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ERI

ENVIRONMENTAL RESOLUTIONS, INC.

TRANSMITTAL

TO: Ms. Eva Chu
Alameda County Health Care Services Agency
Department of Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

DATE: March 5, 2003
PROJECT NUMBER: 223503T7
SUBJECT: 76 Service Station 1156, 4276 MacArthur Boulevard, Oakland, California.

Alameda County
MAR 10 2003
Environmental Health

FROM: Mr. Robert A. Saur
TITLE: Project Manager

WE ARE SENDING YOU:

COPIES	DATED	DESCRIPTION
1	February 19, 2003	Geologic Cross Section

THESE ARE TRANSMITTED as checked below:

[ ] For review and comment [ ] Approved as submitted [ ] Resubmit ___ copies for approval

[X] As requested [ ] Approved as noted [ ] Submit___ copies for distribution

[ ] For approval [ ] Return for corrections [ ] Return ___ corrected prints

[X] For your files [ ] For distribution to regulatory agencies

REMARKS: At the request of ConocoPhillips Company (ConocoPhillips) (formerly Tosco Corporation), Environmental Resolutions, Inc. (ERI) is forwarding one copy of the above-referenced document directly to your office. Please call me at (415) 382-3591 with any questions or comments.

Robert A. Saur

Robert A. Saur, Project Manager

cc: Mr. Dave DeWitt, Phillips 66 Company
Mr. George Leyva, California Regional Water Quality Control Board, San Francisco Bay Region
ERI Project File 223503T7

73 Digital Drive, Suite 100, Novato, California 94949-5791 415-382-9105 (FAX 415-382-1856)
Lake Forest • Novato • Seattle

ENVIRONMENTAL RESOLUTIONS, INC.

March 5, 2003
ERI 223503.R12

Mr. Dave DeWitt
ConocoPhillips Company
2000 Crow Canyon Place, Suite 400
San Ramon, California 94583

Subject: Geologic Cross Section, 76 Service Station 1156, 4276 MacArthur Boulevard, Oakland, California.

Mr. DeWitt:

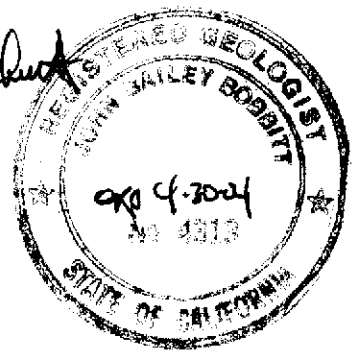
At the request of ConocoPhillips Company (ConocoPhillips) (formerly Tosco Corporation), Environmental Resolutions, Inc. (ERI) has compiled geological cross sections for the subject site. Tosco requested that ERI produce these cross sections to show the subsurface conditions across both the subject site and the Shell Service Station WIC #204-5510-0600, located across the street from the subject site. ERI used boring logs from environmental investigations at the Shell site and the subject site to compile cross sections parallel to the groundwater flow direction (A-A') and perpendicular to the groundwater flow direction (B-B'). Copies of the boring logs used to generate Cross sections A-A' and B-B' are provided in Attachment A. The locations of cross sections A-A' and B-B' are shown on Plate 1. Cross sections A-A' and B-B' are shown on Plates 2 and Plate 3, respectively.

Please call Mr. Robert A. Saur, ERI's project manager for the site, at (415) 382-3591 with any questions regarding this letter report.

Sincerely,
Environmental Resolutions, Inc.

Anne Wettstone
Staff Geologist

John B. Bobbitt
R.G. 4313



Attachments: References

Plate 1: Cross Section Location Map
Plate 2: Cross Section A-A'
Plate 3: Cross Section B-B'

Attachment A: Boring Logs

cc: Ms. Eva Chu, Alameda County Health Care Services Agency, Department of Environmental Health Services
Mr. George Leyva, California Regional Water Quality Control Board, San Francisco Bay Region

REFERENCES

Cambria Environmental Technology, Inc. May 9, 2001. Site Conceptual Model.

Environmental Resolutions, Inc. January 4, 2002. Supplemental Evaluation of Soil and Groundwater and Site Conceptual Model, Tosco 76 Service Station 1156, 4276 MacArthur Boulevard, Oakland, California ERI 223503.R02.

APPROXIMATE SCALE

0 40 80 Feet

2235004

SOURCE: Modified from a map provided by MORROW SURVEYING

ERI ENVIRONMENTAL RESOLUTIONS, INC.

CROSS SECTION LOCATIONS

76 SERVICE STATION 1156
4276 MacArthur Boulevard
Oakland, California

EXPLANATION

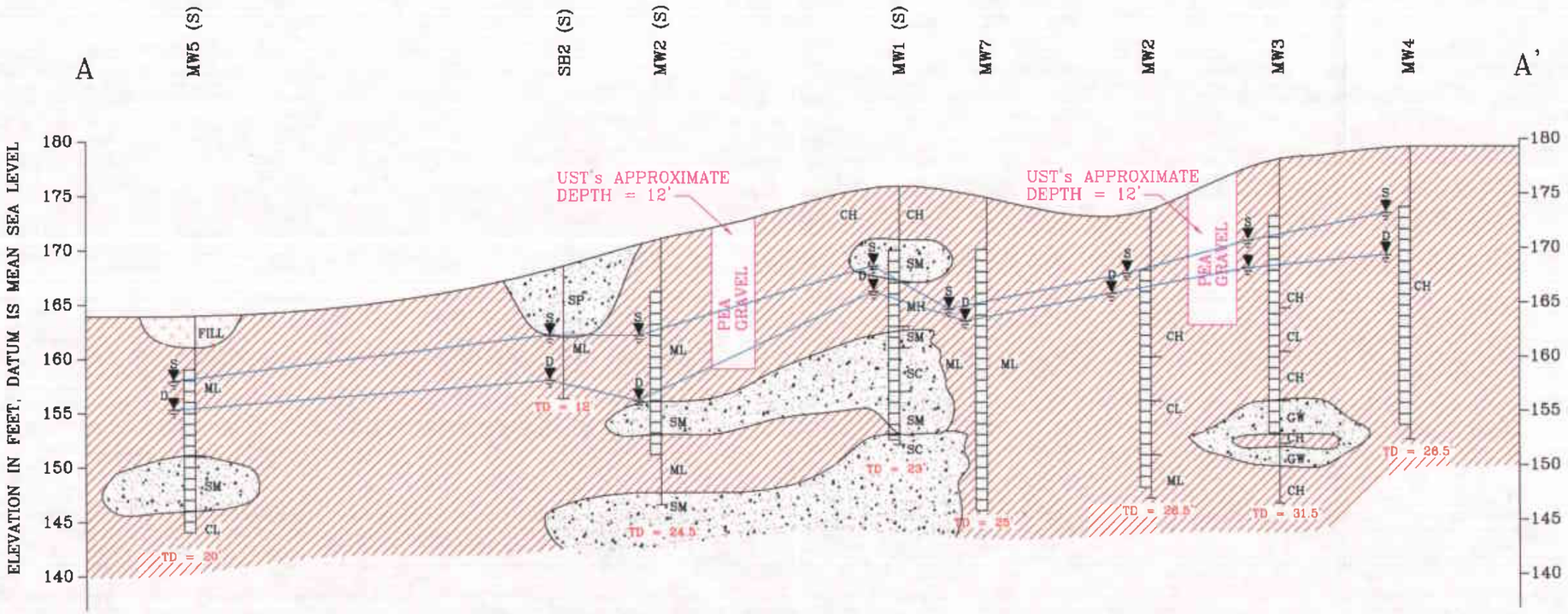
MW7 Groundwater Monitoring Well

TP1 Tank Pit Backfill Well

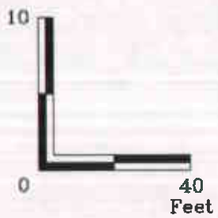
A A' Trace of Cross Sections

PROJECT NO. 2235

PLATE 1



APPROXIMATE SCALE



Vertical Exaggeration X4

FN 2235xsaa-1

ERI ENVIRONMENTAL RESOLUTIONS, INC.

CROSS SECTION A - A'

76 SERVICE STATION 1156
4276 MacArthur Boulevard
Oakland, California

EXPLANATION

- Fine-grained sediments (predominately clay & silt)
- Coarse-grained sediments (predominately sand & gravel)
- Fill

TD = Total Depth

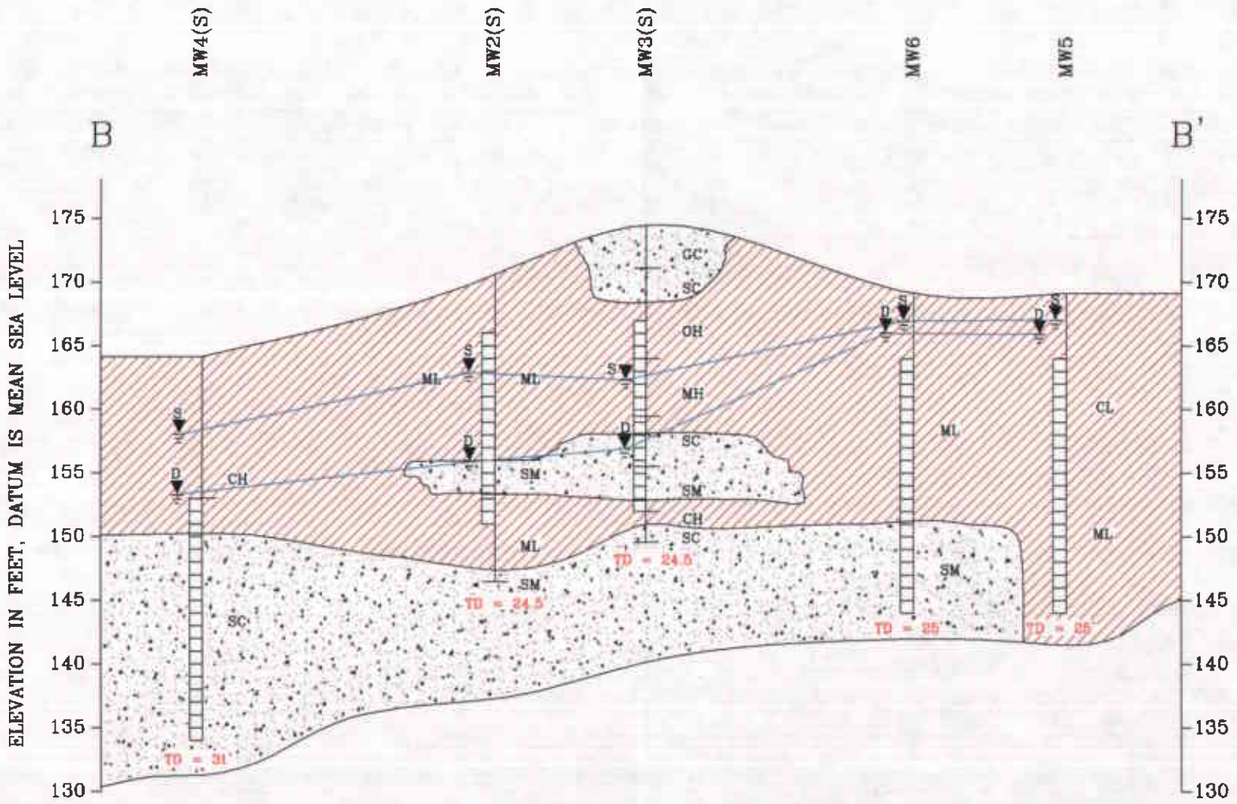
S — Shallowest Groundwater Level

D — Deepest Groundwater Level

PROJECT NO. 2235

PLATE 2

Nov. 26, 2002



APPROXIMATE SCALE

10

0 40 Feet

Vertical Exaggeration 4X

FN 2235xsbb-1

ERI ENVIRONMENTAL RESOLUTIONS, INC.

CROSS SECTION B - B'

76 SERVICE STATION 1156
4276 MacArthur Boulevard
Oakland, California

EXPLANATION

Fine-grained sediments (predominately clay & silt)

Coarse-grained sediments (predominatley sand & gravel)

TD = Total Depth

S Shallowest Groundwater Level

D Deepest Groundwater Level

PROJECT NO. 2235

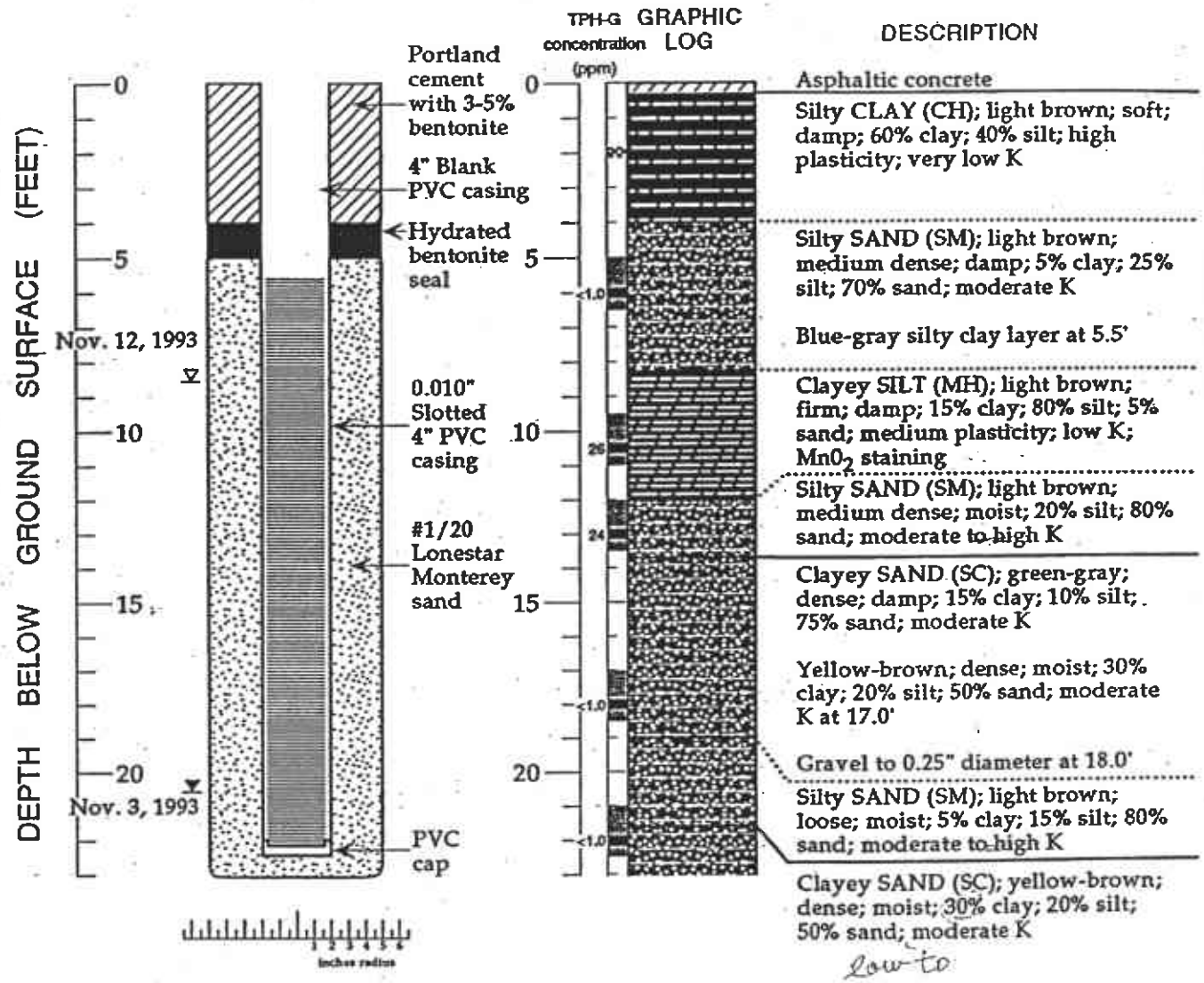
PLATE 3

Nov. 26, 2002

ATTACHMENT A

BORING LOGS

MONITORING WELL MW-1 (BH-A)



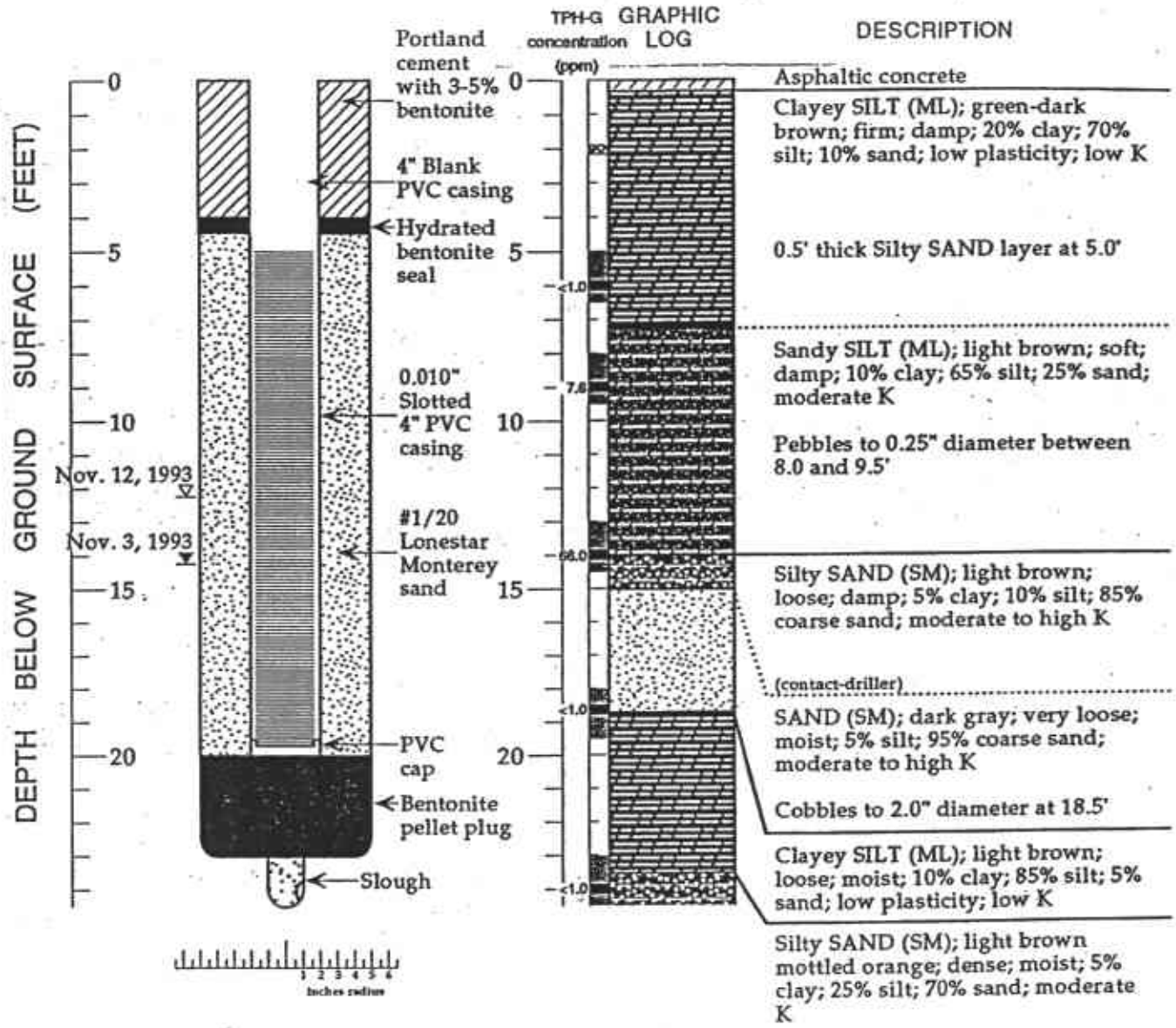
EXPLANATION

- ⧗ Water level during drilling (date)
- ⧖ Water level (date)
- ---------- Contact (dotted where approximate)
- —?—?— Uncertain contact
- ////////// Gradational contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated hydraulic conductivity

Logged By: Janet K. Macdonald
Supervisor: N. Scott MacLeod; RG 5747
Drilling Company: Soils Exploration Services, Vacaville, CA
License Number: C57-582696
Driller: Morris Petersen
Drilling Method: Hollow-stem auger
Date Drilled: November 3, 1993
Well Head Completion: 4" locking well-plug, traffic-rated vault
Type of Sampler: Split barrel (2" ID)
Ground Surface Elevation: 175.79 feet above mean sea level
TPH-G: Total petroleum hydrocarbon as gasoline in soil by modified EPA Method 8015

Boring Log and Well Construction Details - Well MW-1 (BH-A) - Shell Service Station WIC #204-5510-0600, 4255 MacArthur Boulevard, Oakland, California

MONITORING WELL MW-2 (BH-B)



EXPLANATION

- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approximate)
- Uncertain contact
- Gradational contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated hydraulic conductivity

Logged By: Janet K. Macdonald
Supervisor: N. Scott MacLeod; RG 5747
Drilling Company: Soils Exploration Services, Vacaville,CA
License Number: C57-582696
Driller: Morris Peterson
Drilling Method: Hollow-stem auger
Date Drilled: November 3, 1993
Well Head Completion: 4" locking well-plug, traffic-rated vault
Type of Sampler: Split barrel (2" ID)
Ground Surface Elevation: 170.91 feet above mean sea level
TPH-G: Total petroleum hydrocarbon as gasoline in soil by modified EPA Method 8015

Boring Log and Well Construction Details - Well MW-2 (BH-B) - Shell Service Station WIC #204-5510-0600, 4255 MacArthur Boulevard, Oakland, California

S757-001.ai

3/11/94

Client: Shell Oil Products Company

Project No: 240-0524 Phase Task

Location 4255 MacArthur Blvd., Oakland

Surface Elev. NA ft.

Depth (feet)	Blow Count	Sample	Interval	Lithologic Description
0	Ground Surface			
				Asphalt
				Gravelly SAND; (SPG); brown; soft; damp; 10% silt, 70% sand, 20% gravel to 1 inch diameter with concrete and wood; no plasticity; moderate estimated permeability.
5				SILT; (ML); brown; medium stiff; damp; 10% clay, 85% silt, 5% gravel to 0.25 inch diameter with wood; low plasticity; low estimated permeability.
				dark brown; soft; 5% clay, 95% silt; no plasticity.
				moist; low plasticity.
				wet; 10% clay, 80% silt, 10% gravel to 0.125 inch diameter.
10				

TPHg (ppm) | Graphic Log | Boring Completion Graphics

Depth (feet)	Additional Comments
0	
5	Static water level @ 5 ft.
10	Water encountered @ 8 ft.
	Bottom of boring @ 12 ft.

Driller Gregg

Logged By Brian Busch

Water-Bearing Zones NA

Drilling Started 2/13/98

Drilling Completed 2/13/98

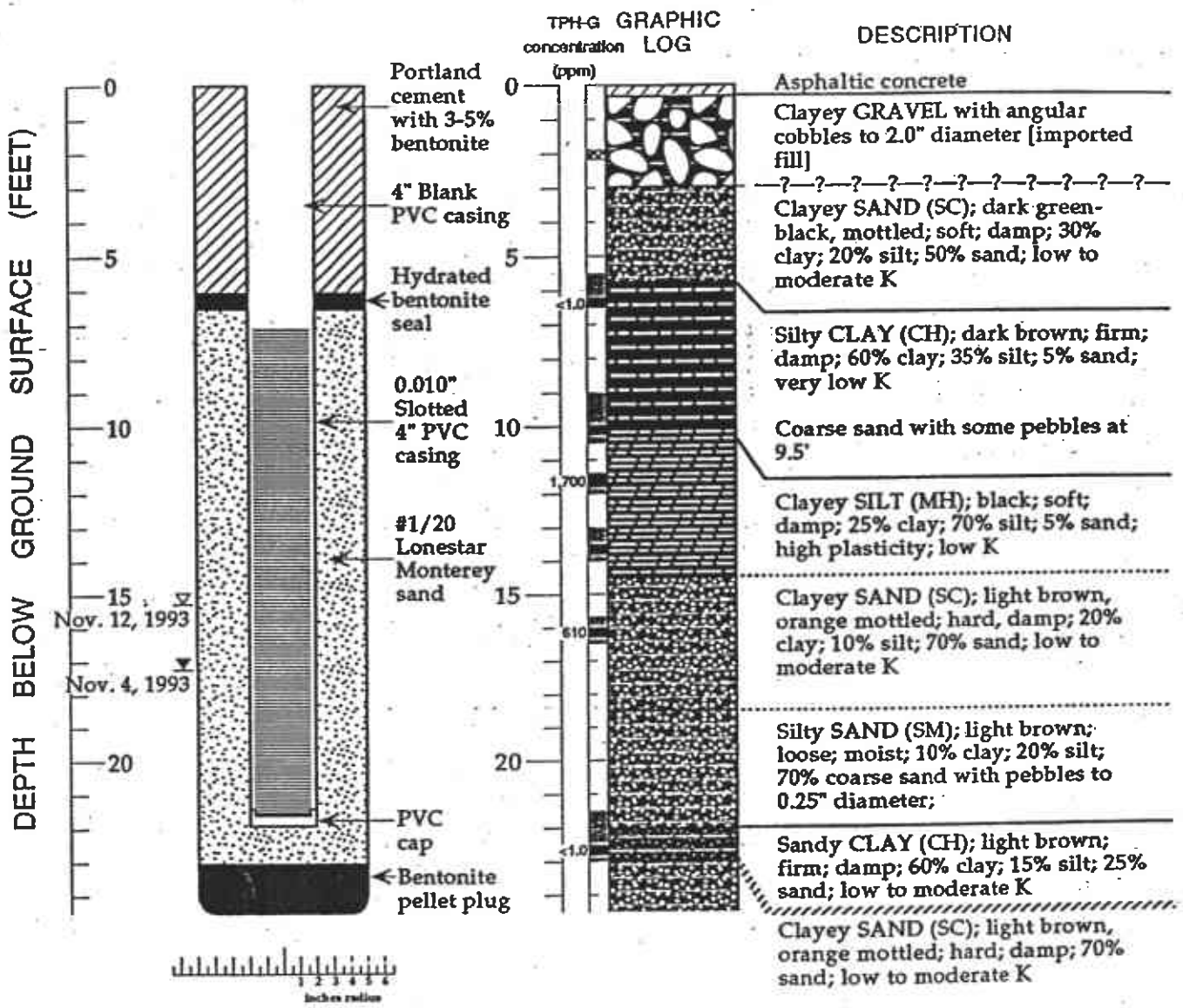
Grout Type Portland Type I/II

Notes: See site map.

BOR 24524 2/13/98

Cambria Environmental Technology, Inc.

MONITORING WELL MW-3 (BH-C)



EXPLANATION

- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approximate)
- —?—?— Uncertain contact
- Gradational contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated hydraulic conductivity

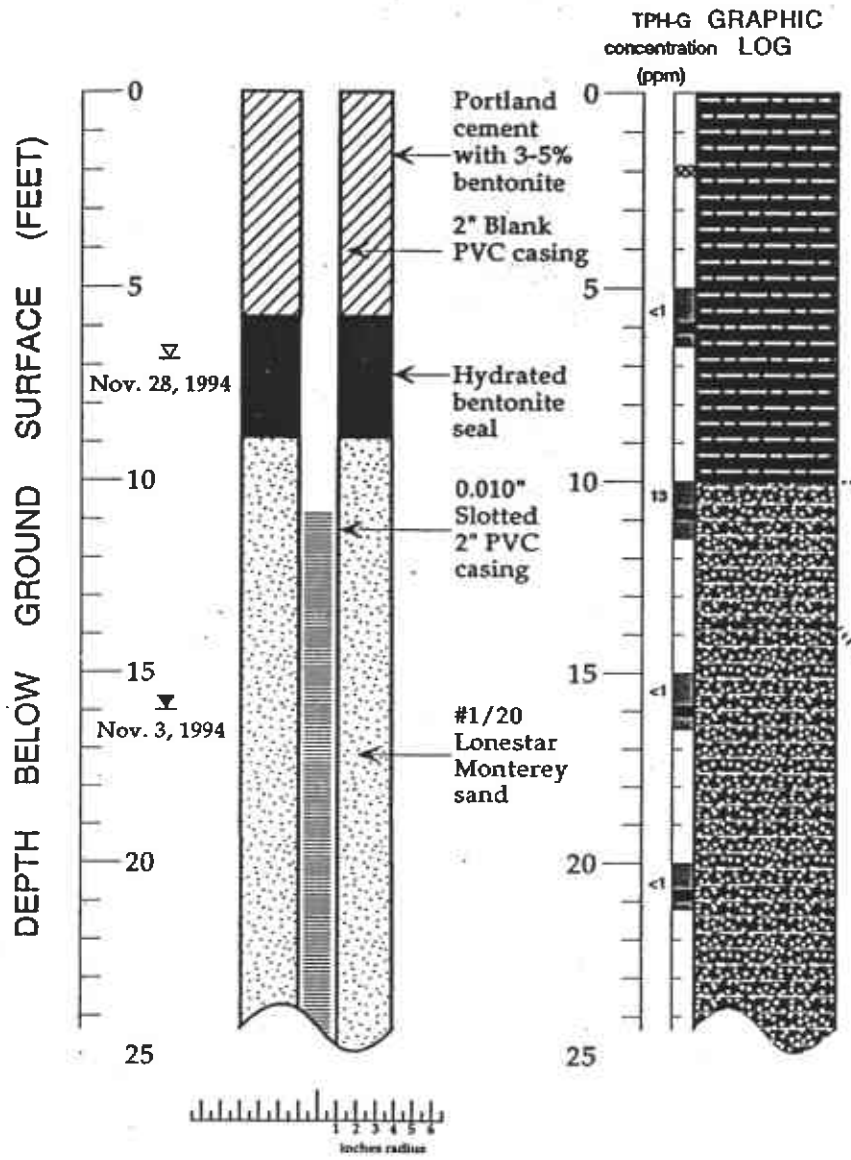
Logged By: Janet K. Macdonald
Supervisor: N. Scott MacLeod; RG 5747
Drilling Company: Soils Exploration Services, Vacaville, CA
License Number: C57-582696
Driller: Morris Peterson
Drilling Method: Hollow-stem auger
Date Drilled: November 4, 1993
Well Head Completion: 4" locking well-plug, traffic-rated vault
Type of Sampler: Split barrel (2" ID)
Ground Surface Elevation: 174.61 feet above mean sea level
TPH-G: Total petroleum hydrocarbon as gasoline in soil by modified EPA Method 8015

Boring Log and Well Construction Details - Well MW-3 (BH-C) - Shell Service Station WIC #204-5510-0600, 4255 MacArthur Boulevard, Oakland, California

S757-002.ai

3/11/94

MONITORING WELL MW-4 (BH-F)



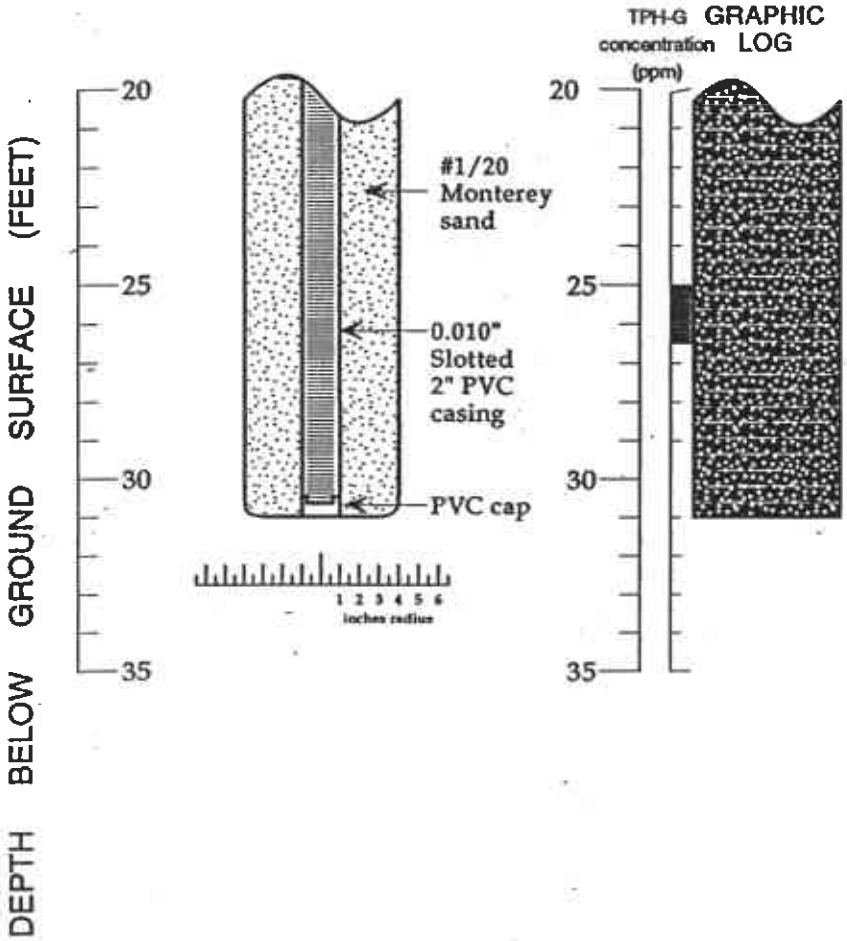
EXPLANATION

- ▼ Water level during drilling (date)
- ▽ Water level (date)
- ——— Contact (dotted where approximate)
- —?—?— Uncertain contact
- ////////// Gradational contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated hydraulic conductivity

Logged By:	Faith Daverin
Supervisor:	Jim Carmody; CEG 1576
Drilling Company:	Gregg Drilling, Pacheco, CA
License Number:	C57-485165
Driller:	Chris St. Pierre
Drilling Method:	Hollow-stem auger - 8" diameter
Date Drilled:	November 3, 1994
Well Head Completion:	2" locking well-plug, traffic-rated vault
Type of Sampler:	Split spoon (2" ID)
Ground Surface Elevation:	feet above mean sea level
TPH-G:	Total petroleum hydrocarbons as gasoline in soil by modified EPA Method 8015

Boring Log and Well Construction Details - Well MW-4 (BH-F) - Shell Service Station WIC #204-5510-0600, 4255 MacArthur Boulevard, Oakland, California

WELL MW-4 (BH-F) (cont.)



Boring Log and Well Construction Details - Well MW-4 (BH-F) - Shell Service Station WIC #204-5510-0600, 4255 MacArthur Boulevard, Oakland, California

1144 - 65th St.
Oakland, CA 94608
Telephone: (510) 420-0700
Fax: (510) 420-9170

BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	MW-5
JOB/SITE NAME	Shell-branded service station	**DRILLING STARTED**	12-Nov-01
LOCATION	4255 MacArthur Boulevard	**DRILLING COMPLETED**	12-Nov-01
PROJECT NUMBER	243-0524	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hollow-stem auger	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	8"	**SCREENED INTERVAL**	5 to 20 ft bgs
LOGGED BY	S. Landsittel	**DEPTH TO WATER (First Encountered)**	8.0 ft (12-Nov-01)
REVIEWED BY	S. Bork, RG# 5620	**DEPTH TO WATER (Static)**	NA
REMARKS	Hand-augered to 5' bgs. Located on Caltrans right-of-way adjacent to I-580 onramp approx. 100' from High St.		

TPHg (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
				0			**FILL:** dark brown; damp; 25% clay, 30% silt, 5% sand, 50% gravel; low plasticity; contains organics.		Portland Type I/II Cement
								3.0	Bentonite Seal
		MW-5-5.5		5			**Clayey Sandy SILT** (ML); dark brown; moist; 20% clay, 50% silt, 25% fine sand, 5% gravel; medium plasticity.		Monterey Sand #2/12
					ML				
				10			@ 10' bgs - 15% clay, 55% silt, 20% fine sand, 10% fine gravel.		
								13.0	2"-diameter, 0.010" Slotted Schedule 40 PVC
				15	SM		**Clayey Silty SAND** (SM); brown; moist; 15% clay, 25% silt, 50% fine sand, 10% fine gravel; low plasticity.		
								18.0	
					CL		**CLAY** (CL); light brown; moist; 80% clay, 12% silt, 5% fine sand, 3% fine gravel; high plasticity.		
				20				20.0	Bottom of Boring @ 20 ft

WELL LOG (SHELL) GINT43EC-114255.GPJ DEFAULT.GDT 1/8/02

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: [illegible] Boring: B57 and 1 Plate: [illegible]

Site: Tosco 76 Service Station 1156 Date: 7/16/99

Drill Contractor: Woodward Drilling

Sample Method: Split Spoon Geologist: MARK S. DOCKUM

Drill Rig: B57 Bore Hole Diameter: 8" Signature: Mark S. Dockum

Location: 2 Feet EAst of Southernmost Driveway Registration: R.G. 4412

Along MacArthur Boulevard Logged by: Dylan Crouse

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						4" asphalt	
						Clay, dark greenish gray, mottled redish orange, some coarse-grained sand, slightly damp, high plasticity, (35% sand, 65% clay)	
5	11	20			CH		
10	18	0				15% fine gravels up to 0.5", 20% sand, medium-grained, damp	
						Silty clay, orange brown, mottled green gray, (35% silt, 65% clay), moist, medium plasticity	
15	21	130			CL		
20	29	20				gravelly clay, light yellowish brown, (40% fine gravel, 60% clay), medium plasticity, very moist, black staining	
		▼			ML	Sandy clay, trace of silt, yellowish brown, wet, medium plasticity, (35% sand, 15% silt, 50% clay)	
25	45	18					
						Total depth at 26.5 feet. Groundwater encountered at 23' 6".	

Casing Diameter: 2" Slot Size: 010 , Sand Size: 2/12 , Grout: Portland I/II

FN: 82356003

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2235 Boring: B5/MW5 Plate: APPENDIX
Site: Tosco 76 Service Station 1156 Date: 7/16/99
Drill Contractor: Woodward Drilling
Sample Method: Split Spoon Geologist: MARK S. DOCKUM
Drill Rig: B57 Bore Hole Diameter: 8" Signature:
Location: Approximately 15' South West of Southern-most Dispenser Island Parallel to High Street Registration: R.G. 4412
Logged by: Dylan Crouse

DEPTH (ft.)	BLOW COUNTS	PID/OVM (ppm)	USCS	GEOLOGIC DESCRIPTION
				4 1/2" asphalt
				Clay, dark yellowish brown, mottled, trace of medium-grained sand, slightly damp, high plasticity, (15% sand, 85% clay)
5	18	235	CH	brown, mottled gray, dry
10	33	265		staining, trace of coarse gravel and rootlets (15% gravel, 85% clay), slightly damp
				Sandy clay, greenish gray, mottled, orange, some medium-grained sand, slight plasticity, caliche present, (35% sand, 65% clay)
15	25	81	CL	
				Clay, strong brown, slight mottling, trace of medium-grained sand, 20% sand, high plasticity, black staining, 80% clay
20	36	9	CH	
				Gravel, yellowish brown, wet
			GW	
25	25	0	CH	Clay, trace of medium-grained sand, yellowish brown, very moist, high plasticity, (15% sand)
			GW	Gravel, orange, slight plasticity, wet
				Clay, yellowish brown, moist, high plasticity
30	22	0	CH	
				Total depth at 31.5 feet. Groundwater encountered at 23.3 feet. Static groundwater at 12 feet.

WELL DESIGN

Casing Diameter: 2" Slot Size: 010 , Sand Size: 2/12 , Grout: Portland I,II

FN: 22358003

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2235 Boring: B4/MW4 Plate: APPENDIX
Site: Tosco 76 Service Station 1156 Date: 7/16/99
Drill Contractor: Woodward Drilling
Sample Method: Split Spoon Geologist: MARK S. DOCKUM
Drill Rig: B57 Bore Hole Diameter: 8" Signature:
Location: 18 Feet North of Southernmost Dispenser Island Parallel High Street Registration: R.G. 4412
Logged by: Dylan Crouse

DEPTH (ft.)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						4 1/2" asphalt	
						Clay, greenish gray, mottled, orange slightly damp, high plasticity	
5	17	309					
10	22	253			CH	trace of medium-grained sand, slightly moist	
15	19	4				moist	
20	28	4				brownish yellow, black staining, 20% gravel, 20% medium-grained sand, moist	
25	36	0				brown, mottled, olive yellow, moist, black staining	
						Total depth at 26.5 feet. Groundwater encountered at 23.6 feet.	

Casing Diameter: 2" Slot Size: 010 , Sand Size: 2/12 , Grout: Portland I,II

FN: 2235R004

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2235 Boring: MW5 Plate: Attachment
Site: Tosco 76 Service Station 1156 Date: 8/29/01
Drill Contractor: Woodward Drilling Company, Inc.
Sample Method: Split Spoon Geologist: JOHN B. BOBBITT
Drill Rig: BK-81 Bore Hole Diameter: 8" Signature:
Location: Eastern side of MacArthur Boulevard Registration: R.G. 4313
approximately 40 feet north of site Logged by: Rob Saur

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						6" Concrete	
5	23	8.3 ▽			CL	CLAY WITH SAND AND TRACE OF GRAVEL: greenish gray, moist, high plasticity, fine-grained sand, fine-grained poorly-sorted subangular gravel.	
10	27	7.7				SANDY CLAY: orange brown, moist, low plasticity, fine-grained sand.	
15	57	11.2			ML	SANDY SILT: orange brown, moist, low plasticity, fine-grained sand.	
20	30						
25	38	7.7				light brown, wet.	
						Boring Terminated at 25 feet. Boring converted to groundwater monitoring well. Groundwater encountered at 6 feet.	

Casing Diameter: 2" Slot Size: 0.020 , Sand Size: #3 , Grout: Portland Cement

FN: 22359D0D

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2235 Boring: MW6 Plate: Attachment
Site: Tosco 76 Service Station 1156 Date: 8/29/01
Drill Contractor: Woodward Drilling Company, Inc.
Sample Method: Split Spoon Geologist: JOHN B. ROBBITT
Drill Rig: BK-81 Bore Hole Diameter: 8" Signature:
Location: Western side of MacArthur Boulevard Registration: R.G. 4313
approx. 30 feet north of Shell station Logged by: Rob Saur

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						6" Concrete	
5	24	10.6				CLAYEY SILT: greenish gray, very moist, medium plasticity.	
10	19	10.0			ML	light brown, trace of fine-grained sub-angular sand (approx. 5%).	
15	24	6.0				CLAYEY SILT WITH SAND: light brown, fine-grained sub-angular sand (approx. 15%).	
20	48	7.7			SM	SAND WITH SILT: orange brown, wet, medium-grained well-sorted well-rounded sand.	
25	50/5"					Boring terminated at 25 feet. Boring converted to groundwater monitoring well. Groundwater encountered at 5.5 feet.	

Casing Diameter: 2" Slot Size: 0.020, Sand Size: #3, Grout: Portland Cement

FN: 22358008

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2235 Boring: MW7 Plate: Attachment
Site: Tosco 76 Service Station 1156 Date: 8/29/01
Drill Contractor: Woodward Drilling Company, Inc.
Sample Method: Split Spoon Geologist: JOHN B. BOBBITT
Drill Rig: BK-81 Bore Hole Diameter: 8" Signature:
Location: Western side of MacArthur Boulevard Registration: R.G. 4313
approx. 40 feet north of High Street Logged by: Rob Saur

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						6" Concrete	
5	50/5"	25				SANDY SILT: brown with bluish green mottling, moist, low plasticity, 40% fine-grained sand.	
10	36	236					
15	35	8.9	▽		ML	light brown, wet.	
20	25	57					
25	50/5"	19.3				reddish brown, 30% medium-grained sand.	
						Boring terminated at 25 feet. Boring converted to groundwater monitoring well. Groundwater encountered at 15 feet.	

Casing Diameter: 2" Slot Size: 0.020 , Sand Size: #3 , Grout: Portland Cement

FN: 22358007