

From 10.5 feet below the mudline and extending to a depth of 13.5 feet, a stratum of sandy clay was encountered. Standard penetration values (N) obtained within these soils averaged 10 blows per foot. These soils are low in plasticity as indicated by Atterberg limit test. The tested liquid limit was 34 percent and plasticity index (PI) was 13. These soils contain approximately 50 percent sand size particles as indicated by a minus #200 sieve test.

Boring B-3 - The subsurface soil conditions consist of a stratum of silty clay.

From the mudline to an approximate depth of 10.5 feet, an upper stratum of silty clay was encountered. Standard penetration values (N) obtained within these soils ranged from zero (0) to 11 blows per foot. These soils are high in plasticity as indicated by Atterberg limit tests. Liquid limits averaged 68 percent and plasticity indices (PI) averaged 29. These soils contain between one (1) and eight (8) percent sand size particles as indicated by minus #200 sieve tests.

Boring B-4 - The subsurface soil conditions consist of an upper stratum of clayey sand and fine sand and a deeper stratum of silty clay.

From the mudline to an approximate depth of six (6) feet, an upper stratum of clayey sand and fine sand was encountered. Standard penetration values (N) obtained within these soils ranged from zero (0) to three (3) blows per foot. These soils are generally non-plastic and contain between one (1) and 34 silt and clay size particles as indicated by minus #200 sieve tests.

From six (6) feet below the mudline and extending, a stratum of silty clay was encountered. Standard penetration values (N) obtained within these soils ranged from seven (7) to 12 blows per foot. These soils are high in plasticity as indicated by an Atterberg limit test. The tested liquid limit was 77 percent and plasticity index (PI) was 34. These soils contain approximately five (5) percent sand size particles as indicated by minus #200 sieve tests.

CONTAMINATION ASSESSMENT

Analytical test results indicate concentrations of Total Petroleum Hydrocarbons (TPH) in the four (4) composite soil samples collected from soil boring locations B-1, B-2, B-3, and B-4. The levels of TPH concentration encountered in the soil samples from soil boring locations B-1 and B-2 are those typically associated with the biodegradation of naturally occurring organic matter and do not represent an adverse environmental concern.

PROFESSIONAL SERVICE INDUSTRIES, INC.

RECORD OF SUBSURFACE EXPLORATION

Boring: B-4

Project Name: 1995 Marina Dredging Project Date of Boring: November 16, 1995

Site: T-Heads - Corpus Christi, Texas Project No.: 326-55415

DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Mc	REMARKS
SURFACE							
Water							
	5						
Mudline = 6.5 feet below water surface							
CLAYEY SAND, gray, wet, very loose.		SS-1	WH			33.0	-#200=34%
FINE SAND, trace clay, gray, wet, very loose.		SS-2	3			28.2	-#200=1%
	10	SS-3	3			23.7	-#200=26% Non Plastic
CLAYEY SAND, gray, very moist, very loose.		SS-4	3		1.25	31.7	
SILTY CLAY, trace sand, grayish tan, very moist, stiff, (CH).		SS-5	10		1.75	36.3	-#200=95% LL=77% PI=34
Same as above, firm.	15	SS-6	7		2.5	32.5	
Same as above, stiff.		SS-7	10		2.5	31.5	-#200=95%
SILTY CLAY, some sand, grayish tan, very moist, stiff.		SS-8	12		1.25	31.8	
Total Depth of Boring = 18.5 ft below water surface	20						

LA #: 11160-04
Client ID: B-4 Comp.

PURGEABLE AROMATICS

Matrix: Soil
LOW LEVEL

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>Method</u>	<u>MDL/DF</u>
Benzene	<10	ug/kg	SW 8020	10/1
Toluene	<10	ug/kg	SW 8020	10/1
Ethylbenzene	<10	ug/kg	SW 8020	10/1
Total Xylenes	<10	ug/kg	SW 8020	10/1
Total VOAs	<10	ug/kg	SW 8020	-/-
MTBE	<10	ug/kg	SW 8020	10/1

Extraction Date:
NA
Analysis Date:
11/28/95
Analyst: WH

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>Method</u>	<u>Analysis Date</u>	<u>Analyst</u>	<u>MDL</u>
Total Recoverable Petroleum Hydrocarbons	33.0	mg/kg	EPA 418.1	11/20/95	RM	10.0

METALS ANALYSIS

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>Method</u>	<u>Analysis Date</u>	<u>Analyst</u>
Total Arsenic	<0.6	mg/kg	SW 7060	11/22/95	MC
Total Barium	<12	mg/kg	SW 7080	11/27/95	JS
Total Cadmium	<0.6	mg/kg	SW 7130	11/20/95	JS
Total Chromium	4.00	mg/kg	SW 7190	11/20/95	JS
Total Lead	6.00	mg/kg	SW 7420	11/21/95	JS
Total Mercury	0.02	mg/kg	SW 7471	11/27/95	JS
Total Selenium	<0.6	mg/kg	SW 7740	11/22/95	MC
Total Silver	<1.00	mg/kg	SW 7760	11/22/95	JS



Lab #: 11160-04
Client ID: B-4 Comp.

BASE/NEUTRAL AND ACID EXTRACTABLES BY GC/MS

Matrix: Soil

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>Method</u>	<u>MDL/DF</u>
<u>BASE NEUTRAL EXTRACTABLES</u>				
N-Nitrosodimethylamine	<330	ug/kg	SW 8270	330/1
Bis (2-chloroethyl) ether	<330	ug/kg	SW 8270	330/1
1,3-Dichlorobenzene	<330	ug/kg	SW 8270	330/1
1,4-Dichlorobenzene	<330	ug/kg	SW 8270	330/1
Benzyl alcohol	<330	ug/kg	SW 8270	330/1
1,2-Dichlorobenzene	<330	ug/kg	SW 8270	330/1
Bis (2-chloroisopropyl) ether	<330	ug/kg	SW 8270	330/1
N-Nitroso di-n-propyl amine	<330	ug/kg	SW 8270	330/1
Hexachloroethane	<330	ug/kg	SW 8270	330/1
Nitrobenzene	<330	ug/kg	SW 8270	330/1
Isophorone	<330	ug/kg	SW 8270	330/1
Bis (2-chloroethoxy) methane	<330	ug/kg	SW 8270	330/1
1,2,4-Trichlorobenzene	<330	ug/kg	SW 8270	330/1
Naphthalene	<330	ug/kg	SW 8270	330/1
4-Chloroaniline	<330	ug/kg	SW 8270	330/1
Hexachlorobutadiene	<330	ug/kg	SW 8270	330/1
2-Methylnaphthalene	<330	ug/kg	SW 8270	330/1
Hexachlorocyclopentadiene	<330	ug/kg	SW 8270	330/1
2-Methylnaphthalene	<800	ug/kg	SW 8270	800/1
2-Nitroaniline	<330	ug/kg	SW 8270	330/1
Dimethylphthalate	<330	ug/kg	SW 8270	330/1
2,4-Dinitrotoluene	<330	ug/kg	SW 8270	330/1
Acenaphthylene	<330	ug/kg	SW 8270	330/1
3-Nitroaniline	<800	ug/kg	SW 8270	800/1
Acenaphthene	<330	ug/kg	SW 8270	330/1
Dibenzofuran	<330	ug/kg	SW 8270	330/1
2,6-Dinitrotoluene	<330	ug/kg	SW 8270	330/1
Fluorene	<330	ug/kg	SW 8270	330/1
4-Chloro phenyl phenyl ether	<330	ug/kg	SW 8270	330/1
4-Nitroaniline	<800	ug/kg	SW 8270	800/1
Diethyl phthalate	<330	ug/kg	SW 8270	330/1
Di-n-Butylphthalate	<330	ug/kg	SW 8270	330/1
N-Nitrosodiphenylamine	<330	ug/kg	SW 8270	330/1
4-Bromo phenyl phenyl ether	<330	ug/kg	SW 8270	330/1
Hexachlorobenzene	<330	ug/kg	SW 8270	330/1
Phenanthrene	<330	ug/kg	SW 8270	330/1
Anthracene	<330	ug/kg	SW 8270	330/1
Fluoranthene	<330	ug/kg	SW 8270	330/1
Pyrene	<330	ug/kg	SW 8270	330/1
Butylbenzyl phthalate	<330	ug/kg	SW 8270	330/1
Benzo (a) anthracene	<330	ug/kg	SW 8270	330/1
Chrysene	<330	ug/kg	SW 8270	330/1
Bis (2-ethylhexyl) phthalate	<330	ug/kg	SW 8270	330/1
2,3'-Dichlorobenzidine	<330	ug/kg	SW 8270	330/1
1-Octylphthalate	<330	ug/kg	SW 8270	330/1
Benzo- (b) fluoranthene	<330	ug/kg	SW 8270	330/1

Extraction Date:
11/20/95
Analysis Date:
11/22/95
Analyst: SP

(continued)



LA #: 11160-04
Client ID: B-4 Comp.

BASE/NEUTRAL AND ACID EXTRACTABLES BY GC/MS (cont.)

Matrix: Soil

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>Method</u>	<u>MDL/DF</u>
<u>BASE NEUTRAL EXTRACTABLES</u>				
Benzo (k) fluoranthene	<330	ug/kg	SW 8270	330/1
Benzo- (a) pyrene	<330	ug/kg	SW 8270	330/1
Benzo (1,2,3-cd) pyrene	<330	ug/kg	SW 8270	330/1
Dibenzo (a,h) anthracene	<330	ug/kg	SW 8270	330/1
Benzo (g,h,i) perylene	<330	ug/kg	SW 8270	330/1

ACID EXTRACTABLES

Phenol	<330	ug/kg	SW 8270	330/1
2-Chlorophenol	<330	ug/kg	SW 8270	330/1
2-Methylphenol	<330	ug/kg	SW 8270	330/1
4-Methylphenol	<330	ug/kg	SW 8270	330/1
2-Nitrophenol	<330	ug/kg	SW 8270	330/1
2,4-Dimethylphenol	<330	ug/kg	SW 8270	330/1
Benzoic acid	<330	ug/kg	SW 8270	330/1
2,4-Dichlorophenol	<330	ug/kg	SW 8270	330/1
4-Chloro-3-methylphenol	<330	ug/kg	SW 8270	330/1
2,4,6-Trichlorophenol	<330	ug/kg	SW 8270	330/1
2,3,5-Trichlorophenol	<330	ug/kg	SW 8270	330/1
2,4-Dinitrophenol	<800	ug/kg	SW 8270	800/1
4-Nitrophenol	<800	ug/kg	SW 8270	800/1
4,6-Dinitro-2-methyl phenol	<800	ug/kg	SW 8270	800/1
Pentachlorophenol	<800	ug/kg	SW 8270	800/1

PESTICIDES

Alpha-BHC	<330	ug/kg	SW 8270	330/1
Beta-BHC	<330	ug/kg	SW 8270	330/1
Gamma-BHC	<330	ug/kg	SW 8270	330/1
Delta-BHC	<330	ug/kg	SW 8270	330/1
Heptachlor	<330	ug/kg	SW 8270	330/1
Aldrin	<330	ug/kg	SW 8270	330/1
Heptachlor epoxide	<330	ug/kg	SW 8270	330/1
Endosulfan I	<330	ug/kg	SW 8270	330/1
Dieldrin	<330	ug/kg	SW 8270	330/1
4,4'-DDE	<330	ug/kg	SW 8270	330/1
Endrin	<330	ug/kg	SW 8270	330/1
Endosulfan II	<330	ug/kg	SW 8270	330/1
4,4'-DDD	<330	ug/kg	SW 8270	330/1
Endrin aldehyde	<330	ug/kg	SW 8270	330/1
Endosulfan sulfate	<330	ug/kg	SW 8270	330/1
4,4'-DDT	<330	ug/kg	SW 8270	330/1
Endrin Ketone	<330	ug/kg	SW 8270	330/1
Heptachlor	<330	ug/kg	SW 8270	330/1



PROFESSIONAL SERVICE INDUSTRIES, INC.

RECORD OF SUBSURFACE EXPLORATION

Boring: B-4

Project Name: 1995 Marina Dredging Project Date of Boring: November 16, 1995

Site: T-Heads - Corpus Christi, Texas Project No.: 326-55415

DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Mc	REMARKS
SURFACE							
Water							
	5						
Mudline = 6.5 feet below water surface							
CLAYEY SAND, gray, wet, very loose.		SS-1	WH			33.0	-#200=34%
FINE SAND, trace clay, gray, wet, very loose.		SS-2	3			28.2	-#200=1%
	10	SS-3	3			23.7	-#200=26% Non Plastic
CLAYEY SAND, gray, very moist, very loose.		SS-4	3		1.25	31.7	
SILTY CLAY, trace sand, grayish tan, very moist, stiff, (CH).		SS-5	10		1.75	36.3	-#200=95% LL=77% PI=34
Same as above, firm.	15	SS-6	7		2.5	32.5	
Same as above, stiff.		SS-7	10		2.5	31.5	-#200=95%
SILTY CLAY, some sand, grayish tan, very moist, stiff.		SS-8	12		1.25	31.8	
Total Depth of Boring = 18.5 ft below water surface	20						

LA #: 11160-04
Client ID: B-4 Comp.

PURGEABLE AROMATICS

Matrix: Soil
LOW LEVEL

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>Method</u>	<u>MDL/DF</u>
Benzene	<10	ug/kg	SW 8020	10/1
Toluene	<10	ug/kg	SW 8020	10/1
Ethylbenzene	<10	ug/kg	SW 8020	10/1
Total Xylenes	<10	ug/kg	SW 8020	10/1
Total VOAs	<10	ug/kg	SW 8020	-/-
MTBE	<10	ug/kg	SW 8020	10/1

Extraction Date:
NA
Analysis Date:
11/28/95
Analyst: WH

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>Method</u>	<u>Analysis Date</u>	<u>Analyst</u>	<u>MDL</u>
Total Recoverable Petroleum Hydrocarbons	33.0	mg/kg	EPA 418.1	11/20/95	RM	10.0

METALS ANALYSIS

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>Method</u>	<u>Analysis Date</u>	<u>Analyst</u>
Total Arsenic	<0.6	mg/kg	SW 7060	11/22/95	MC
Total Barium	<12	mg/kg	SW 7080	11/27/95	JS
Total Cadmium	<0.6	mg/kg	SW 7130	11/20/95	JS
Total Chromium	4.00	mg/kg	SW 7190	11/20/95	JS
Total Lead	6.00	mg/kg	SW 7420	11/21/95	JS
Total Mercury	0.02	mg/kg	SW 7471	11/27/95	JS
Total Selenium	<0.6	mg/kg	SW 7740	11/22/95	MC
Total Silver	<1.00	mg/kg	SW 7760	11/22/95	JS



Lab #: 11160-04
Client ID: B-4 Comp.

BASE/NEUTRAL AND ACID EXTRACTABLES BY GC/MS

Matrix: Soil

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>Method</u>	<u>MDL/DF</u>
<u>BASE NEUTRAL EXTRACTABLES</u>				
N-Nitrosodimethylamine	<330	ug/kg	SW 8270	330/1
Bis (2-chloroethyl) ether	<330	ug/kg	SW 8270	330/1
1,3-Dichlorobenzene	<330	ug/kg	SW 8270	330/1
1,4-Dichlorobenzene	<330	ug/kg	SW 8270	330/1
Benzyl alcohol	<330	ug/kg	SW 8270	330/1
1,2-Dichlorobenzene	<330	ug/kg	SW 8270	330/1
Bis (2-chloroisopropyl) ether	<330	ug/kg	SW 8270	330/1
N-Nitroso di-n-propyl amine	<330	ug/kg	SW 8270	330/1
Hexachloroethane	<330	ug/kg	SW 8270	330/1
Nitrobenzene	<330	ug/kg	SW 8270	330/1
Isophorone	<330	ug/kg	SW 8270	330/1
Bis (2-chloroethoxy) methane	<330	ug/kg	SW 8270	330/1
1,2,4-Trichlorobenzene	<330	ug/kg	SW 8270	330/1
Naphthalene	<330	ug/kg	SW 8270	330/1
4-Chloroaniline	<330	ug/kg	SW 8270	330/1
Hexachlorobutadiene	<330	ug/kg	SW 8270	330/1
2-Methylnaphthalene	<330	ug/kg	SW 8270	330/1
Hexachlorocyclopentadiene	<330	ug/kg	SW 8270	330/1
2-Toronaphthalene	<800	ug/kg	SW 8270	800/1
2-Nitroaniline	<330	ug/kg	SW 8270	330/1
Dimethylphthalate	<330	ug/kg	SW 8270	330/1
2,4-Dinitrotoluene	<330	ug/kg	SW 8270	330/1
Acenaphthylene	<330	ug/kg	SW 8270	330/1
3-Nitroaniline	<800	ug/kg	SW 8270	800/1
Acenaphthene	<330	ug/kg	SW 8270	330/1
Dibenzofuran	<330	ug/kg	SW 8270	330/1
2,6-Dinitrotoluene	<330	ug/kg	SW 8270	330/1
Fluorene	<330	ug/kg	SW 8270	330/1
4-Chloro phenyl phenyl ether	<330	ug/kg	SW 8270	330/1
4-Nitroaniline	<800	ug/kg	SW 8270	800/1
Diethyl phthalate	<330	ug/kg	SW 8270	330/1
Di-n-Butylphthalate	<330	ug/kg	SW 8270	330/1
N-Nitrosodiphenylamine	<330	ug/kg	SW 8270	330/1
4-Bromo phenyl phenyl ether	<330	ug/kg	SW 8270	330/1
Hexachlorobenzene	<330	ug/kg	SW 8270	330/1
Phenanthrene	<330	ug/kg	SW 8270	330/1
Anthracene	<330	ug/kg	SW 8270	330/1
Fluoranthene	<330	ug/kg	SW 8270	330/1
Pyrene	<330	ug/kg	SW 8270	330/1
Butylbenzyl phthalate	<330	ug/kg	SW 8270	330/1
Benzo (a) anthracene	<330	ug/kg	SW 8270	330/1
Chrysene	<330	ug/kg	SW 8270	330/1
Bis (2-ethylhexyl) phthalate	<330	ug/kg	SW 8270	330/1
2,3'-Dichlorobenzidine	<330	ug/kg	SW 8270	330/1
1-Octylphthalate	<330	ug/kg	SW 8270	330/1
Benzo- (b) fluoranthene	<330	ug/kg	SW 8270	330/1

Extraction Date:
11/20/95
Analysis Date:
11/22/95
Analyst: SP

(continued)



LA #: 11160-04
Client ID: B-4 Comp.

BASE/NEUTRAL AND ACID EXTRACTABLES BY GC/MS (cont.)

Matrix: Soil

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>Method</u>	<u>MDL/DF</u>
<u>BASE NEUTRAL EXTRACTABLES</u>				
Benzo (k) fluoranthene	<330	ug/kg	SW 8270	330/1
Benzo- (a) pyrene	<330	ug/kg	SW 8270	330/1
Benzo (1,2,3-cd) pyrene	<330	ug/kg	SW 8270	330/1
Dibenzo (a,h) anthracene	<330	ug/kg	SW 8270	330/1
Benzo (g,h,i) perylene	<330	ug/kg	SW 8270	330/1

ACID EXTRACTABLES

Phenol	<330	ug/kg	SW 8270	330/1
2-Chlorophenol	<330	ug/kg	SW 8270	330/1
2-Methylphenol	<330	ug/kg	SW 8270	330/1
4-Methylphenol	<330	ug/kg	SW 8270	330/1
2-Nitrophenol	<330	ug/kg	SW 8270	330/1
2,4-Dimethylphenol	<330	ug/kg	SW 8270	330/1
Benzoic acid	<330	ug/kg	SW 8270	330/1
2,4-Dichlorophenol	<330	ug/kg	SW 8270	330/1
4-Chloro-3-methylphenol	<330	ug/kg	SW 8270	330/1
2,4,6-Trichlorophenol	<330	ug/kg	SW 8270	330/1
2,3,5-Trichlorophenol	<330	ug/kg	SW 8270	330/1
2,4-Dinitrophenol	<800	ug/kg	SW 8270	800/1
4-Nitrophenol	<800	ug/kg	SW 8270	800/1
4,6-Dinitro-2-methyl phenol	<800	ug/kg	SW 8270	800/1
Pentachlorophenol	<800	ug/kg	SW 8270	800/1

PESTICIDES

Alpha-BHC	<330	ug/kg	SW 8270	330/1
Beta-BHC	<330	ug/kg	SW 8270	330/1
Gamma-BHC	<330	ug/kg	SW 8270	330/1
Delta-BHC	<330	ug/kg	SW 8270	330/1
Heptachlor	<330	ug/kg	SW 8270	330/1
Aldrin	<330	ug/kg	SW 8270	330/1
Heptachlor epoxide	<330	ug/kg	SW 8270	330/1
Endosulfan I	<330	ug/kg	SW 8270	330/1
Dieldrin	<330	ug/kg	SW 8270	330/1
4,4'-DDE	<330	ug/kg	SW 8270	330/1
Endrin	<330	ug/kg	SW 8270	330/1
Endosulfan II	<330	ug/kg	SW 8270	330/1
4,4'-DDD	<330	ug/kg	SW 8270	330/1
Endrin aldehyde	<330	ug/kg	SW 8270	330/1
Endosulfan sulfate	<330	ug/kg	SW 8270	330/1
4,4'-DDT	<330	ug/kg	SW 8270	330/1
Endrin Ketone	<330	ug/kg	SW 8270	330/1
Heptachlor	<330	ug/kg	SW 8270	330/1

