PES Environmental, Inc.
Engineering & Environmental Services

A Report Prepared for:

Mr. Michael Dolan
DOLAN RENTAL COMPANY
6365 Scarlett Court
Dublin, California 94568

PHASE II SOIL AND GROUNDWATER INVESTIGATION DUBLIN ROCK AND READY MIX FACILITY DUBLIN, CALIFORNIA

6393 Scarlett Ct.

August 13, 1993

By:

Daniel E. Trumbly
Senior Staff Geologist

Michael D. Thompson, P.E.
Senior Engineer

REGISTERED PROFESSIONAL ENGINEER
MICHAEL D. THOMPSON
No. 44979
EXP. 3/31/94
CIVIL
STATE OF CALIFORNIA

102.01.002

1682 Novato Boulevard • Suite 100 • Novato, California 94947 • (415) 899-1600 • FAX (415) 899-1601

DISTRIBUTION

PHASE II SOIL AND GROUNDWATER INVESTIGATION
DUBLIN ROCK AND READY MIX FACILITY
6393 SCARLETT COURT
DUBLIN, CALIFORNIA

August 13, 1993

Copy No. 2

		Copy No.
1 copy	Mr. Michael Dolan Dolan Rental Company 6365 Scarlett Court Dublin, California 94568	1
1 copy	Ms. Eva Chu Alameda County Health Agency Division of Hazardous Materials Department of Environmental Health 80 Swan Way, Room 200 Oakland, California 94621	2
1 copy	Mr. Craig A. Mayfield Alameda County Flood Control and Water Conservation District 5997 Parkside Drive Pleasanton, California 94588	3
1 copy	Nancy Casale Cooper, White & Cooper 1333 North California Blvd., Suite 450 Walnut Creek, California 94596	4
3 copies	PES Environmental, Inc.	5-7

William F Frizzell

William F. Frizzell, P.E.
Principal Engineer
Quality Control Reviewer

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ILLUSTRATIONS

1.0 INTRODUCTION

This report presents the results of PES Environmental, Inc.'s (PES) Phase II soil and groundwater investigation performed on behalf of The Dolan Rental Company at 6393 Scarlett Court in Dublin, California (Plate 1). The purpose of this investigation was to evaluate (1) petroleum hydrocarbon concentrations in soil near the former underground tank location and (2) the extent of groundwater containing petroleum hydrocarbons. This investigation was conducted in accordance with PES' *Proposal, Phase II Soil and Groundwater Investigation, Dublin Rock and Ready Mix, Dublin, California,* dated August 26, 1992. The investigative objectives and methodology were reviewed and approved by the Alameda County Health Agency, Division of Hazardous Materials, Department of Environmental Health (ACHA). Subsurface exploration was conducted in accordance with Permit No. 92534 issued by the Alameda County Flood Control and Water Conservation District, Zone 7.

1.1 Background

An underground fuel storage tank was removed from the site in February 1990. The excavation was backfilled following tank removal and paved with concrete. An investigation performed in October 1990 indicated that petroleum hydrocarbons were present in soil and groundwater in the proximity of the former underground tank location (Henneman, 1990).

PES conducted an investigation in November 1991 to evaluate the presence of petroleum hydrocarbons in soil and groundwater at the site. The investigation consisted of installing four groundwater monitoring wells (Plate 2), collecting soil and groundwater samples, and performing chemical analyses. The results of PES' previous investigation were presented in a report entitled *Soil and Groundwater Investigation, Dublin Rock and Ready Mix Facility, 6393 Scarlett Court, Dublin, California,* dated January 31, 1992 (PES, 1992).

Laboratory analyses of soil and groundwater samples indicated the presence of total petroleum hydrocarbons quantified as gasoline (TPHg) in soils near the former tank location at concentrations up to 140 parts per million (ppm). Chemical analyses of groundwater samples collected from a well adjacent to the former tank location (MW-2) indicated the presence of TPHg at a concentration of 170 ppm. Groundwater samples obtained from a well in the southern portion of the site (MW-4) contained 11 ppm TPHg. TPHg and BTEX were not detected in groundwater samples obtained from two wells located north of the former underground tank location (MW-1) and along the southern property border (MW-3).

Based on the results of the investigation, PES recommended that an additional investigation be performed to evaluate the extent of soil and groundwater contamination.

2.0 SOIL AND GROUNDWATER INVESTIGATION

This investigation was designed to provide further information on the distribution of petroleum hydrocarbons in soil and groundwater. The soil investigation was focused near the former underground tank to evaluate whether petroleum hydrocarbon concentrations in soils represent a significant long-term source of groundwater contamination. The groundwater investigation focused on evaluating the extent of petroleum hydrocarbons at the site. Descriptions of the investigative methods employed and the results of this investigation are presented below.

2.1 Investigative Methodology

The field investigation was performed on September 30, November 2, 3, and 13 and December 3, 1992 and included:

- Drilling 13 soil borings;
- Collecting soil and groundwater samples from the soil borings;
- Collecting groundwater samples from existing monitoring wells; and
- Performing chemical analyses.

Details associated with these tasks are presented below.

2.1.1 Soil Borings

Soil borings (Boring B-1 to B-10) were drilled using a truck-mounted drilling rig equipped with 4-inch diameter solid-stem augers between September 30 and November 3, 1992. These borings were drilled to a depth of 11.5 feet below ground surface (bgs) and were logged using the Unified Soil Classification System (Plate A-1). Logs for these borings are presented in Appendix A as Plates A-2 through A-11.

Soil samples were collected by driving a split-barrel sampler lined with stainless tubes 18 inches into undisturbed soils beneath the cutting bit of the auger. The samples were used for lithologic description and screened for the presence of volatile organic compounds using a photo-ionization detector (PID). Sample tubes were sealed with teflon-lined caps taped to the sample container using teflon tape to prevent moisture and contaminant loss. Sample containers were labeled, and placed in a chilled, thermally-insulated cooler for transport to the project analytical laboratory under chain-of-custody protocol.

Soil samples collected near the former underground tank location (Borings B-1 to B-4) were submitted to Superior Precision Analytical, Inc. (Superior) in Martinez, California for analyses for TPHg and BTEX following EPA Test Methods 5030/8015 Modified and 5030/8020, respectively. Superior is a State-certified laboratory for the analyses performed.

Drilling and sampling equipment were decontaminated between Borings B-1 through B-10 by steam cleaning. Sampling equipment was decontaminated between sampling events in each boring by washing with alconox solution and rinsing with potable water. Soil cuttings and rinsate from decontamination operations were placed in 55-gallon steel drums which are stored onsite until proper disposal is arranged. Borings were backfilled to the ground surface with cement bentonite following groundwater sampling.

Borings B-11 through B-13 were drilled to a maximum depth of 9.0 feet bgs using hand augering equipment on November 13 and December 3, 1992. These borings were drilled to collect additional groundwater samples near the eastern, southern, and western property lines. The auger was washed with an alconox solution and rinsed with water between borings to prevent cross contamination. Soil cuttings were placed in 55-gallon drums and stored onsite. The borings were grouted to the surface with a cement bentonite slurry.

2.1.2 Groundwater Sampling from Borings

Groundwater samples were collected from borings B-5 through B-7 and B-9 through B-13 by (1) placing 1-inch diameter polyvinyl chloride (PVC) casing and 0.010-inch, machine-slotted PVC screen into the open borehole, and (2) collecting samples with a teflon bailer. Samples were immediately decanted into 40-milliliter glass, volatile organic analysis (VOA) vials, labeled, and placed in a chilled, thermally-insulated cooler for transport to the project laboratory under chain-of-custody protocol. Groundwater samples were analyzed at Superior for TPHg and BTEX following EPA Test Methods previously described.

Groundwater samples were not collected from Borings B-1, B-2, B-3, B-4, and B-8 because a thin layer of free product (up to 0.25 inches thick) was observed on the groundwater surface in these borings.

2.1.3 Sampling of Existing Groundwater Monitoring Wells

The existing onsite groundwater monitoring wells (Wells MW-1 through MW-4) were sampled on September 30, 1992 by Blaine Technical Services, Inc. (Blaine Tech) of San Jose, California. Prior to sample collection, a minimum of three casing volumes of groundwater was purged from each well using a Middleburg positive displacement pump containing a teflon bladder. Discharge water was monitored for temperature, pH, conductivity, and turbidity. Following purging, samples were collected from each well using a bailer. Samples were decanted into 40-milliliter glass VOA vials, labeled, and placed in a chilled, thermally-insulated cooler for transport to the project laboratory under chain-of-custody protocol. Purge water was placed in a 55-gallon steel drum for storage onsite until appropriate disposal is arranged. A copy of Blaine Tech's groundwater monitoring well sampling report is presented as Appendix B. Samples were transported to Superior and analyzed for TPHg using EPA Test Method 5030/8015 modified and BTEX by EPA Test Method 5030/8020.

2.2 Investigation Results

2.2.1 Subsurface Soil Conditions

Surficial materials at the site consist of degraded asphaltic concrete, concrete slab-on-grade, and landscape aggregate. The thicknesses of the surficial materials range from 0.75 to 1.5 feet thick and are underlain by interbedded silty clay, sandy clay, and some poorly graded sands. The subsurface materials are predominantly silty clays. The sand interbeds are found at depths ranging from 3 to 7 feet bgs and range in thickness from a few inches to 1.25 feet and consist of poorly graded sand and clayey sand. Soils below the interbedded zone consist of silty clay and/or sandy clay which are found to the maximum depths explored (11.5 feet bgs).

2.2.2 Evaluation of Hydrogeologic Conditions

Groundwater levels were measured on September 30, 1992, prior to monitoring well purging and sampling. Groundwater elevation data indicates that groundwater was flowing in an easterly/southeasterly direction with a gradient of 0.0106 feet per foot. Groundwater was encountered at a depth of approximately 6 feet bgs.

2.2.3 Soil Analytical Results

Based on the results of chemical analyses, petroleum hydrocarbons (TPHg) were identified in soil samples collected from 5 feet bgs in borings Boring B-1 (23 ppm), B-2 (34 ppm), and B-4 (470 ppm). These borings were located adjacent to the former location of the underground tank. Chemical analyses of samples collected from 10 feet bgs indicate the presence of TPHg at concentrations ranging from 23 ppm (Boring B-4) to 42 ppm (Boring B-3). Chemical analysis results for soil samples are summarized on Table 1.

2.2.4 Groundwater Analytical Results

Petroleum hydrocarbons were identified in the form of free product in Borings B-1 to B-4 and B-8. Chemical analyses of groundwater samples indicate the presence of TPHg at a concentration of 0.17 ppm in a sample from Boring B-9 and 7.8 ppm in a sample from Boring B-10. These borings are located east and southeast of the former underground tank location. Benzene concentrations in samples collected from Borings B-9 and B-10 were 0.0017 and 0.048 ppm, respectively. Toluene, ethylbenzene and xylene concentrations in these samples were far below their respective State maximum containment levels or Cal EPA action levels for drinking water. TPHg and BTEX were not detected in samples collected from Borings B-5, B-6, B-7, B-11, B-12, and B-13.

Chemical analyses of the samples obtained from the existing groundwater monitoring wells revealed the presence of TPHg in Samples MW-2 and MW-4 at concentrations of 120 ppm and 0.38 ppm, respectively. TPHg was not present at or above method detection limits (0.05 ppm) in Samples MW-1 and MW-3. Benzene concentrations in samples from MW-2 and

MW-4 were 24 and 0.0035 ppm, respectively. Toluene, ethylbenzene and xylene concentrations in these samples were far below their respective State maximum containment levels or Cal EPA action levels for drinking water. BTEX compounds were not detected in Samples MW-1 and MW-3.

3.0 CONCLUSIONS

Groundwater was found to contain petroleum hydrocarbons in an approximate 6,000 square feet area southeast of the former underground tank location. It does not appear that groundwater containing petroleum hydrocarbons extends off-site. Groundwater in the immediate vicinity of the underground tank was found to contain a thin layer of floating product. Additional groundwater monitoring wells should be completed in areas identified as containing free product to confirm the presence of free product. If free product is found, passive product recovery units for the removal of the free product should be installed. Additional groundwater monitoring wells should be installed in areas west and east of the former tank location (near Borings B-5, B-12, and B-13) and south of monitoring well MW-4 (near Boring B7) to monitor the lateral extent of petroleum hydrocarbons in groundwater. Groundwater monitoring should be performed in the four existing wells and the additional groundwater monitoring wells on a quarterly basis. The results of the groundwater monitoring can the be used to evaluate whether additional groundwater remediation is necessary.

An investigation of petroleum hydrocarbons in soils near the former underground tank location was performed to evaluate whether soils in this area represent a significant source for continued groundwater contamination. Based on the results of the chemical analyses, petroleum hydrocarbon concentrations found in soils were generally less than the concentrations measured in the groundwater in this area. The petroleum hydrocarbons detected in the soils are likely associated with the free product and dissolved phase petroleum hydrocarbons found in groundwater in this area. Therefore, remediation of free product on the groundwater should significantly reduce petroleum hydrocarbon concentrations in the soils.

4.0 REFERENCES

Henneman, Kenneth R., 1990. Laboratory Results From Water Samples Taken From Five Borings to Water Around an Old Gas Tank on 10/03/90 at Dublin Rock and Ready Mix, 6393 Scarlett Court, Dublin, California, October 17.

PES Environmental, Inc. 1991. *Soil and Groundwater Investigation, Dublin Rock and Ready Mix Facility, 6393 Scarlett Court, Dublin, California,* January 31.

TABLE 1.
CHEMICAL ANALYSIS RESULTS FOR SOIL SAMPLES
DUBLIN ROCK AND READY MIX
6393 SCARLETT COURT
DUBLIN, CALIFORNIA

(all expressed in parts per million)

Sample I.D.	Depth	Date	TPHg (1)	Benzene	Toluene	Ethylbenzene	Xylenes
Previous PES Investigations							
MW1-4A	11.0	11/22/91	<1 (2)	<0.003	<0.003	<0.003	<0.003
MW2-4A	11.0	11/21/91	140	1.7	3.6	2.6	14
MW3-4A	11.0	11/21/91	<1	<0.003	0.005	<0.003	<0.003
MW4-2A	11.0	11/21/91	<1	<0.003	0.006	0.005	<0.003
Current PES Investigations							
B-1	5.0	11/3/92	23	0.13	0.033	1.4	0.038
B-1	10.0	11/3/92	36	0.095	0.030	0.69	1.7
B-2	5.0	11/3/92	34	0.28	1.4	0.63	4.1
B-2	10.0	11/3/92	40	1.3	0.63	0.98	4.8
B-3	5.0	11/3/92	<1	<.003	0.004	<.003	0.008
B-3	10.0	11/3/92	42	1.1	0.13	0.86	4.7
B-4	5.0	11/3/92	470	2.3	8.6	6.5	38
B-4	10.0	11/3/92	23	0.89	0.22	0.47	2.3

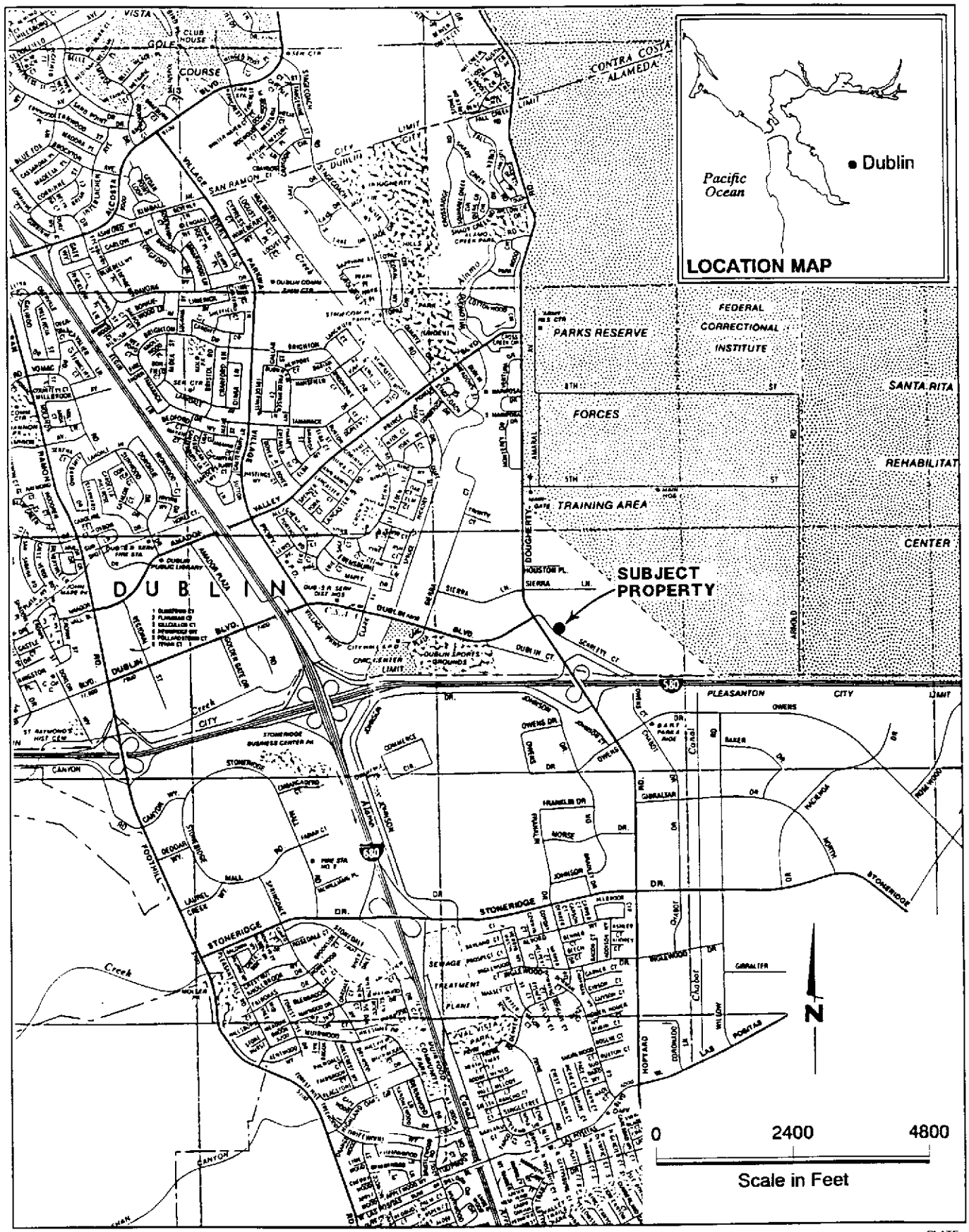
Notes
(1) TPHg - Total petroleum hydrocarbons quantified as gasoline.
(2) <1 - Not detected above reported detection limit.

TABLE 2.
CHEMICAL ANALYSIS RESULTS FOR GROUNDWATER SAMPLES
DUBLIN ROCK AND READY MIX
6393 SCARLETT COURT
DUBLIN, CALIFORNIA

(all expressed in parts per million)

Sample I.D.	Date	TPHg (1)	Benzene	Toluene	Ethylbenzene	Xylenes
MW-1	11/27/91	<0.05 (2)	<0.0003	<0.0003	<0.0003	<0.0003
MW-1	9/30/92	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
MW-2	11/27/91	170	24	13	3.5	16
MW-2	9/30/92	120	24	15	3.8	17
MW-3	11/27/91	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
MW-3	9/30/92	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
MW-4	11/21/91	11	0.1	0.0007	0.25	0.33
MW-4	9/30/92	0.38	0.0035	0.0024	0.0089	0.0034
B5	11/2/92	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
B6	11/2/92	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
B7	11/2/92	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
B9	11/3/92	0.17	0.0017	<0.0003	0.0024	0.0014
B10	11/3/92	7.8	0.048	0.019	0.190	0.150
B11	11/13/92	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
B12	11/13/92	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
B13	12/3/92	<0.05	<0.0003	<0.0003	<0.0003	<0.0003

Notes:
(1) TPHg - Total petroleum hydrocarbons quantified as gasoline.
(2) <0.05 - Not detected above reported detection limit.



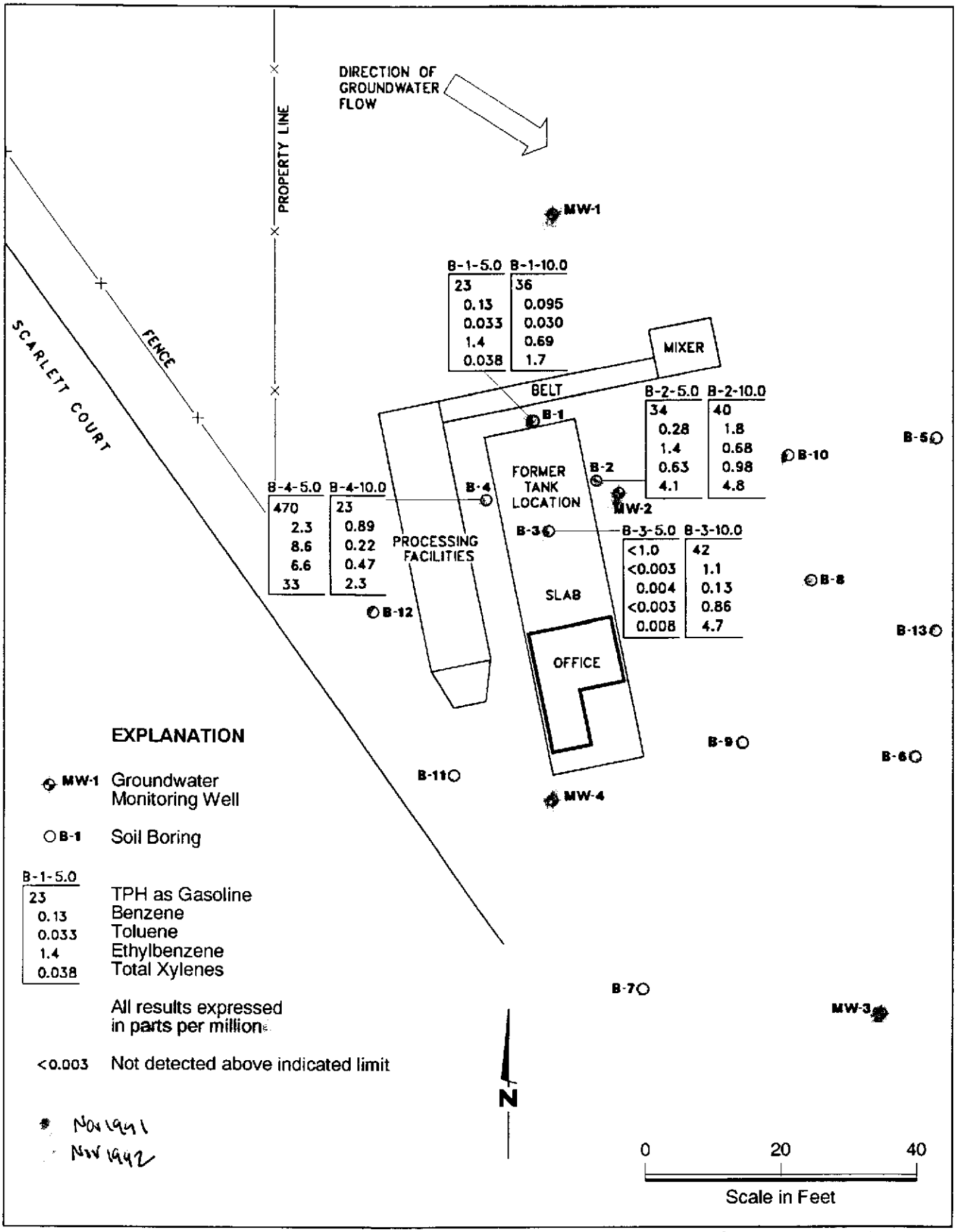
PLATE

1

PES Environmental, Inc.
Engineering & Environmental Services

Vicinity Map
Dublin Rock & Ready Mix
6393 Scarlett Court
Dublin, California

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
102.01.002		12/92		

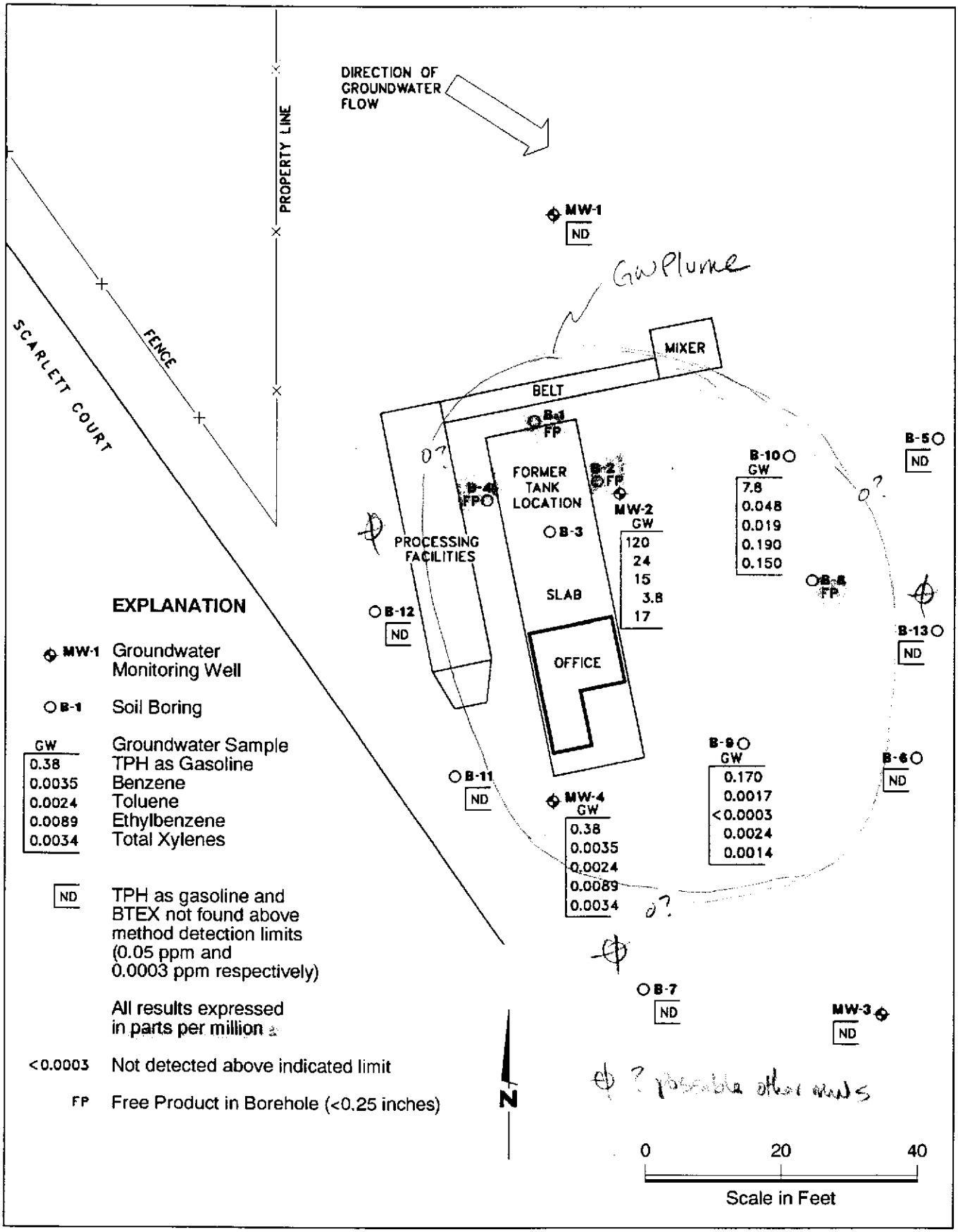


PES Environmental, Inc.
Engineering & Environmental Services

Sample Locations and Chemical Analysis Results for ~~Soil Samples~~
Dublin Rock & Ready Mix
6393 Scarlett Court
Dublin, California

PLATE **2**

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
102.01.002		2/93		



PES Environmental, Inc.
Engineering & Environmental Services

Sample Locations and Chemical Analysis Results for Groundwater Samples
Dublin Rock & Ready Mix
6393 Scarlett Court
Dublin, California

PLATE **3**

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
102.01.002		2/93		

COARSE-GRAINED SOILS (MORE THAN HALF IS COARSER THAN NO. 200 SIEVE)	GRAVELS (MORE THAN HALF COARSE FRACTION IS LARGER THAN NO 4 SIEVE SIZE)	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW		WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
			GP		POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 15% FINES	GM		SILTY GRAVELS, SILTY GRAVELS WITH SAND
			GC		CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
	SANDS (MORE THAN HALF COARSE FRACTION IS LARGER THAN NO 4 SIEVE SIZE)	CLEAN SANDS WITH LITTLE OR NO FINES	SW		WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
			SP		POORLY GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SANDS WITH OVER 15% FINES	SM		SILTY SANDS WITRH OR WITHOUT GRAVEL
			SC		CLAYEY GRAVEL WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS (MORE THAN HALF IS FINER THAN NO. 200 SIEVE)	SILTS AND CLAY (LIQUID LIMIT 50% OR LESS)		ML		INORGANIC SILTS WITH VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
			OL		ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (LIQUID LIMIT GREATER THAN 50%)		MH		INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS, FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH		ORGANIC SILTS OR CLAYS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS			PT		PEAT AND OTHER HIGHLY ORGANIC SOLS

2.5YR6/2 – Soil Color according to Munsell Soil Color Charts (1988 Edition)

PID (PPM) – Headspace reading on photo ionization detector in parts per million

 – No Soil Sample Recovered

 – Partial Soil Sample Recovered

 – Sample Submitted for Laboratory Analysis

 – Complete Soil Sample Recovered

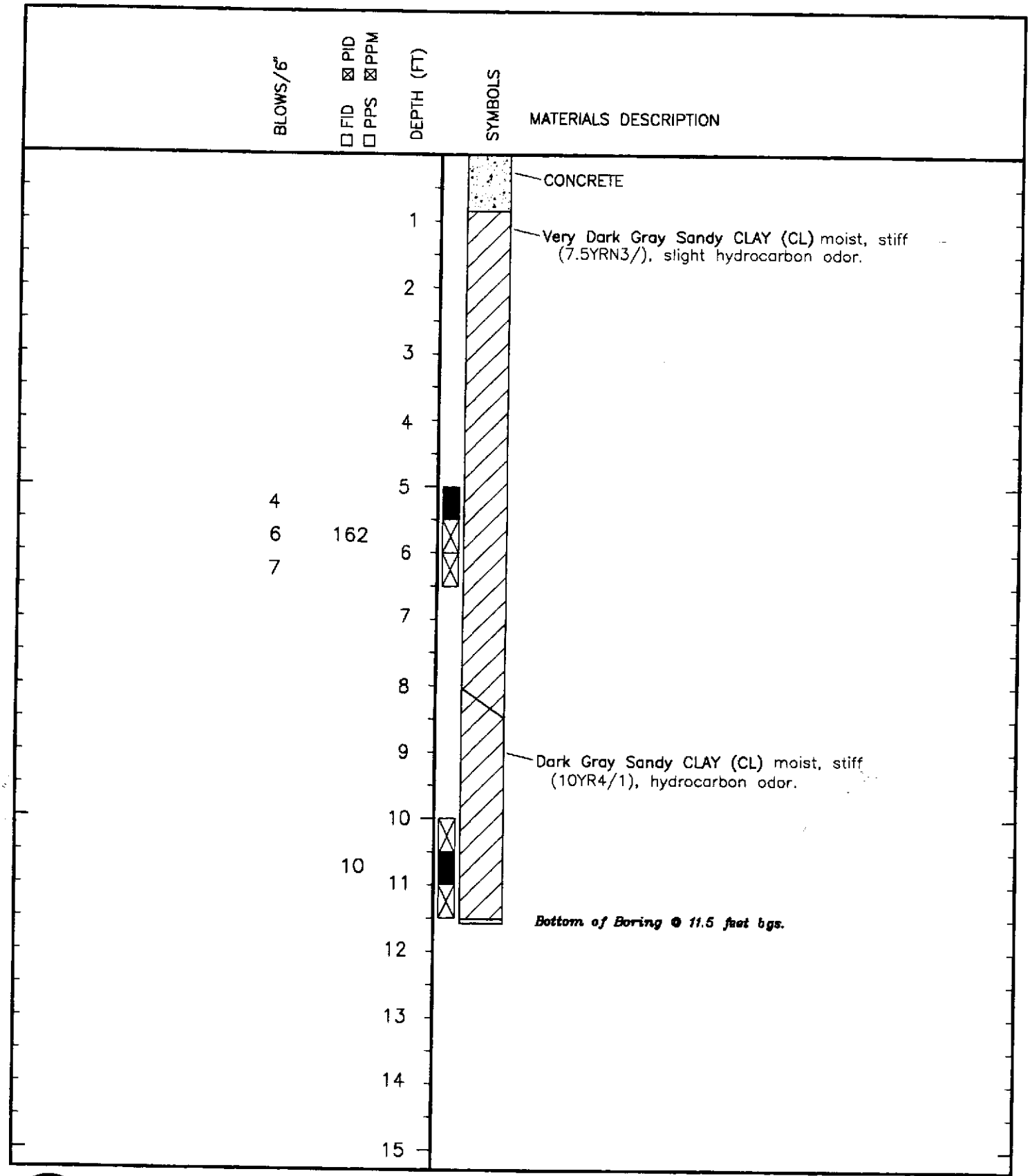
PES Environmental, Inc.
Engineering & Environmental Services

Unified Soil Classification Chart
Dublin Rock and Ready Mix
Dublin, California

PLATE
A-1

JOB NUMBER 102.01.002
LOGGING PERSONNEL DET, MKH, PL
DRAWN SH

DATE 3/93 REVISED DATE



PES Environmental, Inc.
Engineering & Environmental Services

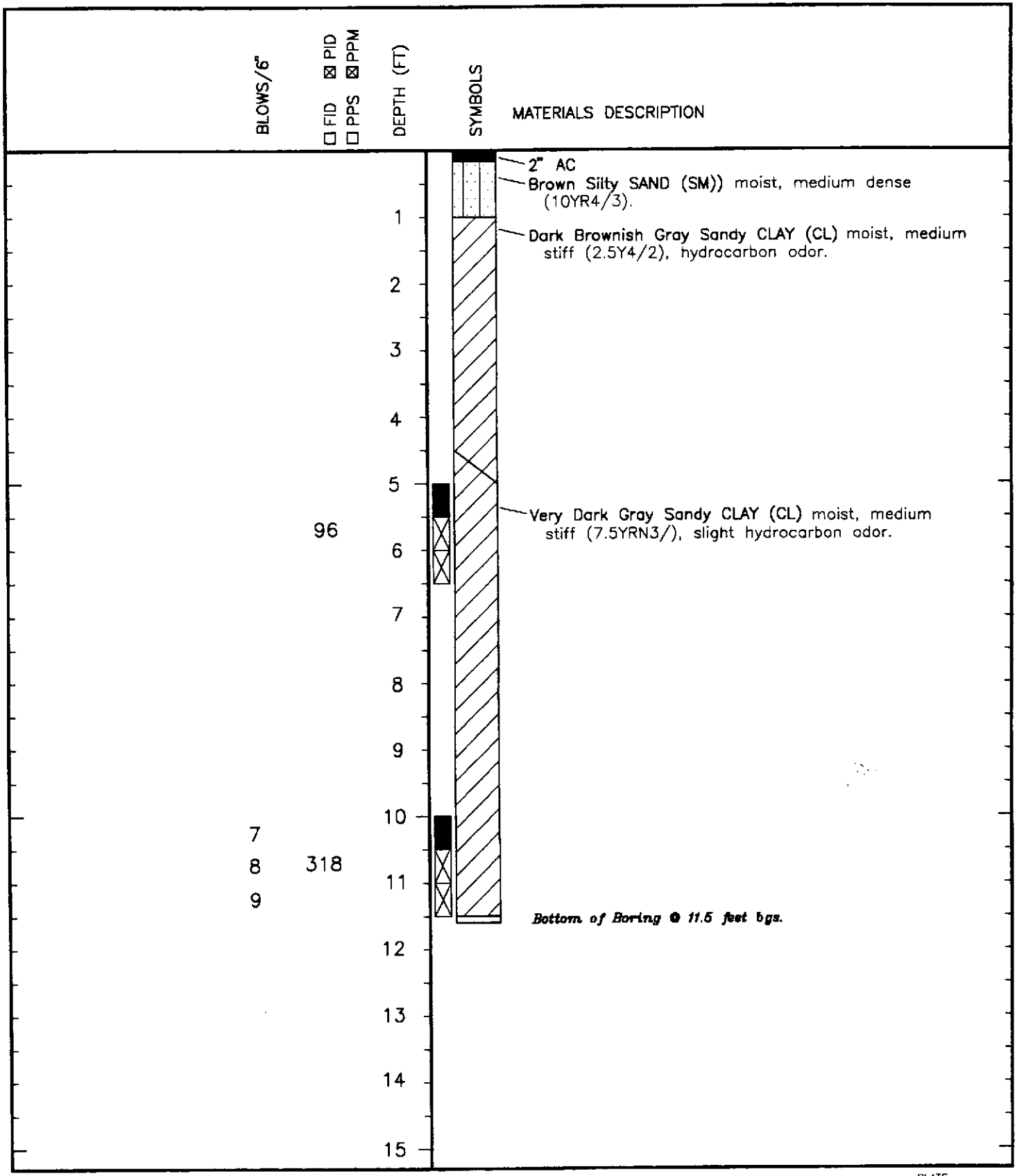
Log of Boring B-1
Dublin Rock and Ready Mix
Dublin, California

PLATE
A-2

JOB NUMBER 102.01.002
LOGGING PERSONNEL DET, MKH, PL
DRAWN SH

DIAMETER OF HOLE 4"
TOTAL DEPTH OF HOLE 9.0'
DRILL RIG Hand Augered

DATE 3/93 REVISED DATE



PES Environmental, Inc.
Engineering & Environmental Services

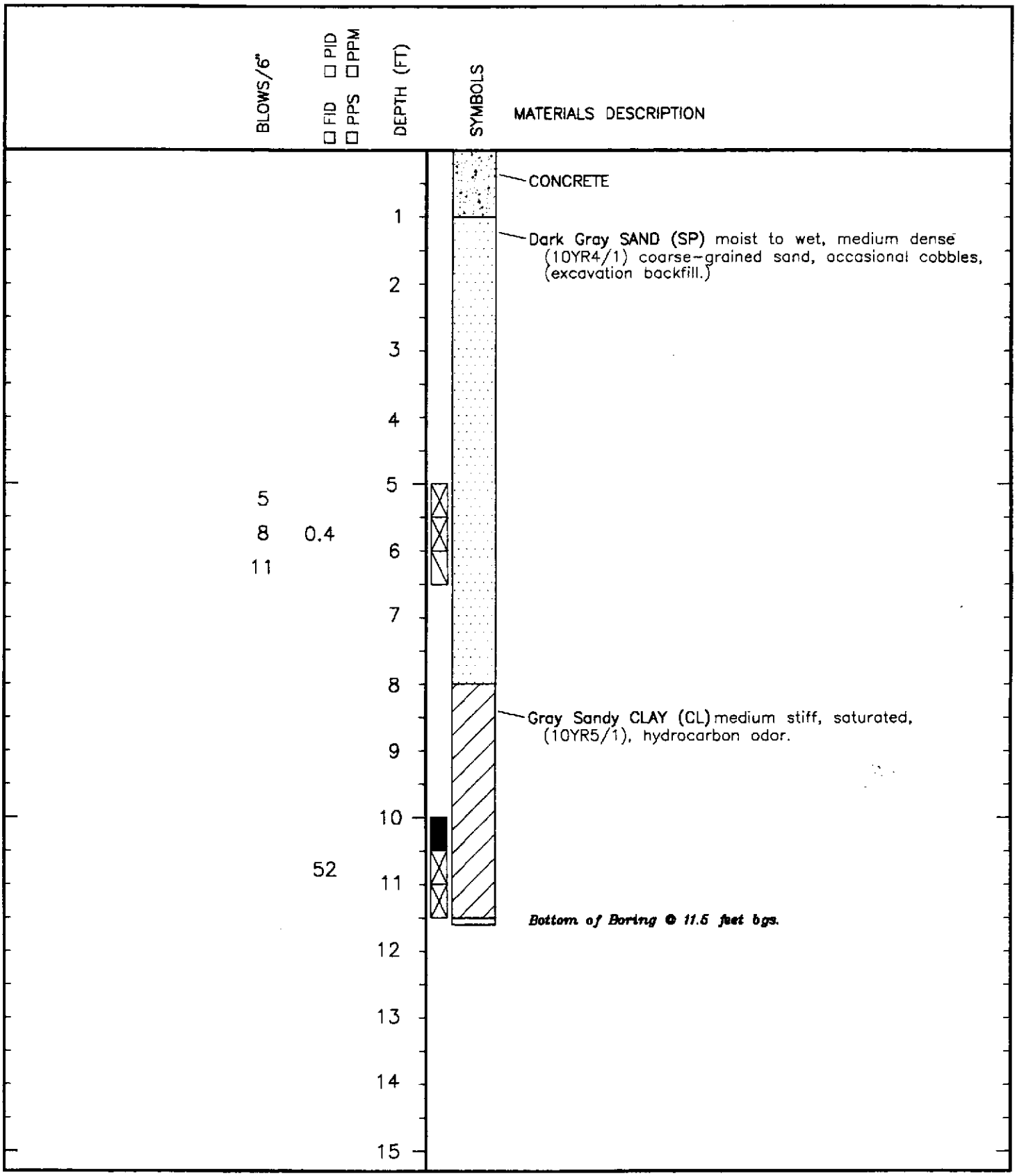
Log of Boring B-2
Dublin Rock and Ready Mix
Dublin, California

PLATE
A-3

JOB NUMBER 102.01.002
LOGGED PERSONNEL DET, MKH, PL
DRAWN SH

DIAMETER OF HOLE 4"
TOTAL DEPTH OF HOLE 9.0'
DRILL RIG Hand Augered

DATE 3/93
REVISED DATE



PES Environmental, Inc.
Engineering & Environmental Services

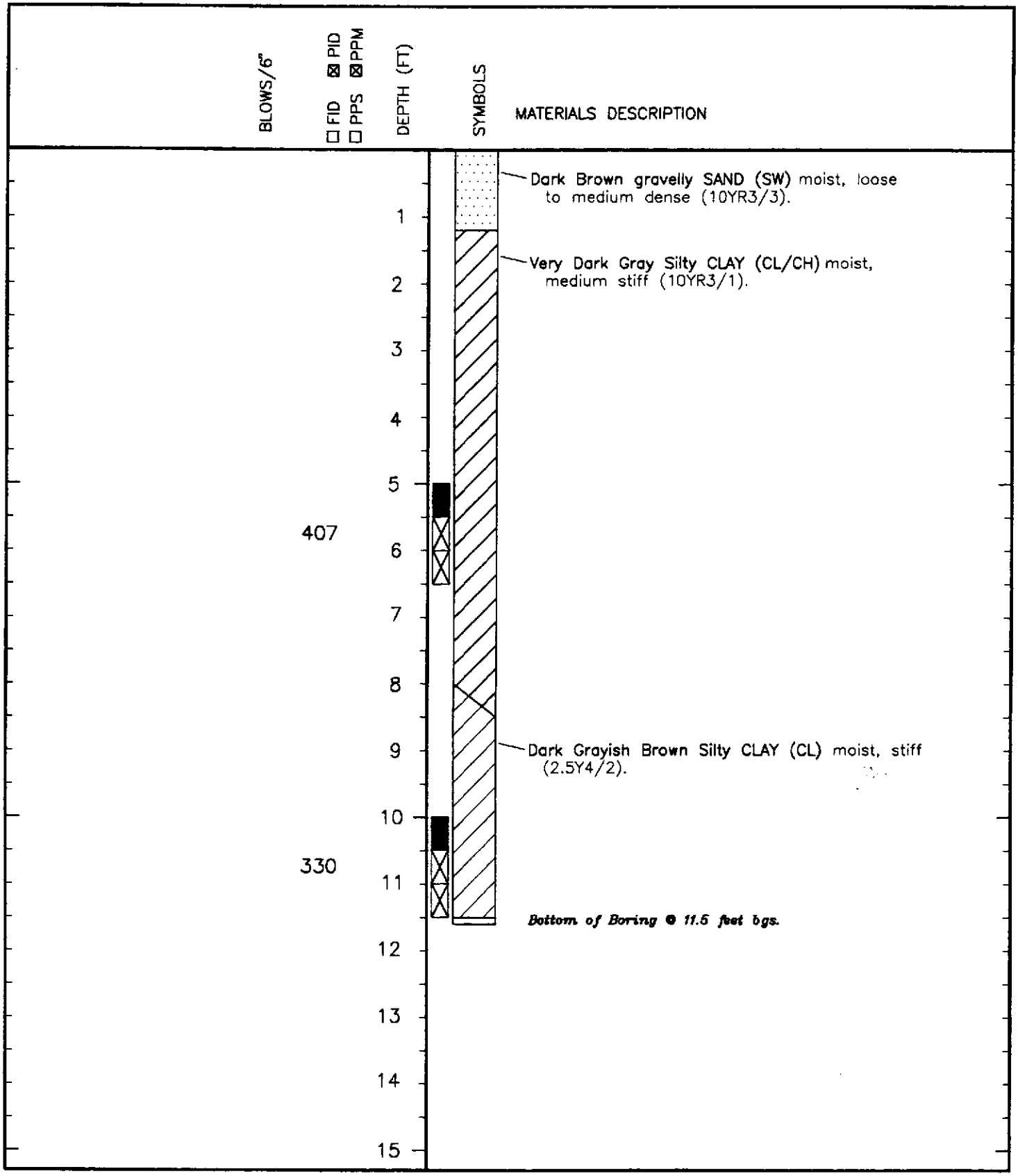
Log of Boring B-3
Dublin Rock and Ready Mix
Dublin, California

PLATE
A-4

JOB NUMBER 102.01.002
LOGGING PERSONNEL DET, MKH, PL
DRAWN SN

DIAMETER OF HOLE 4"
TOTAL DEPTH OF HOLE 9.0'
DRILL RIG Hand Augered

DATE 3/93
REVISED DATE



PES Environmental, Inc.
Engineering & Environmental Services

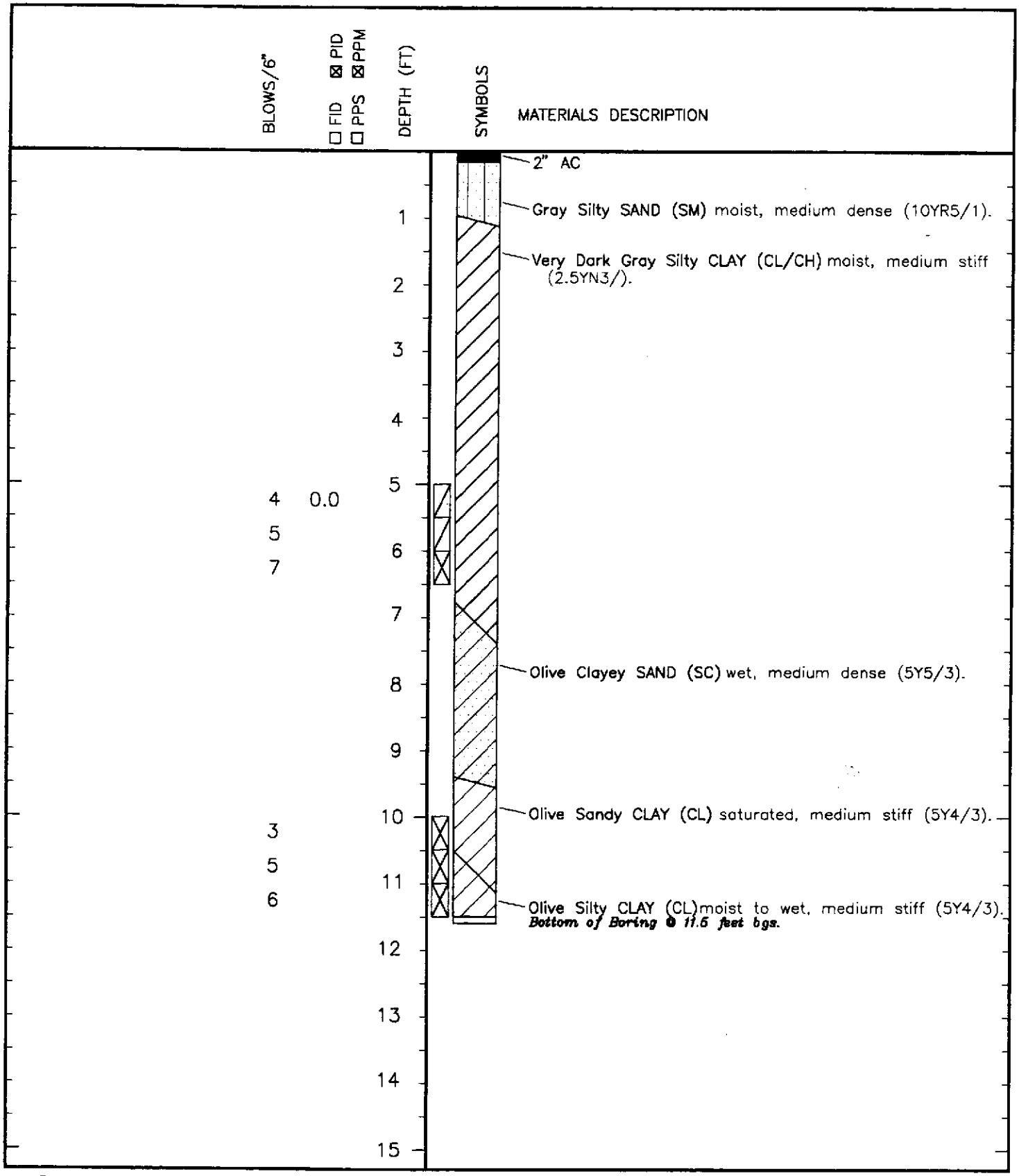
Log of Boring B-4
Dublin Rock and Ready Mix
Dublin, California

PLATE
A-5

JOB NUMBER 102.01.002
LOGGED PERSONNEL DET, MKH, PL
DRAWN SH

DIAMETER OF HOLE 4"
TOTAL DEPTH OF HOLE 9.0'
DRILL RIG Hand Augered

DATE 3/93
REVISED DATE



PES Environmental, Inc.
Engineering & Environmental Services

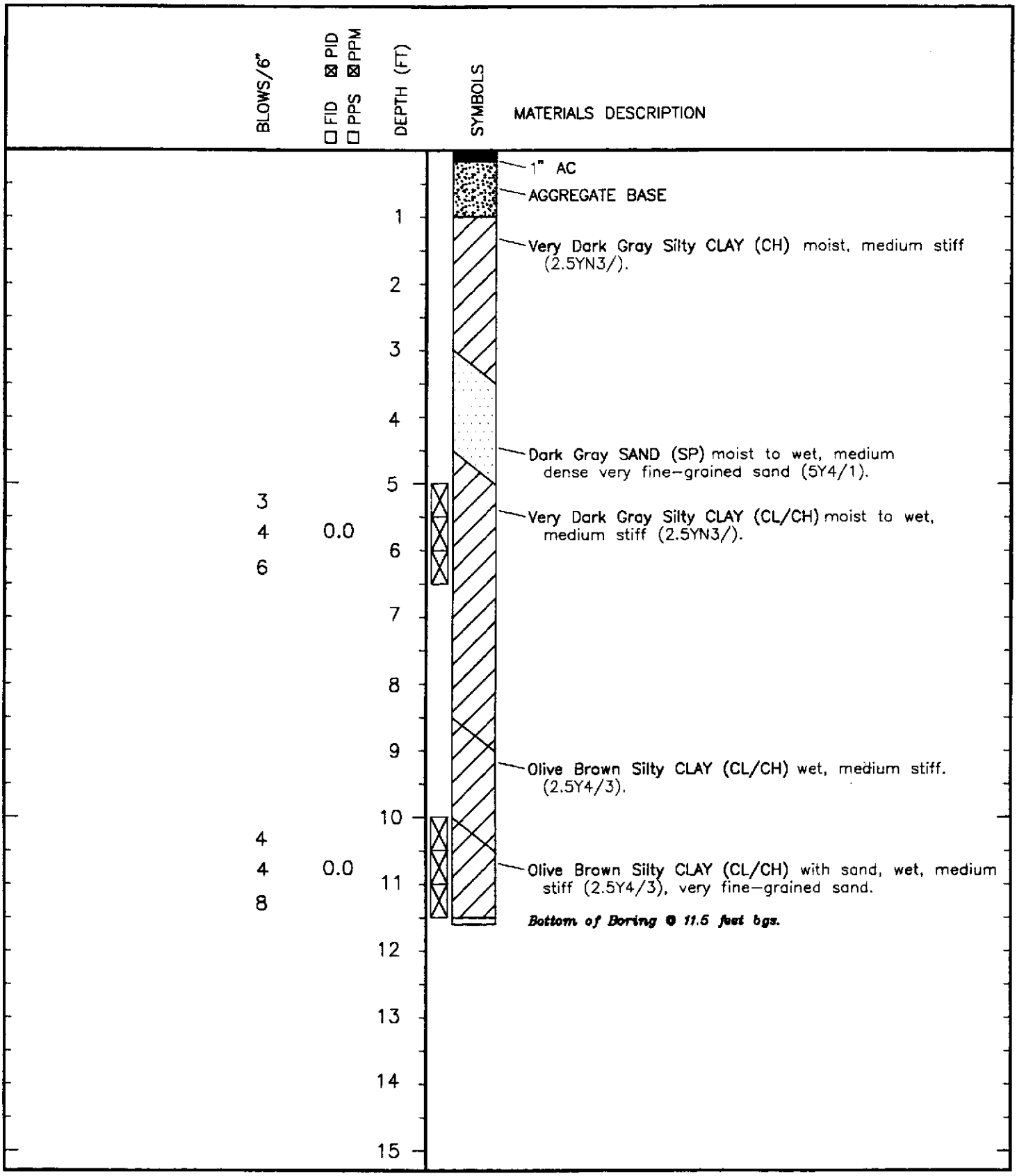
Log of Boring B-5
Dublin Rock and Ready Mix
Dublin, California

PLATE
A-6

JOB NUMBER 102.01.002
LOGGING PERSONNEL DET, MKH, PL
DRAWN SH

DIAMETER OF HOLE 4"
TOTAL DEPTH OF HOLE 9.0'
DRILL RIG Hand Augered

DATE 3/93
REVISED DATE



PES Environmental, Inc.
Engineering & Environmental Services

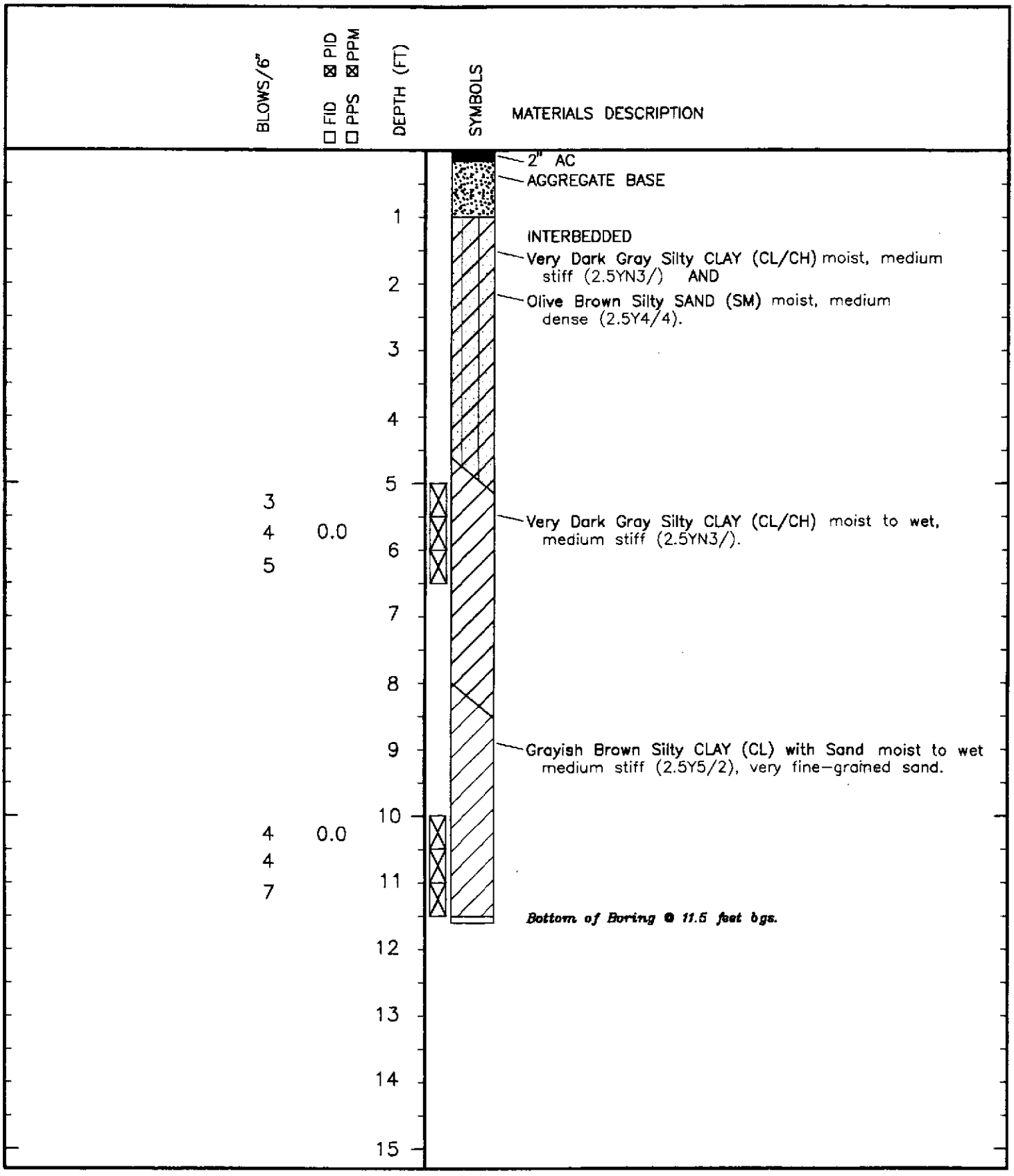
Log of Boring B-6
Dublin Rock and Ready Mix
Dublin, California

PLATE
A-7

JOB NUMBER 102.01.002
LOGGING PERSONNEL DET, MKH, PL
DRAWN SH

DIAMETER OF HOLE 4"
TOTAL DEPTH OF HOLE 9.0'
DRILL RIG Hand Augered

DATE 3/93
REVISED DATE



PES Environmental, Inc.
Engineering & Environmental Services

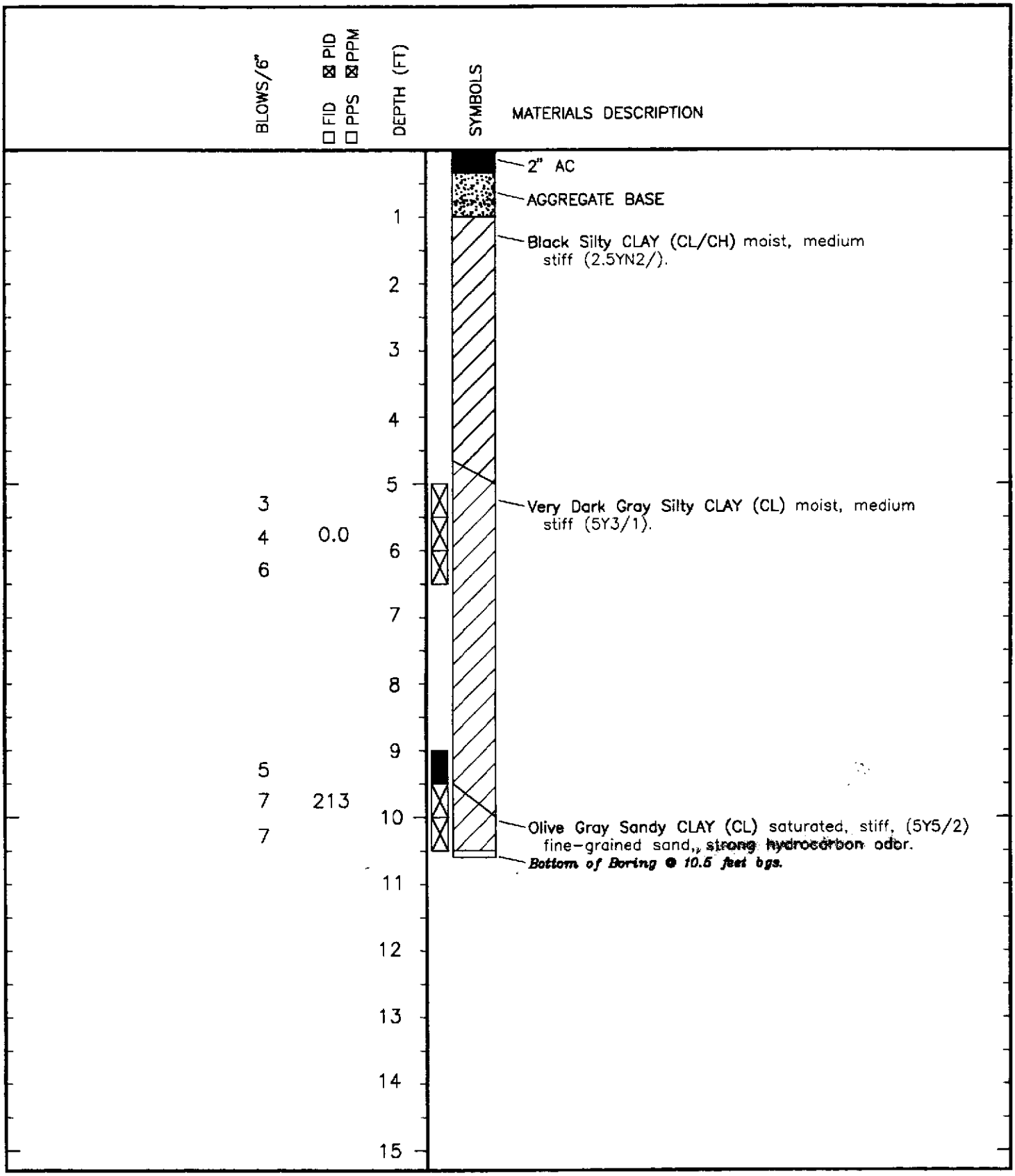
Log of Boring B-7
Dublin Rock and Ready Mix
Dublin, California

PLATE
A-8

JOB NUMBER 102.01.002
LOGGING PERSONNEL DET, MKH, PL
DRAWN SH

DIAMETER OF HOLE 4"
TOTAL DEPTH OF HOLE 9.0'
DRILL RIG Hand Augered

DATE 3/93
REVISED DATE



PES Environmental, Inc.
Engineering & Environmental Services

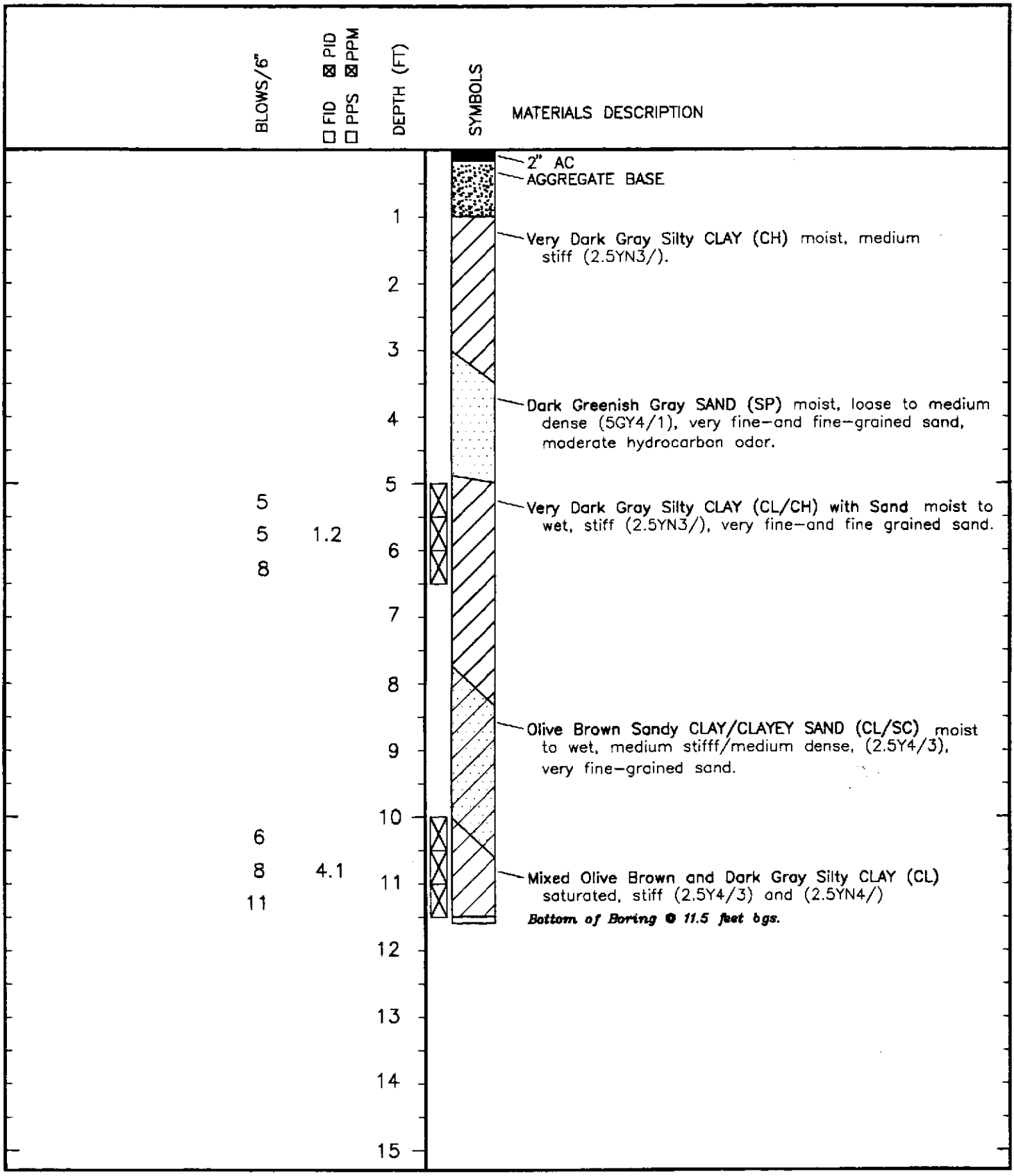
Log of Boring B-8
Dublin Rock and Ready Mix
Dublin, California

PLATE
A-9

JOB NUMBER 102.01.002
LOGGING PERSONNEL DET, MKH, PL
DRAWN SH

DIAMETER OF HOLE 4"
TOTAL DEPTH OF HOLE 9.0'
DRILL RIG Hand Augered

DATE 3/93 REVISED DATE



PES Environmental, Inc.
Engineering & Environmental Services

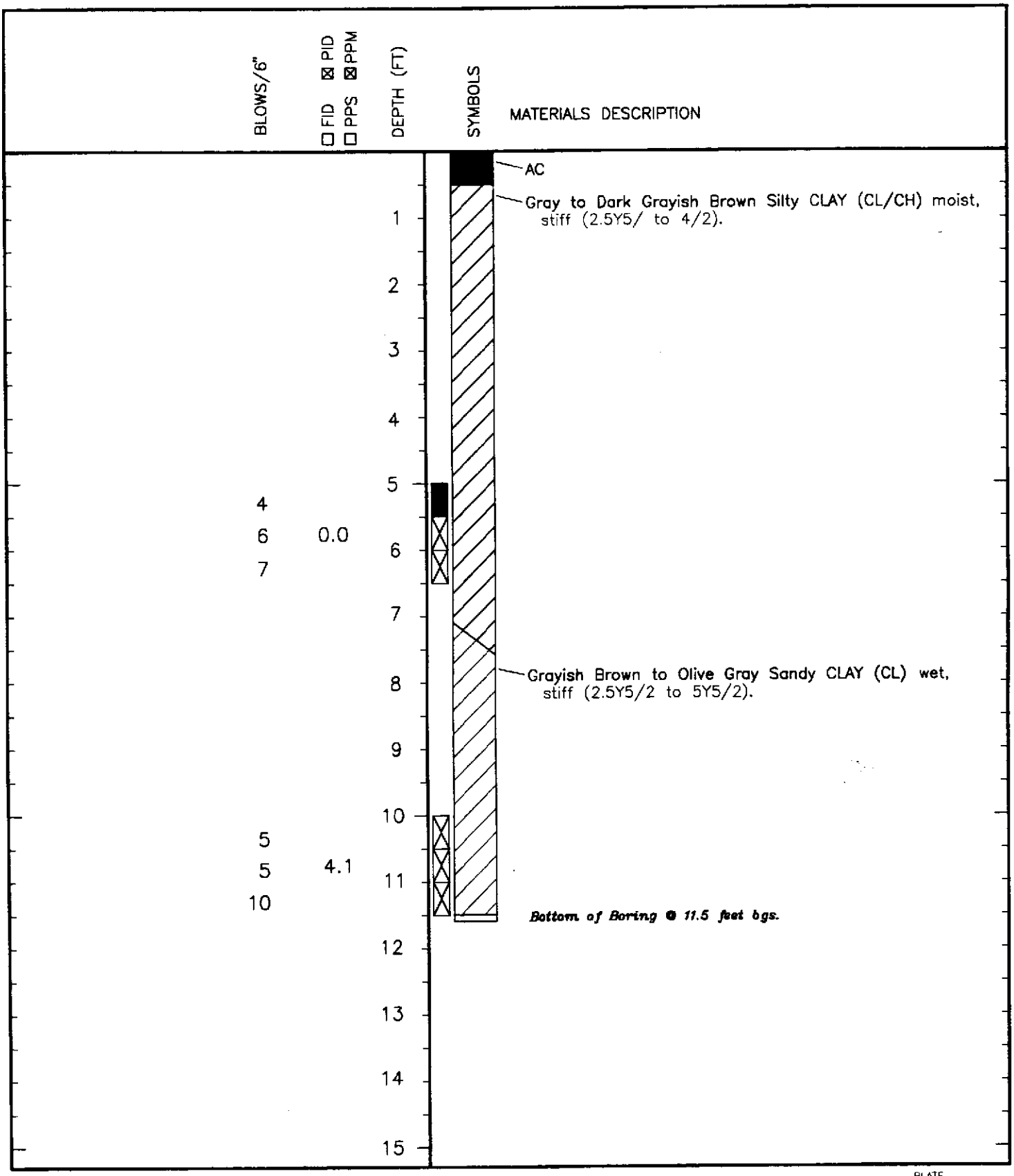
Log of Boring B-9
Dublin Rock and Ready Mix
Dublin, California

PLATE
A-10

JOB NUMBER 102.01.002
LOGGING PERSONNEL DET, MKH, PL
DRAWN SH

DIAMETER OF HOLE 4"
TOTAL DEPTH OF HOLE 9.0'
DRILL RIG Hand Augered

DATE 3/93
REVISED DATE



PES Environmental, Inc.
Engineering & Environmental Services

Log of Boring B-10
Dublin Rock and Ready Mix
Dublin, California

PLATE
A-11

JOB NUMBER 102.01.002
LOGGING PERSONNEL DET, MKH, PL
DRAWN SH

DIAMETER OF HOLE 4"
TOTAL DEPTH OF HOLE 9.0'
DRILL RIG Hand Augered

DATE 3/93 REVISED DATE

BLOWS/6"	☐ FID ☒ PID ☐ PPS ☒ PPM	DEPTH (FT)	SYMBOLS	MATERIALS DESCRIPTION
		1		LANDSCAPING AGGREGATE
				Dark Brown Silty CLAY (CL/CH) moist, medium stiff (10YR3/3).
		2		
		3		
				Dark Brown Silty CLAY (CL/CH) moist, medium stiff fine-grained sand (2.5YN5/).
		4		Gray Silty SAND (SM) moist, medium dense (2.5YN5/).
		5		
				Light Olive Brown CLAY (CL/CH) with Sand moist to wet, (2.5Y5/3).
		6		
		7		***Bottom of Boring @ 6.7 feet bgs.***
		8		
		9		
		10		
		11		
		12		
		13		
		14		
		15		

PES Environmental, Inc.
Engineering & Environmental Services

Log of Boring B-11
Dublin Rock and Ready Mix
Dublin, California

PLATE
A-12

JOB NUMBER 102.01.002
LOGGING PERSONNEL DET, MKH, PL
DRAWN SH

DIAMETER OF HOLE 4"
TOTAL DEPTH OF HOLE 9.0'
DRILL RIG Hand Augered

DATE 3/93 REVISED DATE

BLOWS/6"	☐ FID ☐ PID ☐ PPS ☐ PPM	DEPTH (FT)	SYMBOLS	MATERIALS DESCRIPTION
		1		LANDSCAPE AGGREGATE Dark Brown Silty CLAY (CL/CH) moist, medium stiff (10YR3/3).
		2		
		3		
		4		INTERBEDDED Gray Silty CLAY (CL/CH) moist, medium stiff (2.5YN5/). AND
		5		Dark Gray SAND (SP) moist to wet, medium dense (2.5YN4/), fine-grained sand.
		6		
		7		*Bottom of Boring @ 6.7 feet bgs.*
		8		
		9		
		10		
		11		
		12		
		13		
		14		
		15		

PES Environmental, Inc.
Engineering & Environmental Services

Log of Boring B-12
Dublin Rock and Ready Mix
Dublin, California

PLATE
A-13

JOB NUMBER 102.01.002
LOGGED PERSONNEL DET, MKH, PL
DRAWN SH

DIAMETER OF HOLE 4"
TOTAL DEPTH OF HOLE 9.0'
DRILL RIG Hand Augered

DATE 3/93
REVISED DATE

BLOWS/6"	☐ FID ☒ PID ☐ PPS ☒ PPM	DEPTH (FT)	SYMBOLS	MATERIALS DESCRIPTION
		0		2" AC
				Aggregate Base
		1		
		2		Dark Gray SAND (SP), moist, loose to medium dense, fine-grained sand (5Y4/1).
	4.0	3		
		4		Very Dark Gray Sandy CLAY (CL), moist, medium stiff, (5Y3/1), fine-grained sand.
		5		
	0.0			
		6		Very Dark Gray Silty CLAY (CL) with SAND, moist, to wet, medium stiff; (2.5YN3/), fine-and medium grained sand, trace fine-grained gravel.
		7		
		8		
	0.0			Dark Grayish Brown Silty CLAY (CL/CH), wet to, saturated, medium stiff (2.5Y4/2).
		9		*Bottom of Boring @ 9.0 feet bgs.*
		10		
		11		
		12		
		13		
		14		
		15		

PES Environmental, Inc.
Engineering & Environmental Services

Log of Boring B-13
Dublin Rock and Ready Mix
Dublin, California

PLATE
A-14

JOB NUMBER 102.01.002
LOGGED/REVIEWED DET, MKH, PL
DRAWN SH

DIAMETER OF HOLE 4"
TOTAL DEPTH OF HOLE 9.0'
DRILL RIG Hand Augered

DATE 3/93
REVISED DATE

APPENDIX B

BLAINE TECH SERVICES, INC. - GROUNDWATER SAMPLING REPORT

BLAINE
TECH SERVICES INC.

985 TIMOTHY DRIVE
SAN JOSE, CA 95133
(408) 995-5535
FAX (408) 293-8773

October 6, 1992

PES Environmental, Inc.
1682 Novato Blvd. Suite 100
Novato, CA 94947

Attn: Mike Thompson

SITE:
Dublin Rock & Ready Mix
6393 Scarlett Court
Dublin, California

SAMPLING EVENT:
Evacuate and sample four wells

DATE:
September 30, 1992

GROUNDWATER SAMPLING REPORT 920930-T-1

Blaine Tech Services, Inc. performs specialized environmental sampling and documentation as an independent third party. In order to avoid compromising the objectivity necessary for the proper and disinterested performance of this work, Blaine Tech Services, Inc. does not participate in the interpretation of analytical results or become involved with the marketing or installation of remedial systems.

This report deals with the groundwater well sampling performed by our firm in response to your request. Data collected in the course of our work at the site is presented in the TABLE OF WELL MONITORING DATA. This data was collected during our inspection, well evacuation, and sample collection. Measurements include the total depth of the well and depth to water. Water surfaces were further inspected for the presence of immiscibles. A series of electrical conductivity, pH, and temperature readings were obtained during well evacuation and at the time of sample collection. Recharge performance can be evaluated by comparing the anticipated three, four, or five case volume evacuation gallonage with the volume which could actually be purged.

TABLE OF WELL MONITORING DATA

Well I.D.	MW-1			MW-2			MW-3			MW-4		
Date Sampled	09/30/92			09/30/92			09/30/92			09/30/92		
Well Diameter (in.)	2			2			2			2		
Total Well Depth (ft.)	19.27			19.82			18.87			18.91		
Depth To Water (ft.)	5.34			5.42			5.46			5.78		
Free Product (in.)	NONE			SHEEN/ODOR			NONE			SHEEN/ODOR		
Reason If Not Sampled	--			--			--			--		
1 Case Volume (gal.)	2.2			2.3			2.2			2.1		
Did Well Dewater?	NO			NO			NO			NO		
Gallons Actually Evacuated	7.5			8.5			7.5			7.5		
Purging Device	MIDDLEBURG			MIDDLEBURG			MIDDLEBURG			MIDDLEBURG		
Sampling Device	BAILER			BAILER			BAILER			BAILER		
Time	12:57	13:02	13:07	12:13	12:18	12:28	10:39	10:43	10:49	11:30	11:37	11:44
Temperature (Fahrenheit)	68.8	68.8	68.4	68.0	67.0	67.0	69.8	69.4	69.0	67.6	66.8	67.4
pH	6.2	6.0	5.9	6.5	6.1	6.0	7.2	6.5	6.2	6.5	6.3	6.2
Conductivity (micromhos/cm)	2400	2400	2500	1300	1200	1200	2800	2900	3200	2000	2200	2100
Nephelometric Turbidity Units	>200	>200	>200	>200	>200	>200	>200	>200	>200	>200	>200	>200
BTS Chain of Custody	920930-T-1			920930-T-1			920930-T-1			920930-T-1		
BTS Sample I.D.	MW-1			MW-2			MW-3			MW-4		
DHS HMTL Laboratory	SUPERIOR			SUPERIOR			SUPERIOR			SUPERIOR		
Analysis	TPH (GAS), BTXE			TPH (GAS), BTXE			TPH (GAS), BTXE			TPH (GAS), BTXE		

EQUIPMENT

Selection of Sampling Equipment

The determination of what apparatus is to be used on particular wells may be made by the property owner or the professional consultant directing the performance of the monitoring on the property owner's behalf. If no specific requirement is made known to us, our personnel will select equipment that will accomplish the work in the most efficient manner. Our personnel are equipped with a variety of sampling devices that include USGS/Middleburg pumps, down hole electric submersible pumps, air lift pumps, suction pumps, and bailers made of both Teflon and stainless steel.

Evacuation and Sampling Equipment Mechanics

When equipment is not selected by the client, the apparatus for well evacuation and sample collection is selected by our field personnel based on an evaluation of the field conditions. Four types of devices are commonly available for employment:

Bailers
High Volume Suction Pumps
Electric Submersible Pumps
USGS/Middleburg positive displacement sampling pumps

USGS/Middleburg pumps and bailers were selected for the collection of samples at this site.

USGS/Middleburg Positive Displacement Sampling Pumps: USGS/Middleburg positive displacement sampling pumps are EPA approved pumps appropriate for use in wells down to two inches in diameter and depths up to several hundred feet. The pump contains a flexible Teflon bladder which is alternately allowed to fill with well water and then collapsed. Actuation of the pump is accomplished with compressed air supplied by a single hose to one side of the Teflon membrane. Water on the other side of the membrane is squeezed out of the pump and up a Teflon conductor pipe to the surface. Evacuation and sampling are accomplished as a continuum. The rate of water removal is relatively slow and loss of volatiles almost non-existent. There is only positive pressure on the water being sampled and there is no impeller cavitation or suction. The pumps can be placed at any location within the well, can draw water from the very bottom of the well case, and are virtually immune to the erosive effects of silt or lack of water which destroy other types of pumps.

Disadvantages associated with Middleburg pumps include their high cost, low flow rate, temperamental operation, and cleaning requirements which are both elaborate and time consuming.

Bailers: A bailer, in its simplest form, is a hollow tube which has been fitted with a check valve at the lower end. The device can be lowered into a well by means of a cord. When the bailer enters the water, the check valve opens and liquid flows into the interior of the bailer. The bottom check valve prevents water from escaping when the bailer is drawn up out of the well.

Two types of bailers are used in groundwater wells at sites where fuel hydrocarbons are of concern. The first type of bailer is made of a clear material such as acrylic plastic and is used to obtain a sample of the surface and the near surface liquids in order to detect the presence of visible or measurable fuel hydrocarbon floating on the surface. The second type of bailer is made of Teflon or stainless steel and is used as an evacuation and/or sampling device.

Bailers are inexpensive and relatively easy to clean. Because they are manually operated, variations in operator technique may have a greater influence than would be found with more automated sampling equipment. Also where fuel hydrocarbons are involved, the bailer may include near surface contaminants that are not representative of water deeper in the well.

STANDARD PRACTICES

Evacuation

There are few accepted groundwater sampling protocols that do not call for the evacuation of at least three case volumes of water prior to sample collection, and there are situations where up to ten case volumes of evacuation may be requested. Different professional consultants may specify different levels of evacuation prior to sampling or may request that specific parameters be used to determine when to collect the sample. Our personnel use several standard instruments to record the changes in parameters as the well is evacuated. These instruments are used regardless of whether or not a specific volumetric standard has been called for. As a result, the consultant will always be provided with a record of the pH, EC, and temperature changes that occurred during the evacuation process. Additional information obtained with different types of instruments (such as dissolved oxygen and turbidity meters) can also be collected if requested in advance.

Effluent Materials

Groundwater well sampling protocols call for the evacuation of a sufficient volume of water from the well to insure that the sample is collected from water than has been newly drawn into the well from the surrounding geologic formation. The evacuation of this purge water creates a volume of effluent water which must be contained. Blaine Tech Service, Inc. will place this water in appropriate containers of the client's choice or bring new DOT 17 E drums to the site which are appropriate for the containment of the effluent materials. The determination of how to properly dispose of the effluent water must usually await the results of laboratory analyses of the sample collected from the groundwater well.

If that sample does not establish whether or not the effluent water is contaminated, or if effluent from more than one source has been combined in the same container, it may be necessary to conduct additional analyses on the effluent material.

Observations and Measurements

Included in the scope of work are routine measurements and investigative procedures which are intended to determine if the wells are suitable for evacuation and sampling. These include measurement (from the top of the well case) of the total depth of the well; the depth to water, and the thickness of any free product zone (FPZ) encountered. The presence of a significant free product zone may interfere with efforts to collect a water sample that accurately reflects the condition of groundwater lying below the FPZ. This interference is caused by adhesion of petroleum to any device being lowered through the FPZ and the likelihood that minute globules of petroleum may break free of the sampling device and be included in the sample. Accordingly, evaluation of analytical results from wells containing any amount of free petroleum should take into account the possibility that positive results have been skewed higher by such an inclusion. The decision to sample or not sample such wells is left to the discretion of our field personnel at the site and the consultant who establishes sampling guidelines based on the need for current information on groundwater conditions at the site.

Sampling Methodology

Samples were obtained by standardized sampling procedures that follow an evacuation and sample collection protocol. The sampling methodology conforms with State and Regional Water Quality Control Board standards and specifically adheres to EPA requirements for apparatus, sample containers and sample handling as specified in publication SW 846.

Sample Containers

Sample material is collected in specially prepared containers appropriate to the type of analyses intended. Our firm uses new sample containers of the type specified by either EPA or the RWQCB. Often times analytical laboratories wish to supply the sample containers because checks performed on these bottles are often part of a comprehensive laboratory QC program. In cases where the laboratory does not supply sample containers our personnel collect water samples in containers that are appropriate to the type of analytical procedure that the sample is to receive. For example, 40 ml volatile organic analysis vials (VOAs) are used when analysis for gasoline and similar light volatile compounds is intended. These containers are prepared according to EPA SW 846 and will usually contain a small amount of preservative when the analysis is for TPH as gasoline or EPA 602. Vials intended for EPA 601 analysis and EPA 624 GCMS procedures are not preserved. The closure of volatile organic analysis water sample containers is accomplished with an open headed (syringe accessible) plastic screw cap brought down on top of a Teflon faced septum which is used to seal the sample without headspace.

Water samples intended for semivolatile and nonvolatile analysis such as total oil and grease (TOG) and diesel (TPH HBF) are collected and transported in properly prepared new glass liter bottles. Dark amber glass is used in the manufacture of these bottles to reduce any adverse effect on the sample by sunlight. Antimicrobial preservative may be

added to the sample liquid if a prolonged holding time is expected prior to analysis. Closure is accomplished with a heavy plastic screw cap.

Groundwater well samples intended for metals analysis are transported in new plastic bottles and preserved with nitric acid. Our personnel can field filter the sample liquid prior to placing it in the sample container if instructed to perform this procedure.

Sample Handling Procedures

Water samples are collected in any of several appropriate devices such as bailers, Coliwasas, Middleburg sampling pumps etc. which are described in detail only as warranted by their employment at a given site. Sample liquid is decanted into new sample containers in a manner which reduces the loss of volatile constituents and follows the applicable EPA procedures for handling volatile organic and semi-volatile compounds. Only two variations from the EPA methods are generally employed. First, preservative is added to the sample container prior to addition of the sample liquid. We first discovered this method in bottles prepared by Stoner Laboratories in 1982. It was subsequently adopted by many northern California laboratories and environmental consulting firms as a practical means of reducing the time that a liquid is allowed to aerate prior to closure of the sampling container. Second, because tests have shown that the preservative readily mixes with sample liquid, glass stirring rods are not used to agitate the sample/preservative mixture.

Groundwater samples that are to receive metals analyses can be filtered prior to being placed in the plastic sample bottles that contain the nitric acid preservative. The filtration process employs new glass containers which are discarded and laboratory quality disposable filtering containers which are also discarded. A frequently used filtering procedure employs a vacuum pump to draw sample material through a 0.45 micron filter. The 0.45 micron pore size is standard, but the amount of filter available varies with the type of package selected. Filters are selected on the basis of the relative turbidity of the water sample. Samples which are relatively clean can be efficiently filtered with relatively inexpensive filters while very turbid water will require a very large filter with a high tolerance for sediments. One of many such filters our firm uses are the Nalgene Type A filters in which an upper and lower receptacle chamber are affixed to the filter. Sample material is poured into the upper chamber and a vacuum pump attached to the lower chamber. Simple actuation of the vacuum pump induces the flow of water through the filter and into the lower chamber. The sample is then decanted into the laboratory container and the filter assembly discarded.

Following collection, samples are promptly placed in an ice chest containing prefrozen blocks of an inert ice substitute such as Blue Ice or Super Ice. The samples are maintained in either an ice chest or a refrigerator until delivered into the custody of the laboratory.

Sample Designations

All sample containers are identified with both a sampling event number and a discrete sample identification number. Please note that the sampling event number is the number that appears on our chain of custody. It is roughly equivalent to a job number, but applies only to work done on a particular day of the year rather than spanning several days as jobs and projects often do.

Chain of Custody

Samples are continuously maintained in an appropriate cooled container while in our custody and until delivered to the laboratory under our standard chain of custody. If the samples are taken charge of by a different party (such as another person from our office, a courier, etc.) prior to being delivered to the laboratory, appropriate release and acceptance records are made on the chain of custody (time, date, and signature of person releasing the samples followed by the time, date and signature of the person accepting custody of the samples).

Hazardous Materials Testing Laboratory

After completion of the field work, the sample containers were delivered to Superior Analytical Laboratory in San Francisco, California. Superior Analytical Laboratory is a California Department of Health Services certified Hazardous Materials Testing Laboratory and is listed as DOHS HMTL #220.

Personnel

All Blaine Tech Services, Inc. personnel receive 29 CFR 1910.120(e)(2) training as soon after being hired as is practical. In addition, many of our personnel have additional certifications that include specialized training in level B supplied air apparatus and the supervision of employees working on hazardous materials sites. Employees are not sent to a site unless we are confident they can adhere to any site safety provisions in force at the site and unless we know that they can follow the written provisions of an SSP and the verbal directions of an SSO.

In general, employees sent to a site to perform groundwater well sampling will assume an OSHA level D (wet) environment exists unless otherwise informed. The use of gloves and double glove protocols protects both our employees and the integrity of the samples being collected. Additional protective gear and procedures for higher OSHA levels of protection are available.

Decontamination

All apparatus is brought to the site in clean and serviceable condition. The equipment is decontaminated after each use and before leaving the site. Decontamination procedures include complete disassembly of the device to a point where a jet of steam cleaner water can be directed onto all the internal surfaces (this applies to the *inside* of the Teflon bladders of USGS/Middleburg pumps). Teflon conductor tubing is connected to the steam cleaner water outlet and water is run through the interior of the tubing for several minutes. The devices are then reassembled and actuated for a period of time as an additional measure. Blaine Tech Services, Inc. frequently modifies apparatus to allow complete disassembly and proper cleaning.

Please call if we can be of any further assistance.

for Richard C. Blaine

Richard C/Blaine

RCB/lpn

attachments: chain of custody

BLAINE TECH SERVICES INC.

1370 TULLY ROAD., SUITE 505
SAN JOSE, CA 95122
(408) 995 5535

CHAIN OF CUSTODY 920930 - T1

CLIENT PES

SITE DUBLIN ROCK & READYMIX
6393 SCARLETT CT
DUBLIN CA

CONDUCT ANALYSIS TO DETECT

LAB Superior DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND

☐ EPA ☐ RWQCB REGION ____
☐ LIA
☐ OTHER

SPECIAL INSTRUCTIONS Bill to:
PES JOB # 10201001
ATTN: Mike Thompson

SAMPLE I.D.		MATRIX S = SOIL W = H2O	CONTAINERS TOTAL		C = COMPOSITE ALL CONTAINERS	TPH (GAS) BTEX	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW-1	1310	W	3	VOA's		✓				
MW-2	1230	W	3	VOA's		✓				
MW-3	1055	W	3	VOA's		✓				
MW-4	1150	W	3	VOA's		✓				

9.30.92 @ 1310

SAMPLING COMPLETED DATE TIME

SAMPLING PERFORMED BY F. THIE

RESULTS NEEDED NO LATER THAN ROUTINE

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Francis Thie FRANCIS THIE	9.30.92	1433	BTS REFRIDGERATOR	9.30.92	14:33
[signature]	10/5/92	0950	Benny D. Gardner X282	10/5/92	09:30
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #	

APPENDIX C

CHEMICAL ANALYSIS REPORTS

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 • Martinez, California 94553 • (510) 229-1512 / fax (510) 229-1526

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 86858
CLIENT: Blaine Tech Services, Inc.
CLIENT JOB NO.: 10201001

DATE RECEIVED: 10/05/92
DATE REPORTED: 10/14/92
DATE SAMPLED : 09/30/92

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

LAB #	Sample Identification	Concentration(µg/L) Benzene	Toluene	Ethyl Benzene	Xylenes
1	MW-1	ND<0.3	ND<0.3	ND<0.3	ND<0.3
2	MW-2	24000	15000	3800	17000
3	MW-3	ND<0.3	ND<0.3	ND<0.3	ND<0.3
4	MW-4	3.5	2.4	8.9	3.4

µg/L - parts per billion (ppb)

Method Detection Limit in Water: 0.3 µg/L

QAQC Summary:

Daily Standard run at 20 µg/L: RPD = <15%
MS/MSD Average Recovery =103%: Duplicate RPD = <5

Richard Srna, Ph.D.

Laboratory Director

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 ▪ Martinez, California 94553 ▪ (510) 229-1512 / fax (510) 229-1526

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 86858
CLIENT: Blaine Tech Services, Inc.
CLIENT JOB NO.: 10201001

DATE RECEIVED: 10/05/92
DATE REPORTED: 10/14/92
DATE SAMPLED : 09/30/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by MODIFIED EPA SW-846 METHOD 5030 and 8015

LAB #	Sample Identification	Concentration (mg/L) Gasoline Range
1	MW-1	ND<0.05
2	MW-2	120
3	MW-3	ND<0.05
4	MW-4	0.38

mg/L - parts per million (ppm)

Method Detection Limit for Gasoline in Water: 0.05 mg/L

QAQC Summary:

Daily Standard run at 2mg/L: RPD Gasoline = <15
MS/MSD Average Recovery = 91%: Duplicate RPD =<4%

Richard Srna, Ph.D.

Laboratory Director

BLAINE TECH SERVICES INC.

1370 TULLY ROAD., SUITE 505
SAN JOSE, CA 95122
(408) 995 5535

CHAIN OF CUSTODY 920930 - T1

CLIENT PES

SITE DUBLIN ROCK & READYMIX
6393 SCARLETT CT
DUBLIN CA

CONDUCT ANALYSIS TO DETECT

LAB Superior 06850 DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND

☐ EPA ☐ RWQCB REGION _____
☐ LIA
☐ OTHER

SPECIAL INSTRUCTIONS Bill to:
PES JOB # 10201001
ATTN: Mike Thompson

SAMPLE I.D.		MATRIX S = SOIL W = H2O	CONTAINERS TOTAL		C = COMPOSITE ALL CONTAINERS	TPH (GAS) BTEX						ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW-1	1310	W	3	VOA's		✓									
MW-2	1330	W	3	VOA's		✓									
MW-3	1055	W	3	VOA's		✓									
MW-4	1150	W	3	VOA's		✓									
9.30.92 @ 1310															

Please initial
Samples Stored in Ice.
Appropriate containers.
Samples preserved.
Samples Rec'd in Sequence:
Comments:

SAMPLING COMPLETED	DATE	TIME

SAMPLING PERFORMED BY F. THIE

RESULTS NEEDED NO LATER THAN ROUTINE

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Print: Thie FRANCIS THIE	9.30.92	1433	BTS REFRIGERATOR	9.30.92	1433
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
	10/1/92	0950			
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
	10/5/92	1221		10/5/92	12:20pm

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 55722
CLIENT: PES ENVIRONMENTAL,INC.
CLIENT JOB NO.: 102.01.002

DATE RECEIVED: 11/04/92
DATE REPORTED: 11/12/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by Modified EPA SW-846 Method 5030 and 8015

LAB #	Sample Identification		Concentration Gasoline Range	
1	B-5	water samples	ND<50	ug/L
2	B-6		ND<50	ug/L
3	B-7		ND<50	ug/L
4	B-9		170	ug/L
5	B-10		7800	ug/L
6	B-1-5.0	soil samples	23	mg/kg
7	B-1-10.0		36	mg/kg
8	B-2-5.0		34	mg/kg
9	B-2-10.0		40	mg/kg
10	B-3-5.0		ND<1	mg/kg
11	B-3-10.0		42	mg/kg
12	B-4-5.0		470	mg/kg
13	B-4-10.0		23	mg/kg

mg/kg - parts per million (ppm)
ug/L - parts per billion (ppb)

Method Detection Limit for Gasoline in Soil: 1 mg/kg
Method Detection Limit for Gasoline in Water: 50 ug/L

QAQC Summary:

Daily Standard run at 2mg/L: %Diff Gasoline = <15
MS/MSD Recovery = 106%: Duplicate RPD = 6%

Richard Srna, Ph.D.

Laboratory Manager

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 55722
CLIENT: PES ENVIRONMENTAL,INC.
CLIENT JOB NO.: 102.01.002

DATE RECEIVED: 11/04/92
DATE REPORTED: 11/12/92

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

LAB #	Sample Identification	Concentration Benzene	Toluene	Ethyl Benzene	Xylenes	
1	B-5	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ug/L
2	B-6	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ug/L
3	B-7	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ug/L
4	B-9	1.7	ND<0.3	2.4	1.4	ug/L
5	B-10	48	19	190	150	ug/L
6	B-1-5.0	0.13	0.033	1.4	0.038	mg/kg
7	B-1-10.0	0.095	0.030	0.69	1.7	mg/kg
8	B-2-5.0	0.28	1.4	0.63	4.1	mg/kg
9	B-2-10.0	1.3	0.63	0.98	4.8	mg/kg
10	B-3-5.0	ND<.003	0.004	ND<.003	0.008	mg/kg
11	B-3-10.0	1.1	0.13	0.86	4.7	mg/kg
12	B-4-5.0	2.3	8.6	6.6	38	mg/kg
13	B-4-10.0	0.89	0.22	0.47	2.3	mg/kg

ug/L - parts per billion (ppb)
mg/kg - parts per million (ppm)

Method Detection Limit in Soil: 0.003 mg/kg
Method Detection Limit in Water: 0.3 ug/L

QAQC Summary:

Daily Standard run at 20ug/L: %Diff 8020 = <15%
MS/MSD Average Recovery =98%: Duplicate RPD = 4%

Richard Srna, Ph.D.

Laboratory Manager

P[redacted]nvir[redacted]enta[redacted]. [redacted]
Engineering & Environmental Services

16[redacted]ovat[redacted]leva[redacted]uite [redacted]
Novato, California 94947
(415) 899-1600 FAX (415) 899-1601

CHAIN OF CUSTODY RECORD

SAMPLERS: D. TRUMBLY
M. HOLKENBRINK

JOB NUMBER: 102.01.002

NAME/LOCATION: DOLAN / DUBLIN

PROJECT MANAGER: MICHAEL D. THOMPSON

RECORDER: Mary E Holkenbrink (Signature Required)

DATE YR	MO	DY	TIME	SAMPLE NUMBER OR LAB NUMBER YR	WK	SEQ	SOURCE CODE	MATRIX Water	Sedim't	Soil	Oil	# CONTAINERS & PRESERV. Unpres.	H_2SO_4	HNO_3	Filtered	$Na_2S_2O_3$	$NaHSO_4$	DEPTH IN FEET	COL MTD CD	QA CODE
92	11	02	1250	B	-	5	10	X								2			27	
			1300	B	-	6	10	X									2		27	
			1330	B	-	7	10	X									2		27	
92	11	03	1027	B	-	9	10	X				2							27	
			1552	B	-	10	10	X				2							27	
			1345	B	-	1	- 5.0	48		X		1						5.0	36	
			1407	B	-	1	- 10.0	48		X		1						10.0	36	
			1100	B	-	2	- 5.0	48		X		1						5.0	36	
			1115	B	-	2	- 10.0	48		X		1						10.0	36	
			1420	B	-	3	- 5.0	48		X		1						5.0	36	
			1433	B	-	3	- 10.0	48		X		1						10.0	36	
			1145	B	-	4	- 5.0	48		X		1						5.0	36	

ANALYSIS REQUESTED

EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Pollutant Metals	Benzene/Toluene/Xylene	Total Petrol. Hydrocarb. (Gasoline)
					X	X
					X	X
					X	X
					X	X
					X	X
					X	X
					X	X
					X	X
					X	X
					X	X
					X	X

Please initial:
Samples Stored in Ice. LK
Appropriate containers. LK
Samples preserved. LK
VOAs without headspace. LK
Comments:

NOTES

B-9 reacts w/ HCl

Reference quotation #622

Two CoC forms

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE	TIME
Mary E Holkenbrink	Don E Ellefson	11/4	1052
RELINQUISHED BY: (Signature) Don E Ellefson	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE	TIME

DISPATCHED BY: (Signature)	DATE	TIME	RECEIVED FOR LAB BY: (Signature)	DATE	TIME

METHOD OF SHIPMENT:

Laboratory Copy White — Project Office Copy Yellow — Field or Office Copy Pink

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 • Martinez, California 94553 • (510) 229-1512 / fax (510) 229-1526

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 87175
CLIENT: PES ENVIRONMENTAL, INC.
CLIENT JOB NO.: 102-01-002

DATE RECEIVED: 11/16/92
DATE REPORTED: 11/25/92
DATE SAMPLED : 11/14/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by MODIFIED EPA SW-846 METHOD 5030 and 8015

LAB #	Sample Identification	Concentration (mg/L) Gasoline Range
1	B11 water	ND<0.05
2	B12	ND<0.05

mg/L - parts per million (ppm)

Method Detection Limit for Gasoline in Water: 0.05 mg/L

QAQC Summary:

Daily Standard run at 2mg/L: RPD Gasoline = <15
MS/MSD Average Recovery = 79%: Duplicate RPD = 7%

Richard Srna, Ph.D.

Laboratory Director

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 • Martinez, California 94553 • (510) 229-1512 / fax (510) 229-1526

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 87175
CLIENT: PES ENVIRONMENTAL, INC.
CLIENT JOB NO.: 102-01-002

DATE RECEIVED: 11/16/92
DATE REPORTED: 11/25/92
DATE SAMPLED : 11/14/92

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

LAB #	Sample Identification	Concentration(ug/L) Benzene	Toluene	Ethyl Benzene	Xylenes
1	B11	ND<0.3	ND<0.3	ND<0.3	ND<0.3
2	B12	ND<0.3	ND<0.3	ND<0.3	ND<0.3

µg/L - parts per billion (ppb)

Method Detection Limit in Water: 0.3 µg/L

QAQC Summary:

Daily Standard run at 20 µg/L: RPD = <15%
MS/MSD Average Recovery =95%: Duplicate RPD = <4%

Richard Srna, Ph.D.

Laboratory Director

PES Environmental, Inc.
Engineering & Environmental Services

[redacted]ova[redacted]ulev[redacted]uite[redacted]
Novato, California 94947
(415) 899-1600 FAX (415) 899-1601

CHAIN OF CUSTODY RECORD

SAMPLERS: PAUL LOHMAN

JOB NUMBER: 102.01.002

NAME/LOCATION: DOLAN LUMBER

PROJECT MANAGER: MIKE THOMPSON

RECORDER: Paul R Lohman (Signature Required)

DATE				SAMPLE NUMBER OR LAB NUMBER		
YR	MO	DY	TIME	YR	WK	SEQ
92	11	14	1300	B	11	
92	11	14	1315	B	12	

SOURCE CODE	MATRIX: Water	Sedim't	Soil	Oil	# CONTAINERS & PRESERV: Unpres.	H_2SO_4	HNO_3	Filtered	$NaHSO_4$	DEPTH IN FEET	COL MTD CD	QA CODE
23	X								2		27	
23	X								2		27	

ANALYSIS REQUESTED	EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Pollutant Metals	Benzene/Toluene/Xylene	Total Petrol. Hydrocarb.	BTEX	TPHg
								X	X
								X	X

NOTES

Please Initial: PP

Samples Stored in ice. yes

Appropriate containers. yes

Samples preserved. yes

VOA's without headspace. yes

Comments:

CHAIN OF CUSTODY RECORD

	RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE	TIME
1	Paul R Lohman	Shawn X Sa	11/16	1505
2	Shawn X Sa		11/16	1605
3				
4				

DISPATCHED BY: (Signature) DATE TIME

RECEIVED FOR LAB BY: (Signature) DATE 11/16 TIME 1605

METHOD OF SHIPMENT:

Laboratory Copy White — Project Office Copy Yellow — Field or Office Copy Pink

Superior Precision Analytical, Inc.
P.O. Box 1545 • Martinez, California 94553 • (510) 229-1590 / fax (510) 229-0916

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 87403
CLIENT: PES ENVIRONMENTAL, INC.
CLIENT JOB NO.: 102.01.002

DATE RECEIVED: 12/11/92
DATE REPORTED: 12/17/92
DATE SAMPLED : 12/10/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by MODIFIED EPA SW-846 METHOD 5030 and 8015

LAB #	Sample Identification	Concentration (mg/L) Gasoline Range
1	B13	ND<0.05

mg/L - parts per million (ppm)

Method Detection Limit for Gasoline in Water: 0.05 mg/L

QAQC Summary:

Daily Standard run at 2mg/L: RPD Gasoline = <15
MS/MSD Average Recovery = 90 %: Duplicate RPD = 3 %

Richard Srna, Ph.D.

Laboratory Director

Superior Precision Analytical, Inc.
P.O. Box 1545 • Martinez, California 94553 • (510) 229-1590 / fax (510) 229-0916

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 87403
CLIENT: PES ENVIRONMENTAL, INC.
CLIENT JOB NO.: 102.01.002

DATE RECEIVED: 12/11/92
DATE REPORTED: 12/17/92
DATE SAMPLED : 12/10/92

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

LAB #	Sample Identification	Concentration (ug/L) Benzene	Toluene	Ethyl Benzene	Xylenes
1	B13	ND<0.3	ND<0.3	ND<0.3	ND<0.3

µg/L - parts per billion (ppb)

Method Detection Limit in Water: 0.3 µg/L

QAQC Summary:

Daily Standard run at 20 µg/L: RPD = <15%
MS/MSD Average Recovery = 94 %: Duplicate RPD = < 2 %

Richard Srna, Ph.D.
Laboratory Director

PES Environmental, Inc.
Engineering & Environmental Services

[redacted] Nova[redacted]ulev[redacted]uite [redacted]
Novato, California 94947
(415) 899-1600 FAX (415) 899-1601

CHAIN OF CUSTODY RECORD

SAMPLERS: PAUL LOHMAN

JOB NUMBER: 102.01.002

NAME/LOCATION: DOLAN | DUBLIN

PROJECT MANAGER: MIKE THOMPSON

RECORDER: Paul Lohman (Signature Required)

DATE				SAMPLE NUMBER OR LAB NUMBER			SOURCE CODE	MATRIX				# CONTAINERS & PRESERV					DEPTH IN FEET	COL MTD CD	QA CODE
YR	MO	DY	TIME	YR	WK	SEQ		Water	Sedim't	Soil	Oil	Unpres.	H_2SO_4	HNO_3	Filtered	$NaHSO_4$			
92	12	10	1315	81	3		23	X							3				

ANALYSIS REQUESTED								
EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Pollutant Metals	Benzene/Toluene/Xylene	Total Petrol. Hydrocarb.	TPH-G	BTEX
						X	X	X

NOTES

NORMAL TURNAROUND

Please initial: FT
Samples Stored in Ice. ✓
Appropriate containers. ✓
Samples preserved. ✓
VOA's without headspace. ✓
Comments:

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature) Paul Lohman	RECEIVED BY: (Signature) Brad Thomas	DATE 12/11/92	TIME 12:15
RELINQUISHED BY: (Signature) Paul Lohman	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE	TIME
DISPATCHED BY: (Signature)	DATE	TIME	RECEIVED FOR LAB BY: (Signature) [signature] DATE 12/11/92 TIME 1:10

METHOD OF SHIPMENT: EXPRESS-IT COURIER

Laboratory Copy White — Project Office Copy Yellow — Field or Office Copy Pink