

 **ANALYTICAL REPORT****PREPARED FOR**

Attn: Greg Hoenmans  
Evergreen Natural Resources LLC  
27000 Hwy 12  
Trinidad, Colorado 81082  
Generated 2/29/2024 9:17:01 AM

**JOB DESCRIPTION**

909j Water Sampling  
909j Water Sampling

**JOB NUMBER**

280-187007-2

# Eurofins Denver

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins TestAmerica Project Manager.

## Authorization



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Authorized for release by  
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# Definitions/Glossary

Client: Evergreen Natural Resources LLC  
Project/Site: 909j Water Sampling

Job ID: 280-187007-2

## Qualifiers

### Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Evergreen Natural Resources LLC  
Project: 909j Water Sampling

Job ID: 280-187007-2

**Job ID: 280-187007-2**

**Eurofins Denver**

## Job Narrative 280-187007-2

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.
- Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

This report may include reporting limits (RLs) lower than Eurofins Environmental Testing standard reporting limits. The reported sample results and associated reporting limits are being used specifically to meet the needs of this project. Note that data are not normally reported to these levels without qualification because they are inherently less reliable and potentially less defensible than required by the latest industry standards.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

### Receipt

The sample was received on 1/26/2024 9:20 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.3°C.

### Gas Flow Proportional Counter

Method 903.0: Radium 226 prep batch 160-646331: The barium carrier recovery is outside the upper control limit (110%) for the following sample: CINDY H 23-27 (280-187007-1). The QC samples associated with the batch have acceptable carrier recovery indicating the presence of matrix interference.

Method 903.0: Radium-226 prep batch 160-646331: The following sample had Ba carrier recovery above the QC limit: CINDY H 23-27 (280-187007-1). Native Ba was found in the sample, and this value was used to correct the carrier yield. The recovery is now within QC limits.

Method 904.0: Radium 228 prep batch 160-646338: The barium carrier recovery is outside the upper control limit (110%) for the following sample: CINDY H 23-27 (280-187007-1). The QC samples associated with the batch have acceptable carrier recovery indicating the presence of matrix interference.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

### Rad

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

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# Detection Summary

Client: Evergreen Natural Resources LLC  
Project/Site: 909j Water Sampling

Job ID: 280-187007-2

**Client Sample ID: CINDY H 23-27**

**Lab Sample ID: 280-187007-1**

No Detections.

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This Detection Summary does not include radiochemical test results.

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# Method Summary

Client: Evergreen Natural Resources LLC  
Project/Site: 909j Water Sampling

Job ID: 280-187007-2

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	EET SL
904.0	Radium-228 (GFPC)	EPA	EET SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	EET SL
PrecSep_0	Preparation, Precipitate Separation	None	EET SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	EET SL

#### Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

#### Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# Sample Summary

Client: Evergreen Natural Resources LLC  
Project/Site: 909j Water Sampling

Job ID: 280-187007-2

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-187007-1	CINDY H 23-27	Water	01/25/24 13:15	01/26/24 09:20

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# Client Sample Results

Client: Evergreen Natural Resources LLC  
 Project/Site: 909j Water Sampling

Job ID: 280-187007-2

**Client Sample ID: CINDY H 23-27**

**Lab Sample ID: 280-187007-1**

Date Collected: 01/25/24 13:15

Matrix: Water

Date Received: 01/26/24 09:20

**Method: EPA 903.0 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.16		0.186	0.214	1.00	0.116	pCi/L	01/31/24 09:04	02/23/24 12:30	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		30 - 110					01/31/24 09:04	02/23/24 12:30	1

**Method: EPA 904.0 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.03		0.357	0.370	1.00	0.429	pCi/L	01/31/24 09:11	02/13/24 11:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		30 - 110					01/31/24 09:11	02/13/24 11:21	1
Y Carrier	86.4		30 - 110					01/31/24 09:11	02/13/24 11:21	1

**Method: TAL-STL Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.20		0.403	0.427	5.00	0.429	pCi/L		02/23/24 16:58	1

# QC Sample Results

Client: Evergreen Natural Resources LLC  
Project/Site: 909j Water Sampling

Job ID: 280-187007-2

## Method: 903.0 - Radium-226 (GFPC)

**Lab Sample ID: MB 160-646331/1-A**  
**Matrix: Water**  
**Analysis Batch: 649307**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 646331**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.03443	U	0.0635	0.0636	1.00	0.112	pCi/L	01/31/24 09:04	02/22/24 20:14	1
Carrier	MB MB		Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.2		30 - 110					01/31/24 09:04	02/22/24 20:14	1

**Lab Sample ID: LCS 160-646331/2-A**  
**Matrix: Water**  
**Analysis Batch: 649307**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 646331**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec	Limits
				Uncert. (2σ+/-)					Limits	
Radium-226	11.3	11.12		1.15	1.00	0.140	pCi/L	98	75 - 125	
Carrier	LCS LCS		Limits					%Rec		
Ba Carrier	98.0		30 - 110							

**Lab Sample ID: 500-245307-J-1-B MS**  
**Matrix: Water**  
**Analysis Batch: 649399**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 646331**

Analyte	Sample	Sample	Spike	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec	Limits
	Result	Qual	Added	Result	Qual	Uncert. (2σ+/-)					Limits	
Radium-226	15.5		11.4	26.54		2.55	1.00	0.126	pCi/L	97	60 - 140	
Carrier	MS MS		Limits							%Rec		
Ba Carrier	91.1		30 - 110									

**Lab Sample ID: 500-245307-J-1-C MSD**  
**Matrix: Water**  
**Analysis Batch: 649399**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 646331**

Analyte	Sample	Sample	Spike	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec	RER	RER	Limit
	Result	Qual	Added	Result	Qual	Uncert. (2σ+/-)					Limits		Limit	
Radium-226	15.5		11.4	28.68		2.75	1.00	0.120	pCi/L	116	60 - 140	0.40	1	
Carrier	MSD MSD		Limits							%Rec			Limit	
Ba Carrier	88.8		30 - 110											

## Method: 904.0 - Radium-228 (GFPC)

**Lab Sample ID: MB 160-646338/1-A**  
**Matrix: Water**  
**Analysis Batch: 647950**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 646338**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.05753	U	0.234	0.234	1.00	0.426	pCi/L	01/31/24 09:11	02/13/24 11:15	1

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# QC Sample Results

Client: Evergreen Natural Resources LLC  
 Project/Site: 909j Water Sampling

Job ID: 280-187007-2

## Method: 904.0 - Radium-228 (GFPC) (Continued)

Carrier	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Yield	Qualifier				
Ba Carrier	97.2		30 - 110	01/31/24 09:11	02/13/24 11:15	1
Y Carrier	86.0		30 - 110	01/31/24 09:11	02/13/24 11:15	1

**Lab Sample ID: LCS 160-646338/2-A**  
**Matrix: Water**  
**Analysis Batch: 647950**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 646338**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits

Carrier	LCS LCS		Limits
	%Yield	Qualifier	
Ba Carrier	98.0		30 - 110
Y Carrier	83.4		30 - 110

**Lab Sample ID: 500-245307-J-1-E MS**  
**Matrix: Water**  
**Analysis Batch: 647938**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 646338**

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits

Carrier	MS MS		Limits
	%Yield	Qualifier	
Ba Carrier	91.1		30 - 110
Y Carrier	86.4		30 - 110

**Lab Sample ID: 500-245307-J-1-F MSD**  
**Matrix: Water**  
**Analysis Batch: 647938**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 646338**

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits	RER	RER Limit

Carrier	MSD MSD		Limits
	%Yield	Qualifier	
Ba Carrier	88.8		30 - 110
Y Carrier	86.4		30 - 110

# QC Association Summary

Client: Evergreen Natural Resources LLC  
Project/Site: 909j Water Sampling

Job ID: 280-187007-2

## Rad

### Prep Batch: 646331

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-187007-1	CINDY H 23-27	Total/NA	Water	PrecSep-21	
MB 160-646331/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-646331/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
500-245307-J-1-B MS	Matrix Spike	Total/NA	Water	PrecSep-21	
500-245307-J-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	

### Prep Batch: 646338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-187007-1	CINDY H 23-27	Total/NA	Water	PrecSep_0	
MB 160-646338/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-646338/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
500-245307-J-1-E MS	Matrix Spike	Total/NA	Water	PrecSep_0	
500-245307-J-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	

# Lab Chronicle

Client: Evergreen Natural Resources LLC  
 Project/Site: 909j Water Sampling

Job ID: 280-187007-2

**Client Sample ID: CINDY H 23-27**

**Lab Sample ID: 280-187007-1**

**Date Collected: 01/25/24 13:15**

**Matrix: Water**

**Date Received: 01/26/24 09:20**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			995.25 mL	1.0 g	646331	01/31/24 09:04	KAC	EET SL
Total/NA	Analysis	903.0		1	1.0 mL	1.0 mL	649399	02/23/24 12:30	SCB	EET SL
Total/NA	Prep	PrecSep_0			995.25 mL	1.0 g	646338	01/31/24 09:11	KAC	EET SL
Total/NA	Analysis	904.0		1			647938	02/13/24 11:21	SCB	EET SL
Total/NA	Analysis	Ra226_Ra228		1			649555	02/23/24 16:58	EMH	EET SL

**Laboratory References:**

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566





# Chain of Custody Record



Environment Testing



<b>Client Information (Sub Contract Lab)</b>		Sampler: Gardner, Matthew O	Lab PM: Gardner, Matthew O	Carrier Tracking No(s): 280-689869.1	COC No: 280-689869.1
Client Contact: Shipping/Receiving		Phone: Matthew.Gardner@et.eurofins.com	E-Mail: Matthew.Gardner@et.eurofins.com	State of Origin: Colorado	Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 280-187007-2	Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Y - Trizma Z - other (specify) Other:
Address: 13715 Rider Trail North, Earth City, MO, 63045		Due Date Requested: 2/29/2024		Analysis Requested	
City: Earth City		TAT Requested (days):		904.0/PreSep_0 Standard Target List	
State, Zip: MO, 63045		PO #:		903.0/PreSep_21 Standard Target List	
Phone: 314-298-8566(Tel) 314-298-8757(Fax)		WO #:		R226R228_GFPc	
Email:		Project #: 28001998		Perform MSMSD (Yes or No)	
Project Name: 909j Water Sampling		SSOW#:		Field Filtered Sample (Yes or No)	
Site: Evergreen Natural Resources		Sample Date: 1/25/24		Sample Type (C=Comp, G=grab)	
Sample Identification - Client ID (Lab ID)		Sample Time: 13:15 Mountain		Matrix (W=water, S=solid, O=water, B=issue, A=air)	
CINDY H 23-27 (280-187007-1)		Preservation Code: Water		Total Number of Containers: 2	
<p>Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte &amp; accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica</p>					
<p><b>Possible Hazard Identification</b></p> <p>Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2</p> <p>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)  <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months</p> <p>Special Instructions/QC Requirements:</p>					
Empty Kit Relinquished by:		Date:		Method of Shipment:	
Relinquished by: WILL HARRIS		Date/Time: 1-29-24 14:05		Received by: [Signature]	
Relinquished by:		Date/Time:		Date/Time: JAN 30 2024 08:05	
Relinquished by:		Date/Time:		Date/Time:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:	