5090
Ser 1811JC/00197

30 NOV 1989

Mr. Mark Malinowski
Department of Health Services
State of California
Toxic Substances Control Division
North Coast Section
2151 Berkeley Way, Annex 9
Berkeley, CA 94704

Dear Mr. Malinowski:

This letter is being provided to your office to serve as notification of our intention to place the contents of forty-five 55 gallon drums and two roll-off bins of nonhazardous waste at the proposed Derived Soils Placement Area at Hunters Point Annex (HPA).

The proposed Derived Soils Placement Area (DSPA) is roughly a rectangle 50 x 80 feet, located on an empty lot in the housing area on the corner of Kirkwood and Friedell Streets (see enclosure 1). Soil samples were collected and tested at the proposed DSPA to determine if the area would be an appropriate site for long-term placement of nonhazardous soil cuttings generated during the drilling of pilot borings for various phases of the RI/FS at the Hunters Point Annex. A comprehensive summary of the methods used to obtain these soils samples, as well as the results of the analyses run on the soil samples are presented in enclosure (2). Please note the DSPA is referred to as the proposed Permanent Waste Disposal Area or PWDA in enclosure (2). Although this site shows possible low level contamination of lead, all other organic compounds tentatively identified, including VOC's, were nonpriority pollutants detected at very low levels. Therefore, we believe the proposed DSPA is an appropriate, as well as cost effective, site to place the nonhazardous soil cuttings generated at HPA.

The U.S. Navy currently has forty-five 55 gallon drums and two roll-off bins located at Building 810 on the HPA of nonhazardous soil cuttings generated during the drilling of pilot borings for the reconnaissance phase of the RI/FS and the primary phase of the IR at the Power Plant and the Battery and Electroplating Shop. Analysis for Title 22 metals did not detect any metals at concentrations exceeding the Total Threshold Limit Concentration (TTLC), or ten times the Soluble Threshold Limit Concentrations (STLC). A summary of the sample numbers and the associated drum or bin numbers, source of waste, and laboratory analyses performed are listed in enclosure (3).

The samples analyzed for characterization of soils in drums 51, 81, 82, and 87 were borehole soil samples analyzed as part of the remedial investigation process at HPA. Samples from drums 76 through 80, 83 through 94, 96 through 104, 112 through 131, and bins 1181 and 1217 were collected from the

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containerized wastes. Results of the chemical analyses performed on the samples are summarized in enclosure (3), Tables 2 through 5. The samples were analyzed for both organic and inorganic constituents, chosen on the basis of site use and/or available chemical data. Analysis for organic compounds found none of the samples to exceed detection or reporting limits. Analyses were performed for cyanide and sulfide on selected samples, although neither was detected. Asbestos (chrysotile) was detected in two samples, at less than the 1% quantitation limits.

Based on our review of the enclosed data, the soils in the drums and bins appear to be amenable to on-site placement at the DSPA described above. This material is being forwarded to you for your information. We intend to begin depositing material into the DSPA in the near future.

Should you have any questions regarding this matter, the point of contact is Commander, Western Division, Naval Facilities Engineering Command (Attn: Louise T. Lew, Code 1811, (415) 877-7502).

Sincerely,

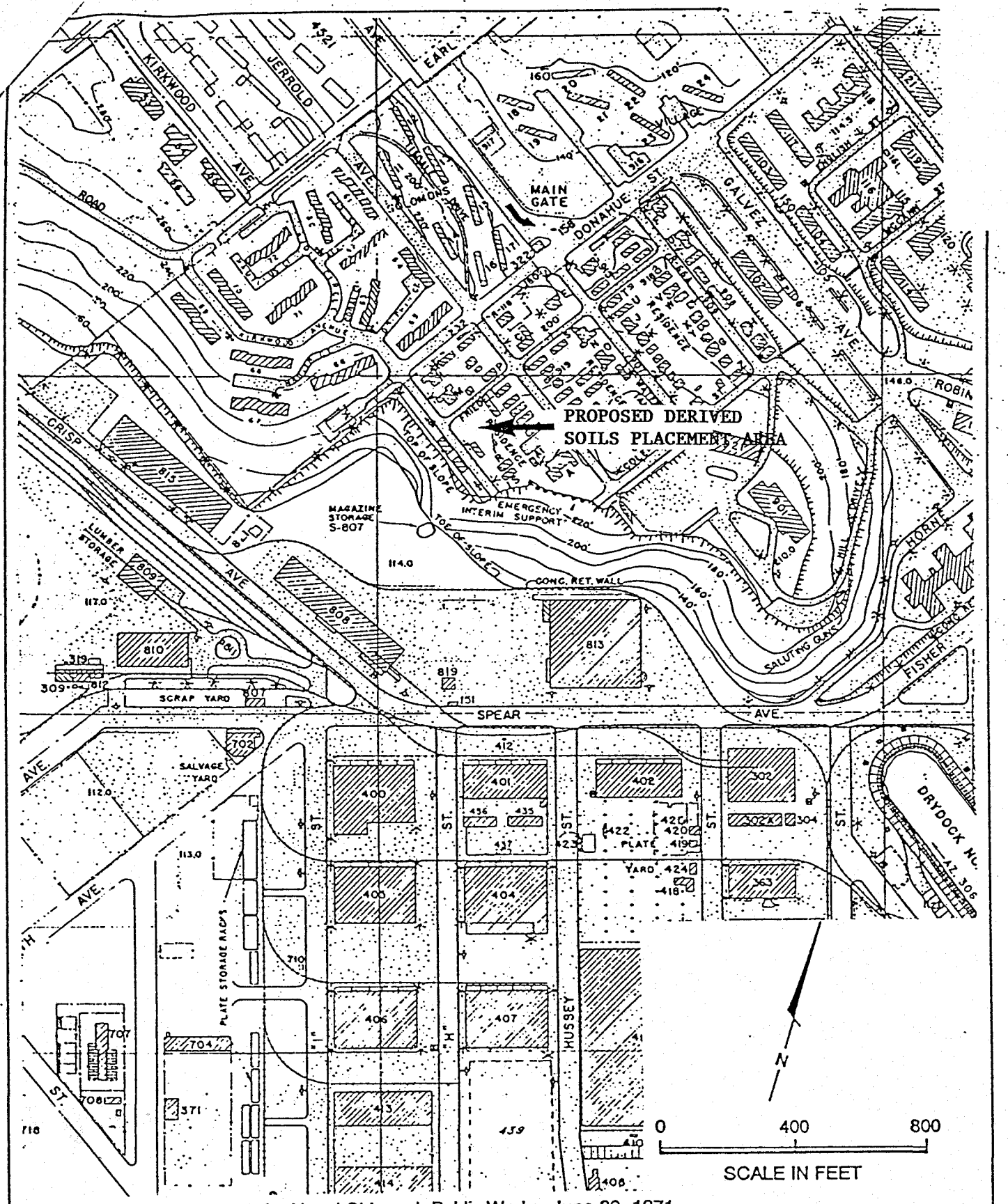
Original signed by:

L. A. MICHLIN
Lieutenant Commander, CEC, USN
Director, Office of Environmental
Management

Encl:
(1) Plates 1 and 2-Maps
(2) Summary of Shallow Soil Sampling at DSPA/HPA
(3) Summary of Nonhazardous Waste Soil Cuttings

Copy to:
Department of Health Services, Technical Support Unit (Attn: William Owen)
Regional Water Quality Control Board (Attn: Steve Ritchie)
Bay Area Air Quality Management District (Attn: Scott Lutz)
U.S. Environmental Protection Agency (Attn: Jerry Clifford)
California Dept. of Fish & Game (Attn: Mike Rugg)
U.S. Fish & Wildlife Service (Attn: Steve Schwarzback)
National Oceanic & Atmospheric Administration (Attn: Chip Demarest)
Technical Review Committee Public Representative (Attn: Margie O'Driscoll)
City and County of San Francisco (Attn: David Wells)
San Francisco District Attorney (Attn: Steve Castleman)

Blind copy to: (w/o encl) 09C9, 202, 09A2C.20, 181, 1811, 1811RP, 1811JC
18A2PW, Admin. Record, Harding Lawson Associates (Attn: Mary Lucas)
PWC SF Bay (Code 420), COMNAVSEASYSCOM (Attn: Robert Milner)
COMNAVBASE San Francisco Writer: Julie Carver, 1811JC, x7502
NAVSTA Treasure Island Typist: B. Palmer, 891130, Ser 4332n
OIC Treasure Island, HPA File: HP/DOHS



Source: Map of Hunters Point Naval Shipyard, Public Works, June 30, 1971

Harding Lawson Associates
Engineering and
Environmental Services

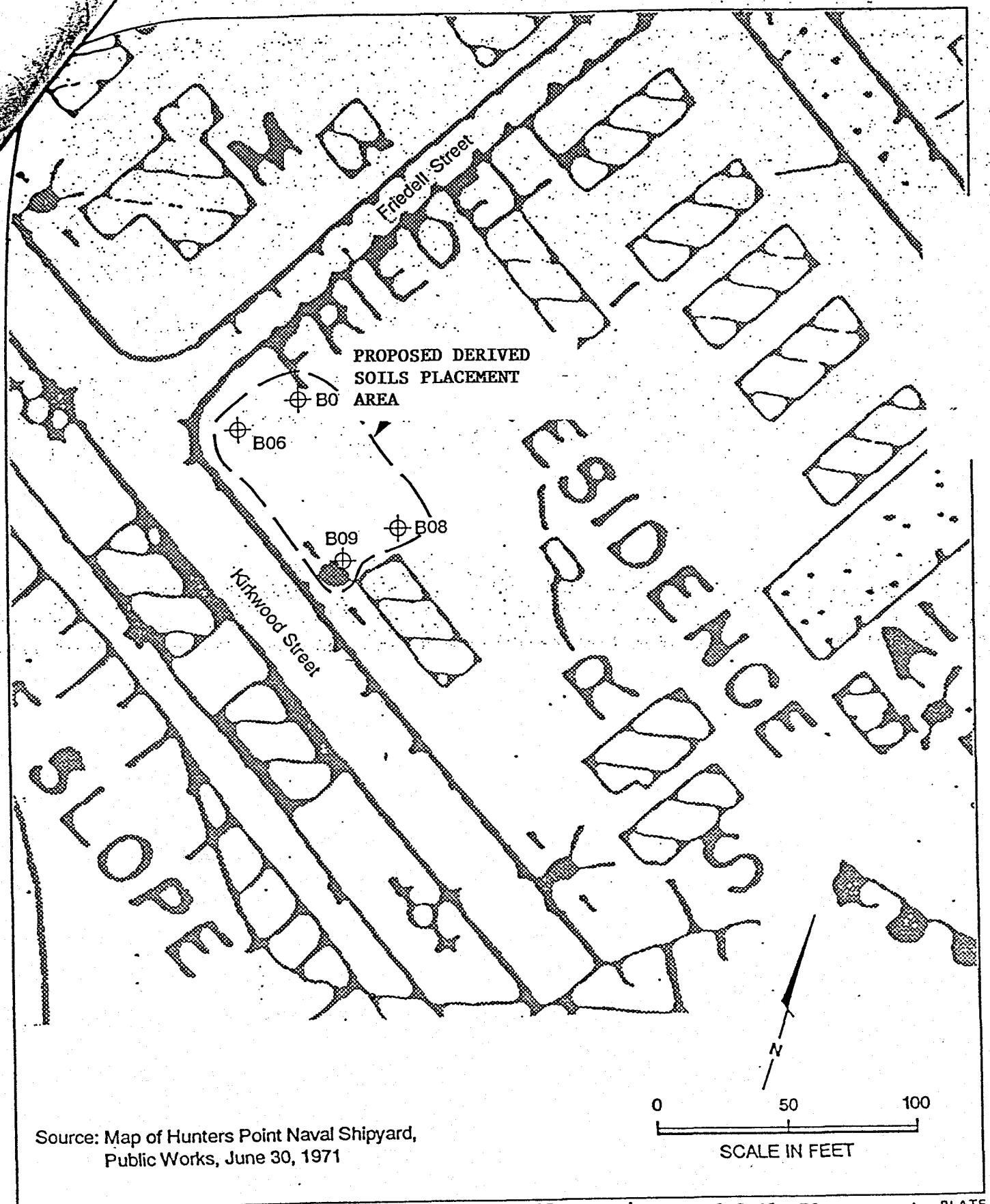
Location of Proposed Derived Soils Placement Area
Hunters Point Annex
San Francisco, California

PLATE 1

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
JC	02176,228.02		9/89	

N/D 128

ENCLOSURE (1)



Source: Map of Hunters Point Naval Shipyard, Public Works, June 30, 1971

Harding Lawson Associates
Engineering and Environmental Services

Location of Proposed Derived Soils Placement Area
Boring Locations
Hunters Point Annex
San Francisco, California

PLATE 2

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
JC	02176,228.02		9/89	

PROPOSED DERIVED SOILS PLACEMENT AREA

SHALLOW SOIL SAMPLING FIELD AND ANALYTICAL PROCEDURES

On June 15, 1989, four shallow soil samples were collected to evaluate soil quality at the proposed DSPA. The sample locations (see plate 2) were selected as representative of the background materials present. A portable hydraulic drill rig was used to drive a split-barrel sampler into undisturbed soil at each location. The sampler was lined with 6-inch long stainless steel tubes. After retrieval, the ends of the sample tubes were sealed with taped, foil-lined plastic caps. All the sample tubes were labeled, stored on ice, and delivered under chain of custody to Thermo Analytical, Inc. Because of a laboratory error that was not confirmed until July 24, 1989 volatile organic analyses were not performed on the four soil samples, although the other analyses requested were performed. Therefore, on August 1, 1989, four additional soil samples were collected from the proposed DSPA at locations adjacent to the original locations. These samples were collected with hand-driven sampling equipment and a split-barrel sampler lined with 6-inch long stainless steel tubes. Samples from the following depth intervals were submitted to the laboratory:

Sample No.	Sample Depth (ft.)	Sampling Date
DSPA B06	1.0-1.5	6/15/89
DSPA B06A	1.0-1.5	8/1/89
DSPA BO7	0.75-1.25	6/15/89
DSPA BO7A	1.0-1.5	8/1/89
DSPA BO8	1.0-1.5	6/15/89
DSPA BO8A	1.0-1.5	8/1/89
DSPA BO9	1.0-1.5	6/15/89
DSPA BO9A	1.0-1.5	8/1/89

During each sampling event, the sampling equipment and the sampler were steam cleaned prior to use at the site. Between samples the sampler was washed with a mixture of tap water and Labtone (a non-phosphate detergent), then rinsed with deionized water. During both sampling events, an equipment blank was collected by pouring deionized water over the soil sampler after it was cleaned and prior to sampling but analytical results were received only from the resample event.

Chemical analysis of the soil samples were performed by Thermo Analytical Inc. (TMA/Norcal) of Richmond, California, a laboratory certified by the state of California for hazardous waste analysis. The soil samples were analyzed using EPA Test Method 8240 for priority pollutant volatile organic compounds (VOC's), EPA Test Method 8270 for priority pollutant semivolatile organic compounds (SOC's), EPA Test Method 8080 for polychlorinated biphenyls (PCB's) and pesticides, EPA Test Method 9070 for oil and grease, EPA Test

Enclosure (2)

Method 8015 for total petroleum hydrocarbons (TPH), EPA Test Method 8020 for aromatic volatile organic compounds, and EPA Test Method 200.7 and 7000 Series for metals (including hexavalent chromium). The equipment blank was analyzed using EPA Test Method 624 for VOC's. Analysis of the soil samples for aromatic VOC's was not requested, but was provided by the laboratory.

RESULTS AND DISCUSSIONS

Enclosure 1, Table 1 summarizes the results of metals analyses of the DSPA soil samples and presents the background levels from the housing area (HLA,1987), as well as Total and Soluble Threshold Limit Concentrations (TTLC's; STLC's) for the metals detected (Title 22 California Code of Regulations Section 66699). Antimony, arsenic, lead, mercury, and zinc were detected in one or more soil samples at levels slightly greater than background metals concentrations identified in soil samples from the HPA housing area. A waste is considered hazardous if the total concentration of a metal exceeds its TTLC; NO TTLC's were exceeded.

Results of the metals analyses of the DSPA soil samples are summarized in Enclosure 1. Antimony, arsenic, lead, mercury, and zinc were detected in one or more soil samples at level slightly greater than background metals concentrations identified in the soil samples from the DSPA; however, no TTLC's were exceeded. Since the lead concentration from Boring DSPA BO6 was more than 10 times the STLC, as was the nickel concentration from Boring BO9, a waste extraction test (WET) was run on each of these samples to evaluate whether the soluble concentration of each metal exceeded its STLC. The WET performed on the soil sample from Boring DSPA BO9 yielded a soluble nickel concentration of 4.13 milligrams per liter (mg/l), less than the STLC of 20.0 mg/l. The WET performed on the soil sample from Boring DSPA BO6 yielded a soluble lead concentration of 5.41 mg/l, slightly greater than the STLC of 5.0 mg/l.

Results of the soil sample organics analyses, presented in Enclosure 1, Table 2, indicated that the samples, except DSPA BO7, contained low levels of TPH characterized as diesel. Concentrations ranged from 10 to 36.6 milligrams per kilogram (mg./kg). Toluene was identified in each soil sample at concentrations ranging from 15 to 62 micrograms per kilograms (ug/kg). Toluene was also identified in the laboratory method blank at 22 micrograms per kilogram (ug/kg); therefore the presence of toluene may be at least partially due to laboratory contamination. Low levels of ethylbenzene and xylenes were also identified in the soil sample from Boring DSPA BO7 (the total concentration is less than 0.3 parts per million). All of the identified constituents are typically associated with gasoline products. Only one other priority pollutant organic compound was identified; 4-methyl-2-pentanone was detected at 110 ug/kg in the soil sample from Boring DSPA BO7. All other organic compounds tentatively identified in the soil samples are nonpriority pollutants detected at very low levels.

VOC's were not detected in the equipment blank. The detection limit was 5 to 40 micrograms per liter (ug/l) for each constituent, as indicated on the laboratory reports.

Attachments:	Table 1	Results of Metals Analyses of Soils Samples
	Table 2	Results of Organic Chemical Analyses of Soil
Samples		
	Plate 1	Location of Proposed DSPA
	Plate 2:	Proposed DSPA Boring Locations
		Key to Sample Numbers
		Laboratory Data Samples

Table 1.
Results of Metals Analyses of Soil Samples, New Proposed Permanent Waste Disposal Area, Hunters Point Annex

BORING NO. (SAMPLE NO.)	Aluminum mg/Kg (1)	Antimony mg/Kg	Arsenic mg/Kg	Barium mg/Kg	Beryllium mg/Kg	Cadmium mg/Kg	Calcium mg/Kg	Chromium mg/Kg	Chrom. 6+ mg/Kg	Cobalt mg/Kg	Copper mg/Kg	Iron mg/Kg
PWDAB06: (8924D011)	11,000	<12	0.44	120	<0.22	<1.2	11,000	130	10	23	32	23,000
PWDAB07: (8924D012)	5,700	2.8	0.96	58	<0.5	<1.2	3,400	120	20	16	10	17,000
PWDAB08: (8924D013)	5,900	<13	0.84	58	<0.5	<0.6	5,400	160	20	20	8.8	20,000
PWDAB09: (8924D014)	6,300	<3.2	0.84	64	<0.5	<0.25	3,700	190	20	25	12	23,000
Housing Area Background Ranges: (2)	NA (3)	ND (4)	ND	3.6-218.0	ND	ND	NA	74.0-884.0	NA	39.0-160.0	4.2-48.0	NA
TTLC (5)	- (6)	500	500	1000	75	100	-	2,500	500	8,000	2,500	-
STLC (7)	-	15	5.0	100	0.75	1.0	-	560	5	80	25	-

1. mg/Kg = ppm
2. HLA, 1987. "Subsurface Investigation Proposed Housing Areas 1 and 2, Ex-Hunters Point Naval Shipyard, San Francisco, California".
3. NA = not analyzed
4. ND = not detected, detection limits indicated on attached laboratory reports or in "Subsurface Investigation Proposed Housing Areas 1 and 2", HLA October 1987
5. TTLC = Total Threshhold Limit Concentration; California Code of Regulations, Title 22, Division 4, Article 11, Section 66699
6. - = no TTLC or STLC is established for this compound.
7. STLC = Soluble Threshhold Limit Concentration; California Code of Regulations, Title 22, Division 4, Article 11, Section 66699, expressed in mg/l.

DRAFT

Table 1.
Results of Metals Analyses of Soil Samples, New Proposed Permanent Waste Disposal Area,
Hunters Point Annex

BORING NUMBER	Lead mg/Kg 1)	Magnesium mg/Kg	Manganese mg/Kg	Mercury mg/Kg	Molybdenum mg/Kg	Nickel mg/Kg	Potassium mg/Kg	Selenium mg/Kg	Silver mg/Kg	Sodium mg/Kg	Thallium mg/Kg	Vanadium mg/Kg	Zinc mg/Kg
PWDAB06: (8924D011)	134	8,700	600	0.318	<5.0	85	400	<0.20	<1.0	110	<6.6	62	90
PWDAB07: (8924D012)	28	2,900	370	0.046	<0.52	82	520	<0.20	<0.2	66	<7.0	41	33
PWDAB08: (8924D013)	13.5	4,100	370	0.039	<1.8	180	330	<0.20	<0.4	75	<4.2	50	31
PWDAB09: (8924D014)	19.7	3,800	430	0.040	<2.8	210	350	<0.20	<0.6	69	<1.3	52	36
Housing Area Background Ranges: (2)	ND-48	NA (3)	NA	ND-0.08	ND (4)	50.6-2,500	NA	ND	ND	NA	ND	17.4-78.4	14.8-66.8
TTLC (5)	1,000	- (6)	-	20	3,500	2,000	-	100	500	-	700	2,400	5,000
STLC (7)	5	-	-	0.2	350	20	-	1.0	5	-	7.0	24	250

1. mg/Kg = ppm
2. HLA, 1987. "Subsurface Investigation Proposed Housing Areas 1 and 2, Ex-Hunters Point Naval Shipyard, San Francisco, California".
3. NA = not analyzed
4. ND = not detected, detection limits indicated on attached laboratory reports or in "Subsurface Investigation Proposed Housing Areas 1 and 2", HLA October 1987
5. TTLC = Total Threshhold Limit Concentration; California Code of Regulations, Title 22, Division 4, Article 11, Section 66699
6. - = no TTLC or STLC is established for this compound.
7. STLC = Soluble Threshhold Limit Concentration; California Code of Regulations, Title 22, Division 4, Article 11, Section 66699, expressed in mg/l.

DRAFT

Table 2.
Results of Organic Chemical Analyses of Soil Samples, New Proposed Permanent Waste Disposal Area
Hunters Point Annex

Boring No. (Sample No.) (Resample #)	Oil & Grease mg/Kg (1)	TPH (2) mg/Kg	toluene ug/Kg (3)	toluene* EPA 8020 ug/Kg	ethyl benzene ug/Kg	xylenes (total) ug/Kg	4-methyl-2-pentanone ug/Kg	cis-1,3-dimethyl-cyclohexane** ug/Kg	4,5-dimethyl-octane** ug/Kg	4-methyl-2-propyl-1 pentanol** ug/Kg	3,5,5-trimethyl-1-hexene** ug/Kg	1,3-dimethyl-cis-cyclohexane** ug/Kg	cyclohexane** ug/Kg
PWDAB06: (8924D011) (8924D011A)	<100	10.0	15	62	<5	<5	<10	8	8	ND	ND	ND	ND
PWDAB07: (8924D012) (8924D012A)	<100	<10.0	50	45	35	170	110	ND (4)	ND	ND	ND	ND	15
PWDAB08: (8924D013) (8924D013A)	<100	25.0	20	41	<5	<5	<10	ND	ND	ND	10	ND	ND
PWDAB09: (8924D014) (8924D014A)	<100	36.6	25	40	<5	<5	<10	ND	ND	10	ND	10	ND

Notes:
* In the laboratory blank for the EPA Method 8020 Analysis, toluene was identified at 22 ug/Kg.
** Tentatively identified compounds.
1. mg/Kg = ppm
2. The TPH is characterized as diesel.
3. ug/Kg = ppb
4. ND = not detected, detection limits indicated on attached laboratory reports.

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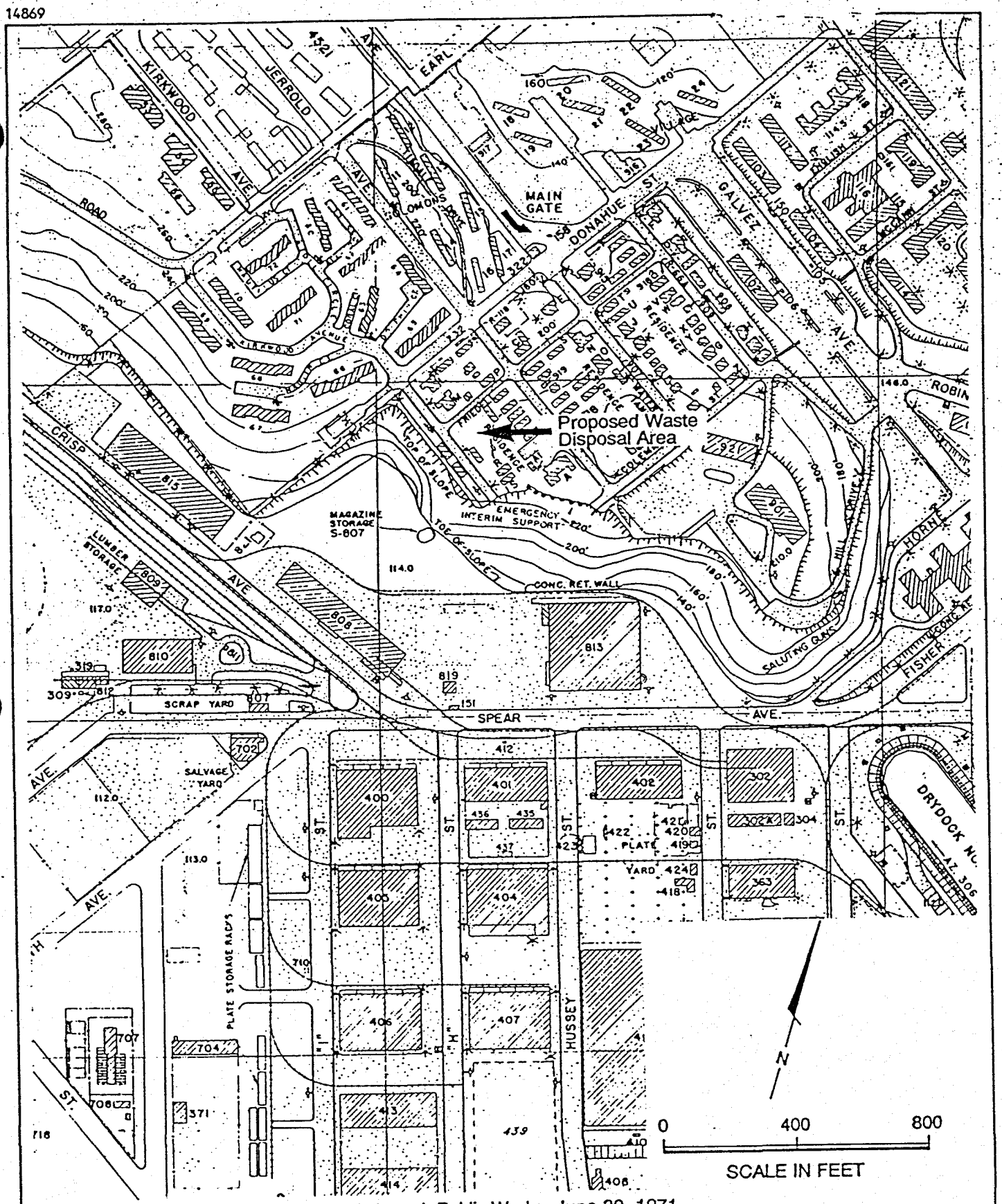


Source: Map of Hunters Point Naval Shipyard, Public Works, June 30, 1971

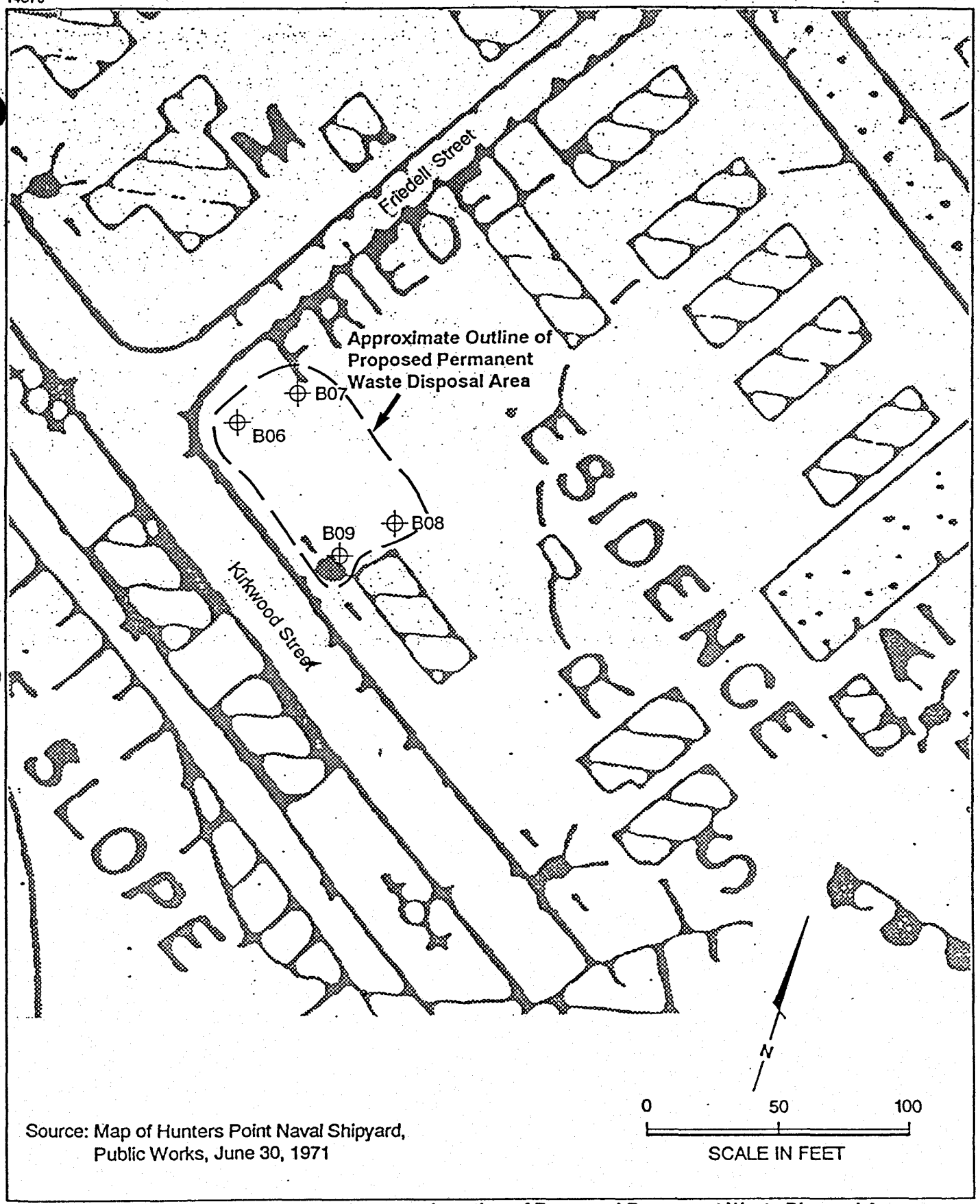
PLATE 1

Harding Lawson Associates
Engineering and Environmental Services

Location of Proposed Permanent Waste Disposal Area
Hunters Point Annex
San Francisco, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
JC	02176,228.02		9/89	

14870



Source: Map of Hunters Point Naval Shipyard,
Public Works, June 30, 1971

Harding Lawson Associates
Engineering and
Environmental Services

Location of Proposed Permanent Waste Disposal Area
Boring Locations
Hunters Point Annex
San Francisco, California

PLATE
2

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
JC	02176,228.02		9/89	

DRAFT

Harding Lawson Associates

Key to Sample Numbers

Boring No.		Sample Depth (ft.)	HLA Sample No.	TMA Sample No.
PWDA	B06	1.0 - 1.5	8924 D011	6281-13-1
	B06A	1.0 - 1.5	8931 D11A	6281-14-2
PWDA	B07	0.75 - 1.25	8924 D012	6281-13-2
	B07A	1.0 - 1.5	8931 D12A	6281-14-3
PWDA	B08	1.0 - 1.5	8924 D013	6281-13-3
	B08A	1.0 - 1.5	8931 D13A	6281-14-4
PWDA	B09	1.0 - 1.5	8924 D014	6281-13-4
	B09A	1.0 - 1.5	8931 D14A	6281-14-5
Equipment Blank		-	8931 EB01	6281-14-1

ANALYTICAL REPORT SAMPLE SET #6281-13

CLIENT: HARDING LAWSON - NOVATO
DATE RECEIVED: 06/16/89
METHODS: CHROMIUM, HEXAVALENT - SW846-7196
MDL (mg/kg) = 5

OIL AND GREASE - SM 503C
MDL (mg/kg) = 100

TMA/Norcal	Customer	Hexavalent Chromium (mg/kg)	Oil & Grease (mg/kg)
6281-13-1	8924D011	10	<100
6281-13-2	8924D012	20	<100
6281-13-3	8924D013	20	<100
6281-13-4	8924D014	20	<100

Received: 07/12/89

TMA Inc. [illegible] REPORT

Results by Sample

Work Order #[illegible]7-046

SAMPLE ID 6281-13-1

FRACTION 01A TEST CODE ICP30 NAME Metals Analysis

Date & Time Collected not specified Category

METALS ANALYSIS

ANALYST RSF

ELEMENT	RESULT	DET LIMIT	ELEMENT	RESULT	DET LIMIT
Aluminum	11000.	788.	Manganese	600.	44.
Antimony	ND	12.	Mercury	0.318	0.005
Arsenic	0.44	0.10	Molybdenum	ND	5.0
Barium	120.	6.0	Nickel	85.	6.0
Beryllium	ND	0.22	Phosphorus	NA	
Boron	NA		Potassium	400.	38.
Cadmium	ND	1.2	Selenium	ND	0.20
Calcium	11,000.	450.	Silicon	NA	
Chromium	130.	14.	Silver	ND	1.0
Cobalt	23.	4.0	Sodium	110.	8.0
Copper	32.	0.5	Sulfur	NA	
Iron	23000.	1410.	Thallium	ND	6.6
Lead	134.	0.10	Titanium	NA	
Lithium	NA		Vanadium	62.	4.0
Magnesium	8700.	1300.	Zinc	90.	6.0

All results reported in mg/Kg unless otherwise specified

NA = Not Analyzed ND = Not detected at specified limit

TMA Inc. [redacted] REPORT

Work Order # [redacted]7-046

Received: 07/12/89

Results by Sample

SAMPLE ID 6281-13-2

FRACTION 02A TEST CODE ICP30 NAME Metals Analysis

Date & Time Collected not specified Category

METALS ANALYSIS

ANALYST RSF

ELEMENT	RESULT	DET LIMIT	ELEMENT	RESULT	DET LIMIT
Aluminum	5700.	306.	Manganese	370.	20.
Antimony	2.8	0.5	Mercury	0.046	0.005
Arsenic	0.96	0.10	Molybdenum	ND	0.52
Barium	58.	2.0	Nickel	82.	4.0
Beryllium	ND	0.5	Phosphorus	NA	
Boron	NA		Potassium	520.	48.
Cadmium	ND	1.2	Selenium	ND	0.20
Calcium	3400.	34.	Silicon	NA	
Chromium	120.	4.0	Silver	ND	0.20
Cobalt	16.	2.0	Sodium	66.	4.
Copper	10.	0.5	Sulfur	NA	
Iron	17000.	788.	Thallium	ND	7.0
Lead	28.	0.1	Titanium	NA	
Lithium	NA		Vanadium	41.	0.5
Magnesium	2900.	144.	Zinc	33.	0.5

All results reported in mg/Kg unless otherwise specified

NA = Not Analyzed ND = Not detected at specified limit

Page [illegible]
Received: 07/12/89

TMA Inc. [illegible] REPORT
Results by Sample

Work Order # [illegible]7-046

SAMPLE ID 6281-13-3

FRACTION 03A TEST CODE ICP30 NAME Metals Analysis
Date & Time Collected not specified Category

METALS ANALYSIS

ANALYST RSF

ELEMENT	RESULT	DET LIMIT	ELEMENT	RESULT	DET LIMIT
Aluminum	5900.	244.	Manganese	370.	16.
Antimony	ND	13.	Mercury	0.039	0.005
Arsenic	0.84	0.10	Molybdenum	ND	1.8
Barium	58.	2.0	Nickel	180.	14.
Beryllium	ND	0.5	Phosphorus	NA	
Boron	NA		Potassium	330.	28.
Cadmium	ND	0.6	Selenium	ND	0.20
Calcium	5400.	160.	Silicon	NA	
Chromium	160.	4.0	Silver	ND	0.4
Cobalt	20.	4.0	Sodium	75.	2.0
Copper	8.8	0.2	Sulfur	NA	
Iron	20000.	704.	Thallium	ND	4.2
Lead	13.5	0.1	Titanium	NA	
Lithium	NA		Vanadium	50.	2.0
Magnesium	4100.	470.	Zinc	31.	4.0

All results reported in mg/Kg unless otherwise specified

NA = Not Analyzed ND = Not detected at specified limit

TMA Inc. REPORT Work Order # [illegible]07-046

Received: 07/12/89

Results by Sample

SAMPLE ID 6281-13-4 FRACTION 04A TEST CODE ICP30 NAME Metals Analysis

Date & Time Collected not specified Category

METALS ANALYSIS

ANALYST RSF

ELEMENT	RESULT	DET LIMIT	ELEMENT	RESULT	DET LIMIT
Aluminum	6300.	258.	Manganese	430.	18.
Antimony	ND	3.2	Mercury	0.040	0.005
Arsenic	0.84	0.10	Molybdenum	ND	2.8
Barium	64.	2.0	Nickel	210.	8.0
Beryllium	ND	0.5	Phosphorus	NA	
Boron	NA		Potassium	350.	6.0
Cadmium	ND	0.25	Selenium	ND	0.20
Calcium	3700.	30.	Silicon	NA	
Chromium	190.	8.0	Silver	ND	0.6
Cobalt	25.	4.0	Sodium	69.	2.0
Copper	12.	0.5	Sulfur	NA	
Iron	23000.	922.	Thallium	ND	1.3
Lead	19.7	0.1	Titanium	NA	
Lithium	NA		Vanadium	52.	0.5
Magnesium	3800.	124.	Zinc	36.	4.0

All results reported in mg/Kg unless otherwise specified

NA = Not Analyzed ND = Not detected at specified limit

TMA Inc. [redacted] REPORT
07/17/89 16:26:31

Work Order #[redacted]7-046

TMA/NORCAL

As requested, four samples were analyzed for 24 select metals in accordance with US EPA SW-846 methods. Please see the attached tables for the results.

ANALYTICAL REPORT FOR SAMPLE SET # 6281-13

CLIENT: HARDING LAWSON - NOVATO
DATE RECEIVED: 06/16/89
DATE EXTRACTED: 06/23/89
DATE ANALYZED: 07/02/89

METHOD: GC/FID METHOD 8015
FUEL CALCULATED AS DIESEL

TMA/NORCAL I.D.	CUSTOMER I.D.	COMPOUND	RESULTS mg/Kg	MDL mg/Kg
6281-13-1	8924D011	DIESEL	10.0	10.0
6281-13-2	8924D012	DIESEL	<10.0	10.0
6281-13-3	8924D013	DIESEL	25.0	10.0
6281-13-4	8924D014	DIESEL	36.6	10.0

RAW DATA IN CHROMATOGRAM FILE

ANALYZED BY: Julie Wise

DATA RELEASED BY: Victoria Taylor 7-3-89

ANALYTICAL REPORT FOR SAMPLE No. 6281-13-01

EPA METHOD 8270
TARGET ANALYTE RESULTS

Client Sample ID 8924D011 Client HARDING LAWSON - NOVATO
File ID 362811301 Date Extracted 06/25/89 Date of Analysis 07/10/89

TMA/Norcal Set ID 6281-13

Cas. No	COMPOUND	RESULTS (ug/Kg)	DETECTION LIMITS (ug/Kg)
62-75-9	N-nitrosodimethylamine	ND	1.0
108-95-2	phenol	ND	1.0
111-44-4	bis(2-chloroethyl)ether	ND	1.0
95-57-8	2-chlorophenol	ND	1.0
541-73-1	1,3-dichlorobenzene	ND	1.0
106-46-7	1,4-dichlorobenzene	ND	1.0
95-50-1	1,2-dichlorobenzene	ND	1.0
39638-329	bis(2-chloroisopropyl)ether	ND	1.0
621-64-7	N-nitrosodi-n-propylamine	ND	1.0
67-72-1	hexachloroethane	ND	1.0
98-95-3	nitrobenzene	ND	1.0
78-59-1	isophorone	ND	1.0
88-75-5	2-nitrophenol	ND	1.0
105-67-9	2,4-dimethylphenol	ND	1.0
11-91-1	bis(2-chloroethoxy)methane	ND	1.0
120-83-2	2,4-dichlorophenol	ND	1.0
120-82-1	1,2,4-trichlorobenzene	ND	1.0
91-20-3	naphthalene	ND	1.0
87-68-3	hexachlorobutadiene	ND	1.0
59-50-7	4-chloro-3-methylphenol	ND	1.0
77-47-4	hexachlorocyclopentadiene	ND	1.0
88-06-2	2,4,6-trichlorophenol	ND	1.0
91-58-7	2-chloronaphthalene	ND	1.0
131-11-3	dimethyl phthalate	ND	1.0
606-20-2	2,6-dinitrotoluene	ND	1.0
208-96-8	acenaphthylene	ND	1.0
83-32-9	acenaphthene	ND	1.0
51-28-5	2,4-dinitrophenol	ND	1.0
100-02-7	4-nitrophenol	ND	1.0
121-14-2	2,4-dinitrotoluene	ND	1.0
84-66-2	diethyl phthalate	ND	1.0
7005-73-3	4-chlorophenyl-phenylether	ND	1.0
86-73-7	fluorene	ND	1.0
534-52-1	2-methyl-4,6-dinitrophenol	ND	1.0
86-30-6	N-nitrosodiphenylamine	ND	1.0
101-55-3	4-bromophenyl-phenylether	ND	1.0
118-74-1	hexachlorobenzene	ND	1.0
87-86-5	pentachlorophenol	ND	1.0
85-01-8	phenanthrene	ND	1.0
120-12-7	anthracene	ND	1.0

ANALYTICAL REPORT FOR SAMPLE No. 6281-13-01

EPA METHOD 8270

TARGET ANALYTE RESULTS

Client Sample ID 8924D011 Client HARDING LAWSON - NOVATO

Cas. No.	COMPOUND	RESULTS (ug/Kg)	DETECTION LIMITS (ug/Kg)
84-74-2	di-n-butyl phthalate	ND	1.0
206-44-0	fluoranthene	ND	1.0
129-00-0	pyrene	ND	1.0
92-87-5	benzidine	ND	1.0
85-68-7	benzyl-butylphthalate	ND	1.0
117-81-7	bis(2-ethylhexyl)phthalate	ND	1.0
56-55-3	benzo(a)anthracene	ND	1.0
218-01-9	chrysene	ND	1.0
91-94-1	3,3-dichlorobenzidine	ND	1.0
117-84-0	di-n-octylphthalate	ND	1.0
205-99-2	benzo(b)fluroanthene	ND	1.0
207-08-9	benzo(k)fluoranthene	ND	1.0
50-32-8	benzo(a)pyrene	ND	1.0
193-39-5	indeno(1,2,3-cd)pyrene	ND	1.0
53-70-3	dibenzo(a,h)anthracene	ND	1.0
191-24-2	benzo(ghi)perylene	ND	1.0

See fotenotes on page 3 of the analytical report

Ron Martinez
Analyst

Debra Langlois
Reviewer

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ANALYTICAL REPORT FOR SAMPLE No. 6281-13-01

NON-TARGET ANALYTE RESULTS
Additional Semi-Volatiles

Client Sample ID 8924D011

Cas. No	COMPOUND	Scan Number	Results UG/KG	Footnotes
	NO ADDITIONAL ANALYTES REQUESTED.			

FOOTNOTES

B The analyte was found in the method blank.

E The reported concentration is an estimate only. The response factor was assumed to be 1.000 relative to an internal standard.

J Indicates an estimated concentration below the Method Detection Limit.

K The isomer is unknown.

N Analytical standards were not analyzed for this compound.

ND Not detected.

W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. 6281-13-02

EPA METHOD 8270
TARGET ANALYTE RESULTS

Client Sample ID 8924D012 Client HARDING LAWSON - NOVATO
File ID 362811302 Date Extracted 06/25/89 Date of Analysis 07/10/89

TMA/Norcal Set ID 6281-13

Cas. No	COMPOUND	RESULTS (ug/Kg)	DETECTION LIMITS (ug/Kg)
62-75-9	N-nitrosodimethylamine	ND	1.0
108-95-2	phenol	ND	1.0
111-44-4	bis(2-chloroethyl)ether	ND	1.0
95-57-8	2-chlorophenol	ND	1.0
541-73-1	1,3-dichlorobenzene	ND	1.0
106-46-7	1,4-dichlorobenzene	ND	1.0
95-50-1	1,2-dichlorobenzene	ND	1.0
39638-329	bis(2-chloroisopropyl)ether	ND	1.0
621-64-7	N-nitrosodi-n-propylamine	ND	1.0
67-72-1	hexachloroethane	ND	1.0
98-95-3	nitrobenzene	ND	1.0
78-59-1	isophorone	ND	1.0
88-75-5	2-nitrophenol	ND	1.0
105-67-9	2,4-dimethylphenol	ND	1.0
11-91-1	bis(2-chloroethoxy)methane	ND	1.0
120-83-2	2,4-dichlorophenol	ND	1.0
120-82-1	1,2,4-trichlorobenzene	ND	1.0
91-20-3	naphthalene	ND	1.0
87-68-3	hexachlorobutadiene	ND	1.0
59-50-7	4-chloro-3-methylphenol	ND	1.0
77-47-4	hexachlorocyclopentadiene	ND	1.0
88-06-2	2,4,6-trichlorophenol	ND	1.0
91-58-7	2-chloronaphthalene	ND	1.0
131-11-3	dimethyl phthalate	ND	1.0
606-20-2	2,6-dinitrotoluene	ND	1.0
208-96-8	acenaphthylene	ND	1.0
83-32-9	acenaphthene	ND	1.0
51-28-5	2,4-dinitrophenol	ND	1.0
100-02-7	4-nitrophenol	ND	1.0
121-14-2	2,4-dinitrotoluene	ND	1.0
84-66-2	diethyl phthalate	ND	1.0
7005-73-3	4-chlorophenyl-phenylether	ND	1.0
86-73-7	fluorene	ND	1.0
534-52-1	2-methyl-4,6-dinitrophenol	ND	1.0
86-30-6	N-nitrosodiphenylamine	ND	1.0
101-55-3	4-bromophenyl-phenylether	ND	1.0
118-74-1	hexachlorobenzene	ND	1.0
87-86-5	pentachlorophenol	ND	1.0
85-01-8	phenanthrene	ND	1.0
120-12-7	anthracene	ND	1.0

ANALYTICAL REPORT FOR SAMPLE No. 6281-13-02

EPA METHOD 8270

TARGET ANALYTE RESULTS

Client Sample ID 8924D012 Client HARDING LAWSON - NOVATO

Cas. No.	COMPOUND	RESULTS (ug/Kg)	DETECTION LIMITS (ug/Kg)
84-74-2	di-n-butyl phthalate	ND	1.0
206-44-0	fluoranthene	ND	1.0
129-00-0	pyrene	ND	1.0
92-87-5	benzidine	ND	1.0
85-68-7	benzyl-butylphthalate	ND	1.0
117-81-7	bis(2-ethylhexyl)phthalate	ND	1.0
56-55-3	benzo(a)anthracene	ND	1.0
218-01-9	chrysene	ND	1.0
91-94-1	3,3-dichlorobenzidine	ND	1.0
117-84-0	di-n-octylphthalate	ND	1.0
205-99-2	benzo(b)fluroanthene	ND	1.0
207-08-9	benzo(k)fluoranthene	ND	1.0
50-32-8	benzo(a)pyrene	ND	1.0
193-39-5	indeno(1,2,3-cd)pyrene	ND	1.0
53-70-3	dibenzo(a,h)anthracene	ND	1.0
191-24-2	benzo(ghi)perylene	ND	1.0

See fotenotes on page 3 of the analytical report

Analyst

Reviewer

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ANALYTICAL REPORT FOR SAMPLE No. 6281-13-02

NON-TARGET ANALYTE RESULTS
Additional Semi-Volatiles

Client Sample ID 8924D012

Cas. No	COMPOUND	Scan Number	Results UG/KG	Footnotes
	NO ADDITIONAL ANALYTES REQUESTED.			

FOOTNOTES

- B The analyte was found in the method blank.
- E The reported concentration is an estimate only. The response factor was assumed to be 1.000 relative to an internal standard.
- J Indicates an estimated concentration below the Method Detection Limit.
- K The isomer is unknown.
- N Analytical standards were not analyzed for this compound.
- ND Not detected.
- W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. 6281-13-03

EPA METHOD 8270
TARGET ANALYTE RESULTS

Client Sample ID 8924D013 Client HARDING LAWSON - NOVATO
File ID 362811303 Date Extracted 06/25/89 Date of Analysis 07/10/89

TMA/Norcal Set ID 6281-13

Cas. No	COMPOUND	RESULTS (ug/Kg)	DETECTION LIMITS (ug/Kg)
62-75-9	N-nitrosodimethylamine	ND	1.0
108-95-2	phenol	ND	1.0
111-44-4	bis(2-chloroethyl)ether	ND	1.0
95-57-8	2-chlorophenol	ND	1.0
541-73-1	1,3-dichlorobenzene	ND	1.0
106-46-7	1,4-dichlorobenzene	ND	1.0
95-50-1	1,2-dichlorobenzene	ND	1.0
39638-329	bis(2-chloroisopropyl)ether	ND	1.0
621-64-7	N-nitrosodi-n-propylamine	ND	1.0
67-72-1	hexachloroethane	ND	1.0
98-95-3	nitrobenzene	ND	1.0
78-59-1	isophorone	ND	1.0
88-75-5	2-nitrophenol	ND	1.0
105-67-9	2,4-dimethylphenol	ND	1.0
11-91-1	bis(2-chloroethoxy)methane	ND	1.0
120-83-2	2,4-dichlorophenol	ND	1.0
120-82-1	1,2,4-trichlorobenzene	ND	1.0
91-20-3	naphthalene	ND	1.0
87-68-3	hexachlorobutadiene	ND	1.0
59-50-7	4-chloro-3-methylphenol	ND	1.0
77-47-4	hexachlorocyclopentadiene	ND	1.0
88-06-2	2,4,6-trichlorophenol	ND	1.0
91-58-7	2-chloronaphthalene	ND	1.0
131-11-3	dimethyl phthalate	ND	1.0
606-20-2	2,6-dinitrotoluene	ND	1.0
208-96-8	acenaphthylene	ND	1.0
83-32-9	acenaphthene	ND	1.0
51-28-5	2,4-dinitrophenol	ND	1.0
100-02-7	4-nitrophenol	ND	1.0
121-14-2	2,4-dinitrotoluene	ND	1.0
84-66-2	diethyl phthalate	ND	1.0
7005-73-3	4-chlorophenyl-phenylether	ND	1.0
86-73-7	fluorene	ND	1.0
534-52-1	2-methyl-4,6-dinitrophenol	ND	1.0
86-30-6	N-nitrosodiphenylamine	ND	1.0
101-55-3	4-bromophenyl-phenylether	ND	1.0
118-74-1	hexachlorobenzene	ND	1.0
87-86-5	pentachlorophenol	ND	1.0
85-01-8	phenanthrene	ND	1.0
120-12-7	anthracene	ND	1.0

ANALYTICAL REPORT FOR SAMPLE No. 6281-13-03

EPA METHOD 8270

TARGET ANALYTE RESULTS

Client Sample ID 8924D013 Client HARDING LAWSON - NOVATO

Cas. No.	COMPOUND	RESULTS (ug/Kg)	DETECTION LIMITS (ug/Kg)
84-74-2	di-n-butyl phthalate	ND	1.0
206-44-0	fluoranthene	ND	1.0
129-00-0	pyrene	ND	1.0
92-87-5	benzidine	ND	1.0
85-68-7	benzyl-butylphthalate	ND	1.0
117-81-7	bis(2-ethylhexyl)phthalate	ND	1.0
56-55-3	benzo(a)anthracene	ND	1.0
218-01-9	chrysene	ND	1.0
91-94-1	3,3-dichlorobenzidine	ND	1.0
117-84-0	di-n-octylphthalate	ND	1.0
205-99-2	benzo(b)fluroanthene	ND	1.0
207-08-9	benzo(k)fluoranthene	ND	1.0
50-32-8	benzo(a)pyrene	ND	1.0
193-39-5	indeno(1,2,3-cd)pyrene	ND	1.0
53-70-3	dibenzo(a,h)anthracene	ND	1.0
191-24-2	benzo(ghi)perylene	ND	1.0

See fotenotes on page 3 of the analytical report

Ron Martino
Analyst

Debra Langlais
Reviewer

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ANALYTICAL REPORT FOR SAMPLE No. 6281-13-03

NON-TARGET ANALYTE RESULTS
Additional Semi-Volatiles

Client Sample ID 8924D013

Cas. No	COMPOUND	Scan Number	Results UG/KG	Footnotes
	NO ADDITIONAL ANALYTES REQUESTED.			

FOOTNOTES

B The analyte was found in the method blank.

E The reported concentration is an estimate only. The response factor was assumed to be 1.000 relative to an internal standard.

J Indicates an estimated concentration below the Method Detection Limit.

K The isomer is unknown.

N Analytical standards were not analyzed for this compound.

ND Not detected.

W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. 6281-13-04

EPA METHOD 8270
TARGET ANALYTE RESULTS

Client Sample ID 8924D014 Client HARDING LAWSON - NOVATO
File ID 362811304 Date Extracted 06/25/89 Date of Analysis 07/10/89

TMA/Norcal Set ID 6281-13

Cas. No	COMPOUND	RESULTS (ug/Kg)	DETECTION LIMITS (ug/Kg)
62-75-9	N-nitrosodimethylamine	ND	1.0
108-95-2	phenol	ND	1.0
111-44-4	bis(2-chloroethyl)ether	ND	1.0
95-57-8	2-chlorophenol	ND	1.0
541-73-1	1,3-dichlorobenzene	ND	1.0
106-46-7	1,4-dichlorobenzene	ND	1.0
95-50-1	1,2-dichlorobenzene	ND	1.0
39638-329	bis(2-chloroisopropyl)ether	ND	1.0
621-64-7	N-nitrosodi-n-propylamine	ND	1.0
67-72-1	hexachloroethane	ND	1.0
98-95-3	nitrobenzene	ND	1.0
78-59-1	isophorone	ND	1.0
88-75-5	2-nitrophenol	ND	1.0
105-67-9	2,4-dimethylphenol	ND	1.0
11-91-1	bis(2-chloroethoxy)methane	ND	1.0
120-83-2	2,4-dichlorophenol	ND	1.0
120-82-1	1,2,4-trichlorobenzene	ND	1.0
91-20-3	naphthalene	ND	1.0
87-68-3	hexachlorobutadiene	ND	1.0
59-50-7	4-chloro-3-methylphenol	ND	1.0
77-47-4	hexachlorocyclopentadiene	ND	1.0
88-06-2	2,4,6-trichlorophenol	ND	1.0
91-58-7	2-chloronaphthalene	ND	1.0
131-11-3	dimethyl phthalate	ND	1.0
606-20-2	2,6-dinitrotoluene	ND	1.0
208-96-8	acenaphthylene	ND	1.0
83-32-9	acenaphthene	ND	1.0
51-28-5	2,4-dinitrophenol	ND	1.0
100-02-7	4-nitrophenol	ND	1.0
121-14-2	2,4-dinitrotoluene	ND	1.0
84-66-2	diethyl phthalate	ND	1.0
7005-73-3	4-chlorophenyl-phenylether	ND	1.0
86-73-7	fluorene	ND	1.0
534-52-1	2-methyl-4,6-dinitrophenol	ND	1.0
86-30-6	N-nitrosodiphenylamine	ND	1.0
101-55-3	4-bromophenyl-phenylether	ND	1.0
118-74-1	hexachlorobenzene	ND	1.0
87-86-5	pentachlorophenol	ND	1.0
85-01-8	phenanthrene	ND	1.0
120-12-7	anthracene	ND	1.0

ANALYTICAL REPORT FOR SAMPLE No. 6281-13-04

EPA METHOD 8270

TARGET ANALYTE RESULTS

Client Sample ID 8924D014 Client HARDING LAWSON - NOVATO

Cas. No.	COMPOUND	RESULTS (ug/Kg)	DETECTION LIMITS (ug/Kg)
84-74-2	di-n-butyl phthalate	ND	1.0
206-44-0	fluoranthene	ND	1.0
129-00-0	pyrene	ND	1.0
92-87-5	benzidine	ND	1.0
85-68-7	benzyl-butylphthalate	ND	1.0
117-81-7	bis(2-ethylhexyl)phthalate	ND	1.0
56-55-3	benzo(a)anthracene	ND	1.0
218-01-9	chrysene	ND	1.0
91-94-1	3,3-dichlorobenzidine	ND	1.0
117-84-0	di-n-octylphthalate	ND	1.0
205-99-2	benzo(b)fluroanthene	ND	1.0
207-08-9	benzo(k)fluoranthene	ND	1.0
50-32-8	benzo(a)pyrene	ND	1.0
193-39-5	indeno(1,2,3-cd)pyrene	ND	1.0
53-70-3	dibenzo(a,h)anthracene	ND	1.0
191-24-2	benzo(ghi)perylene	ND	1.0

See fotenotes on page 3 of the analytical report

Ron Martinez
Analyst

Debra Langlais
Reviewer

Data Release Authorized By

ANALYTICAL REPORT FOR SAMPLE No. 6281-13-04

NON-TARGET ANALYTE RESULTS
Additional Semi-Volatiles

Client Sample ID 8924D014

Cas. No	COMPOUND	Scan Number	Results UG/KG	Footnotes
	NO ADDITIONAL ANALYTES REQUESTED.			

FOOTNOTES

B The analyte was found in the method blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.000 relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
ND Not detected.
W The identification is tentative or closely related to the compound.

EPA METHOD 8080
TARGET ANALYTE RESULTS

Client: HARDING LAWSON -NOVATO
Client Sample ID: 8924D011
TMA/Norcal SAMPLE ID: 6281-13-1
Extract.Method: SOXHLET

Date Received: 6/16/89
Date Extracted: 6/25/89
Date Analyzed: 7/11/89

CAS No	COMPOUND	SOIL RESULTS (ug/Kg)	SOIL DETECTION LIMITS (ug/Kg)
319-84-6	alpha-BHC	< 8.0	8.0
319-85-7	beta-BHC	< 8.0	8.0
319-86-8	delta-BHC	< 8.0	8.0
58-89-9	gamma-BHC(Lindane)	< 8.0	8.0
76-44-8	Heptachlor	< 8.0	8.0
309-00-2	Aldrin	< 8.0	8.0
1024-57-3	Heptachlor Epoxide	< 8.0	8.0
959-98-8	Endosulfan I	< 8.0	8.0
60-57-1	Dieldrin	< 16.0	16.0
72-55-9	4,4'-DDE	< 16.0	16.0
72-20-8	Endrin	< 16.0	16.0
33213-65-9	Endosulfan II	< 16.0	16.0
72-54-8	4,4'-DDD	< 16.0	16.0
1031-07-8	Endosulfan sulfate	< 16.0	16.0
50-29-3	4,4'-DDT	< 16.0	16.0
72-43-5	Methoxychlor	< 80.0	80.0
53494-70-5	Endrin ketone	< 16.0	16.0
5103-71-9	alpha-Chlordane	< 80.0	80.0
5103-74-2	gamma-Chlordane	< 80.0	80.0
57-74-9	Technical Chlordane	< 80.0	80.0
8001-35-2	Toxaphene	< 160.0	160.0
12674-11-2	Aroclor-1016	< 80.0	80.0
11104-28-2	Aroclor-1221	< 80.0	80.0
11141-16-5	Aroclor-1232	< 80.0	80.0
53469-21-9	Aroclor-1242	< 80.0	80.0
12672-29-6	Aroclor-1248	< 80.0	80.0
11097-69-1	Aroclor-1254	< 160.0	160.0
11096-82-5	Aroclor-1260	< 160.0	160.0

Analyst

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EPA METHOD 8080
TARGET ANALYTE RESULTS

Client: HARDING LAWSON -NOVATO
Client Sample ID: 8924D012
TMA/Norcal SAMPLE ID: 6281-13-2
Extract Method: SOXHLET

Date Received: 6/16/89
Date Extracted: 6/25/89
Date Analyzed: 7/11/89

CAS No	COMPOUND	SOIL RESULTS (ug/Kg)	SOIL DETECTION LIMITS (ug/Kg)
319-84-6	alpha-BHC	< 8.0	8.0
319-85-7	beta-BHC	< 8.0	8.0
319-86-8	delta-BHC	< 8.0	8.0
58-89-9	gamma-BHC(Lindane)	< 8.0	8.0
76-44-8	Heptachlor	< 8.0	8.0
309-00-2	Aldrin	< 8.0	8.0
1024-57-3	Heptachlor Epoxide	< 8.0	8.0
959-98-8	Endosulfan I	< 8.0	8.0
60-57-1	Dieldrin	< 16.0	16.0
72-55-9	4,4'-DDE	< 16.0	16.0
72-20-8	Endrin	< 16.0	16.0
33213-65-9	Endosulfan II	< 16.0	16.0
72-54-8	4,4'-DDD	< 16.0	16.0
1031-07-8	Endosulfan sulfate	< 16.0	16.0
50-29-3	4,4'-DDT	< 16.0	16.0
72-43-5	Methoxychlor	< 80.0	80.0
53494-70-5	Endrin ketone	< 16.0	16.0
5103-71-9	alpha-Chlordane	< 80.0	80.0
5103-74-2	gamma-Chlordane	< 80.0	80.0
57-74-9	Technical Chlordane	< 80.0	80.0
8001-35-2	Toxaphene	< 160.0	160.0
12674-11-2	Aroclor-1016	< 80.0	80.0
11104-28-2	Aroclor-1221	< 80.0	80.0
11141-16-5	Aroclor-1232	< 80.0	80.0
53469-21-9	Aroclor-1242	< 80.0	80.0
12672-29-6	Aroclor-1248	< 80.0	80.0
11097-69-1	Aroclor-1254	< 160.0	160.0
11096-82-5	Aroclor-1260	< 160.0	160.0

Analyst

Data Release Authorized By

EPA METHOD 8080
TARGET ANALYTE RESULTS

Client: HARDING LAWSON -NOVATO
Client Sample ID: 8924D013
TMA/Norcal SAMPLE ID: 6281-13-3
Extract.Method: SOXHLET

Date Received: 6/16/89
Date Extracted: 6/25/89
Date Analyzed: 7/11/89

CAS No	COMPOUND	SOIL RESULTS (ug/Kg)	SOIL DETECTION LIMITS (ug/Kg)
319-84-6	alpha-BHC	< 8.0	8.0
319-85-7	beta-BHC	< 8.0	8.0
319-86-8	delta-BHC	< 8.0	8.0
58-89-9	gamma-BHC(Lindane)	< 8.0	8.0
76-44-8	Heptachlor	< 8.0	8.0
309-00-2	Aldrin	< 8.0	8.0
1024-57-3	Heptachlor Epoxide	< 8.0	8.0
959-98-8	Endosulfan I	< 8.0	8.0
60-57-1	Dieldrin	< 16.0	16.0
72-55-9	4,4'-DDE	< 16.0	16.0
72-20-8	Endrin	< 16.0	16.0
33213-65-9	Endosulfan II	< 16.0	16.0
72-54-8	4,4'-DDD	< 16.0	16.0
1031-07-8	Endosulfan sulfate	< 16.0	16.0
50-29-3	4,4'-DDT	< 16.0	16.0
72-43-5	Methoxychlor	< 80.0	80.0
53494-70-5	Endrin ketone	< 16.0	16.0
5103-71-9	alpha-Chlordane	< 80.0	80.0
5103-74-2	gamma-Chlordane	< 80.0	80.0
57-74-9	Technical Chlordane	< 80.0	80.0
8001-35-2	Toxaphene	< 160.0	160.0
12674-11-2	Aroclor-1016	< 80.0	80.0
11104-28-2	Aroclor-1221	< 80.0	80.0
11141-16-5	Aroclor-1232	< 80.0	80.0
53469-21-9	Aroclor-1242	< 80.0	80.0
12672-29-6	Aroclor-1248	< 80.0	80.0
11097-69-1	Aroclor-1254	< 160.0	160.0
11096-82-5	Aroclor-1260	< 160.0	160.0

Analyst

Data Release Authorized By

EPA METHOD 8080
TARGET ANALYTE RESULTS

Client: HARDING LAWSON -NOVATO
Client Sample ID: 8924D014
TMA/Norcal SAMPLE ID: 6281-13-4
Extract.Method: SOXHLET

Date Received: 6/16/89
Date Extracted: 6/25/89
Date Analyzed: 7/11/89

CAS No	COMPOUND	SOIL RESULTS (ug/Kg)	SOIL DETECTION LIMITS (ug/Kg)
319-84-6	alpha-BHC	< 8.0	8.0
319-85-7	beta-BHC	< 8.0	8.0
319-86-8	delta-BHC	< 8.0	8.0
58-89-9	gamma-BHC(Lindane)	< 8.0	8.0
76-44-8	Heptachlor	< 8.0	8.0
309-00-2	Aldrin	< 8.0	8.0
1024-57-3	Heptachlor Epoxide	< 8.0	8.0
959-98-8	Endosulfan I	< 8.0	8.0
60-57-1	Dieldrin	< 16.0	16.0
72-55-9	4,4'-DDE	< 16.0	16.0
72-20-8	Endrin	< 16.0	16.0
33213-65-9	Endosulfan II	< 16.0	16.0
72-54-8	4,4'-DDD	< 16.0	16.0
1031-07-8	Endosulfan sulfate	< 16.0	16.0
50-29-3	4,4'-DDT	< 16.0	16.0
72-43-5	Methoxychlor	< 80.0	80.0
53494-70-5	Endrin ketone	< 16.0	16.0
5103-71-9	alpha-Chlordane	< 80.0	80.0
5103-74-2	gamma-Chlordane	< 80.0	80.0
57-74-9	Technical Chlordane	< 80.0	80.0
8001-35-2	Toxaphene	< 160.0	160.0
12674-11-2	Aroclor-1016	< 80.0	80.0
11104-28-2	Aroclor-1221	< 80.0	80.0
11141-16-5	Aroclor-1232	< 80.0	80.0
53469-21-9	Aroclor-1242	< 80.0	80.0
12672-29-6	Aroclor-1248	< 80.0	80.0
11097-69-1	Aroclor-1254	< 160.0	160.0
11096-82-5	Aroclor-1260	< 160.0	160.0

Analyst

Data Release Authorized By

EPA METHOD 8020
TARGET ANALYTE RESULTS

Client: HARDING LAWSON -NOVATO
Client Sample ID: 8924D011
TMA/Norcal SAMPLE ID: 6281-13-1

Date Received: 6/16/89
Date Analyzed: 7/14/89

CAS. No	COMPOUND	RESULTS (ug/kg)	DETECTION LIMITS (ug/kg)
71-43-2	benzene	< 10	10
108-88-3	toluene	62	10
100-41-4	ethylbenzene	< 10	10
108-38-3	xylenes	< 10	10

Dyson Smith
Analyst

Data Release Authorized By

EPA METHOD 8020
TARGET ANALYTE RESULTS

Client: HARDING LAWSON -NOVATO
Client Sample ID: 8924D012
TMA/Norcal SAMPLE ID: 6281-13-2

Date Received: 6/16/89
Date Analyzed: 7/14/89

CAS. No	COMPOUND	RESULTS (ug/kg)	DETECTION LIMITS (ug/kg)
71-43-2	benzene	< 10	10
108-88-3	toluene	45	10
100-41-4	ethylbenzene	< 10	10
108-38-3	xylenes	< 10	10

Vivian Smith
Analyst

Data Release Authorized By

EPA METHOD 8020
TARGET ANALYTE RESULTS

Client: HARDING LAWSON -NOVATO
Client Sample ID: 8924D013
TMA/Norcal SAMPLE ID: 6281-13-3

Date Received: 6/16/89
Date Analyzed: 7/14/89

CAS. No	COMPOUND	RESULTS (ug/kg)	DETECTION LIMITS (ug/kg)
71-43-2	benzene	< 10	10
108-88-3	toluene	41	10
100-41-4	ethylbenzene	< 10	10
108-38-3	xylenes	< 10	10

Dixon Smith
Analyst

Data Release Authorized By

EPA METHOD 8020
TARGET ANALYTE RESULTS

Client: HARDING LAWSON -NOVATO
Client Sample ID: 8924D014
TMA/Norcal SAMPLE ID: 6281-13-4

Date Received: 6/16/89
Date Analyzed: 7/14/89

CAS. No	COMPOUND	RESULTS (ug/kg)	DETECTION LIMITS (ug/kg)
71-43-2	benzene	< 10	10
108-88-3	toluene	40	10
100-41-4	ethylbenzene	< 10	10
108-38-3	xylenes	< 10	10

Orion Smith
Analyst

Carl Jones
Data Release Authorized By

Analysis Results Report
Total Petroleum Hydrocarbons
Soil Matrix

Client: HARDING LAWSON -NOVATO
Sample Delivery Group: 13
Analysis/Method: PURGE AND TRAP

Date Received: 6/16/89
Date Analyzed: 7/14/89
Date Report: 7/17/89

TMA Sample ID	Client ID	Gasoline (UG/G)	Detection Limits (UG/G)
6281-13-1	8924D011	< 5.85	5.85
6281-13-2	8924D012	< 5.85	5.85
6281-13-3	8924D013	< 5.85	5.85
6281-13-4	8924D014	< 5.85	5.85

Dion Smith
Analyst

Data Release Authorized By

EPA METHOD 8020
TARGET ANALYTE RESULTS

Client: HARDING LAWSON -NOVATO
Client Sample ID: BLANK
TMA/Norcal SAMPLE ID: BLANK

Date Received: NA
Date Analyzed: 7/14/89

CAS. No	COMPOUND	RESULTS (ug/kg)	DETECTION LIMITS (ug/kg)
71-43-2	benzene	< 10	10
108-88-3	toluene	22	10
100-41-4	ethylbenzene	< 10	10
108-38-3	xylenes	< 10	10

Olga Smith
Analyst

Data Release Authorized By

[redacted]ding Lawson Associates
[redacted] Redwood Blvd.
P.O. Box 578
Novato, CA 94948
(415) 892-0821

HUNTERS POINT ANNEX
CHAIN OF CUSTODY FORM

Non-CLP

Samplers: Dave O'Rourke

Job Number: 02176, 228.02

Name/Location: HUNTERS POINT

Project Manager: LISA TEAGUE

Recorder: _____ (Signature Required)

SOURCE CODE	MATRIX: Water	Sediment	Soil	Oil	#CONTAINERS & PRESERV.: Unpres.	H_2SO_4	HNO_3	SAMPLE NUMBER OR LAB NUMBER: Yr	Wk	Seq	DATE: Yr	Mo	Dy	Time	STATION DESCRIPTION/ NOTES	ANALYSIS REQUESTED: VOC 8040	SOC 8070	Pest/PCBs 8080	Metals incl Cr+6	Cyanide	[redacted]	BETX	Oil & Grease (9070 9071)	TPH (Gasoline & Diesel)	pH	Anions (3000)	TDS	8010	8020	Asbestos
50			X		1			89	24	D011	89	06	15	1745		X	X	X	X	X			X	X						
50			X		1			89	24	D012	↓	↓	↓	1800		X	X	X	X	X			X	X						
50			X		1			89	24	D013	↓	↓	↓	1815		X	X	X	X	X			X	X						
50			X		1			89	24	D014	↓	↓	↓	1830		X	X	X	X	X			X	X						
23	X				2			89	24	D010	↓	↓	↓	1700		X														

LAB NUMBER: Yr	Wk	Seq	DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
						24 TAT

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature) Kevin Moore	DATE/TIME 6/16/89 10:26

DISPATCHED BY: (Signature)	DATE/TIME	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
Dave O'Rourke	6/16/89 1026	Jane B Anderson	06/16/89 1300

METHOD OF SHIPMENT

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

6281-13

6533

Harding Lawson & Associates
TMA/Norcal Lab No.: 6281-15 (old set 6281-13)

August 8, 1989

ANALYSIS REPORT
STLC

TMA/Norcal	Customer ID	Lead mg/L	Nickel mg/L	STLC Limit
6281-15-1	8924D011	5.41	--	5.0
6281-15-2	8924D014	--	4.13	20.0

Detection Limits: Lead = 0.05 mg/L
Nickel = 4.13 mg/L

TMA Inc. REPORT Work Order # 89-0[illegible]017

Results by Sample

ceived: 08/02/89

MPLE ID 6231-14-1 (HLA 8931EB01) FRACTION 01A TEST CODE VOA NAME Volatile Organics by GC/MS

Date & Time Collected not specified Category

VOLATILE ORGANIC RESULTS

COMPOUND	RESULT	DET LIMIT
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	10
Acetone	ND	40
Acrolein	ND	20
Acrylonitrile	ND	5
Carbon disulfide	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
1,2-Dichloroethene	ND	5
Chloroform	ND	5
1,2-Dichloroethane	ND	5
Methylethyl ketone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5

COMPOUND	RESULT	DET LIMIT
1,1,2,2-Tetrachloroethane	ND	5
1,2-Dichloropropane	ND	5
trans-1,3-Dichloropropene	ND	5
Trichloroethene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
cis-1,3-Dichloropropene	ND	5
2-Chloroethyl Vinyl Ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-Pentanone	ND	10
Tetrachloroethene	ND	5
Toluene	ND	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Xylenes (Total)	ND	5

NOTE: All results reported in ug/L unless otherwise specified
ND = Not detected at the specified limits

SURROGATE COMPOUNDS	% RECOVERY
d8-Toluene	98
Bromofluorobenzene	100
1,2-Dichloroethane-d4	85

ANALYST WA
DATE INJECTED 08/04/89
DILUTION FACTOR 1.00

Received: 08/02/89

TMA Inc. REPORT
Results by Sample

Work Order # 89-08-017
Continued From Above

SAMPLE ID 6281-14-1 FRACTION 01A TEST CODE VOA L NAME Volatile Organics by GC/MS
Date & Time Collected not specified Category

TENTATIVELY IDENTIFIED VOLATILE COMPOUNDS

COMPOUND	APPR. CONC. ug/L
None Detected	

Received: 08/02/89

TMA Inc. REPORT Work Order # 89-08-017

Results by Sample

SAMPLE ID 6281-14-2 FRACTION 02A TEST CODE VOA S NAME Volatile Organics by GC/MS

CLIENT ID: 8931D11A Date & Time Collected not specified Category

VOLATILE ORGANIC RESULTS

COMPOUND	RESULT	DET LIMIT	COMPOUND	RESULT	DET LIMIT
Chloromethane	ND	10	1,1,2,2-Tetrachloroethane	ND	5
Bromomethane	ND	10	1,2-Dichloropropane	ND	5
Vinyl chloride	ND	10	trans-1,3-Dichloropropene	ND	5
Chloroethane	ND	10	Trichloroethene	ND	5
Methylene chloride	ND	10	Dibromochloromethane	ND	5
Acetone	ND	40	1,1,2-Trichloroethane	ND	5
Acrolein	ND	20	Benzene	ND	5
Acrylonitrile	ND	5	cis-1,3-Dichloropropene	ND	5
Carbon disulfide	ND	5	2-Chloroethyl Vinyl Ether	ND	10
1,1-Dichloroethene	ND	5	Bromoform	ND	5
1,1-Dichloroethane	ND	5	2-Hexanone	ND	10
1,2-Dichloroethene	ND	5	4-Methyl-2-Pentanone	ND	10
Chloroform	ND	5	Tetrachloroethene	ND	5
1,2-Dichloroethane	ND	5	Toluene	15	5
Methylethyl ketone	ND	10	Chlorobenzene	ND	5
1,1,1-Trichloroethane	ND	5	Ethyl benzene	ND	5
Carbon tetrachloride	ND	5	Styrene	ND	5
Vinyl acetate	ND	10	Xylenes (Total)	ND	5
Bromodichloromethane	ND	5			

NOTE: All results reported in ug/Kg unless otherwise specified
ND = Not detected at the specified limits

SURROGATE COMPOUNDS	% RECOVERY
dB-Toluene	106
Bromofluorobenzene	90
1,2-Dichloroethane-d4	86

ANALYST WA
DATE INJECTED 08/04/89
DILUTION FACTOR 1.00

Received: 08/02/89

TMA Inc. REPORT
Results by Sample

Work Order # 89-08-017
Continued From Above

SAMPLE ID 6281-14-2

FRACTION 02A TEST CODE VOA S NAME Volatile Organics by GC/MS
Date & Time Collected not specified Category

TENTATIVELY IDENTIFIED VOLATILE COMPOUNDS

COMPOUND	APPR. CONC. ug/Kg
cis-1,3-dimethyl-cyclohexane	8
4,5-dimethyl-octane	8

Received: 08/02/89

TMA Inc. REPORT

Results by Sample

Work Order # 89-08-017

SAMPLE ID 6281-14-3

CLIENT I.D. 8931D12A

FRACTION 03A TEST CODE VOA S NAME Volatile Organics by GC/MS

Date & Time Collected not specified Category

VOLATILE ORGANIC RESULTS

COMPOUND	RESULT	DET LIMIT	COMPOUND	RESULT	DET LIMIT
Chloromethane	ND	10	1,1,2,2-Tetrachloroethane	ND	5
Bromomethane	ND	10	1,2-Dichloropropane	ND	5
Vinyl chloride	ND	10	trans-1,3-Dichloropropene	ND	5
Chloroethane	ND	10	Trichloroethene	ND	5
Methylene chloride	ND	10	Dibrompchloromethane	ND	5
Acetone	ND	40	1,1,2-Trichloroethane	ND	5
Acrolein	ND	20	Benzene	ND	5
Acrylonitrile	ND	5	cis-1,3-Dichloropropene	ND	5
Carbon disulfide	ND	5	2-Chloroethyl Vinyl Ether	ND	10
1,1-Dichloroethene	ND	5	Bromoform	ND	5
1,1-Dichloroethane	ND	5	2-Hexanone	ND	10
1,2-Dichloroethene	ND	5	4-Methyl-2-Pentanone	110	10
Chloroform	ND	5	Tetrachloroethene	ND	5
1,2-Dichloroethane	ND	5	Toluene	50	5
Methylethyl ketone	ND	10	Chlorobenzene	ND	5
1,1,1-Trichloroethane	ND	5	Ethyl benzene	35	5
Carbon tetrachloride	ND	5	Styrene	ND	5
Vinyl acetate	ND	10	Xylenes (Total)	170	5
Bromodichloromethane	ND	5			

NOTE: All results reported in ug/Kg unless otherwise specified
ND = Not detected at the specified limits

SURROGATE COMPOUNDS	% RECOVERY
d8-Toluene	120
Bromofluorobenzene	84
1,2-Dichloroethane-d4	108

ANALYST WA
DATE INJECTED 08/04/89
DILUTION FACTOR 1.00

Received: 08/02/89

TMA Inc. REPORT
Results by Sample

Work Order # 89-08-017
Continued From Above

SAMPLE ID 6281-14-3

FRACTION 03A TEST CODE VOA S NAME Volatile Organics by GC/MS
Date & Time Collected not specified Category

TENTATIVELY IDENTIFIED VOLATILE COMPOUNDS

COMPOUND	APPR. CONC. ug/Kg
2-ethyl-1,3-dimethyl cyclohexane	15

Received: 08/02/89

TMA Inc. REPORT

Results by Sample

Work Order # 89-08-017

SAMPLE ID 6281-14-4

CLIENT I.D. 8931D13A

FRACTION 04A TEST CODE VOA S NAME Volatile Organics by GC/MS

Date & Time Collected not specified Category

VOLATILE ORGANIC RESULTS

COMPOUND	RESULT	DET LIMIT	COMPOUND	RESULT	DET LIMIT
Chloromethane	ND	10	1,1,2,2-Tetrachloroethane	ND	5
Bromomethane	ND	10	1,2-Dichloropropane	ND	5
Vinyl chloride	ND	10	trans-1,3-Dichloropropene	ND	5
Chloroethane	ND	10	Trichloroethene	ND	5
Methylene chloride	ND	10	Dibromochloromethane	ND	5
Acetone	ND	40	1,1,2-Trichloroethane	ND	5
Acrolein	ND	20	Benzene	ND	5
Acrylonitrile	ND	5	cis-1,3-Dichloropropene	ND	5
Carbon disulfide	ND	5	2-Chloroethyl Vinyl Ether	ND	10
1,1-Dichloroethene	ND	5	Bromoform	ND	5
1,1-Dichloroethane	ND	5	2-Hexanone	ND	10
1,2-Dichloroethene	ND	5	4-Methyl-2-Pentanone	ND	10
Chloroform	ND	5	Tetrachloroethene	ND	5
1,2-Dichloroethane	ND	5	Toluene	20	5
Methylethyl ketone	ND	10	Chlorobenzene	ND	5
1,1,1-Trichloroethane	ND	5	Ethyl benzene	ND	5
Carbon tetrachloride	ND	5	Styrene	ND	5
Vinyl acetate	ND	10	Xylenes (Total)	ND	5
Bromodichloromethane	ND	5			

NOTE: All results reported in ug/Kg unless otherwise specified
ND = Not detected at the specified limits

SURROGATE COMPOUNDS	% RECOVERY
dB-Toluene	98
Bromofluorobenzene	84
1,2-Dichloroethane-d4	108

ANALYST WA
DATE INJECTED 08/04/89
DILUTION FACTOR 1.00

Received: 08/02/89

TMA Inc. REPORT
Results by Sample

Work Order # 89-08-017
Continued From Above

SAMPLE ID 6281-14-4 FRACTION 04A TEST CODE VOA S NAME Volatile Organics by GC/MS
Date & Time Collected not specified Category

TENTATIVELY IDENTIFIED VOLATILE COMPOUNDS

COMPOUND	APPR. CONC. ug/Kg
3,5,5-trimethyl-1-hexene	10

Received: 08/02/89

TMA Inc. REPORT

Results by Sample

Work Order # 89-08-017

SAMPLE ID 6281-14-5

CLIENT I.D. 8931D14A

FRACTION 05A TEST CODE VOA S NAME Volatile Organics by GC/MS

Date & Time Collected not specified Category

VOLATILE ORGANIC RESULTS

COMPOUND	RESULT	DET LIMIT	COMPOUND	RESULT	DET LIMIT
Chloromethane	ND	10	1,1,2,2-Tetrachloroethane	ND	5
Bromomethane	ND	10	1,2-Dichloropropane	ND	5
Vinyl chloride	ND	10	trans-1,3-Dichloropropene	ND	5
Chloroethane	ND	10	Trichloroethene	ND	5
Methylene chloride	ND	10	Dibromochloromethane	ND	5
Acetone	ND	40	1,1,2-Trichloroethane	ND	5
Acrolein	ND	20	Benzene	ND	5
Acrylonitrile	ND	5	cis-1,3-Dichloropropene	ND	5
Carbon disulfide	ND	5	2-Chloroethyl Vinyl Ether	ND	10
1,1-Dichloroethene	ND	5	Bromoform	ND	5
1,1-Dichloroethane	ND	5	2-Hexanone	ND	10
1,2-Dichloroethene	ND	5	4-Methyl-2-Pentanone	ND	10
Chloroform	ND	5	Tetrachloroethene	ND	5
1,2-Dichloroethane	ND	5	Toluene	25	5
Methylethyl ketone	ND	10	Chlorobenzene	ND	5
1,1,1-Trichloroethane	ND	5	Ethyl benzene	ND	5
Carbon tetrachloride	ND	5	Styrene	ND	5
Vinyl acetate	ND	10	Xylenes (Total)	ND	5
Bromodichloromethane	ND	5			

NOTE: All results reported in ug/Kg unless otherwise specified
ND = Not detected at the specified limits

SURROGATE COMPOUNDS	% RECOVERY
d8-Toluene	114
Bromofluorobenzene	80
1,2-Dichloroethane-d4	110

ANALYST WA
DATE INJECTED 08/04/89
DILUTION FACTOR 1.00

N00217.001041
HUNTERS POINT
SSIC NO. 5090.3

ENCLOSURE (2) – SUMMARY OF SHALLOW SOIL SAMPLING AT DSPA/HPA

RESULTS BY SAMPLE - PAGE 11 OF 12

PLACE NON-HAZARDOUS WASTE AT DERIVED SOILS PLACEMENT AREA

THE ABOVE IDENTIFIED PAGE IS NOT AVAILABLE.

EXTENSIVE RESEARCH WAS PERFORMED BY SOUTHWEST DIVISION TO LOCATE THIS PAGE. THIS PAGE HAS BEEN INSERTED AS A PLACEHOLDER AND WILL BE REPLACED SHOULD THE MISSING ITEM BE LOCATED.

QUESTIONS MAY BE DIRECTED TO:

DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132

TELEPHONE: (619) 532-3676

Received: 08/02/89 08/07/89 16:11:35

TMA/NORCAL

Methylene Chloride and Carbon Disulfide were detected in the method blank at levels higher than those found in the samples in this set. Consequently, neither of the two solvents is reported for these samples.

Harding Lawson Associates
7655 Redwood Blvd.
P.O. Box 578
Novato, CA 94948
(415) 892-0821

HUNTERS POINT ANNEX
CHAIN OF CUSTODY FORM

Rush - 1wk for Reg. price As per D. Steurmer

Non-CLP

Job Number: 02176,228.02
Name/Location: Hunters Point
Project Manager: Kit Richard

Samplers: RICK ERDMAN
TOM DRINKARD

Recorder: Rick Erdman (Signature Required)

SOURCE CODE	MATRIX: Water	MATRIX: Sediment	MATRIX: Soil	MATRIX: Oil	#CONTAINERS & PRESERV.: Unpres.	#CONTAINERS & PRESERV.: H_2SO_4	#CONTAINERS & PRESERV.: HNO_3	SAMPLE NUMBER OR LAB NUMBER: Yr	Wk	Seq	DATE: Yr	Mo	Dy	Time	STATION DESCRIPTION/ NOTES	CLP VOC	CLP SOC	CLP Pest/PCBs	CLP Metals	CLP Cyanide	EPA 624	HLA Reporting	BETX	Oil & Grease (9070 9071)	TPH (Gasoline & Diesel)	pH	Anions (3000)	TDS	8010	8020	Asbestos	8240 - VOLATILES
10	X				2			89	31	EB01	89	08	01	0915							X											
48			X		1					D11A				0935																		X
										D12A				0945																		X
										D13A				1010																		X
										D14A				1025																		X

ANALYSIS REQUESTED

LAB NUMBER: Yr	Wk	Seq	DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME

DISPATCHED BY: (Signature)	DATE/TIME	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
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Harding Lawson Associates

1811JC JAC 11/22

November 16, 1989

02176,228.02

Western Division
Naval Facilities Engineering Command
900 Commodore Drive, Bldg. 101
San Bruno, California 94066-0720

Attention: Ms. Louise Lew, Code 1811 LL

Ladies and Gentlemen:

Status of Nonhazardous Waste
Remedial Investigation/Feasibility Studies
Hunters Point Annex

This letter summarizes the status of waste materials derived from the Navy's Remedial Investigation/Feasibility Studies (RI/FS) at Hunters Point Annex (HPA) and presents conclusions regarding methods of disposal of these wastes.

The wastes consist of nonhazardous soil cuttings generated during drilling of pilot borings for the reconnaissance phase of the RI/FS and the primary phase of the IR at the Power Plant and the Battery and Electroplating Shop, spoils from the sump and Baker Tanks at the decontamination facility, and geotechnical cuttings. The wastes are stored in forty-five 55 gallon drums and two roll-off bins located at Building 810 on the Hunters Point facility.

A summary of the sample numbers and the associated drum or bin number, source of waste, and laboratory analyses performed are listed on Table 1. The samples analyzed for characterization of soil in drums 51, 81, 82, and 87 were borehole soil samples analyzed as part of the remedial investigation process at HPA. The samples were analyzed in accordance with Contract Laboratory Program (CLP) procedures. Samples from drums 76 through 80, 88 through 94, 96 through 104, and 112 through 131; and bins 1181 and 1217 were collected from the containerized wastes. Summaries of analytical results for each of the samples are presented in Tables 2 through 5.

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Environmental Services

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Enclosure (3)

Laboratory analytical reports for samples 7680, 9294, 8891, 021208, AW01, AW02, AW03 and the Baker Tank sludge are included with this transmittal. Laboratory analytical reports for samples A080-A086 were submitted to the Navy on May 22, 1989. Laboratory analytical reports for samples A121-A126 and A220-A222 were submitted to the Navy on June 21, 1989.

ANALYTICAL RESULTS

Results of the chemical analyses performed on the samples are summarized on Tables 2 through 5. The samples were analyzed for both organic and inorganic constituents, chosen on the basis of site use and/or available chemical data. Analyses were performed for cyanide and sulfide on selected samples, although none were detected. Asbestos (chrysotile) was detected in two samples 8901A125 and 8906A221 but at less than the 1% quantitation limit. Analysis for Title 22 metals did not detect any metals at concentrations exceeding the Total Threshold Limit Concentration (TTLC), or ten times the Soluble Threshold Limit Concentration (STLC). PCBs, pesticides, total petroleum hydrocarbons, and oil and grease were not detected in the samples analyzed for these parameters.

Results for analyses of sample numbers 7680, 8891, 9294, and the Baker Tank sludge by EPA Method 8010 are not included on Table 3. All analytes identified by this method were not detectable in the soil samples.

A composite soil sample from bins 1181 and 1217 was also subjected to fish bioassays (toxicity tests) and no fish mortality was observed (see attached letter from Aqua Terra Technologies dated March 14, 1989).

CONCLUSIONS AND RECOMMENDATIONS

Based on review of the data by our subcontractor, Universal Engineering Incorporated (UEI), the soils in the drums and bins appear to be amenable to on-site disposal. We recommend that this letter and the attached chemical analyses be forwarded to the Department of Health Services (DHS) for their review and concurrence regarding proper disposal of the soils. If DHS concurs with on-site disposal, please contact us and we will arrange for UEI to empty the drums and bins the proposed Permanent Waste Disposal Area (PWDA).

There has been 48 cubic yards of nonhazardous soil derived from pilot borings temporarily placed on plastic sheeting behind Building 810. The origin and analytical data for this soil are documented in an HLA letter to the Navy dated March 2, 1989.

Temporary disposal of these wastes is documented in letters to the Navy dated March 16 and April 15, 1989. We recommend that this soil be transferred to the PWDA at the same time these RI generated wastes are placed at the area.

Very truly yours,

HARDING LAWSON ASSOCIATES

Mary E. Lucas
Project Manager

Jeff Fenton
Staff Geologist

MEL/JF/jmg/ml069#3

cc: Mr. Don Oliva, Universal Engineering Incorporated

Table 1. Summary of Drilling Waste Analyses
Reconnaissance Activities - Hunters Point Annex

Sample #	Site Where Generated	Drum #	CLP VOC	CLP SOC	CLP PEST/PCBs	CLP Metals	Cyanide	VOCs EPA 8240	SOCs EPA 8270
A080	IR10	51	X	X	X	X			
A081	IR10	51	X	X	X	X			
A082	IR10	51	X	X	X	X			
A084	IR10	51	X	X	X	X			
A085	IR10	51	X	X	X	X			
A086	IR10	51	X	X	X	X			
89147680	Decon Spoils	76,77,78, 79,80							X
A121	IR11	81	X	X	X	X			
A122	IR11	81	X	X	X	X			
A123	IR11	81	X	X	X	X			
A124	IR11	82	X	X	X	X			
A125	IR11	82	X	X	X	X			
A126	IR11	82	X	X	X	X			
A220	IR11	87	X	X	X	X			
A221	IR11	87	X	X	X	X			
A222	IR11	87	X	X	X	X			
8891	IR08	88,89,90,91							X
9294	Decon sump Spoils	92,93,94							X
021208	Bayfill Geotech. Cuttings	96,97,98,99, 100,101,102, 103,104					X		
Baker Tank Sludge	Sludge from Baker Tanks	112-131					X		
AW01	Soil Cuttings Bin	1181						X	X
AW02	Soil Cuttings Bin	1217						X	X
AW03	Soil Cuttings Bin	1181,1217							

Table 1. Summary of Drilling Waste Analyses
Reconnaissance Activities - Hunters Point Annex

Sample #	Site Where Generated	Drum #	Oil and Grease	TPH	pH	8080	8010	8020
A080	IR10	51	X	X				
A081	IR10	51	X	X				
A082	IR10	51	X	X				
A084	IR10	51	X	X				
A085	IR10	51	X	X				
A086	IR10	51	X	X				
89147680	Decon Spoils	76,77,78, 79,80				X	X	
A121	IR11	81	X	X	X			
A122	IR11	81	X	X	X			
A123	IR11	81	X	X	X			
A124	IR11	82	X	X	X			
A125	IR11	82	X	X	X			
A126	IR11	82	X	X	X			
A220	IR11	87	X	X	X			
A221	IR11	87	X	X	X			
A222	IR11	87	X	X	X			
8891	IR08	88,89,90,91				X	X	
9294	Decon sump Spoils	92,93,94				X	X	
021208	Bayfill Geotech. Cuttings	96,97,98,99, 100,101,102, 103,104			X			
Baker Tank Sludge	Sludge from Baker Tanks	112-131		X	X		X	X
AW01	Soil Cuttings Bin	1181						
AW02	Soil Cuttings Bin	1217		X				
AW03	Soil Cuttings Bin	1181,1217						

Table 1. Summary of Drilling Waste Analyses
Reconnaissance Activities - Hunters Point Annex

Sample #	Site Where Generated	Drum #	Asbestos	Bioassay	Title 22 Metals	EPA 6010 (metals)	Sulfide
A080	IR10	51	X				
A081	IR10	51	X				
A082	IR10	51	X				
A084	IR10	51	X				
A085	IR10	51	X				
A086	IR10	51	X				
89147680	Decon Spoils	76,77,78, 79,80			X		
A121	IR11	81					
A122	IR11	81	X				
A123	IR11	81	X				
A124	IR11	82	X				
A125	IR11	82	X				
A126	IR11	82	X				
A220	IR11	87	X				
A221	IR11	87	X				
A222	IR11	87	X				
8891	IR08	88,89,90,91			X		
9294	Decon sump Spoils	92,93,94			X		
021208	Bayfill Geotech. Cuttings	96,97,98,99, 100,101,102, 103,104				X	X
Baker Tank Sludge	Sludge from Baker Tanks	112-131				X	X
AW01	Soil Cuttings Bin	1181	X		X		X
AW02	Soil Cuttings Bin	1217	X		X		
AW03	Soil Cuttings Bin	1181,1217		X			

Table 2. Waste Disposal Analytical Results, Metals
Hunters Point Annex

	Drum #51					
Sample Number:	**A080**	**A081**	**A082**	**A084**	**A085**	**A086**
Units of Concentration:	**mg/kg[1]**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Analyte						
Aluminum	11,300	5,290	9,780	8,020	14,200	2,660
Antimony	ND (5.4)[2]	10.7 B	7.0 B	ND (4.7)	ND (6.2)	7.9 B
Arsenic	5.4	1.0 B	0.47 B	0.74 B	1.6 B	2.8
Barium	38.6 B[3]	30.4 B	28.8 B	26.6 B	61.0	14.0 B
Beryllium	0.49 B	0.60 B	0.62 B	0.42 B	0.95 B	0.45 B
Cadmium	ND (0.76)	0.68 B	ND (0.66)	ND (0.69)	ND (0.87)	ND (0.67)
Calcium	8,020	63,500	42,500	29,600	21,900	179,000
Chromium	43.8	33.2	56.1	51.3	99.9	19.8
Chromium, Hexav.	NA[4]	NA	NA	NA	NA	NA
Cobalt	11.2 B	7.9 B	9.7 B	8.6 B	11.6 B	4.4 B
Copper	32.4	9.1	25.6	26.1	36.7	6.7
Iron	17,100	8,710	14,600	14,200	19,200	5,210
Lead	6.7	2.4	1.4	1.6	2.9	1.7
Magnesium	7,010	3,070	6,070	5,220	9,360	3,030
Manganese	164	298	332	275	381	315
Mercury	0.13	ND (0.11)	ND (0.11)	ND (0.11)	0.15	ND (0.11)
Molybdenum	ND (9.8)	ND (8.8)	ND (8.9)	ND (8.5)	ND (11.2)	ND (8.6)
Nickel	45.5	45.8	25.1	30.2	10.9	19.5
Potassium	1,410	642	1,250	971	2,040	504
Selenium	ND (0.37)	ND (0.33)	ND (0.33)	ND (0.32)	ND (0.42)	ND (0.32)
Silver	0.37 B	0.35 B	ND (0.29)	ND (0.28)	ND (0.36)	ND (0.28)
Sodium	206	900 B	513 B	871 B	1,920	1,630
Thallium	ND (0.24)	ND (0.22)	ND (0.21)	ND (0.21)	ND (0.28)	ND (0.22)
Vanadium	28.8	25.1	40.8	40.8	52.2	14.1
Zinc	48.7	17.0	30.0	30.4	57.1	9.6
Fluoride	NA	NA	NA	NA	NA	NA
Percent Solids	NA	NA	NA	NA	NA	NA

1 mg/kg = miligrams per kilogram

2 ND indicates analyte was not detected in sample. Limit of detection, when available, is included in parentheses.

3 B indicates the reported value was obtained from a reading that was less than the contract required detection limit (CRDL) but was greater than or equal to the instrument detection limit (IDL).

4 NA indicates sample was not analyzed for this analyte

Table 2. Waste Disposal Analytical Results, Metals (continued)
Hunters Point Annex

	Drums 76-80		Drum #81	
Sample Number:	89147680	A121	A122	A123
Units of Concentration:	mg/kg[1]	mg/kg	mg/kg	mg/kg
Analyte				
Aluminum	NA[4]	8,880	10,600	2,690
Antimony	ND (30.0)[2]	ND (0.31)	ND (0.28)	ND (0.31)
Arsenic	ND (0.2)	11.8	2.6	2.4 B[3]
Barium	62	50.2	33.8 B	16.8 B
Beryllium	ND (1.0)	ND (0.47)	ND (0.43)	ND (0.48)
Cadmium	ND (2.0)	ND (0.94)	ND (0.87)	ND (0.95)
Calcium	NA	78,500	30,000	140,000
Chromium	58	40.0	58.9	14.6
Chromium, Hexav.	3	NA	NA	NA
Cobalt	8	13.2	14.0	4.6 B
Copper	27	42.3	39.6	8.7
Fluoride	22	NA	NA	NA
Iron	NA	16,700	16,900	5,310
Lead	ND (50)	4.58	4.8	2.3
Magnesium	NA	8,310	7,140	3,190
Manganese	NA	432	419	345
Mercury	ND (0.5)	0.15	ND (0.05)	ND (0.06)
Molybdenum	ND (2.0)	NA	NA	NA
Nickel	76	58.5	26.1	14.7
Percent Solids	68	NA	NA	NA
Potassium	NA	819 B[4]	1,590	375 B
Selenium	0.2	ND (0.28)	ND (0.26)	ND (0.29)
Silver	ND (3.0)	ND (1.6)	ND (1.5)	ND (1.6)
Sodium	NA	893 B	629 B	2,280
Thallium	ND (30.0)	ND (0.43)	ND (0.39)	ND (0.43)
Vanadium	29	44.2	46.9	10.6 B
Zinc	50	136	54.7	18.0
Fluoride	22	NA	NA	NA
Percent Solids	68	NA	NA	NA

1 mg/kg = miligrams per kilogram

2 ND indicates analyte was not detected in samle. Limit of detection, when available, is included in parenthesis.

3 B indicates the reported value was obtained from a reading that was less than the contract required detection limit (CRDL) but was greater than or equal to the instrument detection limit (IDL).

4 NA indicates sample was not analyuzed for this analyte.

Table 2. Waste Disposal Analytical Results, Metals (continued)
Hunters Point Annex

	Drum #82			Drum #87		
Sample Number:	**A124**	**A125**	**A126**	**A220**	**A221**	**A222**
Units of Concentration:	**mg/kg[1]**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Analyte						
Aluminum	17,800	15,900	4,830	11,500	15,600	7,780
Antimony	0.33 B	ND (0.28)[2]	ND (0.27)	ND (0.76)	ND (0.75)	ND (0.72)
Arsenic	4.6	4.0	3.2	3.5	4.6	2.7
Barium	89.6	114	55.3	218	226	37.8 B
Beryllium	ND (0.44)	ND (0.43)	ND (0.42)	0.69 B[3]	0.68 B	0.60 B
Cadmium	ND (0.88)	ND (0.87)	ND (0.88)	ND (0.89)	ND (0.88)	ND (0.85)
Calcium	28,100	21,400	4,490	41,900	30,100	33,800
Chromium	76.9	101	33.8	47.6	92.9	26.5
Chromium, Hexav.	NA[4]	NA	NA	NA	NA	NA
Cobalt	20.9	21.7	8.4 B	18.4	21.1	10.9
Copper	67.7	40.9	15.4	68.5	43.7	13.3
Iron	29,900	23,600	10,700	20,900	25,500	13,400
Lead	48.6	5.1	2.5	9.3	16.2	2.1
Magnesium	18,300	22,600	4,870	10,700	20,600	8,740
Manganese	734	684	175	1,170	987	308
Mercury	0.18	0.13	ND (0.05)	0.19	0.14	ND (0.02)
Molybdenum	NA	NA	NA	NA	NA	NA
Nickel	72.6	136	34.5	68.9	168	26.9
Potassium	1,040 B	1,180	441 B	1,240	1,080	547 B
Selenium	ND (0.27)	ND (0.26)	ND (0.25)	ND (0.42)	ND (0.42)	1.1
Silver	ND (1.5)	ND (1.5)	ND (1.4)	ND (1.5)	ND (1.5)	ND (1.4)
Sodium	422 B	846 B	181 B	1,190	1,500	421
Thallium	ND (0.40)	ND (0.39)	ND (0.38)	ND (0.29)	ND (0.29)	ND (0.28)
Vanadium	58.5	49.1	25.8	47.2	54.0	31.3
Zinc	111	51.9	24.2	67.1	103	30.2
Fluoride	NA	NA	NA	NA	NA	NA
Percent Solids	NA	NA	NA	NA	NA	NA

1 mg/kg = miligrams per kilogram

2 ND indicates analyte was not detected in sample. Limit of detection, when available, is included in parentheses.

3 B indicates the reported value was obtained from a reading that was less than the contract required detection limit (CRDL) but was greater than or equal to the instrument detection limit (IDL).

4 NA indicates sample was not analyzed for this analyte

Table 2. Waste Disposal Analytical Results, Metals (continued)
Hunters Point Annex

	Drums 88-91	Drums 92-94	Drums 96-104	Drums 112-131
Sample Number:	88919294	9294	021208	Baker Tank Sludge
Units of Concentration:	mg/kg[1]	mg/kg	mg/kg	mg/kg
Analyte				
Aluminum	NA[4]	NA	NA	NA
Antimony	ND (30)[2]	ND (30)	ND (2.0)	ND (1.0)
Arsenic	ND (0.2)	ND (0.2)	ND (5.0)	ND (2.2)
Barium	20	62	28	35
Beryllium	ND (1)	ND (1)	ND (0.5)	ND (0.025)
Cadmium	ND (2)	ND (2)	ND (1.0)	1.4
Calcium	NA	NA	NA	NA
Chromium	32	84	.68	7.8
Chromium, Hexav.	23	7	NA	NA
Cobalt	8	12	9.5	2.0
Copper	18	41	.21	9.0
Iron	NA	NA	NA	NA
Lead	ND (50)	ND (50)	ND (2.2)	8.7
Magnesium	NA	NA	NA	NA
Manganese	NA	NA	NA	NA
Mercury	ND (0.5)	ND (0.5)	ND (2.0)	ND (5.0)
Molybdenum	ND (2)	ND (2)	ND (2.0)	ND (1.0)
Nickel	35	160	.88	.17
Potassium	NA	NA	NA	NA
Selenium	0.6	ND (0.2)	ND (5.0)	ND (5.0)
Silver	ND (3)	ND (3)	ND (0.5)	ND (2.2)
Sodium	NA	NA	NA	NA
Thallium	ND (30)	ND (30)	ND (30)	ND (2.2)
Vanadium	25	21	28	17
Zinc	35	170	48	11
Fluoride	17	15	NA	NA
Percent Solids	64	71	NA	NA

1 mg/kg = miligrams per kilogram

2 ND indicates analyte was not detected in sample. Limit of detection, when available, is included in parentheses.

3 B indicates the reported value was obtained from a reading that was less than the contract required detection limit (CRDL) but was equal to the instrument detection limit.

4 NA indicates sample was not analyzed for this analyte.

Table 2. Waste Disposal Analytical Results, Metals (continued)
Hunters Point Annex

Bins 1181 and 1217

Sanple Number: Units of Concentration: Analyte	AW01 mg/kg[1]	AW02 mg/kg
Aluminum	NA[4]	NA
Antimony	ND (2.5)[2]	ND (2.5)
Arsenic	ND (2.5)	ND (2.5)
Barium	50	24
Beryllium	ND (0.5)	ND (0.5)
Cadmium	ND (0.5)	ND (0.5)
Calcium	NA	NA
Chromium	42	20
Chromium, Hexav.	NA	NA
Cobalt	11	4.6
Copper	31	19
Iron	NA	NA
Lead	13	9.3
Magnesium	NA	NA
Manganese	NA	NA
Mercury	ND (0.1)	ND (0.1)
Molybdenum	ND (0.5)	ND (0.5)
Nickel	95	33
Potassium	NA	NA
Selenium	ND (2.5)	ND (2.5)
Silver	ND (1.0)	ND (1.0)
Sodium	NA	NA
Thallium	ND (2.5)	ND (2.5)
Vanadium	20	9.4
Zinc	78	68
Fluoride	NA	NA
Percent Solids	NA	NA

1 mg/kg = miligrams per kilogram

2 ND indicates analyte was not detected in sample. Limit of detection, when available, is included in parentheses.

3 B indicates the reported value was obtained from a reading that was less than the contract required detection limit (CRDL) but was equal to the instrument detection limit.

4 NA indicates sample was not analyzed for this analyte.

Table 3. Waste Disposal Analytical Results
Volatile Organic Analysis
Hunters Point Annex

	Drum #51					
Sample Number:	**A080**	**A081**	**A082**	**A084**	**A085**	**A086**
Units of Concentration:	**μg/kg[1]**	**μg/kg**	**μg/kg**	**μg/kg**	**μg/kg**	**μg/kg**
Analyte						
Methylene Chloride	2J[2]	1J	ND(5)[3]	ND(5)	2J	ND(5)
Toluene	ND(6)	ND(5)	ND(5)	ND(5)	2J	ND(5)
Acetone	ND(12)	ND(11)	ND(11)	ND(11)	ND(14)	ND(11)
2-Butanone	ND(12)	ND(11)	ND(11)	ND(11)	ND(14)	ND(11)
Unknown	2.0 J	ND	ND	ND	ND	ND
Cyclopropane, 1,12-Trimeth	2.1 J	ND	ND	ND	ND	ND
Ethane, 1,2-Dibromo	2.1 J	ND	ND	ND	ND	ND
4-Methyl -2-Pentanol	6.8 J	ND	ND	ND	ND	ND
Unknown	1.5 J	ND	ND	ND	ND	ND

1 μg/kg = micrograms per kilogram

2 J = The associated numerical value is an estimated quantity because the amount detected is below the required detection limits or because quality control criteria were not met.

3 ND = The analyte was not detected in sample. Limit of Detection, when available, is included in parentheses..

4 UJB = The compound is considered to be undetected and the value reported is an estimated detection limit because the compound was identified in the laboratory blank as well as in the sample.

5 B = The analyte was detected in the blank.

6 NA = The sample was not analyzed for this analyte.

Table 3. Waste Disposal Analytical Results
Volatile Organic Analysis
Hunters Point Annex

	Drum #81			Drum #82	
Sample Number:	A121	A122	A123	A124	A125
Units of Concentration:	μg/kg[1]	μg/kg	μg/kg	μg/kg	μg/kg
Analyte					
Methylene Chloride	21 UJB[4]	13 UJB	18 UJB	36 UJB	99
Toluene	1 J	ND	ND	6	7
Acetone	13 UJB	14 UJB	28 UJB	20 UJB	30 UJB
2-Butanone	15 UJB	11 UJB	13 UJB	16 UJB	16 UJB
Unknown	ND	ND	ND	ND	ND
Cyclopropane, 1,12-Trimeth	ND	ND	ND	ND	ND
Ethane, 1,2-Dibromo	ND	ND	ND	ND	ND
4-Methyl -2-Pentanol	ND	ND	ND	ND	ND
Unknown	ND	ND	ND	ND	ND

1 μg/kg = micrograms per kilogram

2 J = The associated numerical value is an estimated quantity because the amoutn detected is below the required detection limits or because quality control criteria were not met.

3 ND = The analyte was not detected in sample. Limit of detection, when available, is included in parentheses.

4 UJB = The compound is considered to be undetected and the value reported is an estimated detection limit because the compound was identified in the laboratory blank as well as in the sample.

5 B = The analyte was detected in the blank.

6 NA = The sample was not analyzed for this analyte.

Table 3. Waste Disposal Analytical Results
Volatile Organic Analysis
Hunters Point Annex

	Drum #82		Drum #87	
Sample Number:	A126	A220	A221	A222
Units of Concentration:	μg/kg[1]	μg/kg	μg/kg	μg/kg
Analyte				
Methylene Chloride	130	7 UJB[4]	11B[5]	10B
Toluene	6	ND(6)	20	3J[2]
Acetone	35 UJB	ND(11)	6 UJB	6 UJB
2-Butanone	18 UJB	11 UJB	10 UJB	15 UJB
Unknown	ND	ND	ND	ND
Cyclopropane, 1,12-Trimeth	ND	ND	ND	ND
Ethane, 1,2-Dibromo	ND	ND	ND	ND
4-Methyl -2-Pentanol	ND	ND	ND	ND
Unknown	ND	ND	ND	ND

1 μg/kg = micrograms per kilogram

2 J = The associated numerical value is an estimated quantity because the amoutn detected is below the required detection limits or because quality control criteria were not met.

3 ND = The analyte was not detected in sample. Limit of detection, when available, is included in parentheses.

4 UJB = The compound is considered to be undetected and the value reported is an estimated detection limit because the compound was identified in the laboratory blank as well as in the sample.

5 B = The analyte was detected in the blank.

6 NA = The sample was not analyzed for this analyte.

Table 3. Waste Disposal Analytical Results
Volatile Organic Analysis
Hunters Point Annex

	DrumS 112-131	Bin 1181	Bin 1217
Sample Number:	**Baker Tank Sludge**	**A-W01**	**A-W02**
Units of Concentration:	**μg/kg**	**μg/kg**	**μg/kg**
Analyte			
Methylene Chloride	NA	ND (25)[3]	ND (25)
Toluene	ND (0.03)	ND (25)	ND (25)
Acetone	NA	ND (50)	ND (50)
2-Butanone	NA	ND (50)	ND (50)
Unknown	NA	ND	NA
Cyclopropane, 1,12-Trimeth	NA	ND	NA
Ethane, 1,2-Dibromo	NA	ND	NA
4-Methyl -2-Pentanol	NA	ND	NA
Unknown	NA	ND	NA

1 μg/kg = micrograms per kilogram

2 J = The associated numerical value is an estimated quantity because the amoutn detected is below the required detection limits or because quality control criteria were not met.

3 ND = The analyte was not detected in sample. Limit of detection, when available, is included in parentheses.

4 UJB = The compound is considered to be undetected and the value reported is an estimated detection limit because the compound was identified in the laboratory blank as well as in the sample.

5 B = The analyte was detected in the blank.

6 NA = The sample was not analyzed for this analyte.

Table 4. Waste Disposal Analytical Results, Semivolatile Organics Hunters Point Annex

	Drum #51					
Sample Number:	A080	A081	A082	A084	A085	A086
Units of Concentration:	µg/kg[1]	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Analyte						
Phenanthrene	ND[2] (400)	ND (360)	ND (360)	ND (350)	ND (460)	57 J[3]
Di-n-Butylphthalate	ND (400)	ND (360)	ND (360)	ND (350)	ND (460)	ND (350)
Fluoranthene	ND (400)	ND (360)	ND (360)	ND (350)	ND (460)	41 J
Pyrene	ND (400)	ND (360)	ND (360)	ND (350)	ND (460)	76 J
Benzo(a)Anthracene	ND (400)	ND (360)	ND (360)	ND (350)	ND (460)	ND (350)
Chrysene	ND (400)	ND (360)	ND (360)	ND (350)	ND (460)	34 J
Bis(2-ethylhexyl) Phthalate	89 JB[4]	56 JB	61 JB	50 JB	62 JB	49 JB
Benzo(b)Fluoranthene	ND (400)	ND (360)	ND (360)	ND (350)	ND (460)	ND (350)
Benzo(a)Pyrene	ND (400)	ND (360)	ND (360)	ND (350)	ND (460)	ND (350)
Indeno (1,2,3-cd) Pyrene	ND (400)	ND (360)	ND (360)	ND (350)	ND (460)	ND (350)
Benzo(g,h,i)Perylene	ND (400)	ND (360)	ND (360)	ND (350)	ND (460)	ND (350)
Unknowns	1319 J	840 J	830 J	880 J	980 J	830 J
Unknown Alcohols	6820 J	ND	ND	ND	ND	ND
1-Heptene, 2-methyl	790 J	ND	ND	ND	ND	ND
3-Pentene-2-one, 4-methyl	710 J	ND	ND	ND	ND	ND
3-Hexene, 2,5-dimethyl	300 J	ND	ND	ND	ND	ND
5-Hexen-2-one, 5 Methyl-or	ND	ND	ND	ND	ND	ND
5-Hexen-2-one, 5 Methyl-or	ND	ND	ND	ND	ND	ND
3-Heptanone, 2,4-Dimethyl	ND	ND	ND	ND	ND	ND
Bicyclo[2.2.1]Heptan-2-one	ND	ND	ND	ND	ND	ND
Silane, Chlorodimethyl-phenyl	ND	ND	ND	ND	ND	ND
Benzaldehyde, 3-methoxy	ND	ND	ND	ND	ND	ND
Unknown Alkanes	ND	ND	ND	ND	ND	ND

1 µg/kg = micrograms per kilogram

2 ND - The analyte was not detected in sample. Limit of detection, when available, is included in parentheses.

3 J, the associated numerical value is an estimated quantity because the amount detected is below the required detection limits or because quality control criteria were not met.

4 JB - the reported value is an estimated amount. The compound was detected in the blank and quantity reported in the sample is greater than 5 times the amount found in the blank.

Table 4. Waste Disposal Analytical Results, Semivolatile Organics Hunters Point Annex

	Drum #51					
Sample Number:	A080	A081	A082	A084	A085	A086
Units of Concentration:	μg/kg[1]	μg/kg	μg/kg	μg/kg	μg/kg	μg/kg
Analyte						
Olean-12-ene	ND	ND	ND	ND	ND	ND
2H-Pyran-2,3-diol, tetrahydra	ND	ND	ND	ND	ND	ND
Sulphur, Mol (S8)	ND	ND	ND	ND	ND	ND
Napthalene, 1,2,3,5,6, 7,8,8	ND	ND	ND	ND	ND	ND
2-pentenoil Acid, 4 oxo-Me	ND	ND	ND	ND	ND	ND
Unknown Aromatic	ND	ND	ND	ND	ND	ND
Unknown Ketone	ND	ND	ND	ND	ND	ND
4-Nitrophenol	ND (2000)	ND (1800)	ND (1800)	ND (1700)	ND (2200)	ND(1700)
Pentachlorophenol	ND (2000)	ND (1800)	ND (1800)	ND (1700)	ND (2200)	ND(1700)

1 μg/kg = micrograms per kilogram

2 ND - The analyte was not detected in sample. Limit of detection, when available, is included in parentheses.

3 J, the associated numerical value is an estimated quantity because the amount detected is below the required detection limits or because quality control criteria were not met.

4 JB - the reported value is an estimated amount. The compound was detected in the blank and quantity reported in the sample is greater than 5 times the amount found in the blank.

Table 4. Waste Disposal Analytical Results, Semivolatile Organics Hunters Point Annex (continued)

	Drums 76-80	Drum #81		
Sample Number:	**89147680**	**A121**	**A122**	**A123**
Units of Concentration:	**μg/kg[1]**	**μg/kg**	**μg/kg**	**μg/kg**
Analyte				
Phenanthrene	ND[2] (1.0)	50 J[3]	ND (360)	ND (390)
Di-n-Butylphthalate	ND (1.0)	48 J	ND (360)	ND (390)
Fluoranthene	ND (1.0)	40 J	ND (360)	ND (390)
Pyrene	ND (1.0)	100 J	ND (360)	ND (390)
Benzo(a)Anthracene	ND (1.0)	80 J	ND (360)	ND (390)
Chrysene	ND (1.0)	65 J	ND (360)	ND (390)
Bis(2-ethylhexyl) Phthalate	ND (1.0)	120 J	ND (360)	ND (390)
Benzo(b)Fluoranthene	ND (1.0)	150 J	ND (360)	ND (390)
Benzo(a)Pyrene	ND (1.0)	110 J	ND (360)	ND (390)
Indeno (1,2,3-cd) Pyrene	ND (1.0)	84 J	ND (360)	ND (390)
Benzo(g,h,i)Perylene	ND (1.0)	110 J	ND (360)	ND (390)
Unknowns	ND	2990 J	ND	ND
Unknown Alcohols	ND	ND	ND	ND
1-Heptene, 2-methyl	ND	ND	ND	ND
3-Pentene-2-one, 4-methyl	ND	ND	ND	ND
3-Hexene, 2,5-dimethyl	ND	ND	ND	ND
5-Hexen-2-one, 5 Methyl-or	ND	2900 J	ND	ND
5-Hexen-2-one, 5 Methyl-or	ND	380 J	ND	ND
3-Heptanone, 2,4-Dimethyl	ND	1100 J	ND	ND
Bicyclo[2.2.1]Heptan-2-one	ND	810 J	ND	ND
Silane, Chlorodimethyl-phenyl	ND	290 J	ND	ND
Benzaldehyde, 3-methoxy	ND	370 J	ND	ND
Unknown Alkanes	ND	4090 J	ND	ND
Olean-12-ene	ND	810 J	ND	ND

1 μg/kg = micrograms per kilogram

2 ND - The analyte was not detected in sample. Limit of detection, when available, is included in parentheses.

3 J, the associated numerical value is an estimated quantity because the amount detected is below the required detection limits or because quality control criteria were not met.

4 JB - the reported value is an estimated amount. The compound was detected in the blank and quantity reported in the sample is greater than 5 times the amount found in the blank.

Table 4. Waste Disposal Analytical Results, Semivolatile Organics Hunters Point Annex (continued)

	Drums 76-80	Drum #81		
Sample Number:	89147680	A121	A122	A123
Units of Concentration:	µg/kg[1]	µg/kg	µg/kg	µg/kg
Analyte				
2H-Pyran-2,3-diol, tetrahydra	ND	ND	570 J	ND
Sulphur, Mol (S8)	ND	ND	ND	130 J
Napthalene, 1,2,3,5,6, 7,8,8	ND	ND	ND	ND
2-pentenoil Acid, 4 oxo-Me	ND	ND	ND	ND
Unknown Aromatic	ND	ND	ND	ND
Unknown Ketone	ND	ND	ND	ND
4-Nitrophenol	ND (1.0)	ND (1900)	ND (1700)	ND (1900)
Pentachlorophenol	ND (1.0)	ND (1900)	ND (1700)	ND (1900)

1 µg/kg = micrograms per kilogram

2 ND - The analyte was not detected in sample. Limit of detection, when available, is included in parentheses.

3 J, the associated numerical value is an estimated quantity because the amount detected is below the required detection limits or because quality control criteria were not met.

4 JB - the reported value is an estimated amount. The compound was detected in the blank and quantity reported in the sample is greater than 5 times the amount found in the blank.

Table 4. Waste Disposal Analytical Results, Semivolatile Organics Hunters Point Annex

	Drum #82			Drum #87		
Sample Number:	A124	A125	A126	A220	A221	A222
Units of Concentration:	μg/kg[1]	μg/kg	μg/kg	μg/kg	μg/kg	μg/kg
Analyte						
Phenanthrene	47 J[2]	62 J	ND (340)[3]	93 J	ND (360)	ND (350)
Di-n-Butylphthalate	ND (370)	ND (360)	ND (340)	ND (370)	ND (360)	ND (350)
Fluoranthene	ND (370)	39 J	ND (340)	97 J	ND (360)	ND (350)
Pyrene	53 J	33 J	ND (340)	88 J	ND (360)	ND (350)
Benzo(a)Anthracene	49 J	ND (360)	ND (340)	61 J	ND (360)	ND (350)
Chrysene	40 J	ND (360)	ND (340)	72 J	ND (460)	ND (350)
Bis(2-ethylhexyl) Phthalate	ND (370)	ND (360)	ND (340)	ND (370)	70	ND (350)
Benzo(b)Fluoranthene	52 J	35 J	ND (340)	75 J	ND (360)	ND (350)
Benzo(a)Pyrene	ND (370)	ND (360)	ND (340)	53 J	ND (360)	ND (350)
Indeno (1,2,3-cd) Pyrene	ND (370)	ND (360)	ND (340)	46 J	ND (360)	ND (350)
Benzo(g,h,i)Perylene	ND (370)	ND (360)	ND (340)	64 J	ND (360)	ND (350)
1-Heptene, 2-methyl	ND	ND	ND	ND	ND	ND
3-Pentene-2-one, 4-methyl	ND	ND	ND	ND	ND	ND
3-Hexene, 2,5-dimethyl	ND	ND	ND	ND	ND	ND
Unknown Alcohol	ND	ND	ND	ND	ND	ND
5-Hexen-2-one, 5 Methyl-or	ND	ND	ND	ND	ND	ND
5-Hexen-2-one, 5 Methyl-or	ND	ND	ND	ND	ND	ND
3-Heptanone, 2,4-Dimethyl	870 J	850 J	300 J	ND	ND	ND
Bicyclo[2.2.1]Heptan-2-one	ND	ND	ND	ND	ND	ND
Silane, Chlorodimethyl-phenyl	ND	ND	ND	ND	ND	ND

1 μg/kg = micrograms per kilogram

2 ND - The analyte was not detected in sample. Limit of detection, when available, is included in parentheses.

3 J, the associated numerical value is an estimated quantity because the amount detected is below the required detection limits or because quality control criteria were not met.

4 JB - the reported value is an estimated amount. The compound was detected in the blank and quantity reported in the sample is greater than 5 times the amount found in the blank.

Table 4. Waste Disposal Analytical Results, Semivolatile Organics Hunters Point Annex

	Drum #82			Drum #87		
Sample Number:	A124	A125	A126	A220	A221	A222
Units of Concentration:	μg/kg[1]	μg/kg	μg/kg	μg/kg	μg/kg	μg/kg
Analyte						
Benzaldehyde, 3-methoxy	ND	ND	ND	ND	ND	ND
Unknown	7510 J	1020 J	270 J	ND	ND	ND
Unknown Alkanes	4430 J	750 J	ND	3050 J	2439	340 J
Olean-12-ene	ND	ND	ND	ND	ND	ND
2H-Pyran-2,3-diol, tetrahydra	ND	ND	ND	ND	ND	ND
Sulphur, Mol (S8)	ND	ND	ND	ND	ND	ND
Napthalene, 1,2,3,5,6, 7,8,8	180 J	ND	ND	ND	ND	ND
2-pentenoil Acid, 4 oxo-Me	ND	200 J	ND	ND	ND	ND
Unknown Aromatic	ND	ND	100 J	ND	ND	ND
Unknown Ketone	ND	ND	ND	5450 J	5700 J	2420 J
4-Nitrophenol	ND (1800)	ND (1700)	ND (1700)	ND (1800)	68 J	ND (1700)
Pentachlorophenol	ND (1800)	ND (1700)	ND (1700)	ND (1800)	65 J	ND (1700)

1 μg/kg = micrograms per kilogram

2 ND - The analyte was not detected in sample. Limit of detection, when available, is included in parentheses.

3 J, the associated numerical value is an estimated quantity because the amount detected is below the required detection limits or because quality control criteria were not met.

4 JB - the reported value is an estimated amount. The compound was detected in the blank and quantity reported in the sample is greater than 5 times the amount found in the blank.

Table 4. Waste Disposal Analytical Results, Semivolatile Organics Hunters Point Annex

	Drums 88-91	Drums 92-94	Bins 1181 and 1217	
Sample Number:	**8891**	**9294**	**AW01**	**AW02**
Units of Concentration:	**μg/kg[1]**	**μg/kg**	**μg/kg**	**μg/kg**
Analyte				
Phenanthrene	ND (1.0)[2]	ND (1.0)	ND (2310)	ND (330)
Di-n-Butylphthalate	ND (1.0)	ND (1.0)	ND (2310)	ND (330)
Fluoranthene	ND (1.0)	ND (1.0)	ND (2310)	ND (330)
Pyrene	ND (1.0)	ND (1.0)	ND (2310)	ND (330)
Benzo(a)Anthracene	ND (1.0)	ND (1.0)	ND (2310)	ND (330)
Chrysene	ND (1.0)	ND (1.0)	ND (2310)	ND (330)
Bis(2-ethylhexyl) Phthalate	ND (1.0)	ND (1.0)	ND (2310)	ND (330)
Benzo(b)Fluoranthene	ND (1.0)	ND (1.0)	ND (2310)	ND (330)
Benzo(a)Pyrene	ND (1.0)	ND (1.0)	ND (2310)	ND (330)
Indeno (1,2,3-cd) Pyrene	ND (1.0)	ND (1.0)	ND (2310)	ND (330)
Benzo(g,h,i)Perylene	ND (1.0)	ND (1.0)	ND (2310)	ND (330)
1-Heptene, 2-methyl	ND	ND	ND	ND
3-Pentene-2-one, 4-methyl	ND	ND	ND	ND
3-Hexene, 2,5-dimethyl	ND	ND	ND	ND
Unknown Alcohol	ND	ND	ND	ND
5-Hexen-2-one, 5 Methyl-or	ND	ND	ND	ND
5-Hexen-2-one, 5 Methyl-or	ND	ND	ND	ND
3-Heptanone, 2,4-Dimethyl	ND	ND	ND	ND
Bicyclo[2,2.1]Heptan-2-one	ND	ND	ND	ND
Silane, Chlorodimethyl-phenyl	ND	ND	ND	ND
Benzaldehyde, 3-methoxy	ND	ND	ND	ND

1 μg/kg = micrograms per kilogram

2 ND - The analyte was not detected in sample. Limit of detection, when available, is included in parentheses.

3 J, the associated numerical value is an estimated quantity because the amount detected is below the required detection limits or because quality control criteria were not met.

4 JB - the reported value is an estimated amount. The compound was detected in the blank and quantity reported in the sample is greater than 5 times the amount found in the blank.

Table 4. Waste Disposal Analytical Results, Semivolatile Organics Hunters Point Annex

	Drums 88-91	Drums 92-94	Bins 1181 and 1217	
Sample Number:	**8891**	**9294**	**AW01**	**AW02**
Units of Concentration:	**μg/kg[1]**	**μg/kg**	**μg/kg**	**μg/kg**
Analyte				
Olean-12-ene	ND	ND	ND	ND
2H-Pyran-2,3-diol, tetrahydra	ND	ND	ND	ND
Sulphur, Mol (S8)	ND	ND	ND	ND
Napthalene, 1,2,3,5,6, 7,8,8	ND	ND	ND	ND
2-pentenoil Acid, 4 oxo-Me	ND	ND	ND	ND
Unknown Alkane	ND	ND	ND	ND
Unknown	ND	ND	ND	ND
Unknown Aromatic	ND	ND	ND	ND
Unknown Ketone	ND	ND	ND	ND
4-Nitrophenol	ND (5.0)	ND (1.0)	ND (11550)	ND (1650)
Pentachlorophenol	ND (5.0)	ND (1.0)	ND (11550)	ND (1650)

1 μg/kg = micrograms per kilogram

2 ND - The analyte was not detected in sample. Limit of detection, when available, is included in parentheses.

3 J, the associated numerical value is an estimated quantity because the amount detected is below the required detection limits or because quality control criteria were not met.

4 JB - the reported value is an estimated amount. The compound was detected in the blank and quantity reported in the sample is greater than 5 times the amount found in the blank.

Table 5. Waste Disposal Analytical Results, pH and Asbestos
Hunters Point Annex

Drum/Bin Identification	Sample Number	pH	Percent Asbestos	Type of Asbestos
#51	A080	NA[1]	ND[2]	--[3]
	A081	NA	ND	--
	A082	NA	ND	--
	A083	NA	ND	--
	A084	NA	ND	--
	A085	NA	ND	--
	A086	NA	ND	--
#81	A121	8.5	NA	
	A122	9.5	ND	--
	A123	9.1	ND	--
	A124	8.6	ND	--
	A125	7.9	>0.1 and <1.0[4]	Chrysotile
	A126	8.6	ND	--
#87	A220	8.0	ND	--
	A221	8.2	>0.1 and <1.0	Chrysotile
	A222	8.6	ND	--
#96-104	021208	7.8	NA	
#112-131	Baker Tank Sludge	8.2	NA	

1 "NA" indicates sample was not analyzed for this parameter.

2 "ND" indicates that analyte was not detected in sample.

3 "--" indicates not applicable because asbestos was not identified.

4 Chrysotile asbestos was detected in sample but at less than the one percent quantification limit.

ATT

22 1989

March 14, 1989

AW03

002422

GE-048

Ms. Lisa Teague
Harding Lawson Associates
200 Rush Landing Road, P.O. Box 6107
Novato, CA 94948

Subject: Hazardous Waste Toxicity Test Results of Soil Sample 8288 (8910AW03).

Dear Ms. Teague:

This report presents the toxicity test results for fathead minnow (Pimephales promelas) exposed to concentrations of a soil sample provided by Harding Lawson Associates.

Aqua Terra Technologies
Consulting Engineers
& Scientists

2950 Buskirk Avenue
Suite 120
Walnut Creek, CA
[illegible]9 6
415 934-4884

METHODS

All tests were conducted according to Aqua Terra Technologies (ATT) hazardous waste aquatic toxicity test protocol based on Standard Methods for the Examination of Water and Wastewater, 16th Edition, American Public Health Association, 1986, and certified by the State of California Department of Health Services (copy of certificate attached). The soil sample was tested at three concentrations, 250 mg/L, 500 mg/L, and 750 mg/L. The soil sample was thoroughly mixed into dechlorinated tap water using a wrist action shaker. All treatments were run in duplicate with 10 fish per three liter tank and a total of 20 fish per treatment. Temperature was controlled at 20 ± 2°C and photoperiod regulated at approximately 16-hours light and 8-hours dark. Fish were acclimated in the test laboratory for 21 days prior to their use in the test.

Fish mortality, temperature, pH, and dissolved oxygen concentration were monitored during the 96-hour test. Water hardness and alkalinity were measured for dilution water and the highest treatment concentration at the beginning of the test.

TEST RESULTS

No fish mortality occurred in the dilution water control or in any sample treatment concentration for sample 8288. All fish showed no signs of stress. The raw data from tests are summarized in the attached data sheets.

ATT

Test results indicate that the 96-hour LC50 values for the soil sample 8288 (8910AW03) are greater than 500 mg/L. The soil sample 8288 (8910AW03) therefore does not meet the acute aquatic toxicity test criteria (96-hour LC50 $\leq$ 500 mg/L) for identification of a material as hazardous, according to the specification in the California Administration Code, Title 22, Division 4, Article 11, Section 66696.

Should any questions arise as to test procedures or results, do not hesitate to call.

Very truly yours,

AQUA TERRA TECHNOLOGIES, INC.

Ronald M. Block, Ph.D.
Laboratory Director

William E. Foster, M.S.
Laboratory Manager
Aquatic Biologist

RMB/WEF

Enclosures: Bioassay Data Sheet
Chain of Custody
Certificate
Invoice

STATIC A[illegible]E BIOASSAY

Aqua Terra Techn[illegible]es
2950 Buskirk Avenue
Walnut Creek, CA 94596
415 934-4884

CLIENT: Harding Lawson Associates ATTENTION: Ms. Teague

SAMPLE ID#: 8288 SAMPLE DESCRIPTION: Control-dechlorinated tap TESTING DATES: 3/08/89 to 3/12/89
Client ID#: (8910AW03)

	INITIAL						24-HOUR				48-HOUR				72-HOUR				96-HOUR			
TEST CONC mg/L	Alk mg/L	Hard mg/L	Live	pH	DO mg/L	Temp oC	Live	pH	DO mg/L	Temp oC	Live	pH	DO mg/L	Temp oC	Live	pH	DO mg/L	Temp oC	Live	pH	DO mg/L	Temp oC
C-1	42	46	10	7.0	7.9	21	10	7.0	7.6	19	10	7.0	8.2	19	10	7.2	8.2	19	10	7.2	8.1	19
C-2	42	46	10	7.0	7.9	21	10	7.0	8.0	19	10	7.0	8.2	19	10	7.2	8.2	19	10	7.2	8.2	19

Test Species fathead minnow Avg Length 35.2 mm SL Max Length 40.0 mm SL Min Length 31.0 mm SL

Source of Test Species Thomas Fish Company Avg Wt 0.35 g Max Wt 0.55 g Min Wt 0.17 g

Species Density 10/tank 20/treatment Dilution Water dechlorinated tap Test Soln Vol 3 L Depth 17 cm Aeration Bubble

Acclimation Tank % Dead 0 Accl. Tank Water dechlorinated tap Accl. Period 21 days Accl. Temp. 20 +/- 2°C

REMARKS:

96 hr LC50 n/a

95% Confidence Limits n/a

Percent Survival 100%.

TECHNICIAN: Richard Daggett
Richard Daggett, B.A.

LABORATORY MANAGER: William E. Foster
William E. Foster, M.S.

STATIC [illegible]TE BIOASSAY

Aqua Terra Techn[illegible]es
2950 Buskirk Avenue
Walnut Creek, CA 94596
415 934-4884

CLIENT: Harding Lawson Associates ATTENTION: Ms. Teague

SAMPLE ID#: 8288 SAMPLE DESCRIPTION: Soil (8910AW03) TESTING DATES: 3/08/89 - 3/12/89

			INITIAL				24-HOUR				48-HOUR				72-HOUR				96-HOUR			
TEST CONC mg/L	Alk mg/L	Hard mg/L	Live	pH	DO mg/L	Temp oC	Live	pH	DO mg/L	Temp oC	Live	pH	DO mg/L	Temp oC	Live	pH	DO mg/L	Temp oC	Live	pH	DO mg/L	Temp oC
250 A			10	7.5	7.5	21	10	7.5	8.5	19	10	7.5	8.2	19	10	7.5	8.2	19	10	7.5	8.3	19
250 B			10	7.5	7.7	21	10	7.5	8.5	19	10	7.5	8.4	19	10	7.5	8.6	19	10	7.5	8.6	19
500 A			10	8.6	7.6	21	10	7.6	8.4	19	10	7.6	8.6	19	10	7.7	8.5	19	10	7.5	8.4	19
500 B		-	10	8.6	7.6	21	10	7.6	8.5	19	10	7.7	8.5	19	10	7.7	8.6	19	10	7.5	8.5	19
750 A	51	71	10	9.1	7.5	21	10	7.8	8.4	19	10	7.8	8.5	19	10	7.9	8.4	19	10	7.6	8.5	19
750 B	51	71	10	9.3	8.0	21	10	7.8	8.2	19	10	7.8	8.7	19	10	7.8	8.5	19	10	7.6	8.3	19

Test Species fathead minnow Avg Length 35.2 mm SL Max Length 40.0 mm SL Min Length 31.0 mm SL

Source of Test Species Thomas Fish Company Avg Wt 0.35 g Max Wt 0.55 g Min Wt 0.17 g

Species Density 10/tank 20/treatment Dilution Water dechlorinated tap Test Soln Vol 3 L Depth 17 cm Aeration Bubble

Acclimation Tank % Dead 0 Accl. Tank Water dechlorinated tap Accl. Period 21 days Accl. Temp. 20 +/- 2°C

REMARKS:

96 hr LC50 >500 mg/L.

95% Confidence Limits n/a

Percent Survival 100% in all treatment concentrations.

TECHNICIAN: Richard Daggett
Richard Daggett, B.A.

LABORATORY MANAGER: William E. Foster
William E. Foster, M.S.

ATT

FISH BIOASSAY MEASUREMENTS

Fathead Minnows

For: Harding Lawson Associates: Ms Teague

Sample ID#: 8288 Sample Conc. Soil

Client ID#: 8910AW03

Average Length: 35.2 mm SL Average Weight: 0.35 g

Maximum Length: 40.0 mm SL Maximum Weight: .55 g

Minimum Length: 31.0 mm SL Minimum Weight: 0.17 g

Fish Length (mm SL)		Fish Weight (g)	
1.	34.0	1.	0.31
2.	40.0	2.	0.48
3.	30.0	3.	0.17
4.	35.0	4.	0.36
5.	34.0	5.	0.35
6.	40.0	6.	1.55
7.	37.0	7.	0.36
8.	31.0	8.	0.19
9.	38.0	9.	0.49
10.	33.0	10.	0.28

Laboratory Manager: William E. Foster

William E. Foster, M.S.

Aquatic Biologist

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

SAMPLE
AW01
AW02
AW03

FACSIMILE COVER SHEET

UEI Mud Bins at IR01

TO: Kit Richard

BIN # 1181, 1217

FROM: Nancy Wilson

REGARDING: Huntersponit Results

NUMBER OF PAGES TO FOLLOW: 10 DATE: 3/28

IF YOU DO NOT RECEIVE ALL PAGES, PLEASE CALL (415) 486-0900

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

LABORATORY NUMBER: 16937
CLIENT: HARDING LAWSON ASSOCIATES
JOB #: 02176,228.02
LOCATION: HUNTERS POINT

DATE RECEIVED: 03-07-89
DATE ANALYZED: 03-15-89
DATE REPORTED: 03-17-89
PAGE 1 OF 10

Extractable Petroleum Hydrocarbons in Soils & Wastes
EPA 8015 (Modified)
Extraction Method: EPA 3550

LAB ID	CLIENT ID	GASOLINE (mg/Kg)	KEROSINE (mg/Kg)	DIESEL (mg/Kg)	OTHER (mg/Kg)
16937-1	8910AW01	ND(10)	ND(10)	ND(10)	ND(10)
16937-2	8910AW02	ND(10)	ND(10)	ND(10)	ND(10)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference	14
Spike: % Recovery	83

LABORATORY DIRECTOR

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 16937
CLIENT: HARDING LAWSON ASSOCIATES
JOB #: 02176,228.02
LOCATION: HUNTERS POINT

DATE RECEIVED: 03-07-89
DATE ANALYZED: 03-14-89
DATE REPORTED: 03-17-89

Total Volatile Hydrocarbons as Gasoline in Soils & Wastes
EPA 8015 (Modified)
Extraction Method: EPA 5030 (Purge & Trap)

LAB ID	CLIENT ID	TVH AS GASOLINE (mg/Kg)
16937-1	8910AW01	ND(10)
16937-2	8910AW02	ND(10)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

%RPD	14
Spike, % Recovery	101

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 16937-1
CLIENT: HARDING LAWSON ASSOCIATES
JOB #: 02176,228.02
LOCATION: HUNTERS POINT
SAMPLE ID: 8910AW01

DATE RECEIVED: 03-07-89
DATE EXTRACTED: 03-08-89
DATE ANALYZED: 03-09-89
DATE REPORTED: 03-17-89

EPA 8270: Base/Neutral and Acid Extractables in Soils & Wastes
Extraction Method: EPA 3550 Sonication

ACID COMPOUNDS	RESULT ug/kg	LOD ug/kg
Phenol	ND	2310
2-Chlorophenol	ND	2310
2-Nitrophenol	ND	11550
2,4-Dimethylphenol	ND	2310
2,4-Dichlorophenol	ND	2310
4-Chloro-3-methylphenol	ND	2310
2,4,6-Trichlorophenol	ND	2310
2,4-Dinitrophenol	ND	11550
4-Nitrophenol	ND	11550
4,6-Dinitro-2-methylphenol	ND	11550
Pentachlorophenol	ND	11550
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	2310
1,3-Dichlorobenzene	ND	2310
1,4-Dichlorobenzene	ND	2310
1,2-Dichlorobenzene	ND	2310
Bis(2-chloroisopropyl)ether	ND	2310
N-Nitroso-di-n-propylamine	ND	2310
Hexachloroethane	ND	2310
Nitrobenzene	ND	2310
Isophorone	ND	2310
Bis(2-chloroethoxy)methane	ND	2310
1,2,4-Trichlorobenzene	ND	2310
Naphthalene	ND	2310
Hexachlorobutadiene	ND	2310
Hexachlorocyclopentadiene	ND	2310
2-Chloronaphthalene	ND	2310
Dimethylphthalate	ND	2310
Acenaphthylene	ND	2310
2,6-Dinitrotoluene	ND	2310
Acenaphthene	ND	2310
2,4-Dinitrotoluene	ND	2310
Diethylphthalate	ND	2310
4-Chlorophenyl-phenylether	ND	2310
Fluorene	ND	2310
N-Nitrosodiphenylamine	ND	2310

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 16937-1
SAMPLE ID: 8910AW01

BASE/NEUTRAL COMPOUNDS	RESULT ug/kg	LOD ug/kg
4-Bromophenyl-phenylether	ND	2310
Hexachlorobenzene	ND	2310
Phenanthrene	ND	2310
Anthracene	ND	2310
Di-n-butylphthalate	ND	2310
Fluoranthene	ND	2310
Pyrene	ND	2310
Butylbenzylphthalate	ND	2310
3,3'-Dichlorobenzidine	ND	11550
Benzo (a) anthracene	ND	2310
Chrysene	ND	2310
Bis (2-ethylhexyl)phthalate	ND	2310
Di-n-octylphthalate	ND	2310
Benzo (b) fluoranthene	ND	2310
Benzo (k) fluoranthene	ND	2310
Benzo (a) pyrene	ND	2310
Indeno (1,2,3-cd) pyrene	ND	2310
Dibenzo (a,h) anthracene	ND	2310
Benzo (g,h,i) perylene	ND	2310

HSL COMPOUNDS		
Benzoic Acid	ND	11550
2-Methylphenol	ND	2310
4-Methylphenol	ND	2310
2,4,5-Trichlorophenol	ND	11550
Benzyl Alcohol	ND	2310
4-Chloroaniline	ND	2310
2-Methylnaphthalene	ND	2310
2-Nitroanline	ND	11550
3-Nitroaniline	ND	11550
Dibenzofuran	ND	2310
4-Nitroaniline	ND	11550

ND = None Detected, Limit of Detection (LOD) appears in right column

QA/QC SUMMARY: SURROGATE RECOVERIES

Compound	%Recovery	Compound	%Recovery
2-Fluorophenol	60	Nitrobenzene-d5	60
Phenol-d5	63	2-Fluorobiphenyl	83
2,4,6-tribromophenol	11	Terphenyl	122

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 16937-2
CLIENT: HARDING LAWSON ASSOCIATES
JOB #: 02176,228.02
LOCATION: HUNTERS POINT
SAMPLE ID: 8910AW02

DATE RECEIVED: 03-07-89
DATE EXTRACTED: 03-08-89
DATE ANALYZED: 03-09-89
DATE REPORTED: 03-17-89

EPA 8270: Base/Neutral and Acid Extractables in Soils & Wastes
Extraction Method: EPA 3550 Sonication

	RESULT ug/kg	LOD ug/kg
ACID COMPOUNDS		
Phenol	ND	330
2-Chlorophenol	ND	330
2-Nitrophenol	ND	1650
2,4-Dimethylphenol	ND	330
2,4-Dichlorophenol	ND	330
4-Chloro-3-methylphenol	ND	330
2,4,6-Trichlorophenol	ND	330
2,4-Dinitrophenol	ND	1650
4-Nitrophenol	ND	1650
4,6-Dinitro-2-methylphenol	ND	1650
Pentachlorophenol	ND	1650
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	330
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
1,2-Dichlorobenzene	ND	330
Bis(2-chloroisopropyl)ether	ND	330
N-Nitroso-di-n-propylamine	ND	330
Hexachloroethane	ND	330
Nitrobenzene	ND	330
Isophorone	ND	330
Bis(2-chloroethoxy)methane	ND	330
1,2,4-Trichlorobenzene	ND	330
Naphthalene	ND	330
Hexachlorobutadiene	ND	330
Hexachlorocyclopentadiene	ND	330
2-Chloronaphthalene	ND	330
Dimethylphthalate	ND	330
Acenaphthylene	ND	330
2,6-Dinitrotoluene	ND	330
Acenaphthene	ND	330
2,4-Dinitrotoluene	ND	330
Diethylphthalate	ND	330
4-Chlorophenyl-phenylether	ND	330
Fluorene	ND	330
N-Nitrosodiphenylamine	ND	330

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 16937-2
SAMPLE ID: 8910AW02

BASE/NEUTRAL COMPOUNDS	RESULT ug/kg	LOD ug/kg
4-Bromophenyl-phenylether	ND	330
Hexachlorobenzene	ND	330
Phenanthrene	ND	330
Anthracene	ND	330
Di-n-butylphthalate	ND	330
Fluoranthene	ND	330
Pyrene	ND	330
Butylbenzylphthalate	ND	330
3,3'-Dichlorobenzidine	ND	1650
Benzo (a) anthracene	ND	330
Chrysene	ND	330
Bis (2-ethylhexyl)phthalate	ND	330
Di-n-octylphthalate	ND	330
Benzo (b) fluoranthene	ND	330
Benzo (k) fluoranthene	ND	330
Benzo (a) pyrene	ND	330
Indeno (1,2,3-cd) pyrene	ND	330
Dibenzo (a,h) anthracene	ND	330
Benzo (g,h,i) perylene	ND	330

HSL COMPOUNDS		
Benzoic Acid	ND	1650
2-Methylphenol	ND	330
4-Methylphenol	ND	330
2,4,5-Trichlorophenol	ND	1650
Benzyl Alcohol	ND	330
4-Chloroaniline	ND	330
2-Methylnaphthalene	ND	330
2-Nitroanline	ND	1650
3-Nitroaniline	ND	1650
Dibenzofuran	ND	330
4-Nitroaniline	ND	1650

ND = None Detected, Limit of Detection (LOD) appears in right column

QA/QC SUMMARY: SURROGATE RECOVERIES

Compound	%Recovery	Compound	%Recovery
2-Fluorophenol	59	Nitrobenzene-d5	62
Phenol-d5	64	2-Fluorobiphenyl	79
2,4,6-tribromophenol	57	Terphenyl	99

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 16937-1
CLIENT: HARDING LAWSON ASSOCIATES
JOB #: 02176,228.02
LOCATION: HUNTERS POINT
SAMPLE ID: 8910AW01

DATE RECEIVED: 03-07-89
DATE ANALYZED: 03-13-89
DATE REPORTED: 03-17-89

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

COMPOUND	Result ug/kg	Detection Limit ug/kg
chloromethane	ND	50
bromomethane	ND	50
vinyl chloride	ND	50
chloroethane	ND	50
methylene chloride	ND	25
trichlorofluoromethane	ND	25
1,1-dichloroethene	ND	25
1,1-dichloroethane	ND	25
trans-1,2-dichloroethene	ND	25
chloroform	ND	25
1,2-dichloroethane	ND	25
1,1,1-trichloroethane	ND	25
carbon tetrachloride	ND	25
bromodichloromethane	ND	25
1,2-dichloropropane	ND	25
cis-1,3-dichloropropene	ND	25
trichloroethylene	ND	25
dibromochloromethane	ND	25
1,1,2-trichloroethane	ND	25
benzene	ND	25
trans-1,3-dichloropropene	ND	50
2-chloroethylvinyl ether	ND	25
bromoform	ND	25
1,1,2,2-tetrachloroethane	ND	25
tetrachloroethene	ND	25
toluene	ND	25
chlorobenzene	ND	25
ethyl benzene		

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	50
carbon disulfide	ND	25
2-butanone	ND	50
vinyl acetate	ND	50
2-hexanone	ND	50
4-methyl-2-pentanone	ND	50
styrene	ND	25
total xylenes	ND	25

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	108
Toluene-d8	98
Bromofluorobenzene	90

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 16937-2
CLIENT: HARDING LAWSON ASSOCIATES
JOB #: 02176,228.02
LOCATION: HUNTERS POINT
SAMPLE ID: 8910AW02

DATE RECEIVED: 03-07-89
DATE ANALYZED: 03-13-89
DATE REPORTED: 03-17-89
PAGE 8 OF 10

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

COMPOUND	Result ug/kg	Detection Limit ug/kg
chloromethane	ND	50
bromomethane	ND	50
vinyl chloride	ND	50
chloroethane	ND	50
methylene chloride	ND	25
trichlorofluoromethane	ND	25
1,1-dichloroethene	ND	25
1,1-dichloroethane	ND	25
trans-1,2-dichloroethene	ND	25
chloroform	ND	25
1,2-dichloroethane	ND	25
1,1,1-trichloroethane	ND	25
carbon tetrachloride	ND	25
bromodichloromethane	ND	25
1,2-dichloropropane	ND	25
cis-1,3-dichloropropene	ND	25
trichloroethylene	ND	25
dibromochloromethane	ND	25
1,1,2-trichloroethane	ND	25
benzene	ND	25
trans-1,3-dichloropropene	ND	25
2-chloroethylvinyl ether	ND	50
bromoform	ND	25
1,1,2,2-tetrachloroethane	ND	25
tetrachloroethene	ND	25
toluene	ND	25
chlorobenzene	ND	25
ethyl benzene	ND	25

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	50
carbon disulfide	ND	25
2-butanone	ND	50
vinyl acetate	ND	50
2-hexanone	ND	50
4-methyl-2-pentanone	ND	50
styrene	ND	25
total xylenes	ND	25

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	104
Toluene-d8	105
Bromofluorobenzene	104

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 16937-1
CLIENT: HARDING LAWSON ASSOCIATES
JOB #: 02176,228.02
LOCATION: HUNTERS POINT
SAMPLE ID: 8910AW01

DATE RECEIVED: 03-07-89
DATE ANALYZED: 03-09-89
DATE REPORTED: 03-17-89

Title 22 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	DETECTION LIMIT mg/Kg	METHOD
Antimony	ND	2.5	EPA 7041
Arsenic	ND	2.5	EPA 7060
Barium	50	0.5	EPA 6010
Beryllium	ND	0.5	EPA 6010
Cadmium	ND	0.5	EPA 6010
Chromium (total)	42	0.5	EPA 6010
Cobalt	11	0.5	EPA 6010
Copper	31	0.5	EPA 6010
Lead	13	2.5	EPA 7420
Mercury	ND	0.1	EPA 7471
Molybdenum	ND	0.5	EPA 6010
Nickel	95	0.5	EPA 6010
Selenium	ND	2.5	EPA 7740
Silver	ND	1.0	EPA 6010
Thallium	ND	2.5	EPA 7841
Vanadium	20	1.0	EPA 6010
Zinc	78	0.5	EPA 6010

ND = None Detected

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Antimony	<1	115	Mercury	11	101
Arsenic	<1	102	Molybdenum	<1	86
Barium	1	79	Nickel	3	103
Beryllium	2	99	Selenium	<1	96
Cadmium	1	77	Silver	<1	82
Chromium	1	104	Thallium	<1	99
Cobalt	1	87	Vanadium	1	95
Copper	1	99	Zinc	1	110
Lead	1	98			

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 16937-2
CLIENT: HARDING LAWSON ASSOCIATES
JOB #: 02176,228.02
LOCATION: HUNTERS POINT
SAMPLE ID: 8910AW02

DATE RECEIVED: 03-07-89
DATE ANALYZED: 03-09-89
DATE REPORTED: 03-17-89

Title 22 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	DETECTION LIMIT mg/Kg	METHOD
Antimony	ND	2.5	EPA 7041
Arsenic	ND	2.5	EPA 7060
Barium	24	0.5	EPA 6010
Beryllium	ND	0.5	EPA 6010
Cadmium	ND	0.5	EPA 6010
Chromium (total)	20	0.5	EPA 6010
Cobalt	4.6	0.5	EPA 6010
Copper	19	0.5	EPA 6010
Lead	9.3	2.5	EPA 7420
Mercury	ND	0.1	EPA 7471
Molybdenum	ND	0.5	EPA 6010
Nickel	33	0.5	EPA 6010
Selenium	ND	2.5	EPA 7740
Silver	ND	1.0	EPA 6010
Thallium	ND	2.5	EPA 7841
Vanadium	9.4	1.0	EPA 6010
Zinc	68	0.5	EPA 6010

ND = None Detected

QA/QC SUMMARY

	%RPD	%SPIKE
Antimony	<1	115
Arsenic	<1	102
Barium	1	79
Beryllium	2	99
Cadmium	1	77
Chromium	1	104
Cobalt	1	87
Copper	1	99
Lead	1	98
Mercury	11	101
Molybdenum	<1	86
Nickel	3	103
Selenium	<1	96
Silver	<1	82
Thallium	<1	99
Vanadium	1	95
Zinc	1	110

TMA
Thermo Analytical Inc.

TMA/Norcal
2030 Wright Avenue
Richmond, CA 94804-0040
(415) 235-2633

000844

000845

Halogenated Volatile Organic

8914 7680
8914 9294
8914 8891

Composite Drum Sample.

May 12, 1989

Al Vargas
Harding Lawson & Associates
200 Rush Landing Road
Novato, CA 94948

RE: TMA/Norcal Set Number 6281-10

Dear Mr. Vargas:

Enclosed is the report that was excluded from the subject data package delivered to you yesterday. This now completes this data report for your samples delivered April 7, 1989.

If you have any qustions, please give me a call.

Sincerely,

Daniel H. Stuermer, Ph.D.
President

DHS/dss

Enclosures

SUPERIOR ANALYTICAL LABORATORY, INC.
1385 FAIRFAX ST., STE D • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 50866-1
CLIENT: TMA/NORCAL

DATE RECEIVED: 5/11/89
DATE REPORTED: 5/12/89
JOB NO.: 6281-10

EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS

SAMPLE: 6281-10-1
8914 7680

Analyte	(ug/kg)	Analyte	(ug/kg)
Benzyl chloride	ND<1	1,2-Dichlorobenzene	ND<1
Bis(2-chloroethoxy)methane	ND<1	1,3-Dichlorobenzene	ND<1
Bis(2-chloroisopropyl)ether	ND<1	1,4-Dichlorobenzene	ND<1
Bromobenzene	ND<1	Dichlorodifluoromethane	ND<1
Bromodichloromethane	ND<1	1,1-Dichloroethane	ND<1
Bromoform	ND<1	1,2-Dichloroethane	ND<1
Bromomethane	ND<1	1,1-Dichloroethylene	ND<1
Carbon tetrachloride	ND<1	t-1,2-Dichloroethylene	ND<1
Chloroacetaldehyde	ND<1	Dichloromethane	ND<4
Chlorobenzene	ND<1	1,2-Dichloropropane	ND<1
Chloroethane	ND<1	t-1,3-Dichloropropylene	ND<1
Chloroform	ND<1	1,1,2,2-Tetrachloroethane	ND<1
1-Chlorohexane	ND<1	1,1,1,2-Tetrachloroethane	ND<1
2-Chloroethyl vinyl ether	ND<1	Tetrachloroethylene	ND<1
Chloromethane	ND<1	1,1,1-Trichloroethane	ND<1
Chloromethylmethyl ether	ND<1	1,1,2-Trichloroethane	ND<1
Chlorotoluene	ND<1	Trichloroethylene	ND<1
Dibromochloromethane	ND<1	Trichlorofluoromethane	ND<1
Dibromomethane	ND<1	Trichloropropane	ND<1
		Vinyl Chloride	ND<1

ug/kg = part per billion (ppb)

QA/QC SUMMARY:

MS/MSD AVERAGE RECOVERY: 104%.
DUPLICATE RPD =7.

Les Partridge, Ph.D.
Les Partridge
Laboratory Manager

OUTSTANDING QUALITY AND SERVICE

SUPERIOR ANALYTICAL LABORATORY, INC.
1385 FAIRFAX ST., STE D • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 50866-2
CLIENT: TMA/NORCAL

DATE RECEIVED: 5/11/89
DATE REPORTED: 5/12/89
JOB NO.: 6281-10

EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS

SAMPLE: 6281-10-2
8914 8294

Analyte	(ug/kg)	Analyte	(ug/kg)
Benzyl chloride	ND<1	1,2-Dichlorobenzene	ND<1
Bis(2-chloroethoxy)methane	ND<1	1,3-Dichlorobenzene	ND<1
Bis(2-chloroisopropyl)ether	ND<1	1,4-Dichlorobenzene	ND<1
Bromobenzene	ND<1	Dichlorodifluoromethane	ND<1
Bromodichloromethane	ND<1	1,1-Dichloroethane	ND<1
Bromoform	ND<1	1,2-Dichloroethane	ND<1
Bromomethane	ND<1	1,1-Dichloroethylene	ND<1
Carbon tetrachloride	ND<1	t-1,2-Dichloroethylene	ND<1
Chloroacetaldehyde	ND<1	Dichloromethane	ND<4
Chlorobenzene	ND<1	1,2-Dichloropropane	ND<1
Chloroethane	ND<1	t-1,3-Dichloropropylene	ND<1
Chloroform	ND<1	1,1,2,2-Tetrachloroethane	ND<1
1-Chlorohexane	ND<1	1,1,1,2-Tetrachloroethane	ND<1
2-Chloroethyl vinyl ether	ND<1	Tetrachloroethylene	ND<1
Chloromethane	ND<1	1,1,1-Trichloroethane	ND<1
Chloromethylmethyl ether	ND<1	1,1,2-Trichloroethane	ND<1
Chlorotoluene	ND<1	Trichloroethylene	ND<1
Dibromochloromethane	ND<1	Trichlorofluoromethane	ND<1
Dibromomethane	ND<1	Trichloropropane	ND<1
		Vinyl Chloride	ND<1

ug/kg = part per billion (ppb)

QA/QC SUMMARY:

MS/MSD AVERAGE RECOVERY: 104%.
DUPLICATE RPD =7.

Les Partridge, Ph.D.
Laboratory Manager

OUTSTANDING QUALITY AND SERVICE

SUPERIOR ANALYTICAL LABORATORY, INC.
1385 FAIRFAX ST., STE D • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 50866-3
CLIENT: TMA/NORCAL

DATE RECEIVED: 5/11/89
DATE REPORTED: 5/12/89
JOB NO.: 6281-10

EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS

SAMPLE: 6281-10-3
8914 8891

Analyte	(ug/kg)	Analyte	(ug/kg)
Benzyl chloride	ND<1	1,2-Dichlorobenzene	ND<1
Bis(2-chloroethoxy)methane	ND<1	1,3-Dichlorobenzene	ND<1
Bis(2-chloroisopropyl)ether	ND<1	1,4-Dichlorobenzene	ND<1
Bromobenzene	ND<1	Dichlorodifluoromethane	ND<1
Bromodichloromethane	ND<1	1,1-Dichloroethane	ND<1
Bromoform	ND<1	1,2-Dichloroethane	ND<1
Bromomethane	ND<1	1,1-Dichloroethylene	ND<1
Carbon tetrachloride	ND<1	t-1,2-Dichloroethylene	ND<1
Chloroacetaldehyde	ND<1	Dichloromethane	ND<4
Chlorobenzene	ND<1	1,2-Dichloropropane	ND<1
Chloroethane	ND<1	t-1,3-Dichloropropylene	ND<1
Chloroform	ND<1	1,1,2,2-Tetrachloroethane	ND<1
1-Chlorohexane	ND<1	1,1,1,2-Tetrachloroethane	ND<1
2-Chloroethyl vinyl ether	ND<1	Tetrachloroethylene	ND<1
Chloromethane	ND<1	1,1,1-Trichloroethane	ND<1
Chloromethylmethyl ether	ND<1	1,1,2-Trichloroethane	ND<1
Chlorotoluene	ND<1	Trichloroethylene	ND<1
Dibromochloromethane	ND<1	Trichlorofluoromethane	ND<1
Dibromomethane	ND<1	Trichloropropane	ND<1
		Vinyl Chloride	ND<1

ug/kg = part per billion (ppb)

QA/QC SUMMARY:

MS/MSD AVERAGE RECOVERY: 104%.
DUPLICATE RPD =7.

Les Partridge, Ph.D.
Les Partridge
Laboratory Manager

OUTSTANDING QUALITY AND SERVICE

Harding Lawson Associates

March 28, 1989

02176,228.02

Universal Engineering Inc.
P.O. Box 5853
Concord, California 95446
Attention: Mr. Don Oliva

DRUMS 96-104
#021208

002433

Dear Don:

Analytical Results
Hunters Point Annex

This letter presents the analytical results for nine 55-gallon drums located at the Hunters Point Annex (HPA), San Francisco, California. The drums contain soil cuttings generated from geotechnical borings drilled at HPA.

One composite sample (termed sludge) was collected from the drums and analyzed for metals (EPA Method 6010), pH, cyanide, and sulfide (see attached analytical results). The results indicate that the metal concentrations are below restricted levels and that the cyanide and sulfide tests were negative; the pH level was slightly alkaline. Also, there appears to be free liquid associated with the soil cuttings (see attached October 20, 1988 letter from IT to Thorton-Anderson).

Please inform us if there is any further required analytical testing of the sludge contained in the drums prior to its disposal.

If there are any questions, please call either of the undersigned.

Very truly yours,

Harding Lawson Associates

Kit Richard

Kit Richard,
Staff Geologist

for:

Lisa S. Teague,
Project Manager

Attachment: Analytical Results; letter from IT to Thornton-Anderson

ag\lst\188

03/24/89 08:30

WESTERN DIVISION, NAVAL FACILITIES ENGINEERING COMMAND
SAN BRUNO, CALIFORNIA

FACSIMILE TRANSMISSION
(415) 742-7873 or A/V 859-7873

DATE 24 mar 89

PAGES	
TOTAL 9	CONTENT 8

OBJECT: Geotechnical Boring Analysis

TO
ACTIVITY HLA
NAME LISA TERRIE
CODE
EXTENSION 897-7556
FACSIMILE EQUIPT. NO. 897-5275

FROM
CODE 18116B
NAME GREG BROWN
EXTENSION 877-9502

000810

TRANSMITTED (DATE) | TIME

THORNTON ANDERSON
ARCHITECTS

10/12/88
EPR: GET A COPY FOR ENVIRONMENT THANKS

LETTER OR TRANSMITTAL

DATE: October 10, 1988

PROJECT: 8707.10

TO: Department of the Navy
Western Division
Naval Facilities
Engineering Command
PO Box 727
San Bruno, CA 94066-0720

RE: Hunters Point
Contract N62474-86-C-0653

000810

ATTENTION: Les Bana

Forwarding or sending - attached X or under separate ___ cover via: Mail

the following items:

Copy of Letter X
Plans ___
Prints ___
Shop Drawings ___
Other ___

Change Order ___
Samples ___
Specifications ___
As Requested ___

Transmitted as noted below:
For approval ___
For your use X
Other ___
For Review/Comments ___
As Noted Herein ___

COPIES	DATED	DESCRIPTION
1	7 Oct, 1988	Analysis of 9 Drums from Recent Borings

REMARKS: No toxicity was found to be over acceptable levels.

COPY(IES) TO: JMT
JA
FILE
CHRON

SIGNED:

INTERNATIONAL TECHNOLOGY CORPORATION

October 7, 1988

000810

Mr. Steve Silvera
Thornton-Anderson
60 Federal St., Suite 555
San Francisco, Ca 94107

Steve,

Please find attached copies of the Chain of Custody form and Certificate of Analysis for 9 - 55 gallon drums of soil/liquid at the [redacted] San Francisco. Samples were taken on 9-27-88.

If I can answer questions or be of further assistance please call me at 415/372-9100.

Sincerely,

Larry Hudson

Larry Hudson
Project Manager
IT Corporation

LH:cd

Attachments

Oct 11 1 35 PM '88

INTERNATIONAL TECHNOLOGY CORPORATION (141148)

CHAIN-OF-CUSTODY RECORD

R/A Control No. _____

C/C Control No. 021208

NAME/NUMBER THORNTON ANDERSON

LAB DESTINATION PRECISION ANALYTICAL

TEAM MEMBERS K KINCAID

CARRIER/WAYBILL NO. — NONE —

Sample Location and Description	Date and Time Collected	Sample Type	Container Type	Condition on Receipt (Name and Date)	Disposal Record No.
COMPOSITE — 9EA 55GN DRUMS — HUNTERS PT. SF FROM WELL DRILLINGS.	9-27-88 1700 HRS	SLUDGE	40 ML CLEAR GLASS		
(JARS ARE MARKED "1 OF 2 & 2 OF 2")					

COPY

Instructions: STANDARD PREDISPOSAL ANALYSIS REQUESTED

Sample Hazards: _____

TURES: (Name, Company, Date and Time) IT CORP. 15:20 PM

quished By: K Kincaid 9-28-88 15:20 PM

ived By: Jane Clow 9/28/88

quished By: _____

ived By: _____

3. Relinquished By: _____

Received by: _____

4. Relinquished By: _____

Received By: _____

000810

uccompany samples

PA Precision Analytical Laboratory, Inc.
2111 JENNINGS STREET, SAN FRANCISCO, CA 94124-3224, PHONE (415) 822-9649 FAX (415) 822 5290

CERTIFICATE OF ANALYSIS

State License No. 211

Date Received: 09/28/88
Date Reported: 10/06/88
Job #: 70500

International Technology
4575 Pacheco Blvd.
Martinez, CA 94553

000810

Analysis Method EPA 6010
Prep Method EPA 3050 (mg/kg)

Lab ID	70500-1	
Client ID	Comp. Sludge 55 gal. drums; Hunter's Pt/San Francisco	MDL
Tl	ND<5.0	5.0
Hg	ND<2.0	2.0
Se	ND<5.0	5.0
As	ND<5.0	5.0
Mo	ND<2.0	2.0
Sb	ND<2.0	2.0
Zn	48	0.2
Cd	ND<1.0	1.0
Pb	ND<2.2	2.2
Co	9.5	0.5
Ni	88	0.3
Cr	68	0.2
V	28	0.1
Be	ND<0.5	0.5
Cu	21	0.1
Ag	ND<0.5	0.5
Ba	28	0.2

QA/QC Spike Average Recovery = 82%
MDL: Method Detection Limit; Compound below this level would not be detected

Jaime Chow
Laboratory Director

Precision Analytical Laboratory, Inc.
2111 JENNINGS STREET SAN FRANCISCO, CA 94124-3224. PHONE (415) 822-9649 FAX (415) 822 5290

Received: 09/28/88
Reported: 10/06/88
Job #: 70500

Attn: Ken Kincaid
IT Corporation
4575 Pacheco Blvd.
Martinez, CA 94553

000810

Project: Thorton Anderson

Lab ID #: 70500-1
Client ID #: Composite Sludge 55 gal. drums; Hunter's Pt.

Analysis:

pH	7.8
Cyanide	Negative
Sulfide	Negative
Free Liquid	

Jaime Chow
Laboratory Director

Harding Lawson Associates

TELEPHONE CONVERSATION RECORD

File: Geotech borings Job No.: Date: 3/28/89

Person (called, calling): Hadi Wijaja Time: 2:35

Representing: SF - HLA City:

Subject: Tel. No.:

Items Discussed:

Hadi will send us copies of report and boring logs from geotech borings from Sept 88 (?)

Note Reports Review 3/30/89

Signature: KHR

11/01/88

INTERNATIONAL TECHNOLOGY CORPORATION

RECEIVED
THORNTON/ANDERSON
ARCHITECTS

OCT 26 1988

JMT	JA	
CSI	ACCTG	FILE

October 20, 1988

000810

Mr. Steve Silva
Thorton Anderson
60 Federal St., Suite 555
San Francisco, CA 94107

SUBJECT: Hunters Point Analytical Results

Dear Mr. Silva:

IT Corporation appreciates the opportunity to be of service to your company. We have attached for your record a copy of the analytical results for the sludge drums at Hunters Point. Initial review indicates that the metals concentrations are below restricted levels and that cyanide and sulfide tests were negative.

The notation of free liquids indicates that the material will not pass the paint filter test required for landfilling. The handling method probably required for disposal is stabilization. If you have any questions, or we can be of further service, please contact me at 415/372-5251.

clarify
Rob Carr
11/02/88

Sincerely,

Mitch Clark

Mitch Clark
Sales Account Manager
IT Corporation

MC:cd

Attachment

W. Environmental: Wayne Olsen 11/02/88

Regional Office

Precision Analytical Laboratory, Inc.
2111 JENNINGS STREET, SAN FRANCISCO, CA 94124-3224, PHONE (415) 822-9649 FAX (415) 822-5290

CERTIFICATE OF ANALYSIS

State License No. 211

Date Received: 09/28/88
Date Reported: 10/06/88
Job #: 70500

International Technology
4575 Pacheco Blvd.
Martinez, CA 94553

000810

Analysis Method EPA 6010
Prep Method EPA 3050 (mg/kg)

Lab ID	70500-1	
Client ID	Comp. Sludge 55 gal. drums; Hunter's Pt/San Francisco	MDL
Tl	ND<5.0	5.0
Hg	ND<2.0	2.0
Se	ND<5.0	5.0
As	ND<5.0	5.0
Mo	ND<2.0	2.0
Sb	ND<2.0	2.0
Zn	48	0.2
Cd	ND<1.0	1.0
Pb	ND<2.2	2.2
Co	9.5	0.5
Ni	88	0.3
Cr	68	0.2
V	28	0.1
Be	ND<0.5	0.5
Cu	21	0.1
Ag	ND<0.5	0.5
Ba	28	0.2

QA/QC Spike Average Recovery = 82%
MDL: Method Detection Limit; Compound below this level would not be detected

Jaime Chow
Laboratory Director

Precision Analytical Laboratory, Inc.
2111 JENNINGS STREET, SAN FRANCISCO, CA 94124-3224, PHONE (415) 822-9649 FAX (415) 822-5290

Received: 09/28/88
Reported: 10/06/88
Job #: 70500

000810

Attn: Ken Kincaid
IT Corporation
4575 Pacheco Blvd.
Martinez, CA 94553

Project: Thorton Anderson

Lab ID #: 70500-1
Client ID #: Composite Sludge 55 gal. drums; Hunter's Pt.

Analysis:

pH	7.8
Cyanide	Negative
Sulfide	Negative
Free Liquid	

Jaime Chow
Laboratory Director

Precision Analytical Laboratory, Inc.

4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (415) 222-3002 FAX (415) 222-1251

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 211

000887

Received: 07/06/89
Reported: 07/20/89
Job #: 70920

BAKER TANKS
DRUMS # 112-131

Attn: Craig Wright
Universal Engineering
P.O. Box 1306
Benicia, CA. 94510

Project: Baker Tank Clean-up Material

Lab ID #: 70920-1
Client ID: #1 Drum Baker Tank Sludge

ANALYSIS:

			MDL
pH of Leach	8.2		N/A
Sulfide	6.0	mg/kg	10
Cyanide	ND<1.0	mg/kg	1.0
TPH - Diesel	ND<10	mg/kg	10
TPH - Gasoline	ND<10	mg/kg	10
PCB's	N/A	mg/kg	0.5
Halogenated	ND<1.0	mg/kg	1.0
Flashpoint	>140	°F	N/A
Normality	N/A		N/A

MDL: Method detection limit; Compound below this level would not be detected.

QA/QC: Spike Recovery for Gasoline: 94%
Spike Recovery for 1,1,1-Trichloroethane: 113%

METHODS:
TPH by EPA 8015
Sulfide Method EPA 9030
Halogenated Method EPA 8010
Cyanide Method EPA 9010

Surinder Sidhu
Surinder Sidhu
Senior Chemist

Precision Analytical Laboratory, Inc.

4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (415) 222-3002 FAX (415) 222-1251

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 211

Received: 07/06/89
Reported: 07/20/89
Job #: 70920

000887

Attn: Craig Wright
Universal Engineering
P.O. Box 1306
Benicia, CA. 94510

Analysis Method EPA 6010
Prep Method EPA 3050
mg/kg

Lab ID #: 70920-1
Client ID: #1 Drum Sludge

METAL		MDL	% SPIKE RECOVERY
Tl	ND<2.2	2.2	74
As	ND<2.2	2.2	88
Hg	ND<5.0	5.0	98
Se	ND<5.0	5.0	76
Mo	ND<1.0	1.0	84
Sb	ND<1.0	1.0	70
Zn	11	0.15	85
Cd	1.4	0.3	86
Pb	8.7	1.1	84
Co	2.0	0.5	82
Ni	17	0.65	80
Cr	7.8	0.15	82
V	17	0.1	88
Be	ND<0.025	0.025	88
Cu	9.0	0.1	90
Ag	ND<0.1	0.1	77
Ba	35	0.1	82

MDL: Method detection Limit: Compound below this level would n be detected.

Surinder Sidhu

Surinder Sidhu
Senior Chemist

Precision Analytical Laboratory, Inc.

4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (415) 222-3002 FAX (415) 222-1251

CERTIFICATE OF ANALYSIS

State License No. 211

000887

Received: 07/06/89
Reported: 07/20/89
Job No #: 70920

Attn: Craig Wright
Universal Engineering
P.O. Box 1306
Benicia, CA. 94510

Project: Baker Tank Clean-up Material

Aromatic Volatile Hydrocarbon Analysis:
EPA Method 8020
mg/kg

Lab ID 70920-1
Client ID Drum/Sludge

Analysis:

		MDL
Benzene	ND<0.03	0.03
Toluene	ND<0.03	0.03
Ethylbenzene	ND<0.03	0.03
Xylene	ND<0.03	0.03
Chlorobenzene	ND<0.03	0.03
1,2 Dichlorobenzene	ND<0.03	0.03
1,3 Dichlorobenzene	ND<0.03	0.03
1,4 Dichlorobenzene	ND<0.03	0.03

QA/QC: Spike Recovery for Benzene: 88%

Surinder Sidhu
Surinder Sidhu
Senior Chemist

Harding Lawson Associates

March 2, 1989

02176,228.02

002460

000

2C2

Western Division
Naval Facilities Engineering Command
P.O. Box 727
San Bruno, California 94066-0720

Attention: Ms. Louise Lew, Code 1811LL

Ladies and Gentlemen:

Status of Drilling Wastes in Bins
RI/FS - Reconnaissance Phase
Hunters Point Annex

This letter summarizes the status of drilling wastes derived during the reconnaissance phase of the RI/FS for Hunters Point Annex. Specifically, this letter transmits analytical data for material stored in two roll-off bins currently located at Building 810.

The wastes in the two bins were generated during drilling of pilot borings in the Bay Fill (IR-02) area. One bin contains drilling mud and the other contains soil cuttings. Liquids from the bin containing the drill mud have been decanted off and transferred to a Baker tank located at the decon facility.

A composite soil sample was obtained from each bin (Samples 8847B016 and 8847B017) and analyzed for volatile and semivolatile organic compounds (EPA 8240/8270), Title 22 Metals, and Total Petroleum Hydrocarbons (EPA 8015). A separate sample composited from both bins (Sample 8847B018) was also submitted for an acute fish toxicity test. A summary of the analyses performed is presented on Table 1. Copies of the certified laboratory reports are also attached.

ANALYTICAL RESULTS:

No organic compounds were detected by the analytical methods. Low levels of total metals were detected in samples from both bins; however, none of the concentrations exceed the Total Threshold Limit Concentrations (TTLCs). In addition, none of the total concentrations exceed ten times the Soluble Threshold Limit Concentration

(STLC) thereby indicating that the respective STLCs would not be exceeded in Waste Extraction Tests (WETS). Fish mortality was not observed during the acute toxicity test.

CONCLUSIONS

When total metals concentrations in a sample exceed the STLC, California Code of Regulations, Title 22, Chapter 30, Div. 4, Article 11, Sect 66700 requires Waste Extraction Tests (WETS) to evaluate the leachability of metals from the waste. However, due to the dilution factors involved in the extraction phase of the WET, only samples with total metals concentrations greater than ten times the STLC could yield a soluble metals concentration which would exceed the STLC. Because none of the samples from the bins contain total metals concentrations greater than ten times the STLC, we conclude that no further waste characterization is needed and that the drilling wastes can be disposed on-site. It is our understanding that the DHS concurred with this sampling and analysis approach in a monthly meeting with the Navy on January 25, 1989.

The Navy has indicated that a location for on-site disposal will be selected by their On-Scene Coordinator, Mr. Kam Tung. When you have selected such a location, please contact us and we will arrange for disposal of the drilling wastes in the bins.

Very truly yours,

HARDING LAWSON ASSOCIATES

Lisa J. Teague

Lisa Teague
Project Manager

Attachments: Table 1 - Summary of Drilling Waste Analyses
Analytical Test Data - Curtis & Thompkins
Toxicity Test Results - Aqua Terra Technologies

ag\dbp\033

Table 1. Summary of Drilling Waste Analyses
Reconnaissance Activities - Hunters Point Annex

Sample #	Site Where Generated	Drum #	Date Generated	VOCs EPA 8240	SOCs EPA 8270	Title 22 Metals	TPH	pH	Cyanide	Hexavalent Chromium	PCBs	Oil and Grease	Asbestos	Toxicity Test
8847B007	IR-01	12,13,14,15, 16,25,26	11/3 to 11/7/88	X	X	X	X							
8847B008	IR-01, IR-10	1,2,3,4,5,23,24 27,38,39,40	10/12 to 11/7/88			X		X	X					
8847B009	IR-09	17,18,19,20,21,22	11/1 to 11/2/88			X	X	X		X				
8847B010	IR-08	36,37	11/9/88			X	X	X			X			
8847B011	IR-05	28,29,30,31,32	11/8/88			X	X	X						
8847B012	IR-11	8,9	10/10/88				X				X	X	X	
8847B013	IR-07	6,7	10/11/88			X	X	X				X		
8847B014	IR-01, IR-03	10,11	10/17 to 10/18/88	X	X	X	X							
8847B015	IR-02	33,34,35	11/10/88			X	X	X						
8847B016	IR-01, IR-02	Mud Bin	...	X	X	X	X							
8847B017	...	Soil Cuttings Bin	...	X	X	X	X							
8847B018	...	10,11,12,13,14, 15,16,38,39,40, mud bin, soil cuttings bin	...											X
8847B019	...	1,2,3,4,5,17,18, 19,20,21,22,23, 24,28,29,30,31,32	...											X
8847B020	...	6,7,8,9,33,34, 35,36,37	...											X

G6889-L

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

LABORATORY NUMBER: 16276
CLIENT: HARDING LAWSON ASSOCIATES
JOB #: 02176,228.02
LOCATION: HUNTERS POINT/DRUM SAMPLING

DATE RECEIVED: 11-23-88
DATE ANALYZED: 12-07-88
DATE REPORTED: 12-19-88

00467

Total Petroleum Hydrocarbons in Soils & Wastes
EPA 8015 (Modified)
Extraction Method: EPA 3550

LAB ID	CLIENT ID	GASOLINE (mg/Kg)	KEROSINE (mg/Kg)	DIESEL (mg/Kg)	OTHER (mg/Kg)
16276-1	8847B007	ND(10)	ND(10)	ND(10)	ND(10)
16276-3	8847B009	ND(10)	ND(10)	ND(10)	ND(10)
16276-4	8847B010	ND(10)	ND(10)	ND(10)	ND(10)
16276-5	8847B011	ND(10)	ND(10)	ND(10)	ND(10)
16276-6	8847B012	ND(10)	ND(10)	ND(10)	ND(10)
16276-7	8847B013	ND(10)	ND(10)	ND(10)	ND(10)
16276-8	8847B014	ND(10)	ND(10)	ND(10)	ND(10)
16276-9	8847B015	ND(10)	TRACE	ND(10)	ND(10)
16276-10	8847B016	ND(10)	ND(10)	ND(10)	ND(10)
16276-11	8847B017	ND(10)	ND(10)	ND(10)	ND(10)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference	11
Spike: % Recovery	102

LABORATORY DIRECTOR

N00217.001041
HUNTERS POINT
SSIC NO. 5090.3

ENCLOSURE (3) – SUMMARY OF NONHAZARDOUS WASTE SOIL CUTTINGS

VOLATILE ORGANICS IN SOIL AND WASTE
PAGE 2 THROUGH PAGE 6

PLACE NON-HAZARDOUS WASTE AT DERIVED SOILS PLACEMENT AREA

THE ABOVE IDENTIFIED PAGES ARE NOT AVAILABLE.

EXTENSIVE RESEARCH WAS PERFORMED BY SOUTHWEST DIVISION TO LOCATE THESE PAGES. THIS PAGE HAS BEEN INSERTED AS A PLACEHOLDER AND WILL BE REPLACED SHOULD THE MISSING ITEMS BE LOCATED.

QUESTIONS MAY BE DIRECTED TO:

DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132
TELEPHONE: (619) 532-3676

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 16276-10
CLIENT: HARDING LAWSON ASSOCIATES
JOB #: 02176,228.02
SAMPLE ID: 8847B016

DATE RECEIVED: 11-23-88
DATE EXTRACTED: 12-01-88
DATE ANALYZED: 12-01-88
DATE REPORTED: 12-19-88

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

00467

COMPOUND	Result ug/kg	Detection Limit ug/kg
chloromethane	ND	50
bromomethane	ND	50
vinyl chloride	ND	50
chloroethane	ND	50
methylene chloride	ND	25
trichlorofluoromethane	ND	25
1,1-dichloroethene	ND	25
1,1-dichloroethane	ND	25
trans-1,2-dichloroethene	ND	25
chloroform	ND	25
1,2-dichloroethane	ND	25
1,1,1-trichloroethane	ND	25
carbon tetrachloride	ND	25
bromodichloromethane	ND	25
1,2-dichloropropane	ND	25
cis-1,3-dichloropropene	ND	25
trichloroethylene	ND	25
dibromochloromethane	ND	25
1,1,2-trichloroethane	ND	25
benzene	ND	25
trans-1,3-dichloropropene	ND	25
2-chloroethylvinyl ether	ND	50
bromoform	ND	25
1,1,2,2-tetrachloroethane	ND	25
tetrachloroethene	ND	25
toluene	ND	25
chlorobenzene	ND	25
ethyl benzene	ND	25

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	50
carbon disulfide	ND	25
2-butanone	ND	50
vinyl acetate	ND	50
2-hexanone	ND	50
4-methyl-2-pentanone	ND	50
styrene	ND	25
total xylenes	ND	25

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	98
Toluene-d8	93
Bromofluorobenzene	110

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 16276-11
CLIENT: HARDING LAWSON ASSOCIATES
JOB #: 02176,228.02
SAMPLE ID: 8847B017

DATE RECEIVED: 11-23-88
DATE EXTRACTED: 12-01-88
DATE ANALYZED: 12-01-88
DATE REPORTED: 12-19-88

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

00467

COMPOUND	Result ug/kg	Detection Limit ug/kg
chloromethane	ND	50
bromomethane	ND	50
vinyl chloride	ND	50
chloroethane	ND	50
methylene chloride	ND	25
trichlorofluoromethane	ND	25
1,1-dichloroethene	ND	25
1,1-dichloroethane	ND	25
trans-1,2-dichloroethene	ND	25
chloroform	ND	25
1,2-dichloroethane	ND	25
1,1,1-trichloroethane	ND	25
carbon tetrachloride	ND	25
bromodichloromethane	ND	25
1,2-dichloropropane	ND	25
cis-1,3-dichloropropene	ND	25
trichloroethylene	ND	25
dibromochloromethane	ND	25
1,1,2-trichloroethane	ND	25
benzene	ND	25
trans-1,3-dichloropropene	ND	25
2-chloroethylvinyl ether	ND	50
bromoform	ND	25
1,1,2,2-tetrachloroethane	ND	25
tetrachloroethene	ND	25
toluene	ND	25
chlorobenzene	ND	25
ethyl benzene	ND	25

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	50
carbon disulfide	ND	25
2-butanone	ND	50
vinyl acetate	ND	50
2-hexanone	ND	50
4-methyl-2-pentanone	ND	50
styrene	ND	25
total xylenes	ND	25

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	101
Toluene-d8	99
Bromofluorobenzene	101

N00217.001041
HUNTERS POINT
SSIC NO. 5090.3

ENCLOSURE (3) – SUMMARY OF NONHAZARDOUS WASTE SOIL CUTTINGS

VOLATILE ORGANICS IN SOIL AND WASTE
PAGE 9 THROUGH PAGE 12

PLACE NON-HAZARDOUS WASTE AT DERIVED SOILS PLACEMENT AREA

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QUESTIONS MAY BE DIRECTED TO:

DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132
TELEPHONE: (619) 532-3676

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 16276-10
CLIENT: HARDING LAWSON ASSOCIATES
JOB #: 02176,228.02
CLIENT ID: 8847B016
LOCATION: HUNTERS POINT/DRUM SAMPLING

DATE RECEIVED: 11-23-88
DATE EXTRACTED: 11-30-88
DATE ANALYZED: 12-01-88
DATE REPORTED: 12-19-88

EPA 8270: Base/Neutral and Acid Extractables in Soils & Wastes
Extraction Method: EPA 3550 Sonication

00467

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	1.65
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.66
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	1.65
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 16276-10
CLIENT ID: 8847B016

EPA 8270

00467

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
4-Bromophenylphenyl ether	ND	0.33
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65

HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	0.33
Aniline	ND	0.33
Benzyl Alcohol	ND	1.65
4-Chloroaniline	ND	0.66
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	1.65
3-Nitroaniline	ND	1.65
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	1.65

ND = None Detected, Limit of Detection (LOD) appears in right column

QA/QC SUMMARY: SURROGATE RECOVERIES

Compound	%Recovery	Compound	%Recovery
2-Fluorophenol	100	2-Fluorobiphenyl	37
2,4,6-tribromophenol	85	Terphenyl	77
Nitrobenzene-d5	76		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 16276-11
CLIENT: HARDING LAWSON ASSOCIATES
JOB #: 02176,228.02
CLIENT ID: 8847B017
LOCATION: HUNTERS POINT/DRUM SAMPLING

DATE RECEIVED: 11-23-88
DATE EXTRACTED: 11-30-88
DATE ANALYZED: 12-01-88
DATE REPORTED: 12-19-88

EPA 8270: Base/Neutral and Acid Extractables in Soils & Wastes
Extraction Method: EPA 3550 Sonication

00467

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	1.65
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.66
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	1.65
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 16276-11
CLIENT ID: 8847B017

EPA 8270

00467

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
4-Bromophenylphenyl ether	ND	0.33
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65

HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	0.33
Aniline	ND	0.33
Benzyl Alcohol	ND	1.65
4-Chloroaniline	ND	0.66
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	1.65
3-Nitroaniline	ND	1.65
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	1.65

ND = None Detected, Limit of Detection (LOD) appears in right column

QA/QC SUMMARY: SURROGATE RECOVERIES

Compound	%Recovery	Compound	%Recovery
2-Fluorophenol	77	2-Fluorobiphenyl	58
2,4,6-tribromophenol	87	Terphenyl	75
Nitrobenzene-d5	52		

N00217.001041
HUNTERS POINT
SSIC NO. 5090.3

ENCLOSURE (3) – SUMMARY OF NONHAZARDOUS WASTE SOIL CUTTINGS

VOLATILE ORGANICS IN SOIL AND WASTE
PAGE 17 THROUGH PAGE 24

PLACE NON-HAZARDOUS WASTE AT DERIVED SOILS PLACEMENT AREA

THE ABOVE IDENTIFIED PAGES ARE NOT AVAILABLE.

EXTENSIVE RESEARCH WAS PERFORMED BY SOUTHWEST DIVISION TO LOCATE THESE PAGES. THIS PAGE HAS BEEN INSERTED AS A PLACEHOLDER AND WILL BE REPLACED SHOULD THE MISSING ITEMS BE LOCATED.

QUESTIONS MAY BE DIRECTED TO:

DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132
TELEPHONE: (619) 532-3676

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 16276-10
CLIENT: HARDING LAWSON ASSOCIATES
SAMPLE ID: 8847B016
JOB #: 02176,228.02/HUNTERS POINT

DATE RECEIVED: 11-23-88
DATE ANALYZED: 12-08-88
DATE REPORTED: 12-20-88

Title 22 Metals in Soils & Wastes
Digestion Method: EPA 3050

00467

METAL	RESULT mg/Kg	DETECTION LIMIT mg/Kg	METHOD
Antimony	ND	0.7	EPA 6010
Arsenic	ND	0.7	EPA 6010
Barium	27	0.1	EPA 6010
Beryllium	ND	0.2	EPA 6010
Cadmium	ND	0.1	EPA 6010
Chromium (total)	20	0.1	EPA 6010
Cobalt	3.2	0.1	EPA 6010
Copper	14	0.1	EPA 6010
Lead	2.0	0.7	EPA 6010
Mercury	ND	0.1	EPA 7471
Molybdenum	ND	0.1	EPA 6010
Nickel	27	0.1	EPA 6010
Selenium	ND	1.0	EPA 6010
Silver	ND	1.0	EPA 6010
Thallium	ND	0.7	EPA 6010
Vanadium	12	1.0	EPA 6010
Zinc	11	0.1	EPA 6010

ND = None Detected

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Antimony	2	100	Mercury	3	100
Arsenic	1	84	Molybdenum	<1	104
Barium	2	102	Nickel	4	102
Beryllium	6	93	Selenium	7	80
Cadmium	2	78	Silver	<1	99
Chromium	3	101	Thallium	1	87
Cobalt	2	98	Vanadium	4	82
Copper	2	101	Zinc	3	100
Lead	1	102			

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 16276-11
CLIENT: HARDING LAWSON ASSOCIATES
SAMPLE ID: 8847B017
JOB #: 02176,228.02/HUNTERS POINT

DATE RECEIVED: 11-23-88
DATE ANALYZED: 12-08-88
DATE REPORTED: 12-20-88

00467

Title 22 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	DETECTION LIMIT mg/Kg	METHOD
Antimony	ND	2.7	EPA 6010
Arsenic	ND	2.7	EPA 7060
Barium	99	0.5	EPA 6010
Beryllium	0.5	0.5	EPA 6010
Cadmium	ND	0.5	EPA 6010
Chromium (total)	70	0.5	EPA 6010
Cobalt	12	0.5	EPA 6010
Copper	110	0.5	EPA 6010
[redacted]d	9.5	2.7	EPA 7421
[redacted]cury	ND	0.1	EPA 7471
Molybdenum	ND	0.5	EPA 6010
Nickel	85	0.5	EPA 6010
Selenium	ND	2.7	EPA 6010
Silver	ND	1.0	EPA 6010
Thallium	ND	2.7	EPA 6010
Vanadium	49	1.0	EPA 6010
Zinc	70	0.5	EPA 6010

ND = None Detected

QA/QC SUMMARY

	%RPD	%SPIKE
Antimony	2	100
Arsenic	1	84
Barium	2	102
Beryllium	6	93
Cadmium	2	78
Chromium	3	101
Cobalt	2	98
Copper	2	101
[redacted]	1	102

	%RPD	%SPIKE
Mercury	3	100
Molybdenum	<1	104
Nickel	4	102
Selenium	7	80
Silver	<1	99
Thallium	1	87
Vanadium	4	82
Zinc	3	100

RECEIVED
DEC 12 1988
HARDING LAWSON ASSOC.

December 8, 1988

Ms. Lisa Teague
Harding Lawson Associates
200 Rush Landing Road, P. O. Box 6107
Novato, CA 94948

002078

Subject: Toxicity Test Results of Sediment Samples 8211, 8212, and 8213 (8847B018, 8847B019, and 8847B020).

Dear Ms. Teague:

This report presents the toxicity test results for fathead minnow (Pimephales promelas) exposed to concentrations of sediment samples provided by Harding Lawson Associates.

a Terra Technologies
sulting Engineers
cientists

skirk Avenue
e 220
nut Creek, CA
596
934-4884

METHODS

All tests were conducted according to Aqua Terra Technologies (ATT) hazardous waste aquatic toxicity test protocol based on Standard Methods for the Examination of Water and Wastewater, 16th Edition, American Public Health Association, 1986, and certified by the State of California Department of Health Services (copy of certificate attached). Each sediment sample was tested at three concentrations, 250 mg/L, 500 mg/L, and 750 mg/L. Each sediment sample was thoroughly mixed into dechlorinated tap water using a wrist action shaker. All treatments were run in duplicate with 10 fish per three liter tank and a total of 20 fish per treatment. Temperature was controlled at 20 ± 2°C and photoperiod regulated at approximately 16-hours light and 8-hours dark. Fish were acclimated in the test laboratory for 7 days prior to their use in these tests.

Fish mortality, temperature, pH, and dissolved oxygen concentration were monitored during the 96-hours test. Water hardness and alkalinity were measured for dilution water and the highest treatment concentration at the beginning of the test.

TEST RESULTS

No fish mortality occurred in the dilution water control or in any sample treatments. All fish showed no signs of stress. The raw data from tests are summarized in the attached data sheets.

ATT

002078

Test results indicate that the 96-hour LC50 values for the sediment samples 8211, 8212, and 8213 are greater than 500 mg/L. The sediment samples (8211 to 8213) therefore do not meet the acute aquatic toxicity test criteria (96-hour LC50 $\leq$ 500 mg/L) for identification of a material as hazardous, according to the specification in the California Administration Code, Title 22, Division 4, Article 11, Section 66696.

Should any questions arise as to test procedures or results, do not hesitate to call.

Very truly yours,

AQUA TERRA TECHNOLOGIES, INC.

Patrick J. Sheehan, Ph.D.
Laboratory Director

PJS/wf

Enclosures: Bioassay Data Sheet
Chain of Custody
Certificate
Invoice

ATT

FISH BIOASSAY MEASUREMENTS

Fathead Minnows

002072

For: Harding Lawson Associates: Ms. Teague

Sample ID#: 8211 to 8213 Sample Conc. Sediments

Client ID#: 8847B018, 8847B019, 8847B020

Average Length: 28.2 mm SL Average Weight: 0.28 g

Maximum Length: 34.0 mm SL Maximum Weight: 0.40 g

Minimum Length: 23.0 mm SL Minimum Weight: 0.20 g

Fish Length (mm SL)		Fish Weight (g)	
1.	29.0	1.	0.3
2.	27.0	2.	0.2
3.	29.0	3.	0.3
4.	27.0	4.	0.2
5.	33.0	5.	0.4
6.	28.0	6.	0.3
7.	23.0	7.	0.2
8.	34.0	8.	0.4
9.	25.0	9.	0.3
10.	27.0	10.	0.2

Technician: William Foster

2950 Buskirk Avenue
Walnut Creek, CA 9[redacted]
415 934-4884

CLIENT: Harding Lawson Associates ATTENTION: Ms. Teague

SAMPLE ID#: 8211 to 8213 SAMPLE DESCRIPTION: Control-dechlorinated tap TESTING DATES: 11/28/88 - 12/02/88
Client ID#: (8847B018, 8847B019, 8847B020)

002078

			INITIAL				24-HOUR				48-HOUR				72-HOUR				96-HOUR			
TEST CONC mg/L	Alk mg/L	Hard mg/L	Live	pH	DO mg/L	Temp °C	Live	pH	DO mg/L	Temp °C	Live	pH	DO mg/L	Temp °C	Live	pH	DO mg/L	Temp °C	Live	pH	DO mg/L	Temp °C
C-1	44	64	10	7.5	8.7	20	10	7.5	8.4	19	10	7.1	8.6	20	10	7.2	8.7	19	10	7.8	9.0	19
C-2	44	64	10	7.5	8.7	20	10	7.5	8.3	19	10	7.2	8.5	20	10	7.2	8.6	19	10	7.8	9.0	19

Test Species fathead minnow Avg Length 28.2 mm SL Max Length 34.0 mm SL Min Length 23.0 mm SL

Source of Test Species Thomas Fish Company Avg Wt 0.28 g Max Wt 0.40 g Min Wt 0.30 g

Species Density 10/tank 20/treatment Dilution Water dechlorinated tap Test Soln Vol 3 L Depth 17 cm Aeration Bubble

Acclimation Tank % Dead 0 Accl. Tank Water dechlorinated tap Accl. Period 7 days Accl. Temp. 20 +/- 2°C

TECHNICIAN: William Foster
William Foster, M.S.

REMARKS:

96 hr LC50 n/a

95% Confidence Limits n/a

Percent Survival 100%

LABORATORY DIRECTOR: Patrick Sheehan
Patrick Sheehan, PhD

2950 Buskirk Avenue
Walnut Creek, CA 9[redacted]
415 934-4884

CLIENT: Harding Lawson Associates ATTENTION: Ms. Teague

SAMPLE ID#: 8211 to 8213 SAMPLE DESCRIPTION: Control-dechlorinated tap TESTING DATES: 11/28/88 - 12/02/88
Client ID#: (8847B018, 8847B019, 8847B020)

002078

			INITIAL				24-HOUR				48-HOUR				72-HOUR				96-HOUR			
TEST CONC mg/L	Alk mg/L	Hard mg/L	Live	pH	DO mg/L	Temp °C	Live	pH	DO mg/L	Temp °C	Live	pH	DO mg/L	Temp °C	Live	pH	DO mg/L	Temp °C	Live	pH	DO mg/L	Temp °C
C-1	44	64	10	7.5	8.7	20	10	7.5	8.4	19	10	7.1	8.6	20	10	7.2	8.7	19	10	7.8	9.0	19
C-2	44	64	10	7.5	8.7	20	10	7.5	8.3	19	10	7.2	8.5	20	10	7.2	8.6	19	10	7.8	9.0	19

Test Species fathead minnow Avg Length 28.2 mm SL Max Length 34.0 mm SL Min Length 23.0 mm SL

Source of Test Species Thomas Fish Company Avg Wt 0.28 g Max Wt 0.40 g Min Wt 0.30 g

Species Density 10/tank 20/treatment Dilution Water dechlorinated tap Test Soln Vol 3 L Depth 17 cm Aeration Bubble

Acclimation Tank % Dead 0 Accl. Tank Water dechlorinated tap Accl. Period 7 days Accl. Temp. 20 +/- 2°C

TECHNICIAN: William Foster
William Foster, M.S.

REMARKS:

96 hr LC50 n/a

95% Confidence Limits n/a

Percent Survival 100%

LABORATORY DIRECTOR: Patrick Sheehan
Patrick Sheehan, PhD

STATIC ACUTE [illegible] ASSAY

Aqua Terra Technologies
2950 Buskirk Avenue
Walnut Creek, CA 94596
415 934-4884

CLIENT: Harding Lawson Associates ATTENTION: Ms. Teague

SAMPLE ID#: 8211 SAMPLE DESCRIPTION: Sediment (8847B018) TESTING DATES: 11/28/88 - 12/02/88

002078

			INITIAL				24-HOUR				48-HOUR				72-HOUR				96-HOUR			
TEST CONC mg/L	Alk mg/L	Hard mg/L	Live	pH	DO mg/L	Temp °C	Live	pH	DO mg/L	Temp °C	Live	pH	DO mg/L	Temp °C	Live	pH	DO mg/L	Temp °C	Live	pH	DO mg/L	Temp °C
250 A			10	7.4	8.7	20	10	7.6	8.4	19	10	7.4	8.4	20	10	7.5	8.8	18	10	7.9	8.8	19
250 B			10	7.4	8.7	20	10	7.6	8.6	19	10	7.5	8.4	20	10	7.5	8.8	18	10	7.9	8.8	19
500 A			10	7.4	8.7	20	10	7.6	8.6	19	10	7.6	8.4	20	10	7.6	8.8	18	10	8.0	8.6	19
500 B			10	7.4	8.7	20	10	7.6	8.6	19	10	7.6	8.4	20	10	7.6	8.9	18	10	8.0	8.7	19
750 A	38	75	10	7.4	8.7	20	10	7.6	8.4	19	10	7.7	8.4	20	10	7.6	8.9	18	10	7.9	8.8	19
750 B	38	75	10	7.4	8.7	20	10	7.6	8.3	19	10	7.8	8.4	20	10	7.7	8.7	18	10	8.0	8.6	19

Test Species fathead minnow Avg Length 28.2 mm SL Max Length 34.0 mm SL Min Length 23.0 mm SL

Source of Test Species Thomas Fish Company Avg Wt 0.28 g Max Wt 0.40 g Min Wt 0.20 g

Species Density 10/tank 20/treatment Dilution Water dechlorinated tap Test Soln Vol 3 L Depth 17 cm Aeration Bubble

Acclimation Tank % Dead 0 Accl. Tank Water dechlorinated tap Accl. Period 7 days Accl. Temp. 20 +/- 2°C

REMARKS:

96 hr LC50 >500 mg/L

95% Confidence Limits n/a

Percent Survival 100% in all.

TECHNICIAN: William Foster
William Foster, M.S.

LABORATORY DIRECTOR: Patrick Sheehan
Patrick Sheehan, PhD

STATIC ACUTE BIOASSAY

Aqua Terra Technologies
2950 Buskirk Avenue
Walnut Creek, CA 94596
415 934-4884

CLIENT: Harding Lawson Associates ATTENTION: Ms. Teague

SAMPLE ID#: 8212 SAMPLE DESCRIPTION: Sediment (8847B019) TESTING DATES: 11/28/88 - 12/02/88

00207

			INITIAL				24-HOUR				48-HOUR				72-HOUR				96-HOUR			
TEST CONC mg/L	Alk mg/L	Hard mg/L	Live	pH	DO mg/L	Temp °C	Live	pH	DO mg/L	Temp °C	Live	pH	DO mg/L	Temp °C	Live	pH	DO mg/L	Temp °C	Live	pH	DO mg/L	Temp °C
250 A			10	7.5	8.7	20	10	7.7	8.5	19	10	7.8	8.6	20	10	7.7	9.0	18	10	8.0	8.9	19
250 B			10	7.5	8.7	20	10	7.7	8.0	19	10	7.8	9.1	20	10	7.7	8.8	18	10	8.0	8.6	19
500 A			10	7.5	8.7	20	10	7.7	8.3	19	10	7.8	9.2	20	10	7.7	8.8	18	10	7.9	8.8	19
500 B			10	7.5	8.7	20	10	7.6	8.0	19	10	7.8	9.1	20	10	7.8	9.1	18	10	8.0	8.8	19
750 A	45	80	10	7.5	8.7	20	10	7.7	7.9	19	10	7.9	9.3	20	10	7.8	8.9	18	10	7.9	8.9	19
750 B	45	80	10	7.5	8.7	20	10	7.6	8.1	19	10	7.9	9.1	20	10	7.8	8.9	18	10	7.9	8.8	19

Test Species fathead minnow Avg Length 28.2 mm SL Max Length 34.0 mm SL Min Length 23.0 mm SL

Source of Test Species Thomas Fish Company Avg Wt 0.28 g Max Wt 0.40 g Min Wt 0.20 g

Species Density 10/tank 20/treatment Dilution Water dechlorinated tap Test Soln Vol 3 L Depth 17 cm Aeration Bubble

Acclimation Tank % Dead 0 Accl. Tank Water dechlorinated tap Accl. Period 7 days Accl. Temp. 20 +/- 2°C

TECHNICIAN: William Foster
William Foster, M.S.

REMARKS:

96 hr LC50 >500 mg/L

95% Confidence Limits n/a

Percent Survival 100% in all.

LABORATORY DIRECTOR: Patrick Sheehan
Patrick Sheehan, PhD

STATIC ACUTE BIOASSAY

Aqua Terra Technologies
2950 Buskirk Avenue
Walnut Creek, CA 94596
415 934-4884

CLIENT: Harding Lawson Associates ATTENTION: Ms. Teague

SAMPLE ID#: 8213 SAMPLE DESCRIPTION: Sediment (8847B020) TESTING DATES: 11/28/88 - 12/02/88

002078

			INITIAL				24-HOUR				48-HOUR				72-HOUR				96-HOUR			
TEST CONC mg/L	Alk mg/L	Hard mg/L	Live	pH	DO mg/L	Temp °C	Live	pH	DO mg/L	Temp °C	Live	pH	DO mg/L	Temp °C	Live	pH	DO mg/L	Temp °C	Live	pH	DO mg/L	Temp °C
250 A			10	7.5	8.7	20	10	7.7	8.5	19	10	7.9	8.4	20	10	7.8	8.7	18	10	7.9	8.8	19
250 B			10	7.5	8.7	20	10	7.7	8.4	19	10	7.9	8.4	20	10	7.8	8.9	18	10	8.0	8.8	19
500 A			10	7.5	8.7	20	10	7.8	8.4	19	10	7.9	8.4	20	10	7.8	8.9	18	10	8.0	8.6	19
500 B			10	7.5	8.7	20	10	7.8	8.3	19	10	7.9	8.4	20	10	7.9	9.0	18	10	8.0	8.9	19
750 A	40	70	10	7.5	8.7	20	10	7.8	8.1	19	10	7.9	8.4	20	10	7.9	8.8	18	10	7.9	8.9	19
750 B	40	70	10	7.5	8.7	20	10	7.8	8.4	19	10	7.9	8.4	20	10	7.9	9.0	18	10	7.9	9.1	19

Test Species fathead minnow Avg Length 28.2 mm SL Max Length 34.0 mm SL Min Length 23.0 mm SL

Source of Test Species Thomas Fish Company Avg Wt 0.28 g Max Wt 0.40 g Min Wt 0.20 g

Species Density 10/tank 20/treatment Dilution Water dechlorinated tap Test Soln Vol 3 L Depth 17 cm Aeration Bubble

Acclimation Tank % Dead 0 Accl. Tank Water dechlorinated tap Accl. Period 7 days Accl. Temp. 20 +/- 2°C

TECHNICIAN: William Foster
William Foster, M.S.

REMARKS:

96 hr LC50 >500 mg/L

95% Confidence Limits n/a

Percent Survival 100% in all.

LABORATORY DIRECTOR: Patrick Sheehan
Patrick Sheehan, PhD

STATE OF CALIFORNIA

DEPARTMENT OF HEALTH SERVICES

HAZARDOUS WASTE TESTING LABORATORY CERTIFICATE

is hereby granted to

Aqua Terra Technologies, Inc.

to conduct analysis of hazardous waste in the following test categories:

Aquatic Toxicity Testing

This Certificate is granted in accordance with provisions of Article 8.5, Chapter 6.5, Division 20 of the Health and Safety Code.

Certificate No. 169

Expiration Date March 2, 1989

Issued at Berkeley, on March 3, 1987

by

Chief, Hazardous Materials Laboratory Section

Harding Lawson Associates

March 16, 1989

02176,228.02

Western Division
Naval Facilities Engineering Command
900 Commodore Drive, Bldg. 101
San Bruno, California 94066-0720

000
2C2
cc: L. Teague
J. Skalveck

Attention: Ms. Louise Lew, Code 1811LL

Summary Report of Waste Disposal Activities

This letter presents the status of waste management activities for materials generated during the field investigations at HPA.

1. Drum Transfer to Building 810

Seventeen 55-gallon drums containing soil cuttings were transported from various HPA locations to Bldg. 810 on February 27, 1989. The drums were transported by Universal Engineering Inc. (UEI) under supervision of an HLA geologist. Sources of the drums include: geotechnical investigation near Bldg. 707 (11 drums), reconnaissance pilot boring at Bldg. 503-PCB spill area (4 drums), and decontamination facility sump sludge (2 drums). The contents of these drums need to be characterized for disposal purposes. We understand that you have authorized the sampling and analyses of these 17 drums for disposal characterization.

2. Haz Control Bins

On March 8, 1989 the soil cuttings and drilling mud slurry that were stored in two 20 yd^3 roll-off bins at Bldg. 810 were disposed of on-site at HPA. The material was placed on plastic sheeting in a paved area south of Bldg. 810 and east of the Industrial Landfill. This location was approved of by Kam Tung (March 2, 1989, telephone conversation) as a temporary disposal site. The two bins have been removed by Haz Control from HPA.

3. Rinsate From Decontamination Facility

Approximately 6000 gallons of water are stored in a Baker Tank at the decontamination facility. Our March 6, 1989 letter described the pH adjustment procedures to satisfy the disposal standards of the San Francisco Industrial Waste Division of Public Works to allow discharge to the city sewer. Two liters of concentrated hydrochloric acid were added to the water by an HLA geologist on March 8, 1989. The pH was measured at 9.4 on March 9, 1989 and at 7.2 on March 13, 1989. Tommy Lee (S.F. Industrial Waste) will confirm the pH on March 21, 1989. UEI is scheduled for March 21, 1989 to transfer water from Baker Tank via a vacuum truck to the city sewer discharge location under the direction of a Navy representative and witness of Tommy Lee.

4. Drums From Pilot Borings at Building 810

Forty-two drums containing soil cuttings from drilling activities are classified as non-hazardous and will be disposed of on site at HPA. UEI has been requested to place the soil at the temporary location south of Bldg. 810. UEI will either remove the contents using a drum handling forklift or cut the drums in half to spill the soil and then scrap the drums. The most cost efficient method will be used. UEI is scheduled to carry out this task March 21, 1989. Where possible, soils will be returned to the source area.

5. Variance on Hazardous Waste Classification

The HLA letter dated March 7, 1989 requested authorization for UEI to pursue a variance from DHS for the classification of 5 drums of soil as hazardous waste. These soils are from pilot borings drilled during the reconnaissance activities. We understand that you wish to have this disposed of at a permitted facility offsite.

6. UEI Bins at Industrial Landfill

Two 20 yd^3 bins containing drilling mud from pilot boring activities are presently stored at the Industrial Landfill. Samples of the material were collected for chemical analyses on March 6, 1989 to assess proper classification for disposal. Results of the chemical analysis are expected about March 20, 1989.

7. Onsite Disposal Area

We understand that Kam Tung has not yet selected an onsite location for long-term storage. Once this site is chosen, samples are to be collected for characterization.

Very truly yours,

HARDING LAWSON ASSOCIATES

John D. Skalbeck

John D. Skalbeck

cc: UEI, Don Oliva

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RLR

Harding Lawson Associates

HLA

April 5, 1989

002446

02176,228.02

Western Division
Naval Facilities Engineering Command
900 Commodore Drive, Bldg. 101
San Bruno, California 94066-0720

Attention: Ms. Louise Lew, Code 1811LL

Gentlemen:

Summary Report of Waste Disposal Activities
Hunters Point Annex

This letter presents the status of waste management activities for materials generated during field investigations at HPA.

1. Rinsate From Decontamination Facility

On March 21, 1989, an HLA hydrogeologist met Mr. Tommy Lee of the San Francisco Public Works, Industrial Waste Division at the site. The pH of the water in Baker Tank 1 was measured by the HLA hydrogeologist. Mr. Lee verified the pH, found the pH to be at an acceptable level, and approved the discharge of the approximately 6,000 gallons of water in Tank 1 to the city sanitary sewer system. In addition, Mr. Lee verified the pH of the water in Baker Tank 2 and found it also to be at an acceptable level for discharge. The second tank also contained approximately 6,000 gallons of water. On March 21, 1989 both tanks were discharged to the city sanitary sewer system. The tanks were pumped by UEI using a vacuum truck and the water was discharged into a manhole near Building 810 on Spear Avenue under the direction of an HLA geologist. (See also HLA letter dated March 31, 1989).

2. Drums containing Pilot Borings Cuttings Stored at Bldg. 810

On March 21, 1989, 31 drums containing soil cuttings from pilot boring drilling activities were disposed of on site. The disposal site is in a fenced area behind Building 810, near the southern gate to the Industrial Landfill. The drum contents were classified as non-hazardous. Of the forty drums originally slated for disposal, one drum contained

personal protective equipment, not soil; five drums were classified as hazardous waste and will be disposed of separately (see item 3 below); and three drums were inadvertently counted twice.

Under the direction of an HLA geologist, UEI used a backhoe and chain to lift the drums in an attempt to spill the drummed soil onto plastic sheeting. Some drums had to be dismantled in order for the contents to be removed. Where possible, drums were saved for reuse. The damaged drums were gathered into a pile near the plastic sheeting and will be disposed of by UEI during the week of April 3 (see item 6 below). The contents on the plastic sheeting consists of the contents of the Haz Control bins emptied on March 8, 1989 (see also HLA letter dated March 2, 1989) and the contents of the 31 drums emptied on March 21, 1989.

3. Five drums of soil cuttings classified as Hazardous Waste

UEI has arranged to transport the drums to Casmalia, a permitted disposal facility. We understand that Kam Tung and Randy Friedman have discussed the proposed April 13, 1989 disposal date, and gave their verbal approval to HLA on April 4. The drum contents are from pilot borings drilled during the reconnaissance activities and analysis indicated soluble metals concentrations slightly above Soluble Threshold Limit Concentrations (STLC). (See also HLA letter dated March 7, 1989 and January 11, 1989.)

4. UEI Bins at Industrial Landfill

Two 20-cubic yard bins containing drilling mud from pilot boring activities are presently stored at the Industrial Landfill. Results of the chemical analysis from the March 6, 1989 sampling have been received. These results were sent to Don Oliva at UEI on March 31, 1989, for his review in order to assess proper classification for disposal.

5. On-site Disposal Area

We understand that Kam Tung has selected an on-site location for long-term on-site storage of nonhazardous soil cuttings. An HLA geologist met with him on April 4, 1989 to review the proposed site. The samples for site characterization will be collected during the week of April 3. The site is in the same area previously used for disposal of nonhazardous drilling cuttings (see item 2, above) and we understand that these soils will not need to be moved.

6. Used Empty Drum Disposal

- UEI is trying to schedule the removal of the empty damaged drums currently being stored behind Building 810. UEI hopes to get the drums moved to a local landfill on April 7. These empty drums are classified as non-hazardous.

- An HLA geologist will identify those used drums currently being stored behind Building 810 that are reusable. Those drums determined to be reusable will be moved to the decontamination area for storage on April 7.

- Drums moved to the decontamination area under the direction of Kam Tung: In the winter of 1988, Kam Tung had 48 used drums delivered to the decontamination area. Fifteen drums are unusable because they are full of debris, were smashed as they were delivered, and/or are in poor condition. The empty drums which cannot be recycled will be disposed of as described above. The drums containing debris will be moved to Building 810; we need some direction from the Navy regarding disposition of this material. The drums which can be recycled will be stored at the decontamination area.

7. Weekly Drum Inspections

Don Oliva of UEI is sending a drum inspection form to Kam Tung and to Lisa Teague for their editing and approval. Weekly drum inspections will begin during the week of April 3.

8. Drums in Storage at Bldg. 810

There are 69 drums currently being stored at Building 810.

- Five drums have been classified as containing hazardous waste and are awaiting removal to Casmalia (see item 3).

- Six drums contain used personal protective equipment and are awaiting classification based upon review of analytical data from their respective areas of generation.

- Eight drums contain sludge from the decontamination sump. The contents of these drums need to be sampled. Sampling is scheduled for April 7.

- There are 50 drums that contain soil cuttings:Nine drums contain geotechnical boring cuttings. Analytical results were sent to UEI on March 28, 1989 for review for disposal purposes; however, additional data may be needed for disposal characterization. Four drums contain cuttings from a pilot boring. These drums need to be sampled; sampling is scheduled for April 7. Thirty-seven drums contain soil cuttings; some of the data have been received and are being reviewed for disposal criteria.

Very truly yours,

HARDING LAWSON ASSOCIATES

Kit Richard
Staff Geologist

Lisa Teague
Project Manager

cc: Kam Tung, NAVST TI
Don Oliva, UEI

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