

NEW ELK COAL COMPANY



February 28, 2020

Rob Zuber
Division of Reclamation, Mining and Safety
1313 Sherman Street Rm. 215
Denver, Colorado 80203

RE: New Elk Mine
Permit C-1981-012
2019 Annual Hydrology Report

Dear Mr. Zuber:

The New Elk Mine annual Hydrologic Monitoring Requirements are summarized in Table 27 Hydrologic Monitoring Frequency Requirements and Table 28 Water Quality Laboratory Analysis attached to this letter report.

TR-73 approved December 13, 2018 changed the monitoring requirements for wells NE-1-10, NE-6-10a, NE-6-10b, NM-20, NM-21, NM-22, NM-23, and SF-2. Well NE-1-10 changed monitoring requirements from quarterly to water level being monitored semi-annually and field measurements and lab analysis monitored annually. The rest of the wells changed monitoring requirements so the wells only have to be monitored well the mine is active.

New Elk staff expects to send a revision to DRMS to revise Table 27 to include Discharge Monitoring Site 010 and remove NPDES Station 080 as it is outdated.

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NPDES Discharge Monitoring

All NPDES discharges were monitored and reported to CDPHE on Discharge Monitoring Report forms (DMRs). Copies of these reports have already been submitted to the Division (DRMS) and are not duplicated herein.

Discharge Monitoring Site 001 did not discharge during 2019. Water flow to/from is managed by a system of pumps with a gravity flow discharge through the primary if the water level exceeds the discharge elevation of the primary decant spillway. No water was pumped to or withdrawn from pond 001. Evaporate losses were tracked and reported to the Pueblo District of the Colorado Division of Water Resources. These losses were compensated to the stream by water New Elk has under lease from the Hill Ranch.

Discharge Monitoring of Site 004 (Pond 4) is no longer a requirement of the NPDES permit. Throughout the year water levels were minimal and no discharges occurred.

Discharge Monitoring of Site 007 (Pond 7) held little to no water throughout most of 2019. The pond did not have any discharges throughout the year.

Discharge Monitoring of Site 008 (Pond 8) held little to no water throughout 2019. There were no discharges throughout the year. The pond has held minimal water in it since the cleaning in 2018.

Discharge Monitoring of Site 010 (SAE south of Pond 7) with minimal rainfall throughout the year with no discharges. The outfall was monitored carefully throughout the year and minimal maintenance on the SAE was done. The minimal maintenance included minor fixes to a silt fence and a check dam.

RDA Monitoring Wells

Three monitoring wells, **Th-201**, **TH-202**, and **TH-203**, are located on the three lower reclaimed benches of the mine's Refuse Disposal Area. These wells penetrate the compacted refuse down to the contact with the basal bedrock of the disposal area.

The intent is to monitor ground water at the refuse/bedrock contact and alert the operator to potential problems that could arise from accumulation of ground water. The monitoring plan calls for recording depths to water for these sites on a quarterly basis.

Readings were taken March 7, June 12, September 13, and December 9, 2019. This data is summarized in Table 1 RDA Monitoring Wells following this report. No significant changes were noted at any of the wells.

Surface and Groundwater Monitoring

Field data was taken in the second and fourth quarter for the Surface Water, Groundwater, and Mine Water monitoring wells. The field data is compiled in Table 2 Field Data and notes for the field data are shown in **Appendix A Field Notes**. Laboratory Analysis was done on June 6 for Paw-1 and Paw-9. Laboratory Analysis was also completed in the fourth quarter for all Surface Water, Groundwater, and Mine Water monitoring wells. This data is summarized in Table 3 Lab Analysis following this report. The analytical results for these samples are shown in **Appendix B Lab Analytics**. This data was compared to the historical information available in previous AHRs (see 2008 for best tabulation): All observed data fell within the historical range of each parameter.

Analysis of Alluvial Groundwater Data

The groundwater wells did not show much change from 2018 to 2019. Paw-1 saw a decrease in Total Suspension Solids (TSS) from the second quarter to the fourth quarter. All data for Paw-1 was consistent with previous year's data. Paw-2 had a decrease in TSS with the rest of the data remaining the same. Paw-8 had a decrease in TSS with all data remaining the same. Paw-9 data was similar to previous years. New-2 and New-4 had a decrease in TSS with the rest of the data staying similar. This is the first set of data for NE-1-10 so we will compare to next year's results.

Rain Water Monitoring

2019 was a dry year, especially compared to the extremely wet 2017. Snowfall was minimal throughout the first part of the year, followed by a dry Spring and Summer seasons. There was never an event of over an inch in a 24-hour period. The rest of the year was dry until snowfall began in October.

Comments

New Elk worked with DRMS in revising the water monitoring program in 2018. The data for the added well NE-1-10 is documented in this report.

Please advise me if any additional information is needed.

Regards

A handwritten signature in cursive script that reads "Nicholas Mason".

Nicholas Mason

Table 1 RDA Monitoring Wells				
	Depth to Water in Feet			
Quarter	Q1	Q2	Q3	Q4
Date	7-Mar	12-Jun	13-Sep	9-Dec
Th-01	42.4	42.1	42.5	42.4
Th-02	70.5	70.3	70.6	70.5
Th-03	93.3	93.1	93.6	93.5

Table 2 Field Data

Table 2 Field Data										
Second Quarter 2019	Surface Water		Groundwater Wells				Mine Water			
	PRS-1	PRS-4	PAW-1	PAW-2	PAW-8	PAW-9	NEW-2	NEW-4	NEW-1-10	NEW-3
Date	8-May	8-May	6-Jun	16-May	16-May	6-Jun	5-Jun	5-Jun	5-Jun	16-Apr
Field Measurements										
Depth to Water (ft)	-	-	6.9	16.3	32.8	15.2	349.0	355.9	307.4	421.6
Flow Rate (cfs)	77.0	70.9	-	-	-	-	-	-	-	-
Ph (S.U.)	9.28	9.23	7.11	7.35	7.50	7.05	-	-	-	-
Conductivity ($\mu\text{ohms}/\text{cm}^2$)	249	391	280	1459	1463	1043	-	-	-	-
Temperature ($^{\circ}\text{C}$)	6.8	6.3	10.0	10.9	12.8	10.9	-	-	-	-
Fourth Quarter 2019	Surface Water		Groundwater Wells				Mine Water			
	PRS-1	PRS-4	PAW-1	PAW-2	PAW-8	PAW-9	NEW-2	NEW-4	NEW-1-10	NEW-3
Date	13-Nov	13-Nov	7-Nov	20-Nov	20-Nov	7-Nov	10-Dec	10-Dec	10-Dec	5-Nov
Field Measurements										
Depth to Water (ft)	-	-	7.6	17.2	33.4	15.8	348.4	354.2	306.5	421.6
Flow Rate (cfs)	11.7	11.05	-	-	-	-	-	-	-	-
Ph (S.U.)	8.95	8.77	7.76	7.50	7.57	7.36	8.06	8.45	10.14	-
Conductivity ($\mu\text{ohms}/\text{cm}^2$)	344	348	274	1058	1312	1048	2.21	2.05	1316	-
Temperature ($^{\circ}\text{C}$)	6	6	11.3	12	12.1	12.5	15.9	16	9.6	-

Table 3 Lab Analysis											
	Surface Water		Groundwater Wells						Mine Water		
	PRS-1	PRS-4	PAW-1	PAW-9	PAW-2	PAW-8	PAW-1	PAW-9	NEW-2	NEW-4	New-1-10
Date	13-Nov	13-Nov	6-Jun	6-Jun	20-Nov	20-Nov	7-Nov	7-Nov	10-Dec	10-Dec	10-Dec
Laboratory Analysis											
Total Suspended Solids (TSS) (mg/l)	<5	<5	63.0	44.0	176.0	536.0	31.0	47.0	<5	5.0	15.0
Carbonate (mg/l)	<2	3.2	<2	<2	<2	<2	<2	<2	44.4	79.5	264
Bicarbonate (mg/l)	116	117	128	442	453	542	114.0	458.0	1010	1130	395
Chloride (mg/l)	2.6	2.4	12.1	22.3	34.3	37.0	14.1	21.7	10.5	14.3	9.4
Sulfate (mg/l)	42.5	42.1	2.8	75.2	71.9	153.0	1.4	80.2	214	29.9	23.3
Manganese total (Mn) (mg/l)	0.01	0.02	0.15	1.7	1.77	1.81	0.160	2.2	0.05	<0.01	<0.01
Manganese dissolved (Mn) (mg/l)	<0.01	<0.01	0.09	0.24	1.37	<0.01	<0.01	<0.01	0.03	<0.01	<0.01
Calcium (Ca) (mg/l)	43.8	44.5	19.0	76.9	108.0	115.0	18.9	73.8	13.5	5.0	2.3
Magnesium (Mg) (mg/l)	7.1	7.2	10.4	21.1	21	25.3	9.2	19.6	5.7	2.2	2.3
Potassium (K) (mg/l)	1.5	1.2	2	2.2	2.7	2	2.6	2.8	7	5.1	4.3
Sodium (Na) (mg/l)	6	6.5	21.1	129.0	92.9	170.0	18.1	125.0	532.0	529.0	297.0
Iron (Fe) (mg/l), Total Dissolved	<0.03	<0.03	0.19	0.08	1.15	<0.03	<0.03	<0.03	0.17	<0.03	<0.03
Iron (Fe) (mg/l), Total Recoverable	0.03	0.04	33.20	2.11	41.30	22.80	15.0	2.4	0.49	0.29	0.82
Sodium Absorption Rate (SAR)	0.22	0.24	0.98	3.40	2.20	3.80	0.9	3.4	31.00	50.00	34.00
Total Dissolved Solids (TDS) (mg/l)	194	204	162	642	630	864	146	630	1450	1330	784
Hardness (Calculated) (mg/l)	139	141	90	279	356	391	85	265	57	22	15

Table 4 New Elk Rain Gauge Data					
Date	Rain Fall(in)	Date	Rain Fall(in)	Date	Rain Fall(in)
1-Apr	0.0	10-Jun	0.0	15-Aug	0.0
2-Apr	0.0	11-Jun	0.0	16-Aug	0.0
3-Apr	0.0	12-Jun	0.0	19-Aug	0.0
4-Apr	0.0	13-Jun	0.4	20-Aug	0.0
9-Apr	0.0	18-Jun	0.0	21-Aug	0.0
10-Apr	0.0	19-Jun	0.0	22-Aug	0.0
11-Apr	0.0	20-Jun	0.0	27-Aug	0.8
12-Apr	0.0	21-Jun	0.0	28-Aug	0.2
15-Apr	0.0	23-Jun	0.0	29-Aug	0.0
16-Apr	0.0	24-Jun	0.0	30-Aug	0.0
17-Apr	0.0	25-Jun	0.0	3-Sep	0.1
23-Apr	0.2	26-Jun	0.0	4-Sep	0.2
24-Apr	0.1	27-Jun	0.0	5-Sep	0.0
25-Apr	0.0	2-Jul	0.4	7-Sep	0.3
26-Apr	0.2	5-Jul	0.2	10-Sep	0.2
29-Apr	0.0	6-Jul	0.7	11-Sep	0.0
30-Apr	0.5	8-Jul	0.0	12-Sep	0.0
1-May	0.0	9-Jul	0.0	13-Sep	0.0
2-May	0.0	10-Jul	0.0	16-Sep	0.0
7-May	0.0	11-Jul	0.0	17-Sep	0.0
8-May	0.1	16-Jul	0.0	18-Sep	0.0
9-May	0.7	17-Jul	0.0	19-Sep	0.0
10-May	0.3	18-Jul	0.0	24-Sep	0.0
13-May	0.0	19-Jul	0.0	25-Sep	0.0
14-May	0.0	22-Jul	0.2	26-Sep	0.0
15-May	0.0	23-Jul	0.6	27-Sep	0.0
16-May	0.0	24-Jul	0.0	30-Sep	0.0
21-May	0.1	25-Jul	0.0		
22-May	0.0	30-Jul	0.5		
23-May	0.1	31-Jul	0.3		
24-May	0.0	1-Aug	0.0		
28-May	0.0	2-Aug	..1		
29-May	0.0	3-Aug	0.6		
30-May	0.2	5-Aug	0.9		
4-Jun	0.8	6-Aug	0.0		
5-Jun	0.3	7-Aug	0.3		
6-Jun	0.4	13-Aug	0.6		
7-Jun	0.1	14-Aug	0.0		

Table 27 Hydrologic Monitoring Frequency Requirements

Site	Water level or flow	Field Measurements	Laboratory Analysis	NPDES List
PRS-1	S	S	A	
PRS-1a**	Q	Q	Q	
PRS-4 (aka NE080)	S	S	A	
PRS-4a**	Q (then S)	Q (then S)	Q (then A)	
TH-201	Q			
TH-202	Q			
TH-203	Q			
PAW-1	S	S	S	
PAW-1a**	Q (then s)	Q (then s)	Q (then s)	
PAW-2	S	S	A	
PAW-8	S	S	A	
PAW-9	S	S	S	
NEW-2	S	A	A	
NEW-3	S			
NEW-4	S	A	A	
NE-1-10	S	A	A	
NE-6-10a *	Q	Q	Q	
NE-6-10b *	Q	Q	Q	
NM-20 *	Q	Q	Q	
NM-21 *	Q	Q	Q	
NM-22 *	Q	Q	Q	
NM-23 *	Q	Q	Q	
SF-2 *	Q	Q	Q	
NPDES Stations				
NE 001 (mine water pond)				+
NE 004 (Pond 4)				+
NE 007 (Pond 7)				+
NE 008 (Pond 8)				+
NE 080 (PRS-4)				+
KEY S=Semi annually (2nd and 4th quarters) Q=quarterly A=Annually(4th quarter) * Monitoring of the wells is suspended while the mine remains inactive, but the full monitoring program will be resumed prior to any resumption of mining. ** Monitor quarterly for one year, then frequency will change as indicated in table +see NPDES permit for frequency and required analysis Note: If the coal shipping facilities become active, the Division will be notified in writing and the frequency of monitoring				

Table 28 Water Quality Analysis Parameters	
Field Measurements	Units
Flow rate/water level	cfs/feet below top of casing
pH	
Conductivity	
Temperature	
Laboratory Analysis (both Surface and FW unless noted)	Units
Total Suspended Solids (TSS)	mg/l
Total Dissolved Solids (TDS)	mg/l
Carbonate	mg/l
Bicarbonate	mg/l
Chloride	mg/l
Sulfate	mg/l
Manganese (Mn)	mg/l total and dissolved
Potassium (K)	mg/l
Sodium (Na)	mg/l
Calcium (Ca)	mg/l
Magnesium (Mg)	mg/l
Iron (Fe)	mg/l total, diss, total recoverable ¹
Hardness (calculated)	calculated
Sodium Absorption Ratio	unit
Sediment Ponds	
Frequency and analysis in accordance with NPDES permit	
¹ surface water only	

Appendix A

(Field Notes)

DATE: *Mar. 7, 2019* WEATHER: *Clear, Windy, 54°F*

WEATHER: Clear, Windy, 54°F

[illegible]

New Elk Mine - HYDROLOGIC MONITORING - FIELD DATA

Date:

April 16, 2019

Weather:

Partly Cloudy

1.77

[illegible]

New Elk Mine - HYDROLOGIC MONITORING - FIELD DATA

Date: May 8, 2019

Weather:

45°C mainly cloudy 0.1" rainfall previous 24 Hrs.

[illegible]

DATE: May 16, 2019 WEATHER:

[illegible]

New Elk Mine - HYDROLOGIC MONITORING - FIELD DATA

Date: June 5, 2019 Weather: Cloudy 51° F 0.3" previous 24 Hours

[illegible]

New Elk Mine - HYDROLOGIC MONITORING - FIELD DATA

Date:

Jun 6, 2019

Weather:

Partly Cloudy

74. F

0.4 inches rain previous 24 hrs.

[illegible]

New Elk Mine - HYDROLOGIC MONITORING - FIELD DATA

Date: June 12, 2019 Weather: Sunny/Clear 70°F 0.0" of rain last 24 hours

[illegible]

New Elk Mine - HYDROLOGIC MONITORING - FIELD DATA

Date: Sept. 13, 2019 Weather: Clear 53° F 0.0 inches precipitation last 24 hrs.

[illegible]

DATE: 11-5-2019 WEATHER: Clear Sunny 61°F

Clear Sunny 61°F

[illegible]

DATE: 11/13/2019

Q1/ea7

570 F

[illegible]

DATE: 11/7/19

WEATHER:

REPORT
Sunny Clear 53°F

[illegible]

DATE: Nov. 20, 2019

DATE	BY	NOTES
11/11/2023	BY	Cloudy 56°F

[illegible]

DATE:	Dec. 9, 2019	WEATHER:	Cloudy	31°F
TEMPERATURE	SAMPLE # (N/A)	SAMPLED BY	NOTES	

WEATHER:

Cloudy	31°F	NOTES
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[illegible]

DATE: Dec. 10, 2019

Clear

470 F

[illegible]

Appendix B

(Lab Analytics)

New Elk Coal Co. , LLC

Project ID:

Sample ID: PAW 1

ACZ Sample ID: **L52308-01**

Date Sampled: 06/06/19 14:00

Date Received: 06/07/19

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acidify and filter (Potentially Dissolved)	Colorado 5 CCR 1002- 31.5.31 (2009)								06/07/19 16:08	rap
Lab Filtration (0.45um) & Acidification	M200.7/200.8/3005A								06/17/19 12:05	bsu
Total Hot Plate Digestion	M200.2 ICP								06/17/19 14:41	jlw
Total Recoverable Digestion	M200.2 ICP-MS				*				06/14/19 15:45	rap
Total Recoverable Digestion	M200.2 ICP								06/14/19 14:13	aeh

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total recoverable	M200.8 ICP-MS	2	0.0013	B		mg/L	0.0004	0.002	06/17/19 11:22	bsu
Boron, total	M200.7 ICP	1		U		mg/L	0.02	0.1	06/19/19 7:24	jlw
Cadmium, potentially dissolved	M200.7 ICP	1		U		mg/L	0.008	0.03	06/12/19 18:00	jlw
Calcium, dissolved	M200.7 ICP	1	19.0			mg/L	0.1	0.5	06/21/19 5:47	aeh
Chromium, total recoverable	M200.8 ICP-MS	2		U		mg/L	0.001	0.004	06/17/19 11:22	bsu
Copper, potentially dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/12/19 18:00	jlw
Iron, dissolved	M200.7 ICP	1	0.19			mg/L	0.03	0.08	06/22/19 8:50	jlw
Iron, total	M200.7 ICP	1	33.1			mg/L	0.03	0.08	06/19/19 7:24	jlw
Iron, total recoverable	M200.7 ICP	1	33.2			mg/L	0.03	0.08	06/17/19 21:05	aeh
Magnesium, dissolved	M200.7 ICP	1	10.4			mg/L	0.2	1	06/21/19 5:47	aeh
Manganese, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/21/19 5:47	aeh
Manganese, potentially dissolved	M200.7 ICP	1	0.09			mg/L	0.01	0.05	06/12/19 18:00	jlw
Manganese, total	M200.7 ICP	1	0.15			mg/L	0.01	0.05	06/19/19 7:24	jlw
Mercury, total	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/13/19 16:08	slm
Potassium, dissolved	M200.7 ICP	1	2.0			mg/L	0.2	1	06/21/19 5:47	aeh
Sodium, dissolved	M200.7 ICP	1	21.1			mg/L	0.2	1	06/21/19 5:47	aeh
Zinc, potentially dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/12/19 18:00	jlw

New Elk Coal Co. , LLC

Project ID:

Sample ID: PAW 1

ACZ Sample ID: L52308-01

Date Sampled: 06/06/19 14:00

Date Received: 06/07/19

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	128			mg/L	10	20	06/13/19 0:00	enb
Carbonate as CaCO ₃		1		U		mg/L	10	20	06/13/19 0:00	enb
Hydroxide as CaCO ₃		1		U		mg/L	10	20	06/13/19 0:00	enb
Total Alkalinity		1	128			mg/L	10	20	06/13/19 0:00	enb
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-3.4			%			06/24/19 0:00	calc
Sum of Anions			3			meq/L			06/24/19 0:00	calc
Sum of Cations			2.8			meq/L			06/24/19 0:00	calc
Chloride	SM4500Cl-E	1	12.1		*	mg/L	0.5	2	06/11/19 15:20	wtc
Hardness as CaCO ₃ (dissolved)	SM2340B - Calculation		90			mg/L	0.2	5	06/24/19 0:00	calc
Lab Filtration (0.45um filter)	SOPWC050	1							06/13/19 11:23	kja
Residue, Filterable (TDS) @180C	SM2540C	1	162			mg/L	20	40	06/12/19 12:13	eij
Residue, Non-Filterable (TSS) @105C	SM2540D	1	63.0		*	mg/L	5	20	06/12/19 10:49	eij
Sodium Adsorption Ratio in Water	USGS - I1738-78		0.98						06/24/19 0:00	calc
Sulfate	D516-02/-07 - Turbidimetric	1	2.8	B		mg/L	1	5	06/14/19 15:22	wtc

New Elk Coal Co. , LLC

Project ID:

Sample ID: PAW 9

ACZ Sample ID: **L52308-02**

Date Sampled: 06/06/19 14:40

Date Received: 06/07/19

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acidify and filter (Potentially Dissolved)	Colorado 5 CCR 1002- 31.5.31 (2009)								06/07/19 16:19	rap
Lab Filtration (0.45um) & Acidification	M200.7/200.8/3005A								06/17/19 12:05	bsu
Total Hot Plate Digestion	M200.2 ICP								06/17/19 14:53	jlw
Total Recoverable Digestion	M200.2 ICP-MS								06/14/19 16:02	rap
Total Recoverable Digestion	M200.2 ICP								06/14/19 14:39	aeh

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total recoverable	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0002	0.001	06/17/19 11:24	bsu
Boron, total	M200.7 ICP	1	0.04	B		mg/L	0.02	0.1	06/19/19 7:28	jlw
Cadmium, potentially dissolved	M200.7 ICP	1		U		mg/L	0.008	0.03	06/12/19 18:03	jlw
Calcium, dissolved	M200.7 ICP	1	76.9			mg/L	0.1	0.5	06/21/19 5:50	aeh
Chromium, total recoverable	M200.8 ICP-MS	1	0.0014	B		mg/L	0.0005	0.002	06/17/19 11:24	bsu
Copper, potentially dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/12/19 18:03	jlw
Iron, dissolved	M200.7 ICP	1	0.08			mg/L	0.03	0.08	06/22/19 8:54	jlw
Iron, total	M200.7 ICP	1	2.13			mg/L	0.03	0.08	06/19/19 7:28	jlw
Iron, total recoverable	M200.7 ICP	1	2.11			mg/L	0.03	0.08	06/17/19 21:08	aeh
Magnesium, dissolved	M200.7 ICP	1	21.1			mg/L	0.2	1	06/21/19 5:50	aeh
Manganese, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/21/19 5:50	aeh
Manganese, potentially dissolved	M200.7 ICP	1	0.24			mg/L	0.01	0.05	06/12/19 18:03	jlw
Manganese, total	M200.7 ICP	1	1.70			mg/L	0.01	0.05	06/19/19 7:28	jlw
Mercury, total	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/13/19 16:09	slm
Potassium, dissolved	M200.7 ICP	1	2.2			mg/L	0.2	1	06/21/19 5:50	aeh
Sodium, dissolved	M200.7 ICP	1	129			mg/L	0.2	1	06/21/19 5:50	aeh
Zinc, potentially dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/12/19 18:03	jlw

New Elk Coal Co. , LLC

Project ID:

Sample ID: PAW 9

ACZ Sample ID: L52308-02

Date Sampled: 06/06/19 14:40

Date Received: 06/07/19

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	442			mg/L	10	20	06/13/19 0:00	enb
Carbonate as CaCO ₃		1		U		mg/L	10	20	06/13/19 0:00	enb
Hydroxide as CaCO ₃		1		U		mg/L	10	20	06/13/19 0:00	enb
Total Alkalinity		1	442			mg/L	10	20	06/13/19 0:00	enb
Cation-Anion Balance	Calculation									
Cation-Anion Balance			0.0			%			06/24/19 0:00	calc
Sum of Anions			11.0			meq/L			06/24/19 0:00	calc
Sum of Cations			11			meq/L			06/24/19 0:00	calc
Chloride	SM4500Cl-E	1	22.3		*	mg/L	0.5	2	06/11/19 15:20	wtc
Hardness as CaCO ₃ (dissolved)	SM2340B - Calculation		279			mg/L	0.2	5	06/24/19 0:00	calc
Lab Filtration (0.45um filter)	SOPWC050	1							06/13/19 11:27	kja
Residue, Filterable (TDS) @180C	SM2540C	1	642			mg/L	20	40	06/12/19 12:15	eij
Residue, Non-Filterable (TSS) @105C	SM2540D	1	44.0		*	mg/L	5	20	06/12/19 10:51	eij
Sodium Adsorption Ratio in Water	USGS - I1738-78		3.4						06/24/19 0:00	calc
Sulfate	D516-02/-07 - Turbidimetric	5	75.2			mg/L	5	25	06/14/19 15:52	wtc

New Elk Coal Co. , LLC

Project ID:

Sample ID: PRS1

ACZ Sample ID: **L55888-01**

Date Sampled: 11/13/19 14:15

Date Received: 11/14/19

Sample Matrix: Surface Water

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Lab Filtration (0.45um) & Acidification	M200.7/200.8/3005A								11/18/19 14:46	kja
Total Hot Plate Digestion	M200.2 ICP								11/21/19 18:00	kja
Total Recoverable Digestion	M200.2 ICP								11/21/19 14:34	kja

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	1	43.8			mg/L	0.1	0.5	11/20/19 12:32	kja
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.08	11/20/19 12:32	kja
Iron, total	M200.7 ICP	1	0.06	B		mg/L	0.03	0.08	11/22/19 21:01	kja
Iron, total recoverable	M200.7 ICP	1	0.03	B		mg/L	0.03	0.08	11/22/19 18:11	jlw
Magnesium, dissolved	M200.7 ICP	1	7.1			mg/L	0.2	1	11/20/19 12:32	kja
Manganese, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	11/20/19 12:32	kja
Manganese, total	M200.7 ICP	1	0.01	B		mg/L	0.01	0.05	11/22/19 21:01	kja
Potassium, dissolved	M200.7 ICP	1	1.5			mg/L	0.2	1	11/20/19 12:32	kja
Sodium, dissolved	M200.7 ICP	1	6.0			mg/L	0.2	1	11/20/19 12:32	kja

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	116			mg/L	2	20	11/21/19 0:00	emk
Carbonate as CaCO3		1		U		mg/L	2	20	11/21/19 0:00	emk
Hydroxide as CaCO3		1		U		mg/L	2	20	11/21/19 0:00	emk
Total Alkalinity		1	117			mg/L	2	20	11/21/19 0:00	emk
Chloride	SM4500Cl-E	1	2.6		*	mg/L	0.5	2	11/19/19 13:36	wtc
Hardness as CaCO3 (dissolved)	SM2340B - Calculation		139			mg/L	0.2	5	11/25/19 0:00	calc
Lab Filtration (0.45um filter)	SOPWC050	1							11/15/19 10:17	jck
Residue, Filterable (TDS) @180C	SM2540C	1	194			mg/L	20	40	11/15/19 15:03	jck
Residue, Non-Filterable (TSS) @105C	SM2540D	1		U	*	mg/L	5	20	11/15/19 16:35	jck
Sodium Adsorption Ratio in Water	USGS - I1738-78		0.22						11/25/19 0:00	calc
Sulfate	D516-02/07 - Turbidimetric	5	42.5			mg/L	5	25	11/20/19 13:52	mss2

Arizona license number: AZ0102

New Elk Coal Co., LLC

Project ID:

Sample ID: **PRS4**ACZ Sample ID: **L55888-02**

Date Sampled: 11/13/19 14:45

Date Received: 11/14/19

Sample Matrix: Surface Water

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Lab Filtration (0.45um) & Acidification	M200.7/200.8/3005A								11/18/19 14:46	kja
Total Hot Plate Digestion	M200.2 ICP								11/21/19 18:14	kja
Total Recoverable Digestion	M200.2 ICP								11/21/19 15:38	kja

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	1	44.5			mg/L	0.1	0.5	11/20/19 12:36	kja
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.08	11/20/19 12:36	kja
Iron, total	M200.7 ICP	1	0.07	B		mg/L	0.03	0.08	11/22/19 21:04	kja
Iron, total recoverable	M200.7 ICP	1	0.04	B		mg/L	0.03	0.08	11/22/19 18:20	jlw
Magnesium, dissolved	M200.7 ICP	1	7.2			mg/L	0.2	1	11/20/19 12:36	kja
Manganese, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	11/20/19 12:36	kja
Manganese, total	M200.7 ICP	1	0.02	B		mg/L	0.01	0.05	11/22/19 21:04	kja
Potassium, dissolved	M200.7 ICP	1	1.2			mg/L	0.2	1	11/20/19 12:36	kja
Sodium, dissolved	M200.7 ICP	1	6.5			mg/L	0.2	1	11/20/19 12:36	kja

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	117			mg/L	2	20	11/21/19 0:00	emk
Carbonate as CaCO3		1	3.2	B		mg/L	2	20	11/21/19 0:00	emk
Hydroxide as CaCO3		1		U		mg/L	2	20	11/21/19 0:00	emk
Total Alkalinity		1	120			mg/L	2	20	11/21/19 0:00	emk
Chloride	SM4500Cl-E	1	2.4		*	mg/L	0.5	2	11/19/19 13:36	wtc
Hardness as CaCO3 (dissolved)	SM2340B - Calculation		141			mg/L	0.2	5	11/25/19 0:00	calc
Lab Filtration (0.45um filter)	SOPWC050	1							11/15/19 10:23	jck
Residue, Filterable (TDS) @180C	SM2540C	1	204			mg/L	20	40	11/15/19 15:06	jck
Residue, Non-Filterable (TSS) @105C	SM2540D	1		U	*	mg/L	5	20	11/15/19 16:37	jck
Sodium Adsorption Ratio in Water	USGS - I1738-78		0.24						11/25/19 0:00	calc
Sulfate	D516-02/07 - Turbidimetric	5	42.1			mg/L	5	25	11/20/19 13:52	mss2

Arizona license number: **AZ0102**

New Elk Coal Co., LLC

Project ID:

Sample ID: PAW-1

ACZ Sample ID: L55752-01

Date Sampled: 11/07/19 14:15

Date Received: 11/08/19

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acidify and filter (Potentially Dissolved)	Colorado 5 CCR 1002-31.5.31 (2009)								11/08/19 14:41	rap
Lab Filtration (0.45um) & Acidification	M200.7/200.8/3005A								11/13/19 13:15	kja
Total Hot Plate Digestion	M200.2 ICP								11/15/19 14:49	kja
Total Recoverable Digestion	M200.2 ICP-MS								11/15/19 10:41	rap
Total Recoverable Digestion	M200.2 ICP				*				11/18/19 13:23	jlw

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total recoverable	M200.8 ICP-MS	1	0.0006	B		mg/L	0.0002	0.001	11/19/19 16:17	mfm
Boron, total	M200.7 ICP	1	0.04	B		mg/L	0.02	0.1	11/18/19 12:20	kja
Cadmium, potentially dissolved	M200.7 ICP	1		U		mg/L	0.008	0.03	11/11/19 20:23	kja
Calcium, dissolved	M200.7 ICP	1	18.9			mg/L	0.1	0.5	11/14/19 17:31	jlw
Chromium, total recoverable	M200.8 ICP-MS	1	0.0007	B		mg/L	0.0005	0.002	11/19/19 16:17	mfm
Copper, potentially dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	11/11/19 20:23	kja
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.08	11/14/19 17:31	jlw
Iron, total	M200.7 ICP	1	14.4			mg/L	0.03	0.08	11/18/19 12:20	kja
Iron, total recoverable	M200.7 ICP	2	15.0			mg/L	0.06	0.2	11/19/19 19:41	jlw
Magnesium, dissolved	M200.7 ICP	1	9.2			mg/L	0.2	1	11/14/19 17:31	jlw
Manganese, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	11/14/19 17:31	jlw
Manganese, potentially dissolved	M200.7 ICP	1	0.11			mg/L	0.01	0.05	11/11/19 20:23	kja
Manganese, total	M200.7 ICP	1	0.16			mg/L	0.01	0.05	11/18/19 12:20	kja
Mercury, total	M245.1 CVAA	1		U		mg/L	0.0002	0.001	11/13/19 14:31	slm
Potassium, dissolved	M200.7 ICP	1	2.6			mg/L	0.2	1	11/14/19 17:31	jlw
Sodium, dissolved	M200.7 ICP	1	18.1		*	mg/L	0.2	1	11/14/19 17:31	jlw
Zinc, potentially dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	11/11/19 20:23	kja

* Please refer to Qualifier Reports for details.

New Elk Coal Co. , LLC

Project ID:

Sample ID: PAW-1

ACZ Sample ID: **L55752-01**

Date Sampled: 11/07/19 14:15

Date Received: 11/08/19

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	114			mg/L	2	20	11/12/19 0:00	nmc
Carbonate as CaCO ₃		1		U		mg/L	2	20	11/12/19 0:00	nmc
Hydroxide as CaCO ₃		1		U		mg/L	2	20	11/12/19 0:00	nmc
Total Alkalinity		1	116			mg/L	2	20	11/12/19 0:00	nmc
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-1.9			%			11/22/19 0:00	calc
Sum of Anions			2.7			meq/L			11/22/19 0:00	calc
Sum of Cations			2.6			meq/L			11/22/19 0:00	calc
Chloride	SM4500Cl-E	1	14.1			mg/L	0.5	2	11/12/19 15:00	ttg
Hardness as CaCO ₃ (dissolved)	SM2340B - Calculation		85			mg/L	0.2	5	11/22/19 0:00	calc
Lab Filtration (0.45um filter)	SOPWC050	1							11/11/19 10:37	jck
Residue, Filterable (TDS) @180C	SM2540C	1	146		*	mg/L	20	40	11/08/19 14:37	jck
Residue, Non-Filterable (TSS) @105C	SM2540D	1	31.0		*	mg/L	5	20	11/11/19 16:38	jck
Sodium Adsorption Ratio in Water	USGS - I1738-78		0.86						11/22/19 0:00	calc
Sulfate	D516-02/07 - Turbidimetric	1	1.4	B		mg/L	1	5	11/11/19 15:24	mss2

New Elk Coal Co., LLC

Project ID:

Sample ID: PAW-9

ACZ Sample ID: L55752-02

Date Sampled: 11/07/19 14:37

Date Received: 11/08/19

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acidify and filter (Potentially Dissolved)	Colorado 5 CCR 1002-31.5.31 (2009)								11/08/19 14:50	rap
Lab Filtration (0.45um) & Acidification	M200.7/200.8/3005A								11/13/19 13:15	kja
Total Hot Plate Digestion	M200.2 ICP								11/15/19 15:12	kja
Total Recoverable Digestion	M200.2 ICP-MS								11/15/19 10:58	rap
Total Recoverable Digestion	M200.2 ICP								11/18/19 13:46	jlw

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total recoverable	M200.8 ICP-MS	1	0.0003	B		mg/L	0.0002	0.001	11/19/19 16:19	mfm
Boron, total	M200.7 ICP	1	0.05	B		mg/L	0.02	0.1	11/18/19 12:23	kja
Cadmium, potentially dissolved	M200.7 ICP	1		U		mg/L	0.008	0.03	11/11/19 20:26	kja
Calcium, dissolved	M200.7 ICP	1	73.8			mg/L	0.1	0.5	11/14/19 17:34	jlw
Chromium, total recoverable	M200.8 ICP-MS	1	0.0017	B		mg/L	0.0005	0.002	11/19/19 16:19	mfm
Copper, potentially dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	11/11/19 20:26	kja
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.08	11/14/19 17:34	jlw
Iron, total	M200.7 ICP	1	2.39			mg/L	0.03	0.08	11/18/19 12:23	kja
Iron, total recoverable	M200.7 ICP	1	2.42			mg/L	0.03	0.08	11/19/19 19:44	jlw
Magnesium, dissolved	M200.7 ICP	1	19.6			mg/L	0.2	1	11/14/19 17:34	jlw
Manganese, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	11/14/19 17:34	jlw
Manganese, potentially dissolved	M200.7 ICP	1	0.50			mg/L	0.01	0.05	11/11/19 20:26	kja
Manganese, total	M200.7 ICP	1	2.21			mg/L	0.01	0.05	11/18/19 12:23	kja
Mercury, total	M245.1 CVAA	1		U		mg/L	0.0002	0.001	11/13/19 14:32	slm
Potassium, dissolved	M200.7 ICP	1	2.8			mg/L	0.2	1	11/14/19 17:34	jlw
Sodium, dissolved	M200.7 ICP	1	125			mg/L	0.2	1	11/14/19 17:34	jlw
Zinc, potentially dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	11/11/19 20:26	kja

New Elk Coal Co. , LLC

Project ID:

Sample ID: PAW-9

ACZ Sample ID: **L55752-02**

Date Sampled: 11/07/19 14:37

Date Received: 11/08/19

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	458			mg/L	2	20	11/12/19 0:00	nmc
Carbonate as CaCO ₃		1		U		mg/L	2	20	11/12/19 0:00	nmc
Hydroxide as CaCO ₃		1		U		mg/L	2	20	11/12/19 0:00	nmc
Total Alkalinity		1	458			mg/L	2	20	11/12/19 0:00	nmc
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-4.3			%			11/22/19 0:00	calc
Sum of Anions			12			meq/L			11/22/19 0:00	calc
Sum of Cations			11			meq/L			11/22/19 0:00	calc
Chloride	SM4500Cl-E	1	21.7			mg/L	0.5	2	11/12/19 15:00	ttg
Hardness as CaCO ₃ (dissolved)	SM2340B - Calculation		265			mg/L	0.2	5	11/22/19 0:00	calc
Lab Filtration (0.45um filter)	SOPWC050	1							11/11/19 10:44	jck
Residue, Filterable (TDS) @180C	SM2540C	1	630		*	mg/L	20	40	11/08/19 16:17	jck
Residue, Non-Filterable (TSS) @105C	SM2540D	1	47.0		*	mg/L	5	20	11/11/19 16:41	jck
Sodium Adsorption Ratio in Water	USGS - I1738-78		3.4						11/22/19 0:00	calc
Sulfate	D516-02/07 - Turbidimetric	5	80.2			mg/L	5	25	11/11/19 15:31	mss2

New Elk Coal Co. , LLC

Project ID:

Sample ID: PAW 2

ACZ Sample ID: L56083-01

Date Sampled: 11/20/19 14:40

Date Received: 11/22/19

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acidify and filter (Potentially Dissolved)	Colorado 5 CCR 1002- 31.5.31 (2009)								11/24/19 14:18	rap
Lab Filtration (0.45um) & Acidification	M200.7/200.8/3005A								12/02/19 15:20	rap
Total Hot Plate Digestion	M200.2 ICP				*				12/03/19 10:58	jlw
Total Recoverable Digestion	M200.2 ICP-MS								12/03/19 15:01	rap
Total Recoverable Digestion	M200.2 ICP								12/04/19 15:19	kja

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total recoverable	M200.8 ICP-MS	1	0.0033			mg/L	0.0002	0.001	12/05/19 14:27	mfm
Boron, total	M200.7 ICP	2	0.07	B		mg/L	0.04	0.2	12/05/19 14:32	jlw
Cadmium, potentially dissolved	M200.7 ICP	1		U		mg/L	0.008	0.03	11/25/19 17:15	kja
Calcium, dissolved	M200.7 ICP	1	108			mg/L	0.1	0.5	12/04/19 22:46	jlw
Chromium, total recoverable	M200.8 ICP-MS	1	0.0063			mg/L	0.0005	0.002	12/05/19 14:27	mfm
Copper, potentially dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	11/25/19 17:15	kja
Iron, dissolved	M200.7 ICP	1	1.15			mg/L	0.03	0.08	12/04/19 22:46	jlw
Iron, total	M200.7 ICP	2	44.9			mg/L	0.06	0.2	12/05/19 14:32	jlw
Iron, total recoverable	M200.7 ICP	1	41.3			mg/L	0.03	0.08	12/05/19 10:40	jlw
Magnesium, dissolved	M200.7 ICP	1	21.0			mg/L	0.2	1	12/04/19 22:46	jlw
Manganese, dissolved	M200.7 ICP	1	1.37			mg/L	0.01	0.05	12/04/19 22:46	jlw
Manganese, potentially dissolved	M200.7 ICP	1	1.67		*	mg/L	0.01	0.05	11/26/19 14:18	jlw
Manganese, total	M200.7 ICP	2	1.77			mg/L	0.02	0.1	12/04/19 15:31	kja
Mercury, total	M245.1 CVAA	1		U		mg/L	0.0002	0.001	12/03/19 10:49	slm
Potassium, dissolved	M200.7 ICP	1	2.7			mg/L	0.2	1	12/04/19 22:46	jlw
Sodium, dissolved	M200.7 ICP	1	92.9			mg/L	0.2	1	12/04/19 22:46	jlw
Zinc, potentially dissolved	M200.7 ICP	1	0.04	B		mg/L	0.01	0.05	11/25/19 17:15	kja

New Elk Coal Co. , LLC

Project ID:

Sample ID: PAW 2

ACZ Sample ID: **L56083-01**

Date Sampled: 11/20/19 14:40

Date Received: 11/22/19

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	453			mg/L	2	20	12/03/19 0:00	nmc
Carbonate as CaCO ₃		1		U		mg/L	2	20	12/03/19 0:00	nmc
Hydroxide as CaCO ₃		1		U		mg/L	2	20	12/03/19 0:00	nmc
Total Alkalinity		1	453		*	mg/L	2	20	12/03/19 0:00	nmc
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-4.3			%			12/10/19 0:00	calc
Sum of Anions			12			meq/L			12/10/19 0:00	calc
Sum of Cations			11			meq/L			12/10/19 0:00	calc
Chloride	SM4500Cl-E	1	34.3		*	mg/L	0.5	2	12/03/19 13:42	rbt
Hardness as CaCO ₃ (dissolved)	SM2340B - Calculation		356			mg/L	0.2	5	12/10/19 0:00	calc
Lab Filtration (0.45um filter)	SOPWC050	1							11/25/19 16:03	jck
Residue, Filterable (TDS) @180C	SM2540C	1	630			mg/L	20	40	11/25/19 17:40	nmc
Residue, Non-Filterable (TSS) @105C	SM2540D	4	176		*	mg/L	20	80	11/22/19 15:38	eep
Sodium Adsorption Ratio in Water	USGS - I1738-78		2.2						12/10/19 0:00	calc
Sulfate	D516-02/-07/-11 - Turbidimetric	5	71.9			mg/L	5	25	12/10/19 9:56	rbt

New Elk Coal Co., LLC

Project ID:

Sample ID: PAW 8

ACZ Sample ID: L56083-02

Date Sampled: 11/20/19 14:00

Date Received: 11/22/19

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acidify and filter (Potentially Dissolved)	Colorado 5 CCR 1002- 31.5.31 (2009)								11/24/19 14:31	rap
Lab Filtration (0.45um) & Acidification	M200.7/200.8/3005A								12/02/19 15:20	rap
Total Hot Plate Digestion	M200.2 ICP				*				12/03/19 11:10	jlw
Total Recoverable Digestion	M200.2 ICP-MS								12/03/19 15:55	rap
Total Recoverable Digestion	M200.2 ICP								12/04/19 15:42	kja

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total recoverable	M200.8 ICP-MS	1	0.0025			mg/L	0.0002	0.001	12/05/19 14:29	mfm
Boron, total	M200.7 ICP	2	0.06	B		mg/L	0.04	0.2	12/05/19 14:35	jlw
Cadmium, potentially dissolved	M200.7 ICP	1		U		mg/L	0.008	0.03	11/25/19 17:19	kja
Calcium, dissolved	M200.7 ICP	1	115			mg/L	0.1	0.5	12/04/19 22:49	jlw
Chromium, total recoverable	M200.8 ICP-MS	1	0.0145			mg/L	0.0005	0.002	12/05/19 14:29	mfm
Copper, potentially dissolved	M200.7 ICP	1	0.02	B		mg/L	0.01	0.05	11/25/19 17:19	kja
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.08	12/04/19 22:49	jlw
Iron, total	M200.7 ICP	2	24.6			mg/L	0.06	0.2	12/05/19 14:35	jlw
Iron, total recoverable	M200.7 ICP	1	22.8			mg/L	0.03	0.08	12/05/19 10:43	jlw
Magnesium, dissolved	M200.7 ICP	1	25.3			mg/L	0.2	1	12/04/19 22:49	jlw
Manganese, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	12/04/19 22:49	jlw
Manganese, potentially dissolved	M200.7 ICP	1	1.27		*	mg/L	0.01	0.05	11/26/19 14:21	jlw
Manganese, total	M200.7 ICP	2	1.81			mg/L	0.02	0.1	12/04/19 15:35	kja
Mercury, total	M245.1 CVAA	1		U		mg/L	0.0002	0.001	12/03/19 10:50	slm
Potassium, dissolved	M200.7 ICP	1	2.0			mg/L	0.2	1	12/04/19 22:49	jlw
Sodium, dissolved	M200.7 ICP	1	170			mg/L	0.2	1	12/04/19 22:49	jlw
Zinc, potentially dissolved	M200.7 ICP	1	0.04	B		mg/L	0.01	0.05	11/25/19 17:19	kja

New Elk Coal Co. , LLC

Project ID:

Sample ID: PAW 8

ACZ Sample ID: **L56083-02**

Date Sampled: 11/20/19 14:00

Date Received: 11/22/19

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	542			mg/L	2	20	12/03/19 0:00	nmc
Carbonate as CaCO ₃		1		U		mg/L	2	20	12/03/19 0:00	nmc
Hydroxide as CaCO ₃		1		U		mg/L	2	20	12/03/19 0:00	nmc
Total Alkalinity		1	542		*	mg/L	2	20	12/03/19 0:00	nmc
Cation-Anion Balance	Calculation									
Cation-Anion Balance			0.0			%			12/10/19 0:00	calc
Sum of Anions			15			meq/L			12/10/19 0:00	calc
Sum of Cations			15			meq/L			12/10/19 0:00	calc
Chloride	SM4500Cl-E	1	37.0		*	mg/L	0.5	2	12/03/19 13:42	rbt
Hardness as CaCO ₃ (dissolved)	SM2340B - Calculation		391			mg/L	0.2	5	12/10/19 0:00	calc
Lab Filtration (0.45um filter)	SOPWC050	1							11/25/19 16:06	jck
Residue, Filterable (TDS) @180C	SM2540C	2	864			mg/L	40	80	11/25/19 17:42	nmc
Residue, Non-Filterable (TSS) @105C	SM2540D	4	536		*	mg/L	20	80	11/22/19 15:40	eep
Sodium Adsorption Ratio in Water	USGS - I1738-78		3.8						12/10/19 0:00	calc
Sulfate	D516-02/-07/-11 - Turbidimetric	5	153			mg/L	5	25	12/10/19 9:57	rbt

New Elk Coal Co. , LLC

Project ID:

Sample ID: **NEW-2**ACZ Sample ID: **L56404-01**

Date Sampled: 12/10/19 14:05

Date Received: 12/12/19

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acidify and filter (Potentially Dissolved)	Colorado 5 CCR 1002- 31.5.31 (2009)								12/13/19 14:23	rap
Lab Filtration (0.45um) & Acidification	M200.7/200.8/3005A								12/17/19 14:00	kja
Total Hot Plate Digestion	M200.2 ICP								12/17/19 14:33	jlw
Total Recoverable Digestion	M200.2 ICP-MS								12/18/19 12:01	rap
Total Recoverable Digestion	M200.2 ICP								12/18/19 13:38	kja

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total recoverable	M200.8 ICP-MS	1	0.0004	B		mg/L	0.0002	0.001	12/18/19 17:55	mfm
Boron, total	M200.7 ICP	1	0.04	B		mg/L	0.02	0.1	12/18/19 14:53	jlw
Cadmium, potentially dissolved	M200.7 ICP	1		U		mg/L	0.008	0.03	12/16/19 22:26	kja
Calcium, dissolved	M200.7 ICP	1	13.5			mg/L	0.1	0.5	12/18/19 21:41	jlw
Chromium, total recoverable	M200.8 ICP-MS	1		U		mg/L	0.0005	0.002	12/18/19 17:55	mfm
Copper, potentially dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	12/16/19 22:26	kja
Iron, dissolved	M200.7 ICP	1	0.17			mg/L	0.03	0.08	12/18/19 21:41	jlw
Iron, total	M200.7 ICP	1	0.46			mg/L	0.03	0.08	12/18/19 14:53	jlw
Iron, total recoverable	M200.7 ICP	1	0.49			mg/L	0.03	0.08	12/19/19 12:53	kja
Magnesium, dissolved	M200.7 ICP	1	5.7			mg/L	0.2	1	12/18/19 21:41	jlw
Manganese, dissolved	M200.7 ICP	1	0.03	B		mg/L	0.01	0.05	12/18/19 21:41	jlw
Manganese, potentially dissolved	M200.7 ICP	1	0.06			mg/L	0.01	0.05	12/17/19 15:40	jlw
Manganese, total	M200.7 ICP	1	0.05			mg/L	0.01	0.05	12/18/19 14:53	jlw
Mercury, total	M245.1 CVAA	1		U	*	mg/L	0.0002	0.001	12/16/19 15:40	slm
Potassium, dissolved	M200.7 ICP	1	7.0			mg/L	0.2	1	12/18/19 21:41	jlw
Sodium, dissolved	M200.7 ICP	1	532			mg/L	0.2	1	12/18/19 21:41	jlw
Zinc, potentially dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	12/16/19 22:26	kja

New Elk Coal Co. , LLC

Project ID:

Sample ID: NEW-2

ACZ Sample ID: **L56404-01**

Date Sampled: 12/10/19 14:05

Date Received: 12/12/19

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	1010			mg/L	2	20	12/17/19 0:00	enb
Carbonate as CaCO3		1	44.4			mg/L	2	20	12/17/19 0:00	enb
Hydroxide as CaCO3		1		U		mg/L	2	20	12/17/19 0:00	enb
Total Alkalinity		1	1050			mg/L	2	20	12/17/19 0:00	enb
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-2.0			%			12/31/19 0:00	calc
Sum of Anions			26			meq/L			12/31/19 0:00	calc
Sum of Cations			25			meq/L			12/31/19 0:00	calc
Chloride	SM4500Cl-E	1	10.5		*	mg/L	0.5	2	12/20/19 12:46	wtc
Hardness as CaCO3 (dissolved)	SM2340B - Calculation		57			mg/L	0.2	5	12/31/19 0:00	calc
Lab Filtration (0.45um filter)	SOPWC050	1							12/19/19 16:26	mlh
Residue, Filterable (TDS) @180C	SM2540C	1	1450		*	mg/L	20	40	12/13/19 10:46	jck
Residue, Non-Filterable (TSS) @105C	SM2540D	1		U	*	mg/L	5	20	12/13/19 16:04	mlh
Sodium Adsorption Ratio in Water	USGS - I1738-78		31						12/31/19 0:00	calc
Sulfate	D516-02/-07/-11 - Turbidimetric	10	214		*	mg/L	10	50	12/30/19 11:16	mss2

New Elk Coal Co. , LLC

Project ID:

Sample ID: **NEW-4**ACZ Sample ID: **L56404-02**

Date Sampled: 12/10/19 14:50

Date Received: 12/12/19

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acidify and filter (Potentially Dissolved)	Colorado 5 CCR 1002- 31.5.31 (2009)								12/13/19 14:26	rap
Lab Filtration (0.45um) & Acidification	M200.7/200.8/3005A								12/17/19 14:00	kja
Total Hot Plate Digestion	M200.2 ICP								12/17/19 14:57	jlw
Total Recoverable Digestion	M200.2 ICP-MS								12/18/19 12:16	rap
Total Recoverable Digestion	M200.2 ICP								12/18/19 14:01	kja

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total recoverable	M200.8 ICP-MS	1		U		mg/L	0.0002	0.001	12/18/19 17:57	mfm
Boron, total	M200.7 ICP	1	0.03	B		mg/L	0.02	0.1	12/18/19 14:56	jlw
Cadmium, potentially dissolved	M200.7 ICP	1		U		mg/L	0.008	0.03	12/16/19 22:30	kja
Calcium, dissolved	M200.7 ICP	1	5.0			mg/L	0.1	0.5	12/18/19 21:45	jlw
Chromium, total recoverable	M200.8 ICP-MS	1		U		mg/L	0.0005	0.002	12/18/19 17:57	mfm
Copper, potentially dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	12/16/19 22:30	kja
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.08	12/18/19 21:45	jlw
Iron, total	M200.7 ICP	1	0.23			mg/L	0.03	0.08	12/18/19 14:56	jlw
Iron, total recoverable	M200.7 ICP	1	0.29			mg/L	0.03	0.08	12/19/19 12:56	kja
Magnesium, dissolved	M200.7 ICP	1	2.2			mg/L	0.2	1	12/18/19 21:45	jlw
Manganese, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	12/18/19 21:45	jlw
Manganese, potentially dissolved	M200.7 ICP	1	0.01	B		mg/L	0.01	0.05	12/17/19 15:43	jlw
Manganese, total	M200.7 ICP	1		U		mg/L	0.01	0.05	12/18/19 14:56	jlw
Mercury, total	M245.1 CVAA	1		U	*	mg/L	0.0002	0.001	12/16/19 15:41	slm
Potassium, dissolved	M200.7 ICP	1	5.1			mg/L	0.2	1	12/18/19 21:45	jlw
Sodium, dissolved	M200.7 ICP	1	529			mg/L	0.2	1	12/18/19 21:45	jlw
Zinc, potentially dissolved	M200.7 ICP	1	0.03	B		mg/L	0.01	0.05	12/16/19 22:30	kja

New Elk Coal Co. , LLC

Project ID:

Sample ID: NEW-4

ACZ Sample ID: **L56404-02**

Date Sampled: 12/10/19 14:50

Date Received: 12/12/19

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	1130			mg/L	2	20	12/17/19 0:00	enb
Carbonate as CaCO ₃		1	79.5			mg/L	2	20	12/17/19 0:00	enb
Hydroxide as CaCO ₃		1		U		mg/L	2	20	12/17/19 0:00	enb
Total Alkalinity		1	1210			mg/L	2	20	12/17/19 0:00	enb
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-2.0			%			12/31/19 0:00	calc
Sum of Anions			25			meq/L			12/31/19 0:00	calc
Sum of Cations			24			meq/L			12/31/19 0:00	calc
Chloride	SM4500Cl-E	1	14.3		*	mg/L	0.5	2	12/20/19 12:46	wtc
Hardness as CaCO ₃ (dissolved)	SM2340B - Calculation		22			mg/L	0.2	5	12/31/19 0:00	calc
Lab Filtration (0.45um filter)	SOPWC050	1							12/19/19 16:32	mlh
Residue, Filterable (TDS) @180C	SM2540C	1	1330		*	mg/L	20	40	12/13/19 10:49	jck
Residue, Non-Filterable (TSS) @105C	SM2540D	1	5.0	B	*	mg/L	5	20	12/13/19 16:07	mlh
Sodium Adsorption Ratio in Water	USGS - I1738-78		50						12/31/19 0:00	calc
Sulfate	D516-02/-07/-11 - Turbidimetric	1	29.9		*	mg/L	1	5	12/30/19 10:57	mss2

New Elk Coal Co. , LLC

Project ID:

Sample ID: NE 1-10

ACZ Sample ID: L56404-03

Date Sampled: 12/10/19 12:55

Date Received: 12/12/19

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acidify and filter (Potentially Dissolved)	Colorado 5 CCR 1002- 31.5.31 (2009)								12/13/19 14:30	rap
Lab Filtration (0.45um) & Acidification	M200.7/200.8/3005A								12/17/19 14:00	kja
Total Hot Plate Digestion	M200.2 ICP								12/17/19 15:20	jlw
Total Recoverable Digestion	M200.2 ICP-MS								12/18/19 12:30	rap
Total Recoverable Digestion	M200.2 ICP								12/18/19 14:24	kja

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total recoverable	M200.8 ICP-MS	1	0.0159			mg/L	0.0002	0.001	12/18/19 17:59	mfm
Boron, total	M200.7 ICP	1	0.02	B		mg/L	0.02	0.1	12/18/19 14:59	jlw
Cadmium, potentially dissolved	M200.7 ICP	1		U		mg/L	0.008	0.03	12/16/19 22:39	kja
Calcium, dissolved	M200.7 ICP	1	2.3			mg/L	0.1	0.5	12/18/19 21:48	jlw
Chromium, total recoverable	M200.8 ICP-MS	1	0.0022			mg/L	0.0005	0.002	12/18/19 17:59	mfm
Copper, potentially dissolved	M200.7 ICP	1	0.01	B		mg/L	0.01	0.05	12/16/19 22:39	kja
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.08	12/18/19 21:48	jlw
Iron, total	M200.7 ICP	1	0.77			mg/L	0.03	0.08	12/18/19 14:59	jlw
Iron, total recoverable	M200.7 ICP	1	0.82			mg/L	0.03	0.08	12/19/19 12:59	kja
Magnesium, dissolved	M200.7 ICP	1	2.3			mg/L	0.2	1	12/18/19 21:48	jlw
Manganese, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	12/18/19 21:48	jlw
Manganese, potentially dissolved	M200.7 ICP	1	0.01	B		mg/L	0.01	0.05	12/17/19 15:46	jlw
Manganese, total	M200.7 ICP	1		U		mg/L	0.01	0.05	12/18/19 14:59	jlw
Mercury, total	M245.1 CVAA	1		U	*	mg/L	0.0002	0.001	12/16/19 15:41	slm
Potassium, dissolved	M200.7 ICP	1	4.3			mg/L	0.2	1	12/18/19 21:48	jlw
Sodium, dissolved	M200.7 ICP	1	297			mg/L	0.2	1	12/18/19 21:48	jlw
Zinc, potentially dissolved	M200.7 ICP	1	0.02	B		mg/L	0.01	0.05	12/16/19 22:39	kja

New Elk Coal Co. , LLC

Project ID:

Sample ID: NE 1-10

ACZ Sample ID: **L56404-03**

Date Sampled: 12/10/19 12:55

Date Received: 12/12/19

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	395			mg/L	2	20	12/17/19 0:00	enb
Carbonate as CaCO ₃		1	264			mg/L	2	20	12/17/19 0:00	enb
Hydroxide as CaCO ₃		1		U		mg/L	2	20	12/17/19 0:00	enb
Total Alkalinity		1	659			mg/L	2	20	12/17/19 0:00	enb
Cation-Anion Balance	Calculation									
Cation-Anion Balance			0.0			%			12/31/19 0:00	calc
Sum of Anions			14			meq/L			12/31/19 0:00	calc
Sum of Cations			14			meq/L			12/31/19 0:00	calc
Chloride	SM4500Cl-E	1	9.4		*	mg/L	0.5	2	12/20/19 12:46	wtc
Hardness as CaCO ₃ (dissolved)	SM2340B - Calculation		15			mg/L	0.2	5	12/31/19 0:00	calc
Lab Filtration (0.45um filter)	SOPWC050	1							12/19/19 16:38	mlh
Residue, Filterable (TDS) @180C	SM2540C	1	784		*	mg/L	20	40	12/13/19 10:51	jck
Residue, Non-Filterable (TSS) @105C	SM2540D	1	15.0	B	*	mg/L	5	20	12/13/19 16:10	mlh
Sodium Adsorption Ratio in Water	USGS - I1738-78		34						12/31/19 0:00	calc
Sulfate	D516-02/07-11 - Turbidimetric	1	23.3		*	mg/L	1	5	12/30/19 10:57	mss2