



# REPORT

## MARATHON OIL COMPANY 2011-2012 CLOSURE PLAN FOR PICEANCE ASSET PITS, GARFIELD COUNTY, COLORADO

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## 1.0 INTRODUCTION

This closure plan is submitted by Marathon Oil Company (Marathon) for Piceance Asset pits to be closed in 2011 and 2012, and is referred to herein as the 2011-2012 Plan. These Marathon pits have been used to manage exploration and production (E&P) wastes generated during the drilling/completion of natural gas wells in Garfield County, Colorado. Pit closures will be performed in a safe and environmentally protective manner and in accordance with Colorado Oil and Gas Conservation Commission (COGCC) regulations, other applicable regulations, and pertinent COGCC guidance.

Pit closure activities described herein were discussed with the COGCC on April 26, 2011 and are similar to those agreed upon with the COGCC in connection with the 2010 Piceance Asset pit closures. Plans for the 2010 pit closures are detailed in the June 16, 2010 Golder Associates Inc. (Golder) document titled *Marathon Oil Company 2010 Pit Closure Plan for Piceance Asset Pits, Garfield County, Colorado* (the 2010 Plan). To avoid repetition and provide a concise document, this 2011-2012 Plan refers to elements of the 2010 Plan, so is not a stand-alone document.

### 1.1 Pit Closure Status

As described in Table 1, a total of 19 drilling reserve and closed loop cuttings pits were constructed in the Marathon Piceance Asset, along with five associated cement washout pits. The 2010 Plan details proposed closure activities for five of these pits (13C, 18A, 18C, 31A, and 33C). As discussed with the COGCC and detailed in the pending 2010 Pit Closure Report, 2010 pit closure activities focused on the first four pits listed. Based on weather constraints and associated safety considerations, 33C pit closure work will be performed this year. Because closure plans for the five pits noted above are included in the 2010 Plan, these pits are not further discussed herein.

Excluding pit 33C and the cement washout pits, 14 primary pits remain to be closed in the Piceance Asset, including three drilling reserve pits and 11 closed loop cuttings pits. In support of pit closure in the Piceance Asset, detailed pit material characterization and background arsenic determinations were performed, as described in the 2010 Plan. To date, the material characterization program has included eight drilling reserve pits, six closed loop cuttings pits, three cement pits, and nine background arsenic sampling locations.

Marathon will conduct supplemental pit material characterization sampling and analysis prior to commencing pit closure activities at specific locations to determine if remediation efforts will be needed in order to conform to COGCC requirements. If further remediation is required, the 2011-2012 Plan will be followed to reclaim the pits. Based on evaluation of pit material characterization results and comparison to COGCC Table 910-1 standards, pit material remediation will not be required at some locations, such as 19C.

## 1.2 Pit Closure Schedule

Closure of the 14 remaining primary pits and five cement washout pits will be initiated during the spring of 2011, and will be performed in accordance with wildlife stipulation timing constraints. It is anticipated that pit closures will be performed from approximately May 2011 through November 2011. All Piceance Asset pits are scheduled for closure no later than the end of 2012, depending on progress made with the 2011 pit closures, crew availability by the pit closure contractor(s), and other factors.

Many of the currently remaining pit closures shown in Table 1 will involve comparatively small volumes of relatively dry, closed loop cuttings. In contrast, 2010 pit closure activities were characterized by relatively large volumes of wet pit materials, and were generally more logistically challenging and time consuming.

## 2.0 PIT CLOSURE REPORTING

Upon completion of closure, reclamation, and revegetation activities for individual pits/pads, associated pit closure reports will be submitted to the COGCC with pertinent information in accordance with COGCC regulations. These reports will include information such as documentation pertaining to: removal and disposition of pit liquids; removal, amendment, staging, and final disposition of pit solids; removal and final disposition of pit liners; backfilling, grading and cover placement; and will also provide laboratory reports and site photographs.

As noted below, potentially applicable COGCC forms for proper documentation and recordkeeping during pit closure processes include: Form 4 (Sundry Notice), Form 19 (Spill/Release Report), and Form 27 (Site Investigation and Remediation Workplan).

### 2.1 Form 4 – Sundry Notice

A Form 4 will be prepared and submitted to COGCC in the event that pit material analytical results indicate: 1) arsenic concentrations (Section 4.2.2) or PAH concentrations (Section 4.2.3) are above the COGCC Table 910-1 standards but below background concentrations, and burial of these materials in the pit is desired; or 2) beneficial reuse of the pit contents is desired.

### 2.2 Form 19 – Spill/Release Report

In accordance with COGCC Series Rule 337, all spills and releases of E&P waste exceeding 5 barrels will be reported on a Spill/Release Report, Form 19. The Form 19 would be filed pursuant to the reporting requirements in Rule 905 and 906. During the pit closure processes, a Form 19 submittal would be required in the event that a spill/release is revealed beneath a pit liner and has an estimated volume of greater than 5 barrels.

### 2.3 Form 27 – Site Investigation and Remediation Workplan

As suggested by COGCC on May 6, 2011, data that is commonly included in Form 27 submittals is provided as hard copy and electronically in Appendix A. It is understood that COGCC personnel will generate a Form 27 for each pit described in Appendix A, and will assign a remediation number to each pit. This 2011-2012 Plan will then be uploaded and linked to each individual Form 27.

This 2011-2012 Plan specifies the actions required pertaining to pit closure, applicable regulations (e.g. COGCC Series Rules 905, 909) and documentation of the associated processes. Site investigations will commence in accordance with COGCC Series Rules 909.b.

## 3.0 MATERIAL CHARACTERIZATION PROGRAM

### 3.1 Pit Material Sampling

Material sampling performed to date has included characterization of pit material solids, cement washout pit solids, and background arsenic concentrations. As detailed in the 2010 Plan and summarized in Table 1, solid material samples were collected from three cement washout pits and a total of 14 drilling reserve pits and closed loop cuttings pits.

Additional pit material characterization will be conducted when representative samples can be obtained from the other pits shown in Table 1, and these results will be submitted to the COGCC. As discussed with the COGCC on April 26, 2011, four to six subsamples will be obtained from each pit for compositing, depending on pit material volumes. For pits with relatively small pit material volumes, four subsamples will be composited into two analytical laboratory test samples. For pits with relatively large pit material volumes, six subsamples will be composited into three analytical laboratory test samples.

### 3.2 Background Arsenic Sampling

As described in the 2010 Plan, background arsenic samples were collected at the following locations.

- GG – Garden Gulch near Pit 12A
- UN – Unnamed gulch near Pit 18C
- RG – Red Gulch near Pit 33C
- GrG – Gardner Gulch near Pit 34D
- LG1 – Light Gulch near Pit 20C
- LG2 – Light Gulch near Pit 31A
- LG-32C – Light Gulch near Pit 32C
- LG-29C – Light Gulch near Pit 29C
- LG-31A – Light Gulch near Pit 31A

Sampling locations are shown on Figure 1 and analytical result summaries for background arsenic concentrations in the various Piceance Asset drainages are provided in Table 2.

### 3.3 Sample Designations

For samples submitted to date, the sample name includes the sample site designation and the sample depth, such as:

- 18A-6 for a sample collected 6 ft below ground surface in pit 18A
- 29C-Cement-2 for a sample collected 2 ft below ground surface in the cement pit at 29C
- GG-8 for a sample collected 8 ft below ground surface in Garden Gulch

For composite samples, the sample name will include the sample site designation and the composite sample number, such as:

- 26A-C1 for the first composite sample collected from pit 26A
- 26A-C3 for the third composite sample collected from pit 26A

Duplicate samples are identified with the designation DUP.

### 3.4 Analytical Laboratory Testing

Analytical laboratory testing for the pit closures is performed by laboratories that are Colorado certified and approved by Marathon, such as Evergreen Analytical, Inc. (Accutest – Mountain States) and Energy Laboratories, Inc. Samples from drilling reserve pits, closed loop cuttings pits, and cement pits are analyzed for the constituents listed in COGCC Table 910-1, including the following.

- TPH – total volatile and extractable petroleum hydrocarbons
- BTEX – benzene, toluene, ethylbenzene, and xylene (total)
- PAH – polynuclear aromatic hydrocarbons
- EC – electrical conductivity
- SAR – sodium adsorption ratio
- pH
- Metals – 13 metals listed in Table 910-1, excluding boron

Analytical methods, detection limits, bottle and preservation requirements, and sample holding times are summarized in Table 3. Analytical data are received from the laboratory in electronic format as well as in hard copy.

## 4.0 PIT CLOSURE ACTIVITIES

Pit closure activities described below generally apply to all the Marathon Piceance Asset pit closures. The closure process, which will be implemented as a phased approach, is described in the following paragraphs.

- Removal of the pit liquids
- Remediation of pit solids
- Removal of the pit liner for recycling, co-processing, or disposal
- Pit backfilling and site grading
- Revegetation

### 4.1 Removal of Pit Liquids

Initial pit closure activities will include removal of free liquids from the pits. These liquids will be appropriately disposed of off-site.

### 4.2 Remediation of Pit Solids

#### 4.2.1 *Agricultural Standards*

SAR, EC, and pH are collectively referred to herein as agricultural standards. COGCC Table 910-1 agricultural standards were exceeded for some of the remaining pit closures. However, COGCC standards for SAR, EC, and pH only apply to soils within 3 feet of the ground surface. Therefore, in accordance with applicable regulations, 3 feet of cover soil meeting COGCC agricultural standards will be placed over the pit materials at locations where COGCC Table 910-1 agricultural standards are exceeded and are not sufficiently mitigated by material treatment processes (Section 4.2.3). Based on discussions with COGCC on April 26, 2011, we understand that no further action will be required regarding agricultural standards for the upcoming pit closures.

#### 4.2.2 *Arsenic*

The COGCC Table 910-1 standard for arsenic is 0.39 parts per million (ppm). Based on existing data, arsenic is the only metal that has exceeded COGCC Table 910-1 standards for the upcoming pit closures. Because arsenic is a naturally occurring constituent in geologic materials in the vicinity of the Piceance Asset pits, background arsenic concentrations were quantified by the characterization program described in the 2010 Plan. As detailed in Table 2, the highest background arsenic concentrations measured for drainage basins involving upcoming pit closures are as follows:

- 9.3 ppm in Red Gulch (Pits 1C, 2C, and 26A are located in Red Gulch)
- 23.8 ppm in Light Gulch (Pits 19C, 20C, 29C, 31C, and 32C are located in Light Gulch)
- 9.7 ppm in Gardner Gulch (Pits 5C, 34D, and 35D are located in Gardner Gulch)
- 9.8 ppm in Garden Gulch (Pit 12A is located in Garden Gulch)

- Background arsenic will be determined in Cascade Gulch (Pits 21A and 28C are located in Cascade Gulch)

Based on discussions with COGCC on April 26, 2011, we understand that currently acceptable arsenic concentrations allow for pit material arsenic values 10% above the highest background values. Sundry Notices will be submitted to the COGCC, comparing pit material arsenic concentrations to the naturally occurring background levels. We understand that no further action will be required regarding arsenic at these acceptable levels, referred to herein as background plus 10%.

Elevated arsenic concentrations will be addressed by mixing the pit materials with clean soils, thereby amending the pit materials and proportionately reducing constituent concentrations such that pit material concentrations will not exceed background plus 10%.

#### 4.2.3 Organic Compounds

For each of the remaining pits that have been sampled, the following PAH compounds exceed COGCC standards:

- Benzo(A)anthracene
- Benzo(B)fluoranthene
- Benzo(A)pyrene

In addition, dibenzo(A,H)anthracene and indeno(1,2,3-cd)pyrene were exceeded for some of the pits. As discussed with COGCC on April 26, 2011, these PAH compounds are considered to be from the Mahogany Zone of the Green River Formation, which was fully penetrated by each of the Piceance Asset drilling operations. Observations that support this conclusion include the following.

- The Mahogany Zone is characterized as oil-shale ore because of the abundant bitumen lenses that it contains. High concentrations of organics, including PAH compounds, are present within the Mahogany Zone.
- Piceance Asset pits did not receive flowback from the associated natural gas well development operations. In addition, biodiesel and other mud additives potentially associated with elevated PAH concentrations were not used in these natural gas well development operations.

Sundry Notices will be submitted that request consideration of the PAH values as indicative of background concentrations attributable to the Mahogany Zone. Based on these requests and April 26, 2011 discussions with the COGCC, it is assumed that no further action will be performed regarding PAH compounds for the remaining pit closures.

Pits with TPH and benzene exceedances will typically be addressed by amending the pit materials to reduce constituent concentrations. This will be accomplished by mixing the pit materials with clean soils. The volume of clean soil added to the pit materials will be proportional to the TPH exceedance. Marathon

is also considering alternative approaches to meeting COGCC Table 910-1 standards, including landfarming, other treatment methods, and off-site disposal.

### **4.3 Confirmatory Sampling of Pit Materials**

Following the material amendment process or other treatment processes that may be used, representative samples will be collected from the remediated pit materials for confirmatory analyses. As discussed with the COGCC on April 26, 2011, four to six subsamples will be obtained from each pit for compositing, depending on pit material volumes. For pits with relatively small pit material volumes, four subsamples will be composited into two analytical laboratory test samples. For pits with relatively large pit material volumes, six subsamples will be composited into three analytical laboratory test samples. To confirm conformance with COGCC Table 910-1 standards, these samples will be analyzed for pit material constituents with Table 910-1 exceedances.

### **4.4 Pit Liner Removal**

Where present, the synthetic liners that underlie the Piceance Asset pits will be removed. These liners will then be disposed, co-processed, or recycled in accordance with applicable regulatory requirements for solid waste disposal.

### **4.5 Confirmatory Sampling of Sub-grade**

Following removal of the pit liners, sampling and analyses will be performed to confirm that pit operations have not resulted in sub-grade exceedances of Table 910-1 standards. In accordance with COGCC regulations, at least one soil sample will be collected from immediately beneath the liner near the lowest point of the pit. Samples will be analyzed for pit material constituents with Table 910-1 exceedances, such as TPH and benzene. If analytical results or sub-grade visual inspections indicate that soils may have been impacted, Marathon will conduct further assessment and, if necessary, corrective action per COGCC regulations.

### **4.6 Pit Backfilling and Site Grading**

Pits will be backfilled following sub-grade sampling and analysis, and confirmation that pit operations have not resulted in sub-grade exceedances of Table 910-1 standards. Pit backfill materials will include remediated pit materials, will not contain any solid waste, and will meet Table 910-1 standards or established background concentrations. The contents of individual cement washout pits will be placed in the associated primary pit. Based on discussions with COGCC on April 26, 2011, it is understood that pit materials that meet Table 910-1 standards or established background concentrations can also be used as general fill outside of the pits, although these materials will be subject to the cover requirements described below.

After the pits are backfilled, up to 3 feet of cover soil meeting COGCC agricultural standards will be placed over the pit materials at each location; this soil cover will include stockpiled topsoil. Grading will

then be performed to provide positive drainage to the perimeter of the closed pit without negatively impacting surrounding areas. Besides grading, reclamation will be completed according to COGCC's 1000 Rules, including drainage control structures if necessary.

#### **4.7 Revegetation**

The topsoil cover layer will be revegetated based on a BLM and landowner-approved seed mixture and application rate. Additional soil stabilization measures, such as mulching or erosion control blankets, will be used as necessary.

Reclaimed pits will be inspected annually by Marathon until sufficient interim reclamation vegetative ground cover is established (70 percent of pre-disturbance levels). It is anticipated that the interim reclamation vegetative ground cover will be established within three growing seasons following seed application. Revegetation/reclamation actions will be in accordance with the Surface Use Agreements, the Marathon Stormwater Plan, and COGCC's 1000 Rules.

## TABLES

**TABLE 1  
PICEANCE ASSET PIT CLOSURE SUMMARY**

Pit	Description	Synthetic Liner Present?	Drainage Basin	Surface Owner	Comments
13C*	Drilling reserve pit	Yes	Garden Gulch	Chevron	Closed in accordance with 2010 Closure Plan
18A*	Drilling reserve pit	Yes	Garden Gulch	Chevron	Closed in accordance with 2010 Closure Plan
18C*	Drilling reserve pit	Yes	Unnamed	Chevron	Closed in accordance with 2010 Closure Plan
31A*	Drilling reserve pit	Yes	Light Gulch	Chevron	Closed in accordance with 2010 Closure Plan
33C*	Drilling reserve pit	Yes	Red Gulch	MOC/Berry	Will be closed in accordance with 2010 Closure Plan
IC*	Drilling reserve pit	Yes	Red Gulch	Chevron	
2C	Closed loop cuttings pit	Yes	Red Gulch	Savage, et al	
5C	Closed loop cuttings pit	No	Gardner Gulch	Chevron	
12A*	Drilling reserve pit	Yes	Garden Gulch	Chevron	Pit closure will be based on ongoing COGCC/Marathon discussions
19C*	Closed loop cuttings pit	No	Light Gulch	Chevron	A cement washout pit is also present*
20C*	Closed loop cuttings pit	No	Light Gulch	Chevron	A cement washout pit is also present*
21A	Closed loop cuttings pit	Yes	Cascade Canyon	Oxy	
26A	Closed loop cuttings pit	No	Red Gulch	Puckett	A cement washout pit is also present
28C*	Closed loop cuttings pit	Yes	Cascade Canyon	Oxy	
29C*	Closed loop cuttings pit	No	Light Gulch	Chevron	A cement washout pit is also present*
31C*	Drilling reserve pit	Yes	Light Gulch	Chevron	
32C*	Closed loop cuttings pit	No	Light Gulch	MOC/Berry	
34D*	Closed loop cuttings pit	No	Gardner Gulch	Chevron	A cement washout pit is also present
35D*	Closed loop cuttings pit	Yes	Gardner Gulch	Chevron	

\* Pit material characterization samples have been collected

**TABLE 2  
SUMMARY OF BACKGROUND ARSENIC  
SAMPLING CONCENTRATIONS**

Contaminant of Concern	COGCC Concentrations	Units	Sampling Location LG1 (North Light Gulch Near 20C)			Sampling Location RG (Red Gulch Near 33C)			Sampling Location GrG (Gardner Gulch Near 34D)			Sampling Location GG (Garden Gulch Near 12A)			Sampling Location UN (Unnamed Gulch Near 18C)		
			4 ft	8 ft	12 ft	4 ft	8 ft	12 ft	4 ft	8 ft	12 ft	4 ft	8 ft	12 ft	4 ft	8 ft	12 ft
Average Arsenic Concentration*	0.39	mg/kg	13.1			8.6			8.7			8.8			10.9		
Arsenic Concentration	0.39	mg/kg	6.1	9.3	23.8	8.2	8.4	9.3	9.4	9.7	7.0	9.8	8.4	8.2	5.2	9.6	18.0

Contaminant of Concern	COGCC Concentrations	Units	Sampling Location LG2 (South Light Gulch Near 31A)			Sampling Location LG31A (South Light Gulch Near 31A)			Sampling Location LG31A DUPLICATE			Sampling Location LG32C (South Light Gulch Near 32C)			Sampling Location LG32C DUPLICATE			Sampling Location LG29C (South Light Gulch Near 29C)		
			4 ft	8 ft	12 ft	4 ft	8 ft	12 ft	4 ft	8 ft	12 ft	4 ft	8 ft	12 ft	4 ft	8 ft	12 ft	4 ft	8 ft	12 ft
Average Arsenic Concentration*	0.39	mg/kg	2.5			6.8			6.4			5.9			6.5			5.6		
Arsenic Concentration	0.39	mg/kg	2.6	2.0	2.8	7.0	7.4	5.9	6.8	5.1	7.4	5.4	5.4	7.0	6.3	7.5	5.8	5.0	6.0	5.8

\* Average concentration at sample location

COGCC Concentrations from Table 910-1 of *COGCC Final Amended Rules* effective April 1, 2009

ND = not detected

NA = not analyzed

mg/kg = milligrams per kilogram; mmhos/cm = millimhos per centimeter

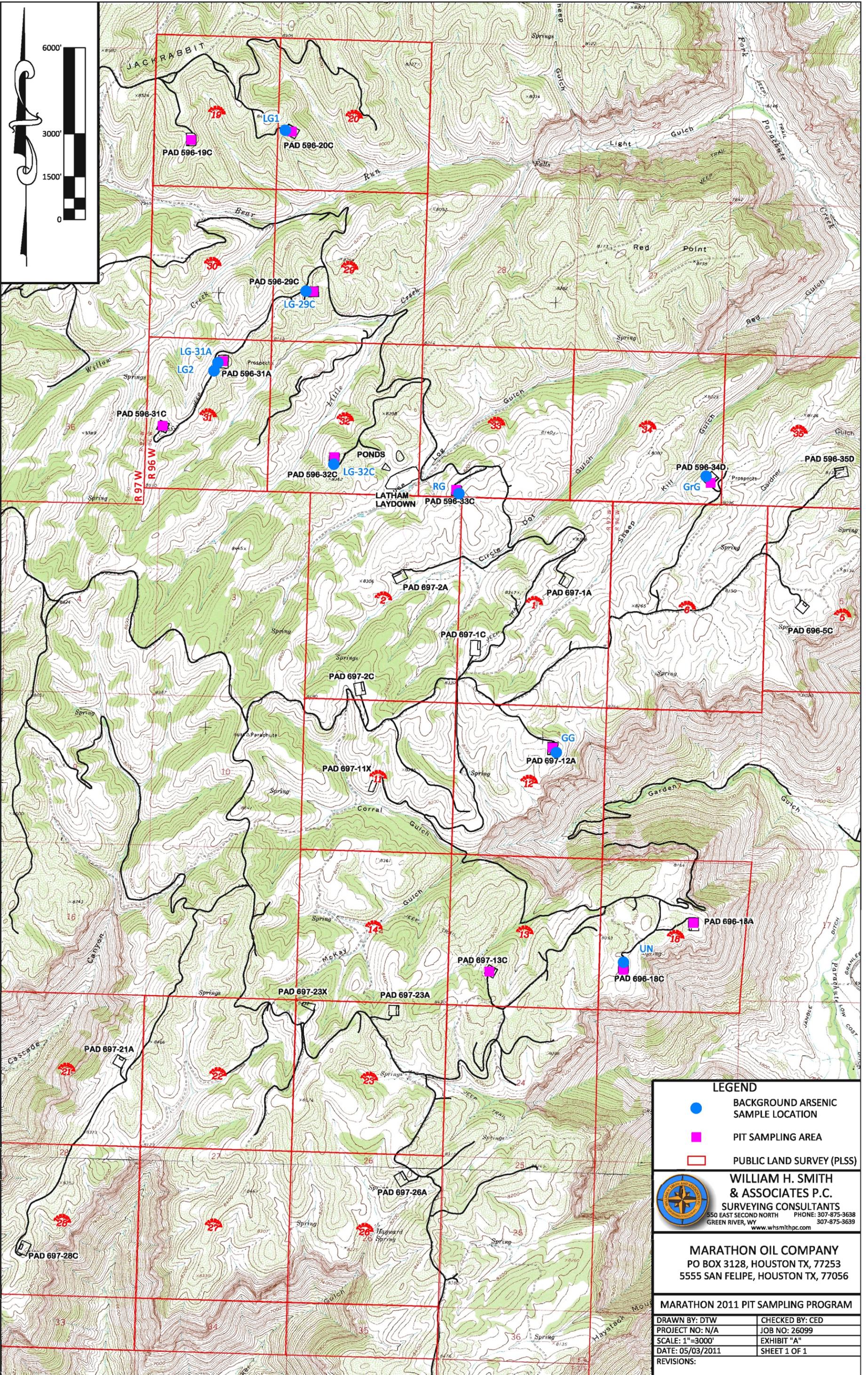
Yellow indicates individual results at or above the COGCC Table 910-1 limit

Green indicates average values at or above the COGCC 910-1 limit

**TABLE 3**  
**ANALYTICAL METHODS AND SAMPLE REQUIREMENTS**

Parameter	Method	Holding Time	Sample Container	Table 910-1 Concentration	Accutest Limits
TVPH (GRO)	8015	14 days	4 oz WM	500 mg/kg	
TEPH (DRO)	8015	14 extract/ 40 analyze	4 oz WM (combine with SVOC)	500 mg/kg	
Benzene	8260	14 days	4 oz WM	0.17 mg/kg	1.0 ug/kg
Toluene	8260	14 days	combine with Benzene	85 mg/kg	2.0 ug/kg
Ethylbenzene	8260	14 days	combine with Benzene	100 mg/kg	5.0 ug/kg
Xylene	8260	14 days	combine with Benzene	175 mg/kg	5.0 ug/kg
Acenaphthalene	8270 SIM	14 extract/ 40 analyze	8 oz WM (combine with DRO)	1000 mg/kg	6.7 ug/kg
Anthracene	8270 SIM	14 extract/ 40 analyze	8 oz WM (combine with DRO)	1000 mg/kg	33 ug/kg
Benzo (a) Anthracene	8270 SIM	14 extract/ 40 analyze	8 oz WM (combine with DRO)	0.22 mg/kg	6.7 ug/kg
Benzo (b) Fluoranthene	8270 SIM	14 extract/ 40 analyze	8 oz WM (combine with DRO)	0.22 mg/kg	6.7 ug/kg
Benzo (k) Fluoranthene	8270 SIM	14 extract/ 40 analyze	8 oz WM (combine with DRO)	2.2 mg/kg	6.7 ug/kg
Benzo (a) Pyrene	8270 SIM	14 extract/ 40 analyze	8 oz WM (combine with DRO)	0.022 mg/kg	6.7 ug/kg
Chrysene	8270 SIM	14 extract/ 40 analyze	8 oz WM (combine with DRO)	22 mg/kg	6.7 ug/kg
Dibenzo (a,h) Anthracene	8270 SIM	14 extract/ 40 analyze	8 oz WM (combine with DRO)	0.022 mg/kg	6.7 ug/kg
Fluoranthene	8270 SIM	14 extract/ 40 analyze	8 oz WM (combine with DRO)	1000 mg/kg	6.7 ug/kg
Fluorene	8270 SIM	14 extract/ 40 analyze	8 oz WM (combine with DRO)	1000 mg/kg	6.7 ug/kg
Indeno (1,2,3,C,D) Pyrene	8270 SIM	14 extract/ 40 analyze	8 oz WM (combine with DRO)	0.22 mg/kg	6.7 ug/kg
Napthalene	8270 SIM	14 extract/ 40 analyze	8 oz WM (combine with DRO)	23 mg/kg	33 ug/kg
Pyrene	8270 SIM	14 extract/ 40 analyze	8 oz WM (combine with DRO)	1000 mg/kg	6.7 ug/kg
As	6020	6 months	8 oz WM (with DRO and SVOC)	0.39 mg/kg	0.4 mg/kg
Ba	6010	6 months	8 oz WM (with DRO and SVOC)	15,000 mg/kg	1.0 mg/kg
Cd	6010	6 months	8 oz WM (with DRO and SVOC)	70 mg/kg	1.0 mg/kg
Cr3	6010	6 months	8 oz WM (with DRO and SVOC)	120,000 mg/kg	
Cr 6	7196	6 months	8 oz WM (with DRO and SVOC)	23 mg/kg	2 mg/kg
Cu	6010	6 months	8 oz WM (with DRO and SVOC)	3,100 mg/kg	2.0 mg/kg
Pb	6010	6 months	8 oz WM (with DRO and SVOC)	400 mg/kg	5.0 mg/kg
Hg	7471	28 days	8 oz WM (with DRO and SVOC)	23 mg/kg	0.14 mg/kg
Ni	6010	6 months	8 oz WM (with DRO and SVOC)	1,600 mg/kg	3.0 mg/kg
Se	6010	6 months	8 oz WM (with DRO and SVOC)	390 mg/kg	5.0 mg/kg
Ag	6010	6 months	8 oz WM (with DRO and SVOC)	390 mg/kg	3.0 mg/kg
Zn	6010	6 months	8 oz WM (with DRO and SVOC)	23,000 mg/kg	3.0 mg/kg
SAR	Dept of Ag	28 days	32 oz WM (all parameters below)	< 12	see below for metals limits
pH	9045	ASAP		6 to 9	N/A
Conductivity	120.1	28 days		< 4 mmhos/cm	1 umho/cm
Ca	6010				40 mg/kg
Na	6010				40 mg/kg
Mg	6010				20 mg/kg

## FIGURES



**LEGEND**

- BACKGROUND ARSENIC SAMPLE LOCATION
- PIT SAMPLING AREA
- PUBLIC LAND SURVEY (PLS)

**WILLIAM H. SMITH & ASSOCIATES P.C.**  
 SURVEYING CONSULTANTS  
 550 EAST SECOND NORTH    PHONE: 307-875-3638  
 GREEN RIVER, WY    307-875-3639  
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**MARATHON OIL COMPANY**  
 PO BOX 3128, HOUSTON TX, 77253  
 5555 SAN FELIPE, HOUSTON TX, 77056

**MARATHON 2011 PIT SAMPLING PROGRAM**

DRAWN BY: DTW	CHECKED BY: CED
PROJECT NO: N/A	JOB NO: 26099
SCALE: 1"=3000'	EXHIBIT "A"
DATE: 05/03/2011	SHEET 1 OF 1
REVISIONS:	

**APPENDIX A**  
**MARATHON PIT CLOSURE DATA**

**APPENDIX A  
MARATHON PIT CLOSURE DATA**

Order of Closure	Remediation Number	API Number	*Well Name	Well Number	County	QtrQtr	Section	Township	Range	Latitude	Longitude	Altitude (Feet)	Waste Type	Adjacent Land Use	Soil Series	Sensitive Area?	Sensitive Area Determination Justification	Depth to Groundwater	Receptor	Receptor Type	Distance to Surface Water (Feet)	Current Status	Comments
1	To Be assigned by COGCCC		12A Drilling Reserve Pit		Garfield	SWNE	12	6S	97W	39.540390	-108.166020	8305	Drill cuttings	High mountain, cattle grazing		No	NA		None	NA			
2	To Be assigned by COGCCC		19C Closed loop cuttings		Garfield	NESW	19	5S	96W	39.597700	-108.212920	8436	Drill cuttings	High mountain, cattle grazing		No	NA		None	NA			
3	To Be assigned by COGCCC		20C Closed loop cuttings		Garfield	NWSW	20	5S	96W	39.599060	-108.200650	8272	Drill cuttings	High mountain, cattle grazing		No	NA		None	NA			
4	To Be assigned by COGCCC		31C Drilling Reserve Pit		Garfield	NWSW	31	5S	96W	39.570220	-108.215290	8530	Drill cuttings	High mountain, cattle grazing		No	NA		None	NA			
5	To Be assigned by COGCCC		32C Closed loop cuttings		Garfield	SESW	32	5S	96W	39.567600	-108.193940	8347	Drill cuttings	High mountain, cattle grazing		No	NA		None	NA			
6	To Be assigned by COGCCC		34D Closed loop cuttings		Garfield	SESE	34	5S	96W	39.566830	-108.147260	8101	Drill cuttings	High mountain, cattle grazing		No	NA		None	NA			
7	To Be assigned by COGCCC		35D Closed loop cuttings		Garfield	SESE	35	5S	96W	39.567860	-108.131480	8117	Drill cuttings	High mountain, cattle grazing		No	NA		None	NA			
8	To Be assigned by COGCCC		29C Closed loop cuttings		Garfield	NESW	29	5S	96W	39.58372/	-108.197030	8187	Drill cuttings	High mountain, cattle grazing		No	NA		None	NA			
9	To Be assigned by COGCCC		1C Drilling Reserve Pit		Garfield	NWSW	1	6S	97W	39.550080	-108.175830	8383	Drill cuttings	High mountain, cattle grazing		No	NA		None	NA			
10	To Be assigned by COGCCC		2C Closed loop cuttings		Garfield	SESW	2	6S	97W	39.545740	-108.189950	8476	Drill cuttings	High mountain, cattle grazing		No	NA		None	NA			
11	To Be assigned by COGCCC		5C Closed loop cuttings		Garfield	NESW	5	6S	96W	39.558990	-108.130460	8108	Drill cuttings	High mountain, cattle grazing		No	NA		None	NA			
12	To Be assigned by COGCCC		21A Closed loop cuttings		Garfield	SENE	21	6S	97W	39.509400	-108.218230	8368	Drill cuttings	High mountain, cattle grazing		No	NA		None	NA			
13	To Be assigned by COGCCC		26A Closed loop cuttings		Garfield	NWNE	26	6S	97W	39.498910	-108.183140	8416	Drill cuttings	High mountain, cattle grazing		No	NA		None	NA			
14	To Be assigned by COGCCC		28C Closed loop cuttings		Garfield	NESW	28	6S	97W	39.491380	-108.229360	8289	Drill cuttings	High mountain, cattle grazing		No	NA		None	NA			