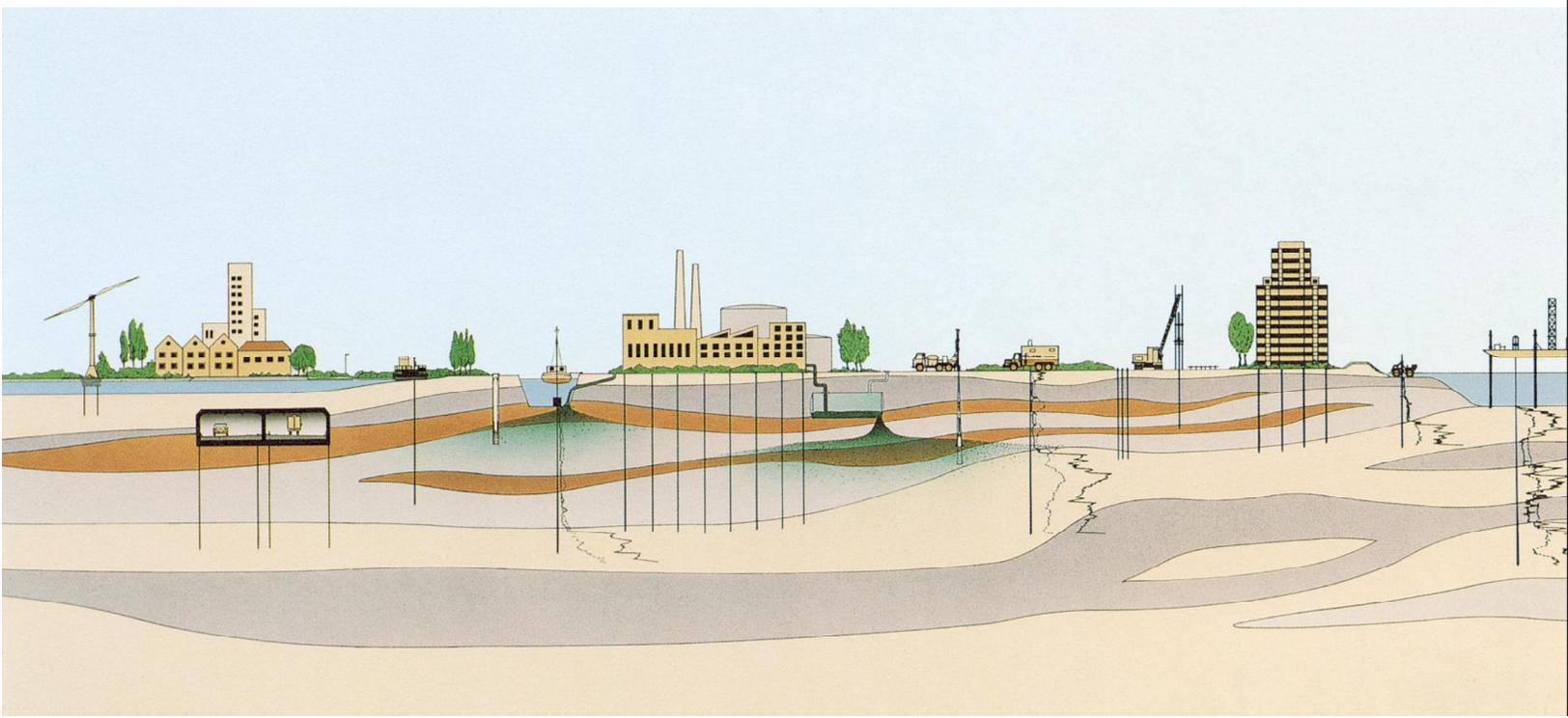


**FINAL
GEOTECHNICAL INVESTIGATION RESULTS
DPW SAN PEDRO
FORCE MAIN CROSSING RELOCATION
PORT OF LOS ANGELES**

Prepared for:
CITY OF LOS ANGELES HARBOR DEPARTMENT

February 2001





4820 McGrath Street, Suite 100
Ventura, California 93003-7778
Tel: (805) 650-7000
Fax: (805) 650-7010

February 13, 2001
Project No. 00-32-3361

City of Los Angeles Harbor Department
Harbor Department Administration Building
425 South Palos Verdes Street
San Pedro, California 90731

Attention: Mr. John Foxworthy

Subject: Final Geotechnical Investigation Results, San Pedro Force Main Crossing Relocation,
Port of Los Angeles, California

Dear John:

Deepening of the Main Channel of the Los Angeles Inner Harbor for the Port of Los Angeles (POLA) Main Channel Deepening Project will require the relocation of the Department of Public Works (DPW) San Pedro 30-inch-diameter sewer force main. The enclosed report provides the factual results of geotechnical exploration and laboratory testing conducted for the alignment of the proposed DPW force main crossing relocation between Berths 94 and 226.

The field exploration and other related activities described in this report were undertaken in conjunction with the second phase of post-fill investigation on the Pier 400 landfill. The contractor for the Pier 400 Stage 2 Dredging and Landfill Project was the Pier 400 Constructors (P400C). Responsibility for the instrumentation installation and post-fill investigation was assigned to Connolly-Pacific Company (one of the joint venture partners). Connolly-Pacific retained Fugro West, Inc. (Fugro), as their geotechnical subcontractor.

On behalf of Fugro, we appreciate the opportunity to contribute to the Port of Los Angeles' development of Pier 400. Please call if we can be of further service.



Sincerely,
FUGRO WEST, INC.

Handwritten signature of Philip Robins in black ink.

Philip Robins
Project Engineer

Handwritten signature of Thomas W. McNeilan in black ink.

Thomas W. McNeilan, P.E., G.E.
Vice President



Copies Submitted: Mr. John Foxworthy, City of Los Angeles Harbor Department (2)
Ms. Allison Linehan, City of Los Angeles, Department of Public Works (2)



CONTENTS

	Page
INTRODUCTION	1
Background and Project Description	1
Scope of Investigation	1
Authorization	2
SUBSURFACE EXPLORATION	2
Existing Geotechnical Data	2
Scope of Exploration	3
Drilling Operations.....	3
Overwater Borings	5
Borehole Positions and Ground Surface Elevations	5
LABORATORY TESTING	5
Geotechnical Laboratory Testing.....	5
Environmental Chemistry Tests	7
SUBSURFACE CONDITIONS	7
Stratigraphy	7
Material Characteristics	8
Environmental Chemistry Test Results	9
LIMITATIONS	11
REFERENCES	11

PLATES

	Plate
Vicinity Map	1
Cross Section Location Map	2
Photographs of Field Work.....	3
Cross Section A-A'.....	4
Key to Cross Sections	5





CONTENTS -- CONTINUED

APPENDICES

APPENDIX A: BORING LOGS

Exploration Summary	Plate A-1
Log of Boring and Test Results, Boring DPW-3L	Plate A-2
Log of Boring and Test Results, Boring DPW-4L	Plate A-3
Log of Boring and Test Results, Boring DPW-4W	Plate A-4
Log of Boring and Test Results, Boring DPW-5W	Plate A-5
Log of Boring and Test Results, Boring DPW-6W	Plate A-6
Key to Terms and Symbols Used on Logs	Plates A-7a and A-7b

APPENDIX B: LABORATORY TEST RESULTS

Summary of Laboratory Test Results, Boring DPW-3L	Plates B-1a to B-5c
Summary of Laboratory Test Results, Boring DPW-4L	Plates B-2a to B-2c
Summary of Laboratory Test Results, Boring DPW-4W	Plates B-3a and B-3b
Summary of Laboratory Test Results, Boring DPW-5W	Plates B-4a and B-4b
Summary of Laboratory Test Results, Boring DPW-6W	Plates B-5a and B-5b
Grain Size Distribution Curves, Boring DPW-3L	Plate B-6
Grain Size Distribution Curves, Boring DPW-4L	Plate B-7
Grain Size Distribution Curves, Boring DPW-4W	Plate B-8
Grain Size Distribution Curves, Boring DPW-5W	Plate B-9
Grain Size Distribution Curves, Boring DPW-6W	Plate B-10
Plasticity Chart, Borings DPW-3L, DPW-4L, DPW-4W, and DPW-5W	Plate B-11
Direct Shear Test Results	Plates B-12 to B-14
Unconsolidated Undrained Triaxial Compression Test, Boring DPL-3L	Plates B-15a and B-15b
Unconsolidated Undrained Triaxial Compression Test, Boring DPL-3L	Plates B-15c and B-15d
Unconfined Compression, Boring DPW-5W	Plates B-16a and B-16b
Expansion Index, Dated February 1, 2001	B-17
Expansion Index, Dated January 15, 2001	B-18

APPENDIX C: TOXSCAN ANALYTICAL REPORT

Environmental Testing Summary	Plate C-1
-------------------------------------	-----------



CONTENTS -- CONTINUED

APPENDICES -- CONTINUED

APPENDIX D: NEARBY BORINGS, VIBRACORES, AND CPTs

Log of CPT, Tethered Seascout Sounding C-5
Log of CPT, Tethered Seascout Sounding C-75
Log of CPT, Tethered Seascout Sounding C-90
Log of Boring and Test Results, Boring DWP-B6
Log of Boring and Test Results, Boring DWP-B7
Log of Boring and Test Results, Boring DWP-V4
Log of Boring and Test Results, Boring DWP-V5
Log of Boring and Test Results, Boring DWP-V6
Log of Boring and Test Results, Boring DWP-V7
Log of Boring and Test Results, Boring FG1-5
Log of Boring and Test Results, Boring FG1-6
Log of CPT, Tethered Seascout Sounding CB-19



INTRODUCTION

Background and Project Description

The City of Los Angeles Harbor Department (LAHD) is currently planning to deepen the navigation channels of the Port of Los Angeles (POLA) Inner Harbor. Execution of the Main Channel Deepening Program will require the relocation of the City of Los Angeles Department of Public Works (DPW) San Pedro 30-inch-diameter sewer force main, which crosses beneath the Main Channel between Berths 94 and 226 (see Plate 1 - Vicinity Map).

The DPW is currently planning to microtunnel the relocated force main. The proposed relocated force main will be between elevation (El). -75 and El. -80 feet (mean lower low water [MLLW] datum).

On behalf of the DPW, the LAHD included the following as add-ons to the geotechnical subsurface post-fill investigations for the Pier 400 Stage 2 Dredging and Landfill Project:

- Overwater and land exploration
- Geotechnical and environmental testing for the DPW force main

Scope of Investigation

The scope and intent of the geotechnical investigation completed for the DPW force main crossing relocation was described in DPW's letter dated September 14, 2000. Based on that information, Fugro provided a proposal dated November 4, 2000, in which the scope of work for the investigation included:

1. Planning and coordination, including the collection and review of existing geotechnical data, and discussions and meetings with POLA and DPW to determine exploration locations;
2. Overwater geotechnical and environmental borings;
3. Onshore geotechnical and environmental borings;
4. Geotechnical laboratory testing;
5. Environmental chemistry analyses; and
6. Preparation of a factual data report that describes the field and laboratory procedures and presents the boring logs and laboratory test results.

Each of these work items is discussed in the following paragraphs. The geotechnical study as described herein does not include investigation or evaluation of the subsurface conditions for the portions of the pipeline route that are onshore of the pipeline channel crossing landfalls.



Authorization

The subsurface exploration and related investigation efforts for the DPW force main crossing relocation were authorized by an Inter-Departmental Order (IDO) between the LAHD and the DPW.

The field exploration and other related activities described in this report were undertaken in conjunction with the second phase of post-fill investigation on the Pier 400 landfill. The contractor for the Pier 400 Stage 2 Dredging and Landfill Project was the Pier 400 Constructors (P400C). Because the P400C is a joint venture, responsibility for the instrumentation installation and post-fill investigation was assigned to Connolly-Pacific Company (one of the joint venture partners), who provided overall management, surveying, and logistical coordination/support for the program. Connolly-Pacific retained Fugro West, Inc. (Fugro) as their geotechnical subcontractor. Fugro, in turn, retained Pitcher Drilling for the sample borings on land and over water.

SUBSURFACE EXPLORATION

Existing Geotechnical Data

Fugro West has completed geological and geotechnical studies of the various waterways in the POLA Inner Harbor to support the proposed Channel Deepening Program. Two phases of field exploration and laboratory testing were performed to evaluate stratigraphic (and environmental) conditions within the limits of the Channel Deepening Program project area. The Phase 1 field investigation was performed in August and September 1996, and the Phase 2 field investigation was performed in April 1997.

A total of 143 tethered cone penetration tests (CPTs) were performed throughout the Inner Harbor. All testing was performed using the tethered Seascout mini-CPT system designed and developed by Fugro. During both phases, a total of 153 vibracores were performed primarily for evaluating sediment chemistry characteristics. Further description of the methods used to obtain those data and the testing results are provided in Fugro's Geotechnical Evaluation Report (Fugro, 1997).

Other explorations for the Main Channel Deepening Program within about 500 feet of the proposed force main crossing relocation alignment are used to supplement the two land and three overwater borings. Subsurface explorations by others have also been included in the existing geotechnical data and added to Fugro's existing Underground Geographical Information System (UGIS). The subsurface data within the vicinity of the existing force main is included in Plate 2 - Exploration Location Map.



Scope of Exploration

The subsurface exploration conducted specifically for the force main crossing relocation included the advancement of five borings designated as DPW-3L and DPW-4L for land borings and DPW-4W through DPW-6W for overwater borings. The three overwater borings were drilled in the Main Channel and the two land borings were drilled at the planned force main microtunnel jacking pit locations. The locations of the borings are shown on Plate 2. The overwater borings were offset slightly from the proposed pipeline alignment to avoid the existing 30-inch-diameter sewer force main line and other adjacent utilities. Each land boring was drilled to about El. -170 feet (MLLW), and each overwater boring was drilled to about El. -100 feet (MLLW).

The five borings drilled for the force main crossing relocation were drilled between November 7 and December 5, 2000. The execution of the boring program was conducted together with the execution of the boring program for the proposed siphon harbor crossing relocation. The sequence of drilling included completion of all the land borings for both projects followed by the advancement of overwater borings for both projects. The specific sequence of the borings was based on the requirements imposed by navigation access in the channels and terminal operations in the onshore areas.

A summary of the exploration dates, location, and surface (or harbor bottom) elevation for each boring location is provided on Plate A-1 in Appendix A. Boring logs for the five borings are provided on Plates A-2 through A-6, and a key to the terms and symbols used on the boring logs is included as Plate A-7. Soils recovered in the samples were described in general accordance with the methods of ASTM Soil Classification System D2487. A description of the exploration equipment and operations is provided in the subsequent paragraphs.

Drilling Operations

Drilling Methods and Borehole Abandonment. The drilling operation was conducted under the technical guidance and observation of a Fugro geologist who also described and packaged the recovered samples. Drilling services for these borings were provided by Pitcher Drilling of Palo Alto, California, who provided a truck-mounted Failing 1500 drill rig, personnel, and associated equipment as shown in Plate 3 - Photographs of Field Work. The five borings for the force main crossing relocation were advanced using wet/rotary procedures using a drag bit attached to a drill string of NW-rod drill pipes, and resulted in hole diameters measuring about 5 inches.

A subsurface obstruction was encountered in Boring DPW-4L where concrete material causing drilling refusal was encountered at a depth of about 8.0 feet. Under advisement of the Los Angeles Harbor Department, drilling was stopped and relocated 10 feet southeast where drilling and sampling was continued.



The borings were advanced using non-toxic, revert or bentonite-based drilling. The borings were backfilled with cement grout after collection of the final sample. At borings DPW-3L and DPW-4L, a surface asphalt cold patch was placed at the top of the backfill upon completion of the boring.

Soil Sampling and Field Testing. Samples were collected at about 5-foot intervals to the planned top of pipe elevation. As requested by DPW, continuous sampling was performed within the zone of the proposed elevation of the sewer pipeline. Samples were collected using driven standard penetration test (SPT), driven California liner, and Shelby tube sampling methods in fine-grained materials. Continuous sampling was performed in a zone 1.5 times the diameter of the tunneling sleeve. For the force main, with a sleeve of 50 inches, the zone of continuous sampling will be from El. -75 to El. -105 feet (MLLW).

The sampling methods included primarily driven sampling using SPT and California liner (with rings) samplers (1-3/8-inch-ID by 2-inch-OD and 2.4-inch-ID by 3-inch-OD, respectively). These samplers were driven using a 140-pound hammer falling 30 inches. The hammer was lifted and dropped using a rope and cathead, with the rope looped twice around the cathead. The number of blows required to drive the samplers the last 12 inches of the 18-inch penetration are shown on the boring logs. Additionally, an Osterberg cell (hydraulic piston) sampler (2.7-inch-ID by 3-inch-OD) was used in the soft/loose sediments near the mudline of the overwater borings. Only a few samples were collected using pushed (Shelby tube) thin-wall tube sampling procedures.

To provide for sample splits for possible environmental testing, most samples were collected using a driven California liner sampler within the depth intervals corresponding to the proposed elevation range of the force main crossing relocation. Within those intervals, sample splits for environmental testing were obtained from the collected samples. The environmental subsamples in each boring were maintained on ice and accompanied by chain-of-custody documentation. Prior to collection of each sample for possible environmental testing, the sampling equipment was decontaminated by a detergent (TSP) wash and deionized water rinses (two to three) to prevent cross-contamination.

In most borings, each recovered sample was screened for volatile organic hydrocarbons using a field photoionization detector (PID). The field monitoring included the placement of the soil from one sample ring (typically the uppermost ring of each sampling interval) into a sealable plastic bag, placement of the bag in the sun for several minutes, and monitoring the headspace in the bag with a precalibrated MiniRAE Plus (Professional PID) provided by Enviro Supply & Service of Fountain Valley, California. The MiniRAE PID has a detection range of 0 to 999.0 parts per million (ppm) with a 0.1-ppm resolution and an accuracy of about 10 percent calibrated to 100-ppm isobutylene.



Overwater Borings

To advance the three overwater borings (Borings DPW-4W, -5W, and -6W) along the route of the force main crossing relocation, Pitcher Drilling's truck-mounted drill rig was mounted on a work barge (the *Hightide 18*) owned and operated by Connolly-Pacific. The drill rig was positioned to allow the boring to be advanced through a 3-foot-diameter moon pool. The *Hightide 18* was tied up to Connolly-Pacific's derrick barge (DB), the *Los Angeles*. The DB *Los Angeles* measures approximately 50 feet by 150 feet and has a four-point anchor system. The barges were positioned by Connolly-Pacific, who also supplied and operated a 40-foot, 65-ton, twin-screw tugboat (the *Durango*) to move the barges and handle the DB *Los Angeles*' anchors.

Borehole Positions and Ground Surface Elevations

Prior to initiating the field exploration, target boring locations established by DPW were preplotted by the LAHD's contract surveyors. Field locations were then established using a Differential Global Positioning System (DGPS) navigation positioning system, referenced to known base stations in the Los Angeles Harbor area. The DGPS also was used to position the barge's anchors. Coordinates calculated from the DGPS system are considered accurate to within about 3 to 5 feet. Coordinates for the boring locations are reported relative to the California State Plane, Zone 7 datum.

Surface elevations for the land borings are based on the ground surface elevations shown on site plans provided by POLA. These elevations are relative to MLLW datum. Harbor bottom elevations for the overwater borings are based on water depths measured at the beginning of drilling and the published tide chart for the Los Angeles Inner Harbor. Surface elevations are reported to the nearest 0.5 foot. In addition, depths for samples collected from overwater borings were corrected for tidal variations using the published tide chart.

LABORATORY TESTING

Geotechnical Laboratory Testing

Testing Program. Samples from the borings were tested to define pertinent classification and engineering soil properties. After completion of the drilling program, a boring log, list of samples, and proposed testing program were forwarded to the soils testing laboratory and DPW. DPW then edited the proposed laboratory testing program and returned the modifications to Fugro West. Fugro West reviewed the program with respect to the proposed scope of tests and available samples, discussed any discrepancies with the DPW, and then forwarded any modifications to the soil testing laboratory.





The laboratory testing program requested by DPW included index tests to determine grain size characteristics, Atterberg limits, moisture contents, unit weights, and soil corrosion (pH, total dissolved solids [TDS], chlorides, sulfate) characteristics. No volume change or permeability tests were within the proposed scope requested by the DPW. Shear strength characteristics for granular materials were evaluated from direct shear test data. Unconfined compression tests were performed to evaluate the undrained shear strength of fine-grained sediments. Most of the testing was concentrated on samples collected from either the two land borings and/or the two elevation intervals being considered for the force main crossing relocation.

The following listing shows the actual numbers of tests assigned and their ASTM standard numbers. The number of tests completed at the time of this preliminary report are in parentheses.

- (91) Water Content and Visual Classification..... ASTM D2216
- (46) In-Place Dry Density..... ASTM D2937
- (6) Mechanical (Sieve) Analysis ASTM D422
- (9) Hydrometer Analysis ASTM D422
- (1) Percent Minus the No. 200 Sieve ASTM D1140
- (9) Atterberg Limits..... ASTM D4318
- (4) Direct Shear ASTM D3080
- (1) Triaxial Unconsolidated Undrained..... ASTM D2850
- (1) Unconfined Compression ASTM D2166
- (2) Expansion Index ASTM D4829
- (5) Soil Corrosion Tests California Test Methods 532, 643

With the exception of the soil corrosion tests, the testing was performed in Fugro's Ventura laboratory.

Because there was not enough volume available from the individual samples to perform a modified compaction test, a modified proctor test was not performed. If a compaction test is desired, it is recommended that shallow test pits be performed at land boring locations to collect adequate samples to perform four tests. A sieve analysis also should be performed on each of these shallow test pit samples.





Presentation of Results. The results of the geotechnical soil tests are provided in Appendix B. Appendix B includes the following presentations:

- Summary of Test Results Plates B-1 to B-5
- Grain Size Curves Plates B-6 to B-10
- Plasticity Chart Plate B-11
- Direct Shear Tests Plates B-12 to B-14
- Unconsolidated Undrained Test Results Plate B-15
- Unconfined Compression Test Results Plate B-16
- Expansion Index Test Results Plates B-17 and B-18

Many of the individual classification test results are also tabulated on the boring logs (Plates A-2 through A-6).

Environmental Chemistry Tests

Soil Samples. Select soil samples recovered from the borings were submitted to ToxScan, Inc. (a state-certified laboratory) for chemical analyses. The entire ToxScan report is included in Appendix C.

The following listing shows the actual numbers of soil samples collected from the five borings and the types and numbers of tests assigned to them:

- (27) Total Recoverable Petroleum Hydrocarbons (TRPH)..... U.S. EPA 418.1
- (7) Volatile Organics including BTEX and MTBE U.S. EPA 8260
- (5) Semivolatile Organics (BNAs)..... U.S. EPA 8270
- (9) Pesticides and Polychlorinated Biphenyls (PCBs)..... U.S. EPA 8080
- (9) CCR Title 22 Metals U.S. EPA 6010

Chemical analyses were preferentially assigned to samples from: a) the onshore boring near the ground surface; and b) from all five borings in the possible microtunnel elevation interval between El. -75 and El. -109 feet.

SUBSURFACE CONDITIONS

Stratigraphy

Overview. The general subsurface stratigraphy along the proposed force main alignment is shown on the cross section included on Plate 4 - Cross Section A-A'. This cross section includes the results of the five borings as well as other Main Channel Deepening Program explorations within 200 feet of the force main alignment.



As shown on the subsurface cross section, the subsurface materials underlying the force main alignment are composed of granular sediments above about El. -40 feet and below about El. -90 feet. Between about El. -40 and El. -90 feet, the materials encountered in the three westerly borings (DPW-3L, -4W, and -5W) are clay. In the easternmost overwater boring (DPW-6W), the clay layer extends down to only about El. -70 feet. In the eastern land boring (DPW-4L), alternating layers of clay and sand are present within that elevation interval. Those stratigraphic variations may be due to the Palos Verdes fault, which is believed to pass beneath the Vincent Thomas Bridge. With the exception of the surficial fill or harbor bottom sediments, the soils are interpreted to be marine or estuarine sediments of Holocene age.

Onshore Jacking Pit Locations. At the DPW force main jacking pit locations, the stratigraphy includes a surface layer of sand fill of variable density. The fill within the Berth 226 location includes a concrete obstruction at the initial boring location. It is uncertain as to what type of structure this is related.

On the western side of the Main Channel at Boring DPW-3L, the approximately 12-foot-thick fill layer is underlain by silty fine sand and fat clay. A stiff to very stiff silt and clay layer was penetrated from about El. -41.5 to El. -88.5 feet. Clayey fine sand and fine to medium sand occurred from about El. -88.5 feet to the bottom of the boring (El. -169.5 feet).

On the east side of the Main Channel at Boring DPW-4L, the fill is interpreted to extend down to about El. -10 feet. The fill consists of dense to very dense silty fine sand and sandy silt to silty sand. Below the fill, generally dense to very dense fine to medium sand and sandy silt to silty sand occur. A hard clay layer was penetrated from about El. -60.5 to El. -78.5 feet.

Navigation Channel. The three overwater borings (DPW-4W, -5W, and -6W) penetrated a surficial layer of very loose harbor bottom sediments that are interpreted to have been deposited subsequent to the last channel deepening program in the early 1980s. The surficial sediment includes both very soft plastic clays and loose silty sands. The harbor bottom sediments are underlain by soft to very stiff clay to El. -96.2 feet, below El. -57.9 feet, and to El. -72.2 feet in Borings DPW-4W, -5W, and -6W, respectively. Borings DPW-4W and -6W penetrated the clay and encountered medium dense to very dense fine and silty fine sand at El. -96.2 feet and El. -72.2 feet, respectively.

Material Characteristics

Testing is ongoing and the following descriptions are subject to future modification.

Fill Materials. The surface fill at the two onshore jacking pit locations is primarily composed of fine to medium sand with variable quantities of shell fragments and an abundance of mica. The density of the fill is similarly variable.



Holocene Sands. The native Holocene sands are typically poorly graded fine sands with variable quantities of fines. Above about El. -80 feet, the percentage of fines typically varies from about 5 to 20 percent and the mean grain size typically ranges from about 0.1 to 0.15 millimeter (mm). Below about El. -80 feet, the fines content typically ranges from about 15 to 35 percent and the mean grain size ranges from about 0.08 to 0.15 mm.

The unit dry weight of the Holocene sands typically ranges from about 95 to 105 pounds per cubic foot (pcf) and the unit wet weight is typically between about 123 and 131 pcf. Above about El. -35 feet, the SPT N-values in the Holocene sands typically range from about 30 to 50. Below about El. -35 feet, the SPT N-values in the Holocene sands typically exceed 50.

Holocene Clays. Clay layers within the primarily Holocene sequence generally classify as "CH" on the classification chart. Atterberg tests indicate that they are of high plasticity. Preliminary results from sieve and hydrometer analyses indicate that they also contain a trace of fine sand. Traces of organic matter and/or shell fragments were generally observed in the clay intervals of all five borings.

The material generally consists of Holocene clays between El. -65 and El. -90 feet, which includes the range of elevations for the proposed force main crossing relocation. Within this zone, the moisture content of the clays range from 41 to 71 percent, resulting in liquidity index values between about 0.5 and 1. In the overwater borings (DPW-4W, -5W, and -6W), the wet unit weight ranges from 92 to 127 pcf, while the wet unit weight in the land borings (DPW -3L and -4L) ranges from 108 to 134.7 pcf. Grain size analyses indicate that the clay contains 8 to 32 percent material coarser than a No. 200 sieve (0.075 mm). It is inferred from torvane readings and driving resistance values that the consistency of the clay layers is generally soft to stiff in the overwater borings and stiff to hard in the land borings.

Environmental Chemistry Test Results

The following discussion summarizes the results of the environmental chemistry test results that are presented in Appendix C. All concentrations are reported on a wet weight basis.

Soil Sample Results. The following list summarizes the results of the non-metals analyses on soil samples.

- Total recoverable hydrocarbons were detected in three of the 27 samples:
 - A measured value of 110 milligrams per kilogram (mg/kg) in the sample from 6.5 feet in Boring DPW-3L
 - A measured value of 5,300 mg/kg in the sample from 3.0 feet in Boring DPW-4L



- A measured value of 920 mg/kg in the sample from 6.5 feet in Boring DPW-4L
- Volatile organic compounds were detected in four of the seven samples analyzed:
 - A measured value of 24 parts per billion (ppb) of toluene in the sample from 36.2 feet in Boring DPW-5W
 - A measured value of 5.3 ppb of toluene in the sample from 40.9 feet in Boring DPW-4W
 - A measured value of 7.7 ppb of p-isopropyl toluene in the sample from 97.5 feet in Boring DPW-4L
 - A measured value of 16 ppb of p-isopropyl toluene in the sample from 103.5 feet in Boring DPW-4L
- No semi-volatile organic compounds were detected in the five samples analyzed.
- No pesticides or PCBs were detected in the nine samples analyzed.

Of the 17 CAM metals, beryllium, selenium, and silver were not detected in any of the nine samples analyzed. The results of the remaining CAM metals analyses on nine samples are summarized in the following table. A majority of the high concentration readings occurred in Boring DPW-4W at about El. -78 feet and in Boring DPW-4L at about El. +12 feet.

Analyte	No. of Samples Detected	Typical Range (mg/kg)	Maximum Concentration (mg/kg)
Antimony	1	1.6	1.6
Arsenic	7	3 – 11	11
Barium	9	28 – 100	240
Cadmium	2	1.6 – 3.6	3.6
Chromium	9	13 – 47	79
Cobalt	9	3.2 – 13	13
Copper	9	4.3 – 39	52
Lead	9	2.4 – 14	76
Mercury	5	0.018 – 0.36	0.36
Molybdenum	4	1.2 – 3.4	23
Nickel	9	8.2 – 30	69
Thallium	1	1	1
Vanadium	9	46 – 98	180
Zinc	9	22 – 75	75



LIMITATIONS

This geotechnical report has been prepared for the City of Los Angeles Harbor Department and the City of Los Angeles Department of Public Works solely for the planning and design of the proposed relocation of the force main beneath the Main Channel of the Port of Los Angeles Inner Harbor. The applicability of this report and data in the report are specifically limited to current conditions and considerations for the proposed project. Data, results, and interpretations contained in this report are directed at and intended to be utilized within the scope of work contained in Fugro West's proposal dated November 6, 2000. This report is not intended to be used for any other purposes.

In performing our professional services, we have used that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical engineers currently practicing in this or similar localities. No other warranty, express or implied, is made as to the professional advice included in this report. Fugro West, Inc., makes no claim or representation concerning any activity or conditions falling outside its specified purposes to which this report is directed.

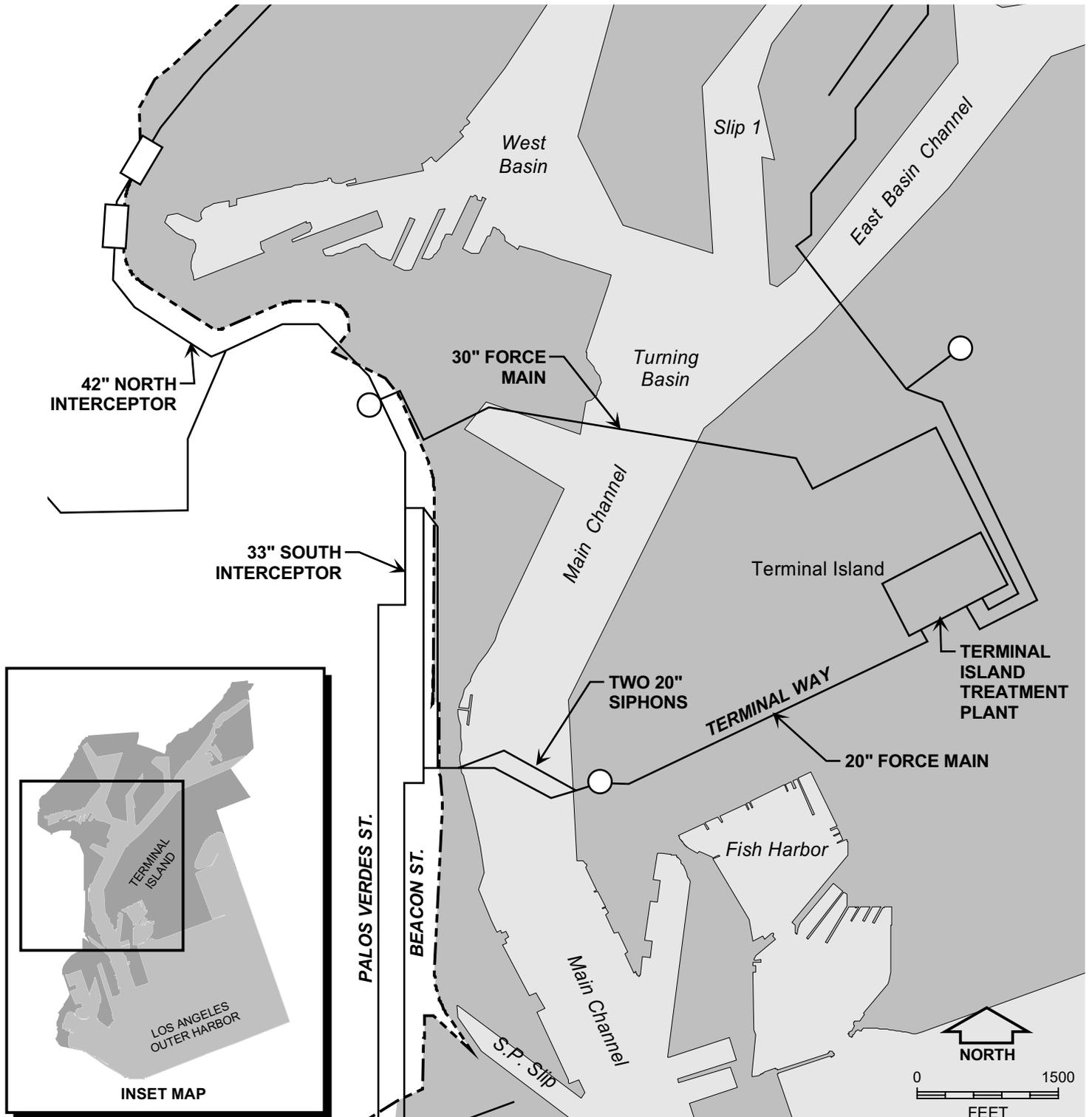
The interpretation of general subsurface conditions is based on subsurface conditions observed at exploration locations only. The information interpreted from those explorations has been used as a basis for our interpretations. Conditions may vary at locations not investigated by our explorations. Subsurface conditions also may change with time due to either natural phenomena or people's activities. We note that any statements, or absence of statements, in this report regarding odors, unusual or suspicious items, or conditions observed are strictly for descriptive purposes and are not intended to convey engineering judgment regarding potential hazardous/toxic assessment.

REFERENCES

- Fugro West, Inc. (1997), *Geotechnical Evaluation Report, Channel Deepening Program, Port of Los Angeles*, Fugro Project No. 96-42-1215, prepared for the City of Los Angeles Harbor Department, August.
- Robertson, P. K., and Campanella, R. G., 1988, *Guidelines for Geotechnical Design Using PCPT and PCPTU*, The University of British Columbia, Soil Mechanics Series No. 120, Vancouver, B.C., Canada.

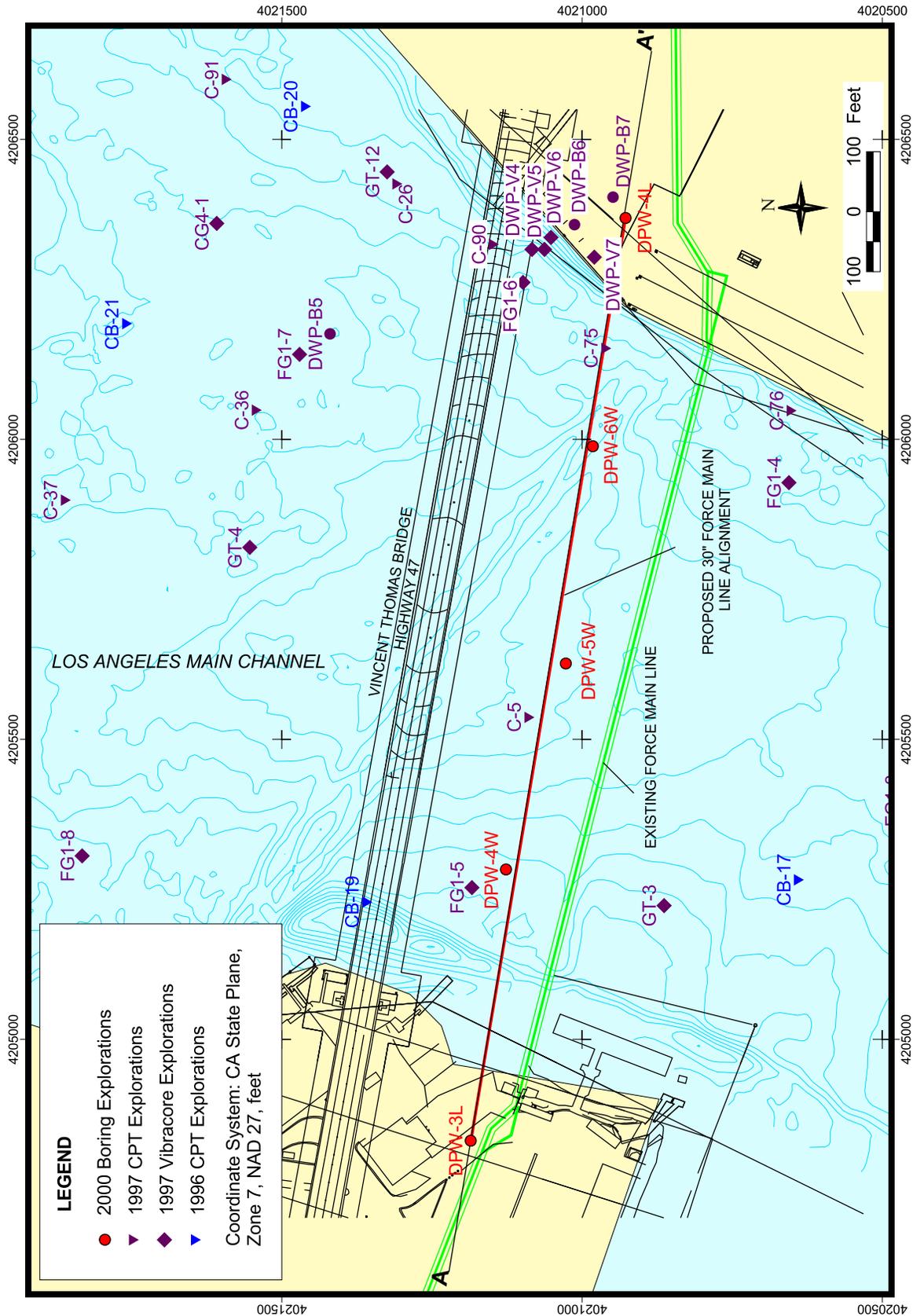


PLATES



VICINITY MAP
San Pedro Force Main Relocation
Port of Los Angeles





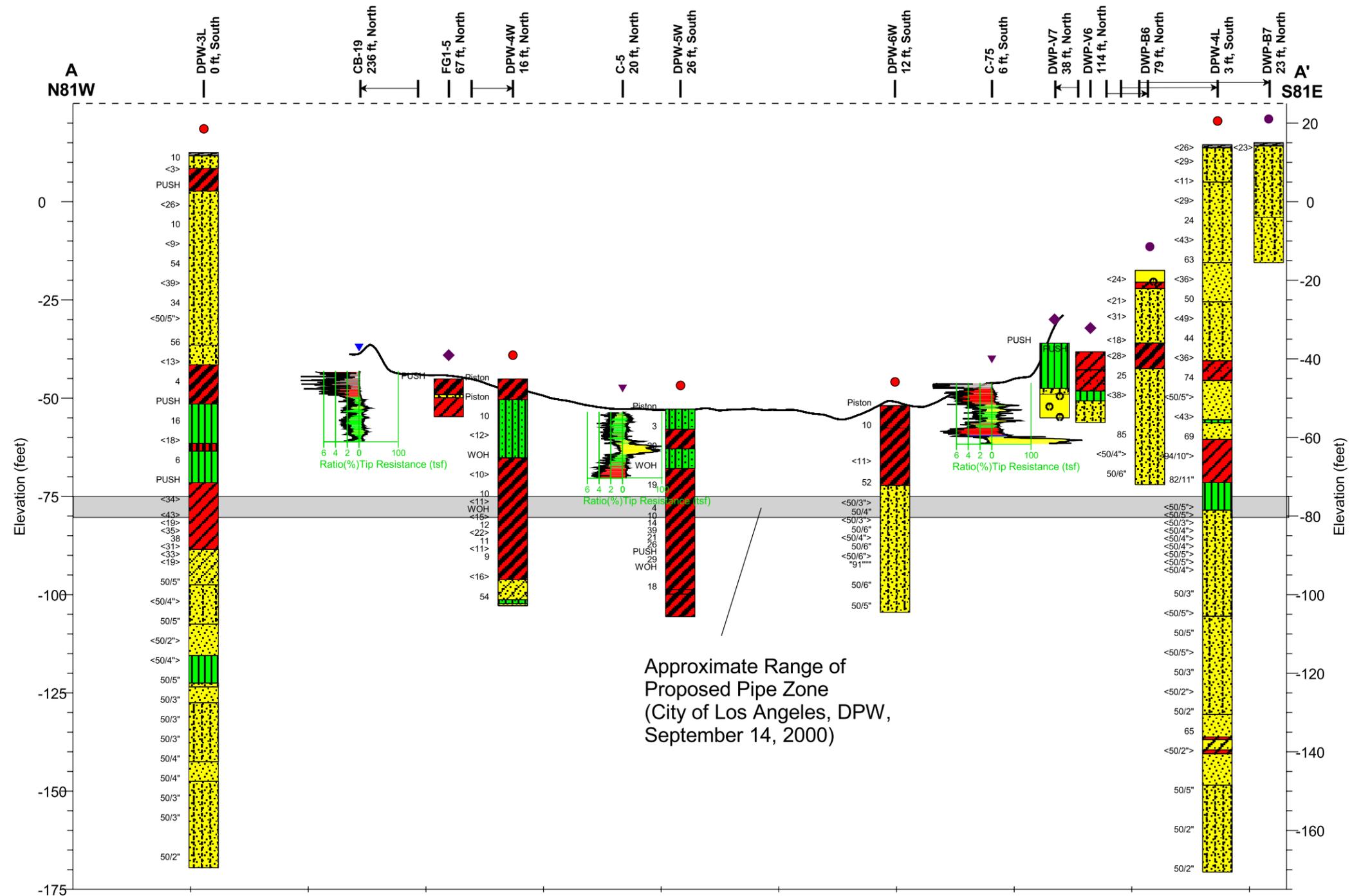
CROSS SECTION LOCATION MAP
 San Pedro Force Main Relocation
 Port of Los Angeles

j:\plate\sewerlines\codb\forcemain\plate-2.cdb

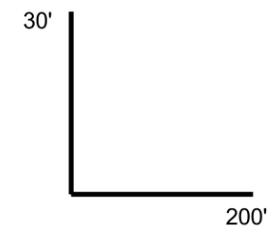


PHOTOGRAPHS OF FIELD WORK
San Pedro Force Main Relocation
Port of Los Angeles





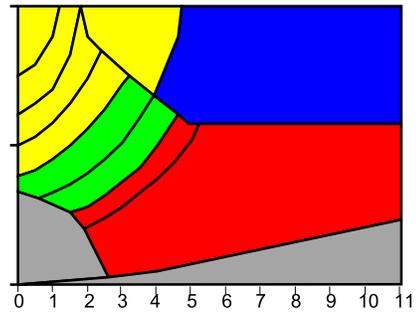
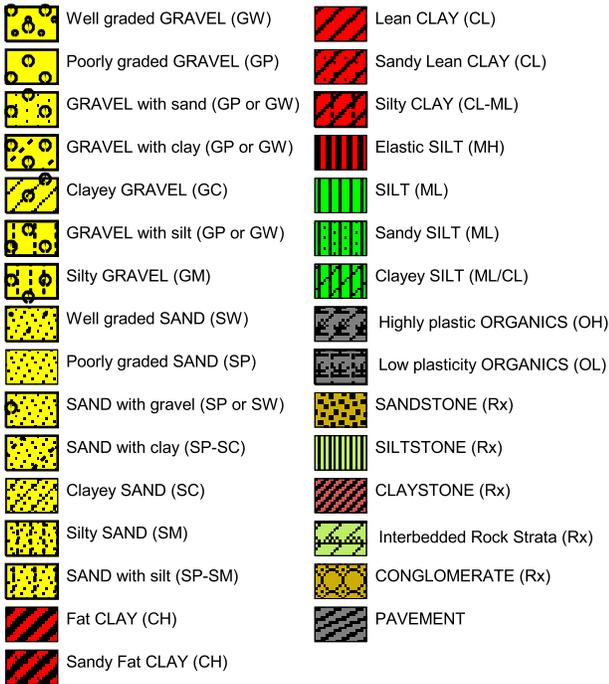
Approximate Range of Proposed Pipe Zone
(City of Los Angeles, DPW,
September 14, 2000)



- NOTES:
- 1) Refer to Plate 2 for cross section location.
 - 2) Data concerning subsurface conditions were obtained at boring and CPT locations only. Strata breaks were interpreted from geophysical records and were interpolated between exploration points. Actual conditions between exploration points may differ from the generalized profile shown here.
 - 3) CPT and boring logs were projected onto the section line.
 - 4) Refer to key in cross section (Plate 5) for details of data plotted on cross section.
 - 5) CPT tip resistance and blow counts are uncorrected for overburden.

CROSS SECTION A-A'
San Pedro Force Main Relocation
Port of Los Angeles

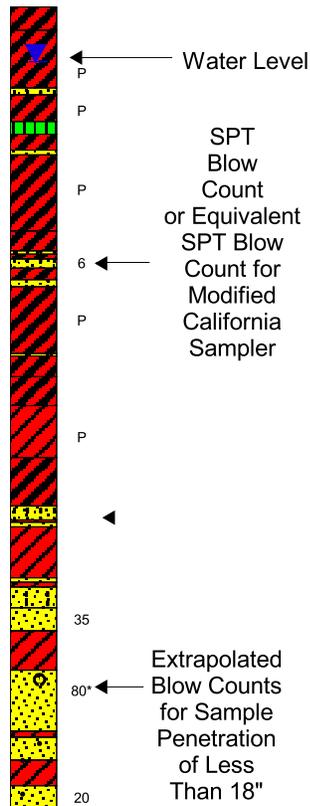
SOIL TYPES



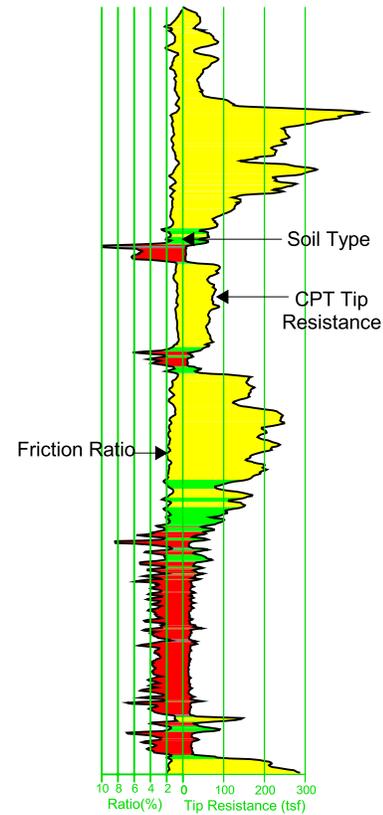
Zone	Soil Behavior Type	U.S.C.S.
1	Sensitive Fine-grained	OL-CH
2	Organic Material	OL-OH
3	Clay	CH
4	Silty Clay to Clay	CL-CH
5	Clayey Silt to Silty Clay	MH-CL
6	Sandy Silt to Clayey Silt	ML-MH
7	Silty Sand to Sandy Silt	SM-ML
8	Sand to Silty Sand	SM-SP
9	Sand	SW-SP
10	Gravelly Sand to Sand	SW-GW
11	Very Stiff Fine-grained *	CH-CL
12	Sand to Clayey Sand *	SC-SM

*overconsolidated or cemented

CPT CORRELATION CHART (Robertson and Campanella, 1988)



SOIL BORING LITHOLOGY



CPT SOUNDING WITH INTERPRETED LITHOLOGY

KEY TO CROSS SECTIONS
 San Pedro Force Main Relocation
 Port of Los Angeles



**APPENDIX A
BORING LOGS**



Location	Drill Dates		Location		Surface Elevation, ft (MLLW)	Final Drilling Depth (ft)	Bottom Elevation, ft (MLLW)	Depth to Water (ft)
	Start	End	Northing	Easting				
Land Borings								
DPW-3L	11/07/2000	11/09/2000	4021185	4204831	12.5	182.0	-169.5	17.0
DPW-4L	11/14/2000	11/15/2000	4020927	4206369	14.5	185.0	-170.5	--
Overwater Borings								
DPW-4W	12/01/2000	12/01/2000	4021126	4205283	-45.1	57.7	-102.8	--
DPW-5W	12/05/2000	12/05/2000	4021027	4205626	-52.8	47.1	-99.9	--
DPW-6W	11/30/2000	11/30/2000	4020981	4205989	-51.9	52.6	-104.5	--

EXPLORATION SUMMARY
 San Pedro Force Main Crossing Relocation
 Port of Los Angeles



ELEVATION, ft.	DEPTH, ft.	SOIL TYPE	SAMPLER	BLOW COUNT	MATERIAL DESCRIPTION	STRATUM NO.	CORING RATE (Min/ft)				FRACTURE DENSITY (fractures/ft)			
							ID TESTS/RQD/RECOVERY(%) / EQ. BLOW COUNTS				ROCK UNCONFINED COMPRESSIVE STRENGTH (PSI)			
GROUND ELEVATION: 12.5 FT (MLLW) (0.8')							5	10	15	20	2	4	6	8
							20	40	60	80	5000	10000	15000	20000
							UNIT WEIGHT (KCF)				SOIL UNDRAINED SHEAR STRENGTH (KSF)			
							0.05	0.10	0.15	0.20	1	2	3	4
					Pavement: 3" Asphalt over 3" base over 3" concrete	II								
				4	Silty fine SAND (SM) (FILL), loose, olive gray -with oxidation seams and trace mica	III								
					Fat CLAY (CH), soft, greenish gray -with shell fragments, at 7' -with sand seams, 9' to 9.5'									
				PUSH										
				42	Silty fine SAND (SM), medium dense, gray -with trace mica and shell fragments -with organic partings and oxidized seams at 10'									
					-loose, 19' to 21'									
				10										
				15		IV								
					-dense to very dense below 27'									
				54										
				63										
					-with clay pockets, 34.5' to 35'									
				34										
				50/5"										
				56	Fine to medium SAND with silt (SP-SM), very dense, gray -with abundant shell fragments	V								
				20	Fat CLAY (CH), stiff, dark gray -with silt pockets and trace mica	VI								
					-soft with silt pockets below 59'									
				PUSH	SILT (ML), stiff to very stiff, dark gray to gray									
					-with clay pockets, 69' to 71'									
				16		VII								
					-elastic silt, very stiff, with mica, 74' to 76'									
				29										
					-with clay seams and oxidation seams, 79' to 81'									
				6										
				PUSH	Lean CLAY (CL), stiff, dark gray									
					-hard below 89'									
				55		VIII								
					-gray to dark gray with shell fragments, 93' to 95'									
				68										
				30										
					-organic matter and shell fragments at 96.5'									
				56										
				38										
					-with abundant mica and organic pockets, 99' to 101'									
				50										
				52	Clayey fine SAND (SC), dense, dark gray -with appreciable mica	IX								
					-trace organics (root) at 102'									
				30										
					-less clay with depth below 103'									
				50/5"	Fine to medium SAND with silt (SP-SM), very dense, light gray to gray									
					-with appreciable mica									
				50/4"										
				120	-fine to medium sand, very dense, light gray to gray below 120'									
				50/5"										
					-with mica at 125'									
				50/2"										
					-silt, hard, gray to dark gray, with some oxidation stains, 128' to 135'									
				50/4"										
				50/5"	-silty fine sand, very dense, dark gray below 135'									
					-fine sand, very dense, 136' to 139.5'									
				140										
				50/3"										
				50/3"	-silty fine sand, very dense, dark gray, with mica below 145'	X								
				50/3"										
					-no mica observed at 150'									
				50/4"										
					-fine to medium sand, very dense, dark gray below 155'									
				160										
				50/4"	-silty fine sand, very dense, dark gray, with mica below 160'									
				50/3"										
				50/3"										
				180										
				50/2"										
					TOTAL DEPTH: 182' BACKFILLED WITH: Cement Grout									

LOG OF BORING AND TEST RESULTS

BORING DPW-3L

Port of Los Angeles



ELEVATION, ft.	DEPTH, ft.	SOIL TYPE	SAMPLER	BLOW COUNT	MATERIAL DESCRIPTION	STRATUM NO.	CORING RATE (Min/ft)				FRACTURE DENSITY (fractures/ft)							
							ID TESTS/RQD/RECOVERY(%) / EQ. BLOW COUNTS				ROCK UNCONFINED COMPRESSIVE STRENGTH (PSI)							
							5	10	15	20	2	4	6	8				
					GROUND ELEVATION: 14.5 FT (MLLW) ▽ (0.9)													
				41	Pavement: 4 Asphalt over 6 base material													
				47	Silty Fine to Medium SAND (SM), dense, dark gray -with appreciable mica and trace shell frgments -black stained pockets with odor -brown clayey sand with appreciable mica and trace shell fragments at 6.5'	II												
				18	Sandy SILT to Silty SAND (SP-SM), medium dense to very dense, dark gray -with appreciable mica													
				46	-with shell fragments, 20' to 22'	III												
				24														
				68														
				63	Fine to Medium SAND (SP), dense to very dense, gray -with appreciable mica and shell frgmts	IV												
				58														
				40	Silty Fine SAND to Sandy SILT (SP-SM), dense to very dense, dark gray -with appreciable mica -with shell fragments, 45' to 52'	V												
				78														
				44														
				57	Sandy Lean CLAY (CL), hard, brown to olive gray	VI												
				74	Fine to Coarse SAND (SP), very dense, brown to olive gray -with clay seams	VII												
				50/5"														
				69	-dark gray silt with fine sand and mica, 70' to 70.8' -very dense, brown, medium to coarse sand with gravel below 70.8'	VII												
				69	Lean CLAY (CL), hard, gray to brown -with oxidation staining, 75' to 77'	VIII												
				80	-with shell fragments, 80' to 82'													
				94/10"														
				82/11"	-hard, olive gray silt, below 86'	VIII												
				50/5"														
				50/5"	Silty SAND (SM), very dense, dark gray to brown -with appreciable mica													
				50/3"														
				50/4"	-olive gray below 101'													
				50/4"														
				50/4"	-with shell fragments, 105.4' to 117'													
				50/5"														
				50/5"														
				50/3"														
				50/5"	-fine sand with silt below 120'	IX												
				50/5"	-with shell fragments, oxidation staining, and mica, 125' to 127'													
				50/5"	-silt with oxidation staining and mica at 130'													
				50/3"	-no recovery													
				50/2"	-no recovery													
				50/2"														
				65	-hard, dark gray, lean clay with few shell fragments below 150.2' -fine to medium sand with clay below 151.4' -lean clay below 154' -very dense, gray, fine to medium sand with mica below 155'													
				50/2"														
				50/5"	-silty fine sand to silt below 163'	X												
				50/2"														
				50/2"	-no recovery													
					TOTAL DEPTH: 185.1' BACKFILLED WITH: Cement Grout													

LOG OF BORING AND TEST RESULTS

BORING DPW-4L

Port of Los Angeles



PROJECT NO: 00-32-3361
 BORING: DPW-6W (San Pedro Force Main Relocation)

START DATE: 11/30/00
 COMPLETION DATE: 11/30/00

DRILLER: Pitcher Drilling
 DRILLING METHOD: Rotary Wash

ELEVATION, ft.	DEPTH, ft.	SOIL TYPE	SAMPLER	BLOW COUNT	MATERIAL DESCRIPTION	STRATUM NO.	CORING RATE (Min/ft)				FRACTURE DENSITY (fractures/ft)					
							ID TESTS/RQD/RECOVERY(%) / EQ. BLOW COUNTS				ROCK UNCONFINED COMPRESSIVE STRENGTH (PSI)					
Coordinates: E4205988.5 N4020981.4 CA State Plane Zone 7, NAD27, feet							5	10	15	20	2	4	6	8		
MUDLINE ELEVATION: -51.9 FT (MLLW)							20	40	60	80	5000	10000	15000	20000		
							SUBMERGED UNIT WEIGHT (KCF)				SOIL UNDRAINED SHEAR STRENGTH (KSF)					
							0.05	0.10	0.15	0.20	1	2	3	4		
				Piston	Sandy Fat CLAY (CH), very soft, dark olive gray -with angular rock fragments	I (5.7')										
	-60			10	Fat CLAY (CH), firm to stiff, dark olive gray -with silt partings, 5.7' to 7.2' -light brown sandy lean clay at 7'	II (20.3')										
				17	-with organic partings and pockets, 14.9' to 15.9'											
	-80			52	Silty Fine SAND (SM), very dense, olive gray -clayey sand at 20.5' -sandy clay at 20.9' -sandy silt at 21.1'	III										
				50/3"	-with sandy silt, 27.8' to 28.6'											
				50/4"												
				50/3"												
				50/6"	-with a few yellowish brown partings, 32.3' to 35.2'											
				50/4"	-light brown below 34.4'											
				50/6"												
				50/6"												
	-100			91"	-olive gray, 41.2' to 42.7'											
				50/6"												
				50/5"	TOTAL DEPTH: 52.6' BACKFILLED WITH: Native Materials											

LOG OF BORING AND TEST RESULTS

BORING DPW-6W

Port of Los Angeles



Report Date: 02/11/01

PLATE A-6

SOIL TYPES

	Well graded GRAVEL (GW)		Clayey SAND (SC)		Clayey silt (ML/CL)
	Poorly graded GRAVEL (GP)		Silty SAND (SM)		Highly plastic ORGANICS (OH)
	GRAVEL with sand (GP or GW)		SAND with silt (SP-SM)		Low plasticity ORGANICS (OL)
	GRAVEL with clay (GP or GW)		Fat CLAY(CH)		SANDSTONE (Rx)
	Clayey GRAVEL (GC)		Sandy fat CLAY (CH)		SILTSTONE (Rx)
	GRAVEL with silt (GP or GW)		Lean CLAY (CL)		CLAYSTONE (Rx)
	Silty GRAVEL (GM)		Sandy lean CLAY (CL)		Interbedded Rock Strata (Rx)
	Well graded SAND (SW)		Silty CLAY (CL-ML)		CONGLOMERATE (Rx)
	Poorly graded SAND (SP)		Elastic SILT (MH)		PAVEMENT
	SAND with gravel (SP or SW)		SILT (ML)		
	SAND with clay (SP-SC)		Sandy SILT (ML)		

SAMPLERS

	Thin Walled 3-inch Tube		Modified California Liner		Bulk Bag
	2-1/4-inch Driven Tube		SPT		Osterberg Cell Sampler (Hydraulic Piston)
	PB Pitcher Barrel Sampler		Rock Core (Interior symbol represents percent recovery)		

CLASSIFICATION TESTS/BLOW COUNTS/ ROCK QUALITY AND CORING RATE

- PERCENT PASSING #200 SIEVE
- WATER CONTENT (%)
- SUBMERGED UNIT WEIGHT (KCF)
- THEORETICAL SUBMERGED UNIT WEIGHT (KCF)
- PLASTIC LIMIT LIQUID LIMIT
- +-----+
- ⊕ EQUIVALENT SPT BLOW COUNT
- ROCK QUALITY DESIGNATION (RQD)
- ROCK RECOVERY PERCENT

STRENGTH TESTS

- ⊗ POCKET PENETROMETER
- ◇ TORVANE
- ◇ REMOTE VANE
- ◆ MINIATURE VANE (◇ RESIDUAL VANE)
- ▲ UNCONSOLIDATED UNDRAINED TRIAXIAL
- ▽ SWEDISH FALL CONE
- UNCONFINED COMPRESSION (SOIL)
- ⊙ POINT LOAD TEST (INTACT SPECIMEN)
- ⊖ POINT LOAD TEST (ALONG WEAK PLANE)
- UNCONFINED COMPRESSION (ROCK)
- △◇ (Open symbols indicate remolded tests)
- + Strength Exceeds Capacity of Measuring Device
- PCPT (Nk = 12 to 15)

KEY TO TERMS AND SYMBOLS USED ON LOGS

San Pedro Force Main Relocation
Port of Los Angeles





TUBE AND LINER SAMPLERS

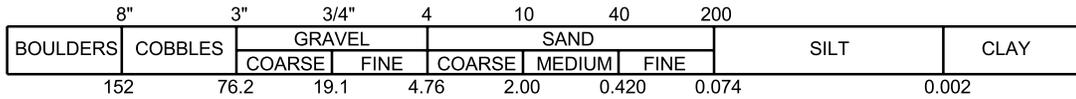
- WOH Liner sample advanced with the weight of a 175 pound hammer.
- PUSH or SAVE Pushed thin-walled 3"-tube.
- 15/24" Number of blows required to produce the indicated penetration using a 2-1/4" tube sampler. The sampler was driven with a 175 pound downhole hammer dropped approximately 5 ft.

SPT AND MODIFIED CALIFORNIA LINER SAMPLERS

- Samplers were driven with a 140 pound above deck hammer dropped approximately 2-1/2 feet.
- 20 Number of blows to produce 12" of penetration after the initial 6" of seating.
 - 86/11" Number of blows required to produce the indicated penetration after an initial 6" seating.
 - Ref/3" 50 blows produced the indicated penetration during the initial 6" interval.

SOIL GRAIN SIZE

U.S. STANDARD SIEVE



SOIL GRAIN SIZE IN MILLIMETERS

STRENGTH OF COHESIVE SOILS

DENSITY OF GRANULAR SOILS

Consistency	Undrained Shear Strength, Kips Per Sq Ft	Descriptive Term	Relative Density (%)*
Very Soft.....	less than 0.25	Very Loose.....	less than 15
Soft.....	0.25 to 0.50	Loose.....	15 to 35
Firm.....	0.50 to 1.00	Medium Dense.....	35 to 65
Stiff.....	1.00 to 2.00	Dense.....	65 to 85
Very Stiff.....	2.00 to 4.00	Very Dense.....	greater than 85
Hard.....	greater than 4.00		

*Estimated from sampler driving record and PCPT tip resistance.

SOIL STRUCTURE

- Slickensided..... Having planes of weakness that appear slick and glossy. The degree of slickensidedness depends upon the spacing of slickensides and the ease of breaking along these planes.
- Fissured..... Containing shrinkage or relief crack, often filled with fine sand or silt, usually more or less vertical.
- Pocket..... Inclusion of material of different texture that is smaller than the diameter of the sample.
- Parting..... Inclusion less than 1/8 inch thick extending through the sample.
- Seam..... Inclusion 1/8 to 3 inches thick extending through the sample.
- Layer..... Inclusion greater than 3 inches thick extending through the sample.
- Laminated..... Soil sample composed of alternating partings or seams of different soil types.
- Interlayered..... Soil sample composed of alternating layers of different soil types.
- Intermixed..... Soil sample composed of pockets of different soil types and layered or laminated structure is not evident.
- Calcareous..... Having appreciable quantities of carbonate.

KEY TO TERMS AND SYMBOLS USED ON LOGS

San Pedro Force Main Relocation
Port of Los Angeles

APPENDIX B
LABORATORY TEST RESULTS



DPW-3L			IDENTIFICATION TESTS					STRENGTH ESTIMATE			UU TRIAXIAL			MULTI-STAGE TRIAXIAL		DIRECT SHEAR TESTS				CORROSIVITY TESTS				COMPACTION TESTS		ADDITIONAL TESTS		
DEPTH (ft)	Sample No.	Sample Type	MC (%)	LL (%)	PL (%)	LI	TUW (pcf)	Fines (%)	Torvane (ksf)	Pocket Pen. (ksf)	Fall Cone (ksf)	Undist. (ksf)	Remold. (ksf)	e50 (%)	c (ksf)	phi (deg)	Peak c (ksf)	Peak phi (deg)	Post Peak c (ksf)	Post Peak phi (ksf)	R (ohm-cm)	pH	Cl (ppm)	SO4 (ppm)	Max DD (ksf)	OMC (%)		
6.0	2		48				107.1																					
10.0	4								0.92																			
10.5	5		31																									
15.0	7		31				124.5										0.41	36										
24.8	10		42				114.2																					
25.3	11						122.7	52																				
35.0	13		30				122.0																					
35.5	14		29				125.1																					
40.5	15																											
43.9	16		26				127.0																					PID=0.0
50.5	17																											PID=0.0
55.0	18			55	23		116.1		9.20																			PID=0.0
55.5	19		39				115.0																					
60.5	20																											PID=0.0
65.5	21		29				122.4																					PID=0.0
Sample Data L = Liner Sample T = Shelby Tube H = Hammer Sample			Identification Tests MC = Moisture Content LL = Liquid Limit PL = Plastic Limit LI = Liquidity Index				Identification Tests TUW = Total Unit Weight Fines = % Passing No. 200 Sieve				Strength Tests UU = Unconsolidated Undrained e50 = Strain at 50% Failure Stress c = Effective Cohesion phi = Effective Angle of Friction				Corrosivity Tests R = Resistivity (ohm-cm) pH = pH Cl = Chloride Content SO4 = Sulfate Content				Additional Tests H = Hydrometer C = Consolidation Test UC = Unconfined Compression EI50 = Expansion Index									

+ Soil : Strength exceeds capacity of measuring device
Rock: Sample broke along discontinuity.
(Intact sample would have greater strength)

SUMMARY OF LABORATORY TEST RESULTS
Boring DPW-3L
Port of Los Angeles





DPW-3L		IDENTIFICATION TESTS							STRENGTH ESTIMATE			UU TRIAXIAL			MULTI-STAGE TRIAXIAL		DIRECT SHEAR TESTS				CORROSIVITY TESTS				COMPACTION TESTS		ADDITIONAL TESTS	
DEPTH (ft)	Sample No.	Sample Type	MC (%)	LL (%)	PL (%)	LI	TUW (pcf)	Fines (%)	Torvane (ksf)	Pocket Pen. (ksf)	Fall Cone (ksf)	Undist. (ksf)	Remold. (ksf)	e50 (%)	c (ksf)	phi (deg)	Peak c (ksf)	Peak phi (deg)	Post Peak c (ksf)	Post Peak phi (ksf)	R (ohm-cm)	pH	Cl (ppm)	SO4 (ppm)	Max DD (kcf)	OMC (%)		
70.5	23								12.60																			PID=0.0
75.0	24																											PID=4.4
75.5	25		41				122.4																					
80.5	26																											PID=0.0
85.5	27			77	36		108.1		11.20																			
85.5	27		57																									
86.0	28								10.00																			PID=0.0
90.0	29		51				109.5																					PID=0.0
94.0	31		63				103.2	93																				H, PID=0.0
96.0	33		47				108.2														436	8.36	5809	103				PID=0.0
98.0	35		53				108.0																					PID=0.0
100.0	37		41				113.9																					UU, PID=0.0
102.0	39						122.8																					PID=0.0
104.0	41		23				131.8																					PID=0.0
106.0	57						126.8	19									1.35	30										H, PID=0.0
Sample Data		Identification Tests					Identification Tests					Strength Tests					Corrosivity Tests				Additional Tests							
L = Liner Sample T = Shelby Tube H = Hammer Sample		MC = Moisture Content LL = Liquid Limit PL = Plastic Limit LI = Liquidity Index					TUW = Total Unit Weight Fines = % Passing No. 200 Sieve					UU = Unconsolidated Undrained e50 = Strain at 50% Failure Stress c = Effective Cohesion phi = Effective Angle of Friction					R = Resistivity (ohm-cm) pH = pH Cl = Chloride Content SO4 = Sulfate Content				H = Hydrometer C = Consolidation Test UC = Unconfined Compression EI50 = Expansion Index							

+ Soil : Strength exceeds capacity of measuring device
Rock: Sample broke along discontinuity; (intact sample would have greater strength)

SUMMARY OF LABORATORY TEST RESULTS
Boring DPW-3L
Port of Los Angeles





DPW-3L			IDENTIFICATION TESTS					STRENGTH ESTIMATE			UU TRIAXIAL			MULTI-STAGE TRIAXIAL		DIRECT SHEAR TESTS				CORROSIVITY TESTS				COMPACTION TESTS		ADDITIONAL TESTS	
DEPTH (ft)	Sample No.	Sample Type	MC (%)	LL (%)	PL (%)	LI	TUW (pcf)	Fines (%)	Torvane (ksf)	Pocket Pen. (ksf)	Fall Cone (ksf)	Undist. (ksf)	Remold. (ksf)	e50 (%)	c (ksf)	phi (deg)	Peak c (ksf)	Peak phi (deg)	Post Peak c (ksf)	Post Peak phi (ksf)	R (ohm-cm)	pH	Cl (ppm)	SO4 (ppm)	Max DD (ksf)	OMC (%)	
110.9	44																										PID=0.0
115.5	45		29				127.3																				PID=0.0
120.4	46																										PID=0.0
125.7	47		25				125.8																				PID=0.0
130.7	48		26				127.9	96																			H, PID=0.0
135.3	49																										PID=0.0
145.3	50																										PID=0.0
150.3	51																										PID=0.0
155.3	52																										PID=0.0
160.3	53																										PID=0.0
165.3	54																										PID=0.0
170.3	55																										PID=0.0
180.2	56																										PID=0.0
Sample Data L = Liner Sample T = Shelby Tube H = Hammer Sample			Identification Tests MC = Moisture Content LL = Liquid Limit PL = Plastic Limit LI = Liquidity Index					Identification Tests TUW = Total Unit Weight Fines = % Passing No. 200 Sieve					Strength Tests UU = Unconsolidated Undrained e50 = Strain at 50% Failure Stress c = Effective Cohesion phi = Effective Angle of Friction					Corrosivity Tests R = Resistivity (ohm-cm) pH = pH Cl = Chloride Content SO4 = Sulfate Content				Additional Tests H = Hydrometer C = Consolidation Test UC = Unconfined Compression EI50 = Expansion Index					

+ Soil : Strength exceeds capacity of measuring device
Rock: Sample broke along discontinuity; (Intact sample would have greater strength)

SUMMARY OF LABORATORY TEST RESULTS
Boring DPW-3L
Port of Los Angeles





DPW-4L		IDENTIFICATION TESTS							STRENGTH ESTIMATE			UU TRIAXIAL			MULTI-STAGE TRIAXIAL		DIRECT SHEAR TESTS				CORROSIIVITY TESTS				COMPACTION TESTS		ADDITIONAL TESTS
DEPTH (ft)	Sample No.	Sample Type	MC (%)	LL (%)	PL (%)	LI	TUW (pcf)	Fines (%)	Torvane (ksf)	Pocket Pen. (ksf)	Fall Cone (ksf)	Undist. (ksf)	Remold. (ksf)	e50 (%)	c (ksf)	phi (deg)	Peak c (ksf)	Peak phi (deg)	Post Peak c (ksf)	Post Peak phi (ksf)	R (ohm-cm)	pH	Cl (ppm)	SO4 (ppm)	Max DD (ksf)	OMC (%)	
2.5	2																										PID=0.0
3.0	2		21				124.9																				
6.0	4		15				120.7																				PID=0.0
11.0	6		21				126.6																				PID=0.0
16.0	8		25				126.4																				PID=0.0
21.5	10		31																								PID=0.0
26.0	11		25					54																			H ₂ PID=0.0
26.5	12		26				124.6										0.48	37									
31.5	13																										PID=0.0
36.0	14																										PID=0.0
36.5	15		19				130.6																				
41.5	16																										PID=0.0
46.0	17																										PID=0.0
46.5	18		23				128.0																				
51.5	19																0.77	32									PID=0.0
Sample Data L = Liner Sample T = Shelby Tube H = Hammer Sample		Identification Tests MC = Moisture Content LL = Liquid Limit PL = Plastic Limit LI = Liquidity Index					Identification Tests TUW = Total Unit Weight Fines = % Passing No. 200 Sieve					Strength Tests UU = Unconsolidated Undrained e50 = Strain at 50% Failure Stress c = Effective Cohesion phi = Effective Angle of Friction					Corrosivity Tests R = Resistivity (ohm-cm) pH = pH Cl = Chloride Content SO4 = Sulfate Content				Additional Tests H = Hydrometer C = Consolidation Test UC = Unconfined Compression EI50 = Expansion Index						

+ Soil : Strength exceeds capacity of measuring device
Rock: Sample broke along discontinuity; (Intact sample would have greater strength)

SUMMARY OF LABORATORY TEST RESULTS
Boring DPW-4L
Port of Los Angeles





DPW-4L		IDENTIFICATION TESTS							STRENGTH ESTIMATE			UU TRIAXIAL			MULTI-STAGE TRIAXIAL		DIRECT SHEAR TESTS				CORROSION TESTS				COMPACTION TESTS		ADDITIONAL TESTS
DEPTH (ft)	Sample No.	Sample Type	MC (%)	LL (%)	PL (%)	LI	TUW (pcf)	Fines (%)	Torvane (ksf)	Pocket Pen. (ksf)	Fall Cone (ksf)	Undist. (ksf)	Remold. (ksf)	e50 (%)	c (ksf)	phi (deg)	Peak c (ksf)	Peak phi (deg)	Post Peak c (ksf)	Post Peak phi (ksf)	R (ohm-cm)	pH	Cl (ppm)	SO4 (ppm)	Max DD (kcf)	OMC (%)	
56.0	20																										PID=0.0
56.5	21		20				133.3																				
61.5	22																										PID=0.0
65.5	23		22																								PID=0.0
71.0	24																										PID=0.0
71.5	25		20				127.2																				PID=0.0
76.5	26																										PID=0.0
80.3	27		19	31	17	0.14																					PID=0.0
80.8	28		19				134.7																				PID=0.0
86.9	29																				472	7.79	4020	470			PID=0.0
115.3	39																										PID=0.0
120.4	40		27				130.7																				PID=0.0
125.4	41																										PID=0.0
130.4	42		28				111.2																				PID=0.0
145.2	43																										PID=0.0
Sample Data L = Liner Sample T = Shelby Tube H = Hammer Sample		Identification Tests MC = Moisture Content LL = Liquid Limit PL = Plastic Limit LI = Liquidity Index					Identification Tests TUW = Total Unit Weight Fines = % Passing No. 200 Sieve					Strength Tests UU = Unconsolidated Undrained e50 = Strain at 50% Failure Stress c = Effective Cohesion phi = Effective Angle of Friction				Corrosivity Tests R = Resistivity (ohm-cm) pH = pH Cl = Chloride Content SO4 = Sulfate Content				Additional Tests H = Hydrometer C = Consolidation Test UC = Unconfined Compression EI50 = Expansion Index							

+ Soil : Strength exceeds capacity of measuring device
Rock: Sample broke along discontinuity; (Intact sample would have greater strength)

SUMMARY OF LABORATORY TEST RESULTS
Boring DPW-4L
Port of Los Angeles





DPW-4W			IDENTIFICATION TESTS					STRENGTH ESTIMATE			UU TRIAXIAL			MULTI-STAGE TRIAXIAL		DIRECT SHEAR TESTS				CORROSIVITY TESTS				COMPACTION TESTS		ADDITIONAL TESTS	
DEPTH (ft)	Sample No.	Sample Type	MC (%)	LL (%)	PL (%)	LI	SUW (pcf)	Fines (%)	Torvane (ksf)	Pocket Pen. (ksf)	Fall Cone (ksf)	Undist. (ksf)	Remold. (ksf)	e50 (%)	c (ksf)	phi (deg)	Peak c (ksf)	Peak phi (deg)	Post Peak c (ksf)	Post Peak phi (ksf)	R (o-cm)	pH	Cl (ppm)	SO4 (ppm)	Max DD (ksf)	OMC (%)	
0.9	1		62																								PID=0.0
1.4	2		51				31.1																				
1.9	3		54	56	23	0.95	28.7																				
2.9	4		38				43.8		0.64																		PID=0.0
6.3	5		31				48.4																				
7.8	6																										PID=0.0
11.7	7		31					80																			PID=0.0
15.6	8																										PID=0.2
16.1	9		31				48.1																				
16.6	10		30				49.3																				
21.6	11		53																								PID=0.0
26.1	12		59				28.5																				
26.6	13																										PID=0.2
31.5	14		60																		305	7.83	8780	1766			PID=0.4
33.0	16		37	47	27	0.51	50.3	86	0.86																		H
Sample Data L = Liner Sample T = Shelby Tube H = Hammer Sample			Identification Tests MC = Moisture Content LL = Liquid Limit PL = Plastic Limit LI = Liquidity Index					Identification Tests SUW = Submerged Unit Weight Fines = % Passing No. 200 Sieve					Strength Tests UU = Unconsolidated Undrained e50 = Strain at 50% Failure Stress c = Effective Cohesion phi = Effective Angle of Friction					Corrosivity Tests R = Resistivity (ohm-cm) pH = pH Cl = Chloride Content SO4 = Sulfate Content				Additional Tests H = Hydrometer C = Consolidation Test UC = Unconfined Compression EI50 = Expansion Index					

+ Soil : Strength exceeds capacity of measuring device
Rock: Sample broke along discontinuity; (Intact sample would have greater strength)

SUMMARY OF LABORATORY TEST RESULTS
Boring DPW-4W
Port of Los Angeles





DPW-4W			IDENTIFICATION TESTS					STRENGTH ESTIMATE			UU TRIAXIAL			MULTI-STAGE TRIAXIAL		DIRECT SHEAR TESTS				CORROSIVITY TESTS				COMPACTION TESTS		ADDITIONAL TESTS			
DEPTH (ft)	Sample No.	Sample Type	MC (%)	LL (%)	PL (%)	LI	SUW (pcf)	Fines (%)	Torvane (ksf)	Pocket Pen. (ksf)	Fall Cone (ksf)	Undist. (ksf)	Remold. (ksf)	e50 (%)	c (ksf)	phi (deg)	Peak c (ksf)	Peak phi (deg)	Post Peak c (ksf)	Post Peak phi (ksf)	R (ohm-cm)	pH	Cl (ppm)	SO4 (ppm)	Max DD (ksf)	OMC (%)			
35.4	17		71	92	29	0.68																						PID=0.4	
36.4	18		70																										PID=0.2
36.9	19						42.8		1.20																				
39.4	20		74																										PID=0.0
40.4	21		57																										
40.9	22						39.8																						PID=0.0
43.5	23		58	83	31	0.52																							PID=0.0
45.0	24		57				35.0																						
45.5	25						39.8																						
47.5	26		71																										PID=0.0
52.1	27																												PID=0.0
52.6	28		26				52.4																						
57.2	29		23																										
57.7	30		26																										PID=0.4
Sample Data L = Liner Sample T = Shelby Tube H = Hammer Sample			Identification Tests MC = Moisture Content LL = Liquid Limit PL = Plastic Limit LI = Liquidity Index					Identification Tests SUW = Submerged Unit Weight Fines = % Passing No. 200 Sieve					Strength Tests UU = Unconsolidated Undrained e50 = Strain at 50% Failure Stress c = Effective Cohesion phi = Effective Angle of Friction					Corrosivity Tests R = Resistivity (ohm-cm) pH = pH Cl = Chloride Content SO4 = Sulfate Content				Additional Tests H = Hydrometer C = Consolidation Test UC = Unconfined Compression EI50 = Expansion Index							

+ Soil : Strength exceeds capacity of measuring device
Rock: Sample broke along discontinuity; (Intact sample would have greater strength)

SUMMARY OF LABORATORY TEST RESULTS
Boring DPW-4W
Port of Los Angeles





DPW-5W			IDENTIFICATION TESTS					STRENGTH ESTIMATE			UU TRIAXIAL			MULTI-STAGE TRIAXIAL		DIRECT SHEAR TESTS				CORROSIVITY TESTS				COMPACTION TESTS		ADDITIONAL TESTS		
DEPTH (ft)	Sample No.	Sample Type	MC (%)	LL (%)	PL (%)	LI	SUW (pcf)	Fines (%)	Torvane (ksf)	Pocket Pen. (ksf)	Fall Cone (ksf)	Undist. (ksf)	Remold. (ksf)	e50 (%)	c (ksf)	phi (deg)	Peak c (ksf)	Peak phi (deg)	Post Peak c (ksf)	Post Peak phi (ksf)	R (o-cm)	pH	Cl (ppm)	SO4 (ppm)	Max DD (ksf)	OMC (%)		
0.5	1						47.0																					PID=23.1
1.5	2		30				58.6																					
2.0	3						46.2																					
6.6	4		35																									PID=3.1
10.6	5																											PID=8.3
11.1	6		29				44.5																					
16.6	7		59																									PID=5.1
20.5	8																											PID=22.9
21.0	9		25	74	29		35.7	90																				H
27.4	10		49																									PID=15.7
28.4	11		57																		327	7.64	10629	9900				PID=7.1
28.9	12						40.6																					
31.2	13		55																									PID=22.4
32.1	14		55																									EI50=208, PID=11.2
32.6	15						45.3																					

Sample Data L = Liner Sample T = Shelby Tube H = Hammer Sample	Identification Tests MC = Moisture Content LL = Liquid Limit PL = Plastic Limit LI = Liquidity Index	Identification Tests SUW = Submerged Unit Weight Fines = % Passing No. 200 Sieve	Strength Tests UU = Unconsolidated Undrained e50 = Strain at 50% Failure Stress c = Effective Cohesion phi = Effective Angle of Friction	Corrosivity Tests R = Resistivity (ohm-cm) pH = pH Cl = Chloride Content SO4 = Sulfate Content	Additional Tests H = Hydrometer C = Consolidation Test UC = Unconfined Compression EI50 = Expansion Index
--	---	---	---	---	--

+ Soil : Strength exceeds capacity of measuring device
Rock: Sample broke along discontinuity; (Intact sample would have greater strength)

SUMMARY OF LABORATORY TEST RESULTS
Boring DPW-5W
Port of Los Angeles





DPW-5W		IDENTIFICATION TESTS							STRENGTH ESTIMATE			UU TRIAXIAL			MULTI-STAGE TRIAXIAL		DIRECT SHEAR TESTS				CORROSIVITY TESTS				COMPACTION TESTS		ADDITIONAL TESTS
DEPTH (ft)	Sample No.	Sample Type	MC (%)	LL (%)	PL (%)	LI	SUW (pcf)	Fines (%)	Torvane (ksf)	Pocket Pen. (ksf)	Fall Cone (ksf)	Undist. (ksf)	Remold. (ksf)	e50 (%)	c (ksf)	phi (deg)	Peak c (ksf)	Peak phi (deg)	Post Peak c (ksf)	Post Peak phi (ksf)	R (ohm-cm)	pH	Cl (ppm)	SO4 (ppm)	Max DD (ksf)	OMC (%)	
34.9	16		65																		363	7.30	6743	2974			PID=4.9
35.7	117		56																								PID=2.4
38.0	17			99	30			99																			UC,H
38.5	18																										PID=9.4
39.5	19		52					34.2																			EI50=95
40.0	20							45.4																			
40.3	21																										PID=4.8
42.4	22		72																								PID=3.9
46.4	23		49					37.5																			
46.9	24							43.9																			
47.1	25		53																								PID=2.1
Sample Data		Identification Tests							Identification Tests			Strength Tests			Corrosivity Tests				Additional Tests								
L = Liner Sample T = Shelby Tube H = Hammer Sample		MC = Moisture Content LL = Liquid Limit PL = Plastic Limit LI = Liquidity Index							SUW = Submerged Unit Weight Fines = % Passing No. 200 Sieve			UU = Unconsolidated Undrained e50 = Strain at 50% Failure Stress c = Effective Cohesion phi = Effective Angle of Friction			R = Resistivity (ohm-cm) pH = pH Cl = Chloride Content SO4 = Sulfate Content				H = Hydrometer C = Consolidation Test UC = Unconfined Compression EI50 = Expansion Index								

+ Soil : Strength exceeds capacity of measuring device
Rock: Sample broke along discontinuity; (Intact sample would have greater strength)

SUMMARY OF LABORATORY TEST RESULTS
Boring DPW-5W
Port of Los Angeles





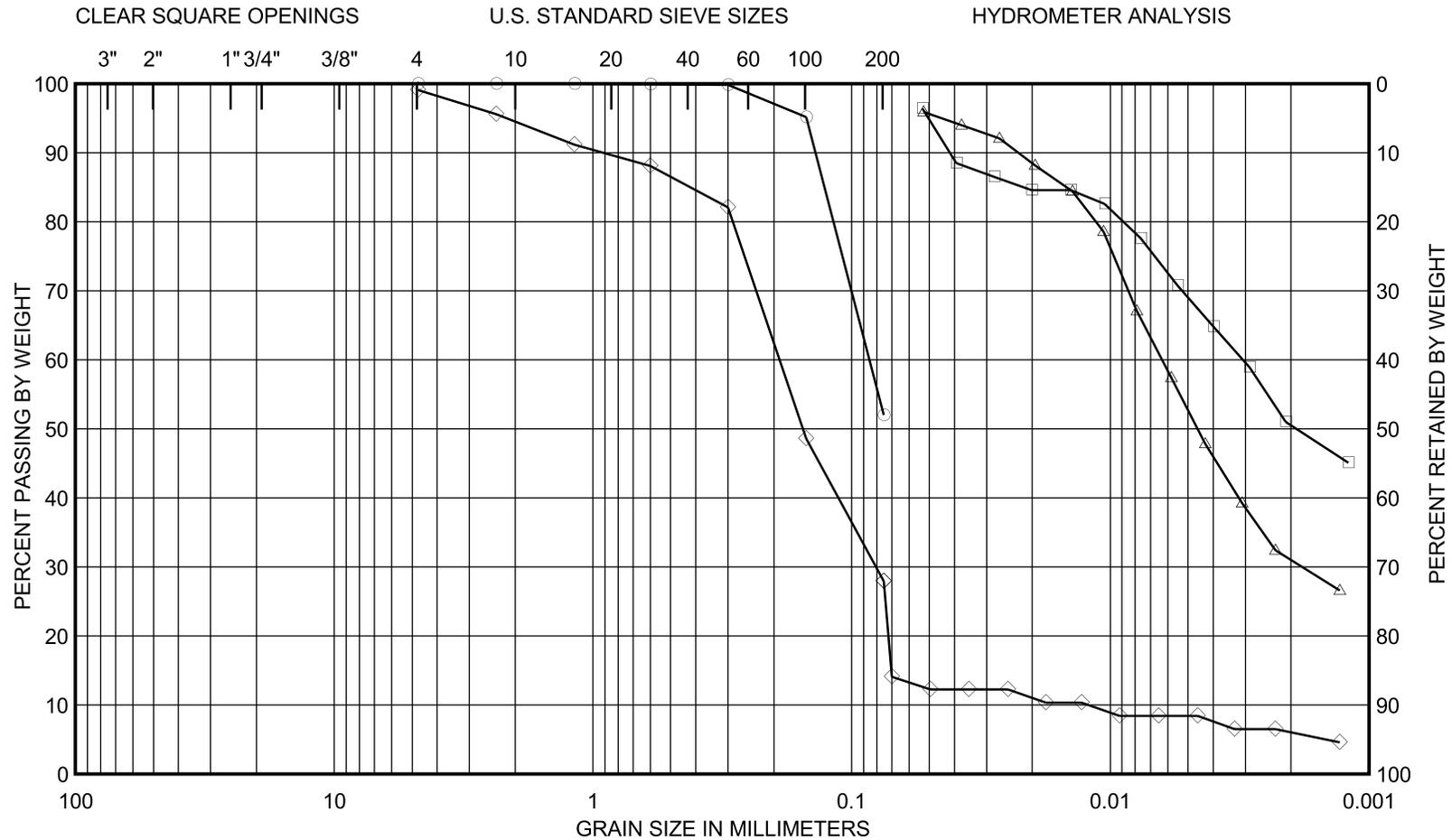
DPW-6W		IDENTIFICATION TESTS							STRENGTH ESTIMATE			UU TRIAXIAL			MULTI-STAGE TRIAXIAL		DIRECT SHEAR TESTS				CORROSIVITY TESTS				COMPACTION TESTS		ADDITIONAL TESTS	
DEPTH (ft)	Sample No.	Sample Type	MC (%)	LL (%)	PL (%)	LI	SUW (pcf)	Fines (%)	Torvane (ksf)	Pocket Pen. (ksf)	Fall Cone (ksf)	Undist. (ksf)	Remold. (ksf)	e50 (%)	c (ksf)	phi (deg)	Peak c (ksf)	Peak phi (deg)	Post Peak c (ksf)	Post Peak phi (ksf)	R (ohm-cm)	pH	Cl (ppm)	SO4 (ppm)	Max DD (ksf)	OMC (%)		
1.0	1		50																									PID=0.2
2.0	2		62																									
7.2	3		56																									PID=0.0
15.4	4		54				41.5		1.38																			PID=0.1
15.9	5								1.20																			
20.7	6		22																									
21.0	7		26																									
21.3	8		26																		545	7.71	7198	2422				PID=0.0
26.0	9						60.0																					
26.3	10		28					68																				H, PID=0.0
28.6	11		31					52																				H, PID=0.5
30.4	12						61.0																					
30.6	13		29														0.53	32										PID=0.2
33.3	14		30																									PID=0.0
34.9	15						62.9																					
Sample Data L = Liner Sample T = Shelby Tube H = Hammer Sample			Identification Tests MC = Moisture Content LL = Liquid Limit PL = Plastic Limit LI = Liquidity Index					Identification Tests SUW = Submerged Unit Weight Fines = % Passing No. 200 Sieve					Strength Tests UU = Unconsolidated Undrained e50 = Strain at 50% Failure Stress c = Effective Cohesion phi = Effective Angle of Friction					Corrosivity Tests R = Resistivity (ohm-cm) pH = pH Cl = Chloride Content SO4 = Sulfate Content					Additional Tests H = Hydrometer C = Consolidation Test UC = Unconfined Compression EI50 = Expansion Index					

+ Soil : Strength exceeds capacity of measuring device
Rock: Sample broke along discontinuity; (Intact sample would have greater strength)

SUMMARY OF LABORATORY TEST RESULTS

Boring DPW-6W Port of Los Angeles



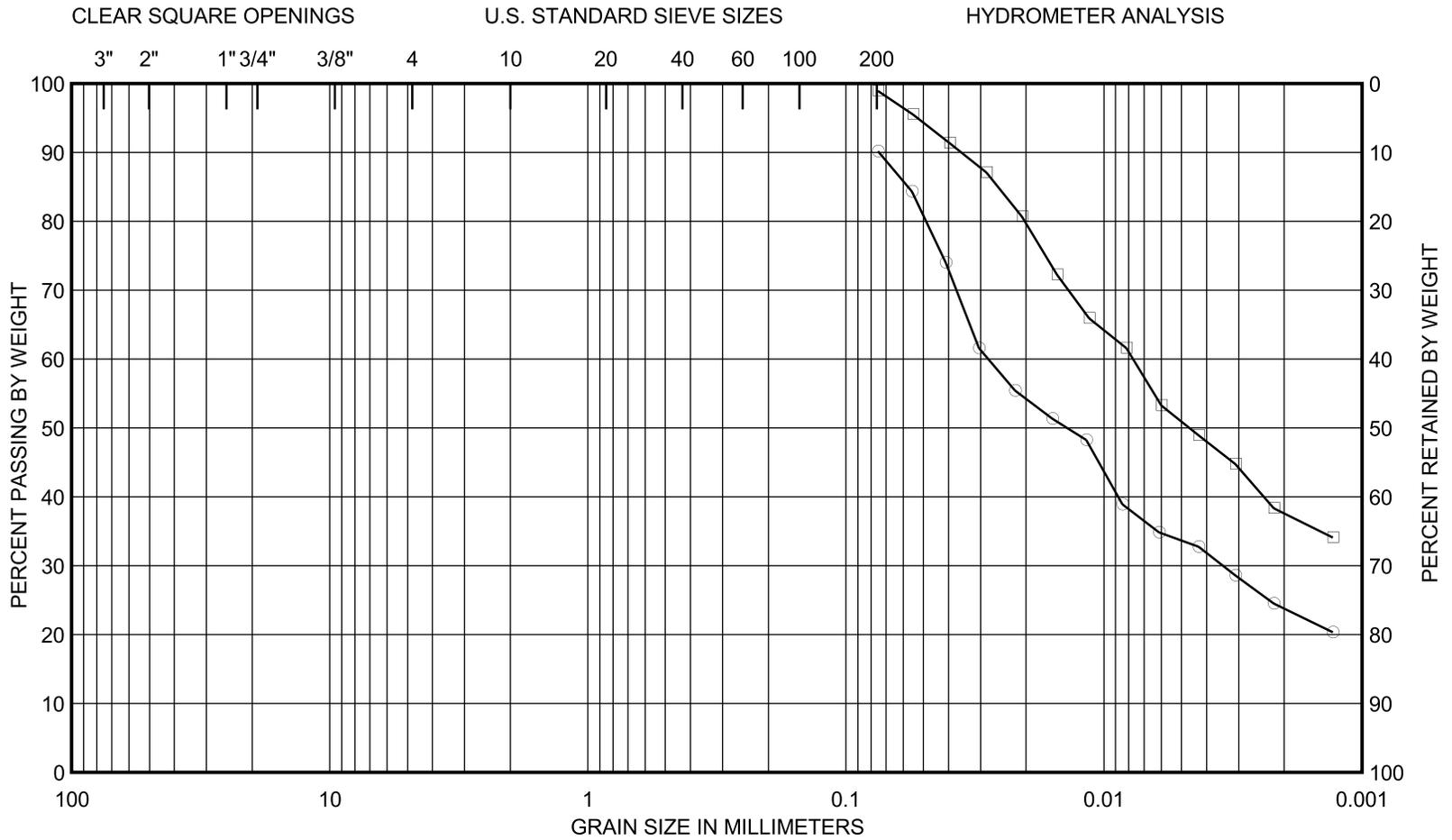


GRAVEL		SAND			SILT (nonplastic) to CLAY (plastic)
COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.	DEPTH (ft)	CURVE	CLASSIFICATION	Cc	Cu	D50 (mm)
11	25.3	○—○	Sandy SILT to Silty SAND			
31	94.0	□—□	Fat CLAY (CH)			0.0019
48	130.7	△—△	Lean CLAY (CL)			0.0046
57	106.0	◇—◇	Silty Fine SAND (SM) with a trace medium to coarse sand			0.15

GRAIN SIZE DISTRIBUTION CURVES
Boring DPW-3L
 Port of Los Angeles



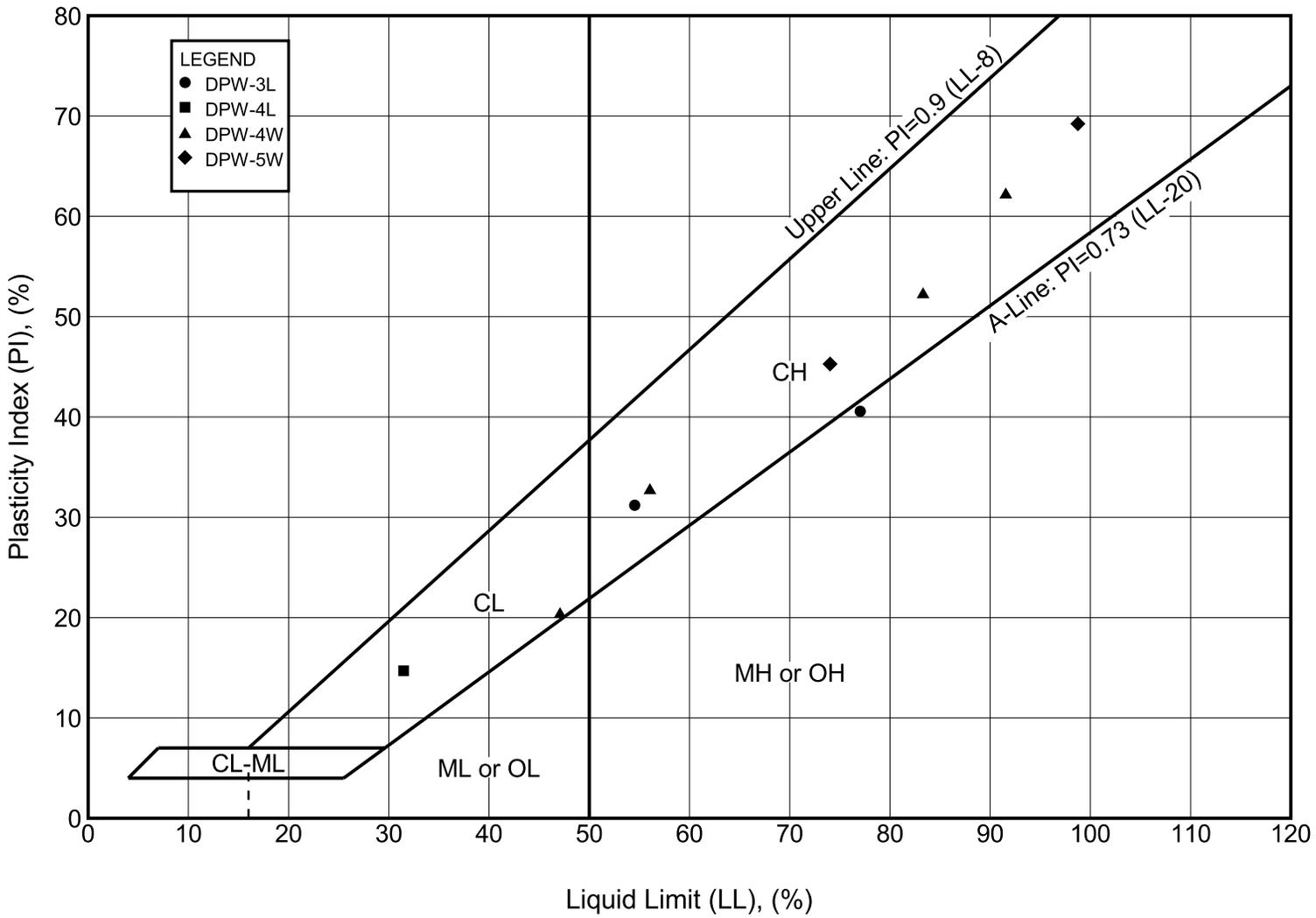


GRAVEL		SAND			SILT (nonplastic) to CLAY (plastic)
COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.	DEPTH (ft)	CURVE	CLASSIFICATION	Cc	Cu	D50 (mm)
9	21.0		Fat CLAY			0.014
17	38.0		Fat CLAY			0.0047

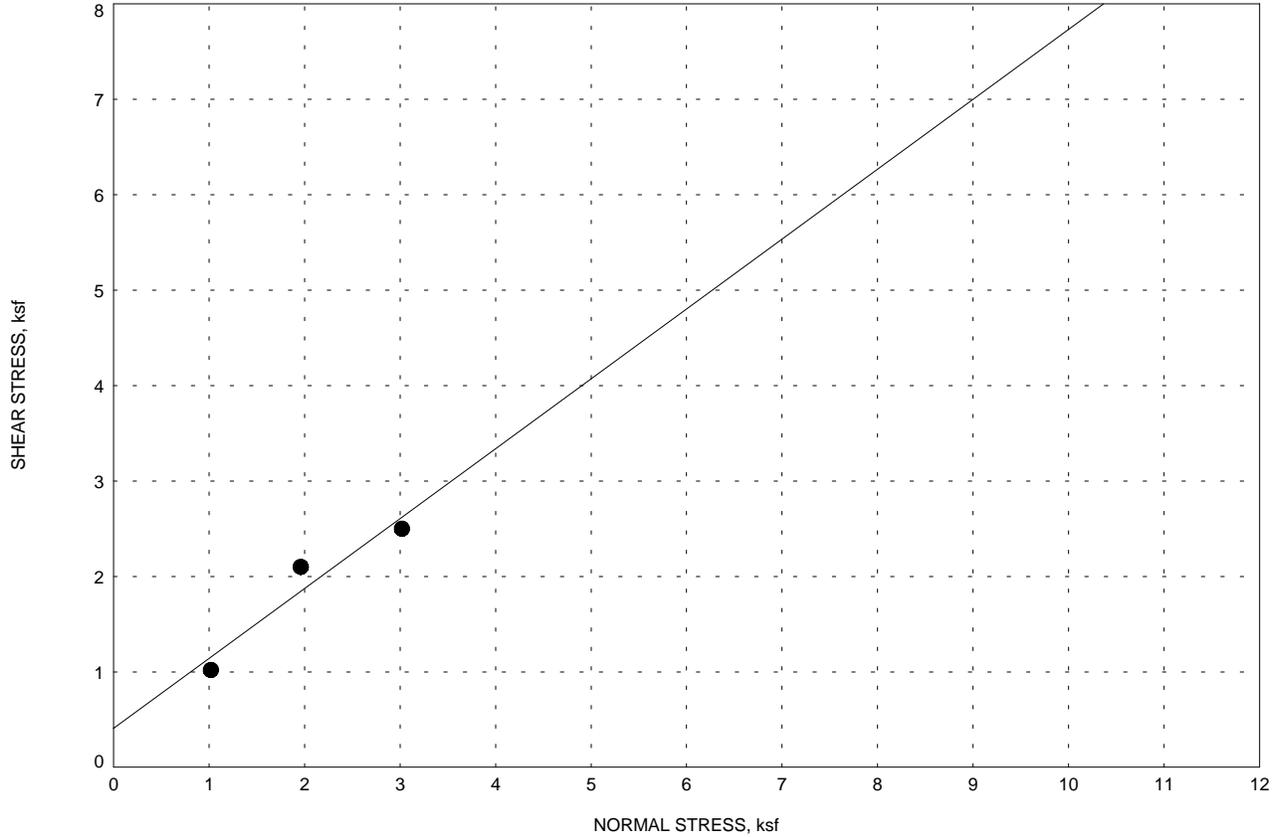
GRAIN SIZE DISTRIBUTION CURVES
Boring DPW-5W
 Port of Los Angeles





PLASTICITY CHART
Borings DPW-3L DPW-4L, DPW-4W, and DPW-5W
Port of Los Angeles

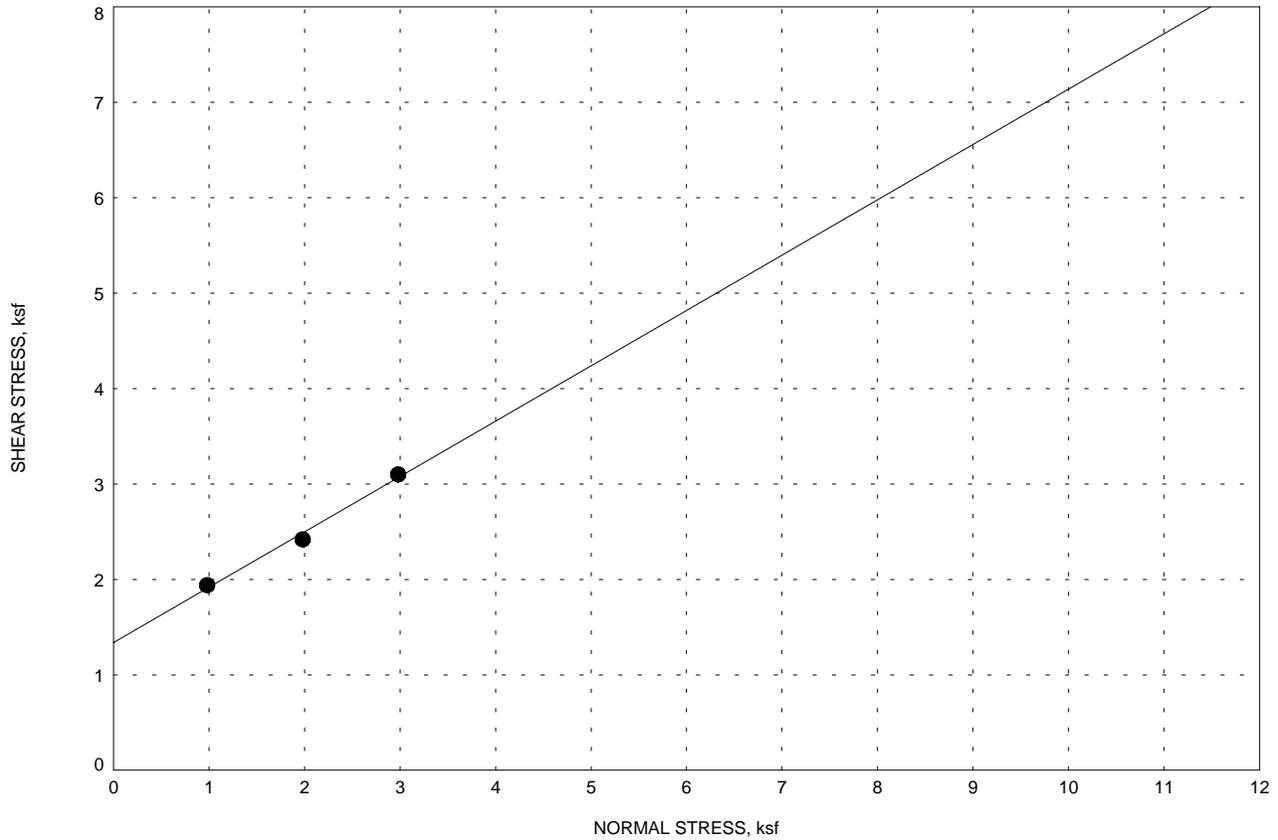




EFFECTIVE COHESION, ksf	0.41
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	36.2
LOCATION	DPW-3L
DEPTH, ft	15
MOISTURE CONTENT, %	31.7
UNIT DRY WEIGHT, pcf	91.3
PASSING NO. 200, %	--
MATERIAL DESCRIPTION	Silty fine SAND (SM)

DIRECT SHEAR TEST RESULTS
 San Pedro Force Main Relocation
 Port of Los Angeles





EFFECTIVE COHESION, ksf 1.35

EFFECTIVE ANGLE OF INTERNAL FRICTION, deg 30.0

LOCATION DPW-3L

DEPTH, ft 106

MOISTURE CONTENT, % 29.1

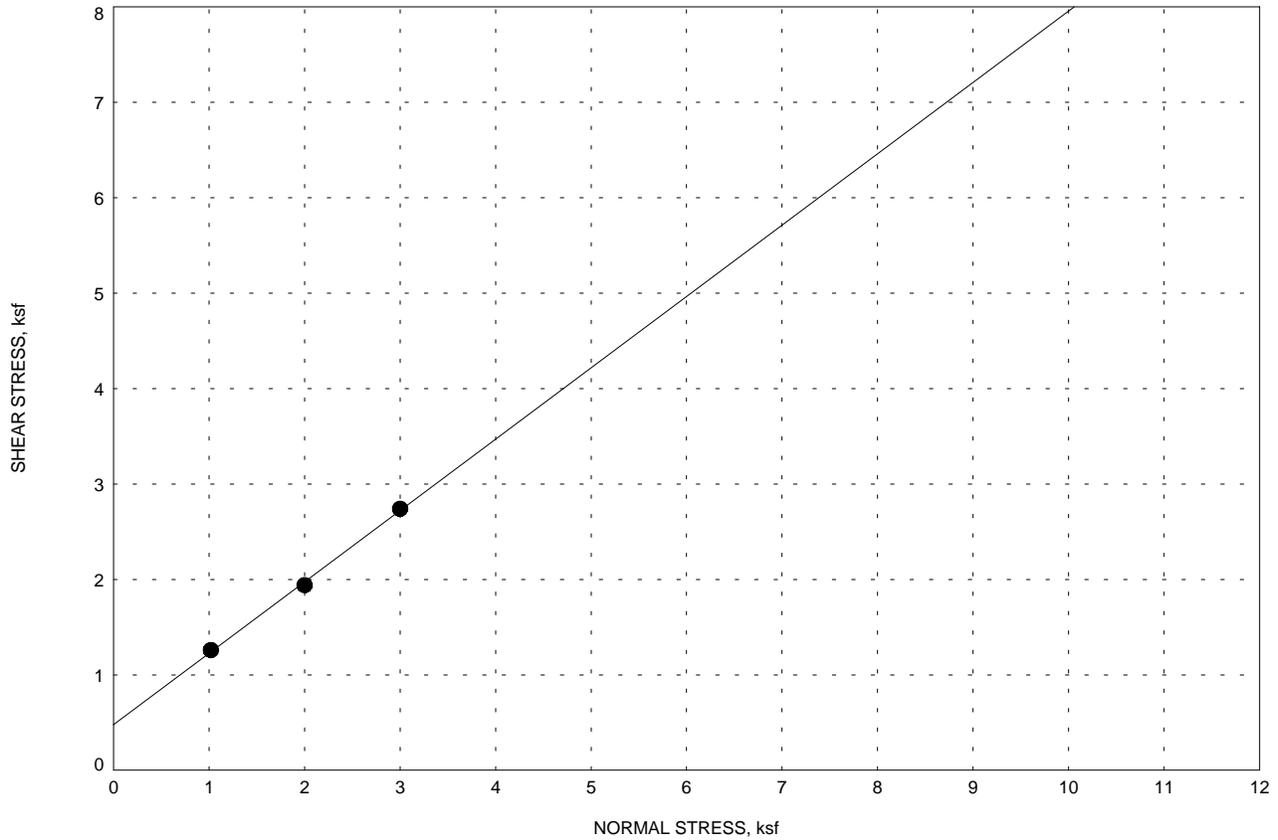
UNIT DRY WEIGHT, pcf 93.2

PASSING NO. 200, % 19

MATERIAL DESCRIPTION SILTY CLAY (CL-ML)

DIRECT SHEAR TEST RESULTS
 San Pedro Force Main Relocation
 Port of Los Angeles





EFFECTIVE COHESION, ksf 0.48

EFFECTIVE ANGLE OF INTERNAL FRICTION, deg 36.8

LOCATION DPW-4L

DEPTH, ft 26.5

MOISTURE CONTENT, % 28.5

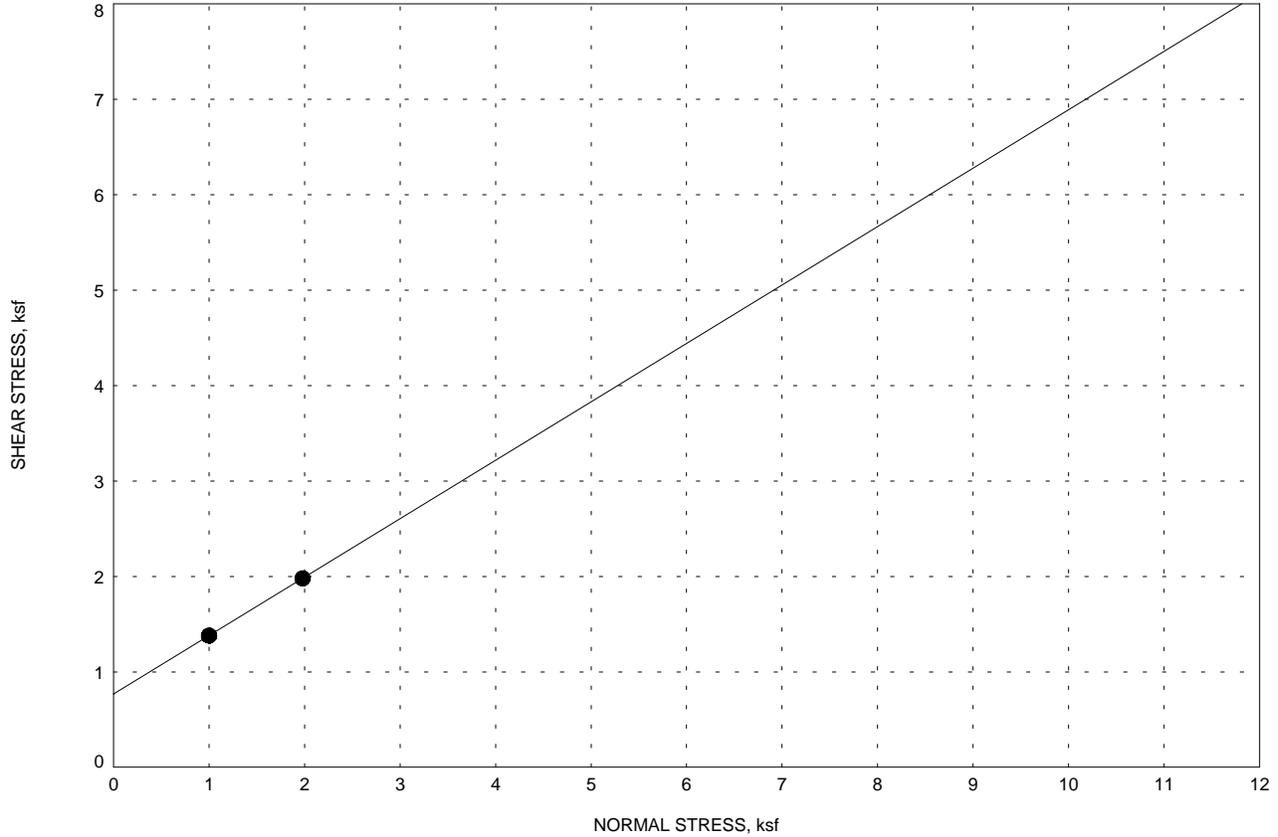
UNIT DRY WEIGHT, pcf 95.6

PASSING NO. 200, % --

MATERIAL DESCRIPTION Silty SAND (SM)

DIRECT SHEAR TEST RESULTS
 San Pedro Force Main Relocation
 Port of Los Angeles

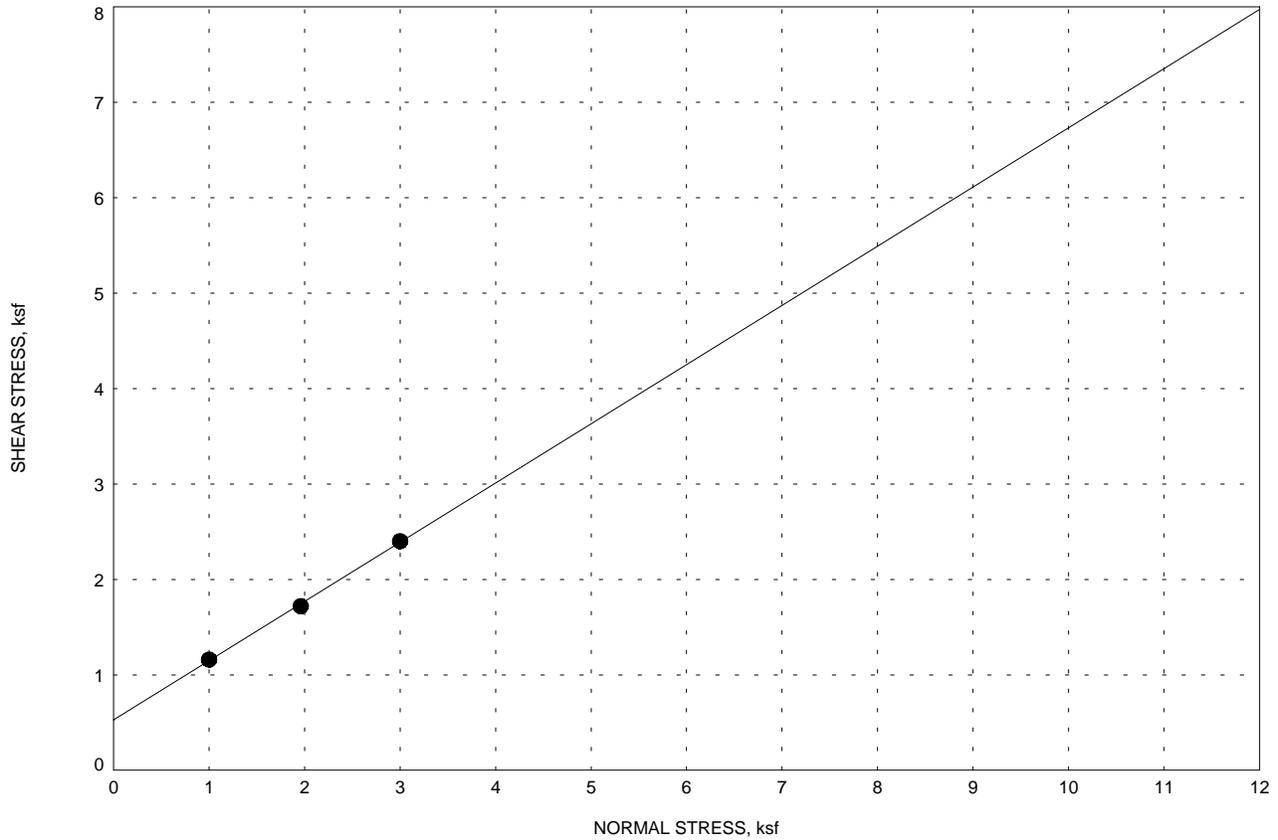




EFFECTIVE COHESION, ksf	0.77
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	31.5
LOCATION	DPW-4L
DEPTH, ft	51.5
MOISTURE CONTENT, %	24.8
UNIT DRY WEIGHT, pcf	92.2
PASSING NO. 200, %	--
MATERIAL DESCRIPTION	Clayey SAND (SC)

DIRECT SHEAR TEST RESULTS
 San Pedro Force Main Relocation
 Port of Los Angeles



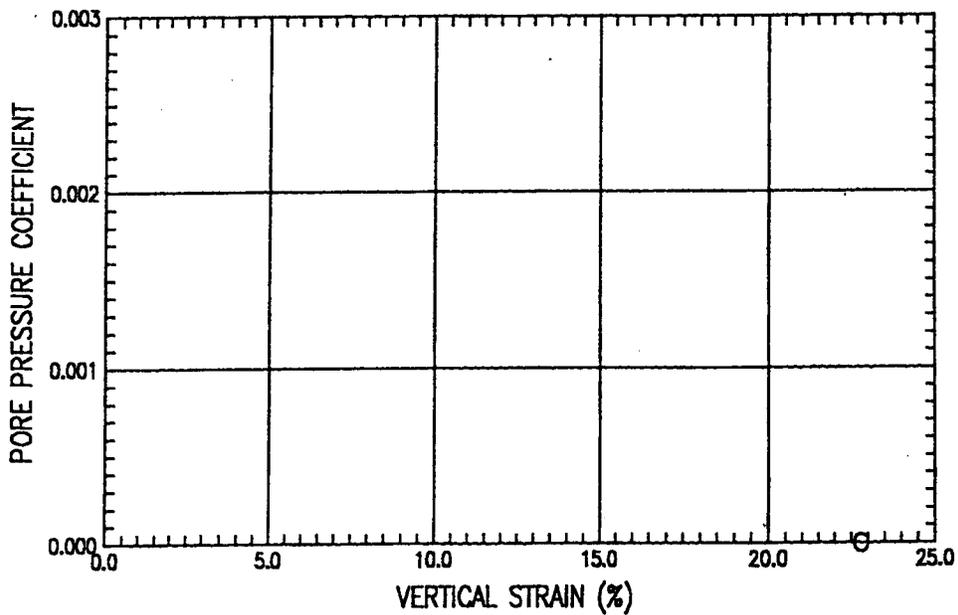
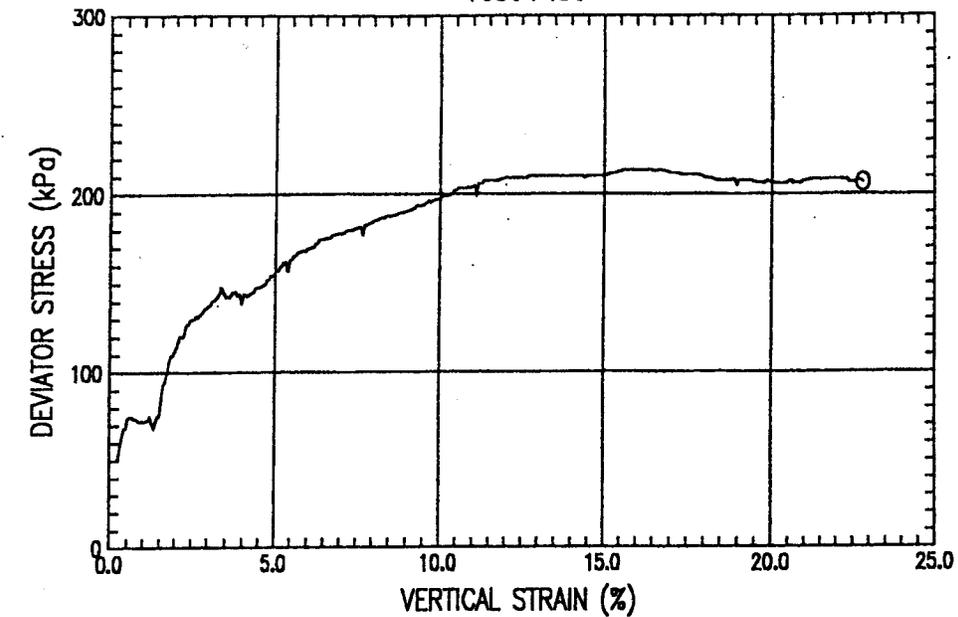


EFFECTIVE COHESION, ksf	0.53
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	31.8
LOCATION	DPW-6W
DEPTH, ft	30.6
MOISTURE CONTENT, %	30.3
UNIT DRY WEIGHT, pcf	100.2
PASSING NO. 200, %	--
MATERIAL DESCRIPTION	Silty SAND (SM)

DIRECT SHEAR TEST RESULTS
 San Pedro Force Main Relocation
 Port of Los Angeles



Test Plot



Fugro McClelland
 Project Name : Pola
 Project No : 00-32-3361 Boring No : DPL-3L Sample No : 37
 Test Date : 1/23 Test No : t3361a Depth : 99.5-100
 Description : Dark olive gray CLAY
 Remarks :

UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Project : Pola
Project No. : 00-32-3361
Boring No. : DPL-3L
Sample No. : 37
Sample Type : Undist
Soil Description : Dark olive gray CLAY
Remarks :

Location : California
Test No. : t3361a
Test Date : 1/23
Depth : 99.5-100
Elevation : N/A

Tested by : AV
Checked by : P.R

Liquid Limit : 50
WATER CONTENT

Plastic Limit : 25

Specific Gravity : 2.7

	BEFORE TEST	AFTER TEST
CONTAINER NO.	U	
WT CONTAINER + WET SOIL (gm)	101.40	101.40
WT CONTAINER + DRY SOIL (gm)	80.60	80.60
WT WATER (gm)	20.80	20.80
WT CONTAINER (gm)	33.10	33.10
WT DRY SOIL (gm)	47.50	47.50
WATER CONTENT (%)	43.79	43.79

	BEFORE TEST	AFTER TEST
WATER CONTENT (%)	43.79	43.79
VOID RATIO	0.00	0.00
WET DENSITY (gm/mm ³)	0.00	0.00
DRY DENSITY (gm/mm ³)	0.00	0.00
DEGREE OF SATURATION (%)	0.00	0.00

Maximum Shear Stress = 106.75 (kPa) at a Vertical Strain of 15.60 %

UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Project : Pola Location : California
Project No. : 00-32-3361 Test No. : t3361a
Boring No. : DPL-3L Test Date : 1/23
Sample No. : 37 Depth : 99.5-100
Sample Type : Undist Elevation : N/A
Soil Description : Dark olive gray CLAY
Remarks :

Tested by : AV
Checked by : P.R

Height : 127.00 (mm) Piston Diameter : 0.00 (mm) Filter Correction : 0.00
(kPa)
Area : 2918.64 (mm²) Piston Friction : 0.0000 (kN) Membrane Correction : 0.0000
(kN/mm)
Volume : 370667 (mm³) Piston Weight : 0.00 (gm) Area Correction : None
Liquid Limit : 50 Plastic Limit : 25 Specific Gravity : 2.7

INITIAL

Height : 127.00 (mm) Dry Density : 0.0000 (gm/mm³)
Area : 2918.64 (mm²) Moisture : 43.79 %
Void Ratio: 0.00
Saturation: 0.00 %

Time : 0.00 (min)

INITIALIZATION

dH : 0.00 (mm) Height : 127.00 (mm) Dry Density : 0.0000 (gm/mm³) Total Vert.
Stress : 82.74 (kPa) Area : 2918.64 (mm²) Moisture : 0.00 % Total Hori.
dV : 0 (mm³)
Stress : 82.74 (kPa) Void Ratio: 0.00 Pore Pressure
: 0.00 (kPa) Saturation: 0.00 % Effect.Vert.
Stress: 82.74 (kPa) Effect.Hori.
Time : 0.00 (min)
Stress: 82.74 (kPa)

END OF CONSOLIDATION - A

dH : 0.00 (mm) Height : 127.00 (mm) Dry Density : 0.0000 (gm/mm³) Total Vert.
Stress : 82.74 (kPa) Area : 2918.64 (mm²) Moisture : 0.00 % Total Hori.
dV : 0 (mm³)
Stress : 82.74 (kPa) Void Ratio: 0.00 Pore Pressure
: 0.00 (kPa) Saturation: 0.00 % Effect.Vert.
Stress: 82.74 (kPa) Effect.Hori.
Time : 0.00 (min)
Stress: 82.74 (kPa)

END OF SATURATION

dH : 0.00 (mm) Height : 127.00 (mm) Dry Density : 0.0000 (gm/mm³) Total Vert.
Stress : 82.74 (kPa) Area : 2918.64 (mm²) Moisture : 0.00 % Total Hori.
dV : 0 (mm³)
Stress : 82.74 (kPa) Void Ratio: 0.00 Pore Pressure
dVCorr : 0 (mm³)
: 0.00 (kPa) Saturation: 0.00 % Effect.Vert.
Stress: 82.74 (kPa) Effect.Hori.
Time : 0.00 (min)
Stress: 82.74 (kPa)

END OF CONSOLIDATION - B

dH : 0.31 (mm) Height : 126.69 (mm) Dry Density : 0.0000 (gm/mm³) Total Vert.
Stress : 133.12 (kPa) Area : 2925.78 (mm²) Moisture : 0.00 % Total Hori.
dV : 0 (mm³)
Stress : 82.74 (kPa) Void Ratio: 0.00 Pore Pressure
: -6.17 (kPa) Saturation: 0.00 % Effect.Vert.
Stress: 139.30 (kPa) Effect.Hori.
Time : 0.00 (min)
Stress: 88.91 (kPa)

FAILURE DURING SHEAR

dH : 19.81 (mm) Height : 107.19 (mm) Dry Density : 0.0000 (gm/mm³) Total Vert.
Stress : 296.24 (kPa) Area : 2918.64 (mm²) Moisture : 0.00 % Total Hori.
dV : 0 (mm³)
Stress : 82.74 (kPa) Void Ratio: 0.00 Pore Pressure
Strain : 15.60 %

Time : 11.90 (min)
Stress: 88.91 (kPa)

Effect.Hori.

END OF TEST

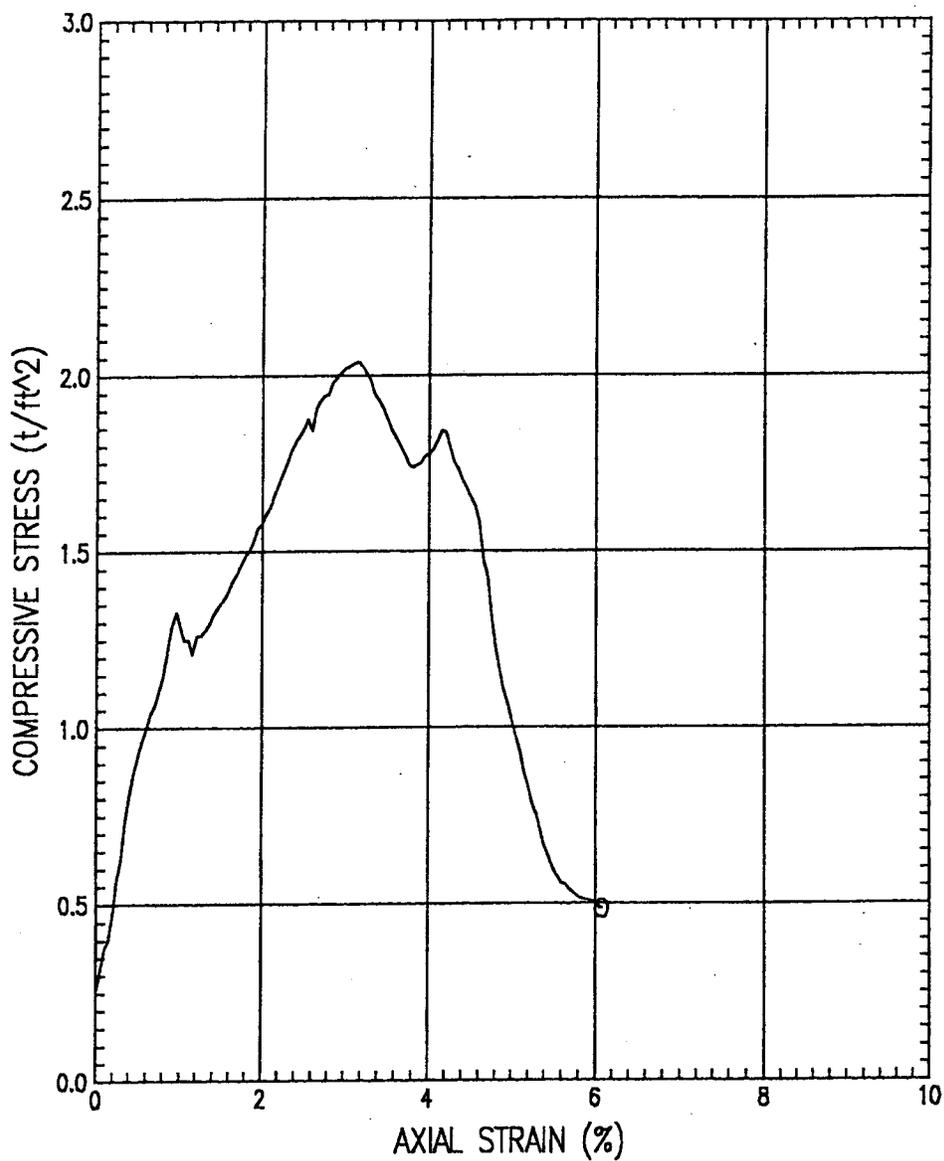
dH : -2.02 (mm)
Stress : 25.81 (kPa)
dV : 0 (mm³)
Stress : 82.74 (kPa)
Strain : -1.59 %
: -6.17 (kPa)

Height : 129.02 (mm) Dry Density : 0.0000 (gm/mm³)
Area : 2918.64 (mm²) Moisture : 0.00 %
Void Ratio: 0.00
Saturation: 0.00 %

Total Vert.
Total Hori.
Pore Pressure
Effect.Vert.
Effect.Hori.

Stress: 31.98 (kPa)
Time : 17.40 (min)
Stress: 88.91 (kPa)

UNCONFINED COMPRESSION



Fugro McClelland
 Project Name : Pola
 Project No : 00-32-3361 Boring No : DPW-5w Sample No : 17
 Test Date : 1/10/01 Test No : t3361b Depth : 38.0'
 Description : Dark olive gray CLAY
 Remarks : U.C

UNCONFINED COMPRESSION TEST

Project : Pola
Project No. : 00-32-3361
Boring No. : DPW-5w
Sample No. : 17
Sample Type : Undis
Soil Description : Dark olive gray CLAY
Remarks : U.C

Location : California
Test No. : t3361b
Test Date : 1/10/01
Depth : 38.0'
Elevation : N/A

Tested by : AV
Checked by : P.R

Height : 6.500 (in)
Area : 6.16 (in²)
(lb/ft³)
Volume : 40.02 (in³)
(lb/ft³)

Quality of Sample : FAIR
Piston Friction : 0.00 (lb)
Piston Weight : 0.00 (gm)

Wet Unit Weight : 0.00
Dry Unit Weight : 0.00

SAMPLE INFORMATION

	SAMPLE #1	SAMPLE #2	SAMPLE #3
CONTAINER NO.	U		
WT CONTAINER + WET SOIL (gm)	154.70	0.00	0.00
WT CONTAINER + DRY SOIL (gm)	117.10	0.00	0.00
WT WATER (gm)	37.60	0.00	0.00
WT CONTAINER (gm)	31.90	0.00	0.00
WT DRY SOIL (gm)	85.20	0.00	0.00
WATER CONTENT (%)	44.13	0.00	0.00

Expansion Index

test performed in accordance to ASTM D4829/UBC standard 29-2



JOB NO: 00-32-3361	JOB NAME: DPW Force Main Crossing	DATE: 2/01/01
CLIENT: POLA		PAGE 1 OF 1

BORING NO: DPW-5W	SAMPLE NO: 14	DEPTH (FT): 32.1
MATERIAL DESCRIPTION: Olive Gray CLAY		

Sample Type	<input type="checkbox"/> Undisturbed	<input checked="" type="checkbox"/> Remold	HEIGHT:	DIAMETER:
		BLOWS:		
		LAYERS:		

% Saturation before test

75

Moisture	BEFORE	AFTER
TARE NO	M	M
WET WT.	645.6	704.6
DRY WT.	570	570
H2O WT.	75.6	134.6
TARE WT	287.1	287.1
SOIL WT.	282.9	282.9
% H2O	27	48

Density	BEFORE	AFTER
Ring NO.		
Ring WT.	287.1	287.1
w/ soil	645.6	704.6
Wet soil	358.5	417.5
Dry soil	282.9	282.9
% H2O	27	48
WET DEN	109	127
DRY DEN	86	86

E₁₅₀ with 40 to 60 % SATURATION

208

METER NO.	pcf	DIAL READING	EXPAN %
DATE	TIME	10 ⁻⁴	
02/01/2001	17:00	0	
02/02/2001	9:10	0.167	
02/02/2001	10:15	0.168	
02/02/2001	12:45	0.169	
02/02/2001	2:25	0.169	
E ₁ MEASURED		=	168

REMARKS:

MBALLMER, 9/99

Expansion Index

test performed in accordance to ASTM D4829/UBC standard 29-2



JOB NO: 00-32-3361	JOB NAME: DPW Force Main Crossing	DATE: 1/15/01
CLIENT: POLA		PAGE 1 OF 1

BORING NO: DPW-5W	SAMPLE NO: 19	DEPTH (FT): 39.5
MATERIAL DESCRIPTION: Olive Gray CLAY		

Sample Type	<input checked="" type="checkbox"/> Undisturbed	<input type="checkbox"/> Remold	HEIGHT:	DIAMETER:
		BLOWS:		
		LAYERS:		

% Saturation before test

43

Moisture	BEFORE	AFTER
TARE NO		
WET WT.	600.1	709.4
DRY WT.	556.6	556.6
H2O WT.	43.5	152.8
TARE WT	275.8	275.8
SOIL WT.	280.8	280.8
% H2O	15	54

Density	BEFORE	AFTER
Ring NO.		
Ring WT.	275.8	275.8
w/ soil	600.1	709.4
Wet soil	324.3	433.6
Dry soil	280.8	280.8
% H2O	15.5	54
WET DEN	98	132
DRY DEN	85	85

E_{l50} with 40 to 60 % SATURATION

95

METER NO.	pcf	DIAL READING	EXPAN %
DATE	TIME	10 ⁻⁴	
01/15/2001	13:30	0	
01/15/2001	8:00	0.102	
01/16/2001	9:00	0.102	
E _l MEASURED		=	102

REMARKS:

MBALLMER, 9/99

**APPENDIX C
TOXSCAN ANALYTICAL REPORT**

Location	Drill Dates		ToxScan Laboratory Number	Date Received
	Start	End		
Land Borings				
DPW-3L	11/07/2000	11/09/2000	T-19046	11/15/2000
DPW-4L	11/14/2000	11/15/2000	T-19046	11/17/2000
Overwater Borings				
DPW-4W	12/01/2000	12/01/2000	T-19081	12/05/2000
DPW-5W	12/05/2000	12/05/2000	T-19090	12/07/2000
DPW-6W	11/30/2000	11/30/2000	T-19081	12/05/2000

ENVIRONMENTAL TESTING SUMMARY
 San Pedro Force Main Crossing Relocation
 Port of Los Angeles



42 Hangar Way • Watsonville, CA 95076-2404 • (831) 724-4522 • FAX (831) 724-3188

December 12, 2000

ToxScan Number: T-19046

Fugro West, Inc.
5855 Olivas Park Drive
Ventura, CA 93003-7672

Attn: Philip Robins

Project Name: Sewer Line Crossing
Project Number: 00 32 3361
Date Sampled: November 07, 2000 - November 15, 2000
Date Received: November 15, 2000 - November 17, 2000
Matrix: Soil

Please find the enclosed test results for the parameters requested for analyses. The samples were analyzed within holding time using the following methods:

Organochlorine Pesticides & PCBs by EPA Method 8081
Semivolatiles by EPA Method 8270C
Total Arsenic by hydride AA by EPA Method 7061
Total Mercury by Cold Vapor AA by EPA Method 7471
Total Metals (Sb,Ba,Be,Cd,Cr,Co,Cu,Pb,Mo,Ni,Ag,Tl,V,Zn) by EPA Method 6020
Total Recoverable Petroleum Hydrocarbons by EPA Method 1664
Total Selenium by hydride AA by EPA Method 7741
Volatile Organic Compounds by EPA Method 8260, conducted by McCampbell Analytical

The samples were received intact and were handled with the proper chain-of-custody procedures. Appropriate QA/QC guidelines were employed during the analyses on a minimum of a 5% basis. QC results were within limits and are reported with or following the data for each analysis.

When analytes are added to samples as matrix spikes, they have the ability to react with components in the sample to form insoluble salts. Barium spikes are prone to reacting with the chloride in the samples forming insoluble barium chloride. The EPA digestion protocol specified for this project is a "strong acid" digestion, which is unable to re-dissolve the precipitated metallic salts. The lower recoveries for barium in the QC results for this batch are attributed to the formation of these insoluble salts. These salts are considered a matrix interference affect, not an analytical or instrumentation deficiency.

This cover letter is an integral part of the report.



42 Hangar Way • Watsonville, CA 95076-2404 • (831) 724-4522 • FAX (831) 724-3188

December 12, 2000

ToxScan Number: T-19046

Fugro West, Inc.
5855 Olivas Park Drive
Ventura, CA 93003-7672

Attn: Philip Robins

If you have any questions or require any additional information, please feel free to call.

Sincerely,

A handwritten signature in black ink that reads "Philip D. Carpenter". The signature is written in a cursive style with a prominent initial "P".

Philip D. Carpenter, Ph.D.
President

Enclosures

This cover letter is an integral part of the report.

Client: Fugro West, Inc.
Method: EPA 8081
Date Extracted: November 20, 2000
Date Analyzed: November 23, 2000
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19046

Client Sample ID: 2@6.5 DPW-3L
ToxScan Lab ID: 19046-01

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
Aldrin	ND	8.0
alpha-BHC	ND	8.0
beta-BHC	ND	8.0
delta-BHC	ND	8.0
gamma-BHC	ND	8.0
alpha-Chlordane	ND	8.0
gamma-Chlordane	ND	8.0
4,4'-DDD	ND	8.0
4,4'-DDE	ND	8.0
4,4'-DDT	ND	8.0
Dieldrin	ND	8.0
Endosulfan I	ND	16
Endosulfan II	ND	16
Endosulfan Sulfate	ND	16
Endrin	ND	16
Endrin Aldehyde	ND	16
Endrin Ketone	ND	16
Heptachlor	ND	8.0
Heptachlor Epoxide	ND	8.0
Methoxychlor	ND	80
Toxaphene	ND	160
Aroclor-1016	ND	160
Aroclor-1221	ND	160
Aroclor-1232	ND	160
Aroclor-1242	ND	160
Aroclor-1248	ND	160
Aroclor-1254	ND	160
Aroclor-1260	ND	160
Total PCB'S	ND	160

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8081
Date Extracted: November 20, 2000
Date Analyzed: November 23, 2000
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19046

Client Sample ID: 8@15.5 DPW-3L
ToxScan Lab ID: 19046-02

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
Aldrin	ND	8.0
alpha-BHC	ND	8.0
beta-BHC	ND	8.0
delta-BHC	ND	8.0
gamma-BHC	ND	8.0
alpha-Chlordane	ND	8.0
gamma-Chlordane	ND	8.0
4,4'-DDD	ND	8.0
4,4'-DDE	ND	8.0
4,4'-DDT	ND	8.0
Dieldrin	ND	8.0
Endosulfan I	ND	16
Endosulfan II	ND	16
Endosulfan Sulfate	ND	16
Endrin	ND	16
Endrin Aldehyde	ND	16
Endrin Ketone	ND	16
Heptachlor	ND	8.0
Heptachlor Epoxide	ND	8.0
Methoxychlor	ND	80
Toxaphene	ND	160
Aroclor-1016	ND	160
Aroclor-1221	ND	160
Aroclor-1232	ND	160
Aroclor-1242	ND	160
Aroclor-1248	ND	160
Aroclor-1254	ND	160
Aroclor-1260	ND	160
Total PCB'S	ND	160

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8081
Date Extracted: November 20, 2000
Date Analyzed: November 23, 2000
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19046

Client Sample ID: 32@94.5 DPW-3L
ToxScan Lab ID: 19046-04

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
Aldrin	ND	8.0
alpha-BHC	ND	8.0
beta-BHC	ND	8.0
delta-BHC	ND	8.0
gamma-BHC	ND	8.0
alpha-Chlordane	ND	8.0
gamma-Chlordane	ND	8.0
4,4'-DDD	ND	8.0
4,4'-DDE	ND	8.0
4,4'-DDT	ND	8.0
Dieldrin	ND	8.0
Endosulfan I	ND	16
Endosulfan II	ND	16
Endosulfan Sulfate	ND	16
Endrin	ND	16
Endrin Aldehyde	ND	16
Endrin Ketone	ND	16
Heptachlor	ND	8.0
Heptachlor Epoxide	ND	8.0
Methoxychlor	ND	80
Toxaphene	ND	160
Aroclor-1016	ND	160
Aroclor-1221	ND	160
Aroclor-1232	ND	160
Aroclor-1242	ND	160
Aroclor-1248	ND	160
Aroclor-1254	ND	160
Aroclor-1260	ND	160
Total PCB'S	ND	160

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8081
Date Extracted: November 20, 2000
Date Analyzed: November 28, 2000
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19046

Client Sample ID: 3@3.0' DPW-4L
ToxScan Lab ID: 19046-11

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
Aldrin	ND	8.0
alpha-BHC	ND	8.0
beta-BHC	ND	8.0
delta-BHC	ND	8.0
gamma-BHC	ND	8.0
alpha-Chlordane	ND	8.0
gamma-Chlordane	ND	8.0
4,4'-DDD	ND	8.0
4,4'-DDE	ND	8.0
4,4'-DDT	ND	8.0
Dieldrin	ND	8.0
Endosulfan I	ND	16
Endosulfan II	ND	16
Endosulfan Sulfate	ND	16
Endrin	ND	16
Endrin Aldehyde	ND	16
Endrin Ketone	ND	16
Heptachlor	ND	8.0
Heptachlor Epoxide	ND	8.0
Methoxychlor	ND	80
Toxaphene	ND	160
Aroclor-1016	ND	160
Aroclor-1221	ND	160
Aroclor-1232	ND	160
Aroclor-1242	ND	160
Aroclor-1248	ND	160
Aroclor-1254	ND	160
Aroclor-1260	ND	160
Total PCB'S	ND	160

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8081
Date Extracted: November 20, 2000
Date Analyzed: November 28, 2000
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19046

Client Sample ID: 31@95.5' DPW-4L
ToxScan Lab ID: 19046-16

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
Aldrin	ND	8.0
alpha-BHC	ND	8.0
beta-BHC	ND	8.0
delta-BHC	ND	8.0
gamma-BHC	ND	8.0
alpha-Chlordane	ND	8.0
gamma-Chlordane	ND	8.0
4,4'-DDD	ND	8.0
4,4'-DDE	ND	8.0
4,4'-DDT	ND	8.0
Dieldrin	ND	8.0
Endosulfan I	ND	16
Endosulfan II	ND	16
Endosulfan Sulfate	ND	16
Endrin	ND	16
Endrin Aldehyde	ND	16
Endrin Ketone	ND	16
Heptachlor	ND	8.0
Heptachlor Epoxide	ND	8.0
Methoxychlor	ND	80
Toxaphene	ND	160
Aroclor-1016	ND	160
Aroclor-1221	ND	160
Aroclor-1232	ND	160
Aroclor-1242	ND	160
Aroclor-1248	ND	160
Aroclor-1254	ND	160
Aroclor-1260	ND	160
Total PCB'S	ND	160

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8270C
Date Extracted: 11/21/00
Date Analyzed: 11/22/00
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19046

Client Sample ID: 32@94.5 DPW-3L

ToxScan Lab ID: 19046-04

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
Phenol	ND	200
Bis(2-chloroethyl)ether	ND	1000
2-Chlorophenol	ND	200
1,3-Dichlorobenzene	ND	100
1,4-Dichlorobenzene	ND	100
Benzyl alcohol	ND	1000
1,2-Dichlorobenzene	ND	100
2-Methylphenol	ND	200
Bis(2-chloroisopropyl)ether	ND	200
Hexachloroethane	ND	200
N-Nitrosodipropylamine	ND	1000
4-Methylphenol	ND	200
Nitrobenzene	ND	500
Isophorone	ND	500
2-Nitrophenol	ND	200
2,4-Dimethylphenol	ND	200
Bis(2-chloroethoxy)methane	ND	1000
2,4-Dichlorophenol	ND	100
Benzoic acid	ND	1000
1,2,4-Trichlorobenzene	ND	100
Naphthalene	ND	100
4-Chloroaniline	ND	500
Hexachlorobutadiene	ND	200
4-Chloro-3-methylphenol	ND	100
2-Methylnaphthalene	ND	100
Hexachlorocyclopentadiene	ND	200
2,4,6-Trichlorophenol	ND	100
2,4,5-Trichlorophenol	ND	100
2-Chloronaphthalene	ND	100
2-Nitroaniline	ND	200
Acenaphthylene	ND	100
Dimethylphthalate	ND	100
2,6-Dinitrotoluene	ND	100
Acenaphthene	ND	100

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8270C
Date Extracted: 11/21/00
Date Analyzed: 11/22/00
Matrix: Soil
Units: ug/Kg (ppb) as received

ToxScan Number: T-19046

Client Sample ID: 32@94.5 DPW-3L

ToxScan Lab ID: 19046-04

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
3-Nitroaniline	ND	200
2,4-Dinitrophenol	ND	500
Dibenzofuran	ND	100
2,4-Dinitrotoluene	ND	100
4-Nitrophenol	ND	500
Fluorene	ND	100
4-Chlorophenyl phenyl ether	ND	100
Diethylphthalate	ND	100
4-Nitroaniline	ND	200
4,6-Dinitro-2-methylphenol	ND	500
N-Nitrosodiphenylamine	ND	200
Azobenzene	ND	100
4-Bromophenyl phenyl ether	ND	100
Hexachlorobenzene	ND	100
Pentachlorophenol	ND	500
Phenanthrene	ND	100
Anthracene	ND	100
Carbazole	ND	200
Di-n-butylphthalate	ND	100
Fluoranthene	ND	100
Pyrene	ND	100
Butyl benzyl phthalate	ND	100
Benzo(a)anthracene	ND	100
Chrysene	ND	100
3,3'-Dichlorobenzidine	ND	200
Bis(2-ethylhexyl)phthalate	ND	100
Di-n-octylphthalate	ND	100
Benzo(b)fluoranthene	ND	100
Benzo(k)fluoranthene	ND	100
Benzo(a)pyrene	ND	100
Indeno(1,2,3-cd)pyrene	ND	100
Dibenzo(a,h)anthracene	ND	100
Benzo(g,h,i)perylene	ND	100

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8270C
Date Extracted: 11/21/00
Date Analyzed: 11/22/00
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19046

Client Sample ID: 31@95.5 DPW-4L

ToxScan Lab ID: 19046-16

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
Phenol	ND	200
Bis(2-chloroethyl)ether	ND	1000
2-Chlorophenol	ND	200
1,3-Dichlorobenzene	ND	100
1,4-Dichlorobenzene	ND	100
Benzyl alcohol	ND	1000
1,2-Dichlorobenzene	ND	100
2-Methylphenol	ND	200
Bis(2-chloroisopropyl)ether	ND	200
Hexachloroethane	ND	200
N-Nitrosodipropylamine	ND	1000
4-Methylphenol	ND	200
Nitrobenzene	ND	500
Isophorone	ND	500
2-Nitrophenol	ND	200
2,4-Dimethylphenol	ND	200
Bis(2-chloroethoxy)methane	ND	1000
2,4-Dichlorophenol	ND	100
Benzoic acid	ND	1000
1,2,4-Trichlorobenzene	ND	100
Naphthalene	ND	100
4-Chloroaniline	ND	500
Hexachlorobutadiene	ND	200
4-Chloro-3-methylphenol	ND	100
2-Methylnaphthalene	ND	100
Hexachlorocyclopentadiene	ND	200
2,4,6-Trichlorophenol	ND	100
2,4,5-Trichlorophenol	ND	100
2-Chloronaphthalene	ND	100
2-Nitroaniline	ND	200
Acenaphthylene	ND	100
Dimethylphthalate	ND	100
2,6-Dinitrotoluene	ND	100
Acenaphthene	ND	100

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8270C
Date Extracted: 11/21/00
Date Analyzed: 11/22/00
Matrix: Soil
Units: ug/Kg (ppb) as received

ToxScan Number: T-19046

Client Sample ID: 31@95.5 DPW-4L

ToxScan Lab ID: 19046-16

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
3-Nitroaniline	ND	200
2,4-Dinitrophenol	ND	500
Dibenzofuran	ND	100
2,4-Dinitrotoluene	ND	100
4-Nitrophenol	ND	500
Fluorene	ND	100
4-Chlorophenyl phenyl ether	ND	100
Diethylphthalate	ND	100
4-Nitroaniline	ND	200
4,6-Dinitro-2-methylphenol	ND	500
N-Nitrosodiphenylamine	ND	200
Azobenzene	ND	100
4-Bromophenyl phenyl ether	ND	100
Hexachlorobenzene	ND	100
Pentachlorophenol	ND	500
Phenanthrene	ND	100
Anthracene	ND	100
Carbazole	ND	200
Di-n-butylphthalate	ND	100
Fluoranthene	ND	100
Pyrene	ND	100
Butyl benzyl phthalate	ND	100
Benzo(a)anthracene	ND	100
Chrysene	ND	100
3,3'-Dichlorobenzidine	ND	200
Bis(2-ethylhexyl)phthalate	ND	100
Di-n-octylphthalate	ND	100
Benzo(b)fluoranthene	ND	100
Benzo(k)fluoranthene	ND	100
Benzo(a)pyrene	ND	100
Indeno(1,2,3-cd)pyrene	ND	100
Dibenzo(a,h)anthracene	ND	100
Benzo(g,h,i)perylene	ND	100

ND = Not Detected

Client: Fugro West, Inc.
 Method: EPA Method(s) 6020 7061 7471 7741
 Date Completed: 12/4/2000 - 12/7/2000
 Matrix: Soil
 Units: mg/kg

ToxScan Number: T-19046

Total Metals

<u>Client</u> <u>Sample ID</u>	<u>ToxScan</u> <u>Lab ID</u>	<u>Analyte</u>	<u>Wet Wt.</u> <u>Sample</u> <u>Value</u>	<u>Wet</u> <u>Reporting</u> <u>Limit</u>
2 @ 6.5 DPW-3L	19046-01	Antimony	ND	1.0
		Arsenic	4.8	1.0
		Barium	28	10
		Beryllium	ND	1.0
		Cadmium	ND	1.0
		Chromium	39	1.0
		Cobalt	9.3	1.0
		Copper	31	1.0
		Lead	14	1.0
		Mercury	0.14	0.020
		Molybdenum	1.2	1.0
		Nickel	30	1.0
		Selenium	ND	1.0
		Silver	ND	1.0
		Thallium	ND	1.0
		Vanadium	78	1.0
		Zinc	66	10

Client: Fugro West, Inc.
 Method: EPA Method(s) 6020 7061 7471 7741
 Date Completed: 12/4/2000 - 12/7/2000
 Matrix: Soil
 Units: mg/kg

ToxScan Number: T-19046

Total Metals

Client	ToxScan		Wet Wt.	Wet
<u>Sample ID</u>	<u>Lab ID</u>	<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
8 @ 15.5 DPW-3L	19046-02	Antimony	ND	1.0
		Arsenic	4.0	1.0
		Barium	37	10
		Beryllium	ND	1.0
		Cadmium	ND	1.0
		Chromium	13	1.0
		Cobalt	3.2	1.0
		Copper	4.6	1.0
		Lead	3.0	1.0
		Mercury	0.018	0.020
		Molybdenum	ND	1.0
		Nickel	8.2	1.0
		Selenium	ND	1.0
		Silver	ND	1.0
		Thallium	ND	1.0
		Vanadium	51	1.0
		Zinc	22	10

Client: Fugro West, Inc.
 Method: EPA Method(s) 6020 7061 7471 7741
 Date Completed: 12/4/2000 - 12/7/2000
 Matrix: Soil
 Units: mg/kg

ToxScan Number: T-19046

Total Metals

Client	ToxScan		Wet Wt.	Wet
<u>Sample ID</u>	<u>Lab ID</u>	<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
38 @ 100.5 DPW-3L	19046-07	Antimony	ND	1.0
		Arsenic	3.6	1.0
		Barium	100	10
		Beryllium	ND	1.0
		Cadmium	1.6	1.0
		Chromium	47	1.0
		Cobalt	7.2	1.0
		Copper	28	1.0
		Lead	4.3	1.0
		Mercury	0.043	0.020
		Molybdenum	ND	1.0
		Nickel	29	1.0
		Selenium	ND	1.0
		Silver	ND	1.0
		Thallium	ND	1.0
		Vanadium	89	1.0
		Zinc	59	10

Client: Fugro West, Inc.
 Method: EPA Method(s) 6020 7061 7471 7741
 Date Completed: 12/4/2000 - 12/7/2000
 Matrix: Soil
 Units: mg/kg

ToxScan Number: T-19046

Total Metals

<u>Client</u> <u>Sample ID</u>	<u>ToxScan</u> <u>Lab ID</u>	<u>Analyte</u>	<u>Sample</u> <u>Value</u>	<u>Reporting</u> <u>Limit</u>
3 @ 3.0' DPW-4L	19046-11	Antimony	1.6	1.0
		Arsenic	4.1	1.0
		Barium	61	10
		Beryllium	ND	1.0
		Cadmium	ND	1.0
		Chromium	22	1.0
		Cobalt	5.1	1.0
		Copper	52	1.0
		Lead	76	1.0
		Mercury	0.36	0.020
		Molybdenum	1.4	1.0
		Nickel	14	1.0
		Selenium	ND	1.0
		Silver	ND	1.0
		Thallium	1.0	1.0
		Vanadium	70	1.0
		Zinc	75	10

Client: Fugro West, Inc.
 Method: EPA Method(s) 6020 7061 7471 7741
 Date Completed: 12/4/2000 - 12/7/2000
 Matrix: Soil
 Units: mg/kg

ToxScan Number: T-19046

Total Metals

<u>Client</u>	<u>ToxScan</u>		<u>Wet Wt.</u>	<u>Wet</u>
<u>Sample ID</u>	<u>Lab ID</u>	<u>Analyte</u>	<u>Sample</u>	<u>Reporting</u>
			<u>Value</u>	<u>Limit</u>
34 @ 101.5' DPW-4L	19046-19	Antimony	ND	1.0
		Arsenic	3.0	1.0
		Barium	38	10
		Beryllium	ND	1.0
		Cadmium	ND	1.0
		Chromium	14	1.0
		Cobalt	3.2	1.0
		Copper	4.3	1.0
		Lead	2.4	1.0
		Mercury	0.030	0.020
		Molybdenum	ND	1.0
		Nickel	8.7	1.0
		Selenium	ND	1.0
		Silver	ND	1.0
		Thallium	ND	1.0
		Vanadium	46	1.0
		Zinc	22	10

Client: Fugro West, Inc.
 Method: EPA Method(s) 1664
 Date Completed: 11/30/2000
 Matrix: Soil
 Units: mg/Kg

ToxScan Number: T-19046

<u>Client</u> <u>Sample ID</u>	<u>ToxScan</u> <u>Lab ID</u>	<u>Analyte</u>	<u>Sample</u> <u>Value</u>	<u>Reporting</u> <u>Limit</u>
2 @ 6.5 DPW-3L	19046-01	TRPH- Gravimetric (SGT- HEM)	110	100
8 @ 15.5 DPW-3L	19046-02	TRPH- Gravimetric (SGT- HEM)	ND	100
30 @ 90.5 DPW-3L	19046-03	TRPH- Gravimetric (SGT- HEM)	ND	100
32 @ 94.5 DPW-3L	19046-04	TRPH- Gravimetric (SGT- HEM)	ND	100
34 @ 96.5 DPW-3L	19046-05	TRPH- Gravimetric (SGT- HEM)	ND	100
36 @ 98.5 DPW-3L	19046-06	TRPH- Gravimetric (SGT- HEM)	ND	100
38 @ 100.5 DPW-3L	19046-07	TRPH- Gravimetric (SGT- HEM)	ND	100
40 @ 102.5 DPW-3L	19046-08	TRPH- Gravimetric (SGT- HEM)	ND	100
44 @ 106.5 DPW-3L	19046-10	TRPH- Gravimetric (SGT- HEM)	ND	100

Client: Fugro West, Inc.
 Method: EPA Method(s) 1664
 Date Completed: 11/30/2000
 Matrix: Soil
 Units: mg/Kg

ToxScan Number: T-19046

<u>Client</u> <u>Sample ID</u>	<u>ToxScan</u> <u>Lab ID</u>	<u>Analyte</u>	<u>Sample</u> <u>Value</u>	<u>Reporting</u> <u>Limit</u>
3 @ 3.0' DPW-4L	19046-11	TRPH- Gravimetric (SGT- HEM)	5300	100
5 @ 6.5' DPW-4L	19046-12	TRPH- Gravimetric (SGT- HEM)	920	100
7 @ 11.5' DPW-4L	19046-13	TRPH- Gravimetric (SGT- HEM)	ND	100
9 @ 16.5' DPW-4L	19046-14	TRPH- Gravimetric (SGT- HEM)	ND	100
30 @ 93.5' DPW-4L	19046-15	TRPH- Gravimetric (SGT- HEM)	ND	100
32 @ 97.5' DPW-4L	19046-17	TRPH- Gravimetric (SGT- HEM)	ND	100
34 @ 101.5' DPW-4L	19046-19	TRPH- Gravimetric (SGT- HEM)	ND	100
36 @ 105.5' DPW-4L	19046-21	TRPH- Gravimetric (SGT- HEM)	100	100
38 @ 109.5' DPW-4L	19046-23	TRPH- Gravimetric (SGT- HEM)	ND	100



McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Toxscan 42 Hangar Way Watsonville, CA 95076	Client Project ID: #T-19046	Date Sampled: 11/08-11/15/00
		Date Received: 11/21/00
	Client Contact: Doug Clark	Date Extracted: 11/21/00
	Client P.O: #013661	Date Analyzed: 11/21/00

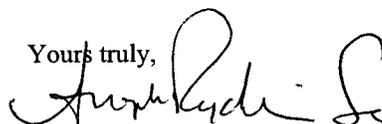
11/30/00

Dear Doug:

Enclosed are:

- 1). the results of 4 samples from your #T-19046 project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director



McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
 Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mcccampbell.com> E-mail: main@mcccampbell.com

Toxscan 42 Hangar Way Watsonville, CA 95076	Client Project ID: #T-19046	Date Sampled: 11/08-11/15/00
		Date Received: 11/21/00
	Client Contact: Doug Clark	Date Extracted: 11/21/00
	Client P.O: #013661	Date Analyzed: 11/23-11/29/00

Volatile Organics By GC/MS

EPA method 8260

Lab ID	54005
Client ID	34 @ 96.5
Matrix	S

Compound	Concentration*	Reporting Limit		Compound	Concentration*	Reporting Limit	
		W	S			W	S
Acetone ^(b)	ND<40	5.0	25	trans-1,3-Dichloropropene	ND	1.0	5.0
Benzene	ND	1.0	5.0	Ethylene dibromide	ND	1.0	5.0
Bromobenzene	ND	1.0	5.0	Ethylbenzene	ND	1.0	5.0
Bromochloromethane	ND	1.0	5.0	Hexachlorobutadiene	ND	5.0	25
Bromodichloromethane	ND	1.0	5.0	Iodomethane	ND	1.0	5.0
Bromoform	ND	1.0	5.0	Isopropylbenzene	ND	1.0	5.0
Bromomethane	ND	1.0	5.0	p-Isopropyl toluene	ND	1.0	5.0
n-Butyl benzene	ND	1.0	5.0	Methyl butyl ketone ^(d)	ND	1.0	5.0
sec-Butyl benzene	ND	1.0	5.0	Methylene Chloride ^(e)	ND<15	1.0	5.0
tert-Butyl benzene	ND	1.0	5.0	Methyl ethyl ketone ^(f)	ND	2.0	10
Carbon Disulfide	ND	1.0	5.0	Methyl isobutyl ketone ^(g)	ND	1.0	5.0
Carbon Tetrachloride	ND	1.0	5.0	Methyl tert-Butyl Ether (MTBE)	---	1.0	5.0
Chlorobenzene	ND	1.0	5.0	Naphthalene	ND	5.0	5.0
Chloroethane	ND	1.0	5.0	n-Propyl benzene	ND	1.0	5.0
2-Chloroethyl Vinyl Ether ^(c)	ND	1.0	5.0	Styrene ^(k)	ND	1.0	5.0
Chloroform	ND	1.0	5.0	1,1,1,2-Tetrachloroethane	ND	1.0	5.0
Chloromethane	ND	1.0	5.0	1,1,2,2-Tetrachloroethane	ND	1.0	5.0
2-Chlorotoluene	ND	1.0	5.0	Tetrachloroethene	ND<10	1.0	5.0
4-Chlorotoluene	ND	1.0	5.0	Toluene ^(l)	ND	1.0	5.0
Dibromochloromethane	ND	1.0	5.0	1,2,3-Trichlorobenzene	ND	5.0	25
1,2-Dibromo-3-chloropropane	ND	2.0	10	1,2,4-Trichlorobenzene	ND	5.0	25
Dibromomethane	ND	1.0	5.0	1,1,1-Trichloroethane	ND	1.0	5.0
1,2-Dichlorobenzene	ND	1.0	5.0	1,1,2-Trichloroethane	ND	1.0	5.0
1,3-Dichlorobenzene	ND	1.0	5.0	Trichloroethene	ND	1.0	5.0
1,4-Dichlorobenzene	ND	1.0	5.0	Trichlorofluoromethane	ND	1.0	5.0
Dichlorodifluoromethane	ND	1.0	5.0	1,2,3-Trichloropropane	ND	1.0	5.0
1,1-Dichloroethane	ND	1.0	5.0	1,2,4-Trimethylbenzene	ND	1.0	5.0
1,2-Dichloroethane	ND	1.0	5.0	1,3,5-Trimethylbenzene	ND	1.0	5.0
1,1-Dichloroethene	ND	1.0	5.0	Vinyl Acetate ^(m)	ND	5.0	25
cis-1,2-Dichloroethene	ND	1.0	5.0	Vinyl Chloride ⁽ⁿ⁾	ND	1.0	5.0
trans-1,2-Dichloroethene	ND	1.0	5.0	Xylenes, total ^(o)	ND	1.0	5.0
1,2-Dichloropropane	ND	1.0	5.0	Comments:			
1,3-Dichloropropane	ND	1.0	5.0	Surrogate Recoveries (%)			
2,2-Dichloropropane	ND	1.0	5.0	Dibromofluoromethane		102	
1,1-Dichloropropene	ND	1.0	5.0	Toluene-d8		119	
cis-1,3-Dichloropropene	ND	1.0	5.0	4-Bromofluorobenzene		122	

* water and vapor samples are reported in ug/L, soil and sludge samples in ug/kg, wipes in ug/wipe and all TCLP / SPLP extracts in ug/L
 ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis

(b) 2-propanone or dimethyl ketone; (c) (2-chloroethoxy) ethene; (d) 2-hexanone; (e) dichloromethane; (f) 2-butanone; (g) 4-methyl-2-pentanone or isopropylacetone; (h) lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~5 vol. % sediment; (j) sample diluted due to high organic content; (k) ethenylbenzene; (l) methylbenzene; (m) acetic acid ethenyl ester; (n) chloroethene; (o) dimethylbenzenes.

DHS Certification No. 1644

Edward Hamilton, Lab Director



McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
 Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Toxscan 42 Hangar Way Watsonville, CA 95076	Client Project ID: #T-19046	Date Sampled: 11/08-11/15/00
		Date Received: 11/21/00
	Client Contact: Doug Clark	Date Extracted: 11/21/00
	Client P.O.: #013661	Date Analyzed: 11/23-11/29/00

Volatile Organics By GC/MS

EPA method 8260

Lab ID	54006
Client ID	40 @ 102.5
Matrix	S

Compound	Concentration*	Reporting Limit		Compound	Concentration*	Reporting Limit	
		W	S			W	S
Acetone ^(b)	ND<40	5.0	25	trans-1,3-Dichloropropene	ND	1.0	5.0
Benzene	ND	1.0	5.0	Ethylene dibromide	ND	1.0	5.0
Bromobenzene	ND	1.0	5.0	Ethylbenzene	ND	1.0	5.0
Bromochloromethane	ND	1.0	5.0	Hexachlorobutadiene	ND	5.0	25
Bromodichloromethane	ND	1.0	5.0	Iodomethane	ND	1.0	5.0
Bromoform	ND	1.0	5.0	Isopropylbenzene	ND	1.0	5.0
Bromomethane	ND	1.0	5.0	p-Isopropyl toluene	ND	1.0	5.0
n-Butyl benzene	ND	1.0	5.0	Methyl butyl ketone ^(d)	ND	1.0	5.0
sec-Butyl benzene	ND	1.0	5.0	Methylene Chloride ^(e)	ND<15	1.0	5.0
tert-Butyl benzene	ND	1.0	5.0	Methyl ethyl ketone ^(f)	ND	2.0	10
Carbon Disulfide	ND	1.0	5.0	Methyl isobutyl ketone ^(g)	ND	1.0	5.0
Carbon Tetrachloride	ND	1.0	5.0	Methyl tert-Butyl Ether (MTBE)	---	1.0	5.0
Chlorobenzene	ND	1.0	5.0	Naphthalene	ND	5.0	5.0
Chloroethane	ND	1.0	5.0	n-Propyl benzene	ND	1.0	5.0
2-Chloroethyl Vinyl Ether ^(c)	ND	1.0	5.0	Styrene ^(k)	ND	1.0	5.0
Chloroform	ND	1.0	5.0	1,1,1,2-Tetrachloroethane	ND	1.0	5.0
Chloromethane	ND	1.0	5.0	1,1,2,2-Tetrachloroethane	ND	1.0	5.0
2-Chlorotoluene	ND	1.0	5.0	Tetrachloroethene	ND<10	1.0	5.0
4-Chlorotoluene	ND	1.0	5.0	Toluene ^(l)	ND	1.0	5.0
Dibromochloromethane	ND	1.0	5.0	1,2,3-Trichlorobenzene	ND	5.0	25
1,2-Dibromo-3-chloropropane	ND	2.0	10	1,2,4-Trichlorobenzene	ND	5.0	25
Dibromomethane	ND	1.0	5.0	1,1,1-Trichloroethane	ND	1.0	5.0
1,2-Dichlorobenzene	ND	1.0	5.0	1,1,2-Trichloroethane	ND	1.0	5.0
1,3-Dichlorobenzene	ND	1.0	5.0	Trichloroethene	ND	1.0	5.0
1,4-Dichlorobenzene	ND	1.0	5.0	Trichlorofluoromethane	ND	1.0	5.0
Dichlorodifluoromethane	ND	1.0	5.0	1,2,3-Trichloropropane	ND	1.0	5.0
1,1-Dichloroethane	ND	1.0	5.0	1,2,4-Trimethylbenzene	ND	1.0	5.0
1,2-Dichloroethane	ND	1.0	5.0	1,3,5-Trimethylbenzene	ND	1.0	5.0
1,1-Dichloroethene	ND	1.0	5.0	Vinyl Acetate ^(m)	ND	5.0	25
cis-1,2-Dichloroethene	ND	1.0	5.0	Vinyl Chloride ⁽ⁿ⁾	ND	1.0	5.0
trans-1,2-Dichloroethene	ND	1.0	5.0	Xylenes, total ^(o)	ND	1.0	5.0
1,2-Dichloropropane	ND	1.0	5.0	Comments:			
1,3-Dichloropropane	ND	1.0	5.0	Surrogate Recoveries (%)			
2,2-Dichloropropane	ND	1.0	5.0	Dibromofluoromethane		101	
1,1-Dichloropropene	ND	1.0	5.0	Toluene-d8		120	
cis-1,3-Dichloropropene	ND	1.0	5.0	4-Bromofluorobenzene		104	

* water and vapor samples are reported in ug/L, soil and sludge samples in ug/kg, wipes in ug/wipe and all TCLP / SPLP extracts in ug/L
 ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis

(b) 2-propanone or dimethyl ketone; (c) (2-chloroethoxy) ethene; (d) 2-hexanone; (e) dichloromethane; (f) 2-butanone; (g) 4-methyl-2-pentanone or isopropylacetone; (h) lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~5 vol. % sediment; (j) sample diluted due to high organic content; (k) ethenylbenzene; (l) methylbenzene; (m) acetic acid ethenyl ester; (n) chloroethene; (o) dimethylbenzenes.

DHS Certification No. 1644

Edward Hamilton, Lab Director



McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
 Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Toxscan 42 Hangar Way Watsonville, CA 95076	Client Project ID: #T-19046	Date Sampled: 11/08-11/15/00
		Date Received: 11/21/00
	Client Contact: Doug Clark	Date Extracted: 11/21/00
	Client P.O: #013661	Date Analyzed: 11/23-11/29/00

Volatile Organics By GC/MS

EPA method 8260

Lab ID	54007
Client ID	32 @ 97.5'
Matrix	S

Compound	Concentration*	Reporting Limit		Compound	Concentration*	Reporting Limit	
		W	S			W	S
VAcetone ^(b)	ND<40	5.0	25	trans-1,3-Dichloropropene	ND	1.0	5.0
Benzene	ND	1.0	5.0	Ethylene dibromide	ND	1.0	5.0
Bromobenzene	ND	1.0	5.0	Ethylbenzene	ND	1.0	5.0
Bromochloromethane	ND	1.0	5.0	Hexachlorobutadiene	ND	5.0	25
Bromodichloromethane	ND	1.0	5.0	Iodomethane	ND	1.0	5.0
Bromoform	ND	1.0	5.0	Isopropylbenzene	ND	1.0	5.0
Bromomethane	ND	1.0	5.0	p-Isopropyl toluene	7.7	1.0	5.0
n-Butyl benzene	ND	1.0	5.0	Methyl butyl ketone ^(d)	ND	1.0	5.0
sec-Butyl benzene	ND	1.0	5.0	Methylene Chloride ^(e)	ND<15	1.0	5.0
tert-Butyl benzene	ND	1.0	5.0	Methyl ethyl ketone ^(f)	ND	2.0	10
Carbon Disulfide	ND	1.0	5.0	Methyl isobutyl ketone ^(g)	ND	1.0	5.0
Carbon Tetrachloride	ND	1.0	5.0	Methyl tert-Butyl Ether (MTBE)	---	1.0	5.0
Chlorobenzene	ND	1.0	5.0	Naphthalene	ND	5.0	5.0
Chloroethane	ND	1.0	5.0	n-Propyl benzene	ND	1.0	5.0
2-Chloroethyl Vinyl Ether ^(c)	ND	1.0	5.0	Styrene ^(k)	ND	1.0	5.0
Chloroform	ND	1.0	5.0	1,1,1,2-Tetrachloroethane	ND	1.0	5.0
Chloromethane	ND	1.0	5.0	1,1,2,2-Tetrachloroethane	ND	1.0	5.0
2-Chlorotoluene	ND	1.0	5.0	Tetrachloroethene	ND<10	1.0	5.0
4-Chlorotoluene	ND	1.0	5.0	Toluene ^(l)	ND	1.0	5.0
Dibromochloromethane	ND	1.0	5.0	1,2,3-Trichlorobenzene	ND	5.0	25
1,2-Dibromo-3-chloropropane	ND	2.0	10	1,2,4-Trichlorobenzene	ND	5.0	25
Dibromomethane	ND	1.0	5.0	1,1,1-Trichloroethane	ND	1.0	5.0
1,2-Dichlorobenzene	ND	1.0	5.0	1,1,2-Trichloroethane	ND	1.0	5.0
1,3-Dichlorobenzene	ND	1.0	5.0	Trichloroethene	ND	1.0	5.0
1,4-Dichlorobenzene	ND	1.0	5.0	Trichlorofluoromethane	ND	1.0	5.0
Dichlorodifluoromethane	ND	1.0	5.0	1,2,3-Trichloropropane	ND	1.0	5.0
1,1-Dichloroethane	ND	1.0	5.0	1,2,4-Trimethylbenzene	ND	1.0	5.0
1,2-Dichloroethane	ND	1.0	5.0	1,3,5-Trimethylbenzene	ND	1.0	5.0
1,1-Dichloroethene	ND	1.0	5.0	Vinyl Acetate ^(m)	ND	5.0	25
cis-1,2-Dichloroethene	ND	1.0	5.0	Vinyl Chloride ⁽ⁿ⁾	ND	1.0	5.0
trans-1,2-Dichloroethene	ND	1.0	5.0	Xylenes, total ^(o)	ND	1.0	5.0
1,2-Dichloropropane	ND	1.0	5.0	Comments:			
1,3-Dichloropropane	ND	1.0	5.0	Surrogate Recoveries (%)			
2,2-Dichloropropane	ND	1.0	5.0	Dibromofluoromethane		100	
1,1-Dichloropropene	ND	1.0	5.0	Toluene-d8		122	
cis-1,3-Dichloropropene	ND	1.0	5.0	4-Bromofluorobenzene		103	

* water and vapor samples are reported in ug/L, soil and sludge samples in ug/kg, wipes in ug/wipe and all TCLP / SPLP extracts in ug/L

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis

(b) 2-propanone or dimethyl ketone; (c) (2-chloroethoxy) ethene; (d) 2-hexanone; (e) dichloromethane; (f) 2-butanone; (g) 4-methyl-2-pentanone or isopropylacetone; (h) lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~5 vol. % sediment; (j) sample diluted due to high organic content; (k) ethenylbenzene; (l) methylbenzene; (m) acetic acid ethenyl ester; (n) chloroethene; (o) dimethylbenzenes.

DHS Certification No. 1644

Edward Hamilton, Lab Director



McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
 Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Toxscan 42 Hangar Way Watsonville, CA 95076	Client Project ID: #T-19046	Date Sampled: 11/08-11/15/00
		Date Received: 11/21/00
	Client Contact: Doug Clark	Date Extracted: 11/21/00
	Client P.O.: #013661	Date Analyzed: 11/23-11/29/00

Volatile Organics By GC/MS

EPA method 8260

Lab ID	54008
Client ID	35 @ 103.5'
Matrix	S

Compound	Concentration*	Reporting Limit		Compound	Concentration*	Reporting Limit	
		W	S			W	S
Acetone ^(b)	ND<40	5.0	25	trans-1,3-Dichloropropene	ND	1.0	5.0
Benzene	ND	1.0	5.0	Ethylene dibromide	ND	1.0	5.0
Bromobenzene	ND	1.0	5.0	Ethylbenzene	ND	1.0	5.0
Bromochloromethane	ND	1.0	5.0	Hexachlorobutadiene	ND	5.0	25
Bromodichloromethane	ND	1.0	5.0	Iodomethane	ND	1.0	5.0
Bromoform	ND	1.0	5.0	Isopropylbenzene	ND	1.0	5.0
Bromomethane	ND	1.0	5.0	p-Isopropyl toluene	16	1.0	5.0
n-Butyl benzene	ND	1.0	5.0	Methyl butyl ketone ^(d)	ND	1.0	5.0
sec-Butyl benzene	ND	1.0	5.0	Methylene Chloride ^(e)	ND<15	1.0	5.0
tert-Butyl benzene	ND	1.0	5.0	Methyl ethyl ketone ^(f)	ND	2.0	10
Carbon Disulfide	ND	1.0	5.0	Methyl isobutyl ketone ^(g)	ND	1.0	5.0
Carbon Tetrachloride	ND	1.0	5.0	Methyl tert-Butyl Ether (MTBE)	---	1.0	5.0
Chlorobenzene	ND	1.0	5.0	Naphthalene	ND	5.0	5.0
Chloroethane	ND	1.0	5.0	n-Propyl benzene	ND	1.0	5.0
2-Chloroethyl Vinyl Ether ^(c)	ND	1.0	5.0	Styrene ^(k)	ND	1.0	5.0
Chloroform	ND	1.0	5.0	1,1,1,2-Tetrachloroethane	ND	1.0	5.0
Chloromethane	ND	1.0	5.0	1,1,2,2-Tetrachloroethane	ND	1.0	5.0
2-Chlorotoluene	ND	1.0	5.0	Tetrachloroethene	ND<10	1.0	5.0
4-Chlorotoluene	ND	1.0	5.0	Toluene ^(l)	ND	1.0	5.0
Dibromochloromethane	ND	1.0	5.0	1,2,3-Trichlorobenzene	ND	5.0	25
1,2-Dibromo-3-chloropropane	ND	2.0	10	1,2,4-Trichlorobenzene	ND	5.0	25
Dibromomethane	ND	1.0	5.0	1,1,1-Trichloroethane	ND	1.0	5.0
1,2-Dichlorobenzene	ND	1.0	5.0	1,1,2-Trichloroethane	ND	1.0	5.0
1,3-Dichlorobenzene	ND	1.0	5.0	Trichloroethene	ND	1.0	5.0
1,4-Dichlorobenzene	ND	1.0	5.0	Trichlorofluoromethane	ND	1.0	5.0
Dichlorodifluoromethane	ND	1.0	5.0	1,2,3-Trichloropropane	ND	1.0	5.0
1,1-Dichloroethane	ND	1.0	5.0	1,2,4-Trimethylbenzene	ND	1.0	5.0
1,2-Dichloroethane	ND	1.0	5.0	1,3,5-Trimethylbenzene	ND	1.0	5.0
1,1-Dichloroethene	ND	1.0	5.0	Vinyl Acetate ^(m)	ND	5.0	25
cis-1,2-Dichloroethene	ND	1.0	5.0	Vinyl Chloride ⁽ⁿ⁾	ND	1.0	5.0
trans-1,2-Dichloroethene	ND	1.0	5.0	Xylenes, total ^(o)	ND	1.0	5.0
1,2-Dichloropropane	ND	1.0	5.0	Comments:			
1,3-Dichloropropane	ND	1.0	5.0	Surrogate Recoveries (%)			
2,2-Dichloropropane	ND	1.0	5.0	Dibromofluoromethane			99
1,1-Dichloropropene	ND	1.0	5.0	Toluene-d8			121
cis-1,3-Dichloropropene	ND	1.0	5.0	4-Bromofluorobenzene			125

*water and vapor samples are reported in ug/L, soil and sludge samples in ug/kg, wipes in ug/wipe and all TCLP / SPLP extracts in ug/L

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis

(b) 2-propanone or dimethyl ketone; (c) (2-chloroethoxy) ethene; (d) 2-hexanone; (e) dichloromethane; (f) 2-butanone; (g) 4-methyl-2-pentanone or isopropylacetone; (h) lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~5 vol. % sediment; (j) sample diluted due to high organic content; (k) ethenylbenzene; (l) methylbenzene; (m) acetic acid ethenyl ester; (n) chloroethene; (o) dimethylbenzenes.

DHS Certification No. 1644

Edward Hamilton, Lab Director

EXPLANATION OF ACRONYMS FOR PROJECT # T-19046

The following is a glossary for acronyms that may be used in this report.

<u>Abbreviation</u>	<u>Definition</u>
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NA	Not Applicable
ND	None Detected
REP	Replicate
RPD	Relative Percent Difference
SRM	Standard Reference Material
TOC	Total Organic Carbon

Client: Fugro West, Inc.
Method: EPA 8081
Date Extracted: November 20, 2000
Date Analyzed: November 23, 2000
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19046

Client Sample ID: Method Blank
ToxScan Lab ID: MB112000

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
Aldrin	ND	8.0
alpha-BHC	ND	8.0
beta-BHC	ND	8.0
delta-BHC	ND	8.0
gamma-BHC	ND	8.0
alpha-Chlordane	ND	8.0
gamma-Chlordane	ND	8.0
4,4'-DDD	ND	8.0
4,4'-DDE	ND	8.0
4,4'-DDT	ND	8.0
Dieldrin	ND	8.0
Endosulfan I	ND	16
Endosulfan II	ND	16
Endosulfan Sulfate	ND	16
Endrin	ND	16
Endrin Aldehyde	ND	16
Endrin Ketone	ND	16
Heptachlor	ND	8.0
Heptachlor Epoxide	ND	8.0
Methoxychlor	ND	80
Toxaphene	ND	160
Aroclor-1016	ND	160
Aroclor-1221	ND	160
Aroclor-1232	ND	160
Aroclor-1242	ND	160
Aroclor-1248	ND	160
Aroclor-1254	ND	160
Aroclor-1260	ND	160
Total PCB'S	ND	160

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8081
Date Extracted: November 20, 2000
Date Analyzed: November 23 & 28, 2000
Matrix: Soil

ToxScan Number: T-19046

Quality Control Report

Surrogate recoveries expressed as percentages:

<u>Sample ID</u>	<u>Tetrachloro-m-xylene</u>	<u>Decachlorobiphenyl</u>	<u>QC Limits</u>
Lab Control Sample	88	87	50-150
Method Blank	85	82	50-150
2@6.5 DPW-3L	81	82	50-150
8@15.5 DPW-3L	73	81	50-150
32@94.5 DPW-3L	85	84	50-150
31@95.5' DPW-4L	82	79	50-150
3@3.0' DPW-4L	78	91	50-150

Client: Fugro West, Inc.
Method: EPA 8081
Date Extracted: November 20, 2000
Date Analyzed: November 23, 2000
Matrix: Soil

ToxScan Number: T-19046

Quality Control Report

Spike recoveries expressed as percentages:

<u>Spiked Compound</u>	<u>LCS % REC</u>	<u>QC LIMITS % REC</u>
Lindane	73	46-127
Heptachlor	85	35-130
Aldrin	85	34-132
Dieldrin	85	31-134
Endrin	93	42-139
4,4'-DDT	85	23-134

LCS = Laboratory Control Sample

Client: Fugro West, Inc.
Method: EPA 8270C
Date Extracted: 11/21/00
Date Analyzed: 11/28/00
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19046

ToxScan Lab ID: Method Blank

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
Phenol	ND	200
Bis(2-chloroethyl)ether	ND	1000
2-Chlorophenol	ND	200
1,3-Dichlorobenzene	ND	100
1,4-Dichlorobenzene	ND	100
Benzyl alcohol	ND	1000
1,2-Dichlorobenzene	ND	100
2-Methylphenol	ND	200
Bis(2-chloroisopropyl)ether	ND	200
Hexachloroethane	ND	200
N-Nitrosodipropylamine	ND	1000
4-Methylphenol	ND	200
Nitrobenzene	ND	500
Isophorone	ND	500
2-Nitrophenol	ND	200
2,4-Dimethylphenol	ND	200
Bis(2-chloroethoxy)methane	ND	1000
2,4-Dichlorophenol	ND	100
Benzoic acid	ND	1000
1,2,4-Trichlorobenzene	ND	100
Naphthalene	ND	100
4-Chloroaniline	ND	500
Hexachlorobutadiene	ND	200
4-Chloro-3-methylphenol	ND	100
2-Methylnaphthalene	ND	100
Hexachlorocyclopentadiene	ND	200
2,4,6-Trichlorophenol	ND	100
2,4,5-Trichlorophenol	ND	100
2-Chloronaphthalene	ND	100
2-Nitroaniline	ND	200
Acenaphthylene	ND	100
Dimethylphthalate	ND	100
2,6-Dinitrotoluene	ND	100
Acenaphthene	ND	100

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8270C
Date Extracted: 11/21/00
Date Analyzed: 11/28/00
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19046

ToxScan Lab ID: Method Blank

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
3-Nitroaniline	ND	200
2,4-Dinitrophenol	ND	500
Dibenzofuran	ND	100
2,4-Dinitrotoluene	ND	100
4-Nitrophenol	ND	500
Fluorene	ND	100
4-Chlorophenyl phenyl ether	ND	100
Diethylphthalate	ND	100
4-Nitroaniline	ND	200
4,6-Dinitro-2-methylphenol	ND	500
N-Nitrosodiphenylamine	ND	200
Azobenzene	ND	100
4-Bromophenyl phenyl ether	ND	100
Hexachlorobenzene	ND	100
Pentachlorophenol	ND	500
Phenanthrene	ND	100
Anthracene	ND	100
Carbazole	ND	200
Di-n-butylphthalate	ND	100
Fluoranthene	ND	100
Pyrene	ND	100
Butyl benzyl phthalate	ND	100
Benzo(a)anthracene	ND	100
Chrysene	ND	100
3,3'-Dichlorobenzidine	ND	200
Bis(2-ethylhexyl)phthalate	ND	100
Di-n-octylphthalate	ND	100
Benzo(b)fluoranthene	ND	100
Benzo(k)fluoranthene	ND	100
Benzo(a)pyrene	ND	100
Indeno(1,2,3-cd)pyrene	ND	100
Dibenzo(a,h)anthracene	ND	100
Benzo(g,h,i)perylene	ND	100

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8270C
Date Extracted: 11/21/00
Date Analyzed: 11/22/00 - 11/28/00
Matrix: Soil

ToxScan Number: T-19046

Quality Control Report:

Surrogate recoveries expressed as percentages

<u>Sample Identification</u>	<u>S1</u>	<u>S2</u>	<u>S3</u>	<u>S4</u>	<u>S5</u>	<u>S6</u>
32@94.5 DPW-3L	86	88	94	88	81	95
31@95.5 DPW-4L	96	85	96	88	81	93
Method Blank	89	85	94	87	90	92
Laboratory Control Sample	97	88	95	89	90	103
31@95.5 DPW-4L MS	93	92	95	91	89	98
31@95.5 DPW-4L MSD	88	86	91	88	88	102

MS = Matrix Spike
MSD = Matrix Spike Duplicate

<u>Surrogates:</u>	<u>QC Limits</u>
S1 = 2-Fluorophenol (S.S.)	25-121
S2 = Phenol-d5 (S.S.)	24-120
S3 = Nitrobenzene-d5 (S.S.)	23-120
S4 = 2-Fluorobiphenyl (S.S.)	30-120
S5 = Tribromophenol (S.S.)	19-122
S6 = Terphenyl-d14 (S.S.)	18-137

Client: Fugro West, Inc.
Method: EPA 8270C
Date Extracted: 11/21/00
Date Analyzed: 11/22/00
Matrix: Soil

ToxScan Number: T-19046

Quality Control Report:

Spike recoveries expressed as percentages

<u>Spiked Compound</u>	<u>LCS % Rec</u>	<u>QC LIMITS % Rec</u>
Phenol	76	26-120
2-Chlorophenol	88	25-120
1,4-Dichlorobenzene	82	28-120
N-Nitrosodipropylamine	90	41-126
1,2,4-Trichlorobenzene	84	38-120
4-Chloro-3-methylphenol	84	26-120
Acenaphthene	88	31-137
2,4-Dinitrotoluene	86	28-120
4-Nitrophenol	78	11-120
Pentachlorophenol	84	17-120
Pyrene	92	35-142

LCS = Laboratory Control Sample

Client: Fugro West, Inc.
Method: EPA 8270C
Date Extracted: 11/21/00
Date Analyzed: 11/22/00
Matrix: Soil

ToxScan Number: T-19046

Quality Control Report:

Spike recoveries expressed as percentages

Client ID: 31@95.5 DPW-4L

ToxScan ID: 19046-16

<u>Spiked Compound</u>	<u>MS % Rec</u>	<u>MSD % Rec</u>	<u>RPD</u>	<u>QC LIMITS</u>	
				<u>% Rec</u>	<u>RPD</u>
Phenol	82	78	5	26-120	35
2-Chlorophenol	90	88	2	25-120	50
1,4-Dichlorobenzene	82	78	5	28-120	27
N-Nitrosodipropylamine	84	88	5	41-126	38
1,2,4-Trichlorobenzene	82	82	0	38-120	23
4-Chloro-3-methylphenol	84	88	5	26-120	33
Acenaphthene	88	90	2	31-137	19
2,4-Dinitrotoluene	82	78	5	28-120	47
4-Nitrophenol	76	74	3	11-120	50
Pentachlorophenol	78	74	5	17-120	47
Pyrene	86	92	7	35-142	36

MS = Matrix Spike

MSD = Matrix Spike Duplicate

RPD = Relative Percent Difference

QC FOR PROJECT # 19046

MATRIX SPIKE / MATRIX SPIKE DUPLICATE SUMMARY:

Matrix: Soil

<u>Analyte</u>	<u>Sample</u>	<u>Spike Amount ppm</u>	<u>MS % Rec</u>	<u>MSD % Rec</u>	<u>RPD</u>
Antimony	19046-01	2.9	60	70	15
Arsenic	19046-01	5.7	71	83	16
Barium	19046-01	14	1	13	171
Beryllium	19046-01	0.29	95	100	5
Cadmium	19046-01	0.29	110	115	4
Chromium	19046-01	2.9	76	75	1
Cobalt	19046-01	2.9	96	92	4
Copper	19046-01	2.9	109	109	0
Lead	19046-01	1.4	104	107	3
Mercury	19046-01	1.0	111	116	4
Molybdenum	19046-01	2.9	88	83	6
Nickel	19046-01	2.9	94	90	4
Selenium	19045-01	0.14	95	95	0
Silver	19046-01	0.57	79	75	5
Thallium	19046-01	2.9	98	99	1
Vanadium	19046-01	2.9	77	78	1
Zinc	19046-01	2.9	80	79	1

QC FOR PROJECT # T-19046

LABORATORY METHOD BLANK SUMMARY

Applicable Matrix: Soil

Total Metals

<u>Analyte</u>	<u>Amount</u>	<u>Reporting Limit ug/L</u>	<u>EPA Method Number</u>
Antimony	ND	1.0	6020
Arsenic	ND	1.0	7061
Barium	ND	10	6020
Beryllium	ND	1.0	6020
Cadmium	ND	1.0	6020
Chromium	ND	1.0	6020
Cobalt	ND	1.0	6020
Copper	ND	1.0	6020
Lead	ND	1.0	6020
Mercury	ND	0.020	7471
Molybdenum	ND	1.0	6020
Nickel	ND	1.0	6020
Selenium	ND	1.0	7741
Silver	ND	1.0	6020
Thallium	ND	1.0	6020
Vanadium	ND	1.0	6020
Zinc	ND	10	6020

QC FOR PROJECT # T-19046

SRM SUMMARY:

Matrix: Soil

Total Metals

<u>Analyte</u>	<u>SRM Value Found</u> <u>mg/Kg</u>	<u>Certified</u> <u>SRM Value</u> <u>mg/Kg</u>	<u>%</u> <u>Recovery</u>	<u>SRM</u>
Antimony	0.800	1.02	79	MESS-3
Arsenic	20.2	21.2	95	MESS-3
Beryllium	1.73	2.30	75	MESS-3
Cadmium	0.219	0.240	91	MESS-3
Chromium	83.6	105	80	MESS-3
Cobalt	11.8	14.4	82	MESS-3
Copper	26.3	33.9	78	MESS-3
Lead	19.5	21.1	93	MESS-3
Mercury	0.119	0.0910	131	MESS-3
Molybdenum	2.70	2.78	97	MESS-3
Nickel	38.1	46.9	81	MESS-3
Selenium	0.699	0.720	97	MESS-3
Silver	0.151	0.180	84	MESS-3
Thallium	0.886	0.900	98	MESS-3
Vanadium	238	243	98	MESS-3
Zinc	124	159	78	MESS-3

MESS-3 = National Research Council Canada, marine sediment.

QC FOR PROJECT # T-19046

SRM SUMMARY:

Matrix: Water

Total Metals

<u>Analyte</u>	<u>Amount Found</u>	<u>Dilution</u>	<u>Corrected Value</u>	<u>SRM</u>	<u>Certified Value</u>	<u>Units</u>	<u>% Recovery</u>
Antimony	34.6	2	69.1	ERA 9970	64.7	ug/L	107
Arsenic	11.9	20	237	ERA 9977	200	ug/L	119
Barium	85.8	5	429	ERA 9970	388	ug/L	111
Beryllium	19.9	5	99.5	ERA 9970	124	ug/L	80
Cadmium	21.2	5	106	ERA 9970	95.9	ug/L	111
Chromium	44.8	5	224	ERA 9970	241	ug/L	93
Cobalt	41.0	5	205	ERA 9970	212	ug/L	97
Copper	22.8	5	114	ERA 9970	118	ug/L	97
Lead	29.0	5	145	ERA 9970	132	ug/L	110
Mercury	5.38	1	5.38	ERA 9977	6.27	mg/L	86
Molybdenum	26.4	5	132	ERA 9970	129	ug/L	102
Nickel	78.6	5	393	ERA 9970	406	ug/L	97
Selenium	10.6	20	212	ERA 9977	200	mg/Kg	106
Silver	10.1	5	50.4	ERA 9970	61.8	ug/L	82
Thallium	14.8	5	74.1	ERA 9970	64.7	ug/L	115
Vanadium	34.8	5	174	ERA 9970	189	ug/L	92
Zinc	44.4	5	222	ERA 9970	221	ug/L	100

ERA 9970 = Environmental Resource Associates, WasteWatR Lot No. 9970

ERA 9977 = Environmental Resource Associates, WasteWatR Lot No. 9977

QC FOR PROJECT # T-19046

LABORATORY METHOD BLANK SUMMARY

Applicable Matrix: Sediment

<u>Analyte</u>	<u>Amount</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>EPA Method Number</u>
TRPH-Gravimetric (SGT- HEM)	ND	100	mg/Kg	1664

QC FOR PROJECT # T-19046

LABORATORY PRECISION SUMMARY:

Matrix: Soil

<u>Analyte</u>	<u>REP 1</u>	<u>REP 2</u>	<u>Units</u>	<u>RPD</u>
TRPH-Gravimetric (SGT-HEM)				
19046-14	ND	ND	mg/Kg	NA



McCAMPBELL ANALYTICAL INC.

110 2nd Ave. South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

QC REPORT

VOCs (EPA 8240/8260)

Date: 11/22/00-11/23/00 Matrix: Soil/Solids

Extraction: TTLC

Compound	Concentration: ug/kg			%Recovery		RPD
	Sample	MS	MSD	Amount Spiked	MS	

SampleID: 111400

Instrument: GC-10

Surrogate	0.000	103.0	102.0	100.00	103	102	1.0
Toluene	0.000	125.0	124.0	100.00	125	124	0.8
Benzene	0.000	128.0	132.0	100.00	128	132	3.1
Chlorobenzene	0.000	106.0	110.0	100.00	106	110	3.7
Trichloroethane	0.000	89.0	93.0	100.00	89	93	4.4
1,1-Dichloroethene	0.000	141.0	150.0	100.00	141	150	6.2

$$\% \text{ Recovery} = \frac{(MS - \text{Sample})}{\text{Amount Spiked}} \cdot 100$$

$$RPD = \frac{(MS - MSD)}{(MS + MSD)} \cdot 100$$

RPD means Relative Percent Deviation



42 Hangar Way • Watsonville, CA 95076-2404 • (831) 724-4522 • FAX (831) 724-3188

January 08, 2001

ToxScan Number: T-19090

Fugro West, Inc.
5855 Olivas Park Drive
Ventura, CA 93003-7672

Attn: Philip Robins

Project Name: Sewer Line Crossing
Project Number: 00 - 32 - 3361
Date Sampled: December 05, 2000
Date Received: December 07, 2000
Matrix: Soil

Please find the enclosed test results for the parameters requested for analyses. The samples were analyzed within holding time using the following methods:

Organochlorine Pesticides & PCBs by EPA Method 8081
Semivolatiles by EPA Method 8270C
Total Arsenic by hydride AA by EPA Method 7061
Total Mercury by Cold Vapor AA by EPA Method 7471
Total Metals (Sb, Ba, Be, Cd, Cr, Co, Cu, Pb, Mo, Ni, Ag, Tl, V, Zn) by EPA Method 6020
Total Recoverable Petroleum Hydrocarbons by EPA Method 1664
Total Selenium by hydride AA by EPA Method 7741
Volatile Organic Compounds by EPA Method 8260, conducted by McCampbell Analytical

The samples were received intact and were handled with the proper chain-of-custody procedures. Appropriate QA/QC guidelines were employed during the analyses on a minimum of a 5% basis. QC results were within limits and are reported with or following the data for each analysis.

The sample used for the mercury and selenium spiking appears to have had interferences which resulted in lower recoveries. The SRM for both mercury and selenium were recovered at 103 and 94 percent, respectively, of the certified value which are well within limits for these SRMs.

If you have any questions or require any additional information, please feel free to call.

Sincerely,

Philip D. Carpenter, Ph.D.
President

Enclosures

This cover letter is an integral part of the report.

Client: Fugro West, Inc.
Method: EPA 8081
Date Extracted: December 12, 2000
Date Analyzed: December 24, 2000
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19090

Client Sample ID: 12 @ 28.9 DPW-5W
ToxScan Lab ID: 19090-01

<u>Analyte</u>	<u>Wet Wt. Sample Value</u>	<u>Wet Wt. Reporting Limit</u>
Aldrin	ND	8.0
alpha-BHC	ND	8.0
beta-BHC	ND	8.0
delta-BHC	ND	8.0
gamma-BHC	ND	8.0
alpha-Chlordane	ND	8.0
gamma-Chlordane	ND	8.0
4,4'-DDD	ND	8.0
4,4'-DDE	ND	8.0
4,4'-DDT	ND	8.0
Dieldrin	ND	8.0
Endosulfan I	ND	16
Endosulfan II	ND	16
Endosulfan Sulfate	ND	16
Endrin	ND	16
Endrin Aldehyde	ND	16
Endrin Ketone	ND	16
Heptachlor	ND	8.0
Heptachlor Epoxide	ND	8.0
Methoxychlor	ND	80
Toxaphene	ND	160
Aroclor-1016	ND	160
Aroclor-1221	ND	160
Aroclor-1232	ND	160
Aroclor-1242	ND	160
Aroclor-1248	ND	160
Aroclor-1254	ND	160
Aroclor-1260	ND	160
Total PCB'S	ND	160

ND = Not Detected

Client: Fugro West, Inc. ToxScan Number: T-19090
 Method: EPA 8270
 Date Extracted: 12/08/00
 Date Analyzed: 12/12/00
 Matrix: Soil
 Units: ug/Kg (ppb)

Client Sample ID: 15@32.6 DPW-5W

ToxScan Lab ID: 19090-02

Analyte	Sample Value	Reporting Limit
Phenol	ND	200
Bis(2-chloroethyl)ether	ND	1000
2-Chlorophenol	ND	200
1,3-Dichlorobenzene	ND	100
1,4-Dichlorobenzene	ND	100
Benzyl alcohol	ND	1000
1,2-Dichlorobenzene	ND	100
2-Methylphenol	ND	200
Bis(2-chloroisopropyl)ether	ND	200
Hexachloroethane	ND	200
N-Nitrosodipropylamine	ND	1000
4-Methylphenol	ND	200
Nitrobenzene	ND	500
Isophorone	ND	500
2-Nitrophenol	ND	200
2,4-Dimethylphenol	ND	200
Bis(2-chloroethoxy)methane	ND	1000
2,4-Dichlorophenol	ND	100
Benzoic acid	ND	1000
1,2,4-Trichlorobenzene	ND	100
Naphthalene	ND	100
4-Chloroaniline	ND	500
Hexachlorobutadiene	ND	200
4-Chloro-3-methylphenol	ND	100
2-Methylnaphthalene	ND	100
Hexachlorocyclopentadiene	ND	200
2,4,6-Trichlorophenol	ND	100
2,4,5-Trichlorophenol	ND	100
2-Chloronaphthalene	ND	100
2-Nitroaniline	ND	200
Acenaphthylene	ND	100
Dimethylphthalate	ND	100
2,6-Dinitrotoluene	ND	100
Acenaphthene	ND	100

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8270
Date Extracted: 12/08/00
Date Analyzed: 12/12/00
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19090

Client Sample ID: 15@32.6 DPW-5W

ToxScan Lab ID: 19090-02

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
3-Nitroaniline	ND	200
2,4-Dinitrophenol	ND	500
Dibenzofuran	ND	100
2,4-Dinitrotoluene	ND	100
4-Nitrophenol	ND	500
Fluorene	ND	100
4-Chlorophenyl phenyl ether	ND	100
Diethylphthalate	ND	100
4-Nitroaniline	ND	200
4,6-Dinitro-2-methylphenol	ND	500
N-Nitrosodiphenylamine	ND	200
Azobenzene	ND	100
4-Bromophenyl phenyl ether	ND	100
Hexachlorobenzene	ND	100
Pentachlorophenol	ND	500
Phenanthrene	ND	100
Anthracene	ND	100
Carbazole	ND	200
Di-n-butylphthalate	ND	100
Fluoranthene	ND	100
Pyrene	ND	100
Butyl benzyl phthalate	ND	100
Benzo(a)anthracene	ND	100
Chrysene	ND	100
3,3'-Dichlorobenzidine	ND	200
Bis(2-ethylhexyl)phthalate	ND	100
Di-n-octylphthalate	ND	1000
Benzo(b)fluoranthene	ND	100
Benzo(k)fluoranthene	ND	100
Benzo(a)pyrene	ND	100
Indeno(1,2,3-cd)pyrene	ND	100
Dibenzo(a,h)anthracene	ND	100
Benzo(g,h,i)perylene	ND	100

ND = Not Detected

Client: Fugro West, Inc.
 Method: EPA Method(s) 6020 7061 7471 7741
 Date Completed: 12/21/2000 - 1/4/2001
 Matrix: Soil
 Units: mg/kg

ToxScan Number: T-19090

Total Metals

<u>Client</u> <u>Sample ID</u>	<u>ToxScan</u> <u>Lab ID</u>	<u>Analyte</u>	<u>Wet Wt.</u> <u>Sample</u> <u>Value</u>	<u>Wet</u> <u>Reporting</u> <u>Limit</u>
12 @ 28.9 DPW-5W	19090-01	Antimony	ND	1.0
		Arsenic	11	5.0
		Barium	57	10
		Beryllium	ND	1.0
		Cadmium	ND	1.0
		Chromium	33	1.0
		Cobalt	9.9	1.0
		Copper	39	1.0
		Lead	11	1.0
		Mercury	ND	0.20
		Molybdenum	3.4	1.0
		Nickel	23	1.0
		Selenium	ND	1.0
		Silver	ND	1.0
		Thallium	ND	1.0
		Vanadium	73	1.0
		Zinc	66	10

Client: Fugro West, Inc.
Method: EPA Method(s) 1664
Date Completed: 12/20/2000
Matrix: Soil
Units: mg/Kg

ToxScan Number: T-19090

<u>Client</u> <u>Sample ID</u>		<u>ToxScan</u> <u>Lab ID</u>	<u>Analyte</u>	<u>Wet Wt.</u> <u>Sample</u> <u>Value</u>	<u>Wet</u> <u>Reporting</u> <u>Limit</u>
12 @ 28.9	DPW-5W	19090-01	TRPH- Gravimetric (SGT- HEM)	ND	100
15 @ 32.6	DPW-5W	19090-02	TRPH- Gravimetric (SGT- HEM)	ND	100
118 @ 36.2	DPW-5W	19090-03	TRPH- Gravimetric (SGT- HEM)	ND	100



McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Toxscan 42 Hangar Way Watsonville, CA 95076	Client Project ID: #T-19090	Date Sampled: 12/05/00
		Date Received: 12/08/00
	Client Contact: Doug Clark	Date Extracted: 12/08/00
	Client P.O: #013711	Date Analyzed: 12/08/00

12/15/00

Dear Doug:

Enclosed are:

- 1). the results of 1 samples from your #T-19090 project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director



McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
 Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Toxscan 42 Hangar Way Watsonville, CA 95076	Client Project ID: #T-19090	Date Sampled: 12/05/00
		Date Received: 12/08/00
	Client Contact: Doug Clark	Date Extracted: 12/08/00
	Client P.O: #013711	Date Analyzed: 12/09/00

Volatile Organics By GC/MS

EPA method 8260

Lab ID	55385
Client ID	T-19090-03-B
Matrix	S

Compound	Concentration*	Reporting Limit		Compound	Concentration*	Reporting Limit	
		W	S			W	S
Acetone ^(b)	ND	5.0	25	trans-1,3-Dichloropropene	ND	1.0	5.0
Benzene	ND	1.0	5.0	Ethylene dibromide	ND	1.0	5.0
Bromobenzene	ND	1.0	5.0	Ethylbenzene	ND	1.0	5.0
Bromochloromethane	ND	1.0	5.0	Hexachlorobutadiene	ND	5.0	25
Bromodichloromethane	ND	1.0	5.0	Iodomethane	ND	1.0	5.0
Bromoform	ND	1.0	5.0	Isopropylbenzene	ND	1.0	5.0
Bromomethane	ND	1.0	5.0	p-Isopropyl toluene	ND	1.0	5.0
n-Butyl benzene	ND	1.0	5.0	Methyl butyl ketone ^(d)	ND	1.0	5.0
sec-Butyl benzene	ND	1.0	5.0	Methylene Chloride ^(e)	ND<10	1.0	5.0
tert-Butyl benzene	ND	1.0	5.0	Methyl ethyl ketone ^(f)	ND	2.0	10
Carbon Disulfide	ND	1.0	5.0	Methyl isobutyl ketone ^(g)	ND	1.0	5.0
Carbon Tetrachloride	ND	1.0	5.0	Methyl tert-Butyl Ether (MTBE)	---	1.0	5.0
Chlorobenzene	ND	1.0	5.0	Naphthalene	ND	5.0	5.0
Chloroethane	ND	1.0	5.0	n-Propyl benzene	ND	1.0	5.0
2-Chloroethyl Vinyl Ether ^(c)	ND	1.0	5.0	Styrene ^(k)	ND	1.0	5.0
Chloroform	ND	1.0	5.0	1,1,1,2-Tetrachloroethane	ND	1.0	5.0
Chloromethane	ND	1.0	5.0	1,1,2,2-Tetrachloroethane	ND	1.0	5.0
2-Chlorotoluene	ND	1.0	5.0	Tetrachloroethene	ND<10	1.0	5.0
4-Chlorotoluene	ND	1.0	5.0	Toluene ^(l)	24	1.0	5.0
Dibromochloromethane	ND	1.0	5.0	1,2,3-Trichlorobenzene	ND	5.0	25
1,2-Dibromo-3-chloropropane	ND	2.0	10	1,2,4-Trichlorobenzene	ND	5.0	25
Dibromomethane	ND	1.0	5.0	1,1,1-Trichloroethane	ND	1.0	5.0
1,2-Dichlorobenzene	ND	1.0	5.0	1,1,2-Trichloroethane	ND	1.0	5.0
1,3-Dichlorobenzene	ND	1.0	5.0	Trichloroethene	ND	1.0	5.0
1,4-Dichlorobenzene	ND	1.0	5.0	Trichlorofluoromethane	ND	1.0	5.0
Dichlorodifluoromethane	ND	1.0	5.0	1,2,3-Trichloropropane	ND	1.0	5.0
1,1-Dichloroethane	ND	1.0	5.0	1,2,4-Trimethylbenzene	ND	1.0	5.0
1,2-Dichloroethane	ND	1.0	5.0	1,3,5-Trimethylbenzene	ND	1.0	5.0
1,1-Dichloroethene	ND	1.0	5.0	Vinyl Acetate ^(m)	ND	5.0	25
cis-1,2-Dichloroethene	ND	1.0	5.0	Vinyl Chloride ⁽ⁿ⁾	ND	1.0	5.0
trans-1,2-Dichloroethene	ND	1.0	5.0	Xylenes, total ^(o)	ND	1.0	5.0
1,2-Dichloropropane	ND	1.0	5.0	Comments:			
1,3-Dichloropropane	ND	1.0	5.0	Surrogate Recoveries (%)			
2,2-Dichloropropane	ND	1.0	5.0	Dibromofluoromethane		105	
1,1-Dichloropropene	ND	1.0	5.0	Toluene-d8		101	
cis-1,3-Dichloropropene	ND	1.0	5.0	4-Bromofluorobenzene		113	

*water and vapor samples are reported in ug/L, soil and sludge samples in ug/kg, wipes in ug/wipe and all TCLP / SPLP extracts in ug/L

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis

(b) 2-propanone or dimethyl ketone; (c) (2-chloroethoxy) ethene; (d) 2-hexanone; (e) dichloromethane; (f) 2-butanone; (g) 4-methyl-2-pentanone or isopropylacetone; (h) lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~5 vol. % sediment; (j) sample diluted due to high organic content; (k) ethenylbenzene; (l) methylbenzene; (m) acetic acid ethenyl ester; (n) chloroethene; (o) dimethylbenzenes.

DHS Certification No. 1644

 Edward Hamilton, Lab Director

EXPLANATION OF ACRONYMS FOR PROJECT # T-19090

The following is a glossary for acronyms that may be used in this report.

<u>Abbreviation</u>	<u>Definition</u>
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NA	Not Applicable
ND	None Detected
REP	Replicate
RPD	Relative Percent Difference
SRM	Standard Reference Material
TOC	Total Organic Carbon

Client: Fugro West, Inc.
Method: EPA 8081
Date Extracted: December 12, 2000
Date Analyzed: December 23, 2000
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19090

Client Sample ID: Method Blank
ToxScan Lab ID: MB121200

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
Aldrin	ND	8.0
alpha-BHC	ND	8.0
beta-BHC	ND	8.0
delta-BHC	ND	8.0
gamma-BHC	ND	8.0
alpha-Chlordane	ND	8.0
gamma-Chlordane	ND	8.0
4,4'-DDD	ND	8.0
4,4'-DDE	ND	8.0
4,4'-DDT	ND	8.0
Dieldrin	ND	8.0
Endosulfan I	ND	16
Endosulfan II	ND	16
Endosulfan Sulfate	ND	16
Endrin	ND	16
Endrin Aldehyde	ND	16
Endrin Ketone	ND	16
Heptachlor	ND	8.0
Heptachlor Epoxide	ND	8.0
Methoxychlor	ND	80
Toxaphene	ND	160
Aroclor-1016	ND	160
Aroclor-1221	ND	160
Aroclor-1232	ND	160
Aroclor-1242	ND	160
Aroclor-1248	ND	160
Aroclor-1254	ND	160
Aroclor-1260	ND	160
Total PCB'S	ND	160

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8081
Date Extracted: December 12, 2000
Date Analyzed: December 23 & 24, 2000
Matrix: Soil

ToxScan Number: T-19090

Quality Control Report

Surrogate recoveries expressed as percentages:

<u>Sample ID</u>	<u>Tetrachloro-m-xylene</u>	<u>Decachlorobiphenyl</u>	<u>QC Limits</u>
Method Blank	94	81	50-150
Lab Control Sample	88	87	50-150
12 @ 28.9 DPW-5W	75	83	50-150

Client: Fugro West, Inc.
Method: EPA 8081
Date Extracted: December 12, 2000
Date Analyzed: December 23, 2000
Matrix: Soil

ToxScan Number: T-19090

Quality Control Report

Spike recoveries expressed as percentages:

<u>Spiked Compound</u>	<u>LCS % REC</u>	<u>QC LIMITS % REC</u>
Lindane	80	46-127
Heptachlor	88	35-130
Aldrin	88	34-132
Dieldrin	89	31-134
Endrin	96	42-139
4,4'-DDT	88	23-134

LCS = Laboratory Control Sample

Client: Fugro West, Inc.
Method: EPA 8270
Date Extracted: 12/8/00
Date Analyzed: 12/12/00
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19090

ToxScan Lab ID: Method Blank

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
Phenol	ND	200
Bis(2-chloroethyl)ether	ND	1000
2-Chlorophenol	ND	200
1,3-Dichlorobenzene	ND	100
1,4-Dichlorobenzene	ND	100
Benzyl alcohol	ND	1000
1,2-Dichlorobenzene	ND	100
2-Methylphenol	ND	200
Bis(2-chloroisopropyl)ether	ND	200
Hexachloroethane	ND	200
N-Nitrosodipropylamine	ND	1000
4-Methylphenol	ND	200
Nitrobenzene	ND	500
Isophorone	ND	500
2-Nitrophenol	ND	200
2,4-Dimethylphenol	ND	200
Bis(2-chloroethoxy)methane	ND	1000
2,4-Dichlorophenol	ND	100
Benzoic acid	ND	1000
1,2,4-Trichlorobenzene	ND	100
Naphthalene	ND	100
4-Chloroaniline	ND	500
Hexachlorobutadiene	ND	200
4-Chloro-3-methylphenol	ND	100
2-Methylnaphthalene	ND	100
Hexachlorocyclopentadiene	ND	200
2,4,6-Trichlorophenol	ND	100
2,4,5-Trichlorophenol	ND	100
2-Chloronaphthalene	ND	100
2-Nitroaniline	ND	200
Acenaphthylene	ND	100
Dimethylphthalate	ND	100
2,6-Dinitrotoluene	ND	100
Acenaphthene	ND	100

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8270
Date Extracted: 12/8/00
Date Analyzed: 12/12/00
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19090

ToxScan Lab ID: Method Blank

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
3-Nitroaniline	ND	200
2,4-Dinitrophenol	ND	500
Dibenzofuran	ND	100
2,4-Dinitrotoluene	ND	100
4-Nitrophenol	ND	500
Fluorene	ND	100
4-Chlorophenyl phenyl ether	ND	100
Diethylphthalate	ND	100
4-Nitroaniline	ND	200
4,6-Dinitro-2-methylphenol	ND	500
N-Nitrosodiphenylamine	ND	200
Azobenzene	ND	100
4-Bromophenyl phenyl ether	ND	100
Hexachlorobenzene	ND	100
Pentachlorophenol	ND	500
Phenanthrene	ND	100
Anthracene	ND	100
Carbazole	ND	200
Di-n-butylphthalate	ND	100
Fluoranthene	ND	100
Pyrene	ND	100
Butyl benzyl phthalate	ND	100
Benzo(a)anthracene	ND	100
Chrysene	ND	100
3,3'-Dichlorobenzidine	ND	200
Bis(2-ethylhexyl)phthalate	ND	100
Di-n-octylphthalate	ND	1000
Benzo(b)fluoranthene	ND	100
Benzo(k)fluoranthene	ND	100
Benzo(a)pyrene	ND	100
Indeno(1,2,3-cd)pyrene	ND	100
Dibenzo(a,h)anthracene	ND	100
Benzo(g,h,i)perylene	ND	100

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8270
Date Extracted: 12/08/00
Date Analyzed: 12/12/00
Matrix: Soil

ToxScan Number: T-19090

Quality Control Report:

Surrogate recoveries expressed as percentages

<u>Sample Identification</u>	<u>S1</u>	<u>S2</u>	<u>S3</u>	<u>S4</u>	<u>S5</u>	<u>S6</u>
15@32.6 DPW-5W	80	78	84	74	67	87
Method Blank	82	80	83	79	73	93
Laboratory Control Sample	80	78	80	77	83	88
15@32.6 DPW-5W MS	73	73	77	71	74	92
15@32.6 DPW-5W MSD	82	80	79	77	83	93

MS = Matrix Spike
MSD = Matrix Spike Duplicate

<u>Surrogates:</u>	<u>QC Limits</u>
S1 = 2-Fluorophenol (S.S.)	25-121
S2 = Phenol-d5 (S.S.)	24-120
S3 = Nitrobenzene-d5 (S.S.)	23-120
S4 = 2-Fluorobiphenyl (S.S.)	30-120
S5 = Tribromophenol (S.S.)	19-122
S6 = Terphenyl-d14 (S.S.)	18-137

Client: Fugro West, Inc.
Method: EPA 8270
Date Extracted: 12/8/00
Date Analyzed: 12/12/00
Matrix: Soil

ToxScan Number: T-19090

Quality Control Report:

Spike recoveries expressed as percentages

<u>Spiked Compound</u>	<u>LCS % Rec</u>	<u>QC LIMITS % Rec</u>
Phenol	72	26-120
2-Chlorophenol	74	25-120
1,4-Dichlorobenzene	72	28-120
N-Nitrosodipropylamine	72	41-126
1,2,4-Trichlorobenzene	80	38-120
4-Chloro-3-methylphenol	80	26-120
Acenaphthene	86	31-137
2,4-Dinitrotoluene	82	28-120
4-Nitrophenol	82	11-120
Pentachlorophenol	80	17-120
Pyrene	86	35-142

LCS = Laboratory Control Sample

Client: Fugro West, Inc.
Method: EPA 8270
Date Extracted: 12/08/00
Date Analyzed: 12/12/00 - 12/13/00
Matrix: Soil

ToxScan Number: T-19090

Quality Control Report:

Spike recoveries expressed as percentages

Client ID: 15@32.6 DPW-5W

ToxScan ID: 19090-02

<u>Spiked Compound</u>	<u>MS</u> <u>% Rec</u>	<u>MSD</u> <u>% Rec</u>	<u>RPD</u>	<u>QC LIMITS</u>	
				<u>% Rec</u>	<u>RPD</u>
Phenol	70	70	0	26-120	35
2-Chlorophenol	78	80	3	25-120	50
1,4-Dichlorobenzene	76	76	0	28-120	27
N-Nitrosodipropylamine	70	70	0	41-126	38
1,2,4-Trichlorobenzene	88	80	10	38-120	23
4-Chloro-3-methylphenol	84	82	2	26-120	33
Acenaphthene	90	82	9	31-137	19
2,4-Dinitrotoluene	78	76	3	28-120	47
4-Nitrophenol	82	80	2	11-120	50
Pentachlorophenol	70	58	19	17-120	47
Pyrene	92	94	2	35-142	36

MS = Matrix Spike

MSD = Matrix Spike Duplicate

RPD = Relative Percent Difference

QC FOR PROJECT # 19090

MATRIX SPIKE / MATRIX SPIKE DUPLICATE SUMMARY:

Matrix: Soil

<u>Analyte</u>	<u>Sample</u>	<u>Spike Amount ppm</u>	<u>MS % Rec</u>	<u>MSD % Rec</u>	<u>RPD</u>
Antimony	19091-10	2.9	70	64	9
Arsenic	19091-10	10	98	88	11
Barium	19091-10	14	90	30	100
Beryllium	19091-10	0.29	106	104	2
Cadmium	19091-10	0.29	116	105	10
Chromium	19091-10	2.9	115	111	4
Cobalt	19091-10	2.9	102	102	0
Copper	19091-10	2.9	112	114	2
Lead	19091-10	1.4	100	88	13
Mercury	19091-10	1.0	21	16	27
Molybdenum	19091-10	2.9	102	100	2
Nickel	19091-10	2.9	110	111	1
Selenium	19096-03	5.0	54	69	24
Silver	19091-10	0.29	116	109	6
Thallium	19091-10	2.9	98	99	1
Vanadium	19091-10	2.9	91	95	4
Zinc	19091-10	2.9	83	94	12

QC FOR PROJECT # T-19090

LABORATORY METHOD BLANK SUMMARY

Applicable Matrix: Sediment

Total Metals

<u>Analyte</u>	<u>Amount</u>	<u>Reporting Limit mg/L</u>	<u>EPA Method Number</u>
Antimony	ND	1.0	6020
Arsenic	ND	5.0	7061
Barium	ND	10	6020
Beryllium	ND	1.0	6020
Cadmium	ND	1.0	6020
Chromium	ND	1.0	6020
Cobalt	ND	1.0	6020
Copper	ND	1.0	6020
Lead	ND	1.0	6020
Mercury	ND	0.020	7471
Molybdenum	ND	1.0	6020
Nickel	ND	1.0	6020
Selenium	ND	1.0	7741
Silver	ND	1.0	6020
Thallium	ND	1.0	6020
Vanadium	ND	1.0	6020
Zinc	ND	10	6020

QC FOR PROJECT # T-19090

SRM SUMMARY:

Matrix: Sediment

Total Metals

<u>Analyte</u>	<u>SRM Value Found</u> <u>mg/Kg</u>	<u>Certified SRM Value</u> <u>mg/Kg</u>	<u>% Recovery</u>	<u>SRM</u>
Antimony	0.759	1.02	74	MESS-3
Arsenic	19.6	21.2	93	MESS-3
Beryllium	1.71	2.30	74	MESS-3
Cadmium	0.217	0.240	91	MESS-3
Chromium	79.3	105	76	MESS-3
Cobalt	13.8	14.4	96	MESS-3
Copper	32.9	33.9	97	MESS-3
Lead	23.9	21.1	113	MESS-3
Mercury	0.0935	0.0910	103	MESS-3
Molybdenum	2.86	2.78	103	MESS-3
Nickel	46.7	46.9	100	MESS-3
Selenium	0.642	0.720	94	MESS-3
Silver	0.172	0.180	96	MESS-3
Thallium	0.959	0.900	107	MESS-3
Vanadium	191	243	79	MESS-3
Zinc	167	159	105	MESS-3

MESS-3 = National Research Council Canada, marine sediment.

QC FOR PROJECT # T-19090

Concentrations of the following are in ug/L

SRM SUMMARY:

Matrix: Water

Total Metals

<u>Analyte</u>	<u>Amount Found</u>	<u>Dilution</u>	<u>Corrected Value</u>	<u>SRM</u>	<u>Certified Value</u>	<u>% Recovery</u>
Antimony	24.3	10	243	ERA 9977	227	107
Arsenic	10.9	20	217	ERA 9977	200	108
Barium	78.6	10	786	ERA 9977	673	117
Beryllium	19.2	10	192	ERA 9977	220	87
Cadmium	13.4	10	134	ERA 9977	120	112
Chromium	38.6	10	386	ERA 9977	413	94
Cobalt	61.0	10	610	ERA 9977	663	91
Copper	41.6	10	416	ERA 9977	447	93
Lead	70.2	10	702	ERA 9977	660	106
Molybdenum	24.4	10	244	ERA 9977	227	107
Nickel	51.7	10	517	ERA 9977	567	91
Selenium	0.353	20	7.06	ERA 9977	200	101
Silver	8.04	10	80.4	ERA 9977	102	79
Thallium	10.7	10	107	ERA 9977	93.3	115
Vanadium	15.3	10	153	ERA 9977	160	96
Zinc	35.4	10	354	ERA 9977	340	104

ERA 9977 = Environmental Resource Associates, WasteWatR Lot No. 9977

QC FOR PROJECT # T-19090

LABORATORY METHOD BLANK SUMMARY

Applicable Matrix: Sediment

<u>Analyte</u>	<u>Amount</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>EPA Method Number</u>
TRPH-Gravimetric (SGT- HEM)	ND	100	mg/Kg	1664



McCAMPBELL ANALYTICAL INC.

110 2nd Ave. South, #D7, Pacheco, CA 94553-5560
 Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

QC REPORT

VOCs (EPA 8240/8260)

Date: 12/09/00-12/10/00 Matrix: Soil

Extraction: N/A

Compound	Concentration: ug/kg				%Recovery		RPD
	Sample	MS	MSD	Amount Spiked	MS	MSD	
SampleID: 120884		Instrument: GC-10					
Surrogate	0.000	83.0	83.0	100.00	83	83	0.0
Toluene	0.000	87.0	93.0	100.00	87	93	6.7
Benzene	0.000	90.0	102.0	100.00	90	102	12.5
Chlorobenzene	0.000	93.0	105.0	100.00	93	105	12.1
Trichloroethane	0.000	73.0	84.0	100.00	73	84	14.0
1,1-Dichloroethene	0.000	79.0	92.0	100.00	79	92	15.2

$$\% \text{ Recovery} = \frac{(MS - \text{Sample})}{\text{Amount Spiked}} \cdot 100$$

$$\text{RPD} = \frac{(MS - \text{MSD})}{(MS + \text{MSD})} \cdot 2 \cdot 100$$

RPD means Relative Percent Deviation



42 Hangar Way • Watsonville, CA 95076-2404 • (831) 724-4522 • FAX (831) 724-3188

January 08, 2001

ToxScan Number: T-19081

Fugro West, Inc.
5855 Olivas Park Drive
Ventura, CA 93003-7672

Attn: Philip Robins

Project Name: Sewer Line Crossing
Project Number: 00 32 3361
Date Sampled: November 28, 2000 - December 01, 2000
Date Received: December 05, 2000
Matrix: Soil

Please find the enclosed test results for the parameters requested for analyses. The samples were analyzed within holding time using the following methods:

Organochlorine Pesticides & PCBs by EPA Method 8081
Semivolatiles by EPA Method 8270C
Total Arsenic by hydride AA by EPA Method 7061
Total Mercury by Cold Vapor AA by EPA Method 7471
Total Metals (Sb,Ba,Be,Cd,Cr,Co,Cu,Pb,Mo,Ni,Ag,Tl,V,Zn) by EPA Method 6020
Total Recoverable Petroleum Hydrocarbons by EPA Method 1664
Total Selenium by hydride AA by EPA Method 7741
Volatile Organic Compounds by EPA Method 8260, conducted by McCampbell Analytical

The samples were received intact and were handled with the proper chain-of-custody procedures. Appropriate QA/QC guidelines were employed during the analyses on a minimum of a 5% basis. QC results were within limits and are reported with or following the data for each analysis.

If you have any questions or require any additional information, please feel free to call.

Sincerely,

Philip D. Carpenter, Ph.D.
President

Enclosures

This cover letter is an integral part of the report.

Client: Fugro West, Inc.
 Method: EPA 8081
 Date Extracted: December 12, 2000
 Date Analyzed: December 23, 2000
 Matrix: Soil
 Units: ug/Kg (ppb)

ToxScan Number: T-19081

Client Sample ID: 10 @ 27.2 DPW-1W
 ToxScan Lab ID: 19081-01

<u>Analyte</u>	<u>Wet Wt. Sample Value</u>	<u>Wet Wt. Reporting Limit</u>
Aldrin	ND	8.0
alpha-BHC	ND	8.0
beta-BHC	ND	8.0
delta-BHC	ND	8.0
gamma-BHC	ND	8.0
alpha-Chlordane	ND	8.0
gamma-Chlordane	ND	8.0
4,4'-DDD	ND	8.0
4,4'-DDE	ND	8.0
4,4'-DDT	ND	8.0
Dieldrin	ND	8.0
Endosulfan I	ND	16
Endosulfan II	ND	16
Endosulfan Sulfate	ND	16
Endrin	ND	16
Endrin Aldehyde	ND	16
Endrin Ketone	ND	16
Heptachlor	ND	8.0
Heptachlor Epoxide	ND	8.0
Methoxychlor	ND	80
Toxaphene	ND	160
Aroclor-1016	ND	160
Aroclor-1221	ND	160
Aroclor-1232	ND	160
Aroclor-1242	ND	160
Aroclor-1248	ND	160
Aroclor-1254	ND	160
Aroclor-1260	ND	160
Total PCB'S	ND	160

ND = Not Detected

Client: Fugro West, Inc.
 Method: EPA 8081
 Date Extracted: December 12, 2000
 Date Analyzed: December 23, 2000
 Matrix: Soil
 Units: ug/Kg (ppb)

ToxScan Number: T-19081

Client Sample ID: 4 @ 22.5 DPW-3W
 ToxScan Lab ID: 19081-09

<u>Analyte</u>	<u>Wet Wt. Sample Value</u>	<u>Wet Wt. Reporting Limit</u>
Aldrin	ND	8.0
alpha-BHC	ND	8.0
beta-BHC	ND	8.0
delta-BHC	ND	8.0
gamma-BHC	ND	8.0
alpha-Chlordane	ND	8.0
gamma-Chlordane	ND	8.0
4,4'-DDD	ND	8.0
4,4'-DDE	ND	8.0
4,4'-DDT	ND	8.0
Dieldrin	ND	8.0
Endosulfan I	ND	16
Endosulfan II	ND	16
Endosulfan Sulfate	ND	16
Endrin	ND	16
Endrin Aldehyde	ND	16
Endrin Ketone	ND	16
Heptachlor	ND	8.0
Heptachlor Epoxide	ND	8.0
Methoxychlor	ND	80
Toxaphene	ND	160
Aroclor-1016	ND	160
Aroclor-1221	ND	160
Aroclor-1232	ND	160
Aroclor-1242	ND	160
Aroclor-1248	ND	160
Aroclor-1254	ND	160
Aroclor-1260	ND	160
Total PCB'S	ND	160

ND = Not Detected

Client: Fugro West, Inc.
 Method: EPA 8081
 Date Extracted: December 12, 2000
 Date Analyzed: December 23, 2000
 Matrix: Soil
 Units: ug/Kg (ppb)

ToxScan Number: T-19081

Client Sample ID: 12 @ 30.4 DPW-6W
 ToxScan Lab ID: 19081-11

<u>Analyte</u>	<u>Wet Wt. Sample Value</u>	<u>Wet Wt. Reporting Limit</u>
Aldrin	ND	8.0
alpha-BHC	ND	8.0
beta-BHC	ND	8.0
delta-BHC	ND	8.0
gamma-BHC	ND	8.0
alpha-Chlordane	ND	8.0
gamma-Chlordane	ND	8.0
4,4'-DDD	ND	8.0
4,4'-DDE	ND	8.0
4,4'-DDT	ND	8.0
Dieldrin	ND	8.0
Endosulfan I	ND	16
Endosulfan II	ND	16
Endosulfan Sulfate	ND	16
Endrin	ND	16
Endrin Aldehyde	ND	16
Endrin Ketone	ND	16
Heptachlor	ND	8.0
Heptachlor Epoxide	ND	8.0
Methoxychlor	ND	80
Toxaphene	ND	160
Aroclor-1016	ND	160
Aroclor-1221	ND	160
Aroclor-1232	ND	160
Aroclor-1242	ND	160
Aroclor-1248	ND	160
Aroclor-1254	ND	160
Aroclor-1260	ND	160
Total PCB'S	ND	160

ND = Not Detected

Client: Fugro West, Inc.
 Method: EPA 8081
 Date Extracted: December 12, 2000
 Date Analyzed: December 23, 2000
 Matrix: Soil
 Units: ug/Kg (ppb)

ToxScan Number: T-19081

Client Sample ID: 15 @ 32.52 DPW-4W
 ToxScan Lab ID: 19081-14

<u>Analyte</u>	<u>Wet Wt. Sample Value</u>	<u>Wet Wt. Reporting Limit</u>
Aldrin	ND	8.0
alpha-BHC	ND	8.0
beta-BHC	ND	8.0
delta-BHC	ND	8.0
gamma-BHC	ND	8.0
alpha-Chlordane	ND	8.0
gamma-Chlordane	ND	8.0
4,4'-DDD	ND	8.0
4,4'-DDE	ND	8.0
4,4'-DDT	ND	8.0
Dieldrin	ND	8.0
Endosulfan I	ND	16
Endosulfan II	ND	16
Endosulfan Sulfate	ND	16
Endrin	ND	16
Endrin Aldehyde	ND	16
Endrin Ketone	ND	16
Heptachlor	ND	8.0
Heptachlor Epoxide	ND	8.0
Methoxychlor	ND	80
Toxaphene	ND	160
Aroclor-1016	ND	160
Aroclor-1221	ND	160
Aroclor-1232	ND	160
Aroclor-1242	ND	160
Aroclor-1248	ND	160
Aroclor-1254	ND	160
Aroclor-1260	ND	160
Total PCB'S	ND	160

ND = Not Detected

Client: Fugro West, Inc.
 Method: EPA 8081
 Date Extracted: December 12, 2000
 Date Analyzed: December 23, 2000
 Matrix: Soil
 Units: ug/Kg (ppb)

ToxScan Number: T-19081

Client Sample ID: 22 @ 40.9 DPW-4W
 ToxScan Lab ID: 19081-15

<u>Analyte</u>	<u>Wet Wt. Sample Value</u>	<u>Wet Wt. Reporting Limit</u>
Aldrin	ND	8.0
alpha-BHC	ND	8.0
beta-BHC	ND	8.0
delta-BHC	ND	8.0
gamma-BHC	ND	8.0
alpha-Chlordane	ND	8.0
gamma-Chlordane	ND	8.0
4,4'-DDD	ND	8.0
4,4'-DDE	ND	8.0
4,4'-DDT	ND	8.0
Dieldrin	ND	8.0
Endosulfan I	ND	16
Endosulfan II	ND	16
Endosulfan Sulfate	ND	16
Endrin	ND	16
Endrin Aldehyde	ND	16
Endrin Ketone	ND	16
Heptachlor	ND	8.0
Heptachlor Epoxide	ND	8.0
Methoxychlor	ND	80
Toxaphene	ND	160
Aroclor-1016	ND	160
Aroclor-1221	ND	160
Aroclor-1232	ND	160
Aroclor-1242	ND	160
Aroclor-1248	ND	160
Aroclor-1254	ND	160
Aroclor-1260	ND	160
Total PCB'S	ND	160

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8270
Date Extracted: 12/08/00
Date Analyzed: 12/12/00
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19081

Client Sample ID: 12@31.3 DPW-1W

ToxScan Lab ID: 19081-02

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
Phenol	ND	200
Bis(2-chloroethyl)ether	ND	1000
2-Chlorophenol	ND	200
1,3-Dichlorobenzene	ND	100
1,4-Dichlorobenzene	ND	100
Benzyl alcohol	ND	1000
1,2-Dichlorobenzene	ND	100
2-Methylphenol	ND	200
Bis(2-chloroisopropyl)ether	ND	200
Hexachloroethane	ND	200
N-Nitrosodipropylamine	ND	1000
4-Methylphenol	ND	200
Nitrobenzene	ND	500
Isophorone	ND	500
2-Nitrophenol	ND	200
2,4-Dimethylphenol	ND	200
Bis(2-chloroethoxy)methane	ND	1000
2,4-Dichlorophenol	ND	100
Benzoic acid	ND	1000
1,2,4-Trichlorobenzene	ND	100
Naphthalene	ND	100
4-Chloroaniline	ND	500
Hexachlorobutadiene	ND	200
4-Chloro-3-methylphenol	ND	100
2-Methylnaphthalene	ND	100
Hexachlorocyclopentadiene	ND	200
2,4,6-Trichlorophenol	ND	100
2,4,5-Trichlorophenol	ND	100
2-Chloronaphthalene	ND	100
2-Nitroaniline	ND	200
Acenaphthylene	ND	100
Dimethylphthalate	ND	100
2,6-Dinitrotoluene	ND	100
Acenaphthene	ND	100

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8270
Date Extracted: 12/08/00
Date Analyzed: 12/12/00
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19081

Client Sample ID: 12@31.3 DPW-1W

ToxScan Lab ID: 19081-02

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
3-Nitroaniline	ND	200
2,4-Dinitrophenol	ND	500
Dibenzofuran	ND	100
2,4-Dinitrotoluene	ND	100
4-Nitrophenol	ND	500
Fluorene	ND	100
4-Chlorophenyl phenyl ether	ND	100
Diethylphthalate	ND	100
4-Nitroaniline	ND	200
4,6-Dinitro-2-methylphenol	ND	500
N-Nitrosodiphenylamine	ND	200
Azobenzene	ND	100
4-Bromophenyl phenyl ether	ND	100
Hexachlorobenzene	ND	100
Pentachlorophenol	ND	500
Phenanthrene	ND	100
Anthracene	ND	100
Carbazole	ND	200
Di-n-butylphthalate	ND	100
Fluoranthene	ND	100
Pyrene	ND	100
Butyl benzyl phthalate	ND	100
Benzo(a)anthracene	ND	100
Chrysene	ND	100
3,3'-Dichlorobenzidine	ND	200
Bis(2-ethylhexyl)phthalate	ND	100
Di-n-octylphthalate	ND	1000
Benzo(b)fluoranthene	ND	100
Benzo(k)fluoranthene	ND	100
Benzo(a)pyrene	ND	100
Indeno(1,2,3-cd)pyrene	ND	100
Dibenzo(a,h)anthracene	ND	100
Benzo(g,h,i)perylene	ND	100

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8270
Date Extracted: 12/08/00
Date Analyzed: 12/12/00
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19081

Client Sample ID: 8@27.3 DPW-3W

ToxScan Lab ID: 19081-08

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
Phenol	ND	200
Bis(2-chloroethyl)ether	ND	1000
2-Chlorophenol	ND	200
1,3-Dichlorobenzene	ND	100
1,4-Dichlorobenzene	ND	100
Benzyl alcohol	ND	1000
1,2-Dichlorobenzene	ND	100
2-Methylphenol	ND	200
Bis(2-chloroisopropyl)ether	ND	200
Hexachloroethane	ND	200
N-Nitrosodipropylamine	ND	1000
4-Methylphenol	ND	200
Nitrobenzene	ND	500
Isophorone	ND	500
2-Nitrophenol	ND	200
2,4-Dimethylphenol	ND	200
Bis(2-chloroethoxy)methane	ND	1000
2,4-Dichlorophenol	ND	100
Benzoic acid	ND	1000
1,2,4-Trichlorobenzene	ND	100
Naphthalene	ND	100
4-Chloroaniline	ND	500
Hexachlorobutadiene	ND	200
4-Chloro-3-methylphenol	ND	100
2-Methylnaphthalene	ND	100
Hexachlorocyclopentadiene	ND	200
2,4,6-Trichlorophenol	ND	100
2,4,5-Trichlorophenol	ND	100
2-Chloronaphthalene	ND	100
2-Nitroaniline	ND	200
Acenaphthylene	ND	100
Dimethylphthalate	ND	100
2,6-Dinitrotoluene	ND	100
Acenaphthene	ND	100

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8270
Date Extracted: 12/08/00
Date Analyzed: 12/12/00
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19081

Client Sample ID: 8@27.3 DPW-3W

ToxScan Lab ID: 19081-08

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
3-Nitroaniline	ND	200
2,4-Dinitrophenol	ND	500
Dibenzofuran	ND	100
2,4-Dinitrotoluene	ND	100
4-Nitrophenol	ND	500
Fluorene	ND	100
4-Chlorophenyl phenyl ether	ND	100
Diethylphthalate	ND	100
4-Nitroaniline	ND	200
4,6-Dinitro-2-methylphenol	ND	500
N-Nitrosodiphenylamine	ND	200
Azobenzene	ND	100
4-Bromophenyl phenyl ether	ND	100
Hexachlorobenzene	ND	100
Pentachlorophenol	ND	500
Phenanthrene	ND	100
Anthracene	ND	100
Carbazole	ND	200
Di-n-butylphthalate	ND	100
Fluoranthene	ND	100
Pyrene	ND	100
Butyl benzyl phthalate	ND	100
Benzo(a)anthracene	ND	100
Chrysene	ND	100
3,3'-Dichlorobenzidine	ND	200
Bis(2-ethylhexyl)phthalate	ND	100
Di-n-octylphthalate	ND	1000
Benzo(b)fluoranthene	ND	100
Benzo(k)fluoranthene	ND	100
Benzo(a)pyrene	ND	100
Indeno(1,2,3-cd)pyrene	ND	100
Dibenzo(a,h)anthracene	ND	100
Benzo(g,h,i)perylene	ND	100

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8270
Date Extracted: 12/08/00
Date Analyzed: 12/12/00
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19081

Client Sample ID: 15@34.9 DPW-6W

ToxScan Lab ID: 19081-12

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
Phenol	ND	200
Bis(2-chloroethyl)ether	ND	1000
2-Chlorophenol	ND	200
1,3-Dichlorobenzene	ND	100
1,4-Dichlorobenzene	ND	100
Benzyl alcohol	ND	1000
1,2-Dichlorobenzene	ND	100
2-Methylphenol	ND	200
Bis(2-chloroisopropyl)ether	ND	200
Hexachloroethane	ND	200
N-Nitrosodipropylamine	ND	1000
4-Methylphenol	ND	200
Nitrobenzene	ND	500
Isophorone	ND	500
2-Nitrophenol	ND	200
2,4-Dimethylphenol	ND	200
Bis(2-chloroethoxy)methane	ND	1000
2,4-Dichlorophenol	ND	100
Benzoic acid	ND	1000
1,2,4-Trichlorobenzene	ND	100
Naphthalene	ND	100
4-Chloroaniline	ND	500
Hexachlorobutadiene	ND	200
4-Chloro-3-methylphenol	ND	100
2-Methylnaphthalene	ND	100
Hexachlorocyclopentadiene	ND	200
2,4,6-Trichlorophenol	ND	100
2,4,5-Trichlorophenol	ND	100
2-Chloronaphthalene	ND	100
2-Nitroaniline	ND	200
Acenaphthylene	ND	100
Dimethylphthalate	ND	100
2,6-Dinitrotoluene	ND	100
Acenaphthene	ND	100

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8270
Date Extracted: 12/08/00
Date Analyzed: 12/12/00
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19081

Client Sample ID: 15@34.9 DPW-6W

ToxScan Lab ID: 19081-12

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
3-Nitroaniline	ND	200
2,4-Dinitrophenol	ND	500
Dibenzofuran	ND	100
2,4-Dinitrotoluene	ND	100
4-Nitrophenol	ND	500
Fluorene	ND	100
4-Chlorophenyl phenyl ether	ND	100
Diethylphthalate	ND	100
4-Nitroaniline	ND	200
4,6-Dinitro-2-methylphenol	ND	500
N-Nitrosodiphenylamine	ND	200
Azobenzene	ND	100
4-Bromophenyl phenyl ether	ND	100
Hexachlorobenzene	ND	100
Pentachlorophenol	ND	500
Phenanthrene	ND	100
Anthracene	ND	100
Carbazole	ND	200
Di-n-butylphthalate	ND	100
Fluoranthene	ND	100
Pyrene	ND	100
Butyl benzyl phthalate	ND	100
Benzo(a)anthracene	ND	100
Chrysene	ND	100
3,3'-Dichlorobenzidine	ND	200
Bis(2-ethylhexyl)phthalate	ND	100
Di-n-octylphthalate	ND	1000
Benzo(b)fluoranthene	ND	100
Benzo(k)fluoranthene	ND	100
Benzo(a)pyrene	ND	100
Indeno(1,2,3-cd)pyrene	ND	100
Dibenzo(a,h)anthracene	ND	100
Benzo(g,h,i)perylene	ND	100

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8270
Date Extracted: 12/8/00
Date Analyzed: 12/12/00
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19081

Client Sample ID: 19@36.9 DPW-4W

ToxScan Lab ID: 19081-16

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
Phenol	ND	200
Bis(2-chloroethyl)ether	ND	1000
2-Chlorophenol	ND	200
1,3-Dichlorobenzene	ND	100
1,4-Dichlorobenzene	ND	100
Benzyl alcohol	ND	1000
1,2-Dichlorobenzene	ND	100
2-Methylphenol	ND	200
Bis(2-chloroisopropyl)ether	ND	200
Hexachloroethane	ND	200
N-Nitrosodipropylamine	ND	1000
4-Methylphenol	ND	200
Nitrobenzene	ND	500
Isophorone	ND	500
2-Nitrophenol	ND	200
2,4-Dimethylphenol	ND	200
Bis(2-chloroethoxy)methane	ND	1000
2,4-Dichlorophenol	ND	100
Benzoic acid	ND	1000
1,2,4-Trichlorobenzene	ND	100
Naphthalene	ND	100
4-Chloroaniline	ND	500
Hexachlorobutadiene	ND	200
4-Chloro-3-methylphenol	ND	100
2-Methylnaphthalene	ND	100
Hexachlorocyclopentadiene	ND	200
2,4,6-Trichlorophenol	ND	100
2,4,5-Trichlorophenol	ND	100
2-Chloronaphthalene	ND	100
2-Nitroaniline	ND	200
Acenaphthylene	ND	100
Dimethylphthalate	ND	100
2,6-Dinitrotoluene	ND	100
Acenaphthene	ND	100

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8270
Date Extracted: 12/8/00
Date Analyzed: 12/12/00
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19081

Client Sample ID: 19@36.9 DPW-4W

ToxScan Lab ID: 19081-16

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
3-Nitroaniline	ND	200
2,4-Dinitrophenol	ND	500
Dibenzofuran	ND	100
2,4-Dinitrotoluene	ND	100
4-Nitrophenol	ND	500
Fluorene	ND	100
4-Chlorophenyl phenyl ether	ND	100
Diethylphthalate	ND	100
4-Nitroaniline	ND	200
4,6-Dinitro-2-methylphenol	ND	500
N-Nitrosodiphenylamine	ND	200
Azobenzene	ND	100
4-Bromophenyl phenyl ether	ND	100
Hexachlorobenzene	ND	100
Pentachlorophenol	ND	500
Phenanthrene	ND	100
Anthracene	ND	100
Carbazole	ND	200
Di-n-butylphthalate	ND	100
Fluoranthene	ND	100
Pyrene	ND	100
Butyl benzyl phthalate	ND	100
Benzo(a)anthracene	ND	100
Chrysene	ND	100
3,3'-Dichlorobenzidine	ND	200
Bis(2-ethylhexyl)phthalate	ND	100
Di-n-octylphthalate	ND	1000
Benzo(b)fluoranthene	ND	100
Benzo(k)fluoranthene	ND	100
Benzo(a)pyrene	ND	100
Indeno(1,2,3-cd)pyrene	ND	100
Dibenzo(a,h)anthracene	ND	100
Benzo(g,h,i)perylene	ND	100

ND = Not Detected

Client: Fugro West, Inc.
 Method: EPA Method(s) 6020 7061 7471 7741
 Date Completed: 12/19/2000 - 12/28/2000
 Matrix: Soil
 Units: mg/kg

ToxScan Number: T-19081

Total Metals

<u>Client</u>	<u>ToxScan</u>		<u>Wet Wt.</u>	<u>Wet</u>
<u>Sample ID</u>	<u>Lab ID</u>	<u>Analyte</u>	<u>Sample</u>	<u>Reporting</u>
			<u>Value</u>	<u>Limit</u>
10 @ 27.2 DPW - 1W	19081-01	Antimony	ND	1.0
		Arsenic	ND	5.0
		Barium	23	10
		Beryllium	ND	1.0
		Cadmium	ND	1.0
		Chromium	11	1.0
		Cobalt	2.8	1.0
		Copper	8.0	1.0
		Lead	2.0	1.0
		Mercury	ND	0.20
		Molybdenum	ND	1.0
		Nickel	4.8	1.0
		Selenium	ND	1.0
		Silver	ND	1.0
		Thallium	ND	1.0
		Vanadium	59	1.0
		Zinc	19	10

Client: Fugro West, Inc.
 Method: EPA Method(s) 6020 7061 7471 7741
 Date Completed: 12/19/2000 - 12/28/2000
 Matrix: Soil
 Units: mg/kg

ToxScan Number: T-19081

Total Metals

Client	ToxScan		Wet Wt.	Wet
<u>Sample ID</u>	<u>Lab ID</u>	<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
4 @ 22.5 DPW - 3W	19081-09	Antimony	ND	1.0
		Arsenic	ND	5.0
		Barium	33	10
		Beryllium	ND	1.0
		Cadmium	ND	1.0
		Chromium	15	1.0
		Cobalt	3.4	1.0
		Copper	68	1.0
		Lead	2.8	1.0
		Mercury	ND	0.20
		Molybdenum	ND	1.0
		Nickel	6.7	1.0
		Selenium	ND	1.0
		Silver	ND	1.0
		Thallium	ND	1.0
		Vanadium	98	1.0
		Zinc	64	10

Client: Fugro West, Inc.
 Method: EPA Method(s) 6020 7061 7471 7741
 Date Completed: 12/19/2000 - 12/28/2000
 Matrix: Soil
 Units: mg/kg

ToxScan Number: T-19081

Total Metals

Client	ToxScan		Wet Wt.	Wet
<u>Sample ID</u>	<u>Lab ID</u>	<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
9 @ 26.3 DPW - 6W	19081-10	Antimony	ND	1.0
		Arsenic	ND	5.0
		Barium	79	10
		Beryllium	ND	1.0
		Cadmium	ND	1.0
		Chromium	27	1.0
		Cobalt	5.0	1.0
		Copper	8.5	1.0
		Lead	3.5	1.0
		Mercury	ND	0.20
		Molybdenum	ND	1.0
		Nickel	11	1.0
		Selenium	ND	1.0
		Silver	ND	1.0
		Thallium	ND	1.0
		Vanadium	89	1.0
		Zinc	36	10

Client: Fugro West, Inc.
 Method: EPA Method(s) 6020 7061 7471 7741
 Date Completed: 12/19/2000 - 12/28/2000
 Matrix: Soil
 Units: mg/kg

ToxScan Number: T-19081

Total Metals

<u>Client</u>	<u>ToxScan</u>		<u>Wet Wt.</u>	<u>Wet</u>
<u>Sample ID</u>	<u>Lab ID</u>	<u>Analyte</u>	<u>Sample</u>	<u>Reporting</u>
			<u>Value</u>	<u>Limit</u>
15 @ 34.9	DPW - 6W 19081-12	Antimony	ND	1.0
		Arsenic	ND	5.0
		Barium	43	10
		Beryllium	ND	1.0
		Cadmium	ND	1.0
		Chromium	24	1.0
		Cobalt	4.1	1.0
		Copper	6.3	1.0
		Lead	3.1	1.0
		Mercury	ND	0.20
		Molybdenum	ND	1.0
		Nickel	9.3	1.0
		Selenium	ND	1.0
		Silver	ND	1.0
		Thallium	ND	1.0
		Vanadium	98	1.0
		Zinc	27	10

Client: Fugro West, Inc.
 Method: EPA Method(s) 6020 7061 7471 7741
 Date Completed: 12/19/2000 - 12/28/2000
 Matrix: Soil
 Units: mg/kg

ToxScan Number: T-19081

Total Metals

<u>Client</u> <u>Sample ID</u>	<u>ToxScan</u> <u>Lab ID</u>	<u>Analyte</u>	<u>Wet Wt.</u> <u>Sample</u> <u>Value</u>	<u>Wet</u> <u>Reporting</u> <u>Limit</u>
15 @ 32.52 DPW - 4W	19081-14	Antimony	ND	1.0
		Arsenic	8.5	5.0
		Barium	240	10
		Beryllium	ND	1.0
		Cadmium	3.6	1.0
		Chromium	79	1.0
		Cobalt	13	1.0
		Copper	31	1.0
		Lead	5.3	1.0
		Mercury	ND	0.20
		Molybdenum	23	1.0
		Nickel	69	1.0
		Selenium	ND	1.0
		Silver	ND	1.0
		Thallium	ND	1.0
		Vanadium	180	1.0
		Zinc	72	10

Client: Fugro West, Inc.
 Method: EPA Method(s) 1664
 Date Completed: 12/20/2000
 Matrix: Soil
 Units: mg/Kg

ToxScan Number: T-19081

<u>Client Sample ID</u>		<u>ToxScan Lab ID</u>	<u>Analyte</u>	<u>Wet Wt. Sample Value</u>	<u>Wet Reporting Limit</u>
10 @ 27.2	DPW - 1W	19081-01	TRPH-Gravimetric (SGT-HEM)	ND	100
12 @ 31.3	DPW - 1W	19081-02	TRPH-Gravimetric (SGT-HEM)	ND	100
14 @ 35.9	DPW - 1W	19081-03	TRPH-Gravimetric (SGT-HEM)	ND	100
16 @ 40.4	DPW - 1W	19081-04	TRPH-Gravimetric (SGT-HEM)	ND	100
11 @ 31.8	DPW - 3W	19081-07	TRPH-Gravimetric (SGT-HEM)	ND	100
8 @ 27.3	DPW - 3W	19081-08	TRPH-Gravimetric (SGT-HEM)	ND	100
4 @ 22.5	DPW - 3W	19081-09	TRPH-Gravimetric (SGT-HEM)	ND	100
9 @ 26.3	DPW - 6W	19081-10	TRPH-Gravimetric (SGT-HEM)	ND	100
12 @ 30.4	DPW - 6W	19081-11	TRPH-Gravimetric (SGT-HEM)	ND	100

Client: Fugro West, Inc.
 Method: EPA Method(s) 1664
 Date Completed: 12/20/2000
 Matrix: Soil
 Units: mg/Kg

ToxScan Number: T-19081

<u>Client</u> <u>Sample ID</u>		<u>ToxScan</u> <u>Lab ID</u>	<u>Analyte</u>	<u>Wet Wt.</u> <u>Sample</u> <u>Value</u>	<u>Wet</u> <u>Reporting</u> <u>Limit</u>
15 @ 34.9	DPW - 6W	19081-12	TRPH- Gravimetric (SGT- HEM)	ND	100
15 @ 32.52 4W	DPW -	19081-14	TRPH- Gravimetric (SGT- HEM)	ND	100
22 @ 40.9	DPW - 4W	19081-15	TRPH- Gravimetric (SGT- HEM)	ND	100
19 @ 36.9	DPW - 4W	19081-16	TRPH- Gravimetric (SGT- HEM)	ND	100



McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Toxscan 42 Hangar Way Watsonville, CA 95076	Client Project ID: #T-19081	Date Sampled: 11/28-12/01/00
		Date Received: 12/08/00
	Client Contact: Doug Clark	Date Extracted: 12/08/00
	Client P.O: #013707	Date Analyzed: 12/08/00

12/15/00

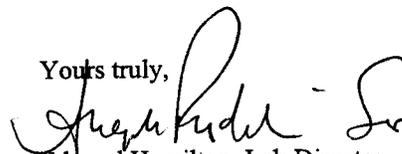
Dear Doug:

Enclosed are:

- 1). the results of 4 samples from your #T-19081 project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,


Edward Hamilton, Lab Director



McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
 Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mcccampbell.com> E-mail: main@mcccampbell.com

Toxscan 42 Hangar Way Watsonville, CA 95076	Client Project ID: #T-19081	Date Sampled: 11/28-12/01/00
		Date Received: 12/08/00
	Client Contact: Doug Clark	Date Extracted: 12/08/00
	Client P.O: #013707	Date Analyzed: 12/08/00

Volatile Organics By GC/MS

EPA method 8260

Lab ID	55374
Client ID	T-19081-03-B
Matrix	S

Compound	Concentration*	Reporting Limit		Compound	Concentration*	Reporting Limit	
		W	S			W	S
Acetone ^(b)	ND	5.0	25	trans-1,3-Dichloropropene	ND	1.0	5.0
Benzene	ND	1.0	5.0	Ethylene dibromide	ND	1.0	5.0
Bromobenzene	ND	1.0	5.0	Ethylbenzene	ND	1.0	5.0
Bromochloromethane	ND	1.0	5.0	Hexachlorobutadiene	ND	5.0	25
Bromodichloromethane	ND	1.0	5.0	Iodomethane	ND	1.0	5.0
Bromoform	ND	1.0	5.0	Isopropylbenzene	ND	1.0	5.0
Bromomethane	ND	1.0	5.0	p-Isopropyl toluene	ND	1.0	5.0
n-Butyl benzene	ND	1.0	5.0	Methyl butyl ketone ^(d)	ND	1.0	5.0
sec-Butyl benzene	ND	1.0	5.0	Methylene Chloride ^(e)	ND<10	1.0	5.0
tert-Butyl benzene	ND	1.0	5.0	Methyl ethyl ketone ⁽ⁱ⁾	ND	2.0	10
Carbon Disulfide	ND	1.0	5.0	Methyl isobutyl ketone ^(g)	ND	1.0	5.0
Carbon Tetrachloride	ND	1.0	5.0	Methyl tert-Butyl Ether (MTBE)	---	1.0	5.0
Chlorobenzene	ND	1.0	5.0	Naphthalene	ND	5.0	5.0
Chloroethane	ND	1.0	5.0	n-Propyl benzene	ND	1.0	5.0
2-Chloroethyl Vinyl Ether ^(c)	ND	1.0	5.0	Styrene ^(k)	ND	1.0	5.0
Chloroform	ND	1.0	5.0	1,1,1,2-Tetrachloroethane	ND	1.0	5.0
Chloromethane	ND	1.0	5.0	1,1,2,2-Tetrachloroethane	ND	1.0	5.0
2-Chlorotoluene	ND	1.0	5.0	Tetrachloroethene	ND<10	1.0	5.0
4-Chlorotoluene	ND	1.0	5.0	Toluene ^(l)	ND	1.0	5.0
Dibromochloromethane	ND	1.0	5.0	1,2,3-Trichlorobenzene	ND	5.0	25
1,2-Dibromo-3-chloropropane	ND	2.0	10	1,2,4-Trichlorobenzene	ND	5.0	25
Dibromomethane	ND	1.0	5.0	1,1,1-Trichloroethane	ND	1.0	5.0
1,2-Dichlorobenzene	ND	1.0	5.0	1,1,2-Trichloroethane	ND	1.0	5.0
1,3-Dichlorobenzene	ND	1.0	5.0	Trichloroethene	ND	1.0	5.0
1,4-Dichlorobenzene	ND	1.0	5.0	Trichlorofluoromethane	ND	1.0	5.0
Dichlorodifluoromethane	ND	1.0	5.0	1,2,3-Trichloropropane	ND	1.0	5.0
1,1-Dichloroethane	ND	1.0	5.0	1,2,4-Trimethylbenzene	ND	1.0	5.0
1,2-Dichloroethane	ND	1.0	5.0	1,3,5-Trimethylbenzene	ND	1.0	5.0
1,1-Dichloroethene	ND	1.0	5.0	Vinyl Acetate ^(m)	ND	5.0	25
cis-1,2-Dichloroethene	ND	1.0	5.0	Vinyl Chloride ⁽ⁿ⁾	ND	1.0	5.0
trans-1,2-Dichloroethene	ND	1.0	5.0	Xylenes, total ^(o)	ND	1.0	5.0
1,2-Dichloropropane	ND	1.0	5.0	Comments:			
1,3-Dichloropropane	ND	1.0	5.0	Surrogate Recoveries (%)			
2,2-Dichloropropane	ND	1.0	5.0	Dibromofluoromethane		103	
1,1-Dichloropropene	ND	1.0	5.0	Toluene-d8		104	
cis-1,3-Dichloropropene	ND	1.0	5.0	4-Bromofluorobenzene		113	

*water and vapor samples are reported in ug/L, soil and sludge samples in ug/kg, wipes in ug/wipe and all TCLP / SPLP extracts in ug/L

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis

(b) 2-propanone or dimethyl ketone; (c) (2-chloroethoxy) ethene; (d) 2-hexanone; (e) dichloromethane; (f) 2-butanone; (g) 4-methyl-2-pentanone or isopropylacetone; (h) lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~5 vol. % sediment; (j) sample diluted due to high organic content; (k) ethenylbenzene; (l) methylbenzene; (m) acetic acid ethenyl ester; (n) chloroethene; (o) dimethylbenzenes.

DHS Certification No. 1644

Edward Hamilton, Lab Director



McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
 Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Toxscan 42 Hangar Way Watsonville, CA 95076	Client Project ID: #T-19081	Date Sampled: 11/28-12/01/00
	Client Contact: Doug Clark	Date Received: 12/08/00
	Client P.O: #013707	Date Analyzed: 12/08/00
		Date Extracted: 12/08/00

Volatile Organics By GC/MS

EPA method 8260

Lab ID	55375
Client ID	T-19081-07-B
Matrix	S

Compound	Concentration*	Reporting Limit		Compound	Concentration*	Reporting Limit	
		W	S			W	S
Acetone ^(b)	ND	5.0	25	trans-1,3-Dichloropropene	ND	1.0	5.0
Benzene	ND	1.0	5.0	Ethylene dibromide	ND	1.0	5.0
Bromobenzene	ND	1.0	5.0	Ethylbenzene	ND	1.0	5.0
Bromochloromethane	ND	1.0	5.0	Hexachlorobutadiene	ND	5.0	25
Bromodichloromethane	ND	1.0	5.0	Iodomethane	ND	1.0	5.0
Bromoform	ND	1.0	5.0	Isopropylbenzene	ND	1.0	5.0
Bromomethane	ND	1.0	5.0	p-Isopropyl toluene	ND	1.0	5.0
n-Butyl benzene	ND	1.0	5.0	Methyl butyl ketone ^(d)	ND	1.0	5.0
sec-Butyl benzene	ND	1.0	5.0	Methylene Chloride ^(e)	ND<10	1.0	5.0
tert-Butyl benzene	ND	1.0	5.0	Methyl ethyl ketone ⁽ⁱ⁾	ND	2.0	10
Carbon Disulfide	ND	1.0	5.0	Methyl isobutyl ketone ^(g)	ND	1.0	5.0
Carbon Tetrachloride	ND	1.0	5.0	Methyl tert-Butyl Ether (MTBE)	---	1.0	5.0
Chlorobenzene	ND	1.0	5.0	Naphthalene	ND	5.0	5.0
Chloroethane	ND	1.0	5.0	n-Propyl benzene	ND	1.0	5.0
2-Chloroethyl Vinyl Ether ^(e)	ND	1.0	5.0	Styrene ^(k)	ND	1.0	5.0
Chloroform	ND	1.0	5.0	1,1,1,2-Tetrachloroethane	ND	1.0	5.0
Chloromethane	ND	1.0	5.0	1,1,2,2-Tetrachloroethane	ND	1.0	5.0
2-Chlorotoluene	ND	1.0	5.0	Tetrachloroethene	ND<10	1.0	5.0
4-Chlorotoluene	ND	1.0	5.0	Toluene ^(l)	ND	1.0	5.0
Dibromochloromethane	ND	1.0	5.0	1,2,3-Trichlorobenzene	ND	5.0	25
1,2-Dibromo-3-chloropropane	ND	2.0	10	1,2,4-Trichlorobenzene	ND	5.0	25
Dibromomethane	ND	1.0	5.0	1,1,1-Trichloroethane	ND	1.0	5.0
1,2-Dichlorobenzene	ND	1.0	5.0	1,1,2-Trichloroethane	ND	1.0	5.0
1,3-Dichlorobenzene	ND	1.0	5.0	Trichloroethene	ND	1.0	5.0
1,4-Dichlorobenzene	ND	1.0	5.0	Trichlorofluoromethane	ND	1.0	5.0
Dichlorodifluoromethane	ND	1.0	5.0	1,2,3-Trichloropropane	ND	1.0	5.0
1,1-Dichloroethane	ND	1.0	5.0	1,2,4-Trimethylbenzene	ND	1.0	5.0
1,2-Dichloroethane	ND	1.0	5.0	1,3,5-Trimethylbenzene	ND	1.0	5.0
1,1-Dichloroethene	ND	1.0	5.0	Vinyl Acetate ^(m)	ND	5.0	25
cis-1,2-Dichloroethene	ND	1.0	5.0	Vinyl Chloride ⁽ⁿ⁾	ND	1.0	5.0
trans-1,2-Dichloroethene	ND	1.0	5.0	Xylenes, total ^(o)	ND	1.0	5.0
1,2-Dichloropropane	ND	1.0	5.0	Comments:			
1,3-Dichloropropane	ND	1.0	5.0	Surrogate Recoveries (%)			
2,2-Dichloropropane	ND	1.0	5.0	Dibromofluoromethane		105	
1,1-Dichloropropene	ND	1.0	5.0	Toluene-d8		102	
cis-1,3-Dichloropropene	ND	1.0	5.0	4-Bromofluorobenzene		105	

* water and vapor samples are reported in ug/L, soil and sludge samples in ug/kg, wipes in ug/wipe and all TCLP / SPLP extracts in ug/L
 ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis

(b) 2-propanone or dimethyl ketone; (c) (2-chloroethoxy) ethene; (d) 2-hexanone; (e) dichloromethane; (f) 2-butanone; (g) 4-methyl-2-pentanone or isopropylacetone; (h) lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~5 vol. % sediment; (j) sample diluted due to high organic content; (k) ethenylbenzene; (l) methylbenzene; (m) acetic acid ethenyl ester; (n) chloroethene; (o) dimethylbenzenes.

DHS Certification No. 1644

 Edward Hamilton, Lab Director



McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
 Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Toxscan 42 Hangar Way Watsonville, CA 95076	Client Project ID: #T-19081	Date Sampled: 11/28-12/01/00
		Date Received: 12/08/00
	Client Contact: Doug Clark	Date Extracted: 12/08/00
	Client P.O.: #013707	Date Analyzed: 12/08/00

Volatile Organics By GC/MS

EPA method 8260

Lab ID	55376
Client ID	T-19081-13-B
Matrix	S

Compound	Concentration*	Reporting Limit		Compound	Concentration*	Reporting Limit	
		W	S			W	S
Acetone ^(b)	ND	5.0	25	trans-1,3-Dichloropropene	ND	1.0	5.0
Benzene	ND	1.0	5.0	Ethylene dibromide	ND	1.0	5.0
Bromobenzene	ND	1.0	5.0	Ethylbenzene	ND	1.0	5.0
Bromochloromethane	ND	1.0	5.0	Hexachlorobutadiene	ND	5.0	25
Bromodichloromethane	ND	1.0	5.0	Iodomethane	ND	1.0	5.0
Bromoform	ND	1.0	5.0	Isopropylbenzene	ND	1.0	5.0
Bromomethane	ND	1.0	5.0	p-Isopropyl toluene	ND	1.0	5.0
n-Butyl benzene	ND	1.0	5.0	Methyl butyl ketone ^(d)	ND	1.0	5.0
sec-Butyl benzene	ND	1.0	5.0	Methylene Chloride ^(e)	ND<10	1.0	5.0
tert-Butyl benzene	ND	1.0	5.0	Methyl ethyl ketone ⁽ⁱ⁾	ND	2.0	10
Carbon Disulfide	ND	1.0	5.0	Methyl isobutyl ketone ^(g)	ND	1.0	5.0
Carbon Tetrachloride	ND	1.0	5.0	Methyl tert-Butyl Ether (MTBE)	---	1.0	5.0
Chlorobenzene	ND	1.0	5.0	Naphthalene	ND	5.0	5.0
Chloroethane	ND	1.0	5.0	n-Propyl benzene	ND	1.0	5.0
2-Chloroethyl Vinyl Ether ^(c)	ND	1.0	5.0	Styrene ^(k)	ND	1.0	5.0
Chloroform	ND	1.0	5.0	1,1,1,2-Tetrachloroethane	ND	1.0	5.0
Chloromethane	ND	1.0	5.0	1,1,2,2-Tetrachloroethane	ND	1.0	5.0
2-Chlorotoluene	ND	1.0	5.0	Tetrachloroethene	ND<10	1.0	5.0
4-Chlorotoluene	ND	1.0	5.0	Toluene ^(l)	ND	1.0	5.0
Dibromochloromethane	ND	1.0	5.0	1,2,3-Trichlorobenzene	ND	5.0	25
1,2-Dibromo-3-chloropropane	ND	2.0	10	1,2,4-Trichlorobenzene	ND	5.0	25
Dibromomethane	ND	1.0	5.0	1,1,1-Trichloroethane	ND	1.0	5.0
1,2-Dichlorobenzene	ND	1.0	5.0	1,1,2-Trichloroethane	ND	1.0	5.0
1,3-Dichlorobenzene	ND	1.0	5.0	Trichloroethene	ND	1.0	5.0
1,4-Dichlorobenzene	ND	1.0	5.0	Trichlorofluoromethane	ND	1.0	5.0
Dichlorodifluoromethane	ND	1.0	5.0	1,2,3-Trichloropropane	ND	1.0	5.0
1,1-Dichloroethane	ND	1.0	5.0	1,2,4-Trimethylbenzene	ND	1.0	5.0
1,2-Dichloroethane	ND	1.0	5.0	1,3,5-Trimethylbenzene	ND	1.0	5.0
1,1-Dichloroethene	ND	1.0	5.0	Vinyl Acetate ^(m)	ND	5.0	25
cis-1,2-Dichloroethene	ND	1.0	5.0	Vinyl Chloride ⁽ⁿ⁾	ND	1.0	5.0
trans-1,2-Dichloroethene	ND	1.0	5.0	Xylenes, total ^(o)	ND	1.0	5.0
1,2-Dichloropropane	ND	1.0	5.0	Comments:			
1,3-Dichloropropane	ND	1.0	5.0	Surrogate Recoveries (%)			
2,2-Dichloropropane	ND	1.0	5.0	Dibromofluoromethane		103	
1,1-Dichloropropene	ND	1.0	5.0	Toluene-d8		103	
cis-1,3-Dichloropropene	ND	1.0	5.0	4-Bromofluorobenzene		113	

*water and vapor samples are reported in ug/L, soil and sludge samples in ug/kg, wipes in ug/wipe and all TCLP / SPLP extracts in ug/L

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis

(b) 2-propanone or dimethyl ketone; (c) (2-chloroethoxy) ethene; (d) 2-hexanone; (e) dichloromethane; (f) 2-butanone; (g) 4-methyl-2-pentanone or isopropylacetone; (h) lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~5 vol. % sediment; (j) sample diluted due to high organic content; (k) ethenylbenzene; (l) methylbenzene; (m) acetic acid ethenyl ester; (n) chloroethene; (o) dimethylbenzenes.

DHS Certification No. 1644

Edward Hamilton, Lab Director



McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
 Telephone : 925-798-1620 Fax : 925-798-1622
 http://www.mcccampbell.com E-mail: main@mcccampbell.com

Toxscan 42 Hangar Way Watsonville, CA 95076	Client Project ID: #T-19081	Date Sampled: 11/28-12/01/00
	Client Contact: Doug Clark	Date Received: 12/08/00
	Client P.O: #013707	Date Extracted: 12/08/00
		Date Analyzed: 12/08/00

Volatile Organics By GC/MS

EPA method 8260

Lab ID	55377
Client ID	T-19081-15-B
Matrix	S

Compound	Concentration*	Reporting Limit		Compound	Concentration*	Reporting Limit	
		W	S			W	S
Acetone ^(b)	ND	5.0	25	trans-1,3-Dichloropropene	ND	1.0	5.0
Benzene	ND	1.0	5.0	Ethylene dibromide	ND	1.0	5.0
Bromobenzene	ND	1.0	5.0	Ethylbenzene	ND	1.0	5.0
Bromochloromethane	ND	1.0	5.0	Hexachlorobutadiene	ND	5.0	25
Bromodichloromethane	ND	1.0	5.0	Iodomethane	ND	1.0	5.0
Bromoform	ND	1.0	5.0	Isopropylbenzene	ND	1.0	5.0
Bromomethane	ND	1.0	5.0	p-Isopropyl toluene	ND	1.0	5.0
n-Butyl benzene	ND	1.0	5.0	Methyl butyl ketone ^(d)	ND	1.0	5.0
sec-Butyl benzene	ND	1.0	5.0	Methylene Chloride ^(e)	ND<10	1.0	5.0
tert-Butyl benzene	ND	1.0	5.0	Methyl ethyl ketone ⁽ⁱ⁾	ND	2.0	10
Carbon Disulfide	ND	1.0	5.0	Methyl isobutyl ketone ^(e)	ND	1.0	5.0
Carbon Tetrachloride	ND	1.0	5.0	Methyl tert-Butyl Ether (MTBE)	---	1.0	5.0
Chlorobenzene	ND	1.0	5.0	Naphthalene	ND	5.0	5.0
Chloroethane	ND	1.0	5.0	n-Propyl benzene	ND	1.0	5.0
2-Chloroethyl Vinyl Ether ^(e)	ND	1.0	5.0	Styrene ^(k)	ND	1.0	5.0
Chloroform	ND	1.0	5.0	1,1,1,2-Tetrachloroethane	ND	1.0	5.0
Chloromethane	ND	1.0	5.0	1,1,2,2-Tetrachloroethane	ND	1.0	5.0
2-Chlorotoluene	ND	1.0	5.0	Tetrachloroethene	ND<10	1.0	5.0
4-Chlorotoluene	ND	1.0	5.0	Toluene ^(l)	5.3	1.0	5.0
Dibromochloromethane	ND	1.0	5.0	1,2,3-Trichlorobenzene	ND	5.0	25
1,2-Dibromo-3-chloropropane	ND	2.0	10	1,2,4-Trichlorobenzene	ND	5.0	25
Dibromomethane	ND	1.0	5.0	1,1,1-Trichloroethane	ND	1.0	5.0
1,2-Dichlorobenzene	ND	1.0	5.0	1,1,2-Trichloroethane	ND	1.0	5.0
1,3-Dichlorobenzene	ND	1.0	5.0	Trichloroethene	ND	1.0	5.0
1,4-Dichlorobenzene	ND	1.0	5.0	Trichlorofluoromethane	ND	1.0	5.0
Dichlorodifluoromethane	ND	1.0	5.0	1,2,3-Trichloropropane	ND	1.0	5.0
1,1-Dichloroethane	ND	1.0	5.0	1,2,4-Trimethylbenzene	ND	1.0	5.0
1,2-Dichloroethane	ND	1.0	5.0	1,3,5-Trimethylbenzene	ND	1.0	5.0
1,1-Dichloroethene	ND	1.0	5.0	Vinyl Acetate ^(m)	ND	5.0	25
cis-1,2-Dichloroethene	ND	1.0	5.0	Vinyl Chloride ⁽ⁿ⁾	ND	1.0	5.0
trans-1,2-Dichloroethene	ND	1.0	5.0	Xylenes, total ^(o)	ND	1.0	5.0
1,2-Dichloropropane	ND	1.0	5.0	Comments:			
1,3-Dichloropropane	ND	1.0	5.0	Surrogate Recoveries (%)			
2,2-Dichloropropane	ND	1.0	5.0	Dibromofluoromethane		104	
1,1-Dichloropropene	ND	1.0	5.0	Toluene-d8		102	
cis-1,3-Dichloropropene	ND	1.0	5.0	4-Bromofluorobenzene		109	

*water and vapor samples are reported in ug/L, soil and sludge samples in ug/kg, wipes in ug/wipe and all TCLP / SPLP extracts in ug/L

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis

(b) 2-propanone or dimethyl ketone; (c) (2-chloroethoxy) ethene; (d) 2-hexanone; (e) dichloromethane; (f) 2-butanone; (g) 4-methyl-2-pentanone or isopropylacetone; (h) lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~5 vol. % sediment; (j) sample diluted due to high organic content; (k) ethenylbenzene; (l) methylbenzene; (m) acetic acid ethenyl ester; (n) chloroethene; (o) dimethylbenzenes.

DHS Certification No. 1644

Edward Hamilton, Lab Director

EXPLANATION OF ACRONYMS FOR PROJECT # T-19081

The following is a glossary for acronyms that may be used in this report.

<u>Abbreviation</u>	<u>Definition</u>
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NA	Not Applicable
ND	None Detected
REP	Replicate
RPD	Relative Percent Difference
SRM	Standard Reference Material
TOC	Total Organic Carbon

Client: Fugro West, Inc.
Method: EPA 8081
Date Extracted: December 12, 2000
Date Analyzed: December 23, 2000
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19081

Client Sample ID: Method Blank
ToxScan Lab ID: MB121200

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
Aldrin	ND	8.0
alpha-BHC	ND	8.0
beta-BHC	ND	8.0
delta-BHC	ND	8.0
gamma-BHC	ND	8.0
alpha-Chlordane	ND	8.0
gamma-Chlordane	ND	8.0
4,4'-DDD	ND	8.0
4,4'-DDE	ND	8.0
4,4'-DDT	ND	8.0
Dieldrin	ND	8.0
Endosulfan I	ND	16
Endosulfan II	ND	16
Endosulfan Sulfate	ND	16
Endrin	ND	16
Endrin Aldehyde	ND	16
Endrin Ketone	ND	16
Heptachlor	ND	8.0
Heptachlor Epoxide	ND	8.0
Methoxychlor	ND	80
Toxaphene	ND	160
Aroclor-1016	ND	160
Aroclor-1221	ND	160
Aroclor-1232	ND	160
Aroclor-1242	ND	160
Aroclor-1248	ND	160
Aroclor-1254	ND	160
Aroclor-1260	ND	160
Total PCB'S	ND	160

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8081
Date Extracted: December 12, 2000
Date Analyzed: December 23, 2000
Matrix: Soil

ToxScan Number: T-19081

Quality Control Report

Surrogate recoveries expressed as percentages:

<u>Sample ID</u>	<u>Tetrachloro-m-xylene</u>	<u>Decachlorobiphenyl</u>	<u>QC Limits</u>
Method Blank	94	81	50-150
Lab Control Sample	88	87	50-150
10 @ 27.2 DPW-1W(MS)	86	82	50-150
10 @ 27.2 DPW-1W(MSD)	91	89	50-150
10 @ 27.2 DPW-1W	96	84	50-150
4 @ 22.5 DPW-3W	98	82	50-150
12 @ 30.4 DPW-6W	83	76	50-150
15 @ 32.52 DPW-4W	97	87	50-150
22 @ 40.9 DPW-4W	86	76	50-150

MS = Matrix Spike

MSD = Matrix Spike Duplicate

Client: Fugro West, Inc.
Method: EPA 8081
Date Extracted: December 12, 2000
Date Analyzed: December 23, 2000
Matrix: Soil

ToxScan Number: T-19081

Quality Control Report

QA/QC on sample 10 @ 27.2 DPW-1W

Spike recoveries expressed as percentages:

<u>Spiked Compound</u>	<u>MS % REC</u>	<u>MSD %REC</u>	<u>% RPD</u>	<u>QC LIMITS</u>	
				<u>% REC</u>	<u>%RPD</u>
Lindane	85	88	3	46-127	50
Heptachlor	85	93	8	35-130	31
Aldrin	85	90	6	34-132	43
Dieldrin	84	91	8	31-134	38
Endrin	91	98	7	42-139	45
4,4'-DDT	86	92	7	23-134	50

MS = Matrix Spike

MSD = Matrix Spike Duplicate

RPD = Relative Percent Difference

Client: Fugro West, Inc.
Method: EPA 8081
Date Extracted: December 12, 2000
Date Analyzed: December 23, 2000
Matrix: Soil

ToxScan Number: T-19081

Quality Control Report

Spike recoveries expressed as percentages:

<u>Spiked Compound</u>	<u>LCS % REC</u>	<u>QC LIMITS % REC</u>
Lindane	80	46-127
Heptachlor	88	35-130
Aldrin	88	34-132
Dieldrin	89	31-134
Endrin	96	42-139
4,4'-DDT	88	23-134

LCS = Laboratory Control Sample

Client: Fugro West, Inc.
Method: EPA 8270
Date Extracted: 12/8/00
Date Analyzed: 12/12/00
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19081

ToxScan Lab ID: Method Blank

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
Phenol	ND	200
Bis(2-chloroethyl)ether	ND	1000
2-Chlorophenol	ND	200
1,3-Dichlorobenzene	ND	100
1,4-Dichlorobenzene	ND	100
Benzyl alcohol	ND	1000
1,2-Dichlorobenzene	ND	100
2-Methylphenol	ND	200
Bis(2-chloroisopropyl)ether	ND	200
Hexachloroethane	ND	200
N-Nitrosodipropylamine	ND	1000
4-Methylphenol	ND	200
Nitrobenzene	ND	500
Isophorone	ND	500
2-Nitrophenol	ND	200
2,4-Dimethylphenol	ND	200
Bis(2-chloroethoxy)methane	ND	1000
2,4-Dichlorophenol	ND	100
Benzoic acid	ND	1000
1,2,4-Trichlorobenzene	ND	100
Naphthalene	ND	100
4-Chloroaniline	ND	500
Hexachlorobutadiene	ND	200
4-Chloro-3-methylphenol	ND	100
2-Methylnaphthalene	ND	100
Hexachlorocyclopentadiene	ND	200
2,4,6-Trichlorophenol	ND	100
2,4,5-Trichlorophenol	ND	100
2-Chloronaphthalene	ND	100
2-Nitroaniline	ND	200
Acenaphthylene	ND	100
Dimethylphthalate	ND	100
2,6-Dinitrotoluene	ND	100
Acenaphthene	ND	100

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8270
Date Extracted: 12/8/00
Date Analyzed: 12/12/00
Matrix: Soil
Units: ug/Kg (ppb)

ToxScan Number: T-19081

ToxScan Lab ID: Method Blank

<u>Analyte</u>	<u>Sample Value</u>	<u>Reporting Limit</u>
3-Nitroaniline	ND	200
2,4-Dinitrophenol	ND	500
Dibenzofuran	ND	100
2,4-Dinitrotoluene	ND	100
4-Nitrophenol	ND	500
Fluorene	ND	100
4-Chlorophenyl phenyl ether	ND	100
Diethylphthalate	ND	100
4-Nitroaniline	ND	200
4,6-Dinitro-2-methylphenol	ND	500
N-Nitrosodiphenylamine	ND	200
Azobenzene	ND	100
4-Bromophenyl phenyl ether	ND	100
Hexachlorobenzene	ND	100
Pentachlorophenol	ND	500
Phenanthrene	ND	100
Anthracene	ND	100
Carbazole	ND	200
Di-n-butylphthalate	ND	100
Fluoranthene	ND	100
Pyrene	ND	100
Butyl benzyl phthalate	ND	100
Benzo(a)anthracene	ND	100
Chrysene	ND	100
3,3'-Dichlorobenzidine	ND	200
Bis(2-ethylhexyl)phthalate	ND	100
Di-n-octylphthalate	ND	1000
Benzo(b)fluoranthene	ND	100
Benzo(k)fluoranthene	ND	100
Benzo(a)pyrene	ND	100
Indeno(1,2,3-cd)pyrene	ND	100
Dibenzo(a,h)anthracene	ND	100
Benzo(g,h,i)perylene	ND	100

ND = Not Detected

Client: Fugro West, Inc.
Method: EPA 8270
Date Extracted: 12/08/00
Date Analyzed: 12/12/00
Matrix: Soil

ToxScan Number: T-19081

Quality Control Report:

Surrogate recoveries expressed as percentages

<u>Sample Identification</u>	<u>S1</u>	<u>S2</u>	<u>S3</u>	<u>S4</u>	<u>S5</u>	<u>S6</u>
12@31.3 DPW-1W	77	73	83	78	70	86
8@27.3 DPW-3W	77	75	81	77	75	94
15@34.9 DPW-6W	75	69	81	73	70	87
19@36.9 DPW-4W	78	76	80	78	71	84
Method Blank	82	80	83	79	73	93
Laboratory Control Sample	80	78	80	77	83	88

<u>Surrogates:</u>	<u>QC Limits</u>
S1 = 2-Fluorophenol (S.S.)	25-121
S2 = Phenol-d5 (S.S.)	24-120
S3 = Nitrobenzene-d5 (S.S.)	23-120
S4 = 2-Fluorobiphenyl (S.S.)	30-120
S5 = Tribromophenol (S.S.)	19-122
S6 = Terphenyl-d14 (S.S.)	18-137

Client: Fugro West, Inc.
Method: EPA 8270
Date Extracted: 12/8/00
Date Analyzed: 12/12/00
Matrix: Soil

ToxScan Number: T-19081

Quality Control Report:

Spike recoveries expressed as percentages

<u>Spiked Compound</u>	<u>LCS % Rec</u>	<u>QC LIMITS % Rec</u>
Phenol	72	26-120
2-Chlorophenol	74	25-120
1,4-Dichlorobenzene	72	28-120
N-Nitrosodipropylamine	72	41-126
1,2,4-Trichlorobenzene	80	38-120
4-Chloro-3-methylphenol	80	26-120
Acenaphthene	86	31-137
2,4-Dinitrotoluene	82	28-120
4-Nitrophenol	82	11-120
Pentachlorophenol	80	17-120
Pyrene	86	35-142

LCS = Laboratory Control Sample

QC FOR PROJECT # 19081

MATRIX SPIKE / MATRIX SPIKE DUPLICATE SUMMARY:

Matrix: Soil

<u>Analyte</u>	<u>Sample</u>	<u>Spike Amount ppm</u>	<u>MS % Rec</u>	<u>MSD % Rec</u>	<u>RPD</u>
Antimony	19088-01	2.9	98	101	3
Arsenic	19088-01	10	97	89	9
Barium	19088-01	14	102	107	5
Beryllium	19088-01	0.29	78	79	1
Cadmium	19088-01	0.29	107	107	0
Chromium	19088-01	2.9	107	113	5
Cobalt	19088-01	2.9	88	93	6
Copper	19088-01	2.9	89	92	3
Lead	19088-01	1.4	97	102	5
Molybdenum	19088-01	2.9	102	103	1
Nickel	19088-01	2.9	91	96	5
Selenium	19091-10	10	101	100	1
Silver	19088-01	0.29	90	100	11
Thallium	19088-01	2.9	92	94	2
Vanadium	19088-01	2.9	115	84	31
Zinc	19088-01	2.9	91	101	10

QC FOR PROJECT # 19081

MATRIX SPIKE / MATRIX SPIKE DUPLICATE SUMMARY:

Matrix: Soil

<u>Analyte</u>	<u>Sample</u>	<u>Spike Amount ppm</u>	<u>MS % Rec</u>	<u>MSD % Rec</u>	<u>RPD</u>
Mercury	19043-01	1.0	77	69	11

QC FOR PROJECT # T-19081

LABORATORY METHOD BLANK SUMMARY

Applicable Matrix: Sediment

Total Metals

<u>Analyte</u>	<u>Amount</u>	<u>Reporting Limit mg/L</u>	<u>EPA Method Number</u>
Antimony	ND	1.0	6020
Arsenic	ND	5.0	7061
Barium	ND	10	6020
Beryllium	ND	1.0	6020
Cadmium	ND	1.0	6020
Chromium	ND	1.0	6020
Cobalt	ND	1.0	6020
Copper	ND	1.0	6020
Lead	ND	1.0	6020
Mercury	ND	0.020	7471
Molybdenum	ND	1.0	6020
Nickel	ND	1.0	6020
Selenium	ND	1.0	7741
Silver	ND	1.0	6020
Thallium	ND	1.0	6020
Vanadium	ND	1.0	6020
Zinc	ND	10	6020

QC FOR PROJECT # T-19081

SRM SUMMARY:

Matrix: Sediment

Total Metals

<u>Analyte</u>	<u>SRM Value Found</u> <u>mg/Kg</u>	<u>Certified</u> <u>SRM Value</u> <u>mg/Kg</u>	<u>%</u> <u>Recovery</u>	<u>SRM</u>
Antimony	0.834	1.02	82	MESS-3
Arsenic	19.6	21.2	93	MESS-3
Beryllium	1.62	2.30	70	MESS-3
Cadmium	0.190	0.240	78	MESS-3
Chromium	90.5	105	86	MESS-3
Cobalt	11.9	14.4	83	MESS-3
Copper	26.4	33.9	78	MESS-3
Lead	23.5	21.1	112	MESS-3
Mercury	0.0564	0.0910	62	MESS-3
Molybdenum	2.18	2.78	78	MESS-3
Nickel	41.8	46.9	89	MESS-3
Selenium	0.473	0.720	65	MESS-3
Silver	0.157	0.180	87	MESS-3
Thallium	0.606	0.900	67	MESS-3
Vanadium	231	243	95	MESS-3
Zinc	137	159	86	MESS-3

MESS-3 = National Research Council Canada, marine sediment.

QC FOR PROJECT # T-19081

Concentrations of the following are in ug/L

SRM SUMMARY:

Matrix: Water

Total Metals

<u>Analyte</u>	<u>Amount Found</u>	<u>Dilution</u>	<u>Corrected Value</u>	<u>SRM</u>	<u>Certified Value</u>	<u>% Recovery</u>
Antimony	68.3	1	68.3	ERA 9970	64.7	106
Arsenic	10.9	20	217	ERA 9977	200	108
Barium	395	1	395	ERA 9970	388	102
Beryllium	121	1	121	ERA 9970	124	98
Cadmium	101	1	101	ERA 9970	95.9	105
Chromium	226	1	226	ERA 9970	241	94
Cobalt	194	1	194	ERA 9970	212	92
Copper	113	1	113	ERA 9970	118	96
Lead	140	1	140	ERA 9970	132	106
Mercury	6.15	1	6.15	ERA 9977	6.27	98
Molybdenum	132	1	132	ERA 9970	129	102
Nickel	383	1	383	ERA 9970	406	95
Selenium	8.65	20	173	ERA 9977	200	86
Silver	51.2	1	51.2	ERA 9970	61.8	83
Thallium	67.0	1	67.0	ERA 9970	64.7	104
Vanadium	173	1	173	ERA 9970	189	92
Zinc	230	1	230	ERA 9970	221	103

ERA 9970 = Environmental Resource Associates, WasteWatR Lot No. 9970

ERA 9977 = Environmental Resource Associates, WasteWatR Lot No. 9977

QC FOR PROJECT # T-19081

LABORATORY METHOD BLANK SUMMARY

Applicable Matrix: Sediment

<u>Analyte</u>	<u>Amount</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>EPA Method Number</u>
TRPH-Gravimetric (SGT- HEM)	ND	100	mg/Kg	1664

QC FOR PROJECT # T-19081

LABORATORY PRECISION SUMMARY:

Matrix: Soil

<u>Analyte</u>	<u>REP 1</u>	<u>REP 2</u>	<u>Units</u>	<u>RPD</u>
TRPH-Gravimetric (SGT-HEM)				
19085-04	ND	ND	mg/Kg	NA



McCAMPBELL ANALYTICAL INC.

110 2nd Ave. South, #D7, Pacheco, CA 94553-5560
 Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

QC REPORT

VOCs (EPA 8240/8260)

Date: 12/07/00-12/08/00 Matrix: Soil

Extraction: TTLC

Compound	Concentration: ug/kg			%Recovery		RPD
	Sample	MS	MSD	Amount Spiked	MS	

SampleID: 112300

Instrument: GC-10

Surrogate	0.000	104.0	104.0	100.00	104	104	0.0
Toluene	0.000	101.0	107.0	100.00	101	107	5.8
Benzene	0.000	106.0	114.0	100.00	106	114	7.3
Chlorobenzene	0.000	99.0	104.0	100.00	99	104	4.9
Trichloroethane	0.000	78.0	84.0	100.00	78	84	7.4
1,1-Dichloroethene	0.000	142.0	158.0	100.00	142	158	10.7

$$\% \text{ Recovery} = \frac{(MS - \text{Sample})}{\text{Amount Spiked}} \cdot 100$$

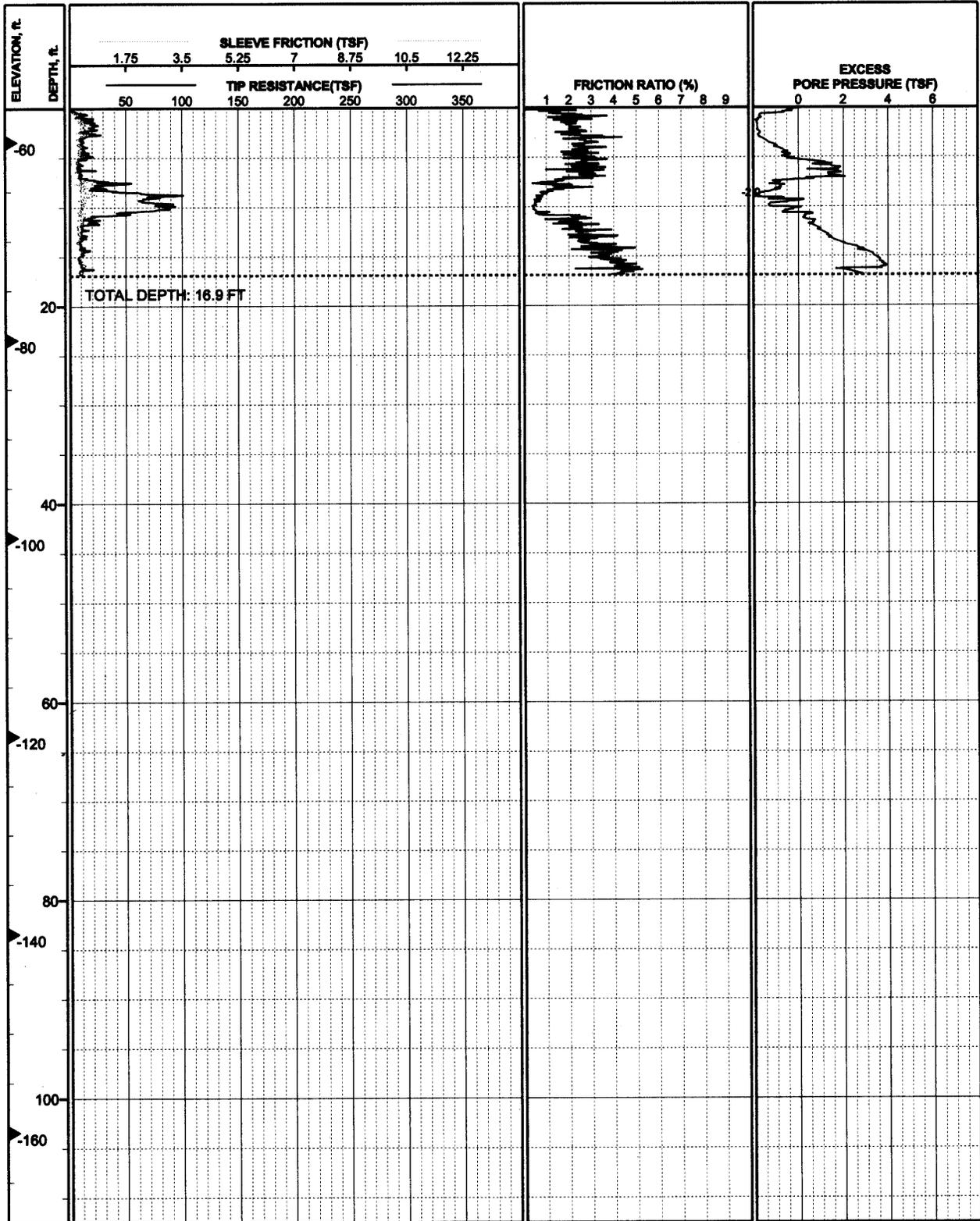
$$RPD = \frac{(MS - MSD)}{(MS + MSD)} \cdot 100$$

RPD means Relative Percent Deviation

APPENDIX D
NEARBY BORINGS, VIBRACORES, AND CPTS



SOUNDING NO.: C-5 COORDINATES: E4205537 N4021088 CA State Plane, Zone 7, Feet VESSEL: Fugro Geosciences
 MUDLINE ELEVATION: -56.6 FT (MLLW) STATION: - FT TEST DATE: 04/22/1997



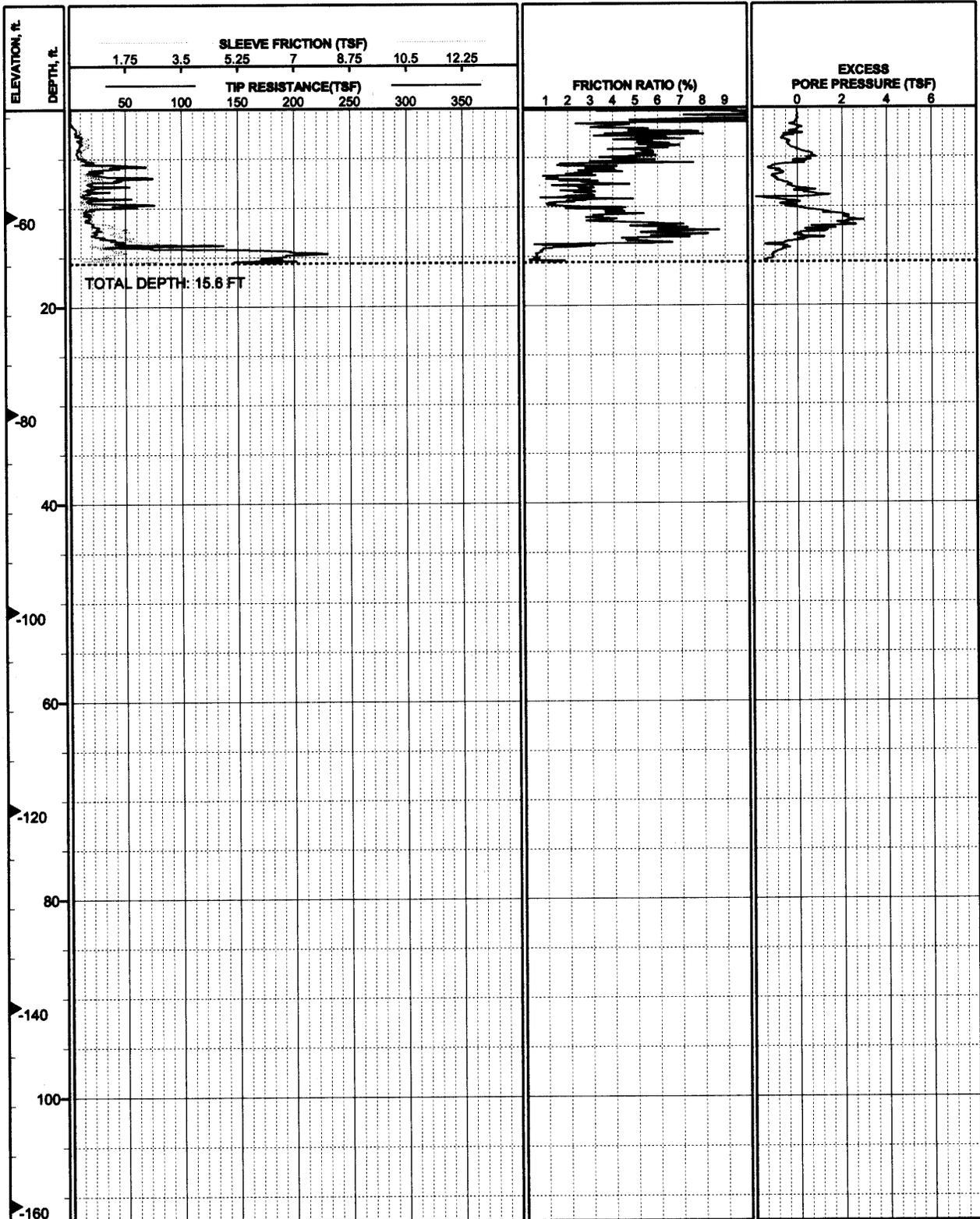
LOG OF CPT
TETHERED SEASCOUT SOUNDING C-5
 Inner Harbor Container Terminal

Report Date: 01/02/01





SOUNDING NO.: C-75 COORDINATES: E4208152 N4020960 CA State Plane, Zone 7, Feet VESSEL: Fugro Geosciences
 MUDLINE ELEVATION: -49.2 FT (MLLW) STATION: - FT TEST DATE: 04/25/1997



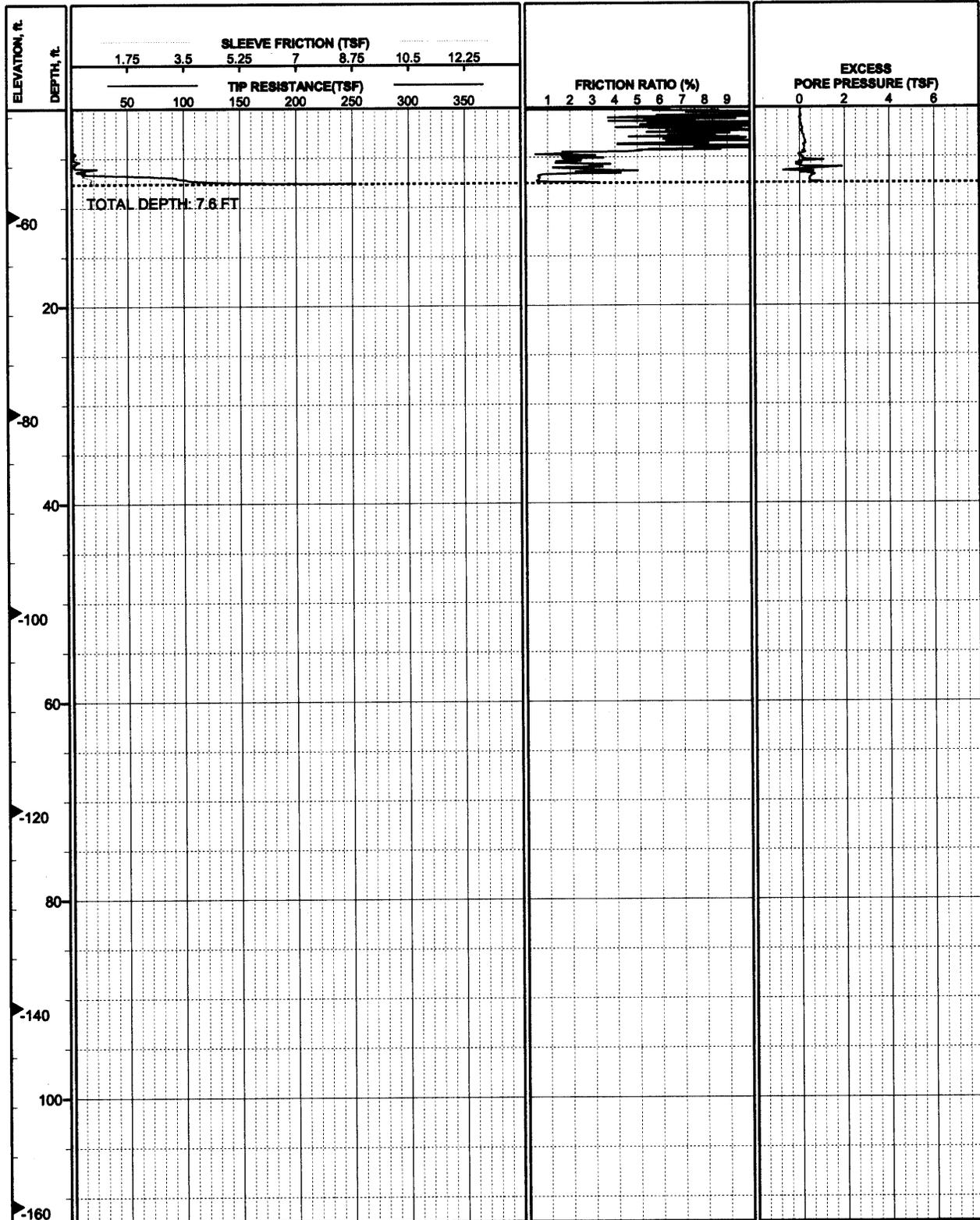
LOG OF CPT
TETHERED SEASCOUT SOUNDING C-75
 Inner Harbor Container Terminal

Report Date: 01/02/01





SOUNDING NO.: C-90 COORDINATES: E4206325 N4021147 CA State Plane, Zone 7, Feet VESSEL: Fugro Geosciences
 MUDLINE ELEVATION: -49.2 FT (MLLW) STATION: - FT TEST DATE: 04/25/1997



LOG OF CPT
TETHERED SEASCOUT SOUNDING C-90
 Inner Harbor Container Terminal

Report Date: 01/02/01



PROJECT NO: 96-42-1217
 BORING: DWP-B6 (Main Channel- DWP Pipeline)

START DATE: 05/02/1997
 COMPLETION DATE: 05/02/1997

DRILLER: Pitcher Drilling
 DRILLING METHOD: Rotary Sample Boring (Wet)

ELEVATION, ft.	DEPTH, ft.	SOIL TYPE	BLOW COUNT	MATERIAL DESCRIPTION	STRATUM NO.	CORING RATE (Min/ft)				FRACTURE DENSITY (fractures/ft)			
						5	10	15	20	2	4	6	8
						ID TESTS/RQD/RECOVERY(%)/EQ. BLOW COUNTS				ROCK UNCONFINED COMPRESSIVE STRENGTH (PSI)			
						20	40	60	80	5000	10000	15000	20000
				Coordinates: E4206358 N4021012 CA State Plane, Zone 7, Feet		SUBMERGED UNIT WEIGHT (KCF)				SOIL UNDRAINED SHEAR STRENGTH (KSF)			
				MUDLINE ELEVATION: -17.5 FT (MLLW)		0.05	0.1	0.15	0.2	1	2	3	4
-20	0/18"			Fine to coarse GRAVEL (GP) quarry run with clayey sand: black	I								
	38			Sandy lean CLAY (CL) to Clayey SAND (SC): stiff to medium dense, black	II								
				3 diameter rock at 4.5'									
	33			Silty fine SAND (SM): medium dense to dense, dark gray, with abundant shells and mica	III								
				- with sand with silt (SP-SM) layers at 12.5'									
	50				III								
	34												
				(18.5')									
-40	28			Fat CLAY (CH): stiff to very stiff, brown, with shell	IV								
	45			- stiff, light to medium gray, with coarse sand, at 22.5'	IV								
	25			Silty fine SAND (SM): medium dense to dense, light brown mottled light gray, with mica	V								
				- interbedded lean clay (CL), stiff, greenish brown, 32' to 33'									
	60												
	51												
-60	85			- very dense, light gray, with mica, below 42'									
				- fine sand with silt (SP-SM) at 42.5'									
	50/4"			- sandy clay (SC) at 47'									
	50/8"												
				TOTAL DEPTH: 54.5'									
				BACKFILLED WITH: No Backfill									

LOG OF BORING AND TEST RESULTS

BORING DWP-B6

DWP Reclaimed Water Pipeline

Report Date: 01/02/01



PROJECT NO: 96-42-1217
 BORING: DWP-B7 (Main Channel- DWP Pipeline)

START DATE: 05/02/1997
 COMPLETION DATE: 05/02/1997

DRILLER: Pitcher Drilling
 DRILLING METHOD: Rotary Sample Boring (Wet)

ELEVATION, ft.	DEPTH, ft.	SOIL TYPE	SAMPLER	BLOW COUNT	MATERIAL DESCRIPTION	STRATUM NO.	CORING RATE (Min/ft)				FRACTURE DENSITY (fractures/ft)				
							5	10	15	20	2	4	6	8	
							ID TESTS/RQD/RECOVERY(%)/EQ. BLOW COUNTS				ROCK UNCONFINED COMPRESSIVE STRENGTH (PSI)				
							20	40	60	80	5000	10000	15000	20000	
					GROUND ELEVATION: 15 FT (MLLW)		UNIT WEIGHT (KCF)				SOIL UNDRAINED SHEAR STRENGTH (KSF)				
					Asphalt; 4 Aggregate base; 6		0.05	0.1	0.15	0.2	1	2	3	4	
				37	Silty, fine to coarse SAND (SM) (Fill): medium dense, light gray, with shells and wood debris - fine grained, with gravel, at 5.7' - scattered shells at 6'	II									
					- light to medium gray, with riprap, at 11'										
					- fine grained, olive gray, trace mica, at 14'										
	20				Fine SAND with silt (SP-SM): medium dense to dense, dark gray - wood fragments at 19'	III									
					- fine to medium grained, dense to very dense, medium gray, with shell fragments, below 29'										
					TOTAL DEPTH: 30.5' BACKFILLED WITH: Drill Hole Cuttings										

LOG OF BORING AND TEST RESULTS

BORING DWP-B7

DWP Reclaimed Water Pipeline

Report Date: 01/02/01



PROJECT NO: 98-42-1217
 BORING: DWP-V4 (Main Channel- DWP Pipeline)

START DATE: 04/09/1997
 COMPLETION DATE: 04/09/1997

DRILLER: Kinnetic Laboratories
 DRILLING METHOD: Vibracore

ELEVATION, ft.	DEPTH, ft.	SOIL TYPE	SAMPLER	BLOW COUNT	MATERIAL DESCRIPTION	STRATUM NO.	CORING RATE (Min/ft)				FRACTURE DENSITY (fractures/ft)				
							5	10	15	20	2	4	6	8	
							ID TESTS/RQD/RECOVERY(%)/EQ. BLOW COUNTS				ROCK UNCONFINED COMPRESSIVE STRENGTH (PSI)				
							20	40	80	80	5000	10000	15000	20000	
					Coordinates: E4206317 N4021083 CA State Plane, Zone 7, Feet		SUBMERGED UNIT WEIGHT (KCF)				SOIL UNDRAINED SHEAR STRENGTH (KSF)				
					MUDLINE ELEVATION: -47.4 FT (MLLW)		0.05	0.1	0.15	0.2	1	2	3	4	
					CLAY with sand (CL): very soft to soft, dark gray, with mica - Intermixed with olive gray silt from 4' to 4.4' (4.4')	I									
				PUSH	SILT with sand (ML): light brown, intermixed with concretions and gravel/rock 1 to 2 diameter - less gravel/rocks at 7'	II									
					TOTAL DEPTH: 9.5' BACKFILLED WITH: No Backfill										

LOG OF BORING AND TEST RESULTS

BORING DWP-V4

DWP Reclaimed Water Pipeline

Report Date: 01/02/01



PROJECT NO: 96-42-1217
 BORING: DWP-V5 (Main Channel- DWP Pipeline)

START DATE: 04/08/1997
 COMPLETION DATE: 04/08/1997

DRILLER: Kinnetic Laboratories
 DRILLING METHOD: Vibracore

ELEVATION, ft.	DEPTH, ft.	SOIL TYPE	SAMPLER	BLOW COUNT	MATERIAL DESCRIPTION	STRATUM NO.	CORING RATE (Min/ft)				FRACTURE DENSITY (fractures/ft)					
							5	10	15	20	2	4	6	8		
							ID TESTS/RQD/RECOVERY(%)/EQ. BLOW COUNTS				ROCK UNCONFINED COMPRESSIVE STRENGTH (PSI)					
							20	40	60	80	5000	10000	15000	20000		
					MUDLINE ELEVATION: -46.3 FT (MLLW)		SUBMERGED UNIT WEIGHT (KCF)				SOIL UNDRAINED SHEAR STRENGTH (KSF)					
							0.05	0.1	0.15	0.2		1	2	3	4	
					CLAY with sand (CL): very soft to soft, dark olive gray, with mica (3)	I										
					Sandy lean CLAY (CL): light brown, intermixed with concretions dark brown band at 4' (6.4)	II										
					Silty fine SAND (SM): light brown to brown, with mica becomes silty fine sand (SM) to sandy silt (ML) at 7'	III										
					TOTAL DEPTH: 9.5' BACKFILLED WITH: No Backfill											

LOG OF BORING AND TEST RESULTS

BORING DWP-V5

DWP Reclaimed Water Pipeline

Report Date: 01/02/01



PROJECT NO: 96-42-1215
 BORING: FG1-5 (Main Channel)

START DATE: 04/06/1997
 COMPLETION DATE: 04/06/1997

DRILLER: Kinnetic Laboratories
 DRILLING METHOD: Vibrocore

ELEVATION, ft.	DEPTH, ft.	SOIL TYPE	SAMPLER	BLOW COUNT	MATERIAL DESCRIPTION	STRATUM NO.	CORING RATE (Min/ft)				FRACTURE DENSITY (fractures/ft)									
							ID TESTS/RQD/RECOVERY(%) / EQ. BLOW COUNTS				ROCK UNCONFINED COMPRESSIVE STRENGTH (PSI)									
							SUBMERGED UNIT WEIGHT (KCF)				SOIL UNDRAINED SHEAR STRENGTH (KSF)									
							5	10	15	20	20	40	80	80	2	4	6	8		
					Coordinates: E4205253 N4021183 CA State Plane, Zone 7, Feet															
					MUDLINE ELEVATION: -45.1 FT (MLLW)															
					Fat CLAY with sand (CH): very soft to soft, dark gray, with mica	I														
					Silty fine SAND (SM): dark gray, with mica and some shell fragments	II														
					CLAY with sand (CL): firm to stiff, olive gray, with mica and few shell fragments	III														
					slight increase in shell fragments, with fine sand, at 6'															
					increasing sand content below 8.75'															
					TOTAL DEPTH: 9.6'															
					BACKFILLED WITH: No Backfill															

LOG OF BORING AND TEST RESULTS

BORING FG1-5

Inner Harbor Container Terminal

Report Date: 01/02/01



PROJECT NO: 96-42-1215
 BORING: FG1-6 (Main Channel)

START DATE: 04/05/1997
 COMPLETION DATE: 04/05/1997

DRILLER: Kinnetic Laboratories
 DRILLING METHOD: Vibrocore

ELEVATION, ft	DEPTH, ft	SOIL TYPE	SAMPLER	BLOW COUNT	MATERIAL DESCRIPTION	STRATUM NO.	CORING RATE (Min/ft)				FRACTURE DENSITY (fractures/ft)				
							5	10	15	20	2	4	6	8	
							ID TESTS/RQD/RECOVERY(%)/EQ. BLOW COUNTS				ROCK UNCONFINED COMPRESSIVE STRENGTH (PSI)				
							20	40	60	80	5000	10000	15000	20000	
					Coordinates: E4206262 N4021098 CA State Plane, Zone 7, Feet		SUBMERGED UNIT WEIGHT (KCF)				SOIL UNDRAINED SHEAR STRENGTH (KSF)				
					MUDLINE ELEVATION: -45.8 FT (MLLW)		0.05	0.1	0.15	0.2	1	2	3	4	
					Sandy CLAY (CL): very soft to soft, dark gray, with mica and few shell fragments	I									
					Silty fine SAND (SM): dark gray to gray, with mica and few organics	II									
					- with soft silt seams at 3.75' to 4.25'										
					- fine to medium grained, with shell fragments and some gravel, at 4' to 4.5'										
					CLAY (CL) to CLAY with sand (CL): stiff, light brown, with mica and concretions										
					TOTAL DEPTH: 8.7' BACKFILLED WITH: No Backfill										

LOG OF BORING AND TEST RESULTS

BORING FG1-6

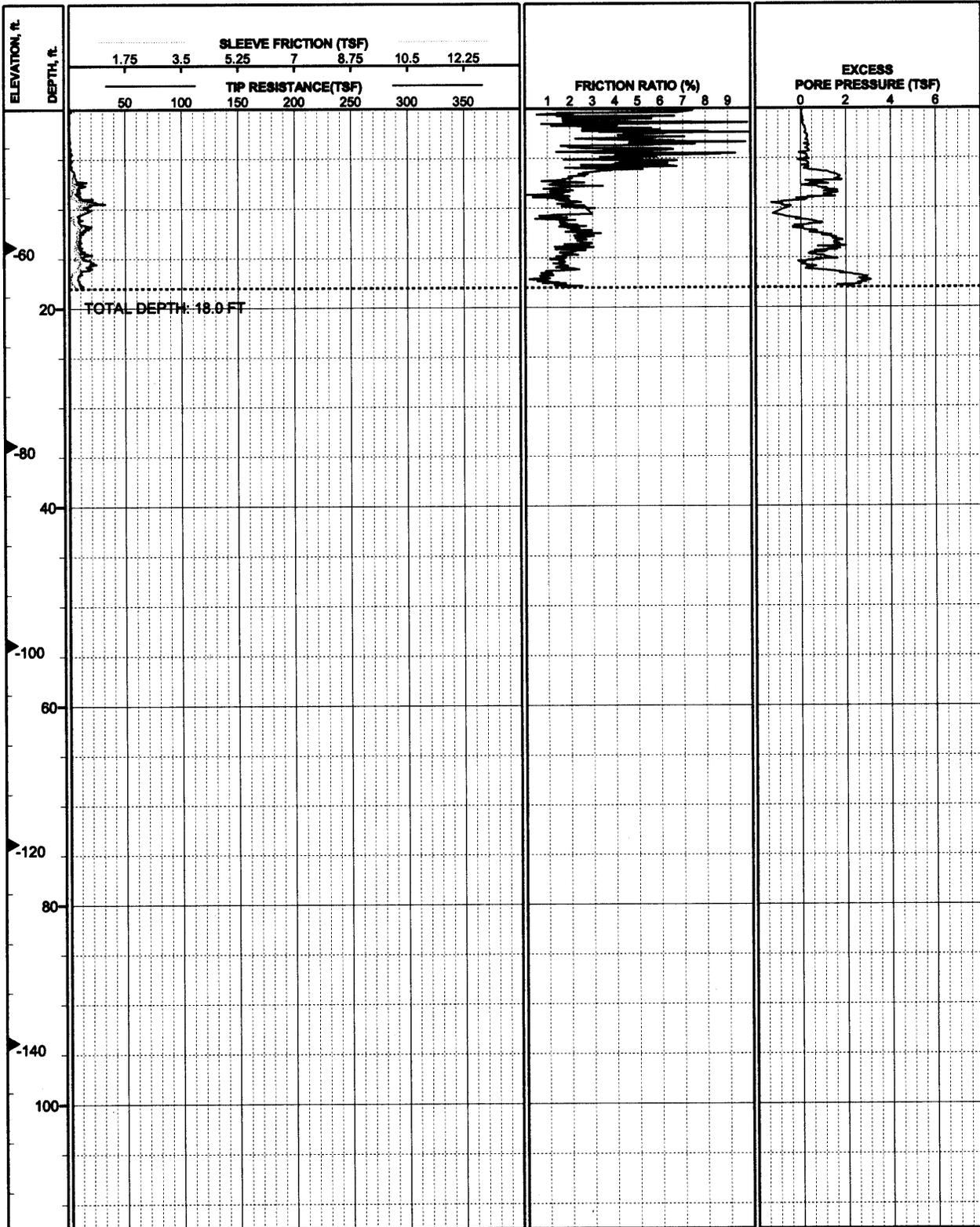
Inner Harbor Container Terminal

Report Date: 01/02/01





SOUNDING NO.: CB-19 COORDINATES: E4205229 N4021358 CA State Plane, Zone 7, Feet VESSEL: Fugro Geosciences
 MUDLINE ELEVATION: -46.2 FT (MLLW) STATION: - FT TEST DATE: 08/08/1996



LOG OF CPT
TETHERED SEASCOUT SOUNDING CB-19
 Pier 400- Main Channel Deepening

Report Date: 01/02/01

