

**Pond Discharge Notification Coversheet**

**Date: 3/1/07**

**Total pages including coversheet = (10)**

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**From: George Squibb, Rocky Flats Surface Water Lead, Telephone (303) 994-0145**

**Re: Discharge notification for Rocky Flats Ponds A-4 and B-5.**

**Pre-discharge samples for Ponds A-4 and B-5 were collected on 2/12/07. Discharge of Ponds A-4 and B-5 is scheduled to begin on 3/1/07 at 11:00 am.**

**Pond A-4 will be direct discharged through the outlet to North Walnut Creek through Point of Compliance (POC) GS11. The discharge is expected to continue through approximately 3/15/07, with a total discharge volume of approximately 11.8 MG.**

**Pond B-5 will be direct discharged through the outlet to South Walnut Creek through POC GS08. The discharge is expected to continue through approximately 3/15/07, with a discharge volume of approximately 7.9 MG.**

**All available analytical data accompany this notice, and all data show the water quality meets applicable surface-water standards.**

**Broomfield has opted not to impound the discharge water within Great Western Reservoir.**

**Please contact me if you have questions.**

PRELIMINARY RESULTS REPORT  
 RIN: 07020720  
 Site: ROCKY FLATS SURFACE WATER  
 Location: A4 POND  
 Ticket Number: NFP 416  
 Report Date: 2/28/2007

Parameter	Units	Date Sampled	Date Analyzed	Result	Qualifier(s)	Uncertainty	Detection Limit	Method
Americium-241	pCi/L	02/12/2007	02/19/2007	0.00524	U	0.00717	0.0288	Am-05-RC Modified
NH3 as N	mg/L	02/12/2007	02/21/2007	0.01	U		0.010	EPA 350.1
NO2+NO3 as N	mg/L	02/12/2007	02/19/2007	7.8			0.070	EPA 353.1
Radium-228	pCi/L	02/12/2007	02/22/2007	0.256	U	0.284	0.472	EPA 904.0 Modified
Plutonium-238	pCi/L	02/12/2007	02/16/2007	0.00201	U	0.0104	0.0226	Pu-11-RC Modified
Plutonium-239/240	pCi/L	02/12/2007	02/16/2007	-0.0201	U	0.0201	0.0152	Pu-11-RC Modified
Uranium-234	pCi/L	02/12/2007	02/16/2007	1.6		0.208	0.040	U-02-RC Modified
Uranium-235/236	pCi/L	02/12/2007	02/16/2007	0.101		0.0319	0.0409	U-02-RC Modified
Uranium-238	pCi/L	02/12/2007	02/16/2007	1.3		0.174	0.0285	U-02-RC Modified

PRELIMINARY RESULTS REPORT  
 RIN: 07020720  
 Site: ROCKY FLATS SURFACE WATER  
 Location: B5 POND  
 Ticket Number: NFP 415  
 Report Date: 2/28/2007

Parameter	Units	Date Sampled	Date Analyzed	Result	Qualifier(s)	Uncertainty	Detection Limit	Method
Americium-241	pCi/L	02/12/2007	02/17/2007	0.00651	U	0.0119	0.0264	Am-05-RC Modified
NH3 as N	mg/L	02/12/2007	02/21/2007	0.069	J		0.010	EPA 350.1
NO2+NO3 as N	mg/L	02/12/2007	02/19/2007	2.01			0.070	EPA 353.1
Radium-228	pCi/L	02/12/2007	02/26/2007	0.0695	U	0.240	0.448	EPA 904.0 Modified
Plutonium-238	pCi/L	02/12/2007	02/16/2007	-0.0101	U	0.0131	0.0227	Pu-11-RC Modified
Plutonium-239/240	pCi/L	02/12/2007	02/16/2007	0.0282		0.0169	0.0153	Pu-11-RC Modified
Uranium-234	pCi/L	02/12/2007	02/16/2007	3.78		0.456	0.0419	U-02-RC Modified
Uranium-235/236	pCi/L	02/12/2007	02/16/2007	0.188		0.0472	0.0429	U-02-RC Modified
Uranium-238	pCi/L	02/12/2007	02/16/2007	3.85		0.463	0.0298	U-02-RC Modified

## ***Data Review and Validation Report***

### General Information

Report Number (RIN): 07020720  
 Sample Event: February 12, 2007  
 Site(s): Rocky Flats, Colorado; Surface Water  
 Laboratory: GEL Laboratories, Charleston, SC  
 Work Order No.: 180750  
 Analysis: Inorganics and Radiochemistry  
 Validator: Steve Donovan  
 Review Date: February 28, 2007

This validation was performed according to the *Environmental Procedures Catalog* (STO 6), "Standard Practice for Validation of Laboratory Data," GT-9(P) (2006). The procedure was applied at Level 3, Data Validation. See attached Data Validation Worksheets for supporting documentation on the data review and validation. All analyses were successfully completed with the following exception. The total cyanide was not measured in samples A4 Pond and B5 Pond due to a laboratory error. The request for these analyses was cancelled because the samples were out of holding time when the error was detected. 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*

<b>Analyte</b>	<b>Line Item Code</b>	<b>Prep Method</b>	<b>Analytical Method</b>
Americium-241	ASP-A-001	HASL-300, Am-05	HASL-300, Am-05-RC
Ammonia-N	WCH-A-003	EPA 350.2	EPA 350.1
Nitrate-N	WCH-A-022	EPA 353.1	EPA 353.1
Plutonium Isotopes	ASP-A-001	HASL-300, Pu-11	HASL-300, Pu-11-RC
Radium-228	GPC-A-020		
Total Cyanide	WCH-A-013	EPA 335.3	EPA 335.3
Uranium Isotopes	ASP-A-001	HASL-300, U-02	HASL-300, U-02-RC

### 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 Number	Location	Analyte(s)	Flag	Reason
180750-001	B5 Pond	Pu-239/240	J	Less than 3 times the MDC
180750-002	A4 Pond	U-235/236	J	Less than 3 times the MDC

#### Sample Shipping/Receiving

GEL Laboratories in Charleston, South Carolina, received three water samples on February 14, 2007 under air bill number 7916 3411 3803, accompanied by a Chain of Custody (COC) form. The COC form was checked to confirm that all of the samples were listed on the form 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.

#### Preservation and Holding Times

The sample shipments were received cool and intact with a temperature within the chilled cooler of 2° C, which complies with requirements. The samples were received in the correct container types and had been preserved correctly for the requested analyses and all samples were analyzed within the applicable holding times.

#### 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.

#### *Method EPA 350.1, Ammonia as N*

Initial calibrations for ammonia as N were performed using five calibration standards on February 21, 2007 resulting in calibration curves with  $r^2$  values greater than 0.995 and intercepts less than 3 times the MDL. Initial and continuing calibration verification (ICV and CCV) checks were made at the required frequency resulting in five CCVs. All calibration check results were within the acceptance criteria.

#### *Method EPA 335.3, Total Cyanide*

Initial calibrations for total cyanide were performed using six calibration standards on February 19, 2007 resulting in calibration curves with  $r^2$  values greater than 0.995 and intercepts less than 3 times the MDL. Initial and continuing calibration verification (ICV and CCV) checks were made at the required frequency resulting in six CCVs. All calibration check results were within the acceptance criteria.

#### *Method EPA 353.1, Nitrate-N*

Initial calibrations for nitrate-N were performed using six calibration standards on February 19, 2007 resulting in calibration curves with  $r^2$  values greater than 0.995 and intercepts less than 3 times the MDL. Initial and continuing calibration verification (ICV and CCV) checks were made

at the required frequency resulting in six CCVs. All calibration check results were within the acceptance criteria.

### Radiochemical Analysis

Radiochemical results are qualified with a “J” flag (estimated) when the result is greater than the minimum detectable concentration (MDC), but less than three times the MDC. Radiochemical results are qualified with a “U” flag (not detected) when the result is greater than the MDC, but less than the two sigma total propagated uncertainty (TPU).

#### *Alpha Spectrometry*

Alpha spectrometry calibrations were performed on February 1, 2007. Calibration standards were counted to obtain a minimum of 10,000 counts per peak. Instrument background was determined on February 11, 2007. All daily instrument calibration checks met the acceptance criteria. The chemical recoveries met the acceptance criteria of 30 to 110% for all samples. The full width at half maximum (FWHM) was reviewed for all analyses to evaluate the spectral resolution. All internal standard peak FWHM values were below 100 keV, demonstrating acceptable resolution. All internal standard peaks were within 50 keV of the expected position. The regions-of-interest (ROIs) for analyte peaks were reviewed. No manual integrations were performed and all ROIs were satisfactory. All isotopes results were blank corrected using data from a blank population.

### Method and Calibration Blanks

Method blanks are analyzed to assess any contamination that may have occurred during sample preparation. Calibration blanks are analyzed to assess instrument contamination prior to and during sample analysis.

#### *Wet Chemistry*

The MB results for volatile analytes were below the PQLs.

#### *Radiochemistry*

All method blank results were below the minimum detectable concentration (MDC) and/or less than 1.65 times the respective total propagated uncertainty (TPU).

### Matrix Spike Analysis

Matrix spike samples (MS) are analyzed as a measure of method performance in the sample matrix. The MS analyses for all analytes resulted in acceptable recovery and precision.

### Laboratory Duplicate Analysis

The laboratory duplicate sample results demonstrate acceptable laboratory precision. The relative percent difference (RPD) values for the laboratory duplicate samples were less than 20 percent relative difference for results that are greater than five times the practical quantitation limit. The radiochemical relative error ratio was less than 3.0 for all duplicates.

### Laboratory Control Sample

Laboratory control samples (LCS) 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 LCS results met the acceptance criteria.

### Detection Limits/Dilutions

The determination of nitrate-N required dilution prior to sample analysis.

All radiochemical minimum detectable concentrations (MDCs) were calculated using data from a blank population and the following equation.

$$MDC = \frac{3.29 * S_b * \sqrt{1 + \frac{CT_s}{CT_b}}}{KT} + \frac{3}{KT}$$

Where:

$S_b$  = Standard deviation of the blank population counts

$K$  = Efficiency factor

$T$  = Count time in minutes

$CT_b$  = Count time for blanks

$CT_s$  = Count time for sample

The calculation of the MDCs using the equation above was verified.

All MDCs were less than the required MDCs.

The required detection limits (RDLs) were met for all other analytes.

### 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 February 28, 2007. 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. The contents of the EDD were manually examined to verify that the sample results accurately reflect the data contained in the sample data package.

Report Prepared By: \_\_\_\_\_  
Steve Donivan, Laboratory Coordinator

# SAMPLE MANAGEMENT SYSTEM

## General Data Validation Report

RIN: 07020720 Lab Code: GEN Validator: Steve Donovan Validation Date: 2/28/2007  
Project: ROCKY FLATS SURFACE WATER Analysis Type:  Metals  General Chem  Rad  Organics  
# of Samples: 3 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
- Detection Limits
- Field/Trip Blanks
- Field Duplicates

All analyses were completed within the applicable holding times.

The reported detection limits are equal to or below contract requirements.

**SAMPLE MANAGEMENT SYSTEM**  
**Radiochemistry Data Validation Worksheet**

RIN: 07020720                      Lab Code: GEN                      Date Due: 2/28/2007  
 Matrix: Water                      Site Code: RFS02                      Date Completed: 2/28/2007

Sample	Analyte	Date Analyzed	Result	Flag	Tracer %R	LCS %R	MS %R	Duplicate
A4 Pond	Plutonium-238	02/16/2007			83.0			
A4 Pond	Uranium-238	02/16/2007			90.0			
A4 Pond	Americium-241	02/19/2007			63.0			
A4 Pond	Radium-228	02/22/2007			97.0			
B5 Pond	Plutonium-238	02/16/2007			81.0			
B5 Pond	Uranium-238	02/16/2007			98.0			
B5 Pond	Americium-241	02/17/2007			77.0			
B5 Pond	Radium-228	02/26/2007			91.0			
C2 Pond	Radium-228	02/22/2007			59.0			
Duplicate	Plutonium-238	02/16/2007			87.0			1.20
Duplicate	Plutonium-239+240	02/16/2007						0.70
Duplicate	Uranium-233+234	02/16/2007			90.4			0.30
Duplicate	Uranium-235	02/16/2007						0.70
Duplicate	Uranium-238	02/16/2007						0.20
Duplicate	Americium-241	02/17/2007			77.9			0.10
Duplicate	Radium-228	02/22/2007						0.40
LCS	Plutonium-239+240	02/16/2007			73.7	101.0		
LCS	Uranium-238	02/16/2007			92.6	97.0		
LCS	Americium-241	02/17/2007			83.8	105.0		
LCS	Radium-228	02/22/2007				107.0		
Method Blank	Plutonium-238	02/16/2007	-0.0018	U	75.5			
Method Blank	Plutonium-239+240	02/16/2007	0.0072	U				
Method Blank	Uranium-233+234	02/16/2007	0.0326	U	86.2			
Method Blank	Uranium-235	02/16/2007	0.0234	U				
Method Blank	Uranium-238	02/16/2007	0.0172	U				
Method Blank	Americium-241	02/17/2007	0.0030	U	85.9			
Method Blank	Radium-228	02/22/2007	0.4330	U				
MS	Plutonium-239+240	02/16/2007			63.3	103.0		
MS	Uranium-238	02/16/2007			87.3		104.0	
MS	Americium-241	02/17/2007			79.9		105.0	
MS	Radium-228	02/22/2007					106.0	

Comments: \_\_\_\_\_  
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**SAMPLE MANAGEMENT SYSTEM**  
**Inorganics Data Validation Worksheet**

**RIN:** 07020720      **Lab Code:** GEN      **Date Due:** 2/28/2007  
**Matrix:** Water      **Site Code:** RFS02      **Date Completed:** 2/28/2007

Analyte	Date Analyzed	CALIBRATION						Method Blank	LCS %R	MS %R	MSD %R	DUP RPD	Serial Dil. %R
		Int.	R <sup>2</sup>	ICV	CCV	ICB	CCB						
Ammonia as N	02/21/2007	0	0.9999	OK	OK	OK	OK	98.0	83.0	84.0			
Cyanide	02/19/2007	0	0.9988	OK	OK	OK	OK	93.0	93.0				
Nitrate+Nitrite as N	02/19/2007	0	0.9993	OK	OK	OK	OK	102.0	113.0		2.00		

**Comments:** \_\_\_\_\_  
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