1R - 170

REPORTS

DATE:

2002

FINAL
SUBSURFACE INVESTIGATION REPORT
FORMER EARTHEN PIT
HOBBS, NEW MEXICO
KEY ENERGY SERVICES, INC.

MARCH 7, 2000

FINAL
SUBSURFACE INVESTIGATION REPORT
FORMER EARTHEN PIT
HOBBS, NEW MEXICO

Prepared for

Porter & Hedges, L.L.P.
700 Louisiana
Houston, Texas 77002

Project Number: 18347

Mark P. Guarisco
Principal Engineer

March 7, 2000

Brown and Caldwell
1415 Louisiana, Suite 2500
Houston, Texas 77002 - (713) 759-0999

P:\Wp\KEYENRGY\18347\005r.doc

1.0 INTRODUCTION

This report describes a subsurface investigation performed at the Key Energy Services (KEY) facility located in Lea County, at 1300 North West County Road, Hobbs, New Mexico. A site location map and site plan map are attached as Figures 1 and 2, respectively. The subject of the investigation is a former earthen pit operated by a previous owner of the property, Two States Tank Rental Company (Two States), from the early 1970's until approximately 1990. Two States was in the frac tank rental business. The earthen pit, located on the east side of the facility, as shown in Figure 2, was used to contain oil field wastes generated during frac tank washout operations. There are two concrete washout pits located at the north end of the earthen pit. These washout pits are temporarily out of service.

The objective of this project was to determine if there is impact to subsurface soil in the area of the former earthen pit. Brown and Caldwell subcontracted Safety and Environmental Solutions, Inc. to drill soil borings in the area of the former earthen pit on January 24-25, 2000. Brown and Caldwell submitted soil samples from the borings to SPL laboratory in Houston, Texas. The laboratory results were used to determine the degree of impact present in subsurface soils near the earthen pit and to determine remediation requirements.

KEY authorized the completion of three soil borings within the perimeter of the former earthen pit to assess subsurface soil impact. One downgradient groundwater well was authorized if any one of the soil borings indicated that soil was impacted to the depth of groundwater beneath the earthen pit. Based on the discovery of impacted soil within the earthen pit, Brown and Caldwell did not install the groundwater monitoring well. Based on field observations, two additional soil borings were drilled within the earthen pit as authorized by the on-site KEY representative.

2.0 BORING INSTALLATION

Five soil borings were installed within the perimeter of the former earthen pit as shown on Figure 2. The boring locations were slightly adjusted from the original locations identified in the work plan, based on field observations that more accurately located the former pit. Soil boring SB-1 was terminated at a depth of four feet below grade when highly contaminated soils were recovered from the soil boring. At this time, the focus of the field investigation was modified to assess conditions within the earthen pit and verify its original depth. The on-site KEY representative authorized two additional soil borings within the earthen pit to further assess conditions in the pit. Subsequent borings were terminated when native soils were encountered. The soil borings were terminated at these depths to prevent further vertical migration of contaminants in the soil. The installation date and final depth for the soil borings are provided in Table 1.

The borings were drilled using hollow stem auger drilling techniques as specified in the work plan. Boring logs are in Appendix A. Each soil boring was continuously sampled at approximately 2-foot intervals. Recovered soil samples were classified according to the Unified Soil Classification System (USCS). Field screening (headspace analyses and visual inspection) was conducted on the recovered soil samples to assist in selecting soil samples for laboratory analyses. Soil samples selected for laboratory analysis were chosen based on:

- The sample interval immediately below the bottom of the former pit (generally the bottom of the soil boring since borings were advanced only to the bottom of the pit)
- The sample interval where field screening results indicate the highest potential for impact

Soil samples were collected from these borings using split spoon samplers. Soil samples from each boring were screened for the presence of organic vapors using a photoionization detector (PID). A portion of each recovered sample was visually inspected and placed in a resealable plastic bag for headspace analysis. Organic vapors were allowed to develop for at least ten minutes. During this time period, each bag was massaged and shaken to break up soil clods. One end of the bag was then opened and the probe of the PID inserted into the bag. The plastic bag was then resealed around the probe and the PID reading recorded in the field log. Organic vapor readings were

recorded on the soil boring logs. The remainder of each soil sample was placed in a resealable plastic bag and stored on ice for possible laboratory analysis.

At the conclusion of soil sampling activities, each boring was backfilled from the bottom of the boring to grade, in accordance with New Mexico Oil Conservation Division (NMOCD) guidelines. Soil cuttings generated during the sampling activities were placed in two 55-gallon drums and stored on-site.

3.0 ANALYTICAL RESULTS

Table 2 summarizes the analytical results of the samples submitted for lab analysis from the five soil borings. The complete laboratory reports are included in Appendix B. The analyses chosen for these samples were based on remediation criteria established by the NMOCD. The analytical test method used for each analyte is also shown in Table 2.

4.0 NEW MEXICO OCD SITE RANKING CRITERIA

The NMOCD requires that site owners rank the risk posed by hydrocarbon impacted soil within impoundments using criteria established for the following three site characteristics: Depth to Groundwater, Wellhead Protection Area, and Distance to Surface Water Body. The resulting ranking is used to establish the level of remediation required, if any, for the site. The criteria used to establish the ranking are contained in the NMOCD guidance document titled Unlined Surface Impoundment Closure Guidelines, February 1993.

The first site characteristic to evaluate is depth to groundwater, defined as the vertical distance from the lowermost contaminants to the seasonal high water elevation of the groundwater. Brown and Caldwell estimates that the depth to groundwater is less than 50 feet, based on the presence of impacted soil at a depth of 11 feet and a typical groundwater elevation of 50 – 55 feet below ground surface for the Hobbs area. Therefore, a site ranking score of 20 is assigned for the Depth to Groundwater criteria.

Depth to Groundwater:	Ranking Score:
< 50 feet	**20**
50 - 99 feet	10
> 100 feet	0

To determine the site ranking for the Wellhead Protection Area criteria, Brown and Caldwell contracted with Banks Information Services, Inc. to obtain a water well search of the area within a one mile radius of the site (Appendix C). The results of the water well search indicated that there were no recorded water wells within 200 feet of the site. Based on this information, a ranking of 0 is assigned for the Wellhead Protection Area criteria.

Wellhead Protection Area:	Ranking Score:
< 1000 feet from a water source, or; < 200 feet from a private domestic water source:	
Yes	20
No	**0**

Based on the USGS topographic map for this site, Brown and Caldwell did not observe any major downgradient surface water bodies within 1000 feet of the site. Therefore, the ranking for the Distance to Surface Water Body category is 0.

Distance to Surface Water Body:	Ranking Score:
< 200 horizontal feet	20
200 – 1,000 feet	10
> 1,000 feet	**0**

The total ranking score obtained by summing the values for the above three criteria is 20. Table 3 indicates the NMOCD cleanup requirements for three ranges of ranking scores. As shown in Table 3, the cleanup requirements for a ranking score of 20 yields soil action levels of 10 parts per million (ppm) for benzene, 50 ppm for BTEX, and 100 ppm for TPH.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The investigation at the site determined that impacted soils and sludges are present in the earthen pit with concentrations of TPH and BTEX that exceed the NMOCD cleanup criteria. Highly contaminated soils, as defined by NMOCD guidance, were reported in borings SB-1, SB-1A, SB-2 and SB-4. The NMOCD defines highly contaminated soils as soil having liquid hydrocarbons or gross hydrocarbon staining. The NMOCD requires that these types of soils be removed or remediated to the maximum practical extent.

Based on field measurements of the pit dimensions and analytical data regarding depth of impacted soil, Brown and Caldwell estimates a volume of 5,900 in-place cubic yards (cy) of soil (300' x 50' x 11') is above the cleanup criteria established by the NMOCD. To excavate the earthen pit area now located beneath the concrete pits, it will be necessary to excavate and remove 70 cubic yards of concrete (from the concrete pits). Additional impacted soil may be present outside and below the pit boundaries evaluated during this investigation

5.2 Recommendations

The NMOCD should be notified of the investigation results and any subsequent activities conducted at the site related to the earthen pit. A workplan should be prepared outlining a remediation strategy for impacted soils at the site. This workplan must be approved by the NMOCD.

Brown and Caldwell recommends excavation and off-site disposal of the impacted soils and sludges identified within the pit boundaries. Alternative low-cost remediation methods such as landfarming would require a longer remediation period, treatability testing and possibly construction of a lined treatment area. Also, landfarming would not be allowed for soils containing

free liquid hydrocarbons. Soils exhibiting free liquid hydrocarbons would require on-site blending with other excavated soils prior to landfarming.

Once the most highly contaminated soil/sludges are excavated and disposed off-site, KEY will have to determine the extent of residual impact to underlying and adjacent soils and remediate soils impacted above cleanup limits. Remediation alternatives for the residual soil could then be evaluated to determine if on-site treatment or in-place closure using risk assessment methods would be more cost-effective than excavation and off-site disposal.

If additional soil impacts do not appear extensive, the residual soil could be excavated at the same time as the pit material. Field test methods could be used to determine when concentrations in residual soil are below cleanup criteria. Samples for laboratory analysis would then be collected to confirm the field results.

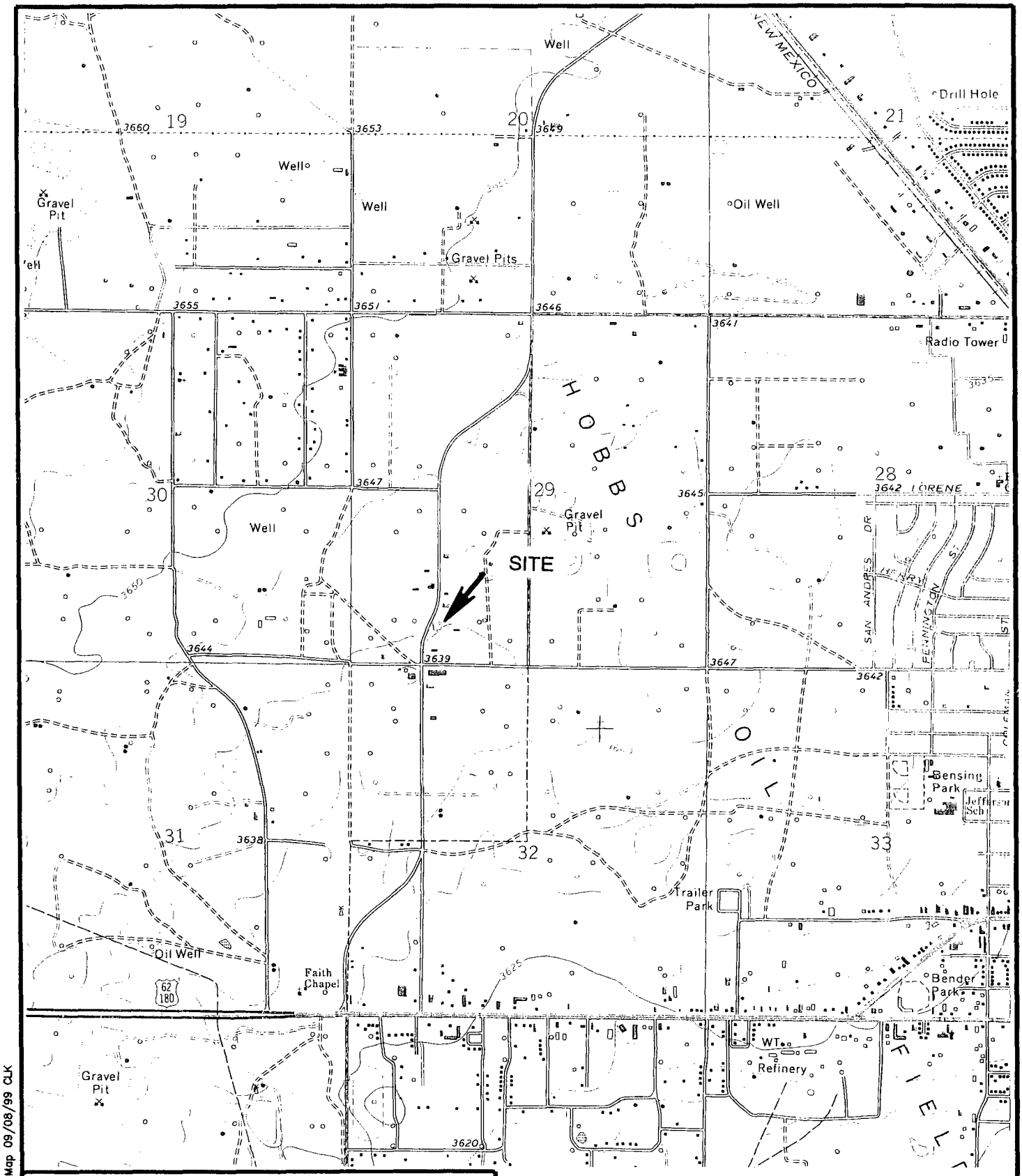
FINAL
SUBSURFACE INVESTIGATION REPORT
FORMER EARTHEN PIT
HOBBS, NEW MEXICO

March 7, 2000

QUALITY CONTROL REVIEWER

Daniel K. Gibson, P.G.
Project Manager

FIGURES



U.S. TOPOGRAPHIC MAP HOBBS WEST, NEW MEXICO. 1969 PHOTO REVISED 1979

BROWN AND CALDWELL
HOUSTON, TEXAS

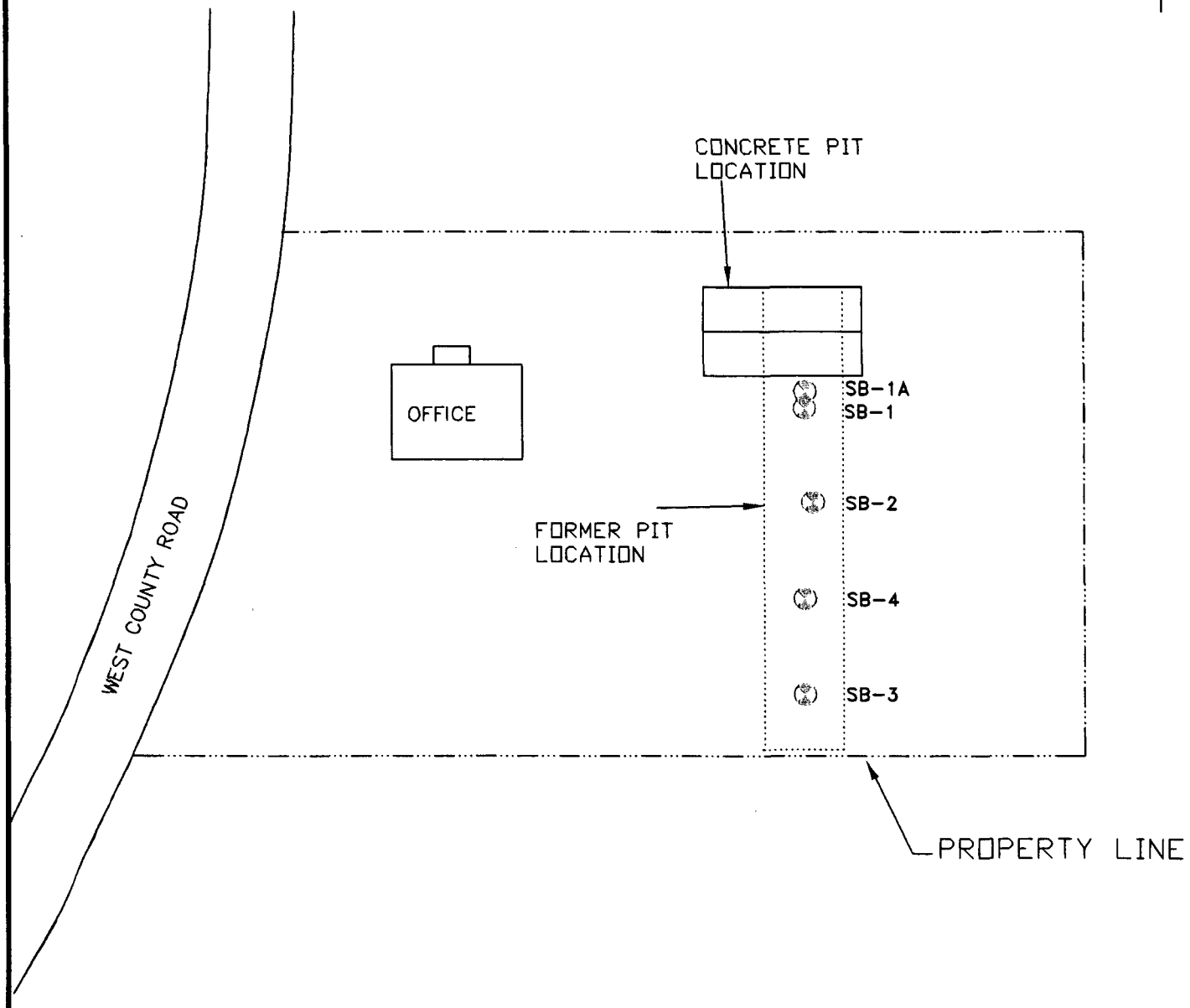
SUBMITTED: _____ DATE: _____
PROJECT MANAGER

APPROVED: _____ DATE: _____
BROWN AND CALDWELL

0 1000 2000
SCALE: 1" = 2000'
DRAWN BY: CLK DATE 9/99
CHK'D BY: _____ DATE _____
APPROVED: _____ DATE _____

TITLE	SITE LOCATION MAP
CLIENT	KEY ENERGY SERVICES
SITE LOCATION	HOBBS, NEW MEXICO
DATE	09/08/99
PROJECT NUMBER	18347.001
FIGURE NUMBER	1

P:\cad\jobs\18347\SiteLocationMap 09/08/99 CLK



LEGEND

SB-3
SOIL BORING LOCATION WITH ID

P:/CAD/JOBS/18347/SBLOCATIONS

BROWN AND CALDWELL HOUSTON, TEXAS SUBMITTED: _____ DATE: _____ PROJECT MANAGER APPROVED: _____ DATE: _____ BROWN AND CALDWELL	0 50 100 APPROXIMATE SCALE: 1" = 100' DRAWN BY: CEA DATE 2/00 CHK'D BY: DG DATE 2/00 APPROVED: ____ DATE ____	TITLE: SITE MAP WITH SOIL BORING LOCATIONS CLIENT: KEY ENERGY SITE LOCATION: 3000 WEST COUNTY ROAD HOBBS, NEW MEXICO	DATE: 02/15/00 PROJECT NUMBER: 18347.001 FIGURE NUMBER: 2

TABLES

Table 1

Soil Boring Depths

Soil Boring	Date	Depth (feet bgs)
SB-1	1/24/00	4
SB-1A	1/25/00	11
SB-2	1/24/00	7.5
SB-3	1/24/00	11
SB-4	1/25/00	11.8

Table 2

Analytical Results
Soil Borings

Sample ID Depth (feet BGS)	SB-1 0-2	SB-1 2-4	SB-1A 6-8	SB-1A 10-11	SB-2 4-6	SB-2 6.5-7.5	SB-3 4-6	SB-3 9-11	SB-4 11.8-12.5
Benzene (mg/kg)	< 0.005	0.850	5	2.3	2.2	1.1	0.190	0.510	4.1
Ethylbenzene (mg/kg)	0.0074	1.2	34	9.1	4.4	2	0.098	0.070	19
Toluene (mg/kg)	< 0.005	8.7	28	20	72	6.1	4.8	6.1	23
Xylenes (mg/kg)	0.012	14.4	67	41	59.3	7.8	3.99	4.2	39
Total BTEX (mg/kg)	0.0194	25.15	134	72.4	157.7	17	9.078	10.88	85.1
TPH-DRO (mg/kg)	940	35,000	24,000	13,000	34,000	11,000	11,000	13,000	18,000
TPH-GRO (mg/kg)	< 0.5	350	850	930	2,600	180	210	240	880
Total TPH (mg/kg)	940	35,350	24,850	13,930	36,600	11,180	11,210	13,240	18,880

Benzene, toluene, ethylbenzene, and xylenes (BTEX) were analyzed using Method 8021.
Total petroleum hydrocarbons (TPH) was analyzed using Method 8015 (diesel and gasoline ranges).

Table 3

Soil Cleanup Goals*

Contaminant	Cleanup Levels (mg/kg) Ranking Score >19	Cleanup Levels (mg/kg) Ranking Score 10-19	Cleanup Levels (mg/kg) Ranking Score 0-9
Benzene	10	10	10
BTEX, Total	50	50	50
TPH	100	1,000	5,000

*As outlined in the NMOCD guidance document, Unlined Surface Impoundment Closure Guidelines, February 1993.

APPENDIX A

Boring Logs

Soil Boring: **SB-1**

Project Name: **Key Energy** Project Number: **18347.001** Sheet **1** of **1**

Project Location: **1300 North West County Road, Hobbs, New Mexico**		Logged By: **Chris Angel**	Approved: **Dan Gibson**
Drilling Contractor: **Safety and Environmental Solutions, Inc.**		Date Started: **1/24/00**	Date Finished: **1/24/00**
Drilling Equipment:	Driller: **Dee Whatley**	Total Boring Depth: (feet) **4.0**	Depth to Static Water: (feet)
Drilling Method: **Hollow Stem Auger**	Borehole Diameter: **8"**	TOC Elevation:	Ground Elevation:
Sampling Method: **Split Spoon**		Diameter and Type of Well Casing: **N/A**	
Comments: **South of concrete pits ~ 20'**		Slot Size: **N/A**	Filter Material: **N/A**
		Development Method: **N/A**	

Depth (feet)	Depth to Water	USC Soil Type	Lithology	Description	Readings	Sampled Interval	Recovery (feet)	Sample ID	Soil Boring Remarks
2		ML		CLAYEY SILT, reddish-brown, brittle, partly cemented with calcium carbonate, calcium carbonate nodules and seams.	30.1		1.2		Sample SB-1-0-2 collected 0-2 fbg.
4		CL		CLAY, very dark gray to black, plastic, saturated with product, brittle, very soft, tank bottoms.	547		2		Sample SB-1-2-4 collected 2-4 fbg.

Soil Boring: **SB-1A**

Project Name: **Key Energy** Project Number: **18347.001** Sheet **1** of **1**

Project Location: **1300 North West County Road, Hobbs, New Mexico**		Logged By: **Chris Angel**	Approved: **Dan Gibson**
Drilling Contractor: **Safety and Environmental Solutions, Inc.**		Date Started: **1/25/00**	Date Finished: **1/25/00**
Drilling Equipment:	Driller: **Dee Whatley**	Total Boring Depth: (feet) **11.0**	Depth to Static Water: (feet)
Drilling Method: **Hollow Stem Auger**	Borehole Diameter: **8"**	TOC Elevation:	Ground Elevation:
Sampling Method: **Split Spoon**		Diameter and Type of Well Casing: **N/A**	
Comments: **South of concrete pits ~ 15'**		Slot Size: **N/A**	Filter Material: **N/A**
		Development Method: **N/A**	

Depth (feet)	Depth to Water	USC Soil Type	Lithology	Description	Readings	Sampled Interval	Recovery (feet)	Sample ID	Soil Boring Remarks
2		ML		CLAYEY SILT, reddish-brown, brittle, partly cemented with calcium carbonate, calcium carbonate nodules and seams.					Sample SB-1A-4-6 collected 4-6 fbg.
4		CL		CLAY, very dark gray to black, plastic, saturated with product, strong odor, brittle, very soft, tank bottoms, fine metal shavings.	826		4		Sample SB-1A-6-8 collected 6-8 fbg.
6					861				
8				Dark brownish-gray with black streaks, some medium sized sand and some layers of metal. Wood chips	791		1.8		
10		SM		SANDY SILT, dark gray to black, strong odor, moist.	720		1		

Soil Boring: **SB-2**

Project Name: **Key Energy** Project Number: **18347.001** Sheet **1** of **1**

Project Location: **1300 North West County Road, Hobbs, New Mexico**		Logged By: **Chris Angel**	Approved: **Dan Gibson**
Drilling Contractor: **Safety and Environmental Solutions, Inc.**		Date Started: **1/24/00**	Date Finished: **1/24/00**
Drilling Equipment:	Driller: **Dee Whatley**	Total Boring Depth: (feet) **7.5**	Depth to Static Water: (feet)
Drilling Method: **Hollow Stem Auger**	Borehole Diameter: **8"**	TOC Elevation:	Ground Elevation:
Sampling Method: **Split Spoon**		Diameter and Type of Well Casing: **N/A**	
Comments: **South of SB-1 ~75'**		Slot Size: **N/A**	Filter Material: **N/A**
		Development Method: **N/A**	

Depth (feet)	Depth to Water	USC Soil Type	Lithology	Description	Readings	Sampled Interval	Recovery (feet)	Sample ID	Soil Boring Remarks
		SM		SILTY SAND with GRAVEL, Light brown, some clay seams, calcium carbonate seams, dry.	504		2		
2		CL		CLAY, very dark gray to black, plastic, odor, moist, tank bottoms, increase moisture with depth, metals and wires in soil, wood chips and roots, brittle.	715		2		
4				Minor coarse sand, very strong odor, less wood, sand and silt seams decrease moisture.	957		2		Sample SB-2-4-6 collected 4-6 fbg.
6		CL		Clay, brown, brittle, very moist, stiff.	29.7		1.5		
		SP		SAND with GRAVEL, brown, coarse to medium grained, poorly sorted, poorly graded, calcium carbonate gravel, dry.					Sample SB-2-6-7.5 collected 6-7.5 fbg.
				LIMESTONE, tan, medium crystals, slight odor, crystals not connected.					

Soil Boring: **SB-3**

Project Name: **Key Energy** Project Number: **18347.001** Sheet **1** of **1**

Project Location: **1300 North West County Road, Hobbs, New Mexico**		Logged By: **Chris Angel**	Approved: **Dan Gibson**
Drilling Contractor: **Safety and Environmental Solutions, Inc.**		Date Started: **1/24/00**	Date Finished: **1/24/00**
Drilling Equipment:	Driller: **Dee Whatley**	Total Boring Depth: (feet) **11.0**	Depth to Static Water: (feet)
Drilling Method: **Hollow Stem Auger**	Borehole Diameter: **8"**	TOC Elevation:	Ground Elevation:
Sampling Method: **Split Spoon**		Diameter and Type of Well Casing: **N/A**	
Comments: **South of SB-2 ~120'**		Slot Size: **N/A**	Filter Material: **N/A**
		Development Method: **N/A**	

Depth (feet)	Depth to Water	USC Soil Type	Lithology	Description	Readings	Sampled Interval	Recovery (feet)	Sample ID	Soil Boring Remarks
2				SANDY SILT, light brown, brittle, some gravel, dry, fill, metal pieces.	9.0		2.5		Sample SB-3-4-6 collected 4-6 fbg.
4		SM		SILTY SAND with GRAVEL fragments, greenish-brown, ~ 2" clay seam at 3', slightly moist, odor.	50.0 197		2		Sample SB-3-9-11 collected 9-11 fbg.
6									
8					167		1		
10				SANDY SILT, brown, slightly moist, brittle, loose, odor.	392		2		

Soil Boring: **SB-4**

Project Name: **Key Energy** Project Number: **18347.001** Sheet **1** of **1**

Project Location: **1300 North West County Road, Hobbs, New Mexico**		Logged By: **Chris Angel**	Approved: **Dan Gibson**
Drilling Contractor: **Safety and Environmental Solutions, Inc.**		Date Started: **1/25/00**	Date Finished: **1/25/00**
Drilling Equipment:	Driller: **Dee Whatley**	Total Boring Depth: (feet) **13.0**	Depth to Static Water: (feet)
Drilling Method: **Hollow Stem Auger**	Borehole Diameter: **8"**	TOC Elevation:	Ground Elevation:
Sampling Method: **Split Spoon**		Diameter and Type of Well Casing: **N/A**	
Comments: **South of SB-2 ~ 60'**		Slot Size: **N/A**	Filter Material: **N/A**
		Development Method: **N/A**	

Depth (feet)	Depth to Water	USC Soil Type	Lithology	Description	Readings	Sampled Interval	Recovery (feet)	Sample ID	Soil Boring Remarks
		SM		SILTY SAND, light brown, calcium carbonate seams, hard, some gravel.	9.1		1.5		
2		ML		CLAYEY SILT, black, slightly plastic, soft, some sand sized particles, very moist, strong odor.	407		2.5		
4		CL		CLAY, very dark gray to black, plastic, odor, moist, tank bottoms, increase moisture with depth, metals and wires in soil, wood chips and roots, brittle.					
6					587				
8									
10				Saturated.					Sample SB-4-11.8-12.5 collect 11.8 to 12.5' fbg.
12		SW		SAND, greenish-tan changing to tan at 12', very fine, well sorted, brittle, dry, odor.					

APPENDIX B

Laboratory Analytical Results

APPENDIX B

Laboratory Analytical Results

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Case Narrative for:
Brown & Caldwell

Certificate of Analysis Number:
00010628

Report To:		Project Name:	Key Energy #18347.001	
Brown & Caldwell		Site:	Key Energy	
Dan Gibson		Site Address:		
1415 Louisiana			Hobbs	NM
Suite 2500		PO Number:		
Houston		State:	New Mexico	
TX		State Cert. No.:	N/A	
77002-		Date Reported:	02/07/2000	
ph: (713) 759-0999	fax: (713) 308-3886			

Your sample ID "SB-1A-10-11" (SPL ID: 00010628-08) was randomly selected for the use in SPL's quality control program for the Diesel Rang Organics analysis by SW846 method 8015. The Matrix Spike (MS) and Matrix Spike Duplicate (MSD) recoveries were outside of the advisabl quality control limits (Batch ID: 2884), due to matrix interference. A Laboratory Control Sample (LCS) was analyzed as a quality control check the analytical batch and all recoveries were within acceptable limits.

Any other data flags or quality control exceptions associated with this report will be footnoted in the analytical result page(s) or the quality cont summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certific Analysis Number.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Rini, Bernadette
Customer Service Manager

02/08/2000
Date

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Brown & Caldwell

Certificate of Analysis Number:

00010628

Report To:	Brown & Caldwell		Project Name:	Key Energy #18347.001	
	Dan Gibson		Site:	Key Energy	
	1415 Louisiana		Site Address:		
	Suite 2500			Hobbs	NM
	Houston		PO Number:		
	TX		State:	New Mexico	
	77002-		State Cert. No.:	N/A	
	ph: (713) 759-0999	fax: (713) 308-3886	Date Reported:	2/7/00	
Fax To:	*Brown & Caldwell*				
	Dan Gibson	*fax: (713) 308-3886*			

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
B-1-0-2	00010628-01	Soil	1/24/00 10:26:00 AM	1/27/00 10:00:00 AM	084673	☐
B-1-2-4	00010628-02	Soil	1/24/00 10:37:00 AM	1/27/00 10:00:00 AM	084673	☐
SB-2-4-6	00010628-03	Soil	1/24/00 1:33:00 PM	1/27/00 10:00:00 AM	084673	☐
B-2-6.5-7.5	00010628-04	Soil	1/24/00 1:39:00 PM	1/27/00 10:00:00 AM	084673	☐
B-3-4-6	00010628-05	Soil	1/24/00 9:52:00 PM	1/27/00 10:00:00 AM	084673	☐
SB-3-9-11	00010628-06	Soil	1/24/00 10:02:00 PM	1/27/00 10:00:00 AM	084673	☐
SB-1A-6-8	00010628-07	Soil	1/25/00 9:42:00 AM	1/27/00 10:00:00 AM	084673	☐
B-1A-10-11	00010628-08	Soil	1/25/00 9:49:00 AM	1/27/00 10:00:00 AM	084673	☐
B-4-11.8-12.5	00010628-09	Soil	1/25/00 12:06:00 PM	1/27/00 10:00:00 AM	084673	☐
IDW	00010628-10	Soil	1/25/00	1/27/00 10:00:00 AM	084673	☑
rip Blank 1/19/00	00010628-11	Water	1/25/00	1/27/00 10:00:00 AM	084672	☐

Fini, Bernadette — 2/8/00
Customer Service Manager — Date

Joel Grice
Laboratory Director

Ted Yen
Quality Assurance Officer

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID SB-1-0-2 **Collected:** 1/24/00 10:26:00 **SPL Sample ID:** 00010628-01

Site: Key Energy

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS				**MCL**	**SW8015B**		**Units: mg/Kg**		
Diesel Range Organics	940		120		25		02/03/00 7:26	RR	182308
Surr: Pentacosane	1200	%	55-155		25	*	02/03/00 7:26	RR	182308

Run ID/Seq #: HP_V_000203A-182308

Prep Method	Prep Date	Prep Initials
SW3550A	01/28/2000 13:21	EE

GASOLINE RANGE ORGANICS				**MCL**	**SW8015B**		**Units: mg/Kg**		
Gasoline Range Organics	ND		0.5		5		02/04/00 19:00	CJ	181773
Surr: 1,4-Difluorobenzene	100	%	63-122		5		02/04/00 19:00	CJ	181773
Surr: 4-Bromofluorobenzene	88.9	%	39-150		5		02/04/00 19:00	CJ	181773
PURGEABLE AROMATICS				**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	ND		5		5		02/04/00 19:00	CJ	181738
Ethylbenzene	ND		5		5		02/04/00 19:00	CJ	181738
Toluene	7.4		5		5		02/04/00 19:00	CJ	181738
Xylenes,Total	12		5		5		02/04/00 19:00	CJ	181738
Surr: 1,4-Difluorobenzene	105	%	59-127		5		02/04/00 19:00	CJ	181738
Surr: 4-Bromofluorobenzene	103	%	48-156		5		02/04/00 19:00	CJ	181738

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID SB-1-2-4 **Collected:** 1/24/00 10:37:00 **SPL Sample ID:** 00010628-02

Site: Key Energy

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			**MCL**	**SW8015B**		**Units: mg/Kg**		
Diesel Range Organics	35000		5000	250		02/03/00 19:54	RR	182299
Surr: Pentacosane	29900	%	55-155	250	*	02/03/00 19:54	RR	182299

Run ID/Seq #: HP_V_000203A-182299

Prep Method	Prep Date	Prep Initials
SW3550A	01/28/2000 13:21	EE

GASOLINE RANGE ORGANICS			**MCL**	**SW8015B**		**Units: mg/Kg**		
Gasoline Range Organics	350		5	50		02/03/00 17:10	CJ	180753
Surr: 1,4-Difluorobenzene	100	%	63-122	50		02/03/00 17:10	CJ	180753
Surr: 4-Bromofluorobenzene	1160	%	39-150	50	*	02/03/00 17:10	CJ	180753
PURGEABLE AROMATICS			**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	850		100	100		02/06/00 16:20	CJ	181762
Ethylbenzene	8700		100	100		02/06/00 16:20	CJ	181762
Toluene	1200		100	100		02/06/00 16:20	CJ	181762
Xylenes,Total	14400		100	100		02/06/00 16:20	CJ	181762
Surr: 1,4-Difluorobenzene	109	%	59-127	100		02/06/00 16:20	CJ	181762
Surr: 4-Bromofluorobenzene	260	%	48-156	100	*	02/06/00 16:20	CJ	181762

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID SB-2-4-6 **Collected:** 1/24/00 1:33:00 **SPL Sample ID:** 00010628-03

Site: Key Energy

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS				**MCL**	**SW8015B**		**Units: mg/Kg**		
Diesel Range Organics	34000		3100		125		02/03/00 20:32	RR	182300
Surr: Pentacosane	29500	%	55-155		125	*	02/03/00 20:32	RR	182300

Run ID/Seq #: HP_V_000203A-182300

Prep Method	Prep Date	Prep Initials
SW3550A	01/28/2000 13:21	EE

GASOLINE RANGE ORGANICS				**MCL**	**SW8015B**		**Units: mg/Kg**		
Gasoline Range Organics	2600		50		500		02/03/00 17:42	CJ	180754
Surr: 1,4-Difluorobenzene	100	%	63-122		500		02/03/00 17:42	CJ	180754
Surr: 4-Bromofluorobenzene	770	%	39-150		500	*	02/03/00 17:42	CJ	180754
PURGEABLE AROMATICS				**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	22000		500		500		02/02/00 19:26	CJ	179730
Ethylbenzene	72000		500		500		02/02/00 19:26	CJ	179730
Toluene	4400		500		500		02/02/00 19:26	CJ	179730
Xylenes,Total	59300		500		500		02/02/00 19:26	CJ	179730
Surr: 1,4-Difluorobenzene	116	%	59-127		500		02/02/00 19:26	CJ	179730
Surr: 4-Bromofluorobenzene	275	%	48-156		500	*	02/02/00 19:26	CJ	179730

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID SB-2-6.5-7.5 **Collected:** 1/24/00 1:39:00 **SPL Sample ID:** 00010628-04

Site: Key Energy

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS				**MCL**	**SW8015B**		**Units: mg/Kg**		
Diesel Range Organics	11000		1200		125		02/03/00 21:11	RR	182301
Surr: Pentacosane	15800	%	55-155		125	*	02/03/00 21:11	RR	182301

Run ID/Seq #: HP_V_000203A-182301

Prep Method	Prep Date	Prep Initials
SW3550A	01/28/2000 13:21	EE

GASOLINE RANGE ORGANICS				**MCL**	**SW8015B**		**Units: mg/Kg**		
Gasoline Range Organics	180		2.5		25		02/03/00 2:19	CJ	179976
Surr: 1,4-Difluorobenzene	100	%	63-122		25		02/03/00 2:19	CJ	179976
Surr: 4-Bromofluorobenzene	982	%	39-150		25	*	02/03/00 2:19	CJ	179976
PURGEABLE AROMATICS				**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	1100		50		50		02/03/00 18:14	CJ	180617
Ethylbenzene	6100		50		50		02/03/00 18:14	CJ	180617
Toluene	2000		50		50		02/03/00 18:14	CJ	180617
Xylenes,Total	7800		50		50		02/03/00 18:14	CJ	180617
Surr: 1,4-Difluorobenzene	121	%	59-127		50		02/03/00 18:14	CJ	180617
Surr: 4-Bromofluorobenzene	246	%	48-156		50	*	02/03/00 18:14	CJ	180617

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID SB-3-4-6 **Collected:** 1/24/00 9:52:00 **SPL Sample ID:** 00010628-05

Site: Key Energy

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS				**MCL**	**SW8015B**		**Units: mg/Kg**		
Diesel Range Organics	11000		1200		125		02/03/00 21:49	RR	182302
Surr: Pentacosane	15200	%	55-155		125	*	02/03/00 21:49	RR	182302

Run ID/Seq #: HP_V_000203A-182302

Prep Method	Prep Date	Prep Initials
SW3550A	01/28/2000 13:21	EE

GASOLINE RANGE ORGANICS				**MCL**	**SW8015B**		**Units: mg/Kg**		
Gasoline Range Organics	210		5		50		02/03/00 2:51	CJ	179977
Surr: 1,4-Difluorobenzene	100	%	63-122		50		02/03/00 2:51	CJ	179977
Surr: 4-Bromofluorobenzene	893	%	39-150		50	*	02/03/00 2:51	CJ	179977
PURGEABLE AROMATICS				**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	190		50		50		02/03/00 2:51	CJ	179569
Ethylbenzene	4800		50		50		02/03/00 2:51	CJ	179569
Toluene	98		50		50		02/03/00 2:51	CJ	179569
Xylenes,Total	3990		50		50		02/03/00 2:51	CJ	179569
Surr: 1,4-Difluorobenzene	93.0	%	59-127		50		02/03/00 2:51	CJ	179569
Surr: 4-Bromofluorobenzene	300	%	48-156		50	*	02/03/00 2:51	CJ	179569

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID SB-3-9-11 **Collected:** 1/24/00 10:02:00 **SPL Sample ID:** 00010628-06

Site: Key Energy

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS				**MCL**	**SW8015B**		**Units: mg/Kg**		
Diesel Range Organics	13000		1200		125		02/03/00 22:27	RR	182303
Surr: Pentacosane	24500	%	55-155		125	*	02/03/00 22:27	RR	182303

Run ID/Seq #: HP_V_000203A-182303

Prep Method	Prep Date	Prep Initials
SW3550A	01/28/2000 13:21	EE

GASOLINE RANGE ORGANICS				**MCL**	**SW8015B**		**Units: mg/Kg**		
Gasoline Range Organics	240		5		50		02/03/00 3:23	CJ	179978
Surr: 1,4-Difluorobenzene	100	%	63-122		50		02/03/00 3:23	CJ	179978
Surr: 4-Bromofluorobenzene	879	%	39-150		50	*	02/03/00 3:23	CJ	179978
PURGEABLE AROMATICS				**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	510		50		50		02/03/00 3:23	CJ	179572
Ethylbenzene	6100		50		50		02/03/00 3:23	CJ	179572
Toluene	70		50		50		02/03/00 3:23	CJ	179572
Xylenes,Total	4200		50		50		02/03/00 3:23	CJ	179572
Surr: 1,4-Difluorobenzene	108	%	59-127		50		02/03/00 3:23	CJ	179572
Surr: 4-Bromofluorobenzene	310	%	48-156		50	*	02/03/00 3:23	CJ	179572

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID SB-1A-6-8 **Collected:** 1/25/00 9:42:00 **SPL Sample ID:** 00010628-07

Site: Key Energy

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS				**MCL**	**SW8015B**		**Units: mg/Kg**		
Diesel Range Organics	24000		2500		125		02/05/00 18:40	RR	182309
Surr: Pentacosane	27900	%	55-155		125	*	02/05/00 18:40	RR	182309

Run ID/Seq #: HP_V_000203A-182309

Prep Method	Prep Date	Prep Initials
SW3550A	01/28/2000 13:21	EE

GASOLINE RANGE ORGANICS				**MCL**	**SW8015B**		**Units: mg/Kg**		
Gasoline Range Organics	850		50		500		02/03/00 3:55	CJ	179979
Surr: 1,4-Difluorobenzene	100	%	63-122		500		02/03/00 3:55	CJ	179979
Surr: 4-Bromofluorobenzene	331	%	39-150		500	*	02/03/00 3:55	CJ	179979
PURGEABLE AROMATICS				**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	5000		500		500		02/03/00 3:55	CJ	180576
Ethylbenzene	28000		500		500		02/03/00 3:55	CJ	180576
Toluene	34000		500		500		02/03/00 3:55	CJ	180576
Xylenes,Total	67000		500		500		02/03/00 3:55	CJ	180576
Surr: 1,4-Difluorobenzene	93.7	%	59-127		500		02/03/00 3:55	CJ	180576
Surr: 4-Bromofluorobenzene	190	%	48-156		500	*	02/03/00 3:55	CJ	180576

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID SB-1A-10-11 **Collected:** 1/25/00 9:49:00 **SPL Sample ID:** 00010628-08

Site: Key Energy

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS				**MCL**	**SW8015B**		**Units: mg/Kg**		
Diesel Range Organics	13000		1200		125		02/05/00 19:19	RR	182310
Surr: Pentacosane	9930	%	55-155		125	*	02/05/00 19:19	RR	182310

Run ID/Seq #: HP_V_000203A-182310

Prep Method	Prep Date	Prep Initials
SW3550A	01/28/2000 13:21	EE

GASOLINE RANGE ORGANICS				**MCL**	**SW8015B**		**Units: mg/Kg**		
Gasoline Range Organics	930		25		250		02/03/00 4:28	CJ	179980
Surr: 1,4-Difluorobenzene	100	%	63-122		250		02/03/00 4:28	CJ	179980
Surr: 4-Bromofluorobenzene	667	%	39-150		250	*	02/03/00 4:28	CJ	179980
PURGEABLE AROMATICS				**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	2300		250		250		02/03/00 4:28	CJ	179739
Ethylbenzene	20000		250		250		02/03/00 4:28	CJ	179739
Toluene	9100		250		250		02/03/00 4:28	CJ	179739
Xylenes,Total	41000		250		250		02/03/00 4:28	CJ	179739
Surr: 1,4-Difluorobenzene	99.1	%	59-127		250		02/03/00 4:28	CJ	179739
Surr: 4-Bromofluorobenzene	260	%	48-156		250	*	02/03/00 4:28	CJ	179739

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID SB-4-11.8-12.5 **Collected:** 1/25/00 12:06:00 **SPL Sample ID:** 00010628-09

Site: Key Energy

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS				**MCL**	**SW8015B**		**Units: mg/Kg**		
Diesel Range Organics	18000		1900		125		02/05/00 19:19	RR	182304
Surr: Pentacosane	19200	%	55-155		125	*	02/05/00 19:19	RR	182304

Run ID/Seq #: HP_V_000203A-182304

Prep Method	Prep Date	Prep Initials
SW3550A	01/28/2000 13:21	EE

GASOLINE RANGE ORGANICS				**MCL**	**SW8015B**		**Units: mg/Kg**		
Gasoline Range Organics	880		25		250		02/03/00 5:00	CJ	179981
Surr: 1,4-Difluorobenzene	100	%	63-122		250		02/03/00 5:00	CJ	179981
Surr: 4-Bromofluorobenzene	584	%	39-150		250	*	02/03/00 5:00	CJ	179981
PURGEABLE AROMATICS				**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	4100		250		250		02/03/00 5:00	CJ	180577
Ethylbenzene	23000		250		250		02/03/00 5:00	CJ	180577
Toluene	19000		250		250		02/03/00 5:00	CJ	180577
Xylenes,Total	39000		250		250		02/03/00 5:00	CJ	180577
Surr: 1,4-Difluorobenzene	113	%	59-127		250		02/03/00 5:00	CJ	180577
Surr: 4-Bromofluorobenzene	248	%	48-156		250	*	02/03/00 5:00	CJ	180577

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID Trip Blank 1/19/00 **Collected:** 1/25/00 **SPL Sample ID:** 00010628-11

Site: Key Energy

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS				**MCL**	**SW8021B**		**Units: ug/L**		
Benzene	ND		1		1		01/31/00 17:11	WR	176085
Ethylbenzene	ND		1		1		01/31/00 17:11	WR	176085
Toluene	ND		1		1		01/31/00 17:11	WR	176085
Xylenes,Total	ND		1		1		01/31/00 17:11	WR	176085
Surr: 1,4-Difluorobenzene	106	%	72-137		1		01/31/00 17:11	WR	176085
Surr: 4-Bromofluorobenzene	109	%	48-156		1		01/31/00 17:11	WR	176085

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

Quality Control Documentation

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

Brown & Caldwell

Key Energy #18347.001

Analysis: Diesel Range Organics
Method: SW8015B
WorkOrder: 00010628
Lab Batch ID: 2884

Method Blank

RunID: HP_V_000203A-182306 Units: mg/Kg
Analysis Date: 02/03/2000 6:09 Analyst: RR
Preparation Date: 01/28/2000 13:21 Prep By: EE Method SW3550A

Analyte	Result	Rep Limit
Diesel Range Organics	ND	10
Surr: Pentacosane	98.3	55-155

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
00010628-01B	SB-1-0-2
00010628-02B	SB-1-2-4
00010628-03B	SB-2-4-6
00010628-04B	SB-2-6.5-7.5
00010628-05B	SB-3-4-6
00010628-06B	SB-3-9-11
00010628-07B	SB-1A-6-8
00010628-08B	SB-1A-10-11
00010628-09B	SB-4-11.8-12.5

Laboratory Control Sample (LCS)

RunID: HP_V_000203A-182307 Units: mg/Kg
Analysis Date: 02/03/2000 6:48 Analyst: RR
Preparation Date: 01/28/2000 13:21 Prep By: EE Method SW3550A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Diesel Range Organics	83.33	73	88	70	122

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 00010628-08
RunID: HP_V_000203A-182305 Units: mg/Kg
Analysis Date: 02/05/2000 19:57 Analyst: RR
Preparation Date: 01/28/2000 13:21 Prep By: EE Method SW3550A

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Diesel Range Organics	13000	83.3	12000	-1180*	83.3	15000	2370*	595*	50	11	155

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

Brown & Caldwell

Key Energy #18347.001

Analysis: Purgeable Aromatics
Method: SW8021B
WorkOrder: 00010628
Lab Batch ID: R8417

Method Blank

RunID: HP_N_000131A-176081 Units: ug/L
Analysis Date: 01/31/2000 11:01 Analyst: WR

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
00010628-11A	Trip Blank 1/19/00

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	106.2	72-137
Surr: 4-Bromofluorobenzene	107.1	48-156

Laboratory Control Sample (LCS)

RunID: HP_N_000131A-176080 Units: ug/L
Analysis Date: 01/31/2000 10:26 Analyst: WR

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	50	101	61	119
Ethylbenzene	50	50	100	70	118
Toluene	50	51	101	65	125
Xylenes,Total	150	151	101	72	117

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 00010640-03
RunID: HP_N_000131A-176083 Units: ug/L
Analysis Date: 01/31/2000 15:54 Analyst: WR

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
enzene	ND	20	22	110	20	22	110	0.157	21	32	164
thylbenzene	ND	20	22	108	20	22	109	1.36	19	52	142
Toluene	ND	20	22	112	20	22	112	0.206	20	38	159
Xylenes,Total	ND	60	66	110	60	67	112	1.50	18	53	144

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

Brown & Caldwell

Key Energy #18347.001

Analysis: Purgeable Aromatics
Method: SW8021B
WorkOrder: 00010628
Lab Batch ID: R8591

Method Blank

RunID: HP_R_000202B-179731 Units: ug/Kg
Analysis Date: 02/02/2000 19:52 Analyst: CJ

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	94.5	59-127
Surr: 4-Bromofluorobenzene	103.3	48-156

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
00010628-03A	SB-2-4-6
00010628-05A	SB-3-4-6
00010628-06A	SB-3-9-11
00010628-07A	SB-1A-6-8
00010628-08A	SB-1A-10-11
00010628-09A	SB-4-11.8-12.5

Laboratory Control Sample (LCS)

RunID: HP_R_000202B-179771 Units: ug/Kg
Analysis Date: 02/02/2000 21:16 Analyst: CJ

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	47	94	60	116
Ethylbenzene	50	45	91	68	127
Toluene	50	46	92	64	122
Xylenes,Total	150	136	91	68	129

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 00010623-09
RunID: HP_R_000202B-179564 Units: ug/Kg
Analysis Date: 02/02/2000 23:37 Analyst: CJ

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	16	79.1	20	15	76.0	3.96	34	35	139
Ethylbenzene	ND	20	14	69.7	20	14	66.5	4.56	35	31	137
Toluene	ND	20	15	74.7	20	15	72.0	3.60	28	31	137
Xylenes,Total	1.4	60	47	76.0	60	44	71.0	6.80	38	19	144

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

Brown & Caldwell

Key Energy #18347.001

Analysis: Gasoline Range Organics
Method: SW8015B
WorkOrder: 00010628
Lab Batch ID: R8603

Method Blank

RunID: HP_R_000202D-179975 Units: mg/Kg
Analysis Date: 02/03/2000 1:47 Analyst: CJ

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	100.0	63-122
Surr: 4-Bromofluorobenzene	80.1	39-150

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
00010628-04A	SB-2-6.5-7.5
00010628-05A	SB-3-4-6
00010628-06A	SB-3-9-11
00010628-07A	SB-1A-6-8
00010628-08A	SB-1A-10-11
00010628-09A	SB-4-11.8-12.5

Laboratory Control Sample (LCS)

RunID: HP_R_000202D-179972 Units: mg/Kg
Analysis Date: 02/02/2000 23:02 Analyst: CJ

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.7	70	44	122

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 00010623-09
RunID: HP_R_000202D-179973 Units: mg/Kg
Analysis Date: 02/03/2000 0:44 Analyst: CJ

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Gasoline Range Organics	ND	0.9	0.61	65.1	0.9	0.61	64.3	1.15	50	26	147

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

Brown & Caldwell

Key Energy #18347.001

Analysis: Purgeable Aromatics
Method: SW8021B
WorkOrder: 00010628
Lab Batch ID: R8637

Method Blank

RunID: HP_R_000203A-180611 Units: ug/L
Analysis Date: 02/03/2000 12:40 Analyst: CJ

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
00010628-04A	SB-2-6.5-7.5

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	96.2	72-137
Surr: 4-Bromofluorobenzene	99.2	48-156

Laboratory Control Sample (LCS)

RunID: HP_R_000203A-180612 Units: ug/L
Analysis Date: 02/03/2000 13:45 Analyst: CJ

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	47	95	61	119
Ethylbenzene	50	47	95	70	118
Toluene	50	48	95	65	125
Xylenes,Total	150	143	95	72	117

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 00020046-01
RunID: HP_R_000203A-180619 Units: ug/Kg
Analysis Date: 02/03/2000 22:00 Analyst: CJ

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	16	78.5	20	14	70.6	10.6	34	35	139
Ethylbenzene	ND	20	14	70.1	20	14	66.5	5.29	35	31	137
Toluene	ND	20	16	76.2	20	14	70.4	7.87	28	31	137
Xylenes,Total	ND	60	43	71.7	60	40	66.7	7.23	38	19	144

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

Brown & Caldwell

Key Energy #18347.001

Analysis: Gasoline Range Organics — **WorkOrder:** 00010628
Method: SW8015B — **Lab Batch ID:** R8642

Method Blank

RunID: HP_R_000203B-180750 Units: mg/Kg
Analysis Date: 02/03/2000 12:40 Analyst: CJ

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
00010628-02A	SB-1-2-4
00010628-03A	SB-2-4-6

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	99.7	63-122
Surr: 4-Bromofluorobenzene	80.1	39-150

Laboratory Control Sample (LCS)

RunID: HP_R_000203B-180751 Units: mg/Kg
Analysis Date: 02/03/2000 14:18 Analyst: CJ

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.72	72	44	122

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 00020046-01
RunID: HP_R_000203B-180760 Units: mg/Kg
Analysis Date: 02/03/2000 23:04 Analyst: CJ

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Gasoline Range Organics	ND	0.9	0.61	67.6	0.9	0.54	59.6	12.6	50	26	147

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

Brown & Caldwell

Key Energy #18347.001

Analysis: Purgeable Aromatics
Method: SW8021B
WorkOrder: 00010628
Lab Batch ID: R8645

Method Blank

RunID: HP_R_000204A-180780 Units: ug/Kg
Analysis Date: 02/04/2000 10:58 Analyst: CJ

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
00010628-01A	SB-1-0-2

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	96.3	59-127
Surr: 4-Bromofluorobenzene	105.1	48-156

Laboratory Control Sample (LCS)

RunID: HP_R_000204A-180777 Units: ug/Kg
Analysis Date: 02/04/2000 7:42 Analyst: CJ

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	51	101	60	116
Ethylbenzene	50	49	97	68	127
Toluene	50	49	98	64	122
Xylenes,Total	150	147	98	68	129

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 00020047-01
RunID: HP_R_000204A-180778 Units: ug/Kg
Analysis Date: 02/04/2000 8:48 Analyst: CJ

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	16	78.1	20	15	73.9	5.52	34	35	139
Ethylbenzene	ND	20	15	76.0	20	15	72.7	4.51	35	31	137
Toluene	ND	20	15	76.9	20	15	74.1	3.69	28	31	137
Xylenes,Total	ND	60	45	75.0	60	44	73.3	2.25	38	19	144

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

Brown & Caldwell

Key Energy #18347.001

Analysis: Gasoline Range Organics **WorkOrder:** 00010628
Method: SW8015B **Lab Batch ID:** R8646

Method Blank

RunID: HP_R_000204B-180788 Units: mg/Kg
Analysis Date: 02/04/2000 10:58 Analyst: CJ

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
00010628-01A	SB-1-0-2

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	99.3	63-122
Surr: 4-Bromofluorobenzene	80.9	39-150

Laboratory Control Sample (LCS)

RunID: HP_R_000204B-180784 Units: mg/Kg
Analysis Date: 02/04/2000 8:15 Analyst: CJ

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.71	71	44	122

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 00020047-01
RunID: HP_R_000204B-180786 Units: mg/Kg
Analysis Date: 02/04/2000 9:52 Analyst: CJ

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Gasoline Range Organics	ND	0.9	0.64	70.9	0.9	0.7	78.1	9.66	50	26	147

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

Brown & Caldwell

Key Energy #18347.001

Analysis: Purgeable Aromatics
Method: SW8021B
WorkOrder: 00010628
Lab Batch ID: R8686

Method Blank

RunID: HP_R_000205A-181747 Units: ug/Kg
Analysis Date: 02/05/2000 2:30 Analyst: CJ

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
00010628-02A	SB-1-2-4

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	95.0	59-127
Surr: 4-Bromofluorobenzene	100.1	48-156

Laboratory Control Sample (LCS)

RunID: HP_R_000205A-181745 Units: ug/Kg
Analysis Date: 02/05/2000 1:11 Analyst: CJ

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	46	91	60	116
Ethylbenzene	50	45	90	68	127
Toluene	50	46	91	64	122
Xylenes,Total	150	137	91	68	129

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 00020047-13
RunID: HP_R_000205A-182283 Units: ug/Kg
Analysis Date: 02/07/2000 12:16 Analyst: CJ

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	17	83.0	20	16	80.2	3.43	34	35	139
Ethylbenzene	ND	20	16	81.8	20	16	78.3	4.38	35	31	137
Toluene	ND	20	17	82.6	20	15	77.4	6.52	28	31	137
Xylenes,Total	ND	60	49	81.7	60	47	78.3	4.17	38	19	144

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

Chain of Custody

And

Sample Receipt Checklist

Chain of Custody

And

Sample Receipt Checklist

SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No: 00010628

084673

page 1 of 2

Client Name: Brown & Caldwell
Address/Phone: 1415 Louisiana, #2500 Houston, TX 77002 713-759-0999
Client Contact: Dan Gibson
Project Name: Key Energy
Project Number: 17347.001
Project Location: Hobbs, NM
Invoice To: Dan Gibson

SAMPLE ID	DATE	TIME	comp	grab	matrix (W=water S=soil SL=sludge O=other:)	bottle (P=plastic A=amber glass G=glass V=vial)	size (1=1 liter 4=4oz 40=vial 8=8oz 16=16oz)	pres. (1=HCl 2=HNO3 3=H2SO4 O=other:)	Number of Containers	TPH DRO/GRO 8015	BTEX 8021							
SB-1-0-2	1/24/00	1026	✓		S	G	4	None	2	✓	✓							
SB-1-2-4	1/24/00	1037	✓		S	G	4	None	2	✓	✓							
SB-2-4-6	1/24/00	1333	✓		S	G	4	None	3	✓	✓							
SB-2-6.5-7.5	1/24/00	1339	✓		S	G	4	None	2	✓	✓							
SB-3-4-6	1/24/00	2152	✓		S	G	4	None	2	✓	✓							
SB-3-9-11	1/24/00	2202	✓		S	G	4	None	2	✓	✓							
SB-1A-6-8	1/25/00	0942	✓		S	G	4	None	3	✓	✓							
SB-1A-10-11	1/25/00	0949	✓		S	G	4	None	2	✓	✓							
SB-4-11.8-12.5	1/25/00	1206	✓		S	G	4	None	2	✓	✓							
IDW	1/25/00		✓		S	G	4	None	5	Hold.								

Client/Consultant Remarks:

Laboratory remarks:

Intact? ☐ Y ☐ N

Temp: 4

Requested TAT

24hr ☐ 72hr ☐
48hr ☐ Standard ☒
Other ☐ ______

Special Reporting Requirements: Fax Results ☒ Raw Data ☐
Standard QC ☐ Level 3 QC ☐ Level 4 QC ☐

Special Detection Limits (specify):

PM review (initial): BAF

1. Relinquished by Sampler: [signature]	date 1/26/00	time 1056	2. Received by:
3. Relinquished by:	date	time	4. Received by:
5. Relinquished by:	date	time	6. Received by Laboratory: D'Anna Stelly 1/27 1000

☒ 8880 Interchange Drive, Houston, TX 77054 (713) 660-0901
☐ 500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775
☐ 459 Hughes Drive, Traverse City, MI 49684 (616) 947-5777

SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No: 00010628 — 084672 — page 2 of 2

Client Name: Brown + Caldwell
Address/Phone: 1415 Louisiana
Client Contact: Dan Gibson
Project Name: Key Energy
Project Number: 18347.008
Project Location: Hobbs, NM
Invoice To: Dan Gibson

SAMPLE ID	DATE	TIME	comp	grab	matrix (W=water S=soil SL=sludge O=other:)	bottle (P=plastic A=amber glass G=glass V=vial)	size (1=1 liter 4=4oz 40=vial 8=8oz 16=16oz)	pres. (1=HCl 2=HNO3 3=H2SO4 O=other:)	Number of Containers	Requested Analysis: BTEX
Trip	1/26/00				W	V	40	1	2	X

Client/Consultant Remarks:

Laboratory remarks:

Intact? ☐ Y ☐ N
Temp: 4

Requested TAT

24hr ☐ 72hr ☐
48hr ☐ Standard ☒
Other ☐ _____

Special Reporting Requirements: Fax Results ☒ Raw Data ☐ Standard QC ☐ Level 3 QC ☐ Level 4 QC ☐

Special Detection Limits (specify):

PM review (initial): BAF

1. Relinquished by Sampler:	date 1/26/00	time 1056	2. Received by:
3. Relinquished by:	date	time	4. Received by:
5. Relinquished by:	date	time	6. Received by Laboratory: 1/27 1000

☐ 8880 Interchange Drive, Houston, TX 77054 (713) 660-0901
☐ 500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775
☐ 450 Hughes Drive, Traverse City, MI 49684 (616) 947-5777

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Sample Receipt Checklist

Workorder:	00010628	Received by:	Stelly, D'Anna
Date and Time Received:	1/27/00 10:00:00 AM	Carrier name:	FedEx
Temperature:	4		

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Water - VOA vials have zero headspace?	Yes ☐	No ☐	Not Present ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☑	

APPENDIX C

Water Well Search

Banks Information Solutions, Inc.

Water Well Report™

February 15, 2000

CLIENT
Brown & Caldwell 1415 Louisiana, Suite 2500 Houston, TX 77002

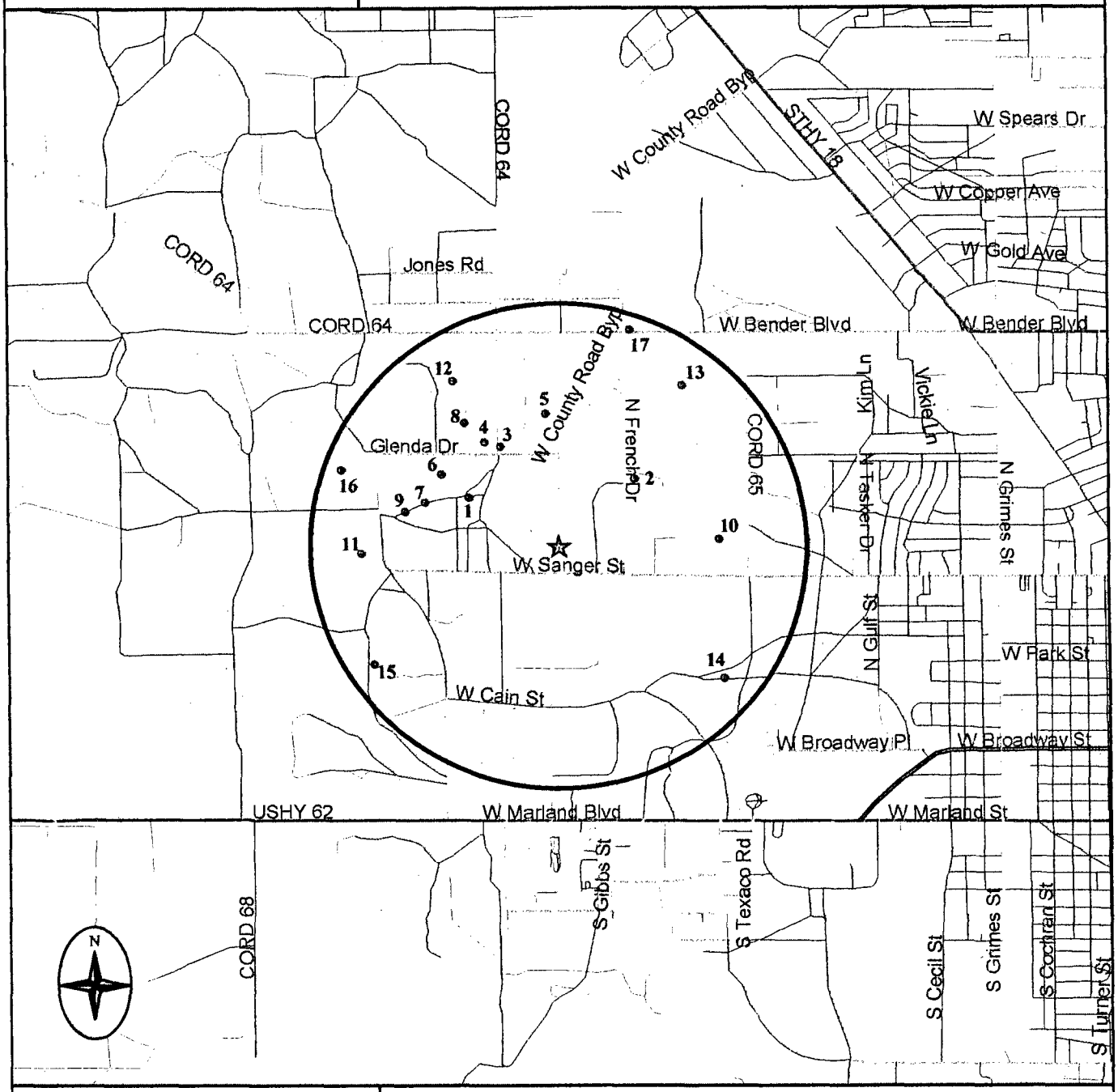
SITE
Key-Hobbs 1300 Northwest County Road Hobbs, New Mexico 021500-014

P.O. Box 12851, Capitol Station, Austin, TX 78711
1701 Nueces, Austin, TX 78701
512.478.0059 FAX 512.478.1433 e-mail banks@banksinfo.com

Banks Information Solutions, Inc.

Water Well Report™

Map of Wells within One Mile

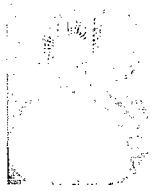


- Subject Site
- Ground Water Wells (Cluster)
- Ground Water Well
- Airport
- Hospital
- Highway
- Primary road
- Secondary and connecting road
- Local road
- Access road
- Water body
- Park
- State

0 0.25 0.5 Miles

Banks Information Solutions, Inc.
P.O. Box 12851, Capitol Station Austin, Texas 78711
1701 Nueces Austin, Texas 78701
512-478-0059 FAX 512-478-1433 E Mail: BANKS@BANKSINFO.COM

February 15, 2000



Water Well Report™

DETAILS

State ID	324257103105101
Banks ID	3502501398
Owner Of Well	PITTMAN, WAYNE
Type Of Well	Irrigation
Depth Drilled	100 '
Completion Date	N/A
Longitude	-103.18083333
Latitude	32.7158333333

MAP ID
1

State ID	324301103101001
Banks ID	3502501400
Owner Of Well	AMERADA PET. CO.
Type Of Well	Unused
Depth Drilled	N/A '
Completion Date	N/A
Longitude	-103.16944444
Latitude	32.7169444444

MAP ID
2

State ID	324308103104301
Banks ID	3502501408
Owner Of Well	N/A
Type Of Well	N/A
Depth Drilled	N/A '
Completion Date	N/A
Longitude	-103.17861111
Latitude	32.7188888889

MAP ID
3

P.O. Box 12851, Capitol Station, Austin, TX 78711
1701 Nueces, Austin, TX 78701
512.478.0059 FAX 512.478.1433 e-mail banks@banksinfo.com

Water Well Report™

DETAILS

State ID	324309103104701
Banks ID	3502501412
Owner Of Well	N/A
Type Of Well	Unused
Depth Drilled	N/A '
Completion Date	N/A
Longitude	-103.17972222
Latitude	32.7191666667

MAP ID
4

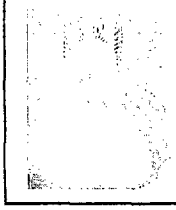
State ID	324315103103201
Banks ID	3502501416
Owner Of Well	RYLANT, W.L.
Type Of Well	Domestic
Depth Drilled	N/A '
Completion Date	N/A
Longitude	-103.17555556
Latitude	32.7208333333

MAP ID
5

State ID	324302103105801
Banks ID	3502501401
Owner Of Well	MCCOMBS, LAVERN
Type Of Well	Unused
Depth Drilled	N/A '
Completion Date	N/A
Longitude	-103.18277778
Latitude	32.7172222222

MAP ID
6

P.O. Box 12851, Capitol Station, Austin, TX 78711
1701 Nueces, Austin, TX 78701
512.478.0059 FAX 512.478.1433 e-mail banks@banksinfo.com



Water Well Report™

DETAILS

State ID	324256103110201
Banks ID	3502501396
Owner Of Well	N/A
Type Of Well	N/A
Depth Drilled	N/A '
Completion Date	N/A
Longitude	-103.18388889
Latitude	32.7155555556

MAP ID
7

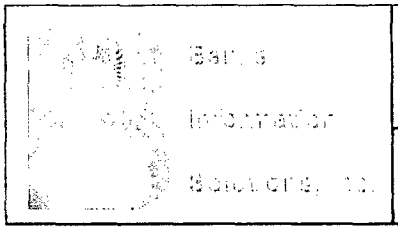
State ID	324313103105201
Banks ID	3502501414
Owner Of Well	SAYRE, J.W.
Type Of Well	Domestic
Depth Drilled	111 '
Completion Date	N/A
Longitude	-103.18111111
Latitude	32.7202777778

MAP ID
8

State ID	324254103110701
Banks ID	3502501395
Owner Of Well	N/A
Type Of Well	Unused
Depth Drilled	N/A '
Completion Date	N/A
Longitude	-103.18527778
Latitude	32.715

MAP ID
9

P.O. Box 12851, Capitol Station, Austin, TX 78711
1701 Nueces, Austin, TX 78701
512.478.0059 FAX 512.478.1433 e-mail banks@banksinfo.com



Water Well Report™

DETAILS

State ID	324248103094901
Banks ID	3502501384
Owner Of Well	TIDEWATER OIL CO.
Type Of Well	Irrigation
Depth Drilled	N/A '
Completion Date	N/A
Longitude	-103.16361111
Latitude	32.7133333333

MAP ID
10

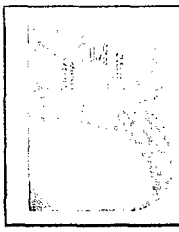
State ID	324245103111801
Banks ID	3502501382
Owner Of Well	OHIO OIL CO.
Type Of Well	Unused
Depth Drilled	55 '
Completion Date	N/A
Longitude	-103.18833333
Latitude	32.7125

MAP ID
11

State ID	324322103105501
Banks ID	3502501430
Owner Of Well	N/A
Type Of Well	N/A
Depth Drilled	70 '
Completion Date	N/A
Longitude	-103.18194444
Latitude	32.7227777778

MAP ID
12

P.O. Box 12851, Capitol Station, Austin, TX 78711
1701 Nueces, Austin, TX 78701
512.478.0059 FAX 512.478.1433 e-mail banks@banksinfo.com



Water Well Report™

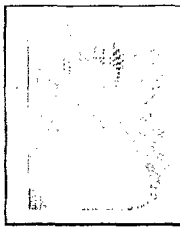
DETAILS

State ID	324321103095801	MAP ID
Banks ID	3502501426	13
Owner Of Well	N/A	
Type Of Well	Unused	
Depth Drilled	N/A '	
Completion Date	N/A	
Longitude	-103.16611111	
Latitude	32.7225	

State ID	324218103094801	MAP ID
Banks ID	3502501360	14
Owner Of Well	AMERADA PET. CO.	
Type Of Well	Unused	
Depth Drilled	76 '	
Completion Date	N/A	
Longitude	-103.16333333	
Latitude	32.705	

State ID	324221103111501	MAP ID
Banks ID	3502501364	15
Owner Of Well	JONES, V.R.	
Type Of Well	Domestic	
Depth Drilled	60 '	
Completion Date	N/A	
Longitude	-103.1875	
Latitude	32.7058333333	

P.O. Box 12851, Capitol Station, Austin, TX 78711
1701 Nueces, Austin, TX 78701
512.478.0059 FAX 512.478.1433 e-mail banks@banksinfo.com



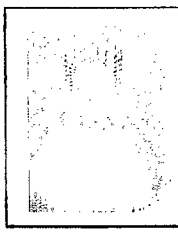
Water Well Report™

DETAILS

State ID	324303103112301	MAP ID
Banks ID	3502501402	16
Owner Of Well	AMERADA	
Type Of Well	Domestic	
Depth Drilled	120 '	
Completion Date	N/A	
Longitude	-103.18972222	
Latitude	32.7175	

State ID	324333103101101	MAP ID
Banks ID	3502501442	17
Owner Of Well	NOLEN, KEN, AND NOLEN CONSTRUCTIO	
Type Of Well	Domestic	
Depth Drilled	102 '	
Completion Date	4/26/93	
Longitude	-103.16972222	
Latitude	32.7258333333	

P.O. Box 12851, Capitol Station, Austin, TX 78711
1701 Nueces, Austin, TX 78701
512.478.0059 FAX 512.478.1433 e-mail banks@banksinfo.com



Water Well Report™

SUMMARY

Water Well Report™ Research Mapping Protocol

Banks Information Solutions, Inc. Water Well Report™ is prepared from existing state water well databases and additional file data/records research conducted at the State Engineers Office located in Roswell, New Mexico. In New Mexico, water wells are located within a grid system using section, township, and range. The locations of these wells on the enclosed map were plotted using a GIS program, ArcView 3.2, with the aid of the section, township, and range of the wells provided by the drillers logs.

Banks Information Solutions, Inc. has performed a thorough and diligent search of all groundwater well information provided and recorded with the New Mexico State Engineers Office. All mapped locations are based on information obtained from the NMSEO. Although Banks performs quality assurance and quality control on all research projects, we recognize that any inaccuracies of the records and mapped well locations could possibly be traced to the appropriate regulatory authority or the actual driller. It may be possible that some water well schedules and logs have never been submitted to the regulatory authority by the water driller and, thus, may explain the possible unaccountability of privately drilled wells. It is uncertain if the above listing provides 100% of the existing wells within the area of review. Therefore, Banks Information Solutions, Inc. cannot fully guarantee the accuracy of the data or well location(s) of those maps and records maintained by the New Mexico State Engineer regulatory authorities.

P.O. Box 12851, Capitol Station, Austin, TX 78711
1701 Nueces, Austin, TX 78701
512.478.0059 FAX 512.478.1433 e-mail banks@banksinfo.com