3R - 79

REPORTS

DATE:

8/1995

REPORT FOR SEMI-ANNUAL GROUNDWATER SAMPLING
MERIDIAN OIL INC. THOMAS NO. 1 LOCATION
BLOOMFIELD, NEW MEXICO

August 1995

Prepared for:

MERIDIAN OIL INC.
FARMINGTON, NEW MEXICO

Project 13164

PHILIP ENVIRONMENTAL

4000 Monroe Road
Farmington, New Mexico 87401
(505) 326-2262

PHILIP ENVIRONMENTAL

August 4, 1995 Project 13164

Mr. Craig A. Bock
Meridian Oil Inc.
3535 East 30th
P.O. Box 4289
Farmington, New Mexico 87401

RE: Report for July, 1995, Semi-Annual Groundwater Sampling at the Meridian Oil Inc. Thomas No. 1 Location, Bloomfield, New Mexico

Dear Mr. Bock:

During October 1994, Philip Environmental Services Corporation (Philip) initiated a semi-annual groundwater sampling program at the Meridian Oil Inc. (MOI) Thomas No. 1 production well location (the site). The site is located in San Juan County, New Mexico in the southwest corner of Section 20, Township 29 North, Range 11 West. A site map showing locations of the monitoring wells is presented in Figure 1.

Groundwater sampling included:

- collecting depth-to-groundwater measurements
- purging a minimum of three well casing volumes and monitoring pH, conductivity, and temperature levels until stabilization occurred for monitoring wells 1 through 5
- collecting groundwater samples from each monitoring well and submitting the samples for laboratory analysis for benzene, toluene, ethylbenzene, and xylenes (BTEX) by U.S. Environmental Protection Agency (USEPA) Method 602

METHODOLOGY

Groundwater sampling of the five monitoring wells at the site took place on July 10, 1995, and was completed on July 11, 1995. Locating the monitoring wells was difficult, due to recent construction at the well site and on adjacent private property. Use of a metal detector was required to locate MW-5. Philip's field representative began sampling by taking a static depth-to-groundwater reading with an electronic water level indicator. In addition, the total depth of the well was measured using a weighted survey tape. Both measurements were taken at the same reference point starting at the top of the well casing. The total linear feet of water in the well was then used to calculate the water volume in the well casing. At least three well casing volumes were removed from each well.

Each well was purged and sampled using a pre-cleaned disposable bailer, with an approximate volume of one liter.

Field water-quality measurements of pH, conductivity, and temperature were taken periodically during the purging of the well to ensure that the water sampled was representative of the ambient groundwater in the aquifer. Once the water quality parameters were stable and at least three well casing volumes had been removed, the groundwater was sampled by pouring groundwater from a disposable bailer directly into 40-milliliter glass containers with Teflon™ septum closures. All samples collected were preserved with hydrochloric acid, placed directly on ice, and transported via Federal Express under strict chain-of-custody procedures to Assaigai Analytical Laboratories located in Albuquerque, New Mexico. Each sample was analyzed for BTEX by USEPA Method 602. In addition to collecting samples from each well, a duplicate of MW-2 (identified as MW-52) was also analyzed.

All groundwater purged from each monitoring well was stored in buckets and transported by hand to a discharge storage tank at the site for disposal, as directed by MOI personnel.

RESULTS

Laboratory results indicated BTEX values to be slightly above detection limits for MW-1 and MW-4. Results from MW-2, MW-3, and MW-5 indicated BTEX compounds present in the samples. The results from the semi-annual sampling are presented in Table 1, along with historical data from previous sampling events. Table 2 presents field measurements of groundwater elevations and field data collected during this sampling event as well as limited data provided by MOI for previous sampling events. A copy of the original laboratory report is included as Appendix A.

If you have any questions or require additional information please do not hesitate to contact Scott T. Pope of Philip at (505) 326-2262.

Respectfully submitted,

PHILIP ENVIRONMENTAL SERVICES CORPORATION

Scott T. Pope

Scott T. Pope
Geologist

J/13164/795rpt

Table 1
BTEX Results from Groundwater Sampling
Meridian Oil Inc.
Thomas Number 1

Location	Date	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Total Xylenes µg/L
MW-1	07/10/95	1.9	ND (1.0)	2.2	ND (2.0)
	01/04/95	<0.3	<0.3	<0.3	<0.9
	10/20/94	<0.3	<0.3	<0.3	<0.9
	06/15/93	ND	ND	ND	ND
	09/01/92	ND	ND	ND	ND
	11/01/91	ND	ND	ND	ND
MW-2	07/10/95	400	ND (10.0)	47.0	324
	01/04/95	448	8.3	48.0	340
	10/20/94	556	<0.3	79.4	569
	06/15/93	860	420	130	2,540
	12/07/92	850	291	98	912
	11/13/92	3.00	484	164	1,190
	10/28/92	1,230	570	113	2,750
	09/15/92	251	64	23	397
	09/01/92	251	64	23	346
	11/01/91	800	2,800	400	8,100
	08/31/91	800	2,800	400	8,100
	08/18/91	10	750	750	620
MW-3	07/11/95	ND (10.0)	620	61	273
	01/04/95	122	2,700	155	1,322
	10/20/94	521	10,900	455	4,040
	06/15/93	ND	7,800	780	7,100
	12/08/92	25.6	1,560	570	1,720
	11/13/92	117	4,270	980	9,850
	10/28/92	256	11,400	1,120	5,640
	09/15/92	ND	8,220	ND	3,630
	09/01/92	ND	8,220	ND	ND
	11/01/91	1,500	30,000	2,000	36,000
	08/31/91	1,500	30,000	2,000	38,000
	08/18/91	10	750	750	620

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Table 1
BTEX Results from Groundwater Sampling
Meridian Oil Inc.
Thomas Number 1
CONTINUED

Location	Date	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Total Xylenes µg/L
MW-4	07/10/95	ND (1.0)	ND (1.0)	ND (1.0)	1.3
	01/04/95	<0.3	<0.3	<0.3	<0.5
	10/20/94	<0.3	<0.3	<0.3	<0.9
	06/15/93	ND	ND	ND	ND
	09/04/92	ND	ND	ND	ND
	11/01/91	ND	ND	ND	ND
MW-5	07/11/95	13.0	6.1	3.7	9.0
	01/04/95	<0.3	<0.3	<0.3	<0.9
	10/20/94	<0.3	<0.3	<0.3	<0.9
	06/15/93	9.7	ND	ND	ND
	09/01/92	ND	ND	ND	ND
	11/01/91	ND	ND	ND	ND
Trip Blank	10/20/94	<0.3	<0.3	<0.3	<0.9
MW-52	07/10/95	490	71.0	79.0	448
(Duplicate	01/04/95	294	44.0	33.0	238
of MW-2)	10/20/95	610	<0.3	72.0	555

µg/L = micrograms per liter
ND = Not Detected
BTEX Analysis by USEPA Method 8020
(1.0) Detection Limit in µg/L

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Table 2

Monitoring Well Sampling

Groundwater Elevations and Water Quality Field Measurements

Location	Date	Elevation feet MSL	pH	Conductivity µmhos/cm	Temperature °F	Gallons Removed
MW-1	07/10/95	5,372.05	7.05	2,790	62.0	2.5
	01/04/95	5,371.72	6.96	2,120	45.5	2.5
	10/20/94	5,371.95	6.81	2,280	58.7	2.0
MW-2	07/10/95	5,371.23	NR	NR	NR	4.0
	01/04/95	5,371.02	6.95	2,160	44.8	1.5
	10/20/94	5,371.26	6.64	2,460	66.4	2.5
	10/28/92	*5,370.54	7.20	2,200	68.0	10.0
	11/13/92	*5,370.48	6.97	2,250	61.0	5.0
MW-3	07/11/95	5,371.21	7.08	2,160	62.6	1.25
	01/04/95	5,371.01	5.35	2,640	43.4	2.0
	10/20/94	5,371.26	2.86	2,970	61.7	2.5
	10/28/92	*5,371.08	7.12	2,450	68.0	10.0
	11/13/92	5,371.00	7.03	2,300	56.3	5.0
MW-4	07/10/95	5,370.38	7.11	1,840	59.0	2.0
	01/04/95	5,370.31	6.97	2,350	43.0	2.0
	10/20/94	5,370.55	6.92	4,160	53.4	2.0
MW-5	07/11/95	5,370.38	7.11	1,840	59.0	2.0
	01/04/95	5,370.31	6.97	2,350	43.0	2.0
	10/20/95	5,370.55	6.92	4,160	53.4	2.0

MSL = mean sea level
µmhos/cm = micromhos per centimeter
°F = degrees Fahrenheit
NR = No Reading
pH, conductivity, and temperature are final measurements prior to sampling.
*Philip assumes the reference point on these measurements to be the top of the well pipe.

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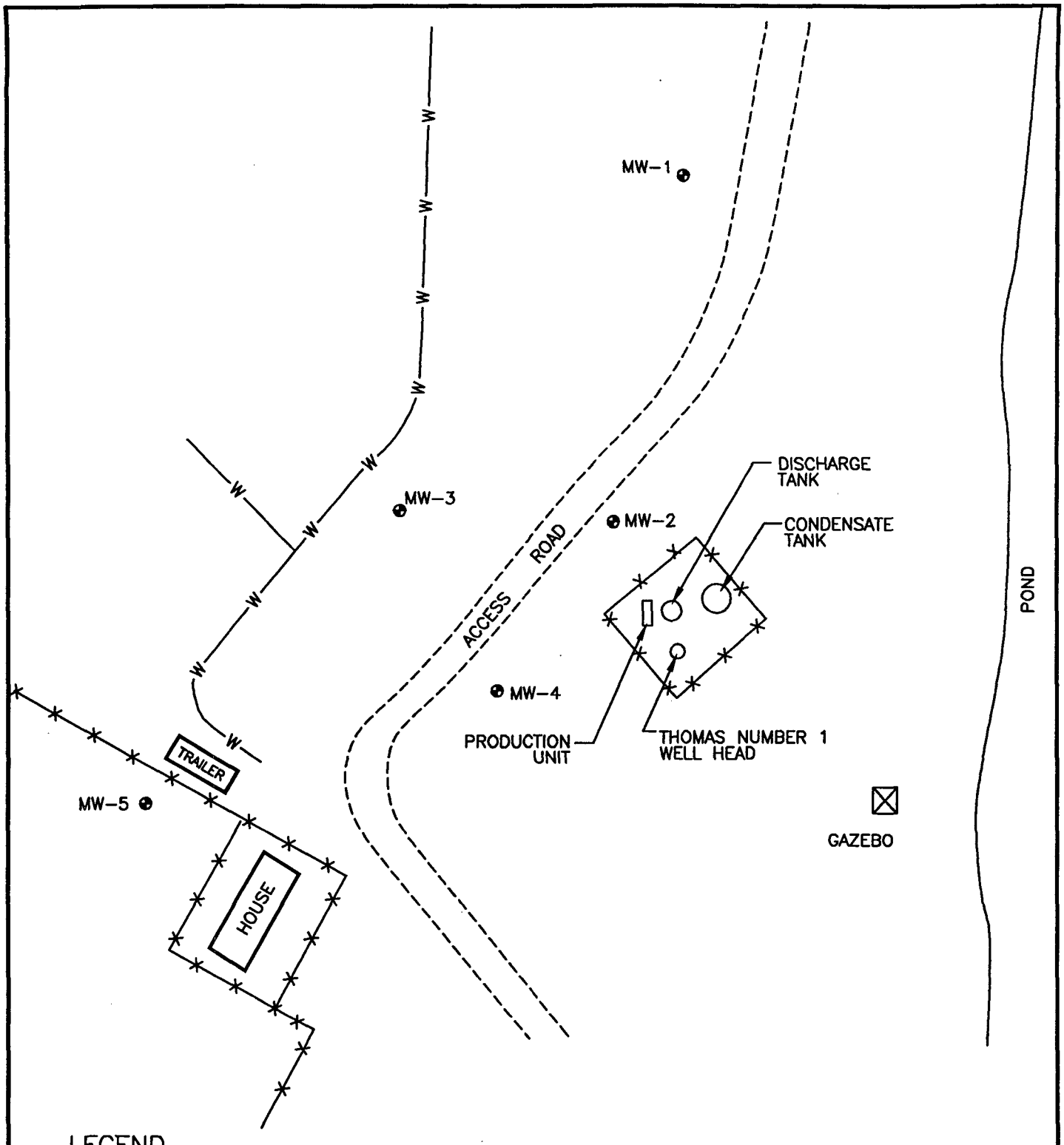

LEGEND

—W— 8" WATER LINE

MW-5 MONITORING WELL LOCATION AND NUMBER

FENCE

0 80

FEET

N

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TITLE: Meridian Oil Inc., Thomas Number 1 Well Site

SCALE	1=80	DATE
DWN:	JEN	
DES:		
CHKD:		
APPD:		

PROJECT NO: 13164
MERIDIAN OIL INC.

Figure 1

REV: 0

COL 13164A-002

APPENDIX A

PHILIP ENVIRONMENTAL

ASSAIGAI ANALYTICAL LABORATORIES
7300 Jefferson, N.E. • Albuquerque, New Mexico 87109 • (505) 345-8964 • FAX (505) 345-7259
3332 Wedgewood, E-5 • El Paso, Texas 79925 • (915) 593-6000 • FAX (915) 593-7820

Report Generated:
July 26, 1995 15:16

CERTIFICATE OF ANALYSIS
RESULTS BY SAMPLE

SENT TO: PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

ATTN: ALLEN HAINS

WORKORDER # : 9507093
WORK ID : 13164
CLIENT CODE : PHI15
DATE RECEIVED : 07/13/95

Lab ID: 9507093-01A
Sample ID: MW-1
Collected: 07/10/95 13:40:00
Matrix: WATER

TEST / METHOD	RESULT	UNITS	LIMIT	D_F	DATE ANAL	BATCH_ID
BTEX/EPA 602						
Benzene	1.9	ug/L	1.0	1.0	07/14/95	WBTXME064
Toluene	ND	ug/L	1.0	1.0	07/14/95	WBTXME064
Ethylbenzene	2.2	ug/L	1.0	1.0	07/14/95	WBTXME064
P-&m-xylene	ND	ug/L	2.0	1.0	07/14/95	WBTXME064
O-xylene	ND	ug/L	1.0	1.0	07/14/95	WBTXME064

Lab ID: 9507093-02A
Sample ID: MW-2
Collected: 07/10/95 14:45:00
Matrix: WATER

TEST / METHOD	RESULT	UNITS	LIMIT	D_F	DATE ANAL	BATCH_ID
BTEX/EPA 602						
Benzene	400	ug/L	1.0	10	07/19/95	WMSVOA-310
Toluene	ND	ug/L	1.0	10	07/19/95	WMSVOA-310
Ethylbenzene	47	ug/L	1.0	10	07/19/95	WMSVOA-310
P-&m-xylene	310	ug/L	2.0	10	07/19/95	WMSVOA-310
O-xylene	14	ug/L	1.0	10	07/19/95	WMSVOA-310

Lab ID: 9507093-03A
Sample ID: MW-52
Collected: 07/10/95 14:50:00
Matrix: WATER

TEST / METHOD	RESULT	UNITS	LIMIT	D_F	DATE ANAL	BATCH_ID
BTEX/EPA 602						
Benzene	490	ug/L	1.0	10	07/19/95	WMSVOA-310
Toluene	71	ug/L	1.0	10	07/19/95	WMSVOA-310
Ethylbenzene	79	ug/L	1.0	10	07/19/95	WMSVOA-310
P-&m-xylene	420	ug/L	2.0	10	07/19/95	WMSVOA-310
O-xylene	28	ug/L	1.0	10	07/19/95	WMSVOA-310

Lab ID: 9507093-04A
Sample ID: MW-3
Collected: 07/11/95 09:55:00
Matrix: WATER

TEST / METHOD	RESULT	UNITS	LIMIT	D_F	DATE ANAL	BATCH_ID
BTEX/EPA 602						
Benzene	ND	ug/L	1.0	10	07/19/95	WMSVOA310
Toluene	620	ug/L	1.0	10	07/19/95	WMSVOA310
Ethylbenzene	61	ug/L	1.0	10	07/19/95	WMSVOA310
P-&m-xylene	200	ug/L	2.0	10	07/19/95	WMSVOA310
O-xylene	73	ug/L	1.0	10	07/19/95	WMSVOA310

Lab ID: 9507093-05A
Sample ID: MW-4
Collected: 07/10/95 16:20:00
Matrix: WATER

TEST / METHOD	RESULT	UNITS	LIMIT	D_F	DATE ANAL	BATCH_ID
BTEX/EPA 602						
Benzene	ND	ug/L	1.0	1.0	07/14/95	WBTXME064
Toluene	ND	ug/L	1.0	1.0	07/14/95	WBTXME064
Ethylbenzene	ND	ug/L	1.0	1.0	07/14/95	WBTXME064
P-&m-xylene	ND	ug/L	2.0	1.0	07/14/95	WBTXME064
O-xylene	1.3	ug/L	1.0	1.0	07/14/95	WBTXME064

Lab ID: 9507093-06A
Sample ID: MW-5
Collected: 07/11/95 12:30:00
Matrix: WATER

TEST / METHOD	RESULT	UNITS	LIMIT	D_F	DATE ANAL	BATCH_ID
BTEX/EPA 602						
Benzene	13	ug/L	1.0	1.3	07/14/95	WBTXME064
Toluene	6.1	ug/L	1.0	1.3	07/14/95	WBTXME064
Ethylbenzene	3.7	ug/L	1.0	1.3	07/14/95	WBTXME064
P-&m-xylene	6.5	ug/L	2.0	1.3	07/14/95	WBTXME064
O-xylene	2.5	ug/L	1.0	1.3	07/14/95	WBTXME064

James A. Seely
Operations Manager

WORKORDER COMMENTS

DATE : 07/26/95
WORKORDER:

DEFINITIONS/DATA QUALIFIERS

The following are definitions, abbreviations, and data qualifiers which may have been utilized in your report:

ND	= Analyte "not detected" in analysis at the sample specific detection limit.
D_F	= Sample "dilution factor"
NT	= Analyte "not tested" per client request.
B	= Analyte was also detected in laboratory method QC blank.
E	= Analyte concentration (result) is an estimated value or exceeds analysis calibration range.
LIMIT	= The minimum amount of the analyte that AAL can detect utilizing the specified analysis.

Please Note: Multiply the "Limit" value (AAL's Detection Limit) by Dilution Factor (D_F) to obtain the sample specific Detection Limit.

REPORT COMMENTS

********** -IND. XMT JOURNAL- ********** DATE JUL-26-1995 ***** TIME 15:51 ********

DATE/TIME = JUL-26-1995 15:49

JOURNAL No. = 04

COMM.RESULT = OK

PAGE(S) = 003

DURATION = 00:01'54

FILE No. =

MODE = TRANSMISSION

DESTINATION = 15053262388 20

RECEIVED ID = / 5053262388

RESOLUTION = STD

-ASSAIGAI ANALYTICAL LAB -

**********(FAX-950 V1.24)** -ASSAIGAI LABS - ***** - 505 345 7259- *********

7093

PHILIP ENVIRONMENTAL

Chain of Custody Record

4000 Monroe Road
Farmington, NM 87401
(505) 326-2262 Phone
(505) 326-2388 FAX

COC Serial No. C 2913

Project Name MOI Thomas No. 1
Project Number 13164 Phase . Task
Samplers STP
Laboratory Name Assaigai
Location Albuquerque

Sample Number (and depth)	Date	Time	Matrix	Total Number of Bottles	Type of Analysis and Bottle: BTEX (602)	Comments
MW-1	7/10/95	1340	H_2O	2	X	
MW-2	7/10/95	1445	"	2	X	
MW-52	7/10/95	1450	"	2	X	
MW-3	7/10/95	~~1620~~ 935	"	2	X	
MW-4	7/10/95	1620		2	X	
MW-5	7/11/95	1230				

Relinquished by:

Signature	Date	Time
Scott T. Pope	7/11/95	1600

Received By:

Signature	Date	Time
Mary Blecha	7/13/95	8:30

Samples Iced: ☒ Yes ☐ No

Preservatives (ONLY for Water Samples)

- ☐ Cyanide ..... Sodium hyroxide (NaOH)
- ☒ Volatile Organic Analysis ..... Hydrochloric acid (HCl)
- ☐ Metals ..... Nitric acid (HNO_3)
- ☐ TPH (418.1) ..... Sulfuric acid (H_2SO_4)
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____

Carrier: Fed Ex
Airbill No. 5318865893

Shipping and Lab Notes:

Please return Cooler