TECHNICAL REPORT SUMMARY

MABEN PROPERTY

PREPARED FOR

RAMACO RESOURCES, INC.

MARCH 2025

PROJECT NO. 6371

Weir International, Inc.
Mining, Geology and Energy Consultants

Notice

Weir International, Inc. (WEIR) was retained by Ramaco Resources, Inc. (Ramaco) to prepare this Technical Report Summary (TRS) related to Ramaco's Maben Property. This report provides a statement of Ramaco's coal reserves and resources at its Maben Property and has been prepared in accordance with the United States Securities and Exchange Commission (SEC), Regulation S-K 1300 for Mining Property Disclosure (S-K 1300) and 17 Code of Federal Regulations (CFR) § 229.601(b)(96)(iii)(B) reporting requirements. This report was prepared for the sole use of Ramaco, and its affiliates and is effective as of December 31, 2024.

This report was prepared by full-time WEIR personnel who meet the SEC's definition of Qualified Persons (QPs) with sufficient experience in the relevant type of mineralization and deposit under consideration in this report.

In preparing this report, WEIR relied upon data, written reports and statements provided by Ramaco. WEIR has taken all appropriate steps, in its professional opinion, to ensure information provided by Ramaco is reasonable and reliable for use in this report.

The accuracy of reserve and resource estimates are, in part, a function of the quality and quantity of available data at the time this report was prepared. Estimates presented herein are considered reasonable. However, estimates should be accepted with the understanding that with additional data and analysis available subsequent to the date of this report, the estimates may necessitate revision which may be material. Certain information set forth in this report contains "forward-looking information", including production, productivity, operating costs, capital costs, sales prices, and other assumptions. These statements are not guarantees of future performance and undue reliance should not be placed on the statements. The assumptions used to develop the forward-looking information and the risks that could cause the actual results to differ materially are detailed in the body of this report.

WEIR and its personnel are not affiliates of Ramaco or any other entity with ownership, royalty or other interest in the subject property of this report.

WEIR hereby consents to the use of Ramaco's Maben Property coal reserve and resource estimates as of December 31, 2024.

Qualified Person: /s/ Weir International, Inc.

Date: March 13, 2025

Address: Weir International, Inc.
1431 Opus Place, Suite 210
Downers Grove, Illinois 60515

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1.0 EXECUTIVE SUMMARY

WEIR International, Inc. (WEIR) was retained by Ramaco Resources, Inc. (Ramaco) to prepare a Technical Report Summary (TRS) related to Ramaco's Maben Property coal holdings. This report has been prepared in accordance with the United States Securities and Exchange Commission (SEC), *Regulation S-K 1300 for Mining Property Disclosure* (S-K 1300) and 17 Code of Federal Regulations (CFR) § 229.601(b)(96)(iii)(B) reporting requirements.

1.1 PROPERTY DESCRIPTION

Ramaco's headquarters is located in Lexington, Kentucky. Ramaco's Maben Property is operated by Maben Coal, LLC (Maben Coal), with headquarters located in Charleston, West Virginia. There is currently one active mine within the property, which is the Maben Highwall No. 2 Mine that started production in May, 2023.

The Maben Property consists of approximately 28,000 acres of leased coal holdings with approximately 52 percent of the lease acreage in Wyoming County, West Virginia and 48 percent in Raleigh County, West Virginia. All of Ramaco's control in the area is through leases from Western Pocahontas Properties Limited Partnership (WPP) and from Beaver Coal Company, Limited (Beaver). Ramaco acquired the WPP lease in July of 2022 and the Beaver lease was acquired in January 2011.

The town of Maben, West Virginia is located to the west of the Maben Property. The town of Hotchkiss, West Virginia is located to the north of the property. The Maben Property is approximately; 52 miles south of Charleston, West Virginia; 80 miles west of Roanoke, Virginia; 52 miles northeast of Kingsport, Tennessee; and 175 miles east/southeast of Lexington, Kentucky. The Maben Property is located at an approximate Longitude of 80° 21' West and Latitude of 37° 37' North on the WGS 84 reference coordinate system. The property is relatively remote, surrounded by scattered rural residences and small towns. See Figure 1.1-1 General Location Map for details.

In addition to the Maben Highwall No. 2 Mine permit, Maben Coal has six additional approved mining and facility permits for the property, as follows:

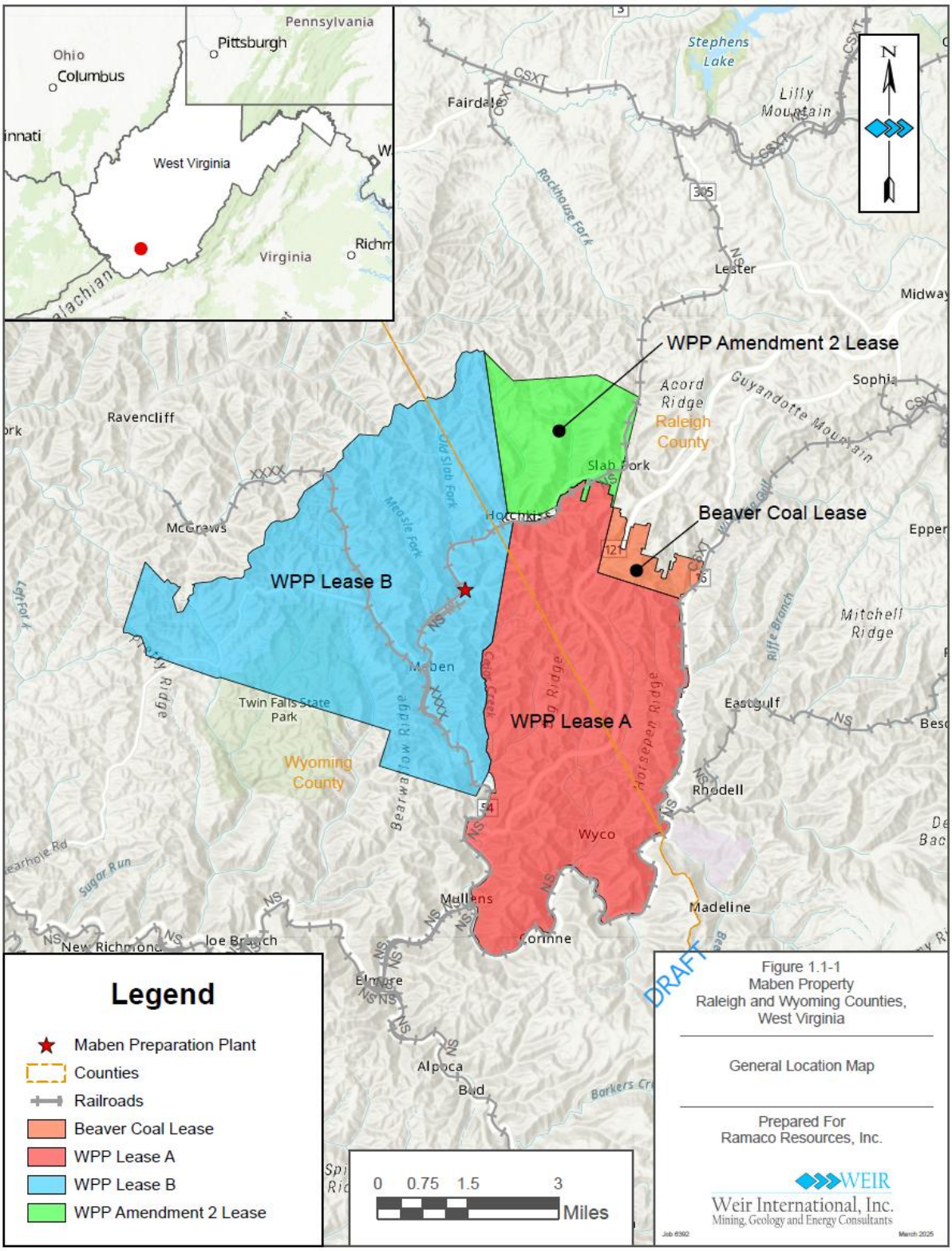
- Maben Highwall No. 1 Mine
- Maben Mine No. 1
- Allen Creek Mine No. 1

- Maben Haulroad No. 1
- Maben Preparation Plant
- Maben Refuse Disposal Area

Maben Coal has three permits pending for the following planned mines:

- Beckley Crystal Deep Mine
- Slick Rock Sewell Deep Mine
- Maben Highwall Mine No. 3

Figure 1.1-1 General Location Map



1.2 GEOLOGICAL SETTING AND MINERALIZATION

The Maben Property is located within the Appalachian Plateau Physiographic Province and is underlain by Lower Pennsylvanian Age rock of the New River and Pocahontas Formations. These formations generally consist of interbedded sandstones, siltstones and shales, with lesser amounts of limey shales, claystone, and coal. The coal seam currently being mined within the property is the Sewell Seam, which is in the New River Formation. There are other coal seams of interest below the Sewell Seam that are in the Pocahontas Formation, which lies below the New River Formation. See Figure 6.3-1 Generalized Stratigraphic Column for additional details. This area of West Virginia is within the Central Appalachia Coal Producing (CAPP) region, which is known for its high-quality, low sulfur, metallurgical grade, bituminous coal seams. The targeted coal seams within the Maben Property exhibit these typical bituminous coal characteristics. The targeted seams within the Maben Property provide a high quality, low-volatile, metallurgical coal product.

1.3 EXPLORATION

Ramaco has not yet performed any coal exploration drilling at the Maben Property and has relied on exploration data that was supplied by WPP from historical drilling programs that were completed on the property by previous leasees.

The adequacy of sample preparation, security, and analytical procedures are generally unknown for holes that were drilled prior to Ramaco acquiring the leases. However, the geologist's logs for these holes contain sampling descriptions and lithologic descriptions that are sufficiently detailed to ascertain that an experienced geologist supervised the drilling and sampling. It is unknown if all coal quality analyses were performed to ASTM standards by qualified laboratories, as detailed in Section 8.0, however, this legacy drillhole information was included as the samples matched the coal seam intervals and reported quality data that was consistent between the different data sources. Model verifications further support WEIR's confidence that a sufficiently representative, valid, and accurate drillhole database and geological model have been generated for the Maben Property that can be relied upon to adequately estimate coal resources and reserves.

1.4 DEVELOPMENT AND OPERATIONS

Maben Coal currently has one active mine, Maben Highwall No. 2 Mine, which operates in the Sewell Seam. This mine consists of a contour stripping operation trailed by a highwall

mining operation. The contour stripping operation is limited, in most of the permit area, to increasing the width of the unreclaimed, previously contour-mined bench to accommodate the highwall mining bench-width requirements and/or to improve highwall conditions where deemed appropriate. Ramaco began production of metallurgical coal at the Maben Property in May of 2023. Contour mining operation has an average mining recovery of approximately 90 percent, and the highwall mining operation has an average mining recovery of approximately 62 percent.

Historical coal production from the Maben Property, in accordance with the Mine Safety and Health Administration (MSHA) statistics, is summarized in Table 1.4-1 as follows:

Table 1.4-1 Maben Property Historical Production

Year	Clean Tons Produced	Employee Hours	Avg. Annual Employees
2021	-	-	
2022	-	807	3
2023	172,587	78,355	32
2024	265,497	114,010	42

Ramaco projects total annual surface and highwall coal production to be approximately 300,000 clean tons, with planned surface and highwall coal mining expected to be completed in 2029. There are three planned underground mining operations which will add to this total in the near future. These mines include the Beckley Crystal Deep Mine, the Allen Creek No. 1 Deep Mine, and the Slick Rock Sewell Deep Mine.

- Beckley Crystal Deep Mine: Planned to start operations in 2026, as a single-section continuous miner operation in the Lower Beckley Seam that is planned to produce a total of approximately 2.4 million clean tons through 2038 (13 year mine life)
- Slick Rock Sewell Deep Mine: Planned to start operations in 2026, as a two-section continuous miner operation in the Sewell Seam that is planned to produce a total of approximately 2.2 million clean tons through 2033 (8 year mine life)
- Allen Creek Mine No.1: Planned to start operations in 2028, as a three-section continuous miner operation in the Pocahontas No. 3 Seam that is planned to produce a total of approximately 4.4 million clean tons through 2038 (9 year mine life)

At commencement of mining at the Maben Highwall No.2 Mine, all Run-of-Mine (ROM) coal was trucked to and washed at Ramaco's Berwind Preparation Plant, which is located approximately 35 miles southwest of the property.

In November 2024, Maben Coal commenced operation of a 250 ROM tons per hour (tph) modular preparation plant that was constructed on the Maben Property to eliminate the need for off-site coal processing. A rail loadout is planned to be constructed on the Norfolk Southern Railroad, but until the new loadout is in operation, clean coal will be trucked to Berwind for rail shipments.

The coal produced from the Maben Property is a high quality, low volatile, metallurgical coal. The market for metallurgical coal produced from the Maben Property has been for both the domestic metallurgical coal market and the global seaborne metallurgical coal market.

1.5 MINERAL RESERVE AND RESOURCE ESTIMATE

The Maben Property coal resources, as of December 31, 2024, are reported as in-place resources and are exclusive of reported coal reserve tons. Resources are reported in categories of Measured, Indicated and Inferred tonnage, in accordance with Regulation S-K Item 1302(d), summarized in Table 1.5-1 as follows:

Table 1.5-1 In-Place Coal Resource Tonnage Estimate, as of December 31, 2024

Seam	Area (Acres)	Average Coal Thickness	In-Place Resources (000 Tons) Measured	Indicated	Total	Inferred
Sewell	2,931	2.6	13,336	1,153	14,489	-
Welch	155	1.3	378	-	378	-
Little Raleigh	291	1.8	748	273	1,021	-
Beckley	9	2.6	43	-	43	-
Lower Beckley	5,310	2.9	29,527	0	29,527	-
Fire Creek	193	2.2	536	288	824	-
Pocahontas No. 9	269	2.1	1,042	51	1,093	-
Pocahontas No. 6	5,857	3.1	33,780	1,826	35,606	-
Pocahontas No. 4	9,846	2.8	51,732	2,175	53,906	-
Pocahontas No. 3	15,937	3.0	88,476	4,683	93,159	-
Total	40,797	2.9	219,599	10,448	230,047	

Notes:

- Mineral Resources reported above are not Mineral Reserves and do not meet the threshold for reserve modifying factors, such as estimated economic viability, that would allow for conversion to mineral reserves. There is no certainty that any part of the Mineral Resources estimated will be converted into Mineral Reserves. Mineral Resources reported here are exclusive of Mineral Reserves.
- Resource economic mineability is based on minable resources with a 2.0 feet minimum seam thickness for underground mining, a 1.0 feet minimum seam thickness for surface and contour mining, a surface mining cutoff stripping ratio of 20:1, producing a metallurgical low volatile coal product realizing an average sales price of $153 per ton at a cash cost of $122 per clean ton (FOB Mine)
- Numbers in the table have been rounded to reflect the accuracy of the estimate and may not sum due to rounding

The conversion of resources to reserves considers the design of a mine plan, accommodating the planned mining equipment and executed in accordance with the MSHA rules and regulations, projected dilution and loss of product coal quality, projected coal sales prices, operating costs, and mineral control to determine if the saleable coal product will be economically mineable.

The coal reserves representing the economically viable tonnage controlled by Ramaco, and estimated in accordance with Regulation S-K Item 1302(e), is summarized in Table 1.5-2 as follows:

Table 1.5-2 Clean Recoverable Coal Reserve Tonnage and Quality Estimate, as of December 31, 2024

Mine / Seam	Product	Total Area (Acres)	Average Seam Thickness (Feet)	Clean Recoverable Reserves (000 Tons			Theoretical Plant Yield (%)	Ash (%)	Sulfur (%)	Calorific Value (BTU/Lb)	Volatile Matter (%)	Raw Relative Density
				Proven	Probable	Total						
Maben Surface and Highwall Mine												
Sewell Seam	Low Vol	665	2.4	1,929	20	1,949	82.4	3.4	0.67	15,133	22.6	1.33
Slick Rock Sewell Deep Mine												
Sewell Seam	Low Vol	1,313	2.3	2,161	18	2,179	82.4	3.4	0.67	15,133	22.6	1.33
Beckley Crystal Deep Mine												
Lower Beckley Seam	Low Vol	1,049	3.7	3,007	-	3,007	79.7	9.1	1.03	14,861	20.0	1.43
Allen Creek Mine No. 1												
Pocahontas No. 3 Seam	Low Vol	1,994	2.9	4,402	-	4,402	70.9	9.1	1.17	14,345	18.8	1.47
Total		5,020	2.8	11,499	38	11,537	77.3	7.1	0.95	14,761	20.5	1.41

Note: Analyses are on a Dry Basis for coal washed at 1.50 specific gravity

Notes:

- Clean recoverable reserve tonnage is based on mining recoveries of 50 to 85 percent (contingent upon retreat mining capability) for underground mining, 90 percent for surface mining, 62 percent for highwall mining, theoretical preparation plant yield, and a 95 percent preparation plant efficiency
- Mineral Reserves estimated based on predominately low volatile metallurgical coal product at an average sales price of $153 per ton and cash cost of $122 per clean ton (FOB Mine)
- Numbers in the table have been rounded to reflect the accuracy of the estimate and may not sum due to rounding
- Mineral Reserves are reported exclusive of Mineral Resources

1.6 ECONOMIC EVALUATION

WEIR prepared a Preliminary Feasibility Study financial model in order to assess the economic viability of the Maben Coal's LOM Plan. Specifically, plans were evaluated using discounted cash flow analysis, incorporating annual revenue projections for the Maben LOM Plan. Cash outflows such as capital, including preproduction costs, sustaining capital, operating costs, transportation costs, royalties, and taxes are subtracted from cash inflows, resulting in annual cash flow projections. No adjustments are made for inflation and all cash flows are in 2024 United States dollars. WEIR's study was conducted on an un-levered basis, excluding costs associated with any debt servicing requirements. In its assessment of the Discounted Cash Flow Net Present Value (DCF-NPV), WEIR utilized a discount rate of 10 percent.

The Preliminary Feasibility Study financial model developed for use in this TRS was meant to evaluate the prospects of economic extraction of coal within the Maben Property resource area. This economic evaluation is not meant to represent a project valuation. Furthermore, optimization of the LOM Plan was outside of the scope of this engagement.

The results of WEIR's Preliminary Feasibility Study demonstrated an after-tax DCF-NPV of $54.5 million for Maben Coal's LOM Plan. Key operational statistics for the LOM Plan, on an after-tax basis, are summarized in Table 1.6-1 as follows:

Table 1.6-1 Key Operating Statistics

	LOM Plan
ROM Tons Produced (000s)	29,271
Clean Tons Produced (000s)	10,143
Preparation Plant Yield (%)	34.7
Tons Sold (000s)	10,166
	($ Per Ton)
Coal Sales Realization	153.29
Direct Cash Costs	121.61
Non-cash Costs	17.80
Total Cost of Sales	139.41
Profit / (Loss)	13.88
EBITDA	31.69
CAPEX	19.30

A sensitivity analysis was undertaken to examine the influence of changes to coal sales prices, production, operating costs, capital expenditures, and the discount rate on the base case after-tax NPV. The sensitivity analysis range (+/- 25 percent) was designed to capture the bounds of reasonable variability for each element analyzed.

Maben Coal's NPV is most sensitive to changes in coal sales prices and operating costs. It is less sensitive to changes in production, discount rate and capital expenditures.

1.7 ENVIRONMENTAL STUDIES AND PERMITTING REQUIREMENTS

As part of the permitting process required by the West Virginia Department of Environmental Protection (WVDEP), numerous baseline studies or impact assessments were undertaken by Ramaco. These baseline studies or impact assessments are summarized as follows, with pertinent text from the permit replicated below:

- Groundwater Inventory and Baseline Quality
- Surface Water Baseline Quality and Quantity
- Surface Water Runoff Analysis
- Probable Hydrologic Consequences

Based on water samples from adjacent mining and the baseline surface water sampling, acid or toxic mine drainage is not expected or anticipated. All of the Ramaco existing and proposed mines are above drainage, except for the Allen Creek Mine, which will be accessed by a slope entry. Probable Hydrologic Consequence (PHC) studies showed no significant ground or surface water resource is likely to be contaminated, diminished, or interrupted, providing that the approved drainage control and revegetation plans are adhered to throughout existing and planned mining activities.

Coal mines in West Virginia are required to file applications for and receive approval of mining permits issued by the WVDEP to conduct surface disturbance and mining activities. Maben Coal has been issued mining permits and associated NPDES permits by the WVDEP as shown in Table 1.7-1 as follows:

Table 1.7-1 Maben Coal Permit Status

Property Description	Permit Number	State	Permitted Surface Area (Acres)	Issue Date	Current Status	NPDES Permit No.
Maben Preparation Plant	O302512	WV	43.15	4/9/2013	Active	WV1026780
Maben Refuse Disposal Area	O301212	WV	302.71	6/6/2013	Active	WV1026780
Maben Highwall Mine No. 1	S300519	WV	197.19	8/30/2021	Active	WV1030086
Maben Highwall Mine No. 2	S300321	WV	113.43	10/27/2022	Active	WV1030281
Maben Highwall Mine No. 3	S300623	WV	265.32	N/A	Pending	WV1030507
Maben Deep Mine No. 1	U300912	WV	9.70	8/14/2014	Not Started	WV1026747
Maben Haulroad No. 1	O301811	WV	69.34	10/22/2012	Active	WV1026551
Allen Creek Mine No. 1	U301911	WV	27.00	02.04/2016	Not Started	WV1026577
Beckley Crystal Deep Mine	U402199A	WV	39.73	N/A	Pending	N/A
Slick Rock Sewell Deep Mine	N/A	WV	37.22	N/A	Pending	N/A

As of December 31, 2023, Ramaco estimated an ARO reclamation liability of $649 thousand for its disturbed permit acreage, which is covered by a total bond amount of $1.3 million.

Ramaco currently employs approximately 42 personnel at Maben Coal and is projected to have maximum employment of 401 personnel through Maben Coal's LOM Plan. Maben Coal also creates substantial economic value with its third-party service and supply providers, utilities, and through payment of taxes and fees to local, state and federal governments.

Ramaco's five environmental citations issued to Maben Coal in the last three years by the WVDEP are typical of similar citations issued to other operators in southern West Virginia and Southwestern Virginia. All of these violations or citations were quickly abated, and none were significant in nature.

Based on WEIR's review of Ramaco's plans for environmental compliance, permit compliance and conditions, and dealings with local individuals and groups, Ramaco's efforts are adequate and reasonable in order to obtain necessary approvals relative to its mining plans.

1.8 CONCLUSIONS AND RECOMMENDATIONS

Ramaco has a long operating history of resource exploration, mine development, and mining operations in this area of West Virginia. Ramaco has full mineral control through current leases for all existing and planned mines included in Maben Coal's LOM plan. Available geological data has been reviewed and analyzed by WEIR and determined to be adequate in quantity and reliability to support the coal resource and coal reserve estimates in this TRS.

The coal resource and coal reserve estimates and supporting Preliminary Feasibility Study were prepared in accordance with Regulation S-K 1300 requirements. There are 230.0 million in-place tons of measured and indicated coal resources, exclusive of reserves, and 11.5 million tons of proven and probable clean recoverable underground, surface and highwall mineable coal reserves within the Maben Property, as of December 31, 2024. Reasonable prospects for economic extraction were established through the development of a Preliminary Feasibility Study relative to the Maben Coal's LOM Plan, considering historical mining performance, historical and projected metallurgical coal sales prices, historical and projected mine operating costs, and recognizing reasonable and sufficient capital expenditures.

The ability of Ramaco, or any coal company, to achieve production and financial projections is dependent on numerous factors. These factors primarily include site-specific geological conditions, the capabilities of management and mine personnel, level of success in acquiring reserves and surface properties, coal sales prices and market conditions, environmental issues, securing permits and bonds, and developing and operating mines in a safe and efficient manner. Unforeseen changes in legislation and new industry developments could substantially alter the performance of any mining company.

Coal mining is carried out in an environment where not all events are predictable. While an effective management team can identify known risks and take measures to manage and/or

mitigate these risks, there is still the possibility of unexpected and unpredictable events occurring. It is not possible therefore to totally remove all risks or state with certainty that an event that may have a material impact on the operation of a coal mine will not occur.

WEIR assessed that the risks associated with the economic mineability of the Maben Property were low to moderate and adds that the majority of the risks can be mitigated with efficient and effective mine planning and mine engineering, and monitoring of the mining operations.

WEIR recommends that any future exploration work and mineral property acquisition should include the following:

- Have an experienced geologist log core holes, measure core recovery, and complete sampling. Geophysically log core holes to verify seam and coal thickness and core recovery.
- Geophysically log rotary holes to verify strata and coal thickness.
- Prepare laboratory sample analysis at 1.40, 1.50, and 1.60 specific gravities to better match the preparation plant specific gravity.
- Continue collecting coal seam channel samples

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2.0 INTRODUCTION

2.1 REGISTRANT

WEIR was retained by Ramaco (Nasdaq: METC) to prepare a TRS related to Ramaco's Maben Property coal holdings. Ramaco is a United States-based mining company with its headquarters located in Lexington, Kentucky. Ramaco has several active metallurgical coal mining operations in southern West Virginia and southwestern Virginia in addition to mineral properties in southwestern Pennsylvania and northeastern Wyoming.

2.2 TERMS OF REFERENCE AND PURPOSE

This TRS was prepared specifically for Ramaco's Maben Property. The reserves and resources have been classified in accordance with SEC mining property disclosure rules under Subpart 1300 and Item 601 (96)(B)(iii) of Regulation S-K. Unless otherwise stated, all volumes, qualities, distances, and currencies are expressed in United States customary units.

The accuracy of reserve and resource estimates are, in part, a function of the quality and quantity of available data at the time this report was prepared. Estimates presented herein are considered reasonable, however, estimates should be accepted with the understanding that with additional data and analysis subsequent to the date of this report, the estimates may necessitate revision which may be material. Certain information set forth in this report contains "forward-looking information", including production, productivity, operating costs, capital expenditures, coal sales prices, and other assumptions. These statements are not guarantees of future performance and undue reliance should not be placed on these statements. The assumptions used to develop forward-looking information and the risks that could cause the actual results to differ materially are detailed in the body of this report.

This TRS reports both mineral reserves and resources (exclusive of reserves). Supporting the assessment of the economic mineability of reported reserves and prospects of economically feasible extraction of reported resources, this TRS includes summary detail of a Preliminary Feasibility Study conducted relative to development of the Maben Property.

WEIR's evaluation of coal reserves and resources was conducted in accordance with Regulation S-K 1300 definitions for Mineral Resource, Mineral Reserve and Preliminary Feasibility Study as follows:

- *Mineral Resource* is a concentration or occurrence of material of economic interest in or on the earth's crust in such form, grade or quality, and quantity that there are reasonable prospects for economic extraction. A mineral resource is a reasonable estimate of mineralization, taking into account relevant factors such as cut-off grade, likely mining dimensions, location or continuity, that, with the assumed and justifiable technical and economic conditions, is likely to, in whole or in part, become economically extractable. It is not merely an inventory of all mineralization drilled or sampled.
- *Mineral Reserve* is an estimate of tonnage and grade or quality of indicated and measured mineral resources that, in the opinion of the Qualified Person, can be the basis of an economically viable project. More specifically, it is the economically mineable part of a measured or indicated mineral resource, which includes diluting materials and allowances for losses that may occur when the material is mined or extracted.
- *Preliminary Feasibility Study* is a comprehensive study of a range of options for the technical and economic viability of a mineral project that has advanced to a stage where a Qualified Person has determined (in the case of underground mining) a preferred mining method, or (in the case of surface mining) a pit configuration, and in all cases has determined an effective method of mineral processing and an effective plan to sell the product.

2.3 SOURCES OF INFORMATION AND DATA

The primary information used in this study was obtained from the following sources:

- Geological data that was exclusively provided by Ramaco's geology and engineering personnel. The geological data includes drillhole information such as driller's logs, geologist's logs, both full and partial scans of geophysical logs, survey data, coal quality laboratory certificates, and MS Excel™ (Excel) versions of drillhole survey, lithology and quality data.
- Mineral and surface ownership maps, and supplemental files were provided exclusively by Ramaco.
- Site visit by WEIR Qualified Persons (QPs) on November 21, 2024.
- Interviews between WEIR personnel and Ramaco personnel including Ramaco's:
  - Senior V.P., General Counsel and Secretary
  - Director of Financial Reporting and Accounting
  - Chief Operating Officer

  - V.P. of Surface Mining Operations
  - V.P. of Underground Mining Operations
  - Mine Manager
  - Site Engineers
- Historical production, productivity, staffing levels, operating costs, capital expenditures, and coal sales revenue provided by Ramaco.
- LOM Plan projections and cost models provided by Ramaco.
- Coal processing and handling facilities' plot plans and flow sheets provided by Ramaco.
- Health, safety, and environmental issues discussed during interviews between WEIR personnel and Ramaco personnel.
- Current mine permit information, in addition to recent permit revisions and renewals, from documents provided by Ramaco and data publicly available from the WVDEP.
- Current and projected mine plans, including production, productivity, operating costs, and capital expenditures required to sustain projected levels of production for Maben Coal provided by Ramaco, and all data was reviewed for reasonableness by WEIR.
- Market outlook and coal sales price projections provided by Ramaco.
- Projected reclamation costs for mine closure activities provided by Ramaco.

A detailed list of all data received and reviewed for this study is provided in Sections 24.0 and 25.0 of this TRS.

2.4 DETAILS OF THE PERSONAL INSPECTION OF THE PROPERTY

WEIR personnel visited the Maben Property on November 21, 2024. While on-site, WEIR personnel conducted interviews with company and mine management relative to the following key topics:

- Geology
- Property
- Infrastructure
- Mine Plan, Production and Productivity
- Preparation Plant and Coal Handling Facilities
- Operating Costs and Capital Expenditures
- Environmental and Compliance
- Marketing
- Risks and Uncertainties

Key areas inspected by WEIR personnel at the Maben Property included the following:

- Mine surface operations including office
- Preparation plant and stockpiles
- Mine operations
  - Maben Highwall Mine No. 1 and haulroad
  - Maben Deep Mine No. 1 Face-up location
  - Beckley Crystal Deep Mine Face-up location
- Refuse Disposal Facility

Based on WEIR's inspections at the Maben Property, the mines, preparation plant and associated infrastructure facilities, and equipment are well maintained and operated with regard for all state and federal rules and regulations related to mine safety and health standards.

2.5 PREVIOUS TECHNICAL REPORT SUMMARY

This TRS is the initial TRS to be filed related to the development of the Maben Property.

3.0 PROPERTY DESCRIPTION

3.1 PROPERTY LOCATION

The town of Maben, West Virginia is located to the west of the Maben Property, the town of Hotchkiss, West Virginia is located to the north of the property. The Maben Property is approximately 52 miles south of Charleston, West Virginia; 80 miles west of Roanoke, Virginia; 52 miles northeast of Kingsport, Tennessee; and 175 miles east/southeast of Lexington, Kentucky. The Maben Property is located in Raleigh and Wyoming Counties, West Virginia at an approximate Longitude of 80° 21' West and Latitude of 37° 37' North on the WGS 84 reference coordinate system. The property is relatively remote, surrounded by scattered rural residences and small towns.

The Maben Property is within the Southern West Virginia Coal Fields of the CAPP Region of the United States. The United States Geological Survey (USGS) 7.5-minute quadrangle map sheets covering the property are McGraws and Lester.

3.2 PROPERTY AREA

The Maben Property consists of approximately 28,000 acres of leased coal holdings located in Wyoming and Raleigh Counties, West Virginia. Ramaco acquired this property in 2022 and commenced highwall mining operations in 2023.

Ramaco supplied copies of lease agreements and property control maps to WEIR related to the areas for which mineral and/or surface property are controlled by Ramaco. WEIR reviewed this information and found no property boundary disputes or other concerns that would signal concern over future mining operations or development potential.

3.3 PROPERTY CONTROL

Ramaco's Maben Property control consists of over 28,000 acres in two leases and one amendment from WPP, and one lease from Beaver Coal Company, Limited (see Figure 1.1-1).

3.4 MINERAL CONTROL

Ramaco's Maben Property mineral control consists of over 28,000 acres in two leases and one amendment from WPP, and one lease from Beaver Coal Company, Limited. Note that the

seams controlled for the WPP leases do not conform to actual individual Lease A and Lease B boundaries. Refer to Figure 3.4-1 below.

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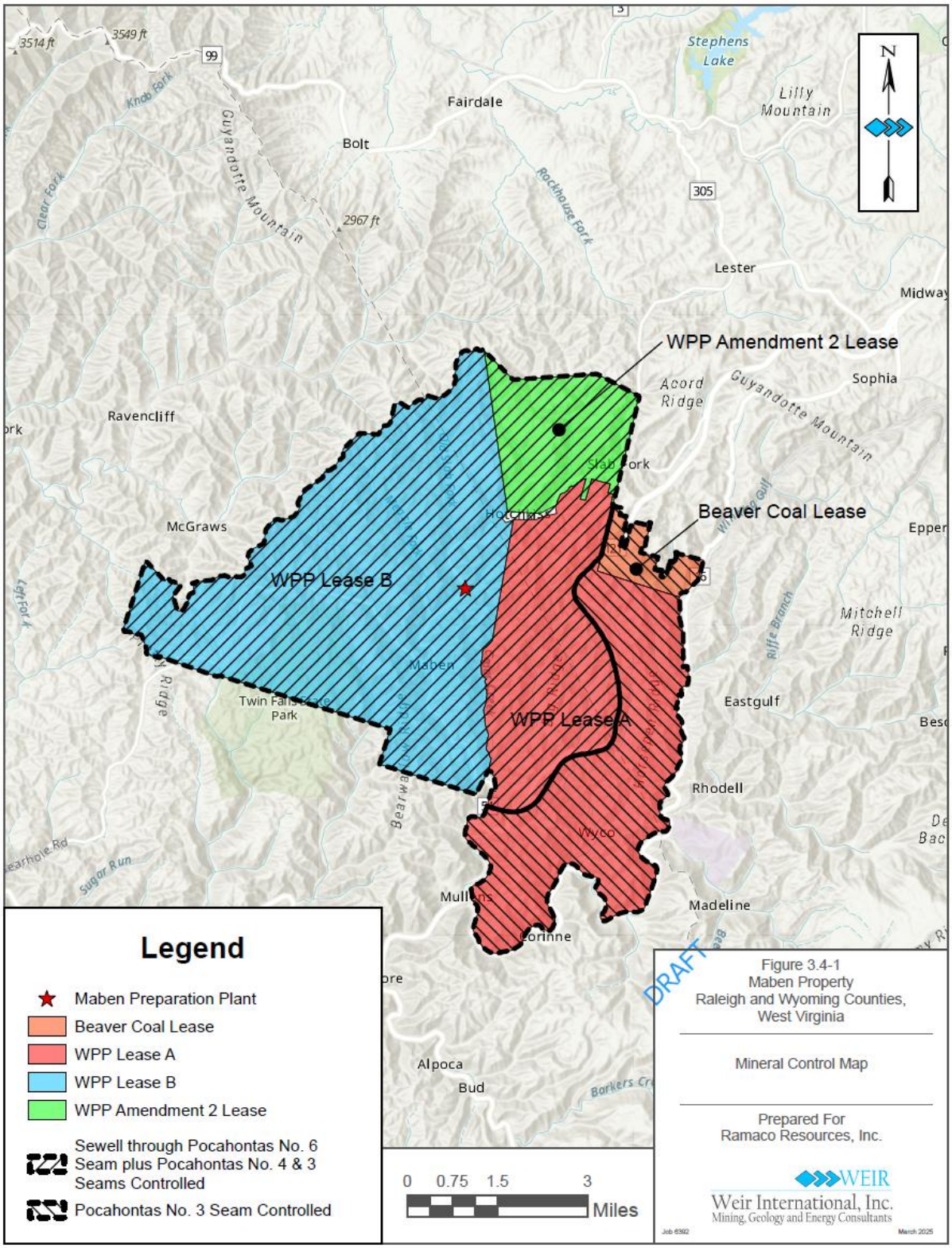
Figure 3.4-1 Mineral Control Map



3.5 SIGNIFICANT PROPERTY ENCUMBRANCES AND PERMIT STATUS

WEIR has not discovered any significant encumbrances for any of the tracts within the Maben Property.

A list of Ramaco's permits for Maben Coal and permit status is shown in Table 3.5-1, with a more detailed description of the permits discussed in Section 17.3.

Table 3.5-1 Maben Coal Permit Status

Property Description	Permit Number	State	Permitted Surface Area (Acres)	Issue Date	Current Status	NPDES Permit No.
Maben Preparation Plant	O302512	WV	43.15	4/9/2013	Active	WV1026780
Maben Refuse Disposal Area	O301212	WV	302.71	6/6/2013	Active	WV1026780
Maben Highwall Mine No. 1	S300519	WV	197.19	8/30/2021	Active	WV1030086
Maben Highwall Mine No. 2	S300321	WV	113.43	10/27/2022	Active	WV1030281
Maben Highwall Mine No. 3	S300623	WV	265.32	N/A	Pending	WV1030507
Maben Deep Mine No. 1	U300912	WV	9.70	8/14/2014	Not Started	WV1026747
Maben Haulroad No. 1	O301811	WV	69.34	10/22/2012	Active	WV1026551
Allen Creek Mine No. 1	U301911	WV	27.00	02.04/2016	Not Started	WV1026577
Beckley Crystal Deep Mine	U402199A	WV	39.73	N/A	Pending	N/A
Slick Rock Sewell Deep Mine	N/A	WV	37.22	N/A	Pending	N/A

3.6 SIGNIFICANT PROPERTY FACTORS AND RISKS

Given Ramaco's controlled interests at the Maben Property, which relate to property that is held by others and leased to Ramaco, WEIR assesses that there are no significant issues affecting access to the coal interests, or Ramaco's ability to execute its mine plans.

WEIR did not conduct an independent verification of property control, nor has it independently surveyed the mining locations. WEIR has relied on information compiled from maps and summaries of the owned and leased properties prepared by Ramaco. WEIR did not conduct a legal title investigation relative to Ramaco's mineral and surface rights. Historically, property control has not posed any challenges related to Ramaco's operations.

3.7 ROYALTY INTEREST

Within the Maben Property, Ramaco holds no material royalty or similar interest in property that is owned or operated by another party.

4.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

4.1 TOPOGRAPHY, ELEVATION, AND VEGETATION

The Maben Property is located in the southwestern portion of the Appalachian Plateau Province directly north and adjacent to the Valley and Ridge Province. It is in the Cumberland Mountain zone of the Appalachian Plateau. The terrain is mountainous, but not so rugged or steep as other areas of southwestern West Virginia. Elevations range from approximately 1,400 feet above Mean Sea Level (MSL) along the valley bottoms to over 2,200 feet above MSL along the ridges, averaging approximately 1,800 feet. The landscapes are well-dissected with dendritic drainage systems. Slab Fork, Cedar Creek, and Allen Creek are small perennial streams and are the primary drainages for the property. These streams flow adjacent to or through the property from north to south and in the order stated above, from West to East across the property. These streams are all tributaries of the Guyandotte River, of the Ohio River. There are also numerous small intermittent and ephemeral creeks on and surrounding the property, which are tributaries to the above-mentioned streams. Topography, streams, and other features of the area are shown on Figure 7.5-1.

The Maben Property consists mostly of unmanaged forestland. The forestland consists of typical trees for this area of the Appalachians, with Oak/Hickory as the dominant forest-type group and a lesser percentage of the Maple/Beech/Birch forest-type group.

The wildlife indigenous to the area is typical of the species and diversities associated with the geographical and climatic areas within which the proposed surface and underground mine sites are located. Reconnaissance of the area affected by the proposed mining determined that the following species are or have been present: Whitetail Deer, Fox Squirrels, Gray Squirrels, Ground Squirrels, Eastern Opossums, Raccoon, Rabbits, Eastern Black Bear, Wild Turkey, and numerous species of birds. On the basis of numerous reconnaissance surveys, no endangered or threatened species of plants or animals, or habitats of such species were found to exist within or adjacent to the mine permit areas.

4.2 PROPERTY ACCESS

The primary access road to the property is West Virginia State Route 54, a two-lane highway, that passes through the town of Maben. The gate to the property is located on the east side of Route 54 approximately 1.3 miles to the north of the town of Maben.

The Norfolk Southern (NS) Railroad parallels the west side of the property along Route 54. The CSXT Railroad also parallels the property with a North/South line along the east side of the property (see Figure 1.1-1).

The nearest commercial airport is the Yeager International Airport (CRW) in Charleston, West Virginia, which is located 52 miles north of Maben, West Virginia. The Tri-Cities Airport (TRI), which is located in Bristol, Tennessee, is approximately 88 miles southwest of Maben, West Virginia.

The nearby waterways are not navigable for commercial traffic. The closest barge docking area is the Alloy Dock which is approximately 33 miles to the north on the Kanawha River, southeast of Charleston, West Virginia.

4.3 CLIMATE AND OPERATING SEASON

The climate associated with the Maben Property is classified as a humid continental, characterized by hot, humid summers and moderately cold winters. Climate conditions vary greatly in the state of West Virginia due to influence of the rugged topography. Average high temperatures range from 82 to 87 degrees Fahrenheit in the summer, with average low temperatures ranging from 20 to 25 degrees Fahrenheit in winter. Average yearly rainfall measured in nearby Logan, West Virginia is approximately 47 inches per year, with approximately 1.6 inches occurring as snowfall. The surface and highwall mining operations on the Maben Property currently operate year-round, regardless of weather conditions.

4.4 INFRASTRUCTURE

Power

Electrical power for mine and facility operations is provided by American Electric Power (AEP). The stub line taps into AEP's 138KV line which runs north/south to the east of the property. The power is stepped down to 69KV at Maben Coal's substation, where Maben Coal's transmission line then traverses to the location of the Maben Preparation Plant.

Water

Water for mine operations is provided by a combination of extraction from abandoned underground mine pools and from settling ponds located on the surface. Mine operations' primary use of water is for dust suppression. Potable water is purchased.

Personnel

The area surrounding the Maben Property has a long history of coal mining and attracting mining personnel with qualified skills has not been an issue for Ramaco thus far. Maben Coal is projected to employ a maximum of 401 personnel over the LOM Plan. Maben Coal operations employed approximately 42 personnel at the end of December 2024. The hourly labor force is non-union and no change in this labor arrangement is anticipated in the near term.

Supplies

Supplies for the mining operations are available from multiple nearby vendors that service the coal industry in the CAPP Region. There are eight Caterpillar mining equipment dealerships located within 50 miles of the Maben Property. There are five Komatsu/Joy Manufacturing mining equipment dealerships within 50 miles of the Maben Property.

5.0 HISTORY

5.1 PREVIOUS OPERATIONS

The Maben Property and surrounding area has an extensive history of coal mining by both surface and underground mining methods. Detailed underground mine maps showing previous mine workings were provided by Ramaco. Other sources of maps showing previous mine workings that WEIR referenced were from the West Virginia Geological and Economic Survey, the Virginia Department of Mines Minerals and Energy, the USGS, and the MSHA. Mining within the Maben Property began in the early 1900s. There have been many different mine operators both large and small in the region since then.

Areas within the Maben Property have been previously surface and underground mined. Within the Maben Property, significant mining has occurred (in descending stratigraphic order) in the Sewell, Beckley, and the Pocahontas No. 6, No. 4, and No. 3 seams. All of these previous mines are abandoned.

5.2 PREVIOUS EXPLORATION AND DEVELOPMENT

Prior to Ramaco's control of the property in 2022, previous exploration included 594 holes drilled within or adjacent to the Maben Property. Previous exploration activity dates back to the early 1910's and some records are difficult to decipher. To the extent possible, WEIR compiled a list of companies conducting exploration, number of holes drilled, total footage drilled, and approximate dates, which are shown in Table 5.2-1. Since property owners and operators have changed several times over the years, prior exploration drilling records are not fully available in original form.

Table 5.2-1 Previous Exploration

Number of Boreholes	Company	Date Range	Laboratory	Seams	Drilled Footage
5	Amigo Smokeless	1969-1970 , 1987	Unknown	Pocahantas seams	1,320
116	Appleton	1940-1998	Unknown	Sewell, Beckley and Pocahontas	57,580
82	Armco Steel	1937-1977	Unknown	Sewell, Beckley and Pocahontas	59,350
14	Bluestone	1999-2001	Precision Testing Laboratoy, Inc.	Sewell (Channel Samples)	8,470
2	Brooks Run Mining Company	2006	Unknown	Sewell, Beckley and Pocahontas	640
12	Consol	1970's	Unknown	Sewell, Beckley and Pocahontas	10,300
41	CRPT	1910's	Unknown	Sewell, Beckley and Pocahontas	6,820
6	Eastern Associated	1964-1965, 1974	Unknown	Sewell, Beckley and Pocahontas	3,702
4	E. C. Minter	Unknown	Unknown	Sewell, Beckley and Pocahontas	2,790
163	Itmann	Unknown	Unknown	Sewell, Beckley and Pocahontas	116,660
15	Koppers Coal	1941-1946	Unknown	Beckley and Pocahontas	4,400
5	Mae Services	1990	Unknown	Sewell, Beckley and Pocahontas	2,050
97	Slab Fork	1953-1977	Unknown	Sewell, Beckley and Pocahontas	32,460
24	U.S. Steel	1960-1961, 1979	Unknown	Sewell, Beckley and Pocahontas	14,700
8	WPP	1952-2010	Unknown	Sewell, Beckley and Pocahontas	4,730

Organizing significantly large amount of data requires performing tasks such as; 1) removing drillhole duplicates (especially where companies change drillhole names to match own naming conventions), 2) resolving multiple copies of drillholes “shared” between companies (i.e. different companies own different seams over the same area and agree to “share” drillhole data, but delete the data for its seams before sharing), 3) resolving localized seam naming differences, and 4) resolving different coordinate systems. These are significant (and on-going) tasks for Ramaco. Based upon thorough review of Ramaco’s compilation of this historical drilling data, it is WEIR’s opinion that this historical data is reliable for use in generating an adequate geological and quality model for reserve and resource estimations for the Maben Property.

6.0 GEOLOGICAL SETTING, MINERALIZATION, AND DEPOSIT

6.1 REGIONAL, LOCAL, AND PROPERTY GEOLOGY

6.1.1 Regional Geology

The Maben Property is located within the Appalachian Plateau Physiographic Province and is underlain by Lower Pennsylvanian Age rock of the New River and Pocahontas Formations. See Figure 6.3-1 Generalized Stratigraphic Column for additional details. This area of West Virginia is within the CAPP Region, which is known for its high-quality, low sulfur, metallurgical grade, bituminous coal seams.

The depositional setting for these seams is complex and thought to be Upper Delta Plain, with settling controlling the sedimentation rate. The Lower Pennsylvania sedimentary strata of the coal-bearing rocks of the Pocahontas Formation rest uncomformably on the Mississippian Bluestone Formation of the Mauch Chunk Group.

The coalbeds of the New River and Pocahontas Formations are interbedded with sandstones, shales, siltstones, and underclays. The sandstones are light gray, very fine to coarse grained, thin bedded to massive, and crossbedded, and consist of 50 to 65 percent quartz, with large proportions of white-weathering feldspar, mica flakes and dark mineral grains. The shales are medium to dark, thinly laminated, and carbonaceous. Horizontally laminated or crossbedded medium light gray siltstones and medium gray clayey to silty underclays occur in thin beds throughout the formation.

The Maben Property is within the western margin of the folded and faulted Central Appalachian Basin, with deformation occurring during the Alleghany (post-Permian) Orogeny.

6.1.2 Local Geology

The Maben Property is located in the Southern Winding Gulf Coal Field of West Virginia. There are no known major faults in the local area. The Mullen Anticline is approximately one mile southeast of the property and exhibits gentle dips of approximately three percent along its general north/south axis.

6.1.3 Property Geology

The primary coal seams of interest on the Maben Property, in descending stratigraphic order, are the Sewell, Beckley, Pocahontas No. 6, Pocahontas No. 4, and Pocahontas No. 3. Of the coal seams Ramaco controls, only the Sewell and Beckley seams outcrop on the property.

6.2 MINERAL DEPOSIT TYPE AND GEOLOGICAL MODEL

The Maben Property resource area is a relatively flat lying, sedimentary deposit of Lower Pennsylvanian Age. These bituminous coal seams in this area here are known to be high-quality, low sulfur, and have metallurgical characteristics.

For internal planning, Ramaco models these seams from exploration results using the SurvCad® mine planning software package. For Ramaco model validation purposes, WEIR modeled the reserves and resources using Datamine MineScape® Stratmodel geological modeling software. The WEIR geological model is discussed in more detail in Section 9.1.

6.3 STRATIGRAPHIC COLUMN AND CROSS SECTIONS

Figure 6.3-1 shows the stratigraphic column for the Maben Property. Cross sections related to the Maben Property can be found on Figure 6.3-2.

Figure 6.3-1 Maben Property Stratigraphic Column

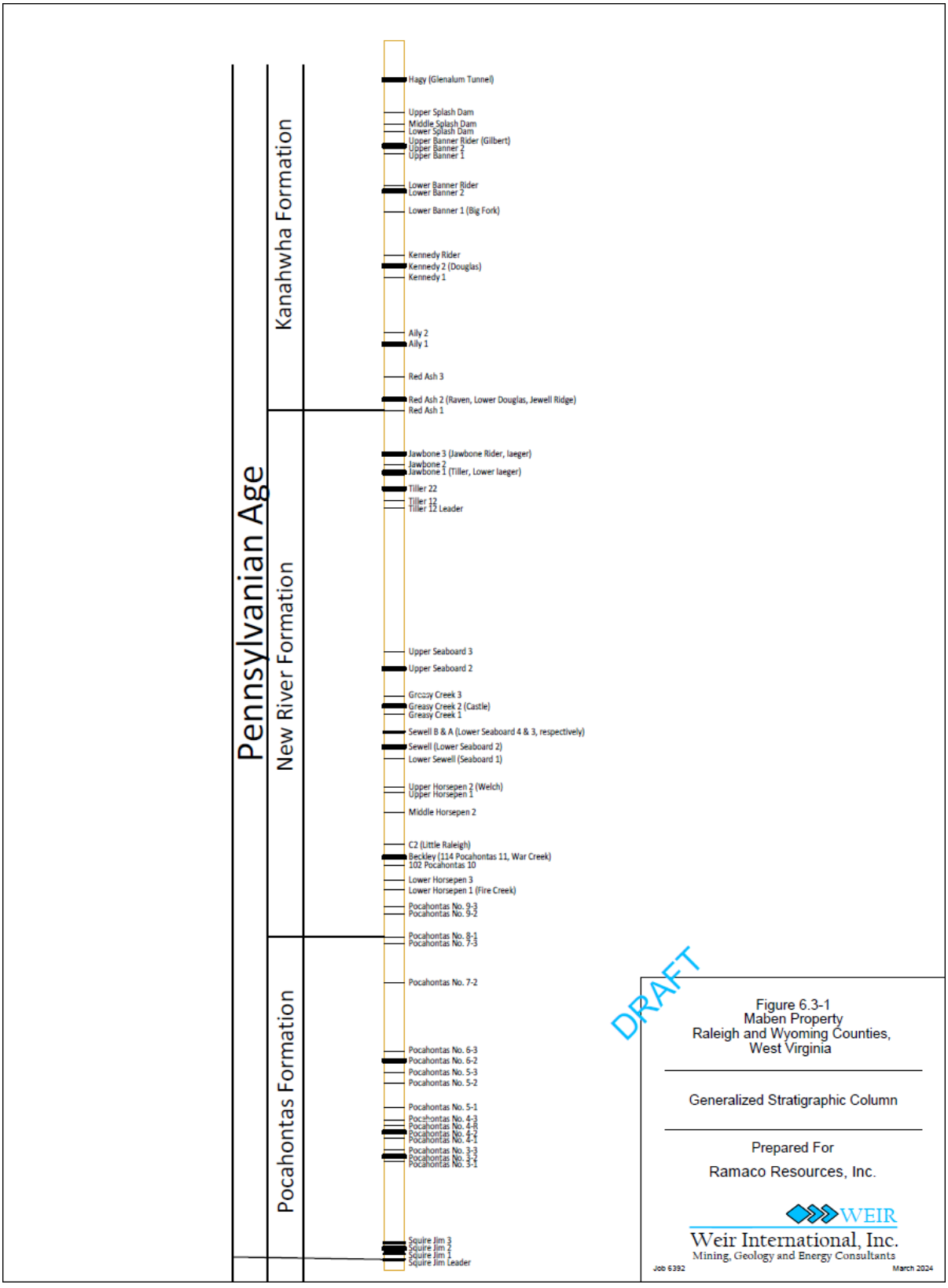
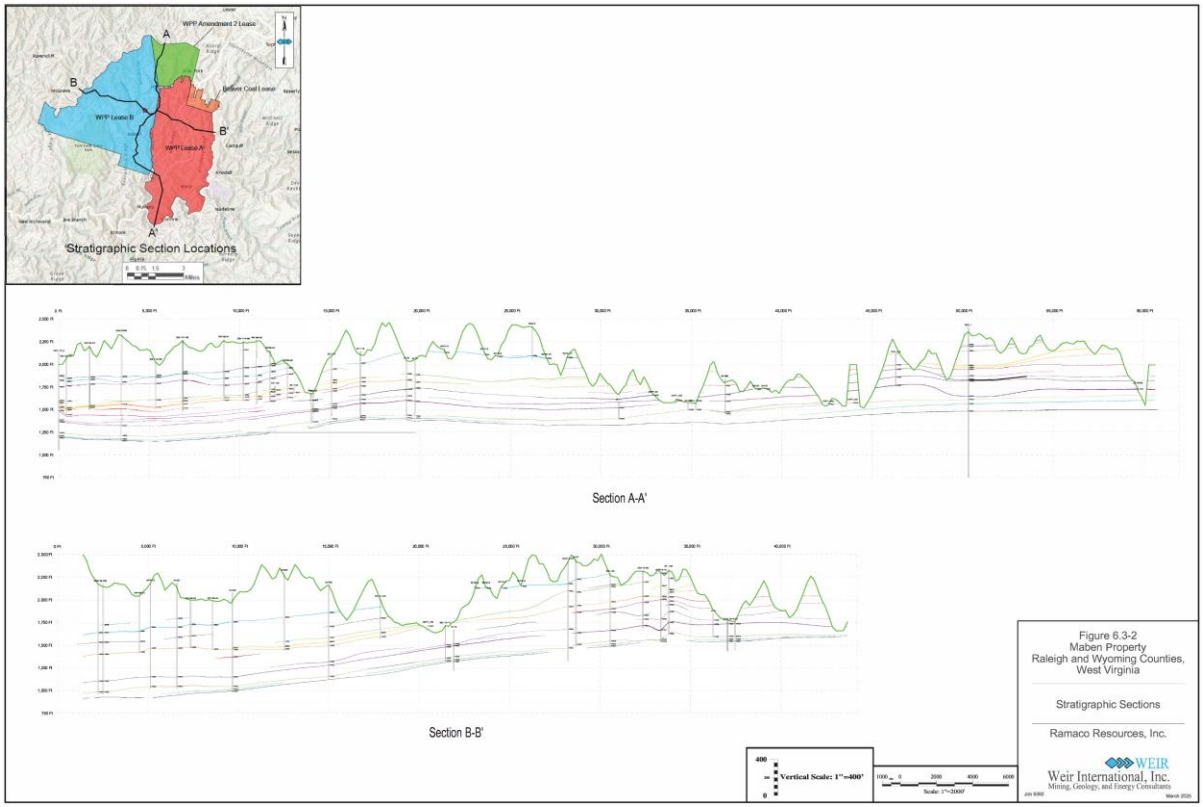


Figure 6.3-2 Maben Property Stratigraphic Sections



See Appendix A for high-resolution version of this Figure

7.0 EXPLORATION

7.1 NON-DRILLING EXPLORATION

Drilling has served as the primary form of exploration for the Maben Property. In addition to exploration drillholes, some seam outcrop measurements, in-mine measurements, and survey points from mine maps of previous operations were recorded for geological modeling purposes.

7.2 DRILLING

Ramaco has not yet performed any exploration drilling programs within the Maben Property and has relied on drillhole data obtained from previous owners and operators. During WEIR's site visit, management commented that a minor amount in-fill drilling was planned in the near future, however, thus far Ramaco has relied on drilling data procured from previous site owners and operators. Previous exploration drilling activity is shown in Table 5.2-1.

7.3 HYDROGEOLOGICAL DATA

Hydrological data for the Maben Property has been obtained from a water seep from the Sewell coal seam and surface water monitoring locations in proximity to Ramaco's existing and planned mining operations. No additional exploration is performed specifically for the purposes of hydrological study. See Section 13.1.2, Hydrogeological Model, for more detail.

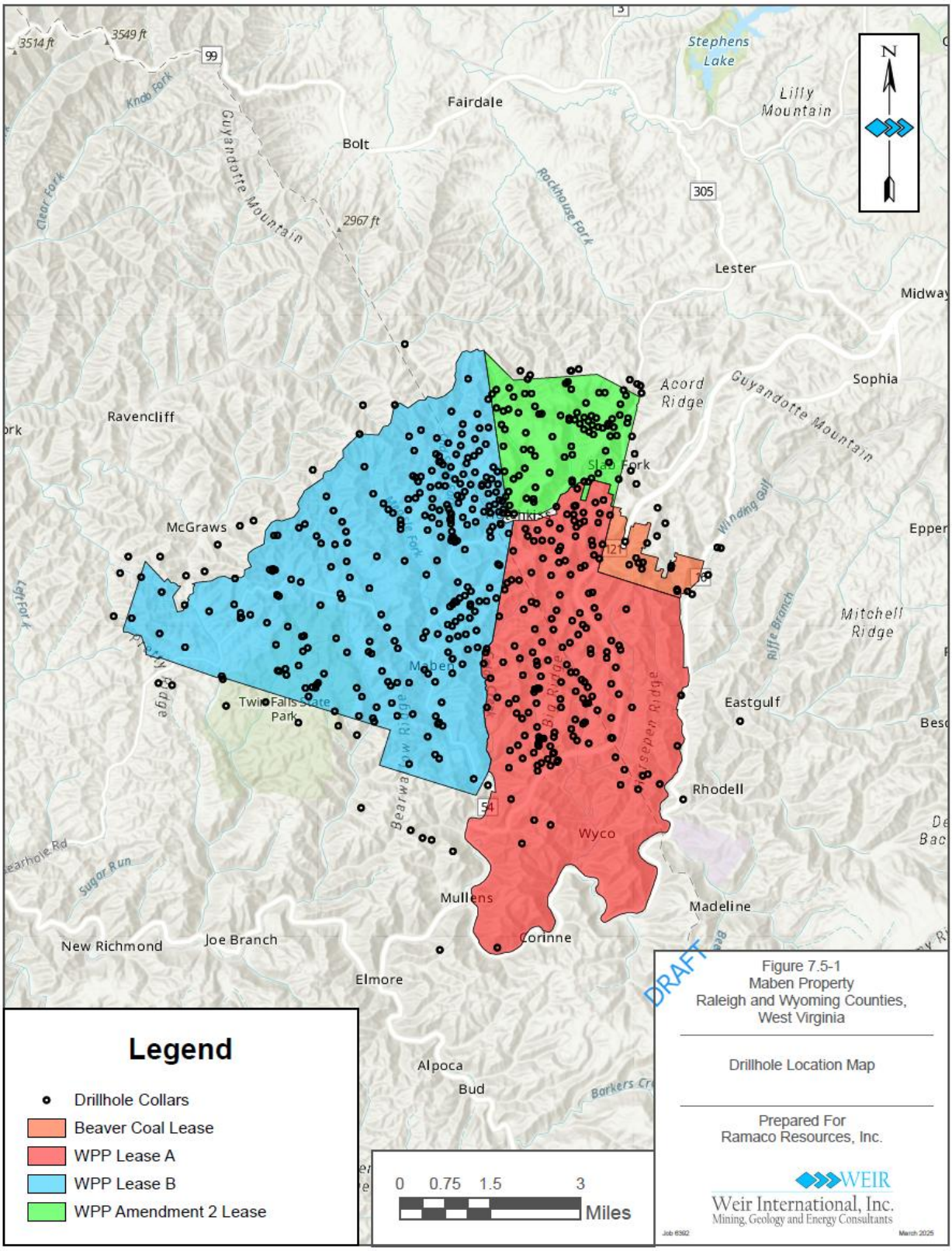
7.4 GEOTECHNICAL DATA

Ramaco does not specifically gather geotechnical data at its existing or planned mining operations within the Maben Property. See Section 13.1.1, Geotechnical Model, for more detail.

7.5 SITE MAP AND DRILLHOLE LOCATIONS

A map showing the location of drillholes used in the WEIR geological model for the Maben Property is provided on Figure 7.5-1.

Figure 7.5-1 Drillhole Locations



7.6 OTHER RELEVANT DRILLING DATA

WEIR did not discover any other relevant drilling data during the creation of this report.

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8.0 SAMPLE PREPARATION, ANALYSES, AND SECURITY

Ramaco has not yet initiated any drilling programs for the Maben Property. The remainder of this Section is intentionally left blank.

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9.0 DATA VERIFICATION

9.1 DATA VERIFICATION PROCEDURES

Ramaco provided WEIR copies of all available historical drilling records in its possession for the Maben Property, which included Excel spreadsheets, driller's log, field geologist's logs, quality results sheets from the coal quality laboratories, as well as drawing files or PDFs of available e-logs. Each hole in the database was individually checked by WEIR against a copy of the driller's and/or geologist's log to confirm data accuracy.

Geological reviews performed by WEIR included:

- Drillhole lithology database comparison to geophysical logs where possible
- Drillhole coal quality database comparison to quality certificates

After completing the precursory verifications and validations described above, the drillhole data was loaded into Datamine's MineScape® Stratmodel, a geological modeling software. MineScape provides robust error checking features during the initial data load, which include confirmations of seam continuity, total depth versus hole header file data, interval overlap, and quality sample continuity with coal seams. Once the drillhole data was loaded, a stratigraphic model was created.

Several further verifications were then possible, which included:

- Creating cross sections through the model to visually inspect if anomalies occur due to miscorrelation of seams
- Creating structural and quality contour plots to visually check for other anomalies due to faulty seam elevations or quality data entry mistakes in the drillhole database

Typical errors that may impact reserve and resource estimates relate to discrepancies in original data entry, and may include:

- Incorrect drillhole coordinates (including elevation)
- Mislabeled drillhole lithology
- Unnoticed erroneous quality analyses where duplicate analyses were not requested
- Excessive drillhole core loss

WEIR conducted a detailed independent geological evaluation of data provided by Ramaco to identify and correct errors of the nature listed above. Where errors are identified and cannot be successfully resolved, it is WEIR's policy to exclude that data from the geological model. Based on WEIR's geological evaluation of data provided, five of the provided drillholes within current lease boundaries were excluded from the drillhole database due to identified errors.

9.2 DATA VERIFICATION LIMITATIONS

Limitations of data verification included incomplete or missing records for some drillholes. The primary reason for this situation is incomplete data transfers upon change in property ownership. Based on modeling results, WEIR found some of the drillholes with incomplete data to be consistent with the deposit and appropriate to include in WEIR's geological model.

9.3 ADEQUACY OF DATA

The adequacy of sample preparation, security, and analytical procedures are generally unknown for drillholes that were drilled prior to Ramaco acquiring the initial leases in 2022. However, the geologist's logs for these holes contain sampling descriptions and lithologic descriptions that are sufficiently detailed to ascertain that an experienced geologist supervised the drilling and sampling. It is unknown if all coal quality analyses were performed to ASTM standards by qualified laboratories, as detailed in Section 8.0, however, this legacy drillhole information was included as the samples matched the coal seam intervals and reported quality data that was consistent between the different data sources. Model verifications further support WEIR's opinion that a representative, valid, and accurate drillhole database and geological model have been generated for the Maben Property that can be relied upon to estimate coal resources and reserves to an accuracy that is acceptable for this report's specified standards.

Ramaco is currently only mining the Sewell Seam, with plans to start three underground mines within the complex in the future. The Sewell Seam is well known for its high quality and metallurgical characteristics and has a history of such from Ramaco's current surface and highwall mining operations at Maben Coal. WEIR believes that this history, along with confirmation data that is being obtained by Ramaco from truck grab quality samples prior to shipment to the Berwind Plant for rail loading, provides adequate coal quality information at this point in time.

WEIR recommends that Ramaco consolidate the multiple sources and formats of drillhole data and continue their work to eliminate errors especially in regard to coal seam correlations. Due

to sparse data in several areas of the property, WEIR also recommends that Ramaco pursue in-fill drilling for improvements to both structural and coal quality models. This is consistent with Maben management's plans revealed to WEIR during its site visit.

10.0 MINERAL PROCESSING AND METALLURGICAL TESTING

10.1 MINERAL PROCESSING TESTING AND ANALYTICAL PROCEDURES

Maben Coal does not yet have a rail loadout, although a new rail loadout is planned in the near future, but construction has not yet been scheduled. In the interim, clean coal samples are taken from trucks outbound to the Berwind Preparation Plant for subsequent rail shipment to ensure customer coal specifications are met prior to loading. The testing is performed by SGS North America Inc. (SGS) on grab samples obtained from the trucks. Proximate and oxidation analyses are performed on the samples. Currently, this is the extent of mineral processing testing that occurs at Maben Coal.

10.2 MINERALIZATION SAMPLE REPRESENTATION

Coal deposits originate in flat, low-lying ground within deltas, alluvial plains, and coastal systems, and as such are a relatively homogeneous, sedimentary mineral occurrence. The deposit within the Maben Property exhibits homogeneous characteristics and does not show any substantial variations in mineralization types or styles that would adversely affect processing or saleability of the coal. Sample data are well representative of the deposit as a whole.

10.3 ANALYTICAL LABORATORIES

For truck grab quality sample analyses, Ramaco uses SGS located in Sophia, West Virginia as its primary laboratory. Typically, once quality samples were bagged and labeled at the mine, the samples were delivered to SGS for quality analyses. SGS is certified by the ANSI National Accreditation Board. SGS performs all of the coal analyses to ASTM standards.

10.4 RELEVANT RESULTS AND PROCESSING FACTORS

The newly constructed Maben Preparation Plant began operations in November, 2024. Previously coal at Maben was washed at Ramaco's Berwind Preparation Plant. While portions of the new plant are still undergoing construction, adjustments and improvements are an on-going process. At this stage, there is not yet any meaningful historical operational data to evaluate.

Coal recovery and resulting product quality are primary concerns for any coal preparation plant. A coal preparation plant's recovery and resulting coal quality of its saleable products are dependent on ROM coal quality and the efficiency at which non coal impurities are removed by the preparation plant process. Tracking and adjusting throughput rates for different plant circuitry, based on ROM coal feed quality, are critical to plant efficiency and product quality. The Maben Preparation Plant currently processes ROM Sewell Seam at specific gravities ranging from 1.4 to 1.7, in order to produce saleable metallurgical coal products.

10.5 DATA ADEQUACY

Ramaco has yet to establish any key performance baselines for evaluating operations at the new preparation plant. However, based on Berwind Preparation Plant train loadout quality results for coal produced at Maben Coal which meet or exceed customer coal quality specifications, the clean coal truck grab sample analyses results alleviate data adequacy concerns at this point in time.

11.0 MINERAL RESOURCE ESTIMATES

The coal resources, as of December 31, 2024, are reported as in-place resources and are exclusive of reported coal reserve tons (see Section 12.0 for reserve tonnage estimates). Resources are reported in Measured, Indicated, and Inferred tonnage categories in accordance with Regulation S-K Item 1302(d).

In addition to the currently active mine, there are three planned underground mines, and numerous other resource areas within the Maben Property which Ramaco may plan and/or permit at a future date.

11.1 KEY ASSUMPTIONS, PARAMETERS, AND METHODS

Data Sources

Planimetric data was provided by Ramaco in AutoCAD format and primarily included base map information such as rivers, drainages, roads, mine features, and property boundaries.

Ramaco provided WEIR drillhole data, which included survey, lithology, and coal quality information. This data was provided in different formats including Excel, ASCII files and PDFs. Geophysical logs, coal quality certificates, driller's logs, geologist's logs, and drillhole survey records were provided as scanned PDF files and AutoCAD drawing files. Within or nearly adjacent to the lease boundaries, data was provided for 594 drillholes, out of which 561 were included in the geological model.

Coal quality data for 127 drillholes was provided for the Maben Property. Data was provided in Excel and ASCII format along with limited quality certificates in PDF format.

Geological Model

The Maben Property geological model was developed by using seam surface grids that were created in Datamine's MineScape® Stratmodel (MineScape) geological modeling software.

Topography data was gridded using MineScape software and a grid cell size of 50 feet by 50 feet from the USGS on-line 3-D Elevation Project data source. The resolution of the topography data is 1/3 arc-second, which results in approximately a 30 by 30 feet data point spacing. The gridded USGS topography contours were compared to drillhole collars. WEIR investigated significant collar elevation discrepancies. Most differences are due to original

drillhole locations being covered with burden or being subsequently mined. Drillholes for which such discrepancies could not be resolved were not used in the model.

The seam surfaces and thicknesses were created by loading the drilling data into MineScape and gridding the seam intercepts using a grid cell size of 50 feet by 50 feet. The parameters used to create the model are defined in the MineScape modeling schema which is a specification of modeling rules that is created for the site. The MineScape interpolators that were used in this study are common in most mine planning software packages. The Planar interpolator is a triangulation method with extrapolation enabled. The Height interpolator is a variant on the trend surface and inverse distance interpolators. The data points are weighted, thus producing a different plane at each sample point. By using a weighting curve that is infinite at zero distance, data honoring can be assured. Due to the least squares fit, the effect of data clustering is minimized. A trend surface is used in MineScape to promote conformability for the modeled seams to regional structures such as synclines, anticlines, or simply seam dip. MineScape caters to using different interpolators for thickness, roofs and floors (surfaces), and the selected trend surface as they are all modeled separately. The interpolator used for each of these items is selected on the basis of appropriateness to the data sets involved, as well as modeling experience. Stratigraphic Model Interpolators are shown in Table 11.1-1, as follows:

Table 11.1-1 Stratigraphic Model Interpolators

Parameter	Interpolator	Power/Order
Thickness	PLANAR	0
Surface	HEIGHT	4
Trend	PLANAR	0

Twenty-two coal seams were modeled for the Maben Property. A summary of drillhole statistics for 20 seams that WEIR considered to have economic potential within the Maben Property are shown in Table 11.1-2.

Table 11.1-2 Drillhole Statistics

Seam	In Mine Plan	Number of Intercepts	Average Seam Thickness (Feet)	Minimum Hole Name	Minimum Seam Thickness (Feet)	Maximum Hole Name	Maximum Thickness (Feet)	Standard Deviation (Feet)
Castle	No	30	1.4	WP-98-29	0.1	WP-98-34	5.0	0.98
Sewell Rider	No	11	1.4	WP99-19	0.4	WP-99-09	2.0	0.52
Sewell B	No	80	1.4	RF-GR-27	0.1	M-015	5.3	1.02
Sewell	Yes	218	2.2	SF-136	0.2	DDH_21_1	8.9	1.55
Welch	No	144	0.9	M-049	0.1	BH-155	2.3	0.48
Upper Little Raleigh	No	4	0.3	79IT01	0.2	79IT03	0.8	0.31
Little Raleigh	No	214	1.0	M-065	0.1	GM-8-90	6.6	0.79
Upper Beckley	No	17	1.2	SF-117	0.2	RF84-B2-7	4.2	1.02
Beckley	No	195	1.9	M-036	0.1	GW-67-BW	7.9	1.35
Lower Beckley	Yes	346	3.4	DDH_5_3	0.2	DDH_21_1	13.3	2.26
Upper Fire Creek	No	6	0.6	SF-109	0.2	SF-100	0.8	0.26
Fire Creek	No	131	1.4	M-75	0.1	WP-08-02	8.9	1.27
Lower Fire Creek	No	95	1.2	DDH_21_1	0.1	BS-82-97	5.4	0.93
Pocahontas No. 9	No	90	1.3	SF-120	0.2	CRPT_737	4.4	0.78
Pocahontas No. 8	No	42	1.0	SF-136	0.2	DDH_4_6	3.0	0.65
Pocahontas No. 6	No	203	2.2	KA-2	0.1	WPP-11-10	10.2	1.84
Pocahontas No. 5	No	73	0.8	CRPT_8	0.2	081-290E	2.7	0.58
Pocahontas No. 4	No	252	2.4	M-045	0.3	SF-15	11.2	1.28
Pocahontas No. 3 Rider	No	19	0.7	SF-148	0.2	GW-63-BW	1.9	0.51
Pocahontas No. 3	Yes	247	3.0	SF-077	0.1	WP-97-14	13.5	1.16

The gridded coal seam structure and coal seam thicknesses were validated against drillhole information to ensure that the data was properly modeled. Inconsistencies between modeled seam surfaces and surrounding drillholes were investigated and any confirmed errors in the drillhole data or model parameters were corrected. This process was repeated until a final version of the model was developed.

Coal Quality Model

At the onset, it should be noted that coal quality data for the Maben Property is extremely sparse. Since Ramaco has not completed any drilling programs on the site, it relies on available data from previous site owners and operators. This sparseness of quality data was discussed with Maben management during WEIR's site visit, who confirmed the lack of data. The Sewell Seam currently being mined, and the seams involved in the other planned mines have a local history of being consistently high quality coking coal seams. That being stated, there are no current plans on the part of Ramaco to initiate any new coal sampling and analysis drilling programs within the Maben Property.

The drillhole data described previously in this report were used to create a washed coal quality model that included raw ash and raw relative density. The washed quality model values were based on a specific gravity float of 1.50.

The drillholes were verified to ensure that the seam depths used in the lithology file matched the sample depths in the quality file. Coal quality samples were loaded into MineScape and composited against the drillhole thicknesses. The composited values were then gridded using a grid cell size of 200 feet by 200 feet and the inverse distance weighted (squared) interpolator. In addition to raw density, the following quality data was modeled for all seams:

- Float @ 1.50 Specific Gravity
  - Ash, Dry weight percent
  - Calorific Value, Dry Btu/lb
  - Total Sulfur, Dry weight percent
  - Volatile Matter, Dry weight percent
  - Yield, weight percent

Quality contours were generated from the grids to check outlier values.

As previously noted, coal quality for some portions of the Maben Property is sparse. Average qualities for seams that have data are shown below in Table 11.1-3. Although there are numerous analyses to provide average quality numbers for the major seams within the property, these quality data points do not sufficiently cover LOM plan areas. Ramaco acknowledge the sparseness of quality data, however, given the long history of metallurgical characteristics, there are no immediate plans to perform drilling to acquire additional quality data.

Based on WEIR's experience within this region, these well-known coking coal seams have highly consistent quality parameters that one can generally rely on. In other words, for these well-known coal seams, one would expect that given an adjacent property successfully mined one of these seams as a high quality metallurgical coal product, basically the same product would be produced nearby that adjacent property. In this context, WEIR is not averse to accepting the overall Maben Property average coal quality values for a particular seam for the purposes of this study. WEIR does recommend that Ramaco acquire additional quality data points in the near future for validation of coal seam qualities.

Table 11.1-3 Coal Seam Quality Summary

Seam	Analysis Count	Theoretical Plant Yield (%)	Ash (%)	Sulfur (%)	Calorific Value (BTU/Lb)	Volatile Matter (%)	Raw Relative Density	Calculated Raw Relative Density
Sewell	71	82.4	3.4	0.67	15,133	22.6	1.33	1.37
Little Raleigh	1	48.3	10.4	0.89	14,061	19.0	-	1.69
Beckley	2	91.7	5.7	0.60	-	-	-	1.35
Lower Beckley	75	79.7	9.1	1.03	14,861	20.0	1.43	1.40
Pocahontas No. 6	9	68.8	7.6	0.81	14,743	19.6	-	1.43
Pocahontas No. 4	12	84.8	7.3	0.77	14,681	18.9	-	1.50
Pocahontas No. 3	33	70.9	9.1	1.17	14,345	18.8	-	1.47
Total	203	79.0	6.9	0.90	14,852	20.7	1.38	1.41

Note: Analyses are on a Dry Basis for coal washed at 1.50 specific gravity

Additional Resource Criteria and Parameters

Based on WEIR's review and evaluation of the data and plans relative to Maben Coal, resource estimation criteria were applied to ensure reported mineral resource tonnage has a reasonable prospect for economic extraction. Resource criteria and parameters are as follows:

- Resources were estimated as of December 31, 2024.
- Underground areas where coal thickness did not meet a minimum thickness of 2.0 feet were excluded from the resource estimate.
- Underground areas within 200 feet of old mine workings were excluded from resource estimates.
- Underground areas with less than 100 feet of cover were excluded from resource estimates.
- Surface and highwall mining areas where coal thickness did not meet a minimum thickness of 1.0 feet were excluded from the resource estimate.
- Surface areas, where there was no subsequent highwall mining, and where stripping ratio exceeds 20:1, were excluded from the resource estimate.
- Tonnage outside of current LOM plans, but within existing property control, and meeting the criteria listed here, is classified as Resource tonnage and is reported exclusive of Reserve tonnage.
- Coal density (pounds per cubic foot) is based on apparent specific gravity data from analyses of dill hole samples and channel samples, where available. Otherwise, it is based on raw coal ash (dry basis) using the formula [1.25+(Ash/100)] x 62.4 pounds per cubic foot

11.2 ESTIMATES OF MINERAL RESOURCES

The coal resources, as of December 31, 2024, are reported as in-place resources and are exclusive of reported coal reserve tons (see Section 12.0). Resources are reported based on the coal resource estimate methodology described and are summarized in Table 11.2-1 as follows:

Table 11.2-1 In-Place Coal Resource Tonnage Estimate, as of December 31, 2024

Seam	Area (Acres)	Average Coal Thickness	In-Place Resources (000 Tons) Measured	Indicated	Total	Inferred
Sewell	2,931	2.6	13,336	1,153	14,489	-
Welch	155	1.3	378	-	378	-
Little Raleigh	291	1.8	748	273	1,021	-
Beckley	9	2.6	43	-	43	-
Lower Beckley	5,310	2.9	29,527	0	29,527	-
Fire Creek	193	2.2	536	288	824	-
Pocahontas No. 9	269	2.1	1,042	51	1,093	-
Pocahontas No. 6	5,857	3.1	33,780	1,826	35,606	-
Pocahontas No. 4	9,846	2.8	51,732	2,175	53,906	-
Pocahontas No. 3	15,937	3.0	88,476	4,683	93,159	-
Total	40,797	2.9	219,599	10,448	230,047	

Notes:

- Mineral Resources reported above are not Mineral Reserves and do not meet the threshold for reserve modifying factors, such as estimated economic viability, that would allow for conversion to mineral reserves. There is no certainty that any part of the Mineral Resources estimated will be converted into Mineral Reserves. Mineral Resources reported here are exclusive of Mineral Reserves.
- Resource economic mineability is based on minable resources with a 2.0 feet minimum seam thickness for underground mining, a 1.0 feet minimum seam thickness for surface and contour mining, a surface mining cutoff stripping ratio of 20:1, producing a metallurgical low volatile coal product realizing an average sales price of $153 per ton at a cash cost of $122 per clean ton (FOB Mine)
- Numbers in the table have been rounded to reflect the accuracy of the estimate and may not sum due to rounding

11.3 TECHNICAL AND ECONOMIC FACTORS FOR DETERMINING PROSPECTS OF ECONOMIC EXTRACTION

A Preliminary Feasibility Study was conducted to assess the prospects for economic extraction of coal within the Maben Property.

Ramaco's forecasted FOB mine coal sales prices are $133.62 per ton in 2025, $142.46 in 2026, $142.49 in 2027, and thereafter $142.46 to $163.76 per ton through 2038. Ramaco's sales price projections conform to published forward price curves for coal of similar quality to coal produced and to be produced at Maben Coal. The sales price is further supported in Section 16.0 of this report.

Capital expenditures are discussed in further detail in Section 18.1. In summary, capital expenditures are projected to average $19.30 per ton over the Maben Coal LOM Plan, compared to the actual average Maben Coal capital expenditure cost of $69.14 per ton in 2024. The 2024 year included high development capital and low production for the Maben Surface and HWM Mine, and high capital expenditures for constructing the Maben Preparation Plant.

Operating cash costs are discussed in further detail in Section 18.2. In summary, operating cash costs are projected to average $121.61 per ton over the Maben Coal LOM Plan, compared to actual average Maben Property operating cost of $124.89 per ton in 2024.

Total projected capital expenditures and operating cost of $140.91 per ton and a coal sales price per ton of $153.29, provide a reasonable basis for WEIR to determine that all underground mineable coal with thickness greater than 2.0 feet, surface and highwall mineable coal with seam thickness greater than 1.0 feet, and surface and contour mineable coal with stripping ratio of approximately 20:1 or lower, has prospects of economic extraction at Maben Coal.

11.4 MINERAL RESOURCE CLASSIFICATION

Mineral Resource estimates prepared for the Maben Property are based on the Regulation S-K Item 1302(d), which established definitions and guidance for mineral resources, mineral reserves, and mining studies used in the United States. The definition standards relative to resources are as follows:

Mineral Resource:
Mineral resource is a concentration or occurrence of material of economic interest in or on the Earth's crust in such form, grade or quality, and quantity that there are reasonable prospects for economic extraction. A mineral resource is a reasonable estimate of mineralization, taking into account relevant factors such as cut-off grade, likely mining dimensions, location or continuity, that, with the assumed and justifiable technical and economic conditions, is likely to, in whole or in part, become economically extractable. It is not merely an inventory of all mineralization drilled or sampled.

- *Inferred mineral resource* is that part of a mineral resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. The level of geological uncertainty associated with an inferred mineral resource is too high to apply relevant technical and economic factors likely to influence the prospects

of economic extraction in a manner useful for evaluation of economic viability. Because an inferred mineral resource has the lowest level of geological confidence of all mineral resources, which prevents the application of the modifying factors in a manner useful for evaluation of economic viability, an inferred mineral resource may not be considered when assessing the economic viability of a mining project, and may not be converted to a mineral reserve.

- *Indicated mineral resource* is that part of a mineral resource for which quantity and grade or quality are estimated on the basis of adequate geological evidence and sampling. The level of geological certainty associated with an indicated mineral resource is sufficient to allow a qualified person to apply modifying factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Because an indicated mineral resource has a lower level of confidence than the level of confidence of a measured mineral resource, an indicated mineral resource may only be converted to a probable mineral reserve.
- *Measured mineral resource* is that part of a mineral resource for which quantity and grade or quality are estimated on the basis of conclusive geological evidence and sampling. The level of geological certainty associated with a measured mineral resource is sufficient to allow a Qualified Person to apply modifying factors, as defined in this section, in sufficient detail to support detailed mine planning and final evaluation of the economic viability of the deposit. Because a measured mineral resource has a higher level of confidence than the level of confidence of either an indicated mineral resource or an inferred mineral resource, a measured mineral resource may be converted to a proven mineral reserve or to a probable mineral reserve.

Geostatistical methods were applied to drillhole and mine measurement coal thickness data for four primary seams within the Maben Property to develop variogram ranges (radii) used for resource classification. Four of the main seams evaluated were the Sewell, Lower Beckley, and the Pocahontas No. 4 and Pocahontas No. 3. Upon review of the analyses, a measured radius of 2,500 feet and an indicated radius of 7,000 feet for coal classification were deemed appropriate by WEIR as parameters for this study and were used for all of the seams.

Within the Measured and Indicated classifications, WEIR has demonstrated a level of geological confidence sufficient to allow for the application of modifying factors to support detailed mine planning and evaluation of the economic viability of the deposit. Beyond the four coal seams mentioned above, there are no outlier seams being considered for resources that display anomalous behavior in comparison. As such, classification radii utilized by WEIR in this study are as follows:

- Measured: 0 - 2,500 feet
- Indicated: 2,500 - 7,000 feet
- Inferred: greater than 7,000 feet

11.5 UNCERTAINTY IN ESTIMATES OF MINERAL RESOURCES

Mining is a high risk, capital-intensive venture and each mineral deposit is unique in its geographic, social, economic, political, environmental, and geologic aspects. At the base of any mining project is the mineral resource itself. Potential risk factors and uncertainties in the geologic data serving as the basis for deposit volume and quality estimations are significant considerations when assessing the potential success of a mining project.

Geological confidence may be considered in the framework of both the natural variability of the mineral occurrence and the uncertainty in the estimation process and data behind it. The mode of mineralization, mineral assemblage, geologic structure, and homogeneity naturally vary for each deposit. Structured variability like cyclic depositional patterns in sedimentary rock can be delineated mathematically with solutions like trend surface analysis or variography. Unstructured variability, in the distribution of igneous rock composition, for example, is more random and less predictable.

The reliability of mineral resource estimation is related to uncertainties introduced at different phases of exploration. Resources meeting criteria for Measured, Indicated, and Inferred categories are determined by the quality of modeled input data, both raw and interpreted. An exploration program comprises several stages of progressive data collection, analysis, and estimation, including:

- Geological data collection
- Geotechnical data collection
- Sampling and assaying procedures
- Bulk density determination
- Geological interpretation and modeling
- Volume and quality estimation
- Validation
- Resource classification and estimation

Error may be introduced at any phase. Managing uncertainty requires frequent review of process standards, conformance, correctional action, and continuous improvement planning. Risk can be minimized with consistent exploration practices that provide transparent,

backwards traceable results that ultimately deliver admissible resource estimates for tonnage and quality.

As discussed in Sections 9.0, 10.0, and 11.0, it is WEIR's opinion that Ramaco's methodology of data acquisition and analysis are adequate and reasonable for resource estimation at the Maben Property. In summary, WEIR has reviewed all geological data inputs serving as the basis for the deposit model, its interpretation, and the estimation and validation of the volume and quality of coal resources at the Maben Property. The spatial continuity of all seams with resource attributes at the Maben Property is well demonstrated by professionally developed, well maintained, quantitative and qualitative data. WEIR finds no material reason, regarding geologic uncertainty, that would prohibit acceptably accurate estimation of mineral resources.

11.6 ADDITIONAL COMMODITIES OR MINERAL EQUIVALENT

There are no other commodities or minerals of interest within the Maben Property resource area other than the coal deposit discussed in this TRS.

11.7 RISK AND MODIFYING FACTORS

The existing surface and HWM mine is performing as projected. Excepting the Allen Creek Mine No. 1, the planned underground mines in the Maben Property are above drainage and relatively dry, which decreases the risk for adverse floor conditions due to the presence of underclays.

The consistency of the seams within the property and good exploration drilling coverage combine to reduce geological risks. This also relates to product quality risks, which WEIR sees as low given historical mining successes in the general area. The appearance and disappearance of partings within mined benches is expected and is difficult to accurately map without extensive drilling. However, these partings are of little consequence to the final product, apart from the marginal additional processing costs involved at the preparation plant for non-coal partings removal.

Leases in planned mining area have been secured by Ramaco and WEIR finds no high risks associated with these coal deeds and leases. Resources that exist in currently unplanned mining areas are well situated for potential future mining.

Risk is also associated with volatility of coal market prices. Significant variations in operating costs, capital expenditures, productivity, and coal sales prices could impact the economic mineability of the coal seams within the Maben Property.

Unforeseen changes in legislation and new industry developments could alter the performance of Ramaco by impacting coal consumer demand, regulation and taxes, including those aimed at reducing emissions of elements such as mercury, sulfur dioxides, nitrogen oxides, particulate matter or greenhouse gases. The emphasis on reducing emissions, however, is more of a concern for mines producing a thermal coal product, as opposed to the metallurgical coal produced and to be produced from the Maben Property.

12.0 MINERAL RESERVE ESTIMATES

12.1 KEY ASSUMPTIONS, PARAMETERS, AND METHODS

The conversion of resources to reserves considers the effects of projected dilution and associated loss of product coal quality, preparation plant performance, projected coal sales prices, operating costs, regulatory compliance requirements, and mineral control. These factors all determine if the saleable coal product will be economically mineable. The design of executable mine plans that accommodate the planned mining equipment and facilities and provide a safe work environment is also considered.

For Ramaco's underground room and pillar operations, it should be noted that retreat mining will be implemented in the planned underground mining operations. This will result in up to 85 percent mining recovery of coal versus approximately 50 percent mining recovery with no retreat mining.

Mine layouts at Maben Coal have several key variables that will largely impact coal recovery. Pillar and panel dimensions are based on minimum, maximum, and optimal equipment operating parameters, as well as geotechnical considerations relative to the safety of the mining operations and subsidence predictions.

Based on a mine's historical performance and projected mineral continuity, the mine design is the primary consideration, apart from mineral resource classification, whereupon resources are converted to reserves.

Based on WEIR's review and evaluation of the Maben Coal LOM Plan, the justification for conversion of resources to reserves was based on specific criteria. In addition to the criteria stated in Section 11.0 for resources, the following criteria were used to estimate reserves for the Maben Property:

- Reserves were estimated as of December 31, 2024.
- Underground mining recovery of 50 to 85 percent (dependent on the extent of retreat mining that can be performed), surface mining recovery of 90 percent, and highwall mining recovery of 62 percent.
- A highwall mining maximum penetration depth of 960 feet, in areas where such depth could be achieved. Areas where a minimum of 400 feet of penetration depth could not be achieved, as a result of any site-specific boundary limitations including extent of

underground mining, were excluded from the reserve classification. A planned penetration depth of 800 feet was used for reserve calculations.

- The point of reference for reserve estimates is post preparation plant processing and recoverable tons were adjusted for a theoretical preparation plant yield based on drillhole and channel sample analyses washed at a 1.50 specific gravity.
- A conservative preparation plant efficiency factor of 95.0 percent was applied to reflect actual performance of the preparation plant, compared to theoretical laboratory results at a 1.50 specific gravity.
- The estimate of reserve tons includes areas that are exclusively within the current LOM Plan.

12.2 ESTIMATES OF MINERAL RESERVES

The coal reserves that represent the economically viable tonnage controlled by Ramaco at the Maben Property, based on the coal reserve estimate methodology described, are shown in Table 12.1-3 as follows:

Table 12.1-3 Clean Recoverable Coal Reserve Tonnage and Quality Estimate, as of December 31, 2024

Mine / Seam	Product	Total Area (Acres)	Average Seam Thickness (Feet)	Clean Recoverable Reserves (000 Tons			Theoretical Plant Yield (%)	Ash (%)	Sulfur (%)	Calorific Value (BTU/Lb)	Volatile Matter (%)	Raw Relative Density
				Proven	Probable	Total						
Maben Surface and Highwall Mine												
Sewell Seam	Low Vol	665	2.4	1,929	20	1,949	82.4	3.4	0.67	15,133	22.6	1.33
Slick Rock Sewell Deep Mine												
Sewell Seam	Low Vol	1,313	2.3	2,161	18	2,179	82.4	3.4	0.67	15,133	22.6	1.33
Beckley Crystal Deep Mine												
Lower Beckley Seam	Low Vol	1,049	3.7	3,007	-	3,007	79.7	9.1	1.03	14,861	20.0	1.43
Allen Creek Mine No. 1												
Pocahontas No. 3 Seam	Low Vol	1,994	2.9	4,402	-	4,402	70.9	9.1	1.17	14,345	18.8	1.47
Total		5,020	2.8	11,499	38	11,537	77.3	7.1	0.95	14,761	20.5	1.41

Note: Analyses are on a Dry Basis for coal washed at 1.50 specific gravity

Notes:

- Clean recoverable reserve tonnage is based on mining recoveries of 50 to 85 percent (contingent upon retreat mining capability) for underground mining, 90 percent for surface mining, 62 percent for highwall mining, theoretical preparation plant yield, and a 95 percent preparation plant efficiency
- Mineral Reserves estimated based on predominately low volatile metallurgical coal product at a sales price of $153 per ton and cash cost of $122 per clean ton (FOB Mine)
- Numbers in the table have been rounded to reflect the accuracy of the estimate and may not sum due to rounding
- Mineral Reserves are reported exclusive of Mineral Resources

12.3 ESTIMATES OF RESERVE CUT-OFF GRADE

The seams within the Maben Property display consistent quality attributes representative of high-quality metallurgical coal. Current mine plans involve producing a low volatile

metallurgical coal. One significant variable regarding cost considerations is Out-of-Seam Dilution (OSD), which results in additional preparation plant costs to obtain a saleable coal product. Preparation plant throughput is also a consideration. Currently, preparation plant ROM throughput is not a limitation, and the incremental cost of "washing out" the additional OSD as a result of minimum mining heights for equipment clearance does not prevent mining coal seams with thicknesses of 2.0 feet. Seam thickness below 2.0 feet results in increased operational difficulty given equipment limitations and capabilities. WEIR did not discover any areas within the planned mining area where washed coal quality parameters for planned mining tonnage was deficient relative to maintaining a high-quality metallurgical grade coal product.

In summary, based on Ramaco's historical and consistent saleable coal product quality at Maben Coal and current coal sales contract specifications, WEIR does not foresee any quality deviations that would adversely affect future coal sales.

12.4 MINERAL RESERVE CLASSIFICATION

WEIR prepared the reserve estimates in accordance with Regulation S-K Item 1302(e), which establishes guidance and definitions for mineral reserves to be used in the United States. The SEC Regulation S-K 1300 Definition Standards relative to reserves are as follows:

> *Modifying factors* are the factors that a qualified person must apply to indicated and measured mineral resources and then evaluate to establish the economic viability of mineral reserves. A qualified person must apply and evaluate modifying factors to convert measured and indicated mineral resources to proven and probable mineral reserves. These factors include but are not restricted to: Mining; processing; metallurgical; infrastructure; economic; marketing; legal; environmental compliance; plans, negotiations, or agreements with local individuals or groups; and governmental factors. The number, type and specific characteristics of the modifying factors applied will necessarily be a function of and depend upon the mineral, mine, property, or project.
>
> A *mineral reserve* is an estimate of tonnage and grade or quality of indicated and measured mineral resources that, in the opinion of the qualified person, can be the basis of an economically viable project. More specifically, it is the economically mineable part of a measured or indicated mineral resource, which includes diluting materials and allowances for losses that may occur when the material is mined or extracted.

- *Probable mineral* reserve is the economically mineable part of an indicated and, in some cases, a measured mineral resource.
- *Proven mineral reserve* is the economically mineable part of a measured mineral resource and can only result from conversion of a measured mineral resource.

Within the extent of the Maben Coal LOM Plan, Measured Resources were converted to Proven Reserves and Indicated Resources were converted to Probable Reserves.

12.5 COAL RESERVE QUALITY AND SALES PRICE

Maben Property reserve coal quality was determined by using seam averages over the property from available drillhole coal quality data. The average dry basis coal quality by seam, for raw coal and washed coal at a 1.50 specific gravity, for the reserves are shown in Table 12.1-3 above.

The average quality for the reserve tons indicates primarily a high quality low volatile metallurgical coal product, which possesses good coking properties. The average volatile matter is 22.6 percent, just slightly above the limit for low volatile coal classification. The range of dry washed volatile matter is between 18.8 and 22.6 percent, with an average of 20.5 percent. The average proximate analyses reflect an overall coal product that is relatively low in ash and sulfur, and high in calorific value. Petrographics data is very limited, however, all available analyses show parameters such as ROMAX, Free Swelling Index, Audibert-Arnu Maximum Dilation, and Gieseler Fluidity that indicate high quality metallurgical grade coal for all seams with analyses. Sewell Seam haultruck grab samples show an average of approximately 97 percent oxidation transmission for November and December, 2024.

Ramaco's forecasted FOB mine coal sales prices are $133.62 per ton in 2025, $142.46 in 2026, $142.49 in 2027, and thereafter $142.46 to $163.76 per ton through 2038. Ramaco's sales price projections conform to published forward price curves for coal of similar quality to coal produced at Maben Coal. The sales price is further supported in Section 16.0 of this report.

12.6 RISK AND MODIFYING FACTORS

In WEIR's opinion, due to the relatively high continuity of the coal seams within the Maben Property in terms of coal quality, coal quality uncertainties do not appear to pose a significant mining risk despite limited quality data within the property as available quality data show all targeted seams to be of high quality with good metallurgical coal characteristics. The same

cannot be said about coal structural continuity within the property as WEIR noted some washouts and numerous seam pinchouts in its geological model.

The Maben Surface and Highwall Mine has a good safety record and maintains regulatory compliance. Workforce census has been and is expected to remain stable. WEIR observed site personnel interviewing prospective employees during its site visit and comments from Ramaco indicated that there were several very favorable prospects for each position being interviewed. The primary mining equipment is well-maintained, as observed from WEIR's site visit, and has sufficient capacity to attain projected levels of productivity and production. As previously noted, mineral rights have been secured for all operating and planned mines.

Coal recovery is an important aspect in assessing the economic viability of a mine. Based on Ramaco's historical mining recovery rates, WEIR does not anticipate significant deviation of product recovery in the future. For deep mines, aerial recovery is based on the pillar size that has been designed for the operation, which is dependent on depth of cover and overlying rock strength. The pillar design is mostly intended to provide safe operation of the primary coal extraction efforts. As indicated in the Ramaco underground LOM Plan, WEIR utilized an average mining recovery of 50 percent for the Maben Property continuous miners for first mining and an additional 35 percent mining recovery for retreat mining in those areas that Ramaco determined to be acceptable for retreat mining (when considering subsidence concerns and general mine safety). This is consistent with typical industry standards and with actual mining recovery reported by Ramaco.

Risk is also associated with the volatility of coal market prices. Significant variations in operating costs, capital expenditures, productivity, and coal sales prices could impact the economic mineability of the coal seams within the Maben Property. Economic analyses and associated sensitivities are further detailed in Section 19.0.

13.0 MINING METHODS

The surface mining method utilized at Maben Coal employs front end loaders, haul trucks, dozers, and a drill to enlarge a pre-law highwall to create sufficient bench width for use of the HWM.

The underground mining method planned for development of the Maben Property is room and pillar mining utilizing continuous miners similar to Ramaco's other underground mining operations. Mains and submains are generally developed on 70 feet by 96 feet centers. Panels are generally developed on 70 feet by 96 feet centers, depending on depth of cover and surface structure concerns related to potential subsidence. Mine entry widths are approximately 20 feet for all entries. Retreat mining in the panels, where permitted, increases overall mining recovery to approximately 85 percent. Due to lack of surface structures within the Maben Property, retreat mining is planned for the majority of the underground mining areas. Although Ramaco has subsidence rights, Ramaco acknowledges the rules and regulations in regard to measures to be taken to mitigate or remedy any material damage or diminution in value that may occur to surface lands, structures, or facilities due to subsidence. No mining is proposed within 50 feet of gas wells.

13.1 GEOTECHNICAL AND HYDROLOGICAL MODELS

13.1.1 Geotechnical Model

Ramaco bases its HWM web spacing and barrier pillar design and underground mine pillar design on; 1) the general characteristics of the roof, coal, and floor strata in concert with Analysis of Coal Pillar Stability (ACPS) and Analysis of Retreat Mining Pillar Stability (ARMPS) software which are both accepted industry standards, 2) experience in the mining industry, and 3) results from similar or adjacent mines. Underground and HWM mining conditions at the Maben Property are consistent with roof and floor being primarily shales and sandstones, with competent coals seams (See Figure 6.3-1). In underground mines, pillars for first mining are designed according to minimum unconfined compressive strengths (UCS) of materials such that pillar stability is greater than 2.0. In the currently active and planned underground mines within the Maben Property, the first mining protection zones are limited to small areas where there are intermittent streams with less than 200 feet of cover.

Generally speaking, the UCS of shale ranges from 2,000 to 20,000 pounds per square inch (psi) while sandstone ranges from 7,000 to 35,000 psi. The compressive strength of the coal used

in the coal pillar stability analysis is 900 psi, realizing a safety factor of at least 2.0 relating to the coal pillar dimension analysis for the underground mines, and web spacings and barrier pillar widths for HWM, when using the lowest value for the compressive strength of shale. Due to this large safety factor when using the minimum commonly accepted UCS value for shale, and since the only protection zones are for intermittent streams in areas of less than 200 feet of cover, Ramaco has waivers in its WVDEP permits for analysis of the engineering properties of soft rock.

There are numerous gas wells and associated gas lines in both the surface and proposed underground mining areas. The owners of the gas wells have been identified on the Subsidence Survey Map in the associated WVDEP permits. No mining is proposed within 50 feet of the gas wells. No protection is proposed for the surface gas lines within the proposed mining areas.

Ramaco has developed roof control plans for all of its permitted underground mines. The HWM has a ground control plan which serves in a similar manner. The plans must be approved by the MSHA before mining can commence. The MSHA routinely performs mine inspections to ensure that these plans are being properly implemented.

For Ramaco's surface mining operations, standing highwall configurations are not substantial enough to warrant specific geotechnical studies. Maximum cut slopes and safety benches are maintained according to MSHA-approved Ground Control Plans.

For highwall mining operations, hole spacing is based on ACPS and ARMPS analysis and previous results in combination with accepted industry standards. Ramaco HWM design maintains an overall minimum safety factor of 2.0 as specified in its ground control plan, which should not result in subsidence. No other measures are required to prevent or minimize subsidence or subsidence related damage. Because no subsidence is anticipated from projected HWM mining, no plan for monitoring the extent of subsidence is proposed at this time. No water supplies are located above the proposed highwall mining areas.

In summary, no specific detailed geotechnical models or data sets have thus far been created for Ramaco's existing or planned mining operations. WEIR notes that to date, Ramaco has not experienced any significant stability problems at its Maben Coal mines. Based on WEIR's experience in the coal industry and Ramaco's successful operating history, both in regard to geotechnical considerations, Ramaco is operating its mines in accordance with industry acceptable geotechnical evaluation and standards.

13.1.2 Hydrogeological Model

The Maben Property is regionally within the Upper Guyandotte River watershed of West Virginia. The Clinch River, to the south of the Maben Property, is the primary hydrological feature in the region and is a tributary of the Tennessee River. The major hydrogeological unit in the area is the Lower Pennsylvanian.

Recharge rates for aquifers in this area are relatively low at approximately 12 inches per year. Transmissivity data for the Norton Formation in the region shows relatively high rates of 100 to 2,000 square feet per day (Aquifer-Characteristics Data for West Virginia, Water-Resources Investigations Report 01-4036, USGS/West Virginia Bureau for Public Health, 2001). These data both suggest unconfined aquifers, and this generally supports the hydrology sections of permits for the Ramaco mines on the property.

A 1993 study conducted by the USGS in cooperation with the Virginia Department of Environmental Quality in the general vicinity further supports this and suggests that the primary aquifers with significant horizontal flow in the area are due to relatively shallow fracture flow systems. Coal seams also act in horizontal flow systems typically resulting in discharge as springs or seeps on hill slopes, or recharge of coal seams at depth. The study found that as depth increases beyond 100 feet, hydraulic conductivity significantly decreases for strata other than coal. This results in little deep regional ground-water flow.

Due to the rural nature of the area, there are several cooperative and private water wells within and adjacent to the Maben Property. There are also structures that utilize the Public Service District water services, and those that utilize both. This ground water inventory information has been summarized by Ramaco in its permit applications.

With the exception of the Allen Creek Mine No. 1, the currently operating and planned Ramaco mines are and will be constructed above drainage and above all domestic surface and groundwater sources. For the Allen Creek Mine No. 1, which is below drainage, the probable hydrologic consequences study performed during completion of the mine permit showed that there were no significant aquifers present above the mine. Due to above drainage construction and low aquifer recharge rates in the area, the other Ramaco mines are relatively dry with little concern for water infiltration. Fracturing and weathering are invariably present in varying degrees in shallow rocks throughout the property. Fracturing affects the hydrologic regime by controlling subsurface water flow (and thus weathering) due to the very low permeability of

un-fractured strata. Infiltration due to this fracturing is sometimes encountered but is insignificant to mine operations.

Surface Water Runoff Analyses are included in permit submittals and indicate that stream flows will not increase during or after mining, therefore there will be no increased potential for flooding or channel scouring. In general, diminution, or interruption of any water supply, as a result of the Ramaco mines, is not anticipated.

Groundwater inventories, water quality data, water balance, recharge and seepage rates have been reviewed in the approved permits and current permit revisions, including hydrologic impact assessments outlining risks, monitoring program detail, and mitigation obligations. Ramaco's approach to obtaining and managing its surface and groundwater data for the Maben Property has been demonstrated to be adequate and aligned with regulatory requirements and standard industry practices. WEIR finds no material barriers to the continued success of the Maben Property regarding hydrologic impact or compliance.

13.1.3 Other Mine Design and Planning Parameters

Mine ventilation is a primary design concern for underground mines. WEIR has reviewed Ramaco's designs and planning for this aspect of its mining operations and has found no significant problems concerning adequacy of ventilation fans or fan locations.

WEIR reviewed Ramaco's mines' proximities to previous mine workings and found no concerns for its existing or planned mining operations as significant old underground workings do not exist above or below any of Ramaco's currently planned underground mines on the property.

Underground mine surface facilities and surface mining sites require drainage designs to control surface water runoff. WEIR has reviewed Ramaco's designs, which have been approved in its WVDEP and NPDES permits, and found the designs to be adequate and consistent with industry standards.

13.2 PRODUCTION, MINE LIFE, DIMENSIONS, DILUTION, AND RECOVERY

13.2.1 Production Rates

Beckley Crystal Deep Mine

Two continuous miners will operate as one supersection at the Beckley Crystal Mine. Supersections are continuous miner sections with split ventilation that allows the operation of two continuous miners on the section, with a projected productivity of 195 feet per shift. This mine is scheduled for startup in 2026 and is scheduled to produce approximately 200,000 clean tons per year at full capacity, until the end of mine life is reached in 2038 for a total of 2.4 million clean tons produced. The Lower Beckley Seam, which averages approximately 3.7 feet in thickness over the LOM Plan, will be mined at the Beckley Crystal Deep Mine. The mine at full capacity is projected to employ 50 personnel. Access is by portal. Potential adverse mining conditions include water accumulation on the mine floor due to seam undulations, although roof and floor conditions are expected to be good.

Slick Rock Sewell Deep Mine

Four continuous miners will operate as two supersections at this mine in the Sewell Seam with a projected productivity of 195 feet per shift. The Slick Rock Sewell Deep Mine is scheduled for startup in mid-2026 and is scheduled to produce approximately 350,000 clean tons per year at full capacity, until the end of mine life is reached in 2033 for a total of 2.2 million clean tons produced. The Sewell Seam averages approximately 2.3 feet in thickness over the LOM Plan. The mine at full capacity is projected to employ 100 personnel. Access is by portal. No adverse mining conditions are anticipated.

Allen Creek Mine No. 1

Six continuous miners will operate as three supersections at this mine in the Pocahontas No. 3 Seam with a projected productivity of 195 feet per shift. This mine is scheduled for startup in 2028 and is scheduled to produce approximately 550,000 clean tons per year at full capacity, until the end of mine life is reached in 2038 for a total of 4.4 million clean tons produced. The Pocahontas No. 3 Seam averages approximately 2.9 feet in thickness over the LOM Plan. The mine at full capacity is projected to employ 150 personnel. Access is by an existing 50 feet slope. This mine was previously developed by Carbon Resources Development, Inc., but never commenced coal production for reasons unknown to WEIR. Roof and floor conditions are anticipated to be good.

Maben Surface and HWM Mine

The Maben Surface and HWM Mine commenced operations in May, 2023 and involves a surface contour operation with primary purpose to create a sufficiently wide working bench for a Superior highwall miner. This is a pre-law mining area that has been previously contour mined, however, there are some areas where the current contour mining produces some coal primarily through widening the existing bench to a minimum width of 85 feet. The contour mining operation takes the burden from in front of the HWM and places it behind the HWM to effectively reclaim this pre-law mining area as the HWM advances. The Sewell Seam is being mined at this operation and averages approximately 2.4 feet in thickness. There are currently 59 Ramaco personnel employed at this mine.

The previously mined bench was also previously auger mined in some areas to relatively short lengths compared to the capability of the Superior highwall miner. Prior to highwall mining with the Superior machine, Ramaco backfills the old auger holes with a low strength grout to help ensure that there is no subsidence after its highwall mining activities. This backfilling of old auger holes is required by the MSHA and is part of Ramaco's ground control plan. The Superior highwall miner penetration depths are projected at approximately 800 feet at full seam thickness, with an 11 feet cut width on a typical web spacing of 9.0 feet. A typical panel design has 10 holes with a 20 to 30 feet wide barrier pillar between panels, depending on ground conditions. Ramaco has been averaging 720 to 740 feet cut lengths. GPS is used for HWM hole alignment. No methane has been encountered in the holes.

Production is planned at 200,000 clean tons per year until the end of mine life in 2029 for total production of 900,000 clean tons from 2025 through 2029. Actual clean coal production in 2023 and 2024 is shown in Table 13.2.1-1 below:

Table 13.2.1-1 Maben Property Historical Clean Coal Production

	2023	2024	Average
Mine	Clean Tons		
Maben Surface	35,960	52,962	44,461
Maben HWM	136,627	212,535	174,581
Maben Complex Total	172,587	265,497	219,042

Actual and projected ROM and clean coal production, preparation plant yield, and sold tons for each of the mines projected for the Maben Coal LOM Plan are shown in Table 13.2.1-2 as follows:

Table 13.2.1-2 Maben Coal LOM Plan Projected ROM and Clean Production, Preparation Plant Yield, and Tons Sold

	2024 [1]	2025	2026	2027	2028	2029	2030	2031
ROM Tons (000)								
Maben Surface Mine	110	143	147	144	141	22	-	-
Maben HWM	424	544	538	514	512	193	-	-
Beckley Crystal Deep Mine	-	-	407	433	525	630	630	630
Slick Rock Deep Mine	-	-	218	979	1,306	1,306	1,306	1,306
Allen Creek Deep Mine	-	-	-	-	849	1,073	1,485	1,485
Total	534	687	1,310	2,071	3,332	3,224	3,421	3,421
Clean Tons (000)								
Maben Surface Mine	53	66	68	66	65	9	-	-
Maben HWM	213	209	207	200	207	78	-	-
Beckley Crystal Deep Mine	-	-	150	143	241	236	219	224
Slick Rock Deep Mine	-	-	23	183	304	307	341	447
Allen Creek Deep Mine	-	-	-	-	350	340	529	571
Total	265	275	447	593	1,168	971	1,089	1,241
Preparation Plant Yield (%)								
Maben Surface Mine	48.0	46.0	46.0	46.0	46.0	40.0	-	-
Maben HWM	50.2	38.5	38.5	38.9	40.5	40.4	-	-
Beckley Crystal Deep Mine	-	-	36.8	33.1	45.9	37.5	34.8	35.5
Slick Rock Deep Mine	-	-	10.5	18.7	23.3	23.5	26.1	34.2
Allen Creek Deep Mine	-	-	-	-	41.3	31.7	35.6	38.4
Average	49.7	40.0	34.1	28.6	35.0	30.1	31.8	36.3
Tons Sold (000)								
Maben Surface Mine	46	72	66	66	65	9	-	-
Maben HWM	170	228	201	199	206	78	-	-
Beckley Crystal Deep Mine	-	-	162	141	239	236	219	224
Slick Rock Deep Mine	-	-	18	180	312	307	341	447
Allen Creek Deep Mine	-	-	-	-	349	340	529	571
Total	215	300	447	587	1,171	971	1,089	1,241

[1] Actual

	2032	2033	2034	2035	2036	2037	2038	LOM Total
ROM Tons (000)								
Maben Surface Mine	-	-	-	-	-	-	-	598
Maben HWM	-	-	-	-	-	-	-	2,301
Beckley Crystal Deep Mine	630	630	630	630	630	630	158	7,192
Slick Rock Deep Mine	1,306	707	-	-	-	-	-	8,432
Allen Creek Deep Mine	1,485	1,485	1,361	990	784	495	225	11,716
Total	3,421	2,822	1,991	1,620	1,414	1,125	382	30,240
Clean Tons (000)								
Maben Surface Mine	-	-	-	-	-	-	-	274
Maben HWM	-	-	-	-	-	-	-	902
Beckley Crystal Deep Mine	220	186	197	186	177	170	44	2,391
Slick Rock Deep Mine	372	197	-	-	-	-	-	2,175
Allen Creek Deep Mine	567	587	518	372	291	188	90	4,402
Total	1,159	969	714	557	468	357	133	10,143
Preparation Plant Yield (%)								
Maben Surface Mine	-	-	-	-	-	-	-	45.8
Maben HWM	-	-	-	-	-	-	-	39.2
Beckley Crystal Deep Mine	34.9	29.5	31.2	29.5	28.1	27.0	27.9	33.2
Slick Rock Deep Mine	28.5	27.8	-	-	-	-	-	25.8
Allen Creek Deep Mine	38.2	39.5	38.0	37.5	37.2	37.9	39.8	37.6
Average	33.9	34.3	35.9	34.4	33.1	31.8	34.9	33.5
Tons Sold (000)								
Maben Surface Mine	-	-	-	-	-	-	-	278
Maben HWM	-	-	-	-	-	-	-	913
Beckley Crystal Deep Mine	220	186	197	186	177	170	44	2,400
Slick Rock Deep Mine	372	197	-	-	-	-	-	2,175
Allen Creek Deep Mine	567	587	518	372	291	188	90	4,401
Total	1,159	969	714	557	468	357	133	10,166

13.2.2 Expected Mine Life

Because the mines are being staged in development, estimates of expected life of mine for Maben Coal is not appropriate, since there are fairly vast resources available to be mined as reported in Section 11.0. As mining at Maben Coal progresses, future mines will be planned and scheduled as necessary to meet internal Ramaco goals aligned with market conditions. WEIR and Ramaco both acknowledge that this reporting methodology may result in the need for future updates to this TRS.

13.2.3 Mine Design Dimensions

The projected mining for the various mine plans are shown on Figures 13.5-1 through 13.5-4.

Mine design criteria utilized for these mine plans are as follows:

- Gas Wells
  - State Permit required to mine within 500 feet of a well
  - MSHA Permit required to mine within 150 feet of a well
  - Active Well barrier - tangent of 15 degrees x depth of cover or 50 feet, whichever is greater
  - Inactive Well barrier - tangent of 5 degrees x depth of cover or 50 feet, whichever is greater
  - Plugged Wells - mine-through is allowed with acquisition of proper State and MSHA Permits

- Pillar Size
  - ARPMS stability factor of 2.0 or greater for mining under protected areas, which is primarily intermittent streams with less than 200 feet of cover.
  - ARMPS stability factor of 1.5 or greater for all other room and pillar development.

- Depth of Cover
  - Ramaco implements a 100 feet minimum depth of cover for all of its underground mines

- Areas without Subsidence Rights
  - ARMPS stability factor of 2.0 or greater will be maintained during first mining.
  - Retreat mining will extend no closer than a tangent of 30 degrees times depth of cover to the property boundary.

- Coal Thickness
  - Mining is not planned in areas where coal seams are less than 2.0 feet in thickness.
  - Continuous miner units are assumed to mine the entire seam thickness (averaging approximately 2.8 feet and ranging from 2.0 to 9.0 feet).

13.2.4 Mining Dilution

OSD related to continuous miner units typically consists of a total of two to three inches of waste from the roof and/or floor. Some areas may require more OSD to be mined to accommodate mine facilities such as ventilation or conveyors. OSD is not included in the reserve or resource estimates since all underground ROM coal is processed at the preparation plant, which effectively eliminates OSD from the saleable coal product.

13.2.5 Mining Recovery

Mining recovery when utilizing continuous miners is based on the pillar design, which is in turn based on depth of cover. Mining recovery varies based on whether developing main or sub-main entries, or a production panel due to the longevity requirements for the mine entries. Mining recovery for first mining is approximately 50 percent, based on pillar design. In the areas where retreat mining is conducted, an additional 35 percent mining recovery is achieved.

For surface mining, a recovery of 90 percent was projected. The designed hole spacing for highwall mining results in a mining recovery of approximately 62 percent.

13.3 DEVELOPMENT AND RECLAMATION REQUIREMENTS

13.3.1 Underground Development Requirements

Maben Coal currently consists of an active surface and HWM mine, and three planned underground mines. Once the underground mines commence production, continuous miner development is required for extensions of belt conveyors, mine power, pipelines, track, and ventilation facilities.

Future ventilation punchouts, or bleeder holes, are anticipated for areas where retreat mining is executed. Each bleeder hole installation will be completed just prior to starting panel development.

Minor development such as drilling holes for rock dust and electrical distribution from the surface may be required at some of the mines, once underground mine development becomes extensive.

13.3.2 Reclamation (Backfilling) Requirements

As part of Ramaco's surface mine plans, the contour mining method will require backfilling as mining progresses. Some of these areas involve facing up Abandoned Mine Lands (AML or, pre-1977 Surface Mine Reclamation Act law). Material from the current contour cuts will be used to re-slope previously contour-mined areas to AOC. To the extent possible, Ramaco avoids the use of valley fills during surface mining operations in preference to backfilling of previously contour mined areas. Backfilling will be contemporaneous with mining progression on a schedule as outlined in the Maben Highwall Mine No. 1 and No. 2 WVDEP mining permits.

WEIR has reviewed Ramaco's 1/11/23 Asset Retirement Obligations (ARO) summary for the period ending 12/31/22, and backfilling obligations appear to be properly accounted for at its mines. Based on Ramaco's permits with the WVDEP, bonding requirements are current and at satisfactory levels at the Maben Property (see Section 17.3 and 17.5 for additional details on bonding and mine closure planning).

13.4 MINING EQUIPMENT AND PERSONNEL

13.4.1 Mining Equipment

Maben Coal is utilizing the following industry standard surface and HWM mining equipment, as shown in Table 13.4-1.

Table 13.4.1-1 Standard/Typical Surface and HWM Mining Equipment

Type	Make	Model
Surface Mine		
Wheel Loader	Komatsu	WA800-8
Wheel Loader	Komatsu	WA500-8
Rock Truck	Caterpillar	773F
Rock Truck	Caterpillar	773F
Rock Truck	Caterpillar	773F
Rock Truck	Caterpillar	773F
Rock Drill	Ingersoll Rand	DML
Dozer	Caterpillar	D10T
Dozer	Caterpillar	D9R
Dozer	Caterpillar	D6T
Excavator	Komatsu	PC360LC-11
Excavator	Komatsu	PC290LC-11
Road Grader	John Deere	672G
Articulating Truck	Caterpillar	740B
Highwall Miner		
Highwall Miner	Superior	HWM
Generator	Genset	QSK50-G4
Wheel Loader	John Deere	844K
Wheel Loader	Caterpillar	988H

Maben Coal is planning on utilizing the following industry standard mining equipment on the continuous miner sections, as shown in Table 13.4.1-2.

Table 13.4.1-2 Standard/Typical Continuous Miner Section Equipment

Continuous Miner Supersection Unit
2 - Joy 14CM15 Continuous Miners
4 - Narco 10SC32 Shuttle Cars
2 - Fletcher CHDDR15 Roof Bolters
1 - Fairchild 35C Battery Scoops
1 - Feeder Breaker
2 - Mantrips

Table 13.4.1-3 shows the total underground equipment fleet expected at Maben Coal over the next 10 years. In some cases, mines that commence later in the LOM Plan will utilize equipment currently being used at Maben Coal mines to avoid additional capital expenditures.

Table 13.4.1-3 Maben Coal Primary Underground Equipment Fleet

Mine	Supersections	Continuous Miners	Shuttle Cars	Roof Bolters	Battery Scoops	Feeder Breakers	Mantrips	Service Locomotiv
Beckley Crystal Deep Mine	1	2	3	2	1	1	2	1
Slick Rock Sewell Deep Mine	2	4	6	4	2	2	4	2
Allen Creek No. 1 Mine	3	6	9	6	3	3	6	3
Total	6	12	18	12	6	6	12	6

No significant changes are anticipated in the type of mining equipment used throughout the Maben Coal LOM Plan. Based on WEIR's experience in the industry and on Ramaco's historical performance, WEIR believes that Ramaco can meet planned production requirements with the mining equipment described in this section using prudent operating methods and operating schedules.

13.4.2 Staffing

The current staffing is summarized in Table 13.4.2-1 below. This number will significantly increase as the new underground mines commence operations.

Table 13.4.2-1 Current Staffing

	Total
Maben Surface Mine	28
Maben HWM	13
Maben Preparation Plant	16
Administration	2
	59

Note: Staffing as of December 2024

Each operating mine at the Maben Coal is scheduled to produce coal two production shifts each day, the A Shift and the B Shift. Planned underground mine crews on the idle night shift will provide support services, including production equipment moves, off-shift maintenance, and other support functions as required. In addition, general underground support crews will work each shift performing routine supply, belt maintenance, and outby support functions. Hourly personnel are not affiliated with any union and no changes to this are anticipated in the near term.

The preparation plant is staffed with two crews to process ROM coal 20 hours per day over two, 10-hour shifts, five days per week with no holidays.

The actual and projected staffing for the LOM Plan is shown in Table 13.4.2-2 as follows:

Table 13.4.2-2 LOM Plan Staffing

	Total
Current[(1)]	59
2025	75
2026	204
2027	251
2028	351
2029	401
2030 - 2032	362
2033	348
2034	248
2035 - 2036	198
2037 - 2038	148

[(1)] As of December 31, 2024.

Most of Ramaco's employees live nearby in Raleigh and Wyoming Counties, West Virginia. Ramaco has had no major issues hiring qualified candidates for open positions and relies considerably on employee referrals.

Based on industry experience and Ramaco's historical performance, WEIR believes that the staffing levels are adequate to meet Ramaco's planned production.

Mine Safety

An industry standard for safety performance is the Non-Fatal Days Lost (NFDL) Incidence Rate, which is determined by the number of lost time injuries multiplied by 200,000 divided by the manhours worked.

Maben Coal's manhours worked, NFDL injuries, and NFDL Incidence Rate for 2023 through 2024, compared to the national average NFDL Incidence Rate for United States surface and underground coal mines are shown in Table 13.4.2-3.

Table 13.4.2-3 Maben Coal Manhours Worked, NFDL Injuries and NFDL Incidence Rate

	Manhours Worked	NFDL Injuries		NFDL Incidence Rate	
		Employee	Contractor	Mine Total	National Average
	Maben Surface Mine				
2024	78,862	-	-	-	0.81
2023	60,225	-	-	-	0.84
	Maben HWM				
2024	35,148	-	-	-	0.81
2023	18,130	-	-	-	0.84

Maben Coal's NFDL Incidence Rates are significantly lower than the national average in 2023 and 2024. For 2023 and 2024, both the Maben Surface Mine and HWM had a zero NFDL Incidence Rate.

The Maben Preparation Plant manhours worked, NFDL injuries, and NFDL Incidence Rate reported to the MSHA for 2024, compared to the national average NFDL Incidence Rate for United States preparation plants are shown in Table 13.4.2-4 as follows:

Table 13.4.2-4 Plant Manhours Worked, NFDL Injuries and NFDL Incidence Rate

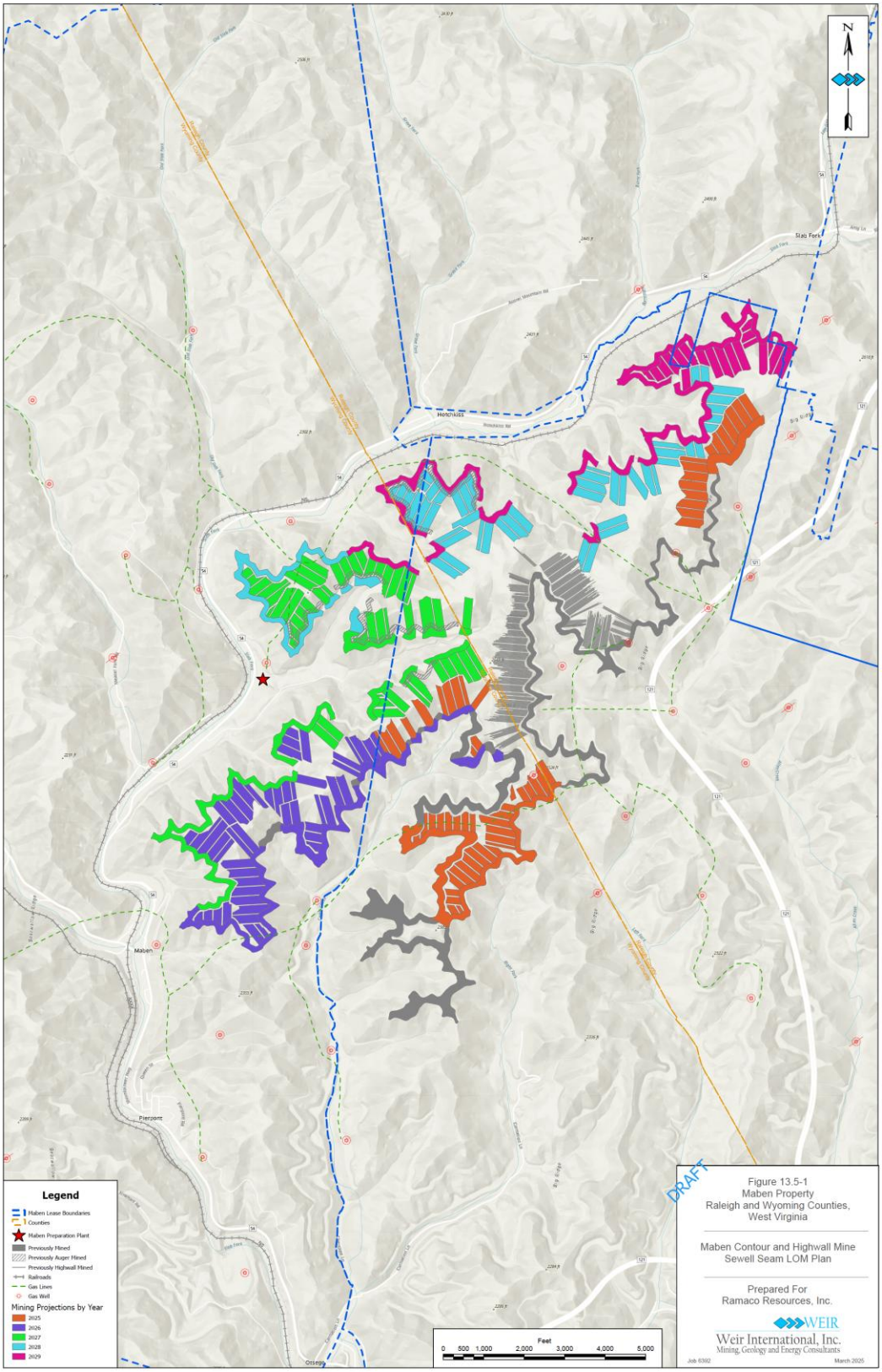
	Manhours Worked	NFDL Injuries		NFDL Incidence Rate	
		Maben	Contractor	Maben Plant	National Average
2024	5,015	-	-	-	0.52
2023	-	-	-	-	0.91

The Maben Preparation Plant historical NFDL Incidence Rates for 2024 are significantly lower than the national average. For 2024, the Maben Preparation Plant had a zero NFDL Incidence Rate.

13.5 LIFE OF MINE PLAN MAPS

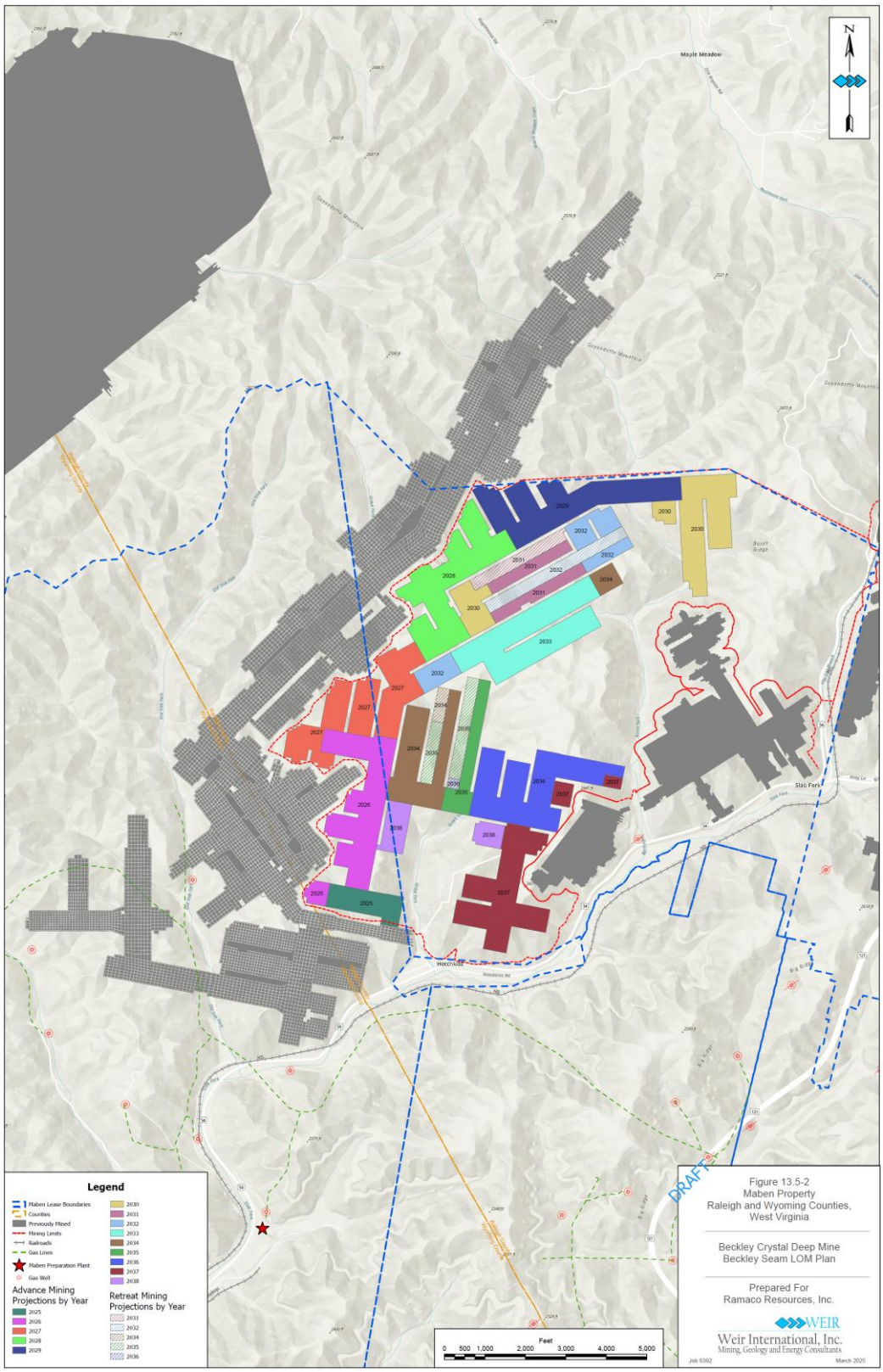
The Maben Coal LOM Plans are shown on Figures 13.5-1 through 13.5-4.

Figure 13.5-1 Life of Mine Plan, Maben Contour and Highwall Mine



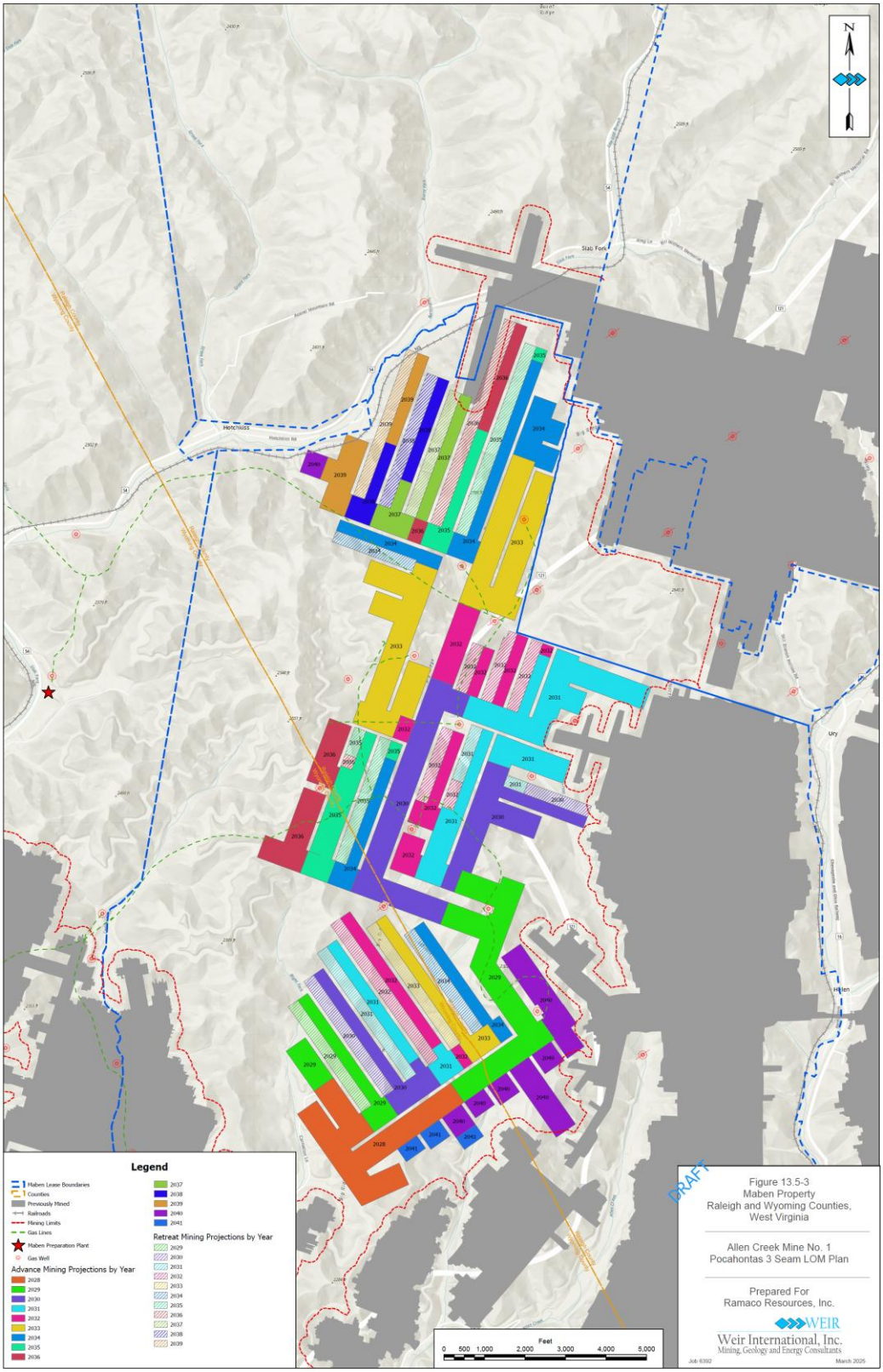
See Appendix A for high-resolution version of this Figure

Figure 13.5-2 Life of Mine Plan, Beckley Crystal Deep Mine



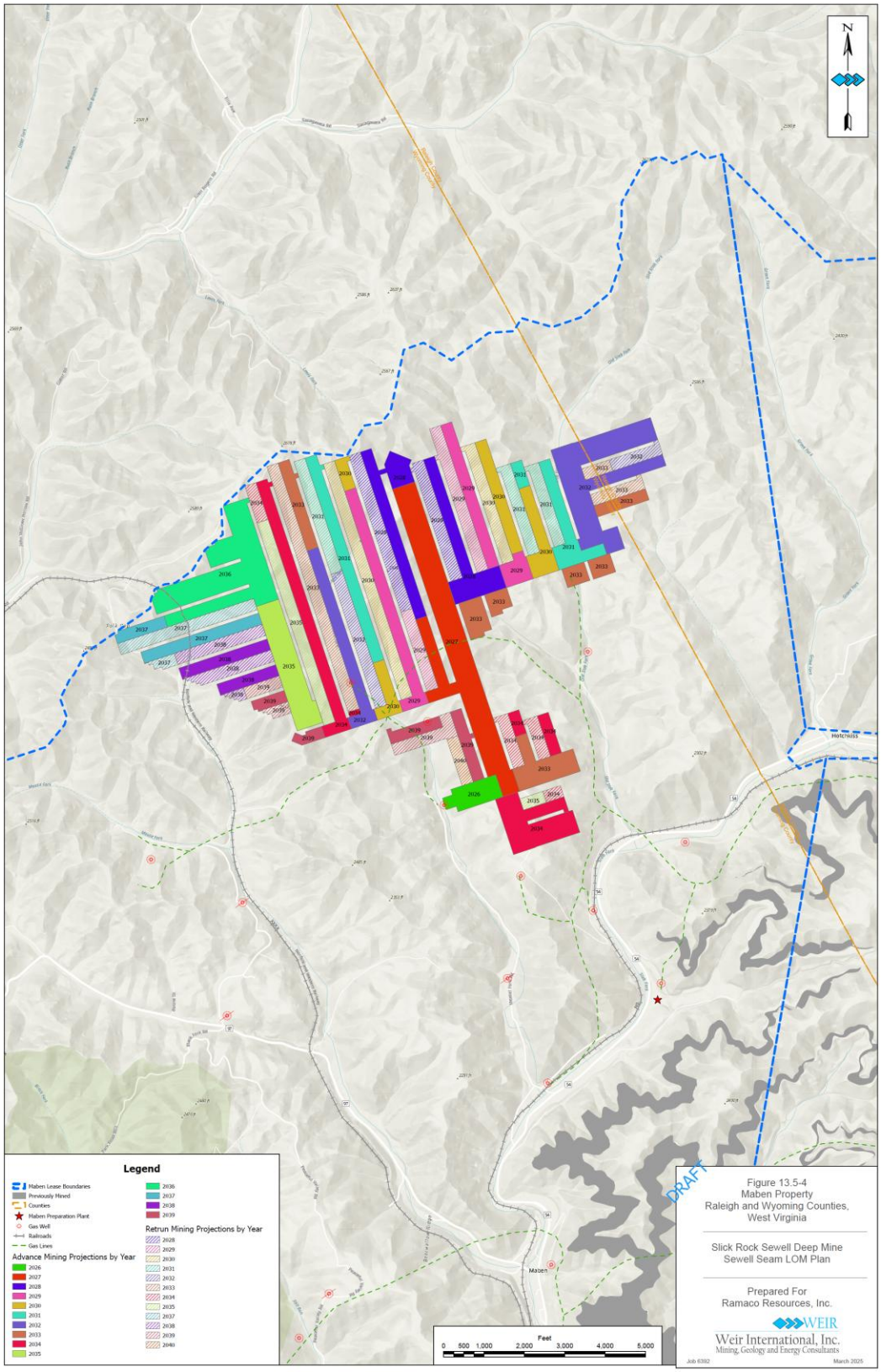
See Appendix A for high-resolution version of this Figure

Figure 13.5-3 Life of Mine Plan, Allen Creek Mine No. 1



See Appendix A for high-resolution version of this Figure

Figure 13.5-4 Life of Mine Plan, Slick Rock Sewell Deep Mine



See Appendix A for high-resolution version of this Figure

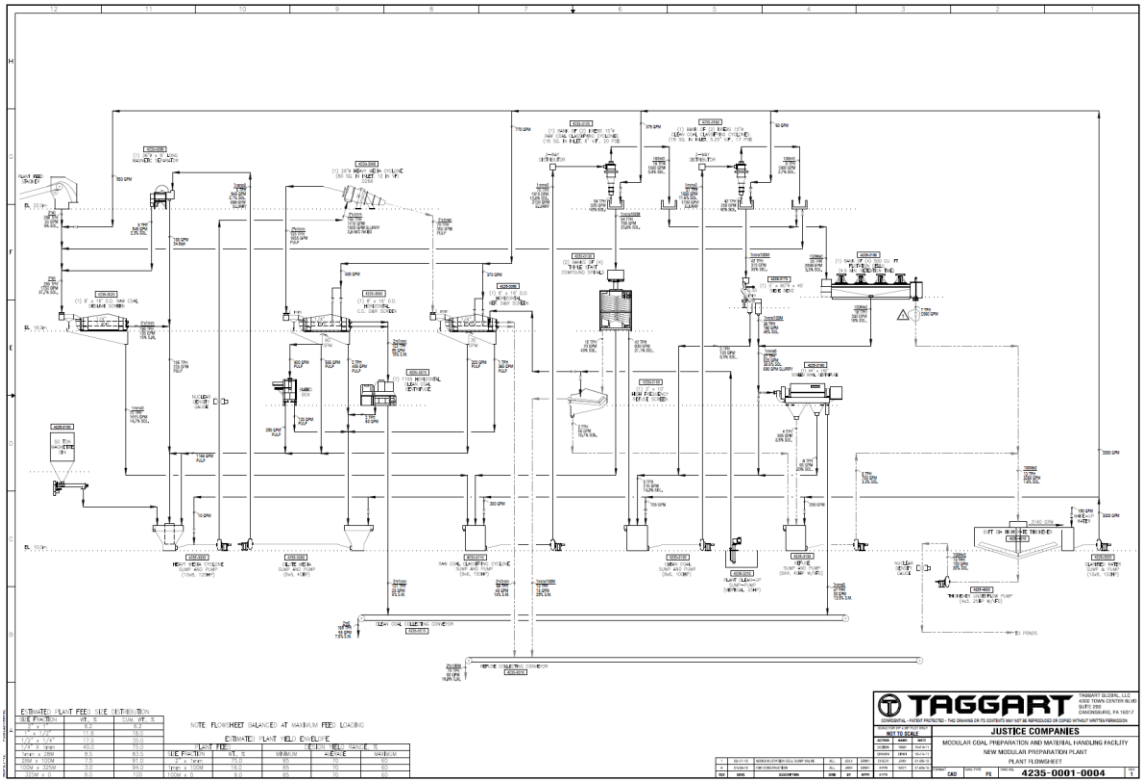
14.0 PROCESSING AND RECOVERY METHODS

14.1 MABEN PREPARATION PLANT PROCESS AND FLOWSHEET

Initially coal mined at the Maben Property was shipped to Ramaco's Berwind Plant for processing. On-site construction of a modular coal processing plant was started in May, 2024. This basically new modular plant was located in Alabama where it operated for three weeks and then idled in 2014. The plant started operations at the Maben Property in November, 2024. The processing circuits in the Maben Preparation Plant include one, twenty six-inch heavy media cyclone, classifying cyclones, two banks of four compound spirals, one bank of four conventional self-aspirating flotation cells, and a belt press filter. A simplified flowsheet for the Maben Preparation Plant is shown on Figure 14.1-1. Construction is on-going mainly involving efforts to enclose the plant for protection from weather.

A preparation plant addition is currently being designed to add a heavy media vessel, heavy media cyclones, spirals, and froth flotation to increase the processing rate to at least 750 ROM TPH.

Figure 14.1-1 Simplified Preparation Plant Flowsheet



See Appendix A for high-resolution version of Figure 14.1-1

14.2 PLANT PROCESSING DESIGN, EQUIPMENT CHARACTERISTICS AND SPECIFICATIONS

The preparation plant has a nameplate capacity of 250 ROM tons per hour. The plant operates two, 10-hour shifts per day, on a 5 to 6 day week processing schedule as required.

ROM coal from the mines within the Maben Property is hauled by over the highway (OTR) end-dump trucks to the Maben Preparation Plant. Ground storage ROM coal capacity at the plant is approximately 20,000 tons. The ROM coal is fed into a hopper by front end loaders. From the hopper, a 36-inch-wide conveyor feeds the ROM coal the preparation plant.

The plant feed ROM coal material is screened at +2 inch, and 1mm x 0. The 2 inch x 1mm ROM coal is processed in a 26-inch diameter heavy media cyclone. The 1mm x 0 material is processed in two raw coal classifying cyclones. From the raw coal classifying cyclones, 1mm x 100 mesh material is processed in two banks of four triple-start compound spirals. The ultrafine 100 mesh x 0 material is cleaned by four 500 cubic foot conventional froth flotation cells.

Clean coal storage capacity is minimal at this time. Currently clean coal is loaded into OTR trucks using front end loaders and hauled to the Berwind Preparation Plant for rail loadout. To eliminate the need for haulage to the Berwind Preparation Plant, a new rail loadout system is planned to be constructed in the near future but has not yet been scheduled. The loadout will accommodate up to 125 cars and will be served by the NS Railroad. It will be located on an existing live NS line.

Preparation plant refuse is placed in the adjacent Maben Refuse Disposal Area, which is a combined coarse and fine refuse disposal area. The combined refuse is transported to the disposal area by 40-ton articulated end dump haul trucks. The remaining refuse disposal capacity far exceeds capacity requirements for the current LOM plans.

Although there is currently no processing plant capacity concern, with the advent of new mine startups in the relatively near future, Ramaco has developed a plan to increase the Maben Property ROM coal processing capacity. A new preparation plant will be constructed adjacent to the existing plant which will have the capacity to process approximately 500 ROM TPH for a total site processing capacity of approximately 750 ROM TPH. Construction of this new plant is anticipated to begin in 2027.

14.3 ENERGY, WATER, PROCESS MATERIALS, AND PERSONNEL REQUIREMENTS

Power is supplied to the plant by AEP. Power is received at a primary voltage of 69,000 volts and fed through a 10,000 KVA substation where voltage is reduced to 12,470 volts. Voltage is further reduced inside the preparation plant, to 480 volts.

Make up water is available from several sources including the adjacent Slab Fork creek and detention ponds. There have been no issues regarding make up water availability.

15.0 INFRASTRUCTURE

15.1 ROADS

The primary access road to the Maben Property is West Virginia State Route 54, a two-lane highway, along the western side of the property. The site gate is on the east side of Route 54 approximately 1.3 miles to the north of the town of Maben.

15.2 RAILROADS

The NS Railroad parallels the west side of the property along Route 54. The CSXT Railroad also parallels the property with a North/South line along the east side of the property (see Figure 1.1-1).

15.3 POWER

Maben Coal's electrical stub line taps into AEP's 138KV line which runs north/south to the east of the property. The power is stepped down to 69KV at Maben Coal's substation, where transmission line then traverses to the location of the Maben Preparation Plant.

15.4 WATER

Water for mining and coal processing operations is provided by a combination of extraction from settling ponds located on the surface and Slab Fork, a creek which runs along Route 54.

15.5 PIPELINES

There are several oil and natural gas collection lines that service wells within the Maben Property. Any construction and earth moving activities in proximity to these lines requires coordination with the oil or natural gas line owner.

15.6 PORT FACILITIES

The nearby waterways are not navigable for commercial traffic. The closest barge docking area is the Alloy Dock which is approximately 33 miles to the north on the Kanawha River, southeast of Charleston, West Virginia.

Currently, coal produced at Maben Coal is processed at the Berwind Preparation Plant and railed, via the NS Railroad, to the Pier 6 Terminal, owned and operated by Norfolk Southern Corporation, and located at Lamberts Point in Norfolk, Virginia. Metallurgical coal produced at Maben Coal is exported from the Pier 6 Terminal.

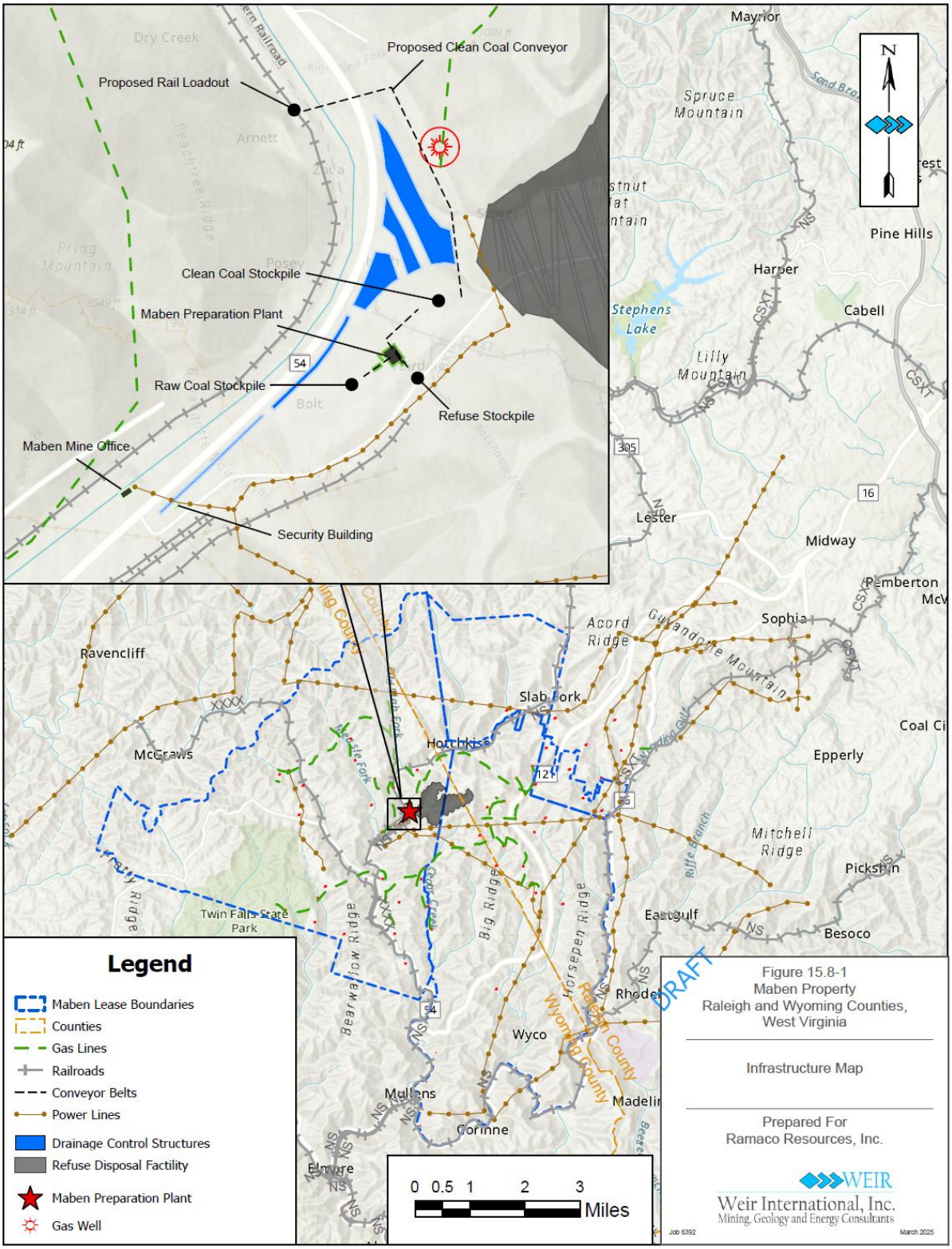
15.7 DAMS AND REFUSE DISPOSAL

There are no structures that are existing or planned to be constructed in such a size or manner that will be subject to the West Virginia Dam Control Act, and/or MSHA regulations. Refer to Section 17.2 for details on coal refuse disposal for the Maben Property.

15.8 SITE INFRASTRUCTURE

On-site facilities include a small gatehouse at the site entrance and a small office building on the west side of Route 54. Refer to Figure 15.8-1 for more details on site infrastructure.

Figure 15.8-1 Infrastructure Map

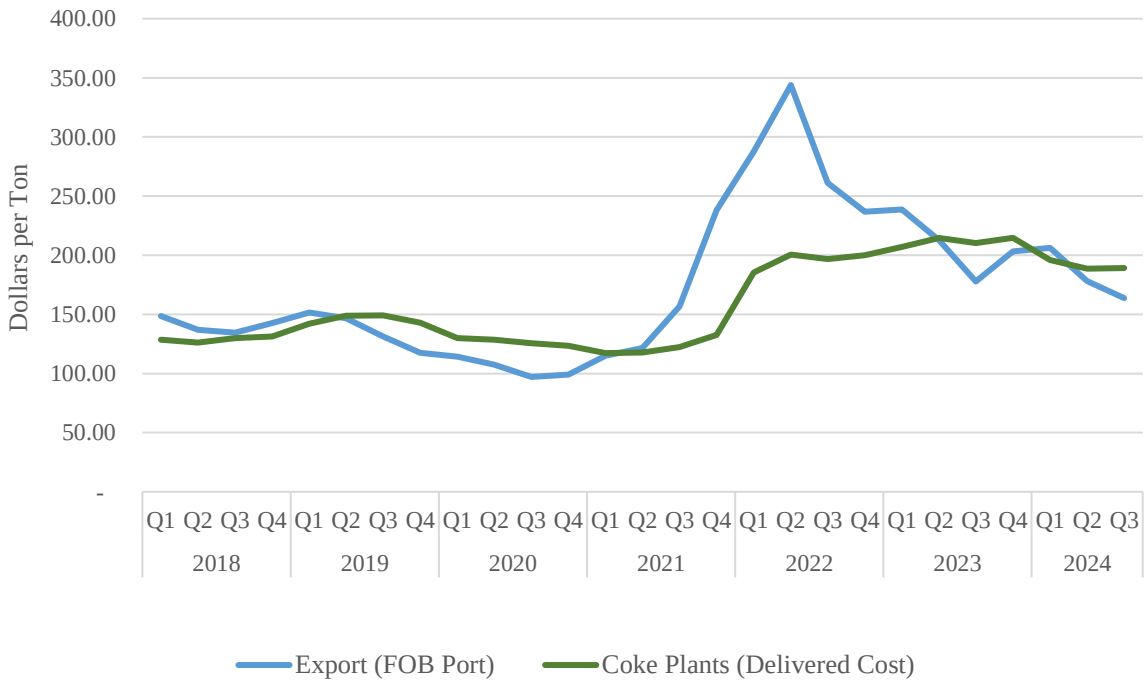


16.0 MARKET STUDIES

16.1 MARKETS

Maben Coal produces saleable low volatile metallurgical coal. The market for metallurgical coal from the Maben Property consists of both domestic metallurgical coal consumers and exports into the global seaborne metallurgical coal market. The US Energy Information Administration (EIA) compiles average historical price data for metallurgical coal delivered to domestic coke plants and metallurgical coal delivered to tidewater terminals for export. Note that the EIA data includes all classifications of metallurgical coal (high, mid and low volatile), as well as both spot and contract sales prices. Historical prices for metallurgical coal, as reported by the EIA, are shown on Figure 16.1-1 as follows:

Figure 16.1-1 Metallurgical Coal Sales Prices



Source: EIA Quarterly Coal Report

Between 2018 and third quarter 2024, export prices (FOB port) and domestic coke plant prices (delivered cost) have averaged $172.93 and $159.26 per ton, respectively.

16.2 MATERIAL CONTRACTS

Ramaco (across all of its mining operations) is contracted to sell __ million tons of both low-volatile and high-volatile metallurgical coal at an overall average price of approximately $___ per ton FOB mine.

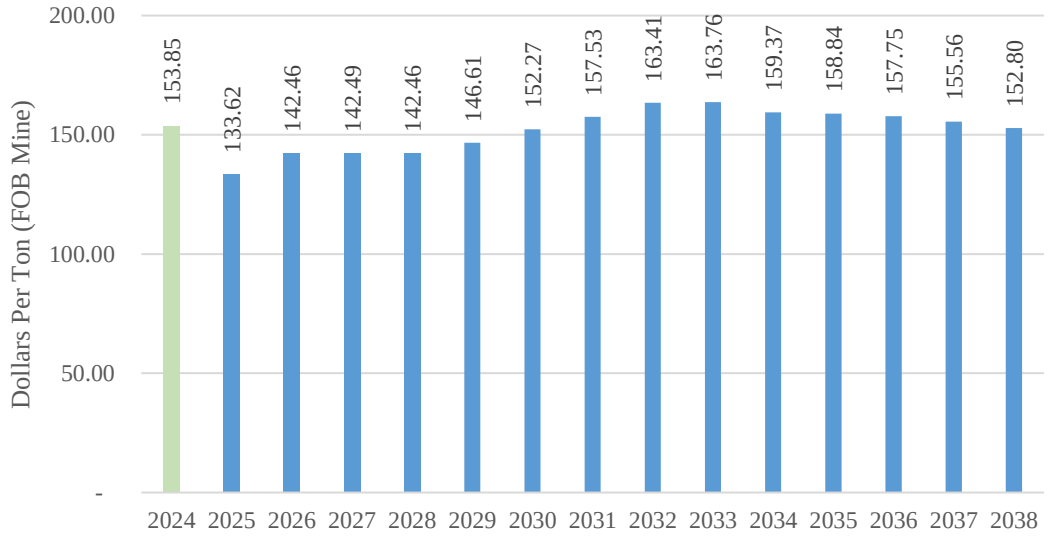
Coal sales from the Maben Property represent approximately __ percent of Ramaco's 2025 projected coal sales tonnage, with metallurgical coal representing nearly __ percent of Ramaco's 2025 projected coal sales.

16.3 PRICE FORECAST

For purposes of this report, WEIR utilized price forecasts that Ramaco prepared for Maben Coal's coal sales for 2025 through 2028. Ramaco based its FOB mine coal sales prices on available FOB Port index forward pricing and Ramaco's estimated adjustments for Maben Coal's coal quality, freight expense, and loading expense. Ramaco's price forecasts and adjustments reflect its experience in selling and transporting metallurgical coal since 2017.

Ramaco's historical (2024) and forecast (2025 through 2038) FOB mine coal sales price for Maben Coal is shown on Figure 16.1-2.

Figure 16.1-2 Historical and Forecast Coal Sales Prices



Ramaco's forecast FOB mine coal sales prices are $133.62 per ton in 2025, $142.46 in 2026, $142.49 in 2027, and thereafter $142.46 to $163.76 per ton through 2038. Ramaco's sales price projections conform to published forward price curves for coal of similar quality to coal produced from the Maben Property.

17.0 ENVIRONMENTAL STUDIES, PERMITTING, AND LOCAL INDIVIDUALS OR GROUPS AGREEMENTS

17.1 ENVIRONMENTAL STUDIES

As part of the permitting process required by the WVDEP, numerous baseline studies or impact assessments were undertaken by Ramaco. These baseline studies or impact assessments included in the permit are summarized as follows, with pertinent text from the permit replicated below:

- Groundwater Inventory and Baseline Quality
- Surface Water Baseline Quality and Quantity
- Surface Water Runoff Analysis
- Probable Hydrologic Consequences

Groundwater Inventory and Baseline Quality

Ramaco conducted surveys to inventory water use and to determine the extent and purpose of ground water usage in the areas that could be affected by existing and planned mines within ½ mile of proposed mining limits for each permitted mine site. Field teams made door-to-door visits to these potentially affected residents to gather information by way of completing questionnaire forms regarding water supply source(s), extent of reliance, purpose of reliance (domestic, agricultural, etc.), depth of well(s), character of springs, and other data. The teams measured water level depths in wells where possible and agreeable by owners and obtained surveyed locations accordingly. The detailed results of the surveys are included in each site's WVDEP permit application.

Surface Water Baseline Quality, Quantity, and Runoff Analysis

Baseline surface water monitoring for flow and quality parameters was conducted at strategic, WVDEP approved locations, as applicable, over a period of six months for each of the permit areas. During mining and through the final release of the permit, the stations selected for each site are monitored in accordance with the approved surface water monitoring plans submitted in the site's permits. Data collected during this period will be compared with the pre-mining baseline data to determine if and how the proposed operation is affecting the surface water systems. If necessary, remedial measures can be taken to assure the protection of the surface water systems.

Based on samples from adjacent mining and the baseline surface water sampling there should be no acid or toxic mine drainage. However, Ramaco proposes that all coal wastes will be treated as potentially toxic material and handled accordingly using encapsulation cells that are discussed below.

Surface water runoff analyses were performed over the watershed(s) associated with each permit site to evaluate the potential impact of proposed operations on flooding and streamflow alteration. Peak discharges were calculated for the "pre-mining", "during-mining", and post-mining" conditions and were compared. These evaluations were performed using SEDCAD 4 software, developed by the University of Kentucky. These analyses and results are included in the individual sites' permits and show that there will be no increase in peak discharge during mining or post mining for any of the permit areas. Original laboratory data sheets for surface and ground water baseline monitoring are included in the permits.

Probable Hydrologic Consequences

PHCs were evaluated for each permit application. Subsidence will likely occur where retreat mining has been executed as approved. It is expected that direct fracturing of overburden will occur with consequently increased porosity (increased storage capacity) and lateral permeability in response to mining. The little water that is present in that strata will be drained into the underground mines, but the overlying intervals contains no significant aquifers other than, perhaps, the coal seams. Highwall mining will be conducted in such a manner that subsidence will not occur and as thus, should not negatively influence PHC.

In summary, all the Ramaco existing and proposed mines are well above any significantly producing aquifers. The PHC studies and results are included in each individual sites' permit application. The PHC studies showed no significant ground or surface water resource is likely to be contaminated, diminished, or interrupted, providing that the approved drainage control and revegetation plans are adhered to throughout existing and planned mining activities.

17.2 REFUSE DISPOSAL AND WATER MANAGEMENT

Refuse Disposal

The Maben Refuse Disposal Area (MSHA ID 4609662) serves the Maben Preparation Plant. Combined coarse and fine refuse from the preparation plant is transported to the disposal area by 40-ton articulated end dump haul trucks. Current refuse capacity significantly exceeds the LOM Plan's refuse volumes projected in this TRS. This was readily apparent during WEIR's site visit.

Outside of the Maben Refuse Disposal Area, no coal, or non-coal related disposal, is planned at any of the mine sites.

Water Monitoring and Management

In order to determine the impact of existing and proposed operations on the hydrologic balance, surface water samples are collected bi-monthly with a minimum seven days between sample dates at each of the permitted sites. Ground water samples are collected monthly. Samples are sent to a qualified laboratory and analyzed for the following parameters: flow, pH, total acidity, total alkalinity, total iron, total manganese, total sulfates, total suspended solids, and total dissolved solids or specific conductance at 25 degrees C. The samples collected during and after mining will be compared with each other, and with the data collected during the baseline surface water study and used to determine the impact of the operation on the water in the receiving streams.

No specific water treatment facilities other than sediment control are required or planned for any of the mine sites. Based on previous mining and collected water samples. the operations will not contaminate any of the ground or surface water systems of the Maben Property. Results of water sampling has shown no significant levels of surface water contamination at the mine sites.

Surface water management for both Ramaco's surface and underground permitted mining areas within the Maben Property generally involves a combination of structures such as; 1) sediment ditches, 2) temporary sedimentation ponds, 3) soil encapsulation cells that are specifically designed to contain potentially hazardous soil in regards to acid forming materials, 4) permanent and temporary diversion ditches, 5) corrugated metal pipe (CMP) placement for drainages that cross access roads or haulroads, and 6) drainage diversion ditches and collections for excess spoil disposal areas. The underground mine locations have a significantly smaller surface footprint, however, these locations use the same surface water management design considerations as surface mines. Detailed designs for all drainage and sediment control structures are included in Ramaco's permits. There are no significant water retention structures subject to the West Virginia Dam Control Act, or MSHA regulations, and there are no other permanent impoundments planned at any of the mine permit sites.

All permitted mine sites have a Materials Handling Plan designed to mitigate the potential for acid mine drainage generation regarding those materials excavated during the land disturbance activities associated with development of the proposed mining facility. Some areas have known potentially acid generating materials. This is determined from Acid Base Accounting data that

is collected as part of the permitting requirements. Also, selenium data is documented within the water chemistry of the equivalent mine discharge samples. The equivalent water data provides a more appropriate geochemical characterization as compared to in-situ strata testing.

Material that requires special handling for potentially acidic discharges meets the following standards: have a net acid base accounting that is ≥-5 and at least 1 foot thick; have Selenium concentrations greater than 1 mg/kg and at least 1 foot thick; have a pH ≤4 and be at least 1-foot-thick. Materials to be specially handled will be placed in encapsulation cells to assure there is no potential for acid producing material. The cells will be located on the mine bench in an area free of any seeps, springs, or mine drainage, "high and dry", and sealed with a minimum of 4.0 feet of the most imperious material available. The approximate location of planned encapsulation cells is shown on the Geohydrologic Maps that are included in the permit applications.

Discharges from these structures will be monitored in accordance with the approved plans. Sediment structures will be cleaned or enlarged if the total suspended solids exceed effluent limitations. All discharges will go through sediment control structures. The pond discharges will be monitored in accordance with approved plans and treated to meet effluent limitations, if needed.

Regarding highwall mining concerns, there is no residual head of water anticipated on any of the designed outcrop barriers which are designed at a minimum of 50 feet width. Based on water samples collected from adjacent mining, there is not anticipated to be any acid, alkaline, or iron laden drainage.

All permitted sites have a surface water runoff monitoring plan. Within twenty-four hours of a one-year frequency, twenty-four hour storm event or greater, a permit-wide inspection and report of the drainage systems is completed and submitted to the WVDEP, as applicable. The inspection and subsequent report note any damages or deficiencies in the drainage system so that repairs can be implemented immediately. It also indicates if any sediment structure is at or near it's clean out capacity (60 percent). A rain gauge, located at the mine office on the Maben Property is used to monitor precipitation events. In-stream monitoring stations are used to take stream flow measurements. The rain gauge is monitored daily and reported monthly to the appropriate regulatory authority.

17.3 PERMITS AND BONDING

Coal mines in West Virginia are required to file applications for and receive approval of mining permits issued by the WVDEP to conduct surface disturbance and mining activities. Maben Coal has been issued mining permits and associated NPDES permits by the WVDEP as shown in Table 17.3-1 as follows:

Table 17.3-1 Maben Coal Mining and NPDES Permits

Property Description	Permit Number	State	Permitted Surface Area (Acres)	Issue Date	Current Status	NPDES Permit No.
Maben Preparation Plant	O302512	WV	43.15	4/9/2013	Active	WV1026780
Maben Refuse Disposal Area	O301212	WV	302.71	6/6/2013	Active	WV1026780
Maben Highwall Mine No. 1	S300519	WV	197.19	8/30/2021	Active	WV1030086
Maben Highwall Mine No. 2	S300321	WV	113.43	10/27/2022	Active	WV1030281
Maben Highwall Mine No. 3	S300623	WV	265.32	N/A	Pending	WV1030507
Maben Deep Mine No. 1	U300912	WV	9.70	8/14/2014	Not Started	WV1026747
Maben Haulroad No. 1	O301811	WV	69.34	10/22/2012	Active	WV1026551
Allen Creek Mine No. 1	U301911	WV	27.00	02.04/2016	Not Started	WV1026577
Beckley Crystal Deep Mine	U402199A	WV	39.73	N/A	Pending	N/A
Slick Rock Sewell Deep Mine	N/A	WV	37.22	N/A	Pending	N/A

A total bond amount of $1.3 million held by Ramaco is based on the mine closure reclamation liability cost estimate as of December 31, 2023. The ARO estimate for all sites within the Maben Property is $742,000, as of December 31, 2023. The WVDEP utilizes a bond matrix that determines the rate per acre based upon the activity that the land is to be used for. This rate per acre is simply applied to the permit sites' acreage to obtain the bond requirement. WEIR concludes that Ramaco's bonding approach, bond amounts, and the ARO estimates that are currently allocated for the permitted areas within the Maben Property appear reasonable.

Upon searching the WVDEP violation records, it was found that the existing mines operating at Maben Coal have an excellent environmental compliance record with no significant fines or citations over the last two years.

17.4 LOCAL STAKEHOLDERS

As indicated in Section 13.4.2, Ramaco currently employs 59 personnel at Maben Coal and is projected to have maximum employment of approximately 401 personnel during the Maben Coal LOM Plan. The Maben Property creates substantial economic value with its third-party service and supply providers, utilities and through payment of taxes and fees to local, state and federal governmental agencies.

The Maben Property is located in a rural and fairly isolated area of West Virginia. Reportedly, there have been no social or community impact issues relative to mining within the Maben Property. The local area supports Ramaco for the jobs that it provides for people in the surrounding communities.

17.5 MINE CLOSURE PLANS

The primary pre-mining land use for the Maben Property is forestland. The approved post-mining land use for Ramaco's permits is forestland. No land within the permit areas have been historically used for prime farmland. The slope of all land within the existing and proposed permit areas is ten percent or greater, which also precludes post-mining land use as prime farmland.

Upon completion of mining operations and regrading, topsoil will be redistributed over the disturbed areas. Mine soil that served as a base for coal stockpiles will be tested to determine if supplemental liming is necessary prior to blending this material with the other mine soil onsite. After the permit area has been graded, soil analysis will be performed to determine the quantity of agricultural limestone, or an equivalent supplement, and fertilizer necessary to achieve the post-mining land use.

All regraded areas will be revegetated as soon as practical to establish quick vegetative cover and minimize erosion. Disturbed and un-reclaimed acreage including excess spoil disposal sites, will not exceed two hundred (200) acres or fifty (50) percent of the permit area, whichever is less. Runoff from these regraded areas will be routed through properly constructed and maintained sediment structures that are designed to retain site runoff along enough for the suspended solids to settle.

Streams on the Maben Property are generally approximately 1,000 feet below the ridges. Soils within the permit area formed in residual parent material derived from interbedded shale, siltstone and sandstone. This consists of very steep soils on narrow ridge tops and on side slopes. The annual precipitation in the area averages approximately 47 inches. Woodlands make up about 85 percent of the total area in this type of country and soils in this area are well suited to growing forests. The areas to be disturbed and later reclaimed are in the oak-hickory type, of the Appalachian Forest and consists of yellow poplar, basswood, red and black oak, hickory, sugar maple, chestnut oak, white oak, beech, pine/hemlock, scarlet oak, other miscellaneous hardwoods. On dry ridges, spurs and southern slopes white oak, hickory, chestnut oak, Virginia pine and pitch pine are the dominant species. These sites tend to be less productive, and the timber has slower growth, while the moist coves and northern and eastern

slopes contain yellow poplar, sugar maple, red oak, black oak, beech, and basswood and are more productive sites.

Both hardwoods and pine seedlings will be hand planted by a reputable tree planting contractor to create a diverse and productive forest. Several species will be selected to create a diverse forest. The overall stocking density for all woody plants on the permitted mine site is at least 500 plants per acre. The stocking density for trees is at least 350 plants per acre. All final land use is planned as forestland except small areas of permanent drainage structures and access roads that have been approved to remain.

Temporary erosion control vegetative cover is established as contemporaneously as practical, with backfilling and grading, until a permanent tree cover can be established. A tree-compatible cover will be used to keep the vegetation that is being established for erosion control from competing too aggressively with the tree seedlings.

17.6 ENVIRONMENTAL COMPLIANCE, PERMITTING, AND LOCAL INDIVIDUALS OR GROUPS ISSUES

Based on WEIR's review of Ramaco's plans for environmental compliance, permit compliance and conditions, and dealings with local individuals and groups, Ramaco's efforts are adequate and reasonable in order to obtain approvals necessary relative to the execution of Maben Coal's LOM Plan.

18.0 CAPITAL AND OPERATING COSTS

Ramaco provided historical and projected operating costs and capital expenditures for Maben Coal, which were an adequate check and basis for the LOM Plan cost projections. The operating costs and capital expenditures are included in the financial statements that are audited annually by MCM CPAs & Advisors for Ramaco's 10-K reporting to the SEC. The auditing performed by MCM CPAs & Advisors is conducted in accordance with the standards of the Public Company Accounting Oversight Board.

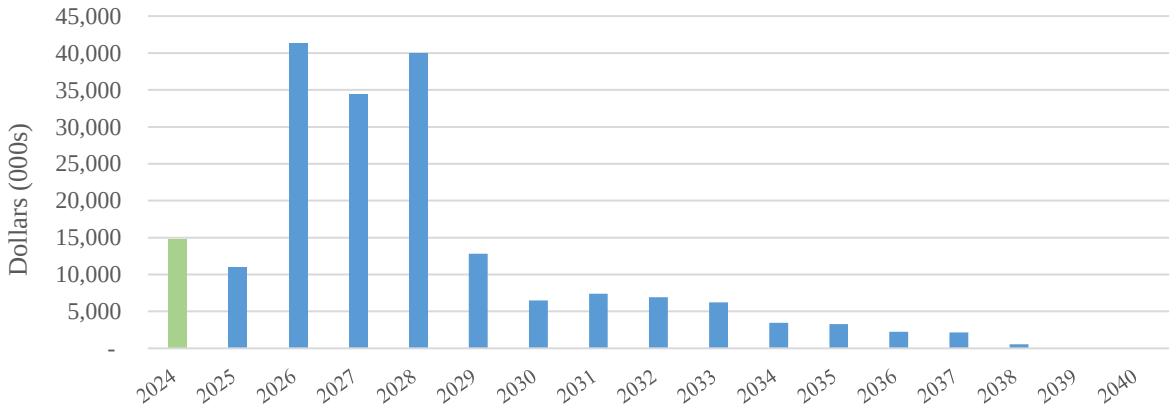
18.1 CAPITAL EXPENDITURES

Maben Coal will require capital to be expended each year for infrastructure additions/extensions, as well as for mining equipment rebuilds/replacements to continue to produce coal at currently projected annual levels of production.

Development costs for Maben Coal since 2024 are considered "Sunk Costs" and as economic returns in this economic analysis are presented only on a forward-looking basis, Sunk Costs are not included in the economic return of the project, as estimated in this study.

The projected capital expenditures are categorized according to each mining operation, and the Maben Preparation Plant. Actual capital expenditures for 2024 and projected capital expenditures, in 2024 dollars, for 2025 through 2040, are shown on Figure 18.1-1:

Figure 18.1-1 Historical and Projected LOM Plan Capital Expenditures



Note: 2024 is actual, LOM Plan includes 10 percent contingency

The capital expenditures increase in 2026 and 2027 associated with the development of the Beckley Crytal Mine in 2026 and the Slick Rock and Allen Creek Mines in 2027. In 2028, an additional continuous miner unit is added to the Allen Creek Mine and a third continuous miner unit is planned to be added to the Allen Creek as well.

Ramaco began the development of the Maben Property with the Maben Surface Mine and HWM and commencement of the Maben Preparation Plant in 2024. Mine management has had several years of experience estimating capital expenditures for surface and underground mining, and the risk of inaccurate estimates is low.

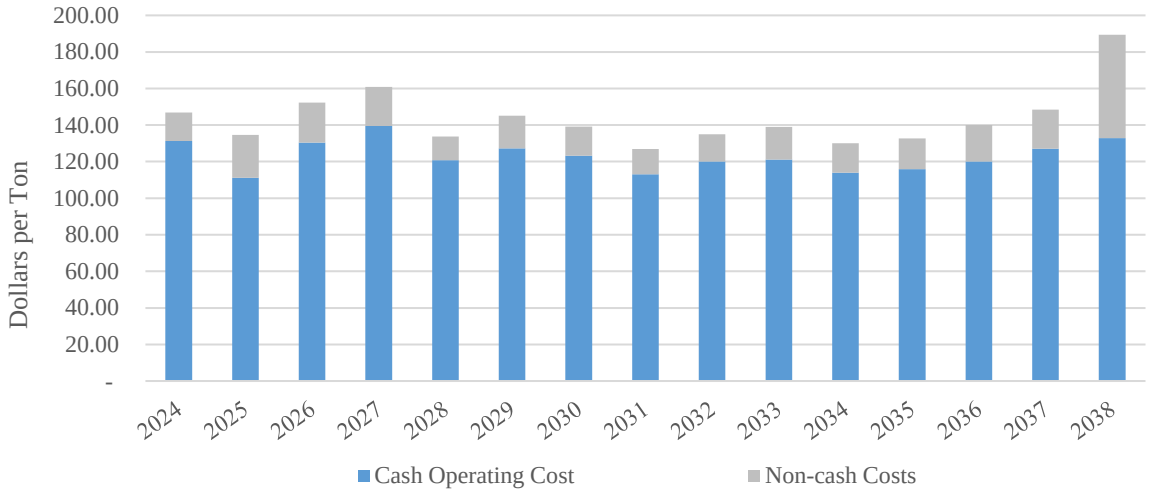
The LOM Plan projected average capital cost of $16.59 per ton for projected mining equipment and infrastructure requirements is lower than the 2024 capital cost of $68.58 per ton, which included capital for the Maben Surface and HWM Mine and the Maben Preparation Plant. Capital expenditures per annual ton are estimated to have an accuracy within +/- 15.0 percent.

Contingency costs account for undeveloped scope and insufficient data. Contingency for required major projects and mining equipment is estimated at 10 percent and is intended to cover unallocated costs from lack of detailing in scope items. It is a compilation of aggregate risk from estimated cost areas.

18.2 OPERATING COSTS AND RISKS

Operating costs are projected based on historical operating costs and adjusted based on projected changes in staffing, hours worked, and production and productivity for mining areas in the LOM Plan. Maben Coal's actual and LOM Plan projected cash and non-cash operating costs in dollars per ton, are shown on Figure 18.2-1:

Figure 18.2-1 Maben Coal Historical and LOM Plan Operating Costs



Note: 2024 is actual

Descriptions or explanations of the operating costs considered in the LOM Plan are as follows:

Direct Cash Cost:

- Labor cost, which includes wages and benefits for hourly and salary personnel at the mine and preparation plant.
- Maintenance and supplies, which are expenses related to upkeep of mining equipment and associated infrastructure.
- Utility expenses, which are expenses related primarily to purchase of electrical power to operate mining equipment at the mines and preparation plant equipment, telephone and data lines, water, and garbage services.
- Trucking costs, which are expenses primarily related to transportation of ROM coal from the mines to the preparation plant.
- Allocations (in/out), which are various costs for the preparation plant and administration.
- Professional services, which are expenses related to legal, engineering, and other firms providing services to Maben Coal.
- Property Tax and Insurance are expenses related to property taxes and liability insurance for risk management purposes.
- Other costs, which are miscellaneous expenses related to the operation of the mines and preparation plant.
- Sales related costs are expenses related to Black Lung Excise Tax, West Virginia Severance Taxes, and West Virginia and Office of Surface Mining reclamation taxes.

- Royalties are expenses related to leased surface and mineral properties.
- General and Administrative, which include expenses related to administrative offices and personnel managing the mining operations.

Selling, General and Administrative Costs:

- Expenses related to coal sales and corporate administrative costs

Non-Cash Costs:

- Asset retirement obligation accretion, depreciation, and amortization costs

Detailed LOM Plan annual operating costs and capital expenditures are shown below in Table 18.2-1.

Table 18.2-1 LOM Plan Annual Operating Cost and Capital Expenditures

	2025	2026	2027	2028	2029	2030	2031	2032	2033
	Dollars (millions)								
Labor	8.2	20.3	30.6	50.3	43.7	48.1	49.5	49.4	41.7
Maintenance & supplies	10.8	19.1	25.4	42.5	34.4	35.9	36.9	36.8	30.5
Utility expenses	0.9	3.9	5.9	13.0	12.3	12.7	13.0	12.9	10.4
Trucking	2.7	4.6	6.9	15.4	15.4	17.8	17.8	17.8	16.0
Property tax & insurance	0.8	0.9	0.9	1.0	0.8	0.6	0.6	0.6	0.6
Other	2.0	1.8	1.8	1.8	0.6	-	-	-	-
Sales related tax	6.0	7.9	10.2	17.8	16.3	19.0	22.3	21.6	18.1
Administrative	1.9	(0.2)	0.0	(0.4)	0.1	0.1	0.1	0.1	0.1
Total Cost of Production	33.3	58.3	81.9	141.5	123.5	134.2	140.3	139.2	117.4
Asset Retirement Obligation	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3
Depreciation and amortization	6.7	9.3	12.1	14.7	17.1	17.0	17.0	17.0	17.0
Total Costs and Expenses	40.4	68.0	94.3	156.6	140.9	151.5	157.6	156.5	134.7
Capital Expenditures	12.1	45.5	37.9	44.0	14.1	7.1	8.1	7.6	6.8

	2034	2035	2036	2037	2038	2039	2040	Total
	Dollars (millions)							
Labor	29.3	24.4	21.7	18.3	7.2	0.1	0.1	443.1
Maintenance & supplies	20.0	15.3	13.3	10.8	4.0	0.0	0.0	335.9
Utility expenses	6.5	5.3	4.9	4.4	1.6	-	-	107.6
Trucking	11.9	9.0	7.3	5.0	2.1	-	-	149.9
Property tax & insurance	0.5	0.5	0.5	0.5	0.4	0.4	0.4	9.9
Other	-	-	-	-	-	-	-	8.0
Sales related tax	13.0	10.1	8.4	6.3	2.3	-	-	179.3
Administrative	0.1	0.1	0.1	0.1	0.1	0.1	0.1	2.5
Total Cost of Production	81.4	64.6	56.3	45.4	17.7	0.6	0.6	1,236.2
Asset Retirement Obligation	0.2	0.1	0.1	0.1	0.0	-	-	3.6
Depreciation and amortization	11.3	9.2	9.2	7.5	7.5	4.7	-	177.3
Total Costs and Expenses	92.9	73.9	65.6	53.1	25.3	5.3	0.6	1,417.1
Capital Expenditures	3.8	3.6	2.5	2.4	0.6	-	-	196.2

The LOM Plan projected cash operating cost of $121.61 per ton is $14.35 per ton lower than the 2024 historical cash operating cost of $135.96 per ton. The historical cash operating cost was higher due to the development costs associated with the Maben Surface and HWM Mine as well as the Maben Preparation Plant. With the long history of cost of sales at other Ramaco surface and underground mines, no contingency is included, although the accuracy of the LOM Plan projected cost of sales should be considered to be within 15 percent of the historical average.

Capital and Operating Cost Estimation Risk

Maben Coal has been in operation since 2024 although Ramaco has had a relatively long period of experience with capital expenditure costs and operating costs. Since the mining operations will be conducted in similar coal seam thickness and mined in the same manner as historically performed by Ramaco, there is little risk associated with the specific engineering estimation methods used to arrive at projected capital expenditures and operating costs. An assessment of accuracy of estimation methods is reflected in the sensitivity analysis in Section 19.3.

For purposes of the Preliminary Feasibility Study relative to the Maben Coal LOM Plan, capital expenditures are estimated to an accuracy of +/- 15 percent, with a contingency of 10 percent, and operating costs are estimated at an accuracy of +/- 15 percent, with no contingency.

19.0 ECONOMIC ANALYSIS

19.1 ASSUMPTIONS, PARAMETERS, AND METHODS

A Preliminary Feasibility Study financial model has been prepared in order to assess the economic viability of the Maben Coal LOM Plan. Specifically, plans were evaluated using discounted cash flow analysis, which consists of annual revenue projections for the Maben Coal LOM Plan. Cash outflows such as capital, including preproduction costs, sustaining capital costs, operating costs, transportation costs, and taxes are subtracted from the inflows to produce the annual cash flow projections. Cash flows are recognized to occur at the end of each period. There is no adjustment for inflation in the financial model, and all cash flows are in 2024 dollars. WEIR's study is conducted on an un-levered basis, excluding costs associated with any debt servicing requirements.

To reflect the time value of money, annual net cash flow projections are discounted back to the project valuation date, using a discount rate of 10 percent. The discount rate appropriate to a specific project depends on many factors, including the type of commodity and the level of project risks, such as market risk, technical risk, and political risk.

Projected cash flows do not include allowance of any potential salvage value. Additionally, capital previously expended (sunk cost) is not included in the assessment of economic returns.

WEIR's after-tax NPV incorporates a projected corporate income tax rate of 21 percent, as provided by Ramaco.

In addition to NPV, the Internal Rate of Return (IRR) is also calculated. The IRR is defined as the discount rate that results in an NPV equal to zero. Payback Period is calculated as the time required to achieve positive cumulative cash flow at a 10 percent discount rate. Maben Coal is an ongoing operation with no initial investment required (i.e., already sunk cost), with a payback period of approximately four years.

The actual and LOM Plan coal sales price forecasts used to estimate revenue and the annual cash flow forecast detail are shown in Table 19.1-1 as follows:

Table 19.1-1 Annual Cash Flow Forecast Detail

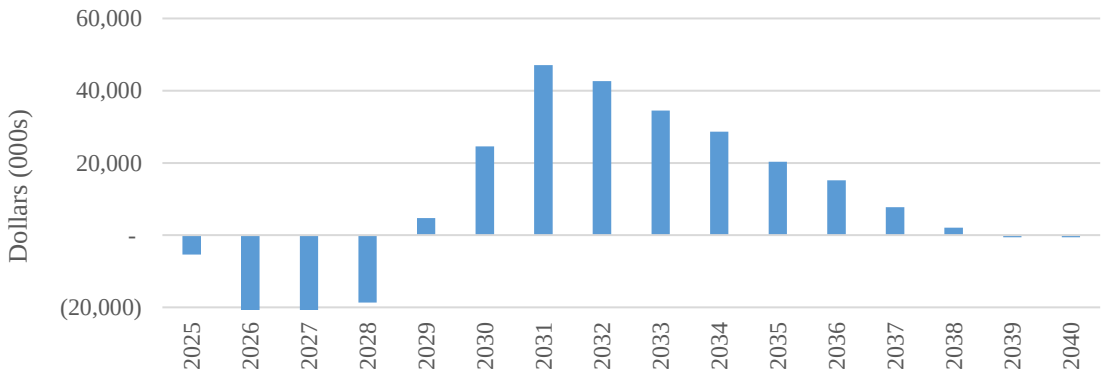
	2025	2026	2027	2028	2029	2030	2031	2032	2033
Tons Sold (000)	0.3	0.4	0.6	1.2	1.0	1.1	1.2	1.2	1.0
Sales Price ($ Per Ton)	133.62	142.46	142.49	142.46	146.61	152.27	157.53	163.41	163.76
	Dollars (millions)								
Revenue	40.1	63.6	83.6	166.9	142.3	165.9	195.5	189.5	158.7
Total Costs and Expenses	33.3	58.3	81.9	141.5	123.5	134.2	140.3	139.2	117.4
Income before taxes	(0.3)	(4.4)	(10.7)	10.3	1.4	14.4	37.9	33.0	24.1
Income tax expense	(0.1)	(0.9)	(2.3)	2.2	0.3	3.0	8.0	6.9	5.1
Net income	(0.2)	(3.5)	(8.5)	8.1	1.1	11.4	29.9	26.0	19.0
Adjusted EBITDA	6.8	6.3	4.0	23.2	18.5	28.7	47.3	43.4	36.3
Capital Expenditures	12.1	45.5	37.9	44.0	14.1	7.1	8.1	7.6	6.8
Total Cash Flow	(5.3)	(39.2)	(33.9)	(20.9)	4.4	21.5	39.2	35.8	29.5

	2034	2035	2036	2037	2038	2039	2040	Total
Tons Sold (000)	0.7	0.6	0.5	0.4	0.1	-	-	10.2
Sales Price ($ Per Ton)	159.4	158.8	157.8	155.6	152.8	-	-	153.29
	Dollars (millions)							
Revenue	113.9	88.5	73.9	55.6	20.4	-	-	1,558.3
Total Costs and Expenses	81.4	64.6	56.3	45.4	17.7	0.6	0.6	1,236.2
Income before taxes	21.0	14.6	8.3	2.5	(4.9)	(5.3)	(0.6)	141.2
Income tax expense	4.4	3.1	1.7	0.5	(1.0)	(1.1)	(0.1)	29.7
Net income	16.6	11.5	6.6	2.0	(3.9)	(4.2)	(0.5)	111.6
Adjusted EBITDA	28.1	20.8	15.9	9.6	3.7	0.5	(0.5)	292.5
Capital Expenditures	3.8	3.6	2.5	2.4	0.6	-	-	196.2
Total Cash Flow	24.2	17.2	13.4	7.2	3.1	0.5	(0.5)	96.2

19.2 ECONOMIC ANALYSIS AND ANNUAL CASH FLOW FORECAST

Annual cash flows for the Maben Coal LOM Plan are summarized on Figure 19.2-1 as follows:

Figure 19.2-1 Annual Cash Flow Forecast



Cash flows decline after 2034, as a result of a projected decrease in coal production. While not included in these cash flows, Ramaco plans to commence other mining operations within the Maben Property, as existing operations phase out. Significant tonnage associated with those future, to-be-planned operations, is currently classified as Resource tonnage. As LOM plans are prepared for operations within the current Resource areas of the Maben Property, updates will be made to this analysis.

The Maben Coal LOM Plan has an after-tax NPV of $54.5 million, at a base case discount rate of 10 percent (Table 19.2-1). Since Maben Coal is an ongoing operation with no initial investment required (i.e., already sunk cost), the IRR is infinite. Cumulative (undiscounted) cash flow over the LOM Plan is positive, at $125.9 million.

The after-tax NPV, IRR, and cumulative cash flow are summarized in Table 19.2-1 as follows:

Table 19.2-1 After-Tax NPV, IRR, Cumulative Cash Flow, and ROI

	LOM Plan
NPV ($Million)	10.3
IRR (%)	Infinite
Cumulative Cash Flow ($Million)	125.9

Table 19.2-2 presents key operational statistics for the LOM Plan on an after-tax basis. Over the LOM Plan, the average cash operating cost is $121.61 per clean ton. Operating costs include mining, processing, G&A, but exclude amortization costs on capital expenditures.

Table 19.2-2 Key Operating Statistics

	LOM Plan
ROM Tons Produced (000s)	29,271
Clean Tons Produced (000s)	10,143
Preparation Plant Yield (%)	34.7
Tons Sold (000s)	10,166
	($ Per Ton)
Coal Sales Realization	153.29
Direct Cash Costs	121.61
Non-cash Costs	17.80
Total Cost of Sales	139.41
Profit / (Loss)	13.88
EBITDA	31.69
CAPEX	19.30

19.3 SENSITIVITY ANALYSIS

A sensitivity analysis was undertaken to examine the influence of changes to assumptions for coal sales prices, production, operating cost, capital expenditures, and the discount rate on the base case after-tax NPV. The sensitivity analysis range (+/- 25 percent) was designed to capture the bounds of reasonable variability for each element analyzed. The basis for reasonable variability for each element analyzed is summarized as follows:

- Sales Price - Historical coal sales price variability of 13 percent between 2024 and 2025
- Production - Variability in production of 39 percent from 2024 to 2025
- Operating Cost - Estimated accuracy of +/- 15 percent
- Capital Costs - Estimated accuracy of +/- 15 percent
- Discount Rate - based on range of variability from 7.5 to 12.5 percent

Figure 19.3-1 depicts the results of the NPV sensitivity analysis.

Figure 19.3-1 Net Present Value Sensitivity Analysis

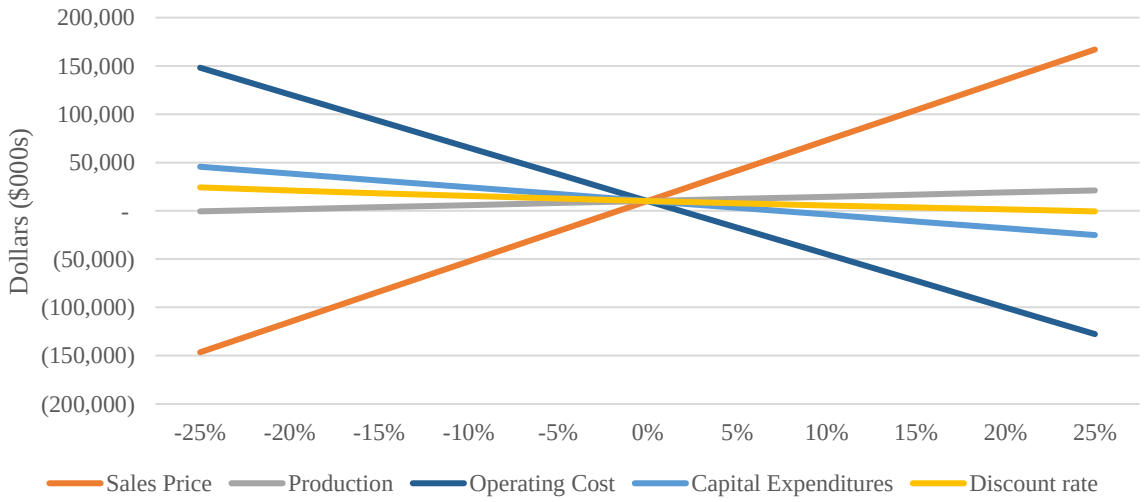


Figure 19.3-1 shows that Maben Coal's NPV is most sensitive to changes in coal sales prices followed closely by sensitivity to changes in operating costs. It is less sensitive to changes in production, discount rate and capital expenditures.

20.0 ADJACENT PROPERTIES

This TRS does not include any estimates of coal resources or coal reserves associated with adjacent uncontrolled properties.

21.0 OTHER RELEVANT DATA AND INFORMATION

Conducting a due diligence investigation relative to the mineral and surface rights of Ramaco's mining operations was not part of WEIR's scope of work. This TRS is based on Ramaco controlling, by lease or ownership, or having the ability to acquire the coal reserves and surface lands necessary to support its mine plans.

The ability of Ramaco, or any coal company, to achieve production and financial projections is dependent on numerous factors. These factors primarily include site-specific geological conditions, the capabilities of management and mine personnel, level of success in acquiring reserves and surface properties, coal sales prices and market conditions, environmental issues, securing permits and bonds, and developing and operating mines in a safe and efficient manner. Unforeseen changes in legislation and new industry developments could substantially alter the performance of any mining company.

Coal mining is carried out in an environment where not all events are predictable. While an effective management team can identify known risks and take measures to manage and/or mitigate these risks, there is still the possibility of unexpected and unpredictable events occurring. It is not possible therefore to totally remove all risks or state with certainty that an event that may have a material impact on the operation of a coal mine will not occur.

22.0 INTERPRETATIONS AND CONCLUSIONS

22.1 SUMMARY OF INTERPRETATIONS AND CONCLUSIONS

Interpretation

Ramaco has a long operating history of resource exploration, mine development, and mining operations, with extensive exploration data including drillholes, in-mine seam thickness and elevation measurements, and in-mine channel samples supporting the determination of mineral resource and reserve estimates and projected economic viability. The data has been reviewed and analyzed by WEIR and determined to be adequate in quantity and reliability to support the coal resource and coal reserve estimates in this TRS.

Conclusion

The coal resource and coal reserve estimates and supporting Preliminary Feasibility Study were prepared in accordance with Regulation S-K 1300 requirements. There are 230.0 million in-place tons of Measured and Indicated coal resources, exclusive of reserves, and 11.5 million clean recoverable tons of mineable reserves within the Maben Property, as of December 31, 2024. Reasonable prospects for economic extraction were established through the development of a Preliminary Feasibility Study relative to the Maben Coal LOM Plan, considering historical mining performance, historical and projected metallurgical coal sales prices, historical and projected mine operating costs, and recognizing reasonable and sufficient capital expenditures.

22.2 SIGNIFICANT RISKS AND UNCERTAINTIES

Risk, as defined for this study, is a hazard, condition, or event related to geology and reserves, mine operations and planning, environmental issues, health and safety, and general business issues that when taken individually, or in combination, have an adverse impact on Ramaco's development of the Maben Property. Risks can disrupt operations, adversely affect production and productivity, and result in increased operating cost and/or increased capital expenditures.

In the context of this TRS, the likelihood of a risk is a subjective measure of the probability of the risk occurring, recognizing the magnitude of the risk defined as follows:

> *Low Risk* indicates that the combined probabilities (low/medium/high) together with the economic impact (minimal/significant/adverse), if conditions exist, should not have any material adverse effect on the economic viability of the project.

Moderate Risk indicates that the combined probabilities (low/medium/high) together with the economic impact (minimal/significant/adverse), if conditions exist, could have a detrimental effect on the economic viability of the project.

High Risk indicates that the combined probabilities (low/medium/high) together with the economic impact (minimal/significant/adverse), if conditions exist, could have a seriously adverse effect the economic viability of the project.

Based on a review of available information and discussions with Ramaco personnel, WEIR identified potential risks associated with the Maben Coal LOM Plan. The risks, WEIR's assessment of risk magnitude, and comments based on WEIR's experience with surface and underground mining operations are summarized in Table 22.2-1 as follows:

Table 22.2-1 Maben Property Risk Assessment Summary

Area of Risk	WEIR Risk Assessment	Comments
Coal Quality	Low	Based on previous production and core hole quality data, coal quality appears to be a consistently good metallurgical coal product.
Horizontal Stress	Low	Historical mining operations do not indicate horizontal stress problems.
Land Acquisition	Low	All mineral control is maintained through current leases and subleases. No additional acquisitions are necessary for the LOM Plan.
Methane	Low to Moderate	Although methane gas is present in the seams, gas liberation is expected to be low to moderate, or at levels that can be safely mitigated during mining. Procedures and continuous gas monitoring will be in place to prevent, to the extent possible, methane ignitions and mine fires.
Overburden Stress	Low to Moderate	The potential for a coal pillar bump or release of stress when mining will be monitored as a part of the normal mining operation. Due to the mountainous terrain, overburden can approach 1,000 feet when mining under ridges. However, the risk of bumps occurring is minimal, since coal outbursts, as a result of sudden release of energy, are typically associated with depth of cover of 1,500 to plus 2,000 feet.
Qualified Employees	Low to Moderate	Recent changes in the coal mining industry have resulted in many coal mines being closed resulting in fewer qualified employees available in general. Ramaco has existing operations with sufficient qualified employees. However, additional mine startups may cause some employee shortages. Ramaco can train inexperienced miners along with its experienced miners.
Rail Lines	Low to Moderate	There is currently a shortage of coal rail transportation capacity. The recent upswing in coal prices has resulted in short term increases in rail capacity. This capacity will likely be a relative unknown for the medium to long term.
Refuse Disposal	Low	Ramaco's currently permitted refuse disposal capacity is sufficient for the long term.

Area of Risk	WEIR Risk Assessment	Comments
Roof Lithology	Low to Moderate	All underground coal mines have the potential to experience unstable roof conditions. The relative consistency of the New River and Pocahontas Formations that primarily consists of competent sandstones and shales help decrease this risk at the Maben Property Deep Mines. Additionally, this potential risk can be kept in the low range through proper ground control engineering and following approved roof control plans.
Geology	Low to Moderate	The structure of the seams at the Maben Property all have a relatively gentle dip of approximately three percent along the the north/south axis. There are no significant faults in the area. There are some anomalies such as sand channels that cut out seams.
Spontaneous Combustion	Low	Coal seams at the Maben Property have a low potential for spontaneous combustion, and Ramaco has not experienced any loss of production due to spontaneous combustion.
Water Inflow	Low	Ramaco's mines within the Maben Property are expected to be relatively dry since most of the mines are well above drainage.
Market Conditions	Moderate	Market conditions remain volatile for metallurgical coal. Blast Furnace methods for making steel is under pressure from various world-wide government entities due to CO_2 emissions. Markets in China, Japan, Korea, and India are likely to be primary drivers for the metallurgical coal industry.

It is WEIR's opinion that the majority of the risks can be mitigated with efficient and effective mine planning and mine engineering, and monitoring of the mining operations.

23.0 RECOMMENDATIONS

The Maben Property has sufficient geologic exploration data to reasonably estimate mineral reserves and resources. Future exploration work should be undertaken by Ramaco to continuously provide geological data primarily for use by mine operations personnel related to effective implementation of the LOM plans. Future exploration work and mineral property acquisition should include what has been historically implemented related to the following:

Geology

- Have an experienced geologist log core holes, measure core recovery, and complete sampling. Geophysically log core holes to verify seam and coal thickness and core recovery.
- Geophysically log rotary holes to verify strata and coal thickness.
- Continue to prepare laboratory sample analysis at 1.40, 1.50, and 1.60 specific gravities to better match the preparation plant specific gravity when processing a metallurgical coal.
- Continue collecting channel samples (include parting).

24.0 REFERENCES

References used in preparation of this TRS are as follows:

- Ramaco, 2024. *Budget Map 2025_V4_Maben_SEWL_HWM_FINAL*
- Ramaco, 2024, *Beckley Crystal 2025 CTPF Map No Xrefs*
- Ramaco, 2024. *Allen Creek P3 2025 CTPF Map No Xrefs*
- Ramaco, 2024. *Slick Rock Sewell 2025 CTPF Map No Xref*
- Harlow, George E., Jr. and LeCain, Gary D., 1993, *Hydraulic Characteristics of, and Ground-Water Flow in, Coal-Bearing Rocks of Southwestern Virginia: U. S. Geological Survey Water-Supply Paper 2388.*

Websites Referenced:

- Securities and Exchange Commission - Modernization of Property Disclosures for Mining Registrants - Final Rule Adoption
  https://www.sec.gov/rules/final/2018/33-10570.pdf
- MSHA Data Retrieval Site
  https://www.msha.gov/mine-data-retrieval-system
- WVDEP Permits
  https://apps.dep.wv.gov/webapp/_dep/securearea/public_query/ePermittingApplicationSearchPage.cfm

25.0 RELIANCE ON INFORMATION PROVIDED BY THE REGISTRANT

In preparing this report, WEIR relied upon data, written reports and statements provided by the registrant. It is WEIR's belief that the underlying assumptions and facts supporting information provided by the registrant are factual and accurate, and WEIR has no reason to believe that any material facts have been withheld or misstated. WEIR has taken all appropriate steps, in its professional opinion, to ensure information provided by the registrant is reasonable and reliable for use in this report.

The registrant's technical and financial personnel provided information as summarized in Table 25.1 as follows:

Table 25.1 Information Relied Upon from Registrant

Category	Information	Report Section
Legal	Mineral control and surface rights	3
Hydrogeological	Hydrogeological Analysis including inflow rates, permeability and tranmisivity calculations, and watershed analysis	13.1.2
Marketing	Coal sales price projections	16
Environmental	Permits, bond, and reclamation liability	17
Macroeconomic	Real price growth (coal sales, labor and other cash costs)	18

APPENDIX A - EXHIBITS

Exhibit 6.3-2	Maben Property, Geological Cross Sections
Exhibit 13.5-1	Life of Mine Plan, Maben Contour and Highwall Mine
Exhibit 13.5-2	Life of Mine Plan, Beckley Crystal Deep Mine
Exhibit 13.5-3	Life of Mine Plan, Allen Creek Mine No. 1
Exhibit 13.5-4	Life of Mine Plan, Slick Rock Sewell Deep Mine
Exhibit 14.1-1	Simplified Preparation Plant Flowsheet