3R-141

Monitor Well Installation Report And Quarterly Report Date: 6/2006

ENVIROTECH INC.

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

MONITOR WELL INSTALLATION AND QUARTERLY MONITORING REPORT

AT:

NORTH HOGBACK 12-1, 12-4, AND 12-9
NAVAJO NATION
SAN JUAN COUNTY, NEW MEXICO

FOR:

MR. STEVE FALLIN, PRODUCTION MANAGER
DUNCAN OIL
1777 SOUTH HARRISON – PENTHOUSE ONE
DENVER, COLORADO 80210

PROJECT NO. 05161-002

JULY 2006

5796 U.S. HIGHWAY 64 • FARMINGTON, NM 87401 • (505) 632-0615

ENVIROTECH INC.

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

July 24, 2006

Project No. 05161-002

Mr. Brandon Powell
NMOCD
1000 Rio Brazos Road
Aztec, NM 87410

RE: MONITOR WELL INSTALLATION AND QUARTERLY MONITORING REPORT

Dear Mr. Powell:

Enclosed please find one (1) copy of the report entitled, *Monitor Well Installation and Quarterly Monitoring Report.* This report details the drilling, monitor well installation, and quarterly monitoring for the North Hogback 12-1, 12-4, and 12-9 locations on the Navajo Nation in San Juan County, New Mexico.

We appreciate the opportunity to be of service. If you should have any questions or require additional information, please contact our office at (505) 632-0615.

Respectfully Submitted,
ENVIROTECH, INC.

Greg W. Crabtree, EIT
Environmental Engineer
gcrabtree@envirotech-inc.com

Enclosure: One (1) copy

DUNCAN OIL
MONITOR WELL INSTALLATION AND QUARTERLY MONITORING REPORT
NORTH HOGBACK 12-1, 12-4, AND 12-9
NAVAJO NATION
SAN JUAN COUNTY, NEW MEXICO

TABLE OF CONTENTS

INTRODUCTION

Envirotech, Inc. has completed the installation of seven (7) monitor wells at the Duncan Oil North Hogback 12-1, 12-4, and 12-9 well sites. The drilling was necessary due to the presence of contaminated groundwater at the sites. Contaminated soil was excavated from the sites in September and October of 2005. The contaminated soil was hauled to Envirotech's NMOCD permitted landfarm at Hilltop, NM for remediation. Water samples collected at the time of excavation indicated that the three (3) sites previously referenced had contaminants in the groundwater above the guidelines set forth by the USEPA and adopted by the NNEPA.

DRILLING AND SOIL SAMPLING PERFORMED

North Hogback 12-9

On June 26, 2006 Envirotech personnel mobilized to the site to perform monitor well installation at the North Hogback 12-9 site. One (1) monitor well was installed in the middle of the excavated area; the other monitor well was installed down gradient approximately 120 feet to the north. Drill cuttings were analyzed every five (5) feet with use of an Organic Vapor Meter (OVM). A soil sample was also collected from the water/soil interface and analyzed for Total Petroleum Hydrocarbons (TPH) via USEPA Method 8015. Lithology logs were completed on the drill cuttings and are included in ***Appendix A, Lithology Logs***. The results of the analysis are shown in **Table 1** below.

Table 1: Summary of Laboratory Results for Soil from MW-1 and MW-2 at N. Hogback 12-9

Sample ID	Monitor Well #1		Monitor Well #2	
	OVM (ppm)	TPH (ppm)	OVM (ppm)	TPH (ppm)
Sample at 5 feet Below Ground Surface	0		0	
Sample at 10 feet BGS (soil water interface)	17	15.8	30	42.1
Sample at 15 feet Below Ground Surface	8		5	
Sample at 20 feet Below Ground Surface	2			

Soil samples from the drill cuttings were also analyzed via USEPA Method 8021B for benzene, ethylbenzene, toluene and total xylenes. These results are summarized in **Table 2** below. All contaminants of concern analyzed for are below the regulatory levels for soil; ***see Appendix B, Laboratory Soil Sample Results.***

Table 2: Summary of BTEX Results for Soil from MW-1 and MW-2 at N. Hogback 12-9

Sample ID	Monitor Well #1	Monitor Well #2
Benzene	ND	ND
Toluene	3.1	ND
Ethylbenzene	ND	ND
Total Xylenes	14.8	ND

North Hogback 12-1

Work on the North Hogback 12-1 began on June 28, 2006. Two (2) monitor wells were installed at this location. The first monitor well was installed in the middle of the previously excavated area. The second monitor well was installed approximately 100 feet to the north-northwest, ***see Figure 2, North Hogback 12-9 and 12-1 Site Map.*** Both monitor wells were installed to a depth of 20 feet BGS. A well consolidated shale layer was encountered at 18 feet BGS in MW-1 and 16 feet BGS in MW-2. Only a small amount of moisture was encountered at approximately 15 feet BGS in both monitor wells.

Drill cuttings were analyzed at five (5) feet increments. The results of the analysis are shown in **Table 3** and **Table 4** below. Lithology Logs were also completed on the monitor wells and can be seen in ***Appendix A, Lithology Logs.***

Table 3: Summary of Laboratory Results for Soil from MW-1 and MW-2 at N. Hogback 12-1

Sample ID	Monitor Well #1		Monitor Well #2	
	OVM (ppm)	TPH (ppm)	OVM (ppm)	TPH (ppm)
Sample at 5 feet Below Ground Surface	0		5	
Sample at 10 feet Below Ground Surface	6		4	
Sample at 15 feet Below Ground Surface	2	ND	67	345
Sample at 20 feet Below Ground Surface	3		76	

Table 4: Summary of BTEX Results for Soil from MW-1 and MW-2 at N. Hogback 12-1

Sample ID	Monitor Well #1	Monitor Well #2
Benzene	ND	55.2
Toluene	5.2	34.7
Ethylbenzene	5.0	26.3
Total Xylenes	20.5	206.6

The high amounts of Total Petroleum Hydrocarbons and BTEX in the sample collected from MW-2 indicate that there has been water present in the past at this location. Water in this area is from a perched water table whose source may be from a nearby irrigation canal. This would suggest that the water table in this area will have a large seasonal variation. This could also explain why no water was encountered during the drilling process. Complete laboratory results for the above soil samples can be viewed in ***Appendix B, Laboratory Soil Sample Results.***

North Hogback 12-4

Monitor well installation at the North Hogback 12-4 began on June 29, 2006 with the final two (2) monitor wells being installed on June 30, 2006. All three (3) monitor wells were drilled to a depth of approximately 10 feet. Approximately 2.0 feet of flowing sands entered the soil boring

of monitor well # 1 (MW-1) prior to the monitor well being installed. Drill cuttings were analyzed every five (5) feet with the use of an OVM.

Soil samples were also collected from the soil water interface and analyzed in the laboratory for TPH and BTEX via USEPA Method 8015 and 8021B respectively. **Tables 5 and 6** below summarize the field and laboratory results for TPH and OVM. Complete Laboratory results for the above soil samples can be viewed in ***Appendix B, Laboratory Soil Sample Results.***

Table 5: Summary of Laboratory Results for Soil from MW-1, MW-2, and MW-3 at N. Hogback 12-4

Sample ID	Monitor Well #1		Monitor Well #2		Monitor Well #3	
	OVM (ppm)	TPH (ppm)	OVM (ppm)	TPH (ppm)	OVM (ppm)	TPH (ppm)
Sample at 5 feet Below Ground Surface	3		3		3	
Sample at soil water interface	79	84.7	0	ND	1	ND
Sample at 10 feet Below Ground Surface	30		0		1	

Table 6: Summary of BTEX Results for Soil from MW-1, MW-2, and MW-3 at N. Hogback 12-4

Sample ID	Monitor Well #1	Monitor Well #2	Monitor Well #3
Benzene	ND	3.7	ND
Toluene	27.1	4.6	2.0
Ethylbenzene	30.6	5.6	ND
Total Xylenes	140	50.4	9.7

SURVEYING

Envirotech personnel returned to the site to survey the monitor well locations and collect groundwater samples at each monitor well. Surveying was performed using a total station. A spot was selected at the edge of the hill next to the river valley. This location was chosen since all seven (7) monitor wells and the Bench Mark could be seen from this location. Distance and direction from the set up location were noted for each monitor well as well as the dry hole marker for the 12-1, 12-4, and 12-9 well sites. Due to the scale of the map, the 12-9 and 12-1 sites are plotted on ***Figure 2*** and 12-4 is plotted on ***Figure 3***.

GROUNDWATER SAMPLING AND ANALYSIS

Groundwater sampling was performed on only five (5) of the seven (7) monitor wells. No water was observed in either monitor well at the North Hogback 12-1 well site. Prior to sampling a minimum of three (3) well volumes of water was bailed out of each well with a new disposable bailer.

Water Levels were calculated from the surveying data to draw a water level map. Since only two (2) monitor wells at the 12-1 and 12-9 sites had water, a groundwater gradient could not be determined for these sites. Water levels for these sites are shown on ***Figure 4***. A water level map with the water gradient indicated is shown in ***Figure 5*** for the North Hogback 12-4. It appears that the groundwater is moving from east-northeast to west-southwest across the site. Water levels for the individual wells are tabulated in **Table 7** below.

Table 7: Water Levels

Name	Casing Elevation	Water Level	Water Elevation
N. Hogback 12-1 MW-1	5025.84	Dry	
N. Hogback 12-1 MW-2	5027.47	Dry	
N. Hogback 12-9 MW-1	5026.12	14.94	5011.18
N. Hogback 12-9 MW-2	5025.61	10.97	5014.64
N. Hogback 12-4 MW-1	4966.45	6.57	4959.88
N. Hogback 12-4 MW-2	4966.60	6.94	4959.66
N. Hogback 12-4 MW-3	4967.44	8.8	4958.64

North Hogback 12-9

Samples were collected from the two (2) monitor wells at the North Hogback 12-9 and analyzed for lead, manganese, and iron via USEPA Method 6010B. Results from this are summarized in **Tables 8 and 9** below and laboratory certificates are presented in ***Appendix C, Laboratory Water Sample Results.***

Table 8: Summary of Laboratory Metals Analysis for North Hogback 12-9

Analyte	Monitor Well #1	Monitor Well #2	**Regulated Level**
Iron (ppm)	0.541	ND	**1.0**
Manganese (ppm)	**0.280**	**0.224**	**0.2**
Lead (ppm)	ND	ND	**0.050**

Values in bold exceed the USEPA regulated level

North Hogback 12-1

No groundwater samples could be collected at the 12-1 well site. The monitor wells at this location did not have measurable amounts of water in them. Water levels will be rechecked at the next quarterly monitoring event.

North Hogback 12-4

All three (3) monitor wells at this location were sampled for BTEX via USEPA method 8021B. Prior to sampling three (3) well volumes were bailed from each well. The contaminants of concern analyzed for in Method 8021B are all below the regulated levels. A summary of the laboratory results is presented in **Table 9** below. All the contaminants of concern are below the EPA's regulated level for groundwater at the 12-4 site.

Table 9: Summary of Laboratory BTEX Analysis for North Hogback 12-4

Analyte	Monitor Well #1	Monitor Well #2	Monitor Well #3	**Regulated Level**
Benzene (ppb)	1.2	1.6	1.3	**5.0**
Toluene (ppb)	5.9	1.8	0.4	**1,000**
Ethylbenzene (ppb)	23.4	1.6	0.8	**700**
Total Xylenes (ppb)	16.7	8.7	2.8	**10,000**

SUMMARY AND CONCLUSIONS

Envirotech has completed the installation of seven (7) monitor wells and the first quarter of sampling at the North Hogback 12-1, 12-4, and 12-9 well sites. All of the contaminants of concern analyzed for are below the EPA's regulated level at the North Hogback 12-4. Envirotech recommends two (2) additional quarters of sampling at this location. At the 12-9 location, manganese was slightly higher than the regulated level in both monitor wells at 0.28 and 0.224 ppm respectively. Envirotech recommends an additional three (3) quarters of sampling at this location. Since no sample was able to be collected from the 12-1 locations, Envirotech recommends checking the water level each quarter for an additional three (3) quarters. Samples from the 12-1 will be collected if a sufficient amount of water is present.

We appreciate the opportunity to be of service. Should you have any questions or require additional information, please contact our office at (505) 632-0615.

Respectfully submitted,
ENVIROTECH, INC.

Greg Crabtree, EIT
Environmental Engineer
gcrabtree@envirotech-inc.com

Reviewed By:

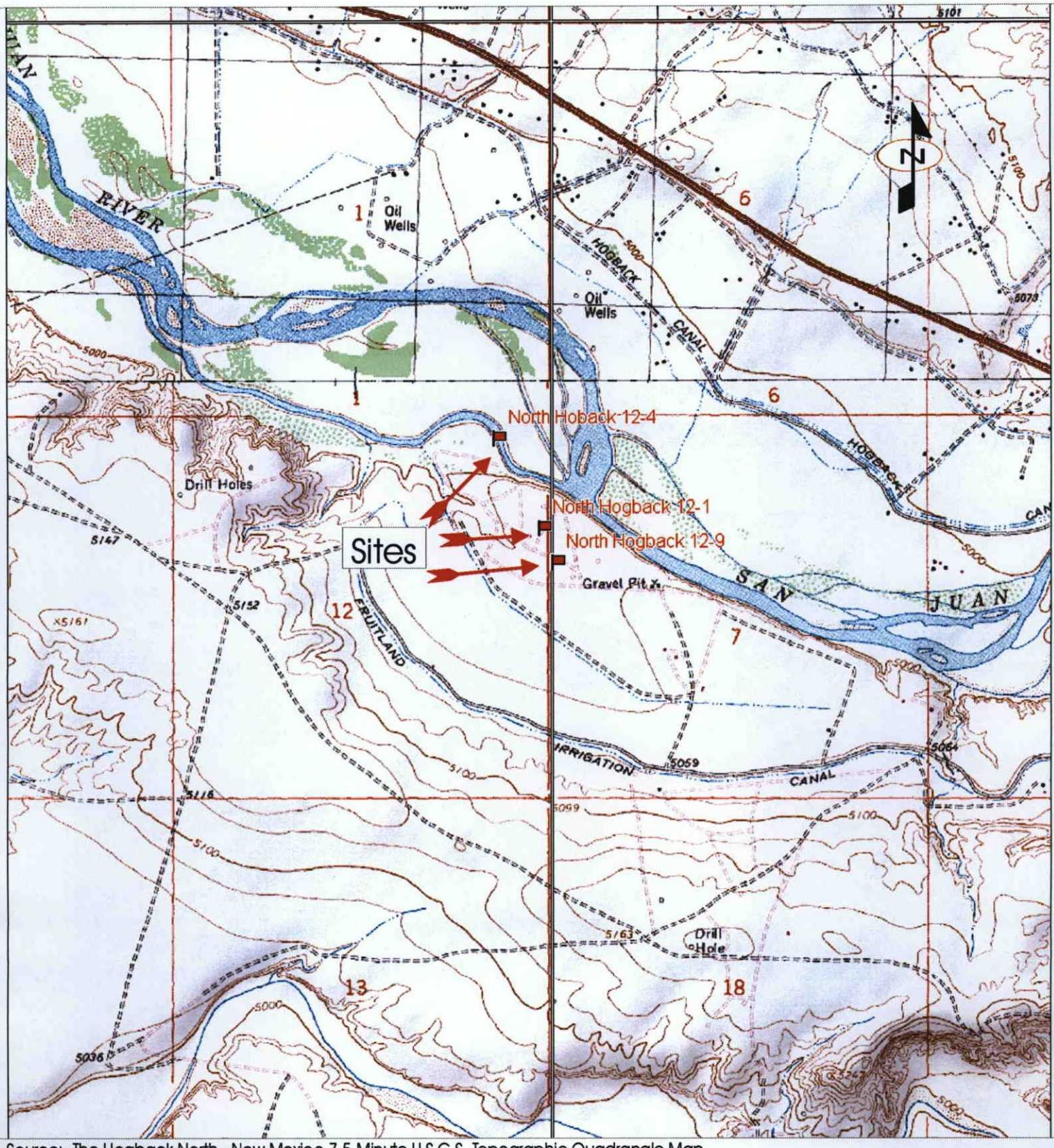
C. Jack Collins
Chief Environmental Scientist/Hydrogeologist
NMCES #098
jcollins@envirotech-inc.com

CHARLES J. COLLINS, P.G., C.E.S. NEW MEXICO 038 CERTIFIED SCIENTIST

Morris D. Young
President
NMCES #038
myoung@envirotech-inc.com

MORRIS D. YOUNG, C.E.S. NEW MEXICO 098 CERTIFIED SCIENTIST

FIGURES



Source: The Hogback North, New Mexico 7.5 Minute U.S.G.S. Topographic Quadrangle Map
Scale: 1:24,000 1" = 2000'

North Hogback 12-1, 12-4, & 12-9
Section 12, Township 29N, Range 16W

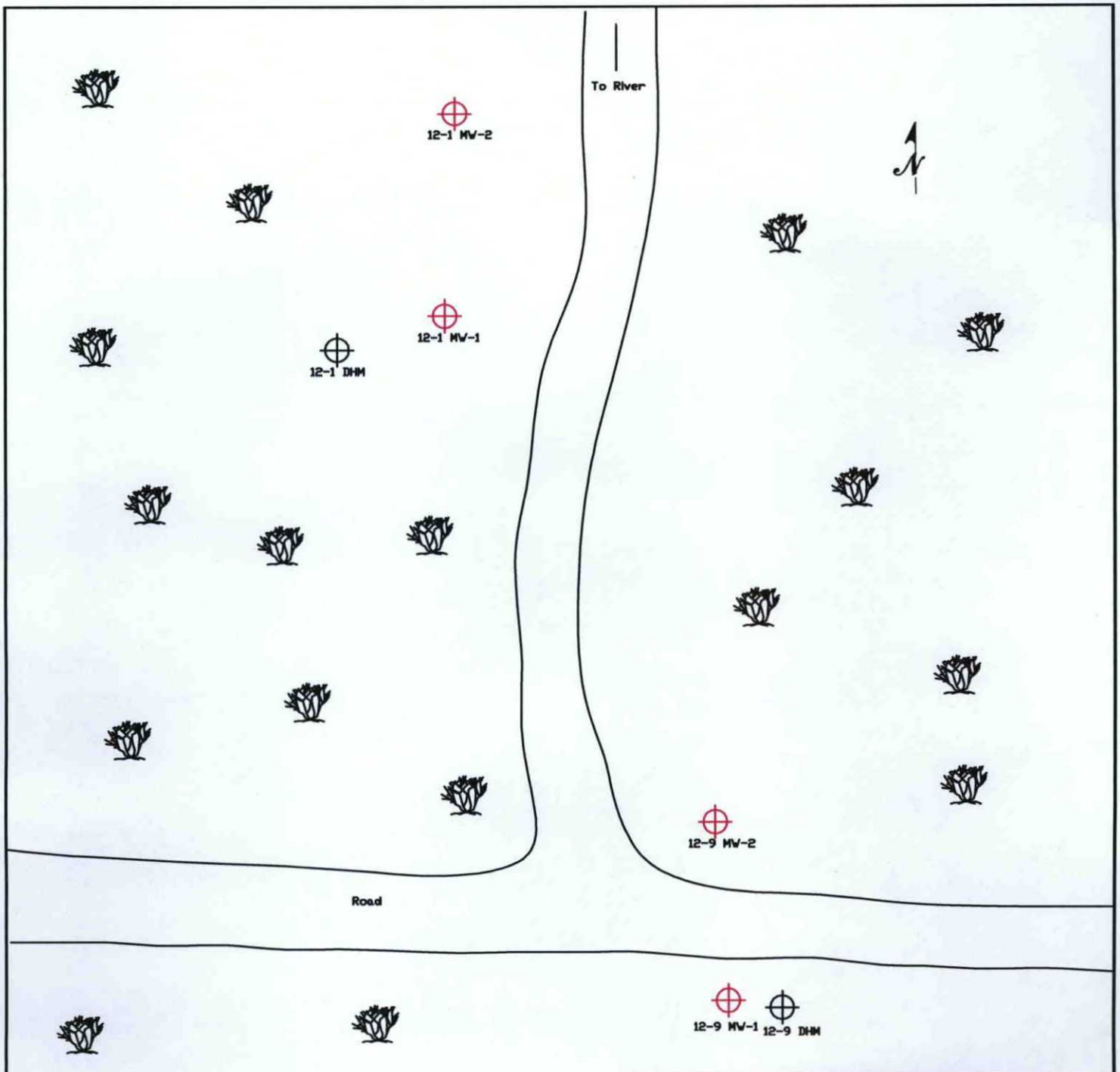
PROJECT No 05161-002 | Date Drawn: 7/20/06

ENVIROTECH INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS
5796 U.S. HIGHWAY 64
FARMINGTON, NEW MEXICO 87401
PHONE (505) 632-0615

Vicinity Map

Figure 1

DRAWN BY: Greg Crabtree | PROJECT MANAGER: C. Jack Collins



Duncan Oil
North Hogback
12-1 and 12-9 Site Map

SCALE:1" = 100'	FIGURE NO. 2	REV
PROJECT NO.05161-002		

REVISIONS

NO.	DATE	BY	DESCRIPTION

MAP DRWN	GWC	7/14/06	BASE DRWN	GWC	7/14/06

Legend

- Dry Hole Marker
- Monitor Well Location

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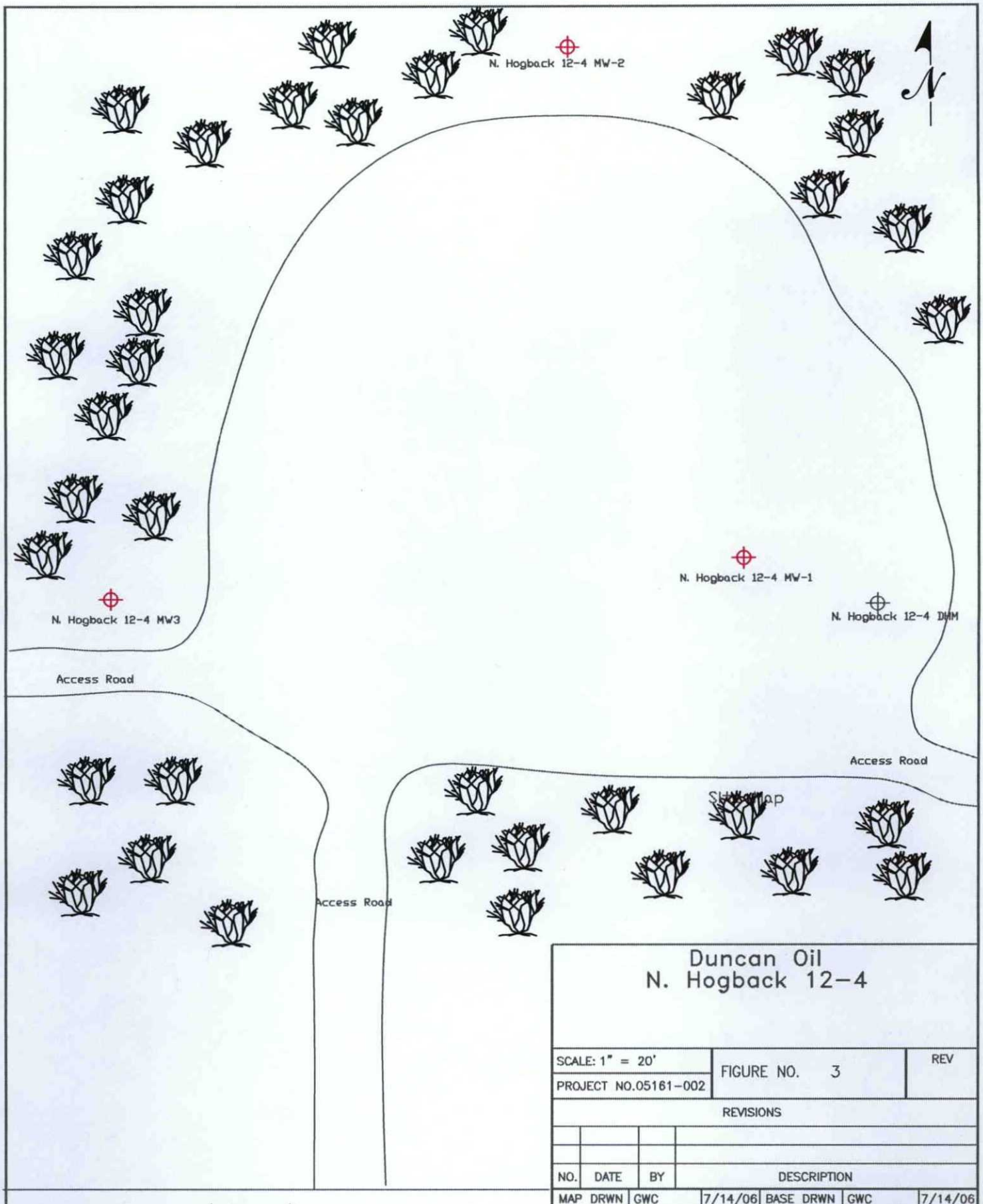
5796 U.S. HIGHWAY 64, FARMINGTON, NM 87401 505-632-0615



Duncan Oil
N. Hogback 12-4

SCALE: 1" = 20'	FIGURE NO. 3	REV
PROJECT NO.05161-002		

REVISIONS

NO.	DATE	BY	DESCRIPTION

MAP DRWN	GWC	7/14/06	BASE DRWN	GWC	7/14/06

Legend

- Dry Hole Marker
- Monitor Well Location

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ENVIROTECH

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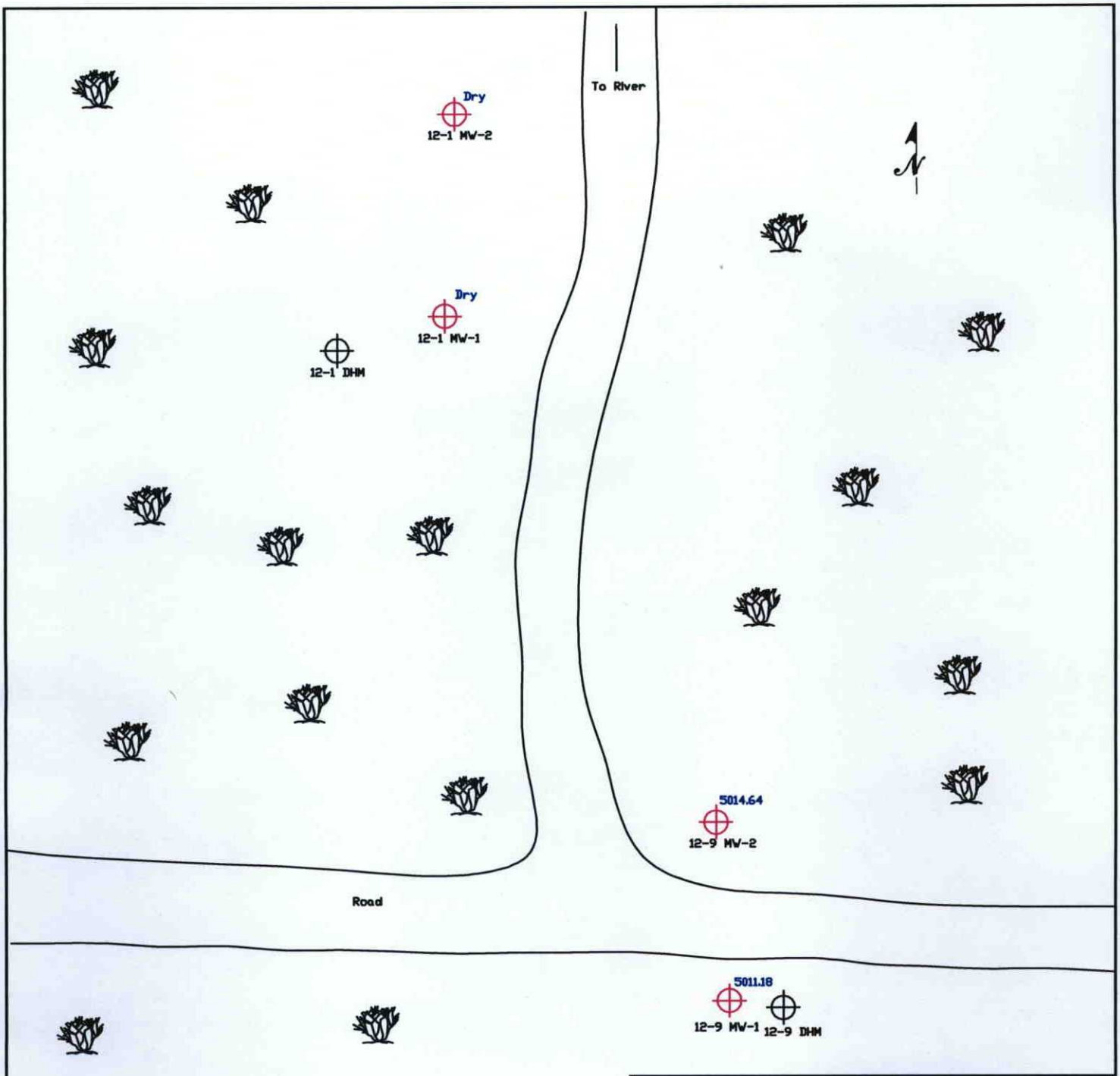

Duncan Oil
North Hogback
12-1 and 12-9 Site Map

SCALE:1" = 100'	FIGURE NO. 4	REV
PROJECT NO.05161-002		

REVISIONS

NO.	DATE	BY	DESCRIPTION

MAP DRWN	GWC	7/14/06	BASE DRWN	GWC	7/14/06

Legend

- Dry Hole Marker
- Monitor Well Location
- 5014.64 Water Level Elevation

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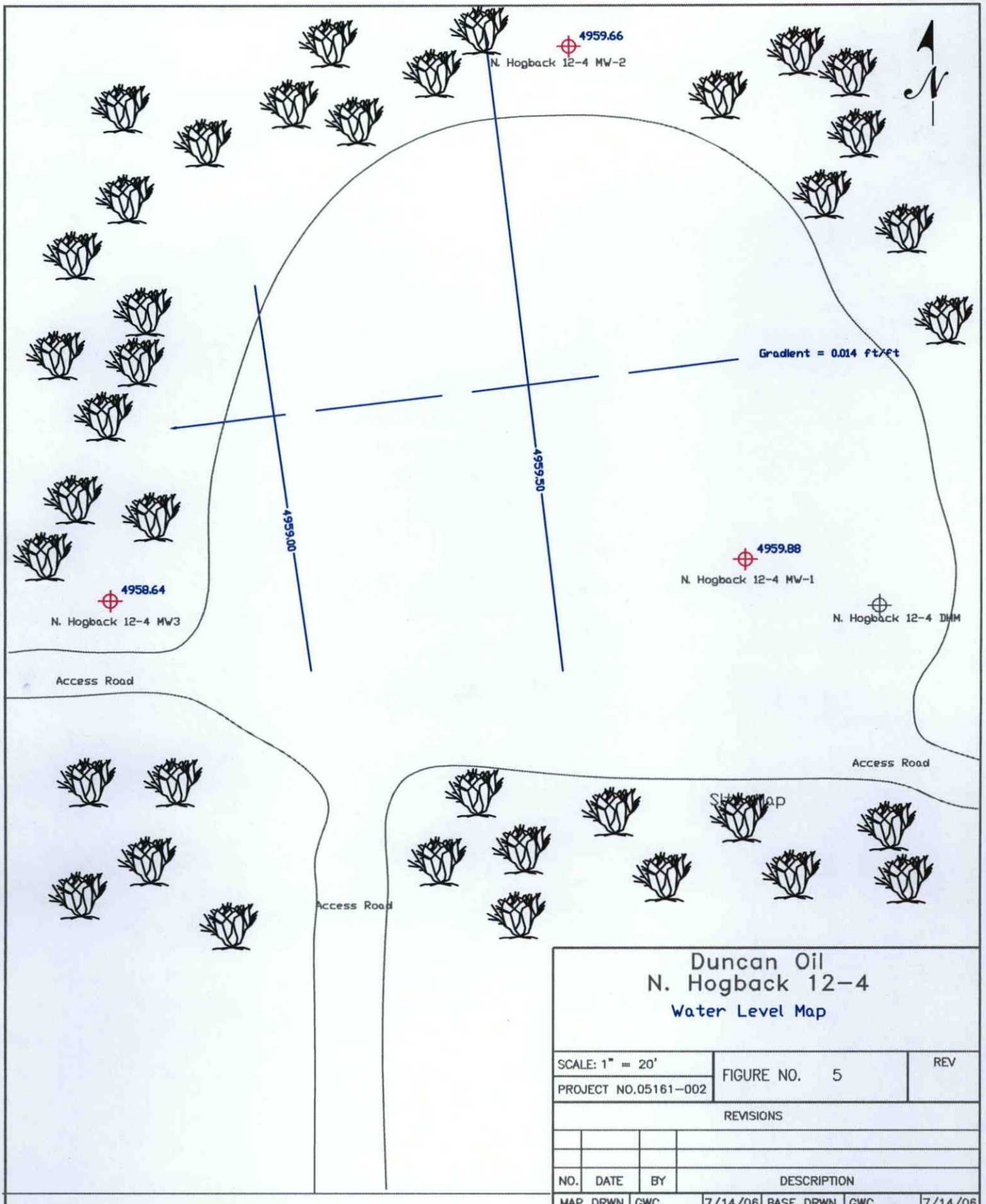

Duncan Oil
N. Hogback 12-4
Water Level Map

SCALE: 1" = 20'	FIGURE NO. 5	REV
PROJECT NO.05161-002		

REVISIONS

NO.	DATE	BY	DESCRIPTION

MAP DRWN	GWC	7/14/06	BASE DRWN	GWC	7/14/06

Legend

- Dry Hole Marker
- Monitor Well Location
- 4958.64 Water Level Elevation
- 4959.00 Water Level Contour

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ENVIROTECH
5796 U.S. HIGHWAY 64, FARMINGTON, NM 87401 505-632-0615

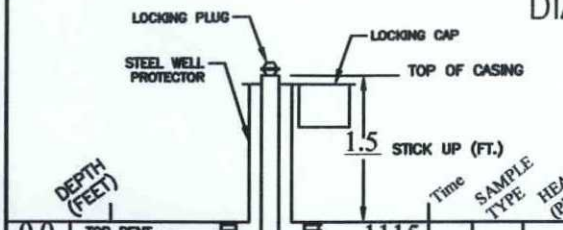
APPENDIX A

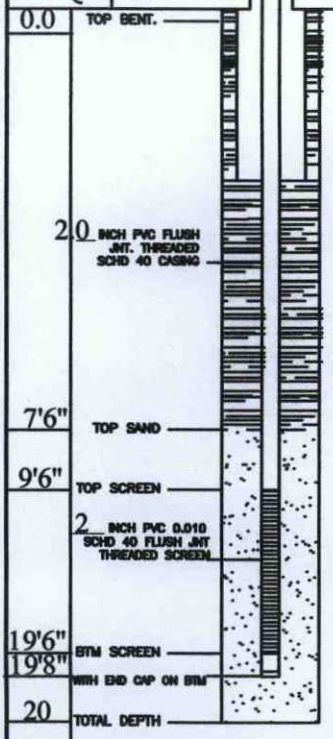
Lithology Logs

ABOVE GRADE WELL COMPLETION DIAGRAM / LITHOLOGY LOG

MW 12-1 MW #1

SB _____





Time	SAMPLE TYPE	HEADSPACE (PPM)	LITHOLOGY	SAMPLE DESCRIPTION	DEPTH (FEET)
					0
1115				fill sand, light brown	
1120	C	1		fill sand, light brown	5
1128	C	6		fill sand, light brown	10
				cobble sand/clay, some moisture	
1134	C	2			15
				shale layer	
1152	C	3		TD = 20'	20

Well Materials Used:

6 Sks 10–12 Silica Sand
1 Sks Bentonite Chips
___ Sks Class "A" Cement
___ Sks Quickcrete
15 Ft Blank Casing
10 Ft Screen

Well Development:

_____ Bailed
_____ Pumped
_____ Gallons of Water

Remarks:
No Water encountered

DRILLER: Danny/Kelly Padilla
HELPER: Brandon Benally/Sue Smith
DRILLING COMPANY: Envirotech
DRILLING METHOD: Tubex

BIT SIZE: _____
TOTAL BORING DEPTH: 20'
DATE STARTED: 6/28/06
SAMPLER TYPE: Cuttings

LOCATION: N. Hogback 12-1
ELEVATION: _____
DATE COMPLETED 6/28/06
GEOLOGIST: Greg Crabtree

Duncan Oil
North Hogback 12-1

REVISIONS
BY ___ DATE _____
BY ___ DATE _____

JOB # 05161-002

ENVIROTECH INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS
5796 U.S. HIGHWAY 64
FARMINGTON, NEW MEXICO 87401
(505) 632–0615
AbvGrdlog.dwg

MW-1

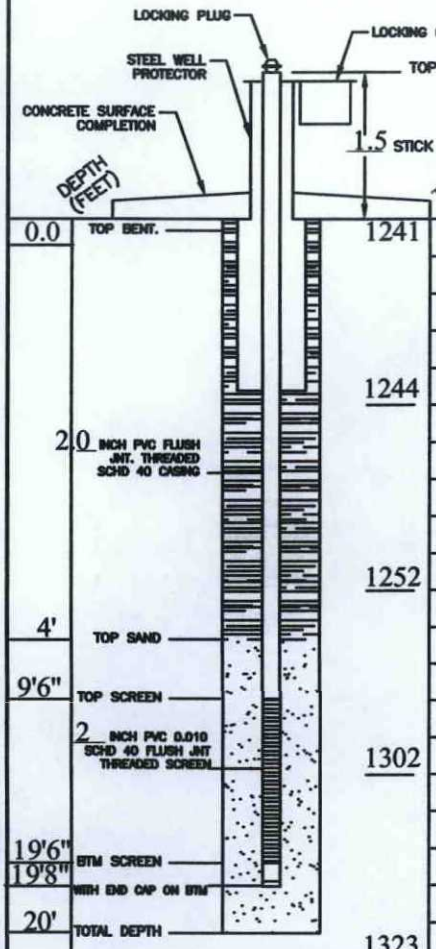
DATE 7/12/06 DRAWN GWC
SCALE _____ APPROVED ___

PAGE 1 OF 1

ABOVE GRADE WELL COMPLETION DIAGRAM / LITHOLOGY LOG

MW 12-1 MW-2

SB _____



Time	SAMPLE TYPE	HEADSPACE (PPM)	LITHOLOGY	SAMPLE DESCRIPTION	DEPTH (FEET)
1241				Medium Grain Sand/Cobble, dry	0
1244	C	5		Medium Grain Sand/Cobble, dry	5
1252	C	4		Medium Grain Sand/Cobble, dry	10
1302	C	67		Sand/Cobble, slight moisture, strong hydrocarbon odor	15
				shale layer, dry, strong hydrocarbon odor	
1323		76		TD = 20'	20

Well Materials Used:

6 Sks 10–12 Silica Sand
1 Sks Bentonite Chips
___ Sks Class "A" Cement
___ Sks Quickcrete
15 Ft Blank Casing
10 Ft Screen

Well Development:

_____ Bailed
_____ Pumped
_____ Gallons of Water

Remarks:
No Water encountered

DRILLER: Kelly Padilla
HELPER: Brandon Benally
DRILLING COMPANY: Envirotech
DRILLING METHOD: Tubex

BIT SIZE: _____
TOTAL BORING DEPTH: 20'
DATE STARTED: 6/28/06
SAMPLER TYPE: Cuttings

LOCATION: N. Hogback 12-1
ELEVATION: _____
DATE COMPLETED 6/28/06
GEOLOGIST: Greg Crabtree

Duncan Oil
North Hogback 12-1

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MW-2

REVISIONS
BY ___ DATE _____
BY ___ DATE _____

JOB # 05161-002

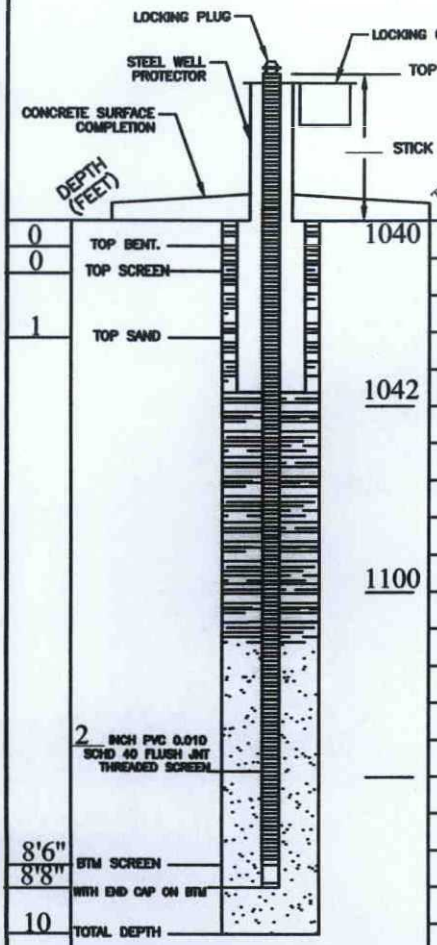
DATE 7/12/06 DRAWN GWC
SCALE _____ APPROVED ___

PAGE 1 OF 1

ABOVE GRADE WELL COMPLETION DIAGRAM / LITHOLOGY LOG

MW 12-4 MW-1

SB _____



Time	SAMPLE TYPE	HEADSPACE (PPM)	LITHOLOGY	SAMPLE DESCRIPTION	DEPTH (FEET)
1040				light brown, sand/clay mixture, no odor	0
				water level on 7/5/06	
1042	C	5		light brown, sand/clay mixture, no odor	5
	C	79		Medium Grain Sand/Cobbles, dark gray, strong odor	
1100	C	30		cobbles, dark gray, slight hydrocarbon odor	10

Well Materials Used:

6 Sks 10–12 Silica Sand
1 Sks Bentonite Chips
___ Sks Class "A" Cement
___ Sks Quickcrete
15 Ft Blank Casing
10 Ft Screen

Well Development:
X Bailed
___ Pumped
3.0 Gallons of Water

Remarks:

DRILLER: Danny Padilla
HELPER: Brandon Benally
DRILLING COMPANY: Envirotech
DRILLING METHOD: Tubex

BIT SIZE: _____
TOTAL BORING DEPTH: 10'
DATE STARTED: 6/29/06
SAMPLER TYPE: Cuttings

LOCATION: N. Hogback 12-4
ELEVATION: _____
DATE COMPLETED 6/29/06
GEOLOGIST: Greg Crabtree

Duncan Oil
North Hogback 12-4

ENVIROTECH INC.

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MW-1

REVISIONS
BY ___ DATE ___
BY ___ DATE ___

JOB # 05161-002

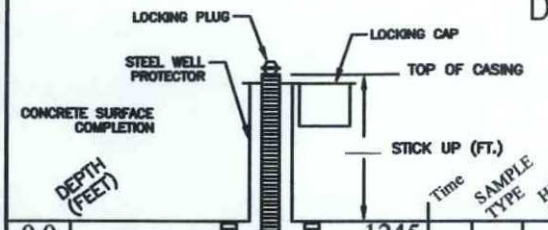
DATE 7/12/06 DRAWN GWC
SCALE ___ APPROVED ___

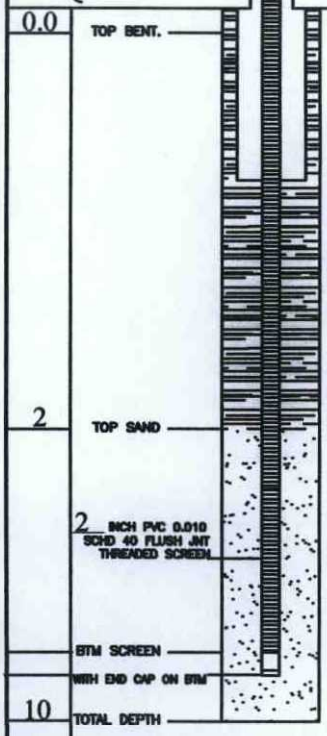
PAGE 1 OF 1

ABOVE GRADE WELL COMPLETION DIAGRAM / LITHOLOGY LOG

MW 12-4 MW-2

SB _____





DEPTH (FEET)	Time	SAMPLE TYPE	HEADSPACE (PPM)	LITHOLOGY	SAMPLE DESCRIPTION	DEPTH (FEET)
	1245				Medium Grain Sand, Light Brown, dry, no odor	0
					medium grain light brown sand with cobbles	
	1252	C	3		WL on 7/5/06	5
					moist, medium grain sand with cobbles	
	1300	C	0			10

Well Materials Used:

5 Sks 10–12 Silica Sand
1 Sks Bentonite Chips
___ Sks Class "A" Cement
___ Sks Quickcrete
___ Ft Blank Casing
10 Ft Screen

Well Development:
_____ Bailed
_____ Pumped
_____ Gallons of Water

Remarks:
No Water encountered

DRILLER: Kelly Padilla
HELPER: Brandon Benally
DRILLING COMPANY: Envirotech
DRILLING METHOD: HSA

BIT SIZE: _____
TOTAL BORING DEPTH: 10'
DATE STARTED: 6/30/06
SAMPLER TYPE: Cuttings

LOCATION: N. Hogback 12-4
ELEVATION: _____
DATE COMPLETED 6/30/06
GEOLOGIST: Greg Crabtree

Duncan Oil
North Hogback 12-4

ENVIROTECH INC.

ENVIRONMENTAL SCIENTISTS & ENGINEERS
5796 U.S. HIGHWAY 64
FARMINGTON, NEW MEXICO 87401
(505) 632–0615
AbvGrdlog.dwg

MW-2

REVISIONS
BY ___ DATE _____
BY ___ DATE _____

JOB # 05161-002

DATE 7/12/06 DRAWN GWC
SCALE _____ APPROVED ___

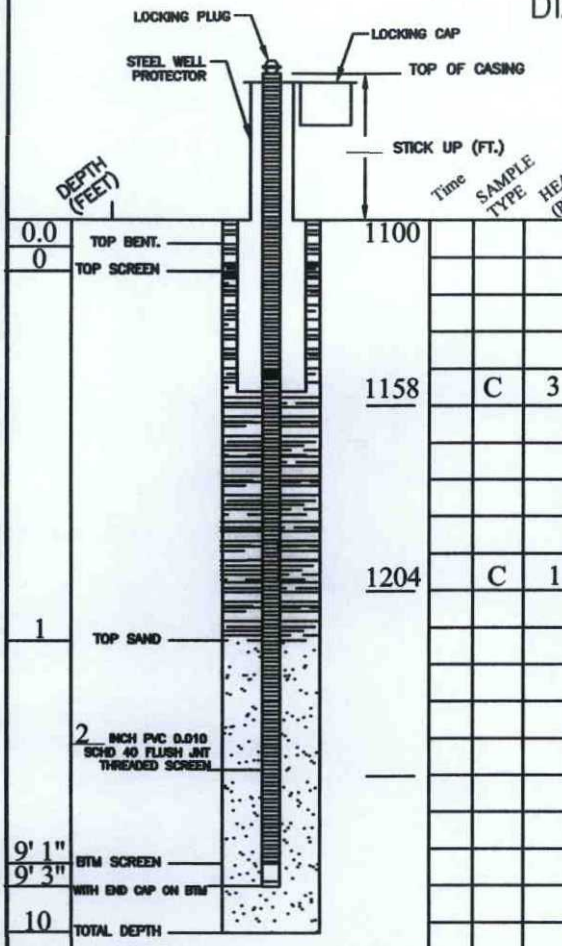
PAGE 1 OF 1

20

ABOVE GRADE WELL COMPLETION DIAGRAM / LITHOLOGY LOG

MW 12-4 MW-3

SB _____



Time	SAMPLE TYPE	HEADSPACE (PPM)	LITHOLOGY	SAMPLE DESCRIPTION	DEPTH (FEET)
					0
1100				Medium grain sand, light brown, dry, no odor	
				Medium grain sand with cobbles, light brown, dry, no odor	
1158	C	3			5
				WL on 7/5/06	
				moist, medium grain sand with cobbles	
1204	C	1		moist sand/cobbles gray, slight musty odor	10

Well Materials Used:

5 Sks 10–12 Silica Sand
1 Sks Bentonite Chips
___ Sks Class "A" Cement
___ Sks Quickcrete
___ Ft Blank Casing
10 Ft Screen

Well Development:
X Bailed
_____ Pumped
2.5 Gallons of Water

Remarks:
No Water encountered

DRILLER: Kelly Padilla
HELPER: Brandon Benally
DRILLING COMPANY: Envirotech
DRILLING METHOD: HSA

BIT SIZE: _____
TOTAL BORING DEPTH: 10'
DATE STARTED: 6/30/06
SAMPLER TYPE: Cuttings

LOCATION: N. Hogback 12-4
ELEVATION: _____
DATE COMPLETED 6/30/06
GEOLOGIST: Greg Crabtree

Duncan Oil
North Hogback 12-4

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MW-3

REVISIONS
BY ___ DATE _____
BY ___ DATE _____

JOB # 05161-002

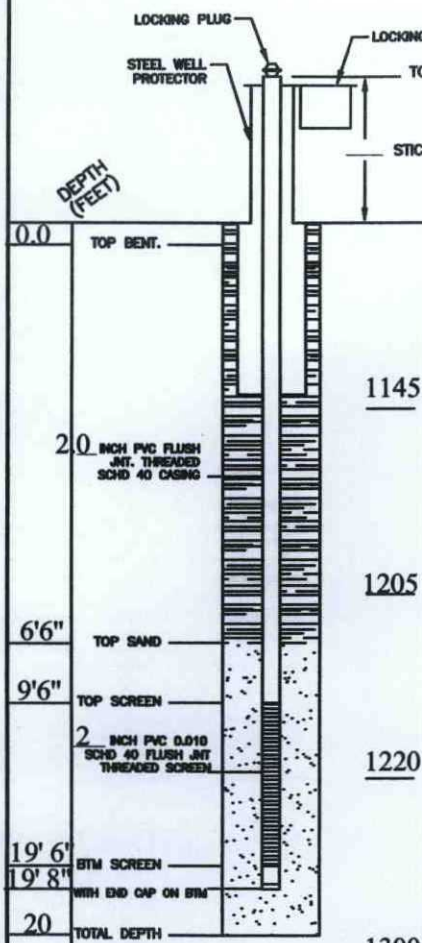
DATE 7/12/06 DRAWN GWC
SCALE _____ APPROVED ____

PAGE 1 OF 1

ABOVE GRADE WELL COMPLETION DIAGRAM / LITHOLOGY LOG

MW 12-9 MW-1

SB _____



Time	SAMPLE TYPE	HEADSPACE (PPM)	LITHOLOGY	SAMPLE DESCRIPTION	DEPTH (FEET)
					0
				fill, light brown sand, dry, no odor	
1145	C	0			5
1205	C	17		sand and clay mixture, Dark gray, moist, slight odor	10
				WL on 7/5/06	
1220	C	8		very moist, dark gray sand/clay with some cobble, slight odor	15
1300	C	2		dry, light gray sand with some cobble	20

Well Materials Used:

4 Sks 10–12 Silica Sand
1/2 Sks Bentonite Chips
___ Sks Class "A" Cement
___ Sks Quickcrete
10 Ft Blank Casing
10 Ft Screen

Well Development:

X Bailed
___ Pumped
3.0 Gallons of Water

Remarks:

DRILLER: Danny Padilla
HELPER: Brandon Bennally
DRILLING COMPANY: Envirotech
DRILLING METHOD: Tubex

BIT SIZE: _____
TOTAL BORING DEPTH: 20'
DATE STARTED: 5/19/06
SAMPLER TYPE: Cuttings

LOCATION: N. Hogback 12-9
ELEVATION: _____
DATE COMPLETED 6/26/06
GEOLOGIST: Greg Crabtree

Duncan Oil
North Hogback 12-9

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MW-1

REVISIONS
BY ___ DATE ___
BY ___ DATE ___

JOB # 05161-002

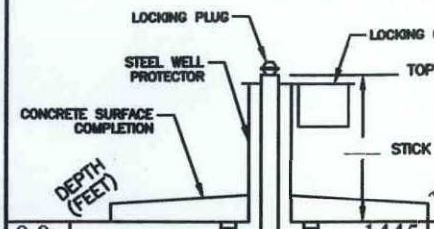
DATE 7/12/06 DRAWN GWC
SCALE ___ APPROVED ___

PAGE 1 OF 1

ABOVE GRADE WELL COMPLETION DIAGRAM / LITHOLOGY LOG

MW 12-9 MW-2

SB _____



DEPTH (FEET)		Time	SAMPLE TYPE	HEADSPACE (PPM)	LITHOLOGY	SAMPLE DESCRIPTION	DEPTH (FEET)
0.0	TOP BENT.	1445				sand/cobbles light brown	0
		1500	C	0		sand/cobbles light brown	5
2.0	2 INCH PVC FLUSH JNT. THREADED SCHD 40 CASING					WL at 8.5 feet on 7/5/06	
		1515	C	0		mechanical difficulty @ 8.5' resume drilling on 6/28/06	
		0945	C	30		sand/cobbles light brown, moist	10
4' 1"	TOP SAND						
4'6"	TOP SCREEN						
	2 INCH PVC 0.010 SCHD 40 FLUSH JNT THREADED SCREEN	1000	C	5		very moist, dark gray sand/clay with some cobble TD = 15'	15
14'6"	BTM SCREEN						
	WITH END CAP ON BTM						
15	TOTAL DEPTH						

Well Materials Used:

6 Sks 10–12 Silica Sand
1 Sks Bentonite Chips
___ Sks Class "A" Cement
___ Sks Quickcrete
10 Ft Blank Casing
10 Ft Screen

Well Development:
X Bailed
___ Pumped
2.5 Gallons of Water

Remarks:

DRILLER: Danny/Kelly Padilla
HELPER: Brandon Benally / Sue Smith
DRILLING COMPANY: Envirotech
DRILLING METHOD: Tubex

BIT SIZE: _____
TOTAL BORING DEPTH: 15'
DATE STARTED: 6/26/06
SAMPLER TYPE: Cuttings

LOCATION: N. Hogback 12-9
ELEVATION: _____
DATE COMPLETED 6/28/06
GEOLOGIST: Greg Crabtree

Duncan Oil
North Hogback 12-9

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MW-2

REVISIONS
BY ___ DATE ___
BY ___ DATE ___

JOB # 05161-002

DATE 7/12/06 DRAWN GWC
SCALE ___ APPROVED ___

PAGE 1 OF 1

APPENDIX B

Laboratory Soil Sample Results

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Duncan Oil	Project #:	05161-002
Sample ID:	MW #1	Date Reported:	06-30-06
Laboratory Number:	37595	Date Sampled:	06-28-06
Chain of Custody No:	1110	Date Received:	06-28-06
Sample Matrix:	Soil	Date Extracted:	06-29-06
Preservative:	Cool	Date Analyzed:	06-30-06
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **N. Hogback 12 - #1**

Analyst

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Duncan Oil	Project #:	05161-002
Sample ID:	MW #2	Date Reported:	06-30-06
Laboratory Number:	37596	Date Sampled:	06-28-06
Chain of Custody No:	1110	Date Received:	06-28-06
Sample Matrix:	Soil	Date Extracted:	06-29-06
Preservative:	Cool	Date Analyzed:	06-30-06
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**3.4**	**0.2**
Diesel Range (C10 - C28)	**342**	**0.1**
Total Petroleum Hydrocarbons	**345**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **N. Hogback 12 - #1**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA Method 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	06-30-06 QA/QC	Date Reported:	06-30-06
Laboratory Number:	37592	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	06-30-06
Condition:	N/A	Analysis Requested:	TPH

	I-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
Gasoline Range C5 - C10	02-04-05	9.9794E+002	9.9894E+002	**0.10%**	**0 - 15%**
Diesel Range C10 - C28	02-04-05	1.0014E+003	1.0034E+003	**0.20%**	**0 - 15%**

Blank Conc. (mg/L - mg/Kg)	Concentration	Detection Limit
Gasoline Range C5 - C10	**ND**	**0.2**
Diesel Range C10 - C28	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
Gasoline Range C5 - C10	**ND**	**ND**	**0.0%**	**0 - 30%**
Diesel Range C10 - C28	**ND**	**ND**	**0.0%**	**0 - 30%**

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	**ND**	**250**	**250**	**100.0%**	**75 - 125%**
Diesel Range C10 - C28	**ND**	**250**	**250**	**100.0%**	**75 - 125%**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 37592 - 37593, 37595 - 37596, 37598 - 37602.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Duncan Oil	Project #:	05161-002
Sample ID:	MW #1	Date Reported:	06-30-06
Laboratory Number:	37595	Date Sampled:	06-28-06
Chain of Custody:	1110	Date Received:	06-28-06
Sample Matrix:	Soil	Date Analyzed:	06-30-06
Preservative:	Cool	Date Extracted:	06-29-06
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**1.8**
Toluene	**5.2**	**1.7**
Ethylbenzene	**5.0**	**1.5**
p,m-Xylene	**13.3**	**2.2**
o-Xylene	**7.2**	**1.0**
Total BTEX	**30.7**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**97.0 %**
	1,4-difluorobenzene	**97.0 %**
	Bromochlorobenzene	**97.0 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **N. Hogback 12 - #1**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Duncan Oil	Project #:	05161-002
Sample ID:	MW #2	Date Reported:	06-30-06
Laboratory Number:	37596	Date Sampled:	06-28-06
Chain of Custody:	1110	Date Received:	06-28-06
Sample Matrix:	Soil	Date Analyzed:	06-30-06
Preservative:	Cool	Date Extracted:	06-29-06
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**55.2**	**1.8**
Toluene	**34.7**	**1.7**
Ethylbenzene	**26.3**	**1.5**
p,m-Xylene	**147**	**2.2**
o-Xylene	**59.6**	**1.0**
Total BTEX	**323**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**98.0 %**
	1,4-difluorobenzene	**98.0 %**
	Bromochlorobenzene	**98.0 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **N. Hogback 12 - #1**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	N/A	Project #:	N/A
Sample ID:	06-30-BTEX QA/QC	Date Reported:	06-30-06
Laboratory Number:	37595	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	06-30-06
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	6.4411E+007	6.4540E+007	0.2%	ND	0.2
Toluene	7.7076E+007	7.7230E+007	0.2%	ND	0.2
Ethylbenzene	3.4236E+007	3.4305E+007	0.2%	ND	0.2
p,m-Xylene	1.4479E+008	1.4508E+008	0.2%	ND	0.2
o-Xylene	7.3511E+007	7.3658E+007	0.2%	ND	0.1

Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	ND	ND	0.0%	0 - 30%	1.8
Toluene	5.2	5.2	0.0%	0 - 30%	1.7
Ethylbenzene	5.0	5.0	0.0%	0 - 30%	1.5
p,m-Xylene	13.3	13.2	0.8%	0 - 30%	2.2
o-Xylene	7.2	7.2	0.0%	0 - 30%	1.0

Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	ND	50.0	49.9	99.8%	39 - 150
Toluene	5.2	50.0	55.2	100.0%	46 - 148
Ethylbenzene	5.0	50.0	55.0	100.0%	32 - 160
p,m-Xylene	13.3	100	113	99.9%	46 - 148
o-Xylene	7.2	50.0	57.1	99.8%	46 - 148

ND - Parameter not detected at the stated detection limit.

References:

Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **QA/QC for Samples 37595 - 37596, 37598 - 37599, 37602.**

Analyst

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CHAIN OF CUSTODY RECORD

1110

Client / Project Name	Project Location	ANALYSIS / PARAMETERS
Duncan Oil	N. Hogback 12-#1	
Sampler:	Client No. 05161-002	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	8015	8021					Remarks
MW #1	6/28/06	1134	37595	Soil	1	✓	✓					
MW #2	6/28/06	1330	37596	Soil	1	✓	✓					

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Greg Crabtree	6/28/06	1630	Clint Vaught	6/28/06	1630
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

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Sample Receipt	Y	N	N/A
Received Intact	✓		
Cool - Ice/Blue Ice			

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Duncan Oil	Project #:	05161-002
Sample ID:	MW #1	Date Reported:	06-30-06
Laboratory Number:	37602	Date Sampled:	06-29-06
Chain of Custody No:	1147	Date Received:	06-29-06
Sample Matrix:	Soil	Date Extracted:	06-29-06
Preservative:	Cool	Date Analyzed:	06-30-06
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**4.8**	**0.2**
Diesel Range (C10 - C28)	**79.9**	**0.1**
Total Petroleum Hydrocarbons	**84.7**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **N. Hogback 12 - #4.**

Analyst

Review

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA Method 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	06-30-06 QA/QC	Date Reported:	06-30-06
Laboratory Number:	37592	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	06-30-06
Condition:	N/A	Analysis Requested:	TPH

	I-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
Gasoline Range C5 - C10	02-04-05	9.9794E+002	9.9894E+002	**0.10%**	**0 - 15%**
Diesel Range C10 - C28	02-04-05	1.0014E+003	1.0034E+003	**0.20%**	**0 - 15%**

Blank Conc. (mg/L - mg/Kg)	Concentration	Detection Limit
Gasoline Range C5 - C10	**ND**	**0.2**
Diesel Range C10 - C28	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
Gasoline Range C5 - C10	**ND**	**ND**	**0.0%**	**0 - 30%**
Diesel Range C10 - C28	**ND**	**ND**	**0.0%**	**0 - 30%**

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	**ND**	**250**	**250**	**100.0%**	**75 - 125%**
Diesel Range C10 - C28	**ND**	**250**	**250**	**100.0%**	**75 - 125%**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 37592 - 37593, 37595 - 37596, 37598 - 37602.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Duncan Oil	Project #:	05161-002
Sample ID:	MW #1	Date Reported:	06-30-06
Laboratory Number:	37602	Date Sampled:	06-29-06
Chain of Custody:	1147	Date Received:	06-29-06
Sample Matrix:	Soil	Date Analyzed:	06-30-06
Preservative:	Cool	Date Extracted:	06-29-06
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**1.8**
Toluene	**27.1**	**1.7**
Ethylbenzene	**30.6**	**1.5**
p,m-Xylene	**111**	**2.2**
o-Xylene	**29.0**	**1.0**
Total BTEX	**198**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**97.0 %**
	1,4-difluorobenzene	**97.0 %**
	Bromochlorobenzene	**97.0 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **N. Hogback 12 - #4**

Analyst

Review

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	N/A	Project #:	N/A
Sample ID:	06-30-BTEX QA/QC	Date Reported:	06-30-06
Laboratory Number:	37595	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	06-30-06
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	6.4411E+007	6.4540E+007	0.2%	ND	0.2
Toluene	7.7076E+007	7.7230E+007	0.2%	ND	0.2
Ethylbenzene	3.4236E+007	3.4305E+007	0.2%	ND	0.2
p,m-Xylene	1.4479E+008	1.4508E+008	0.2%	ND	0.2
o-Xylene	7.3511E+007	7.3658E+007	0.2%	ND	0.1

Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	ND	ND	0.0%	0 - 30%	1.8
Toluene	5.2	5.2	0.0%	0 - 30%	1.7
Ethylbenzene	5.0	5.0	0.0%	0 - 30%	1.5
p,m-Xylene	13.3	13.2	0.8%	0 - 30%	2.2
o-Xylene	7.2	7.2	0.0%	0 - 30%	1.0

Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	ND	50.0	49.9	99.8%	39 - 150
Toluene	5.2	50.0	55.2	100.0%	46 - 148
Ethylbenzene	5.0	50.0	55.0	100.0%	32 - 160
p,m-Xylene	13.3	100	113	99.9%	46 - 148
o-Xylene	7.2	50.0	57.1	99.8%	46 - 148

ND - Parameter not detected at the stated detection limit.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **QA/QC for Samples 37595 - 37596, 37598 - 37599, 37602.**

Analyst

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CHAIN OF CUSTODY RECORD

1147

Client / Project Name	Project Location	ANALYSIS / PARAMETERS
Duncan Oil	05161-002	
Sampler: G. Crabtree	Client No. Ne Hagback 12-#4	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	8015	8021					Remarks
MW #1	6/29/06	1050	37602	Soil	1	✓	✓					

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Greg Crabtree	6/29/06	1425	Chuck Van	6/29/06	1425
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

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Sample Receipt	Y	N	N/A
Received Intact	✓		
Cool - Ice/Blue Ice	✓		

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Duncan Oil	Project #:	05161-002
Sample ID:	MW #3	Date Reported:	07-05-06
Laboratory Number:	37629	Date Sampled:	06-30-06
Chain of Custody:	1154	Date Received:	06-30-06
Sample Matrix:	Soil	Date Analyzed:	07-05-06
Preservative:	Cool	Date Extracted:	07-05-06
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**3.7**	**1.8**
Toluene	**4.6**	**1.7**
Ethylbenzene	**5.6**	**1.5**
p,m-Xylene	**37.0**	**2.2**
o-Xylene	**13.4**	**1.0**
Total BTEX	**64.3**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**99.0 %**
	1,4-difluorobenzene	**99.0 %**
	Bromochlorobenzene	**99.0 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **N. Hogback 12 - #4.**

Analyst

Review

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Duncan Oil	Project #:	05161-002
Sample ID:	MW #2	Date Reported:	07-05-06
Laboratory Number:	37630	Date Sampled:	06-30-06
Chain of Custody:	1154	Date Received:	06-30-06
Sample Matrix:	Soil	Date Analyzed:	07-05-06
Preservative:	Cool	Date Extracted:	07-05-06
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**1.8**
Toluene	**2.0**	**1.7**
Ethylbenzene	**ND**	**1.5**
p,m-Xylene	**6.6**	**2.2**
o-Xylene	**3.1**	**1.0**
Total BTEX	**11.7**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**98.0 %**
	1,4-difluorobenzene	**98.0 %**
	Bromochlorobenzene	**98.0 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **N. Hogback 12 - #4.**

Analyst

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	N/A	Project #:	N/A
Sample ID:	07-05-BTEX QA/QC	Date Reported:	07-05-06
Laboratory Number:	37629	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	07-05-06
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	6.2492E+007	6.2618E+007	0.2%	ND	0.2
Toluene	7.5872E+007	7.6024E+007	0.2%	ND	0.2
Ethylbenzene	3.4126E+007	3.4195E+007	0.2%	ND	0.2
p,m-Xylene	1.4317E+008	1.4345E+008	0.2%	ND	0.2
o-Xylene	7.3136E+007	7.3283E+007	0.2%	ND	0.1

Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	3.7	3.7	0.0%	0 - 30%	1.8
Toluene	4.6	4.6	0.0%	0 - 30%	1.7
Ethylbenzene	5.6	5.6	0.0%	0 - 30%	1.5
p,m-Xylene	37.0	37.0	0.0%	0 - 30%	2.2
o-Xylene	13.4	13.4	0.0%	0 - 30%	1.0

Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	3.7	50.0	53.6	99.8%	39 - 150
Toluene	4.6	50.0	54.6	100.0%	46 - 148
Ethylbenzene	5.6	50.0	55.5	99.8%	32 - 160
p,m-Xylene	37.0	100	136	99.6%	46 - 148
o-Xylene	13.4	50.0	63.3	99.8%	46 - 148

ND - Parameter not detected at the stated detection limit.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **QA/QC for Samples 37629 - 37630.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Duncan Oil	Project #:	05161-002
Sample ID:	MW #3	Date Reported:	07-05-06
Laboratory Number:	37629	Date Sampled:	06-30-06
Chain of Custody No:	1154	Date Received:	06-30-06
Sample Matrix:	Soil	Date Extracted:	07-05-06
Preservative:	Cool	Date Analyzed:	07-05-06
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **N. Hogback 12 - #4.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Duncan Oil	Project #:	05161-002
Sample ID:	MW #2	Date Reported:	07-05-06
Laboratory Number:	37630	Date Sampled:	06-30-06
Chain of Custody No:	1154	Date Received:	06-30-06
Sample Matrix:	Soil	Date Extracted:	07-05-06
Preservative:	Cool	Date Analyzed:	07-05-06
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **N. Hogback 12 - #4.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA Method 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	07-05-06 QA/QC	Date Reported:	07-05-06
Laboratory Number:	37629	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	07-05-06
Condition:	N/A	Analysis Requested:	TPH

	I-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
Gasoline Range C5 - C10	02-04-05	9.9900E+002	1.0000E+003	**0.10%**	**0 - 15%**
Diesel Range C10 - C28	02-04-05	9.9800E+002	1.0000E+003	**0.20%**	**0 - 15%**

Blank Conc. (mg/L - mg/Kg)	Concentration	Detection Limit
Gasoline Range C5 - C10	**ND**	**0.2**
Diesel Range C10 - C28	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
Gasoline Range C5 - C10	**ND**	**ND**	**0.0%**	**0 - 30%**
Diesel Range C10 - C28	**ND**	**ND**	**0.0%**	**0 - 30%**

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	**ND**	**250**	**250**	**100.0%**	**75 - 125%**
Diesel Range C10 - C28	**ND**	**250**	**250**	**100.0%**	**75 - 125%**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 37629 - 37630.**

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CHAIN OF CUSTODY RECORD

1154

Client / Project Name	Project Location	ANALYSIS / PARAMETERS
Duncan Oil	N. Hogback 12-#4	
Sampler: G. Crabtree	Client No. 05161-002	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	8015	8021					Remarks
MW #3	6/30/06	1205	37629	Soil	1	✓	✓					
MW #2	6/30/06	1320	37630	Soil	1	✓	✓					

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Greg Crabtree	6/30/06	1530	Linda Hall	6/30/06	1530
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

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Sample Receipt	Y	N	N/A
Received Intact	✓		
Cool - Ice/Blue Ice	✓		

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Duncan Oil	Project #:	05161-002
Sample ID:	MW #1	Date Reported:	06-28-06
Laboratory Number:	37565	Date Sampled:	06-26-06
Chain of Custody No:	1101	Date Received:	06-26-06
Sample Matrix:	Soil	Date Extracted:	06-27-06
Preservative:	Cool	Date Analyzed:	06-28-06
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**0.3**	**0.2**
Diesel Range (C10 - C28)	**15.5**	**0.1**
Total Petroleum Hydrocarbons	**15.8**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **North Hogback 12-9.**

Analyst

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA Method 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	06-28-06 QA/QC	Date Reported:	06-28-06
Laboratory Number:	37556	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	06-28-06
Condition:	N/A	Analysis Requested:	TPH

	I-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
Gasoline Range C5 - C10	02-04-05	1.0014E+003	1.0024E+003	**0.10%**	**0 - 15%**
Diesel Range C10 - C28	02-04-05	1.0006E+003	1.0026E+003	**0.20%**	**0 - 15%**

Blank Conc. (mg/L - mg/Kg)	Concentration	Detection Limit
Gasoline Range C5 - C10	**ND**	**0.2**
Diesel Range C10 - C28	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
Gasoline Range C5 - C10	**ND**	**ND**	**0.0%**	**0 - 30%**
Diesel Range C10 - C28	**ND**	**ND**	**0.0%**	**0 - 30%**

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	**ND**	**250**	**250**	**100.0%**	**75 - 125%**
Diesel Range C10 - C28	**ND**	**250**	**250**	**100.0%**	**75 - 125%**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 37556 - 37557, 37565.**

Analyst

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Duncan Oil	Project #:	05161-002
Sample ID:	MW #1	Date Reported:	06-28-06
Laboratory Number:	37565	Date Sampled:	06-26-06
Chain of Custody:	1101	Date Received:	06-26-06
Sample Matrix:	Soil	Date Analyzed:	06-28-06
Preservative:	Cool	Date Extracted:	06-27-06
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**1.8**
Toluene	**3.1**	**1.7**
Ethylbenzene	**ND**	**1.5**
p,m-Xylene	**13.1**	**2.2**
o-Xylene	**1.7**	**1.0**
Total BTEX	**17.9**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**98.0 %**
	1,4-difluorobenzene	**98.0 %**
	Bromochlorobenzene	**98.0 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **North Hogback 12-9.**

Analyst

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	N/A	Project #:	N/A
Sample ID:	06-28-BTEX QA/QC	Date Reported:	06-28-06
Laboratory Number:	37556	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	06-28-06
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	6.8179E+007	6.8315E+007	0.2%	ND	0.2
Toluene	9.1539E+007	9.1723E+007	0.2%	ND	0.2
Ethylbenzene	4.5101E+007	4.5191E+007	0.2%	ND	0.2
p,m-Xylene	1.7240E+008	1.7275E+008	0.2%	ND	0.2
o-Xylene	9.2230E+007	9.2414E+007	0.2%	ND	0.1

Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	ND	ND	0.0%	0 - 30%	1.8
Toluene	4.9	4.9	0.0%	0 - 30%	1.7
Ethylbenzene	3.7	3.7	0.0%	0 - 30%	1.5
p,m-Xylene	17.7	17.7	0.0%	0 - 30%	2.2
o-Xylene	6.0	6.0	0.0%	0 - 30%	1.0

Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	ND	50.0	50.0	100.0%	39 - 150
Toluene	4.9	50.0	54.8	99.8%	46 - 148
Ethylbenzene	3.7	50.0	53.7	100.0%	32 - 160
p,m-Xylene	17.7	100	118	99.9%	46 - 148
o-Xylene	6.0	50.0	55.9	99.8%	46 - 148

ND - Parameter not detected at the stated detection limit.

References:

Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **QA/QC for Samples 37556 - 37557, 37565.**

Analyst

Review

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CHAIN OF CUSTODY RECORD

1101

Client / Project Name	Project Location	ANALYSIS / PARAMETERS
Duncan Oil	North Hogback 12-9	
Sampler: G. Crabtree	Client No. 05161-002	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	8015	8021					Remarks
MW #1	6/26/06	1205	37565	Soil	1	✓	✓					

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Greg Crabtree	6/26/06	1700	Dave C. Clemmons	6/26/06	1700
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

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Sample Receipt	Y	N	N/A
Received Intact	✓		
Cool - Ice/Blue Ice	✓		

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Duncan Oil	Project #:	05161-002
Sample ID:	MW #2	Date Reported:	06-30-06
Laboratory Number:	37583	Date Sampled:	06-27-06
Chain of Custody No:	1105	Date Received:	06-27-06
Sample Matrix:	Soil	Date Extracted:	06-28-06
Preservative:	Cool	Date Analyzed:	06-29-06
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**42.1**	**0.1**
Total Petroleum Hydrocarbons	**42.1**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **North Hogback 12 - #9.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA Method 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	06-29-06 QA/QC	Date Reported:	06-30-06
Laboratory Number:	37566	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	06-29-06
Condition:	N/A	Analysis Requested:	TPH

	I-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
Gasoline Range C5 - C10	02-04-05	9.9892E+002	9.9992E+002	**0.10%**	**0 - 15%**
Diesel Range C10 - C28	02-04-05	1.0035E+003	1.0055E+003	**0.20%**	**0 - 15%**

Blank Conc. (mg/L - mg/Kg)	Concentration	Detection Limit
Gasoline Range C5 - C10	**ND**	**0.2**
Diesel Range C10 - C28	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
Gasoline Range C5 - C10	**ND**	**ND**	**0.0%**	**0 - 30%**
Diesel Range C10 - C28	**ND**	**ND**	**0.0%**	**0 - 30%**

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	**ND**	**250**	**250**	**100.0%**	**75 - 125%**
Diesel Range C10 - C28	**ND**	**250**	**250**	**100.0%**	**75 - 125%**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 37566 - 37573, 37583, 37591.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Duncan Oil	Project #:	05161-002
Sample ID:	MW #2	Date Reported:	06-30-06
Laboratory Number:	37583	Date Sampled:	06-27-06
Chain of Custody:	1105	Date Received:	06-27-06
Sample Matrix:	Soil	Date Analyzed:	06-29-06
Preservative:	Cool	Date Extracted:	06-28-06
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**1.8**
Toluene	**ND**	**1.7**
Ethylbenzene	**ND**	**1.5**
p,m-Xylene	**ND**	**2.2**
o-Xylene	**ND**	**1.0**
Total BTEX	**ND**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**98.0 %**
	1,4-difluorobenzene	**98.0 %**
	Bromochlorobenzene	**98.0 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **North Hogback 12 - #9.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	N/A	Project #:	N/A
Sample ID:	06-29-BTEX QA/QC	Date Reported:	06-30-06
Laboratory Number:	37566	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	06-29-06
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	5.6305E+007	5.6418E+007	0.2%	ND	0.2
Toluene	6.5944E+007	6.6076E+007	0.2%	ND	0.2
Ethylbenzene	3.0333E+007	3.0394E+007	0.2%	ND	0.2
p,m-Xylene	1.2467E+008	1.2492E+008	0.2%	ND	0.2
o-Xylene	6.0957E+007	6.1079E+007	0.2%	ND	0.1

Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	ND	ND	0.0%	0 - 30%	1.8
Toluene	4.3	4.3	0.0%	0 - 30%	1.7
Ethylbenzene	5.5	5.5	0.0%	0 - 30%	1.5
p,m-Xylene	17.0	17.0	0.0%	0 - 30%	2.2
o-Xylene	10.8	10.8	0.0%	0 - 30%	1.0

Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	ND	50.0	50.0	100.0%	39 - 150
Toluene	4.3	50.0	54.2	99.8%	46 - 148
Ethylbenzene	5.5	50.0	55.5	100.0%	32 - 160
p,m-Xylene	17.0	100	117	100.0%	46 - 148
o-Xylene	10.8	50.0	60.7	99.8%	46 - 148

ND - Parameter not detected at the stated detection limit.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **QA/QC for Samples 37566 - 37573, 37583.**

Analyst

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CHAIN OF CUSTODY RECORD

1105

Client / Project Name	Project Location	ANALYSIS / PARAMETERS
Duncan O.1	North Hogback 12-#9	

Sampler:	Client No.
G. Crabtree	05161-002

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	8015	8021					Remarks
MW #2	6/27/06	0945	37583	Soil	1	✓	✓					

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Greg Crabtree	6/27/06	1710	Christine M Walters	6/27/06	1710
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

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Sample Receipt	Y	N	N/A
Received Intact			
Cool - Ice/Blue Ice			

APPENDIX C

Laboratory Water Sample Results

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

TRACE METAL ANALYSIS

Client:	Duncan Oil	Project #:	05161-002
Sample ID:	12 - 9 MW #1	Date Reported:	07-07-06
Laboratory Number:	37663	Date Sampled:	07-05-06
Chain of Custody:	1159	Date Received:	07-05-06
Sample Matrix:	Water	Date Analyzed:	07-07-06
Preservative:	Cool	Date Digested:	07-06-06
Condition:	Cool & Intact	Analysis Needed:	Fe, Mn, Pb

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
Iron	**0.541**	**0.001**
Manganese	**0.280**	**0.001**
Lead	**ND**	**0.001**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **N. Hogback.**

Christine M Walters
Analyst

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

TRACE METAL ANALYSIS

Client:	Duncan Oil	Project #:	05161-002
Sample ID:	12 - 9 MW #2	Date Reported:	07-07-06
Laboratory Number:	37664	Date Sampled:	07-05-06
Chain of Custody:	1159	Date Received:	07-05-06
Sample Matrix:	Water	Date Analyzed:	07-07-06
Preservative:	Cool	Date Digested:	07-06-06
Condition:	Cool & Intact	Analysis Needed:	Fe, Mn, Pb

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
Iron	**ND**	**0.001**
Manganese	**0.224**	**0.001**
Lead	**ND**	**0.001**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **N. Hogback.**

Christine M Walters
Analyst

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

TRACE METAL ANALYSIS
Quality Control /
Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	07-07-TM QA/QC	Date Reported:	07-07-06
Laboratory Number:	37663	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Analysis Requested:	Fe, Mn, Pb	Date Analyzed:	07-07-06
Condition:	N/A	Date Digested:	07-06-06

Blank & Duplicate Conc. (mg/L)	Instrument Blank (mg/L)	Detection Limit	Sample (mg/L)	Duplicate (mg/L)	% Diff.	Acceptance Range
Iron	**ND**	**0.001**	**0.541**	**0.541**	**0.0%**	**0% - 30%**
Manganese	**ND**	**0.001**	**0.280**	**0.283**	**1.1%**	**0% - 30%**
Lead	**ND**	**0.001**	**ND**	**ND**	**0.0%**	**0% - 30%**

Spike Conc. (mg/L)	Spike Added	Sample (mg/L)	Spiked Sample	Percent Recovery	Acceptance Range
Iron	**0.500**	**0.541**	**1.060**	**101.8%**	**80% - 120%**
Manganese	**0.500**	**0.280**	**0.778**	**99.7%**	**80% - 120%**
Lead	**0.500**	**ND**	**0.518**	**103.5%**	**80% - 120%**

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils. SW-846, USEPA, December 1996.

Method 6010B, Analysis of Metals by Inductively Coupled Plasma Atomic Emmision Spectorscopy, SW-846, USEPA, December 1996.

Comments: **QA/QC for samples 37663 - 37664, 37695 - 37698**

Christine M Walters
Analyst

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Duncan Oil	Project #:	05161-002
Sample ID:	12 - 4 MW #1	Date Reported:	07-07-06
Chain of Custody:	1159	Date Sampled:	07-05-06
Laboratory Number:	37665	Date Received:	07-05-06
Sample Matrix:	Water	Date Analyzed:	07-07-06
Preservative:	Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**1.2**	**1**	**0.2**
Toluene	**5.9**	**1**	**0.2**
Ethylbenzene	**23.4**	**1**	**0.2**
p,m-Xylene	**11.2**	**1**	**0.2**
o-Xylene	**5.5**	**1**	**0.1**
Total BTEX	**47.2**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	fluorobenzene	**99.8 %**
	1,4-difluorobenzene	**99.8 %**
	4-bromochlorobenzene	**99.8 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **N. Hogback**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Duncan Oil	Project #:	05161-002
Sample ID:	12 - 4 MW #2	Date Reported:	07-07-06
Chain of Custody:	1159	Date Sampled:	07-05-06
Laboratory Number:	37666	Date Received:	07-05-06
Sample Matrix:	Water	Date Analyzed:	07-07-06
Preservative:	Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**1.6**	**1**	**0.2**
Toluene	**1.8**	**1**	**0.2**
Ethylbenzene	**1.6**	**1**	**0.2**
p,m-Xylene	**5.6**	**1**	**0.2**
o-Xylene	**3.1**	**1**	**0.1**
Total BTEX	**13.7**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	fluorobenzene	**99.8 %**
	1,4-difluorobenzene	**99.8 %**
	4-bromochlorobenzene	**99.8 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **N. Hogback**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Duncan Oil	Project #:	05161-002
Sample ID:	12 - 4 MW #3	Date Reported:	07-07-06
Chain of Custody:	1159	Date Sampled:	07-05-06
Laboratory Number:	37667	Date Received:	07-05-06
Sample Matrix:	Water	Date Analyzed:	07-07-06
Preservative:	Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**1.3**	**1**	**0.2**
Toluene	**0.4**	**1**	**0.2**
Ethylbenzene	**0.8**	**1**	**0.2**
p,m-Xylene	**1.8**	**1**	**0.2**
o-Xylene	**1.0**	**1**	**0.1**
Total BTEX	**5.3**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	fluorobenzene	**99.8 %**
	1,4-difluorobenzene	**99.8 %**
	4-bromochlorobenzene	**99.8 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **N. Hogback**

Analyst

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PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS
QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	07-07-BTEX QA/QC	Date Reported:	07-07-06
Laboratory Number:	37663	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	07-07-06
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	6.2672E+007	6.2861E+007	0.30%	ND	0.2
Toluene	7.3255E+007	7.3476E+007	0.30%	ND	0.2
Ethylbenzene	3.2873E+007	3.2972E+007	0.30%	ND	0.2
p,m-Xylene	1.3735E+008	1.3776E+008	0.30%	ND	0.2
o-Xylene	6.9100E+007	6.9308E+007	0.30%	ND	0.1

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff.	Accept Limit
Benzene	1.2	1.2	0.0%	0 - 30%
Toluene	5.9	5.9	0.0%	0 - 30%
Ethylbenzene	23.4	23.3	0.4%	0 - 30%
p,m-Xylene	11.2	11.1	0.9%	0 - 30%
o-Xylene	5.5	5.5	0.0%	0 - 30%

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	1.2	50.0	51.1	99.7%	39 - 150
Toluene	5.9	50.0	55.8	99.8%	46 - 148
Ethylbenzene	23.4	50.0	73.3	99.9%	32 - 160
p,m-Xylene	11.2	100	111	99.8%	46 - 148
o-Xylene	5.5	50.0	55.4	99.8%	46 - 148

ND - Parameter not detected at the stated detection limit.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **QA/QC for samples 37665 - 37667.**

Analyst

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CHAIN OF CUSTODY RECORD

1159

Client / Project Name	Project Location	ANALYSIS / PARAMETERS
Duncan Oil	N. Hogback	
Sampler: G. Crabtree / J. Collins	Client No. 05161-002	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	6010	8021					Remarks
12-9 MW #1	7/5/06	1400	376663	WATER	1	✓						
12-9 MW #2	7/5/06	1405	376664	WATER	1	✓						
12-4 MW #1	7/5/06	1530	376665	WATER	2		✓					
12-4 MW #2	7/5/06	1540	376666	WATER	2		✓					
12-4 MW #3	7/5/06	1545	376667	WATER	2		✓					

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Greg Crabtree	7/5/06	1640	Mustang Walters	7/5/06	1640
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

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Sample Receipt	Y	N	N/A
Received Intact	✓		
Cool - Ice/Blue Ice	✓		