1R - 204

REPORTS

DATE:

11/95

SECOR

SUPPLEMENTAL ENVIRONMENTAL INVESTIGATION OF THE SOUTH FOUR LAKES TANK BATTERY

PHILLIPS PETROLEUM COMPANY
SOUTH FOUR LAKES UNIT
LEA COUNTY, NEW MEXICO
***SECOR* PROJECT NO. B0106-001-02**

Prepared For:

PHILLIPS PETROLEUM COMPANY
NORTH AMERICAN PRODUCTION
PERMIAN BASIN PROFIT CENTER
4001 PENBROOK AVENUE
ODESSA, TX 79762

Prepared By:

***SECOR* INTERNATIONAL INCORPORATED**
355 Union Boulevard Suite 200
Lakewood, Colorado 80228-1500
(303) 763-8800

November 28, 1995

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Background

This report summarizes findings of a soil and groundwater assessment for three additional monitoring wells (MW-14, MW-15 and MW-16) installed in October, 1995, at the Phillips Petroleum Company (Phillips) South Four Lakes Unit (the Unit).

Phillips Petroleum Company (Phillips) owns and operates the South Four Lakes Unit (Unit) located in Lea County, New Mexico, just north of U. S. Highway 380 and approximately 12 miles northwest of the town of Tatum (Figure 1). The Unit is an oil and gas lease containing three active producing wells, one saltwater disposal well, and associated production tank battery. Land covered by the tank battery portion (approximately five acres) of the lease is owned by the State of New Mexico. The tank battery is surrounded by relatively flat grazing lands. Regionally, topography gently slopes to the east-southeast and is sparsely vegetated.

This investigation follows the installation of nine monitoring wells in December, 1994. These activities are summarized in a report prepared by *SECOR* entitled Soil and Groundwater Assessment Report dated March 13, 1995.

As part of a corrective action requested by the State of New Mexico, Phillips submitted a remedial action plan (RAP) to the New Mexico Energy, Minerals and Natural Resources Department, Oil Conservation Division (OCD) on July 27, 1995. Approval of the RAP was granted by the OCD on August 18, 1995.

1.2 Purpose and Scope

The purpose of the additional groundwater assessment was to define the downgradient extent of: 1) the dissolved-phase (dissolved plume) petroleum hydrocarbons in groundwater; and 2) residual petroleum hydrocarbons in subsurface soil, if any (caliche). This work was preformed in accordance with Section 3.0, Delineation of the Downgradient Edge of the Dissolved Plume, of the RAP dated July, 1995. The soil and groundwater assessment included the following tasks:

1. Drilling three soil borings and installing groundwater monitoring wells; and
2. Analyzing three groundwater samples for USEPA method 8260 constituents.

This report contains three sections: 1) Section 1.0 - Introduction; 2) Section 2.0 - Field Program; and 3) Section 3.0 - Results.

2.0 FIELD PROGRAM

Field activities were performed from October 9 through 11, 1995, and included the installation of three monitor wells, measurement of groundwater levels and collection and analysis of groundwater samples. The monitor wells were positioned to characterize the downgradient extent of the dissolved-phase plume, groundwater flow direction, and gradient.

A pre-positioning walk through of the Unit was conducted on October 9, 1995. A safety meeting was conducted to explain the hazards of Hydrogen Sulfide (H_2S) gas and the required H_2S monitoring.

2.1 Soil Borings and Monitoring Well Installations

Field activities included three soil borings completed as 2-inch monitoring wells. Prior to drilling activities, a safety meeting was held and below-grade utilities were cleared by Phillips. Pool Environmental Drilling of Roswell, New Mexico, was contracted by *SECOR* to drill and install three monitoring wells. Boring locations were staked and drilling operations began at soil boring location MW-14. Clean and decontaminated auger flights were brought to the Unit to drill the three borings without having to decontaminate auger flights between boring locations. The locations of these soil borings and associated monitoring wells are shown on Figure 2.

Borings were drilled utilizing hollow stem auger techniques with a truck mounted CME 75 drill rig. The three boring locations were drilled to a maximum depth of 35 feet bgs, continuous coring methods were used when possible to obtain a representative stratigraphic record from each soil boring.

A description of the cores are provided on the boring logs provided in Appendix A. A PhotoIonization Detector (PID) Model PGM-75K/SV, manufactured by RAE Systems was used to detect the presence of volatile organic hydrocarbons in recovered soil core. A representative portion of each core sample was broken up, placed in a plastic bag and sealed. The samples were allowed to volatilize and equilibrate at 70° F prior to measuring vapor concentrations in the headspace.

After advancement of the augers to the pre-determined installation depth of 35 feet bgs, approximately 15 feet of 0.020 machine slotted Schedule 40 PVC screen and 20 feet of flush thread PVC blank riser casing was lowered inside the hollow stem augers to the total depth drilled leaving a 2½ feet of PVC

casing stickup. A filter pack was installed incrementally in the annulus around the monitoring well screen as the augers were withdrawn. The filter pack consisted of clean 10/20 sand and was installed from the bottom of the bore hole to 1½ to 2½ feet above the top of the screen in each well bore. To prevent bridging, a weighted tape measure was used continuously to monitor the filter pack installation.

Borings (MW-14 through MW-16) were completed using two-inch Schedule 40 flush joint PVC casing; 15 feet of 0.020 inch slotted screen and 20 feet of blank riser. Depth to groundwater in the monitoring wells averaged 24 feet bgs. The wells were constructed in accordance with State of New Mexico OCD guidelines, with a minimum of five feet of well screen above the water table to accommodate for seasonal fluctuations in the static groundwater elevation. Boring and Well Completion logs are presented in Appendix A.

2.2 Monitoring Well Development and Groundwater Sampling

Monitoring well development and groundwater sampling were performed on October 10 and 11, 1995. Wells MW-14, MW-15 and MW-16 were developed to restore natural permeability of the surrounding formation and to purge sediment and groundwater affected by construction activities. To ensure natural permeability around the well bores each new well was purged of a minimum of five wet casing volumes of groundwater.

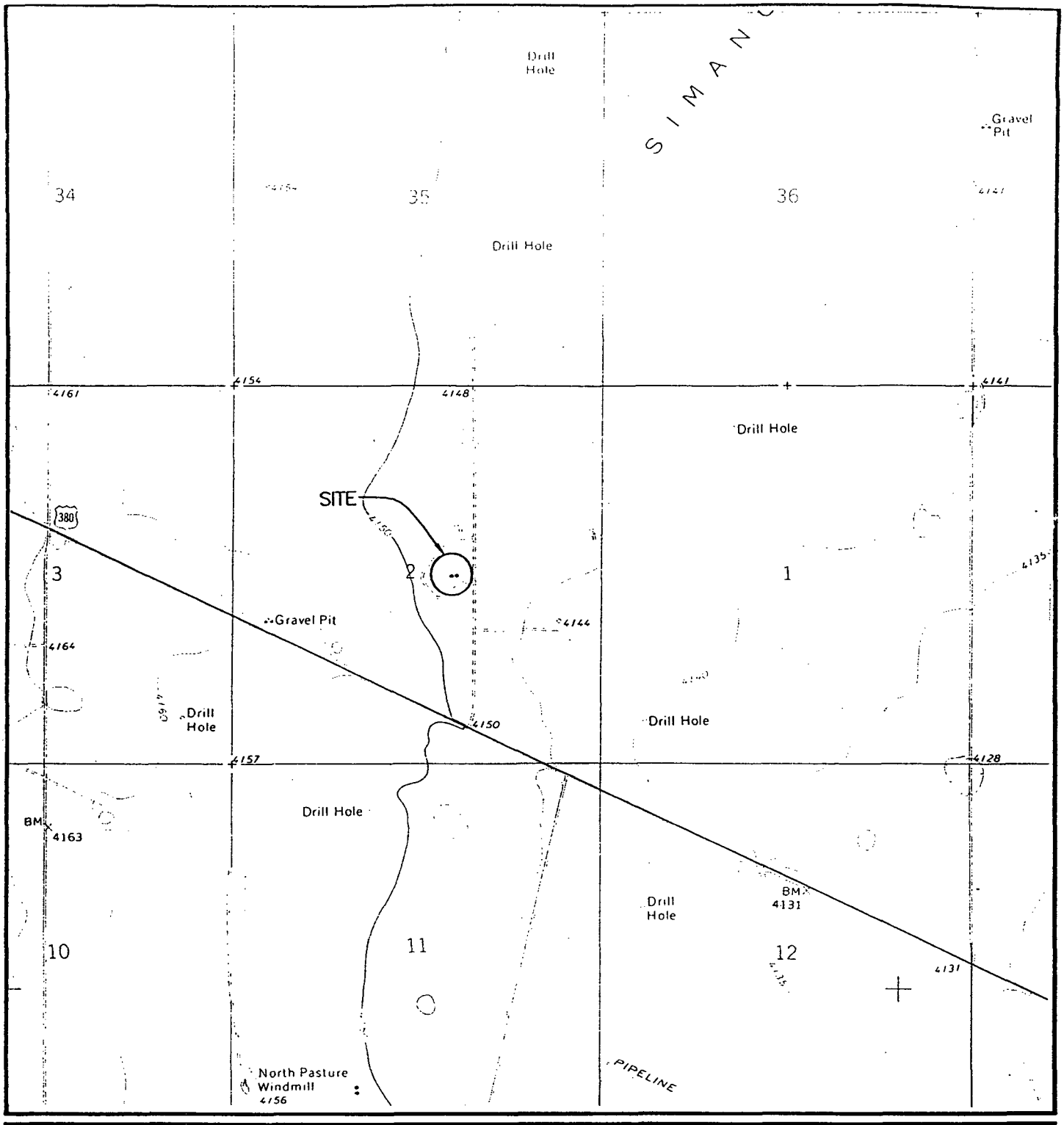
Groundwater samples were collected on October 11, 1995, from MW-14, MW-15 and MW-16 using disposable bailers. Each sample was placed in laboratory supplied 40-milliliter VOA vials. Groundwater samples were labeled, preserved in an ice filled cooler and transported under Chain-Of-Custody procedures (Appendix B) to Heritage Environmental Services in Indianapolis, Indiana. Groundwater samples were analyzed for:

Constituent	Analytical Method
Volatile Organic Compounds (including Naphthalene)	USEPA 8260

Groundwater level measurements are summarized in Table 1, analytical results are summarized in Table 2 and the analytical report is included as Appendix B.

3.0 RESULTS

Field-screening PID measurements and visual observations of the sediment core from soil borings (Appendix A) indicate the edge of the dissolved -phase plume extends just to the southeast of MW-15 as shown on Figure 4. Dissolved volatile organic compounds were not detected in groundwater samples from MW-14 nor MW-16.



NEW MEXICO

QUADRANGLE LOCATION

U.S.G.S. 7.5 MINUTE SERIES (TOPOGRAPHIC)

SIMANOLA VALLEY QUADRANGLE
NEW MEXICO

2,000 0 2,000

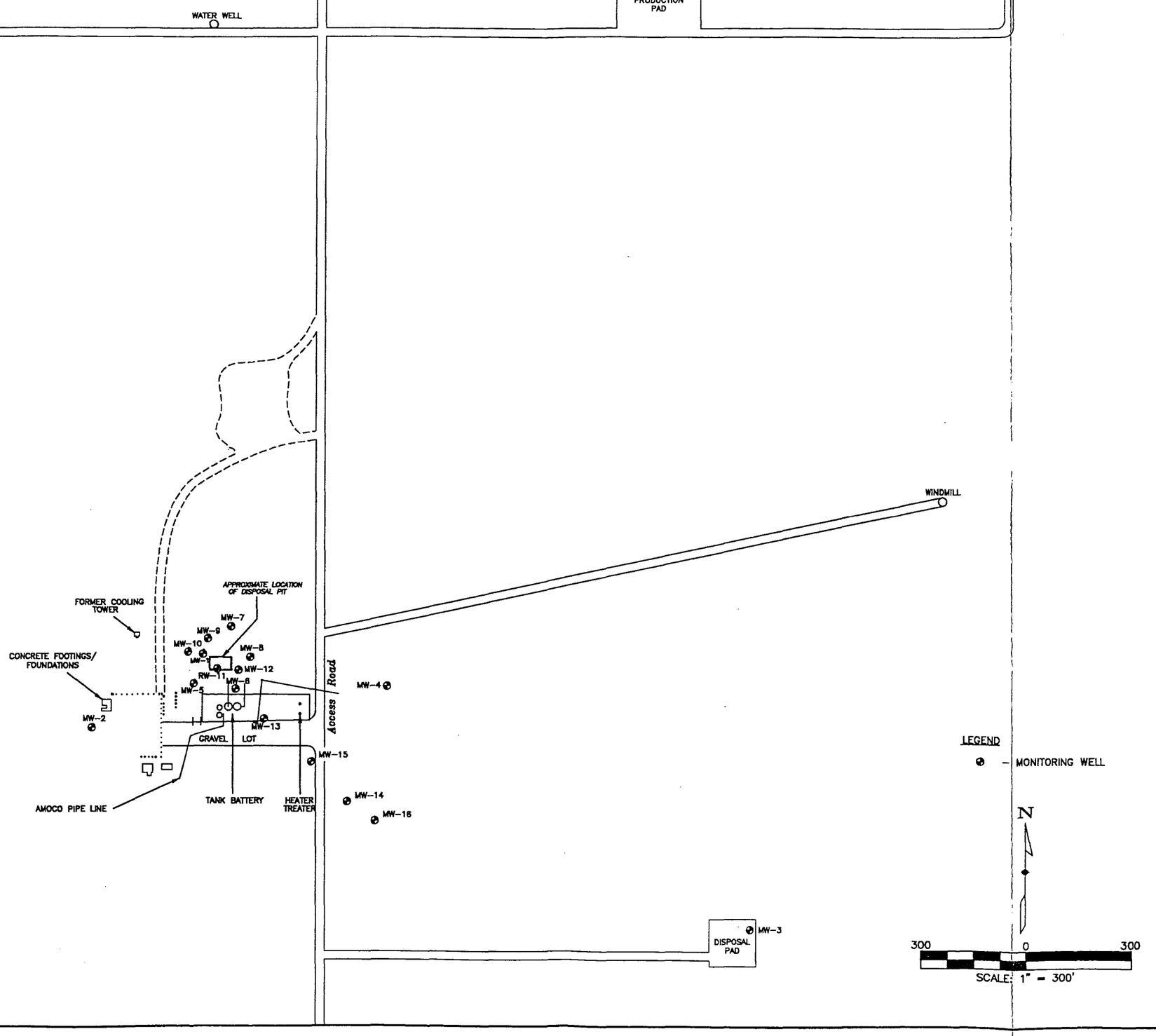
SCALE: 1" = 2,000'
CONTOUR INTERVAL: 5 FEET
PHOTO DATE: 1970

N

Figure 1 *Site Location Map*	PHILLIPS PETROLEUM COMPANY South Four Lakes Unit Lea County, New Mexico

SECOR
355 Union Boulevard
Suite 200
Lakewood, Colorado 80228

DWN	SDP
APPR	TRS
DATE	02/14/95
JOB NO.	b0106-001-01



NO.	DATE	INT.	REVISION

NO.	DATE	INT.	REVISION

NOTES/COMMENTS:

MW-14, MW-15, AND MW-16 HAVE NOT BEEN SURVEYED. LOCATIONS ARE APPROXIMATE.

SIGNATURE	DATE
REVIEW ENGR:	
PROJECT ENGR:	
PROJECT MGR:	
CLIENT:	

PREPARED BY

SECOR INTERNATIONAL INCORPORATED

SECOR

355 UNION BOULEVARD
SUITE 200
LAKEWOOD, COLORADO 80228

PREPARED FOR

PHILLIPS PETROLEUM COMPANY

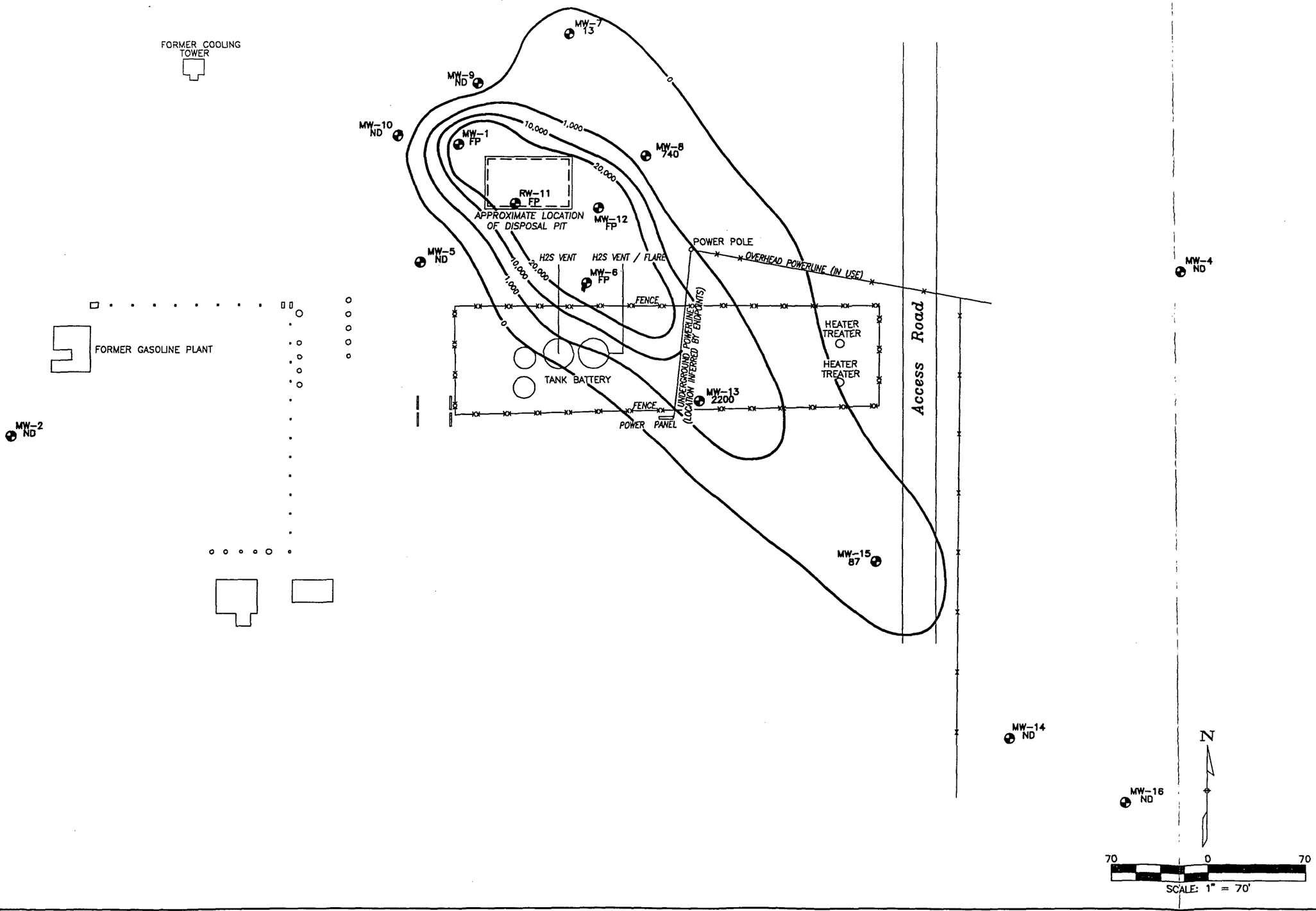
NORTH AMERICA PRODUCTION
PERMIAN BASIN REGION

SOUTH FOUR LAKES UNIT
LEA COUNTY, NEW MEXICO

MONITORING WELL LOCATION MAP

DESIGNED BY:	DETAILED BY:	CHECKED BY:
	SDP/DJZ	TPS
DATE: 11/20/95		ACAD FILE: BAS-0212
PROJECT NO.: B0106-001-02		PLOT SCALE: 1" = 1'

FIGURE 2



NO.	DATE	INIT.	REVISION

NO.	DATE	INIT.	REVISION

LEGEND

- MW-1 FP — MONITORING WELL
- FP — FREEPHASE PETROLEUM
- ND — NOT DETECTED
- 87 — BENZENE CONCENTRATION IN GROUNDWATER (mg/l) BASED ON SAMPLES COLLECTED ON 1/17/95, 10/11/95.

SIGNATURE		DATE
REVIEW ENGR:		
PROJECT ENGR:		
PROJECT MGR:		
CLIENT:		

PREPARED BY:

SECOR INTERNATIONAL INCORPORATED

SECOR

355 UNION BOULEVARD
SUITE 200
LAKEWOOD, COLORADO 80228

PREPARED FOR:

PHILLIPS PETROLEUM COMPANY

NORTH AMERICA PRODUCTION
PERMIAN BASIN REGION

SOUTH FOUR LAKES UNIT
LEA COUNTY, NEW MEXICO

BENZENE ISOCONCENTRATION MAP

DESIGNED BY:	DETAILED BY:	CHECKED BY:
	SDP	TRS
DATE: 11/20/95		ACAD FILE: LOC-0109
PROJECT NO.: 80105-001-02		PLOT SCALE: 1" = 1'

FIGURE 3

TABLE 1

SUMMARY OF GROUNDWATER LEVEL MEASUREMENTS
PHILLIPS PETROLEUM COMPANY
SOUTH FOUR LAKES UNIT
LEA COUNTY, NEW MEXICO
SECOR PROJECT NO. B0106-001-02 SA 0511

Monitor Well No.	Date of Measurement	Casing Elevation*	Depth to Groundwater (ft.)	Groundwater Elevation (ft.)**	Free Product Thickness (ft.)
MW-1	01/04/95	4149.13	26.05	4124.33	1.55
	01/17/95		26.37	4124.34	1.96
	10/10/95		NM	NM	NM
MW-2	01/04/95	4151.50	26.64	4124.86	ND
	01/17/95		26.61	4124.89	ND
	10/10/95		26.98	4124.52	ND
MW-3	01/04/95	4146.80	NM	NM	ND
	01/17/95		25.74	4121.06	ND
	10/10/95		26.13	4120.67	ND
MW-4	01/04/95	4148.58	25.14	4123.44	ND
	01/17/95		25.18	4123.40	ND
	10/10/95		25.54	4123.04	ND
MW-5	01/04/95	4150.40	26.04	4126.36	ND
	01/17/95		25.98	4124.42	ND
	10/10/95		26.33	4124.07	ND
MW-6	01/04/95	4149.90	28.88	4123.99	3.68
	01/17/95		28.93	4124.04	3.81
	10/10/95		NM	NM	NM
MW-7	01/04/95	4149.16	24.85	4124.31	ND
	01/17/95		24.85	4124.31	ND
	10/10/95		25.17	4123.99	ND
MW-8	01/04/95	4148.81	24.66	4124.15	ND
	01/17/95		24.66	4124.15	ND
	10/10/95		NM	NM	NM
MW-9	01/04/95	4149.63	25.20	4124.43	ND
	01/17/95		25.16	4124.47	ND
	10/10/95		25.52	4124.11	ND

TABLE 1 (continued)

SUMMARY OF GROUNDWATER LEVEL MEASUREMENTS
PHILLIPS PETROLEUM COMPANY
SOUTH FOUR LAKES UNIT
LEA COUNTY, NEW MEXICO
SECOR PROJECT NO. B0106-001-01 SA 0511

Monitor Well No.	Date of Measurement	Casing Elevation*	Depth to Groundwater (ft.)	Groundwater Elevation (ft.)**	Free Product Thickness (ft.)
MW-10	01/04/95	4149.98	25.45	4124.53	ND
	01/17/95		25.45	4124.53	ND
	10/10/95		25.79	4124.19	ND
RW-11	01/04/95	4149.86	28.40	4124.06	3.22
	01/17/95		28.76	4124.07	3.69
	10/10/95		NM	NM	NM
MW-12	01/04/95	4149.15	25.30	4124.13	0.35
	01/17/95		25.58	4124.16	0.73
	10/10/95		NM	NM	NM
MW-13	01/04/95	4150.31	26.42	4123.89	ND
	01/17/95		26.39	4123.92	ND
	10/10/95		26.76	4123.55	ND
MW-14	10/11/95	NM	28.93	UNK	ND
MW-15	10/11/95	NM	27.47	UNK	ND
MW-16	10/11/95	NM	28.59	UNK	ND

Note: ND = Not detected
NM = Not measured.
* Casing Elevations surveyed to Mean Sea Level
** Correction equation for free-phase is Casing Elevation - Depth to Water +(0.802 x Product Thickness).

TABLE 2

SUMMARY OF CHEMICAL ANALYTICAL DATA
PHILLIPS PETROLEUM COMPANY
SOUTH FOUR LAKES UNIT
LEA COUNTY, NEW MEXICO
SECOR PROJECT B0106-001-02 SA0511

		SAMPLE LOCATION			
Date Sampled	Parameter	MW-14	MW-15	MW-16	TRIP BLANK
11-Oct-95	Benzene	BDL	87	BDL	BDL
11-Oct-95	Bromobenzene	BDL	BDL	BDL	BDL
11-Oct-95	Bromochloromethane	BDL	BDL	BDL	BDL
11-Oct-95	Bromodichloromethane	BDL	BDL	BDL	BDL
11-Oct-95	Bromoform	BDL	BDL	BDL	BDL
11-Oct-95	Bromomethane	BDL	BDL	BDL	BDL
11-Oct-95	n-Butylbenzene	BDL	BDL	BDL	BDL
11-Oct-95	sec-Butylbenzene	BDL	11	BDL	BDL
11-Oct-95	tert-Butylbenzene	BDL	BDL	BDL	BDL
11-Oct-95	Carbon Tetrachloride	BDL	BDL	BDL	BDL
11-Oct-95	Chlorobenzene	BDL	BDL	BDL	BDL
11-Oct-95	Dibromochloromethane	BDL	BDL	BDL	BDL
11-Oct-95	Chloroethane	BDL	BDL	BDL	BDL
11-Oct-95	Chloroform	BDL	BDL	BDL	BDL
11-Oct-95	Chloromethane	BDL	BDL	BDL	BDL
11-Oct-95	2-Chlorotoluene	BDL	BDL	BDL	BDL
11-Oct-95	4-Chlorotoluene	BDL	BDL	BDL	BDL
11-Oct-95	1,2-Dibromo-3-Chloropropane (DBCP)	BDL	BDL	BDL	BDL
11-Oct-95	1,2-Dibromoethane (EDB)	BDL	BDL	BDL	BDL
11-Oct-95	Dibromomethane	BDL	BDL	BDL	BDL
11-Oct-95	1,2-Dichlorobenzene	BDL	BDL	BDL	BDL
11-Oct-95	1,3-Dichlorobenzene	BDL	BDL	BDL	BDL
11-Oct-95	1,4-Dichlorobenzene	BDL	BDL	BDL	BDL
11-Oct-95	Dichlorodifluoromethane	BDL	BDL	BDL	BDL
11-Oct-95	1,1-Dichloroethane	BDL	BDL	BDL	BDL
11-Oct-95	1,2-Dichloroethane	BDL	BDL	BDL	BDL
11-Oct-95	1,1-Dichloroethene	BDL	BDL	BDL	BDL
11-Oct-95	cis-1,2-Dichloroethene	BDL	BDL	BDL	BDL
11-Oct-95	trans-1,2-Dichloroethene	BDL	BDL	BDL	BDL
11-Oct-95	1,2-Dichloropropane	BDL	BDL	BDL	BDL
11-Oct-95	1,3-Dichloropropane	BDL	BDL	BDL	BDL
11-Oct-95	2,2-Dichloropropane	BDL	BDL	BDL	BDL
11-Oct-95	1,1-Dichloropropene	BDL	BDL	BDL	BDL
11-Oct-95	Ethyl Benzene	BDL	770	BDL	BDL
11-Oct-95	Hexachlorobutadiene	BDL	BDL	BDL	BDL
11-Oct-95	Isopropylbenzene	BDL	66	BDL	BDL
11-Oct-95	4-Isopropyltoluene	BDL	7	BDL	BDL
11-Oct-95	Dichloromethane	BDL	BDL	BDL	BDL
11-Oct-95	Naphthalene	BDL	170	BDL	BDL
11-Oct-95	n-Propylbenzene	BDL	72	BDL	BDL
11-Oct-95	Styrene	BDL	BDL	BDL	BDL
11-Oct-95	1,1,1,2-Tetrachloroethane	BDL	BDL	BDL	BDL
11-Oct-95	1,1,2,2-Tetrachloroethane	BDL	BDL	BDL	BDL
11-Oct-95	Tetrachloroethene	BDL	BDL	BDL	BDL

TABLE 2

SUMMARY OF CHEMICAL ANALYTICAL DATA
PHILLIPS PETROLEUM COMPANY
SOUTH FOUR LAKES UNIT
LEA COUNTY, NEW MEXICO
SECOR PROJECT B0106-001-02 SA0511

		SAMPLE LOCATION			
Date Sampled	Parameter	MW-14	MW-15	MW-16	TRIP BLANK
11-Oct-95	Toluene	BDL	1,100	BDL	BDL
11-Oct-95	1,2,3-Trichlorobenzene	BDL	BDL	BDL	BDL
11-Oct-95	1,2,4-Trichlorobenzene	BDL	310	BDL	BDL
11-Oct-95	1,1,1-Trichloroethane	BDL	BDL	BDL	BDL
11-Oct-95	1,1,2-Trichloroethane	BDL	BDL	BDL	BDL
11-Oct-95	Trichloroethene	BDL	BDL	BDL	BDL
11-Oct-95	Trichlorofluoromethane	BDL	BDL	BDL	BDL
11-Oct-95	1,2,3-Trichloropropane	BDL	BDL	BDL	BDL
11-Oct-95	1,2,4-Trimethylbenzene	BDL	BDL	BDL	BDL
11-Oct-95	1,3,5-Trimethylbenzene	BDL	BDL	BDL	BDL
11-Oct-95	Vinyl Chloride	BDL	BDL	BDL	BDL
11-Oct-95	o-Xylene	BDL	870	BDL	BDL
11-Oct-95	m/p-Xylene	BDL	1,200	BDL	BDL

Note: All values reported in micrograms per liter , ug/l, (ppb).
BDL - Below detection limit (5.0 ug/l)

APPENDIX A

BOREHOLE LOGS

AND

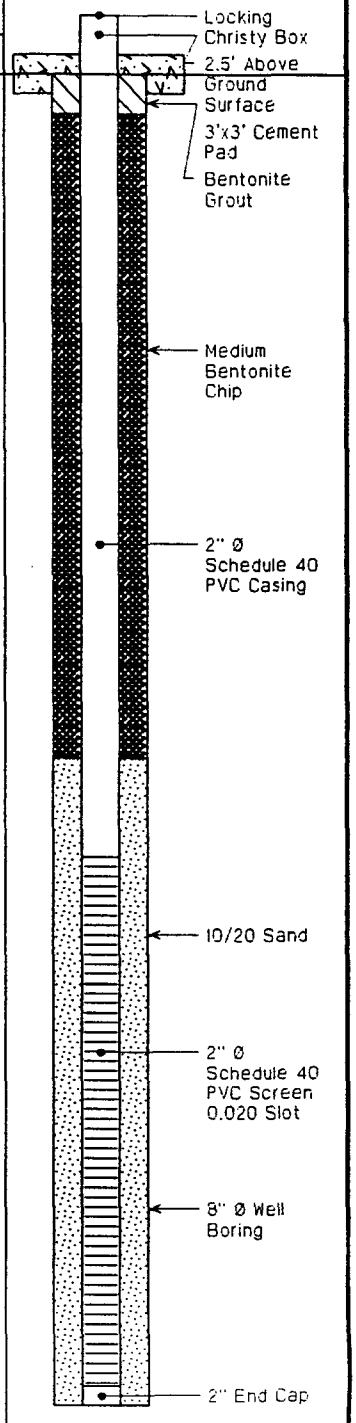
WELL CONSTRUCTION DIAGRAMS

Monitoring Well No. MW-14

PROJECT: Phillips South Four Lakes
DATE: 10/9/95
LOGGED BY: Tom Stotler
DRILL RIG: Pool Environmental Drilling, Roswell, NM.
HOLE DIA.: 8.0 in.
SAMPLER: 5' Continuous Sampler
INITIAL GW DEPTH: ft.
FINAL GW: 28.34 ft.
CASING ELEV.: NA

DESCRIPTION	USCS CLASS	DEPTH	BLOWS/6"	PID (ppm)
LOSES: Sandy, Fine Grained to Very Fine Grained, Some Calachie, Cobbles. Tan to Red, Moist.	ML	0-4		
LOSES: As Above.	ML	4-9		1.3
SAND: Very Fine Grained, Silty, Tan to Buff, Semi Moist to Dry.	SM	9-12		0.0 0.0 0.0
CALICHE: White, Dense, Dry, Very Fine Grained.		12-13		0.0
CALICHE: White, Dense, Plastic, Some Iron Staining, Semi Moist, No PHC Odor or Staining.		13-19		0.0 0.0 0.1 0.0 0.1
CALICHE: As Above. Refusal at 20' Will Come Out and Drill. Calicified Layer at 20' and 21', Very Hard Rock, Dry Below 20'.		19-21		0.1 0.0 0.0
CALICHE: Very Hard, Calicified.		21-23		
Will Attempt 2' Split Spoon, As Above With Attempt Coring, No Returns, Will Drill to Total Depth.	SM	23-28		
Grounwater Elevation 28.34'		28	54/6	0.0
SAND: Very Fine Grained, Tan to Buff. Wet.		28-34		NR
TOTAL DEPTH = 34.0 FEET		34		

WELL CONSTRUCTION DETAIL



SECOR

SECOR International Incorporated
Denver, Colorado

Notes:
Back Ground Reading PID 0.9 - 1.3 PPM.

Project No.
B0106-001-02

Page 1 of 1

Monitoring Well No. MW-15

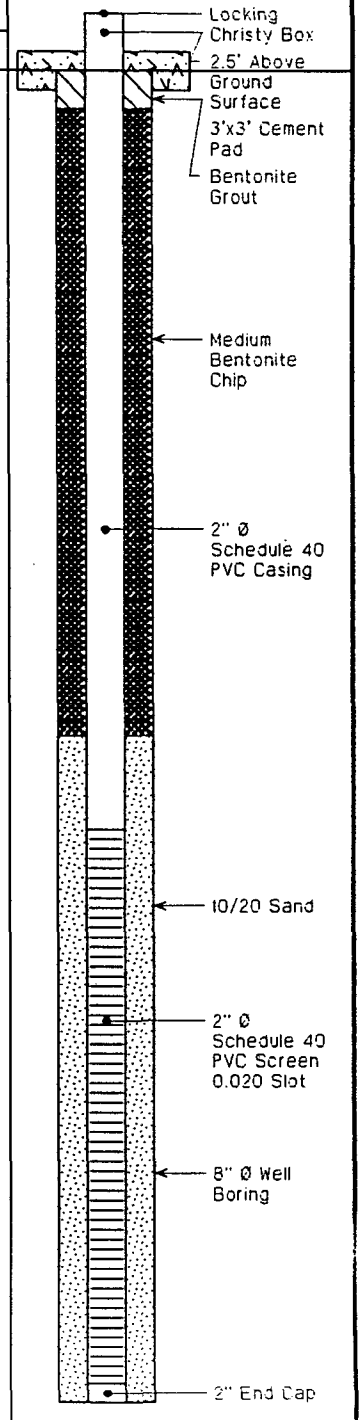
PROJECT: Phillips South Four Lakes
DRILL RIG: Pool Environmental Drilling, Roswell, NM.
INITIAL GW DEPTH: ft.

DATE: 10/9/95
HOLE DIA.: 8.0 in.
FINAL GW: 27.47 ft.

LOGGED BY: Tom Stotler
SAMPLER: 5' Continuous Sampler
CASING ELEV.: NA

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	BLOWS/6"	SAMPLE	PID (ppm)
▼			0			
CLAY: Silty, Brown, Moist, Organic Odor.	ML		1			
CALICHE: Tan to Buff, Clayey, Moist, No PHC Odor or Staining.			2			
			3			
CALICHE: As Above, Dry.			4			
			5			
			6			
			7			
			8		⊠	
CALICHE: White to Tan, Hard, Semi Moist, No OHC Odor.			9		⊠	0.0
			10		⊠	0.0
			11		⊠	0.0
			12		⊠	
			13		⊠	0.0
CALICHE: White, Sandy, Some Large Fragments, Clayey, Semi Moist, No PHC Odor or Staining.			14		⊠	
Refusal, Will Drill with Center Rod.			15		⊠	0.0
Drilled 15' to 17' Hard. Broke out at 17', Drilled to 18'.			16			
CALICHE: Clayey, Moist, Gray Buff.			17			
			18			
2' Split Spoon			19			
CALICHE: White Very Fine Grained, Some Clay, Slight Moist.			20	31 50	⊠	0.0
Bent in Well 5' Spoon, Will Not Pass 12'.			21			
CALICHE: No PHC Odor or Staining.			22			
			23			
			24			
SAND: Very Fine Grained, Well Sorted, Wet, Slight Odor.	SM		25	53/5	⊠	1999
SAND: As Above, Staining at 26.5', Odor.			26	18 20	⊠	266
			27	21		
▼ Groundwater Elevation 27.47'			28			
SAND: As Above, Wet First 6", Moist for Lower 1'.	SM		29			
			30	10 24	⊠	0.0
			31	34		
			32			
			33			
			34			
			35		⊠	0.0
TOTAL DEPTH = 35 FEET at 17:30			36			

WELL CONSTRUCTION DETAIL



SECOR

SECOR International Incorporated
Denver, Colorado

Notes:

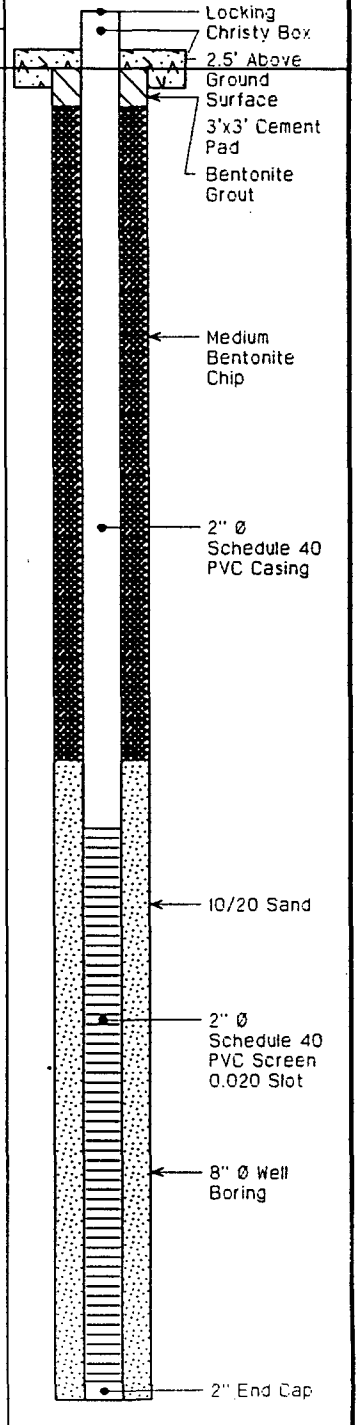
Project No.
B0106-001-02

Monitoring Well No. MW-16

PROJECT: Phillips South Four Lakes
DATE: 10/10/95
LOGGED BY: Tom Stotler
DRILL RIG: Pool Environmental Drilling, Roswell, NM.
HOLE DIA.: 8.0 in.
SAMPLER: 5' Continuous Sampler
INITIAL GW DEPTH: ft.
FINAL GW: 28.59 ft.
CASING ELEV.: NA

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	BLOWS/6"	SAMPLE	PID (ppm)
▼			0			
LOSES: Clayey, Moist, Red, Very Fine Grained, No PHC Odor or Staining.	ML		1			
CALICHE: Very Fine Grained, Tan to Buff, Dry, Clayey, No Staining or Odor.	ML		2			
			3			
			4			
CALICHE: Sandy, Very Fine Grained, Tan to Buff, Dry, Some Clay, Soft, No PHC Odor or Staining, Crumbles.			5			0.0
			6			0.0
			7			0.0
			8			0.0
CALICHE: As Above.			9			0.0
			10			0.0
CALICHE: Tan to Buff, Clayey, Dense, Crumbles, No PHC Odor or Staining.			11			0.0
CALICHE: Becomes Very Dense, Predominantly White.			12			0.0
Refusal.			13			0.0
CALICHE: White, Dense, Clayey, Plastic, No Staining or Odor.			14			
			15			
CALICHE: Hard Layer. Drilling Very Slowly.			16			
			17			
			18			
Sample at 19'.			19			
CALICHE: Dense, White to Light Gray, Slightly Moist, No PHC Odor or Staining.			20	10		0.0
				10		0.0
Hole Deviated too Much. Moved 10' NW to Redrill. Will Redrill to 20' and Continue Sampling.			21	20		0.0
CALICHE: Hard.			22			
			23			
			24			
CALICHE: Hard. Refusal, Will Drill to Water and Then Sample.			25			0.0
SAND: Very Fine Grained, Tan to Buff, Wet, Hard Streaks, Well Cemented. No PHC Odor or Staining.	SM		26	54/6		0.0
			27			
SAND: As Above.			28	52		0.0
▼ Grounwater Elevation 28.59'			29	56/5		
SAND: Very Fine Grained, Tan, Wet, Well Sorted, No PHC Odors or Staining.			30			
			31			
			32			
			33			
			34			
			35			
TOTAL DEPTH = 35 FEET			36			

WELL CONSTRUCTION DETAIL



SECOR

SECOR International Incorporated
Denver, Colorado

Notes:

Project No.
B0106-001-02

APPENDIX B

LABORATORY REPORTS

AND

CHAIN-OF-CUSTODY DOCUMENTATION

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8305	13-OCT-95		A357044
	Complete	PO Number	
	17-OCT-95	WRK ORD #63-2408	
	Printed	Sampled	
	17-OCT-95	11-OCT-95	

Report To	Bill To
TOM STOTLER SECOR 355 UNION BOULEVARD, SUITE 200 LAKEWOOD, CO 80228-1500	STEVE DE ALBUQUERQUE PHILLIPS PETROLEUM; HOUSTON 6330 WEST LOOP SOUTH BELLAIRE, TX 77401

Sample Description

SAMPLE ID: B0106-001-02-MW-14
SAMPLED BY: TOM STOTLER (SECOR)

VOLATILE ORGANICS (CAPILLARY COLUMN) SW846-8260A

Analyst: H. WILLIAMS Analysis Date: 16-OCT-95 10:42 Instrument: GC/MS VOA Test: 0510.6.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	5.0	ug/L
BROMOBENZENE	BDL	5.0	ug/L
BROMOCHLOROMETHANE	BDL	5.0	ug/L
BROMODICHLOROMETHANE	BDL	5.0	ug/L
BROMOFORM	BDL	5.0	ug/L
BROMOMETHANE	BDL	5.0	ug/L
N-BUTYLBENZENE	BDL	5.0	ug/L
SEC-BUTYLBENZENE	BDL	5.0	ug/L
TERT-BUTYLBENZENE	BDL	5.0	ug/L
CARBON TETRACHLORIDE	BDL	5.0	ug/L
CHLOROBENZENE	BDL	5.0	ug/L
DIBROMOCHLOROMETHANE	BDL	5.0	ug/L
CHLOROETHANE	BDL	5.0	ug/L
CHLOROFORM	BDL	5.0	ug/L
CHLOROMETHANE	BDL	5.0	ug/L
2-CHLOROTOLUENE (O-CHLOROTOLUENE)	BDL	5.0	ug/L
4-CHLOROTOLUENE (P-CHLOROTOLUENE)	BDL	5.0	ug/L
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	BDL	5.0	ug/L
1,2-DIBROMOETHANE (EDB)	BDL	5.0	ug/L
DIBROMOMETHANE	BDL	5.0	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5.0	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5.0	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5.0	ug/L
DICHLORODIFLUOROMETHANE	BDL	5.0	ug/L
1,1-DICHLOROETHANE	BDL	5.0	ug/L
1,2-DICHLOROETHANE	BDL	5.0	ug/L
1,1-DICHLOROETHENE	BDL	5.0	ug/L
CIS-1,2-DICHLOROETHENE	BDL	5.0	ug/L
TRANS-1,2-DICHLOROETHENE	BDL	5.0	ug/L
1,2-DICHLOROPROPANE	BDL	5.0	ug/L
1,3-DICHLOROPROPANE	BDL	5.0	ug/L
2,2-DICHLOROPROPANE	BDL	5.0	ug/L
1,1-DICHLOROPROPENE	BDL	5.0	ug/L
ETHYL BENZENE	BDL	5.0	ug/L

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: A357044

Parameter	Result	Det. Limit	Units
HEXACHLOROBUTADIENE	BDL	5.0	ug/L
ISOPROPYLBENZENE (CUMENE)	BDL	5.0	ug/L
4-ISOPROPYLTOLUENE (P-ISOPROPYLTOLUENE)	BDL	5.0	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5.0	ug/L
NAPHTHALENE	BDL	5.0	ug/L
N-PROPYLBENZENE	BDL	5.0	ug/L
STYRENE	BDL	5.0	ug/L
1,1,1,2-TETRACHLOROETHANE	BDL	5.0	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5.0	ug/L
TETRACHLOROETHENE	BDL	5.0	ug/L
TOLUENE	BDL	5.0	ug/L
1,2,3-TRICHLOROBENZENE	BDL	5.0	ug/L
1,2,4-TRICHLOROBENZENE	BDL	5.0	ug/L
1,1,1-TRICHLOROETHANE	BDL	5.0	ug/L
1,1,2-TRICHLOROETHANE	BDL	5.0	ug/L
TRICHLOROETHENE	BDL	5.0	ug/L
TRICHLOROFLUOROMETHANE	BDL	5.0	ug/L
1,2,3-TRICHLOROPROPANE	BDL	5.0	ug/L
1,2,4-TRIMETHYLBENZENE	BDL	5.0	ug/L
1,3,5-TRIMETHYLBENZENE	BDL	5.0	ug/L
VINYL CHLORIDE	BDL	5.0	ug/L
O-XYLENE	BDL	5.0	ug/L
M/P-XYLENE	BDL	5.0	ug/L
...			
SURROGATE RECOVERY			

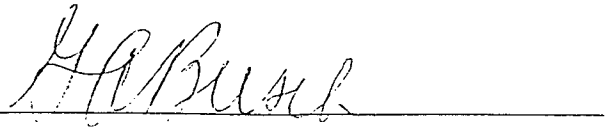
DICHLOROETHANE-D4	107		% Rec
TOLUENE-D8	105		% Rec
4-BROMOFLUOROBENZENE	99		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 42748.

Additional copies of this report sent to:
STEVE DE ALBUQUERQUE, PHILLIPS PETROLEUM COMPANY
6330 WEST LOOP SOUTH, BELLAIRE, TX 77401

Approved : 

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8305	13-OCT-95		A357045
	Complete	PO Number	
	17-OCT-95	WRK ORD #63-2408	
	Printed	Sampled	
	17-OCT-95	11-OCT-95 08:29	

Report To	Bill To
TOM STOTLER SECOR 355 UNION BOULEVARD, SUITE 200 LAKEWOOD, CO 80228-1500	STEVE DE ALBUQUERQUE PHILLIPS PETROLEUM; HOUSTON 6330 WEST LOOP SOUTH BELLAIRE, TX 77401

Sample Description

SAMPLE ID: B0106-001-02-MW-15
SAMPLED BY: TOM STOTLER (SECOR)

VOLATILE ORGANICS (CAPILLARY COLUMN) SW846-8260A

Analyst: H. WILLIAMS Analysis Date: 16-OCT-95 12:05 Instrument: GC/MS VOA Test: 0510.6.0

Parameter	Result	Det. Limit	Units
BENZENE	87	5.0	ug/L
BROMOBENZENE	BDL	5.0	ug/L
BROMOCHLOROMETHANE	BDL	5.0	ug/L
BROMODICHLOROMETHANE	BDL	5.0	ug/L
BROMOFORM	BDL	5.0	ug/L
BROMOMETHANE	BDL	5.0	ug/L
N-BUTYLBENZENE	BDL	5.0	ug/L
SEC-BUTYLBENZENE	11	5.0	ug/L
TERT-BUTYLBENZENE	BDL	5.0	ug/L
CARBON TETRACHLORIDE	BDL	5.0	ug/L
CHLOROBENZENE	BDL	5.0	ug/L
DIBROMOCHLOROMETHANE	BDL	5.0	ug/L
CHLOROETHANE	BDL	5.0	ug/L
CHLOROFORM	BDL	5.0	ug/L
CHLOROMETHANE	BDL	5.0	ug/L
2-CHLOROTOLUENE (O-CHLOROTOLUENE)	BDL	5.0	ug/L
4-CHLOROTOLUENE (P-CHLOROTOLUENE)	BDL	5.0	ug/L
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	BDL	5.0	ug/L
1,2-DIBROMOETHANE (EDB)	BDL	5.0	ug/L
DIBROMOMETHANE	BDL	5.0	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5.0	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5.0	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5.0	ug/L
DICHLORODIFLUOROMETHANE	BDL	5.0	ug/L
1,1-DICHLOROETHANE	BDL	5.0	ug/L
1,2-DICHLOROETHANE	BDL	5.0	ug/L
1,1-DICHLOROETHENE	BDL	5.0	ug/L
CIS-1,2-DICHLOROETHENE	BDL	5.0	ug/L
TRANS-1,2-DICHLOROETHENE	BDL	5.0	ug/L
1,2-DICHLOROPROPANE	BDL	5.0	ug/L
1,3-DICHLOROPROPANE	BDL	5.0	ug/L
2,2-DICHLOROPROPANE	BDL	5.0	ug/L
1,1-DICHLOROPROPENE	BDL	5.0	ug/L
ETHYL BENZENE	EST 790	5.0	ug/L

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: A357045

Parameter	Result	Det. Limit	Units
HEXACHLOROBUTADIENE	BDL	5.0	ug/L
ISOPROPYLBENZENE (CUMENE)	66	5.0	ug/L
4-ISOPROPYLTOLUENE (P-ISOPROPYLTOLUENE)	7	5.0	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5.0	ug/L
NAPHTHALENE	EST 150	5.0	ug/L
N-PROPYLBENZENE	72	5.0	ug/L
STYRENE	BDL	5.0	ug/L
1,1,1,2-TETRACHLOROETHANE	BDL	5.0	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5.0	ug/L
TETRACHLOROETHENE	BDL	5.0	ug/L
TOLUENE	EST 1000	5.0	ug/L
1,2,3-TRICHLOROBENZENE	BDL	5.0	ug/L
1,2,4-TRICHLOROBENZENE	BDL	5.0	ug/L
1,1,1-TRICHLOROETHANE	BDL	5.0	ug/L
1,1,2-TRICHLOROETHANE	BDL	5.0	ug/L
TRICHLOROETHENE	BDL	5.0	ug/L
TRICHLOROFLUOROMETHANE	BDL	5.0	ug/L
1,2,3-TRICHLOROPROPANE	BDL	5.0	ug/L
1,2,4-TRIMETHYLBENZENE	EST 300	5.0	ug/L
1,3,5-TRIMETHYLBENZENE	94	5.0	ug/L
VINYL CHLORIDE	BDL	5.0	ug/L
O-XYLENE	EST 910	5.0	ug/L
M/P-XYLENE	EST 1300	5.0	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	111		% Rec
TOLUENE-D8	107		% Rec
4-BROMOFLUOROBENZENE	110		% Rec

Dilution necessary due to high concentration of target compounds.

VOLATILE ORGANICS (CAPILLARY COLUMN) SW846-8260A

Analyst: R. SHAMP Analysis Date: 17-OCT-95 09:21 Instrument: GC/MS VOA Test: 0510.6.1

Parameter	Result	Det. Limit	Units
BENZENE	BDL	120	ug/L
BROMOBENZENE	BDL	120	ug/L
BROMOCHLOROMETHANE	BDL	120	ug/L
BROMODICHLOROMETHANE	BDL	120	ug/L
BROMOFORM	BDL	120	ug/L
BROMOMETHANE	BDL	120	ug/L
N-BUTYLBENZENE	BDL	120	ug/L
SEC-BUTYLBENZENE	BDL	120	ug/L
TERT-BUTYLBENZENE	BDL	120	ug/L
CARBON TETRACHLORIDE	BDL	120	ug/L
CHLOROBENZENE	BDL	120	ug/L
DIBROMOCHLOROMETHANE	BDL	120	ug/L
CHLOROETHANE	BDL	120	ug/L
CHLOROFORM	BDL	120	ug/L
CHLOROMETHANE	BDL	120	ug/L
2-CHLOROTOLUENE (O-CHLOROTOLUENE)	BDL	120	ug/L
4-CHLOROTOLUENE (P-CHLOROTOLUENE)	BDL	120	ug/L
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	BDL	120	ug/L
1,2-DIBROMOETHANE (EDB)	BDL	120	ug/L
DIBROMOMETHANE	BDL	120	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	120	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	120	ug/L

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: A357045

Parameter	Result	Det. Limit	Units
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	120	ug/L
DICHLORODIFLUOROMETHANE	BDL	120	ug/L
1,1-DICHLOROETHANE	BDL	120	ug/L
1,2-DICHLOROETHANE	BDL	120	ug/L
1,1-DICHLOROETHENE	BDL	120	ug/L
CIS-1,2-DICHLOROETHENE	BDL	120	ug/L
TRANS-1,2-DICHLOROETHENE	BDL	120	ug/L
1,2-DICHLOROPROPANE	BDL	120	ug/L
1,3-DICHLOROPROPANE	BDL	120	ug/L
2,2-DICHLOROPROPANE	BDL	120	ug/L
1,1-DICHLOROPROPENE	BDL	120	ug/L
ETHYL BENZENE	770	120	ug/L
HEXACHLOROBUTADIENE	BDL	120	ug/L
ISOPROPYLBENZENE (CUMENE)	BDL	120	ug/L
4-ISOPROPYLTOLUENE (P-ISOPROPYLTOLUENE)	BDL	120	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	120	ug/L
NAPHTHALENE	170	120	ug/L
N-PROPYLBENZENE	BDL	120	ug/L
STYRENE	BDL	120	ug/L
1,1,1,2-TETRACHLOROETHANE	BDL	120	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	120	ug/L
TETRACHLOROETHENE	BDL	120	ug/L
TOLUENE	1100	120	ug/L
1,2,3-TRICHLOROBENZENE	BDL	120	ug/L
1,2,4-TRICHLOROBENZENE	310	120	ug/L
1,1,1-TRICHLOROETHANE	BDL	120	ug/L
1,1,2-TRICHLOROETHANE	BDL	120	ug/L
TRICHLOROETHENE	BDL	120	ug/L
TRICHLOROFLUOROMETHANE	BDL	120	ug/L
1,2,3-TRICHLOROPROPANE	BDL	120	ug/L
1,2,4-TRIMETHYLBENZENE	BDL	120	ug/L
1,3,5-TRIMETHYLBENZENE	BDL	120	ug/L
VINYL CHLORIDE	BDL	120	ug/L
O-XYLENE	870	120	ug/L
M/P-XYLENE	1200	120	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	114		% Rec
TOLUENE-D8	105		% Rec
4-BROMOFLUOROBENZENE	104		% Rec

1:25 Dilution necessary due to high concentration of target compounds.

Sample Comments

BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number 42748.

Additional copies of this report sent to:
STEVE DE ALBUQUERQUE, PHILLIPS PETROLEUM COMPANY

HERITAGE ENVIRONMENTAL SERVICES, INC.

Lab Sample ID: A357045

Sample Comments

6330 WEST LOOP SOUTH, BELLAIRE, TX 77401

Approved : _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8305	13-OCT-95		A357046
	Complete	PO Number	
	17-OCT-95	WRK ORD #63-2408	
	Printed	Sampled	
	17-OCT-95	11-OCT-95	

Report To	Bill To
TOM STOTLER SECOR 355 UNION BOULEVARD, SUITE 200 LAKEWOOD, CO 80228-1500	STEVE DE ALBUQUERQUE PHILLIPS PETROLEUM; HOUSTON 6330 WEST LOOP SOUTH BELLAIRE, TX 77401

Sample Description

SAMPLE ID: B0106-001-02-MW-16
SAMPLED BY: TOM STOTLER (SECOR)

VOLATILE ORGANICS (CAPILLARY COLUMN) SW846-8260A

Analyst: H. WILLIAMS Analysis Date: 16-OCT-95 12:46 Instrument: GC/MS VOA Test: 0510.6.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	5.0	ug/L
BROMOBENZENE	BDL	5.0	ug/L
BROMOCHLOROMETHANE	BDL	5.0	ug/L
BROMODICHLOROMETHANE	BDL	5.0	ug/L
BROMOFORM	BDL	5.0	ug/L
BROMOMETHANE	BDL	5.0	ug/L
N-BUTYLBENZENE	BDL	5.0	ug/L
SEC-BUTYLBENZENE	BDL	5.0	ug/L
TERT-BUTYLBENZENE	BDL	5.0	ug/L
CARBON TETRACHLORIDE	BDL	5.0	ug/L
CHLOROBENZENE	BDL	5.0	ug/L
DIBROMOCHLOROMETHANE	BDL	5.0	ug/L
CHLOROETHANE	BDL	5.0	ug/L
CHLOROFORM	BDL	5.0	ug/L
CHLOROMETHANE	BDL	5.0	ug/L
2-CHLOROTOLUENE (O-CHLOROTOLUENE)	BDL	5.0	ug/L
4-CHLOROTOLUENE (P-CHLOROTOLUENE)	BDL	5.0	ug/L
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	BDL	5.0	ug/L
1,2-DIBROMOETHANE (EDB)	BDL	5.0	ug/L
DIBROMOMETHANE	BDL	5.0	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5.0	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5.0	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5.0	ug/L
DICHLORODIFLUOROMETHANE	BDL	5.0	ug/L
1,1-DICHLOROETHANE	BDL	5.0	ug/L
1,2-DICHLOROETHANE	BDL	5.0	ug/L
1,1-DICHLOROETHENE	BDL	5.0	ug/L
CIS-1,2-DICHLOROETHENE	BDL	5.0	ug/L
TRANS-1,2-DICHLOROETHENE	BDL	5.0	ug/L
1,2-DICHLOROPROPANE	BDL	5.0	ug/L
1,3-DICHLOROPROPANE	BDL	5.0	ug/L
2,2-DICHLOROPROPANE	BDL	5.0	ug/L
1,1-DICHLOROPROPENE	BDL	5.0	ug/L
ETHYL BENZENE	BDL	5.0	ug/L

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: A357046

Parameter	Result	Det. Limit	Units
HEXACHLOROBUTADIENE	BDL	5.0	ug/L
ISOPROPYLBENZENE (CUMENE)	BDL	5.0	ug/L
4-ISOPROPYLTOLUENE (P-ISOPROPYLTOLUENE)	BDL	5.0	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5.0	ug/L
NAPHTHALENE	BDL	5.0	ug/L
N-PROPYLBENZENE	BDL	5.0	ug/L
STYRENE	BDL	5.0	ug/L
1,1,1,2-TETRACHLOROETHANE	BDL	5.0	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5.0	ug/L
TETRACHLOROETHENE	BDL	5.0	ug/L
TOLUENE	BDL	5.0	ug/L
1,2,3-TRICHLOROBENZENE	BDL	5.0	ug/L
1,2,4-TRICHLOROBENZENE	BDL	5.0	ug/L
1,1,1-TRICHLOROETHANE	BDL	5.0	ug/L
1,1,2-TRICHLOROETHANE	BDL	5.0	ug/L
TRICHLOROETHENE	BDL	5.0	ug/L
TRICHLOROFLUOROMETHANE	BDL	5.0	ug/L
1,2,3-TRICHLOROPROPANE	BDL	5.0	ug/L
1,2,4-TRIMETHYLBENZENE	BDL	5.0	ug/L
1,3,5-TRIMETHYLBENZENE	BDL	5.0	ug/L
VINYL CHLORIDE	BDL	5.0	ug/L
O-XYLENE	BDL	5.0	ug/L
M/P-XYLENE	BDL	5.0	ug/L
. .			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	92		% Rec
TOLUENE-D8	99		% Rec
4-BROMOFLUOROBENZENE	93		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 42748.

Additional copies of this report sent to:
STEVE DE ALBUQUERQUE, PHILLIPS PETROLEUM COMPANY
6330 WEST LOOP SOUTH, BELLAIRE, TX 77401

Approved : _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8305	13-OCT-95		A357047
	Complete	PO Number	
	17-OCT-95	WRK ORD #63-2408	
	Printed	Sampled	
	17-OCT-95	11-OCT-95	

Report To

TOM STOTLER
SECOR
355 UNION BOULEVARD, SUITE 200
LAKEWOOD, CO 80228-1500

Bill To

STEVE DE ALBUQUERQUE
PHILLIPS PETROLEUM; HOUSTON
6330 WEST LOOP SOUTH
BELLAIRE, TX 77401

Sample Description

SAMPLE ID: TRIP BLANK
SAMPLED BY: TOM STOTLER (SECOR)

VOLATILE ORGANICS (CAPILLARY COLUMN) SW846-8260A

Analyst: R. SHAMP Analysis Date: 17-OCT-95 08:40 Instrument: GC/MS VOA Test: 0510.6.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	5.0	ug/L
BROMOBENZENE	BDL	5.0	ug/L
BROMOCHLOROMETHANE	BDL	5.0	ug/L
BROMODICHLOROMETHANE	BDL	5.0	ug/L
BROMOFORM	BDL	5.0	ug/L
BROMOMETHANE	BDL	5.0	ug/L
N-BUTYLBENZENE	BDL	5.0	ug/L
SEC-BUTYLBENZENE	BDL	5.0	ug/L
TERT-BUTYLBENZENE	BDL	5.0	ug/L
CARBON TETRACHLORIDE	BDL	5.0	ug/L
CHLOROBENZENE	BDL	5.0	ug/L
DIBROMOCHLOROMETHANE	BDL	5.0	ug/L
CHLOROETHANE	BDL	5.0	ug/L
CHLOROFORM	BDL	5.0	ug/L
CHLOROMETHANE	BDL	5.0	ug/L
2-CHLOROTOLUENE (O-CHLOROTOLUENE)	BDL	5.0	ug/L
4-CHLOROTOLUENE (P-CHLOROTOLUENE)	BDL	5.0	ug/L
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	BDL	5.0	ug/L
1,2-DIBROMOETHANE (EDB)	BDL	5.0	ug/L
DIBROMOMETHANE	BDL	5.0	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5.0	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5.0	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5.0	ug/L
DICHLORODIFLUOROMETHANE	BDL	5.0	ug/L
1,1-DICHLOROETHANE	BDL	5.0	ug/L
1,2-DICHLOROETHANE	BDL	5.0	ug/L
1,1-DICHLOROETHENE	BDL	5.0	ug/L
CIS-1,2-DICHLOROETHENE	BDL	5.0	ug/L
TRANS-1,2-DICHLOROETHENE	BDL	5.0	ug/L
1,2-DICHLOROPROPANE	BDL	5.0	ug/L
1,3-DICHLOROPROPANE	BDL	5.0	ug/L
2,2-DICHLOROPROPANE	BDL	5.0	ug/L
1,1-DICHLOROPROPENE	BDL	5.0	ug/L
ETHYL BENZENE	BDL	5.0	ug/L

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Parameter	Result	Det. Limit	Units
HEXACHLOROBUTADIENE	BDL	5.0	ug/L
ISOPROPYLBENZENE (CUMENE)	BDL	5.0	ug/L
4-ISOPROPYLTOLUENE (P-ISOPROPYLTOLUENE)	BDL	5.0	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5.0	ug/L
NAPHTHALENE	BDL	5.0	ug/L
N-PROPYLBENZENE	BDL	5.0	ug/L
STYRENE	BDL	5.0	ug/L
1,1,1,2-TETRACHLOROETHANE	BDL	5.0	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5.0	ug/L
TETRACHLOROETHENE	BDL	5.0	ug/L
TOLUENE	BDL	5.0	ug/L
1,2,3-TRICHLOROBENZENE	BDL	5.0	ug/L
1,2,4-TRICHLOROBENZENE	BDL	5.0	ug/L
1,1,1-TRICHLOROETHANE	BDL	5.0	ug/L
1,1,2-TRICHLOROETHANE	BDL	5.0	ug/L
TRICHLOROETHENE	BDL	5.0	ug/L
TRICHLOROFLUOROMETHANE	BDL	5.0	ug/L
1,2,3-TRICHLOROPROPANE	BDL	5.0	ug/L
1,2,4-TRIMETHYLBENZENE	BDL	5.0	ug/L
1,3,5-TRIMETHYLBENZENE	BDL	5.0	ug/L
VINYL CHLORIDE	BDL	5.0	ug/L
O-XYLENE	BDL	5.0	ug/L
M/P-XYLENE	BDL	5.0	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	110		% Rec
TOLUENE-D8	104		% Rec
4-BROMOFLUOROBENZENE	100		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 42748.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Additional copies of this report sent to:
STEVE DE ALBUQUERQUE, PHILLIPS PETROLEUM COMPANY
6330 WEST LOOP SOUTH, BELLAIRE, TX 77401

Approved : H A Busch

TO ENSURE PROPER HANDLING OF SAMPLES PLEASE COMPLETE THIS ENTIRE FORM

HERITAGE ENVIRONMENTAL SERVICES

COMMERCIAL LABORATORY OPERATIONS

I - 42748

7901 West Morris Street
Indianapolis, Indiana 46231 (317) 243-0811 Fax (317) 486-5095

Co. Name: SECOR

Project Name: Phillips So. Four Lakes Tank Battery

Quote No.: Z126388 PO No.: Direct Bill Phillips

ENVIRONMENTAL PROGRAM:

CWA NPDES _____ IWP _____ SLUDGE _____

RCRA MW _____ SW _____ DISPOSAL _____

SDWA _____ CERCLA/SUPERFUND _____ OTHER X

Sampled by: Thomas R. Stotler

Report To:
Co: SECOR
Add: 355 Union Blvd #200
Lakewood, Colo 80228

Attn: Tom Stotler
Phone: 303-763-8800

Accelerated Turnaround Requested Rush
(Subject to Additional Charge)

Result Request by: 10 (Mo) , 17 (Day) , 95 (Yr)

(Date must be Accepted and Approved by Lab)

Sample ID:	Date:	Time:	Comp	Grab	Sample Description	Sample Type (Matrix): DW, GW, WW, Soil, Oil, Sludge, Other	No. of Containers	Analyses Requested (Note special detection limits or methods): Vac 8240	Remarks:	LAB Sample No.
B0106-001-02-MW-14	10/11/95	AM PM		X	B0106-001-02-MW-14	GW	2	X	FAX Results TO	A35704
B0106-001-02-MW-15	10/11/95	0829 AM PM		X	B0106-001-02-MW-15	GW	2	X	303-763-8844	045
B0106-001-02-MW-16	10/11/95	AM PM		X	B0106-001-02-MW-16	GW	2	X	Pres. HCL	046
		AM PM			TRIP BLANK	—	2	X		047
		AM PM								
		AM PM								
		AM PM								
		AM PM								
		AM PM								
		AM PM								
		AM PM								
		AM PM								

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Thomas R Stotler	10/13/95 1512			/	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	/			/	
Relinquished by: (Signature)	Date/Time	Received for Lab by: (Signature)	Date/Time	Remarks	
	/	S. Askew	10/13/95 8:25		

Properly Preserved ✓

Broken Bottles _____

Distribution: White original and Yellow copy to accompany sample to laboratory. copy to be retained by client.

Rev. 6/95