Data Validation Package

January 2011
Groundwater Sampling at the Gnome-Coach, New Mexico, Site

November 2011

U.S. DEPARTMENT OF ENERGY | Legacy Management

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Contents

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Sampling Event Summary

Site: Gnome-Coach, New Mexico, Site

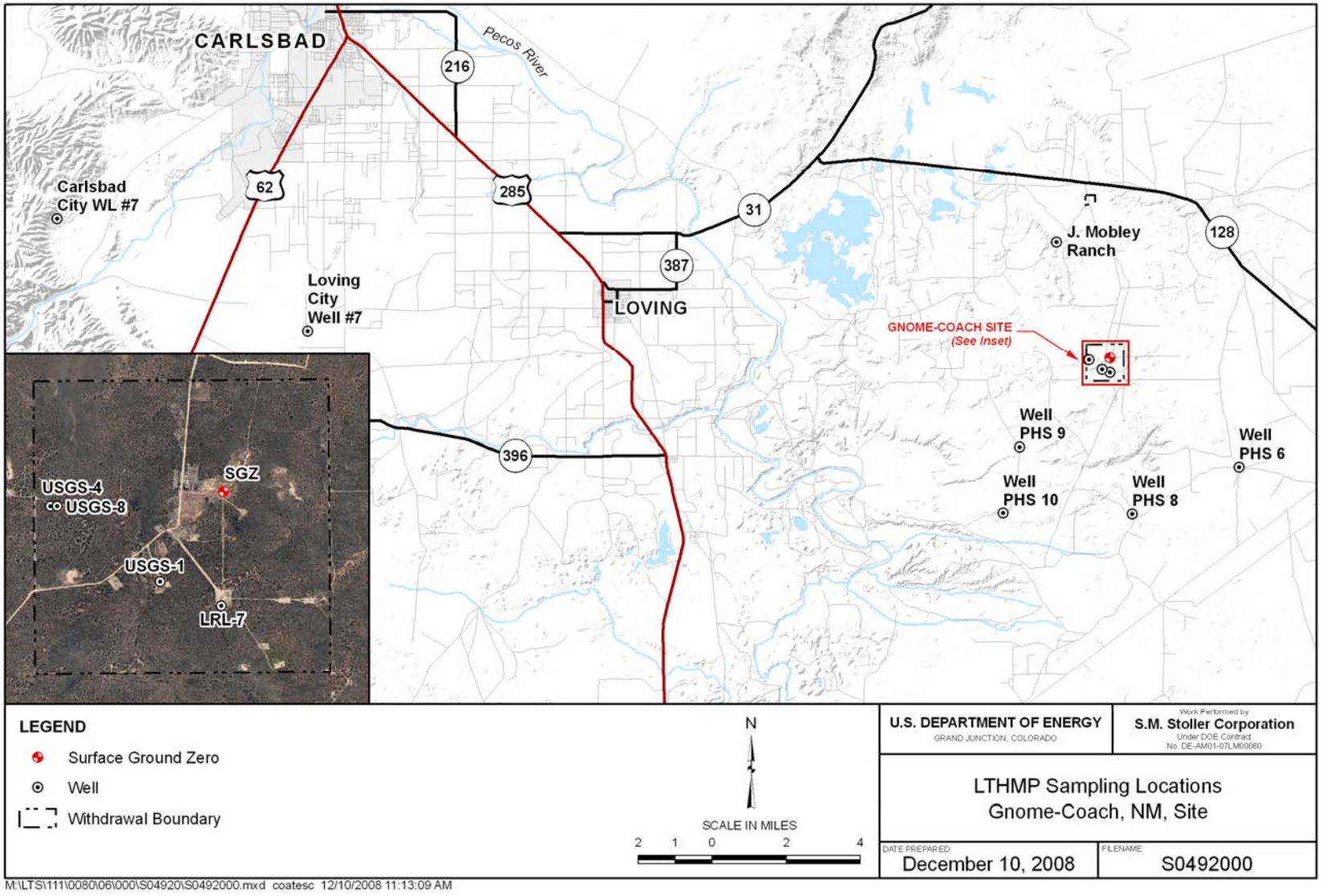
Sampling Period: January 19, 2011

Annual sampling was conducted January 19, 2011, to monitor groundwater for potential radionuclide contamination at the Gnome-Coach site in New Mexico. The sampling was performed as specified in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites* (LMS/PLN/S04351, continually updated). A duplicate sample was also collected from well USGS-1. Water levels were measured in the sampled wells. Refer to the sample location map for well locations.

Samples were analyzed by the U.S. Environmental Protection Agency (EPA) Radiation & Indoor Environments National Laboratory in Las Vegas, Nevada. Samples were analyzed for gamma-emitting radionuclides by high-resolution gamma spectrometry, strontium-90, and tritium using the method. Tritium was not measured using the enrichment method because the EPA laboratory no longer offers that service. Detonation and/or tracer test-related contaminants were detected in wells LRL-7, USGS-4, and USGS-8. The detection of radionuclides in these wells was expected because wells USGS-4 and USGS-8 were previously used for a radionuclide tracer test and well LRL-7 was used for waste disposal. Radionuclide time-concentration graphs are included in this report for these wells.

Richard C. Findlay
Site Lead, S.M. Stoller Corporation

11-21-2011
Date



Gnome-Coach Sample Location Map

Data Assessment Summary

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Water Sampling Field Activities Verification Checklist

Project	Gnome-Coach, New Mexico	**Date(s) of Water Sampling**	January 19, 2011
Date(s) of Verification	October 17, 2011	**Name of Verifier**	Steve Donivan

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures?	Yes	
List other documents, SOPs, instructions.		Work Order letter dated December 20, 2010.
2. Were the sampling locations specified in the planning documents sampled?	Yes	
3. Was a pre-trip calibration conducted as specified in the above-named documents?	Yes	Pre-trip calibration was performed on January 14, 2011.
4. Was an operational check of the field equipment conducted daily?	Yes	
Did the operational checks meet criteria?	No	The pH probe failed. pH measurements were made in the lab approximately 30 hours after sample collection.
5. Were the number and types (alkalinity, temperature, specific conductance, pH, turbidity, DO, ORP) of field measurements taken as specified?	Yes	
6. Was the category of the well documented?	Yes	
7. Were the following conditions met when purging a Category I well:	NA	There were no Category I wells.
Was one pump/tubing volume purged prior to sampling?		
Did the water level stabilize prior to sampling?		
Did pH, specific conductance, and turbidity measurements stabilize prior to sampling?		
Was the flow rate less than 500 mL/min?		
If a portable pump was used, was there a 4-hour delay between pump installation and sampling?		

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?	Yes	
Was one pump/tubing volume removed prior to sampling?	Yes	
9. Were duplicates taken at a frequency of one per 20 samples?	Yes	A duplicate sample was collected from location USGS-1.
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with nondedicated equipment?	NA	Dedicated equipment was used at all wells.
11. Were trip blanks prepared and included with each shipment of VOC samples?	NA	
12. Were QC samples assigned a fictitious site identification number?	Yes	
Was the true identity of the samples recorded on the Quality Assurance Sample Log or in the Field Data Collection System (FDCS) report?	Yes	Location ID 2858 was used for the duplicate sample.
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. Are field data sheets signed and dated by both team members (hardcopies) or are dates present for the “Date Signed” fields (FDCS)?	Yes	
18. Was all other pertinent information documented on the field data sheets?	Yes	
19. Was the presence or absence of ice in the cooler documented at every sample location?	NA	Sample chilling was not required.
20. Were water levels measured at the locations specified in the planning documents?	Yes	

Laboratory Performance Assessment

General Information

Requisition No. (RIN): 11013546
Sample Event: January 19, 2011
Site(s): Gnome-Coach Site
Laboratory: Radiation and Indoor Environments National Laboratory
Las Vegas, NV
Analysis: Radiochemistry
Validator: Steve Donivan
Review Date: October 17, 2011

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. All analyses were successfully completed with the following exception. The determination of tritium using the enrichment method was not performed as the Radiation and Indoor Environments National Laboratory no longer provides that service. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 1.

Table 1. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Gamma Spectrometry	GAM-A-001	RQA-302	RQA-302
Strontium-90	GPC-A-009	NAREL SR-04	NAREL SR-04
Tritium	LSC-A-001	RQA-604	RQA-604

Data Qualifier Summary

Analytical results were qualified as listed in Table 2. Refer to the sections below for an explanation of the data qualifiers applied.

Table 2. Data Qualifier Summary

Sample	Location	Analyte	Flag	Reason
735559	USGS-1	Potassium-40	U	Less than the Decision Level Concentration
735559	USGS-1	Lead-212	U	Less than the Decision Level Concentration
735560	USGS-4	Potassium-40	U	Less than the Decision Level Concentration
735564	USGS-1	Tritium	U	Less than the Decision Level Concentration
735567	USGS-1 Duplicate	Tritium	U	Less than the Decision Level Concentration
735569	USGS-1	Strontium-90	U	Less than the Decision Level Concentration
735572	LRL-7	Strontium-90	U	Less than the Decision Level Concentration
735573	USGS-1 Duplicate	Strontium-90	U	Less than the Decision Level Concentration

Sample Shipping/Receiving

The Radiation and Indoor Environments National Laboratory in Las Vegas, Nevada, received five water samples on February 3, 2011, submitted for the determination of gamma emitting nuclides, strontium-90, tritium, and tritium (enrichment method). The enriched tritium method was not performed as stated above. The electronic deliverable was checked to confirm that all of the samples scheduled were received and analyzed.

Preservation and Holding Times

The sample shipment was received intact with all samples in the correct container types and preserved correctly for the requested analyses. All samples were analyzed within the applicable holding times.

Laboratory Instrument Calibration

Data for this RIN were reported at Analysis Service Level B, results only) and do not include calibration data.

Radiochemical Analysis

Radiochemical results are qualified with a "U" flag (not detected) when the result is greater than the minimum detectable concentration (MDC) but less than the Decision Level Concentration, estimated as 3 times the one-sigma total propagated uncertainty. Results above the Decision Level Concentration and the MDC are qualified with a "J" flag (estimated) when the result is less than Determination Limit (3 times the MDC).

Completeness

The electronic data deliverable was the only deliverable received for this RIN.

Electronic Data Deliverable (EDD) File

The EDD file arrived on August 15, 2011. The Sample Management System EDD validation module was used to verify that the EDD file was 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.

SAMPLE MANAGEMENT SYSTEM

General Data Validation Report

RIN: 11013546 **Lab Code:** RIE **Validator:** Steve Donivan **Validation Date:** 10/17/2011

Project: Gnome-Coach 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	The reported detection limits are equal to or below contract requirements.
☐ Field/Trip Blanks	
☑ Field Duplicates	There were 3 duplicates evaluated.

Sampling Quality Control Assessment

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

Sampling Protocol

Wells LRL-7, USGS-4, and USGS-8 were sampled using dedicated bladder pumps. Data from these wells are qualified with an "F" flag in the database indicating the well was purged and sampled using the low-flow sampling method, and with a "Q" because these are Category II wells. Well USGS-1 was sampled with a dedicated submersible pump.

Equipment Blank Assessment

An equipment blank was not required during this sampling event.

Field Duplicate Assessment

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 USGS-1. Acceptable precision is indicated when the relative error ratio for the sample and duplicate is less than three. The duplicate data met this criterion.

SAMPLE MANAGEMENT SYSTEM

Validation Report: Field Duplicates

RIN: 11013546 **Lab Code:** RIE **Project:** Gnome-Coach Site **Validation Date:** 10/17/2011

Duplicate: 2858 **Sample:** USGS-1

Analyte	Sample Result	Sample Flag	Sample Error	Sample Dilution	Duplicate Result	Duplicate Flag	Duplicate Error	Duplicate Dilution	RPD	RER	Units
Cs-137	0.00E+00	U	0.00E+00	1	0.00E+00	U	0.00E+00	1			pCi/L
H-3	-4.21E-02		8.60E-02	1	2.31E-02		9.00E-02	1		1.0	nCi/L
Pb-214					6.13E+00		2.80E+00	1			pCi/L
Sr-90	-1.09E+00		1.80E+00	1	2.66E-01		6.20E-01	1		1.4	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: Steve Donivan — Date: 11-14-2011

Data Validation Lead: Steve Donivan — Date: 11-14-2011

Attachment 1
Assessment of Anomalous Data

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Potential Outliers Report

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Potential Outliers Report

Potential outliers are measurements that are extremely large or small relative to the rest of the data and, therefore, are suspected of misrepresenting the population from which they were collected. Potential outliers may result from transcription errors, data-coding errors, or measurement system problems. However, outliers may also represent true extreme values of a distribution and indicate more variability in the population than was expected.

Statistical outlier tests give probabilistic evidence that an extreme value does not "fit" with the distribution of the remainder of the data and is therefore a statistical outlier. These tests should only be used to identify data points that require further investigation. The tests alone cannot determine whether a statistical outlier should be discarded or corrected within a data set.

There are three steps involved in identifying extreme values or outliers:

1. Identify extreme values that may be potential outliers by generating the Outliers Report using the Sample Management System from data in the SEEPro database. The application compares the new data set with historical data and lists the new data that fall outside the historical data range. A determination is also made if the data are normally distributed using the Shapiro-Wilk Test.
2. Apply the appropriate statistical test. Dixon's Extreme Value test is used to test for statistical outliers when the sample size is less than or equal to 25. This test considers both extreme values that are much smaller than the rest of the data (case 1) and extreme values that are much larger than the rest of the data (case 2). This test is valid only if the data without the suspected outlier are normally distributed. Rosner's Test is a parametric test that is used to detect outliers for sample sizes of 25 or more. This test also assumes that the data without the suspected outliers are normally distributed.
3. Scientifically review statistical outliers and decide on their disposition.

There were no potential outliers identified, and the data for this event are acceptable as qualified.

Data Validation Outliers Report - No Field Parameters

Comparison: All Historical Data

Laboratory: Environmental Protection Agency

RIN: 11013546

Report Date: 10/28/2011

					Current			Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
						Qualifiers			Qualifiers			Qualifiers				
Site Code	Location Code	Sample ID	Sample Date	Analyte	Result	Lab	Data	Result	Lab	Data	Result	Lab	Data	N	N Below Detect	
GNO01	USGS-4	N001	01/19/2011	Tritium	11300		FQ	1300000			13200		FQ	43	0	No
GNO01	USGS-8	N001	01/19/2011	Tritium	21200		FQ	1500000			25500		FQ	45	0	No

STATISTICAL TESTS:

The distribution of the data is tested for normality or lognormality using the Shapiro-Wilk Test

Outliers are identified using Dixon's Test when there are 25 or fewer data points.

Outliers are identified using Rosner's Test when there are 26 or more data points.

See Data Quality Assessment: Statistical Methods for Practitioners, EPA QC/G-9S, February 2006.

Attachment 2
Data Presentation

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Groundwater Quality Data

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Groundwater Quality Data by Location (USEE100) FOR SITE GNO01, Gnome-Coach Site
REPORT DATE: 10/28/2011
Location: LRL-7 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range		(Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Cesium-137	pCi/L	01/19/2011	N001	13440.22	-	13440.22	134		FQ	#	0	16
Dissolved Oxygen	mg/L	01/19/2011	N001	13440.22	-	13440.22	0.38		FQ	#		
Oxidation Reduction Potential	mV	01/19/2011	N001	13440.22	-	13440.22	-102		FQ	#		
pH	s.u.	01/19/2011	N001	13440.22	-	13440.22	11.73		FQ	#		
Potassium-40	pCi/L	01/19/2011	N001	13440.22	-	13440.22	2530		FQ	#	0	300
Specific Conductance	umhos /cm	01/19/2011	N001	13440.22	-	13440.22	200300		FQ	#		
Strontium-90	pCi/L	01/19/2011	N001	13440.22	-	13440.22	-1.86		UFQ	#	29	15
Temperature	C	01/19/2011	N001	13440.22	-	13440.22	21.2		FQ	#		
Tritium	pCi/L	01/19/2011	N001	13440.22	-	13440.22	3910		FQ	#	150	250
Turbidity	NTU	01/19/2011	N001	13440.22	-	13440.22	5.55		FQ	#		

Groundwater Quality Data by Location (USEE100) FOR SITE GNO01, Gnome-Coach Site
REPORT DATE: 10/28/2011
Location: USGS-1 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range		(Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Cesium-137	pCi/L	01/19/2011	N001	13424.83	-	13424.83	0	U		#	2.2	0
Cesium-137	pCi/L	01/19/2011	N002	13424.83	-	13424.83	0	U		#	2.4	0
Dissolved Oxygen	mg/L	01/19/2011	N001	13424.83	-	13424.83	1.5			#		
Lead-212	pCi/L	01/19/2011	N001	13424.83	-	13424.83	2.08		U	#	0	2.7
Lead-214	pCi/L	01/19/2011	N002	13424.83	-	13424.83	6.13			#	0	2.8
Oxidation Reduction Potential	mV	01/19/2011	N001	13424.83	-	13424.83	-90			#		
pH	s.u.	01/19/2011	N001	13424.83	-	13424.83	6.8			#		
Potassium-40	pCi/L	01/19/2011	N001	13424.83	-	13424.83	12.5		U	#	0	13
Specific Conductance	umhos /cm	01/19/2011	N001	13424.83	-	13424.83	5000			#		
Strontium-90	pCi/L	01/19/2011	N001	13424.83	-	13424.83	-1.09		U	#	3.6	1.8
Strontium-90	pCi/L	01/19/2011	N002	13424.83	-	13424.83	0.266		U	#	1.1	0.62
Temperature	C	01/19/2011	N001	13424.83	-	13424.83	23			#		
Tritium	pCi/L	01/19/2011	N001	13424.83	-	13424.83	-42.1		U	#	150	86
Tritium	pCi/L	01/19/2011	N002	13424.83	-	13424.83	23.1		U	#	150	90
Turbidity	NTU	01/19/2011	N001	13424.83	-	13424.83	2			#		

Groundwater Quality Data by Location (USEE100) FOR SITE GNO01, Gnome-Coach Site
REPORT DATE: 10/28/2011
Location: USGS-4 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range		(Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Cesium-137	pCi/L	01/19/2011	N001	13411.19	-	13411.19	0	U	FQ	#	2.4	0
Dissolved Oxygen	mg/L	01/19/2011	N001	13411.19	-	13411.19	1.4		FQ	#		
Lead-214	pCi/L	01/19/2011	N001	13411.19	-	13411.19	4.91		FQ	#	0	2.9
Oxidation Reduction Potential	mV	01/19/2011	N001	13411.19	-	13411.19	-53		FQ	#		
pH	s.u.	01/19/2011	N001	13411.19	-	13411.19	6.68		FQ	#		
Potassium-40	pCi/L	01/19/2011	N001	13411.19	-	13411.19	16.1		UFQ	#	0	13
Specific Conductance	umhos /cm	01/19/2011	N001	13411.19	-	13411.19	6130		FQ	#		
Strontium-90	pCi/L	01/19/2011	N001	13411.19	-	13411.19	2650		FQ	#	6	120
Temperature	C	01/19/2011	N001	13411.19	-	13411.19	20.5		FQ	#		
Tritium	pCi/L	01/19/2011	N001	13411.19	-	13411.19	11300		FQ	#	150	560
Turbidity	NTU	01/19/2011	N001	13411.19	-	13411.19	10.7		FQ	#		

Groundwater Quality Data by Location (USEE100) FOR SITE GNO01, Gnome-Coach Site
REPORT DATE: 10/28/2011
Location: USGS-8 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range		(Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Cesium-137	pCi/L	01/19/2011	N001	13408.76	-	13408.76	150		FQ	#	0	18
Dissolved Oxygen	mg/L	01/19/2011	N001	13408.76	-	13408.76	1.32		FQ	#		
Oxidation Reduction Potential	mV	01/19/2011	N001	13408.76	-	13408.76	-122.5		FQ	#		
pH	s.u.	01/19/2011	N001	13408.76	-	13408.76	6.7		FQ	#		
Specific Conductance	umhos /cm	01/19/2011	N001	13408.76	-	13408.76	6046		FQ	#		
Strontium-90	pCi/L	01/19/2011	N001	13408.76	-	13408.76	3650		FQ	#	5.7	160
Temperature	C	01/19/2011	N001	13408.76	-	13408.76	20.78		FQ	#		
Tritium	pCi/L	01/19/2011	N001	13408.76	-	13408.76	21200		FQ	#	150	960
Turbidity	NTU	01/19/2011	N001	13408.76	-	13408.76	10.1		FQ	#		

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.

Static Water Level Data

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STATIC WATER LEVELS (USEE700) FOR SITE GNO01, Gnome-Coach Site
REPORT DATE: 10/28/2011

Location Code	Flow Code	Top of Casing Elevation (Ft)	Measurement Date	Measurement Time	Depth From Top of Casing (Ft)	Water Elevation (Ft)
LRL-7		3442.42	01/19/2011	01:00:18	468.51	2973.91
USGS-4		3415.25	01/19/2011	10:45:15	426.22	2989.03
USGS-8		3412.96	01/19/2011	11:45:39	419.65	2993.31

FLOW CODES: B BACKGROUND C CROSS GRADIENT D DOWN GRADIENT F OFF SITE
N UNKNOWN O ON SITE U UPGRADIENT

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Time-Concentration Graphs

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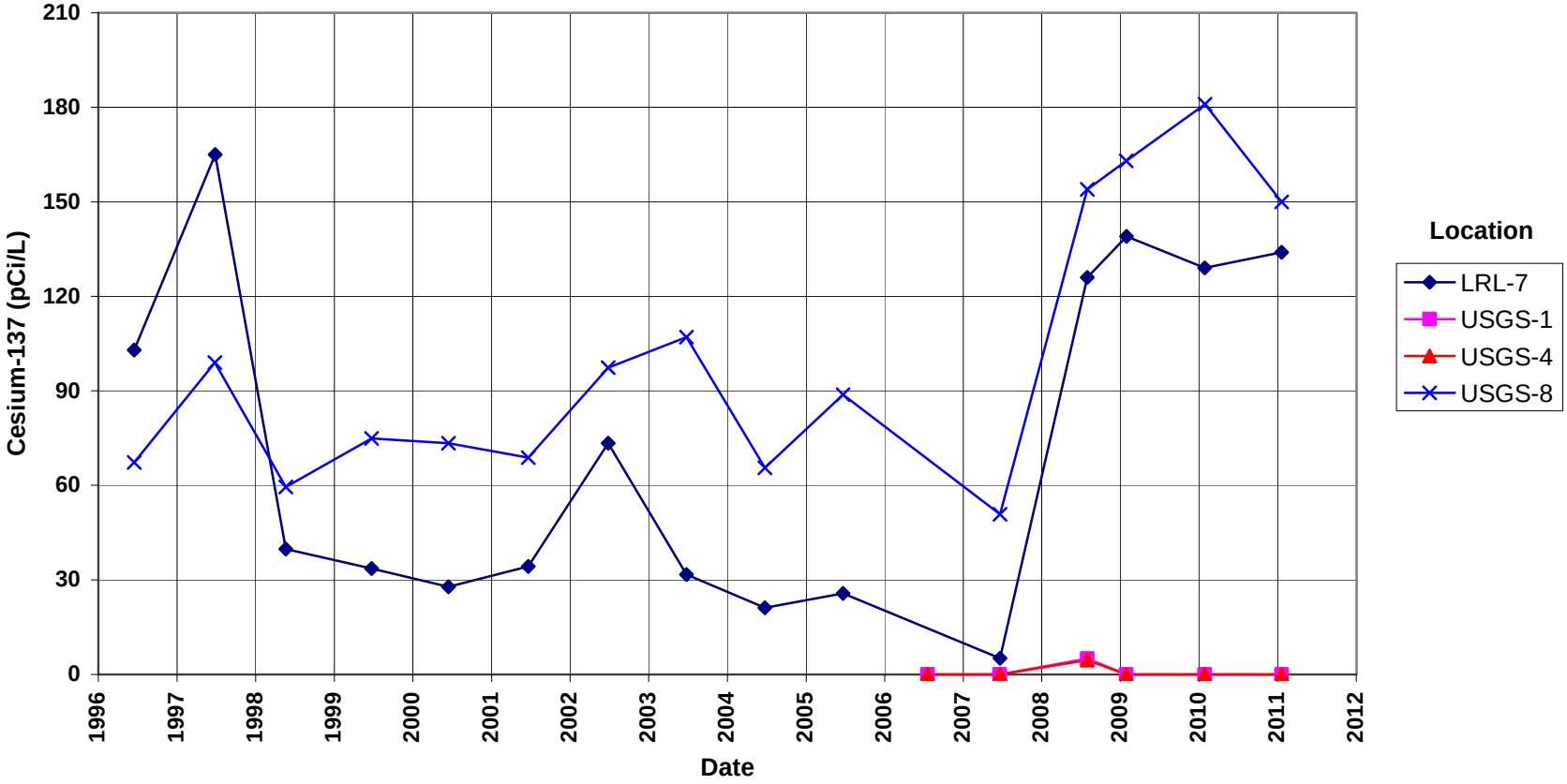
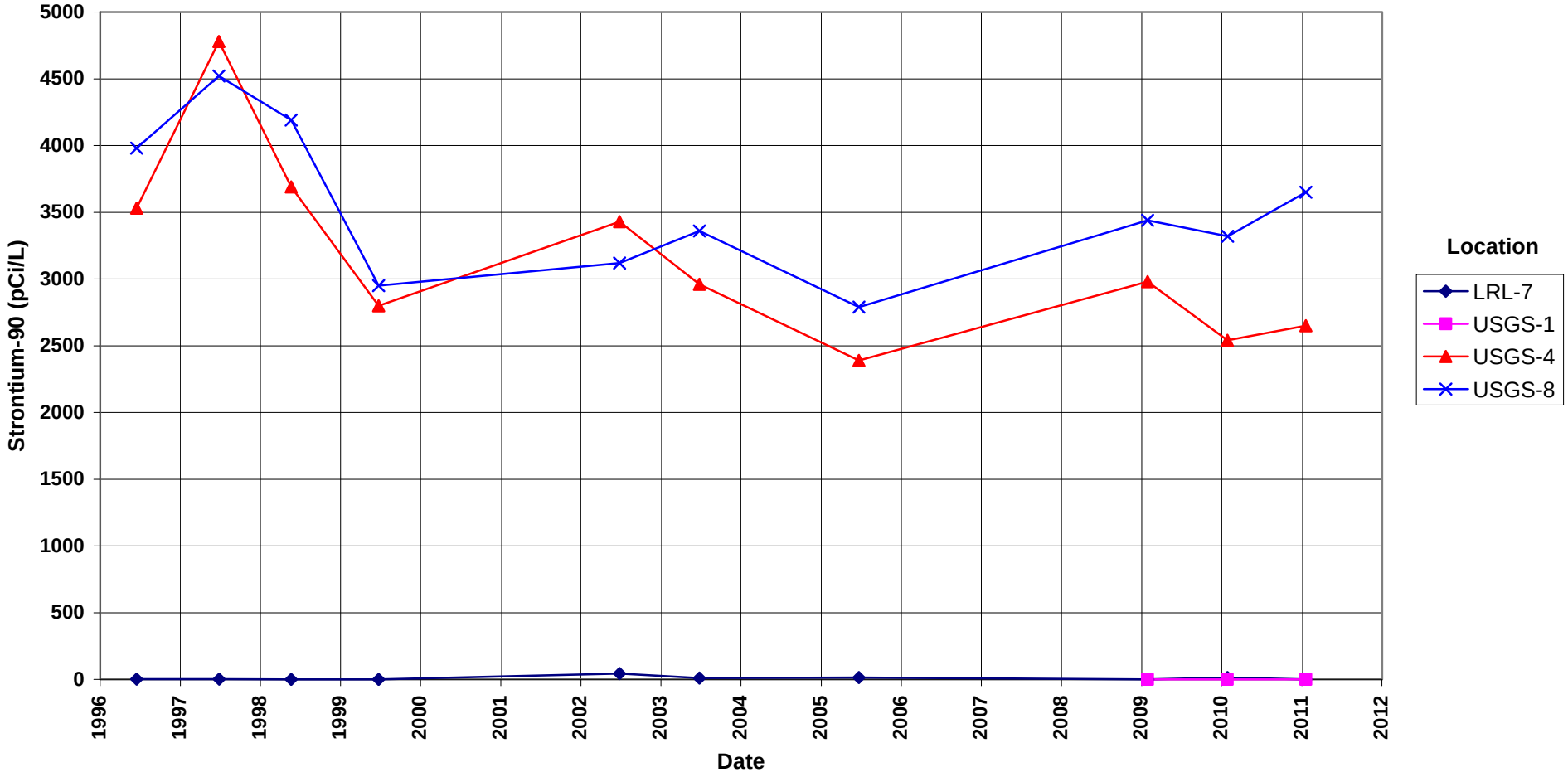
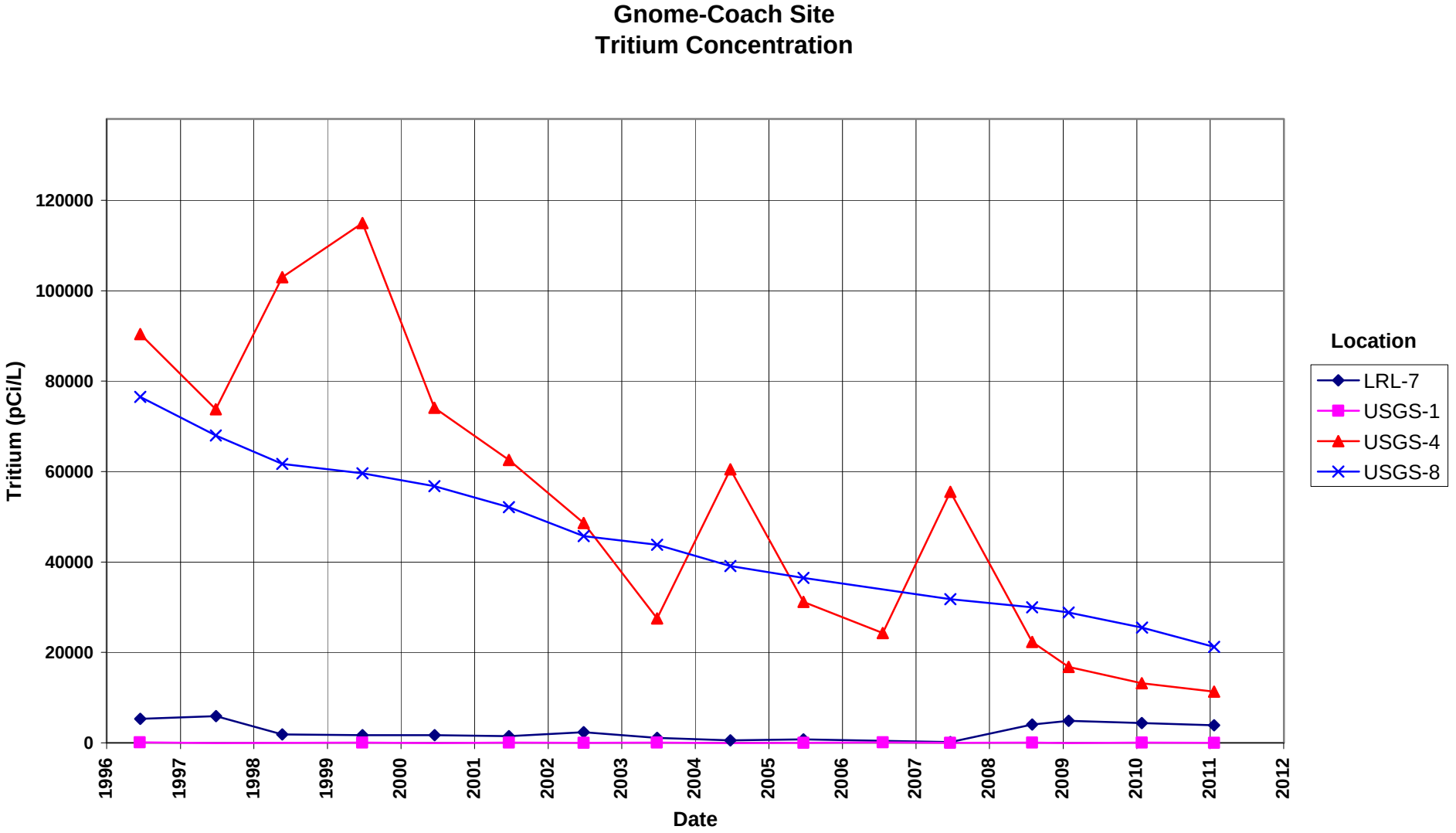
Gnome-Coach Site
Cesium-137 Concentration



Gnome-Coach Site
Strontium-90 Concentration




Gnome-Coach Site
Tritium Concentration
Tritium (pCi/L)
120000
100000
80000
60000
40000
20000
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Date
Location
LRL-7
USGS-1
USGS-4
USGS-8

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Attachment 3
Sampling and Analysis Work Order

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Stoller

established 1959

Task Order LM00-502
Control Number 11-0170

December 20, 2010

U.S. Department of Energy
Office of Legacy Management
ATTN: Jalena Dayvault
Site Manager
2597 B ¾ Road
Grand Junction, CO 81503

SUBJECT: Contract No. DE-AM01-07LM00060, S. M. Stoller Corporation (Stoller)
January 2011 Environmental Sampling at Gnome-Coach, New Mexico

REFERENCE: Task Order LM-502-07-617, Gnome-Coach, NM, Site

Dear Ms. Dayvault:

The purpose of this letter is to inform you of the upcoming sampling event at the Gnome-Coach, New Mexico, site. Enclosed are the map and tables specifying sample locations and analytes for routine monitoring. Water quality data will be collected from monitoring wells at this site as part of the routine environmental sampling currently scheduled to begin the week of January 17, 2011.

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

Monitoring Wells

LRL-7	USGS-1	USGS-4	USGS-8

All samples will be collected as directed in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites*. Well and property owners have been notified of the scheduled sampling event.

Please call me with any questions at 970-248-6419.

Sincerely,

Richard C. Findlay

Richard C. Findlay
Site Lead

RF/lcg/dc
Enclosures (3)

The S.M. Stoller Corporation 2597 B ¾ Road Grand Junction, CO 81503 (970) 248-6000 Fax (970) 248-6040

cc: (electronic)
Cheri Bahrke, Stoller
Steve Donivan, Stoller
Rick Findlay, Stoller
Bev Gallagher, Stoller
Lauren Goodknight, Stoller
Mark Plessinger, Stoller
EDD Delivery
rc-grand.junction
File: GNO 410.02 (A)

Sampling Frequencies for Locations at Gnome-Coach, New Mexico

Location ID	Quarterly	Semiannually	Annually	Biennially	Not Sampled	Notes
Monitoring Wells						
LRL-7			X			Bladder pump
USGS-1			X			Electric pump; add a sample port to the plumbing
USGS-4			X			Bladder pump
USGS-8			X			Bladder pump

Annual sampling conducted in January

Constituent Sampling Breakdown

Site	Gnome-Coach				
Analyte	**Groundwater**	**Surface Water**	**Required Detection Limit (mg/L)**	**Analytical Method**	**Line Item Code**
Approx. No. Samples/yr	4	0			
Field Measurements					
Alkalinity					
Dissolved Oxygen	X				
Redox Potential	X				
pH	X				
Specific Conductance	X				
Turbidity	X				
Temperature	X				
Laboratory Measurements					
Aluminum					
Ammonia as N (NH3-N)					
Calcium					
Chloride					
Chromium					
Gamma Spec	X		10 pCi/L	Gamma Spectrometry	GAM-A-001
Gross Alpha					
Gross Beta					
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-90	X		1 pCi/L	Gas Proportional Counter	GPC-A-009
Sulfate					
Sulfide					
Total Dissolved Solids					
Total Organic Carbon					
Tritium	X		400 pCi/L	Liquid Scintillation	LSC-A-001
Enriched Tritium	25% of the samples		10 pCi/L	Liquid Scintillation	LMR-15
Uranium					
Vanadium					
Zinc					
Total No. of Analytes	4	0			

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

Attachment 4
Trip Report

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Stoller
Grand Junction Office
established 1959

Memorandum

Control Number N/A

DATE: January 25, 2011

TO: Rick Findlay

FROM: Jeff Price

SUBJECT: Trip Report (LTHMP Sampling)

Site: Gnome/Coach, NM

Dates of Sampling Event: January 18–20, 2011

Team Members: Kent Moe and Jeff Price.

Number of Locations Sampled: 4 on site monitoring wells.

Locations Not Sampled/Reason: None.

Quality Control Sample Cross Reference: The following is the false identification assigned to the quality control sample:

False ID	True ID	Sample Type	Associated Matrix	Ticket Number
2858	USGS-1	Duplicate	Groundwater	JCV 195

RIN Number Assigned: RIN 11013546 (EPA).

Sample Shipment: Samples were shipped on January 24, 2011.

Water Level Measurements: Water levels for sampled wells are presented in the following table.

Site Code	Well ID	Date	DTW (ft)	Comments
GNO01	USGS-1	1/19/11	434.00	Running dedicated submersible pump.
GNO01	USGS-4	1/19/11	426.22	
GNO01	USGS-8	1/19/11	419.65	
GNO01	LRL-7	1/19/11	468.51	

DTW = Depth to Water (all measurements obtained from north top of casing)
ft = Feet
ID = Identification

Sampling/Analysis: Samples collected from all wells listed on the work order were analyzed by the EPA lab for tritium, strontium-90, and gamma spec; one well was also analyzed for enriched tritium. Copies of the sample collection logs and chain of custody documentation are maintained by the sampling coordinator.

Site Specific Information: A solar panel used to power a datalogger at the site had been stolen; no other equipment was stolen or damaged. Sampling equipment failure resulted in no on-site pH measurements being made; pH measurements were made in the lab approximately 30 hours after sample collection.

cc: (electronic)
Jalena Dayvault, DOE
Steve Donivan, Stoller
EDD Delivery