

LIST INC # 1456
BLACKSTOCK LUMBER
KING CO.

RZA AGRA, Inc.

Engineering & Environmental Services

RECEIVED

JUL 19 1993

DEPT. OF ECOLOGY

11335 NE 122nd Way
Suite 100
Kirkland, WA 98034-6918
(206) 820-4669
FAX (206) 821-3914

W-8424-1

1 July 1993

Blackstock Properties Limited
P.O. Box 9405
Seattle, Washington 98109

Attention: Mr. Jim Blackstock

Subject: Quarterly Groundwater Monitoring Status Report
Former Blackstock Lumber Property
601 Elliott Avenue West
Seattle, Washington

DEPARTMENT OF ECOLOGY NWRO/TCP TANK UNIT	
INTERIM CLEANUP REPORT	<input checked="" type="checkbox"/>
SITE CHARACTERIZATION	<input type="checkbox"/>
FINAL CLEANUP REPORT	<input type="checkbox"/>
OTHER <u>Groundwater Monitoring</u>	<input checked="" type="checkbox"/>
AFFECTED MEDIA: SOIL	<input checked="" type="checkbox"/>
OTHER _____ GW	<input checked="" type="checkbox"/>
INSPECTOR (INIT.) <u>JK</u>	DATE <u>8-6-93</u>

Dear Mr. Blackstock:

RZA AGRA, Inc. (RZA AGRA) is pleased to present this report documenting our quarterly groundwater monitoring activities performed at the above referenced site during June 1993 (see Figure 1, Vicinity Map). The report includes a description of field activities performed, the results of analytical testing of groundwater samples, and our conclusions and recommendations based upon the available data. The report also includes the analytical test results from previous sampling events on site, which took place in January and March of this year.

Introduction

In July of 1991, Northwest EnviroService, Inc. excavated and removed five underground storage tanks (USTs) at this site. Soil sampling and site assessment services were provided by Earth Consultants, Inc. (ECI). The tanks ranged in capacity from 300 gallons to 10,000 gallons and contained various petroleum products including gasoline, diesel, and heating oil. Petroleum contamination was discovered in soils near a UST which was utilized to store Bunker "C" heating oil. A portion of the contaminated soil (above the water table) was excavated and placed in a stockpile. Petroleum contamination discovered beneath a historical building foundation during excavation was left in place by ECI for possible removal at a later date. Petroleum hydrocarbon concentrations detected in the site soils ranged from 150 parts per million (ppm) to 8600 ppm.

During October of 1991, two groundwater monitoring wells were installed at the site under the direction of ECI, in order to assess the condition of groundwater near the historical location of three underground storage tanks. No petroleum contamination was detected in the groundwater at these locations.

RZA AGRA began work at this site in July of 1992. Our initial work consisted of separating petroleum-impacted soil stockpiled on site from "clean" soil in the stockpile. Soil impacted by petroleum at levels above the Model Toxics Control Act (MTCA) Method A cleanup action level was hauled to the Regional Disposal Company Transfer Station on 3rd Avenue in Seattle for transport to Roosevelt Regional Landfill in Eastern Washington.

In December of 1992, RZA AGRA conducted a subsurface exploration program to evaluate the soil and groundwater conditions in the immediate vicinity of the Bunker C contamination discovered during previous site assessment work. The exploration program consisted of backfilling the open excavation on site and then advancing eight soil borings in or near the area where petroleum hydrocarbons were previously discovered. The borings ranged in depth from 11.5 feet to 16.5 feet. Three borings were completed as groundwater monitoring wells which are being utilized to gather data on the physical and chemical parameters of the local groundwater. The locations of borings and monitoring wells are shown on the Site and Exploration Plan, Figure 2.

Groundwater Monitoring Procedures

Fluid level measurements were performed in each monitoring well using an interface probe which measures the thickness of liquid petroleum hydrocarbons (LPH), if present, and depth to groundwater relative to the top of casing (TOC) elevations for the wells. TOC elevations, and thus groundwater elevations, are based on an arbitrary datum of 100.00 feet established at the southwest corner of the stormwater catch basin in proximity to the groundwater monitoring wells. A summary of fluid levels measurements is presented in Table 1, attached. This table contains all fluid level data collected to date. It should be noted that the top of casing elevations for the monitoring wells were reset during the June monitoring event in order to include monitoring well EC-1, which previously could not be located.

Based upon the most recent water level data, the estimated direction of groundwater flow is generally south toward Elliot Bay. The Burlington Northern railroad tracks, which are adjacent to the site on the southwest, form a natural conduit which redirects groundwater southeast along the rail line. This is a typical occurrence since railroad tracks are often constructed on a deep base of very porous, quarry spall type material. Figure

3, the Groundwater Contour Map, depicts the estimated elevation of the groundwater table across this site. The estimated groundwater gradient and flow direction are based upon simplified assumptions and limited data and should be considered generalized estimates only. These estimates may be significantly affected by factors such as changes in site use, subsurface anomalies, and seasonal variations in precipitation.

All three of the RZA AGRA groundwater monitoring wells were purged and sampled during the March monitoring event. Approximately four gallons of water was purged from each well utilizing a small capacity Honda pump. Following purging of the wells an RZA AGRA field representative used a disposable bailer to obtain a discrete, representative sample of the groundwater present in the well. No apparent signs of petroleum contamination were noted in the groundwater during sampling (petroleum odor or discoloration). The samples collected were carefully decanted into laboratory prepared, glass containers; labelled; and, placed in a chilled cooler for transport to Friedman Bruya Inc. (FBI) in Seattle, Washington. FBI analyzed all groundwater samples for total petroleum hydrocarbons utilizing the Washington Department of Ecology (Ecology) W418.1 analytical method.

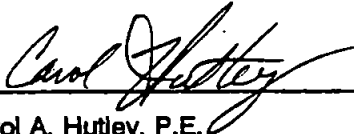
Analytical results indicate that, although one groundwater sample (MW-2) contained detectable petroleum hydrocarbons, none of the samples contained petroleum hydrocarbons at levels above the MTCA Method A cleanup action level of 1,000 parts per billion (ppb). It should be noted that the level of petroleum hydrocarbons detected in MW-2 was substantially less than the quantity detected during the last quarterly sampling event. Table 2 presents a summary of analytical results for groundwater testing performed during the June sampling event at the site, as well as all previous sampling events.

Conclusions and Recommendations

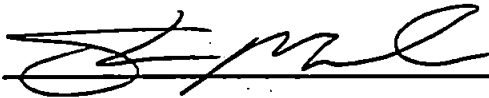
Although the water sample collected from MW-2 contained detectable petroleum hydrocarbons, the concentration quantified was below the MTCA Method A cleanup action level. Initial groundwater analysis did not reveal any detectable petroleum hydrocarbons in the water from this well; however, the March sampling event detected petroleum hydrocarbons at a concentration of 760 ppb. The current level of petroleum hydrocarbons in MW-2 is 270 ppb. Since this well is located near the estimated center of the petroleum contaminated soil remaining in the subsurface at this site, it is not unexpected that some petroleum impact would be observed over time. The impact observed has been minimal and continued monitoring will likely provide data supporting conditional site closure within Ecology guidelines.

We appreciate the opportunity to be of continued service to Blackstock Properties, Ltd. If you have any questions regarding this report, or any other aspect of this project, please do not hesitate to contact us at your earliest convenience.

Respectfully Submitted,
RZA AGRA, Inc.



Carol A. Hutley, P.E.
Project Environmental Engineer

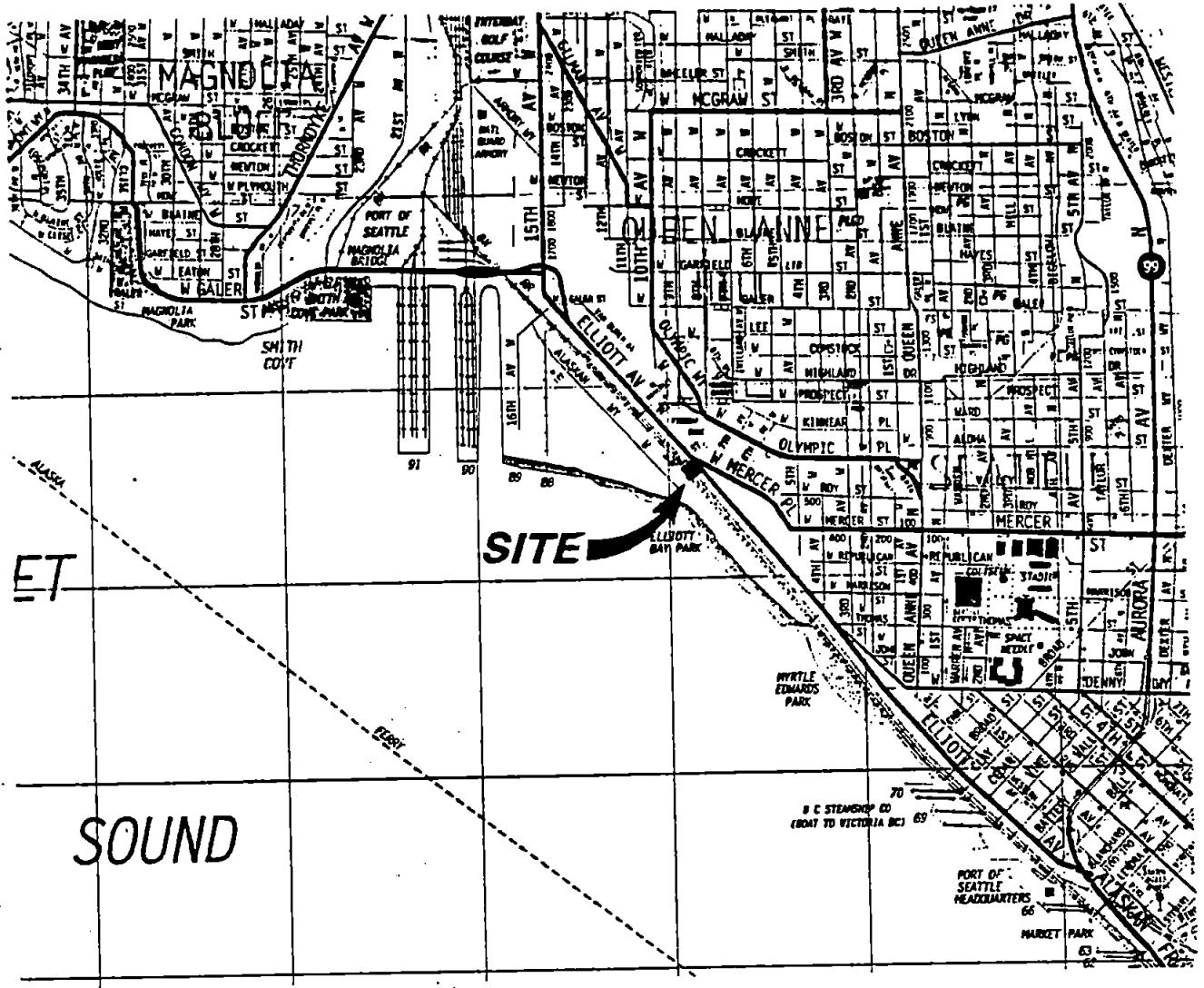


Steven M. Marczewski, P.E.
Senior Project Manager

CAH/SSM/ch

- Attachments:
- Figure 1 - Vicinity Map
 - Figure 2 - Site and Exploration Plan
 - Figure 3 - Groundwater Surface Elevation Contour Map
 - Table 1 - Summary of Fluid Level Data
 - Table 2 - Summary of Analytical Results
 - Laboratory Report and Chain-of-Custody Record





RZA-AGRA
ENGINEERING & ENVIRONMENTAL SERVICES

11335 N.E. 122nd Way
Suite 100
Kirkland, Washington
98034-6918

W.O.	W-8424
DESIGN	CAH
DRAWN	MJF
DATE	NOV 1992
SCALE	N.T.S.

BLACKSTOCK PROPERTIES LTD.
SEATTLE, WASHINGTON

LOCATION MAP

FIGURE 1

ELLIOTT AVENUE WEST

PROPERTY LINE

WOOD WALL

ASPHALT YARD
(NORTH YARD)

FORMER
UST #2

BUILDING
(REMOVED)

WEST MERCER STREET
(ASPHALT)

LEGEND

B-5

BORING NUMBER AND LOCATION

MW-3

MONITORING WELL NUMBER AND LOCATION



LIMITS OF FORMER EXCAVATION

LIMITS OF FORMER
EXCAVATION (BACKFILLED)

MW-3

FORMER
UST #4

EC-2

FORMER
UST #3

FORMER
UST #5

EC-1

B-3

B-2

B-1

B-3

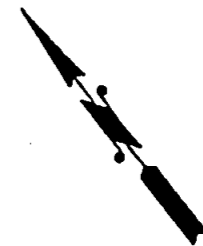
B-5

MW-1 MW-2

FENCE

LOADING SPUR

BURLINGTON NORTHERN RAILROAD LINES
(NOT SHOWN)



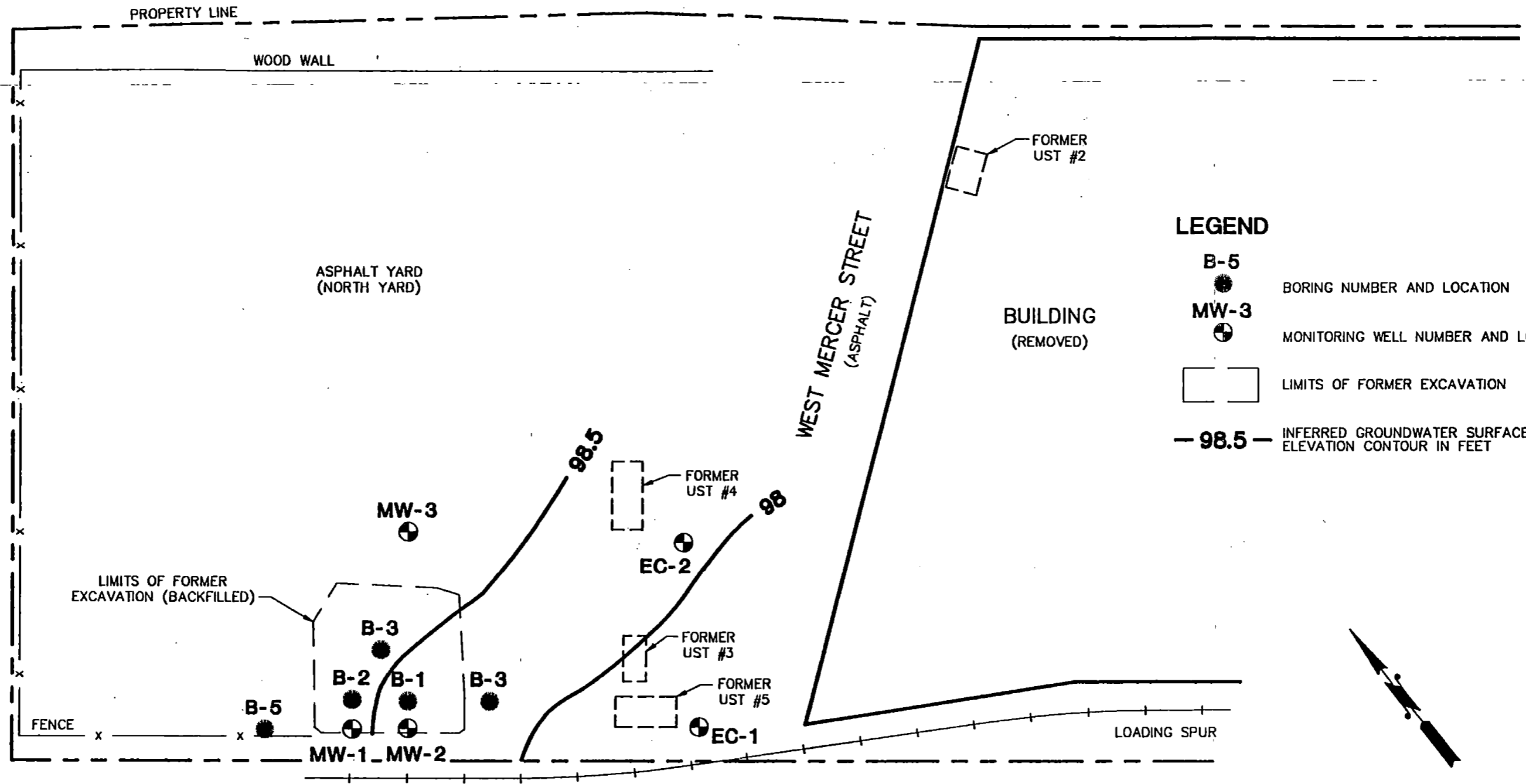
RZA AGRA, INC.
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Kirkland, Washington 98034-6918

W.O. W-8424-1
DESIGN CAH
DRAWN MJF
DATE JUL 1993
SCALE 1"=30'

BLACKSTOCK PROPERTIES, LTD.
SEATTLE, WASHINGTON
SITE AND EXPLORATION PLAN

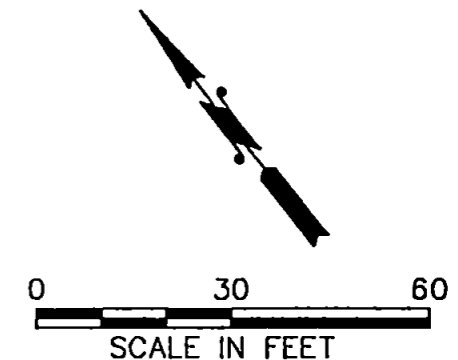
FIGURE 2

ELLIOTT AVENUE WEST



LEGEND

- B-5** ● BORING NUMBER AND LOCATION
- MW-3** ⊕ MONITORING WELL NUMBER AND LOCATION
- LIMITS OF FORMER EXCAVATION
- 98.5 - INFERRED GROUNDWATER SURFACE ELEVATION CONTOUR IN FEET



BURLINGTON NORTHERN RAILROAD LINES
(NOT SHOWN)

RZA AGRA, INC.
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Kirkland, Washington 98034-6918

W.O.	W-8424-1.
DESIGN	CAH
DRAWN	MJF
DATE	JUL 1993
SCALE	1"=30'

BLACKSTOCK PROPERTIES, LTD.
SEATTLE, WASHINGTON
**GROUNDWATER SURFACE ELEVATION
CONTOUR MAP FOR JUNE 1993**
FIGURE 3

TABLE 1
Summary of Fluid Level Data
Blackstock Properties, Ltd.
Seattle, Washington
Project Number: W-8424-1

Date	MW-1 TOC: 101.1 100.9 ¹		MW-2 TOC: 100.9 101.0 ¹		MW-3 TOC: 100.9 100.9 ¹		ECI MW-1 TOC: 101.2 ¹		ECI MW-2 TOC: 101.2 101.7 ¹	
	Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation
01-29-93	2.3	98.8	2.4	98.5	2.2	98.7	---	---	---	---
02-02-93	2.9	98.2	2.7	98.2	2.7	98.2	---	---	3.1	98.1
03-26-93	2.1	99.0	2.3	98.6	2.1	98.8	---	---	2.6	98.6
06-18-93	2.2	98.7	2.8	98.2	2.1	98.8	3.1	98.1	4.0	97.7

- NOTES:**
1. Top of Casing Elevations Reset 6-18-93 to Accommodate Field Location of EC-1
 2. Data not obtained
 3. ECI Wells were Installed by Earth Consultants, Inc.

TABLE 2
Summary of Analytical Results - Groundwater
Blackstock Properties, Ltd.
Seattle, Washington
Project Number: W-8424-1

Well Number	Date Sampled	TPH/W418.1 (ppb) ¹	Comments
MW-1	1-29-93	< 200	No Odor
	3-26-93	< 200	No Odor or Discoloration
	6-18-93	< 200	No Odor
MW-2	1-29-93	< 200	Slight Septic Odor
	3-26-93	700	No Odor or Discoloration
	6-18-93	270	Slight Septic Odor
MW-3	1-29-93	< 200	No Odor
	3-26-93	< 200	No Odor or Discoloration
	6-18-93	< 200	No Odor
Trip Blank	1-29-92	< 200	Prepared by Lab
	3-26-93	< 200	Prepared by Lab
	6-18-93	NT ²	Not Provided

NOTES:

1. ppb = parts per billion
2. NT = Not Tested

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: June 23, 1993
Date Received: June 18, 1993
Project: 11-08424-01, Blackstock
Date Samples Extracted: June 21, 1993
Date Extracts Analyzed: June 21, 1993

RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS
BY IR (METHOD 418.1)
(MODIFIED TO REPORT RESULTS AS DIESEL)
Results Reported as $\mu\text{g/L}$ (ppb)

<u>Sample #</u>	<u>Total Petroleum Hydrocarbons</u>
MW-1	<200
MW-2	270
MW-3	<200
 <u>Quality Assurance</u>	
Blank	<200
Tap Water (Matrix Spike) % Recovery	96%
Tap Water (Matrix Spike Duplicate) % Recovery	70%
Spike Level	250

RZA-AGRA

Environmental & Engineering Services
 11335 Northeast 122nd Way
 Kirkland, Washington 98034-6918
 (206) 820-4669/FAX (206) 821-3914

No 01913

Chain of Custody Record / Analysis Request

Analysis Requested: (write preferred method in box)

Project Name: BLACKSTOCK Job No.: 11-08424-01
 Project Manager: CANDI HUTLEY Phone #: (206) 820-4669
 Sampler: MARK T JOHNSON

RZA-AGRA Sample ID	Lab Samp ID	Date Collected	Time Collected	Matrix (S=soil, W=water, A=air)	# Containers/Preservation			CHILL	WTPH - 418.1	Hold for Further Analysis	RUSH (see below)
					40 ml VOA /	1 L Glass / 1m ³ etc	9 oz Glass /				
MW 1	40968	6-18-93	11:45	W		X		X			
MW 2	409670	6-18-93	11:50	W		X		X			
MW 3	40977	6-18-93	11:55	W		X		X			
TRIP BLANK											

RELINQUISHED BY SAMPLER: Signature: <u>[Signature]</u> Printed Name: <u>MARK T. JOHNSON</u> Firm: <u>RZA-AGRA</u> Date/Time: <u>6-18-93 12:50</u>	RELINQUISHED BY: Signature: _____ Printed Name: _____ Firm: _____ Date/Time: _____	RELINQUISHED BY: Signature: _____ Printed Name: _____ Firm: _____ Date/Time: _____	LABORATORY: Total # Containers: _____ Condition of Containers? _____ Condition of Seals? _____	Special Handling Turnaround: <input type="checkbox"/> 8 hour <input type="checkbox"/> 24 hour <input type="checkbox"/> 5 business day <input type="checkbox"/> 10 business day <input type="checkbox"/> other _____ (#) business day
RECEIVED BY: Signature: <u>[Signature]</u> Printed Name: <u>Amy Gray</u> Firm: <u>Friedman & Bruya Inc.</u> Date/Time: <u>06-18-93 12:53</u>	RECEIVED BY: Signature: _____ Printed Name: _____ Firm: _____ Date/Time: _____	RECEIVED BY: Signature: _____ Printed Name: _____ Firm: _____ Date/Time: _____	PURPOSE OF SAMPLING / COMMENTS: _____ _____	