Data Validation Package

June 2012
Natural Gas and Produced Water Sampling at the Gasbuggy, New Mexico, Site

July 2013

U.S. DEPARTMENT OF ENERGY | Legacy Management

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Sampling Event Summary

Site: Gasbuggy Site, Rio Arriba County, New Mexico

Sampling Period: June 20–21, 2012

Annual natural gas and produced water monitoring was conducted for gas wells adjacent to Section 36, where the Gasbuggy test was conducted. Sampling and analysis were conducted as specified in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites* (LMS/PRO/S04351, continually updated). Natural gas samples were collected for tritium and carbon-14 analyses. Produced water samples were collected and analyzed for tritium, gamma-emitting radionuclides (by high-resolution gamma spectrometry), gross alpha, and gross beta. A duplicate produced water sample was collected from well 30-039-07525. Produced water samples were not collected at locations 30-039-30161 and 30-039-21744 because of insufficient water. Samples were not collected from location 30-039-29988 because the well was shut-in.

Refer to Table 1 for produced water sample analytical results. Low levels of gamma-emitting nuclides, gross alpha, and/or gross beta activity were detected in the samples of produced water from the natural gas production wells. The low levels detected are representative of natural background radioactivity and do not indicate the presence of detonation-related radionuclides.

Table 1. Gasbuggy Natural Gas Production Well – Produced Water Sample Analysis Results

Sample Location (API #)	Collection Date	Tritium (pCi/L)	Gamma Spectrometry, Total (pCi/L)	Gross Alpha (pCi/L)	Gross Beta (pCi/L)
Indian A No. 002 (30-039-07525)	06/07/2011	ND	ND	ND	20.1 [a]
Schalk 29-4 No. 007 (30-039-21620)	06/08/2011	ND	606	ND	556
Schalk 29-4 No. 017 (30-039-21743)	06/08/2011	ND	21.1 [a]	ND	ND
Valencia Canyon Unit No. 037 (30-039-21647)	06/08/2011	ND	18.1 [a]	ND	27.7 [a]

[a] Estimated value.
pCi/L = picocuries per liter.
ND = Not detected, below the decision level concentration.

Refer to Table 2 for natural gas sample analytical results. Carbon-14 and tritium were not detected in any of the natural gas samples collected.

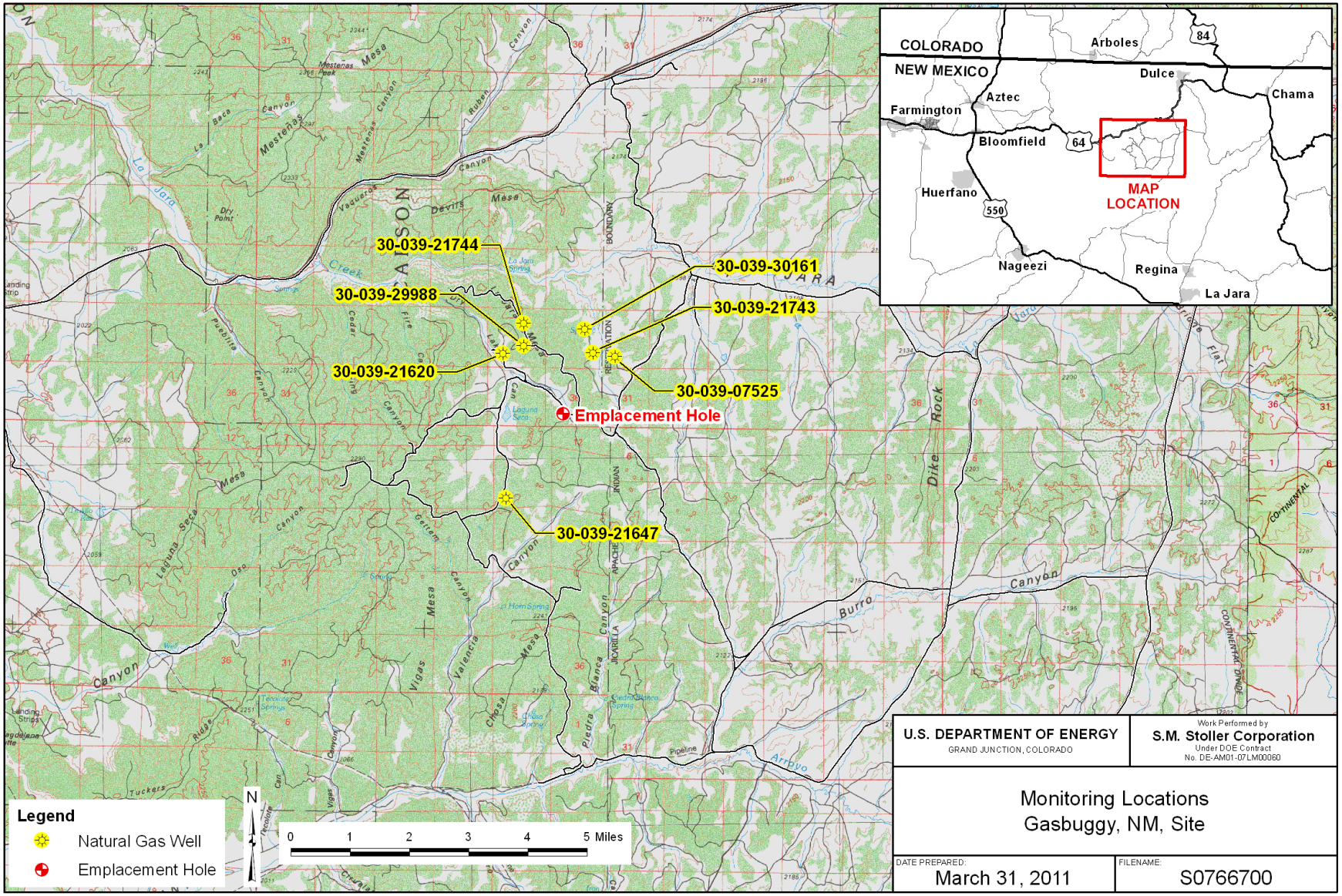
Table 2. Gasbuggy Natural Gas Production Well – Gas Sample Analysis Results

Sample Location (API #)	Collection Date	Tritium (pCi/L)	Carbon-14 (pCi/L)
Indian A No. 002 (30-039-07525)	06/07/2011	ND	ND
Many Canyons 29-04-25 No. 123 (30-039-30161)	06/08/2011	ND	ND
Schalk 29-4 No. 007 (30-039-21620)	06/08/2011	ND	ND
Schalk 29-4 No. 014 (30-039-21744)	06/08/2011	ND	ND
Schalk 29-4 No. 017 (30-039-21743)	06/08/2011	ND	ND
Valencia Canyon Unit No. 037 (30-039-21647)	06/08/2011	ND	ND

pCi/L = picocuries per liter of methane.
ND = Not detected, below the decision level concentration.

Mark Plessinger
Site Lead, S.M. Stoller Corporation

Date 7/10/13



Gas Sampling Locations at the Gasbuggy, New Mexico, Site

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Data Assessment Summary

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Water Sampling Field Activities Verification Checklist

Project	Gasbuggy, New Mexico	**Date(s) of Water Sampling**	June 20–21, 2012
Date(s) of Verification	August 28, 2012	**Name of Verifier**	Stephen Donivan

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures?	Yes	
List any Program Directives or other documents, SOPs, instructions.		Work Order letter dated May 16, 2012.
2. Were the sampling locations specified in the planning documents sampled?	No	Produced water samples were not collected at locations 30-039-30161 and 30-039-21744 because of insufficient water. Samples were not collected from location 30-039-29988 because the well was shut-in.
3. Were calibrations conducted as specified in the above-named documents?	NA	No field measurements were required.
4. Was an operational check of the field equipment conducted daily?	NA	
Did the operational checks meet criteria?	NA	
5. Were the number and types (alkalinity, temperature, specific conductance, pH, turbidity, DO, ORP) of field measurements taken as specified?	NA	
6. Were wells categorized correctly?	Yes	All wells were Category V.
7. Were the following conditions met when purging a Category I well:		
Was one pump/tubing volume purged prior to sampling?	NA	
Did the water level stabilize prior to sampling?	NA	
Did pH, specific conductance, and turbidity measurements meet criteria prior to sampling?	NA	
Was the flow rate less than 500 mL/min?	NA	

Water Sampling Field Activities Verification Checklist (continued)

	Response (Yes, No, NA)	Comments
8. Were the following conditions met when purging a Category II well:		
Was the flow rate less than 500 mL/min?	NA	
Was one pump/tubing volume removed prior to sampling?	NA	
9. Were duplicates taken at a frequency of one per 20 samples?	Yes	A duplicate sample was collected from well 30-039-07525.
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with non-dedicated equipment?	NA	
11. Were trip blanks prepared and included with each shipment of VOC samples?	NA	
12. Were the true identities of the QC samples documented?	Yes	
13. Were samples collected in the containers specified?	Yes	
14. Were samples filtered and preserved as specified?	Yes	
15. Were the number and types of samples collected as specified?	Yes	
16. Were chain of custody records completed and was sample custody maintained?	Yes	
17. Was all pertinent information documented on the field data sheets?	Yes	
18. Was the presence or absence of ice in the cooler documented at every sample location?	NA	Sample cooling was not required.
19. Were water levels measured at the locations specified in the planning documents?	NA	

Laboratory Performance Assessment

General Information

Requisition (RIN):	12064621
Sample Event:	June 20–21, 2012
Site(s):	Gasbuggy, New Mexico
Laboratory:	Isotech Laboratories
Work Order No.:	18582
Analysis:	Radiochemistry
Validator:	Steve Donivan
Review Date:	October 22, 2012

This validation was performed according to the *Environmental Procedures Catalog*, (LMS/PRO/S04325, continually updated) "Standard Practice for Validation of Laboratory Data." The procedure was applied at Level 1, Data Deliverables Examination. The data were examined to assess the completeness of the deliverables, identify any reporting errors, and assess the usability of the data based on the results of the field duplicate and the laboratory's evaluation of their data, as described in the narrative provided. The data are acceptable as received. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 3.

Table 3. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Natural Gas Analysis	LMG-01	NA	Gas Chromatography
Carbon-14 and Tritium	LMG-03	Combustion	Liquid Scintillation Counting

Data Qualifier Summary

None of the analytical results required qualification.

Sample Shipping/Receiving

Isotech Laboratories received six natural gas samples on June 27, 2012, accompanied by a Chain of Custody (COC) form. The COC form was checked to confirm that all of the samples were listed with sample collection dates and times, and that signatures and dates were present indicating sample relinquishment and receipt. The COC form was complete with no errors or omissions.

Summary

Six natural gas samples were received at Isotech Laboratories and analyzed by gas chromatography to determine the natural gas composition. The samples were then combusted with the resulting water collected for analysis. Carbon-14 and tritium were measured in the water collected by liquid scintillation counting. There were no analytical difficulties noted by the laboratory.

Completeness

The results of the gas chromatography analysis were reported in volume percent showing the average sample composition of 86 percent methane.

The carbon-14 results were reported in percent modern carbon. The tritium results were reported in tritium units. Carbon-14 and tritium were not detected in any of the samples.

General Information

Requisition No. (RIN): 12064622
Sample Event: June 20–21, 2012
Site(s): Gasbuggy, New Mexico
Laboratory: ALS Laboratory Group, Fort Collins, Colorado
Work Order No.: 1206341
Analysis: Radiochemistry
Validator: Steve Donivan
Review Date: August 28, 2012

This validation was performed according to the *Environmental Procedures Catalog* (LMS/PRO/S04325), "Standard Practice for Validation of Laboratory Data." The procedure was applied at Level 2, Data Deliverables Verification. See attached Data Validation Worksheets for supporting documentation on the data review and validation. All analyses were successfully completed. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 4.

Table 4. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Gross Alpha/Beta	GPC-A-001	PA SOP702R19	PA SOP724R10
Gamma Spectrometry	GAM-A-001	PA SOP739R9	PA SOP713R10
Tritium	LCS-A-001	PA SOP700R10	PA SOP704R9

Data Qualifier Summary

Analytical results were qualified as listed in Table 5. Refer to the sections below for an explanation of the data qualifiers applied.

Table 5. Data Qualifier Summary

Sample Number	Location	Analyte	Flag	Reason
1206341-2	30-039-07525	Lead-212	U	Nuclide identification criteria not met
1206341-2	30-039-07525	Thorium-234	U	Nuclide identification criteria not met
1206341-3	30-039-21647	Actinium-228	J	Less than 3 times the MDC
1206341-3	30-039-21647	Gross Beta	J	Less than 3 times the MDC
1206341-4	30-039-07525 Duplicate	Gross Beta	J	Less than 3 times the MDC
1206341-5	30-039-21743	Actinium-228	J	Less than 3 times the MDC

Sample Shipping/Receiving

ALS Laboratory Group in Fort Collins, Colorado, received five water samples on June 26, 2012, accompanied by a Chain of Custody (COC) form. The COC form was checked to confirm that the samples were listed with sample collection dates and times, and that signatures and dates were present indicating sample relinquishment and receipt. The COC form was complete with no errors or omissions. Copies of the air waybills were included with the receiving documentation.

Preservation and Holding Times

The sample shipment was received intact at ambient temperature which complies with requirements. All samples were received in the correct container types and had been preserved correctly for the requested analyses with the following exception. Several of the samples had pH values greater than two when received. The samples were acidified to a pH less than two and allowed to equilibrate prior to proceeding with analysis. Sample analysis was completed within the applicable holding times.

Detection and Quantitation Limits

Radiochemical analytes (those measured by radiometric counting) are evaluated using the minimum detectable concentration (MDC), Decision Level Concentration (DLC), and Determination Limit (DL). The MDC is a measure of radiochemical method performance and was calculated and reported as specified in *Quality Systems for Analytical Services*. The DLC is the minimum concentration of an analyte that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, and is estimated as 3 times the one-sigma total propagated uncertainty. Results that are greater than the MDC, but less than the DLC are qualified with a "U" flag (not detected). The DL for radiochemical results is the lowest concentration that can be reliably measured, and is defined as 3 times the MDC. Results not previously "U" qualified that are less than the DL are qualified with a "J" flag as estimated values.

The reported MDCs for radiochemical analytes demonstrate compliance with contractual requirements with the following exceptions. The required MDCs were not met for gross alpha and gross beta because of the elevated levels of dissolved solids in the samples.

Laboratory Instrument Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for all analytes. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear curve. Compliance requirements for continuing calibration checks are established to ensure that the instrument continues to be capable of producing acceptable qualitative and quantitative data. All laboratory instrument calibrations were performed correctly in accordance with the cited methods.

Gamma Spectrometry

Activity concentrations above the MDC were reported in some instances where minimum nuclide identification criteria were not met. Such tentative identifications result when the software attempts to calculate net activity concentrations for analytes where either one or both of the following criteria are not satisfied: the 'diagnostic' peak for a nuclide must be identified above the critical level, or the minimum library peak abundance must be attained. Sample results for gamma-emitting radionuclides that do not meet the identification criteria are qualified with a "U" flag as not detected.

Method Blank

Method blanks are analyzed to assess any contamination that may have occurred during sample preparation. All method blank results were below the applicable DLC.

Laboratory Control Sample

Laboratory control samples were analyzed at the correct frequency to provide information on the accuracy of the analytical method and the overall laboratory performance, including sample preparation. All control sample results were acceptable.

Laboratory Replicate Analysis

Laboratory replicate sample results demonstrate acceptable laboratory precision. The relative percent difference value for the chloride matrix spike replicate was not provided and could not be calculated from raw data. The radiochemical relative error ratio (calculated using the one-sigma total propagated uncertainty) for the sample replicates was less than three for all duplicates.

Matrix Spike Analysis

Matrix spike samples are used to measure method performance in the sample matrix. The spike data are not evaluated when the concentration of the unspiked sample is greater than 4 times the spike concentration. The spike recoveries met the recovery and precision criteria for all analytes evaluated.

Completeness

Results were reported in the correct units for all analytes requested using contract-required laboratory qualifiers.

Electronic Data Deliverable (EDD) File

The EDD file arrived on July 17, 2012. The Sample Management System EDD validation module was used to verify that the EDD files were complete and in compliance with requirements. The module compares the contents of the file to the requested analyses to ensure all and only the requested data are delivered. The contents of the EDD were manually examined to verify that the sample results accurately reflect the data contained in the sample data package.

SAMPLE MANAGEMENT SYSTEM

General Data Validation Report

RIN: 12064622 **Lab Code:** PAR **Validator:** Steve Donivan **Validation Date:** 8/28/2012

Project: Gasbuggy Site **Analysis Type:** ☐ Metals ☐ General Chem ☑ Rad ☐ Organics

# of Samples: 5 **Matrix:** WATER **Requested Analysis Completed:** Yes

Chain of Custody

Present: OK **Signed:** OK **Dated:** OK

Sample

Integrity: OK **Preservation:** OK **Temperature:** OK

Select Quality Parameters

☑ Holding Times	All analyses were completed within the applicable holding times.
☑ Detection Limits	There are 10 detection limit failures.
☐ Field/Trip Blanks	
☑ Field Duplicates	There was 1 duplicate evaluated.

SAMPLE MANAGEMENT SYSTEM

RIN: 12064622 Lab Code: PAR

Non-Compliance Report: Detection Limits

Project: Gasbuggy Site

Validation Date: 8/28/2012

Ticket	Location	Lab Sample ID	Method Code	Lab Method	Analyte Name	Result	Qualifier	Reported Detection Limit	Required Detection Limit	Units
KHW 670	2790	1206341-4	GPC-A-001	724R11	GROSS ALPHA	-0.614	U	15	2	pCi/L
KHW 670	2790	1206341-4	GPC-A-001	724R11	GROSS BETA	20.1		19	4	pCi/L
KHW 668	30-039-07525	1206341-2	GPC-A-001	724R11	GROSS BETA	8.3	U	20	4	pCi/L
KHW 668	30-039-07525	1206341-2	GPC-A-001	724R11	GROSS ALPHA	8.33	U	15	2	pCi/L
KHW 666	30-039-21620	1206341-1	GPC-A-001	724R11	GROSS BETA	556		20	4	pCi/L
KHW 666	30-039-21620	1206341-1	GPC-A-001	724R11	GROSS ALPHA	5.54	U	15	2	pCi/L
KHW 669	30-039-21647	1206341-3	GPC-A-001	724R11	GROSS ALPHA	4.61	U	14	2	pCi/L
KHW 669	30-039-21647	1206341-3	GPC-A-001	724R11	GROSS BETA	27.7		19	4	pCi/L
KHW 673	30-039-21743	1206341-5	GPC-A-001	724R11	GROSS BETA	15.3	U	22	4	pCi/L
KHW 673	30-039-21743	1206341-5	GPC-A-001	724R11	GROSS ALPHA	-6.13	U	17	2	pCi/L

SAMPLE MANAGEMENT SYSTEM
Radiochemistry Data Validation Worksheet

RIN: 12064622 **Lab Code:** PAR **Date Due:** 7/24/2012

Matrix: Water **Site Code:** GSB01 **Date Completed:** 7/17/2012

Sample	Analyte	Date Analyzed	Result	Flag	Tracer %R	LCS %R	MS %R	Duplicate
30-039-21743	Actinium-228	06/29/2012						0.88
30-039-21743	Americium-241	06/29/2012						0.70
Blank_Spike	Americium-241	06/29/2012				95.60		
30-039-21743	Antimony-125	06/29/2012						0.56
30-039-21743	Cerium-144	06/29/2012						0.58
30-039-21743	Cesium-134	06/29/2012						1.54
30-039-21743	Cesium-137	06/29/2012						0.26
Blank_Spike	Cesium-137	06/29/2012				102.00		
30-039-21743	Cobalt-60	06/29/2012						0.63
Blank_Spike	Cobalt-60	06/29/2012				97.70		
30-039-21743	Europium-152	06/29/2012						0.65
30-039-21743	Europium-154	06/29/2012						0.82
30-039-21743	Europium-155	06/29/2012						0.18
30-039-21743	GROSS ALPHA	06/30/2012						1.59
Blank	GROSS ALPHA	06/30/2012	0	Y				
2790	GROSS ALPHA	06/30/2012					85.2	
Blank_Spike	GROSS ALPHA	06/30/2012				92.90		
30-039-21743	GROSS BETA	06/30/2012						0.17
Blank_Spike	GROSS BETA	06/30/2012				96.20		
2790	GROSS BETA	06/30/2012					98.0	
Blank	GROSS BETA	06/30/2012	-0.4000	Y				
30-039-07525	H-3	06/29/2012						0.70
Blank_Spike	H-3	06/29/2012				95.40		
2790	H-3	06/29/2012					93.7	
Blank	H-3	06/29/2012	-75.0000	U				
30-039-21743	Lead-212	06/29/2012						0.37
30-039-21743	Potassium-40	06/29/2012						0.85
30-039-21743	Promethium-144	06/29/2012						1.32
30-039-21743	Promethium-146	06/29/2012						2.28
30-039-21743	Ruthenium-106	06/29/2012						0.69
30-039-21743	Thorium-234	06/29/2012						0.59
30-039-21743	Uranium-235	06/29/2012						0.52

SAMPLE MANAGEMENT SYSTEM
Radiochemistry Data Validation Worksheet

RIN: 12064622 **Lab Code:** PAR **Date Due:** 7/24/2012

Matrix: Water **Site Code:** GSB01 **Date Completed:** 7/17/2012

Sample	Analyte	Date Analyzed	Result	Flag	Tracer %R	LCS %R	MS %R	Duplicate
30-039-21743	Yttrium-88	06/29/2012						0.82

Sampling Quality Control Assessment

The following information summarizes and assesses quality control for this sampling event.

Equipment Blank Assessment

An equipment blank was not required.

Field Duplicate Analysis

Field duplicate samples are collected and analyzed as an indication of overall precision of the measurement process. The precision observed includes both field and laboratory precision and has more variability than laboratory duplicates which measure only laboratory performance. A duplicate sample was collected from location 30-039-07525. The radiochemical duplicate results had relative error ratios less than three, demonstrating acceptable precision.

SAMPLE MANAGEMENT SYSTEM

Validation Report: Field Duplicates

RIN: 12064622 **Lab Code:** PAR **Project:** Gasbuggy Site **Validation Date:** 8/28/2012

Duplicate: 2790 **Sample:** 30-039-07525

Analyte	Sample Result	Sample Flag	Sample Error	Sample Dilution	Duplicate Result	Duplicate Flag	Duplicate Error	Duplicate Dilution	RPD	RER	Units
Actinium-228	13.2	U	8.6	1	10.6	U	10.3	1		0.4	pCi/L
Americium-241	-28.7	U	26.1	1	2.52	U	16.1	1		2.0	pCi/L
Antimony-125	5.37	U	6.7	1	3.32	U	6.58	1		0.4	pCi/L
Cerium-144	-1.7	U	11.7	1	3.21	U	12.9	1		0.6	pCi/L
Cesium-134	0.148	U	2.67	1	-2.49	U	2.88	1		1.3	pCi/L
Cesium-137	-2.04	U	2.8	1	-1.47	U	2.66	1		0.3	pCi/L
Cobalt-60	-2.05	U	2.82	1	0.19	U	2.99	1		1.1	pCi/L
Europium-152	-2.65	U	13.9	1	0.847	U	13.8	1		0.3	pCi/L
Europium-154	-2.77	U	14.8	1	-12.1	U	20.2	1		0.7	pCi/L
Europium-155	1.88	U	7.18	1	5.3	U	6.6	1		0.7	pCi/L
GROSS ALPHA	8.33	U	9.34	1	-0.614	U	8.31	1		1.4	pCi/L
GROSS BETA	8.3	U	12.4	1	20.1		12.1	1		1.3	pCi/L
H-3	22	U	202	1	58.1	U	201	1		0.2	pCi/L
Lead-212	8.37		4.32	1	-4.73	U	8.55	1		2.7	pCi/L
Potassium-40	-36.3	U	92.6	1	-18.2	U	73.9	1		0.3	pCi/L
Promethium-144	0.929	U	2.82	1	-6	U	11	1		1.2	pCi/L
Promethium-146	0.851	U	3.25	1	2.17	U	3.14	1		0.6	pCi/L
Ruthenium-106	-15.6	U	24.8	1	5.54	U	24.1	1		1.2	pCi/L
Thorium-234	74.3		38.6	1	19.8	U	84.5	1		1.1	pCi/L
Uranium-235	1.45	U	24.3	1	13.2	U	11.7	1		0.9	pCi/L
Yttrium-88	-1.96	U	5.63	1	0.97	U	5.43	1		0.7	pCi/L

Certification

All laboratory analytical quality control criteria were met except as qualified in this report. The data qualifiers listed on the SEEPro database reports are defined on the last page of each report. All data in this package are considered validated and available for use.

Laboratory Coordinator: Stephen Donivan — Stephen Donivan — 7-10-2013 — Date

Data Validation Lead: Stephen Donivan — Stephen Donivan — 7-10-2013 — Date

Attachment 1
Data Presentation

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Produced Water Data

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General Water Quality Data by Location (USEE105) FOR SITE GSB01, Gasbuggy Site
REPORT DATE: 06/26/2013
Location: 30-039-07525 WELL Indian A No. 002; N-30-29N-3W; Producing Well

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Actinium-228	pCi/L	06/21/2012	N001	0 - 0	13.2	U		#	16	8.6
Actinium-228	pCi/L	06/21/2012	N002	0 - 0	10.6	U		#	17	10.3
Americium-241	pCi/L	06/21/2012	N001	0 - 0	-28.7	U		#	45	26.1
Americium-241	pCi/L	06/21/2012	N002	0 - 0	2.52	U		#	27	16.1
Antimony-125	pCi/L	06/21/2012	N001	0 - 0	5.37	U		#	12	6.7
Antimony-125	pCi/L	06/21/2012	N002	0 - 0	3.32	U		#	12	6.58
Cerium-144	pCi/L	06/21/2012	N001	0 - 0	-1.7	U		#	20	11.7
Cerium-144	pCi/L	06/21/2012	N002	0 - 0	3.21	U		#	21	12.9
Cesium-134	pCi/L	06/21/2012	N001	0 - 0	0.148	U		#	4.5	2.67
Cesium-134	pCi/L	06/21/2012	N002	0 - 0	-2.49	U		#	4.9	2.88
Cesium-137	pCi/L	06/21/2012	N001	0 - 0	-2.04	U		#	4.9	2.8
Cesium-137	pCi/L	06/21/2012	N002	0 - 0	-1.47	U		#	4.6	2.66
Cobalt-60	pCi/L	06/21/2012	N001	0 - 0	-2.05	U		#	5.1	2.82
Cobalt-60	pCi/L	06/21/2012	N002	0 - 0	0.19	U		#	5.1	2.99
Europium-152	pCi/L	06/21/2012	N001	0 - 0	-2.65	U		#	24	13.9
Europium-152	pCi/L	06/21/2012	N002	0 - 0	0.847	U		#	24	13.8
Europium-154	pCi/L	06/21/2012	N001	0 - 0	-2.77	U		#	26	14.8
Europium-154	pCi/L	06/21/2012	N002	0 - 0	-12.1	U		#	35	20.2

General Water Quality Data by Location (USEE105) FOR SITE GSB01, Gasbuggy Site
REPORT DATE: 06/26/2013
Location: 30-039-07525 WELL Indian A No. 002; N-30-29N-3W; Producing Well

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Europium-155	pCi/L	06/21/2012	N001	0 - 0	1.88	U		#	12	7.18
Europium-155	pCi/L	06/21/2012	N002	0 - 0	5.3	U		#	11	6.6
Gross Alpha	pCi/L	06/21/2012	N001	0 - 0	8.33	U		#	15	9.34
Gross Alpha	pCi/L	06/21/2012	N002	0 - 0	-.614	U		#	15	8.31
Gross Beta	pCi/L	06/21/2012	N001	0 - 0	8.3	U		#	20	12.4
Gross Beta	pCi/L	06/21/2012	N002	0 - 0	20.1		J	#	19	12.1
Lead-212	pCi/L	06/21/2012	N001	0 - 0	8.37		U	#	6.7	4.32
Lead-212	pCi/L	06/21/2012	N002	0 - 0	-4.73	U		#	14	8.55
Potassium-40	pCi/L	06/21/2012	N001	0 - 0	-36.3	U		#	160	92.6
Potassium-40	pCi/L	06/21/2012	N002	0 - 0	-18.2	U		#	120	73.9
Promethium-144	pCi/L	06/21/2012	N001	0 - 0	0.929	U		#	4.7	2.82
Promethium-144	pCi/L	06/21/2012	N002	0 - 0	-6	U		#	18	11
Promethium-146	pCi/L	06/21/2012	N001	0 - 0	0.851	U		#	5.4	3.25
Promethium-146	pCi/L	06/21/2012	N002	0 - 0	2.17	U		#	5.2	3.14
Ruthenium-106	pCi/L	06/21/2012	N001	0 - 0	-15.6	U		#	43	24.8
Ruthenium-106	pCi/L	06/21/2012	N002	0 - 0	5.54	U		#	40	24.1
Thorium-234	pCi/L	06/21/2012	N001	0 - 0	74.3		U	#	60	38.6
Thorium-234	pCi/L	06/21/2012	N002	0 - 0	19.8	U		#	140	84.5

General Water Quality Data by Location (USEE105) FOR SITE GSB01, Gasbuggy Site
REPORT DATE: 06/26/2013
Location: 30-039-07525 WELL Indian A No. 002; N-30-29N-3W; Producing Well

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Tritium	pCi/L	06/21/2012	N001	0 - 0	22	U		#	340	202
Tritium	pCi/L	06/21/2012	N002	0 - 0	58.1	U		#	340	201
Uranium-235	pCi/L	06/21/2012	N001	0 - 0	1.45	U		#	40	24.3
Uranium-235	pCi/L	06/21/2012	N002	0 - 0	13.2	U		#	21	11.7
Yttrium-88	pCi/L	06/21/2012	N001	0 - 0	-1.96	U		#	9.5	5.63
Yttrium-88	pCi/L	06/21/2012	N002	0 - 0	0.97	U		#	9.1	5.43

General Water Quality Data by Location (USEE105) FOR SITE GSB01, Gasbuggy Site

REPORT DATE: 06/26/2013

Location: 30-039-21620 WELL SCHALK 29-4 No. 007; K-26-29N-4W; Producing Well

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Actinium-228	pCi/L	06/21/2012	N001	0 - 0	12.8	U		#	21	11.2
Americium-241	pCi/L	06/21/2012	N001	0 - 0	10.7	U		#	45	27
Antimony-125	pCi/L	06/21/2012	N001	0 - 0	-1.31	U		#	12	6.76
Cerium-144	pCi/L	06/21/2012	N001	0 - 0	-7.23	U		#	20	12
Cesium-134	pCi/L	06/21/2012	N001	0 - 0	-1.33	U		#	4.8	2.79
Cesium-137	pCi/L	06/21/2012	N001	0 - 0	-3.55	U		#	5	2.84
Cobalt-60	pCi/L	06/21/2012	N001	0 - 0	-.63	U		#	4.9	2.78
Europium-152	pCi/L	06/21/2012	N001	0 - 0	2.65	U		#	23	13.5
Europium-154	pCi/L	06/21/2012	N001	0 - 0	-6.32	U		#	27	15.5
Europium-155	pCi/L	06/21/2012	N001	0 - 0	-5.6	U		#	12	7.32
Gross Alpha	pCi/L	06/21/2012	N001	0 - 0	5.54	U		#	15	8.98
Gross Beta	pCi/L	06/21/2012	N001	0 - 0	556			#	20	90.8
Lead-212	pCi/L	06/21/2012	N001	0 - 0	-.0707	U		#	14	8.11
Potassium-40	pCi/L	06/21/2012	N001	0 - 0	606			#	160	126
Promethium-144	pCi/L	06/21/2012	N001	0 - 0	0.982	U		#	5	2.97
Promethium-146	pCi/L	06/21/2012	N001	0 - 0	-1.81	U		#	5.7	3.3
Ruthenium-106	pCi/L	06/21/2012	N001	0 - 0	2.52	U		#	42	25
Thorium-234	pCi/L	06/21/2012	N001	0 - 0	3.54	U		#	120	72.4
Tritium	pCi/L	06/21/2012	N001	0 - 0	94.4	U		#	340	205
Uranium-235	pCi/L	06/21/2012	N001	0 - 0	0.0416	U		#	41	24.4
Yttrium-88	pCi/L	06/21/2012	N001	0 - 0	0.27	U		#	9.4	5.62

General Water Quality Data by Location (USEE105) FOR SITE GSB01, Gasbuggy Site

REPORT DATE: 06/26/2013

Location: 30-039-21647 WELL VALENCIA CANYON UNIT No. 037; M-14-28N-4W; Producing Well

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Actinium-228	pCi/L	06/20/2012	N001	0 - 0	18.1	TI	J	#	15	7.42
Americium-241	pCi/L	06/20/2012	N001	0 - 0	-16.8	U		#	96	57
Antimony-125	pCi/L	06/20/2012	N001	0 - 0	-1.09	U		#	9.9	5.84
Cerium-144	pCi/L	06/20/2012	N001	0 - 0	-7.12	U		#	22	13
Cesium-134	pCi/L	06/20/2012	N001	0 - 0	-1.1	U		#	4.1	2.4
Cesium-137	pCi/L	06/20/2012	N001	0 - 0	-1.39	U		#	3.8	2.18
Cobalt-60	pCi/L	06/20/2012	N001	0 - 0	-.939	U		#	3.8	2.15
Europium-152	pCi/L	06/20/2012	N001	0 - 0	-7.61	U		#	20	11.3
Europium-154	pCi/L	06/20/2012	N001	0 - 0	-10.6	U		#	22	12.3
Europium-155	pCi/L	06/20/2012	N001	0 - 0	-5.95	U		#	14	8.3
Gross Alpha	pCi/L	06/20/2012	N001	0 - 0	4.61	U		#	14	8.42
Gross Beta	pCi/L	06/20/2012	N001	0 - 0	27.7		J	#	19	12.7
Lead-212	pCi/L	06/20/2012	N001	0 - 0	-2.41	U		#	13	7.9
Potassium-40	pCi/L	06/20/2012	N001	0 - 0	-44.4	U		#	110	67.3
Promethium-144	pCi/L	06/20/2012	N001	0 - 0	1.63	U		#	5.6	3.43
Promethium-146	pCi/L	06/20/2012	N001	0 - 0	1.52	U		#	4.1	2.51
Ruthenium-106	pCi/L	06/20/2012	N001	0 - 0	-20.3	U		#	38	21.6
Thorium-234	pCi/L	06/20/2012	N001	0 - 0	6.53	U		#	210	129
Tritium	pCi/L	06/20/2012	N001	0 - 0	193	U		#	340	209
Uranium-235	pCi/L	06/20/2012	N001	0 - 0	-9.22	U		#	38	22.8
Yttrium-88	pCi/L	06/20/2012	N001	0 - 0	2.07	U		#	3.9	2.41

General Water Quality Data by Location (USEE105) FOR SITE GSB01, Gasbuggy Site

REPORT DATE: 06/26/2013

Location: 30-039-21743 WELL SCHALK 29-4 No. 017; I-25-29N-4W; Producing Well

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Actinium-228	pCi/L	06/21/2012	N001	0	-	0	21.1		J	#	19	12.4
Americium-241	pCi/L	06/21/2012	N001	0	-	0	-5.11	U		#	24	13.9
Antimony-125	pCi/L	06/21/2012	N001	0	-	0	-1.15	U		#	12	7.02
Cerium-144	pCi/L	06/21/2012	N001	0	-	0	-5.27	U		#	21	12.3
Cesium-134	pCi/L	06/21/2012	N001	0	-	0	-4.3	U		#	5.6	3.22
Cesium-137	pCi/L	06/21/2012	N001	0	-	0	-1.44	U		#	5.3	3.06
Cobalt-60	pCi/L	06/21/2012	N001	0	-	0	-.257	U		#	6.1	3.52
Europium-152	pCi/L	06/21/2012	N001	0	-	0	-.896	U		#	32	18.4
Europium-154	pCi/L	06/21/2012	N001	0	-	0	-5.79	U		#	31	17.8
Europium-155	pCi/L	06/21/2012	N001	0	-	0	-1.11	U		#	12	7.22
Gross Alpha	pCi/L	06/21/2012	N001	0	-	0	-6.13	U		#	17	9.34
Gross Beta	pCi/L	06/21/2012	N001	0	-	0	15.3	U		#	22	13.6
Lead-212	pCi/L	06/21/2012	N001	0	-	0	4.24	U		#	14	8.43
Potassium-40	pCi/L	06/21/2012	N001	0	-	0	42.5	U		#	140	83.3
Promethium-144	pCi/L	06/21/2012	N001	0	-	0	-.656	U		#	5.5	3.24
Promethium-146	pCi/L	06/21/2012	N001	0	-	0	4.99	U		#	5.9	3.71
Ruthenium-106	pCi/L	06/21/2012	N001	0	-	0	-24	U		#	50	28.7
Thorium-234	pCi/L	06/21/2012	N001	0	-	0	35.1	U		#	140	84.3
Tritium	pCi/L	06/21/2012	N001	0	-	0	-24.1	U		#	340	199
Uranium-235	pCi/L	06/21/2012	N001	0	-	0	11.6	U		#	21	12.9
Yttrium-88	pCi/L	06/21/2012	N001	0	-	0	2.69	U		#	5.7	3.5

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:

*	Replicate analysis not within control limits.
>	Result above upper detection limit.
A	TIC is a suspected aldol-condensation product.
B	Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
C	Pesticide result confirmed by GC-MS.
D	Analyte determined in diluted sample.
E	Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
H	Holding time expired, value suspect.
I	Increased detection limit due to required dilution.
J	Estimated
N	Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
P	> 25% difference in detected pesticide or Aroclor concentrations between 2 columns.
U	Analytical result below detection limit.
W	Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
X,Y,Z	Laboratory defined qualifier, see case narrative.

DATA QUALIFIERS:

F	Low flow sampling method used.	G	Possible grout contamination, pH > 9.	J	Estimated value.
L	Less than 3 bore volumes purged prior to sampling.	Q	Qualitative result due to sampling technique.	R	Unusable result.
U	Parameter analyzed for but was not detected.	X	Location is undefined.		

QA QUALIFIER:

#	Validated according to quality assurance guidelines.

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Natural Gas Data

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Gas Matrix Chemistry Data by Location (USEE510) FOR SITE GSB01, Gasbuggy Site
REPORT DATE: 06/26/2013
Location: 30-039-07525 WELL, Natural Gas Well - Vertical, Indian A No. 002; N-30-29N-3W; Producing Well

Parameter	Units	Sample Date	Sample ID	Ticket Number	Elev. Range	(Ft)	Matrix Subtype	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Carbon-14	pMC	06/21/2012	0001	KHW 659	-		NATURAL GAS - DRY	0.2	U		#	0.2	
Tritium	pCi/L	06/21/2012	0001	KHW 659	-		NATURAL GAS - DRY	0.0596	U		#	0.0596	

Gas Matrix Chemistry Data by Location (USEE510) FOR SITE GSB01, Gasbuggy Site
REPORT DATE: 06/26/2013
Location: 30-039-21620 WELL, Natural Gas Well - Vertical, SCHALK 29-4 No. 007; K-26-29N-4W; Producing Well

Parameter	Units	Sample Date	Sample ID	Ticket Number	Elev. Range	(Ft)	Matrix Subtype	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Carbon-14	pMC	06/21/2012	0001	KHW 661	-		NATURAL GAS - DRY	0.2	U		#	0.2	
Tritium	pCi/L	06/21/2012	0001	KHW 661	-		NATURAL GAS - DRY	0.0514	U		#	0.0514	

Gas Matrix Chemistry Data by Location (USEE510) FOR SITE GSB01, Gasbuggy Site
REPORT DATE: 06/26/2013
Location: 30-039-21647 WELL, Natural Gas Well - Vertical, VALENCIA CANYON UNIT No. 037; M-14-28N-4W; Producing Well

Parameter	Units	Sample Date	Sample ID	Ticket Number	Elev. Range	(Ft)	Matrix Subtype	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Carbon-14	pMC	06/20/2012	0001	KHW 662	-		NATURAL GAS - DRY	0.2	U		#	0.2	
Tritium	pCi/L	06/20/2012	0001	KHW 662	-		NATURAL GAS - DRY	0.0514	U		#	0.0514	

Gas Matrix Chemistry Data by Location (USEE510) FOR SITE GSB01, Gasbuggy Site
REPORT DATE: 06/26/2013
Location: 30-039-21743 WELL, Natural Gas Well - Vertical, SCHALK 29-4 No. 017; I-25-29N-4W; Producing Well

Parameter	Units	Sample Date	Sample ID	Ticket Number	Elev. Range	(Ft)	Matrix Subtype	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Carbon-14	pMC	06/21/2012	0001	KHW 664	-		NATURAL GAS - DRY	0.2	U		#	0.2	
Tritium	pCi/L	06/21/2012	0001	KHW 664	-		NATURAL GAS - DRY	0.0514	U		#	0.0514	

Gas Matrix Chemistry Data by Location (USEE510) FOR SITE GSB01, Gasbuggy Site
REPORT DATE: 06/26/2013
Location: 30-039-21744 WELL, Natural Gas Well - Vertical, SCHALK 29-4 No. 014; B-26-29N-4W; Producing Well

Parameter	Units	Sample Date	ID	Ticket Number	Elev. Range	(Ft)	Matrix Subtype	Result	Qualifiers Lab	Data	QA	Detection Limit	Uncertainty
Carbon-14	pMC	06/21/2012	0001	KHW 660	-		NATURAL GAS - DRY	0.2	U		#	0.2	
Tritium	pCi/L	06/21/2012	0001	KHW 660	-		NATURAL GAS - DRY	0.0514	U		#	0.0514	

Gas Matrix Chemistry Data by Location (USEE510) FOR SITE GSB01, Gasbuggy Site
REPORT DATE: 06/26/2013
Location: 30-039-30161 WELL, Natural Gas Well - Angle, MANY CANYONS 29 4 25 No. 123; G-25-29N-4W; Producing Well, New Well 06/07

Parameter	Units	Sample Date	ID	Ticket Number	Elev. Range	(Ft)	Matrix Subtype	Result	Qualifiers Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Carbon-14	pMC	06/21/2012	0001	KHW 663	-		NATURAL GAS - DRY	0.2	U		#	0.2	
Tritium	pCi/L	06/21/2012	0001	KHW 663	-		NATURAL GAS - DRY	0.0514	U		#	0.0514	

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:

*	Replicate analysis not within control limits.
>	Result above upper detection limit.
A	TIC is a suspected aldol-condensation product.
B	Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
C	Pesticide result confirmed by GC-MS.
D	Analyte determined in diluted sample.
E	Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
H	Holding time expired, value suspect.
I	Increased detection limit due to required dilution.
J	Estimated
N	Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
P	> 25% difference in detected pesticide or Aroclor concentrations between 2 columns.
U	Analytical result below detection limit.
W	Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
X,Y,Z	Laboratory defined qualifier, see case narrative.

DATA QUALIFIERS:

F	Low flow sampling method used.	G	Possible grout contamination, pH > 9.	J	Estimated value.
L	Less than 3 bore volumes purged prior to sampling.	Q	Qualitative result due to sampling technique.	R	Unusable result.
U	Parameter analyzed for but was not detected.	X	Location is undefined.		

QA QUALIFIER:

#	Validated according to quality assurance guidelines.

Attachment 2
Sampling and Analysis Work Order

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Task Order LM00-502
Control Number 12-0642

May 16, 2012

U.S. Department of Energy
Office of Legacy Management
ATTN: Jalena Dayvault
Site Manager
2597 Legacy Way
Grand Junction, CO 81503

SUBJECT: Contract No. DE-AM01-07LM00060, S.M. Stoller Corporations (Stoller)
June 2012 Environmental Sampling at Gasbuggy, New Mexico, Site

REFERENCE: Task Order LM00-502-07-616, Gasbuggy, New Mexico, Site

Dear Ms. Dayvault:

The purpose of this letter is to inform you of the upcoming sampling event at Gasbuggy, New Mexico. Enclosed are the map and tables specifying sample locations and analytes for routine monitoring at the Gasbuggy site. Natural gas and produced water will be collected from gas wells at this site as part of the environmental sampling currently scheduled to begin the week of June 18, 2012.

The following list shows the locations scheduled to be sampled during this event.

30-039-07525	30-039-21620	30-039-21647	30-039-21743
30-039-21744	30-039-29988	30-039-30161	

All samples will be collected as directed in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites*. Access agreements are being reviewed and are expected to be complete by the beginning of fieldwork.

Please contact me at (970) 248-6378 if you have any questions or concerns.

Sincerely,

Mark P Plessinger
2012.05.17 09:50:40 -06'00'

Mark Plessinger
Site Lead

MP/lcg/dc
Enclosures (3)

The S.M. Stoller Corporation 2597 Legacy Way Grand Junction, CO 81503 (970) 248-6000 Fax (970) 248-6040

cc: (electronic)
Karl Stoeckle, DOE
Steve Donivan, Stoller
Bev Gallagher, Stoller
Lauren Goodknight, Stoller
Rick Hutton, Stoller
EDD Delivery
rc-grand.junction

Sampling Frequencies for Locations at Gasbuggy, New Mexico

Location ID	Quarterly	Semiannually	Annually	Every 5 Years	Not Sampled	Notes
Monitoring Wells						
Jicarilla Well 1				X		Windmill; next in 6/2014
Lower Burro Canyon				X		Windmill; next in 6/2014
Well 30.3.32.343 (N)				X		Windmill; next in 6/2014
Well 28.3.33.233 (S)				X		Windmill; next in 6/2014
Windmill #2				X		Windmill; next in 6/2014
Surface Locations						
Bubbling Springs				X		Next in 6/2014
Cave Springs				X		Next in 6/2014
Cedar Springs				X		Next in 6/2014
La Jara Creek				X		Next in 6/2014
Pnd N WL 30.3.32.343				X		Next in 6/2014
Gas and Produced Water Locations						
30-039-21744			X			
30-039-21620			X			
30-039-29988			X			
30-039-30161			X			
30-039-21743			X			
30-039-07525			X			
30-039-21647			X			

Annual GAS sampling conducted in June; water sampling every 5 years

Constituent Sampling Breakdown

Site	Gasbuggy						
Analyte	**Groundwater**	**Surface Water**	**Gas**	**Produced Water**	**Required Detection Limit (mg/L)**	**Analytical Method**	**Line Item Code**
Approx. No. Samples/yr	5	5	7	7			
Field Measurements							
Alkalinity							
Dissolved Oxygen	X	X					
Redox Potential	X	X					
pH	X	X					
Specific Conductance	X	X					
Turbidity	X						
Temperature	X	X					
Laboratory Measurements							
Aluminum							
Ammonia as N (NH3-N)							
Calcium							
Carbon-14			X		NA	Liquid Scintillation	LMG-03
Chloride							
Chromium							
Gamma Spec	X			X	10 pCi/L	Gamma Spectrometry	GAM-A-001
Gross Alpha				X	2 pCi/L	EPA 900.0	GPC-A-001
Gross Beta				X	4 pCi/L	EPA 900.0	GPC-A-001
Iron							
Lead							
Magnesium							
Manganese							
Molybdenum							
Nickel							
Nickel-63							
Nitrate + Nitrite as N ((NO_3+NO_2)-N							
Potassium							
Radium-226							
Radium-228							
Selenium							
Silica							
Sodium							
Strontium							
Total Dissolved Solids							
Total Organic Carbon							
Tritium	X	X	X	X	400 pCi/L (Water)	Liquid Scintillation	LSC-A-001, LMG-03
Uranium							
Vanadium							
Zinc							
Total No. of Analytes	2	1	2	4			

Note: All private well samples are to be unfiltered. The total number of analytes does not include field parameters.

Attachment 3
Trip Report

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Stoller
Grand Junction Office
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Memorandum

Control Number N/A

DATE: July 5, 2012

TO: Mark Plessinger

FROM: Dan Sellers

SUBJECT: Trip Report (Natural Gas and Produced Water Sampling)

Site: Gasbuggy, New Mexico

Dates of Sampling Event: June 20 and 21, 2012

Team Members: David Atkinson and Dan Sellers.

Number of Locations Sampled: Produced water from 4 natural gas wells, and natural gas from 6 natural gas wells.

Locations Not Sampled/Reason: No produced water or natural gas samples were collected at well 30-039-29988 because it is a "shut in" well. No produced water was collected at wells 30-039-21744 and 30-039-30161 due to lack of water. Field measurements were not taken on the produced water samples.

Quality Control Sample Cross Reference: The following is the false identification assigned to the quality control samples for produced water:

False ID	True ID	Sample Type	Associated Matrix	Ticket Number
2790	30-039-07525	Duplicate	Produced Water	KHW 670

RIN Number Assigned: Samples were assigned to RIN 12064621 (natural gas) and RIN 12064622 (water).

Sample Shipment: Samples were shipped on June 25, 2012.

Water Level Measurements: NA.

Trip Summary: The 2012 Gasbuggy sampling event was conducted June 20 and June 21, 2012. Jalena Dayvault with DOE LM, and Dan Sellers, David Atkinson, and Mark Plessinger with the LMS contractor staff participated in the sampling event.

On Wednesday June 20, the sampling team traveled from Grand Junction to Gasbuggy "ground zero." A representative from Conoco Phillips and Mark Plessinger accompanied the sample team to sample gas well 30–039–21647 located in the Carson National Forest.

On Thursday, June 21, four individuals from the Williams Production Co., a representative from the Jicarilla tribe, Jalena Dayvault, and Mark Plessinger met the sampling team at the Gasbuggy site. The sampling team was accompanied by the above individuals and traveled to well 30-039-07525, which is located on the Jicarilla Apache tribal property. Upon completing sample collection at this well, the sampling team continued to four other gas wells located in the Carson National Forest — one well operated by Black Hills Gas Resources and three wells operated by Schalk Development. Representatives from these companies were met at Gasbuggy "ground zero" at different scheduled times and accompanied staff to appropriate gas wells for sampling.

The following table is a list of natural gas wells sampled and the location from where the valve was opened to extract the gas from each well head (i.e. well head tubing, well head separator, or well meter).

Gas Well ID (API #)	Valve Location	Alternate Gas Well ID	Gas Well Operator
30–039–21744	Well head separator	B–26–29N–4W Schalk 29–4 No. 014	John E. Schalk
30–039–21620	Well head separator	K–26–29N–4W Schalk 29–4 No. 007	John E. Schalk
30–039–21743	Well head separator	I–25–29N–4W Schalk 29–4 No. 17	John E. Schalk
30–039–30161	Well meter	G–25–29N–4W Many Canyons 29 4 25 No. 123	Black Hills Gas Resources, Inc.
30–039–07525	Well head separator	N–30–29N–3W Indian A No. 002	Williams Production Co., LLC
30–039–21647	Well head tubing	M–14–28N–4W Valencia Canyon Unit No. 037	ConocoPhillips

The following table is a list of natural gas wells where produced water was sampled and the location from where the valve was opened to extract the water (i.e. well holding tank or well head separator).

Gas Well ID (API #)	Valve Location	Alternate Gas Well ID	Gas Well Operator
30–039–21620	Well holding tank	K–26–29N–4W Schalk 29–4 No. 007	John E. Schalk
30–039–21743	Well holding tank	I–25–29N–4W Schalk 29–4 No. 17	John E. Schalk
30–039–07525	Well head separator	N–30–29N–3W Indian A No. 002	Williams Production Co., LLC
30–039–21647	Well holding tank	M–14–28N–4W Valencia Canyon Unit No. 037	ConocoPhillips

All gas samples will be analyzed for tritium and carbon-14. All produced water samples will be analyzed for tritium, gross alpha, gross beta, and gamma emitters by high resolution gamma spectroscopy.

(JP/lcg)

cc: (electronic)
Jalena Dayvault, DOE
Steve Donivan, Stoller
Rick Hutton, Stoller
Mark Plessinger, Stoller
EDD Delivery