

# RZA AGRA Alaska, Inc.

Engineering, Inc.

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2100-26-004  
MAY 20 '94 J.M.M.

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May 13, 1994  
31-06924-02

Chevron USA  
P.O. Box 5004  
San Ramon, California 94583

**R E C E I V E D**

**JUL 25 1994**

**DEPARTMENT OF  
ENVIRONMENTAL CONSERVATION  
ADO**

Attention: Mr. Robert Gondek

**RE: Summary Report for Confirmation Soil Sampling - Chevron  
Station No. 2555, 9th & Gambell Streets - Anchorage, Alaska.**

Dear Mr. Gondek:

RZA AGRA Alaska, Inc. (AGRA) is pleased to present this report summarizing the confirmation soil sampling activities and results at Chevron's former Station No. 2555. AGRA has been monitoring and operating a soil vapor extraction system (VES) at the project site since 1990. AGRA has reviewed the historical groundwater and VES analytical data and observed that the petroleum hydrocarbon levels which are extracted through the shallow horizontal VES arrays have achieved a point of diminishing returns.

Chevron operated a retail fueling facility/service station at 920 Gambell Street in Anchorage, Alaska. The station was demolished in June 1990. All underground storage tanks (USTs) and associated piping were removed and disposed of properly. Petroleum impacted soils were encountered during excavation activities. The Alaska Department of Environmental Conservation (ADEC) approved on-site remediation of the impacted soil excavated during the UST removal. Four horizontal vapor extraction arrays were installed in the UST excavation areas. Fertilizer was mixed with the hydrocarbon impacted soil and then the soil was placed in the excavation area around the arrays. A soil vapor extraction system consisting of six vertical vapor extraction wells and the four horizontal arrays began operations in January 1991. Air sparging technology was combined with the VES in December of 1992 to enhance the removal of hydrocarbons.

Presently, a network of monitoring wells and an air sparging/VES are located on-site. Monitoring wells MW-2, MW-3, MW-4, and MW-5 are utilized as air sparging wells. Volatile hydrocarbons are extracted from the subsurface soils through monitoring wells M-1, MW-6, and the four horizontal vapor extraction arrays. All other monitoring wells are utilized for obtaining groundwater data.



0095

Prior to the incorporation of air sparging into the remediation system, the average daily discharge from the VES was approximately 0.0023 lbs BTEX/day. Organic vapor concentrations from the VES, when vapors were being pulled from the horizontal arrays only, were non-detectable. After incorporation of air sparging, the VES emission rate increased to approximately 0.123 lbs BTEX/day. No increase in the organic vapor concentrations from the shallow horizontal arrays has been observed.

On February 11, 1994, AGRA advanced a series of soil borings into the impacted soil to confirm that the soil had been successfully remediated. Five (5) borings were advanced to approximately 15-feet below surface grade. These borings were placed in the areas previously excavated where the former USTs and pump island existed. Figure 1 is a site diagram showing the location of the monitoring wells, previous excavation areas, and the location of the confirmation soil borings. Soil boring logs are attached to this letter.

AGRA collected soil samples with a decontaminated, 2.5-foot long, 3-inch diameter split-spoon sampler from each boring at 2.5-5 (S-1), 7.5-10 (S-2), and 12.5-15-feet (S-3) below grade. All samples collected were submitted to GTEL Environmental Laboratories, Inc. (GTEL) in Concord, California. The samples were analyzed for benzene, toluene, ethylbenzene and xylene (BTEX) by EPA Method 5030/8020, gasoline range petroleum hydrocarbons (GRPH) by EPA Method 5030/8015, and diesel range petroleum hydrocarbon (DRPH) by EPA Method 3550/8100. A copy of the analytical reports from GTEL are attached for your review. Analytical results were compared to the ADEC Cleanup Levels identified in the UST Regulations (18AAC78).

Using the ADEC matrix score sheet, this site has a matrix score of 42. The suggested cleanup level for this site is Level A. The following criteria was used to determine the cleanup level:

Depth to subsurface water (5-15 ft.)*	8	X 60
Mean annual precipitation (15-25 in.)	3	
Soil type (coarse grained soil with fines)	8	
Potential receptors (private well < 500 ft.)	15	
<u>Volume of contaminated soil (100-500 cu. yd.)</u>	<u>8</u>	
<b>Matrix Score</b>	<b>42</b>	44

\* The lowest zone of impacted soil in the excavation area is 10-feet; depth to water is approximately 17 feet, thus, a depth of 7 feet to subsurface water was calculated.



0096

Cleanup standards:	Level A	Level B
Benzene	0.1 ppm	0.5 ppm
BTEX	10 ppm	15 ppm
GRPH	50 ppm	100 ppm
DRPH	100 ppm	200 ppm

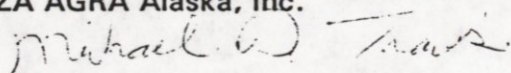
Of the fifteen soil samples collected, three had detectable levels of BTEX and GRPH, and ten had detectable levels of DRPH. Two samples (CSB-1\S2 & CSB-2\S1) had benzene and GRPH concentrations above Level A cleanup standards. None of the soil samples analyzed for BTEX exceeded Level A cleanup standards. Four samples, CSB-1\S1, CSB-2\S1, CSB-4\S1 & S2, had DRPH levels above Level A standards. Table 1 is a summary of the analytical results.

The objective of this sampling event was to determine if petroleum hydrocarbon concentrations in the upper 10-feet of the subsurface soil were below the ADEC cleanup levels identified for the site. Several of the soil samples analyzed during this program are above targeted cleanup levels for this site at this time.

The ADEC has identified a possible drinking water well within 500-feet northeast of the project site. However, it is our understanding that the well is not currently in use and the land is for sale. The sale is pending based on negotiations for municipal water hook-up. If and when that well is abandoned the matrix score could be changed to 39 which would indicate a Level B cleanup level for this site. *(NO) 41 still level A,*

RZA AGRA Alaska, Inc. appreciates the opportunity to provide services to you. If you have any questions or comments please call me at 276-6480.

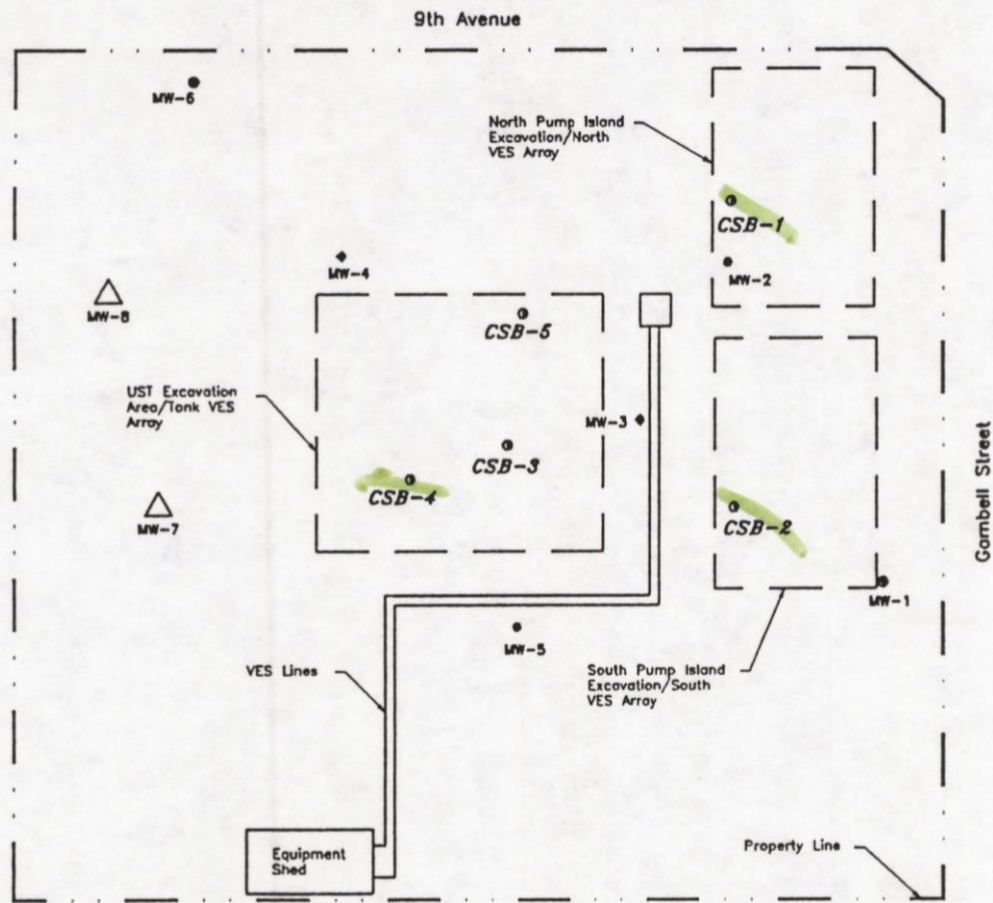
Respectfully submitted,  
RZA AGRA Alaska, Inc.



Michael D. Travis, P.E.  
Vice President

Enclosures: Figure 1 - Monitoring Well Location Map  
Table 1 - Soil Boring Analytical Summary Table  
Soil Boring Logs  
Laboratory Analytical Reports  
copy: Phil Briggs, Chevron U.S.A.

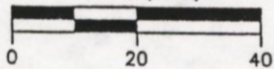




**LEGEND**

- CSB-3 SOIL BORING
- MW-1 VAPOR EXTRACTION WELL/MONITORING WELL
- MW-5 SPARGE WELL/MONITORING WELL
- △ MW-7 GROUNDWATER MONITORING WELL

SCALE (FEET)



RZA AGRA Alaska, Inc.  
ENGINEERING & ENVIRONMENTAL SERVICES

711 H STREET  
SUITE 450  
ANCHORAGE, ALASKA 99501-3442

W.O. 31-6924-02  
DESIGN TAS  
DRAWN PSH  
DATE 5-17-94  
SCALE AS NOTED  
F.N. (SITELOC)

CHEVRON STATION NO. 2555  
NINTH & GAMBELL  
ANCHORAGE, ALASKA

MONITORING WELL  
LOCATION MAP

FIGURE 1

TABLE 1 - SOIL BORING ANALYTICAL SUMMARY TABLE

SAMPLE IDENTIFICATION	CSB-1			CSB-2		
	S-1	S-2	S-3	S-1	S-2	S-3
SAMPLE DATE	2/11/94	2/11/94	2/11/94	2/11/94	2/11/94	2/11/94
SAMPLE DEPTH	2.5-5	7.5-10	17.5-15	2.5-5	7.5-10	17.5-15
BENZENE	<0.020	0.56	<0.005	0.15	<0.005	<0.005
TOLUENE	0.16	0.95	<0.005	0.82	<0.005	<0.005
ETHYLBENZENE	0.22	0.52	<0.005	1.0	<0.005	<0.005
TOTAL XYLENE	4.7	3.4	<0.015	5.2	<0.015	<0.015
TOTAL BTEX	5.08	5.43	ND	7.17	ND	ND
GRPH	39	100	<1	220	<1	<1
DRPH	160	30	<10	160	23	<10

SAMPLE IDENTIFICATION	CSB-3			CSB-4		
	S-1	S-2	S-3	S-1	S-2	S-3
SAMPLE DATE	2/11/94	2/11/94	2/11/94	2/11/94	2/11/94	2/11/94
SAMPLE DEPTH	2.5-5	7.5-10	17.5-15	2.5-5	7.5-10	17.5-15
BENZENE	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
TOLUENE	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
ETHYLBENZENE	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
TOTAL XYLENE	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
TOTAL BTEX	ND	ND	ND	ND	ND	ND
GRPH	<1	<1	<1	<1	<1	<1
DRPH	75	39	<10	230	180	<10

SAMPLE IDENTIFICATION	CSB-5		
	S-1	S-2	S-3
SAMPLE DATE	2/11/94	2/11/94	2/11/94
SAMPLE DEPTH	2.5-5	7.5-10	17.5-15
BENZENE	<0.005	<0.005	<0.005
TOLUENE	<0.005	<0.005	<0.005
ETHYLBENZENE	<0.005	<0.005	<0.005
TOTAL XYLENE	<0.015	<0.015	<0.015
TOTAL BTEX	ND	ND	ND
GRPH	<1	<1	<1
DRPH	12	90	<10

All results are reported in parts per million

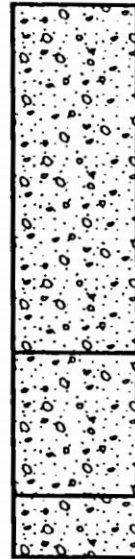
ELEVATION REFERENCE: ON SITE REFERENCE DATUM 100.00 FEET  
 GROUND SURFACE ELEVATION: FEET CASING ELEVATION: N/A

GRAPHIC LOG

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE RECOVERY	PENETRATION RESISTANCE TAP NO.	OMV READING	ANALYTICAL METHODS	GROUND WATER
0								0
5	Very loose, damp, brown, SW. Well-graded SAND with gravel. (Fill)	I	S-1	☐	2	0.9	8020 8015 8100	5
10	Very loose, damp, brown, SW. Well-graded SAND with gravel. (Fill)	I	S-2	☐	5	0.3	8020 8015 8100	10
15	Medium dense, moist, grey-brown, SP. Poorly sorted SAND with gravel. (Fill)	I	S-3	☐	26	0.3	8020 8015 8100	15
20								20
25								25
30	TOTAL DEPTH = 13.5 FEET							30

0099

GROUND SURFACE



LEGEND

Grab Sample  
 2-inch O.D. split-spoon sample  
 Observed groundwater level at time of drilling (ATD)  
 Contact  
 Dashed Where Approximate or Inferred  
 Gravel  
 Sand  
 Silt  
 Clay  
 Organics  
**ANALYTICAL METHODS**  
 8020 = BTEX  
 8015 = GRPH  
 8100 = DRPH

NOTES:

1. B61, 4 1/4" Hollow Stem Auger, 2" Split Spoon

DATE STARTED: 2/11/94

DATE COMPLETED: 2/11/94

**RZA AGRA Alaska, Inc.**  
 ENGINEERING, GEOTECHNICAL  
 & ENVIRONMENTAL SERVICES  
 711 H Street  
 Suite 450  
 Anchorage, Alaska 99501

W.O. FILE 31-6924-02  
 DRAWN CSB5  
 SCALE 2-18-94  
 LOGGED AS NOTED  
JBB

CHEVRON STATION NO. 9-2555  
 920 GAMBELL STREET  
 ANCHORAGE, ALASKA  
 SOIL BORING NO. CSB-5  
 DRILL LOG

ELEVATION REFERENCE: ON SITE REFERENCE DATUM 100.00 FEET  
 GROUND SURFACE ELEVATION: FEET CASING ELEVATION: N/A

GRAPHIC LOG

0100

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE RECOVERY	PENETRATION RESISTANCE TAP NO.	OMV READING	ANALYTICAL METHODS	GROUND WATER
0								0
5	Medium dense, damp, brown, SW. Well-graded SAND with gravel. (Fill)	I	S-1	□	18	0.3	8020 8015 8100	5
10	Medium dense, damp, brown, SW. Well-graded SAND with gravel. (Fill)	I	S-2	□	22	--	8020 8015 8100	10
15	Loose, damp, brown, SW. Well-graded SAND with gravel. (Fill)	I	S-3	□	8	1.9	8020 8015 8100	15
20								20
25								25
30	TOTAL DEPTH = 13.5 FEET							30



LEGEND

Grab Sample  
 2-inch O.D. split-spoon sample  
 Observed groundwater level at time of drilling (ATD)  
 Contact  
 Dashed Where Approximate or Inferred  
 Gravel  
 Sand  
 Silt  
 Clay  
 Organics  
**ANALYTICAL METHODS**  
 8020 = BTEX  
 8015 = GRPH  
 8100 = DRPH

NOTES:

1. B61, 4 1/4" Hollow Stem Auger, 2" Split Spoon

DATE STARTED: 2/11/94

DATE COMPLETED: 2/11/94

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 Suite 450  
 Anchorage, Alaska 99501

W.O. FILE 31-6924-02  
 DRAWN CSB4  
 SCALE 2-18-94  
 LOGGED AS NOTED  
JBB

CHEVRON STATION NO. 9-2555  
 920 GAMBELL STREET  
 ANCHORAGE, ALASKA  
 SOIL BORING NO. CSB-4  
 DRILL LOG

ELEVATION REFERENCE: ON SITE REFERENCE DATUM 100.00 FEET  
 GROUND SURFACE ELEVATION: FEET CASING ELEVATION: N/A

GRAPHIC LOG

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE RECOVERY	PENETRATION RESISTANCE TAP NO.	QVM READING	ANALYTICAL METHODS	GROUND WATER
0								0
5	Medium dense, damp, brown, SW. Well-graded SAND with gravel. (Fill)	I	S-1	☐	30	1.1	8020 8015 8100	5
10	Loose, damp, brown, SW. Well-graded SAND with gravel. (Fill)	I	S-2	☐	6	1.1	8020 8015 8100	10
15	Medium dense, damp, brown, SW. Well-graded SAND with gravel. (Fill)	I	S-3	☐	26	1.1	8020 8015 8100	15
20								20
25								25
30	TOTAL DEPTH = 13.5 FEET							30

0101

GROUND SURFACE



LEGEND

Grab Sample  
 Observed groundwater level at time of drilling (ATD)  
 2-inch O.D. split-spoon sample  
 Contact  
 Dashed Where Approximate or Inferred  
**ANALYTICAL METHODS**  
 8020 = BTEX  
 8015 = GRPH  
 8100 = DRPH  
 Gravel  
 Sand  
 Silt  
 Clay  
 Organics

NOTES:

1. B61, 4 1/4" Hollow Stem Auger, 2" Split Spoon

DATE STARTED: 2/11/94

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W.O. FILE 31-6924-02  
 DRAWN CSB3  
 SCALE 2-18-94  
 LOGGED AS NOTED  
JBB

CHEVRON STATION NO. 9-2555  
 920 GAMBELL STREET  
 ANCHORAGE, ALASKA  
 SOIL BORING NO. CSB-3  
 DRILL LOG





