James P. Bowers, PE
R. William Rudolph, Jr., PE

August 18, 1990
SCI 447.019

Mr. Jonathan Redding
Fitzgerald, Abbott & Beardsley
1221 Broadway, 21st Floor
Oakland, California 94612

Preliminary Subsurface Investigation
of Gasoline Tank Area
1432 Harrison Street
Oakland, California

Dear Mr. Redding:

This letter records our services to date regarding underground fuel storage tanks located at the referenced address. At least two (2) gasoline storage tanks are situated below the sidewalk along Harrison Street in front of the existing building, approximately as shown on Plate 1. Our services to date have consisted of drilling two test borings near the tanks on July 25, 1990, obtaining soil samples from the borings, and performing analytical tests on selected samples.

Investigation

In general, the test borings were drilled to depths of about 25 feet using solid flight auger drilling equipment. Our field engineer observed drilling operations, prepared detailed logs of the materials encountered, and obtained undisturbed samples. Upon conclusion of drilling, the test borings were backfilled with neat cement grout. Cuttings generated during drilling were placed in steel barrels and left on-site.

Soil samples were retained in brass sample liners. The ends of the liners were covered with Teflon sheeting, capped and sealed with duct tape. Samples were refrigerated on-site in ice chests, and remained so until delivery to the analytical laboratory for testing. Chain-of-custody records accompanied the samples to the analytical laboratory. Copies of the test boring logs and the Chain-of-Custody documents are attached.

Two soil samples were selected for chemical analysis. The soil samples were analyzed for total petroleum hydrocarbons (TPH), as

gasoline, in accordance with approved EPA test methods. Analytical services were provided by Curtis & Tompkins, Ltd. A summary of the data is presented below. Analytical test reports are attached.

Sample Designation	TPH as gasoline (ppm)[1]	Benzene (ppb)[2]	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)
1 @ 20'	6,300	99,000	490,000	110,000	610,000
2 @ 18.5'	9,300	98,000	900,000	190,000	1,100,000

[1] ppm = parts per million = mg/kg
[2] ppb = parts per billion = ug/kg

Soil and Groundwater Conditions

Our test borings indicate that the tank area is underlain by medium dense and dense sands containing minor amounts of silt and clay. These sands extend to the depths explored, approximately 25 feet below existing grades. Groundwater was encountered at a depth of about 20 feet during drilling. This level likely does not reflect stabilized groundwater conditions.

Conclusions

The results of our preliminary study indicate that gasoline exists in the soil below the tanks. We judge that the source of contamination is/are the existing or previous fuel tanks, or their piping systems, that exist in the area. The soil samples analyzed contain concentrations of gasoline as high as 9300 ppm, as well as elevated concentrations of BTXE. These concentrations are considered relatively high and suggestive of a significant fuel release. The gasoline concentrations exceed current remediation regulatory guidelines, as promulgated by the Alameda County Health Care Services Agency. Consequently, we conclude that soil remediation will be required.

The gasoline contamination appears to extend to groundwater. Based on the high gasoline concentrations and our experience

with other similar problems, we judge that (1) free gasoline product may exist on the groundwater surface, and (2) groundwater quality has likely been degraded. The severity of the groundwater problem is unknown at this time. However, we suspect that further study will indicate that groundwater remediation will be appropriate.

If you have any questions regarding our services to date, please call.

Yours very truly,

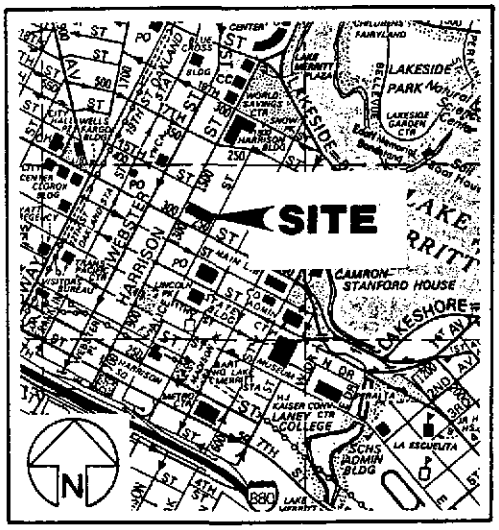
Subsurface Consultants, Inc.

James P. Bowers
Geotechnical Engineer 157 (expires 3/31/91)

CRF:JPB:nf

Attachments: Site Plan, Plate 1
Logs of Test Borings 1 and 2
Unified Soil Classification System
Laboratory Test Reports
Chain-of-Custody Documents

ALICE STREET



VICINITY MAP

TEST BORING

1432 HARRISON

APPROXIMATE LOCATION OF FUEL TANKS

Soil at 20' TPHg 6,300 ppm benz 99. ppm

2 1

HARRISON STREET

Soil at 18.5' TPHg 9,300 ppm benz 98. ppm

N

APPROXIMATE SCALE (feet)

0 40 80

SITE PLAN

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HARRISON STREET GARAGE – OAKLAND, CA

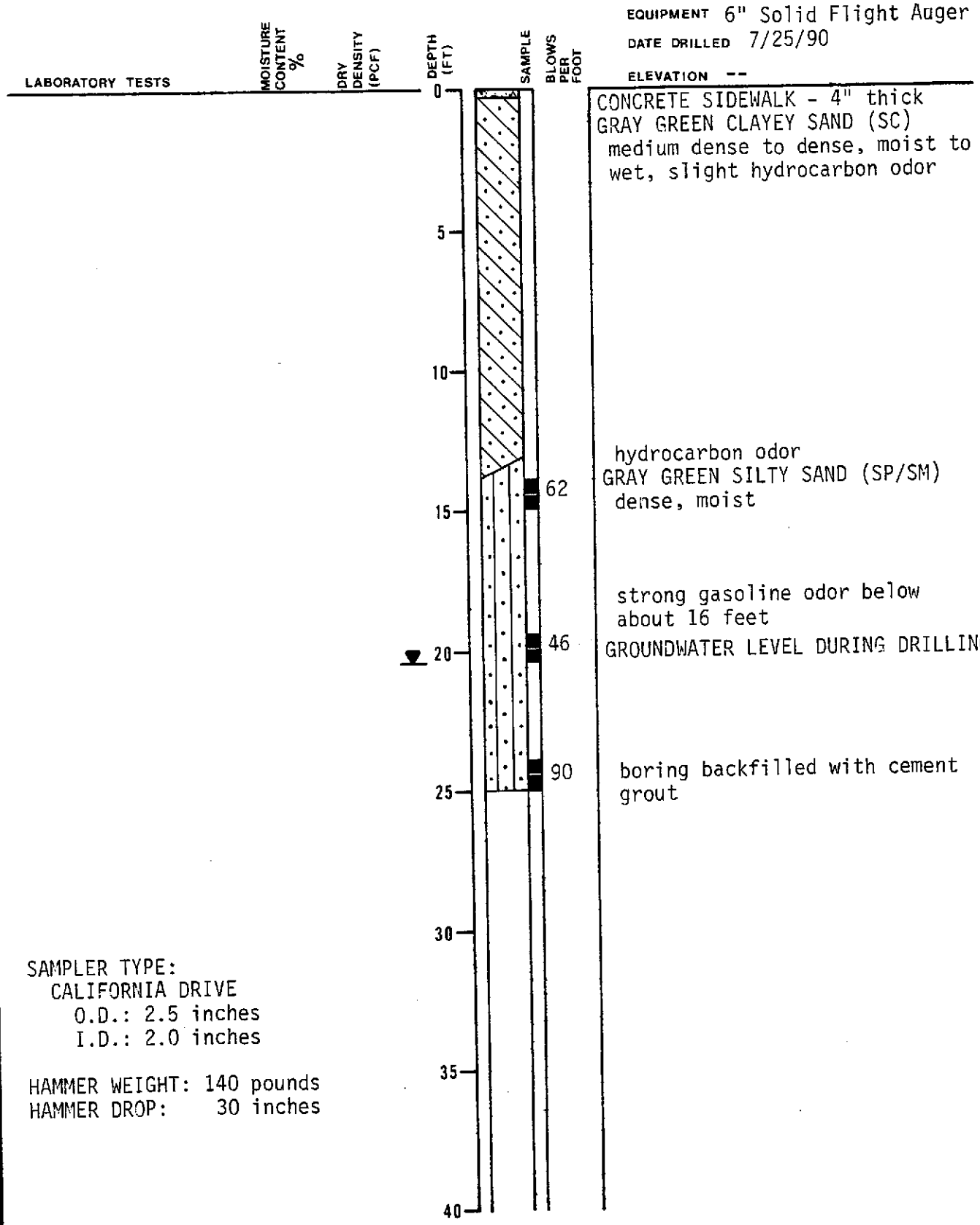
JOB NUMBER	DATE	APPROVED
447.019	8/16/90	

PLATE 1

Harrison St S

LOG OF TEST BORING 1

EQUIPMENT 6" Solid Flight Auger
DATE DRILLED 7/25/90
ELEVATION --



SAMPLER TYPE:
CALIFORNIA DRIVE
O.D.: 2.5 inches
I.D.: 2.0 inches

HAMMER WEIGHT: 140 pounds
HAMMER DROP: 30 inches

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HARRISON STREET GARAGE - OAKLAND, CA

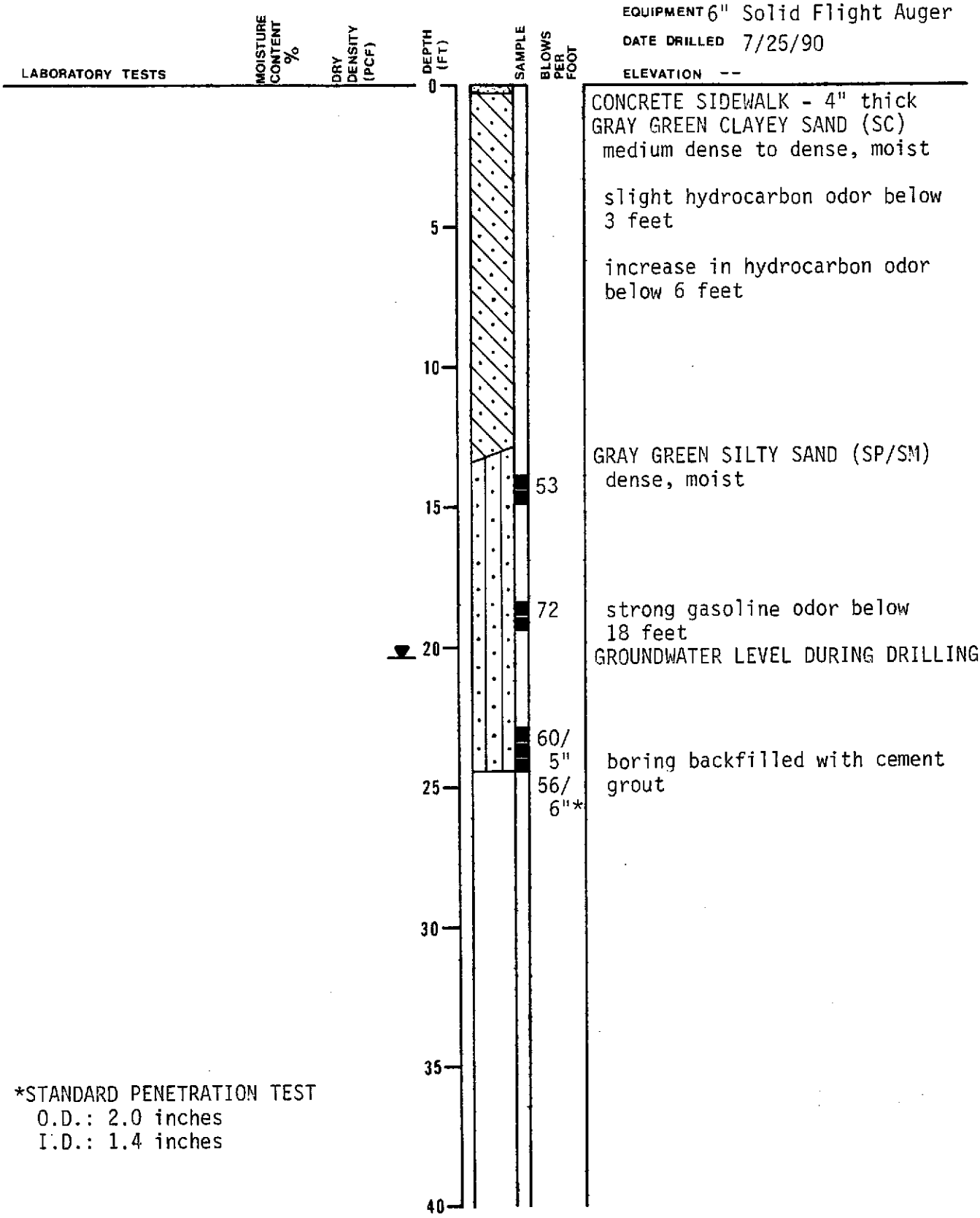
JOB NUMBER	DATE	APPROVED
447.019	8/17/90	

PLATE 2

Harrison St N

LOG OF TEST BORING 2

EQUIPMENT 6" Solid Flight Auger
DATE DRILLED 7/25/90
ELEVATION --



*STANDARD PENETRATION TEST
O.D.: 2.0 inches
I.D.: 1.4 inches

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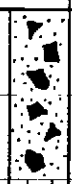
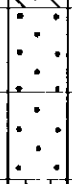
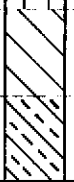
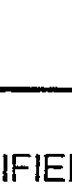
HARRISON STREET GARAGE - OAKLAND, CA

JOB NUMBER	DATE	APPROVED	PLATE
447.019	8/17/90		3

GENERAL SOIL CATEGORIES			SYMBOLS		TYPICAL SOIL TYPES
COARSE GRAINED SOILS More than half is larger than No. 200 sieve	GRAVEL More than half coarse fraction is larger than No. 4 sieve size	Clean Gravel with little or no fines	GW		Well Graded Gravel, Gravel-Sand Mixtures
			GP		Poorly Graded Gravel, Gravel-Sand Mixtures
		Gravel with more than 12% fines	GM		Silty Gravel, Poorly Graded Gravel-Sand-Silt Mixtures
			GC		Clayey Gravel, Poorly Graded Gravel-Sand-Clay Mixtures
	SAND More than half coarse fraction is smaller than No. 4 sieve size	Clean sand with little or no fines	SW		Well Graded Sand, Gravelly Sand
			SP		Poorly Graded Sand, Gravelly Sand
		Sand with more than 12% fines	SM		Silty Sand, Poorly Graded Sand-Silt Mixtures
			SC		Clayey Sand, Poorly Graded Sand-Clay Mixtures
FINE GRAINED SOILS More than half is smaller than No. 200 sieve	SILT AND CLAY Liquid Limit Less than 50%		ML		Inorganic Silt and Very Fine Sand, Rock Flour, Silty or Clayey Fine Sand, or Clayey Silt with Slight Plasticity
			CL		Inorganic Clay of Low to Medium Plasticity, Gravelly Clay, Sandy Clay, Silty Clay, Lean Clay
			OL		Organic Clay and Organic Silty Clay of Low Plasticity
	SILT AND CLAY Liquid Limit Greater than 50%		MH		Inorganic Silt, Micaceous or Diatomaceous Fine Sandy or Silty Soils, Elastic Silt
			CH		Inorganic Clay of High Plasticity, Fat Clay
			OH		Organic Clay of Medium to High Plasticity, Organic Silt
HIGHLY ORGANIC SOILS			PT		Peat and Other Highly Organic Soils

UNIFIED SOIL CLASSIFICATION SYSTEM

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HARRISON STREET GARAGE - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
447.019	8/17/90	

PLATE 4

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

DATE RECEIVED: 07/27/90
DATE REPORTED: 08/14/90

LAB NUMBER: 101213

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 2 SOIL SAMPLES

PROJECT #: 447.019
LOCATION: HARRISON GARAGE

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101213
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 447.019
JOB LOCATION: HARRISON GARAGE

DATE RECEIVED: 07/27/90
DATE ANALYZED: 08/14/90
DATE REPORTED: 08/14/90

Total Volatile Hydrocarbons with BTXE in Soils & Wastes
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (mg/Kg)	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)
101213-1	1 @ 20.0	6,300	99,000	490,000	110,000	610,000
101213-2	2 @ 18.5	9,300	98,000	900,000	190,000	1,100,000

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	93

Subsurface Consultants 10213

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: HARRISON GARAGE

SCI Job Number: 447.019

Project Contact at SCI: JIM BOWERS

Sampled By: FERNANDO VELEZ

Analytical Laboratory: CURTIS & TOMPKINS

Analytical Turnaround: NORMAL

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
1 @ 20.0	S	T	7/25/90		TVH + BTXE	
2 @ 18.5	S	T	7/25/90		TVH + BTXE	

* * * * * *

Released by: [signature] Date:

Released by Courier: Date:

Received by Laboratory: [signature] Date: 7/27/90

Relinquished by Laboratory: Date:

Received by: Date:

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461