SITE CHARACTERIZATION REPORT BUILDING 109-UST PARKS RESERVE FORCES TRAINING AREA DUBLIN, CA

Prepared for

U.S. Army Corps of Engineers
Sacramento District
1325 J Street
Sacramento, California 95814-2922

June 29, 1995

Woodward-Clyde

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Woodward-Clyde

Engineering & sciences applied to the earth & its environment

June 29, 1995

CESPK-ED-EC Richard Haavisto
Corps of Engineers
Sacramento District
1325 J Street
Sacramento, CA 95814-2922

Subject: Final Site Characterization Report at Building 109-UST
Camp Parks Reserve Forces Training Area (RFTA), Dublin, CA
Contract DACA05-92-D-0032, D.O. 0037

Dear Mr. Haavisto:

Woodward-Clyde Federal Services (WCFS) respectfully submits this final report of subsurface investigations completed at the location of the former underground storage tank at Building 109, Camp Parks RFTA. Your comments on the draft report have been incorporated into this final version.

A copy of this report is also being sent to Ms. Eva Chu of the Alameda County Health Care Services Agency, Department of Environmental Health for your convenience.

Please do not hesitate to call either of us at (510) 893-3600, if you have any questions or comments regarding this report.

Sincerely,

WOODWARD-CLYDE FEDERAL SERVICES

J. Michael Sartor, P.E.
Project Manager

Jo Beth Folger
Task Manager

Attachment (3 copies)

cc: Marshall Merrick, Parks RFTA (3 copies w/Attachments)
Dennis Stone, AFRC-FM-PWE, Fort McCoy, WI
Eva Chu, Alameda County Department of Environmental Health

Woodward-Clyde Federal Services • A subsidiary of Woodward-Clyde Group, Inc.
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CERTIFICATION

SITE CHARACTERIZATION REPORT
BUILDING 109-UST
PARKS RESERVE FORCES TRAINING AREA
DUBLIN, CALIFORNIA

June 29, 1995
7197

This report has been prepared by the staff of Woodward-Clyde and has been reviewed and approved by the professional whose signature appears below.

The findings, recommendations, specifications, or professional opinions are presented within the limits prescribed by the client, and prepared in accordance with generally accepted engineering practice in Northern California at the time this work plan was prepared. No other warranty is either expressed or implied.

WOODWARD-CLYDE

Michael Sartor, P.E.
Project Manager

Jo Beth Folger
Task Manager

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1.0
INTRODUCTION

1.1 SCOPE OF WORK

This report addresses the procedures involved with the investigation and evaluation of an underground storage tank (UST) site located within the Parks Reserve Forces Training Area (PRFTA) in Dublin, CA, at the former Building 109. This work was performed in order to investigate the extent and magnitude of petroleum hydrocarbons in the subsurface soil and groundwater at the site. Specific activities included the collection of soil samples during the drilling and construction of three proposed groundwater monitoring wells at the site, initial monitoring well groundwater sample collection, sample analysis, and waste disposal. This report has been prepared in accordance with the State of California, Regional Water Quality Control Board (RWQCB), Tri-Regional Board Staff Recommendations; WCFS's "Site Characterization Workplan Building 109-UST" which was dated July 8, 1994, and WCFS's November 20, 1994 letter to Eva Chu, Alameda County Department of Environmental Health, which revised the well locations.

1.2 SITE CONTACTS

Woodward-Clyde is providing consulting engineering services for the project to the U.S. Army Corps of Engineers, Sacramento District. Table 1 presents the names and addresses of other important entities involved with the site investigation, including the regulatory agencies who will receive copies of report and correspondence regarding this site investigation.

1.3 SITE LOCATION AND DESCRIPTION

PRFTA is located in Townships 2 and 3 South, Range 1 East on the Dublin 7.5 minute topographic quadrangle in Alameda and Contra Costa Counties, California (Figure 1). PRFTA occupies approximately 2800 acres and is bounded by multiple entities. PRFTA's neighbors include Federal Correctional Institutions, Santa Rita Rehabilitation Center,

Alameda County Santa Rita Jail, Tassajara Creek Regional Park, local businesses, and residential districts.

PRFTA is a multi-use installation that hosts a variety of tenants, both military and civilian. PRFTA organizations utilize the installation for activities which include: fire services, maintenance of buildings, range control, storage facilities, demolition activities, and administration of utilities. Tenant organizations who lease buildings or space at PRFTA include Federal entities (U.S. Army Reserve components and U.S. Border Patrol), private companies, and private and public organizations.

Building 109 was located in the southern portion of the facility (Figure 2).

1.4 SITE HISTORY

Prior to its demolition which is currently underway, Building 109 was a trash incinerator. During building demolition and removal activities in mid-March 1994, a previously unknown 2000-3000 gallon UST was discovered under the building floor and damaged. It is suspected that the tank held fuel oil, possibly as a supplemental fuel for the incinerator. On March 22, 1994, the UST was punctured during the demolition of Building 109, resulting in fuel leakage into a 12 foot deep excavation pit within the perimeter of the incinerator building foundations. Approximately 442 gallons of product were removed from the excavation and another estimated 1,077 gallons removed from the tank. Additional water and fuel was removed from the excavation pit on six subsequent dates from March 28 through April 25, 1994. The recovered liquid was disposed at a licensed disposal facility. Need manifests

A material which appears to be ash from the incinerator was also discovered during the demolition. It is visible in the excavation walls on the south side of the building as lenses buried about 4 feet deep. Its lateral extent is unknown. The ash material is the subject of a separate investigation, but because MW-1 apparently was drilled through some ash, certain samples collected during this UST investigation were analyzed for ash constituents of concern. The analytical results are included in this report for completeness, but interpretation will be reserved for the report of the ash investigation.

2.0
FIELD ACTIVITIES

This section describes field activities that were completed to evaluate and delineate petroleum hydrocarbons in the soil and groundwater that may be attributable to the former UST at Building 109.

2.1 DRILLING LOCATIONS

Three boreholes were drilled and sampled on December 12 and 20, 1994, and were completed as groundwater monitoring wells, identified as MW-1, MW-2, and MW-3 (Figure 3). The monitoring wells were located to assess the lateral and vertical extent of fuel constituents within the property and to evaluate the site-specific groundwater flow direction and gradient. Monitoring well MW-3 was installed within ten feet of the former UST per RWQCB guidelines. Monitoring wells MW-2 and MW-3 were installed crossgradient and downgradient of the excavation where the fuel was spilled to intercept groundwater which may have been affected by former UST's contents.

2.2 DRILLING AND SUBSURFACE SOIL SAMPLING METHODOLOGY

The boreholes were drilled using truck mounted Mobile B-61 and B-53 drill rigs equipped with 10-inch outside diameter, hollow-stem, continuous flight augers. The drilling subcontractor was Kvilhaug Well Drilling and Pump Company, Inc., of Concord, California. The wells were constructed in accordance with a permit issued by the Alameda County Flood Control and Water Conservation District Zone 7 (Appendix A).

Soil samples were collected using a split-spoon drive sampler capable of holding three 2.5-inch diameter, 6-inch long brass liners. Samples were collected by advancing the hollow-stem auger flights to the specified depth and then driving the sampler within the augers to obtain the sample. A 140-pound hammer with 30-inch drop was used to drive the sampler. Subsurface soil samples were collected for chemical analysis and lithologic logging during drilling at each borehole location. Soil samples were described in accordance with the Unified Soil Classification System (USCS). A boring log was completed by the WCC

hydrogeologist for each borehole. Boring logs are provided in Appendix B. Cuttings generated during drilling were placed in drums for eventual proper disposal by the Army.

Following collection, the soil sample liner designated for chemical analysis was sealed with teflon sheeting, plastic end caps, and duct tape and labeled. Each sample was sealed in a plastic ziplock bag and placed in a chilled cooler containing ice for transport to the analytical laboratory. The soil samples were shipped for analysis under chain-of-custody protocol to Anametrix Laboratories of San Jose, California. All samples were transported, extracted and analyzed within the method-prescribed holding times. The soil samples submitted to the laboratory were analyzed for total extractable hydrocarbons as kerosene, motor oil and diesel (TPHd) by modified EPA Method 8015, and benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8010/8020. In addition, one sample which appeared to be ash (MW-1-4) was analyzed for STLC Lead. The samples from the bottom of each well were analyzed for a suite of metals to see if underlying soil had been impacted by leaching from overlying ash.

2.3 MONITORING WELL INSTALLATION PROCEDURES

After reaching total depth, the boreholes were completed as groundwater monitoring wells. All well construction materials were emplaced through the center of the hollow-stem auger flights. Prior to construction, well casing materials were decontaminated by steam cleaning. The monitoring wells were constructed using 4-inch diameter, flush threaded, Schedule 40 polyvinylchloride (PVC) well casing. The screened portion of each well consisted of 0.02-inch factory slotted PVC of the same diameter and grade as the solid pipe. The wells were screened approximately from 12 to 22 feet below ground surface. The screen intervals were selected to straddle the uppermost groundwater zone encountered and to allow for monitoring seasonal fluctuations of the water table. Water was first encountered at depths of 13.5 to 16 feet below ground surface.

After installing the well casing and screen in the borehole, a sand filter pack consisting of Lonestar No. 2/12 sand was poured down the annulus of the augers. As the sand was added, the augers were pulled to allow the sand filter pack to fill the borehole annulus. The bottom of the augers was not pulled above the level of the sand during sand placement to help

ensure a complete and continuous sand filter pack around the well screen. The sand filter pack extended from the bottom of the boring to one foot above the top of the well screen.

Following installation of the sand filter pack, approximately one to two feet of bentonite was placed on top of the sand filter pack as a seal. The seal consisted of 3/8-inch bentonite pellets hydrated in place with approximately five-gallons of water. The seal was allowed to hydrate for a minimum of 30-minutes before grouting was performed. Wells were capped with water-tight locking caps secured with keyed-alike locks.

A neat cement grout mixture was used to seal the borehole annulus from the top of the bentonite seal to just below ground surface. The neat cement grout consisted of a mixture of Type I and II Portland cement (94-lbs per bag), bentonite powder (up to 5 percent), and potable water (approximately 7 gallons per bag of cement).

After grouting, surface completions were performed at each monitoring well location. The surface completion consisted of a grouted in-place traffic rated utility box mounted nearly flush with the surrounding grade. Table 2 summarizes monitoring well construction details.

2.4 MONITORING WELL DEVELOPMENT PROCEDURES

Following construction, each monitoring well was developed to remove sediment from well construction, so that the well would yield representative groundwater samples. The wells were developed on January 24, 1995. The monitoring wells were developed according to the following procedures:

- All downhole equipment (with the exception of new suction hose) was cleaned with a solution of laboratory grade soap (Alconox) and potable water before each use.

- Prior to development, an Oil/Water Interface probe was used to measure the presence of a floating immiscible layer in each well. The water level and total depth of each well was measured and recorded.

- The screened interval of each well was swabbed for a maximum of 10-minutes to agitate the sand pack and loosen formational sand and silt.

- Each well was then purged dry until 10 casing volumes had been removed.

- Purging of each monitoring well was accomplished using a centrifugal pump.

- During well purging, general water quality parameters (pH, specific conductance, temperature, turbidity) were periodically measured and recorded, water color and odor were periodically observed and recorded.

Water removed from the wells during well development was contained in 55-gallon drums and stored on-site. Water Sample Logs used to document monitoring well development are provided in Appendix C.

2.5 GROUNDWATER SAMPLING PROCEDURES

Groundwater monitoring wells MW-1, MW-2, and MW-3 were sampled on January 25, 1995. Groundwater samples were collected from each monitoring well according to the following procedures:

- Purging and sampling equipment was cleaned in a solution of laboratory soap (Alconox) and potable water; rinsed with potable water; and finally rinsed with distilled water.

- Prior to sampling, an Oil/Water Interface probe was used to measure the presence of a floating immiscible layer in each well.

- At each well, the water level and total depth were measured.

- Wells MW-1, MW-2, and MW-3 were purged using a centrifugal pump.

- During purging, general water quality parameters (pH, specific conductance, temperature, turbidity) were periodically measured and recorded. Water color and odor were periodically observed and recorded.

- Purging continued until a minimum of 4-casing volumes of water were removed and water quality parameters stabilized.

- Groundwater samples were collected at each well with a new disposable bailer and were poured into appropriate sample containers provided by the analytical laboratory. Sample containers were sealed, labeled, wrapped in cushioned wrapping, and then placed in a chilled cooler containing ice for shipment to the analytical laboratory.

- An equipment blank sample was collected, given the fictitious name MW-4 and analyzed along with the other samples.

- After sampling was complete, general water quality parameters, water level, and total depth were again measured and recorded.

Immediately following sample collection, the sample bottles were placed in a chilled cooler for storage and transport to the analytical laboratory. All groundwater samples collected were recorded on chain-of-custody forms prior to shipment to the laboratory. Groundwater samples collected were submitted to a state certified laboratory for analysis. All samples were transported, extracted and analyzed within the method-prescribed holding times. The samples collected for this project were submitted to Anametrix Laboratories of San Jose, California. The groundwater samples were analyzed for TPHd by modified EPA Method 8015, and BTEX by EPA Method 8010/8020. MW-1 (the suspected ash area) was also analyzed for lead by Method 6010A and by Method 8290 for PCDD/PCDF.

Water removed from the wells during purging was contained in 55-gallon drums for disposal. Water Sample Logs used to document monitoring well purging and sampling are provided in Appendix C.

2.6 DECONTAMINATION PROCEDURES

Down-hole drilling equipment such as augers were steam-cleaned prior to use between wells. The California split-spoon sampler, brass tube liners, oil-water interface probe and water level indicators were cleaned before each use by washing in a laboratory grade solution followed by two tap water rinses and one rinse with distilled water.

2.7 HEALTH AND SAFETY

Field activities at PRFTA were conducted in accordance with the provisions of the site specific Health and Safety Plan. The plan was prepared to comply with state, federal and COE occupational health and safety regulations to ensure health and safety of all workers, regulators, and public at the site.

2.8 ENGINEERING SURVEY

After installation, the three monitoring wells were surveyed by Hunter Surveying, Inc., of Orangevalle, California, a state licensed engineering surveyor. Each well location was surveyed to an accuracy of 0.01 foot for the following points:

- The north rim of the top of well casing (with cap off) was surveyed for elevation and location.

- The ground surface at the well was surveyed for elevation.

The survey data for the newly installed monitoring wells are provided in Table 2. The survey map is included in Appendix E.

3.0
DATA EVALUATION

This section describes hydrogeologic conditions for the PRFTA facility and provides an assessment of the vertical and horizontal extent of contamination at the Building 109 site.

3.1 SITE HYDROGEOLOGY

The depth to groundwater during drilling and sampling was about 13.5 to 16 feet below grade. Groundwater elevations stabilized in the wells at about 328 feet above mean sea level (MSL). Figure 4 shows the approximate groundwater elevation contours of water elevations measured on January 25, 1995. The groundwater flow direction is towards the west-southwest. The horizontal hydraulic gradient across the site was estimated to be about 0.0014 feet per foot which is quite flat.

3.2 ANALYTICAL RESULTS

3.2.1 Subsurface Soils

Subsurface soil sampling was conducted on December 12 and 20, 1994. Analytical results of soil samples collected are summarized in Table 3. A quality assurance/quality control (QA/QC) review was performed on the analytical data which is included in Appendix D. The results of the review indicate that data are of acceptable quality.

TPH as diesel was not detected in any of the samples. This is as expected since the spill occurred into the central excavation. TPH as motor oil was detected at the low level of 29 mg/kg in MW-1-4' (the ash sample). BTEX was detected only in MW-3-15' at low levels (Benzene - 0.057, Toluene - 0.11, Ethylbenzene - 0.30, and Xylene - 1.0 mg/kg). The levels of metals in the soil are within acceptable background ranges. An elevated concentration of soluble lead was detected in the ash sample, however.

3.2.2 Groundwater

An oil-water interface probe was used to measure the thickness of any floating immiscible layer, if present, prior to purging. No measurable immiscible layer was present in any of the monitoring wells at Building 109.

Groundwater samples were analyzed for TPHd (modified EPA Method 8015) and BTEX (EPA Method 80101/8020). In addition to the groundwater samples collected from the three monitoring wells, one equipment rinsate sample was collected (labelled MW-4 on the chain-of-custody and the analytical data sheets). A QA/QC review was performed on the groundwater data. The groundwater analytical results are presented in Table 4. The water sample from MW-1 (in the suspected ash area) was analyzed for lead by EPA Method 6010A and for PCDD/PCDFs by EPA Method 8290.

TPH as diesel was detected in all three wells, at levels from 62 to 1,200 μg/L. BTEX was also detected in MW-3 (benzene at 2.5 μg/L). No lead or PCDD/PCDFs were detected.

polychlorinated dioxins / furans

4.0
SUMMARY AND CONCLUSIONS

4.1 SUMMARY

Groundwater elevation at the facility was calculated to be at about 328 feet above mean sea level. The calculated groundwater flow direction was estimated to be towards the west-southwest.

Diesel was not detected in any of the soil samples. Total petroleum hydrocarbons quantified as motor oil and the constituents of benzene, toluene, ethylbenzene, and total xylenes were detected at low levels in soil samples collected from MW-1-4' and MW-3-15', respectively.

An oil/water interface probe was used to detect and measure the presence of an immiscible layer prior to well development and again prior to initiating groundwater sampling. No measurable immiscible layer was detected in any of the wells. TPH quantified as diesel was detected in the groundwater samples collected from all three wells.

4.2 CONCLUSIONS

This report satisfies the requirements for a Preliminary Investigation and Evaluation Report (PIER) and, as noted previously, concludes that the groundwater beneath the site has been impacted by diesel fuel.

5.0
LIMITATIONS

The conclusions presented in this report are based on the available data and the professional opinion and experience of WCFS. If additional data are collected, the conclusions presented herein may be revised. WCFS's services were performed with the standard of care and skill commonly used as state of the practice in the profession. No other representation, expressed or implied, and no warranty or guarantee, is included or intended.

6.0
REFERENCES

Regional Water Quality Control Board - North Coast, San Francisco Bay, and Central Valley Regions (RWQCB). 1990. Tri-Regional Board Staff Recommendation for Preliminary Evaluation and Investigation of Underground Tank Sites. August 10; and Appendix A - Reports, August 30, 1991.

Woodward-Clyde Federal Services, Site Characterization Workplan Building 109-UST Parks Reserve Forces Training Area, Dublin, CA. July 8, 1994.

TABLE 1

LIST OF CONTACTS
BUILDING 109-UST
PRFTA, DUBLIN, CALIFORNIA

Owner's Representatives:

U.S Army Corps of Engineers
Sacramento District
1325 J Street
Sacramento, CA 95814-2922
Attn: CESPK-ED-EC
Richard Haavisto (916) 557-7440

Parks Reserve Forces Training Area (PRFTA)
Building 790
Camp Parks, CA 94568
Bob Cowan (510) 829-8780

I Corps and Fort Lewis
Ft. Lewis, WA 98433
Attn: AFZH-DEQ (Steucke)
Paul Steucke, Jr.

Environmental Consultants:

Woodward-Clyde Federal Services
500-12th Street, Suite 100
Oakland, California 94607
Michael Sartor (510) 874-3173
Jo Beth Folger (510) 874-3138

Lead Implementing Agency:

Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, CA 94621
Eva Chu (510) 271-4530

Regional Water Quality Control Board:

Regional Water Quality Control Board
2101 Webster Street, Suite 500
Oakland, California 94612
(510) 286-1255

TABLE 2

MONITORING WELL CONSTRUCTION DETAILS AND GROUNDWATER ELEVATION
7197 - PRFTA BUILDING 109

Well ID	Date	Total Depth (ft)	Screened Interval (ft below ground surface)	Coordinates[4]		Ground Elevation[5]	TOC Elevation[5]	Groundwater Depth[3] (ft)	Groundwater Elevation (ft,MSL)[5]
				Northing	Easting				
MW-1	1/25/95	22	12 to 22	2,083,140.99	6,155,375.64	335.76	338.64	10.60	328.04
MW-2	1/25/95	22	12 to 22	2,083,185.84	6,155,335.54	336.52	340.22	12.23	327.99
MW-3	1/25/95	22	12 to 22	2,083,218.37	6,155,371.77	338.91	341.42	13.36	328.06

NOTES:
(1) TOC, Top of Casing
(2) MSL, Mean Sea Level
(3) Depth to groundwater is measured from the TOC
(4) Horizontal grid values based on NAD83, California Coordinate System, Zone 3 - Stations PFW2 to PFE4
(5) Vertical Elevations based on NGVD 1929 - Stations PFW2 and PFE4

TABLE 3

SOIL SAMPLES ANALYTICAL RESULTS
BUILDING 109-UST

Sample I.D. (depth)	EPA Modified Method 8015/8020				TPH by EPA Modified Method 8015			CWET Lead
	Benzene	Toluene	Ethylbenzene	Xylenes	Diesel	Motor Oil	Kerosene	
MW-1 (4')	ND	ND	ND	ND	ND	29	ND	319[1]
MW-1 (10')	ND	ND	ND	ND	ND	ND	ND	--
MW-1 (14')	ND	ND	ND	ND	ND	ND	ND	--
MW-2 (5')	ND	ND	ND	ND	ND	ND	ND	--
MW-2 (10')	ND	ND	ND	ND	ND	ND	ND	--
MW-2 (15')	ND	ND	ND	ND	ND	ND	ND	--
MW-3 (5')	ND	ND	ND	ND	ND	ND	ND	--
MW-3 (10')	ND	ND	ND	ND	ND	ND	ND	--
MW-3 (15')	0.057	0.11	0.30	1.0	ND	ND	ND	--

	Total Metals by EPA Method 6010A (7471 for Hg)																
	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Pb	Hg	Mo	Ni	Se	Ag	Tl	V	Zn
MW-1 (14')	ND	5.1	112	ND	ND	19.6	9.0	15.6	5.6	ND	ND	26.5	ND	ND	ND	31.0	32.9
MW-2 (15')	ND	3.9	--	ND	ND	15.0	--	10.7	4.3	ND	--	19.4	ND	ND	ND	-	23.4
MW-3 (15')	ND	4.4	86	ND	ND	16.5	7.5	11.6	4.4	ND	ND	19.3	ND	ND	ND	27.9	28.0

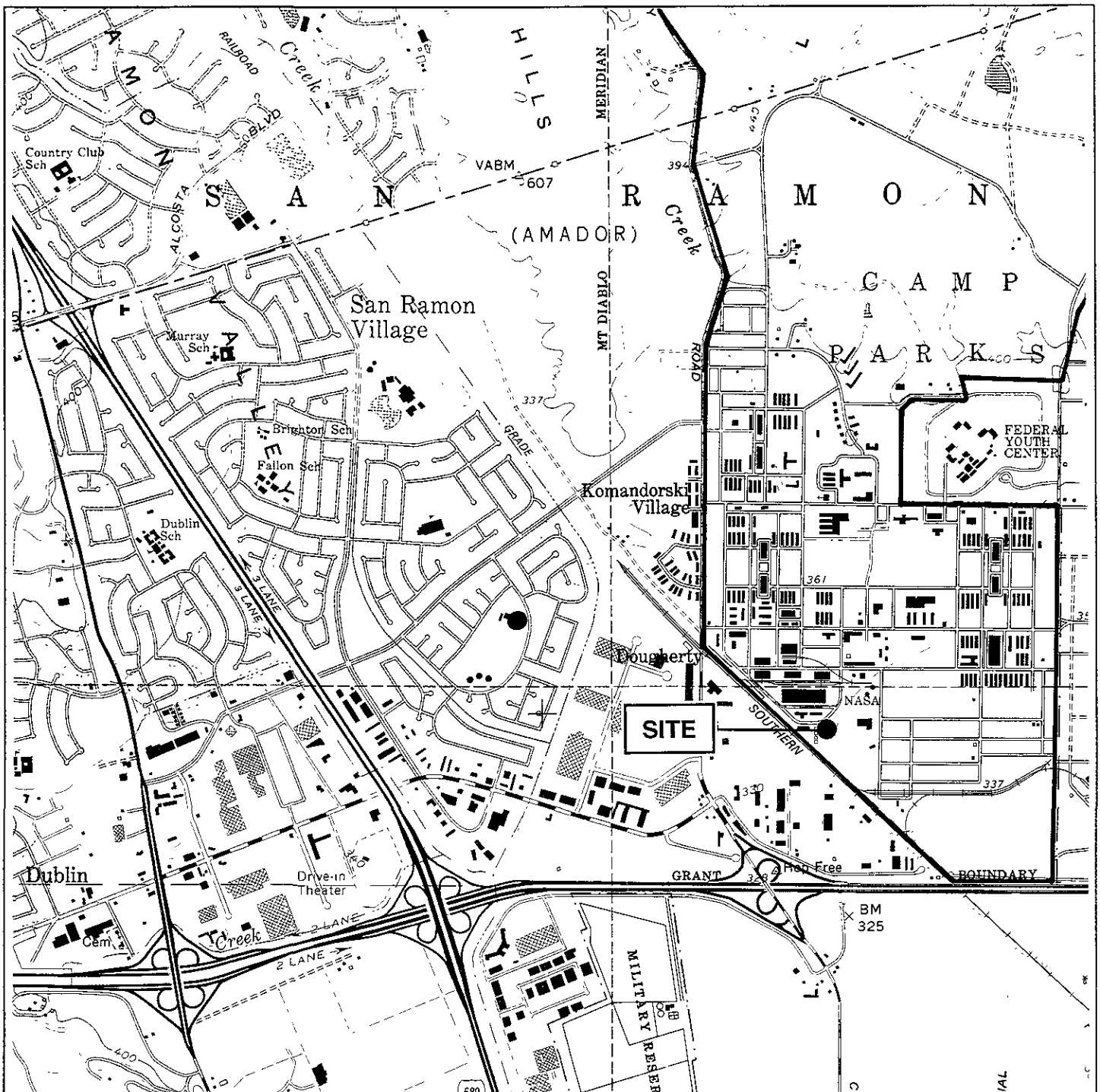
NOTES: All results are in mg/kg
ND = not detected
-- = not analyzed
[1] MW-1-4 appeared to be ash, results reported in mg/L

TABLE 4

GROUNDWATER SAMPLES ANALYTICAL RESULTS
BUILDING 109-UST

Sample I.D.	Date Sampled	EPA Modified Method 8015/8020				TPH by Modified Method 8015		6010-A Lead	8290 PCDD/ PCDF
		Benzene	Toluene	Ethylbenzene	Xylenes	Diesel	Kerosene		
MW-1	1/25/95	ND	ND	ND	ND	62	ND	ND	ND
MW-2	1/25/95	ND	ND	ND	ND	300	ND	--	--
MW-3	1/25/95	2.5	1.2	2.5	8.0	1200	820	--	--

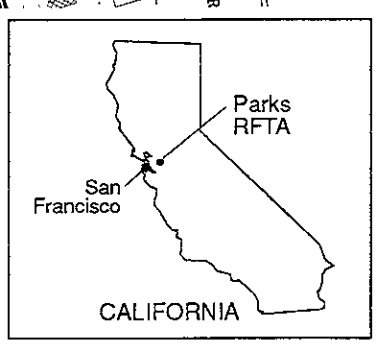
NOTES: All results are in $\mu g/kg$
ND = not detected
-- = not analyzed



LEGEND

Facility Boundary

Note: Base Map From Dublin Quadrangle, Minute Series (Topographic) 1961, Photorevised 1980



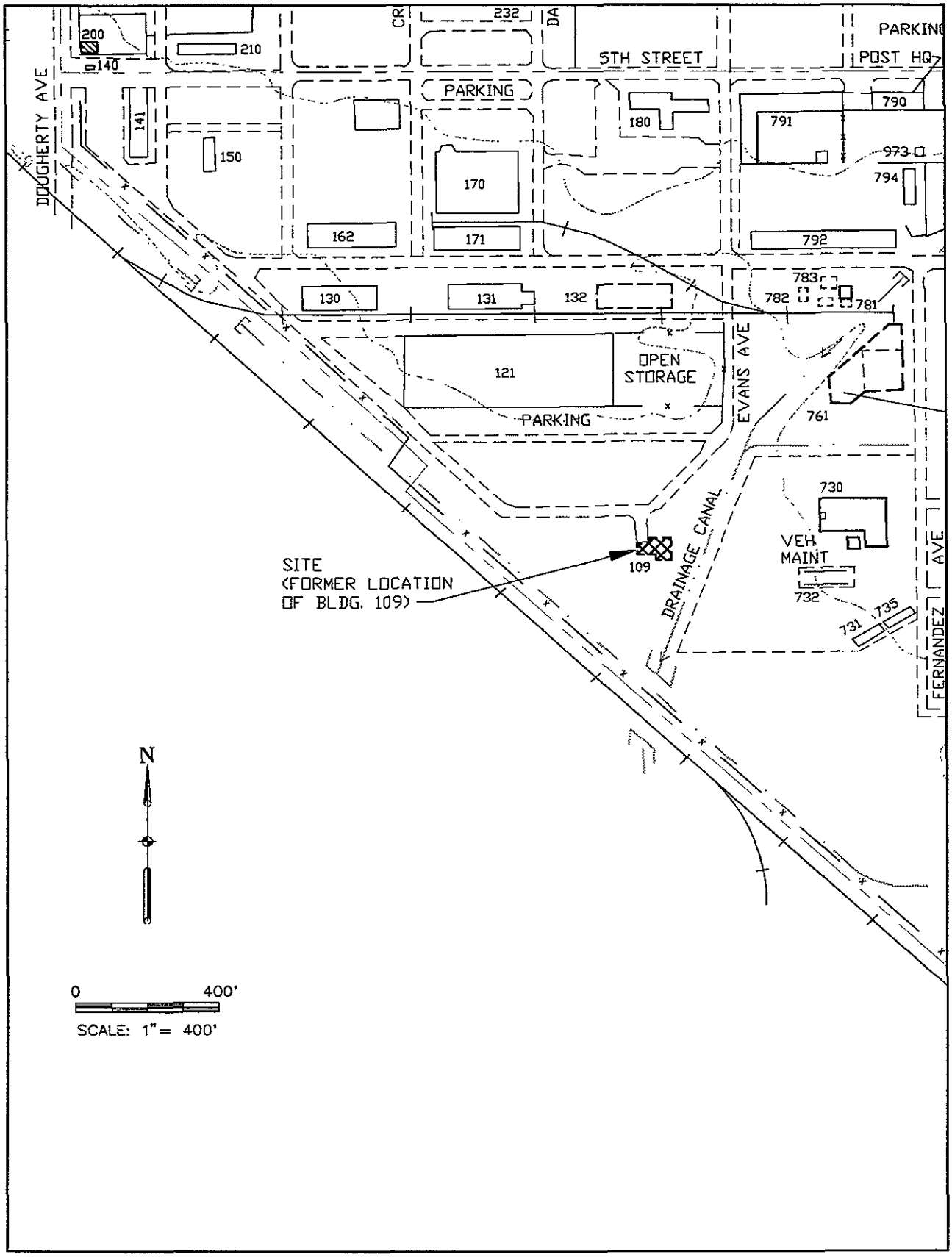
N

0 1

mile

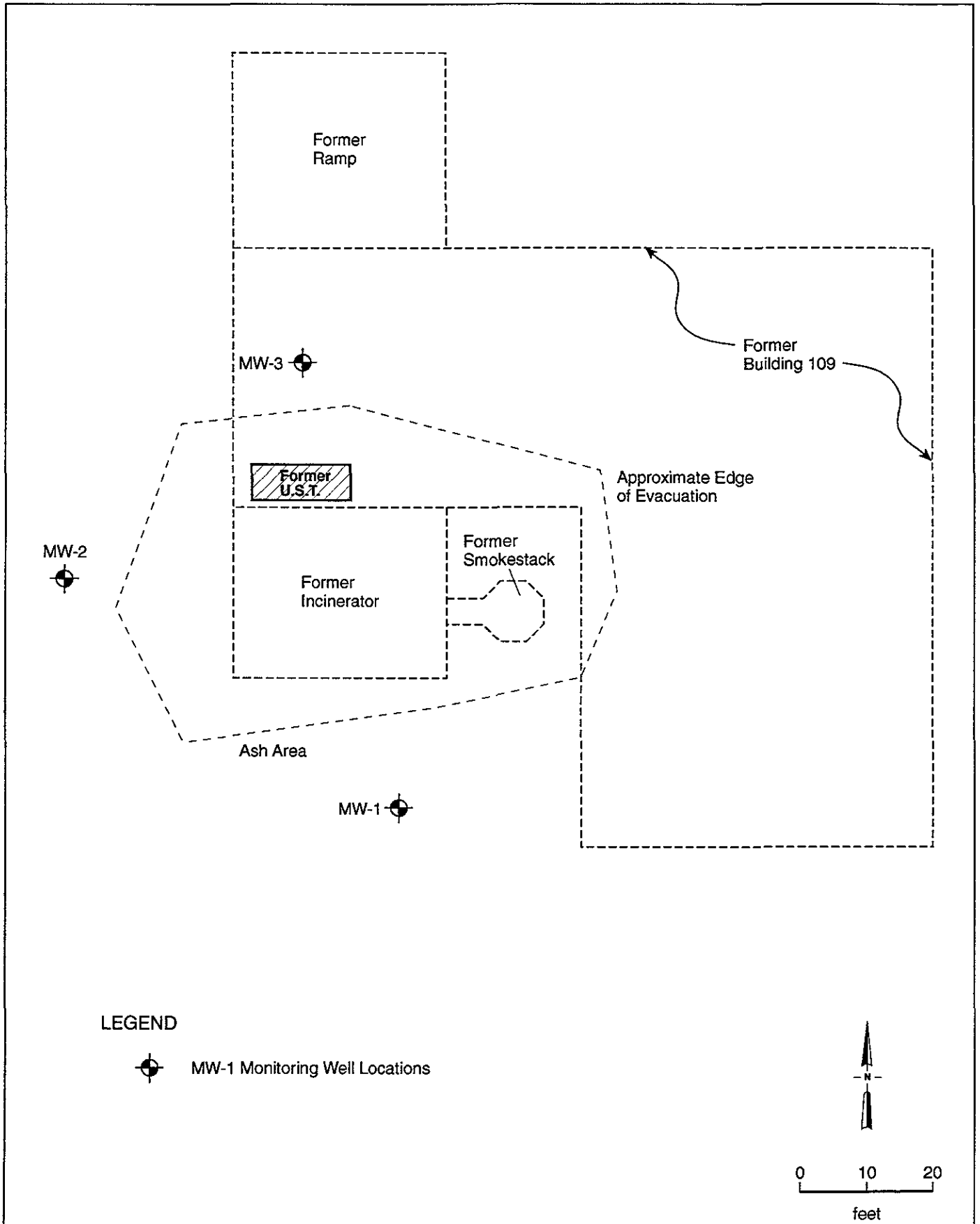
Project No. 7136/7137	Parks Reserve Forces Training Area	FACILITY MAP LOCATION PARKS RESERVE FORCES TRAINING AREA DUBLIN, CALIFORNIA	Figure 1
Woodward-Clyde			

7136-300/062895/mci



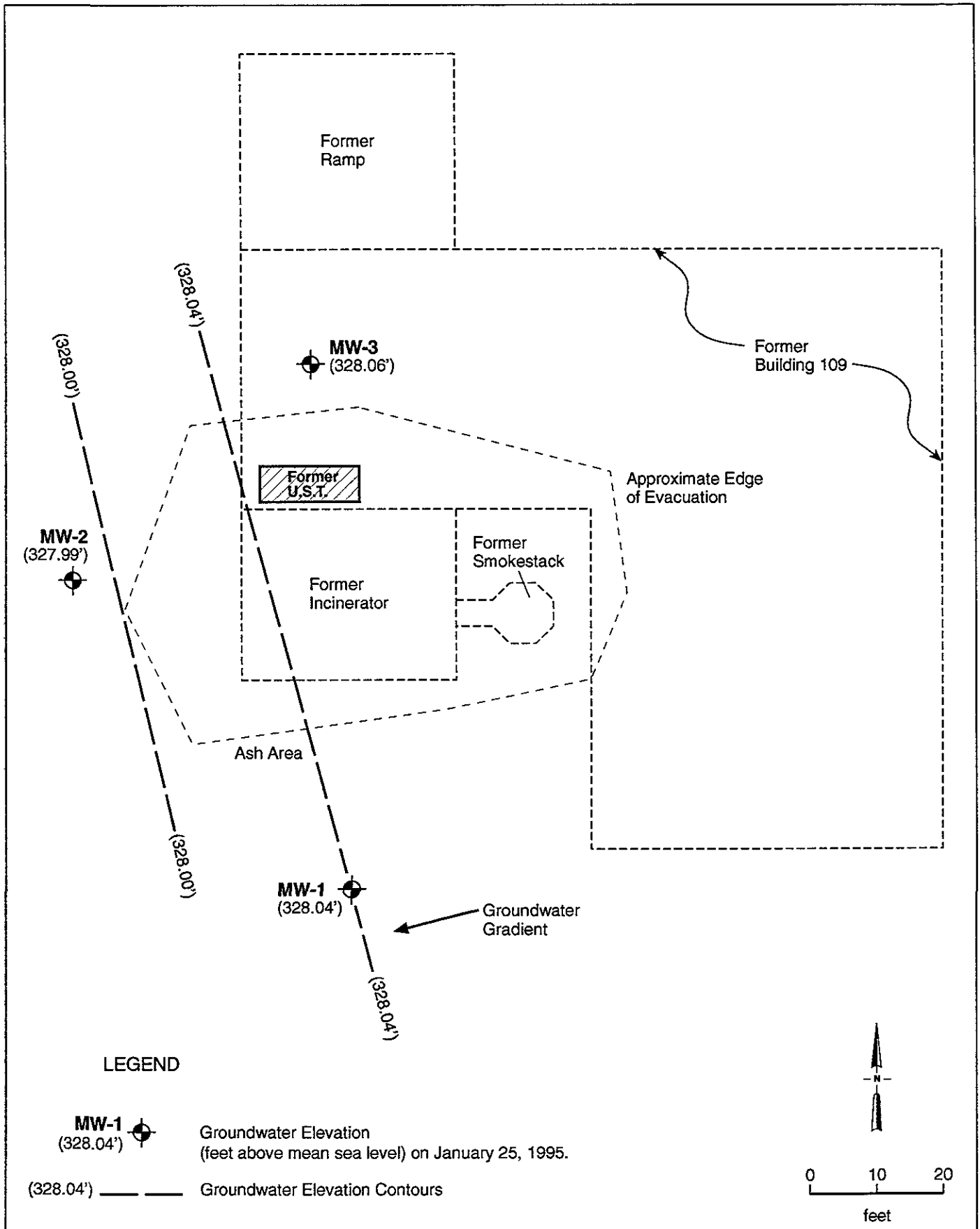
PARK-13 052094

Project No. 7112	PARKS RESERVE FORCES TRAINING AREA	SITE LOCATION BLDG. 109 INVESTIGATION	Figure 2
Woodward-Clyde Consultants			



Project No. 7137	Parks Reserve Forces Training Area	MONITORING WELL LOCATIONS BUILDING 109 INVESTIGATION	Figure 3
Woodward-Clyde			

7137-300/033095



Project No. 7137	Parks Reserve Forces Training Area	GROUNDWATER ELEVATION BUILDING 109 INVESTIGATION	Figure 4
Woodward-Clyde			

7137-300/033095/cum

APPENDIX A
WELL INSTALLATION PERMIT

ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588 VOICE (510) 484-2600
FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Building 109 (outside)
Camp Parks RFTA
Dublin, CA

CLIENT
Name Sacramento District Corps of Engineers
Address 1325 J Street Voice
City Sacramento, CA Zip 95814

APPLICANT
Name Sevin Belir/Mike Sartor
Woodward-Clyde Cons. Fax 510-874-3268
Address 500 12th Street Ste 100 Voice 510-874-1788
City Oakland, CA Zip 94607

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection		General	
Water Supply		Contamination	
Monitoring	X	Well Destruction	

PROPOSED WATER SUPPLY WELL USE

Domestic		Industrial		Other	
Municipal		Irrigation			

DRILLING METHOD:

Mud Rotary		Air Rotary		Auger	X
Cable		Other			

DRILLER'S LICENSE NO. Kvilaug C57-482-390

WELL PROJECTS

Drill Hole Diameter	10	in.	Maximum		
Casing Diameter	4	in.	Depth	20	ft.
Surface Seal Depth	2	ft.	Number	3	

GEOTECHNICAL PROJECTS

Number of Borings			Maximum		
Hole Diameter		in.	Depth		ft.

ESTIMATED STARTING DATE 12/12/94
ESTIMATED COMPLETION DATE 12/13/94

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE [signature]

FOR OFFICE USE

PERMIT NUMBER 94775
LOCATION NUMBER

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well Projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 8 Dec 94
Wyman Hong

APPENDIX B
BORING LOGS

Woodward-Clyde Consultants PROJECT NAME Camp Parks VST109 NO. 7137-0100

BORING LOCATION ~30' South of Incinerator Room Bldg 109		ELEVATION AND DATUM	
DRILLING AGENCY KUILMAUG	DRILLER -	DATE STARTED / DATE FINISHED 12/20/94	
DRILLING EQUIPMENT B-53 Mobile Drill		COMPLETION DEPTH 22	SAMPLER 2" CA. I.D.
DRILLING METHOD Hollow Stem Auger	DRILL BIT 10"	NO. OF SAMPLES / DIST.	UNDIST. 3
SIZE AND TYPE OF CASING 4" PVC Sch. 40		WATER ELEV. FIRST 13.5	COMPL. 14 24 HRS
TYPE OF PERFORATION 0.020-inch	FROM 12 TO 22 FT.	LOGGED BY SBilir	CHECKED BY:
SIZE AND TYPE OF PACK Lonestar 2/12	FROM 10 TO 22 FT.		
TYPE OF SEAL Portland Cement	FROM 0 TO 9 FT.		

Bentonite 9-10

DEPTH (FEET)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	OVA: Meter Calibrated	Piezometer Data	SAMPLES: Type No	SAMPLES: Recov. in	SAMPLES: Penetra Resist (Blows/6 in)	REMARKS (Drill Rate, Fluid loss, Odor, etc.)
2	CLAYEY GRAVEL - Rubble Dark brown, various color aggregate, brick fragments, damp (Rain), medium dense	GM/GC						7	Begin drill 1025
	CLAY gray with brown, medium dense and stiff, low plasticity	CL						10 11	
4	DSA Rubble Rusty stains and various color aggregate, mostly black-brown, glass fragments, pebbles up to 2cm			<5				15	MW-1-4 1040
5								6 9 15 17	
7	CLAY Dark brown, some fine sand/silt pockets and aggregate, slightly plastic, damp, medium dense	CL/ML							
9	becomes light brown to brown			<5				10 12	MW-1-10 1110 Duplicate
11	becomes silty and damp							19 24	
13	becomes wet			<5				5 6 6	MW-1-14 1130

FIELD LOG OF BORING NO. MW-1 SHEET 1 of 2

Woodward-Clyde Consultants

PROJECT NAME Camp Parks 109 UST NO. 7137.0100

DEPTH (FEET)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	OVA (Reading / Sensitivity)	Piezometer Data	SAMPLES: Type No.	SAMPLES: Blows/6 in.	SAMPLES: Pocket Pen. (Blows/6 in.)	REMARKS (Drill. Rate, Fluid loss, Odor, etc.)
15	Some aggregate	CL/ML							
17									
19									
21									
22	TD @ 22								TD @ 1145 Monument well protector placed at surface Stick up

FIELD LOG OF BORING NO. MW-1 SHEET 2 of 2

Woodward-Clyde Consultants PROJECT NAME Camp Parks 109 UST NO. 7137-000

BORING LOCATION ~30' West of Bldg. 109 - Incinerator Room		ELEVATION AND DATUM	
DRILLING AGENCY KUILHAUG	DRILLER -	DATE STARTED / DATE FINISHED	12/12/94
DRILLING EQUIPMENT Hollow Stem Auger		COMPLETION DEPTH 22	SAMPLER 2" ID CA
DRILLING METHOD B-61 Mobile Drill	DRILL BIT 10"	NO. OF SAMPLES / DIST.	UNDIST. 3
SIZE AND TYPE OF CASING 4" PVC Sch. 40		WATER ELEV. / FIRST 14.5	COMPL. 13 / 24 HRS
TYPE OF PERFORATION 0.020-inch	FROM 12 TO 22 FT.	LOGGED BY S BILIR	CHECKED BY:
SIZE AND TYPE OF PACK Lonestar 2/12	FROM 10 TO 22 FT.		
TYPE OF SEAL Portland Cement / Bentonite 9-10	FROM 0 TO 9 FT.		

DEPTH (FEET)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	OVA (Meter Reading)	Piezometer Data	SAMPLES: Type No	SAMPLES: Recovery (ft)	SAMPLES: Penetration Resist (Blows/6 in)	REMARKS (Drill Rate, Fluid loss, Odor, etc.)
2	SILTY/CLAYEY GRAVEL Rubble. Dark brown with various color aggregate, moist (due to rain) to damp, slight plasticity, loose gravels up to 5cm	GM/GC		<5				5	OVA Cal 0730 Begin 1120
4	GRAVELLY CLAY Dark brown to brown, various color aggregate, slight to low plasticity, loose	ML/CL						12	
								>15	
	becomes light brown with some pebbly gravel up to 2cm.			<5				6	MW-2-5 1135
6								6	
								18	
								21	
8									
10	becomes grayish brown, brown stains (organic matter), low plasticity, damp, medium dense, medium stiff			<5				8	MW-2- 1205
								16	
								18	
								30	
12	becomes moist								
14		SM/SC							

FIELD LOG OF BORING NO. MW-2 SHEET 1 of 2

Woodward-Clyde Consultants

PROJECT NAME Camp Parks 109 UST NO. 7137-0100

DEPTH (FEET)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	OVA	Piezometer Data	SAMPLES: Type No.	SAMPLES: Recov. ft	SAMPLES: Penetration Resist. (Blows/6 in.)	REMARKS (Drill Rate, Fluid loss, Odor, etc.)
14		ML/CL							
	SILTY/CLAYEY SANDS light brown, very soft, nonplastic, wet, some sand, pockets of clay	SM/SC	▽			X		3 3 3 4	MW-2-15 1220
16									
	CLAY light to medium brown, medium stiff dense, sand and silt at top	ML/CL							
18									
20									
22	TD @ 22'								Monument well protector placed at surface Stick up

FIELD LOG OF BORING NO. MW-2

Woodward-Clyde Consultants

PROJECT NAME Camp Parks 109 UST NO. 7137-0100

BORING LOCATION ~10' North of 109 UST. On excavated pile.		ELEVATION AND DATUM	
DRILLING AGENCY KVILHAUG	DRILLER	DATE STARTED / DATE FINISHED 12/20/94	
DRILLING EQUIPMENT B-53 Mobile Drill		COMPLETION DEPTH 22	SAMPLER 2" CA ID.
DRILLING METHOD Hollow Stem Auger	DRILL BIT 10"	NO. OF SAMPLES / DIST.	UNDIST. 3
SIZE AND TYPE OF CASING 4" PVC Sch. 40		WATER ELEV. / FIRST 16	COMPL. 14.3 24 HRS
TYPE OF PERFORATION 0.020-inch	FROM 12 TO 22 FT.	LOGGED BY SBiLiR	CHECKED BY:
SIZE AND TYPE OF PACK Lonestar 2/12	FROM 10 TO 22 FT.		
TYPE OF SEAL Portland Cement	FROM 0 TO 9 FT.		

Bentonite 9-10

DEPTH (FEET)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	OVA: Water Content	OVA: Piezometer Data	SAMPLES: Type No	SAMPLES: Recov ft	SAMPLES: Penetra Resist (Blows/6 in)	REMARKS (Drill Rate, Fluid loss, Odor, etc.)
2	Clayey gravel (Rubble) Dark brown, various color aggregate, Moist (due to rain), gravels up to 4cm, Slight plasticity	GM/GC							Begin drill 0815
4	Clay Dark brown, pockets of medium and fine sand (orange to rust colored stains), some gravels	ML/CL		<5		X		5	MW-3-5 0836
6	becomes Mostly clay, disturbed texture (compacted)					X		7	
8						X		9	
10	becomes mottled with gray, low plasticity, medium dense and stiff, damp			<5		X		9	MW-3-10 0850
12						X		15	
14						X		17	

FIELD LOG OF BORING NO. MW-3 SHEET 1 of 2

Woodward-Clyde Consultants

PROJECT NAME Camp Parks 109 UST NO. 7137-0100

DEPTH (FEET)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	Water Content	Piezometer Data	SAMPLES: Type No	SAMPLES: Recov. ft	SAMPLES: Penetra. Resist. (Blows/6 in.)	REMARKS (Drill. Rate, Fluid loss, Odor, etc.)
15	becomes moist Silty sand becomes wet, brown to light orange rust color, medium sand with fines	SM/SC		5-10					MW-3-15 0900 Strong product odor
17									
	Clay gray to light brown, medium dense, slight plasticity	ML/CL							product odor
19									
21									product odor
22	TD @ 22'								TD 0945 Monument well protector placed at surface Stickup

FIELD LOG OF BORING NO. MW-3 SHEET 2 of 2

APPENDIX C
WATER SAMPLE LOGS (DEVELOPMENT AND GROUNDWATER SAMPLING)

WATER SAMPLE LOG

Sample No. MW-1

Project No. : 7137-0200 Date: 1-24-95

Project Name: Camp Parks - Dublin

Sample Location: MW-1 - WELL DEVELOPMENT

Well Description: 4" sch 40

Weather Conditions: Rainy

Observations / Comments: Dolphin key; well surrounded by mud surface mount = ok

Quality Assurance

Sampling Method: NA

Method to Measure Water Level : SOLINST

Pump Lines: (New) / Cleaned Bailer Lines: New / Cleaned

Method of cleaning Pump / Bailer:

pH Meter No.: 023092.8 Calibrated 4.00 7.00 15°C

Specific Conductance Meter No.: F2016588 Calibrated Red-Lined

Comments: TD: 24.45 B. Development 13.77 x .653 = 9 gals/cv
Baled 1gal; surge well, pump
@ 75g turbidity ↓.

Sampling Measurements

Water Level (below MP) at Start: 10.68 End:

Measuring Point (MP): TOC (N RIM)

Time	Discharge (gallons)	pH	Temp. (°C)	Specific Conductance (µmhos / cm)	Turbidity	Color	Odor	Comments
10:18	20	7.3	17	1099	7100	BRN	NO	
10:21	40	7.31	17.5	1099	"	"	"	
10:25	75	7.31	18.0	1050	"	"	"	Dry @ 75g
10:36	95	7.29	17.8	~~1050~~ 1099	7100 (SHEN)	LT BRN	NO	v. little sediment
10:40	110	7.24	18.0	1050	7100 (ALGO)	"	"	"

Total Discharge: 110 Casing Volumes Removed: 10+

Method of disposal of discharged water: To - 2 labeled 55gal drum

Number and size of sample containers filled: NONE

Collected by: JL/LK

Woodward-Clyde Consultants
500 12th Street, Suite 100, Oakland, CA 94607-4014
(415) 893-3600

Sample No.

-1 bbl on MW-2 : lid doesn't fit tight
-anymore

WATER SAMPLE LOG

Sample No. MW-2

Project No.: 7137-0200 Date: 1-24-95

Project Name: CAMP PARK

Sample Location: MW-2

Well Description: 4" sch 40 PVC

Weather Conditions: RAINING

Observations / Comments: WELL DEVELOPMENT

Quality Assurance

Sampling Method: NA

Method to Measure Water Level: SOLINST

Pump Lines: (New) / Cleaned Bailer Lines: New / Cleaned

Method of cleaning Pump / (Bailer): Alconox, Tap, D.I.

pH Meter No.: 0230928 Calibrated 4.00 / 7.00 @ 25,

Specific Conductance Meter No.: E8016582 Calibrated Red lined

Comments: TD = 24.50 ft. 26 BEFORE DEV (F 24.86) 12.49 x .653 = 8.15 gals/
CV
Bailed 4 gals, surge 10 mins, pump, less sediment @ End (95 g.)

Sampling Measurements

Water Level (below MP) at Start: 12.37 End:

Measuring Point (MP): TOC (N RIM)

Time	Discharge (gallons)	pH	Temp. (°C)	Specific Conductance (µmhos / cm)	Turbidity 1.25 m [illegible]	Color	Odor	Comments
1105	20	7.50	17	1100	7100	BRN	NO	DRY @ 20 gals
1109	35	7.41	17	1099	"	"	"	DRY @ 35 G
11:19	45	7.27	17.5	1020	"	"	"	DRY @ 45 G
11:26	60	7.27	17.2	980	"	"	"	DRY @ 60 G
11:45	75	7.25	17.2	920	"	"	"	DRY @ 75 G
13:40	85	7.27	18	950	"	"	"	DRY @ 85
13:43	95	7.13	18.2	920	< "	TAN	"	DRY @ 95 G

Total Discharge: 95 Casing Volumes Removed:

Method of disposal of discharged water: 2-DBL's (labeled)

Number and size of sample containers filled: NONE

Collected by: JTLK

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(415) 893-3600

Sample No.

WATER SAMPLE LOG

Sample No. MW-3

Project No.: 7137-0200 Date: 1-28-95

Project Name: CAMP PARK

Sample Location: MW-3

Well Description: 4" sch 40 PVC

Weather Conditions: RAINING

Observations / Comments: WELL DEVELOPMENT

Quality Assurance

Sampling Method: N/A

Method to Measure Water Level: SOUNST

Pump Lines: (New) / Cleaned Bailer Lines: New / Cleaned

Method of cleaning Pump / Bailer: Alconox, Tap, D.I.

pH Meter No.: 02.30928 Calibrated 4.00+7.00@25°C

Specific Conductance Meter No.: ~~36~~ F20165 ~~11,000 x .653 = 7.23~~ Calibrated Red-line 4

Comments: TD = 24.18 - 13.46 = 10.72 x .653 = 7.00 ≈ 1 CV.

Sampling Measurements

Water Level (below MP) at Start: 13.46 End:

Measuring Point (MP): TOC (N RIM)

Time	Discharge (gallons)	pH	Temp. (°C)	Specific Conductance (µmhos / cm)	Turbidity	Color	Odor	Comments
1353	20	6.99	18.5	1300	7100	BRN	oily sheen	DIESEL ODOR
1355	40	7.16	17.8	980	7100	"	"	"
1359	60	7.07	18.0	980	>100	lt tan	"	Lots oily sheen v. little sediment
14:07	80	7.11	18.0	1050	7100	"	"	v. little sediment
1410	100	7.12	18.0	910	7100	lt tan	"	v. little sediment

Total Discharge: 110 Casing Volumes Removed: 15

Method of disposal of discharged water: To 2- labeled 55gal drums

Number and size of sample containers filled: NONE

Collected by: JL/LK

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500 12th Street, Suite 100, Oakland, CA 94607-4014
(415) 893-3600

Sample No.

WATER SAMPLE LOG

Sample No. MW-3

Project No.: 7137-0200
Date: 1-25-95

Project Name: CAMP PARKS

Sample Location: MW-3

Well Description: 4" sch 40 PVC

Weather Conditions: overcast

Observations / Comments: Dolphin key.

Quality Assurance

Sampling Method: Disposable

Method to Measure Water Level: Solinst

Pump Lines: New / Cleaned Same as well dev.
Bailer Lines: (New) / Cleaned

Method of cleaning Pump / Bailer: DI Rinse

pH Meter No.: 0280928
Calibrated 7.00/4.00@25°C

Specific Conductance Meter No.: F8016588
Calibrated RED LINED

Comments: TD= ~~25~~ 24.54; 11.18 x .653 = 7.3 x 4 = 29.2 gals/4cv

Sampling Measurements

Water Level (below MP) at Start: 13.36
End: 13.42

Measuring Point (MP): TOC (N RIM)

Time	Discharge (gallons)	pH	Temp. (°C)	Specific Conductance (µmhos / cm)	Turbidity	Color	Odor	Comments
10:35	5	6.98	17	1000	7100	Lt tan	Yes	DIESEL ODOR oily sheen
10:38	10	7.13	17.5	910	"	"	"	oily sheen
10:39	20	7.13	18.0	950	"	"	"	mid of oily sheen
10:41	25	7.16	18.0	1100	"	"	"	top of column
10:43	30	7.20	18.0	1010	"	"	"	" " "
10:45	35	7.19	17.8	1000	"	"	"	
10:48	40	7.16	17.9	950	70	"	"	
AS 11:00	AS	7.30	17.0	900	40	"	"	

Total Discharge: 43
Casing Volumes Removed: 5.9

Method of disposal of discharged water: 55 To 1 - labeled 55 g

Number and size of sample containers filled: @ 2-1L (TPH-d + Kerosene); 2-1L (Fuel oil); 3 voc's w/HCl (BTEX)

Equip Blank = MW-4 @ 10:00

Collected by: JL/LK

Woodward-Clyde Consultants
500 12th Street, Suite 100, Oakland, CA 94607-4014
(415) 893-3600

Sample No.

WATER SAMPLE LOG

Sample No. MW-2

Project No.: 7137 200 Date: 1-25-95

Project Name: CAMP PARKS

Sample Location: MW-3

Well Description: 4" SCH 40 PVC

Weather Conditions: OVERCAST

Observations / Comments:

Quality Assurance

Sampling Method: DISPOSABLE

Method to Measure Water Level: 200' SOLINST

Pump Lines: (New) / Cleaned Bailer Lines: (New) / Cleaned

Method of cleaning Pump / Bailer:

pH Meter No.: 0286928 Calibrated 7.00/4.00 25°C

Specific Conductance Meter No.: F8016588 Calibrated RPD Lined

Comments: 24.50 + .36 = 24.86 - 12.23 = 12.63 x .653 = 8.24 x 4 = 32.98 = 4CV

Sampling Measurements

Water Level (below MP) at Start: 12.23 End: 12.20

Measuring Point (MP): TOC NO

Time	Discharge (gallons)	pH	Temp. (°C)	Specific Conductance (µmhos / cm)	Turbidity	Color	Odor	Comments
11:38	5	7.16	17.5	750	~~Muddy~~ >100	MILKY	MD	
11:39	10	7.03	17.8	990	"	"	"	
11:41	15	7.11	17.5	890	"	"	"	
11:43	20	7.10	17.8	900	"	"	"	
11:44	25	7.10	17.8	890	"	"	"	
11:46	30	7.08	17.8	900	"	"	"	
11:47	37	7.10	17.8	910	"	"	"	
13:10	AS	7.36	17.8	880	"	"	"	

Total Discharge: 376 Casing Volumes Removed: 4 plus (4.5)

Method of disposal of discharged water: 55 GAL DRUM - labeled

Number and size of sample containers filled: 2 VOAs TSTEX 2 Amber liter TPH EXT Fuel oil 2 Amber liter TPH Diesel Kerosene

Collected by: L.K. I.L.

Woodward-Clyde Consultants
500 12th Street, Suite 100, Oakland, CA 94607-4014
(415) 893-3600

Sample No.

- one labeled "DECON" DRUM FOR DECON WATER.

WATER SAMPLE LOG

Sample No. MW-1

Project No. : 7137-0200 Date: 1-25-95

Project Name: CAMP PARK

Sample Location: MW-1

Well Description: 4" sch 40 PVC

Weather Conditions: Overcast partly sunny

Observations / Comments:

Quality Assurance

Sampling Method: New Disposable Bailer

Method to Measure Water Level : Solinst

Pump Lines: New / Cleaned Bailer Lines: (New) / Cleaned

Method of cleaning Pump / (Bailer): DI RINSE

pH Meter No.: 02.80928 Calibrated 4/7 @ 25°C

Specific Conductance Meter No.: F8016588 Calibrated Redlined

Comments: TD = 24.48 + .36 = 24.84; 14.24 x .663 = 9.29 x 4 = 37.1 gals/4cv

Sampling Measurements

Water Level (below MP) at Start: 10.60 End: 10.72↑

Measuring Point (MP): TOC (N RIM)

Time	Discharge (gallons)	pH	Temp. (°C)	Specific Conductance (µmhos / cm)	Turbidity	Color	Odor	Comments
1322	5	7.31	17.2	1020	7100	LT BRN	NO	
1324	10	7.27	17.2	1050	"	"	"	
1325	15	7.20	17.5	1070	"	"	"	
1326	20	7.16	17.7	1070	"	"	"	
1327	25	7.19	17.7	1080	"	"	"	
1329	30	7.17	17.8	1080	"	"	"	
1331	30	7.22	17.5	1070	"	"	"	
1351	A.S.	7.25	17.5	1020	MOD	LT tan	NO	

Total Discharge: 42 Casing Volumes Removed: 4.52

Method of disposal of discharged water: To bbl - labeled

Number and size of sample containers filled: @ 1340 2 VOA's (BTEX); 2-1L (DIESEL + KEROSENE); 2-1L (Fuel Oil); 1-500ml HP (Total Pb)

Collected by: JL/LK

Woodward-Clyde Consultants
500 12th Street, Suite 100, Oakland, CA 94607-4014
(415) 893-3600

APPENDIX D
CHEMICAL ANALYTICAL DATA

MW2 soil

Inchcape Testing Services
Anametrix Laboratories

1961 Concourse Drive
Suite E
San Jose, CA 95131
Tel: 408-432-8192
Fax: 408-432-8198

MS. JOBETH FOLGER
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4041

Workorder # : 9412134
Date Received : 12/13/94
Project ID : 7137
Purchase Order: N/A

The following samples were received at Anametrix for analysis :

ANAMETRIX ID	CLIENT SAMPLE ID
9412134- 1	MW-2-5
9412134- 2	MW-2-10
9412134- 3	MW-2-15

This report is organized in sections according to the specific Anametrix laboratory group which performed the analysis(es) and generated the data.

The results contained within this report relate to only the sample(s) tested. Additionally, these data should be considered in their entirety and Anametrix cannot be responsible for the detachment, separation, or otherwise partial use of this report.

Anametrix is certified by the California Department of Health Services (DHS) to perform environmental testing under Certificate Number 1234.

If you have any further questions or comments on this report, please call your project manager as soon as possible. Thank you for using Inchcape Testing Services.

Corinne Chan for
Susan Kraska Yeager
Laboratory Director

12/22/94
Date

Steve Ueda
Project Manager

This report consists of 22 pages.

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MS. JOBETH FOLGER
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4041

Workorder # : 9412134
Date Received : 12/13/94
Project ID : 7137
Purchase Order: N/A
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9412134- 1	MW-2-5	SOIL	12/12/94	BTEX
9412134- 2	MW-2-10	SOIL	12/12/94	BTEX
9412134- 3	MW-2-15	SOIL	12/12/94	BTEX
9412134- 1	MW-2-5	SOIL	12/12/94	TPHd
9412134- 2	MW-2-10	SOIL	12/12/94	TPHd
9412134- 3	MW-2-15	SOIL	12/12/94	TPHd

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MS. JOBETH FOLGER
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4041

Workorder # : 9412134
Date Received : 12/13/94
Project ID : 7137
Purchase Order: N/A
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- All holding times have been met for the analyses reported in this section.

Cheryl Bedmar 12/14/94
Department Supervisor Date

Chemist 12/19/94
Date

Organic Analysis Data Sheet
Total Petroleum Hydrocarbons as Gasoline with BTEX
ITS - Anametrix Laboratories - (408)432-8192

Lab Workorder : 9412134 Client Project ID : 7137

Matrix : SOIL Units : mg/Kg

Compound Name	Method Reporting Limit*	Client ID MW-2-5 Lab ID 9412134-01	Client ID MW-2-10 Lab ID 9412134-02	Client ID MW-2-15 Lab ID 9412134-03	Client ID Lab ID METHOD BLANK	Client ID Lab ID
Benzene	0.0050	ND	ND	ND	ND	
Toluene	0.0050	ND	ND	ND	ND	
Ethylbenzene	0.0050	ND	ND	ND	ND	
Total Xylenes	0.0050	ND	ND	ND	ND	
TPH as Gasoline	0.50	-	-	-	-	
Surrogate Recovery		98%	101%	102%	98%	
Instrument ID		HP12	HP12	HP12	HP12	
Date Sampled		12/12/94	12/12/94	12/12/94	N/A	
Date Analyzed		12/15/94	12/15/94	12/15/94	12/15/94	
RLMF		1	1	1	1	
Filename Reference		FPD13401.D	FPD13402.D	FPD13403.D	BD1501E1.D	

* The Method Reporting Limit must be multiplied by the Reporting Limit Multiplication Factor (RLMF) to achieve the compound's reporting limit in the analysis.

ND : Not detected at or above the reporting limit for the analysis as performed.
TPHg : Determined by GC/FID following sample purge & trap by EPA Method 5030.
BTEX : Determined by modified EPA Method 8020 following sample purge & trap by EPA Method 5030.

Lab Control Limits for surrogate compound p-Bromofluorobenzene are 53-147%.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Reggie Dawson 12/19/94
Analyst Date

Cheryl Bodmer 12/19/94
Supervisor Date

Issued on 12/16/94 @ 01:35 PM

Matrix Spike Report

Total Petroleum Hydrocarbons as BTEX

ITS - Anametrix Laboratories - (408)432-8192

Project ID : 7137
Sample ID : MW-2-5
Matrix : SOIL
Date Sampled : 12/12/94

Laboratory ID : 9412134-01
Analyst : RD
Supervisor : [illegible]
Instrument ID : HP12
Units : mg/Kg

COMPOUND NAME	SPIKE AMOUNT	SAMPLE RESULTS	MS RECOVERY	MSD RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS
Benzene	0.040	ND	68%	65%	45-139	4%	30
Toluene	0.040	ND	63%	60%	51-138	4%	30
Ethylbenzene	0.040	ND	63%	58%	48-146	8%	30
Total Xylenes	0.040	ND	68%	63%	50-139	8%	30
Surrogate Recovery		98%	124%	125%			
Date Analyzed		12/15/94	12/15/94	12/15/94			
Multiplier		1	1	1			
Filename Reference		FPD13401.D	FMD13401.D	FDD13401.D			

* Limits established by Inchcape Testing Services, Anametrix Laboratories.

Laboratory Control Spike Report
Total Petroleum Hydrocarbons as BTEX
ITS - Anametrix Laboratories - (408)432-8192

Instrument ID : HP12
Matrix : SOLID

Analyst : RD
Supervisor : [illegible]
Units : mg/Kg

COMPOUND NAME	SPIKE AMOUNT	LCS RECOVERY	RECOVERY LIMITS
Benzene	0.010	110%	52-133
Toluene	0.010	100%	57-136
Ethylbenzene	0.010	100%	56-139
Total Xylenes	0.010	110%	56-141
Surrogate Recovery		105%	53-147
Date Analyzed		12/15/94	
Multiplier		1	
Filename Reference		MD1501E1.D	

* Limits established by Inchcape Testing Services, Anametrix Laboratories.

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS AS DIESEL
ANAMETRIX, INC. (408) 432-8192

Anametrix W.O.: 9412134
Matrix : SOIL
Date Sampled : 12/12/94
Date Extracted: 12/14/94

Project Number : 7137
Date Released : 12/19/94
Instrument I.D.: HP19

Anametrix I.D.	Client I.D.	Date Analyzed	Reporting Limit (mg/Kg)	Amount Found (mg/Kg)	Surrogate %Rec
9412134-01	MW-2-5	12/16/94	10	ND	89%
9412134-02	MW-2-10	12/16/94	10	ND	84%
9412134-03	MW-2-15	12/16/94	10	ND	84%
BD14H1F1	METHOD BLANK	12/16/94	10	ND	82%

Note : Reporting limit is obtained by multiplying the dilution factor times 10 mg/Kg.
The surrogate recovery limits for o-terphenyl are 64-109%.

ND - Not detected at or above the practical quantitation limit for the method.
TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following sample extraction by EPA Method 3550.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

C.R. Patel 12/19/94
Analyst Date

Cheryl Balmer 12/19/94
Supervisor Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL
ANAMETRIX, INC. (408) 432-8192

Anametrix W.O.: 9412134
Matrix : SOIL
Date Sampled : 12/12/94
Date Extracted: 12/14/94

Project Number : 7137
Date Released : 12/19/94
Instrument I.D.: HP19

Anametrix I.D.	Client I.D.	Date Analyzed	Reporting Limit (mg/Kg)	Amount Found (mg/Kg)	Surrogate %Rec
9412134-01	MW-2-5	12/16/94	10	ND	89%
9412134-02	MW-2-10	12/16/94	10	ND	84%
9412134-03	MW-2-15	12/16/94	10	ND	84%
BD14H1F1	METHOD BLANK	12/16/94	10	ND	82%

Note : Reporting limit is obtained by multiplying the dilution factor times 10 mg/Kg.
The surrogate recovery limits for o-terphenyl are 64-109%.

ND - Not detected at or above the practical quantitation limit for the method.
TPHd - Total Petroleum Hydrocarbons as motor oil is determined by GCFID following sample extraction by EPA Method 3550.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Analyst 12/19/94 Date

Supervisor 12/19/94 Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS AS KEROSENE
ANAMETRIX, INC. (408) 432-8192

Anametrix W.O.: 9412134
Matrix : SOIL
Date Sampled : 12/12/94
Date Extracted: 12/14/94

Project Number : 7137
Date Released : 12/19/94
Instrument I.D.: HP19

Anametrix I.D.	Client I.D.	Date Analyzed	Reporting Limit (mg/Kg)	Amount Found (mg/Kg)	Surrogate %Rec
9412134-01	MW-2-5	12/16/94	10	ND	89%
9412134-02	MW-2-10	12/16/94	10	ND	84%
9412134-03	MW-2-15	12/16/94	10	ND	84%
BD14H1F1	METHOD BLANK	12/16/94	10	ND	82%

Note : Reporting limit is obtained by multiplying the dilution factor times 10 mg/Kg.
The surrogate recovery limits for o-terphenyl are 64-109%.

ND - Not detected at or above the practical quantitation limit for the method.
TPHd - Total Petroleum Hydrocarbons as kerosene is determined by GCFID following sample extraction by EPA Method 3550.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Analyst 12/19/94 Date

Supervisor 12/19/94 Date

TOTAL EXTRACTABLE HYDROCARBON MATRIX SPIKE REPORT
EPA METHOD 3550 WITH GC/FID
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 7137 MW-2-10
Matrix : SOIL
Date Sampled : 12/12/94
Date Extracted: 12/14/94
Date Analyzed : 12/16/94

Anametrix I.D. : 9412134-02
Analyst : ARP
Supervisor : [illegible]
Date Released : 12/19/94
Instrument I.D.: HP19

COMPOUND	SPIKE AMT (mg/Kg)	SAMPLE CONC (mg/Kg)	REC MS (mg/Kg)	% REC MS	REC MD (mg/Kg)	% REC MD	RPD	% REC LIMITS *
DIESEL	62.5	0	60.7	97%	58.7	94%	-3%	32-143
SURROGATE				88%		88%		55-129

* Quality control limits established by Anametrix, Inc.

TOTAL EXTRACTABLE HYDROCARBON LABORATORY CONTROL SAMPLE REPORT
EPA METHOD 3550 WITH GC/FID
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : LAB CONTROL SAMPLE
Matrix : SOIL
Date Sampled : N/A
Date Extracted: 12/14/94
Date Analyzed : 12/16/94

Anametrix I.D. : MD14H1F1
Analyst : AP
Supervisor : CM
Date Released : 12/19/94
Instrument I.D.: HP19

COMPOUND	SPIKE AMT (mg/Kg)	REC LCS (mg/Kg)	% REC LCS	% REC LIMITS *
DIESEL	62.5	56.6	91%	48-113
SURROGATE			97%	55-129

* Quality control limits established by Anametrix, Inc.

ANAMETRIX REPORT DESCRIPTION
INORGANICS

Analytical Data Report (ADR)

The ADR contains tabulated results for inorganic analytes. All field samples, QC samples and blanks were prepared and analyzed according to procedures in the following references:

- "Test Methods for Evaluating Solid Waste," SW-846, EPA, 3rd Edition, November 1986.
- "Methods for Chemical Analysis of Water and Wastes," EPA, 3rd Edition, 1983.
- CCR Title 22, Section 66261, Appendix II, California Waste Extraction Test.
- CCR Title 22, Section 66261, Appendix XI, Organic Lead.
- "Standard Methods for the Examination of Water and Wastewater," APHA, AWWA, WEF, 18th Edition, 1992.
- USEPA Contract Laboratory Program Statement of Work for Inorganic Analyses, ILM02.1, 1991.

Matrix Spike Report (MSR)

The MSR summarizes percent recovery and relative percent difference information for matrix spikes and matrix spike duplicates. This information is a statement of both accuracy and precision. MSRs may not be provided with all analytical reports. Anametrix control limit for MSR is 75-125% with 25% for RPD limits, except for Method 6010A, which is 80-120% with 25% RPD limits.

Laboratory Control Sample Report (LCSR)

The LCSR summarizes percent recovery information for laboratory control spikes on reagent water or soil. This information is a statement of performance for the method, i.e., the samples are properly prepared and analyzed according to the applicable methods. Anametrix control limit for LCSR is 80-120%.

Method Blank Report (MBR)

The MBR summarizes quality control information for reagents used in preparing samples. The absolute value of each analyte measured in the method blank should be below the method reporting limit for that analyte.

Post Digestion Spike Report (PDSR)

The PDSR summarizes percent recovery information for post digestion spikes. A post digestion spike is performed for a particular analyte if the matrix spike recovery is outside of established control limits. Any percent recovery for a post digestion spike outside of established limits for an analyte indicates probable matrix effects and interferences for that analyte. Anametrix control limit for PDSR is 75-125%.

Qualifiers (Q)

Anametrix uses several data qualifiers in inorganic reports. These qualifiers give additional information on the analytes reported. The *following is a list of qualifiers and their meanings:*

- I - *Sample was analyzed at the stated dilution due to spectral interferences.*
- U - Analyte concentration was below the method reporting limit. For matrix and post digestion spike reports, a value of "0.0" is entered for calculation of the percent recovery.
- B - Sample concentration was below the reporting limit but above the instrument detection limit. Result is entered for calculation of the percent recovery only.
- H - Spike percent recovery was outside of Anametrix control limits due to interferences from relatively high concentration level of the analyte in the unspiked sample.
- L - Reporting limit was increased to compensate for background absorbances or matrix interferences.

Comment Codes

In addition to qualifiers, the following codes are used in the comment section of all reports to give additional information about sample preparation methods:

- A - Sample was prepared for silver based on the silver digestion method developed by the Southern California Laboratory, Department of Health Services, "Acid Digestion for Sediments, Sludges, Soils and Solid Wastes. A Proposed Alternative to EPA SW846, Method 3050." Environmental Science and Technology, 1989, 23, 898-900.
- T - Spikes were prepared after extraction by the Toxicity Characteristic Leaching Procedure (TCLP).
- C - Spikes were prepared after extraction by the California Waste Extraction Test (CWET) method.
- D - Reported results are dissolved, not total, metals.

Reporting Conventions

Analytical values reported are gross values, i.e., not corrected for method blank contamination. Solid matrices are reported on a wet weight basis, unless specifically *requested otherwise.*

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MS. JOBETH FOLGER
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4041

Workorder # : 9412134
Date Received : 12/13/94
Project ID : 7137
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9412134- 3	MW-2-15	SOIL	12/12/94	PP-MET

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MS. JOBETH FOLGER
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4041

Workorder # : 9412134
Date Received : 12/13/94
Project ID : 7137
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

QA/QC SUMMARY :

- All holding times have been met for the analyses reported in this section.
- Matrix spike recoveries for sample MW-2-15 for antimony were outside Anametrix control limits, possibly due to interferences encountered during the sample preparation. A post digestion spike was performed, and the result was within control limits, indicating no spectral interferences.

Department Supervisor 12/22/94 Date

Chemist 12/22/94 Date

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192
DATA REPORT

Anametrix Sample ID: 9412134-03
Client Sample ID: MW-2-15
Client Project Number: 7137
Matrix: SOIL

Date Sampled: 12/12/94
Analyst: SC
Supervisor: MW

Analyte	Prep. Method	Analytical Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Reporting Limit	Results	Q
Antimony	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	6.0	ND	
Arsenic	3050A	6010A	ICP2	12/14/94	12/21/94	1	mg/Kg	1.0	3.9	
Beryllium	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	0.50	ND	
Cadmium	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	0.50	ND	
Chromium	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	1.0	15.0	
Copper	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	2.5	10.7	
Lead	3050A	6010A	ICP2	12/14/94	12/21/94	1	mg/Kg	0.30	4.3	
Mercury	3050A	6010A	HGA1	12/14/94	12/15/94	1	mg/Kg	0.10	ND	
Nickel	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	4.0	19.4	
Selenium	3050A	6010A	ICP2	12/14/94	12/21/94	1	mg/Kg	0.50	ND	
Silver	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	1.0	ND	
Thallium	3050A	6010A	ICP2	12/14/94	12/21/94	1	mg/Kg	1.0	ND	
Zinc	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	2.0	23.4	

COMMENTS:

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192

METHOD BLANK REPORT

Anametrix Sample ID: **BD144SA**
Anametrix WO #: **9412134**
Client Project Number: **7137**
Matrix: **SOIL**

Analyst: SC
Supervisor: MW

Analyte	Prep. Method	Analytical Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Reporting Limit	Results	Q
Antimony	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	6.0	ND	
Arsenic	3050A	6010A	ICP2	12/14/94	12/21/94	1	mg/Kg	1.0	ND	
Beryllium	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	0.50	ND	
Cadmium	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	0.50	ND	
Chromium	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	1.0	ND	
Copper	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	2.5	ND	
Lead	3050A	6010A	ICP2	12/14/94	12/21/94	1	mg/Kg	0.30	ND	
Mercury	3050A	6010A	HGA1	12/14/94	12/15/94	1	mg/Kg	0.10	ND	
Nickel	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	4.0	ND	
Selenium	3050A	6010A	ICP2	12/14/94	12/21/94	1	mg/Kg	0.50	ND	
Silver	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	1.0	ND	
Thallium	3050A	6010A	ICP2	12/14/94	12/21/94	1	mg/Kg	1.0	ND	
Zinc	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	2.0	ND	

COMMENTS:

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192

SAMPLE DUPLICATE REPORT

Anametrix Sample ID: **9412134-03D**
Client Sample ID: **MW-2-15**
Client Project Number: **7137**
Matrix: **SOIL**

Analyst: SC
Supervisor: MW

Analyte	Prep. Method	Analyt. Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Sample Conc.	Sample Duplicate Conc.	RPD	Q
Antimony	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	ND	ND	N/A	
Arsenic	3050A	6010A	ICP2	12/14/94	12/21/94	1	mg/Kg	3.9	3.8	2.6	
Beryllium	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	ND	ND	N/A	
Cadmium	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	ND	ND	N/A	
Chromium	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	15.0	17.7	16.5	
Copper	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	10.7	12.0	11.5	
Lead	3050A	6010A	ICP2	12/14/94	12/21/94	1	mg/Kg	4.3	4.2	2.4	
Mercury	3050A	6010A	HGA1	12/14/94	12/15/94	1	mg/Kg	ND	ND	N/A	
Nickel	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	19.4	21.8	11.7	
Selenium	3050A	6010A	ICP2	12/14/94	12/21/94	1	mg/Kg	ND	ND	N/A	
Silver	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	ND	ND	N/A	
Thallium	3050A	6010A	ICP2	12/14/94	12/21/94	1	mg/Kg	ND	ND	N/A	
Zinc	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	23.4	26.6	12.8	

COMMENTS:

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192
MATRIX SPIKE REPORT

Anametrix. Sample ID: *9412134-03MS,MD*
Client Sample ID: **MW-2-15**
Client Proj. Number: **7137**
Matrix: **SOIL**

Analyst: SC
Supervisor: MW

Analyte	Analyt. Method	Instr. I.D.	Date Prepared	Date Analyzed	Units	Spike Amount	Sample Conc.	Matrix Spike Conc.	% Rec.	Matrix Sp. Dup. Conc.	% Rec.	RPD	Q
Antimony	6010A	ICP1	12/14/94	12/20/94	mg/Kg	50.0	0.0	12.3	24.6	14.1	28.2	13.6	U
Arsenic	6010A	ICP2	12/14/94	12/21/94	mg/Kg	10.0	3.9	13.8	99.0	13.6	97.0	1.5	
Beryllium	6010A	ICP1	12/14/94	12/20/94	mg/Kg	5.0	0.0	5.1	102	5.0	100	2.0	U
Cadmium	6010A	ICP1	12/14/94	12/20/94	mg/Kg	5.0	0.0	4.3	86.0	4.3	86.0	0.0	U
Chromium	6010A	ICP1	12/14/94	12/20/94	mg/Kg	20.0	15.0	38.5	118	34.9	99.5	9.8	
Copper	6010A	ICP1	12/14/94	12/20/94	mg/Kg	25.0	10.7	36.7	104	34.9	96.8	5.0	
Lead	6010A	ICP2	12/14/94	12/21/94	mg/Kg	50.0	4.3	52.8	97.0	52.2	95.8	1.1	
Mercury	6010A	HGA1	12/14/94	12/15/94	mg/Kg	0.50	0.0	0.48	96.0	0.48	96.0	0.0	U
Nickel	6010A	ICP1	12/14/94	12/20/94	mg/Kg	50.0	19.4	69.7	101	69.6	100	0.1	
Selenium	6010A	ICP2	12/14/94	12/21/94	mg/Kg	5.0	0.0	5.1	102	5.1	102	0.0	U
Silver	6010A	ICP1	12/14/94	12/20/94	mg/Kg	5.0	0.0	4.1	82.0	4.1	82.0	0.0	U
Thallium	6010A	ICP2	12/14/94	12/21/94	mg/Kg	10.0	0.0	8.9	89.0	9.2	92.0	3.3	U
Zinc	6010A	ICP1	12/14/94	12/20/94	mg/Kg	50.0	23.4	72.1	97.4	67.6	88.4	6.4	

COMMENTS:

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192

POST DIGESTION SPIKE REPORT

Anametrix Sample ID: 9412134-03PDS
Client Sample ID: MW-2-15
Client Project Number: 7137
Matrix: SOIL

Analyst: SC
Supervisor: MW

Analyte	Analyt. Method	Instr. ID	Date Prepared	Date Analyzed	D.F.	Units	Spike Amount	Sample Conc.	PDS Conc.	% Rec.	Q
Antimony	6010A	ICP1	12/21/94	12/21/94	1	mg/Kg	25.0	0.0	22.3	89.2	U

COMMENTS:

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192

LABORATORY CONTROL SAMPLE REPORT

Lab. Control Sample ID: **LD144SA**
Anametrix WO #: **9412134**
Client Project Number: **7137**
Matrix: **SOIL**

Analyst: SC
Supervisor: MW

Analyte	Prep. Method	Analytical Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Spike Amount	LCS Results	% Recovery	Q
Antimony	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	50.0	43.5	87.0	
Arsenic	3050A	6010A	ICP2	12/14/94	12/21/94	1	mg/Kg	10.0	10.0	100	
Beryllium	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	5.0	4.7	94.0	
Cadmium	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	5.0	4.2	84.0	
Chromium	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	20.0	18.0	90.0	
Copper	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	25.0	22.5	90.0	
Lead	3050A	6010A	ICP2	12/14/94	12/21/94	1	mg/Kg	50.0	50.7	101	
Mercury	3050A	6010A	HGA1	12/14/94	12/15/94	1	mg/Kg	0.50	0.50	100	
Nickel	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	50.0	45.4	90.8	
Selenium	3050A	6010A	ICP2	12/14/94	12/21/94	1	mg/Kg	5.0	5.2	104	
Silver	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	5.0	4.3	86.0	
Thallium	3050A	6010A	ICP2	12/14/94	12/21/94	1	mg/Kg	10.0	10.1	101	
Zinc	3050A	6010A	ICP1	12/14/94	12/20/94	1	mg/Kg	50.0	41.5	83.0	

COMMENTS:

Inchcape Testing Services
Anametrix Laboratories

SAMPLE RECEIVING CHECKLIST

WORKORDER NUMBER: 9417134 CLIENT PROJECT ID: 7137

COOLER

Shipping slip (airbill, etc.) present?	YES	NO	(N/A)
If YES, enter carrier name and airbill # : ____			
Custody Seal on the outside of cooler?	YES	NO	(N/A)
Condition: INTACT ____ BROKEN ____			
Temperature of sample (s) within range?	(YES)	NO	N/A
List temperature of cooler (s): 2°C			

SAMPLES

Chain of custody seal present for each container?	YES	NO	(N/A)
Condition: INTACT ____ BROKEN ____			
Samples arrived within holding time?	(YES)	NO	N/A
Samples in proper containers for methods requested?	(YES)	NO	
Condition of containers: INTACT ✓ BROKEN ____			
If NO, were samples transferred to proper container? ____			
Were VOA containers received with zero headspace?	YES	NO	(N/A)
If NO, was it noted on the chain of custody? ____			
Were container labels complete? (ID, date, time preservative, etc.)	(YES)	NO	
Were samples preserved with the proper preservative?	YES	NO	(N/A)
If NO, was the proper preservative added at time of receipt? ____			
pH check of samples required at time of receipt?	YES	(NO)	
If YES, pH checked and recorded by: ____			
Sufficient amount of sample received for methods requested?	(YES)	NO	
If NO, has the client or lab project manager been notified? ____			
Field blanks received with sample batch? # of Sets: ____	YES	NO	(N/A)
Trip blanks received with sample batch? # of Sets: ____	YES	NO	(N/A)

CHAIN OF CUSTODY

Chain of custody received with samples?	(YES)	NO
Has it been filled out completely and in ink?	(YES)	NO
Sample ID's on chain of custody agree with container labels?	(YES)	NO
Number of containers indicated on chain of custody agree with number received?	(YES)	NO
Analysis methods clearly specified?	(YES)	NO
Sampling date and time indicated?	(YES)	NO
Proper signatures of sampler, courier, sample custodian in appropriate place? with time and date?	(YES)	NO
Turnaround time? REGULAR ✓ RUSH ____		

Any NO response and/or any "BROKEN" that was checked must be detailed in the Corrective Action Form.

Sample Custodian: JP Date: 12-13-94 Project Manager: [signature] Date: 12/20/94

9412134 (2) 28.00

Woodward-Clyde Consultants
500 12th Street, Suite 100, Oakland, CA 94607-4014
(510) 893-3600

Chain of Custody Record

PROJECT NO. 7137

SAMPLERS: (Signature) [signature]

	DATE 1994	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	ANALYSES * EPA Method 8015	EPA Method 8020 (BTEX)	EPA Method	EPA Method Priority Pollutant metals (CCR Metals 17)					Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
1	12/12	1135	MW-2-5	S	X	X							3	* 8015 TPH-ext (Diesel, Kerosene, fuel oil)
2	↓	1205	MW-2-10	S	X	X							2	
3	↓	1220	MW-2-15	S	X	X		X					3	

Samples collected in brass liners, teflon coated paper, plastic caps, and ziplock bags. Stored on ice upon collection

Normal TAT

Questions/Results
JoBeth Folger
510-874-3138

TOTAL NUMBER OF CONTAINERS: 8

lice chest

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	1994 12/13 1510	[signature]	[signature]	12/13/94 1700	

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
Anametrix courier			[signature]	12/13/94 1700

MW1 & 3 soil

Inchcape Testing Services
Anametrix Laboratories

1961 Concourse Drive
Suite E
San Jose, CA 95131
Tel: 408-432-8192
Fax: 408-432-8198

MS. JOBETH FOLGER
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4041

Workorder # : 9412222
Date Received : 12/21/94
Project ID : 7137
Purchase Order: N/A

The following samples were received at Anametrix for analysis :

ANAMETRIX ID	CLIENT SAMPLE ID
9412222- 1	MW-3-5
9412222- 2	MW-3-10
9412222- 3	MW-3-15
9412222- 4	MW-1-4
9412222- 5	MW-1-10
9412222- 6	MW-1-14

This report is organized in sections according to the specific Anametrix laboratory group which performed the analysis(es) and generated the data.

The results contained within this report relate to only the sample(s) tested. Additionally, these data should be considered in their entirety and Anametrix cannot be responsible for the detachment, separation, or otherwise partial use of this report.

Anametrix is certified by the California Department of Health Services (DHS) to perform environmental testing under Certificate Number 1234.

If you have any further questions or comments on this report, please call your project manager as soon as possible. Thank you for using Inchcape Testing Services.

Todd Stringer for
Susan Kraska Yeager
Laboratory Director

1-4-95
Date

Dave Valenta
Project Manager

This report consists of 25 pages.

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MS. JOBETH FOLGER
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4041

Workorder # : 9412222
Date Received : 12/21/94
Project ID : 7137
Purchase Order: N/A
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9412222- 1	MW-3-5	SOIL	12/20/94	BTEX
9412222- 2	MW-3-10	SOIL	12/20/94	BTEX
9412222- 3	MW-3-15	SOIL	12/20/94	BTEX
9412222- 4	MW-1-4	SOIL	12/20/94	BTEX
9412222- 5	MW-1-10	SOIL	12/20/94	BTEX
9412222- 6	MW-1-14	SOIL	12/20/94	BTEX
9412222- 1	MW-3-5	SOIL	12/20/94	TPHd
9412222- 2	MW-3-10	SOIL	12/20/94	TPHd
9412222- 3	MW-3-15	SOIL	12/20/94	TPHd
9412222- 4	MW-1-4	SOIL	12/20/94	TPHd
9412222- 5	MW-1-10	SOIL	12/20/94	TPHd
9412222- 6	MW-1-14	SOIL	12/20/94	TPHd

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MS. JOBETH FOLGER
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4041

Workorder # : 9412222
Date Received : 12/21/94
Project ID : 7137
Purchase Order: N/A
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- All holding times have been met for the analyses reported in this workorder.

Cheryl Balmer 1/3/95
Department Supervisor Date

Reggie Dawson 1/3/95
Chemist Date

Organic Analysis Data Sheet
Total Petroleum Hydrocarbons as Gasoline with BTEX
ITS - Anametrix Laboratories - (408)432-8192

Lab Workorder : 9412222 | Client Project ID : 7137

Matrix : SOIL | Units : mg/Kg

Compound Name	Method Reporting Limit*	Client ID MW-3-5 Lab ID 9412222-01	Client ID MW-3-10 Lab ID 9412222-02	Client ID MW-3-15 Lab ID 9412222-03	Client ID MW-1-4 Lab ID 9412222-04	Client ID MW-1-10 Lab ID 9412222-05
Benzene	0.0050	ND	ND	0.057	ND	ND
Toluene	0.0050	ND	ND	0.11	ND	ND
Ethylbenzene	0.0050	ND	ND	0.30	ND	ND
Total Xylenes	0.0050	ND	ND	1.0	ND	ND
TPH as Gasoline	0.50	--	--	--	--	--
Surrogate Recovery		82%	95%	129%	78%	98%
Instrument ID		HP12	HP12	HP12	HP12	HP12
Date Sampled		12/20/94	12/20/94	12/20/94	12/20/94	12/20/94
Date Analyzed		12/28/94	12/28/94	12/29/94	12/28/94	12/28/94
RLMF		1	1	10	1	1
Filename Reference		FPD22201.D	FPD22202.D	FRD22203.D	FPD22204.D	FPD22205.D

* The Method Reporting Limit must be multiplied by the Reporting Limit Multiplication Factor (RLMF) to achieve the compound's reporting limit in the analysis.

ND : Not detected at or above the reporting limit for the analysis as performed.
TPHg : Determined by GC/FID following sample purge & trap by EPA Method 5030.
BTEX : Determined by modified EPA Method 8020 following sample purge & trap by EPA Method 5030.

Lab Control Limits for surrogate compound p-Bromofluorobenzene are 53-147%.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

O R Patel 01/03/95
Analyst Date

Cheryl Barbmer 1/3/95
Supervisor Date

Issued on 1/4/95 @ 4:16 pm

[redacted] Organic Analysis Data Sheet [redacted]

Total Petroleum Hydrocarbons as Gasoline with BTEX

ITS - Anametrix Laboratories - (408)432-8192

Lab Workorder : 9412222

Client Project ID : 7137

Matrix : SOIL

Units : mg/Kg

Compound Name	Method Reporting Limit*	Client ID MW-1-14 Lab ID 9412222-06	Client ID Lab ID METHOD BLANK	Client ID Lab ID METHOD BLANK	Client ID Lab ID METHOD BLANK	Client ID Lab ID
Benzene	0.0050	ND	ND	ND	ND	
Toluene	0.0050	ND	ND	ND	ND	
Ethylbenzene	0.0050	ND	ND	ND	ND	
Total Xylenes	0.0050	ND	ND	ND	ND	
TPH as Gasoline	0.50	--	--	--	--	
Surrogate Recovery		99%	97%	101%	99%	
Instrument ID		HP12	HP12	HP12	HP12	
Date Sampled		12/20/94	N/A	N/A	N/A	
Date Analyzed		12/28/94	12/28/94	12/28/94	12/29/94	
RLMF		1	1	1	1	
Filename Reference		FPD22206.D	BD2801E1.D	BD2802E1.D	BD2901E1.D	

* The Method Reporting Limit must be multiplied by the Reporting Limit Multiplication Factor (RLMF) to achieve the compound's reporting limit in the analysis.

ND : Not detected at or above the reporting limit for the analysis as performed.
TPHg : Determined by GC/FID following sample purge & trap by EPA Method 5030.
BTEX : Determined by modified EPA Method 8020 following sample purge & trap by EPA Method 5030.

Lab Control Limits for surrogate compound p-Bromofluorobenzene are 53-147%.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

C R Patel 01103195
Analyst Date

Cheryl Beckman 1/3/95
Supervisor Date

Matrix Spike Report

Total Petroleum Hydrocarbons as BTEX

ITS - Anametrix Laboratories - (408)432-8192

Project ID : 7137
Sample ID : MW-3-10
Matrix : SOIL
Date Sampled : 12/20/94

Laboratory ID : 9412222-02
Analyst : RV
Supervisor : cs
Instrument ID : HP12
Units : mg/Kg

COMPOUND NAME	SPIKE AMOUNT	SAMPLE RESULTS	MS RECOVERY	MSD RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS
Benzene	0.020	ND	106%	100%	45-139	6%	30
Toluene	0.020	ND	106%	96%	51-138	10%	30
Ethylbenzene	0.020	ND	110%	100%	48-146	10%	30
Total Xylenes	0.020	ND	120%	106%	50-139	12%	30
Surrogate Recovery		95%	94%	87%			
Date Analyzed		12/28/94	12/28/94	12/28/94			
Multiplier		1	1	1			
Filename Reference		FPD22202.D	FMD22202.D	FDD22202.D			

* Limits established by Inchcape Testing Services, Anametrix Laboratories.

Matrix Spike Report

Total Petroleum Hydrocarbons as BTEX

ITS - Anametrix Laboratories - (408)432-8192

Project ID : 7137
Sample ID : BATCH SPIKE
Matrix : SOIL
Date Sampled : N/A

Laboratory ID : BATCH SPIKE
Analyst : RD
Supervisor : [illegible]
Instrument ID : HP12
Units : mg/Kg

COMPOUND NAME	SPIKE AMOUNT	SAMPLE RESULTS	MS RECOVERY	MSD RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS
Benzene	0.040	ND	106%	116%	45-139	-9%	30
Toluene	0.040	ND	106%	116%	51-138	-9%	30
Ethylbenzene	0.040	ND	110%	120%	48-146	-9%	30
Total Xylenes	0.040	ND	110%	126%	50-139	-14%	30
Surrogate Recovery		103%	104%	109%			
Date Analyzed		12/29/94	12/29/94	12/29/94			
Multiplier		1	1	1			
Filename Reference		FRD23702.D	FMD23702.D	FDD23702.D			

* Limits established by Inchcape Testing Services, Anametrix Laboratories.

Laboratory Control Spike Report
Total Petroleum Hydrocarbons as BTEX
ITS - Anametrix Laboratories - (408)432-8192

Instrument ID : HP12
Matrix : SOLID

Analyst : RD
Supervisor : [illegible]
Units : mg/Kg

COMPOUND NAME	SPIKE AMOUNT	LCS RECOVERY	RECOVERY LIMITS
Benzene	0.020	98%	52-133
Toluene	0.020	101%	57-136
Ethylbenzene	0.020	104%	56-139
Total Xylenes	0.020	114%	56-141
Surrogate Recovery		100%	53-147
Date Analyzed		12/28/94	
Multiplier		1	
Filename Reference		MD2802E1.D	

* Limits established by Inchcape Testing Services, Anametrix Laboratories.

Laboratory Control Spike Report
Total Petroleum Hydrocarbons as BTEX
ITS - Anametrix Laboratories - (408)432-8192

Instrument ID : HP12
Matrix : SOLID

Analyst : RD
Supervisor : [illegible]
Units : mg/Kg

COMPOUND NAME	SPIKE AMOUNT	LCS RECOVERY	RECOVERY LIMITS
Benzene	0.020	105%	52-133
Toluene	0.020	106%	57-136
Ethylbenzene	0.020	110%	56-139
Total Xylenes	0.020	121%	56-141
Surrogate Recovery		99%	53-147
Date Analyzed		12/29/94	
Multiplier		1	
Filename Reference		MD2901E1.D	

* Limits established by Inchcape Testing Services, Anametrix Laboratories.

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS AS DIESEL
ANAMETRIX, INC. (408) 432-8192

Anametrix W.O.: 9412222
Matrix : SOIL
Date Sampled : 12/20/94
Date Extracted: 12/23/94

Project Number : 7137
Date Released : 12/29/94
Instrument I.D.: HP19

Anametrix I.D.	Client I.D.	Date Analyzed	Reporting Limit (mg/Kg)	Amount Found (mg/Kg)	Surrogate %Rec
9412222-01	MW-3-5	12/28/94	10	ND	83%
9412222-02	MW-3-10	12/28/94	10	ND	78%
9412222-03	MW-3-15	12/28/94	10	ND	89%
9412222-04	MW-1-4	12/29/94	10	ND	86%
9412222-05	MW-1-10	12/28/94	10	ND	85%
9412222-06	MW-1-14	12/29/94	10	ND	90%
BD23H1F1	METHOD BLANK	12/28/94	10	ND	76%

Note : Reporting limit is obtained by multiplying the dilution factor times 10 mg/Kg.
The surrogate recovery limits for o-terphenyl are 64-109%.

ND - Not detected at or above the practical quantitation limit for the method.
TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following sample extraction by EPA Method 3550.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Dosli 1/31/95
Analyst Date

Cheryl Balmer 1/31/95
Supervisor Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL
ANAMETRIX, INC. (408) 432-8192

Anametrix W.O.: 9412222
Matrix : SOIL
Date Sampled : 12/20/94
Date Extracted: 12/23/94

Project Number : 7137
Date Released : 12/29/94
Instrument I.D.: HP19

Anametrix I.D.	Client I.D.	Date Analyzed	Reporting Limit (mg/Kg)	Amount Found (mg/Kg)	Surrogate %Rec
9412222-01	MW-3-5	12/28/94	10	ND	83%
9412222-02	MW-3-10	12/28/94	10	ND	78%
9412222-03	MW-3-15	12/28/94	10	ND	89%
9412222-04	MW-1-4	12/29/94	10	29	86%
9412222-05	MW-1-10	12/28/94	10	ND	85%
9412222-06	MW-1-14	12/29/94	10	ND	90%
BD23H1F1	METHOD BLANK	12/28/94	10	ND	76%

Note : Reporting limit is obtained by multiplying the dilution factor times 10 mg/Kg.
The surrogate recovery limits for o-terphenyl are 64-109%.

ND - Not detected at or above the practical quantitation limit for the method.
TPHd - Total Petroleum Hydrocarbons as motor oil is determined by GCFID following sample extraction by EPA Method 3550.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Doshi 1/3/95
Analyst Date

Cheryl Beemer 1/3/95
Supervisor Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS AS KEROSENE
ANAMETRIX, INC. (408) 432-8192

Anametrix W.O.: 9412222
Matrix : SOIL
Date Sampled : 12/20/94
Date Extracted: 12/23/94

Project Number : 7137
Date Released : 12/29/94
Instrument I.D.: HP19

Anametrix I.D.	Client I.D.	Date Analyzed	Reporting Limit (mg/Kg)	Amount Found (mg/Kg)	Surrogate %Rec
9412222-01	MW-3-5	12/28/94	10	ND	83%
9412222-02	MW-3-10	12/28/94	10	ND	78%
9412222-03	MW-3-15	12/28/94	10	ND	89%
9412222-04	MW-1-4	12/29/94	10	ND	86%
9412222-05	MW-1-10	12/28/94	10	ND	85%
9412222-06	MW-1-14	12/29/94	10	ND	90%
BD23H1F1	METHOD BLANK	12/28/94	10	ND	76%

Note : Reporting limit is obtained by multiplying the dilution factor times 10 mg/Kg.
The surrogate recovery limits for o-terphenyl are 64-109%.

ND - Not detected at or above the practical quantitation limit for the method.
TPHd - Total Petroleum Hydrocarbons as kerosene is determined by GCFID following sample extraction by EPA Method 3550.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Doshi 1/31/95
Analyst Date

Cheryl Balmer 1/31/95
Supervisor Date

TOTAL EXTRACTABLE HYDROCARBON MATRIX SPIKE REPORT
EPA METHOD 3550 WITH GC/FID
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 7137 MW-1-10
Matrix : SOIL
Date Sampled : 12/20/94
Date Extracted: 12/23/94
Date Analyzed : 12/28/94

Anametrix I.D. : 9412222-05
Analyst : [signature]
Supervisor : [signature]
Date Released : 01/03/95
Instrument I.D.: HP19

COMPOUND	SPIKE AMT (mg/Kg)	SAMPLE CONC (mg/Kg)	REC MS (mg/Kg)	% REC MS	REC MD (mg/Kg)	% REC MD	RPD	% REC LIMITS *
DIESEL	62.5	0	54.5	87%	56.3	90%	3%	32-143
SURROGATE				93%		88%		64-109

* Quality control limits established by Anametrix, Inc.

TOTAL EXTRACTABLE HYDROCARBON LABORATORY CONTROL SAMPLE REPORT
EPA METHOD 3550 WITH GC/FID
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : LAB CONTROL SAMPLE
Matrix : SOIL
Date Sampled : N/A
Date Extracted: 12/23/94
Date Analyzed : 12/28/94

Anametrix I.D. : MD23H1F1
Analyst : [illegible]
Supervisor : [illegible]
Date Released : 12/29/94
Instrument I.D.: HP19

COMPOUND	SPIKE AMT (mg/Kg)	REC LCS (mg/Kg)	% REC LCS	% REC LIMITS *
DIESEL	62.5	49.5	79%	48-113
SURROGATE			84%	64-109

* Quality control limits established by Anametrix, Inc.

ANAMETRIX REPORT DESCRIPTION
INORGANICS

Analytical Data Report (ADR)

The ADR contains tabulated results for inorganic analytes. All field samples, QC samples and blanks were prepared and analyzed according to procedures in the following references:

- "Test Methods for Evaluating Solid Waste," SW-846, EPA, 3rd Edition, November 1986.
- "Methods for Chemical Analysis of Water and Wastes," EPA, 3rd Edition, 1983.
- CCR Title 22, Section 66261, Appendix II, California Waste Extraction Test.
- CCR Title 22, Section 56261, Appendix XI, Organic Lead.
- "Standard Methods for the Examination of Water and Wastewater," APHA, AWWA, WEF, 18th Edition, 1992.
- USEPA Contract Laboratory Program Statement of Work for Inorganic Analyses, ILM02.1, 1991.

Matrix Spike Report (MSR)

The MSR summarizes percent recovery and relative percent difference information for matrix spikes and matrix spike duplicates. This information is a statement of both accuracy and precision. MSRs may not be provided with all analytical reports. Anametrix control limit for MSR is 75-125% with 25% for RPD limits, except for Method 6010A, which is 80-120% with 25% RPD limits.

Laboratory Control Sample Report (LCSR)

The LCSR summarizes percent recovery information for laboratory control spikes on reagent water or soil. This information is a statement of performance for the method, i.e., the samples are properly prepared and analyzed according to the applicable methods. Anametrix control limit for LCSR is 80-120%.

Method Blank Report (MBR)

The MBR summarizes quality control information for reagents used in preparing samples. The absolute value of each analyte measured in the method blank should be below the method reporting limit for that analyte.

Post Digestion Spike Report (PDSR)

The PDSR summarizes percent recovery information for post digestion spikes. A post digestion spike is performed for a particular analyte if the matrix spike recovery is outside of established control limits. Any percent recovery for a post digestion spike outside of established limits for an analyte indicates probable matrix effects and interferences for that analyte. Anametrix control limit for PDSR is 75-125%.

Qualifiers (Q)

Anametrix uses several data qualifiers in inorganic reports. These qualifiers give additional information on the analytes reported. The following is a list of qualifiers and their meanings:

- I - Sample was analyzed at the stated dilution due to spectral interferences.
- U - Analyte concentration was below the method reporting limit. For matrix and post digestion spike reports, a value of "0.0" is entered for calculation of the percent recovery.
- B - Sample concentration was below the reporting limit but above the instrument detection limit. Result is entered for calculation of the percent recovery only.
- H - Spike percent recovery was outside of Anametrix control limits due to interferences from relatively high concentration level of the analyte in the unspiked sample.
- L - Reporting limit was increased to compensate for background absorbances or matrix interferences.

Comment Codes

In addition to qualifiers, the following codes are used in the comment section of all reports to give additional information about sample preparation methods:

- A - Sample was prepared for silver based on the silver digestion method developed by the Southern California Laboratory, Department of Health Services, "Acid Digestion for Sediments, Sludges, Soils and Solid Wastes. A Proposed Alternative to EPA SW846, Method 3050." Environmental Science and Technology, 1989, 23, 898-900.
- T - Spikes were prepared after extraction by the Toxicity Characteristic Leaching Procedure (TCLP).
- C - Spikes were prepared after extraction by the California Waste Extraction Test (CWET) method.
- D - Reported results are dissolved, not total, metals.

Reporting Conventions

Analytical values reported are gross values, i.e., not corrected for method blank contamination. Solid matrices are reported on a wet weight basis, unless specifically requested otherwise.

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MS. JOBETH FOLGER
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4041

Workorder # : 9412222
Date Received : 12/21/94
Project ID : 7137
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9412222- 3	MW-3-15	SOIL	12/20/94	T 22-MET
9412222- 6	MW-1-14	SOIL	12/20/94	T 22-MET

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MS. JOBETH FOLGER
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4041

Workorder # : 9412222
Date Received : 12/21/94
Project ID : 7137
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

QA/QC SUMMARY :

- All holding times have been met for the analyses reported in this section.
- Matrix spike recoveries for sample MW-1-14 for antimony were outside Anametrix cotrol limits, possibly due to matrix effects. A post digestion spike was performed, and the result was within control limits, indicating no spectral interferences.

Department Supervisor 12/30/94 Date

Chemist 12/30/94 Date

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192
DATA REPORT

Anametrix Sample ID: **9412222-03**
Client Sample ID: **MW-3-15**
Client Project Number: **7137**
Matrix: **SOIL**

Date Sampled: **12/20/94**
Analyst: SC
Supervisor: MW

Analyte	Prep. Method	Analytical Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Reporting Limit	Results	Q
Antimony	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	6.0	ND	
Arsenic	3050A	6010A	ICP2	12/27/94	12/27/94	1	mg/Kg	1.0	4.4	
Barium	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	10.0	86.0	
Beryllium	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	0.50	ND	
Cadmium	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	0.50	ND	
Chromium	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	1.0	16.5	
Cobalt	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	5.0	7.5	
Copper	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	2.5	11.6	
Lead	3050A	6010A	ICP2	12/27/94	12/27/94	1	mg/Kg	0.30	4.4	
Mercury	7471	7471	HGA1	12/27/94	12/29/94	1	mg/Kg	0.10	ND	
Molybdenum	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	1.0	ND	
Nickel	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	4.0	19.3	
Selenium	3050A	6010A	ICP2	12/27/94	12/27/94	1	mg/Kg	0.50	ND	
Silver	3050A	6010A	ICP2	12/27/94	12/27/94	1	mg/Kg	1.0	ND	
Thallium	3050A	6010A	ICP2	12/27/94	12/27/94	1	mg/Kg	1.0	ND	
Vanadium	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	5.0	27.9	
Zinc	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	2.0	28.0	

COMMENTS:

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192
DATA REPORT

Anametrix Sample ID: 9412222-06
Client Sample ID: MW-1-14
Client Project Number: 7137
Matrix: SOIL

Date Sampled: 12/20/94
Analyst: SC
Supervisor: MW

Analyte	Prep. Method	Analytical Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Reporting Limit	Results	Q
Antimony	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	6.0	ND	
Arsenic	3050A	6010A	ICP2	12/27/94	12/27/94	1	mg/Kg	1.0	5.1	
Barium	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	10.0	112	
Beryllium	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	0.50	ND	
Cadmium	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	0.50	ND	
Chromium	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	1.0	19.6	
Cobalt	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	5.0	9.0	
Copper	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	2.5	15.6	
Lead	3050A	6010A	ICP2	12/27/94	12/27/94	1	mg/Kg	0.30	5.6	
Mercury	7471	7471	HGA1	12/27/94	12/29/94	1	mg/Kg	0.10	ND	
Molybdenum	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	1.0	ND	
Nickel	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	4.0	26.5	
Selenium	3050A	6010A	ICP2	12/27/94	12/27/94	1	mg/Kg	0.50	ND	
Silver	3050A	6010A	ICP2	12/27/94	12/27/94	1	mg/Kg	1.0	ND	
Thallium	3050A	6010A	ICP2	12/27/94	12/27/94	1	mg/Kg	1.0	ND	
Vanadium	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	5.0	31.0	
Zinc	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	2.0	32.9	

COMMENTS:

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192

METHOD BLANK REPORT

Anametrix Sample ID: **BD274SA**
Anametrix WO #: **9412222**
Client Project Number: **7137**
Matrix: **SOIL**

Analyst: J.C
Supervisor: MW

Analyte	Prep. Method	Analytical Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Reporting Limit	Results	Q
Antimony	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	6.0	ND	
Arsenic	3050A	6010A	ICP2	12/27/94	12/27/94	1	mg/Kg	1.0	ND	
Barium	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	10.0	ND	
Beryllium	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	0.50	ND	
Cadmium	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	0.50	ND	
Chromium	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	1.0	ND	
Cobalt	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	5.0	ND	
Copper	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	2.5	ND	
Lead	3050A	6010A	ICP2	12/27/94	12/27/94	1	mg/Kg	0.30	ND	
Mercury	7471	7471	HGA1	12/27/94	12/29/94	1	mg/Kg	0.10	ND	
Molybdenum	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	1.0	ND	
Nickel	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	4.0	ND	
Selenium	3050A	6010A	ICP2	12/27/94	12/27/94	1	mg/Kg	0.50	ND	
Silver	3050A	6010A	ICP2	12/27/94	12/27/94	1	mg/Kg	1.0	ND	
Thallium	3050A	6010A	ICP2	12/27/94	12/27/94	1	mg/Kg	1.0	ND	
Vanadium	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	5.0	ND	
Zinc	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	2.0	ND	

COMMENTS:

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192
MATRIX SPIKE REPORT

Anametrix. Sample ID: **9412222-06MS,MD**
Client Sample ID: **MW-1-14**
Client Proj. Number: **7137**
Matrix: **SOIL**

Analyst: JC
Supervisor: MW

Analyte	Analyt. Method	Instr. I.D.	Date Prepared	Date Analyzed	Units	Spike Amount	Sample Conc.	Matrix Spike Conc.	% Rec.	Matrix Sp. Dup. Conc.	% Rec.	RPD	Q
Antimony	6010A	ICP1	12/27/94	12/29/94	mg/Kg	50.0	0.0	21.8	**43.6**	22.3	**44.6**	**2.3**	U
Arsenic	6010A	ICP2	12/27/94	12/27/94	mg/Kg	10.0	5.1	14.2	**91.0**	14.7	**96.0**	**3.5**	
Barium	6010A	ICP1	12/27/94	12/29/94	mg/Kg	200	112	305	**96.5**	312	**100**	**2.3**	
Beryllium	6010A	ICP1	12/27/94	12/29/94	mg/Kg	5.0	0.0	5.3	**106**	5.3	**106**	**0.0**	U
Cadmium	6010A	ICP1	12/27/94	12/29/94	mg/Kg	5.0	0.0	4.3	**86.0**	4.5	**90.0**	**4.5**	U
Chromium	6010A	ICP1	12/27/94	12/29/94	mg/Kg	20.0	19.6	38.2	**93.0**	38.3	**93.5**	**0.3**	
Cobalt	6010A	ICP1	12/27/94	12/29/94	mg/Kg	50.0	9.0	53.8	**89.6**	54.3	**90.6**	**0.9**	
Copper	6010A	ICP1	12/27/94	12/29/94	mg/Kg	25.0	15.6	38.7	**92.4**	39.7	**96.4**	**2.6**	
Lead	6010A	ICP2	12/27/94	12/27/94	mg/Kg	50.0	5.6	50.9	**90.6**	50.4	**89.6**	**1.0**	
Mercury	7471	HGA1	12/27/94	12/29/94	mg/Kg	0.50	0.0	0.46	**92.0**	0.47	**94.0**	**2.2**	U
Molybdenum	6010A	ICP1	12/27/94	12/29/94	mg/Kg	200	0.0	170	**85.0**	168	**84.0**	**1.2**	U
Nickel	6010A	ICP1	12/27/94	12/29/94	mg/Kg	50.0	26.5	71.4	**89.8**	71.1	**89.2**	**0.4**	
Selenium	6010A	ICP2	12/27/94	12/27/94	mg/Kg	5.0	0.0	4.9	**98.0**	4.7	**94.0**	**4.2**	U
Silver	6010A	ICP2	12/27/94	12/27/94	mg/Kg	5.0	0.0	4.8	**96.0**	4.9	**98.0**	**2.1**	U
Thallium	6010A	ICP2	12/27/94	12/27/94	mg/Kg	10.0	0.0	9.2	**92.0**	8.8	**88.0**	**4.4**	U
Vanadium	6010A	ICP1	12/27/94	12/29/94	mg/Kg	50.0	31.0	75.9	**89.8**	76.2	**90.4**	**0.4**	
Zinc	6010A	ICP1	12/27/94	12/29/94	mg/Kg	50.0	32.9	75.0	**84.2**	76.7	**87.6**	**2.2**	

COMMENTS:

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192

POST DIGESTION SPIKE REPORT

Anametrix Sample ID: **9412222-06PDS**
Client Sample ID: **MW-1-14**
Client Project Number: **7137**
Matrix: **SOIL**

Analyst: SC
Supervisor: MW

Analyte	Analyt. Method	Instr. ID	Date Prepared	Date Analyzed	D.F.	Units	Spike Amount	Sample Conc.	PDS Conc.	% Rec.	Q
Antimony	6010A	ICP1	12/29/94	12/29/94	1	mg/Kg	25.0	0.0	23.1	92.4	U

COMMENTS:

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192

LABORATORY CONTROL SAMPLE REPORT

Lab. Control Sample ID: LD274SA
Anametrix WO #: 9412222
Client Project Number: 7137
Matrix: SOIL

Analyst: SC
Supervisor: dlw

Analyte	Prep. Method	Analytical Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Spike Amount	LCS Results	% Recovery	Q
Antimony	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	50.0	44.0	88.0	
Arsenic	3050A	6010A	ICP2	12/27/94	12/27/94	1	mg/Kg	10.0	9.6	96.0	
Barium	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	200	192	96.0	
Beryllium	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	5.0	4.8	96.0	
Cadmium	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	5.0	4.2	84.0	
Chromium	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	20.0	18.3	91.5	
Cobalt	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	50.0	46.1	92.2	
Copper	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	25.0	23.3	93.2	
Lead	3050A	6010A	ICP2	12/27/94	12/27/94	1	mg/Kg	50.0	48.5	97.0	
Mercury	7471	7471	HGA1	12/27/94	12/29/94	1	mg/Kg	0.50	0.46	92.0	
Molybdenum	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	200	181	90.5	
Nickel	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	50.0	45.0	90.0	
Selenium	3050A	6010A	ICP2	12/27/94	12/27/94	1	mg/Kg	5.0	5.1	102	
Silver	3050A	6010A	ICP2	12/27/94	12/27/94	1	mg/Kg	5.0	5.0	100	
Thallium	3050A	6010A	ICP2	12/27/94	12/27/94	1	mg/Kg	10.0	10.3	103	
Vanadium	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	50.0	45.1	90.2	
Zinc	3050A	6010A	ICP1	12/27/94	12/29/94	1	mg/Kg	50.0	41.8	83.6	

COMMENTS:

Inchcape Testing Services
Anametrix Laboratories

SAMPLE RECEIVING CHECKLIST

WORKORDER NUMBER: 9412222 CLIENT PROJECT ID: 7137

COOLER

Shipping slip (airbill, etc.) present?	YES	NO	(N/A)
If YES, enter carrier name and airbill # :			
Custody Seal on the outside of cooler?	YES	NO	(N/A)
Condition: INTACT ____ BROKEN ____			
Temperature of sample (s) within range?	(YES)	NO	N/A
List temperature of cooler (s): 6 °C			

SAMPLES

Chain of custody seal present for each container?	YES	NO	(N/A)
Condition: INTACT ____ BROKEN ____			
Samples arrived within holding time?	(YES)	NO	N/A
Samples in proper containers for methods requested?	(YES)	NO	
Condition of containers: INTACT ✓ BROKEN ____			
If NO, were samples transferred to proper container? ____			
Were VOA containers received with zero headspace?	YES	NO	(N/A)
If NO, was it noted on the chain of custody? ____			
Were container labels complete? (ID, date, time preservative, etc.)	(YES)	NO	
Were samples preserved with the proper preservative?	YES	NO	(N/A)
If NO, was the proper preservative added at time of receipt? ____			
pH check of samples required at time of receipt?	YES	(NO)	
If YES, pH checked and recorded by: ____			
Sufficient amount of sample received for methods requested?	(YES)	NO	
If NO, has the client or lab project manager been notified? ____			
Field blanks received with sample batch? # of Sets: ____	YES	NO	(N/A)
Trip blanks received with sample batch? # of Sets: ____	YES	NO	(N/A)

CHAIN OF CUSTODY

Chain of custody received with samples?	(YES)	NO
Has it been filled out completely and in ink?	(YES)	NO
Sample ID's on chain of custody agree with container labels?	(YES)	NO
Number of containers indicated on chain of custody agree with number received?	(YES)	NO
Analysis methods clearly specified?	YES	(NO)
Sampling date and time indicated?	(YES)	NO
Proper signatures of sampler, courier, sample custodian in appropriate place? with time and date?	(YES)	NO
Turnaround time? REGULAR ____ RUSH ____		

Any NO response and/or any "BROKEN" that was checked must be detailed in the Corrective Action Form.

Sample Custodian: [signature] Date: 12/21/94 Project Manager: [signature] Date: 12/22/94

Inchcape Testing Services
Anametrix Laboratories

1961 Concourse Drive
Suite E
San Jose, CA 95131
Tel: 408-432-8192
Fax: 408-432-8198

"ash sample" - test for metals lead MW1@4'

MS. JOBETH FOLGER
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4041

Workorder # : 9501029
Date Received : 01/05/95
Project ID : 7137
Purchase Order: N/A

The following samples were received at Anametrix for analysis :

ANAMETRIX ID	CLIENT SAMPLE ID
9501029- 1	MW-1-4

This report is organized in sections according to the specific Anametrix laboratory group which performed the analysis(es) and generated the data.

The results contained within this report relate to only the sample(s) tested. Additionally, these data should be considered in their entirety and Anametrix cannot be responsible for the detachment, separation, or otherwise partial use of this report.

Anametrix is certified by the California Department of Health Services (DHS) to perform environmental testing under Certificate Number 1234.

If you have any further questions or comments on this report, please call your project manager as soon as possible. Thank you for using Inchcape Testing Services.

Corinne Chan for
Susan Kraska Yeager
Laboratory Director

Vance Wakida
Project Manager

01/17/95
Date

This report consists of 9 pages.

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MS. JOBETH FOLGER
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4041

Workorder # : 9501029
Date Received : 01/05/95
Project ID : 7137
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9501029- 1	MW-1-4	SOIL	12/20/94	CWET-INORG
9501029- 1	MW-1-4	SOIL	12/20/94	CWETMETALS

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MS. JOBETH FOLGER
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4041

Workorder # : 9501029
Date Received : 01/05/95
Project ID : 7137
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

QA/QC SUMMARY :

- All holding times have been met for the analyses reported in this section.

Department Supervisor 1/17/95 Date

Chemist 1/17/95 Date

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192
DATA REPORT

Analyte-Method: **Lead-STLC-6010A**
Client Project Number: **7137**
Matrix - Units: **SOIL - mg/L**

Analyst: SC
Supervisor: MW

Anametrix Sample ID	Client Sample ID	Prep. Method	Instr. ID	Date Sampled	Date Prepared	Date Analyzed	D.F.	Reporting Limit	Results	Q
9501029-01	MW-1-4	CWET	ICP1	12/20/94	01/12/95	01/13/95	50	2.0	319	
BJ125EA	METHOD BLANK	CWET	ICP1	N/A	01/12/95	01/13/95	5	0.20	ND	

COMMENTS:

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192

SAMPLE DUPLICATE REPORT

Anametrix Sample ID: **9501029-01D**
Client Sample ID: **MW-1-4**
Client Project Number: **7137**
Matrix: **SOIL**

Analyst: SC
Supervisor: LW

Analyte	Prep. Method	Analyt. Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Sample Conc.	Sample Duplicate Conc.	RPD	Q
Lead	CWET	6010A	ICP1	01/12/95	01/13/95	50	mg/L	319	326	2.2	

COMMENTS:

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192
MATRIX SPIKE REPORT

Anametrix. Sample ID: **9501029-01MS**
Client Sample ID: **MW-1-4**
Client Proj. Number: **7137**
Matrix: **SOIL**

Analyst: SC
Supervisor: MW

Analyte	Analyt. Method	Instr. I.D.	Date Prepared	Date Analyzed	Units	Spike Amount	Sample Conc.	Matrix Spike Conc.	% Rec.				Q
Lead	6010A	ICP1	01/12/95	01/13/95	mg/L	5.0	319	332	NR				H

COMMENTS: NR - Not reported due to high level of analyte concentration in the sample compared to spiked amount.

water

Inchcape Testing Services
Anametrix Laboratories

1961 Concourse Drive
Suite E
San Jose, CA 95131
Tel: 408-432-8192
Fax: 408-432-8198

MS. JOBETH FOLGER
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4041

Workorder # : 9501222
Date Received : 01/25/95
Project ID : 7137-0200
Purchase Order: N/A

The following samples were received at Anametrix for analysis :

ANAMETRIX ID	CLIENT SAMPLE ID
9501222- 1	MW-3
9501222- 2	MW-1
9501222- 3	T.BLANK
9501222- 4	MW-4 - Equip Blank
9501222- 5	MW-2

This report is organized in sections according to the specific Anametrix laboratory group which performed the analysis(es) and generated the data.

The results contained within this report relate to only the sample(s) tested. Additionally, these data should be considered in their entirety and Anametrix cannot be responsible for the detachment, separation, or otherwise partial use of this report.

Anametrix is certified by the California Department of Health Services (DHS) to perform environmental testing under Certificate Number 1234.

If you have any further questions or comments on this report, please call your project manager as soon as possible. Thank you for using Inchcape Testing Services.

Susan Kraska Yeager
Laboratory Director

01/31/95
Date

Cristina V Rayburn
Project Manager

This report consists of 22 pages.

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MS. JOBETH FOLGER
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4041

Workorder # : 9501222
Date Received : 01/25/95
Project ID : 7137-0200
Purchase Order: N/A
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9501222- 1	MW-3	WATER	01/25/95	BTEX
9501222- 2	MW-1	WATER	01/25/95	BTEX
9501222- 3	T.BLANK	WATER	01/25/95	BTEX
9501222- 4	MW-4	WATER	01/25/95	BTEX
9501222- 5	MW-2	WATER	01/25/95	BTEX
9501222- 1	MW-3	WATER	01/25/95	TPHd
9501222- 2	MW-1	WATER	01/25/95	TPHd
9501222- 4	MW-4	WATER	01/25/95	TPHd
9501222- 5	MW-2	WATER	01/25/95	TPHd

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MS. JOBETH FOLGER
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4041

Workorder # : 9501222
Date Received : 01/25/95
Project ID : 7137-0200
Purchase Order: N/A
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- All holding times have been met for the analyses reported in this section.
- The concentrations reported as diesel for samples MW-3, MW-1, and MW-2 are primarily due to the presence of a heavier petroleum product, possibly aged diesel fuel.

Cheryl Balmer 1/31/95
Department Supervisor Date

Lucia Shor 1/31/95
Chemist Date

Organic Analysis Data Sheet
Total Petroleum Hydrocarbons as Gasoline with BTEX
ITS - Anametrix Laboratories - (408)432-8192

Lab Workorder : 9501222 | Client Project ID : 7137-0200

Matrix : WATER | Units : ug/L

Compound Name	Method Reporting Limit*	Client ID MW-3 Lab ID 9501222-01	Client ID MW-1 Lab ID 9501222-02	Client ID T.BLANK Lab ID 9501222-03	Client ID MW-4 Equip Blank Lab ID 9501222-04	Client ID MW-2 Lab ID 9501222-05
Benzene	0.50	2.5	ND	ND	ND	ND
Toluene	0.50	1.2	ND	ND	ND	ND
Ethylbenzene	0.50	2.5	ND	ND	ND	ND
Total Xylenes	0.50	8.0	ND	ND	ND	ND
TPH as Gasoline	50	--	--	--	--	--
Surrogate Recovery		135%	99%	97%	95%	95%
Instrument ID		HP12	HP12	HP12	HP12	HP12
Date Sampled		01/25/95	01/25/95	01/25/95	01/25/95	01/25/95
Date Analyzed		01/26/95	01/26/95	01/26/95	01/26/95	01/26/95
RLMF		1	1	1	1	1
Filename Reference		FPJ22201.D	FPJ22202.D	FPJ22203.D	FPJ22204.D	FPJ22205.D

* The Method Reporting Limit must be multiplied by the Reporting Limit Multiplication Factor (RLMF) to achieve the compound's reporting limit in the analysis.

ND : Not detected at or above the reporting limit for the analysis as performed.
TPHg : Determined by GC/FID following sample purge & trap by EPA Method 5030.
BTEX : Determined by modified EPA Method 8020 following sample purge & trap by EPA Method 5030.

Lab Control Limits for surrogate compound p-Bromofluorobenzene are 61-139%.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Irma Shea 1/30/95
Analyst Date

Cheryl Balmer 1/30/95
Supervisor Date

Issued on 1/30/95 @ 1:52 pm

Organic Analysis Data Sheet
Total Petroleum Hydrocarbons as Gasoline with BTEX
ITS - Anametrix Laboratories - (408)432-8192

Lab Workorder : 9501222 | Client Project ID : 7137-0200

Matrix : WATER | Units : ug/L

Compound Name	Method Reporting Limit*	Client ID	Client ID	Client ID	Client ID	Client ID
		Lab ID	Lab ID	Lab ID	Lab ID	Lab ID
		METHOD BLANK				
Benzene	5.0	ND				
Toluene	5.0	ND				
Ethylbenzene	5.0	ND				
Total Xylenes	5.0	ND				
TPH as Gasoline	500	ND				
Surrogate Recovery		95%				
Instrument ID		HP12				
Date Sampled		N/A				
Date Analyzed		01/26/95				
RLMF		1				
Filename Reference		BJ2601E1.D				

* The Method Reporting Limit must be multiplied by the Reporting Limit Multiplication Factor (RLMF) to achieve the compound's reporting limit in the analysis.

ND : Not detected at or above the reporting limit for the analysis as performed.
TPHg : Determined by GC/FID following sample purge & trap by EPA Method 5030.
BTEX : Determined by modified EPA Method 8020 following sample purge & trap by EPA Method 5030.

Lab Control Limits for surrogate compound p-Bromofluorobenzene are 53-147%.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Luisa Shea 1/31/95
Analyst Date

Cheryl Balmer 1/30/95
Supervisor Date

Issued on 1/30/95 @ 12:19 pm

Matrix Spike Report

Total Petroleum Hydrocarbons as BTEX

ITS - Anametrix Laboratories - (408)432-8192

Project ID : 7137-0200
Sample ID : MW-2
Matrix : WATER
Date Sampled : 01/25/95

Laboratory ID : 9501222-05
Analyst : TS
Supervisor : [illegible]
Instrument ID : HP12
Units : ug/L

COMPOUND NAME	SPIKE AMOUNT	SAMPLE RESULTS	MS RECOVERY	MSD RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS
Benzene	20	ND	90%	100%	45-139	-11%	30
Toluene	20	ND	95%	100%	51-138	-5%	30
Ethylbenzene	20	ND	95%	105%	48-146	-10%	30
Total Xylenes	20	ND	90%	95%	50-139	-5%	30
Surrogate Recovery		95%	99%	101%			
Date Analyzed		01/26/95	01/26/95	01/26/95			
Multiplier		1	1	1			
Filename Reference		FPJ22205.D	FMJ22205.D	FDJ22205.D			

* Limits established by Inchcape Testing Services, Anametrix Laboratories.

Laboratory Control Spike Report
Total Petroleum Hydrocarbons as BTEX
ITS - Anametrix Laboratories - (408)432-8192

Instrument ID : HP12
Matrix : LIQUID

Analyst : IS
Supervisor : [illegible]
Units : ug/L

COMPOUND NAME	SPIKE AMOUNT	LCS RECOVERY	RECOVERY LIMITS
Benzene	20	95%	52-133
Toluene	20	95%	57-136
Ethylbenzene	20	100%	56-139
Total Xylenes	20	90%	56-141
Surrogate Recovery		98%	61-139
Date Analyzed		01/26/95	
Multiplier		1	
Filename Reference		MJ2601E1.D	

* Limits established by Inchcape Testing Services, Anametrix Laboratories.

TOTAL PETROLEUM HYDROCARBONS AS DIESEL
INCHCAPE TESTING SERVICES - ANAMETRIX
(408) 432-8192

DATA SUMMARY FORM

Anametrix Workorder:	9501222	Client Project ID:	7137-0200
Matrix:	WATER	Date Released:	1/31/95
Date Extracted:	1/26/95	Concentration Units:	ug/L
Instrument ID:	HP27		

Anametrix ID	Client ID	Date Sampled	Date Analyzed	Dilution Factor	Reporting Limit	Amount Found	Surrogate Recovery
9501222-01	MW-3	1/25/95	1/26/95	1	50	1200	103%
9501222-02	MW-1	1/25/95	1/26/95	1	50	62	92%
9501222-04	MW-4	1/25/95	1/27/95	1	50	ND	96% - equip blank
9501222-05	MW-2	1/25/95	1/27/95	1	50	300	90%
BJ2611F1	Method Blank	----	1/26/95	1	50	ND	100%

ND: Not detected at or above the reporting limit for the method.
TPHd: Total Petroleum Hydrocarbons as C10-C28 is determined by GC/FID (modified EPA Method 8015) following sample extraction by EPA Method 3510.
Surrogate recovery quality control limits for o-terphenyl are 67-103%.
All testing procedures follow California Department of Health Services approved methods.

Irene Shen 1/31/95
Analyst Date

Cheryl Balmer 1/31/95
Supervisor Date

TOTAL PETROLEUM HYDROCARBONS AS KEROSENE

INCHCAPE TESTING SERVICES - ANAMETRIX

(408) 432-8192

DATA SUMMARY FORM

Anametrix Workorder:	9501222	Client Project ID:	7137-0200
Matrix:	WATER	Date Released:	1/31/95
Date Extracted:	1/26/95	Concentration Units:	ug/L
Instrument ID:	HP27		

Anametrix ID	Client ID	Date Sampled	Date Analyzed	Dilution Factor	Reporting Limit	Amount Found	Surrogate Recovery
9501222-01	MW-3	1/25/95	1/26/95	1	50	820	103%
9501222-02	MW-1	1/25/95	1/26/95	1	50	ND	92%
9501222-04	MW-4	1/25/95	1/27/95	1	50	ND	96%
9501222-05	MW-2	1/25/95	1/27/95	1	50	ND	90%
BJ2611F1	Method Blank	----	1/26/95	1	50	ND	100%

ND: Not detected at or above the reporting limit for the method.
TPHd: Total Petroleum Hydrocarbons as kerosene is determined by GC/FID (modified EPA Method 8015) following sample extraction by EPA Method 3510.
Surrogate recovery quality control limits for o-terphenyl are 67-103%.
All testing procedures follow California Department of Health Services approved methods.

Lucia Shor 1/31/95
Analyst Date

Cheryl Balmer 1/31/95
Supervisor Date

TOTAL PETROLEUM HYDROCARBONS AS DIESEL

INCHCAPE TESTING SERVICES - ANAMETRIX

(408) 432-8192

MATRIX SPIKE RECOVERY REPORT

Client Project ID:	7137-0200	Anametrix ID:	9501222-04
Client Sample ID:	MW-4	Date Released:	1/31/95
Date Sampled:	1/25/95	Instrument ID:	HP27
Date Extracted:	1/26/95	Matrix:	WATER
Date Analyzed:	1/27/95	Concentration Units:	ug/L

COMPOUND NAME	SPIKE AMT	SAMPLE CONC	MS CONC	% REC MS	MSD CONC	%REC MSD	RPD
Diesel	1250	300	1480	94%	1470	94%	-1%
o-Terphenyl				83%		102%	

Quality control limits for MS/MSD recovery are 38-96%.

Quality control limits for RPD(relative percent difference) are +/- 18%.

Quality control limits for o-terphenyl recovery are 67-103%.

TOTAL PETROLEUM HYDROCARBONS AS DIESEL

INCHCAPE TESTING SERVICES - ANAMETRIX

(408) 432-8192

LABORATORY CONTROL SAMPLE REPORT

Client Project ID:	7137-0200	Anametrix ID:	MJ2611F1
Matrix:	WATER	Date Released:	1/31/95
Date Extracted:	1/26/95	Instrument ID:	HP27
Date Analyzed:	1/26/95	Concentration Units:	ug/L

COMPOUND NAME	SPIKE AMT	LCS CONC	%REC LCS
Diesel	1250	1100	88%
o-Terphenyl			95%

Quality control limits for LCS recovery are 38-96%.

Quality control limits for o-terphenyl recovery are 67-103%.

ANAMETRIX REPORT DESCRIPTION
INORGANICS

Analytical Data Report (ADR)

The ADR contains tabulated results for inorganic analytes. All field samples, QC samples and blanks were prepared and analyzed according to procedures in the following references:

- "Test Methods for Evaluating Solid Waste," SW-846, EPA, 3rd Edition, November 1986.
- "Methods for Chemical Analysis of Water and Wastes," EPA, 3rd Edition, 1983.
- CCR Title 22, Section 66261, Appendix II, California Waste Extraction Test.
- CCR Title 22, Section 66261, Appendix XI, Organic Lead.
- "Standard Methods for the Examination of Water and Wastewater," APHA, AWWA, WEF, 18th Edition, 1992.
- USEPA Contract Laboratory Program Statement of Work for Inorganic Analyses, ILM02.1, 1991.

Matrix Spike Report (MSR)

The MSR summarizes percent recovery and relative percent difference information for matrix spikes and matrix spike duplicates. This information is a statement of both accuracy and precision. MSRs may not be provided with all analytical reports. Anametrix control limit for MSR is 75-125% with 25% for RPD limits, except for Method 6010A, which is 80-120% with 25% RPD limits.

Laboratory Control Sample Report (LCSR)

The LCSR summarizes percent recovery information for laboratory control spikes on reagent water or soil. This information is a statement of performance for the method, i.e., the samples are properly prepared and analyzed according to the applicable methods. Anametrix control limit for LCSR is 80-120%.

Method Blank Report (MBR)

The MBR summarizes quality control information for reagents used in preparing samples. The absolute value of each analyte measured in the method blank should be below the method reporting limit for that analyte.

Post Digestion Spike Report (PDSR)

The PDSR summarizes percent recovery information for post digestion spikes. A post digestion spike is performed for a particular analyte if the matrix spike recovery is outside of established control limits. Any percent recovery for a post digestion spike outside of established limits for an analyte indicates probable matrix effects and interferences for that analyte. Anametrix control limit for PDSR is 75-125%.

Qualifiers (Q)

Anametrix uses several data qualifiers in inorganic reports. These qualifiers give additional information on the analytes reported. The following is a list of qualifiers and their meanings:

- I - Sample was analyzed at the stated dilution due to spectral interferences.
- U - Analyte concentration was below the method reporting limit. For matrix and post digestion spike reports, a value of "0.0" is entered for calculation of the percent recovery.
- B - Sample concentration was below the reporting limit but above the instrument detection limit. Result is entered for calculation of the percent recovery only.
- H - Spike percent recovery was outside of Anametrix control limits due to interferences from relatively high concentration level of the analyte in the unspiked sample.
- L - Reporting limit was increased to compensate for background absorbances or matrix interferences.

Comment Codes

In addition to qualifiers, the following codes are used in the comment section of all reports to give additional information about sample preparation methods:

- A - Sample was prepared for silver based on the silver digestion method developed by the Southern California Laboratory, Department of Health Services, "Acid Digestion for Sediments, Sludges, Soils and Solid Wastes. A Proposed Alternative to EPA SW846, Method 3050." Environmental Science and Technology, 1989, 23, 898-900.
- T - Spikes were prepared after extraction by the Toxicity Characteristic Leaching Procedure (TCLP).
- C - Spikes were prepared after extraction by the California Waste Extraction Test (CWET) method.
- D - Reported results are dissolved, not total, metals.

Reporting Conventions

Analytical values reported are gross values, i.e., not corrected for method blank contamination. Solid matrices are reported on a wet weight basis, unless specifically requested otherwise.

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MS. JOBETH FOLGER
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4041

Workorder # : 9501222
Date Received : 01/25/95
Project ID : 7137-0200
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9501222- 2	MW-1	WATER	01/25/95	6010
9501222- 4	MW-4	WATER	01/25/95	6010

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MS. JOBETH FOLGER
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4041

Workorder # : 9501222
Date Received : 01/25/95
Project ID : 7137-0200
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

QA/QC SUMMARY :

- All holding times have been met for the analyses reported in this section.

1/31/95
Department Supervisor Date

1/31/95
Chemist Date

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192
DATA REPORT

Analyte-Method: **Lead-6010A**
Client Project Number: **7137-0200**
Matrix - Units: **WATER - ug/L**

Analyst: SC
Supervisor: MDL

Anametrix Sample ID	Client Sample ID	Prep. Method	Instr. ID	Date Sampled	Date Prepared	Date Analyzed	D.F.	Reporting Limit	Results	Q
9501222-02	MW-1	3010A	ICP2	01/25/95	01/26/95	01/27/95	1	40.0	ND	
9501222-04	MW-4	3010A	ICP2	01/25/95	01/26/95	01/27/95	1	40.0	ND	
BJ265WB	METHOD BLANK	3010A	ICP2	N/A	01/26/95	01/27/95	1	40.0	ND	

COMMENTS:

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192

SAMPLE DUPLICATE REPORT

Anametrix Sample ID: **9501222-04D**
Client Sample ID: **MW-4**
Client Project Number: **7137-0200**
Matrix: **WATER**

Analyst: SC
Supervisor: ~~MBA~~

Analyte	Prep. Method	Analyt. Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Sample Conc.	Sample Duplicate Conc.	RPD	Q
Lead	3010A	6010A	ICP2	01/26/95	01/27/95	1	ug/L	ND	ND	N/A	

COMMENTS:

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192
MATRIX SPIKE REPORT

Anametrix. Sample ID: **9501222-04MS,MD**
Client Sample ID: **MW-4**
Client Proj. Number: **7137-0200**
Matrix: **WATER**

Analyst: SC
Supervisor: mdl

Analyte	Analyt. Method	Instr. I.D.	Date Prepared	Date Analyzed	Units	Spike Amount	Sample Conc.	Matrix Spike Conc.	% Rec.	Matrix Sp. Dup. Conc.	% Rec.	RPD	Q
Lead	6010A	ICP2	01/26/95	01/27/95	1.0	500	0.0	512	102	515	103	0.6	

COMMENTS:

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES
(408) 432-8192

LABORATORY CONTROL SAMPLE REPORT

Lab. Control Sample ID: **LJ265WB**
Anametrix WO #: **9501222**
Client Project Number: **7137-0200**
Matrix: **WATER**

Analyst: SC
Supervisor: mst

Analyte	Prep. Method	Analytical Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Spike Amount	LCS Results	% Recovery	Q
Lead	3010A	6010A	ICP2	01/26/95	01/27/95	1	ug/L	500	512	102	

COMMENTS:

Inchcape Testing Services
Anametrix Laboratories

SAMPLE RECEIVING CHECKLIST

WORKORDER NUMBER: 9501222 CLIENT PROJECT ID: 7137-0200

COOLER

Shipping slip (airbill, etc.) present?	YES	NO	(N/A)
If YES, enter carrier name and airbill # :			
Custody Seal on the outside of cooler?	YES	NO	(N/A)
Condition: INTACT ____ BROKEN ____			
Temperature of sample (s) within range?	(YES)	NO	N/A
List temperature of cooler (s): 4°C (604), 3°C (663)			

SAMPLES

Chain of custody seal present for each container?	YES	NO	(N/A)
Condition: INTACT ____ BROKEN ____			
Samples arrived within holding time?	(YES)	NO	N/A
Samples in proper containers for methods requested?	(YES)	NO	
Condition of containers: INTACT ✓ BROKEN ____			
If NO, were samples transferred to proper container? ____			
Were VOA containers received with zero headspace?	(YES)	NO	N/A
If NO, was it noted on the chain of custody? ____			
Were container labels complete? (ID, date, time preservative, etc.)	(YES)	NO	
Were samples preserved with the proper preservative?	YES	(NO)	N/A
If NO, was the proper preservative added at time of receipt? yes			
pH check of samples required at time of receipt?	(YES)	NO	
If YES, pH checked and recorded by: WB			
Sufficient amount of sample received for methods requested?	(YES)	NO	
If NO, has the client or lab project manager been notified? ____			
Field blanks received with sample batch? # of Sets: ____	YES	NO	(N/A)
Trip blanks received with sample batch? # of Sets: 1	(YES)	NO	N/A

CHAIN OF CUSTODY

Chain of custody received with samples?	(YES)	NO
Has it been filled out completely and in ink?	(YES)	NO
Sample ID's on chain of custody agree with container labels?	(YES)	NO
Number of containers indicated on chain of custody agree with number received?	(YES)	NO
Analysis methods clearly specified?	(YES)	NO
Sampling date and time indicated?	(YES)	NO
Proper signatures of sampler, courier, sample custodian in appropriate place? with time and date?	(YES)	NO
Turnaround time? REGULAR ✓ RUSH ____		

Any NO response and/or any "BROKEN" that was checked must be detailed in the Corrective Action Form.

Sample Custodian: WB Date: 1/25/95 Project Manager: CWR Date: 1/28/95

5121

9501222 (18) (10/22)

Woodward-Clyde Consultants
500 12th Street, Suite 100, Oakland, CA 94607-4014
(510) 893-3600

Chain of Custody Record

PROJECT NO. CAMP PARKS 7137-0200

SAMPLERS: (Signature) [signature] R Krause

	DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method BTEX	EPA Method DIESEL *	EPA Method KEROSENE *	EPA Method Total Pb	~~BTEX~~	FUEL OIL *					Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
(3)	1/25/95	0800	TRIP BLANK	W	2										2	RESULTS TO
(4)		10:00	MW-4	W	2	X	X	X		X					7	TO BETH FOLGER
		~~11:00~~	~~MW-3~~	~~W~~	~~2~~	~~X~~	~~X~~			~~X~~					~~6~~	QUESTIONS CALL
(1)		11:00	MW-3	W	2										2	JO.BETH @ 8743138
(5)		13:10	MW-2	W	2	X	X			X					6	* = TPH extractables quantified as....
(2)	↓	13:40	MW-1	W	2										2	FUEL OIL MAY BE SIMILAR TO BUNKER OIL.

SAMPLES WRAPPED IN BUBBLEWRAP + IN ZIPLOCK BAGS, PLACED IN ICED COOLER FOR SHIPMENT TO LAB.

01/30/95 cw
Cancel fuel oil JoBeth Folger

TOTAL NUMBER OF CONTAINERS: 19

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	1/25/95 14:45	[signature]	[signature]	1/25/95 1530	

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
Anametrix Courier			[signature]	1/25/95 1530

MW1 water
diglins

Inchcape Testing Services
Anametrix Laboratories

1961 Concourse Drive
Suite E
San Jose, CA 95131
Tel: 408-432-8192
Fax: 408-432-8198

February 14, 1995

Ms. Jo Beth Folger
WOODWARD CLYDE CONSULTANTS
500 12th Street
Suite 100
Oakland, CA 94607-4041

Dear Ms. Folger:

Enclosed are the analytical results for your project ID: 7137-0200, we received on January 25, 1995. The enclosed work was performed by a laboratory subcontracted by Inchcape Testing Services - Anametrix Laboratories.

I.T.S. Anametrix ID:	Client ID:
9501222-2	MW1

If you have any questions regarding this workorder, please give me a call at (408)432-8192.

Sincerely,

INCHCAPE TESTING SERVICES
ANAMETRIX LABORATORIES

Cristina V. Rayburn

Cristina Velasquez Rayburn
Project Manager

Quanterra Environmental Services

Quanterra Incorporated
880 Riverside Parkway
West Sacramento, California 95605

916 373-5600 Telephone
916 372-1059 Fax

February 10, 1995
Lab ID: 079979

Cristina V. Rayburn
Inchcape Testing Services
1961 Concourse Drive, Suite E
San Jose, CA 95131

Dear Ms. Rayburn:

Enclosed is the report for the PCDD/PCDF analysis by Method 8290 of your one aqueous sample for your Project #9501222 received at Quanterra Incorporated on 26 January 1995 under chain-of-custody.

Detection limits for dioxins and furans are reported on a sample specific basis and all results are recovery corrected per the isotope dilution technique. For an analyte reported as 'Not Detected' the associated detection limit represents its maximum possible concentration. The method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your samples.

All samples and extracts are retained for 30 days from the date of this report. If longer storage is required or you would like samples returned to you, please call with instructions.

Results are on the attached data sheets.

If you have any questions, please feel free to call.

Sincerely,

Eric W. Redman
Senior Scientist
Advanced Technology Group

Kathleen A. Gill
Program Administrator

KG/jk

Quanterra
Environmental Services

SAMPLE DESCRIPTION INFORMATION
for
Anametrix, Inc.

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
079979-0001-MB	Method Blank	AQUEOUS			26 JAN 95
079979-0001-SA	7137-0200 MW-1	AQUEOUS	25 JAN 95	13:40	26 JAN 95

Quanterra
Environmental Services

POLYCHLORINATED DIOXINS/FURANS
ISOMER SPECIFIC ANALYSIS
Method 8290

Client Name: Anametrix, Inc.
Client ID: Method Blank
Lab ID: 079979-0001-MB
Matrix: AQUEOUS
Authorized: 26 JAN 95

Sampled: NA
Prepared: 30 JAN 95

Received: NA
Analyzed: 03 FEB 95

Sample Amount 1.00 L
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	pg/L	0.92	
2,3,7,8-TCDF	ND	pg/L	0.92	
PeCDFs (total)	ND	pg/L	2.4	
1,2,3,7,8-PeCDF	ND	pg/L	2.3	
2,3,4,7,8-PeCDF	ND	pg/L	2.4	
HxCDFs (total)	ND	pg/L	1.7	
1,2,3,4,7,8-HxCDF	ND	pg/L	1.6	
1,2,3,6,7,8-HxCDF	ND	pg/L	1.6	
2,3,4,6,7,8-HxCDF	ND	pg/L	1.7	
1,2,3,7,8,9-HxCDF	ND	pg/L	1.5	
HpCDFs (total)	ND	pg/L	2.2	
1,2,3,4,6,7,8-HpCDF	ND	pg/L	1.9	
1,2,3,4,7,8,9-HpCDF	ND	pg/L	2.2	
OCDF	ND	pg/L	4.9	
Dioxins				
TCDDs (total)	ND	pg/L	2.2	
2,3,7,8-TCDD	ND	pg/L	0.66	
PeCDDs (total)	ND	pg/L	1.6	
1,2,3,7,8-PeCDD	ND	pg/L	1.6	
HxCDDs (total)	ND	pg/L	1.9	
1,2,3,4,7,8-HxCDD	ND	pg/L	1.9	
1,2,3,6,7,8-HxCDD	ND	pg/L	1.7	
1,2,3,7,8,9-HxCDD	ND	pg/L	1.7	
HpCDDs (total)	ND	pg/L	2.6	
1,2,3,4,6,7,8-HpCDD	ND	pg/L	2.6	
OCDD	ND	pg/L	6.5	

(continued on following page)

ND = Not detected
NA = Not applicable

Reported By: Clark Pickell

Approved By: Jill Kellmann

The cover letter is an integral part of this report.
Rev 230787

Quanterra
Environmental Services

POLYCHLORINATED DIOXINS/FURANS
ISOMER SPECIFIC ANALYSIS (CONT.)
Method 8290

Client Name: Anametrix, Inc.
Client ID: Method Blank
Lab ID: 079979-0001-MB
Matrix: AQUEOUS
Authorized: 26 JAN 95

Sampled: NA
Prepared: 30 JAN 95

Received: NA
Analyzed: 03 FEB 95

Sample Amount 1.00 L
Column Type DB-5

	% Recovery
13C-2,3,7,8-TCDF	74
13C-2,3,7,8-TCDD	70
13C-1,2,3,7,8-PeCDF	69
13C-1,2,3,7,8-PeCDD	71
13C-1,2,3,4,7,8-HxCDF	64
13C-1,2,3,6,7,8-HxCDD	65
13C-1,2,3,4,6,7,8-HpCDF	55
13C-1,2,3,4,6,7,8-HpCDD	56
13C-OCDD	45

ND = Not detected
NA = Not applicable

Reported By: Clark Pickell

Approved By: Jill Kellmann

The cover letter is an integral part of this report.
Rev 230787

Quanterra
Environmental Services

POLYCHLORINATED DIOXINS/FURANS
ISOMER SPECIFIC ANALYSIS
Method 8290

Client Name: Anametrix, Inc.
Client ID: 7137-0200 MW-1
Lab ID: 079979-0001-SA
Matrix: AQUEOUS
Authorized: 26 JAN 95

Sampled: 25 JAN 95
Prepared: 30 JAN 95

Received: 26 JAN 95
Analyzed: 08 FEB 95

Sample Amount 1.04 L
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	pg/L	2.0	
2,3,7,8-TCDF	ND	pg/L	2.0	
PeCDFs (total)	ND	pg/L	3.9	
1,2,3,7,8-PeCDF	ND	pg/L	3.9	
2,3,4,7,8-PeCDF	ND	pg/L	3.4	
HxCDFs (total)	ND	pg/L	2.1	
1,2,3,4,7,8-HxCDF	ND	pg/L	1.2	
1,2,3,6,7,8-HxCDF	ND	pg/L	1.6	
2,3,4,6,7,8-HxCDF	ND	pg/L	1.7	
1,2,3,7,8,9-HxCDF	ND	pg/L	2.1	
HpCDFs (total)	ND	pg/L	2.1	
1,2,3,4,6,7,8-HpCDF	ND	pg/L	2.1	
1,2,3,4,7,8,9-HpCDF	ND	pg/L	0.93	
OCDF	ND	pg/L	3.9	
Dioxins				
TCDDs (total)	ND	pg/L	2.7	
2,3,7,8-TCDD	ND	pg/L	2.7	
PeCDDs (total)	ND	pg/L	2.4	
1,2,3,7,8-PeCDD	ND	pg/L	2.4	
HxCDDs (total)	ND	pg/L	2.5	
1,2,3,4,7,8-HxCDD	ND	pg/L	2.4	
1,2,3,6,7,8-HxCDD	ND	pg/L	2.4	
1,2,3,7,8,9-HxCDD	ND	pg/L	2.5	
HpCDDs (total)	ND	pg/L	2.0	
1,2,3,4,6,7,8-HpCDD	ND	pg/L	2.0	
OCDD	ND	pg/L	15	

(continued on following page)

ND = Not detected
NA = Not applicable

Reported By: Maricon Estrada
Approved By: Jill Kellmann

The cover letter is an integral part of this report.
Rev 230787

Quanterra
Environmental Services

POLYCHLORINATED DIOXINS/FURANS
ISOMER SPECIFIC ANALYSIS (CONT.)
Method 8290

Client Name: Anametrix, Inc.
Client ID: 7137-0200 MW-1
Lab ID: 079979-0001-SA
Matrix: AQUEOUS
Authorized: 26 JAN 95

Sampled: 25 JAN 95
Prepared: 30 JAN 95

Received: 26 JAN 95
Analyzed: 08 FEB 95

Sample Amount 1.04 L
Column Type DB-5

	% Recovery
13C-2,3,7,8-TCDF	63
13C-2,3,7,8-TCDD	67
13C-1,2,3,7,8-PeCDF	60
13C-1,2,3,7,8-PeCDD	64
13C-1,2,3,4,7,8-HxCDF	73
13C-1,2,3,6,7,8-HxCDD	72
13C-1,2,3,4,6,7,8-HpCDF	83
13C-1,2,3,4,6,7,8-HpCDD	77
13C-OCDD	67

ND = Not detected
NA = Not applicable

Reported By: Maricon Estrada

Approved By: Jill Kellmann

The cover letter is an integral part of this report.
Rev 230787

Quanterra
Environmental Services

LABORATORY CONTROL SAMPLE REPORT
Advanced Technology Group - High Resolution
Project: 079979

Category: 8290-HR-A C14-C18 D/F plus 2378-substituted isomers by Method 8290
Matrix: AQUEOUS
QC Lot: 27 JAN 95-A QC Run: 03 FEB 95-A
Concentration Units: pg/uL

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) LCS	Accuracy(%) Limits
2,3,7,8-TCDF	10.0	11.2	112	60-140
1,2,3,7,8-PeCDF	25.0	25.8	103	60-140
2,3,4,7,8-PeCDF	25.0	27.6	110	60-140
1,2,3,4,7,8-HxCDF	25.0	26.5	106	60-140
1,2,3,6,7,8-HxCDF	25.0	26.0	104	60-140
2,3,4,6,7,8-HxCDF	25.0	26.8	107	60-140
1,2,3,7,8,9-HxCDF	25.0	24.8	99	60-140
1,2,3,4,6,7,8-HpCDF	25.0	28.4	113	60-140
1,2,3,4,7,8,9-HpCDF	25.0	29.8	119	60-140
OCDF	50.0	58.2	116	60-140
2,3,7,8-TCDD	10.0	10.2	102	60-140
1,2,3,7,8-PeCDD	25.0	27.5	110	60-140
1,2,3,4,7,8-HxCDD	25.0	25.9	104	60-140
1,2,3,6,7,8-HxCDD	25.0	27.6	110	60-140
1,2,3,7,8,9-HxCDD	25.0	27.4	110	60-140
1,2,3,4,6,7,8-HpCDD	25.0	26.4	106	60-140
OCDD	50.0	52.9	106	60-140
13C-2,3,7,8-TCDF	50.0	37.1	74	40-135
13C-1,2,3,7,8-PeCDF	50.0	39.4	79	40-135
13C-1,2,3,4,7,8-HxCDF	125	88.9	71	40-135
13C-1,2,3,4,6,7,8-HpCDF	125	79.0	63	40-135
13C-2,3,7,8-TCDD	50.0	36.4	73	40-135
13C-1,2,3,7,8-PeCDD	50.0	38.0	76	40-135
13C-1,2,3,6,7,8-HxCDD	125	85.2	68	40-135
13C-1,2,3,4,6,7,8-HpCDD	125	85.3	68	40-135
13C-OCDD	250	139	55	40-135

ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

Inchcape Testing Services
Anametrix Laboratories
1961 Concourse Drive, Suite E
San Jose, CA 95131
(408) 432-8192 • Fax (408) 432-8198

CHAIN-OF-CUSTODY RECORD

PROJECT NUMBER: 9501222
PROJECT NAME:
Send Report Attention of: CRISTINA RAYBURN
Report Due: 2/3/95
Verbal Due: / /

Sample Number	Date	Time	Comp	Matrix	Station Location	Number of Cntnrs	Type of Containers	Type of Analysis: Dioxin (8290)	Condition of Samples	Initial
2*	1/25/95	1340		W		2	liter	X	Good, t = 3.9°C;	

* sample identified on label as project: 7137-020 #: MW-1

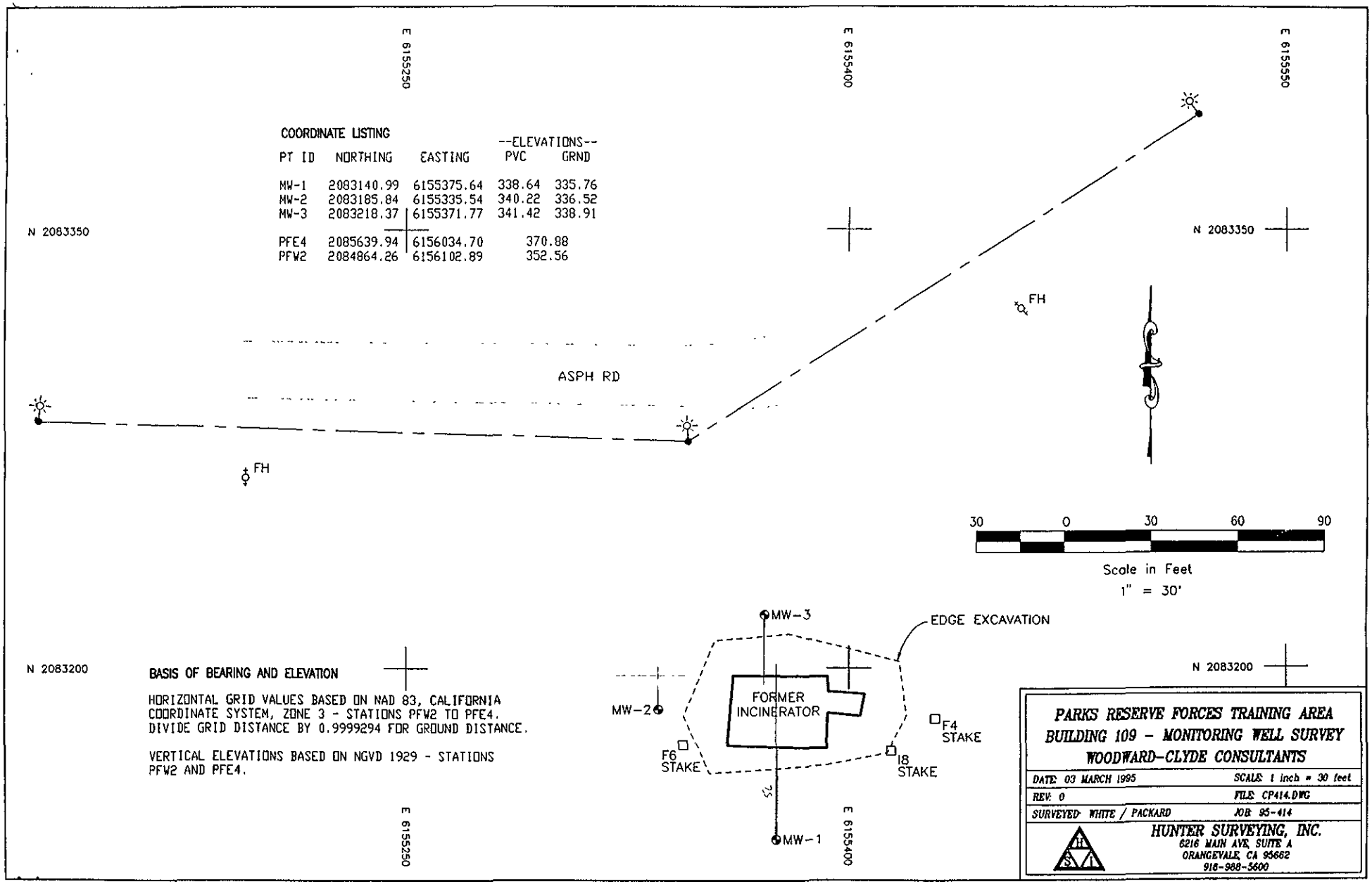
RJB 012695

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
	1/25/95 1600	Fed Ex # 4166239571	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Date/Time	Received by Lab: RJ Bonaly	Date/Time 012695/10

Remarks: PLEASE SEND ORIGINAL CHAIN OF CUSTODY ALONG WITH THE REPORT. Please hold samples for 45 days after the report is mailed. Sub to Quanterra

COMPANY: INCHCAPE TESTING SERVICES, ANAMETRIX LABS
ADDRESS: 1961 CONCOURSE DRIVE, SUITE E
SAN JOSE, CA 95131
PHONE: (408)432-8192 FAX: (408)432-8198

APPENDIX E
SURVEY MAP



COORDINATE LISTING

PT ID	NORTHING	EASTING	--ELEVATIONS-- PVC	GRND
MW-1	2083140.99	6155375.64	338.64	335.76
MW-2	2083185.84	6155335.54	340.22	336.52
MW-3	2083218.37	6155371.77	341.42	338.91
PFE4	2085639.94	6156034.70		370.88
PFW2	2084864.26	6156102.89		352.56

BASIS OF BEARING AND ELEVATION

HORIZONTAL GRID VALUES BASED ON NAD 83, CALIFORNIA COORDINATE SYSTEM, ZONE 3 - STATIONS PFW2 TO PFE4. DIVIDE GRID DISTANCE BY 0.9999294 FOR GROUND DISTANCE.

VERTICAL ELEVATIONS BASED ON NGVD 1929 - STATIONS PFW2 AND PFE4.

PARKS RESERVE FORCES TRAINING AREA
BUILDING 109 - MONITORING WELL SURVEY
WOODWARD-CLYDE CONSULTANTS

DATE: 03 MARCH 1995	SCALE: 1 inch = 30 feet
REV: 0	FILE: CP414.DWG
SURVEYED: WHITE / PACKARD	JOB: 95-414

HUNTER SURVEYING, INC.
6216 MAIN AVE, SUITE A
ORANGEVALE, CA 95662
916-988-5600