



Site Specific Water Sampling Report

Proposed Well: 596-32C

Sample Locations: MOC 20, MOC 21, MOC 22 & MOC 23

Plateau Area Buys & Associates Project Number: 536-07

Client: Marathon Oil Corporation

Date: 9/15/2008 & 9/24/2008

Time: 7:00-12:00

Weather Conditions: Sunny ~75° F

Contractor: N/A

A Buys & Associates team including Carrie Gudorf and Jeff Yelton were directed by Adell Heneghan to generate a baseline of surface water quality data for the above referenced sites. The Buys & Associates team located 4 possible spring sites near the proposed 596-32C well site to evaluate the background water quality of surface water (springs and ponds). Of the sampling sites 4 spring were sampled and data was collected; 2 of the sites were located on private property and sampling was postponed until 9/26/2008 to obtain permission from the property owner.

The following are the locations of the sites: (Refer to attached map)

- Moc 20**: Township 6 South, Range 97 West, Section 2;
- Moc 21**: Township 6 South, Range 97 West, Section 2;
- Moc 22: Township 5 South, Range 96 West, Section 32;
- Moc 23: Township 5 South, Range 96 West, Section 32.

(* denotes springs which were dry and samples were not collected.)

(** denotes springs which were inaccessible during the first inspection due to private property the inspection was postponed until 9/26/2008).

As the team reached the water site, they marked that point on their GPS to ensure consistent sampling in the future. A total of 4 sampling sites were visited and 4 sites were sampled. All of the known springs were sampled in accordance with the surface use agreement. Further site reconnaissance will be conducted, by the field team as development of the MOC 596-32C well pad continues.

Sampling was conducted at each site by filling 4 plastic (500mL) bottles, 1 plastic (250mL) bottle, 1 plastic (125mL) bottle and by filling 4 (40mL) VOA Vial bottles in accordance with standard water sampling procedures. The sample bottles, were labeled, logged onto a chain of custody form and were placed on ice in a cooler and shipped to Environmental Science Corp. in Mt. Juliet, Tennessee for analytical analysis. An analytical list is attached. Sample results will be forwarded to Buys & Associates and Marathon Oil Corporation, upon completion.

Insitu water was also field tested at each sample location, using a calibrated Horiba Water Quality Meter. To gather Horiba data, analysts fully submerged the probe end in water and waited while each data reading settled to a stable result. If the probe could not be submerged, analysts poured the sample water into a clean test cup and placed the Horiba probe into the cup. This later approach may have altered the Turbidity data and therefore Turbidity data are merely estimates.

Included with this email is an Excel Spreadsheet of Horiba data obtained.

Laboratory Analyses for Surface Water Collected on 9/15/08 & 9/24/2008

Alkalinity
Ammonia
Bicarbonate
Calcium
Carbonate
Chloride
Electric Conductance
Flouride
Magnesium
Nitrate
Nitrite
pH
Potassium,
Sodium
Sulfate
Sulfide
Total Dissolved Solids
Total Organic Carbon
VOCs EPA method 8260
Barium
Boron
Cadmium
Chromium\Copper
Lead
Manganese
Mercury
Molybdenum
Nickel
Selenium
Silver
Zinc

9/15/2008 & Date: 9/24/2008		Western Slope Stream Water Sampling MOC 596-32C	
Samplers: 9/15/2008-Carrie Gudorf & Jeff Yelton; 9/24/2008-Carrie Gudorf & Sean McCarthy		Job Code: 536-07	Weather: Sunny ~75°

SITE ID	DESCRIPTION	UTM	Date:	TIME	pH	COND. (S/cm)	TURB. (NTU)	DO (g/L)	TEMP. (°C)	SAL. (%)	TDS (g/L)	ORP mV	PICS	Comments
MOC-20**	House Log Gulch	12S 0741647 4383125	9/24/2008	12:12	8.05	0.6	2.8	11.48	14.85	0.03	0.382	105	Yes	Sampling was delayed due to private access.
MOC-21**	House Log Gulch	12S 0741250 4382869	9/24/2008	11:30	6.8	0.662	49.8	15.95	9.31	0.03	0.424	169	Yes	Sampling was delayed due to private access.
MOC-22	Little Creek	12S 0740863 4383512	9/15/2008	15:43	8.39	0.827	56	10.28	20.14	0.04	0.531	65	Yes	
MOC-23	Little Creek	12S 0741085 4384279	9/15/2008	14:48	8.16	0.818	13.7	11.12	20.27	0.04	0.524	79	Yes	
													Calibration Time: 9:00	

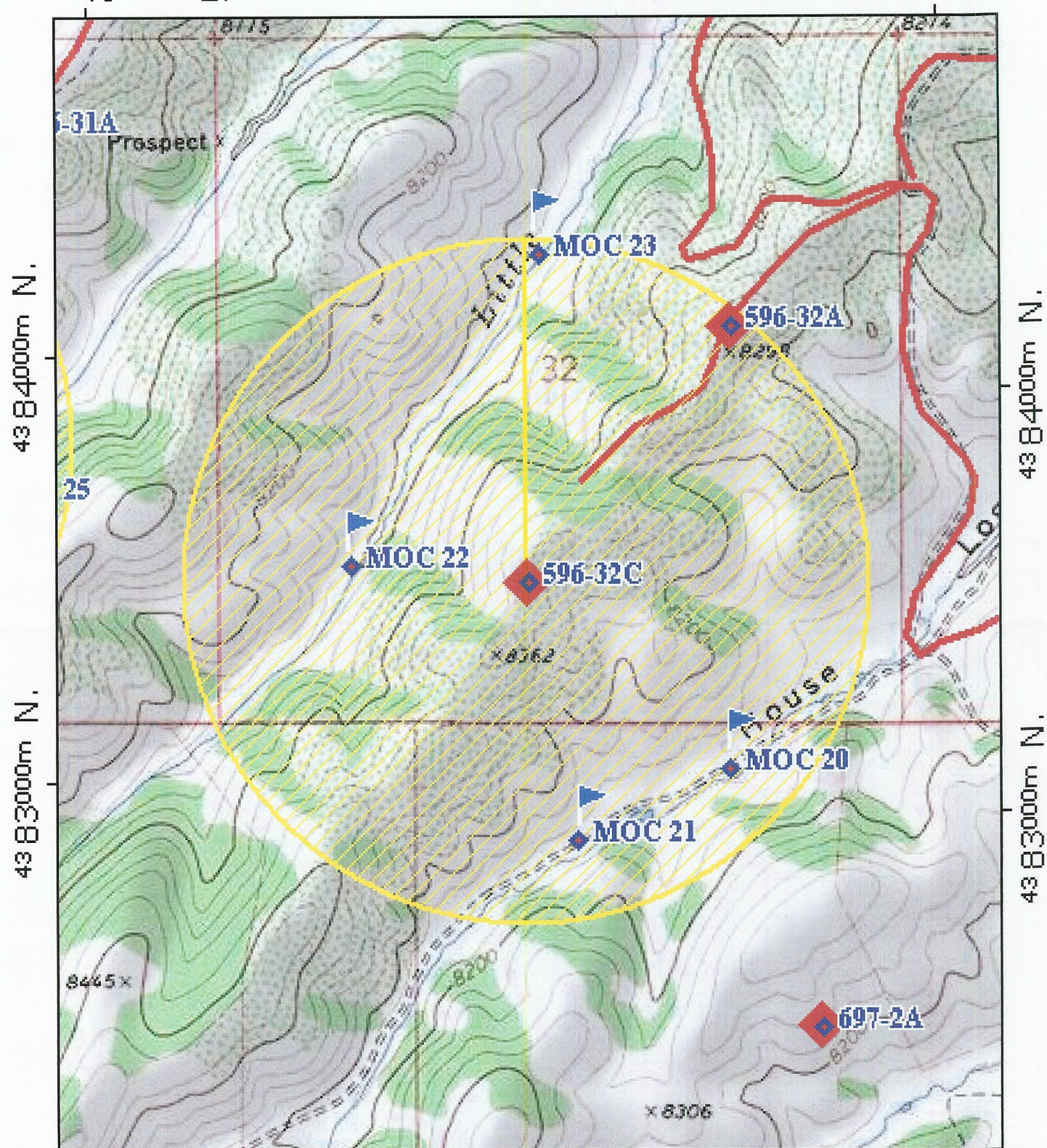
*Denotes dry springs/ponds

**denotes water collection delayed due to private property access.


```
!! map printed on 09/10/08 from "Latest%20Sample%20Sites[1"
```

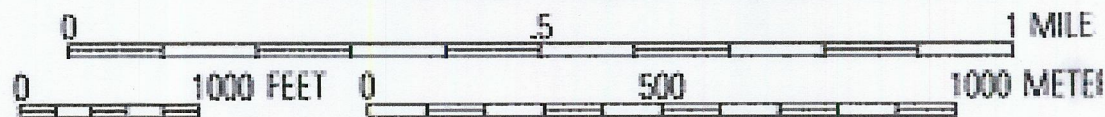
740000m E.

WGS84 Zone 12S 742000m E.



WGS84 Zone 12S 742000m E.

TN★/MIN
11½°



Map created with TOPO!® ©2003 National Geographic (www.nationalgeographic.com)

Buys and Associates, Inc.
Spring and Seep Data Collection Form

12:12

Spring Name: <u>Horse Log</u>	Date: <u>9-24/08</u>
GPS Waypoint: <u>MCL 20</u>	Inspected By: <u>CHG/SAM</u>
Lat:	Long:
Photo Log Number (s): <u>1110 - 1115 1110</u>	

UTM 12-S-0741647 4383125

Physical Description:			
Source of Spring:	<u>Bedrock</u>	Alluvium	
Geologic Formation:	<u>Alluvium</u>	Horse Bench SS	<u>Green River FM</u>
Location of spring:	<u>Canyon Bottom</u> (name canyon):		
	Base of Cliff Hillside Other (describe):		
Channel Description (width, gradient, length):	<u>12"</u>		
Spring discharges to:	Nine Mile Creek	Ephemeral drainage	Mesa top
Intermittent stream (name):			
Riparian Vegetation present along discharge channel?:	Y	N	Describe:

Beneficial Uses:	
Spring box present?	Y <u>N</u> Describe:
Evidence of Livestock Use:	<u>Y</u> N Describe:
Evidence of Wildlife Use:	<u>Y</u> N Describe:

Flow and Field Parameters:			
Flow measurement procedure:	Water Probe	Container/Stopwatch	Visual Estimate
Probe Data (depth, velocity, width):			
Container/Stopwatch Data (time, volume):			
Flow measurement accuracy:	Low	Moderate	High
Field Parameters (record units):	pH =	SC =	T =

pH. 8.05
 cond. 0.006 0.600
 Turb. 2.8
 DO 11.48
 Temp 14.85
 Sal 0.03 %
 TDS 382
 ORP 105

Buys and Associates, Inc.
Spring and Seep Data Collection Form

11:30

Spring Name: <u>House Log</u>	Date: <u>9-24-08</u>
GPS Waypoint: <u>#VOC 21</u>	Inspected By: <u>Carrie Gudorf / Sean McCarty</u>
Lat: <u>N 33.697</u>	Long: <u>W 108 11.533</u>
Photo Log Number (s): <u>1103 1109</u>	

UTM 12-5-074125 4382869

Physical Description:			
Source of Spring:	<u>Bedrock</u>	Alluvium	
Geologic Formation:	Alluvium	Horse Bench SS	Green River FM
Location of spring:	<u>Canyon Bottom</u> (name canyon):		
	Base of Cliff Hillside Other (describe):		
Channel Description (width, gradient, length):	<u>12"</u>		
Spring discharges to:	Nine Mile Creek	Ephemeral drainage	Mesa top
	Intermittent stream (name):		
Riparian Vegetation present along discharge channel?:	Y	N	Describe:

Beneficial Uses:	
Spring box present?	Y <u>N</u> Describe:
Evidence of Livestock Use:	<u>Y</u> N Describe:
Evidence of Wildlife Use:	<u>Y</u> N Describe:

Flow and Field Parameters:			
Flow measurement procedure:	Water Probe	Container/Stopwatch	<u>Visual Estimate</u>
Probe Data (depth, velocity, width):			
Container/Stopwatch Data (time, volume):			
Flow measurement accuracy:	Low	Moderate	High
Field Parameters (record units):	pH =	SC =	T =

PH - 6.8
 Cond. 0.662
 Turb. 49.8
 DO 15.95
 Temp 9.31
 Sal. 0.03%
 TDS. .424
 ORP 169

< 1 cfs

Buys and Associates, Inc.
Spring and Seep Data Collection Form

15:43

Spring Name: <u>Little Creek</u>	Date: <u>9/15/08</u>
GPS Waypoint: <u>MOC 21 22</u>	Inspected By: <u>CHG/JAY</u>
Lat:	Long:
Photo Log Number (s): <u>100/1054 / 100/1058</u> <u>12S 740663 A383512</u>	

Physical Description:		
Source of Spring:	<u>Bedrock</u>	Alluvium
Geologic Formation:	Alluvium	Horse Bench SS <u>Green River FM</u>
Location of spring:	<u>Canyon Bottom</u> (name canyon): <u>Little Creek</u>	
	Base of Cliff Hillside Other (describe):	
Channel Description (width, gradient, length):	<u>2' wide, 5% grade</u>	
Spring discharges to:	Nine Mile Creek Ephemeral drainage Mesa top	
	Intermittent stream (name): <u>Light Gulch</u>	
Riparian Vegetation present along discharge channel?:	<u>N</u> Describe:	

Beneficial Uses:		
Spring box present?	Y <u>N</u>	Describe:
Evidence of Livestock Use:	<u>Y</u> N	Describe:
Evidence of Wildlife Use:	<u>Y</u> N	Describe:

Flow and Field Parameters:		
Flow measurement procedure:	Water Probe Container/Stopwatch	(Visual Estimate)
Probe Data (depth, velocity, width):		
Container/Stopwatch Data (time, volume):	<u>1-3 cfs</u>	
Flow measurement accuracy:	<u>Low</u>	Moderate High
Field Parameters (record units):	pH =	SC = T =

pH: 8.39
 Cond: 0.827
 Turbidity: 56
 DO: 10.28
 Temp 20.14°C

Salinity 0.04%
 TDS: 0.531
 ORP: 65

Buys and Associates, Inc.
Spring and Seep Data Collection Form

14:48

Spring Name: <u>Little Creek</u>	Date: <u>9/15/08</u>
GPS Waypoint: <u>MOC23</u>	Inspected By: <u>CHG/JAY</u>
Lat: <u>12S0741085</u>	Long: <u>N4384279</u>
Photo Log Number (s): <u>100-1052/100-1056</u>	

Physical Description:	
Source of Spring: <u>Bedrock</u>	Alluvium
Geologic Formation: <u>Alluvium</u>	Horse Bench SS <u>Green River FM</u>
Location of spring: <u>Canyon Bottom</u> (name canyon):	
Base of Cliff <input type="checkbox"/> Hillside <input type="checkbox"/> Other (describe):	
Channel Description (width, gradient, length): <u>12 inches/5%</u>	
Spring discharges to: <u>Nine Mile Creek</u> <input type="checkbox"/> Ephemeral drainage <input type="checkbox"/> Mesa top <input type="checkbox"/>	
Intermittent stream (name): <u>Perennial/Parachute creek</u> <u>Light Gold</u>	
Riparian Vegetation present along discharge channel?: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Describe: <u>Marsh Grass, Sedges, Sagebrush, Rabbit brush</u>	

Beneficial Uses:	
Spring box present? <input type="checkbox"/> Y <input checked="" type="checkbox"/> N	Describe:
Evidence of Livestock Use: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Describe: <u>Cattle poop</u>
Evidence of Wildlife Use: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Describe: <u>Deer/kk/Coyote</u>

Flow and Field Parameters:	
Flow measurement procedure: <input type="checkbox"/> Water Probe <input type="checkbox"/> Container/Stopwatch <input checked="" type="checkbox"/> Visual Estimate	
Probe Data (depth, velocity, width): <u>1 1/2' / sec</u>	
Container/Stopwatch Data (time, volume):	
Flow measurement accuracy: <input checked="" type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High	
Field Parameters (record units): pH = SC = T =	

pH - 8.16
 Cond - 0.818
 Turb - 13.7
 DO - 11.12
 Temp - 20.27C

~~DEAR~~
 Sal - 0.04%
 TDS 0.524
 ORP
~~ORP~~ - 79

Invoice : Date : 09/15/2008
Customer : P257879
Phone # : 6157585858
Dept :
Special : Weight : 10.0
Handling : COD :
Total : 0.00
Shipping : 0.00
Special : 0.00
Handling : 0.00
Total : 0.00

Svcs: STANDARD OVERNIGHT
TRCK: 9632 6252 9750

Buy's and Associates, Inc - GJ, CO 838 Grand Avenue, Suite 100 Grand Junction, CO 81506

Report to:	Carrie Gudorf	Email:	cgudorf@buysandassociates.
Project Description:	BACKGROUND WATER SAMPLING		
Phone: (970) 245-0778	Client Project #:	Lab Project #	
FAX: (970) 245-0330	Site/Facility ID#:	UYSGJCO-MOC	
Collected by (print):		P.O.#:	

Actnum: UYSGJCO (lab use only)
Template/Prelogin T53454/P257879
Cooler #: 9-15-1
Shipped Via: FedEx Ground

Prepared by:



ENVIRONMENTAL
SCIENCE CORP.

12065 Lebanon Road

Mt. Juliet, TN 37122

Phone (800) 767-5859

FAX (615) 758-5859

Actnum: UYSGJCO (lab use only)
Template/Prelogin T53454/P257879
Cooler #: 9-15-1
Shipped Via: FedEx Ground

Remarks/Contaminant Sample # (lab only)

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	ALK, ALKB, ALKCA 500mlHDP-E-NoPres	Cl, NO2, NO3, SO4, pH 125mlHDP-E-NoPres	Ethylene Glycol 40mlAmb-NoPres	Metals 500mlHDP-E-HNO3	NH3 250mlHDP-E-H2SO4	SPCON, TDS 500mlHDP-E-NoPres	SULFIDE 500mlHDP-E-NAOH+ZnAc	TOC 250mlAmb-Septa-HCl
MOC 20	GRAB	GW		9/24/08	12:12	11	X	X	X	X	X	X	X	X
MOC 21		GW		9/24/08	11:30	11	X	X	X	X	X	X	X	X
		GW				11	X	X	X	X	X	X	X	X
		GW				11	X	X	X	X	X	X	X	X
MOC 30		GW		9/24/08	15:13	11	X	X	X	X	X	X	X	X
MOC 31		GW		9/24/08	14:20	11	X	X	X	X	X	X	X	X
		GW				11	X	X	X	X	X	X	X	X
		GW				11	X	X	X	X	X	X	X	X
		GW				11	X	X	X	X	X	X	X	X
		GW				11	X	X	X	X	X	X	X	X

*Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks: Metals = Ca, Mg, K, Na, Ba, B, Cd, Cr, Cu, Pb, Mn, Hg, Mo, Ni, Se, Ag, Zn

pH _____ Temp _____

Flow _____ Other _____

Relinquished by: (Signature)	Date: 9/25/08 8:45	Time: 8:45	Received by: (Signature)	Condition: (lab use only)
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	