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REPORTS

DATE:

2002

ARCADIS

Infrastructure, buildings, environment, communications

Mr. William Olson
Oil Conservation Division
State of New Mexico Energy, Minerals, and Natural Resources Department
2040 S. Pacheco
Santa Fe, New Mexico 87505

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Tulsa
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Tel 918 664 9900
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ENVIRONMENTAL

Subject:
Results of Confirmation Sampling Activities
Koch Pipeline Company LP Crouch Station
Lea County, New Mexico

Dear Mr. Olson:

Tulsa,
5 August 2002

Contact:
Eric M. Rainey, P.G.

Extension:
918/664-9900

On behalf of Koch Pipeline Company, LP (Koch), ARCADIS is submitting to the New Mexico Oil Conservation Division (OCD) the results of confirmation sampling activities conducted at the former crude oil pipeline pumping station located approximately 18 miles northwest of Hobbs, New Mexico. The site is situated in the SW ¼ of Section 18, Township 18 South, Range 36 East in Lea County, New Mexico (Figure 1). The confirmation sampling activities were conducted in accordance with the Work Plan for Site Closure Activities dated April 30, 2002.

Site History

A subsurface investigation and subsequent remedial activities were conducted at the site following a release of crude oil in 1996 from a 12-inch diameter pipeline located within the bermed area south of the westernmost aboveground storage tank. Site activities performed following the release included the excavation and proper disposal of crude-oil impacted soil within the diked area, and the installation of monitoring wells and soil vapor extraction (SVE) wells. A SVE system was installed at the site in 1997 and operated until 2000. During this time, periodic groundwater monitoring activities were conducted, including the installation of three additional monitoring wells.

Based on the subsurface investigations conducted at the site, and groundwater-monitoring events between 1996 and 2000, the crude oil release had not adversely impacted the groundwater underling the site. Depth to groundwater at the site is approximately 60 ft below ground surface, and the groundwater flow direction is to the southeast. One monitoring well (MW-3), located upgradient of the Koch facility, is the only well at the site that has historically contained dissolved hydrocarbon concentrations in the groundwater. The dissolved hydrocarbons detected in this well have been attributed to a hydrocarbon release upgradient of the Koch site currently being assessed and remediated by Texas New Mexico Pipeline Company and

Southwestern Public Service. With the exception of Well MW-3, the groundwater quality results indicate that dissolved hydrocarbon concentrations in the groundwater have been below New Mexico Water Quality Control Commission (WQCC) standards since 1998.

Summary of Field Activities

On June 27, 2002, Koch conducted confirmation soil sampling activities at the release location to assess residual hydrocarbon concentrations in the vadose zone following soil vapor extraction activities. The primary objective of the soil sampling activities was to verify that residual constituents of concern in vadose zone soils were below acceptable concentrations to ensure the protection of the underlying groundwater. A complete round of groundwater quality samples was also collected from the existing monitoring wells to assess groundwater quality conditions at the site.

Three soil borings (SB-1 through SB-3) were installed in the vicinity of the release to facilitate the collection of soil samples. Soil boring locations are depicted on Figure 2. The soil borings were installed to a depth of approximately 53 ft below ground surface using air rotary drilling techniques. Soil boring logs are provided in Attachment 1. Soil samples were collected using a split-spoon sampler (advanced in front of the drill bit) at 5 ft intervals and prepared in the field for headspace analysis of volatile organic compounds (VOCs) using an HNu photoionization detector (PID). Soil samples submitted for analyses were submitted to Pace Analytical Services (Pace) located in Lenexa, Kansas using USEPA-approved methodologies. In accordance with the approved work plan, a total of three soil samples were collected from each boring for subsequent laboratory analyses as follows:

- One composite soil sample was collected from 0 to 3 ft below ground surface for analysis for benzene, toluene, ethylbenzene, xylenes (BTEX), total petroleum hydrocarbons-gasoline range organics (TPH-GRO), total petroleum hydrocarbons-diesel range organics (TPH-DRO), and total lead.

- One soil sample exhibiting the highest PID reading above the water table was analyzed for BTEX, TPH-GRO, TPH-DRO, and total barium.

- One soil sample was collected immediately above the water table for analyses of BTEX, TPH-GRO, and TPH-DRO to document that crude oil impacts in the shallow subsurface did not migrate vertically downward to the water table.

The analytical results of soil sampling activities are summarized in Table 1. The analytical reports are provided in Attachment 2. The soil analytical results can be summarized as follows:

- No BTEX was detected above the laboratory-reporting limit in any soil sample.
- No BTEX was detected above the laboratory-reporting limit in any soil sample.
- TPH-DRO was detected above the laboratory-reporting limit in 4 of 9 soil samples. Detectable TPH-DRO ranged from 27 mg/kg in Sample SB3-5 to 3700 mg/kg in Sample SB2-3.
- Barium concentrations ranged from 50.4 mg/kg in Sample SB2-7 to 378 mg/kg in Sample SB1-7.
- Lead concentrations ranged from 2.63 mg/kg in Sample SB2-7 to 8.12 mg/kg in Sample SB3-3.

All monitoring wells were sampled on June 27, 2002 to assess groundwater quality conditions underlying the site. Prior to sampling, water levels in the monitoring wells were measured to the nearest 0.01 ft using an oil/water interface probe (Table 2). A groundwater elevation contour map prepared using the June 27, 2002 data is presented on Figure 3. A minimum of three casing volumes of water was purged from each well. Samples were collected using dedicated disposable polyethylene bailers, placed in laboratory-supplied containers, pack on ice, and shipped to Pace for analysis of BTEX using approved methodologies.

BTEX concentrations in the groundwater are summarized in Table 3. The laboratory reports are included in Attachment 1. The groundwater analytical results can be summarized as follows:

- One or more BTEX constituents were detected above the laboratory-reporting limit in 2 of 5 groundwater samples. Detectable benzene concentrations were 0.200 milligrams per liter (mg/L) in Sample MW-3 and 0.460 mg/L in Sample MW-5. Ethylbenzene and xylenes were detected above the laboratory-reporting limit in one sample only (MW-5) at 0.019 mg/L and 0.015 mg/L, respectively.

Closure Criteria Evaluation

The soil remediation action levels have been developed according to a ranking criteria to determine their relative threat to public health, fresh waters, and the

environment. The recommended remediation action levels at the Crouch Station site are as follows:

- Benzene at 10 milligrams per kilogram (mg/kg);
- BTEX at 50 mg/kg; and
- TPH-GRO/TPH-DRO at 1000 mg/kg

A comparison of the soil analytical results indicate that with one exception, concentrations of BTEX, TPH-GRO, and TPH-DRO are below the recommended remediation action levels. The one exception involved a TPH-DRO concentration of 3700 mg/kg in the near surface sample (SB2-3) collected from 0 to 3 ft below ground surface (bgs). The hydrocarbon impacts at this location is limited in depth, as evidenced by the absence of detectable BTEX, TPH-GRO, and TPH-DRO in the soil sample (i.e. SB2-7) collected directly beneath this zone at 6 ft to 7 ft bgs. Although the TPH-DRO concentration at this location exceeds the recommended remediation action level, the absence of BTEX constituents and minor concentration of TPH-GRO in this sample suggests the hydrocarbon is weathered and degraded, and exhibits low toxicity and limited migration potential. Concentrations of barium and lead detected in soil samples are within acceptable WQCC limits, and therefore, do not represent a concern to the underlying groundwater.

An evaluation of the groundwater quality data indicates that MW-3, located upgradient of the Crouch station site, continues to exhibit dissolved hydrocarbons impacts associated with the Texas New Mexico Pipeline Company and Southwestern Public Service release. The occurrence of dissolved hydrocarbons in Well MW-5 indicates that the dissolved hydrocarbon plume from this release has migrated further downgradient and has impacted Well MW-5. Prior to the June 2002 sampling event, no BTEX constituents had been detected in this well, suggesting the dissolved hydrocarbon impacts in this well are not associated with the 1996 crude oil release within the bermed area. Moreover, it is evident from an evaluation of soil boring logs and soil analytical results that hydrocarbon impacts associated with the 1996 crude oil release did not migrate down to groundwater underlying the site.

In conclusion, an evaluation of the site hydrogeology and the results of soil and groundwater analytical data indicate that closure is applicable for the Crouch Station site. Site remedial activities performed at the site (i.e. soil vapor extraction) have successfully reduced soil concentrations in the vadose zone. One confirmatory soil sample (i.e. near-surface sample collected from 0 to 3 ft bgs) exhibited a TPH-DRO concentration above the recommended remediation action level; however, field and analytical data indicates that hydrocarbon impacts at the sample location are limited in extent and pose no threat to the underlying groundwater (Note, Koch is requesting that the OCD evaluate the Crouch site on a site-specific basis, and consider using a recommended remediation action level of 5000 mg/kg for TPH-DRO. We believe

that the soil boring program and confirmation soil sampling results support our contention that the groundwater has not been adversely impacted as a result of the 1996 crude oil release.)

At this time, Koch recommends that the monitoring wells and SVE wells be properly abandoned in accordance with state guidelines. The SVE remedial system will be decommissioned during the well abandonment activities. Koch requests that the OCD issue a closure for the former Crouch Station facility

If you have any questions regarding the information provided herein or need additional information, please contact Mr. Frank VanRyn with Koch at (316) 828-2146 or the undersigned at (918) 664-9900 at your earliest convenience.

Sincerely,

ARCADIS G&M, Inc.

Eric M. Rainey/mw

Eric M. Rainey, P.G.
Senior Hydrogeologist

Brian Guillette/mw

Brian Guillette, P.G.
Vice President/Area Manager

Copies:
Frank VanRyn, Koch

Attachments
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Table 1. Results of Soil Quality Data, Koch Crouch Station, Lea County, New Mexico.

Sample Number	Date Collected	Sample Depth (ft BGS)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	Barium (mg/kg)	Lead (mg/kg)
SB1-3	6/27/02	0-3	<0.05	<0.05	<0.05	<0.130	<5.0	120	NA	7.5
SB1-7	6/27/02	6-7	<0.05	<0.05	<0.05	<0.130	25.0	840	378	NA
SB1-53	6/27/02	52-53	<0.05	<0.05	<0.05	<0.130	<5.0	<10.0	NA	NA
SB2-3	6/27/02	0-3	<0.05	<0.05	<0.05	<0.130	35.0	3700	NA	2.63
SB2-7	6/27/02	6-7	<0.05	<0.05	<0.05	<0.130	<5.0	<10.0	50.4	NA
SB2-53	6/27/02	52-53	<0.05	<0.05	<0.05	<0.130	<5.0	<10.0	NA	NA
SB3-3	6/27/02	0-3	<0.049	<0.049	<0.049	<0.130	<4.9	<9.8	NA	8
SB3-5	6/27/02	6-7	<0.05	<0.05	<0.05	<0.130	<5.0	27	134	NA
SB3-53	6/27/02	52-53	<0.05	<0.05	<0.05	<0.130	5.3	<10.0	NA	NA

ft BGS Feet Below Ground Surface.
mg/kg Milligrams per kilogram.
< Less than.
TPH-GRO Total Petroleum Hydrocarbons-Gasoline Range Organics
TPH-DRO Total Petroleum Hydrocarbons-Diesel Range Organics
G:\APROJECT\KOCH\OK131701\TABLES\[S&WBTEX.XLS]Soil

Table 2. Summary of Water Level Measurements, Koch Crouch Station, Lea County, New Mexico.

Well Number	Date Measured	Measuring Point Elevation (i.e. TOC) (ft)	Depth to Water (ft bTOC)	Water Level Elevation (ft)
MW-1	6/27/02	3851.09	58.17	3792.92
MW-2	6/27/02	3849.48	59.50	3789.98
MW-3	6/27/02	3853.89	61.15	3792.74
MW-4	6/27/02	3852.02	61.16	3790.86
MW-5	6/27/02	3851.51	60.39	3791.92

TOC Top of Casing.
ft bTOC Feet below top of casing.

G:\APROJECT\KOCH\OK131701\TABLES\[GWELE.XLS]Sheet1

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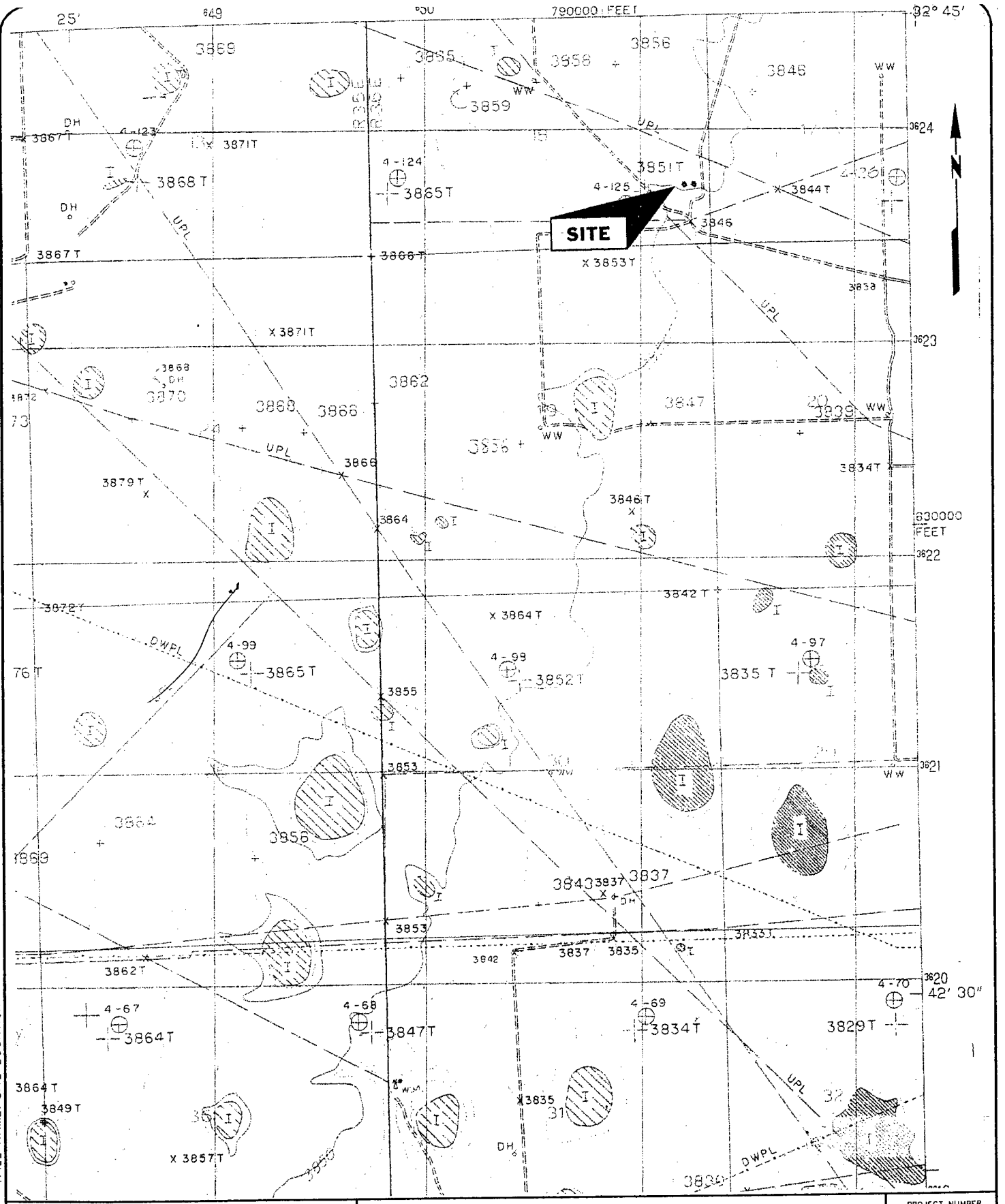
Table 3. Summary of Groundwater Quality Data, Koch Crouch Station, Lea County, New Mexico.

Sample Number	Date Collected	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)
MW-1	6/27/02	<0.002	<0.002	<0.002	<0.005
	2/21/00	<0.002	<0.002	<0.002	<0.006
	4/30/98	<0.002	<0.002	<0.002	<0.006
	5/23/97	0.550	<0.001	<0.001	<0.003
	4/27/97	0.710	<0.001	<0.001	<0.003
MW-2	6/27/02	<0.002	<0.002	<0.002	<0.005
	2/21/00	<0.002	<0.002	<0.002	<0.006
	5/23/97	0.098	<0.001	<0.001	<0.003
MW-3	6/27/02	0.200	<0.002	<0.002	<0.006
	2/21/00	2.02	<0.002	<0.002	<0.006
	8/31/99	0.628	NA	NA	NA
	2/12/99	126.0	NA	NA	NA
	5/6/98	1.201	<0.001	<0.001	<0.003
	5/1/98	0.160	<0.002	<0.002	<0.006
MW-4	6/27/02	<0.002	<0.002	<0.002	<0.005
	2/21/00	<0.002	<0.002	<0.002	<0.006
	5/6/98	<0.005	<0.001	<0.001	<0.003
	5/1/98	<0.007	<0.002	<0.002	<0.006
MW-5	6/27/02	0.460	<0.002	0.019	0.015
	2/21/00	<0.002	<0.002	<0.002	<0.006
	5/1/98	<0.002	<0.002	<0.002	<0.006

< Less than.
mg/L Milligrams per liter.

G:\APROJECT\KOCH\OK131701\TABLES\[S&WBTEX.XLS]WaterQual



DATE: 23APRIL02	FILE NAME: SITE LOCATION
COMPILED BY: ERIC RAINEY	PROJECT MANAGER: ERIC RAINEY
DRAWN BY: JIM HARBESTON	

ARCADIS G&M

5100 EAST SKELLY DRIVE SUITE 1000
TULSA, OKLAHOMA 74135
Tel: (918) 664-9900 Fax: (918) 664-9925

0 2000 FT.

SITE LOCATION MAP

REF. 7.5' USGS QUADRANGLE - HOBBS, NEW MEXICO

KOCH PIPELINE CO. L.P.
CROUCH STATION
LEA COUNTY, NEW MEXICO

PROJECT NUMBER
OK001317.0001

FIGURE NUMBER
1

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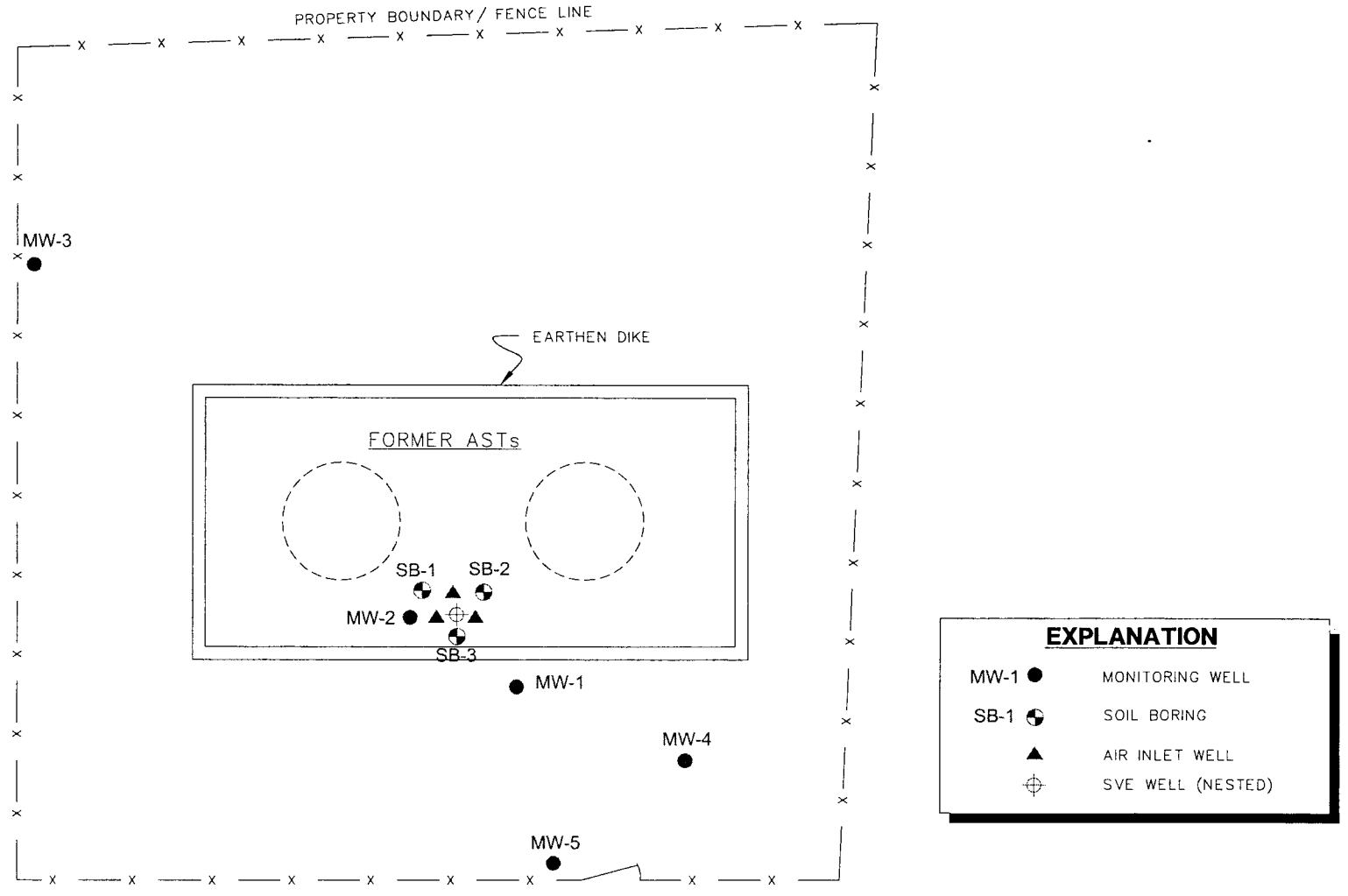

ARCADIS G&M
5100 EAST SKELLY DRIVE SUITE 1000
TULSA, OKLAHOMA 74135
Tel: (918) 664-9900 Fax: (918) 664-9925

0 100 FT.

SITE MAP

KOCH PIPELINE CO. L.P.
CROUCH STATION
LEA COUNTY, NEW MEXICO

PROJECT NUMBER
OK001317.0001

FIGURE NUMBER
2

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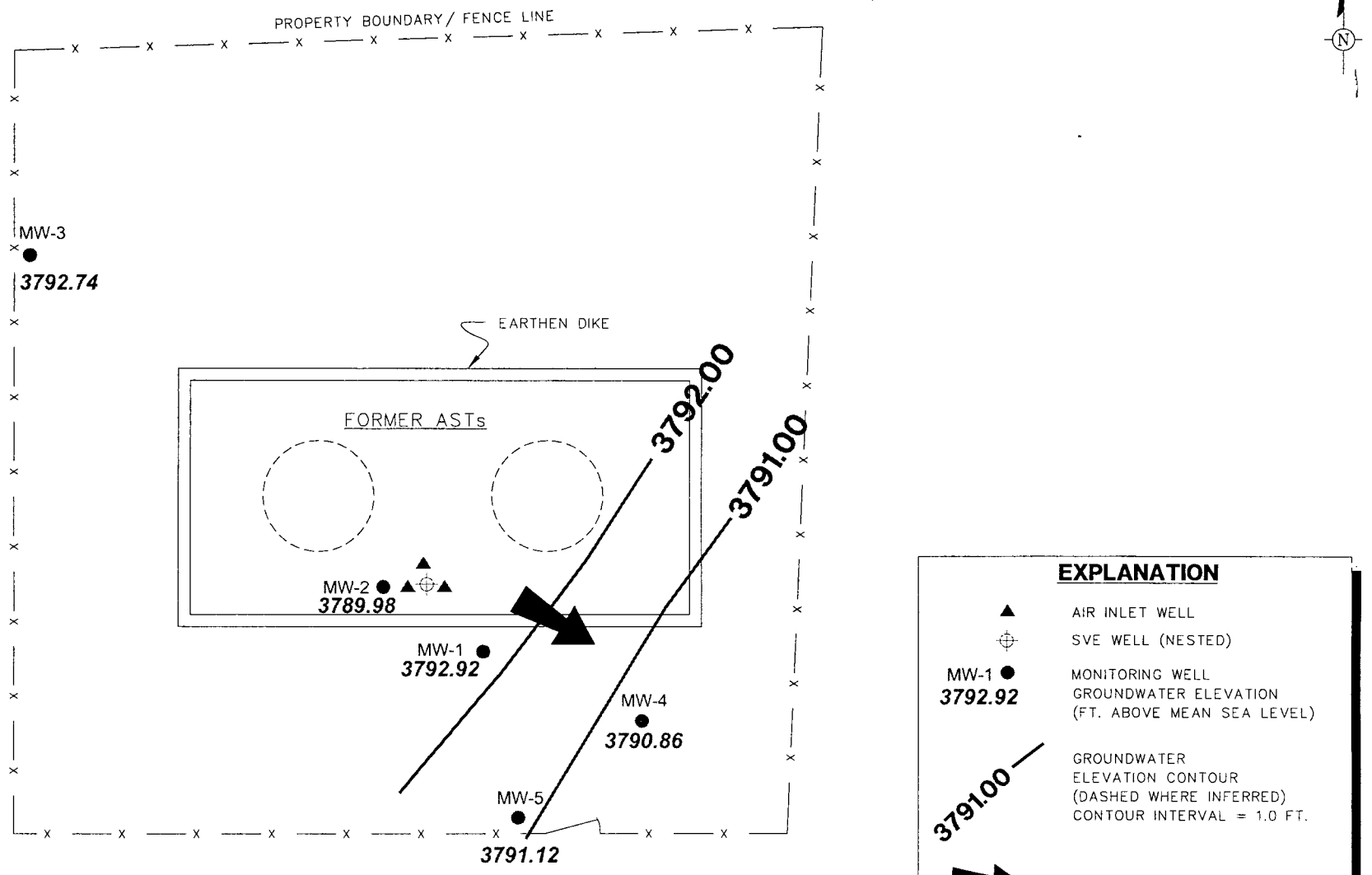


EXPLANATION

- AIR INLET WELL
- SVE WELL (NESTED)
- MW-1 3792.92 — MONITORING WELL GROUNDWATER ELEVATION (FT. ABOVE MEAN SEA LEVEL)
- 3791.00 — GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL = 1.0 FT.
- GROUNDWATER FLOW DIRECTION

ARCADIS G&M
5100 EAST SKELLY DRIVE SUITE 1000
TULSA, OKLAHOMA 74135
Tel: (918) 664-9900 Fax: (918) 664-9925

0 100 FT.

GROUNDWATER ELEVATION CONTOURS JUNE 27, 2002

KOCH PIPELINE CO. L.P.
CROUCH STATION
LEA COUNTY, NEW MEXICO

PROJECT NUMBER
OK001317.0001

FIGURE NUMBER
3

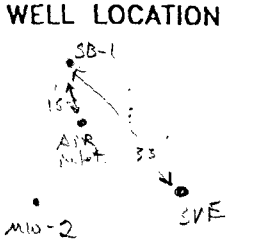
ATTACHMENT 1

ARCADIS

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE
0K01317.001	Koch	Hobbs, NM	SB-1	1 OF 3

DRILLING METHOD: Air Rotary	SAMPLING METHOD: split spoon
DRILLING START: 1000 6-27-02 / FINISH: 1130	DEVEL START / FINISH
STATIC DTW / DTO	TIME / DATE
ELEVATION TOC / GL	DRILLED BY: Scarborough
	LOGGED BY: L. Cook

WELL LOCATION



WELL CONSTRUCTION	DEPTH FEET	CLASS	NAME	COLOR	DESCRIPTION: GRADATION, SECONDARY CHARACTERISTICS, ODOR, REMARKS.	M.C.	HNU (PPM)	SAMPLE NO.	SAMPLE DEPTH	BLOWS	RECOV. %	TYPE	
	1												
	2		S-1	BK	vf sand	D	<2	1		–	80	SS	SB1-3 10:15
	3		caliche	wh									
	4												
	5												
	6		caliche	wh	hard	D	45	2		–	30	SS	SB1-7 1030
Grout w/ 5% Bentonite	7												
	8												
	9												
	10												
	11		caliche	Tan wh	sl softer, tr-little vf sand	D	<2	3		–	90	SS	
	12												
	13												
	14												
	15												
	16		caliche	wh lt tan	mod hard, tr vfs	D	<2	<1					
	17												
	18												
	19												
	20												

ARCADIS

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE
0K0131.7.001			SB-1	2 OF 3

DRILLING METHOD	SAMPLING METHOD
DRILLING START / FINISH	DEVEL. START / FINISH
STATIC DTW / DTO — TIME / DATE	DRILLED BY
ELEVATION TOC / GL	LOGGED BY L. Cook

WELL LOCATION

WELL CONSTRUCTION	DEPTH FEET	CLASS	NAME	COLOR	DESCRIPTION: GRADATION, SECONDARY CHARACTERISTICS, ODOR, REMARKS.	M.C.	HNU (PPM)	SAMPLE NO.	SAMPLE DEPTH	BLOWS	RECOV. %	TYPE
	20											
	1		Caliche	Tan lt pink	sl hard	D	<2	5		-	40	SS
	2											
	3											
	4											
	5											
	6		caliche	H Tan pink	mod hard, tr. vfs	D	<2	6		-	50	SS
	7											
	8											
	9											
	30											
	11		caliche	lt tan tan	w/ vf sand	D	<2	7		-	20	SS
	12											
	13											
	14											
	15		Sand	lt tan	vfg, some caliche	D	<2	8		-	70	SS
	16											
	17											
	18											
	19											
	40											

ARCADIS

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE
0K01317.001			SB-1	3 OF 3

DRILLING METHOD	SAMPLING METHOD
DRILLING START / FINISH	DEVEL. START / FINISH
STATIC DTW / DTO / TIME / DATE	DRILLED BY
ELEVATION TOC / GL	LOGGED BY L. Cook

WELL LOCATION

WELL CONSTRUCTION	DEPTH FEET	CLASS	NAME	COLOR	DESCRIPTION: GRADATION, SECONDARY CHARACTERISTICS, ODOR, REMARKS.	M.C.	HNU (PPM)	SAMPLE NO.	SAMPLE DEPTH	BLOWS	RECOV. %	TYPE
	40											
	1		Sand	Tan	vfg, silty	D	<2	9		-	80	SS
	2											
	3											
	4											
	45		Sand	Tan	vfg, silty	D	<2	10		-	70	SS
	6											
	7											
	8											
	9											
	50											
	11					SM	<2	11		-	55	SS
	12		Sand	Tan	vfg, w/ hand streaks, silty							
	13				TD = 53 ft							
	14											
	15											
	16											
	17											
	18											
	19											

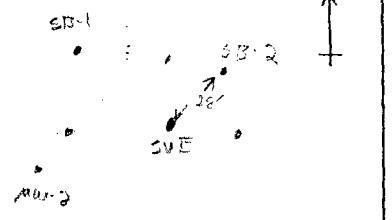
SB1-53 1130

ARCADIS

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE
0K0131100.1	Koch	Hobbs, NM	SB-2	1 OF 3

DRILLING METHOD: Air Rotary	SAMPLING METHOD: Split Spoon
DRILLING START: 1055 6-20-02 / FINISH: 1330	DEVEL START: / FINISH:
STATIC DTW: / TIME: / DTO: / DATE:	DRILLED BY: Scarborough
ELEVATION TOC: / GL:	LOGGED BY: L. Cook

WELL LOCATION



WELL CONSTRUCTION	DEPTH FEET	CLASS	NAME	COLOR	DESCRIPTION: GRADATION, SECONDARY CHARACTERISTICS, ODOR, REMARKS.	M.C.	HNU (PPM)	SAMPLE NO.	SAMPLE DEPTH	BLOWS	RECOV. x	TYPE	
Grout w/5% Bentonite	1												
	2		Silt	Bk									
					sl hard, some vf sand	D	40	1		-	80	SS	SB2-3 1200
	3												
	4												
	5												
	6		caliche	wh	sl hard	D	10	2		-	40	SS	
	7			Tan									
	8												
	9												
	10												
	11		caliche	Tan wh	sl softer, little vfs	D	12	3		-	80	SS	SB2-11/2 1220
	12												
	13												
	14												
	15				Geo tech sample 15-16ft								
	16		caliche	wh	mod hard, little vfs	D	42	4		-	20	SS	
	17			pink									
	18												
	19												
	20												

ARCADIS

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE
0k0131.0001			SB-2	2 OF 3

DRILLING METHOD	SAMPLING METHOD
DRILLING START / FINISH	DEVEL. START / FINISH
STATIC DTW / DTO — TIME / DATE	DRILLED BY
ELEVATION TOC / GL	LOGGED BY L. Cook

WELL LOCATION — N

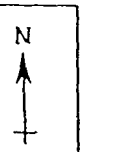
WELL CONSTRUCTION	DEPTH FEET	CLASS	NAME	COLOR	DESCRIPTION: GRADATION, SECONDARY CHARACTERISTICS, ODOR, REMARKS.	M.C.	HNU (PPM)	SAMPLE NO.	SAMPLE DEPTH	BLOWS	RECOV. %	TYPE
	20											
	1		caliche	lt tan wh	w/ vf sand	D	<2	5		-	25	SS
	2											
	3											
	4											
	5											
	6		Caliche	lt Tan	w/ vf sand	D	<2	6		-	70	SS
	7											
	8											
	9											
	30											
	11		Caliche	tan wh	+ vf sand	D	<2	7		-	60	SS
	12											
	13											
	14											
	15											
	16		Sand	Tan	vfg silty	D	<2	8		-	70	SS
	17											
	18											
	19											
	40											

ARCADIS

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE
0K0131700L			SB-2	3 OF 3

DRILLING METHOD	SAMPLING METHOD
DRILLING START / FINISH	DEVEL. START / FINISH
STATIC DTW / DTO — TIME / DATE	DRILLED BY
ELEVATION TOC / GL	LOGGED BY L. Cook

WELL LOCATION



WELL CONSTRUCTION	DEPTH FEET	CLASS	NAME	COLOR	DESCRIPTION: GRADATION, SECONDARY CHARACTERISTICS, ODOR, REMARKS.	M.C.	HNU (PPM)	SAMPLE NO.	SAMPLE DEPTH	BLOWS	RECOV.%	TYPE
	40											
	1		Sand	Tan	vfg, silty	D	<2	9		-	70	SS
	2											
	3											
	4											
	5											
	6		Sand	Tan	vfg	D	<2	10		-	70	SS
	7											
	8											
	9											
	10											
	11											
	12		Sand	Tan	vfg	D/M	<2	11		-	70	SS
	13											
	14											
	15											
	16											
	17											
	18											
	19											

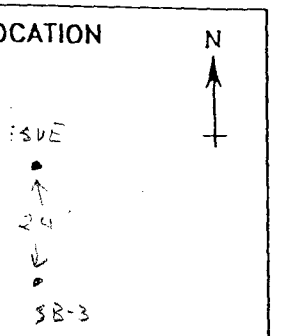
SB2-53
1320

ARCADIS

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE
0K001317.001	Koch	Hobbs, NM	SB-3	1 OF 3

DRILLING METHOD: Air Rotary	SAMPLING METHOD: Split Spoon
DRILLING START: 1400 6-27-02 / FINISH: 1545	DEVEL. START: / FINISH:
STATIC DTW: / DTO:	TIME: / DATE:
ELEVATION TOC: / GL:	DRILLED BY: [illegible]
	LOGGED BY: L Cook

WELL LOCATION



WELL CONSTRUCTION	DEPTH FEET	CLASS	NAME	COLOR	DESCRIPTION: GRADATION, SECONDARY CHARACTERISTICS, ODOR, REMARKS.	M.C.	HNU (PPM)	SAMPLE NO.	SAMPLE DEPTH	BLOWS	RECOV.%	TYPE
	1											
	2		silt	Bk		Dm	40	1		-	80	SS
	3			/								
	4					D	50	2		-	60	SS
	5											
	6		Caliche	wh	hard	D	10	3		-	40	SS
Grout w/ 5% Bentonite	7											
	8											
	9											
	10											
	11		Caliche	wh / Pink		D	6	4		-	50	SS
	12											
	13											
	14											
	15											
	16		Caliche	wh / Tan	hard, w/ VFS, silty lenses	D	<2	5		-	60	SS
	17											
	18											
	19											
	20											

SB3-3 1415

SB3-5 1430

ARCADIS

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE
01000137.001			SB-3	2 OF 3

DRILLING METHOD	SAMPLING METHOD
DRILLING START / FINISH	DEVEL START / FINISH
STATIC DTW / DTO — TIME / DATE	DRILLED BY
ELEVATION TOC / GL	LOGGED BY L. Cook

WELL LOCATION

WELL CONSTRUCTION	DEPTH FEET	CLASS	NAME	COLOR	DESCRIPTION: GRADATION, SECONDARY CHARACTERISTICS, ODOR, REMARKS.	M.C.	HNU (PPM)	SAMPLE NO.	SAMPLE DEPTH	BLOWS	RECOV.%	TYPE
	20											
	1		Caliche	Wh to lt tan	hard some vf sand	D	2	6		-	40	SS
	2											
	3											
	4											
	25											
	6		Caliche	Pink wh	hard	D		7		-	70	SS
	7			Tan	increasing vf sand							
	8											
	9											
	30											
	11		Caliche	wh Tan	m/vf sand lenses	D		8		-	65	SS
	12											
	13											
	14											
	35											
	16		Sand	Tan	vfg, sl hard lenses, silty	D		9		-	60	SS
	17											
	18											
	19											
	40											

ARCADIS

JOB NUMBER	CLIENT	LOCATION	WELL NO.	PAGE
okn1317.001			SB-3	3 OF 3

DRILLING METHOD	SAMPLING METHOD
DRILLING START / FINISH	DEVEL. START / FINISH
STATIC DTW / DTO	TIME / DATE
ELEVATION TOC / GL	DRILLED BY
	LOGGED BY L. Cook

WELL LOCATION

N

WELL CONSTRUCTION	DEPTH FEET	CLASS	NAME	COLOR	DESCRIPTION: GRADATION, SECONDARY CHARACTERISTICS, ODOR, REMARKS.	M.C.	HNU (PPM)	SAMPLE NO.	SAMPLE DEPTH	BLOWS	RECOV.%	TYPE
	40											
	1		Sand	Tan	vfg, silty	D	<2	10		-	40	SS
	2											
	3											
	4											
	45		Sand	Tan	vfg, little silt, some caliche	D	<2	11		-	50	SS
	6											
	7											
	8											
	9											
	50											
	11											
	12		Sand	Tan	Same caliche 5% vfg	D/M	<2	12		-	75	SS
	13											
	14											
	15											
	16											
	17											
	18											
	19											

SB3-55 1540

ATTACHMENT 2

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July 23, 2002

Mr. ERIC RAINEY
GERAGHTY & MILLER INC
5100 EAST SKELLY DRIVE
SUITE 1000
TULSA, OK 74135

RE: Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

Dear Mr. RAINEY:

Enclosed are the analytical results for sample(s) received by the laboratory on July 1, 2002. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report please feel free to contact me.

Sincerely,

Adam Taylor

Adam Taylor
adam.taylor@pacelabs.com
Project Manager

Kansas/NELAP Certification Number E-10116

Enclosures

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

Project Sample Number	Sample Number	Client Sample ID	Matrix	Date Collected	Date Received
6060405-001	605243526	SB1-3	Soil	06/27/02 10:15	07/01/02 10:00
6060405-002	605243534	SB1-7	Soil	06/27/02 10:30	07/01/02 10:00
6060405-003	605243542	SB1-53	Soil	06/27/02 11:30	07/01/02 10:00
6060405-004	605243559	SB2-3	Soil	06/27/02 12:00	07/01/02 10:00
6060405-005	605243807	SB2-12	Soil	06/27/02 12:20	07/01/02 10:00
6060405-006	605243815	SB2-53	Soil	06/27/02 13:20	07/01/02 10:00
6060405-007	605243823	SB3-3	Soil	06/27/02 14:15	07/01/02 10:00
6060405-008	605243831	SB3-5	Soil	06/27/02 14:30	07/01/02 10:00
6060405-009	605243849	SB3-53	Soil	06/27/02 15:40	07/01/02 10:00
6060405-010	605243856	DRUM SOIL	Soil	06/27/02 15:45	07/01/02 10:00
6060405-011	605243864	MW-1	Water	06/27/02 16:00	07/01/02 10:00
6060405-012	605243872	MW-2	Water	06/27/02 16:30	07/01/02 10:00
6060405-013	605243880	MW-3	Water	06/27/02 17:00	07/01/02 10:00
6060405-014	605243898	MW-4	Water	06/27/02 17:30	07/01/02 10:00
6060405-015	605243906	MW-5	Water	06/27/02 18:00	07/01/02 10:00
6060405-016	605243914	DRUM WATER	Water	06/27/02 18:30	07/01/02 10:00
6060405-017	605243922	TRIP BLANK	Water	06/27/02	07/01/02 10:00

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SAMPLE ANALYTE COUNT

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Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

Project Sample Number	Sample No	Client Sample ID	Analysis Code	Analysis Description	Analytes Reported
6060405-001	605243526	SB1-3	%MOISTURE	Percent Moisture	1
			6010T SPAC	Metals, Trace ICP, Soil	2
			OA1 SL60	TPH Gas/BTEX	7
			OA2 SL60	Total Extractable Hydrocarbons	9
6060405-002	605243534	SB1-7	%MOISTURE	Percent Moisture	1
			6010T SPAC	Metals, Trace ICP, Soil	2
			OA1 SL60	TPH Gas/BTEX	7
			OA2 SL60	Total Extractable Hydrocarbons	9
6060405-003	605243542	SB1-53	%MOISTURE	Percent Moisture	1
			OA1 SL60	TPH Gas/BTEX	7
			OA2 SL60	Total Extractable Hydrocarbons	9
6060405-004	605243559	SB2-3	%MOISTURE	Percent Moisture	1
			6010T SPAC	Metals, Trace ICP, Soil	2
			OA1 SL60	TPH Gas/BTEX	7
			OA2 SL60	Total Extractable Hydrocarbons	9
6060405-005	605243807	SB2-12	%MOISTURE	Percent Moisture	1
			6010T SPAC	Metals, Trace ICP, Soil	2
			OA1 SL60	TPH Gas/BTEX	7
			OA2 SL60	Total Extractable Hydrocarbons	9
6060405-006	605243815	SB2-53	%MOISTURE	Percent Moisture	1
			OA1 SL60	TPH Gas/BTEX	7
			OA2 SL60	Total Extractable Hydrocarbons	9
6060405-007	605243823	SB3-3	%MOISTURE	Percent Moisture	1
			6010T SPAC	Metals, Trace ICP, Soil	2
			OA1 SL60	TPH Gas/BTEX	7
			OA2 SL60	Total Extractable Hydrocarbons	10
6060405-008	605243831	SB3-5	%MOISTURE	Percent Moisture	1
			6010T SPAC	Metals, Trace ICP, Soil	2
			OA1 SL60	TPH Gas/BTEX	7
			OA2 SL60	Total Extractable Hydrocarbons	9
6060405-009	605243849	SB3-53	%MOISTURE	Percent Moisture	1
			OA1 SL60	TPH Gas/BTEX	7
			OA2 SL60	Total Extractable Hydrocarbons	9
6060405-010	605243856	DRUM SOIL	%MOISTURE	Percent Moisture	1
			OA1 SL60	TPH Gas/BTEX	7
			OA2 SL60	Total Extractable Hydrocarbons	9
6060405-011	605243864	MW-1	8020 WPAC	Aromatic Volatile Organics	5
6060405-012	605243872	MW-2	8020 WPAC	Aromatic Volatile Organics	5
6060405-013	605243880	MW-3	8020 WPAC	Aromatic Volatile Organics	5
6060405-014	605243898	MW-4	8020 WPAC	Aromatic Volatile Organics	5

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Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

Project Sample Number	Sample No	Client Sample ID	Analysis Code	Analysis Description	Analytes Reported
6060405-015	605243906	MW-5	8020 WPAC	Aromatic Volatile Organics	5
6060405-016	605243914	DRUM WATER	1010 EPA	Flash Point, Closed Cup	1
			8020 WPAC	Aromatic Volatile Organics	5
6060405-017	605243922	TRIP BLANK	8020 WPAC	Aromatic Volatile Organics	5

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Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

Solid results are reported on a wet weight basis

Lab Sample No: 605243526 Project Sample Number: 6060405-001 Date Collected: 06/27/02 10:15
Client Sample ID: SB1-3 Matrix: Soil Date Received: 07/01/02 10:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
Metals								
Metals, Trace ICP, Soil	Prep/Method: EPA 3050 / EPA 6010							
Lead	7.50	mg/kg	0.463	07/12/02	JAH	7439-92-1		
Date Digested				07/09/02				
GC Semivolatiles								
Total Extractable Hydrocarbons	Prep/Method: OA2 / OA2							
Mineral Spirits	ND	mg/kg	10.	07/08/02 22:38	WAW			
Jet Fuel	ND	mg/kg	10.	07/08/02 22:38	WAW			
Kerosene	ND	mg/kg	10.	07/08/02 22:38	WAW			
Diesel Fuel	120	mg/kg	10.	07/08/02 22:38	WAW	68334-30-5		
Fuel Oil	ND	mg/kg	10.	07/08/02 22:38	WAW	68334-30-5		
Motor Oil	ND	mg/kg	10.	07/08/02 22:38	WAW			
n-Tetracosane (S)	110	%		07/08/02 22:38	WAW	646-31-1		
p-Terphenyl (S)	120	%		07/08/02 22:38	WAW	92-94-4		
Date Extracted				07/08/02				
Organics Prep								
Percent Moisture	Method:							
Percent Moisture	10.1	%		07/09/02	MAM			
GC Volatiles								
TPH Gas/BTEX	Prep/Method: TPH GRO/BTEX / EPA 8021/OA1							
Gasoline Range Hydrocarbons	ND	ug/kg	5000	07/11/02 11:52	SHF			
Benzene	ND	ug/kg	50.	07/11/02 11:52	SHF	71-43-2		
Toluene	ND	ug/kg	50.	07/11/02 11:52	SHF	108-88-3		
Ethylbenzene	ND	ug/kg	50.	07/11/02 11:52	SHF	100-41-4		
Xylene (Total)	ND	ug/kg	130	07/11/02 11:52	SHF	1330-20-7		
a,a,a-Trifluorotoluene (S)	103	%		07/11/02 11:52	SHF	98-08-8		
4-Bromofluorobenzene (S)	104	%		07/11/02 11:52	SHF	460-00-4		

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Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

Lab Sample No: 605243534 Project Sample Number: 6060405-002 Date Collected: 06/27/02 10:30
Client Sample ID: SB1-7 Matrix: Soil Date Received: 07/01/02 10:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
Metals								
Metals, Trace ICP, Soil	Prep/Method: EPA 3050 / EPA 6010							
Barium	378.	mg/kg	0.935	07/12/02	JAH	7440-39-3		
Date Digested				07/09/02				
GC Semivolatiles								
Total Extractable Hydrocarbons	Prep/Method: OA2 / OA2							
Mineral Spirits	ND	mg/kg	10.	07/08/02 17:03	WAW			
Jet Fuel	ND	mg/kg	10.	07/08/02 17:03	WAW			
Kerosene	ND	mg/kg	10.	07/08/02 17:03	WAW			
Diesel Fuel	840	mg/kg	10.	07/08/02 17:03	WAW	68334-30-5		
Fuel Oil	ND	mg/kg	10.	07/08/02 17:03	WAW	68334-30-5		
Motor Oil	ND	mg/kg	10.	07/08/02 17:03	WAW			
n-Tetracosane (S)	148	%		07/08/02 17:03	WAW	646-31-1	1	
p-Terphenyl (S)	120	%		07/08/02 17:03	WAW	92-94-4		
Date Extracted				07/08/02				
Organics Prep								
Percent Moisture	Method:							
Percent Moisture	1.4	%		07/09/02	MAM			
GC Volatiles								
TPH Gas/BTEX	Prep/Method: TPH GRO/BTEX / EPA 8021/OA1							
Gasoline Range Hydrocarbons	25000	ug/kg	5000	07/11/02 12:52	SHF			
Benzene	ND	ug/kg	50.	07/11/02 12:52	SHF	71-43-2		
Toluene	ND	ug/kg	50.	07/11/02 12:52	SHF	108-88-3		
Ethylbenzene	ND	ug/kg	50.	07/11/02 12:52	SHF	100-41-4		
Xylene (Total)	ND	ug/kg	130	07/11/02 12:52	SHF	1330-20-7		
a,a,a-Trifluorotoluene (S)	101	%		07/11/02 12:52	SHF	98-08-8		
4-Bromofluorobenzene (S)	105	%		07/11/02 12:52	SHF	460-00-4		

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Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

Lab Sample No: 605243542 Project Sample Number: 6060405-003 Date Collected: 06/27/02 11:30
Client Sample ID: SB1-53 Matrix: Soil Date Received: 07/01/02 10:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
GC Semivolatiles								
Total Extractable Hydrocarbons	Prep/Method: OA2 / OA2							
Mineral Spirits	ND	mg/kg	10.	07/08/02 15:22	WAW			
Jet Fuel	ND	mg/kg	10.	07/08/02 15:22	WAW			
Kerosene	ND	mg/kg	10.	07/08/02 15:22	WAW			
Diesel Fuel	ND	mg/kg	10.	07/08/02 15:22	WAW	68334-30-5		
Fuel Oil	ND	mg/kg	10.	07/08/02 15:22	WAW	68334-30-5		
Motor Oil	ND	mg/kg	10.	07/08/02 15:22	WAW			
n-Tetracosane (S)	98	%		07/08/02 15:22	WAW	646-31-1		
p-Terphenyl (S)	99	%		07/08/02 15:22	WAW	92-94-4		
Date Extracted				07/08/02				
Organics Prep								
Percent Moisture	Method:							
Percent Moisture	20.1	%		07/09/02	MAM			
GC Volatiles								
TPH Gas/BTEX	Prep/Method: TPH GRO/BTEX / EPA 8021/OA1							
Gasoline Range Hydrocarbons	ND	ug/kg	5000	07/11/02 13:23	SHF			
Benzene	ND	ug/kg	50.	07/11/02 13:23	SHF	71-43-2		
Toluene	ND	ug/kg	50.	07/11/02 13:23	SHF	108-88-3		
Ethylbenzene	ND	ug/kg	50.	07/11/02 13:23	SHF	100-41-4		
Xylene (Total)	ND	ug/kg	130	07/11/02 13:23	SHF	1330-20-7		
a,a,a-Trifluorotoluene (S)	101	%		07/11/02 13:23	SHF	98-08-8		
4-Bromofluorobenzene (S)	104	%		07/11/02 13:23	SHF	460-00-4		

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Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

Lab Sample No: 605243559 Project Sample Number: 6060405-004 Date Collected: 06/27/02 12:00
Client Sample ID: SB2-3 Matrix: Soil Date Received: 07/01/02 10:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
Metals								
Metals, Trace ICP, Soil	Prep/Method: EPA 3050 / EPA 6010							
Lead	2.63	mg/kg	0.476	07/12/02	JAH	7439-92-1		
Date Digested				07/09/02				
GC Semivolatiles								
Total Extractable Hydrocarbons	Prep/Method: OA2 / OA2							
Mineral Spirits	ND	mg/kg	50.	07/08/02 20:58	WAW			
Jet Fuel	ND	mg/kg	50.	07/08/02 20:58	WAW			
Kerosene	ND	mg/kg	50.	07/08/02 20:58	WAW			
Diesel Fuel	3700	mg/kg	50.	07/08/02 20:58	WAW	68334-30-5		
Fuel Oil	ND	mg/kg	50.	07/08/02 20:58	WAW	68334-30-5		
Motor Oil	ND	mg/kg	50.	07/08/02 20:58	WAW			
n-Tetracosane (S)	96	%		07/08/02 20:58	WAW	646-31-1		
p-Terphenyl (S)	88	%		07/08/02 20:58	WAW	92-94-4		
Date Extracted				07/08/02				
Organics Prep								
Percent Moisture	Method:							
Percent Moisture	8.6	%		07/09/02	MAM			
GC Volatiles								
TPH Gas/BTEX	Prep/Method: TPH GRO/BTEX / EPA 8021/OA1							
Gasoline Range Hydrocarbons	35000	ug/kg	5000	07/11/02 13:52	SHF			
Benzene	ND	ug/kg	50.	07/11/02 13:52	SHF	71-43-2		
Toluene	ND	ug/kg	50.	07/11/02 13:52	SHF	108-88-3		
Ethylbenzene	ND	ug/kg	50.	07/11/02 13:52	SHF	100-41-4		
Xylene (Total)	ND	ug/kg	130	07/11/02 13:52	SHF	1330-20-7		
a,a,a-Trifluorotoluene (S)	98	%		07/11/02 13:52	SHF	98-08-8		
4-Bromofluorobenzene (S)	98	%		07/11/02 13:52	SHF	460-00-4		

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Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

Lab Sample No: 605243807 Project Sample Number: 6060405-005 Date Collected: 06/27/02 12:20
Client Sample ID: SB2-12 Matrix: Soil Date Received: 07/01/02 10:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
Metals								
Metals, Trace ICP, Soil	Prep/Method: EPA 3050 / EPA 6010							
Barium	50.4	mg/kg	0.952	07/12/02	JAH	7440-39-3		
Date Digested				07/09/02				
GC Semivolatiles								
Total Extractable Hydrocarbons	Prep/Method: OA2 / OA2							
Mineral Spirits	ND	mg/kg	10.	07/08/02 14:15	JLO			
Jet Fuel	ND	mg/kg	10.	07/08/02 14:15	JLO			
Kerosene	ND	mg/kg	10.	07/08/02 14:15	JLO			
Diesel Fuel	ND	mg/kg	10.	07/08/02 14:15	JLO	68334-30-5		
Fuel Oil	ND	mg/kg	10.	07/08/02 14:15	JLO	68334-30-5		
Motor Oil	ND	mg/kg	10.	07/08/02 14:15	JLO			
n-Tetracosane (S)	111	%		07/08/02 14:15	JLO	646-31-1		
p-Terphenyl (S)	113	%		07/08/02 14:15	JLO	92-94-4		
Date Extracted				07/08/02				
Organics Prep								
Percent Moisture	Method:							
Percent Moisture	28.4	%		07/09/02	MAM			
GC Volatiles								
TPH Gas/BTEX	Prep/Method: TPH GRO/BTEX / EPA 8021/OA1							
Gasoline Range Hydrocarbons	ND	ug/kg	5000	07/11/02 14:22	SHF			
Benzene	ND	ug/kg	50.	07/11/02 14:22	SHF	71-43-2		
Toluene	ND	ug/kg	50.	07/11/02 14:22	SHF	108-88-3		
Ethylbenzene	ND	ug/kg	50.	07/11/02 14:22	SHF	100-41-4		
Xylene (Total)	ND	ug/kg	130	07/11/02 14:22	SHF	1330-20-7		
a,a,a-Trifluorotoluene (S)	103	%		07/11/02 14:22	SHF	98-08-8		
4-Bromofluorobenzene (S)	103	%		07/11/02 14:22	SHF	460-00-4		

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Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

Lab Sample No: 605243815 Project Sample Number: 6060405-006 Date Collected: 06/27/02 13:20
Client Sample ID: SB2-53 Matrix: Soil Date Received: 07/01/02 10:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
GC Semivolatiles								
Total Extractable Hydrocarbons	Prep/Method: OA2 / OA2							
Mineral Spirits	ND	mg/kg	10.	07/08/02 14:48	JLO			
Jet Fuel	ND	mg/kg	10.	07/08/02 14:48	JLO			
Kerosene	ND	mg/kg	10.	07/08/02 14:48	JLO			
Diesel Fuel	ND	mg/kg	10.	07/08/02 14:48	JLO	68334-30-5		
Fuel Oil	ND	mg/kg	10.	07/08/02 14:48	JLO	68334-30-5		
Motor Oil	ND	mg/kg	10.	07/08/02 14:48	JLO			
n-Tetracosane (S)	103	%		07/08/02 14:48	JLO	646-31-1		
p-Terphenyl (S)	105	%		07/08/02 14:48	JLO	92-94-4		
Date Extracted				07/08/02				
Organics Prep								
Percent Moisture	Method:							
Percent Moisture	6.5	%		07/09/02	MAM			
GC Volatiles								
TPH Gas/BTEX	Prep/Method: TPH GRO/BTEX / EPA 8021/OA1							
Gasoline Range Hydrocarbons	ND	ug/kg	5000	07/11/02 14:52	SHF			
Benzene	ND	ug/kg	50.	07/11/02 14:52	SHF	71-43-2		
Toluene	ND	ug/kg	50.	07/11/02 14:52	SHF	108-88-3		
Ethylbenzene	ND	ug/kg	50.	07/11/02 14:52	SHF	100-41-4		
Xylene (Total)	ND	ug/kg	130	07/11/02 14:52	SHF	1330-20-7		
a,a,a-Trifluorotoluene (S)	102	%		07/11/02 14:52	SHF	98-08-8		
4-Bromofluorobenzene (S)	99	%		07/11/02 14:52	SHF	460-00-4		

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Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

Lab Sample No: 605243823 Project Sample Number: 6060405-007 Date Collected: 06/27/02 14:15
Client Sample ID: SB3-3 Matrix: Soil Date Received: 07/01/02 10:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
Metals								
Metals, Trace ICP, Soil	Prep/Method: EPA 3050 / EPA 6010							
Lead	8.12	mg/kg	0.500	07/12/02	JAH	7439-92-1		
Date Digested				07/09/02				
GC Semivolatiles								
Total Extractable Hydrocarbons	Prep/Method: OA2 / OA2							
Mineral Spirits	ND	mg/kg	9.8	07/12/02	MIM			
Jet Fuel	ND	mg/kg	9.8	07/12/02	MIM			
Kerosene	ND	mg/kg	9.8	07/12/02	MIM			
Diesel Fuel	ND	mg/kg	9.8	07/12/02	MIM	68334-30-5		
Fuel Oil	ND	mg/kg	9.8	07/12/02	MIM	68334-30-5		
Motor Oil	ND	mg/kg	9.8	07/12/02	MIM			
Total Petroleum Hydrocarbons	170	mg/kg	9.8	07/12/02	MIM		2	
n-Tetracosane (S)	108	%		07/12/02	MIM	646-31-1		
p-Terphenyl (S)	104	%		07/12/02	MIM	92-94-4		
Date Extracted				07/11/02				
Organics Prep								
Percent Moisture	Method:							
Percent Moisture	12.6	%		07/10/02	MAM			
GC Volatiles								
TPH Gas/BTEX	Prep/Method: TPH GRO/BTEX / EPA 8021/OA1							
Gasoline Range Hydrocarbons	ND	ug/kg	4900	07/11/02 15:23	SHF			
Benzene	ND	ug/kg	49.	07/11/02 15:23	SHF	71-43-2		
Toluene	ND	ug/kg	49.	07/11/02 15:23	SHF	108-88-3		
Ethylbenzene	ND	ug/kg	49.	07/11/02 15:23	SHF	100-41-4		
Xylene (Total)	ND	ug/kg	130	07/11/02 15:23	SHF	1330-20-7		
a,a,a-Trifluorotoluene (S)	104	%		07/11/02 15:23	SHF	98-08-8		
4-Bromofluorobenzene (S)	102	%		07/11/02 15:23	SHF	460-00-4		

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Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

Lab Sample No: 605243831 Project Sample Number: 6060405-008 Date Collected: 06/27/02 14:30
Client Sample ID: SB3-5 Matrix: Soil Date Received: 07/01/02 10:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
Metals								
Metals, Trace ICP, Soil	Prep/Method: EPA 3050 / EPA 6010							
Barium	134.	mg/kg	0.952	07/12/02	JAH	7440-39-3		
Date Digested				07/09/02				
GC Semivolatiles								
Total Extractable Hydrocarbons	Prep/Method: OA2 / OA2							
Mineral Spirits	ND	mg/kg	9.9	07/12/02	MIM			
Jet Fuel	ND	mg/kg	9.9	07/12/02	MIM			
Kerosene	ND	mg/kg	9.9	07/12/02	MIM			
Diesel Fuel	27.	mg/kg	9.9	07/12/02	MIM	68334-30-5		
Fuel Oil	ND	mg/kg	9.9	07/12/02	MIM	68334-30-5		
Motor Oil	ND	mg/kg	9.9	07/12/02	MIM			
n-Tetracosane (S)	107	%		07/12/02	MIM	646-31-1		
p-Terphenyl (S)	107	%		07/12/02	MIM	92-94-4		
Date Extracted				07/11/02				
Organics Prep								
Percent Moisture	Method:							
Percent Moisture	4.1	%		07/10/02	MAM			
GC Volatiles								
TPH Gas/BTEX	Prep/Method: TPH GRO/BTEX / EPA 8021/OA1							
Gasoline Range Hydrocarbons	ND	ug/kg	5000	07/11/02 15:53	SHF			
Benzene	ND	ug/kg	50.	07/11/02 15:53	SHF	71-43-2		
Toluene	ND	ug/kg	50.	07/11/02 15:53	SHF	108-88-3		
Ethylbenzene	ND	ug/kg	50.	07/11/02 15:53	SHF	100-41-4		
Xylene (Total)	ND	ug/kg	130	07/11/02 15:53	SHF	1330-20-7		
a,a,a-Trifluorotoluene (S)	102	%		07/11/02 15:53	SHF	98-08-8		
4-Bromofluorobenzene (S)	103	%		07/11/02 15:53	SHF	460-00-4		

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Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

Lab Sample No: 605243849 Project Sample Number: 6060405-009 Date Collected: 06/27/02 15:40
Client Sample ID: SB3-53 Matrix: Soil Date Received: 07/01/02 10:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
GC Semivolatiles								
Total Extractable Hydrocarbons	Prep/Method: OA2 / OA2							
Mineral Spirits	ND	mg/kg	10.	07/12/02	MIM			
Jet Fuel	ND	mg/kg	10.	07/12/02	MIM			
Kerosene	ND	mg/kg	10.	07/12/02	MIM			
Diesel Fuel	ND	mg/kg	10.	07/12/02	MIM	68334-30-5		
Fuel Oil	ND	mg/kg	10.	07/12/02	MIM	68334-30-5		
Motor Oil	ND	mg/kg	10.	07/12/02	MIM			
n-Tetracosane (S)	77	%		07/12/02	MIM	646-31-1		
p-Terphenyl (S)	79	%		07/12/02	MIM	92-94-4		
Date Extracted				07/11/02				
Organics Prep								
Percent Moisture	Method:							
Percent Moisture	6.7	%		07/10/02	MAM			
GC Volatiles								
TPH Gas/BTEX	Prep/Method: TPH GRO/BTEX / EPA 8021/OA1							
Gasoline Range Hydrocarbons	5300	ug/kg	5000	07/11/02 16:23	SHF			
Benzene	ND	ug/kg	50.	07/11/02 16:23	SHF	71-43-2		
Toluene	ND	ug/kg	50.	07/11/02 16:23	SHF	108-88-3		
Ethylbenzene	ND	ug/kg	50.	07/11/02 16:23	SHF	100-41-4		
Xylene (Total)	ND	ug/kg	130	07/11/02 16:23	SHF	1330-20-7		
a,a,a-Trifluorotoluene (S)	103	%		07/11/02 16:23	SHF	98-08-8		
4-Bromofluorobenzene (S)	102	%		07/11/02 16:23	SHF	460-00-4		

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Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

Lab Sample No: 605243856 Project Sample Number: 6060405-010 Date Collected: 06/27/02 15:45
Client Sample ID: DRUM SOIL Matrix: Soil Date Received: 07/01/02 10:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
GC Semivolatiles								
Total Extractable Hydrocarbons	Prep/Method: OA2 / OA2							
Mineral Spirits	ND	mg/kg	9.8	07/12/02	MIM			
Jet Fuel	ND	mg/kg	9.8	07/12/02	MIM			
Kerosene	ND	mg/kg	9.8	07/12/02	MIM			
Diesel Fuel	ND	mg/kg	9.8	07/12/02	MIM	68334-30-5		
Fuel Oil	ND	mg/kg	9.8	07/12/02	MIM	68334-30-5		
Motor Oil	ND	mg/kg	9.8	07/12/02	MIM			
n-Tetracosane (S)	94	%		07/12/02	MIM	646-31-1		
p-Terphenyl (S)	98	%		07/12/02	MIM	92-94-4		
Date Extracted				07/11/02				
Organics Prep								
Percent Moisture	Method:							
Percent Moisture	9.4	%		07/10/02	MAM			
GC Volatiles								
TPH Gas/BTEX	Prep/Method: TPH GRO/BTEX / EPA 8021/OA1							
Gasoline Range Hydrocarbons	5200	ug/kg	5000	07/11/02 17:53	SHF			
Benzene	ND	ug/kg	50.	07/11/02 17:53	SHF	71-43-2		
Toluene	110	ug/kg	50.	07/11/02 17:53	SHF	108-88-3		
Ethylbenzene	ND	ug/kg	50.	07/11/02 17:53	SHF	100-41-4		
Xylene (Total)	170	ug/kg	130	07/11/02 17:53	SHF	1330-20-7		
a,a,a-Trifluorotoluene (S)	99	%		07/11/02 17:53	SHF	98-08-8		
4-Bromofluorobenzene (S)	102	%		07/11/02 17:53	SHF	460-00-4		

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Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

Lab Sample No: 605243864 Project Sample Number: 6060405-011 Date Collected: 06/27/02 16:00
Client Sample ID: MW-1 Matrix: Water Date Received: 07/01/02 10:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
GC Volatiles								
Aromatic Volatile Organics	Method: EPA 8021							
Benzene	ND	ug/l	2.0	07/11/02 11:36		71-43-2		
Ethylbenzene	ND	ug/l	2.0	07/11/02 11:36		100-41-4		
Toluene	ND	ug/l	2.0	07/11/02 11:36		108-88-3		
Xylene (Total)	ND	ug/l	5.0	07/11/02 11:36		1330-20-7		
a,a,a-Trifluorotoluene (S)	106	%		07/11/02 11:36		98-08-8		

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Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

Lab Sample No: 605243872 Project Sample Number: 6060405-012 Date Collected: 06/27/02 16:30
Client Sample ID: MW-2 Matrix: Water Date Received: 07/01/02 10:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
GC Volatiles								
Aromatic Volatile Organics	Method: EPA 8021							
Benzene	ND	ug/l	2.0	07/11/02 12:06		71-43-2		
Ethylbenzene	ND	ug/l	2.0	07/11/02 12:06		100-41-4		
Toluene	ND	ug/l	2.0	07/11/02 12:06		108-88-3		
Xylene (Total)	ND	ug/l	5.0	07/11/02 12:06		1330-20-7		
a,a,a-Trifluorotoluene (S)	101	%		07/11/02 12:06		98-08-8		

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Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

Lab Sample No: 605243880 Project Sample Number: 6060405-013 Date Collected: 06/27/02 17:00
Client Sample ID: MW-3 Matrix: Water Date Received: 07/01/02 10:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
GC Volatiles								
Aromatic Volatile Organics	Method: EPA 8021							
Benzene	200	ug/l	2.0	07/11/02 12:38		71-43-2		
Ethylbenzene	ND	ug/l	2.0	07/11/02 12:38		100-41-4		
Toluene	ND	ug/l	2.0	07/11/02 12:38		108-88-3		
Xylene (Total)	ND	ug/l	5.0	07/11/02 12:38		1330-20-7		
a,a,a-Trifluorotoluene (S)	102	%		07/11/02 12:38		98-08-8		

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Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

Lab Sample No: 605243898 Project Sample Number: 6060405-014 Date Collected: 06/27/02 17:30
Client Sample ID: MW-4 Matrix: Water Date Received: 07/01/02 10:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
GC Volatiles								
Aromatic Volatile Organics	Method: EPA 8021							
Benzene	ND	ug/l	2.0	07/11/02 13:10		71-43-2		
Ethylbenzene	ND	ug/l	2.0	07/11/02 13:10		100-41-4		
Toluene	ND	ug/l	2.0	07/11/02 13:10		108-88-3		
Xylene (Total)	ND	ug/l	5.0	07/11/02 13:10		1330-20-7		
a,a,a-Trifluorotoluene (S)	99	%		07/11/02 13:10		98-08-8		

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Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

Lab Sample No: 605243906 Project Sample Number: 6060405-015 Date Collected: 06/27/02 18:00
Client Sample ID: MW-5 Matrix: Water Date Received: 07/01/02 10:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
GC Volatiles								
Aromatic Volatile Organics	Method: EPA 8021							
Benzene	460	ug/l	10.	07/11/02		71-43-2		
Ethylbenzene	19.	ug/l	2.0	07/11/02 13:42		100-41-4		
Toluene	ND	ug/l	2.0	07/11/02 13:42		108-88-3		
Xylene (Total)	15.	ug/l	5.0	07/11/02 13:42		1330-20-7		
a,a,a-Trifluorotoluene (S)	102	%		07/11/02 13:42		98-08-8		

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Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

Lab Sample No: 605243914 Project Sample Number: 6060405-016 Date Collected: 06/27/02 18:30
Client Sample ID: DRUM WATER Matrix: Water Date Received: 07/01/02 10:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
Wet Chemistry								
Flash Point, Closed Cup	Method: EPA 1010							
Flash Point	>94	deg C		07/08/02	KMW			
GC Volatiles								
Aromatic Volatile Organics	Method: EPA 8021							
Benzene	ND	ug/l	2.0	07/11/02 14:15		71-43-2		
Ethylbenzene	ND	ug/l	2.0	07/11/02 14:15		100-41-4		
Toluene	ND	ug/l	2.0	07/11/02 14:15		108-88-3		
Xylene (Total)	ND	ug/l	5.0	07/11/02 14:15		1330-20-7		
a,a,a-Trifluorotoluene (S)	98	%		07/11/02 14:15		98-08-8		

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Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

Lab Sample No: 605243922 Project Sample Number: 6060405-017 Date Collected: 06/27/02 00:00
Client Sample ID: TRIP BLANK Matrix: Water Date Received: 07/01/02 10:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
GC Volatiles								
Aromatic Volatile Organics	Method: EPA 8021							
Benzene	ND	ug/l	2.0	07/11/02 14:48		71-43-2		
Ethylbenzene	ND	ug/l	2.0	07/11/02 14:48		100-41-4		
Toluene	ND	ug/l	2.0	07/11/02 14:48		108-88-3		
Xylene (Total)	ND	ug/l	5.0	07/11/02 14:48		1330-20-7		
a,a,a-Trifluorotoluene (S)	98	%		07/11/02 14:48		98-08-8		

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Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

PARAMETER FOOTNOTES

ND	Not detected at or above adjusted reporting limit
NC	Not Calculable
J	Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit
MDL	Adjusted Method Detection Limit
(S)	Surrogate
[1]	The surrogate recovery value exceeded the laboratory established control limits. The alternate surrogate recovery was within the control limits; therefore, the sample results were accepted without reanalysis.
[2]	Quantitation of the Total Petroleum Hydrocarbon fraction was achieved using No. 2 diesel fuel as a reference standard from C10 to C28. The TPH fingerprint was indicative of gasoline range hydrocarbons.

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QUALITY CONTROL DATA

Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

QC Batch: 125624 Analysis Method: OA2
QC Batch Method: OA2 Analysis Description: Total Extractable Hydrocarbons
Associated Lab Samples: 605243526 605243534 605243542 605243559 605243807 605243815

METHOD BLANK: 605253624
Associated Lab Samples: 605243526 605243534 605243542 605243559 605243807 605243815

Parameter	Units	Blank Result	Reporting Limit	Footnotes
Mineral Spirits	mg/kg	ND	10.	
Jet Fuel	mg/kg	ND	10.	
Kerosene	mg/kg	ND	10.	
Diesel Fuel	mg/kg	ND	10.	
Fuel Oil	mg/kg	ND	10.	
Motor Oil	mg/kg	ND	10.	
n-Tetracosane (S)	%	104		
p-Terphenyl (S)	%	103		

LABORATORY CONTROL SAMPLE: 605253632

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Footnotes
Diesel Fuel	mg/kg	500.00	443.0	89	64-114	
n-Tetracosane (S)				108	59-131	
p-Terphenyl (S)				112	38-129	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 605253640 605253657

Parameter	Units	605243526 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Footnotes
Diesel Fuel	mg/kg	120.8	500.00	461.4	488.7	68	74	60-124	6	19	
n-Tetracosane (S)						94	91	59-131			
p-Terphenyl (S)						107	105	38-129			

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QUALITY CONTROL DATA

Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

QC Batch: 125882 Analysis Method: OA2
QC Batch Method: OA2 Analysis Description: Total Extractable Hydrocarbons
Associated Lab Samples: 605243823 605243831 605243849 605243856

METHOD BLANK: 605261379
Associated Lab Samples: 605243823 605243831 605243849 605243856

Parameter	Units	Blank Result	Reporting Limit	Footnotes
Mineral Spirits	mg/kg	ND	10.	
Jet Fuel	mg/kg	ND	10.	
Kerosene	mg/kg	ND	10.	
Diesel Fuel	mg/kg	ND	10.	
Fuel Oil	mg/kg	ND	10.	
Motor Oil	mg/kg	ND	10.	
n-Tetracosane (S)	%	102		
p-Terphenyl (S)	%	100		

LABORATORY CONTROL SAMPLE: 605261403

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Footnotes
Diesel Fuel	mg/kg	500.00	523.7	105	64-114	
n-Tetracosane (S)				121	59-131	
p-Terphenyl (S)				114	38-129	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 605261387 605261395

Parameter	Units	605243823 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Footnotes
Diesel Fuel	mg/kg	0	495.00	527.8	584.1	107	118	60-124	10	19	
n-Tetracosane (S)						112	140	59-131			1
p-Terphenyl (S)						112	127	38-129			

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QUALITY CONTROL DATA

Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

QC Batch: 125865 Analysis Method: EPA 8021/OA1
QC Batch Method: TPH GRO/BTEX Analysis Description: TPH Gas/BTEX
Associated Lab Samples: 605243526 605243534 605243542 605243559 605243807
605243815 605243823 605243831 605243849 605243856

METHOD BLANK: 605260843
Associated Lab Samples: 605243526 605243534 605243542 605243559 605243807 605243815 605243823
605243831 605243849 605243856

Parameter	Units	Blank Result	Reporting Limit	Footnotes
Gasoline Range Hydrocarbons	ug/kg	ND	5000	
Benzene	ug/kg	ND	50.	
Toluene	ug/kg	ND	50.	
Ethylbenzene	ug/kg	ND	50.	
Xylene (Total)	ug/kg	ND	130	
a,a,a-Trifluorotoluene (S)	%	99		
4-Bromofluorobenzene (S)	%	102		

LABORATORY CONTROL SAMPLE: 605260850

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Footnotes
Gasoline Range Hydrocarbons	ug/kg	100000	95930	96	69-127	
Benzene	ug/kg	1000.00	1078	108	82-122	
Toluene	ug/kg	1000.00	1075	108	85-116	
Ethylbenzene	ug/kg	1000.00	1080	108	85-116	
Xylene (Total)	ug/kg	3000.00	3298	110	85-123	
a,a,a-Trifluorotoluene (S)				100	80-112	
4-Bromofluorobenzene (S)				98	75-127	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 605261031 605261049

Parameter	Units	605250125 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Footnotes
Gasoline Range Hydrocarbons	ug/kg	4799	102300	95420	103500	89	95	64-123	8	20	
Benzene	ug/kg	0	1023.00	1068	1077	104	104	78-121	1	15	
Toluene	ug/kg	13.16	1023.00	1083	1070	105	102	85-114	1	15	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 605261031 605261049

Parameter	Units	605250125 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Footnotes
Ethylbenzene	ug/kg	24.08	1023.00	1083	1083	104	102	85-116	0	15	
Xylene (Total)	ug/kg	88.86	3069.00	3249	3270	103	102	83-126	1	13	
a,a,a-Trifluorotoluene (S)						98	97	80-112			
4-Bromofluorobenzene (S)						96	100	75-127			

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QUALITY CONTROL DATA

Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

QC Batch: 125871 Analysis Method: EPA 8021
QC Batch Method: EPA 8021 Analysis Description: Aromatic Volatile Organics
Associated Lab Samples: 605243864 605243872 605243880 605243898 605243906 605243914 605243922

METHOD BLANK: 605261015
Associated Lab Samples: 605243864 605243872 605243880 605243898 605243906 605243914 605243922

Parameter	Units	Blank Result	Reporting Limit	Footnotes
Benzene	ug/l	ND	2.0	
Ethylbenzene	ug/l	ND	2.0	
Toluene	ug/l	ND	2.0	
Xylene (Total)	ug/l	ND	5.0	
a,a,a-Trifluorotoluene (S)	%	98		

LABORATORY CONTROL SAMPLE: 605261023

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Footnotes
Benzene	ug/l	20.00	20.16	101	84-122	
Ethylbenzene	ug/l	20.00	18.47	92	85-117	
Toluene	ug/l	20.00	20.14	101	87-117	
Xylene (Total)	ug/l	60.00	59.80	100	85-119	
a,a,a-Trifluorotoluene (S)				98	83-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 605269661 605269679

Parameter	Units	605255736 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Footnotes
Benzene	ug/l	0.3539	20.00	21.01	19.54	103	96	82-123	7	10	
Ethylbenzene	ug/l	0	20.00	17.91	17.88	90	89	84-118	0	10	
Toluene	ug/l	0.1589	20.00	20.10	19.28	100	96	82-117	4	10	
Xylene (Total)	ug/l	0.6835	60.00	58.24	57.91	96	95	84-121	1	13	
a,a,a-Trifluorotoluene (S)						98	94	83-115			

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

QC Batch: 125710 Analysis Method: EPA 6010
QC Batch Method: EPA 3050 Analysis Description: Metals, Trace ICP, Soil
Associated Lab Samples: 605243526 605243534 605243559 605243807 605243823 605243831

METHOD BLANK: 605256866
Associated Lab Samples: 605243526 605243534 605243559 605243807 605243823 605243831

Parameter	Units	Blank Result	Reporting Limit	Footnotes
Barium	mg/kg	ND	0.935	
Lead	mg/kg	ND	0.467	

LABORATORY CONTROL SAMPLE: 605256874

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Footnotes
Barium	mg/kg	95.24	85.07	89	80-120	
Lead	mg/kg	95.24	78.91	83	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 605256882 605256890

Parameter	Units	605243526 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Footnotes
Barium	mg/kg	143.5	91.74	218.9	219.6	82	81	75-125	0	20	
Lead	mg/kg	7.502	91.74	82.07	84.76	81	82	75-125	3	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

QC Batch: 125761 Analysis Method:
QC Batch Method: Analysis Description: Percent Moisture
Associated Lab Samples: 605243526 605243534 605243542 605243559 605243807 605243815

SAMPLE DUPLICATE: 605257849

Parameter	Units	605252543 Result	DUP Result	RPD	RPD	Footnotes
Percent Moisture	%	18.50	18.30	1	0	

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QUALITY CONTROL DATA

Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

QC Batch: 125836 Analysis Method:
QC Batch Method: Analysis Description: Percent Moisture
Associated Lab Samples: 605243823 605243831 605243849 605243856

SAMPLE DUPLICATE: 605260157

Parameter	Units	605243823 Result	DUP Result	RPD	RPD	Footnotes
Percent Moisture	%	12.60	12.80	2	0	

REPORT OF LABORATORY ANALYSIS

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Lab Project Number: 6060405
Client Project ID: KOCH - KROUCH STA.

QUALITY CONTROL DATA PARAMETER FOOTNOTES

Consistent with EPA guidelines, unrounded concentrations are displayed and have been used to calculate % Rec and RPD values.

LCS(D)	Laboratory Control Sample (Duplicate)
MS(D)	Matrix Spike (Duplicate)
DUP	Sample Duplicate
ND	Not detected at or above adjusted reporting limit
NC	Not Calculable
J	Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit
MDL	Adjusted Method Detection Limit
RPD	Relative Percent Difference
(S)	Surrogate
[1]	The surrogate recovery value exceeded the laboratory established control limits. The alternate surrogate recovery was within the control limits; therefore, the sample results were accepted without reanalysis.

REPORT OF LABORATORY ANALYSIS

CHAIN-OF-CUSTODY Analytical Request Document

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The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

615291

Page: 1 of 1

Section A — Required Client Information:

Company: Arcadis
Address: 5100 E Skelly Dr #1000
Tulsa, OK 74135
Phone: 918 664-9400 Fax: 664-9925

Section B — Required Client Information:

Report To: Ellen Rainey
Copy To:
Invoice To: Same
P.O.:
Project Name: Koch - Krouch Sta.
Project Number: OK001317.0001

Client Information (Check quote/contract):
Requested Due Date: *TAT: Stnd

* Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge.
Turn Around Time (TAT) in calendar days.

Section C — To Be Completed by Pace Analytical and Client

Quote Reference:
Project Manager:
Project #: 60604053
Profile #:

Section D — Required Client Information:

SAMPLE ID
One character per box.
(A–Z, 0–9 / .–)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
WATER	WT
SOIL	SL
OIL	OL
WIPE	WP
AIR	AR
TISSUE	TS
OTHER	OT

Requested Analysis: BTEX, TPH (GRO/DRO), Total Lead, Total Barium

ITEM #	SAMPLE ID	MATRIX CODE	DATE COLLECTED mm / dd / yy	TIME COLLECTED hh:mm a/p	# Containers	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	BTEX	TPH (GRO/DRO)	Total Lead	Total Barium	Remarks / Lab ID
1	SB1-3	SL	6/27/02	1015	2									X	X	X		2 (40z)		605243526
2	SB1-7			1030	2									X	X		X	1		3534
3	SB1-53			1130	2									X	X					3542
4	SB2-3			1200	2									X	X	X		↓		3559
5	SB2-12			1220	2									X	X		X	(40z)		3807
6	SB2-53			1320	2									X	X			2 (40z)		3815
7	SB2-3			1415	2									X	X	X		(40z)		3823
8	SB3-5			1420	2									X	X		X	2 (40z)		3831
9	SB3-53			1540	2									X	X			0 (40z)		3849
10	DUP-SOIL	↓	↓	1545	2									X	X			↓		3856
11																				
12																				

SHIPMENT METHOD	AIRBILL NO.	SHIPPING DATE	NO. OF COOLERS
Fed X			

ITEM NUMBER	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	Cook/Arcadis	6/28/02	1700	[illegible]	7/1/02	1000

SAMPLE CONDITION

Temp in °C	19
Received on Ice	Y/N
Sealed Cooler	Y/N
Samples Intact	Y/N

SAMPLE NOTES

Additional Comments:

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Lavvy Cook
SIGNATURE of SAMPLER: Lavvy Cook
DATE Signed: (MM / DD / YY) 6/28/02

SEE REVERSE SIDE FOR INSTRUCTIONS

CHAIN OF CUSTODY / Analytical Request Document

Pace Analytical™
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The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

651045

Page: 1 of 1

Required Client Information: Section A

Company: Arcadis
Address: 420 E. Skelly Dr #1000
Tulsa, ok 74135
Phone: 918 664-9400 Fax:

Required Client Information: Section B

Report To: E. Rainey
Copy To:
Invoice To: same
P.O.
Project Name: Koch-Crouch sta.
Project Number: ok001312.0001

Client Information (Check quote/contract):
Requested Due Date: *TAT: Stnd

* Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge.
Turn Around Time (TAT) in calendar days.

To Be Completed by Pace Analytical and Client: Section C

Quote Reference:
Project Manager:
Project #: 6060405
Profile #:

Section D — **Required Client Information:**

SAMPLE ID
One character per box.
(A–Z, 0–9 / .–)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
WATER	WT
SOIL	SL
OIL	OL
WIPE	WP
AIR	AR
TISSUE	TS
OTHER	OT

ITEM #	SAMPLE ID	MATRIX CODE	DATE COLLECTED (mm / dd / yy)	TIME COLLECTED (hh:mm a/p)	# Containers	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Requested Analysis: BTEX (Grab)	Flashpoint			Remarks / Lab ID
1	MW-1	WT	6/27/02	11:00	3				X					X			3 PV	605243864
2	MW-2			16:30	3				X					X				3872
3	MW-3			17:00	3				X					X				3880
4	MW-4			17:30	3				X					X				3898
5	MW-5			18:00	3				X					X				3906
6	Drum water			18:30	4	X			X					X	X	GN		3914
7	Trip Blank				2									X			2 PV	3922
8																		
9																		
10																		
11																		
12																		

SHIPMENT METHOD	AIRBILL NO.	SHIPPING DATE	NO. OF COOLERS
Fed X		6-27-02	1

ITEM NUMBER	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	Terry Cook/Arcadis	6/28/02	1700		6/28/02	
					7/1/02	1000

SAMPLE CONDITION

Temp in °C	1.9
Received on Ice	(Y)/N
Sealed Cooler	Y/(N)
Samples Intact	(Y)/N

SAMPLE NOTES

Additional Comments:

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Terry Cook
SIGNATURE of SAMPLER:
DATE Signed: (MM / DD / YY) 6/28/02

SEE REVERSE SIDE FOR INSTRUCTIONS