COASTAL

Tank Services & Construction

Licensed UST Service Provider • A Division of CTC

Residential Environmental Analytical Laboratory
13346 1st Avenue North East
Seattle, Washington 98125

Re: Terminal 115

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Sampling Map: Attachment #1
TLC Log : Attachment #2
Analytical : Attachment #3

Coastal Tank Cleaning, Inc., at the request of R.E.A.L, Inc., performed site assessment requirements regarding over excavation activities at Terminal 115. CTC arrived on site after excavation, removal and initial sampling operations had been performed. The original excavation was approximately 19' X 10' with 70 yards of presumed uncontaminated soil stockpiled South of the excavation and a stockpile presumed contaminated with approximately 5 yards to the North of the excavation.

Field Sampling Plan:

CTC will perform Thin Layer Chromatography on site in order to expedite over excavation activities. Following TLC, CTC will collect discrete soil samples from the resulting excavation. Soil samples will be collected from the UST excavation using stainless steel spoons. Sampling equipment will be cleaned with a non-phosphatic detergent and stiff bristle brush and rinsed with deionized water between sampling events. Samples will be placed directly into laboratory prepared glass jars, placed into a chilled cooler and transported to the laboratory for analysis.

CTC will obtained a total of eight (8) soil samples, five from the over excavation and three from the stockpiled soils. We will coordinate transfer of the soil samples to Friedman & Bruya, Inc. in Seattle, Washington for quantitative analysis under chain-of custody protocol. All soil samples will be analyzed for Total Petroleum Hydrocarbons using DOE method WTPH-D.

Samples and Analysis Performed:

CTC arrived on site May 7, 1993 after tank excavation, removal and initial sampling operations had been completed.

Inspection of the resulting excavation provided visual and aromatic confirmation of contamination. In order to expedite the over excavation activities, CTC's Don Austin performed on site Thin Layer Chromatography during these operations.

Don Austin is certified and experienced in performing Thin Layer Chromatography. Standard protocol was strictly adhered to, with diesel standards being run periodically to ensure a high level of confidence in the screening results.

A total of six (6) separate tests were performed during these over excavation activities (see attachment #2). TLC standards were set for 50 ppm, 100 ppm and 1,000 ppm for each analysis. Over excavation proceeded until TLC results indicated contamination levels below 100 ppm at which point soil samples were obtained for transport to the laboratory.

Water was encountered at approximately 13 feet below ground surface. CTC obtained a sample of this water in the bottom of the excavation which appeared noticeably contaminated with a product layer. CTC advised Port of Seattle Representative as well as Nordic Construction Site Superintendent that removal of the water followed by resampling 24 hours later is appropriate. To date, CTC is in receipt of this water sample as no analysis has been requested.

Approximately 235 yards of soil was removed from the excavation during these over excavation activities. The over excavation was approximately 28 feet East and West, 23 feet North and South and approximately 13 feet in depth.

A sample was obtained from the bottom of the excavation at approximately 12 1/2 feet. Samples from the East and West sidewalls were obtained at approximately 12 feet below ground surface. Samples from the North and South sidewalls were obtained approximately 12 feet below ground surface. In addition, three (3) samples were obtained from the stockpile presumed to be uncontaminated at the East, West and Center (see attachment #1).

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All soil samples obtained following over excavation activities were transported to Friedman & Bruya, Inc. in Seattle, Washington on May 7, 1993 under chain-of-custody protocol. All soil samples were analyzed for Total Petroleum Hydrocarbons using DOE method WTPH-D. Please be advised the holding time for analysis on the water sample is a maximum of 14 days. Please see attached analytical for results.

If you have any questions please feel free to give me a call.

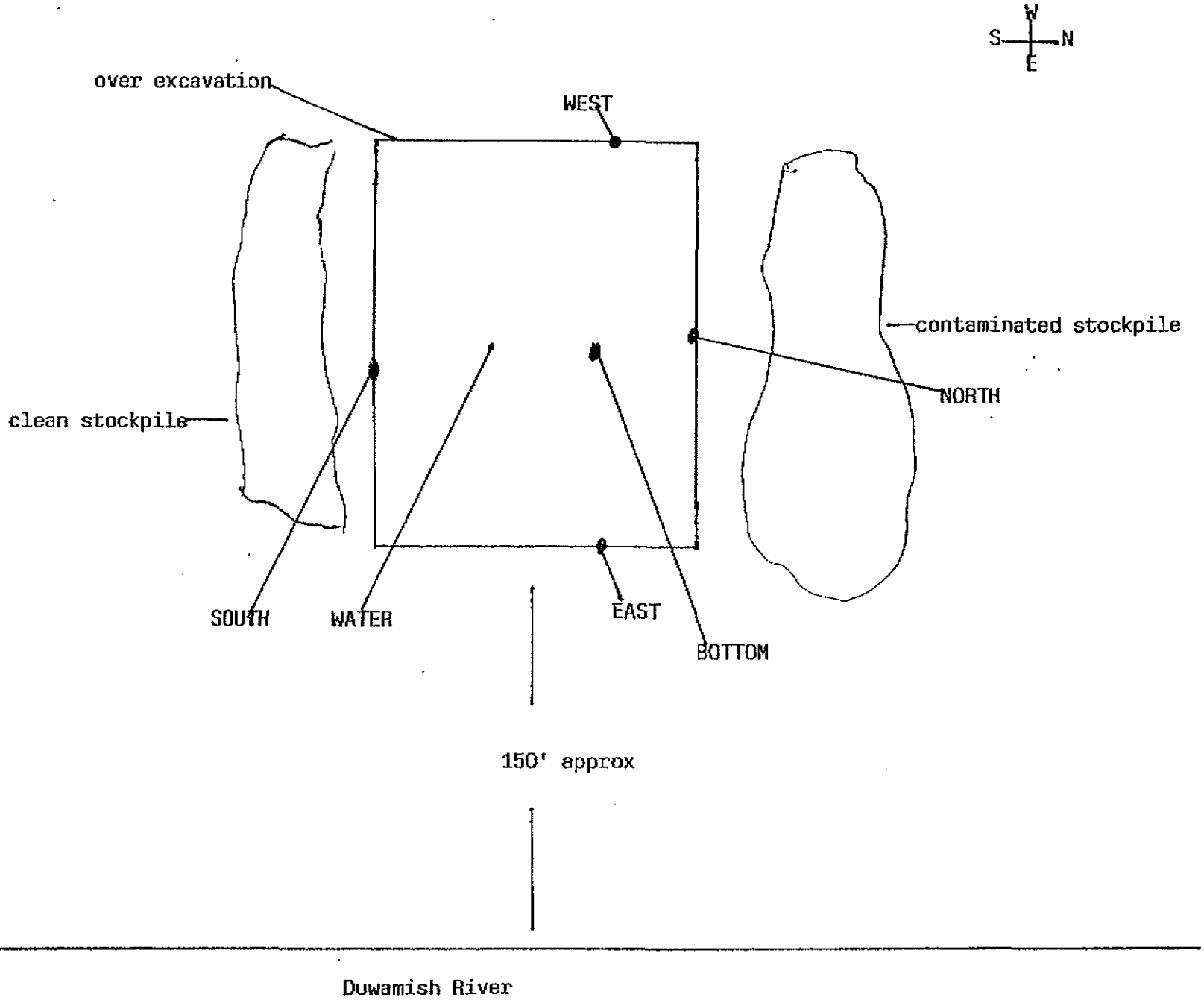
Sincerely,

Don Austin

c/c Nordic Construction
R.E.A.L, Inc.
Port of Seattle

ATTACHMENT #1

TERMINAL 115



PROJECT: Terminal 115 DATE: May 7th, 1993

THIN LAYER CHROMATOGRAPHIC ANALYSIS

Sample No.	Extraction	TLC Result, ppm	Soil Matrix	Observation
West Bottom #1 at approx 10'	5 grams .025	Over 1,000 ppm	Soil Sand/ silt mix	Over 1,000 ppm
West #2 at approx 6' BGS	5 grams .025	Below 200 ppm	Sand/silt	
South #2 at approx 8'	5 grams .025	over 200 ppm	Sand/silt	400-500 ppm
South #3 at approx 10'	5 grams .5	Below 100 ppm	Sand/silt	
East #1 at approx 10'	5 grams .5	over 200	Sand/ silt	near 1,000 ppm (East wall high)
East #2 at approx 11'	5 grams .5	Below 100	Sand/ silt	
north #1 at 10'	5 grams .5	over 500	Sand/ silt	
North #2 at 10'	5 grams .5	over 200	Sand/ silt	
north #3 at 10'	5 grams .5	Below 100 ppm	Sand/ silt	
Bottom at approx 11'	5 grams .5	Below 200 ppm	Sand/ silt	Bottom from south end as water + rocks at center + South

RECEIVED FROM 0000000000000000000

5008-B 15th Avenue West
Seattle, WA 98119

4.29.93
10:08 am

SAMPLE CHAIN OF CUSTODY

Send Report To:
Company R.E.A.L Contact Vince Brotherton
Address 13346 1st NE
City, State, Zip Seattle
Phone # 206 365-4177 Date 4/27/93

SITE NO.	PROJECT NAME	PURCHASE ORDER #
	Port of Seattle Terminal 115	

SAMPLERS (signature) PROJECT LOCATION

REMARKS SAMPLE DISPOSAL INFORM.

- o Dispose after 30 days
- o Return Samples
- o Call for Instructions

SAMPLE #	Date/Time Sampled	Type of Sample	# of Jars	Lab Sample #	Analyses Requested
1	4/26 12:00	Soil	1	39594	WTPH-D
2	4/26 12:00	Soil	1	39595	" "
3	4/26 12:00	Soil	1	39596	
4	4/26 12:00	Soil	1	39597	
5	4/26 12:00	Soil	1	39598	
7	4/26 12:00	Soil	1	39599	✓
	asked Vince for Project Name. 5.4.93				

SIGNATURE	PRINT NAME	COMPANY	Date	Time
Relinquished by:				
Received by: Angela Floyd	A. Floyd	F&B,I	4.29.93	10:08
Relinquished by:				
Received by:				

Date of Report: May 5, 1993
Date Received: April 29, 1993
Project: Port of Seattle Terminal 115
Date Samples Extracted: April 29, 1993
Date Extracts Analyzed: April 30, 1993

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL BY GC/FID (Modified 8015) per Washington DOE Guidelines

Results Reported as µg/g (ppm)

Sample #	Diesel	Internal Standard (% Recovery)
1	10	78%
2	8,900	83%
3	1,000	77%
4	380	78%
6	450	77%
7	31,000[ve,b]	82%
Quality Assurance		
Blank	<10	80%
1 (Duplicate)	60[c]	79%
1 (Matrix Spike) % Recovery	98%	79%
1 (Matrix Spike Duplicate) % Recovery	57%	80%
Spike Blank % Recovery	92%	78%
Spike Level	1,000	

[ve] The value reported exceeded the calibration range established for the sample.
[b] Some of the product layer floating on the top of the water layer was analyzed along with the soil.
[c] This may be carryover from the previous sample.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

ATTACHMENT #3

Date of Report: May 11, 1993
Date Received: May 7, 1993
Project: Terminal 115
Date Samples Extracted: May 9, 1993
Date Extracts Analyzed: May 9, 1993

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL BY GC/FID (Modified 8015) per Washington DOE Guidelines
Results Reported as µg/g (ppm)

Sample #	Diesel	Internal Standard (% Recovery)
Bottom	<10	68%
East	<10	67%
West	<10	91%
North	30	60%
South	30	92%
Composite: Stockpile East Stockpile West Stockpile Center	1,100	65%

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

ATTACHMENT #3

Date of Report: May 11, 1993
Date Received: May 7, 1993
Project: Terminal 115
Date Samples Extracted: May 9, 1993
Date Extracts Analyzed: May 9, 1993

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL BY GC/FID (Modified 8015) per Washington DOE Guidelines

Results Reported as µg/g (ppm)
Quality Assurance

Sample #	Diesel	Internal Standard (% Recovery)
Blank	<10	93%
Composite: Stockpile East Stockpile West Stockpile Center (Duplicate)	1,100	65%
Composite: Stockpile East Stockpile West Stockpile Center (Matrix Spike) % Recovery	[ai]	66%
Composite: Stockpile East Stockpile West Stockpile Center (Matrix Spike Duplicate) % Recovery	[ai]	60%
Spike Blank % Recovery	130%	70%
Spike Level	500	

[ai] The amount spiked was insufficient to give meaningful recovery data.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: May 21, 1993
Date Received: May 20, 1993
Project: 30014, Terminal 115
Date Samples Extracted: May 20, 1993
Date Extracts Analyzed: May 21, 1993

RESULTS FROM THE ANALYSIS OF THE WATER SAMPLE FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL BY GC/FID (Modified 8015)
Samples Processed Using Method 3510 per Washington DOE Guidelines
Results Reported as µg/L (ppb)

Sample #	Diesel
Water at Bottom	8,000
Quality Assurance	
Blank	<200
Spike Blank % Recovery	92%
Spike Level	5,000