

Quarterly Report

Calendar Year 2025 – Third Quarter, July 1 – September 30, 2025

Prepared by:

**Carlsbad Environmental Monitoring & Research Center
under a financial assistance grant from
U.S. Department of Energy
Carlsbad Field Office (CBFO)
Award No. DE-EM0005195**

Submitted to:

**U.S. Department of Energy
Carlsbad Field Office**

October 2025

Field Programs - Radiation Safety Group

WIPP Underground Effluent Monitoring (Station B)

From July 1st to September 30th, a total of 14 filters were collected from the primary skid at Station B (11 sample filters, 1 trip blank and 2 filter blanks).

All 14 filters from the primary skid at Station B have been processed (gravimetrics, sample flow volume, and mass concentration have been calculated in the Field Programs (FP) data package) and transferred to the Radiochemistry group (RC).

WIPP Underground Effluent Monitoring (Station F)

From July 1st to September 30th, a total of 98 filters were collected from the primary skid at Station F (78 sample filters, 10 trip blanks and 10 filter blanks).

All 98 filters from the primary skid at Station F have been processed (gravimetrics, sample flow volume, and mass concentration have been calculated in the Field Programs (FP) data package) and transferred to the Radiochemistry group (RC).

From July 1st to September 30th, a total of 104 filters were collected from the secondary skid at Station F (84 sample filters, 10 trip blanks and 10 filter blanks).

All 104 filters from the secondary skid at Station F have been processed (gravimetrics, sample flow volume, and mass concentration have been calculated in the Field Programs (FP) data package) and transferred to the Environmental Chemistry group (EC).

WIPP Underground Effluent Monitoring (Station G)

From July 1st to September 30th, a total of 98 filters were collected from the primary skid at Station G (78 sample filters, 10 trip blanks and 10 filter blanks).

All 98 filters from the primary skid at Station G have been processed (gravimetrics, sample flow volume, and mass concentration have been calculated in the Field Programs (FP) data package) and transferred to the Radiochemistry group (RC).

From July 1st to September 30th, a total of 100 filters were collected from the secondary skid at Station G (80 sample filters, 10 trip blanks and 10 filter blanks).

All 100 filters from the secondary skid at Station G have been processed (gravimetrics, sample flow volume, and mass concentration have been calculated in the Field Programs (FP) data package) and transferred to the Environmental Chemistry group (EC).

Ambient Air Sampling

From July 1st to September 30th, 12 ambient air particulate filters were collected from the six perimeter and regional continuous sampling stations (On-Site, Near Field, Cactus Flats, WIPP East, Carlsbad, and Loving) using a high-volume sampler (HiVol). All filters have been

processed (gravimetrics, total air flow values, and notes of any irregularities) by FP and transferred to RC.

Subtask - Non-Radiological analyses

From July 1st to September 30th, 4 Whatman-41 filters and 2 trip blank filters were collected, from the 2 sampling sites (Near Field and Cactus Flats) using a high-volume sampler. All filters have been processed (recorded total airflow values and any irregularities) by FP and transferred to EC.

Soils sampling

From July 1st to September 30th, 30 soil samples were processed.

Vegetation sampling

From July 1st to September 30th, 3 vegetation samples were collected and processed.

Surface Water Monitoring

From July 1st to September 30th, 4 surface water samples were collected. All samples were processed and transferred to both the EC and RC groups.

Drinking Water Monitoring

From July 1st to September 30th, 8 drinking water samples were collected. All samples were processed and transferred to both the EC and RC groups.

Sediment Monitoring

From July 1st to September 30th, 2 sediment samples were collected. The samples are prepared for processing.

Groundwater Monitoring

No activity to report this quarter.

Nuclear Materials Management and Safeguards

From July 1st to September 30th, the Radiation Safety group (RS) collected and bulked radioactive waste from NMSU, LANL, and the WIPP Labs groups working in the CEMRC facility. Radiation Safety (RS) has performed monthly surveys of all laboratories where radioactive materials are present, including smears and dose rate measurements. Several measuring instruments were sent out for calibration.

Radiochemistry Group

WIPP Underground Effluent Monitoring (Stations B, F, and G)

Gross alpha and beta activities on individual filters collected from station F, taken before any high-efficiency particulate air (HEPA) filtration, and Stations B and G, taken after HEPA filtration, were counted using a low-background gas proportional counter (Protean Instruments) for 1200 minutes (20 hours). The last filter from Station B was collected on July 11, 2025, and the first filter from Station G in the new Safety Significant Confinement Ventilation System (SSCVS) facility was collected on July 15, 2025. The complete results for gross alpha and gross beta counts on FAS filters from all stations through September 2025 were submitted to CBFO on October 10, 2025.

As of September 30, 2025, all 2024 samples have been analyzed. However, several samples with low recovery rates were re-prepared and were reanalyzed during this 3rd Quarter. The 2024 Annual Report is almost complete. In addition:

- MAPEP Series 53 – Soil samples were analyzed for gamma-radiation isotopes.
- MAPEP Series 53 – Air filter samples were analyzed for gamma-radiation isotopes.
- MAPEP Series 53 – Water samples were analyzed for gamma-radiation isotopes.
- Drinking Water samples (2025 sampling) were analyzed for gamma-radiation isotopes.
- Surface Water samples (2025 sampling) were analyzed for gamma-radiation isotopes.

Characteristic results are included in the following pages.

CEMRC Gross Alpha-Beta Analysis

Batch ID 56589
Count Method FAS Gross Alpha Beta

Sample ID	Count Began	Addr	Count Time	Alpha counts	Beta counts
56019	10/8/2025 7:06:24 PM	7	1,200.0 minutes	148.0	2,228.0
56020	10/8/2025 7:06:42 PM	9	1,200.0 minutes	126.0	1,694.0
56021	10/8/2025 7:06:57 PM	11	1,200.0 minutes	254.0	2,531.0
56022	10/8/2025 7:07:12 PM	12	1,200.0 minutes	258.0	3,616.0
56023	10/8/2025 7:07:27 PM	13	1,200.0 minutes	94.0	884.0
56024	10/8/2025 7:07:46 PM	14	1,200.0 minutes	167.0	3,309.0
56025	10/8/2025 7:08:02 PM	15	1,200.0 minutes	182.0	4,065.0
56196	10/8/2025 7:05:43 PM	4	1,200.0 minutes	73.0	859.0

Alpha/Beta Count Results

Air Filter Sample Activity Report

Batch ID 56589

Count Method FAS Gross Alpha Beta

Sample ID 56019

Addr: 7

Flow Time		Flow Rate		Bkg Time		1,200.0 minutes		Count Time		1,200.0 minutes	
On	9/22/2025 8:08:00 AM	0.00 LPM		Total Flow Time		0.0 minutes		Count Began		10/8/2025 7:06:24 PM	
Off	9/23/2025 8:07:00 AM	0.00 LPM		Total Sampled Volume		1.0000 e+000 Sample		Count Ended		10/9/2025 3:07:34 PM	
Factor		Bkg cpm	Gross cpm	Net dpm	MDC Bq	DAC Bq	Net Concentration Bq		% of DAC		DAC-Hrs
Alpha	1.000	0.066	0.123	0.250	2.6645 e-003	0.0000 e+000	4.1723 e-003 ±	9.1468 e-004	0.000	0.000	
	sd	0.007	0.010	0.055			9.1468 e-004				
Beta	1.000	0.665	1.857	3.034	4.7662 e-003	0.0000 e+000	5.0570 e-002 ±	2.0432 e-003	0.000	0.000	
	sd	0.024	0.039	0.123			2.0432 e-003				

Sample ID 56020

Addr: 9

Flow Time		Flow Rate		Bkg Time		1,200.0 minutes		Count Time		1,200.0 minutes	
On	9/23/2025 8:08:00 AM	0.00 LPM		Total Flow Time		0.0 minutes		Count Began		10/8/2025 7:06:42 PM	
Off	9/24/2025 8:06:00 AM	0.00 LPM		Total Sampled Volume		1.0000 e+000 Sample		Count Ended		10/9/2025 3:07:54 PM	
Factor		Bkg cpm	Gross cpm	Net dpm	MDC Bq	DAC Bq	Net Concentration Bq		% of DAC		DAC-Hrs
Alpha	1.000	0.040	0.105	0.273	2.0413 e-003	0.0000 e+000	4.5562 e-003 ± 7.7566 e-004		0.000	0.000	
		0.006	0.009	0.047			7.7566 e-004				
Beta	1.000	0.380	1.412	2.600	3.5905 e-003	0.0000 e+000	4.3335 e-002 ± 1.7073 e-003		0.000	0.000	
		0.018	0.034	0.102			1.7073 e-003				

Sample ID 56021

Addr: 11

Flow Time		Flow Rate		Bkg Time		1,200.0 minutes		Count Time		1,200.0 minutes	
On	9/24/2025 8:07:00 AM	0.00 LPM		Total Flow Time		0.0 minutes		Count Began		10/8/2025 7:06:57 PM	
Off	9/25/2025 8:20:00 AM	0.00 LPM		Total Sampled Volume		1.0000 e+000 Sample		Count Ended		10/9/2025 3:08:09 PM	
Factor		Bkg cpm	Gross cpm	Net dpm	MDC Bq	DAC Bq	Net Concentration Bq		% of DAC		DAC-Hrs
Alpha	1.000	0.126	0.212	0.382	3.7002 e-003	0.0000 e+000	6.3643 e-003 ± 1.2496 e-003		0.000	0.000	
		0.010	0.013	0.075			1.2496 e-003				
Beta	1.000	0.610	2.109	3.741	4.4819 e-003	0.0000 e+000	6.2353 e-002 ± 2.1206 e-003		0.000	0.000	
		0.023	0.042	0.127			2.1206 e-003				

Alpha/Beta Count Results

Air Filter Sample Activity Report

Batch ID 56589

Count Method FAS Gross Alpha Beta

Sample ID 56022

Addr: 12

Flow Time		Flow Rate		Bkg Time		1,200.0 minutes		Count Time		1,200.0 minutes	
On	9/25/2025 8:20:00 AM	0.00 LPM		Total Flow Time		0.0 minutes		Count Began		10/8/2025 7:07:12 PM	
Off	9/26/2025 8:02:00 AM	0.00 LPM		Total Sampled Volume		1.0000 e+000 Sample		Count Ended		10/9/2025 3:08:28 PM	
Factor		Bkg cpm	Gross cpm	Net dpm	MDC Bq	DAC Bq	Net Concentration Bq		% of DAC	DAC-Hrs	
Alpha	1.000	0.098	0.215	0.530	3.3226 e-003	0.0000 e+000	8.8331 e-003 ± 1.2252 e-003		0.000	0.000	
	sd	0.009	0.013	0.074			1.2252 e-003				
Beta	1.000	0.689	3.013	5.935	4.8687 e-003	0.0000 e+000	9.8923 e-002 ± 2.6461 e-003		0.000	0.000	
	sd	0.024	0.050	0.159			2.6461 e-003				

Sample ID 56023

Addr: 13

Flow Time		Flow Rate		Bkg Time		1,200.0 minutes		Count Time		1,200.0 minutes	
On	9/26/2025 8:03:00 AM	0.00 LPM		Total Flow Time		0.0 minutes		Count Began		10/8/2025 7:07:27 PM	
Off	9/26/2025 9:30:00 AM	0.00 LPM		Total Sampled Volume		1.0000 e+000 Sample		Count Ended		10/9/2025 3:08:42 PM	
Factor		Bkg cpm	Gross cpm	Net dpm	MDC Bq	DAC Bq	Net Concentration Bq		% of DAC		DAC-Hrs
Alpha	1.000	0.087	0.078	-0.036	2.9857 e-003	0.0000 e+000	-5.9526 e-004 ± 8.7896 e-004		0.000	0.000	
		0.008	0.008	0.053			8.7896 e-004				
Beta	1.000	0.669	0.737	0.172	4.7626 e-003	0.0000 e+000	2.8670 e-003 ± 1.4553 e-003		0.000	0.000	
		0.024	0.025	0.087			1.4553 e-003				

Sample ID 56024

Addr: 14

Flow Time		Flow Rate		Bkg Time		1,200.0 minutes		Count Time		1,200.0 minutes	
On	9/29/2025 2:40:00 PM	0.00 LPM		Total Flow Time		0.0 minutes		Count Began		10/8/2025 7:07:46 PM	
Off	9/30/2025 8:03:00 AM	0.00 LPM		Total Sampled Volume		1.0000 e+000 Sample		Count Ended		10/9/2025 3:09:00 PM	
Factor		Bkg cpm	Gross cpm	Net dpm	MDC Bq	DAC Bq	Net Concentration Bq		% of DAC		DAC-Hrs
Alpha	1.000	0.068	0.139	0.311	2.6865 e-003	0.0000 e+000	5.1819 e-003 ± 9.5421 e-004		0.000	0.000	
		0.008	0.011	0.057			9.5421 e-004				
Beta	1.000	0.593	2.758	5.524	4.5085 e-003	0.0000 e+000	9.2061 e-002 ± 2.5011 e-003		0.000	0.000	
		0.022	0.048	0.150			2.5011 e-003				

Alpha/Beta Count Results

Air Filter Sample Activity Report

Batch ID 56589

Count Method FAS Gross Alpha Beta

Sample ID 56025

Addr: 15

Flow Time		Flow Rate		Bkg Time		1,200.0 minutes		Count Time		1,200.0 minutes	
On	9/30/2025 8:04:00 AM	0.00 LPM		Total Flow Time		0.0 minutes		Count Began		10/8/2025 7:08:02 PM	
Off	10/1/2025 8:15:00 AM	0.00 LPM		Total Sampled Volume		1.0000 e+000 Sample		Count Ended		10/9/2025 3:09:17 PM	
Factor		Bkg cpm	Gross cpm	Net dpm	MDC Bq	DAC Bq	Net Concentration Bq		% of DAC	DAC-Hrs	
Alpha	1.000	0.080	0.152	0.313	2.9328 e-003	0.0000 e+000	5.2222 e-003 ± 1.0175 e-003		0.000	0.000	
	sd	0.008	0.011	0.061			1.0175 e-003				
Beta	1.000	0.681	3.388	6.900	4.8184 e-003	0.0000 e+000	1.1500 e-001 ± 2.8235 e-003		0.000	0.000	
	sd	0.024	0.053	0.169			2.8235 e-003				

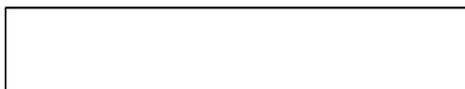
Sample ID 56196

Addr: 4

Filter Blank for 56589

Flow Time		Flow Rate		Bkg Time		1,200.0 minutes		Count Time		1,200.0 minutes	
On	1/1/1900	0.00 LPM		Total Flow Time		0.0 minutes		Count Began		10/8/2025 7:05:43 PM	
Off	1/1/1900	0.00 LPM		Total Sampled Volume		1.0000 e+000 Sample		Count Ended		10/9/2025 3:06:53 PM	
Factor		Bkg cpm	Gross cpm	Net dpm	MDC Bq	DAC Bq	Net Concentration Bq		% of DAC	DAC-Hrs	
Alpha sd	1.000	0.052	0.061	0.038	2.2846 e-003	0.0000 e+000	6.3870 e-004 ± 6.7476 e-004		0.000	0.000	
		0.007	0.007	0.040			6.7476 e-004				
Beta sd	1.000	0.750	0.716	-0.087	4.8942 e-003	0.0000 e+000	-1.4498 e-003 ± 1.4774 e-003		0.000	0.000	
		0.025	0.024	0.089			1.4774 e-003				

[PS 0



Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000066832.Cnf
Batch Identification: 2024 HIVOL 53507
Sample Identification: 53511
Procedure Description: U - 3 Days (Blank Corrected)

Detector Name: 5-02
Env. Background: System Bkgd 74220

Sample Size: 2.4893E-01 +/- 0.0000E+00 unit
Sample Date/Time: 7/17/2024 8:43:58 AM
Acquisition Date/Time: 9/10/2025 11:41:12 AM
Acquisition Live Time: 4320.0 minutes
Acquisition Real Time: 4320.0 minutes

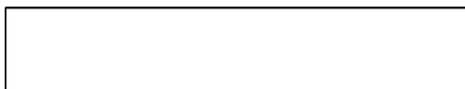
Tracer Certificate: 1320_U232_T
Tracer Quantity: 0.053 mL
Counting Efficiency: 0.3226 +/- 0.0036 on 8/4/2025 3:45:02 PM
Chem. Rec. Factor (%): 99.95 +/- 5.6655

----- ----- PEAK AREA REPORT ----- -----						
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	FWHM (keV)
U-232	T	5.271	1712.00	4.84	3.00	79.9
U-234		4.720	484.53	18.02	2.00	22.4
U-235		4.352	41.65	48.30	3.00	3.3
U-238		4.140	431.99	19.64	3.00	11.9

T = Tracer Peak used for Effective Efficiency

----- ----- NUCLIDE ANALYSIS RESULTS ----- -----						
Nuclide		Energy (keV)	Activity (Bq /unit)		MDA (Bq /unit)	
U-232		5302.50*	8.342E-02 +/-	9.269E-03	6.871E-04 +/-	7.634E-05
U-234		4761.50*	2.334E-02 +/-	4.940E-03	8.573E-03 +/-	9.525E-04
U-235		4385.50*	2.475E-03 +/-	1.227E-03	2.293E-03 +/-	2.547E-04
U-238		4184.40*	2.072E-02 +/-	4.675E-03	8.376E-03 +/-	9.306E-04

[PS 0



Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000066839.Cnf
Batch Identification: 2024 HIVOL 53507
Sample Identification: 53518
Procedure Description: U - 3 Days (Blank Corrected)

Detector Name: 5-10
Env. Background: System Bkgd 74228

Sample Size: 2.5679E-01 +/- 0.0000E+00 unit
Sample Date/Time: 8/8/2024 8:43:58 AM
Acquisition Date/Time: 9/10/2025 11:41:07 AM
Acquisition Live Time: 4320.0 minutes
Acquisition Real Time: 4320.0 minutes

Tracer Certificate: 1320_U232_T
Tracer Quantity: 0.053 mL
Counting Efficiency: 0.3297 +/- 0.0037 on 8/5/2025 5:49:29 PM
Chem. Rec. Factor (%): 108.36 +/- 6.0850

		PEAK AREA REPORT				

Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	FWHM (keV)

U-232	T	5.274	1895.00	4.60	0.00	44.4
U-234		4.721	503.69	18.57	5.00	24.9
U-235		4.357	27.01	72.07	2.00	2.9
U-238		4.147	379.34	23.56	4.00	26.6

T = Tracer Peak used for Effective Efficiency

		NUCLIDE ANALYSIS RESULTS				

Nuclide	Energy (keV)	Activity (Bq /unit)			MDA (Bq /unit)	

U-232	5302.50*	8.073E-02	+/-	8.885E-03	3.135E-04	+/- 3.451E-05
U-234	4761.50*	2.122E-02	+/-	4.582E-03	8.154E-03	+/- 8.974E-04
U-235	4385.50*	1.404E-03	+/-	1.024E-03	2.130E-03	+/- 2.344E-04
U-238	4184.40*	1.592E-02	+/-	4.138E-03	7.959E-03	+/- 8.759E-04

[PS 0



Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000066691.Cnf
Batch Identification: 2024Hivol_Recoun
Sample Identification: 53461
Procedure Description: Am - 3 Days

Detector Name: 2-01
Env. Background: System Bkgd 74048

Sample Size: 1.0000E+00 +/- 0.0000E+00 unit
Sample Date/Time: 9/2/2025 2:39:58 PM
Acquisition Date/Time: 9/2/2025 2:39:58 PM
Acquisition Live Time: 4320.0 minutes
Acquisition Real Time: 4320.0 minutes

Tracer Certificate: 1322_Am-243-4_T
Tracer Quantity: 0.052 mL
Counting Efficiency: 0.3334 +/- 0.0037 on 7/25/2025 2:55:18 PM
Chem. Rec. Factor (%): 89.14 +/- 2.5988

----- ----- PEAK AREA REPORT ----- -----					
Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	FWHM (keV)
AM-241	5.476	3.00	176.38	2.00	2.9
AM-243 T	5.244	1423.00	5.31	1.00	47.7

T = Tracer Peak used for Effective Efficiency

----- ----- NUCLIDE ANALYSIS RESULTS ----- -----					
Nuclide	Energy (keV)	Activity (Bq /unit)		MDA (Bq /unit)	
AM-241	5479.10*	3.897E-05	+/- 6.876E-05	1.560E-04	+/- 8.422E-06
AM-243	5270.00*	1.854E-02	+/- 1.001E-03	1.210E-04	+/- 6.533E-06

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*****
*                               *
*       New Mexico State University       *
*       Quality Assurance Report         *
*                               *
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Report Date       : 9/5/25   11:36:16 AM
QA File          : C:\Genie2k\CAMFILES\Calver1_2019.QAF
Analyst          :
Sample ID        : D1E250905
Sample Quantity  : 1.00 unit
Sample Date      : 8/1/94    1:00:00 PM
Measurement Date : 9/5/25   11:31:09 AM
Elapsed Live Time : 300 seconds
Elapsed Real Time : 305 seconds

```

Test	Parameter	Low Limit	High Limit	New Value	Flag
LU	121 Pk Energy	1.2078E+02	1.2278E+02	1.2179E+02	< >
LU	779 Pk Energy	7.7789E+02	7.7989E+02	7.7894E+02	< >
LU	1408 Pk Energy	1.4069E+03	1.4089E+03	1.4088E+03	< >
LU	121 FWHM	7.0000E-01	2.1000E+00	1.3636E+00	< >
LU	779 FWHM	1.4000E+00	3.1000E+00	2.5320E+00	< >
LU	1408 FWHM	1.9000E+00	4.5000E+00	3.8385E+00	< >
LU	121 DCA	1.0000E+00	1.2000E+00	1.0857E+00	< >
LU	779 DCA	1.0000E+00	1.2000E+00	1.1208E+00	< >
LU	1408 DCA	1.0000E+00	1.2500E+00	1.1723E+00	< >

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Flags Key:  LU = Boundary Test          (Ab = Above      , Be = Below )
             SD = Sample Driven N-Sigma Test  (In = Investigate, Ac = Action)

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UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

Reviewed by: _____

* NOTE: DAILY QUALITY CONTROL SAMPLES (QC) ARE GIVEN A USER DRIVEN *
* N-SIGMA TEST. INVESTIGATE MEANS THE MEASUREMENT IS BETWEEN *
* 10% AND 15% OF THE BASELINE. ACTION MEANS THAT THE MEASUREMENT *
* IS ABOVE 15% OF THE BASELINE. *
* LABORATORY CONTROL SAMPLES ARE GIVEN A BOUNDARY TEST. THE RESULT *
* IS ACCEPTABLE IF IT LIES BETWEEN +/- 25% OF THE TRUE SOURCE *
* ACTIVITY. *

C E M R C G A M M A S P E C T R U M A N A L Y S I S

Sample ID : DW56574
Sample Description : DW56574
 :
Calibration ID :
Background ID :

Sample Collection Date : 8/5/2025 12:28:00 PM
Count Start Date : 9/5/2025 1:22:16 PM

Sample Aliquot : 1.50000E+00
Aliquot Unc. : 0.00000E+00
Aliquot Unit : L

Live Time (sec) : 172800
Real Time (sec) : 172828

Energy Calibration Used Done On : 7/16/2024
Efficiency Calibration Used Done On : 7/17/2024
Efficiency ID : DET01_WMarEff_24

%Random Unc. : 0.0
%Systematic Unc. : 0.0

Nuclide	Energy	Eff%	UncEff%	Abun%	UncAbn%	HL(d)	UncHL(d)	Conc(Bq/unit)	Unc2sigma
MDC									
K-40	1460.81	0.819	0.036	10.6700	0.1100	4.66412E+11	2.92192E+09	3.02890E-01	1.22768E-01
3.94938E-01									
MN-54	834.82	1.280	0.043	99.9750	0.0000	3.12700E+02	0.00000E+00	3.96946E-03	1.51340E-02
5.05251E-02									
CO-57	122.06	2.825	0.102	85.5100	0.1800	2.70900E+02	6.00000E-01	3.23490E-03	1.50361E-02
4.98749E-02									
CO-57	136.47	2.985	0.147	10.6000	0.1800	2.70900E+02	6.00000E-01	-5.14110E-02	6.74278E-02
2.26899E-01									
CO-60	1173.22	0.989	0.025	100.0000	0.0000	1.92518E+03	3.65240E-01	1.14561E-02	9.98851E-03

3.31632E-02									
CO-60	1332.49	0.889	0.029	100.0000	0.0000	1.92518E+03	3.65240E-01	-1.13219E-02	1.06360E-02
3.69207E-02									
ZN-65	1115.52	1.029	0.025	50.7500	0.0000	2.44400E+02	0.00000E+00	1.98731E-02	2.12538E-02
7.08395E-02									
CS-134	604.69	1.599	0.067	97.6000	0.0000	7.53125E+02	0.00000E+00	-2.48486E-02	1.68154E-02
5.65203E-02									
CS-134	795.84	1.324	0.047	85.4000	0.0000	7.53125E+02	0.00000E+00	-8.69049E-04	1.14009E-02
3.85030E-02									
CS-137	661.65	1.504	0.060	85.1200	0.2300	1.10193E+04	1.09572E+01	3.87614E-02	1.45028E-02
4.69022E-02									
RA-226	186.21	3.026	0.234	3.2800	0.0000	5.84384E+05	1.82620E+02	3.80751E-01	2.12134E-01
6.90012E-01									
RA-228	911.07	1.201	0.037	27.7000	1.0000	2.10013E+03	0.00000E+00	8.17448E-02	4.17378E-02
1.36054E-01									
AM-241	59.54	0.525	0.000	36.3000	0.0000	1.58153E+05	0.00000E+00	2.19068E-03	1.34999E-01
0.00000E+00									

13 nuclide lines identified

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: DET01
 Sample Title: DW56574
 Peak Analysis Performed on: 9/8/2025 8:52:12 AM
 Peak Analysis From Channel: 50
 Peak Analysis To Channel: 8190

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	236-	247	243.20	59.54	0.24	1.081E+00	133.24	1.769E+03
2	491-	508	499.39	122.06	0.24	1.866E+01	173.47	2.672E+03
3	555-	563	558.44	136.47	0.24	-3.885E+01	101.82	1.377E+03
4	758-	767	762.26	186.21	0.87	9.794E+01	108.08	1.402E+03
5	2468-	2493	2477.10	604.69	0.29	-9.766E+01	131.91	1.690E+03
6	2699-	2723	2710.51	661.65	0.90	1.284E+02	95.53	8.996E+02
7	3251-	3268	3260.39	795.84	0.38	-2.475E+00	64.94	5.275E+02
8	3401-	3428	3420.13	834.82	0.28	1.226E+01	93.49	8.437E+02
9	3724-	3746	3732.58	911.07	0.41	6.978E+01	70.95	5.502E+02

10	4562-	4579	4570.37	1115.52	0.24	2.458E+01	52.55	3.654E+02
11	4798-	4815	4806.80	1173.22	0.64	2.903E+01	50.60	3.350E+02
12	5450-	5469	5459.45	1332.49	0.24	-2.579E+01	48.43	3.198E+02
13	5976-	5996	5985.30	1460.81	0.70	6.860E+01	55.27	3.644E+02

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

```

*****
*                               New Mexico State University          *
*                               Quality Assurance Report              *
*****

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Report Date       : 9/11/25 12:21:36 PM
QA File          : C:\Genie2k\CAMFILES\Calver1_2019.QAF
Analyst         :
Sample ID        : D1E250909
Sample Quantity  : 1.00 unit
Sample Date      : 8/1/94 1:00:00 PM
Measurement Date : 9/9/25 8:13:23 AM
Elapsed Live Time : 300 seconds
Elapsed Real Time : 305 seconds

```

Test	Parameter	Low Limit	High Limit	New Value	Flag
LU	121 Pk Energy	1.2078E+02	1.2278E+02	1.2176E+02	< >
LU	779 Pk Energy	7.7789E+02	7.7989E+02	7.7880E+02	< >
LU	1408 Pk Energy	1.4069E+03	1.4089E+03	1.4085E+03	< >
LU	121 FWHM	7.0000E-01	2.1000E+00	1.3807E+00	< >
LU	779 FWHM	1.4000E+00	3.1000E+00	2.6452E+00	< >
LU	1408 FWHM	1.9000E+00	4.5000E+00	4.1843E+00	< >
LU	121 DCA	1.0000E+00	1.2000E+00	1.0935E+00	< >
LU	779 DCA	1.0000E+00	1.2000E+00	1.1255E+00	< >
LU	1408 DCA	1.0000E+00	1.2500E+00	1.1650E+00	< >

```

Flags Key:  LU = Boundary Test          (Ab = Above      , Be = Below )
             SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)

```

UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

Reviewed by: _____

* NOTE: DAILY QUALITY CONTROL SAMPLES (QC) ARE GIVEN A USER DRIVEN *
* N-SIGMA TEST. INVESTIGATE MEANS THE MEASUREMENT IS BETWEEN *
* 10% AND 15% OF THE BASELINE. ACTION MEANS THAT THE MEASUREMENT *
* IS ABOVE 15% OF THE BASELINE. *
* LABORATORY CONTROL SAMPLES ARE GIVEN A BOUNDARY TEST. THE RESULT *
* IS ACCEPTABLE IF IT LIES BETWEEN +/- 25% OF THE TRUE SOURCE *
* ACTIVITY. *

 C E M R C G A M M A S P E C T R U M A N A L Y S I S

Sample ID : SW56557
 Sample Description : SW56557
 :
 Calibration ID :
 Background ID :
 Sample Collection Date : 8/19/2025 1:37:00 PM
 Count Start Date : 9/9/2025 9:10:04 AM
 Sample Aliquot : 1.50000E+00
 Aliquot Unc. : 0.00000E+00
 Aliquot Unit : L
 Live Time (sec) : 172800
 Real Time (sec) : 172830
 Energy Calibration Used Done On : 7/16/2024
 Efficiency Calibration Used Done On : 7/17/2024
 Efficiency ID : DET01_WMarEff_24
 %Random Unc. : 0.0
 %Systematic Unc. : 0.0

Nuclide	Energy	Eff%	UncEff%	Abun%	UncAbn%	HL(d)	UncHL(d)	Conc(Bq/unit)	Unc2sigma
MDC									
K-40	1460.81	0.819	0.036	10.6700	0.1100	4.66412E+11	2.92192E+09	5.85549E-01	1.28701E-01
	3.91280E-01								
MN-54	834.82	1.280	0.043	99.9750	0.0000	3.12700E+02	0.00000E+00	6.58036E-03	1.45216E-02
	4.83903E-02								
CO-57	122.06	2.825	0.102	85.5100	0.1800	2.70900E+02	6.00000E-01	3.47364E-03	1.47382E-02
	4.88784E-02								
CO-57	136.47	2.985	0.147	10.6000	0.1800	2.70900E+02	6.00000E-01	-4.15695E-02	7.70571E-02
	2.58049E-01								
CO-60	1173.22	0.989	0.025	100.0000	0.0000	1.92518E+03	3.65240E-01	1.58940E-02	9.87934E-03

3.24823E-02									
CO-60	1332.49	0.889	0.029	100.0000	0.0000	1.92518E+03	3.65240E-01	2.14805E-03	1.14916E-02
3.88554E-02									
ZN-65	1115.52	1.029	0.025	50.7500	0.0000	2.44400E+02	0.00000E+00	3.20192E-02	2.44551E-02
8.08301E-02									
CS-134	604.69	1.599	0.067	97.6000	0.0000	7.53125E+02	0.00000E+00	-4.95410E-02	1.88394E-02
6.33700E-02									
CS-134	795.84	1.324	0.047	85.4000	0.0000	7.53125E+02	0.00000E+00	1.12674E-02	1.09594E-02
3.63807E-02									
CS-137	661.65	1.504	0.060	85.1200	0.2300	1.10193E+04	1.09572E+01	3.46936E-02	1.44216E-02
4.68271E-02									
RA-226	186.21	3.026	0.234	3.2800	0.0000	5.84384E+05	1.82620E+02	5.93723E-01	2.51357E-01
8.08092E-01									
RA-228	911.07	1.201	0.037	27.7000	1.0000	2.10013E+03	0.00000E+00	4.10079E-02	3.53713E-02
1.17105E-01									
AM-241	59.54	0.525	0.000	36.3000	0.0000	1.58153E+05	0.00000E+00	3.65144E-01	1.76598E-01
0.00000E+00									

13 nuclide lines identified

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: DET01
 Sample Title: SW56557
 Peak Analysis Performed on: 9/11/2025 10:08:44 AM
 Peak Analysis From Channel: 50
 Peak Analysis To Channel: 8190

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	235-	250	243.20	59.54	0.72	1.802E+02	173.75	2.452E+03
2	491-	508	499.39	122.06	0.24	2.057E+01	174.54	2.708E+03
3	552-	562	558.44	136.47	0.24	-3.224E+01	119.49	1.700E+03
4	757-	768	762.26	186.21	0.68	1.527E+02	127.15	1.758E+03
5	2464-	2492	2477.10	604.69	0.24	-1.965E+02	148.56	2.031E+03
6	2701-	2725	2710.51	661.65	0.27	1.150E+02	95.16	8.990E+02
7	3252-	3268	3260.39	795.84	0.53	3.239E+01	62.98	4.916E+02
8	3408-	3434	3420.13	834.82	0.57	2.079E+01	91.76	8.322E+02
9	3725-	3742	3732.58	911.07	0.24	3.512E+01	60.50	4.619E+02

10	4562-	4583	4570.37	1115.52	0.42	4.076E+01	62.23	4.632E+02
11	4798-	4815	4806.80	1173.22	0.50	4.043E+01	50.22	3.236E+02
12	5448-	5469	5459.45	1332.49	0.25	4.911E+00	52.54	3.421E+02
13	5975-	5995	5985.30	1460.81	0.34	1.326E+02	57.08	3.634E+02

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Environmental Chemistry Group

From July 1st to September 30th, 2025, the Environmental Chemistry (EC) group conducted the analyses for samples collected in the 3rd Quarter of 2025. The anions, cations, pH, conductivity, specific gravity, TDS/TSS, mercury, and metals analyses were conducted for drinking water (8 samples) and surface water samples (4 samples). The cation analyses were performed for Whatman filters collected during the 1st and 2nd quarters of 2025.

The following tables and figures represent characteristics results.

Sample Type: Near Field (107), ambient air
Year: 2025
Analysis Performed: Cations

Start Date	Sodium µg/m ³	Magnesium µg/m ³	Potassium µg/m ³	Calcium µg/m ³
01/08/2025	4.56E-01	7.96E-02	1.72E-01	1.32E+00
01/29/2025	6.85E-01	1.66E-01	2.88E-01	1.84E+00
03/05/2025	7.20E-01	1.64E-01	2.39E-01	1.60E+00
03/21/2025	4.95E-01	1.47E-01	1.97E-01	1.56E+00
04/09/2025	6.95E-01	1.42E-01	2.10E-01	2.13E+00
04/25/2025	6.07E-01	1.42E-01	1.89E-01	1.78E+00
05/16/2025	3.70E-01	1.18E-01	2.36E-01	2.02E+00
06/11/2025	3.77E-01	9.76E-02	1.82E-01	1.79E+00

Sample Type: Cactus Flats (108), ambient air
Year: 2025
Analysis Performed: Cations

Start Date	Sodium µg/m ³	Magnesium µg/m ³	Potassium µg/m ³	Calcium µg/m ³
01/08/2025	2.49E-01	5.54E-02	9.71E-02	1.57E+00
01/29/2025	3.35E-01	9.99E-02	1.64E-01	1.86E+00
03/05/2025	5.17E-01	1.22E-01	1.69E-01	1.53E+00
03/21/2025	4.67E-01	1.02E-01	1.42E-01	1.73E+00
04/09/2025	5.56E-01	1.12E-01	1.50E-01	2.16E+00
04/25/2025	5.01E-01	1.01E-01	1.06E-01	1.73E+00
05/16/2025	4.63E-01	1.48E-01	2.43E-01	2.92E+00
06/11/2025	2.84E-01	7.76E-02	1.59E-01	1.64E+00

[illegible]

Drinking Water

Sample Type: Drinking Water

Year: 2025

Analysis Performed: Anions

Sample Location	Chloride mg/L	Nitrate mg/L	Phosphate mg/L	Sulfate mg/L
Carlsbad (Sheep draw)	3.72E+01	4.49E+00	<MDL	8.96E+01
Hobbs	1.27E+02	2.29E+01	<MDL	1.55E+02
Double Eagle PRV4	3.00E+01	1.30E+01	<MDL	3.97E+01
Loving	3.14E+01	2.06E+01	<MDL	1.16E+02
Otis	2.83E+02	1.60E+01	<MDL	6.32E+02
Malaga	6.50E+02	1.54E+01	<MDL	1.01E+03

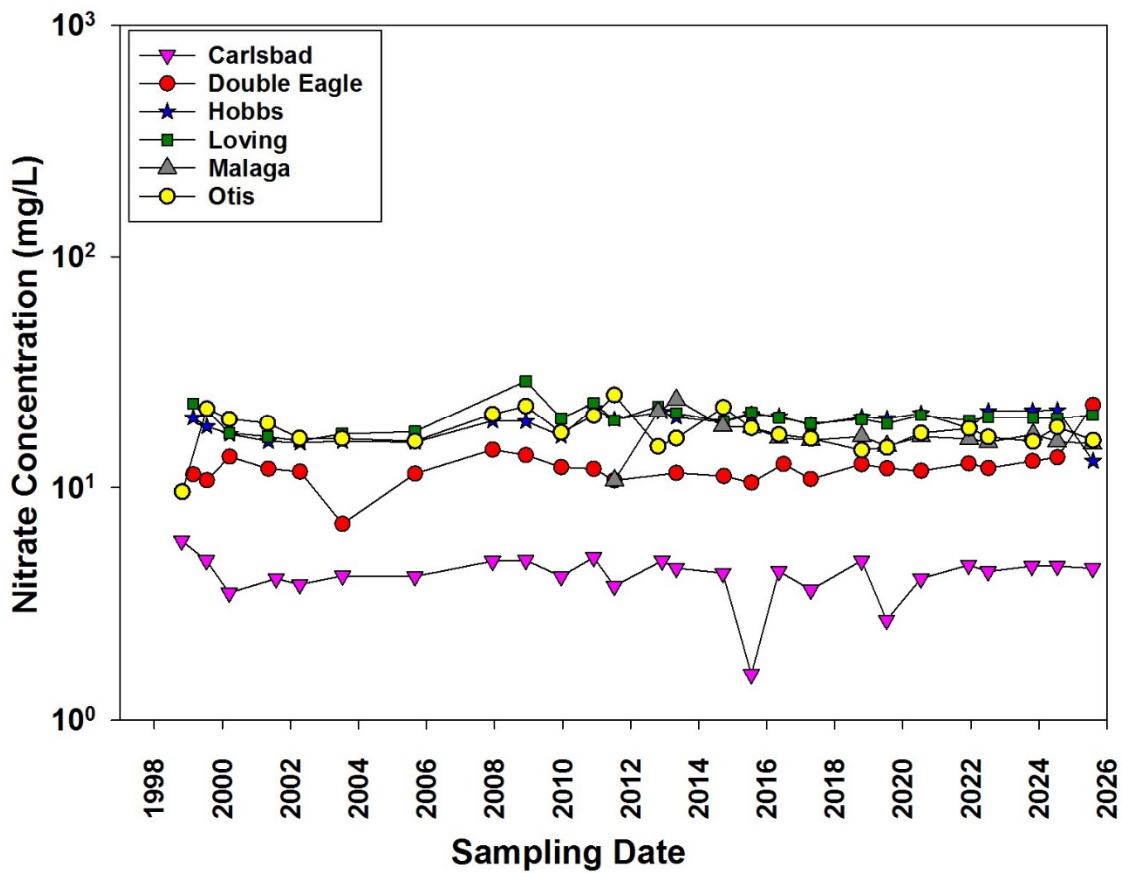


Figure 1: Historical Concentrations of Nitrate in Drinking Water

Sample Type: Drinking Water
Year: 2025
Analysis Performed: Cations

Sample Location	Sodium mg/L	Magnesium mg/L	Potassium mg/L	Calcium mg/L
Carlsbad (Sheep draw)	2.82E+01	3.25E+01	<MDL	7.25E+01
Hobbs	6.14E+01	2.56E+01	<MDL	1.14E+02
Double Eagle PRV4	3.18E+01	1.02E+01	<MDL	5.03E+01
Loving	2.24E+01	3.64E+01	<MDL	8.65E+01
Otis	9.93E+01	7.65E+01	<MDL	2.81E+02
Malaga	2.14E+02	1.29E+02	<MDL	4.54E+02

Sample Type: Drinking Water
Year: 2025
Analysis Performed: pH

Sample Location	pH @ 26.77°C
Carlsbad (Sheep draw)	8.34
Hobbs	8.16
Double Eagle PRV4	8.19
Loving	8.11
Otis	7.84
Malaga	7.59

Sample Type: Drinking Water
Year: 2025
Analysis Performed: Total Organic Carbon

Sample Location	TOC mg/L
Carlsbad (Sheep draw)	
Hobbs	
Double Eagle PRV-4	
Loving	
Otis	
Malaga	

Sample Type: Drinking Water
Year: 2025
Analysis Performed: Conductivity

Sample Location	Conductivity mS/cm	Temperature °C
Carlsbad (Sheep draw)	0.729	27.9
Loving	0.792	27.8
Otis	2.24	28.1
Malaga	3.65	27.8
Hobbs	1.073	27.7
PRV4 (Double Eagle)	0.500	27.6

Sample Type: Drinking Water
Year: 2025
Analysis Performed: Specific gravity

Sample Location	Specific Gravity
Carlsbad (Sheep draw)	0.991
Loving	0.990
Otis	0.993
Malaga	0.995
Hobbs	0.992
PRV4 (Double Eagle)	0.992

Sample Type: Drinking Water
Year: 2025
Analysis Performed: TDS/TSS

Sample Location	TDS mg/L	TSS mg/L
Carlsbad (Sheep draw)	440.0	N.D.
Loving	560.0	20.0
Otis	1820.0	N.D.
Malaga	3260.0	N.D.
Hobbs	720.0	20.0
PRV4 (Double Eagle)	260.0	N.D.
N.D. = non-detect.		

Sample Type: Drinking Water
Year: 2025
Analysis Performed: Metals

Metal	Carlsbad Conc µg/L	Loving Conc µg/L	Otis Conc µg/L	Malaga Conc µg/L	Hobbs Conc µg/L	Double Eagle (PRV4) Conc µg/L
Ag	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Al	3.02E+00	4.54E+00	3.00E+01	9.67E+00	4.31E+00	6.98E+00
As	7.13E-01	1.77E+00	1.88E+00	2.03E+00	6.54E+00	7.34E+00
Ba	7.05E+01	3.29E+01	1.33E+01	1.20E+01	5.50E+01	8.79E+01
Be	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Ca	7.23E+04	8.52E+04	2.64E+05	4.31E+05	1.12E+05	5.01E+04
Cd	4.51E-03	4.98E-02	<MDC	<MDC	7.41E-03	<MDC
Ce	<MDC	<MDC	4.35E-02	<MDC	<MDC	<MDC
Co	8.90E-02	1.01E-01	3.56E-01	5.19E-01	1.51E-01	6.10E-02
Cr	2.00E+00	2.63E+00	2.92E+00	2.77E+00	2.32E+00	1.80E+00
Cu	4.10E+00	5.40E+00	<MDC	<MDC	8.94E+00	<MDC
Dy	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Er	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Eu	1.30E-02	5.95E-03	<MDC	<MDC	8.91E-03	1.54E-02
Fe	2.26E+02	2.69E+02	1.02E+03	1.45E+03	3.56E+02	2.34E+02
Gd	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Hg	<MDL	<MDL	0.167	<MDL	<MDL	<MDL
K	1.27E+03	1.80E+03	2.71E+03	3.83E+03	2.61E+03	2.46E+03
La	<MDC	<MDC	2.05E-02	<MDC	<MDC	<MDC
Li	7.16E+00	1.92E+01	4.41E+01	6.05E+01	3.72E+01	1.82E+01
Mg	3.35E+04	3.64E+04	8.01E+04	1.32E+05	2.66E+04	9.83E+03
Mn	4.35E-01	5.67E-01	1.02E+00	<MDC	1.27E+00	3.49E+00
Mo	1.36E+00	1.67E+00	3.93E+00	4.06E+00	2.70E+00	1.77E+00
Na	2.62E+04	2.06E+04	9.35E+04	2.01E+05	5.54E+04	2.94E+04

Nd	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Ni	2.69E+00	2.95E+00	1.93E+01	1.37E+01	3.96E+00	1.72E+00
P	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Pb	2.55E-01	4.16E+00	<MDC	<MDC	5.10E-01	1.12E+00
Pr	<MDC	<MDC	5.47E-03	<MDC	<MDC	<MDC
Sb	3.05E-02	4.28E-02	3.51E-02	3.79E-02	6.08E-02	2.66E-02
Sc	1.37E+00	2.19E+00	2.40E+00	2.52E+00	5.41E+00	3.39E+00
Se	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Si	6.10E+03	9.49E+03	9.66E+03	9.97E+03	2.55E+04	1.52E+04
Sr	3.08E+02	7.08E+02	2.87E+03	5.11E+03	1.13E+03	4.70E+02
Th	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Tl	7.50E-02	3.53E-03	<MDC	<MDC	<MDC	<MDC
U	8.12E-01	1.92E+00	4.07E+00	5.69E+00	3.80E+00	1.41E+00
V	3.96E+00	1.22E+01	9.40E+00	8.05E+00	3.04E+01	2.81E+01
Zn	5.60E+00	2.51E+02	2.29E+01	<MDC	1.10E+01	8.76E+00

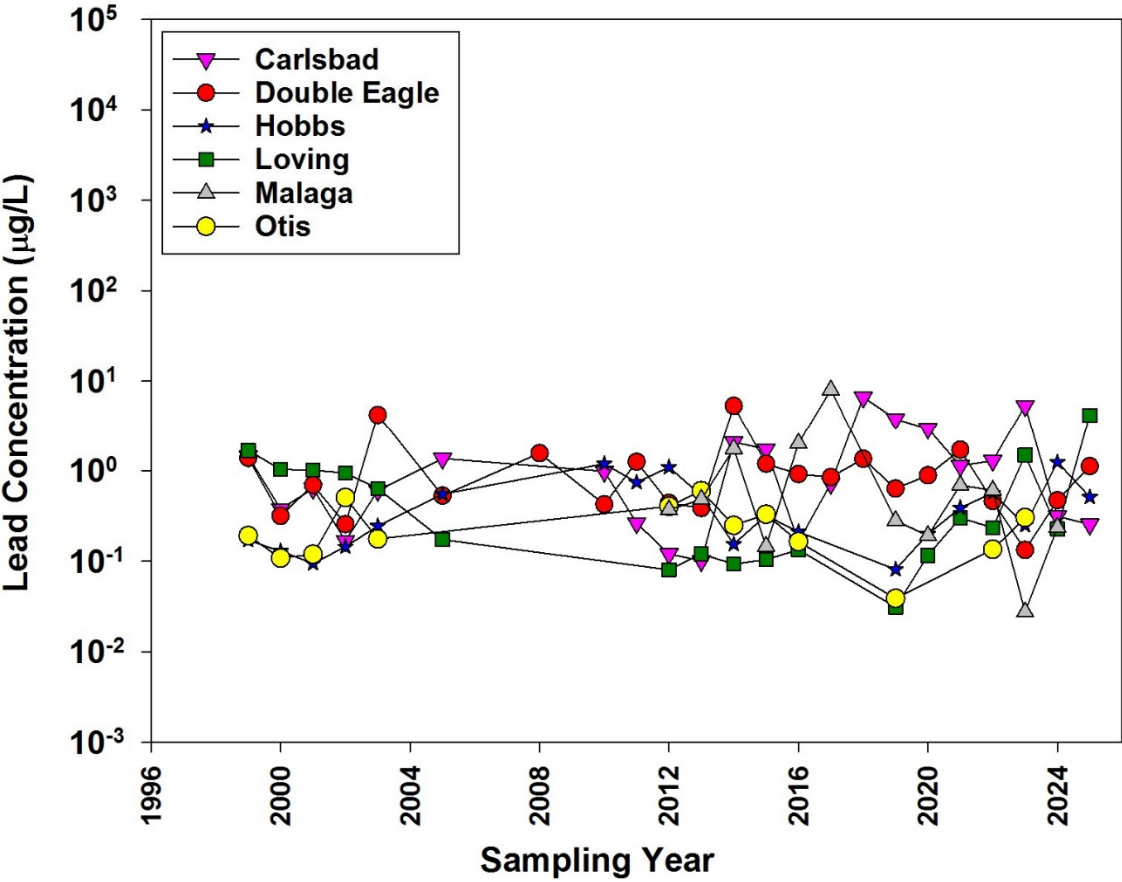


Figure 2: Historical Concentrations of Lead in Drinking Water

Surface Water

Sample Type: Surface Water
Year: 2025
Analysis Performed: Anions

Sample Location	Chloride mg/L	Nitrate mg/L	Phosphate mg/L	Sulfate mg/L
Hill Tank	2.73E+00	1.03E+00	4.66E-01	7.63E+00
Noya Tank	1.09E+00	1.71E+00	6.77E-01	1.82E+00
Pierce Canyon	1.41E+03	3.14E+00	<MDL	1.47E+03
Lake Carlsbad (Shore)	7.04E+02	1.48E+00	<MDL	1.16E+03
Brantley Lake (shore)	1.33E+03	<MDL	<MDL	1.42E+03
Brantley Lake (shallow)	9.98E+02	<MDL	<MDL	1.15E+03
Brantley Lake (deep)	1.01E+03	<MDL	<MDL	1.15E+03
Pecos River (Shore)	4.94E+02	2.33E+00	<MDL	1.11E+03

Sample Type: Surface Water
Year: 2025
Analysis Performed: Cations

Sample Location	Sodium mg/L	Magnesium mg/L	Potassium mg/L	Calcium mg/L
Hill Tank	1.38E+00	3.61E+00	7.59E+00	4.93E+01
Noya Tank	3.40E-01	2.05E+00	5.38E+00	4.26E+01
Pierce Canyon	8.30E+02	1.86E+02	3.91E+01	4.98E+02
Lake Carlsbad (Shore)	4.47E+02	1.19E+02	9.52E+00	3.88E+02
Brantley Lake (Shore)	8.42E+02	1.47E+02	1.50E+01	4.96E+02
Brantley Lake (shallow)	6.47E+02	1.07E+02	1.30E+01	4.01E+02
Brantley Lake (deep)	6.54E+02	1.01E+02	<MDL	4.03E+02
Pecos River (Shore)	4.07E+02	9.58E+01	8.08E+00	4.95E+02

Sample Type: Surface Water
Year: 2025
Analysis Performed: pH

Sample Location	pH @ 25°C
Hill Tank	8.33
Noya Tank	8.41
Pierce Canyon	8.07
Lake Carlsbad (Shore)	8.21
Brantley Lake (Shore)	8.29
Brantley Lake (shallow)	8.12
Brantley Lake (deep)	7.95
Pecos River (Shore)	7.58

Sample Type: Surface Water
Year: 2025
Analysis Performed: Conductivity

Sample Location	Conductivity mS/cm	Temperature °C
Hill Tank	0.1764	19.8
Noya Tank	0.1537	19.8
Pierce Canyon	6.49	19.6
Lake Carlsbad (Shore)	4.26	19.6
Brantley Lake (Shore)	6.44	19.4
Brantley Lake (shallow)	4.92	21.1
Brantley Lake (deep)	4.98	21.1

Pecos River (Shore)	3.91	19.9

Sample Type: Surface Water
Year: 2025
Analysis Performed: Specific gravity

Sample Location	SG _{T/4°C}
Hill Tank	0.995
Noya Tank	0.996
Pierce Canyon	1.001
Lake Carlsbad (Shore)	0.999
Brantley Lake (Shore)	1.000
Brantley Lake (Shallow)	0.993
Brantley Lake (Deep)	0.997
Pecos River (Shore)	1.000

Sample Type: Surface Water
Year: 2025
Analysis Performed: TOC

Sample Location	TOC mg/L
Hill Tank	16.01
Noya Tank	16.10
Pierce Canyon	17.91
Lake Carlsbad (Shore)	17.73
Brantley Lake (Shore)	18.33
Pecos River (Shore)	12.11

Sample Type: Surface Water
Year: 2025
Analysis Performed: TDS/TSS

Sample Location	TDS mg/L	TSS mg/L
Hill Tank	160.00	N.D.
Noya Tank	200.00	N.D.
Pierce Canyon	4760.00	N.D.
Lake Carlsbad (Shore)	2960.00	N.D.
Brantley Lake (Shore)	4680.00	N.D.
Brantley Lake (shallow)	3800.00	40.00
Brantley Lake (deep)	3680.00	N.D.
Pecos River (Shore)	2720.00	2120.00

Sample Type: Surface Water
Year: 2025
Analysis Performed: Metals

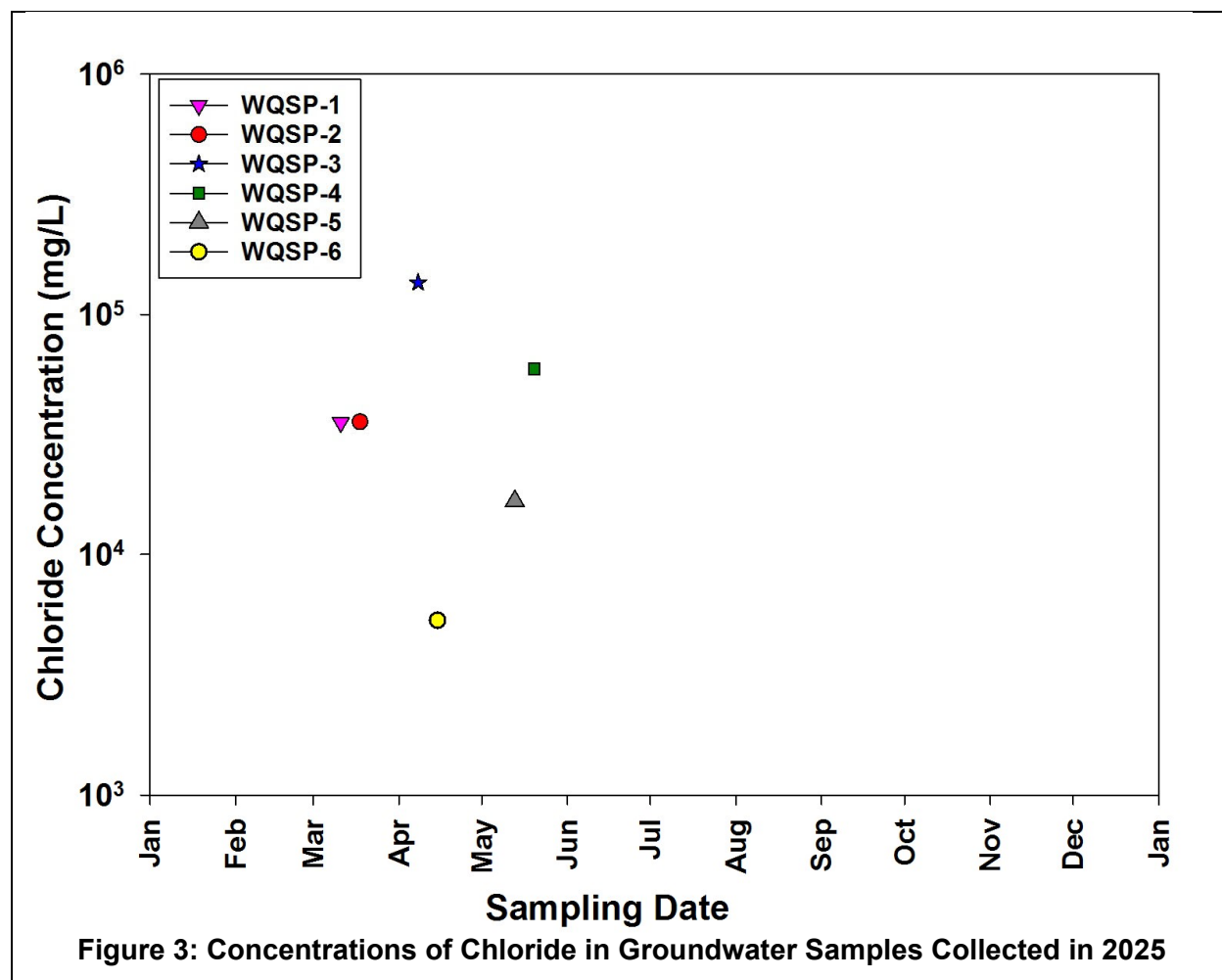
Metal	Hill Tank Conc µg/L	Noya Tank Conc µg/L	Pierce Canyon Conc µg/L
Ag	<MDC	<MDC	<MDC
Al	6.54E+03	7.12E+03	1.78E+03
As	2.68E+00	2.60E+00	<MDC
Ba	2.60E+02	2.55E+02	1.37E+02
Be	4.83E-01	5.26E-01	<MDC
Ca	4.51E+04	3.96E+04	4.16E+05
Cd	1.14E-01	1.16E-01	<MDC
Ce	1.27E+01	1.37E+01	2.58E+00
Co	4.22E+00	4.59E+00	2.17E+00
Cr	4.51E+00	4.23E+00	<MDC
Cu	<MDC	1.89E+01	<MDC
Dy	9.61E-01	1.08E+00	2.22E-01
Er	4.42E-01	4.95E-01	1.01E-01
Eu	3.70E-01	4.21E-01	9.55E-02
Fe	3.28E+03	3.49E+03	2.33E+03
Gd	1.50E+00	1.69E+00	3.28E-01
Hg	<MDL	<MDL	<MDC
K	7.03E+03	6.94E+03	1.53E+04
La	5.53E+00	5.96E+00	1.07E+00
Li	7.55E+00	9.43E+00	7.70E+01
Mg	7.34E+03	7.60E+03	1.80E+05
Mn	1.71E+02	1.93E+02	1.69E+02
Mo	1.39E-01	3.00E-01	2.91E+00
Na	1.56E+03	7.99E+02	7.10E+05
Nd	6.68E+00	7.06E+00	1.40E+00
Ni	8.94E+00	8.94E+00	1.81E+01
P	4.48E+02	5.71E+02	1.15E+02
Pb	6.48E+00	8.88E+00	<MDC
Pr	1.55E+00	1.64E+00	3.20E-01
Sb	1.11E-01	1.30E-01	2.07E-01
Sc	2.94E+00	3.30E+00	2.12E+00
Se	<MDC	<MDC	<MDC
Si	1.56E+04	1.74E+04	7.44E+03
Sr	1.39E+02	1.16E+02	6.87E+03
Th	1.60E-01	2.10E-01	<MDC
Ti	3.34E-02	4.14E-02	<MDC
U	2.33E-01	2.06E-01	6.07E+00
V	1.64E+01	1.92E+01	8.11E+00
Zn	<MDC	<MDC	<MDC

	Brantley Lake		Lake Carlsbad		Red Bluff		Brantley Lake	Lake Carlsbad	Pecos River
Metal	Shallow Conc µg/L	Deep Conc µg/L	Shallow Conc µg/L	Deep Conc µg/L	Shallow Conc µg/L	Deep Conc µg/L	Shore Conc µg/L	Shore Conc µg/L	Shore Conc µg/L
Ag	<MDC	<MDC					<MDC	<MDC	<MDC
Al	5.01E+01	1.53E+02					1.95E+02	1.71E+02	1.88E+04
As	<MDC	<MDC					<MDC	<MDC	7.17E+00
Ba	9.29E+01	1.14E+02					9.10E+01	2.14E+01	1.53E+02
Be	<MDC	<MDC					<MDC	<MDC	1.93E+00
Ca	3.74E+05	3.76E+05					4.60E+05	3.48E+05	4.73E+05
Cd	<MDC	<MDC					<MDC	<MDC	4.16E-01
Ce	<MDC	2.14E-01					3.09E-01	3.09E-01	4.13E+01
Co	5.76E-01	7.03E-01					9.79E-01	7.04E-01	1.18E+01
Cr	<MDC	<MDC					<MDC	<MDC	1.19E+01
Cu	<MDC	<MDC					<MDC	<MDC	<MDC
Dy	<MDC	<MDC					<MDC	<MDC	4.05E+00
Er	<MDC	<MDC					<MDC	<MDC	1.80E+00
Eu	<MDC	<MDC					<MDC	<MDC	1.39E+00
Fe	1.16E+03	1.59E+03					1.39E+03	1.40E+03	1.38E+04
Gd	<MDC	<MDC					<MDC	<MDC	6.03E+00
Hg	<MDC	<MDC					<MDC	<MDC	<MDC
K	8.67E+03	8.78E+03					9.44E+03	5.21E+03	8.08E+03
La	<MDC	1.01E-01					1.42E-01	1.55E-01	1.77E+01
Li	4.07E+01	4.24E+01					5.53E+01	4.60E+01	6.58E+01
Mg	1.04E+05	1.05E+05					1.42E+05	1.16E+05	1.06E+05
Mn	4.05E+01	1.33E+02					3.71E+01	9.89E+00	1.76E+03
Mo	4.64E+00	3.59E+00					3.82E+00	2.91E+00	2.20E+00
Na	5.74E+05	5.86E+05					7.81E+05	4.12E+05	3.72E+05
Nd	<MDC	<MDC					<MDC	<MDC	2.42E+01
Ni	1.35E+01	1.48E+01					1.56E+01	1.31E+01	3.71E+01
P	<MDC	<MDC					<MDC	<MDC	8.84E+02
Pb	<MDC	<MDC					<MDC	<MDC	<MDC
Pr	3.22E-02	2.65E-02					3.76E-02	3.68E-02	5.41E+00
Sb	2.32E-01	1.46E-01					2.06E-01	9.32E-02	1.80E-01
Sc	1.05E+00	1.45E+00					1.19E+00	1.63E+00	8.19E+00
Se	<MDC	<MDC					<MDC	<MDC	<MDC
Si	5.86E+03	6.14E+03					4.53E+03	5.79E+03	4.07E+04
Sr	5.84E+03	5.77E+03					7.34E+03	5.10E+03	6.32E+03
Th	<MDC	<MDC					<MDC	<MDC	2.54E+00
Tl	<MDC	<MDC					<MDC	<MDC	7.39E-02
U	3.69E+00	3.71E+00					4.51E+00	3.42E+00	6.12E+00
V	5.44E+00	6.00E+00					4.01E+00	5.86E+00	4.44E+01
Zn	<MDC	<MDC					<MDC	<MDC	<MDC

Groundwater

Sample Type: Ground Water
Year: 2025
Analysis Performed: Anions

Sample Location	Chloride mg/L	Nitrate mg/L	Phosphate mg/L	Sulfate mg/L
WQSP-1	3.56E+04	<MDL	<MDL	4.85E+03
WQSP-2	3.59E+04	<MDL	<MDL	5.28E+03
WQSP-3	1.36E+05	<MDL	<MDL	7.95E+03
WQSP-4	5.94E+04	<MDL	<MDL	6.75E+03
WQSP-5	1.66E+04	<MDL	<MDL	4.88E+03
WQSP-6	5.32E+03	<MDL	<MDL	4.51E+03



Sample Type: Ground Water
Year: 2025
Analysis Performed: Cations

Sample Location	Sodium mg/L	Magnesium mg/L	Potassium mg/L	Calcium mg/L
WQSP-1	2.31E+04	1.01E+03	4.12E+02	1.79E+03
WQSP-2	2.16E+04	9.74E+02	4.36E+02	1.58E+03
WQSP-3	8.39E+04	2.29E+03	1.47E+03	1.44E+03
WQSP-4	4.02E+04	1.24E+03	9.81E+02	1.80E+03
WQSP-5	1.13E+04	5.95E+02	3.76E+02	1.12E+03
WQSP-6	4.69E+03	2.01E+02	1.63E+02	7.14E+02

Sample Type: Ground Water
Year: 2025
Analysis Performed: pH

Sample Location	pH @ 23°C
WQSP-1	6.86
WQSP-2	7.05
WQSP-3	7.32
WQSP-4	7.42
WQSP-5	7.62
WQSP-6	8.02

Sample Type: Ground Water
Year: 2025
Analysis Performed: Conductivity

Sample Location	Conductivity mS/cm	Temperature °C
WQSP-1	85.4	21.7
WQSP-2	83.6	21.7
WQSP-3	198.8	18.6
WQSP-4	128.9	20.4
WQSP-5	46.8	22.6
WQSP-6	21.0	18.6

Sample Type: Ground Water
Year: 2025
Analysis Performed: Specific gravity

Sample Location	SG T/4°C
WQSP-1	1.041
WQSP-2	1.044
WQSP-3	1.129
WQSP-4	1.069
WQSP-5	1.024
WQSP-6	1.007

Sample Type: Ground Water
Year: 2025
Analysis Performed: TOC

Sample Location	TOC mg/L
WQSP-1	1.440
WQSP-2	1.322
WQSP-3	0.969
WQSP-4	3.497
WQSP-5	4.130
WQSP-6	1.384

Sample Type: Ground Water
Year: 2025
Analysis Performed: TDS/TSS

Sample Location	TDS mg/L	TSS mg/L
WQSP-1	66480.00	N.D.
WQSP-2	66440.00	N.D.
WQSP-3	229580.00	60.00
WQSP-4	111260.00	20.00
WQSP-5	35020.00	40.00
WQSP-6	15440.00	180.00

Internal Dosimetry Group and Public Outreach

***In vivo* radiobioassay measurements performed during the reporting period:**

None for WIPP (no current contract), 19 for the contract radiological personnel and those working in the laboratories located at CEMRC, 4 for the public participants.

DOELAP onsite assessment:

A DOELAP onsite assessment of the ID Laboratory at CEMRC was conducted on August 26 and 27, 2025 to assure routine practices of the direct radiobioassay program comply with DOELAP criteria. The following CEMRC staff members were interviewed during the course of the assessment: CEMRC Director Dr. Lambis Papelis, direct radiobioassay Technical Lead Dr. Ila Pillalamarri, direct radiobioassay Research Scientist Associate Nhat Nguyen, and CEMRC QA Manager Christian Perez. There were no findings or concerns resulting from the onsite assessment.

Outreach activities:

CEMRC and the Internal Dosimetry group continue to interact with the public to explain CEMRC's function and to encourage the Lie Down and Be Counted (LDBC) project's lung and whole body in-vivo radiobioassay measurements at CEMRC. CEMRC also promotes awareness of environmental monitoring and research, to the public. The following are outreach activities during the reporting period:

- 7/23/2025 – 7/25/2025: Provided shadowing opportunity to 2 New Mexico State University students from the College of Engineering, interns of the NuChemE project. The students were given detailed introductions to the ID lab, basic health physics knowledge, and the whole-body count instruments and systems as well as the theories behind them. The students also had opportunities to gain hands-on experience on operating the system, and go through the whole-body radiobioassay measurement process themselves.
- 7/25/2025: Provided a detailed (approximately 1-day) tour including introduction to CEMRC in general and ID lab specifically, demonstration of the lung and whole-body radiobioassay measurement, and handing out LDBC brochures to a group of 12 students and professors from New Mexico State University and University of Texas in El Paso, participants in the NuChemE project, funded by DOE-EM and led by NMSU.
- 8/19/2025: Provided a tour of the CEMRC facility and explained CEMRC's mission to Scott Lopez, President and CEO of the New Mexico Nuclear Alliance, and Kristen Gamboa, Executive Director of the Carlsbad Department of Development.
- 9/24/2025: Gave a presentation about CEMRC and WIPP to the Student Chapter of the American Nuclear Society at New Mexico State University in Las Cruces, NM.

Low Background Radiation Experiment (LBRE)

A *Drosophila* development experiment was deployed at WIPP on July 31st. With the expert help of NMSU's Dr. Jennifer Curtis, 60 tubes of 3 pairs of males and females were started at NMSU, and these were transported to WIPP and 30 sets were emplaced aboveground and belowground at WIPP. Multiple generations of eggs were allowed to develop through the 1st, 2nd and 3rd instar stages of development (Figure 1) and RNA was extracted from stages 3-days, 5-days and 6-days post-adult removal. Fourteen straight days of work at WIPP were required to obtain these samples which are now being prepared for RNA-Seq transcriptome analysis.

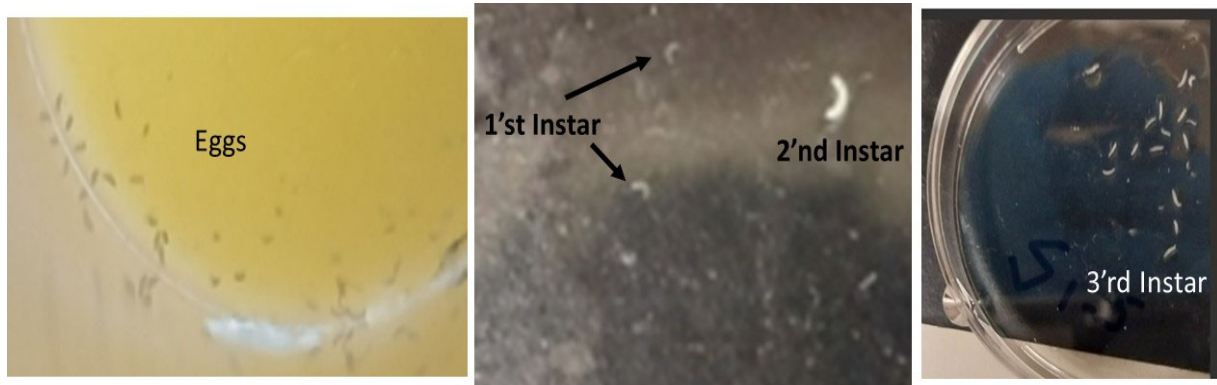


Figure 1. Adult mating pairs of fruit flies laid eggs at WIPP (magnified ~ 10x), which developed into 1st and 2nd instar larvae at 3 days (mag. ~ 5x) and 3rd instar larvae at 6 days (no magnification).

Initial RNA extractions were performed in-situ at WIPP, and then RNA purifications were carried out in the NMSU Biology Department. RNA yield was related to the larval developmental stage with less RNA extracted from younger vs older larvae (Table 1). Many of the samples are at the limit of detection for RNA sequencing (Minimum of 100 ng total RNA), and we only have 25 μ L to send for sequencing. We will discuss this issue with Azenta, the company we have used for RNA sequencing for all our LBRE sequencing projects. Besides low RNA yield, another problem which arose was mold contamination. So, mold-positive samples will be submitted for RNA analysis in order to hopefully identify and normalize for the mold signal.

Lastly, efforts to identify ancient biomarker signals in the Permian-age WIPP halite have been delayed because of technical problems with the scanning and transmission electron microscopes (SEM and TEM) at NMSU. These problems have been recently solved and so we should be able to provide images of at least positive and negative control samples in the next quarter.

Table 1. RNA extracts were performed in-situ at WIPP and RNA was subsequently purified and quantified at NMSU. Gene expression analysis will be performed on two experimental groups: 1. Larval Development and 2. Sex-dependent Adult Responses.

Larval Age	RNA ng/uL	Avg ng/uL	Adults at WIPP for 14 days	RNA ng/uL	Avg ng/uL
3 days old	16.9	17.05	male group 1	6.9	7.1
	17.2			7.3	
3 days	14.2	14.35	male group 2	6.7	6.8
	14.5			6.9	
3 days	27.2	27.5	male group 3	4.2	4.3
	27.8			4.4	
3 days	53.9	54.6	male group 4	2.4	2.65
	55.3			2.9	
3 days & mold	3.6	3.8	female group 1	59.3	59.05
	4			58.8	
3 days & mold	7.4	7.45	female group 2	20.4	20.55
	7.5			20.7	
5 days	94.3	95.7	female group 3	13.3	13.2
	97.1			13.1	
5 days	337.9	342.2	female group 4	90	89.9
	346.5			89.8	
5 days	323.2	317.95			
	312.7				
6 days	328.2	327.35			
	326.5				
6 days	19.9	19.65			
	19.4				
6 days	241.1	239.85			
	238.6				