PST 185976

Prepared for

Harold & Barbara Blize
Race Trac Gas
Highway 20 and Highway 39 (Junction)
Alsike, Alberta

Legal Description: NW-36--48-4-W5M

Post-Remediation Groundwater Monitoring Summary Report for Petroleum Storage Tank Site in Alberta

Site: # 5720

SUBMITTED BY

KC Environmental Group Ltd.
December 19, 2005

Conducted By: Vanessa Castro, BSc
Environmental Consultant

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Senior Environmental Engineer

KC ENVIRONMENTAL GROUP LTD.
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December 19, 2005

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Dear Mr. and Mrs. Blize:

Re: Post - Remediation Groundwater Monitoring Report –Site # 5720

KC Environmental Group Ltd. (KC) was retained by Mr. Harold Blize to provide environmental consulting services for Site # 5720 located at the Junction of Hwy 39 and Hwy 20, (NW-36-48-4-W5M), Alsike, Alberta. According to Alberta Environment (AENV) requirements, one time groundwater sampling around the remediated formerly contaminated area is required after completion of the remediation work, in order to ensure that groundwater in the area is also remediated.

On-site remediation work for site # 5720 was completed in September of 2004. However, as borehole drilling was required for reinstallation of two groundwater wells, post remediation groundwater monitoring was delayed until site restoration work involving aboveground storage tank installation and site paving was finished.

Based on laboratory results, all the groundwater samples collected in October of 2005 have non-detectable BTEX and petroleum fraction F1. All the groundwater samples have levels of petroleum fraction F2 that are either non-detectable or within the applicable Generic Hydrocarbon Criteria for the Groundwater Ingestion Pathway, defined in Alberta Environment's Risk Management Guidelines for Petroleum Storage Tank Sites (October, 2001). The selected criteria are also the criteria for Human Drinking Water.

As post-remediation groundwater monitoring shows that there is no environmental concern regarding petroleum hydrocarbon contamination in the groundwater system, no further remedial action is necessary for site # 5720.

Public Informati n
Date: 17-Feb-2006
~~Advisor:~~ MB

Head Office: 780.488.7926
Toll Free: 1.877.774.5678
Fax: 780.452.8284

Should you wish to discuss this information or have any questions, please contact me at (780) 488–7926.

Sincerely yours,

KC Environmental Group Ltd.

Kirstin Castro-Wunsch, P.Eng
Senior Environmental Engineer

PERMIT TO PRACTICE
KC Environmental Group Ltd.
Signature
Date Dec 19/05
PERMIT NUMBER: P 6080
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

TABLE OF CONTENTS

List of Tables

List of Appendix

EXECUTIVE SUMMARY

KC Environmental Group Ltd. (KC) was retained by Mr. Harold Blize to provide environmental consulting services for Safety Codes Council Site # 5720 located at Junction of Hwy 39 and Hwy 20, (NW- 36- 48- 4 W5), Alsike, Alberta. According to Alberta Environment (AENV) requirements, one time groundwater sampling around the remediated formerly contaminated area is required after completion of the remediation work, in order to ensure that groundwater in the area is also remediated.

On-site remediation work for site # 5720 was completed in September of 2004. However, as borehole drilling was required for reinstallation of two groundwater wells, post remediation groundwater monitoring was delayed until site restoration work involving aboveground storage tank installation and site paving was finished.

Based on the October 2005 groundwater sample laboratory results, the following conclusions were drawn:

- All the groundwater samples have non-detectable BTEX and petroleum fraction F1. All the groundwater samples have levels of petroleum fraction F2 that are either non-detectable or within the applicable Generic Hydrocarbon Criteria for the Groundwater Ingestion Pathway, defined in Alberta Environment's Risk Management Guidelines for Petroleum Storage Tank Sites (October, 2001). The selected criteria are also the criteria for Human Drinking Water
- In conclusion, as post remediation groundwater monitoring shows that there is no indication for environmental concern regarding the petroleum hydrocarbon contamination in the groundwater system, no further remedial action is necessary for site # 5720.

1.0 INTRODUCTION

KC Environmental Group Ltd. (KC) was retained by Mr. Harold Blize to provide environmental consulting services for Site # 5720 located at the Junction of Hwy 39 and Hwy 20, (NW- 36- 48- 4-W5M), Alsike, Alberta. According to Alberta Environment (AENV) requirements, one time groundwater sampling around the remediated formerly contaminated area is required after completion of the remediation work, in order to ensure that groundwater in the area is also remediated.

1.1 Background

The results of the Phase III ESA Report prepared by KC (October 15, 2002) for site # 5720 located in Alsike, Alberta, show that the petroleum contaminants have migrated towards the groundwater system and were identified on the west side of the subject site. The remediation criteria for groundwater are the Generic Hydrocarbon Criteria for Groundwater Ingestion Pathway.

On-site remedaiton work for site # 5720 was completed in September of 2004. However, as borehole drilling was required for reinstallation of two groundwater wells, post remediation groundwater monitoring was delayed until site restoration work involving aboveground storage tank installation and site paving was finished.

1.2 Scope of work

The following tasks were completed by KC during post–remediation groundwater monitoring work for SCC Site # 5720:

- Installation of two new monitoring wells along the perimeter of the remediated area, as the two previous groundwater monitoring wells located east and south of the impacted area, respectively, were removed during excavation of the petroleum hydrocarbon contaminated soil.

- Sampling of groundwater from the on-site potable groundwater well, located north of the remediated area.

- Submission of four groundwater samples according to AENV's Risk Management Guidelines for Petroleum Storage Tank Site, October 2001; including a sample from the potable groundwater well.

- Analysis and reporting of the analytical results conforming to relevant sections of the Risk Management Guidelines for Petroleum Storage Tank Sites (October, 2001).

- Submission of report to the client, Safety Codes Council (SCC), and AENV.

2.0 SITE SENSITIVITY ASSESSMENT

Site # 5720 is located in a rural area, at the junction of Highway 20 and Highway 39, and is zoned as highway commercial use.

2.1 Site Conditions

The soil profile in the excavation basin included: an initial layer of approximately 0.08 m asphalt; a layer of 0.20 m imported gravel fill; and, at least a 5.0 m thick silty clay horizon with occasional inclusion of sandy clay. The water table was encountered at a depth between 3m and 4 m during phase II borehole drilling and the phase III remediation work conducted by KC Environmental.

Table 1 General Soil Lithology

Depth (m)	General soil lithology
0.0 - 0.2	Generally covered by asphalt/gravel
0.2 –3.0	Brown silty clay
3.0 - 5.0	Sandy clay
*5.25 - 7.50	Clay with iron oxides

- The soil lithology for this depth interval was observed during the phase II Environmental Site Assessment and the phase III site remediation work.

2.2 Land Use Assessment - Surrounding Land Use and Receptors

Commercial land use on site:

The site has a general store on it, which also serves as the local post office. Approximately 70 m east of the general store are, a denture clinic, Teddy Bear's Restaurant and a trailer, followed by a service centre located about 150 m from the general store. Further east, about 200 m, from the general store is an oilfield and industrial supplier (Apex Distribution).

The general store located on site is most affected by the contamination due to its close proximity to the underground gasoline storage tanks.

Adjacent land uses

North: Immediately north of the subject site is a wooded area, followed by a farm field.

South: Immediately south of the subject site is a ditch located within a 30 m distance, followed by Highway 39 and then a cultivated farm field.

East: Immediately east of the subject site is a wooded area, followed by a farmhouse located approximately 200 m from the subject site.

West: Immediately west of the subject site is a wooded area.

Since the subject site is situated in a rural area and is zoned as highway commercial, the land use is considered to be commercial land use.

2.3 Exposure Pathways

2.3.1 Human Pathway

Soil Ingestion and Soil Dermal Contact

This pathway is considered low, as incidental soil ingestion and soil dermal contact is unlikely for a paved commercial area.

Inhalation of Indoor Air

The inhalation exposure pathway is considered high as volatile contaminants can enter via the basement of the general store. This can be via general seepage or through underground potable water and sewage disposal/collection piping pathways. The general store on the subject site would be most affected by the contamination.

Groundwater Ingestion Pathway

There are two potable groundwater wells on site. One is located underneath the general store (west end of the property) and the other is on the east end of the property. The potential contaminant migration plume from the underground storage tanks was originally predicated to be primarily in the north-east direction due to the influence of the groundwater flow. However, the contamination migration plume was determined to be in the direction of south-east based on the results of delineation and field observations. To provide a higher safety factor, the groundwater ingestion pathway is considered in selecting the remediation criteria.

2.3.2 Ecological Pathway

Plant/Invertebrate Soil Contact

As the gas station dispensing area is paved and contaminants are mainly found below ground surface at a depth between 3 m and 4m, the exposure of terrestrial organisms (plant and invertebrate) to contaminants is considered low.

Aquatic Life

There is a river located more than 3 km to the east. As this is the only surface water body and is located more than 300 m from the subject site, the potential risk to freshwater aquatic life, from contaminants originating from the subject site is not considered.

The potential pathways are therefore primarily through inhalation of vapor from soil and groundwater, and groundwater ingestion.

2.3.3 Applicable Remediation Criteria as Approved by Alberta Environment

Based on the above land use assessment and potential exposure pathways assessment, the remediation criteria considered for the groundwater is therefore the Generic Hydrocarbon Criteria for Groundwater Ingestion Pathway defined in Alberta Environment's Risk Management Guidelines for Petroleum Storage Tank Sites (October, 2001). The criteria selected are also the criteria for Human Drinking Water.

3.0 INSTALLATION OF TWO GROUNDWATER MONITORING WELLS

Two groundwater-monitoring wells, MW-S and MW-E, located to the south and east of the impacted area, were installed on October 19, 2005 for post-remediation groundwater monitoring purposes. Both of the wells were drilled to a depth of approximately 6 m. Groundwater monitoring well "MW1", located to the west of contamination plume and the potable groundwater well located to the north of the impacted area are two of the remaining pre-existing groundwater wells. Borehole logs for the two newly installed groundwater monitoring wells are attached in Appendix A.

3.1 Field Observation and Laboratory Analysis

The four monitoring wells were purged on October 19th, 2005 and the groundwater samples were collected on October 20th, 2005. The collected groundwater samples were sent to the laboratory for analysis of for BTEX (benzene, toluene, ethyl-benzene and

xylene), petroleum hydrocarbon fractions F1 and F2. The 2005 laboratory results for the groundwater samples are summarized in Table 1.

Free product was not observed and petroleum hydrocarbon odour was not detected in any of the four groundwater samples. The groundwater samples were mainly clear with a small amount of sediment.

The four groundwater-monitoring wells are considered to be shallow wells as the water levels in all four wells were approximately 3.5 m below ground surface. The laboratory results are listed in the following Table 2.

Table 2 Comparison of Laboratory Analysis for Groundwater Samples to the Generic Hydrocarbon Criteria for the Groundwater Ingestion Pathway

	Benzene	Toluene	Ethyl-Benzene	Xylene	F1	F2
Groundwater Ingestion Pathway Criteria	0.005	0.024	0.0024	0.3	5	2
MW-1	<0.001	<0.001	<0.001	<0.001	<0.1	<0.1
MW-S	<0.001	<0.001	<0.001	<0.001	0.2	<0.1
MW-E	<0.001	<0.001	<0.001	<0.001	0.1	<0.1
P (on-site potable groundwater well)	<0.001	<0.001	<0.001	<0.001	<0.1	<0.1

All values in (mg/L) ppm unless otherwise noted.
Levels that exceed criteria are in bold text and shaded.

BTEX and Petroleum Hydrocarbon Fraction F1 – The laboratory results show that the four submitted groundwater samples have levels of BTEX and fraction F1 below the laboratory detection limits.

Petroleum Hydrocarbon Fraction F2 – The laboratory results show that only two out of the four submitted groundwater samples have detectable levels of petroleum hydrocarbon fraction F2, but within the applicable criteria.

3.2 Conclusions and Recommendations

Based upon the laboratory results, all the groundwater samples have non-detectable BTEX and petroleum fraction F1. All the groundwater samples have levels of petroleum fraction F2 either non-detectable or within the applicable Generic Hydrocarbon Criteria for the Groundwater Ingestion Pathway, defined in Alberta Environment's Risk Management Guidelines for Petroleum Storage Tank Sites (October, 2001). The criteria selected are also the criteria for Human Drinking Water

In conclusion, as post remediation groundwater monitoring shows that there is no indication for environmental concern regarding petroleum hydrocarbon contamination in the groundwater system, no further remedial action is necessary for site # 5720.

4.0 GROUNDWATER SAMPLING PROCEDURE

- The monitoring wells consist of a 51mm diameter PVC pipe with 2mm slots. The annulus between the wall of the hole and the slotted pipe was filled with Sil 7 frac sand to form a sand filter. The remainder of the fill consist of 9.5mm granular bentonite chips up to ground surface. The well was capped with a locking cap, and the keys to each well held by the consultant.
- The groundwater monitoring wells (piezometers) were purged (emptied) with a motorized pump and allowed to recharge for 24 hours after purging.
- A minimum of three well volumes was purged from each groundwater well. This is determined by use of a water level meter and the circumference of the well.
- Groundwater samples were collected directly from dedicated bailers into containers provided by the laboratory for each analysis.
- All samples were stored in an ice packed cooler, which should keep the samples at a temperature of about 4°C.

5.0 PROJECT LIMITATIONS

5.1 Sampling Limitations

A limited number of samples were submitted for laboratory testing and only for components as determined by the Alberta Remediation program. Laboratory analysis is limited in that it only provides quantifiable data about specific samples tested and compounds tested for, and may not necessarily reflect the entire site. Interpretations are based on a limited number of laboratory results and the error in this must be recognized. Laboratory results were used to validate field data and to obtain a more accurate reading of hydrocarbon contamination levels.

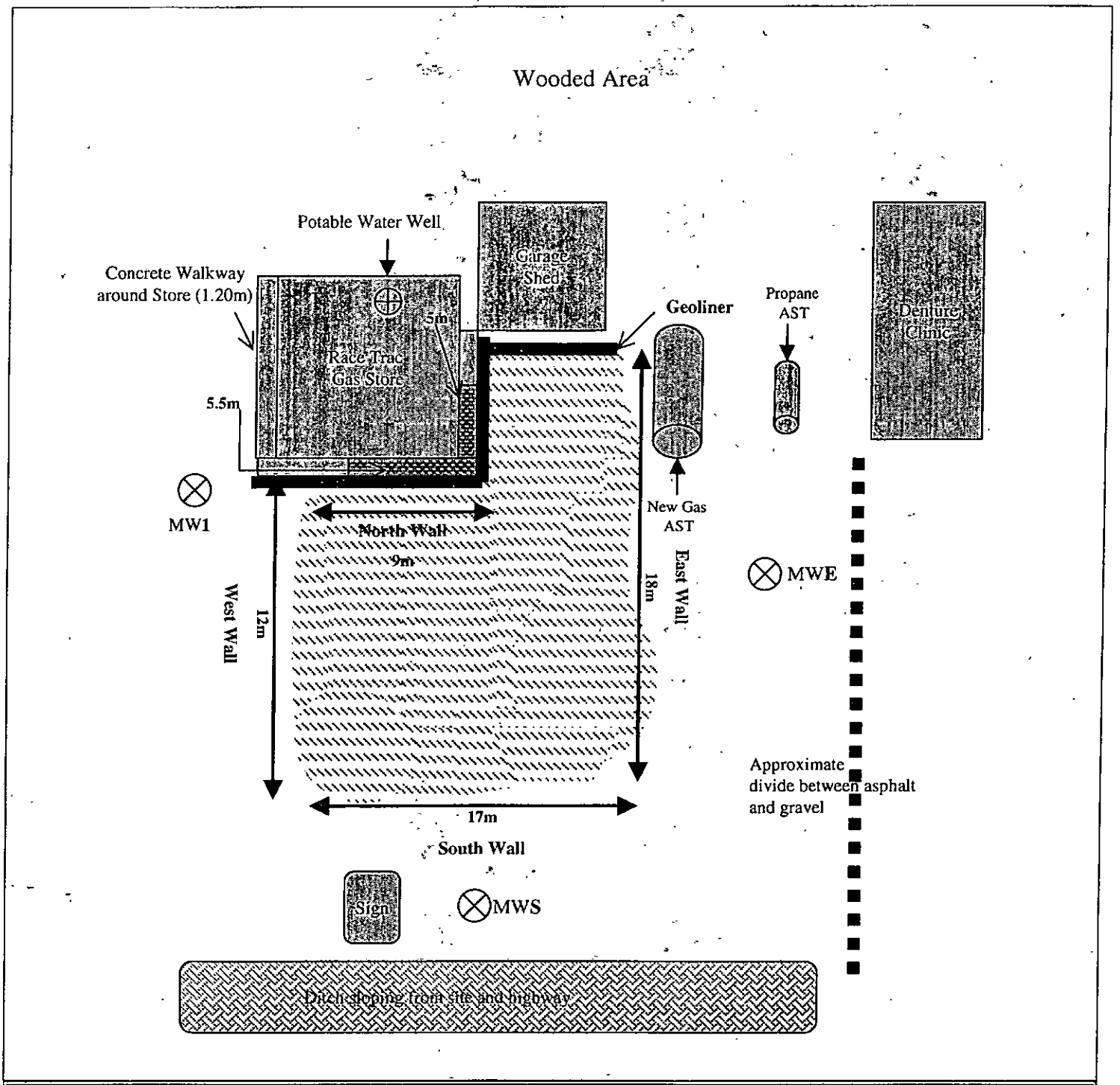
5.2 Project Limitations

This project has been completed to the best of the consultant's abilities and in accordance to the APEGGA Code of Ethics. However, the report is based on the information reviewed to the extent that the information was available and to the extent considered reasonable within the allocated project time frame and project budget. KC Environmental Group Ltd. and the environmental consultants who prepared this report do not accept any liability for contamination that may be found later on the subject site and is not identified in this environmental report.

The purpose of the report is to provide the client with further information with respect to the potential for environmental contamination due to the past or the present site uses. One copy of the report is maintained in the consultant's files as required by APEGGA.

APPENDIX A

SITE SKETCH WITH RELATIVE LOCATIONS OF GROUNDWATER MONITORING WELLS AND BOREHOLE LOGS



Location of Monitoring Wells at Race Trac Gas Site 5720 located at Junction of Hwy 39 and Hwy 20, Alsike, AB.

~ 40m³ of Contaminated Soil at a depth of 2m to 5m that meets the Generic Hydrocarbon and Lead Criteria for Coarse-Grained Soil (Commercial Land Use).

Excavation area that was backfilled with clean imported soil.
~ 1000m³ of Contaminated Soil was remediated to meet the Generic Hydrocarbon and Lead Criteria for Coarse-Grained Soil (Commercial Land Use) and the Generic Hydrocarbon Criteria for Groundwater Ingestion Pathway (Coarse-Grained Soil).

Geoliner

⊗ MW1 3.4 m west and 0.9 m south of SW corner of store building.
⊗ MWS 1 0m west and 15.4 m south of SE corner of store building.
⊗ MWE 20.5 m east and 6.5 m south of SE corner of store building.

N

KC ENVIRONMENTAL GROUP LTD.

Note: Sketch is approximate and Not to scale

DRILLER'S LOG REPORT

PROJECT.	801-05-367-site 5720	DATE	19-Oct-05
BOREHOLE:	S	LOGGED.	Vanessa Castro
START TIME:	09.45 AM	END TIME.	10:30 AM

Depth in m	Well Construction		Sample Number	Soil Type
0		Gravel		
0.75		Silty brown clay till	S-0.75.	
1.5		Silty brown clay till	S-1.5	
2.25		Silty brown clay till with charcoal, iron oxides and some sand.	S-2.25	
3		Silty brown clay till with charcoal, iron oxides and some sand.	S-3.00	
3.75		Moist sandy clay with charcoal	S-3.75	
4.5		Wet, sandy clay	S-4.5	
5.25		Wet sand	S-5.25	
6		Wet sand	S-6.00	
		END OF DRILLING		
		10ft of slotted pipe at bottom 10ft of solid pipe on top		

TOTAL ORGANIC HYDROCARBON VAPOUR (ppm)

0 500 1000 1500 2000 2500

0 1 2 3 4 5 6 7 8 9 10

fines (clay and silt)

fine sand

med sand

coarse sand

gravel

cobbles

sil sand

bentonite chips

asphalt

*Sample sent to laboratory ▼ Water Table

SOLID AUGER USED. BECK DRILLING

DRILLER'S LOG REPORT

PROJECT:	801-05-367-site 5720	DATE:	19-Oct-05
BOREHOLE:	E	LOGGED:	Vanessa Castro
START TIME:	10:45 AM	END TIME.	11.20 AM

Depth In m	Well Construction		Sample Number	Soil Type
0		Ashphalt over concrete and soil		
0.75		Stiff brown clay	E-0.75	
1.5		Stiff brown clay with some silt	E-1.5	
2.25		Soft, silty grey/blue clay with some charcoal	E-2 25	
3		Soft, silty grey/blue clay with some charcoal and some med grain sand	E-3 00	
3.75		Moist, sandy (med grain) clay	E-3.75	
4 5		Wet, med grain sand	E-4 5	
5.25		Moist, med grain sand	E-5.25	
6		Wet, med grain sand	E-6.00	
		END OF DRILLING		
		10ft of slotted pipe at bottom 10ft of solid pipe on top		

TOTAL ORGANIC HYDROCARBON VAPOUR (ppm)

0 500 1000 1500 2000 2500

0 1 2 3 4 5 6 7 8 9 10

fines (clay and silt)

fine sand

med sand

coarse sand

gravel

cobbles

sil sand

bentonite chips

asphalt

*Sample sent to laboratory ▼ Water Table

SOLID AUGER USED. BECK DRILLING

\\Kcserver\kcserver\Consulting\PROJECT\AB Remediation Prgm\Site 5720 Atsike\2005 - Post Remediation Work\GW Monitoring Report\App. A - B.Logs- 5720-Dec 05.xls]Hole 2-5720

APPENDIX B

LABORATORY RESULTS

Certificate of Analysis

CLIENT NAME: KC ENVIRONMENTAL

ATTENTION: VANESSA CASTRO

AGAT WORK ORDER: 05E141771

CCME Petroleum Hydrocarbons in Water (CWS)

SAMPLE TYPE: water
SAMPLE ID: 475251
SAMPLE DESCRIPTION: MW-1@1730

DATE SAMPLED: Oct 20, 2005
DATE RECEIVED: Oct-24, 2005
DATE REPORTED: Oct 26, 2005

PARAMETER	RESULTS	UNITS	M.D.L.	DATE ANALYZED	INITIALS	DATE PREPARED
Benzene	<0.001	mg/L	0.001	Oct 25, 2005	LP	Oct 24, 2005
Toluene	<0.001	mg/L	0.001	Oct 25, 2005	LP	Oct 24, 2005
Ethylbenzene	<0.001	mg/L	0.001	Oct 25, 2005	LP	Oct 24, 2005
Xylenes	<0.001	mg/L	0.001	Oct 25, 2005	LP	Oct 24, 2005
C6 - C10 (F1)	<0.1	mg/L	0.1	Oct 25, 2005	LP	Oct 24, 2005
C6 - C10 (F1 minus BTEX)	<0.1	mg/L	0.1			
C>10 - C16	<0.1	mg/L	0.1	Oct 26, 2005	EG	Oct 25, 2005
C>16 - C34	<0.1	mg/L	0.1	Oct 26, 2005	EG	Oct 25, 2005
C>34 - C50	<0.1	mg/L	0.1	Oct 26, 2005	EG	Oct 25, 2005
Gravimetric Heavy Hydrocarbons	NA	mg/L	1000			
Gravimetric Heavy Hydrocarbons - Sili	NA	mg/L	1000			

COMMENTS:

M.D.L. - Method Detection Limit
The C6-C10 fraction is calculated using toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not inluded in and cannot be added to the Total C6-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
Total C6 - C50 results are corrected for BTEX and PAH (if requested) contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Sample is blank corrected.

Certified By: Laarni Sayao, Co-ordinator - Trace Organics

Certificate of Analysis

CLIENT NAME: KC ENVIRONMENTAL

AGAT WORK ORDER: 05E141771

ATTENTION: VANESSA CASTRO

CCME Petroleum Hydrocarbons in Water (CWS)

SAMPLE TYPE: water
SAMPLE ID: 475252
SAMPLE DESCRIPTION: MW-S@1730

DATE SAMPLED: Oct 20, 2005
DATE RECEIVED: Oct 24, 2005
DATE REPORTED: Oct 26, 2005

PARAMETER	RESULTS	UNITS	M.D.L.	DATE ANALYZED	INITIALS	DATE PREPARED
Benzene	<0.001	mg/L	0.001	Oct 25, 2005	LP	Oct 24, 2005
Toluene	<0.001	mg/L	0.001	Oct 25, 2005	LP	Oct 24, 2005
Ethylbenzene	<0.001	mg/L	0.001	Oct 25, 2005	LP	Oct 24, 2005
Xylenes	<0.001	mg/L	0.001	Oct 25, 2005	LP	Oct 24, 2005
C6 - C10 (F1)	<0.1	mg/L	0.1	Oct 25, 2005	LP	Oct 24, 2005
C6 - C10 (F1 minus BTEX)	<0.1	mg/L	0.1			
C>10 - C16	0.2	mg/L	0.1	Oct 26, 2005	EG	Oct 25, 2005
C>16 - C34	<0.1	mg/L	0.1	Oct 26, 2005	EG	Oct 25, 2005
C>34 - C50	<0.1	mg/L	0.1	Oct 26, 2005	EG	Oct 25, 2005
Gravimetric Heavy Hydrocarbons	NA	mg/L	1000			
Gravimetric Heavy Hydrocarbons - Sili	NA	mg/L	1000			

COMMENTS:

M.D.L. - Method Detection Limit
The C6-C10 fraction is calculated using toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not inluded in and cannot be added to the Total C6-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
Total C6 - C50 results are corrected for BTEX and PAH (if requested) contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Sample is blank corrected.

Certified By: Laarni Sayao, Co-ordinator - Trace Organics

AGAT® Laboratories

Certificate of Analysis

CLIENT NAME: KC ENVIRONMENTAL

AGAT WORK ORDER: 05E141771

ATTENTION: VANESSA CASTRO

CCME Petroleum Hydrocarbons in Water (CWS)

SAMPLE TYPE: water
SAMPLE ID: 475253
SAMPLE DESCRIPTION: MW-E@1730

DATE SAMPLED: Oct 20, 2005
DATE RECEIVED: Oct 24, 2005
DATE REPORTED: Oct 26, 2005

PARAMETER	RESULTS	UNITS	M.D.L.	DATE ANALYZED	INITIALS	DATE PREPARED
Benzene	<0.001	mg/L	0.001	Oct 25, 2005	LP	Oct 24, 2005
Toluene	<0.001	mg/L	0.001	Oct 25, 2005	LP	Oct 24, 2005
Ethylbenzene	<0.001	mg/L	0.001	Oct 25, 2005	LP	Oct 24, 2005
Xylenes	<0.001	mg/L	0.001	Oct 25, 2005	LP	Oct 24, 2005
C6 - C10 (F1)	<0.1	mg/L	0.1	Oct 25, 2005	LP	Oct 24, 2005
C6 - C10 (F1 minus BTEX)	<0.1	mg/L	0.1			
C>10 - C16	0.1	mg/L	0.1	Oct 26, 2005	EG	Oct 25, 2005
C>16 - C34	<0.1	mg/L	0.1	Oct 26, 2005	EG	Oct 25, 2005
C>34 - C50	<0.1	mg/L	0.1	Oct 26, 2005	EG	Oct 25, 2005
Gravimetric Heavy Hydrocarbons	NA	mg/L	1000			
Gravimetric Heavy Hydrocarbons - Sili	NA	mg/L	1000			

COMMENTS:

M.D.L. - Method Detection Limit
The C6-C10 fraction is calculated using toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not inluded in and cannot be added to the Total C6-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
Total C6 - C50 results are corrected for BTEX and PAH (if requested) contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Sample is blank corrected.

Certified By: Laarni Sayao, Co-ordinator - Trace Organics

AGAT® Laboratories

Certificate of Analysis

CLIENT NAME: KC ENVIRONMENTAL

AGAT WORK ORDER: 05E141771

ATTENTION: VANESSA CASTRO

CCME Petroleum Hydrocarbons in Water (CWS)

SAMPLE TYPE: water
SAMPLE ID: 475254
SAMPLE DESCRIPTION: P @ 1830

DATE SAMPLED: Oct 20, 2005
DATE RECEIVED: Oct 24, 2005
DATE REPORTED: Oct 26, 2005

PARAMETER	RESULTS	UNITS	M.D.L.	DATE ANALYZED	INITIALS	DATE PREPARED
Benzene	<0.001	mg/L	0.001	Oct 25, 2005	LP	Oct 24, 2005
Toluene	<0.001	mg/L	0.001	Oct 25, 2005	LP	Oct 24, 2005
Ethylbenzene	<0.001	mg/L	0.001	Oct 25, 2005	LP	Oct 24, 2005
Xylenes	<0.001	mg/L	0.001	Oct 25, 2005	LP	Oct 24, 2005
C6 - C10 (F1)	<0.1	mg/L	0.1	Oct 25, 2005	LP	Oct 24, 2005
C6 - C10 (F1 minus BTEX)	<0.1	mg/L	0.1			
C>10 - C16	<0.1	mg/L	0.1	Oct 26, 2005	EG	Oct 25, 2005
C>16 - C34	<0.1	mg/L	0.1	Oct 26, 2005	EG	Oct 25, 2005
C>34 - C50	<0.1	mg/L	0.1	Oct 26, 2005	EG	Oct 25, 2005
Gravimetric Heavy Hydrocarbons	NA	mg/L	1000			
Gravimetric Heavy Hydrocarbons - Sili	NA	mg/L	1000			

COMMENTS:

M.D.L. - Method Detection Limit
The C6-C10 fraction is calculated using toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not inluded in and cannot be added to the Total C6-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
Total C6 - C50 results are corrected for BTEX and PAH (if requested) contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%
Extraction and holding times were met for this sample.
Sample is blank corrected.

Certified By: Laarni Sayao, Co-ordinator - Trace Organics