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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Bureau of District Mining Operations
Pottsville Office



Mine Reclamation Advisory Board July 2019

Acid Mine Drainage Treatment at BET Associates, IV to Comply with TMDLs



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Mining Permit

- Currently BET Associates IV, LLC
- 7,596 acre Mining permit, includes a coal breaker, anthracite surface mining, refuse reprocessing, and coal ash disposal
- Formerly Bethlehem Mines permitted in the 1970's then Lehigh Coal and Navigation Company in 1990.
- Underground mining began in 1793, surface mines since the early 1900's.



Water History

- Abandoned underground mines form minepools that are interconnected.
- As mines in the valley closed in the 1950's, the state installed pumps to lower the minepool to keep the remaining mines working
- 1980 Consent Decree with EPA required Bethlehem Mines to maintain pumps and treat water.
- Pumped discharge to Panther Creek until 2001 when pumps were permanently shut off.



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Water History

- Gravity discharge from an abandoned muleway along SR309 since 2001 with flows up to 20,000 gpm discharging to the Little Schuylkill River
- Panther Creek and Little Schuylkill River TMDL data collection began in 2002. Historic Data was not used when pumped to Panther Ck.
- Impairments included iron, aluminum, and manganese.
- All NPDES points on Panther Ck. were dropped in 2005



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Permit Revision

- Added 5 NPDES points on Panther Creek
 - 3 Potential pumped mine drainage
 - 2 Stormwater
- Stringent water quality limits are necessary to comply with TMDLs on Little Schuylkill River and Panther Creek.
- Compliance with the TMDL based on Cumulative Load of all mine drainage discharges.

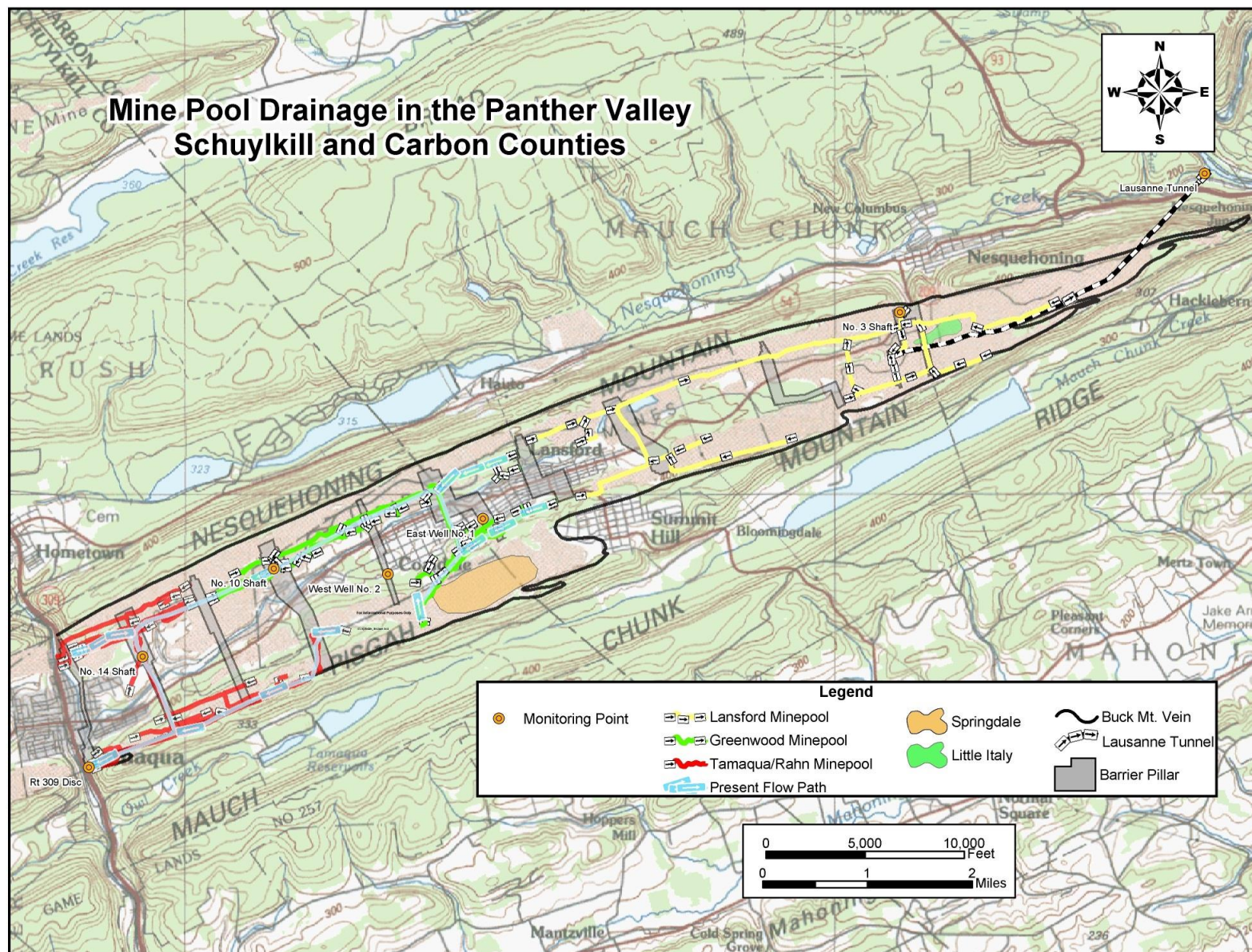


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Mine Pool Drainage in the Panther Valley Schuylkill and Carbon Counties



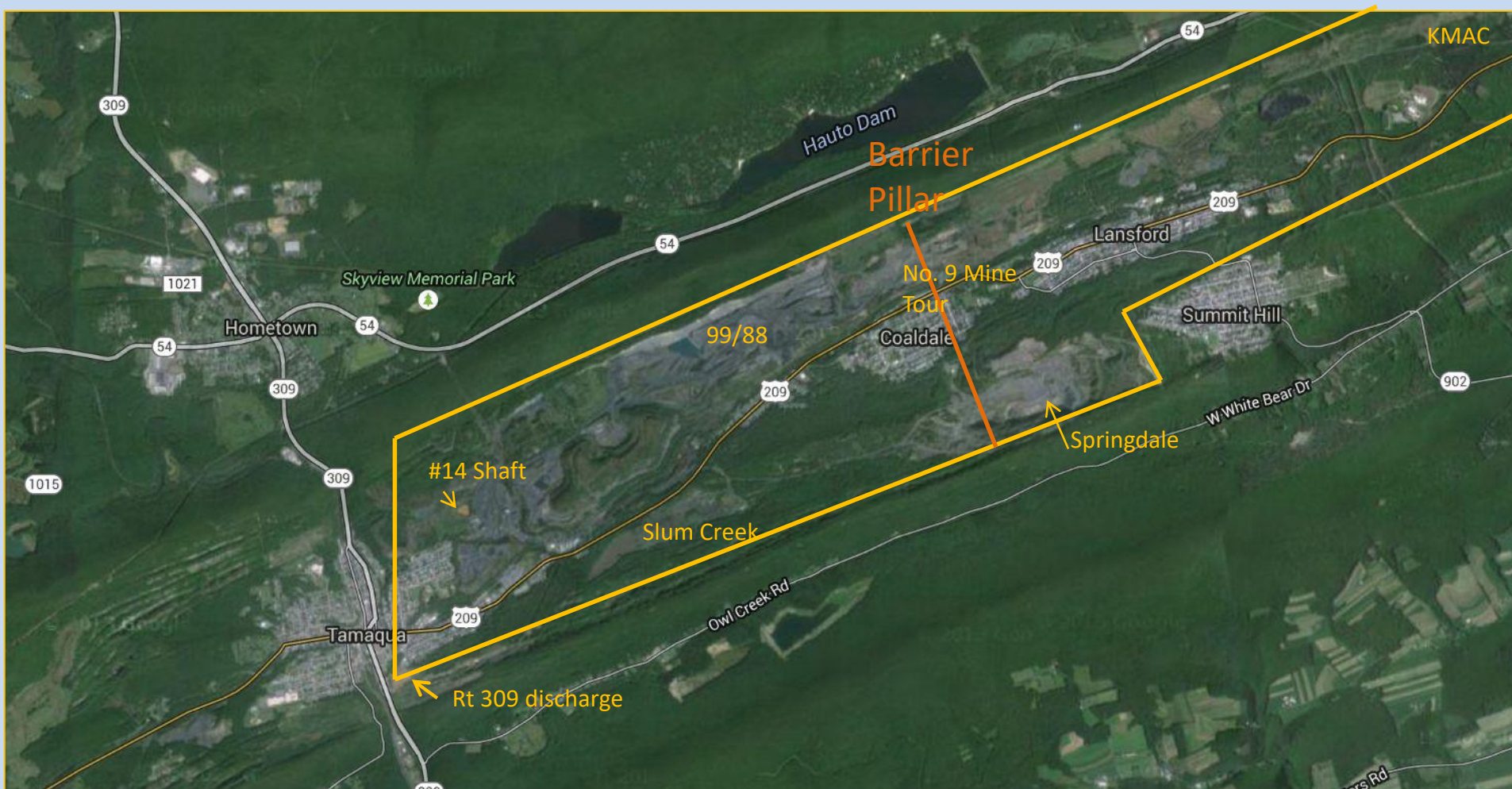


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BET Associates IV, LLC (Lehigh Coal & Navigation Operation)





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Rt. 309 Treatment Pebble lime and settling Approx 4.0 acres

Panther
Creek

Little
Schuylkill
River

Treated
Discharge

Rt. 309
Discharge





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NPDES Limits

Outfalls: 001, 003 , 004, 005

	Monthly Average	Daily Max.	Instantaneous Max.	Monthly Average Mass Loading
Total Fe	1.5 mg/l	3.0 mg/l	4.5 mg/l	180.10 lbs/day
Total Mn	1.0 mg/l	2.0 mg/l	2.5 mg/l	168.00 lbs/day
Total Al	0.75 mg/l	0.75 mg/l	0.75 mg/l	90.10 lbs/day
TSS	35.0 mg/l	70.0 mg/l	90.0 mg/l	4,203.4 lbs/day

pH – Within the range of 6.0 to 10.0 at all times.

TDS (mg/L) – Monitor and Report

Flow (GPM) – Measured Daily

Alkalinity must exceed acidity at all time.



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Abandoned mines contribute to the minepool





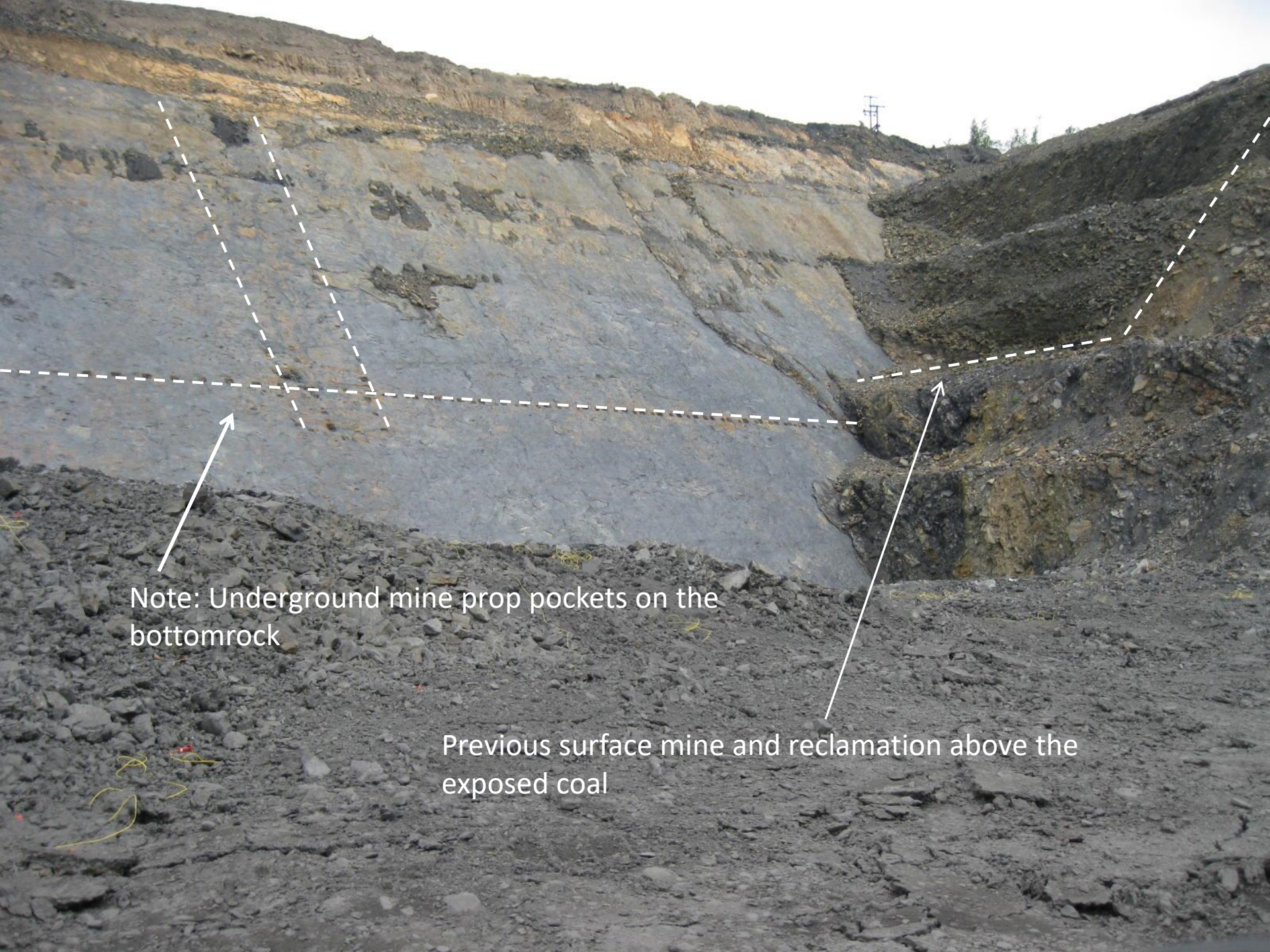
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BET – 99/88 Operation





Note: Underground mine prop pockets on the bottomrock

Previous surface mine and reclamation above the exposed coal



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RATES

Museum: \$3.00

Museum and Mine Tour:

Adult: \$10.00

Child 5-10 yrs.: \$7.00

Child Under 4 yrs.: Free

Group Rates: (20 or more)

Adult: \$7.50

Student: \$6.50

Tours are every hour from 11 AM - 3 PM.

For groups of 20 or more please call to make a reservation.

Appropriate Attire Required

Light jacket or sweater, the mine is 50 degrees year round.

Be sure to visit our unique gift shop which features beautifully hand sculpted coal souvenirs, t-shirts, hats, a variety of books, and more!



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Field example of the minepool

