EMCON ASSOCIATES

EMCON

FEB 05 1987

January 28, 1987
Project 738-08.03

Gettler Ryan Inc.
1992 National Avenue
Hayward, California 94545

Attn: Mr. Jeffrey M. Ryan

Re: Shell Service Station
Lewelling Boulevard and
Washington Avenue,
San Leandro, California

Gentlemen:

This letter presents the results of an ongoing soil and ground-water investigation conducted by Gettler-Ryan and EMCON Associates at the Shell service station located at Lewelling Boulevard and Washington Avenue, San Leandro, California. EMCON and Gettler-Ryan installed one additional ground-water monitoring well at the site on December 24, 1986. The purpose of the current investigation is to further define the on-site extent of the gasoline encountered in the ground water during the previous investigations. It is EMCON's understanding that the results of this investigation will be used to document hydrocarbon concentrations for soil disposal purposes if the tanks are to be replaced.

PREVIOUS INVESTIGATIONS

Four ground-water monitoring wells (S-1 through S-4) were installed at the site during the initial phase of this investigation by EMCON and Gettler-Ryan Inc. This investigation revealed gasoline concentrations of 520 parts per billion (ppb) in Well S-1, 2,200 ppb in Well S-2, and 32,000 ppb in Well S-4. Well S-3 contained approximately 6 inches of free floating gasoline. In a subsequent soil investigation, four soil borings (S-A through S-D) were sampled. Soil analysis showed gasoline concentrations ranging from none detected in Boring S-D to 1,700 milligrams per kilogram (mg/kg) or parts per million (ppm) in Boring S-B. The locations of these wells and soil borings are shown on Figure 1. The results of these investigations were transmitted to Gettler-Ryan in reports dated August 12, 1985, and September 12, 1986, respectively.

FIELD INVESTIGATION PROCEDURES

During the latest investigation one additional monitoring well (S-5) was drilled at the location shown on Figure 1. Well S-5 was drilled on the west edge of the property, adjacent to the waste oil tank. The well was drilled using continous-flight hollow-stem auger drilling equipment and was logged by an EMCON geologist according to the Unified Soil Classification System and standard geologic techniques. Soil samples for logging were obtained from auger return materials and by advancing a California Modified split-spoon sampler into undisturbed soil beyond the tip of the auger at 5-foot intervals. Well S-5 was completed with the installation of 4-inch-diameter PVC casing and 0.020-inch factory slotted screen. Well construction details accompany the attached Exploratory Boring Log.

no soil samples analyzed

The newly installed Monitoring Well S-5 was field checked for the presence of free-floating petroleum product with a clear acrylic bailer. Ground-water samples were then collected from Well S-5 and were analyzed for the presence of gasoline as well as benzene, toluene and xylene (BTX) compounds by gas chromatography followed by photo-ionization and flame-ionization detection. Prior to sampling, a minimum of three casing volumes of water were purged from the well with a low-discharge submersible pump constructed of stainless steel and teflon materials. Complete laboratory methods and results accompany this report.

SITE HYDROGEOLOGIC CONDITIONS

Well S-5 encountered clay to a depth of 5-1/2 feet, underlain by clayey sand to 6-1/2 feet, sandy silt to 7-1/2 feet, followed by high-plasticity clay to the total depth explored of 20-1/2 feet. Moderate gasoline odor was noted in soils from Well S-5 from 5 to 8 feet below the surface. Ground water was first encountered at approximately 7 feet.

Ground surface and top of casing elevations for Monitoring Wells S-1 through S-5 were surveyed to the nearest 0.01 foot relative to mean sea level. Liquid levels were measured for Wells S-1 through S-5 on January 8, 1987. No floating product was noted in any of the wells. Ground-water elevations and contours are shown on Figure 1. The contours show that the direction of local ground-water flow appears to be south at an approximate gradient of 0.006, although regional ground-water flow is westerly, towards San Francisco Bay.

LABORATORY INVESTIGATIONS AND RESULTS

Ground-water samples obtained from Well S-5 on January 8, 1987 were analyzed for the presence of gasoline and BTX (benzene, toluene, xylene) compounds. Results of the analyses reveal 7,800 parts per billion dissolved gasoline in Well S-5. A certified analytical report is attached.

If you have any questions regarding the contents of this letter, please do not hesitate to call.

Very Truly Yours,

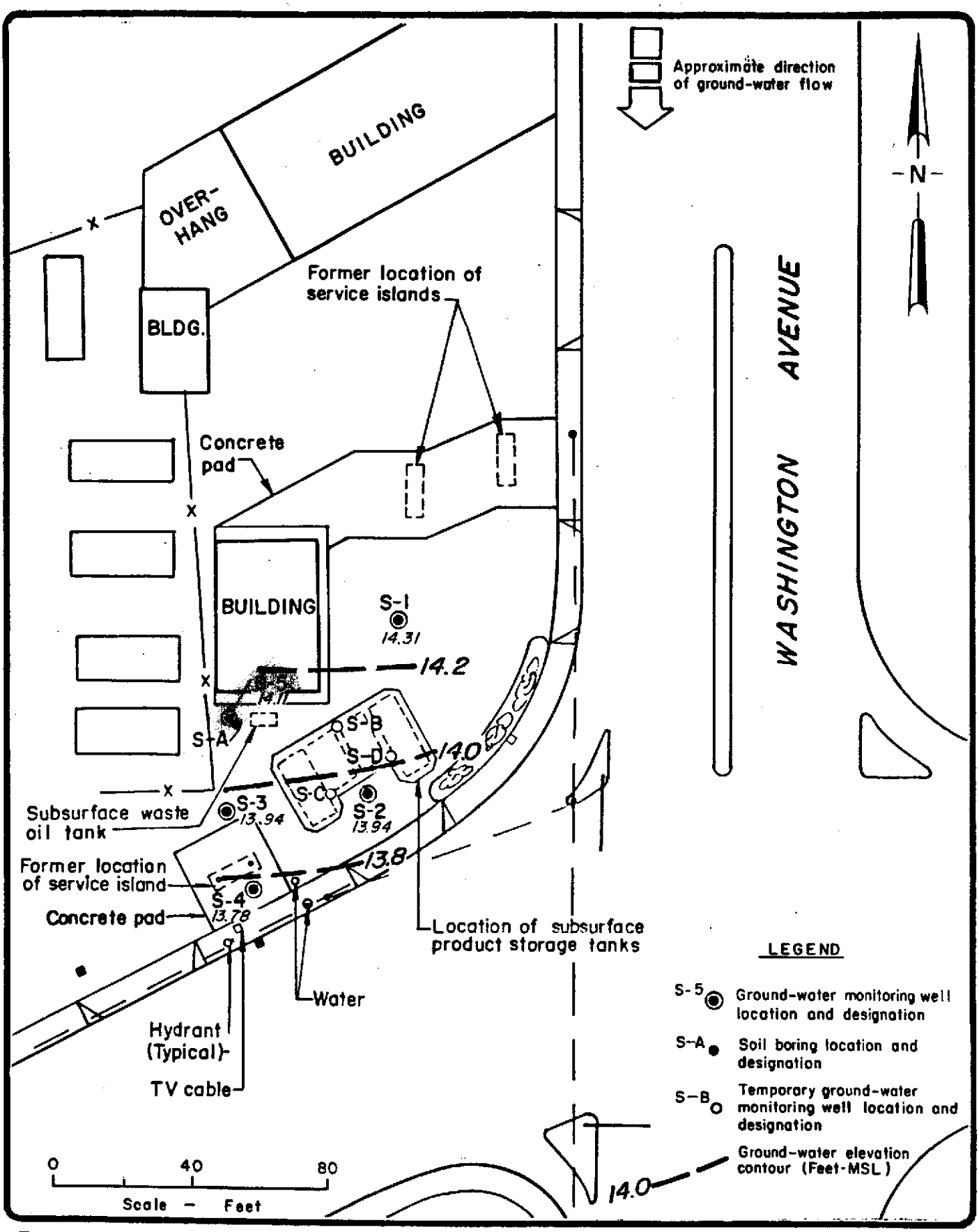
EMCON Associates

Justin D. Bradley
Staff Geologist

R. Lee Dooley
Vice President
CEG 1006

JDB/RLD/rp

Attachments



EMCON Associates
San Jose, California

GETTLER-RYAN INC.
SUBSURFACE HYDROGEOLOGIC INVESTIGATION
SHELL STATION, LEWELLING BLVD. & WASHINGTON AVE.
SAN LEANDRO, CALIFORNIA

GROUND-WATER CONTOUR MAP

FIGURE 1

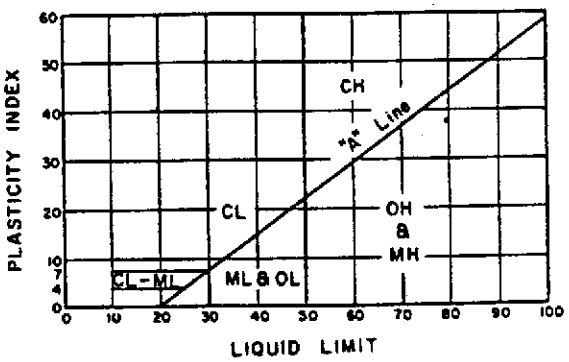
PROJECT NO. 738-08.03

MAJOR DIVISIONS		SYMBOLS	TYPICAL SOIL DESCRIPTIONS
COARSE GRAINED SOILS (More than 1/2 of soil > no. 200 sieve size)	GRAVELS (More than 1/2 of coarse fraction > no. 4 sieve size)	GW	Well graded gravels or gravel-sand mixtures, little or no fines
		GP	Poorly graded gravels or gravel-sand mixtures, little or no fines
		GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS (More than 1/2 of coarse fraction < no. 4 sieve size)	SW	Well graded sands or gravelly sands, little or no fines
		SP	Poorly graded sands or gravelly sands, little or no fines
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE GRAINED SOILS (More than 1/2 of soil < no. 200 sieve size)	SILTS & CLAYS LL < 50	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
	SILTS & CLAYS LL > 50	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silty clays, organic silts
HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils

CLASSIFICATION CHART
(Unified Soil Classification System)

CLASSIFICATION	RANGE OF GRAIN SIZES	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	305 to 76.2
GRAVEL	3" to No. 4	76.2 to 4.76
coarse	3" to 3/4"	76.2 to 19.1
fine	3/4" to No. 4	19.1 to 4.76
SAND	No. 4 to No. 200	4.76 to 0.074
coarse	No. 4 to No. 10	4.76 to 2.00
medium	No. 10 to No. 40	2.00 to 0.420
fine	No. 40 to No. 200	0.420 to 0.074
SILT & CLAY	Below No. 200	Below 0.074

GRAIN SIZE CHART



PLASTICITY CHART

METHOD OF SOIL CLASSIFICATION

EMCON ASSOCIATES

PLATE

NOTES: Logs of Exploratory Borings

2.5 YR, 6/2		Denotes color as field checked to Munsell Soil Color Charts (1975 Edition)
		Denotes undisturbed sample taken in 2-inch split-spoon sampler.
		Denotes disturbed sample (bag sample).
	▽	Denotes first observation of groundwater.
	▼	Denotes static ground-water level.
	NR	No recovery
Penetration		Sample drive hammer weight = 140 pounds, drop = 30 inches. Blows required to drive sampler 1 foot are indicated on logs.

LOG OF EXPLORATORY BORING

PROJECT NUMBER 738-08.03 BORING NO. S-5

PROJECT NAME Gettler-Ryan, Shell, Washington & Lewelling PAGE 1 OF 2

BY JDB DATE 12/24/86 SURFACE ELEV. 21.71'

TORVANE (TSF)	POCKET PENETROMETER (TSF)	PENETRATION (Blows/Ft.)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
						GP	ASPHALT GRAVEL-FILL; coarse baserock.
						CL	CLAY; dark gray (5Y, 4/1); 98-100% low- to moderate-plasticity fines; <2% fine sand; stiff; damp; no gasoline odor. @4': slight gasoline odor.
	1.25	9		5	1	SC	CLAYEY SAND; dark gray (5Y, 4/1); 20-40% low-plasticity fines; 60-80% fine sand; loose; moist; slight to moderate gasoline odor.
			▼ ▽			ML CH-CL	SANDY SILT; dark gray (5Y, 4/1); 70-90% non-plastic fines; 10-30% fine sand; stiff; moderate gasoline odor.
	1.5	17		10	2		CLAY; black (5Y, 2.5/1); 100% moderate- to high-plasticity fines; occasionally calcareous; stiff to very stiff; wet in voids; slight gasoline odor to 10 feet.
						CH	
	2.25	22		15	3		@14': gray (5Y, 5/1); 100% high-plasticity fines; very stiff; very moist; no gasoline odor. @19': abundant caliche disseminated; no gasoline odor.
	2.0	29		20	4		

REMARKS

Drilled with 8- and 12-inch continuous-flight, hollow-stem auger drilling equipment. Converted to a 4-inch monitoring well as detailed on Plate B.

LOG OF EXPLORATORY BORING

PROJECT NUMBER 738-08.03 BORING NO. S-5

PROJECT NAME Gettler-Ryan, Shell, Washington & Lewelling PAGE 2 OF 2

BY JDB DATE 12/24/86 SURFACE ELEV. 21.71'

TORVANE (TSF)	POCKET PENETRO-METER (TSF)	PENETRA-TION (Blows/Ft.)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION
				20			BOTTOM OF BORING AT 20.5 FEET
				25			
				30			
				35			
				40			

REMARKS

PLATE B

WELL DETAILS

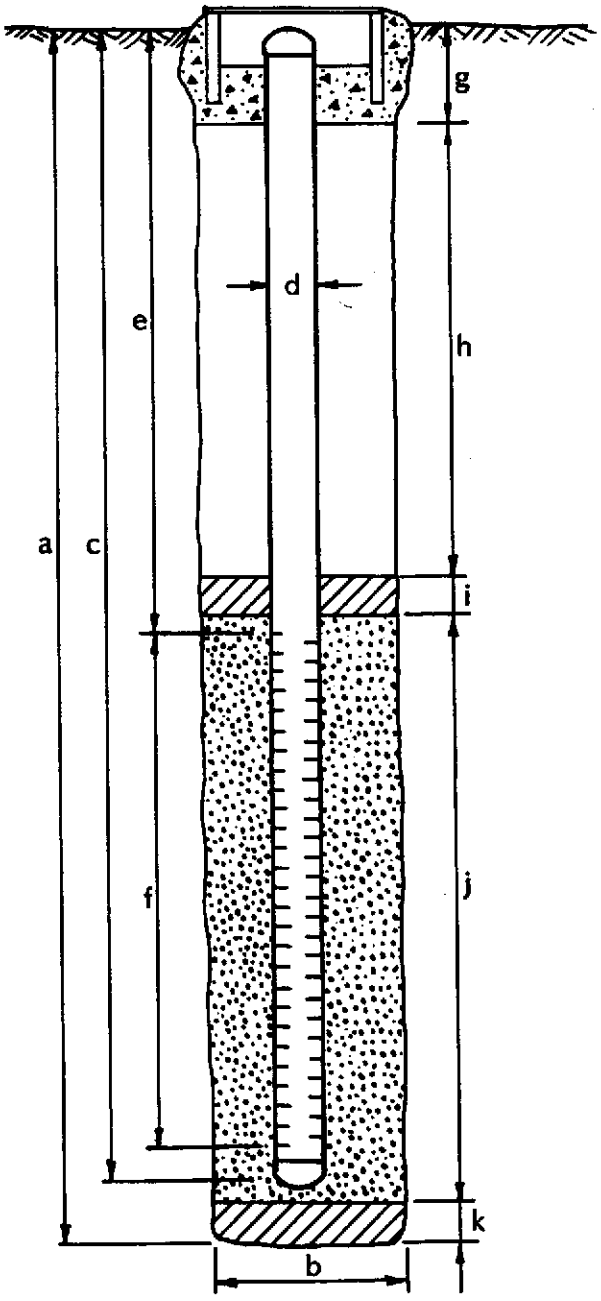
PROJECT NUMBER 738-08.03 BORING / WELL NO. S-5

PROJECT NAME Shell, Washington & Lewelling, San Leandro TOP OF CASING ELEV. 21.24'

COUNTY Alameda GROUND SURFACE ELEV. 21.71'

WELL PERMIT NO. DATUM Project

G-5 vault box (Std.)



EXPLORATORY BORING

a. Total depth 20½ ft.

b. Diameter 12 in.

Drilling method Hollow-stem auger

WELL CONSTRUCTION

c. Casing length 18½ ft.

Material schedule 40 PVC

d. Diameter 4 in.

e. Depth to top perforations 3½ ft.

f. Perforated length 15 ft.

Perforated interval from 18½ to 3½ ft.

Perforation type machined slot

Perforation size 0.020 inch

g. Surface seal (1 - 0') 1 ft.

Seal material concrete

h. Backfill (1½ - 1') ½ ft.

Backfill material concrete

i. Seal (2½ - 1½') 1 ft.

Seal material bentonite

j. Gravel pack (18½ - 2½') 16 ft.

Pack material 6x12 Monterey Sand

k. Bottom seal (20½ - 18½') 2 ft.

Seal material compacted clay

PLATE C

EMCON A' 'OCIATES • CHEMICAL LA ORATORIES

Analysis • Consultation • Research • Environmental Studies
State Approved Water Laboratory

CERTIFIED ANALYTICAL REPORT

Report to:

Project Number: 738-08.03

Gettler-Ryan, Inc.
1992 National Ave.
Hayward, CA 94545

Location: Shell, Washington and Lewelling, San Leandro

Sample Type: WATER
Units: ug/l

Sample Designation:	S05
Field Date:	01/08/87
Laboratory Number:	E87-0015
Volatile Hydrocarbons due to Gasoline	7800
Benzene	380
Toluene	510
Xylenes and Ethylbenzene	1000

Reported by: Karen A Murphy Date: Jan 23 1987

1921 RINGWOOD AVENUE, SAN JOSE, CALIFORNIA 95131 TELEPHONE (408) 275-1444

DATE: 01/23/87

Project Number: 738-08.03

Gettler-Ryan, Inc.
1992 National Ave.
Hayward, CA 94545

Location: Shell, Washington and Lewelling, San Leandro

METHODS OF ANALYSIS

Sample Type: WATER

PARAMETER	METHOD
Volatile Hydrocarbons due to Gasoline Benzene Toluene Xylenes and Ethylbenzene	The method of analysis is taken from EPA methods 5030, 8015, 8020 and 602. The samples are tested by gas chromatography using the purge and trap technique. Detection is by means of flame and photo ionization detectors.