KAPREALIAN ENGINEERING, INC.
Consulting Engineers
P. O. BOX 913
BENICIA, CA 94510
(415) 676-9100 (707) 746-6915

KEI-J87-083
August 11, 1987

Shell Oil Company
P.O. Box 7004
Lafayette, CA 94549

Attention: Mr. Ray Newsome

Re: Soil Sampling Investigation
Former Shell Service Station
7194 Amador Valley Blvd.
Dublin, California

Dear Mr. Newsome:

This report summarizes the subsurface investigation performed by Kaprealian Engineering, Inc. (KEI) at the referenced site. All work was performed in compliance with the regulations and guidelines established by the Regional Water Quality Control Board (RWQCB), and the Alameda County Department of Environmental Health.

The scope of the work performed in our investigation consisted of the following:

- Supervision of the removal of the underground tanks
- Coordination with the state and local agencies
- Collection of samples of native soil
- Water sampling
- Delivery of samples with proper chain of custody to a certified analytical laboratory
- Technical review and preparation of this report

FIELD INVESTIGATION

KEI's field investigation was conducted on August 3, 1987, and consisted of supervision of the removal of four (4) underground storage tanks. Ms. Tonya Snyder-Hoover, Fire Inspector for the Dublin/San Ramon Service District, was present for the tank removal. The tanks consisted of three 10000 gallon fuel tanks and one 280 gallon waste oil tank. The fuel tanks were fiberglass and appeared to be in good condition. The waste oil tank was steel and appeared to be rusty. No holes were noted in

the tank.

Groundwater was encountered in the fuel tank pit at a depth of approximately 11.5 feet, prohibiting soil sampling immediately beneath the tanks. Four (4) samples of native soil (labeled A1, B1, C1, and D1) were taken from the sidewalls of the pit at a depth of about 11.0 feet. The samples were collected from bulk material excavated by backhoe. The samples were placed in clean, two-inch diameter brass tubes, sealed with aluminum foil and plastic caps, and were stored in a cooled ice chest for delivery to the contracted laboratory.

One water sample, labeled W1, was collected from the fuel tank pit after soil sampling was completed. The sample was placed in a VOA vial with a Teflon-lined screw cap, and was stored with the soil samples as described above.

One soil sample, labeled W.O.-1, was collected from the native soil beneath the waste oil tank at a depth of 9.0 feet. It was collected and stored as described above.

SUBSURFACE CONDITIONS

The subsurface soils exposed in the excavations consisted primarily of sandy clay. Strong odors were present in all samples. The backfill material from the fuel tank pit consisted of pea gravel and will be used to backfill the excavation. The soil from the waste oil pit was stockpiled at the site.

ANALYTICAL RESULTS

All samples were analyzed by Sequoia Analytical Laboratory of Redwood City, California and were accompanied by proper chain of custody forms. The samples from the fuel tank pit were analyzed for total hydrocarbon (THC) as gasoline, benzene, toluene and xylene (BTX) concentrations. The sample from the waste oil pit was analyzed for THC (high boiling fraction), total oil and grease (TOG) and EPA 8010 and 8020 constituents. The water sample was analyzed for THC as gasoline and BTX. The analytical results are summarized in Table 1. Copies of the laboratory analyses and the chain of custody forms are attached to this report.

DISCUSSION AND RECOMMENDATIONS

Analytical results of the soil samples from the fuel tank pit indicate high levels of total hydrocarbon in three areas. The samples from these three areas (A1, B1 and D1) had THC levels very near or greater than 1000 ppm.

The water sample from the fuel tank pit had high levels of THC and BTX.

KEI recommends that additional excavation (laterally) is necessary to remove as much contaminated soil as possible (with THC concentration above 1000 ppm level) to reduce the impact on the environment.

According to the guidelines established by the RWQCB, further investigation is necessary at the site to determine the extent of the subsurface contamination. To comply with the requirements of the RWQCB, KEI recommends the installation of four (4) groundwater monitoring wells at the site to determine the lateral and vertical extent of contamination. Our proposal for this work will be forwarded to you upon your request.

KEI recommends that the soil from the waste oil tank pit be disposed of at a Class I site.

A copy of this report should be sent to Ms. Tonya Snyder/Hoover of the Dublin/San Ramon Services District, the Alameda County Health Department, City of Dublin Public Works Department and to the Regional Water Quality Control Board.

LIMITATIONS

Soil deposits and rock formations may vary in thickness, lithology, saturation, strength and other properties across any site. In addition, environmental changes, either naturally-occurring or artificially-induced, may cause changes in groundwater levels and flow paths, thereby changing the extent and concentration of any contaminants. Our studies assume that the field and laboratory data are reasonably representative of the site as a whole, and assume that subsurface conditions are reasonably conducive to interpolation and extrapolation.

The results of this study are based on the data obtained from the field and laboratory investigations. We have analyzed this data using what we believe to be currently applicable engineering techniques and principles in the Northern California region. We make no warranty, either expressed or implied, except that our

services have been performed in accordance with generally accepted professional principles and practices existing for such work.

Should you have any questions regarding this report, please feel free to call me at (415) 676-9100 or (707) 746-6915.

Sincerely,

Kaprealian Engineering, Inc.

Mardo Kaprealian

License #C29326
Exp. date 3/31/91

Attachments: Location plan
Laboratory analyses
Chain of custody forms
Table 1

TABLE 1

SUMMARY OF LABORATORY ANALYSES

(Soil analyses in parts per million,
Water analysis in parts per billion)

Sample #	Type	Total Hydrocarbon	Benzene	Toluene	Xylene
A1	soil	1100	14	4.5	37
B1	soil	970	12	22	60
C1	soil	270	4.2	0.45	2.7
D1	soil	1900	31	5.5	36
W.O.-1*	soil	45	<0.05	<0.05	----
W1	water	85,000	1,400	3,600	11,000

* Gravimetric waste oil for this sample was 45 ppm.

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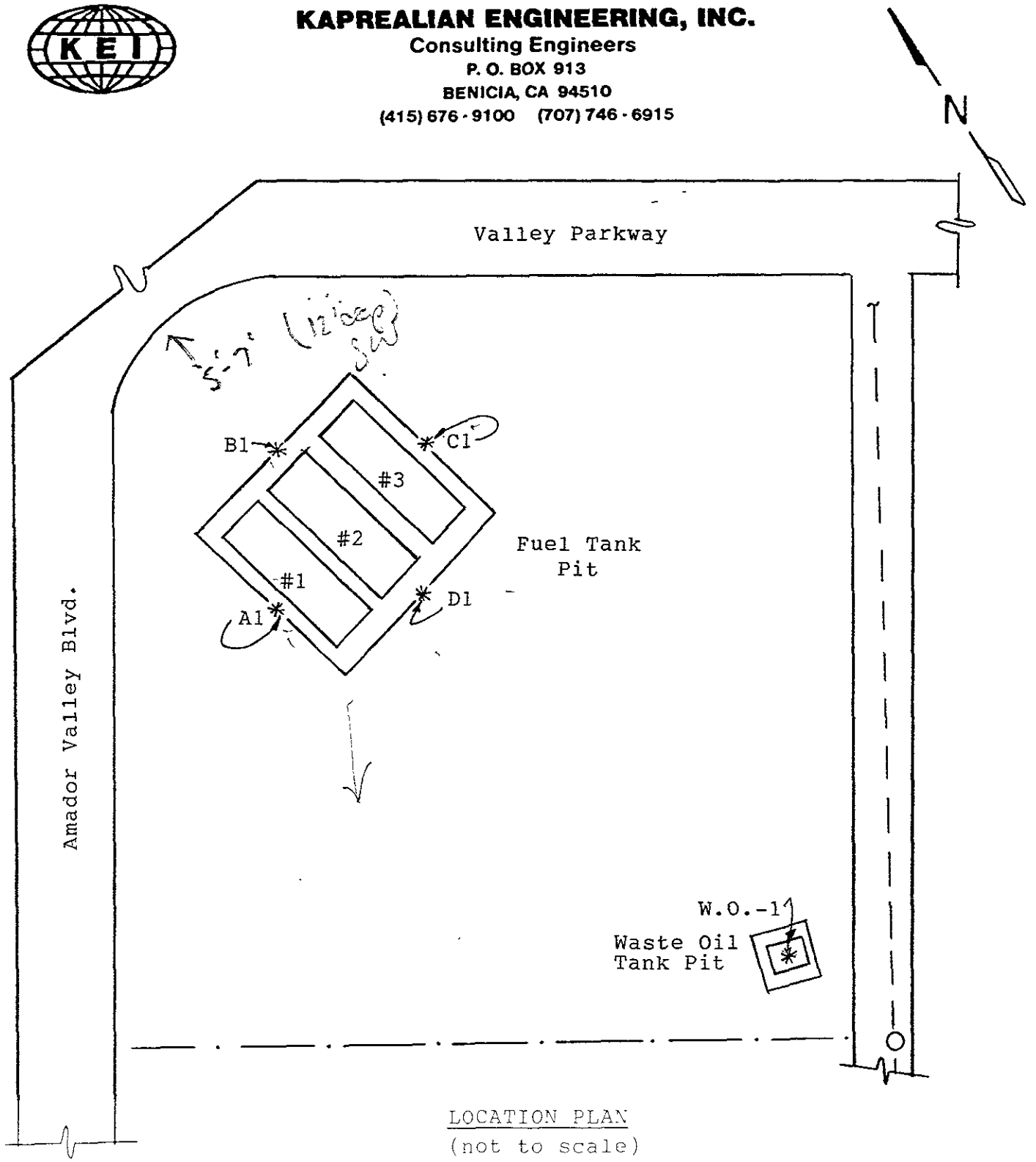

LOCATION PLAN
(not to scale)

* soil sample location

ABANDONED SHELL S/S
7194 Amador Valley Blvd.
Dublin, California

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

Kaprealian Engineering, Inc.
P.O. Box 913
Benicia, CA 94510
Attn: Mardo Kaprealian, P.E.
President

Date Sampled: 08-03-87
Date Received: 08-04-87
Date Reported: 08-06-87

Sample Number

7080041

Sample Description

Soil #A1
Shell at 7194 Amador Valley Blvd.
in Dublin, CA

ANALYSIS

	Detection Limit ppm	Sample Results ppm
Total Hydrocarbons as Gasoline	1	1,100
Benzene	0.1	14
Toluene	0.1	4.5
Xylenes	0.1	37

NOTE: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

jao

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Date Sampled: 08-03-87
Date Received: 08-04-87
Date Reported: 08-06-87

Sample Number	Sample Description
7080042	Soil # B1 Shell at 7194 Amador Valley Blvd. in Dublin, CA

ANALYSIS

	Detection Limit ppm	Sample Results ppm
Total Hydrocarbons as Gasoline	1	970
Benzene	0.1	12
Toluene	0.1	22
Xylenes	0.1	60

NOTE: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

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President

Date Sampled: 08-03-87
Date Received: 08-04-87
Date Reported: 08-06-87

Sample Number	Sample Description
7080043	Soil # C1 Shell at 7194 Amador Valley Blvd. in Dublin, CA

ANALYSIS

	Detection Limit ppm	Sample Results ppm
Total Hydrocarbons as Gasoline	1	270
Benzene	0.1	4.2
Toluene	0.1	0.45
Xylenes	0.1	2.7

NOTE: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

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Date Sampled: 08-03-87
Date Received: 08-04-87
Date Reported: 08-06-87

Sample Number	Sample Description
7080044	Soil # D1 Shell at 7194 Amador Valley Blvd. in Dublin, CA

ANALYSIS

	Detection Limit ppm	Sample Results ppm
Total Hydrocarbons as Gasoline	1	1,900
Benzene	0.1	31
Toluene	0.1	5.5
Xylenes	0.1	36

NOTE: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

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Date Sampled: 08-03-87
Date Received: 08-04-87
Date Reported: 08-06-87

Sample Number

7080045

Sample Description

Water W-1
Shell at 7194 Amador Valley Blvd.
in Dublin, CA

ANALYSIS

	Detection Limit ppb	Sample Results ppb
Total Hydrocarbons as Gasoline	50	85,000
Benzene	0.5	1,400
Toluene	0.5	3,600
Xylenes	0.5	11,000

NOTE: Analysis was performed using EPA method 602.

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Laboratory Director

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KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

RUSH

SAMPLER: Jean Semenchy (signature) KEI

DATE/TIME OF COLLECTION: 1300-1500 8/3/87

TURNAROUND TIME: 24 Hours

SAMPLE DESCRIPTION AND PROJECT NUMBER: Shell Dublin
7194 Amador Valley Blvd.

SAMPLE #	ANALYSIS	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
A1	THC BTX	grab	1	Soil
B1	THC BTX	Grab	1	Soil
C1	THC BTX	grab	1	Soil
D1	THC BTX	grab	1	Soil
W-1	THC, BTX	grab	1	water

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. Jean Semenchy KEI		Pat Brust Sequoia Water Lab	4:32 8/4/87
2.			
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS:

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

Kaprealian Engineering, Inc.
P.O. Box 913
Benicia, CA 94510
Attn: Mardo Kaprealian, P.E.
President

Date Sampled: 08-03-87
Date Received: 08-04-87
Date Reported: 08-21-87

Sample Number	Sample Description	Detection Limit ppm	Total Hydrocarbons as Diesel ppm
7080054	Soil W.O.-1 Shell at 7194 Amador Valley Blvd. in Dublin, CA	1	45

NOTE: Analysis was performed using EPA methods 3550 and 8015.

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Laboratory Director

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Kaprealian Engineering, Inc.
P.O. Box 913
Benicia, CA 94510
Attn: Mardo Kaprealian, P.E.
President

Date Sampled: 08-03-87
Date Received: 08-04-87
Date Reported: 08-21-87

Sample Number	Sample Description	Detection Limit ppm	Gravimetric Waste Oil as Petroleum Oil ppm
7080054	Soil W.O.-1 Shell at 7194 Amador Valley Blvd. in Dublin, CA	30	75

NOTE: Analysis was performed using EPA extraction method 3550 with Trichlorotriflouroethane as solvent, and gravimetric determination by standard methods 503E.

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Attn: Mardo Kaprealian, P.E.
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Date Sampled: 08-03-87
Date Received: 08-04-87
Date Extracted: 08-17-87
Date Reported: 08-21-87

Sample Number

7080054

Sample Description

Soil W.O.-1
Shell at 7194
Amador Valley Blvd.
in Dublin, CA

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS
results in ppb

Acrolein	< 10,000	trans-1,2-Dichloroethene	< 50
Acrylonitrile	< 10,000	1,2-Dichloropropane	< 50
Benzene	< 50	1,3-Dichloropropene	< 50
Bromomethane	< 50	Ethylbenzene	< 50
Bromodichloromethane	< 50	Methylene chloride	< 50
Bromoform	< 50	1,1,2,2-Tetrachloroethane	< 50
Carbon tetrachloride	< 50	Tetrachloroethene	< 50
Chlorobenzene	< 50	1,1,1-Trichloroethane	< 50
Chloroethane	< 50	1,1,2-Trichloroethane	< 50
2-Chloroethylvinyl ether	< 50	Trichloroethene	< 50
Chloroform	< 50	Toluene	< 50
Chloromethane	< 50	Vinyl chloride	< 50
Dibromochloromethane	< 50	1,2-Dichlorobenzene	< 50
1,1-Dichloroethane	< 50	1,3-Dichlorobenzene	< 50
1,2-Dichloroethane	< 50	1,4-Dichlorobenzene	< 50
1,1-Dichloroethene	< 50		

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

jao

NOTE: Methods 8010 & 8020 of the EPA were used for this analysis.

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: Jean Semanday KEI (signature) DATE/TIME OF COLLECTION: 1500 8/3/87 TURNAROUND TIME: 10 Days

SAMPLE DESCRIPTION AND PROJECT NUMBER: Shell Dublin
1194 Amador Valley Blvd.

SAMPLE #	ANALYSIS	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
W.O.-1	THC(HB), TOG, 8010, 8020	grab	1	Soil

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. Jean Semanday KEI		Pat Brusko Sequoia Analytical	4:32 8/4/87
2.			
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS: Results by August 18 please

SEQUOIA Analytical Laboratory
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President

Date Sampled: 08/27/87
Date Received: 08/28/87
Date Reported: 09/01/87

Sample Number

7082239

Sample Description

Shell - Dublin,
Soil A-11

ANALYSIS

	Detection Limit ppm	Sample Results ppm
Total Hydrocarbons as Gasoline	1	830
Benzene	0.1	6.9
Toluene	0.1	7.7
Xylenes	0.1	30

NOTE: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

sls

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Benicia, CA 94510
Attn: Mardo Kaprealian, P.E.
President

Date Sampled: 08/27/87
Date Received: 08/28/87
Date Reported: 09/01/87

Sample Number

7082240

Sample Description

Shell - Dublin,
Soil A-12

ANALYSIS

	Detection Limit ppm	Sample Results ppm
Total Hydrocarbons as Gasoline	1	500
Benzene	0.1	5.1
Toluene	0.1	18
Xylenes	0.1	36

NOTE: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

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President

Date Sampled: 08/27/87
Date Received: 08/28/87
Date Reported: 09/01/87

Sample Number

7082241

Sample Description

Shell - Dublin,
Soil D-11

ANALYSIS

	Detection Limit ppm	Sample Results ppm
Total Hydrocarbons as Gasoline	1	1,300
Benzene	0.1	18
Toluene	0.1	23
Xylenes	0.1	69

NOTE: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

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Attn: Mardo Kaprealian, P.E.
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Date Sampled: 08/27/87
Date Received: 08/28/87
Date Reported: 09/01/87

Sample Number

7082242

Sample Description

Shell - Dublin,
Soil D-12

ANALYSIS

	Detection Limit ppm	Sample Results ppm
Total Hydrocarbons as Gasoline	1	2,100
Benzene	0.1	39
Toluene	0.1	91
Xylenes	0.1	59

NOTE: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

sls

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: (signature) NS KEL

DATE/TIME OF COLLECTION: 8/27/87 1330-2330 PM

TURNAROUND TIME: 24 HRS

SAMPLE DESCRIPTION AND PROJECT NUMBER: SHELL - Dublin.

SAMPLE #	ANALYSIS	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
A-11	THC. BTX	Grab	1	S
A-12	THC. BTX	Grab	1	S
D-11	THC. BTX	Grab	1	S
D-12	THC. BTX	Grab	1	S

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. NS KEL	8/28/87	Sequoia Lab	1245 8-28-87
2.			
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS: