



Friday, January 28, 2022

Randy Evans
Randy Evans
328 South Overland Tr.
Fort Collins, CO 80521

Re: ALS Workorder: 2112233
Project Name: WPWT Facility
Project Number:

Dear Mr. Evans:

Three water samples were received from Randy Evans, on 12/10/2021. The samples were scheduled for the following analyses:

GC/MS Volatiles

Inorganics

Metals

Radium-226

Radium-228

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Katie M. O'Brien
Project Manager

Accreditations: ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
Arizona	AZ0828
California (CA)	2926
Colorado (CO)	CO01099
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
Oklahoma	1301
PJLA (DoD ELAP/ISO 170250)	95377
PJLA (DOE-AP/ISO 17025)	95377
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO010992018-1
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	TN02976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280
Virginia	460305

40 CFR Part 136: All analyses for Clean Water Act samples are analyzed using the 40 CFR Part 136 specified method and include all the QC requirements.



2112233

GC/MS Volatiles:

The sample was analyzed using GC/MS following the current revision of SOP 525 based on SW-846 Method 8260C.

All acceptance criteria were met.

Metals:

The sample was analyzed following SW-846, 3rd Edition procedures. Analysis by Trace ICP followed method 6010D and the current revision of SOP 834.

All acceptance criteria were met.

Inorganics:

The sample was analyzed following EMSL and Standard Method procedures for the current revisions of the following SOPs and methods:

<u>Analyte</u>	<u>Method</u>	<u>SOP #</u>
TDS	SM2540C	1101
Chloride	300.0 Revision 2.1	1113
Fluoride	300.0 Revision 2.1	1113
Sulfate	300.0 Revision 2.1	1113

All acceptance criteria were met.

Radium-228:

The sample was analyzed for the presence of ²²⁸Ra by low background gas flow proportional counting of ²²⁸Ac, which is the ingrown progeny of ²²⁸Ra, according to the current revision of SOP 724.

All acceptance criteria were met.

Radium-226:

The sample was prepared and analyzed according to the current revision of SOP 783.

All acceptance criteria were met.

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Sample Number(s) Cross-Reference Table

OrderNum: 2112233

Client Name: Randy Evans

Client Project Name: WPWT Facility

Client Project Number:

Client PO Number: WO 014

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Outfall 001A	2112233-1		WATER	10-Dec-21	14:00
Outfall 001A	2112233-2		WATER	10-Dec-21	13:30
Outfall 001A	2112233-3		WATER	10-Dec-21	13:30



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: RANDY EVANS

Workorder No: 2112233

Project Manager: KMO

Initials: CXT

Date: 12/10/2021

		N/A	YES	NO
1.	Are airbills / shipping documents present and/or removable?	X		
	Tracking number:			
2.	Are custody seals on shipping containers intact?	X		
3.	Are custody seals on sample containers intact?	X		
4.	Is there a COC (chain-of-custody) present?		X	
5.	Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)		X	
6.	Are short-hold samples present?			X
7.	Are all samples within holding times for the requested analyses?		X	
8.	Were all sample containers received intact? (not broken or leaking)		X	
9.	Is there sufficient sample for the requested analyses?		X	
10.	Are samples in proper containers for requested analyses? (form 250, <i>Sample Handling Guidelines</i>)		X	
11.	Are all aqueous samples preserved correctly, if required? (excluding volatiles)			X
12.	Are all samples requiring no headspace (VOC, GRO, RSK/MEE, radon) free of bubbles > 6 mm (1/4 inch) diameter? (i.e. size of green pea)		X	
13.	Were the samples shipped on ice?		X	
14.	Were cooler temperatures measured at 0.1-6.0°C?			RAD ONLY
	IR gun used*:	#5		
	Cooler #:	1		
	Temperature (°C):	3.1		
	# of custody seals on cooler:	0		
	External µR/hr reading:	NA		
	Background µR/hr reading:	11		
	Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? NA			

* Please provide details here for NO responses to boxes above - for 2 thru 5 & 7 thru 12, notify PM & continue w/ login.

Sample 1 bottle 2 received at pH 7; added 3ml of concentrated hno3 lot# 267725; final pH <2

Sample 3 bottles 1/2 received at pH 7; added 6ml each of concentrated hno3 lot# 267725; final pH <2

Were unpreserved bottles pH checked? YES All client bottle ID's vs ALS lab ID's double-checked by CT

If applicable, was the client contacted? YES / NO / NA Contact: _____ Date/Time: 12/13/21

Project Manager Signature / Date: [Signature]

Client: Randy Evans
Project: WPWT Facility
Sample ID: Outfall 001A
Legal Location:
Collection Date: 12/10/2021 14:00

Date: 21-Jan-22
Work Order: 2112233
Lab ID: 2112233-1
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Total Recoverable ICP Metals			SW6010		Prep Date: 12/17/2021	PrepBy: ETC
BORON	2.2		0.1	MG/L	1	12/20/2021 13:13
BARIUM	6.8		0.1	MG/L	1	12/20/2021 13:13
SODIUM	750		10	MG/L	10	12/20/2021 13:33
Ion Chromatography			EPA300.0		Prep Date: 12/14/2021	PrepBy: AOW
CHLORIDE	390		5	MG/L	25	12/14/2021 15:53
FLUORIDE	4.9		1	MG/L	10	12/14/2021 15:47
SULFATE	ND		10	MG/L	10	12/14/2021 15:47
Total Dissolved Solids			SM2540C		Prep Date: 12/14/2021	PrepBy: BMK
TOTAL DISSOLVED SOLIDS	2000		80	MG/L	1	12/15/2021

Client: Randy Evans
Project: WPWT Facility
Sample ID: Outfall 001A
Legal Location:
Collection Date: 12/10/2021 13:30

Date: 21-Jan-22
Work Order: 2112233
Lab ID: 2112233-2
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GC/MS Volatiles			SW8260_25		Prep Date: 12/14/2021	PrepBy: DJL
BENZENE	ND		1	UG/L	1	12/15/2021 00:05
TOLUENE	ND		1	UG/L	1	12/15/2021 00:05
ETHYLBENZENE	ND		1	UG/L	1	12/15/2021 00:05
M+P-XYLENE	ND		1	UG/L	1	12/15/2021 00:05
O-XYLENE	ND		1	UG/L	1	12/15/2021 00:05
1,3,5-TRIMETHYLBENZENE	ND		1	UG/L	1	12/15/2021 00:05
1,2,4-TRIMETHYLBENZENE	ND		1	UG/L	1	12/15/2021 00:05
NAPHTHALENE	ND		1	UG/L	1	12/15/2021 00:05
Surr: DIBROMOFLUOROMETHANE	99		80-120	%REC	1	12/15/2021 00:05
Surr: TOLUENE-D8	100		80-120	%REC	1	12/15/2021 00:05
Surr: 4-BROMOFLUOROBENZENE	100		80-120	%REC	1	12/15/2021 00:05

Client: Randy Evans
Project: WPWT Facility
Sample ID: Outfall 001A
Legal Location:
Collection Date: 12/10/2021 13:30

Date: 21-Jan-22
Work Order: 2112233
Lab ID: 2112233-3
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1						
Ra-226	0.93 (+/- 0.38)		SOP 783		Prep Date: 12/21/2021	PrepBy: EJE
<i>Carr: BARIUM</i>	95.1			0.17 pCi/l	NA	12/30/2021 11:11
				40-110 %REC	DL = NA	12/30/2021 11:11
Radium-228 Analysis by GFPC						
Ra-228	ND (+/- 0.4)	Y1,U	SOP 724		Prep Date: 1/6/2022	PrepBy: MMS
<i>Carr: BARIUM</i>	101	Y1		0.78 pCi/l	NA	1/19/2022 09:01
				40-110 %REC	DL = NA	1/19/2022 09:01

Client: Randy Evans
Project: WPWT Facility
Sample ID: Outfall 001A
Legal Location:
Collection Date: 12/10/2021 13:30

Date: 21-Jan-22
Work Order: 2112233
Lab ID: 2112233-3
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
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Explanation of Qualifiers

Radiochemistry:

- "Report Limit" is the MDC
- U or ND - Result is less than the sample specific MDC.
- Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 - Chemical Yield outside default limits.
- W - DER is greater than Warning Limit of 1.42
- * - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
- # - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
- G - Sample density differs by more than 15% of LCS density.
- D - DER is greater than Control Limit
- M - Requested MDC not met.
- M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
- L - LCS Recovery below lower control limit.
- H - LCS Recovery above upper control limit.
- P - LCS, Matrix Spike Recovery within control limits.
- N - Matrix Spike Recovery outside control limits
- NC - Not Calculated for duplicate results less than 5 times MDC
- B - Analyte concentration greater than MDC.
- B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

- B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).
- U or ND - Indicates that the compound was analyzed for but not detected.
- E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
- M - Duplicate injection precision was not met.
- N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
- Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.
- * - Duplicate analysis (relative percent difference) not within control limits.
- S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

- U or ND - Indicates that the compound was analyzed for but not detected.
- B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.
- E - Analyte concentration exceeds the upper level of the calibration range.
- J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).
- A - A tentatively identified compound is a suspected aldol-condensation product.
- X - The analyte was diluted below an accurate quantitation level.
- * - The spike recovery is equal to or outside the control criteria used.
- + - The relative percent difference (RPD) equals or exceeds the control criteria.
- G - A pattern resembling gasoline was detected in this sample.
- D - A pattern resembling diesel was detected in this sample.
- M - A pattern resembling motor oil was detected in this sample.
- C - A pattern resembling crude oil was detected in this sample.
- 4 - A pattern resembling JP-4 was detected in this sample.
- 5 - A pattern resembling JP-5 was detected in this sample.
- H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
- L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.
- Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
 - gasoline
 - JP-8
 - diesel
 - mineral spirits
 - motor oil
 - Stoddard solvent
 - bunker C

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Date: 1/21/2022 11:06:

Client: Randy Evans
 Work Order: 2112233
 Project: WPWT Facility

QC BATCH REPORT

Batch ID: **RE211221-1-3** Instrument ID: **Alpha Scin** Method: **Radium-226 by Radon Emanation**

LCS		Sample ID: RE211221-1			Units: pCi/l			Analysis Date: 12/30/2021 11:11				
Client ID:		Run ID: RE211221-1B			Prep Date: 12/21/2021			DF: NA				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref Value	DER	DER Limit	Qual	
Ra-226	49 (+/- 12)	0	46.42		106	67-120					P	
Carr: BARIUM	15330		16080		95.3	40-110						

LCSD		Sample ID: RE211221-1			Units: pCi/l			Analysis Date: 12/30/2021 11:11				
Client ID:		Run ID: RE211221-1B			Prep Date: 12/21/2021			DF: NA				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref Value	DER	DER Limit	Qual	
Ra-226	42 (+/- 10)	0	46.42		89.6	67-120		49	0.46	2.13	P	
Carr: BARIUM	15710		16080		97.7	40-110		15330				

MB		Sample ID: RE211221-1			Units: pCi/l			Analysis Date: 12/30/2021 11:11				
Client ID:		Run ID: RE211221-1B			Prep Date: 12/21/2021			DF: NA				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref Value	DER	DER Limit	Qual	
Ra-226	ND	0.42									U	
Carr: BARIUM	15290		16090		95	40-110						

The following samples were analyzed in this batch:

Client: Randy Evans
 Work Order: 2112233
 Project: WPWT Facility

QC BATCH REPORT

Batch ID: RA220106-2-2 Instrument ID: LB4100-C Method: Radium-228 Analysis by GFPC

LCS		Sample ID: RA220106-2		Units: pCi/l			Analysis Date: 1/19/2022 09:01				
Client ID:		Run ID: RA220106-2A			Prep Date: 1/6/2022			DF: NA			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref Value	DER	DER Limit	Qual
Ra-228	24 (+/- 5.6)	0.8	22.52		107	70-130					P
Carr: BARIUM	29860		31260		95.5	40-110					

LCSD		Sample ID: RA220106-2		Units: pCi/l			Analysis Date: 1/19/2022 09:01				
Client ID:		Run ID: RA220106-2A			Prep Date: 1/6/2022			DF: NA			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref Value	DER	DER Limit	Qual
Ra-228	23.7 (+/- 5.5)	0.9	22.52		105	70-130		24	0.04	2.13	P
Carr: BARIUM	29380		31260		94	40-110		29860			

MB		Sample ID: RA220106-2		Units: pCi/l			Analysis Date: 1/19/2022 09:01				
Client ID:		Run ID: RA220106-2A			Prep Date: 1/6/2022			DF: NA			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref Value	DER	DER Limit	Qual
Ra-228	ND	0.92									U
Carr: BARIUM	29540		31260		94.5	40-110					

The following samples were analyzed in this batch:

Client: Randy Evans
 Work Order: 2112233
 Project: WPWT Facility

QC BATCH REPORT

Batch ID: IP211217-2-2 Instrument ID: ICPTrace2 Method: SW6010

LCS		Sample ID: IP211217-2			Units: MG/L		Analysis Date: 12/20/2021 13:11				
Client ID:		Run ID: IT211220-1A3			Prep Date: 12/17/2021		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
BARIUM	0.951	0.1	1		95	80-120				20	
BORON	0.984	0.1	1		98	80-120				20	
SODIUM	40.4	1	40		101	80-120				20	

LCSD		Sample ID: IP211217-2			Units: MG/L		Analysis Date: 12/20/2021 13:12				
Client ID:		Run ID: IT211220-1A3			Prep Date: 12/17/2021		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
BARIUM	0.947	0.1	1		95	80-120		0.951	0	20	
BORON	0.983	0.1	1		98	80-120		0.984	0	20	
SODIUM	40.7	1	40		102	80-120		40.4	1	20	

MB		Sample ID: IP211217-2			Units: MG/L		Analysis Date: 12/20/2021 13:09					
Client ID:		Run ID: IT211220-1A3			Prep Date: 12/17/2021		DF: 1					
Analyte	Result	ReportLimit										Qual
BARIUM	ND	0.1										
BORON	ND	0.1										
SODIUM	ND	1										

The following samples were analyzed in this batch:

Client: Randy Evans
 Work Order: 2112233
 Project: WPWT Facility

QC BATCH REPORT

Batch ID: VL211214-33-2 Instrument ID: HPV1 Method: SW8260_25

LCS		Sample ID: VL211214-33			Units: UG/L		Analysis Date: 12/14/2021 22:37				
Client ID:		Run ID: VL211214-33a			Prep Date: 12/14/2021		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
BENZENE	9.08	1	10		91	80-120				20	
TOLUENE	9.69	1	10		97	80-120				20	
Surr: DIBROMOFLUOROMETHANE	24.3		25		97	80-120					
Surr: TOLUENE-D8	24.8		25		99	80-120					
Surr: 4-BROMOFLUOROBENZENE	24.2		25		97	80-120					

LCSD		Sample ID: VL211214-33			Units: UG/L		Analysis Date: 12/14/2021 22:59				
Client ID:		Run ID: VL211214-33a			Prep Date: 12/14/2021		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
BENZENE	9.27	1	10		93	80-120		9.08	2	20	
TOLUENE	9.86	1	10		99	80-120		9.69	2	20	
Surr: DIBROMOFLUOROMETHANE	24.4		25		98	80-120			1		
Surr: TOLUENE-D8	24.9		25		99	80-120			0		
Surr: 4-BROMOFLUOROBENZENE	24.6		25		98	80-120			2		

MB		Sample ID: VL211214-33			Units: UG/L		Analysis Date: 12/14/2021 23:43					
Client ID:		Run ID: VL211214-33a			Prep Date: 12/14/2021		DF: 1					
Analyte	Result	ReportLimit										Qual
BENZENE	ND	1										
TOLUENE	ND	1										
ETHYLBENZENE	ND	1										
M+P-XYLENE	ND	1										
O-XYLENE	ND	1										
1,3,5-TRIMETHYLBENZENE	ND	1										
1,2,4-TRIMETHYLBENZENE	ND	1										
NAPHTHALENE	ND	1										
Surr: DIBROMOFLUOROMETHANE	24.7				99	80-120						
Surr: TOLUENE-D8	24.8				99	80-120						
Surr: 4-BROMOFLUOROBENZENE	24.5				98	80-120						

The following samples were analyzed in this batch:

Client: Randy Evans
 Work Order: 2112233
 Project: WPWT Facility

QC BATCH REPORT

Batch ID: IC211214-1-1 Instrument ID: IC3 Method: EPA300.0

LCS		Sample ID: IC211214-1			Units: MG/L		Analysis Date: 12/14/2021 11:32				
Client ID:		Run ID: IC211214-1A1			Prep Date: 12/14/2021		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
FLUORIDE	5.28	0.1	5		106	90-110				15	
CHLORIDE	10.6	0.2	10		106	90-110				15	
SULFATE	51.1	1	50		102	90-110				15	

LCSD		Sample ID: IC211214-1			Units: MG/L		Analysis Date: 12/14/2021 13:58				
Client ID:		Run ID: IC211214-1A1			Prep Date: 12/14/2021		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
FLUORIDE	5.34	0.1	5		107	90-110		5.28	1	15	
CHLORIDE	10.8	0.2	10		108	90-110		10.6	2	15	
SULFATE	51.9	1	50		104	90-110		51.1	2	15	

MB		Sample ID: IC211214-1			Units: MG/L		Analysis Date: 12/14/2021 12:51					
Client ID:		Run ID: IC211214-1A1			Prep Date: 12/14/2021		DF: 1					
Analyte	Result	ReportLimit										Qual
FLUORIDE	ND	0.1										
CHLORIDE	ND	0.2										
SULFATE	ND	1										

The following samples were analyzed in this batch:

Client: Randy Evans
Work Order: 2112233
Project: WPWT Facility

QC BATCH REPORT

Batch ID: **TD211214-1-1** Instrument ID: **Balance** Method: **SM2540C**

LCS		Sample ID: TD211214-1			Units: MG/L		Analysis Date: 12/15/2021				
Client ID:		Run ID: TD211215-1A1			Prep Date: 12/14/2021		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	391	20	400		98	85-115				14	

LCSD		Sample ID: TD211214-1			Units: MG/L		Analysis Date: 12/15/2021				
Client ID:		Run ID: TD211215-1A1			Prep Date: 12/14/2021		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	357	20	400		89	85-115		391	9	14	

MB		Sample ID: TD211214-1			Units: MG/L		Analysis Date: 12/15/2021					
Client ID:		Run ID: TD211215-1A1			Prep Date: 12/14/2021		DF: 1					
Analyte	Result	ReportLimit										Qual
TOTAL DISSOLVED SOLIDS	ND	20										

The following samples were analyzed in this batch: