wells are currently being developed.

The constant-rate test at 24EX4 was reset on December 11 at a rate of 5 gallons per minute (gpm). The test with a 10 gpm pumping rate encountered a boundary condition at about 400 minutes. The well would have pumped dry in less than 3 days, so pumping was halted. The latest drawdown curve for the 5 gpm pumping rate is included with these minutes. The drawdown curve for an extraction rate of 10 gpm is also included.

The low-flow-rate sampling procedure was attached to the agenda and discussed. It is the same procedure that was described in the MCAS Tustin report "Draft Issue Paper on Low-Flow-Rate Purging and Sampling Study" except a 24-hour waiting period has been added after the pump is installed. This was included to reduce the potential of sampling water that had been mixed during pump placement. Boring logs that show proposed pump depths for EX5, EX5OB1 and EX5OB2 were also included with the sampling procedure. Sampling pumps were proposed to be set adjacent to coarse-grained strata. The proposed pump depth for EX5 was 125 feet below ground surface (bgs), 124 feet bgs for EX5OB1, and 147 feet bgs for EX5OB2. A cross-section showing HydroPunch results from the 24EX5 well group area was included with the agenda and with these minutes. Results for TCE in groundwater are highlighted. These results will be compared to the results obtained from standard purge method and the low-flow-rate sampling method. Herb Levine, Tayseer Mahmoud, and John Broderick agreed to the sampling procedure and proposed pump placement depths.

Pat suggested that the vacuum-enhanced pumping test at 24EX4 be initiated at 10 gpm. This would enable the group to compare pumping with and without vacuum at the same pumping rate. The group agreed to the 10 gpm pumping rate.

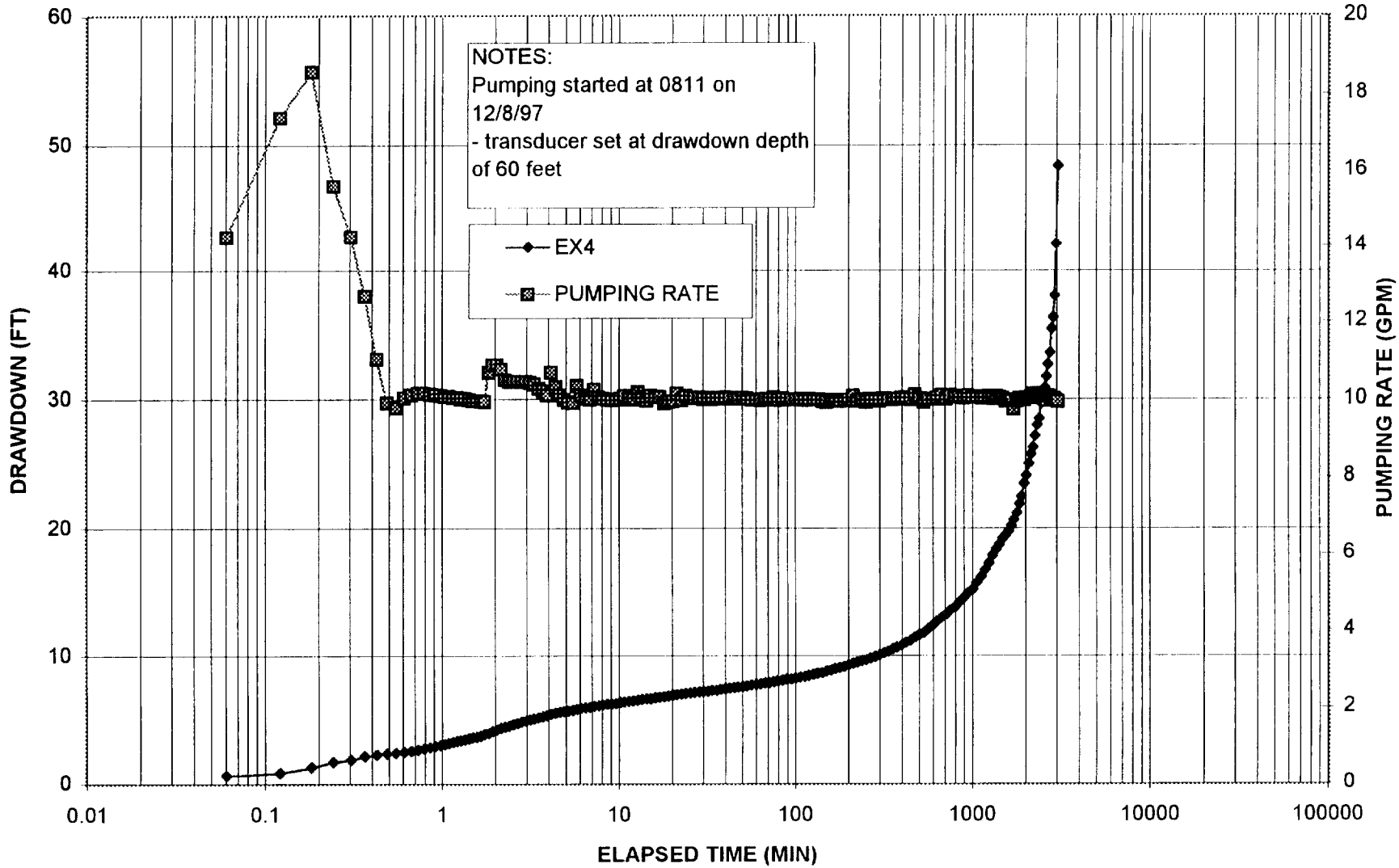
MEETING MINUTES (continued)

The Plan of Action for Site 24 field work for the next two weeks included the following:

1. Complete constant-rate test at extraction well 24EX4.
2. Mobilize equipment for vacuum-enhanced groundwater extraction test at 24EX4.
3. Repair well 24IN2OB2.
4. Develop and sample 24EX6 and 24IN2 well groups.
5. Conduct low-flow sampling at 24EX5 well group.
6. Perform field reconnaissance for the CPT/HydroPunch sampling at the leading edge of the TCE hot spot.

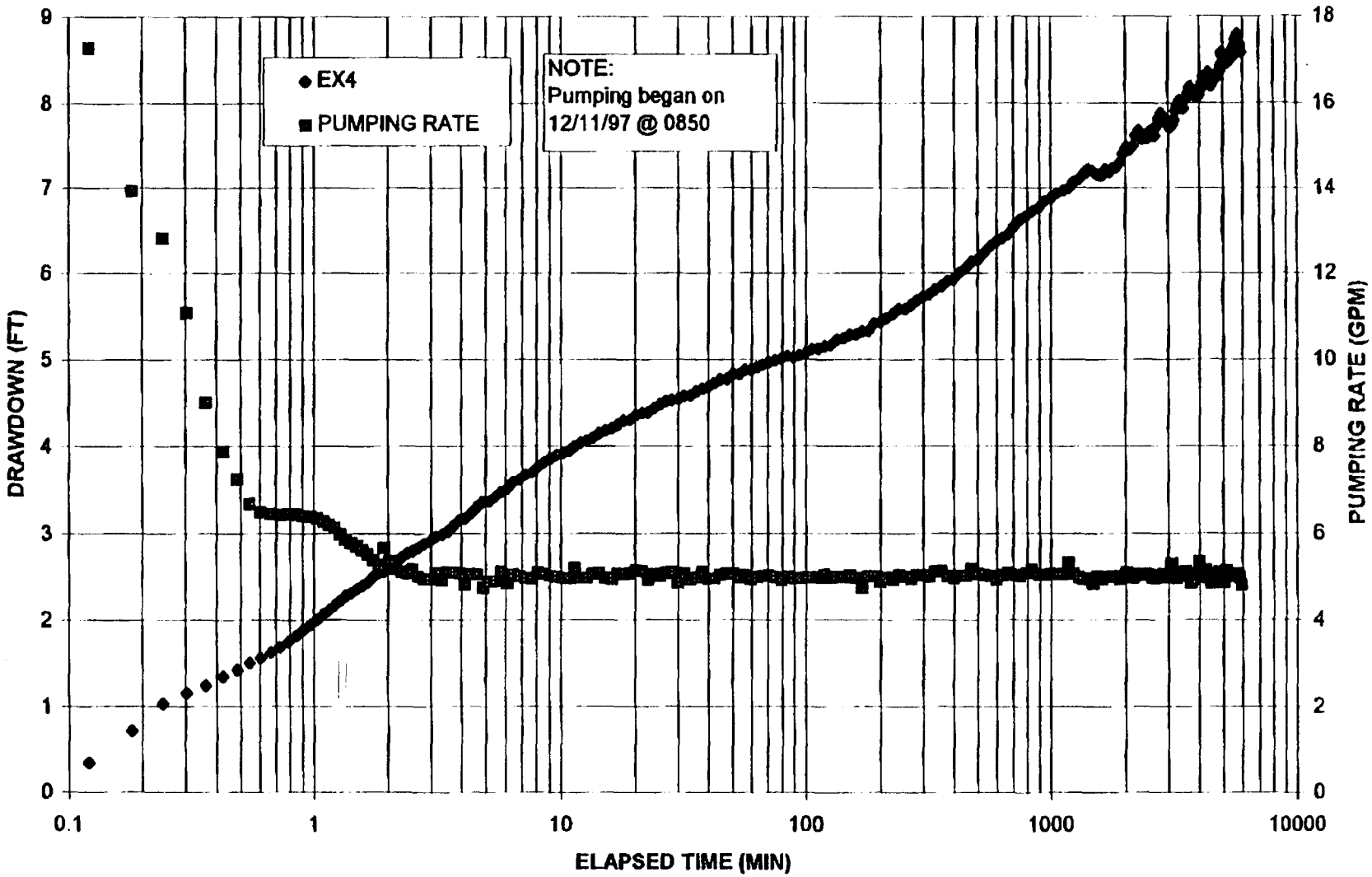
EX4 CONSTANT RATE AQUIFER TEST

10 gpm

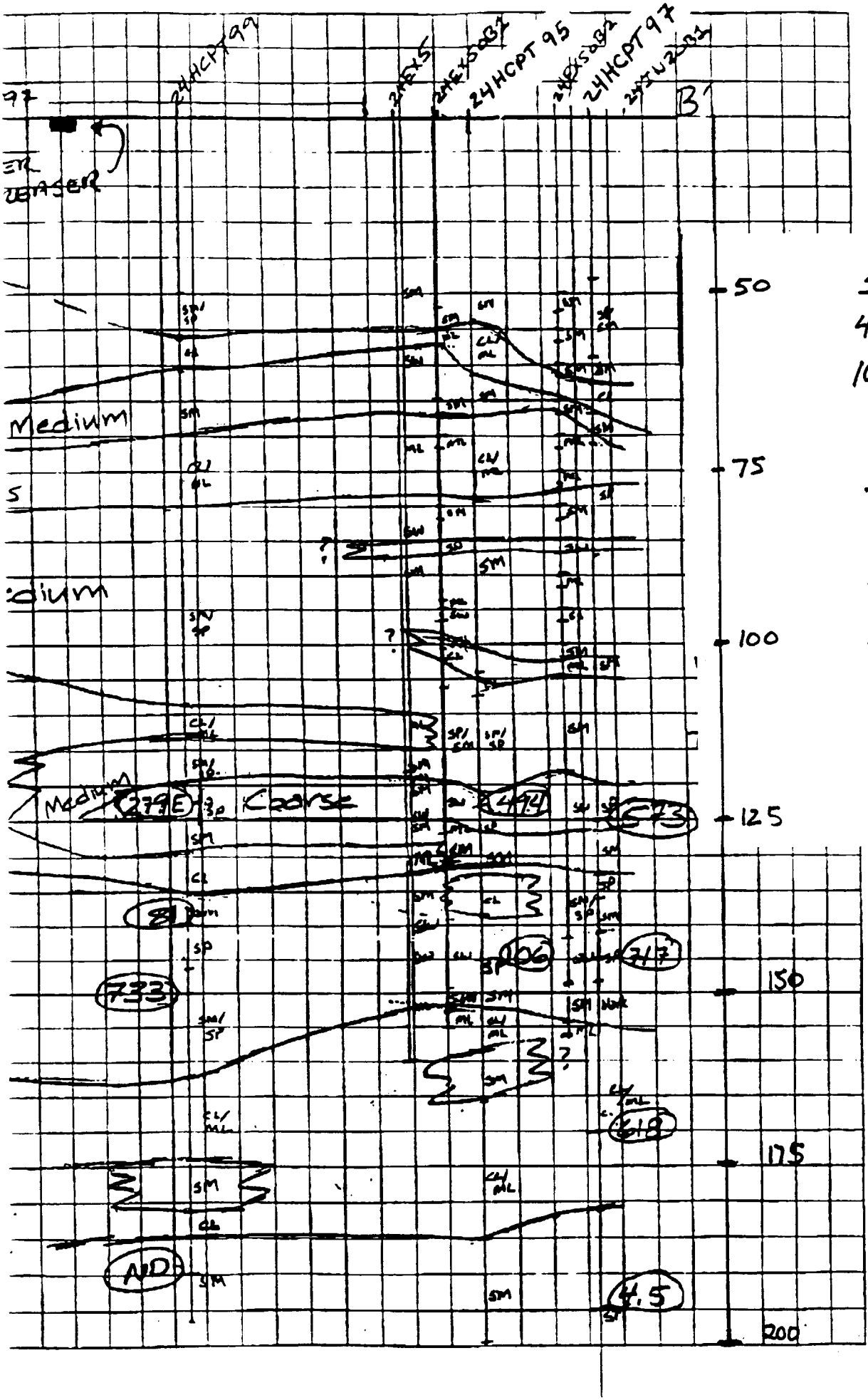


5 gpm

EX4 CONSTANT RATE AQUIFER TEST (#5)
EXTRACTION WELL



12/15/97 12:48 PM



24HCPT95

494 µg/L @ 123'
106 µg/L @ 145'

24 HCPT 97

573 µg/L @ 125'
717 µg/L @ 145'
618 µg/L @ 170'
4.5 µg/L @ 195

EX5
1083

SB-142-005

BOREHOLE LOG

PROJECT and JOB NUMBER: CLEAN II 22214-142

SHEET NO.: 4 OF 6

HOLE NO.: 24BX5

(Template: NAVY)

Organic Vapors Reading (ppm)	Core RQD %	Core/Soil Recovery %	Core Length/ Sampler Advance	Blow Counts or Recovery (ft)	Core Run No./ Sampler Type	Elevation in Feet	Depth in Feet	Graphics	Sample	Description and Classification	Sample No./Remarks:
							92				
							94				
							96				
							98				
							100				
							102				
							104				
							106				
							108				
	0	24"	17"		← 10 20-50 for 5"		110			SANDY SILT (ML), dark grayish brown (10YR, 4/2), very stiff, ~~moist~~ moist, sand is fine, white and black mottling (<5%)	First sample
							112				
							114				
	0	24"	24"	4-5-10-19			116			SILTY SAND (SM), pale brown (10YR, 6/3), loose, saturated, fine to coarse grained	
										SANDY SILT (ML), grayish brown (10YR, 5/2), stiff, wet, sand is fine	
							118				
							120			SILTY SAND (SM), yellowish brown (10YR, 5/4), med dense, saturated, sand is fine grained, (silt content decreases w/depth)	yields water
	0	24"	24	5-16	20-24		122			trace gravel (~2" diam)	

SITE and LOCATION

EX5
2 of 3

SB-142-005

BOREHOLE LOG

PROJECT and JOB NUMBER: CLEAN II 22214-142

SHEET NO.: 5 OF 6 | HOLE NO.: 24BX5

(Template: NAVY)

Pump Placement @ 125'

Core RQD %	Core/Soil Recovery %	Core Length/ Sampler Advance	Blow Counts or Recovery (ft)	Core Run No./ Sampler Type	Elevation in Feet	Depth in Feet	Graphics	Sample	Description and Classification	Sample No./Remarks:
	24"	24"	12-15-20-27			126			GRAVELLY SAND (SW), very pale brown (10YR, 7/3), loose, saturated, sand is coarse, gravel 1/2"-2" diam.	yields water readily
						125			SILTY SAND (SM), yellowish brown (10YR, 5/4), med. dense, saturated, sand is fine to med.	
	24"	10"	24-50 for 7"			130			SANDY SILT (ML), yellowish brown (10YR, 5/4), hard, saturated, sand is fine	
						132				
						134				
	24"	24"	9-11-17-23			136			SILTY SAND (SM), light yellowish brown (10YR, 6/4), med. dense, saturated, sand is fine	np
						138				
	24"	~~10~~ 24"	pp 10-24 ~~34-50 for 7"~~ 2-4-5-10			140			SAND (SW), pale brown (10YR, 6/3), loose, saturated, sand is fine to med. w/ trace coarse grains, trace silt	yields water
						142				
						144				
						146				
	24"	24"	4-5-9-13			148			as above, med to coarse grained,	liquified (yields water)
						150				
	24"	24"	7-20-26-33			152			Sandy SILT (ML), dk brown (10YR 3/3) medium stiff, wet, fine grained sand, trace clay	field test gives a density of medium stiff
						154				
						156				

SITE and LOCATION: MCAS El Toro - VOC SOURCE AREA

HOLE NO.: 24BX5

EX5
3 of 3

SB-142-005

BOREHOLE LOG

PROJECT and JOB NUMBER: CLEAN II 22214-142

SHEET NO.: 6 OF 6

HOLE NO.: EX5

(Template: NAVY)

Organic Vapor Reading (ppm)	Core RQD %	Core/Soil Recovery %	Core Length/ Sampler Advance	Blow Counts or Recovery (ft)	Core Run No./ Sampler Type	Elevation in Feet	Depth in Feet	Graphics	Sample	Description and Classification	Sample No./Remarks:
0		24"	24"	10-24-30-36			154			as above, except becomes f-m grained sand	
										@157.5, becomes hard, clayey	
							160			Bottom of boring	
							162				

SITE and LOCATION
MCAS El Toro - VOC SOURCE AREA

HOLE NO. EX5

EX5OB1
1 of 2

SB-142-005

BOREHOLE LOG

PROJECT and JOB NUMBER: CLEAN II 22214-142

SHEET NO. 4 OF

HOLE NO. EX5 OB1

(Template: NAVY)

Reading (ppm)	Core RQD %	Core/Soil Recovery %	Core Length/ Sampler Advance	Blow Counts or Recovery (ft)	Core Run No./ Sampler Type	Elevation in Feet	Depth in Feet	Graphics	Sample	Description and Classification	Sample No./Remarks:
							94			clayey SILT (ML), dk yellowish brn (10YR4/4) ~~[illegible]~~ Hard, moist, trace sand	
		8"	9"	15-5/3"			96			SILTY SAND (SM), dk yellowish brn (10YR4/4), v. dense, moist, f-m grained	
							98				
		23"	24"	25-25-27-40			102			@100 ft, clayey silt layer Below 100.5 ft, becomes trace med. grained H. olv brn (2.5Y5/3)	
		24"	24"	13-17-19-23			102			@102 ft, clayey silt layer	
							104			Silty CLAY (CL), very dark greyish brown (2.5Y3/2), Hard, moist, 5-15% black mottling (possible organics)	
		23"	24"	10-[illegible]-[illegible]-31			106			@105 ft, trace sand; grades to clayey sandy silt	
		23"	24"	6-15-25-36			108			Silty SAND (SM), olv. brn (2.5Y4/3), v. dense, wet, fine to med. grained, trace coarse. Interbedded with clayey silty sand, sandy & clayey silt, and sand, 1"-9" thick.	
		24"	24"	13-15-31-33			110			@109.5 less silt, below 110 ft f-grained, trace med.	
		24"	24"	11-14-11-37			112			@111.5, trace black mottling in clayey silt layer	
		8"	24"	3-4-5-7			114			@113.5, becomes fine grained, trace fine gravel to 114.8 Below 114.8, fine grained sandy silts/silty sands	
		23"	24"	4-9-19-32			116			~~@115.5 and 116~~ SE 10/87 @117.5 and 118 ft, clayey layers approx 1" thick	
		24"	24"	12-20-26-32			118			Below 118', becomes saturated	gields-little water
		23"	24"	4-4-14-15			120	SEVE		SAND (SW), H. olv. brn (2.5Y5/3), v. dense, saturated, f-c grained, trace f-c gravel to 1.5", trace silt	gields water sieve sample 142050 D=120-[illegible]
		18"	5"	50/5"			122			@120-121.5, trace coarse grained, no gravel	@120-121.5, liquifies upon shaking
		17"	17"	2-20-50/5"			124				@122-123.5, liquifies

SET PUMP @ 124'

SITE and LOCATION: MCAS El Toro - VOC SOURCE AREA

HOLE NO. EX5OB1

EX5OB1
2 of 2

SB-142-005

BOREHOLE LOG

PROJECT and JOB NUMBER: CLEAN II 22214-142

SHEET NO. 5 OF

HOLE NO. EX5 OB1

(Template: NAVY)

Organic Vapor Reading (ppm)	Core RQD %	Core/Soil Recovery	Core Length/ Sampler Advance	Blow Counts or Recovery (ft)	Core Run No./ Sampler Type	Elevation in Feet	Depth in Feet	Graphics	Sample	Description and Classification	Sample No./Remarks:
										@125.5, 5" thick	
0		17"	16"	12-30-50/4"			124			@125 ft, gravelly, fine to coarse gravel to 1.5"	yields water
										SILT(ML), olv. brn (2.5Y4/3), hard, wet, trace clay & sand	
0		24"	24"	8-40-30-36			126			@126-127, fine grained, trace med.	
										@126-127, silty	
0		24"	17"	22-40-50/5"			128			clayey Silty SAND(SM), olv brn (2.5Y4/3) v. dense, wet, f-m sand	
0		24"	17"	16-25-50/5"			130			no sample SB 10/27/97	
										@131.5 becomes silty sand, no clay	10/28/97
0		24"	24"	4-6-6-8			132			Silty SAND(SM), lt. olv brn (2.5Y5/3), medium dense, f-m grained, trace coarse sand and f-c gravel to 2" saturated	SB 10/28 yields water
0		24"	24"	5-12-19-36			134				134-137' liquified
0		24"	24"	6-10-8-12			136			@136.8-137.8, fine grained	SB 10/28/97 low water yield
0		24"	24"	4-7-8-12			138			Sand(SW), lt. olv brn (2.5Y5/3), med. dense, saturated, f-c grained, trace silt	yields water
0		24"	24"	9-13-21-25			140			@140 ft, 2" thick silty sand, fine grained	140-141.5 liquified
										@141.5 ft, 6" thick silty sand, fine grained	
0		24"	24"	5-7-8-12			142			below SB 10/28/97 @143, trace f-c gravel to 1.5"	Sieve Sample T420511 D=142.5-1 ~~144-146 ft sample no recovery~~ SB 10/28/97
0		24"	24"	4-8-10-13			144				
0		24"	24"	8-10-14-15			146				146-147 & 149-150 liquifies upon shaking
		24"	24"	8-13-17-26			148			Silty SAND(SM), lt. olv. brn (2.5Y5/4), med dense, saturated, f-m grained, trace coarse grained, trace f-c gravel to 2", sub rounded to rounded	Sieve Sample T420512 D=148.5-150
0		24"	24"	9-11-13-14			150			@151, f-c sand; below 151, increasing silt, no gravel	@150-151 liquified
0		24"	24"	7-12-14-17			152			clayey silt(ML), dk brown (10YR3/3), very stiff wet,	low water yield 151-153'
		23"	24"				154			Below 155, becomes sandy, borderline silty sand	
							156				

SITE and LOCATION: MCAS El Toro - VOC SOURCE AREA

156' bottom of hole

HOLE NO. EX5OB1

061

EX5 OB2

1 of 2

SB-142-005

BOREHOLE LOG

PROJECT and JOB NUMBER: CLEAN II 22214-142

SHEET NO.: 4 OF 5 | HOLE NO.: EX5 OB2

(Template: NAVY)

Organic Vapor Reading (ppm)	Core RQD %	Core/Soil Recovery %	Core Length/ Sampler Advance	Blow Counts or Recovery (ft)	Core Run No./ Sampler Type	Elevation in Feet	Depth in Feet	Graphics	Sample	Description and Classification	Sample No./Remarks
							92				
							94				
0		21"	16	20-42-50 for 4"			96			SILTY CLAY (CL), dark yellowish brown (10YR 3/4), hard, moist	
										SILTY SAND (SM), dark yellowish brown (10YR 4/6), dense, pt 0-22, moist, sand is fine, trace med and coarse grains.	
							98				
0		21"	18"	45-50-50			100			as above, light yellowish brown (10YR 6/4), trace clay	
1		24"	24"	8-24-34-29			102				
1		20	23"	5-16-22-50/5"			104			CLAYEY SILT (ML), very dark grayish brown (10YR 3/2), hard, moist. @105 ft, becomes sandy	10/24/97
1		22"	24"	17-28-40-40			106			Silty SAND (SM), brown (10YR 4/3), v. dense, moist, f-m grained, high silt percentage, interbedded w/ sandy silts, & clayey silty sand, and sand	
0		22"	24"	12-25-42-45			108			@109.2 ft, becomes ~~SAND (SM)~~ lt. olv. brn (2.5Y 5/3), ~~v. dense~~, wet, f-c w/ trace fine gravel, ~~[illegible]~~ ~~silty~~ ~~interbedded w/ silty sand~~, fine ~~grained~~ ← no contact	SB 10/24 all corrections
0		24	24"	22-18-96-50			110				
2		17"	24"	7-13-18-24			112			@111 ft, 5" thick sandy silt, fine grained @112-113 ft, sand, saturated, f-m, trace silt, wet below 113 ft	
0		22"	22"	18-25-45-50/4"			114			@114 ft, 3" thick sand, f-m, trace coarse, trace silt @115-116 ft, low silt percentage	
0		23"	23"	9-10-18-50/5"			116			@117-118 ft, sandy silt, fine grained	
0		24"	24"	7-13-10-20			118			SAND (SW), grayish brn (2.5Y 5/2), dense, saturated, f-m grained, trace silt, trace coarse grained	yields water
0		17"	11"	13-50/5"			120			@120 ft, trace fine-coarse gravel	
0		8"	24"	5-7-9-10			122			Becomes medium dense	@122-123.5, liquified
							124				

SITE and LOCATION: MCAS El Toro - VOC SOURCE AREA

HOLE NO.: 74EX5OB2

EX5OB2
2 of 2

SB-142-005

BOREHOLE LOG

PROJECT and JOB NUMBER: CLEAN II 22214-142

SHEET NO.: 5 OF 5

HOLE NO.: EX5 OB2

(Template: NAVY)

Organic Vapor Reading (ppm)	Core RQD %	Core/Soil Recovery	Core Length/ Sampler Advance	Blow Counts or Recovery (ft)	Core Run No./ Sampler Type	Elevation in Feet	Depth in Feet	Graphics	Sample	Description and Classification	Sample No./Remarks:
0		24"	24"	5-8-8-11			124			Same as above @ 123.5 ft 26 [illegible] 124 f-c grained, trace f-c gravel to 1.25"	yields water liquified @ 124-125
0		24"	24"	6-18-23-32			126			Becomes v. dense	soil cuttings bin contains coarse gravel to 2.75 in.
0		13"	24"	15-30-32-45			128				
0		24" 23	24/24/97 16"	25-35-50/4"			130			Clayey SILT (ML), dk greyish brn (2.5Y4/2), Hard, wet	
0										Clayey silty SAND (SM), olv brn (2.5Y4/3), v. dense moist to wet, f-c grained, less clay w/ depth	
0		24"	24"	10-11-10-12			132			SAND (SW), lt. olv. brn (2.5Y5/3), med. dense, saturated, f-c grained trace silt, borderline silty	yields water
0		24"	24"	4-9-10-13			134			Silty SAND (SM), lt. olv brn (2.5Y5/3), med. dense, f-m grained, saturated,	134-138 liquifies w/ shaking
0		24"	24"	8-12-10-14			136				
1		24"	24"	11-13-10-12			138			below 138, increasing silt content	
0		24"	24"	5-8-11-15			140				
0		8"	24"	7-11-21-23			142			SAND (SW), Same as 132-134, except dense, f-m, trace coarse	142-143.5 liquified
0		22"	24"	6-10-16-17			144			Below 144 less silt	
0		24"	24"	10-14-17-19			146			Below 146 more silt	146-147.5 liquifies w/ shaking
0		24"	24"	10-11-13-14			148			@ 147.8 becomes silty, trace clay	
1		24"	24"	7-9-12-15			150			Silty SAND (SM), lt. olv brn (2.5Y5/3), dense, saturated, fine grained, high silt content decreasing w/ depth	low water yield 148-153.5 ft
0		24"	24"	10-21-32-38			152				
0		14"	13"	32-50/4"			154			SILT (ML), dk yellowish brn (10YR3/4), Hard wet, trace clay and fine sand. Becomes sandy w/ depth	
							156				

SET PUMP @ 147'

SITE and LOCATION: MCAS El Toro - VOC SOURCE AREA

Bottom of Borehole = 156'

HOLE NO.: EX5OB2

Low Flow Rate Sampling Procedure
Site 24 - MCAS El Toro
(from MCAS Tustin Draft Issue Paper on Low-Flow-Rate Purging and Sampling Study)

1. Set pump at desired depth at least 24 hours prior to sampling.
2. Measure and record static water level after pump is set and immediately prior to pumping.
3. Establish control settings for a pumping rate of 100 milliliters per minute (mL/min) and begin pumping at 100 mL/min.
4. Continue to measure and record water level in well and the pumping rate for at least 30 minutes. Ensure that drawdown in the well does not exceed 0.1 feet.
5. If drawdown is less that 0.1 feet, the well may be used for low-flow sampling.
6. Stop pumping and wait at least 24 hours.
7. After waiting for at least 24 hours, measure and record static water level.
8. Begin pumping at 100 mL/min.
9. Continue to measure and record water level in well and the pumping rate. Ensure that drawdown in the well does not exceed 0.1 feet
10. Collect water samples for measurement of pH, conductivity, temperature and turbidity at 5-minute intervals. Record groundwater parameter measurements.
11. Collect groundwater samples for volatile organic compound analysis after groundwater parameters have stabilized to within 10 percent for three consecutive measurements and turbidity is less that 5 nephelometric turbidity units (NTUs).