GARDEN OF EDEN INVESTMENT GROUP INC
Vertically Integrated Supply Chain For Green-Built Sustainable Communities
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www.GoeInvestmentGroup.com **(818) 309-8725**

Graphene and Rare Metals Extraction Plant
Algoma WV, 180 Acres

GOE Investment Group has been in meetings with Normal Mullins, President of Black Diamond Enterprises Inc in Algoma, WV owns approximately 4.5 million tons of mined washable metallurgical coal reserves on 130 acres. This reserve is committed as the superior feedstock for Graphene products developed for custom industry applications. A 43010 report of this metallurgical coal confirms the presence showing Vanadium, Graphene, Iridium, Platinum, Gold, Gallion, Lanthanum, Lithium, Lutetium, and Scandium are in high concentrations in this rare old coal deposits that has been flushed with amounts or natural high mineral aquifer water.

Proposal-- is being negotiated for an equity investor partnership to invest $150M to build an extraction plant in Algoma WV at a site location near the 4.5 million tons of mined washable metallurgical coal reserves. The 43101 Report, proforma and Bios are attached at the end of this document

Norman Mullins has 51 years of mineral preparation experience, the last 39 years specifically in the coal industry as a foreman, superintendent, and independent proprietor. He has a partnership with Tony Freeman, owner of Wholesale Graphene Center, London UK. They have developed proprietary processing and extraction technologies that enable the production of synthetic Graphene and extraction of certain rare earth metals contained in significant quantities within this metallurgical coal feedstock.

Production-- a Graphene product for the steel industry that will lower carbon emissions and increase the efficiency of the steel-making process, while lowering costs. It would take the annual production of the first facility to supply the steel industry clients currently on board. There is not a competitor in this market.

Graphene Market-- for the replacement of silicone as a coating for microchips. The opportunity is a trillion microchips annually and a three-to-five-year contract. This business will require most of the production capability of one facility. Replacing silicone with this custom Graphene coating lowers costs and improves performance. There is not a competitor in this market.

Timeline - The construction time will be 7-10 months, with concurrent construction of the two facilities. The extraction facilities will each produce approximately 168 tons of synthetic graphene and 2688 grams of scandium per day.

1) **The proven development of affordable Graphene for industry in large quantities through an international partnership of experts in Graphene science, facility design and metallurgical coal products.**

2) **Extraction of Rare Earth Elements and Precious metals during the graphene production process, including economically recoverable quantities of Lanthanum, Lithium, Lutetium, and Scandium.**

3) **Capture of liquid petroleum during the graphene production process.**

4) **Creation of Carbon Sequestration Tax Credits under Section 45Q.**

Black Diamond Enterprises, Inc., Algoma, WV, USA

Graphene and Rare Metals Extraction Project

Use of Funds – Immediate purchase of 2 industrial properties and a corporate office building in Southern West Virginia. The buildings will be converted to state-of-the-art graphene and rare metals extraction plants. The funds will also be used to purchase and install all related equipment to produce and package graphene and rare earth metals including necessary laboratory equipment. Other uses of the funding include engineering, permitting, bonding, legal, licensing, and working capital.

Click the link below to see the Excel Proforma

99__Norman Mullins___ProForma

NORMAN BRUCE MULLINS II
P. O. Box 1703
Cedar Bluff, VA 24609
(276) 971-1856 e-mail: nbmullins@gmail.com

Experience:

11/99 to Present **Independent Proprietor**
Consultant and contractor to various mining companies providing design, engineering, construction, and management services.

6/98 to 11/99 **Covol Technologies, Inc., Lehi, UT**
Plant Manager
Pocahontas Synfuel Plant, Northfork, WV
Management of a state-of-the-art coal-based synthetic fuel manufacturing facility. Supervised eleven personnel. Responsible for bringing the plant on-line, ramping-up production to design capacity, then exceeding design capacity.

Interim Plant Manager
Commonwealth Synfuel Plant, Karthaus, PA
Management of a second synfuel plant, with similar duties as at the Pocahontas plant. Again, exceeded design capacity.

	many different duties and acted in a number of capacities ranging from laborer to general manager.
12/92 to 1/93	**Consolidation Coal Company, Pittsburgh, PA**
5/92 to 7/92	Hourly Laborer, Temporary
12/91 to 1/92	Buchanan No. 1 Mine, Page, VA
5/91 to 8/91	Performed non-production work in an underground mine, during summer and Christmas breaks from college.

Education:	**Virginia Tech, Blacksburg, VA** Bachelor's Degree in Mining Engineering Course Work Included: Surface Mining and Reclamation, Development and Mining Systems, Mining Plant Engineering, Mineral Processing, Coal Preparation, Blasting, Mining Health and Safety, and a comprehensive mine planning and design project.

Qualifications and Certifications:

* MSHA Qualified Impoundment Inspector
* MSHA Qualified Instructor, Surface
* MSHA Qualified Methane/Oxygen Deficiency Detection, Surface
* VA Preparation Plant Foreman
* VA Mineral Surface Mine Foreman
* VA Qualified Gas Detection
* AL Surface Mine Foreman

NI 43-101 Technical Report:

The Algoma Coal Refuse Pile Project

Buzzard Branch Creek, Algoma, West Virginia

Prepared for Norman Mullins, Black Diamond Enterprises, Inc.

Prepared by Emmanuel Sosa, P.G., M.S, and Eric Kappus, Ph.D.

Date Effective: 7/10/24

CERTIFICATE OF QUALIFIED PERSON

I, Emmanuel Sosa, P.Geo, am employed as a Senior Consultant Geologist with an environmental consulting firm and am a geological consultant with an office address of 3109 Jefferson Ave., in El Paso, Texas, 79930.

This certificate applies to the technical report titled "NI 43-101 Technical Report on "The Algoma Coal Refuse Pile Project, Algoma, West Virginia" that has an effective date of December 31, 2022 (the "technical report").

I am a Professional Geoscientist (P.Geo.) under the Texas Board of Professional Geoscientists (ID# 15169). I graduated with a Bachelor of Science degree in Geological Sciences from the University of Texas at El Paso in 2014. In 2019, I obtained a Master of Science degree in Environmental Science from the University of Texas at El Paso.

I have practiced my profession for 9 years. My relevant experience includes the scheduling and oversight of geotechnical and environmental drilling, oversight of groundwater monitoring well installations, coordination and implementation of groundwater sampling events, soil excavation pile sampling and characterization, and performance of Phase I and Phase II environmental site assessments. From June 2024 to present I have been in the role of Senior Consultant, with my main responsibility being the management of quarterly site activities at State managed sites.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43–101 Standards of Disclosure for Mineral Projects ("NI 43–101").

I have visited the Algoma coal refuse piles on two separate occasions, for a total of 5 days onsite. I have personally inspected, delineated, and documented the coal refuse piles, and identified the previously drilled boring locations.

I am co-responsible for all subsections of this NI 43-101 technical report, and I am independent of Black Diamond Enterprises, Inc.

I have been involved with the Algoma coal refuse pile since February 2024.

I have read the NI 43–101 and the sections of the technical report for which I am responsible have been prepared in compliance with that Instrument to the best of my knowledge.

As of the effective date of the technical report, to the best of my knowledge, information and belief, the sections of the technical report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Dated: July 10th, 2024

"signed and sealed"

Emmanuel Sosa, MS., P.Geo.

CERTIFICATE OF QUALIFIED PERSON

I, Eric Kappus, Ph.D., am a geological consultant with an office address of 5724 Beaumont Pl., El Paso, Texas, 79912, USA.

This certificate applies to the technical report titled "NI 43-101: The Algoma Coal Refuse Pile Project Buzzard Branch Creek, Algoma, West Virginia" that has an effective date of July 10th, 2024.

I am a consulting geologist and member of the New Mexico Geological Society. I graduated with a Master of Science degree in Geological Sciences (2005) and a Ph.D. in Geological Sciences (2016).

I have been a consulting geologist since 2003, with 21 years of experience on a wide variety of projects including geoscience education (for industry, museums, and educational organizations at all age levels), stratigraphic characterization, paleontological surveys, environmental geochemistry, and characterization of several types of mineral/economic deposits. I have project experience with exploration and modeling of several types of mineral deposits including sedimentary, metamorphic and igneous hosted deposits.

I am co-responsible for all sections of this NI 43-101 technical Report, and I am independent of Black Diamond Enterprises, Inc. as described by Section 1.5 of NI 43–101.

I have been involved with the Algoma Refuse Pile Project since February of 2024.

I have read the National Instrument 43-101 Standards of Disclosure for Mineral Projects, and the sections of the technical report for which I am responsible have been prepared in compliance with that instrument to the best of my knowledge.

As of the effective date of the technical report, to the best of my knowledge, information and belief, the sections of the technical report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Dated: July 10th, 2024 "signed and sealed"

Eric Kappus, Ph.D.

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1: SUMMARY

1.1 Introduction

This technical report was prepared by Emmanuel Sosa (P.G., M.S.), Eric Kappus (Ph.D.), and Mike Snell (Ph.D.) for Norman Mullins, CEO of Black Diamond Enterprises, Inc., located at 348 Ascue Road, Cedar Bluff, VA. 24609.

This Project is a venture of Black Diamond Enterprises, Inc. who holds 100% interest in this Project. The Project name is *Algoma Refuse Pile Project*.

Underground mining at Algoma halted in the mid 1980's, leaving large coal refuse piles ("GOB piles") behind.

1.2 Terms of Reference

This Report presents up to date information on the Algoma Refuse Pile Project including refuse pile Resource and Reserve volume estimates, coal quality data, geochemical analyses, spring water flow rate and water quality, as well as market and operational information. All this information will be used to support the efforts of Black Diamond Enterprises, Inc. to reclaim the coal refuse piles and remediate the area.

-Currency is expressed in US dollars ($USD) and units are a mix of metric and US standard units.

-Coal Refuse Pile volume estimates are reported as tonnages (2000 lbs/ton). Black or grey shale ("ash") will be referred to as "rock" in this Report.

-Abbreviations used in this Report for repeated names, locations, and businesses are as follows:

Algoma Refuse Pile Project – "ARPP", or "Algoma Property", or "this Project."

Alchemy Engineering and Associates, Inc. – "Alchemy"

Black Diamond Enterprises, Inc. – "BDE"

Marshall Miller and Associates, Inc. – "Marshall Miller"

Buzzard Branch of the North Fork of Elkhorn creek – Buzzard Branch creek

-This present Report is capitalized, as is the Property discussed, as well as individual refuse pile names (i.e. Pile 4).

1.3 Project Setting

The Algoma Refuse Pile Project (ARPP) is located in southernmost West Virginia in McDowell County, amidst a large number of historic and active coal mines of the Pocahontas coalfield of the Appalachian basin.

The property is accessed from Algoma, WV, taking Tuscarora Dr./Moccasin Hill Rd a few hundred feet north from Cherokee Road. Moccasin Hill Rd follows the Buzzard Branch of the North Fork of Elkhorn creek up into the valley, and the water spring and coal refuse piles are located on improved dirt roads along this valley.

The property has snowy winters and an average rainfall of 45 inches (cm) per year. It is densely forested in spring and summer Months, especially in the valley floor. The Hatfield-McCoy recreational vehicle trail runs adjacent to the property on the north and western sides.

Five coal refuse piles (and one large impoundment) are located between 1800 feet and 2300 feet elevation, alternating on either side of Buzzard Branch creek going upstream (Figure 10-1; Figure 10-2).

1.4 Mineral Tenure, Surface Rights, Water Rights, Royalties and Agreements

The Algoma property is 180.64 acres in size, with ~35 acres currently comprising the Project area (containing coal refuse piles), legally known as the following parcels:

- 27-11-0235-0001-0005 (33.79 acres)
- 27-11-0235-0001-0003 (9.3 acres)
- 27-11-0235-0001-0006 (6.74 acres)
- 27-11-0235-0009-0001 (20.25 acres)
- 27-11-0235-0001-0004 (12.82 acres)
- 27-11-0235-0025-0000 (97.74 acres)

Total acreage: 180.64 acres

Subsurface oil, gas, and mineral rights for these tracts were conveyed previously to others. Surface water rights belong to the property owner, particularly for the large spring flowing into Buzzard Branch creek on the property.

1.5 Geology and Mineralization

Regional geology of the area consists of several hundred feet of exposed, horizontal strata of lower Pennsylvanian units in the stream valleys and on hilltops, mostly covered by soil and forest. General stratigraphy of the area was described by Arkle (1974).

On the Algoma property, Pennsylvanian units exposed include the upper part of the Pocahontas Formation found in the valley, with the overlying New River Formation exposed on the hills above. A simplified stratigraphic section of these two units (modified from Englund et al., 1974) is presented in Figure 7-2. Detailed stratigraphy of the Pocahontas Formation can be found in Rouse (2009) and in Korus (2002) for the New River Formation.

There is no mineralization associated with this Project, as it is coal mine refuse piles.

1.6 History

Lower Pennsylvanian units have been mined extensively for coal in southern West Virginia, and mining in Algoma began in 1891 with the Algoma Mine, which followed the Pocahontas No. 3 seam underground from Buzzard Branch creek to the northeast. Refuse from this mine was deposited in 6 refuse pile areas on the valley, including a large impoundment in the northeast portion of the property (Pile 6). A more detailed history of the operations on this property can be found at abandonedonline.net (Abandoned, 2024).

1.7 Drilling

Drilling was performed as part of a Reserve estimate conducted by Marshall Miller and Associates in 1997. Although that report was not available, volumetric data were re-produced by Alchemy Engineering Associates, Inc. (2017; Appendix 1) and Green (2023; Appendix 2). Fourteen of these boreholes were re-located for this Report in Piles 1, 3, 4, and 5a, to confirm an estimation of volume for each. Piles without locatable boreholes are Piles 2, 5b, and 6.

1.8 Sampling

A summary of earlier sampling and analysis is presented below in Table 1-1.

Table 1-1: Summary table of analyses on samples from the Algoma Refuse Pile Project site.

Analysis year and Lab name	# of samples	Analyzed for:
2003 Precision Labs	1	Coal Quality/Major Element Geochemistry
2005 SGS	3	Coal Quality/Float-Sink
2008 G&C	5	Coal Quality
2019 Freeman and Streather	1	Major (and some trace) Element Geochemistry
2020 Precision Labs	1	Coal trace metals (Cs and Rb)
2022 Benchmark	9	Major mineralogy (XRD)
2023 Perkin Elmer	1	Trace Element Chemistry
2023 Chimera	1	Major and Trace Element Chemistry
2024 ActLabs (this Report)	14	Bulk pile Major/Trace Element Geochemistry

Sampling for this Report was preliminary to confirm earlier analyses, and we collected composite samples from Piles 4 and 5a for bulk geochemistry of refuse piles and separate geochemistry of black/grey rock ("ash"). Results of all analyses for this Report are summarized in Appendix 3 and older lab reports are attached as Appendix 11.

Samples for this Report were sent to Activation Laboratories in British Columbia, Canada, an independent, accredited, third-party laboratory. Analysis of 10 bulk refuse pile samples confirm concentrations of scandium (~14ppm, Appendix 3) as does one other analysis (Perkin Elmer, 2023; Appendix 11) as mentioned in the BDE Executive Summary (2024; Appendix 4) and BDE ProForma (2024; Appendix 5).

1.9 Data Verification

Borehole depth verification was the primary type of data verification for this study. 14 boreholes were re-located and depth to natural ground was confirmed, giving data for average thicknesses of these piles (Piles 1,3,4 and 5a).

Earlier chemical analyses focused on coal, and these results are presented alongside our sample analysis in Appendix 3, but verification for these data is limited to scandium. Concentrations of scandium in our samples confirmed those reported in Perkin Elmer (2023; Appendix 11), and in the Executive Summary by Green (BDE Executive Summary, 2024; Appendix 4). Scandium has been identified by others as "highly promising for utilization" as an economic resource in global coal reserves (Dai and Finkelman, 2018).

1.10 Metallurgical Testing

Metallurgical testing was performed as part of the technical feasibility study on floated coal samples and the results are presented in Freeman and Streather (2019). This testing is preliminary, but results were very positive showing coal quality, BTU and metal content, and other geochemistry data.

Materials vary by sampling site, so to understand metals in coal refuse piles a more thorough sampling scheme is needed. Table 1.1 (above) has a list of analyses included and each of these reports is attached in Appendix 11.

1.11 Refuse Pile Resource Estimation

Refuse pile Resources were estimated based off 1) data from earlier reports (Marshall Miller, 1997; Alchemy, 2008; Alchemy, 2017; Green, 2023), 2) comparison of historic topographic maps and aerial photos and 3) field observations on two separate site visits.

Piles for which we could not verify thicknesses from borehole data are tabulated below (Table 1-2) and designated in this Report as Inferred Resources. We have also included previous estimates for these piles in the same table.

Tonnage was estimated at 1.5 tons for every cubic yard of material, and projected value using 33% of raw tonnage as amount of graphene produced. The current value of composite, commercial grade graphene is estimated here at $15,000/ton. Total material in Piles 2, 5b, and 6 are estimated to be 3,837,592 million tons total material, with Inferred Resources valued at a total of $18,996,080,400 (Table 1-2).

Table 1-2: Resource Estimates showing pile size, volume, tonnage and projected value (based on 2024 commercial, composite grade graphene prices).

Pile Number	Area (ft^2)	Avg. Thickness	Volume (ft^3)	Tons in place	Inferred Value in place
2 (Alchemy, 2009)	261,360	30 ft	7,840,800	254,826	n/a
2 (this Report)	108,667	30 ft	3,260,010	163,000	$806,853,300
5b (this Report)	175,355	45 ft	7,947,480	397,374	$1,967,001,300
6 (this Report)	1,395,099	variable	52,328,100	3,100,924	$15,349,573,800
6 (Alchemy, 2009)	2,726,856	variable	71,527,320	3,218,730	n/a
6 Alchemy (2017)	Not given	Not given	not given	3,218,730	n/a
Totals (this Report)	**1,796,650**	**n/a**	**67,061,460**	**3,837,592**	**$18,123,428,400**

Notes To Accompany Table 1-2:

-The Qualified Person for the resource estimate is Emmanuel Sosa, PGeo, MS.
-Tons in place assumes 1.5 tons/cubic yard, minus 10% on a conservative basis
-Graphene tonnage is estimated at 33% of raw tonnage for all piles and multiplied by $15,000.
-Coal Refuse Pile volumes (and tonnage) are reported in situ.
-Inferred Value assumes $15,000/ton graphene

1.12 Refuse Pile Resource Statement

The Resource estimations cited by this Report are included in Table 1-2. Results of each volume estimate is given in tons. Refuse pile Resources are reported in situ. Refuse pile Resources that are not classified as Reserves had unverifiable volumes because no boreholes were located in this Piles (2, 5b, and 6). The Refuse Pile Inferred Resources have an effective date of July 5, 2024.

Previous reports classified each of the refuse piles and the impoundment as reserves (Alchemy, 2017; Green, 2023).

1.13 Refuse Pile Reserve Estimation

Indicated Reserves are reported here for refuse Piles 1, 3, 4, and 5a, which have confirmed thicknesses based on borehole data, topographic analysis, and field observations, with an estimated cumulative volume of 1,032,214 million tons.

A production plan was developed by Black Diamond Enterprises, Inc. with both a technical feasibility study (Freeman and Streather, 2019; Appendix 7) and a financial feasibility study (BDE ProForma, 2024; Appendix 5) supporting pre-existing data and feasibility studies (Alchemy, 2017; Green, 2023; Appendices 1 and 2) from early analyses. Many modifying factors were considered in a production plan, including 1) no mining is needed, 2) proximity to an existing, low cost processing plant site, 3) access to a railway at the processing plant site, 4) favorable preliminary metal concentrations (scandium and possibly others), 5) projected growth of the graphene market, 6) refuse pile remediation incentives such as the West Virginia Voluntary Remediation program, 7) tax breaks, 8) simplicity with permitting (only a Special Permit for Removal of Abandoned Coal Refuse Pile which has already been applied for), 9) other local/state/federal incentives including the Abandoned Minelands Economic Revitalization (AMLER) Program (https://dep.wv.gov/dlr/aml/Pages/AML-Pilot-Program.aspx), and Carbon Sequestration Tax Credits under Section 45Q.

A reserve estimation is presented in Table 1-3.

Table 1-3: Reserve Estimates showing area, volume, tonnage and value for each refuse pile included in this Report

Pile number	Surface Area	Avg. thickness	Volume (ft^3)	Ton (1.5 tons/yd^3)	10-15% off (tons)	Value in place ($USD)
1	581,052	40 ft	11,621,040	645,613	547,771	$2,711,466,450
3	85,035	20 ft	850,350	47,242	42,517	$210,459,150
4	166,169	55 ft	5,700,000	316,666	284,999	$1,410,745,050
5a	208,278	35 ft	3,323,168	184,620	156,927	$776,788,650
Totals	**1,040,534**	**n/a**	**21,494,558**	**1,194,141**	**1,032,214**	**$5,109,459,300**

Notes to Accompany Table 1-3:

-The Qualified Person for the resource estimate is Emmanuel Sosa, PGeo, MS.
-Piles 2, 5b and 6 from previous studies are excluded here because borehole data was not -confirmed for these.
-Value in place is calculated using 70% Carbon content, with one ton of graphene produced for every 3 tons of refuse pile material, and a price of $15,000/ton of graphene.
-Tonnage is reported on a 85%-90% basis in order to be conservative.

A reserve base audit estimate on demonstrated Indicated/Probable Reserves was reported by Alchemy Engineering Associates, Inc. (2017; Appendix 1).

1.14 Refuse Pile Reserve Statement

Reserves are an estimate of the saleable product. The reference point is the final exit point of product from the processing plant. Volume estimates and spacing for boreholes in piles 1,2, 4, and 5a provides data for an Indicated Reserve, and the BDE ProForma (2024; Appendix 5) and BDE Executive Summary (2024; Appendix 4) provide the economic justification for the designation of a Indicated Reserve for these refuse piles.

1.15 Mine Plan

No mining will be performed for this Project as this is previously stockpiled material. Historic mining has accumulated approximately 4,869,806 tons of coal refuse piles which will be removed using loaders and dump trucks, with a Special Permit for Removal of Abandoned Coal Refuse Piles (MR-21).

1.16 Recovery/Processing Plan

A summary of the recovery and processing of coal to graphene is outlined below in steps (see also Freeman and Streather, 2019; Appendix 7). Based on that technical feasibility study, graphene production ("recovery") is ~33% of raw tonnage from refuse piles. It is likely that Pile 6 (large impoundment; Figure 10-1) will have different recovery/production because of reported differences in grain size and pile makeup (Alchemy, 2017; Green, 2023; Appendices 1 and 2), but borehole data is needed.

1. Raw refuse pile material is crushed to 200 mesh (70 microns).
2. A modified Fisher-Trope process removes volatiles, inerts, and oil.
3. Leftover coal is floated at ~1.55 g/cm^3 to remove the denser rock material ("ash")
4. Metals are removed during flotation (above), then further concentrated using a combination of either acid leaching, electrolysis, or possibly enzymes.
5. A four-compartment, specially designed proprietary furnace is used to convert the coal to synthetic graphite, and then to commercial, composite grade graphene.

1.17 Infrastructure

The only infrastructure required on site will be road improvement for removal of coal refuse piles. Infrastructure for a processing plant is already in place with an abandoned grocery store site 8 miles away in Big Four, WV. The site has a large space for production, and also a railway onto the property. Design for the production plant is being undertaken by Norm Mullins of Black Diamond Enterprises, Inc.

1.18 Markets and Contracts

A financial feasibility study was produced by Green (2023; Appendix 2) which outlines the assets of the property and includes graphene market information. An updated BDE ProForma (2024; Appendix 5) and BDE Executive Summary (2024; Appendix 4) were also provided for this study which supply additional information related to the feasibility of this Project.

Detailed information about the current global graphene market (based on 8 separate market reports), with projections, can be found in the following article (Entoro, 2024):

https://www.entoro.com/news/graphene-market-forecast-growth-drivers-and-future-prospects

To summarize, the global graphene market is expected to grow significantly between now and 2030 from an annual average of $506 million to more than $3 billion dollars. Key market drivers are rising global demand for graphene, research and development of graphene applications, and expanding applications in aerospace and automotive industries.

A Letter of Intent for purchase of graphene product is included with this Report (Wend, 2022; Appendix 10)

1.19 Environmental, Permitting and Social Considerations

There are no significant environmental considerations for this Project, as it involves the removal of coal mine refuse piles. Incentives are available in the state of West Virginia for remediation of coal refuse piles.

1.19.1 Environmental Considerations

This Project involves the cleanup of coal mine waste and does not bring up any environmental considerations.

The Buzzard Branch creek runs through the immediate area, adjacent to the coal refuse stockpiles, so removal efforts should avoid contaminating this stream.

1.19.2 Closure and Reclamation Planning

Reclamation of each of the piles will consist of extraction to natural ground surface, and then replanting with native vegetation. This will occur simultaneously as piles are removed.

1.19.3 Permitting Considerations

Because the Algoma Refuse Pile Project only involves remediation of refuse piles, the only permit required is a Special Permit for Removal of Abandoned Coal Refuse Pile which has already been applied for in 2023.

1.19.4 Social Considerations

A return of industry to the area will benefit residents with job opportunities and aid in the cleanup of legacy coal mining waste. These efforts will help empower the citizens of the community of Algoma, WV and nearby Big Four, WV (the site of the processing plant).

1.20 Capital Cost Estimates

Capital expenditures are outlined in Appendix 6 (Timing and Use of Funds, 2019), prepared by Black Diamond Enterprises, Inc.. Expenditure for this Project totals $150,036,000, and working capital for the first 12 months of operations totals an additional $19,000,000.

1.21 Operating Cost Estimates

An operating cost estimate was generated by Black Diamond Enterprises, Inc as part of a ProForma document (BDE ProForma, 2024), which can be found in Appendix 5. Below is a summary of monthly staffing, labor and marketing costs.

Production Labor Cost: $571,443

Mining Labor Cost: $50,560

Salaried Labor Cost: $23,200

Sales and Marketing: $40,000

Total Monthly Staffing and Labor Cost: $685,202

A preliminary schedule of operations is available in Alchemy (2017; Appendix 1) including permitting requirements and a preliminary production schedule. A more detailed description of the production schedule can be found in the BDE ProForma (2024; Appendix 5).

1.22 Economic Analysis

A pre-feasibility study (Alchemy, 2009; Appendix 13) and several technical and economic feasibility studies were conducted for the Algoma Refuse Pile Project, which include, 1) coal quality assessment (Precision, 2003; SGS, 2005; Alchemy, 2008; G&C, 2018; All in Appendix 11), 2) a feasibility study for graphene production (Freeman and Streather, 2019; Appendix 7), 3) valuations of coal and market information (Marshall Miller, 1997; Alchemy, 2008 & 2009; Alchemy, 2017; Alternafuels, 2022; Appendices 12 & 13, 1, and 8). Green (2023; Appendix 2) provided the most recent property valuation and marketing strategy for the ARPP.

The current sale price of commercial, composite grade graphene per ton is estimated at $15,000, which has increased from an estimated $3500/ton in 2019. With an Indicated Reserve on the property of 1,032,214 tons, and 33% of this raw tonnage converted graphene, that gives a total value of the coal refuse piles at $5,109,459,300.

1.23 Risks

There are no major risk factors for the Algoma Refuse Pile Project, other than unforeseen changes to the graphene market. Based on the market projections outlined in the graphene market is expected to grow significantly between now and 2030 (Entoro, 2024).

Permitting requirements to support this Project are not significant (only one permit described above).

1.24 Opportunities

The following opportunities have been identified for the Algoma Refuse Pile Project:

- remediation of coal refuse piles.

- targeted drilling and sampling of Piles 2, 5b, and 6 will greatly increase the volume and confidence in the Indicated Reserve already present on the property.

- continued investigation of metals present in the coal refuse piles and impoundment, with a great potential for extraction and sale.

1.25 Interpretation and Conclusions

Under the assumptions in this Report, the Algoma Refuse Pile Project Inferred Resource designation is supported by previous reports, topographic analysis, and field observations. The Indicated Reserve designation is supported by ease of permitting and remediation incentives, ease of removal (no mining required), proximity to an already designated processing facility, and the positive market outlook for graphene and potential for metal extraction and marketing.

1.26 Recommendations

Additional drilling, and thorough sampling and analysis of refuse piles and their chemistry (coal and rock) is recommended for a Reserve estimate of all the coal refuse piles on the Algoma Refuse Pile Project site (including Piles 2, 5b, and 6), especially to characterize trace metals (in addition to scandium).

Earlier reports and analyses show the presence of metals in floated coal samples (Freeman and Streather, 2019; Appendix 7) and scientific studies demonstrate metals in coal of the region as well as in the Pocahontas 3 seam (Yesenchak et al., 2022), which was the source of the refuse piles on the ARPP Property.

2: INTRODUCTION

Emmanuel Sosa, MS, PGeo, Eric Kappus, PhD, and Mike Snell, PhD prepared this technical report for Black Diamond Enterprises, Inc on the Algoma Refuse Pile Project (ARPP), located in Algoma, West Virginia, USA.

This Property contains 6 coal refuse piles of varying size, with piles 1, 3, 4, and 5a being pre-SMCRA piles (before the Surface Mining Control and Reclamation Act of 1977). Piles 2 and 6 are post-SMCRA and have been remediated (leveled and covered with fill and vegetation).

The ARPP is a venture of Black Diamond Enterprises, Inc, located at 348 Ascue Road, Cedar Bluff, VA. 24609.

3: RELIANCE ON OTHER EXPERTS

This Report relies on several other reports including volume estimates (Alchemy, 2008; Marshall Miller and Associates, 1997 - reproduced in Alchemy, 2017 and Green, 2023), coal quality estimates (Precision Labs, 2003; SGS, 2005; G&C, 2008; Freeman and Streather, 2019), coal valuation estimates (Alchemy 2017; Alternafuels, 2022; BDE ProForma, 2024), as well as economic and feasibility studies (Marshall Miller, 1997; Alchemy 2017; Freeman and Streather, 2019; Green, 2023; and BDE ProForma, 2024). Each of these is cited and included as an Appendix to this report,

except the Marshall Miller and Associates report (1997), which was not available for review. Fortunately, Marshall Miller (1997) was cited with tables reproduced by others (Alchemy, 2017; Green, 2023; Appendices 1 and 2) and the authors of this Report re-located original borehole marker stakes (see Figure 12-1) on all refuse piles except Piles 2, 5a, and 6.

A number of reported analyses did not meet our criteria for inclusion in this Report, mostly because of a lack of original data reports from certified analytical laboratories, or too small a number of samples. The exception to this is scandium, which is reported in Perkin Elmer (2023; Appendix 11) and the BDE Executive Summary, 2024; Appendix 4) as having concentrations of 16 ppm. Analyses for this Report confirm a range of scandium comparable to previous analytical results (Appendix 3).

With a current market price of scandium chloride at $124/gram, with scandium concentrations of 16ppm (~16g/ton), assuming 90% recovery, the extracted scandium is valued at $1,785/ton. The current estimate of 1,032,214 tons (Indicated Reserve only) gives an estimated total value of $1,842,501,990 (based on the June 2024 spot price of scandium chloride at $124/gram).

4: PROPERTY DESCRIPTION AND LOCATION

The property consists of 2 contiguous tracks of vacant land just north of the small community of Algoma, WV. Figure 4-1 shows the location, property boundary, and location of coal refuse piles (and the large impoundment).

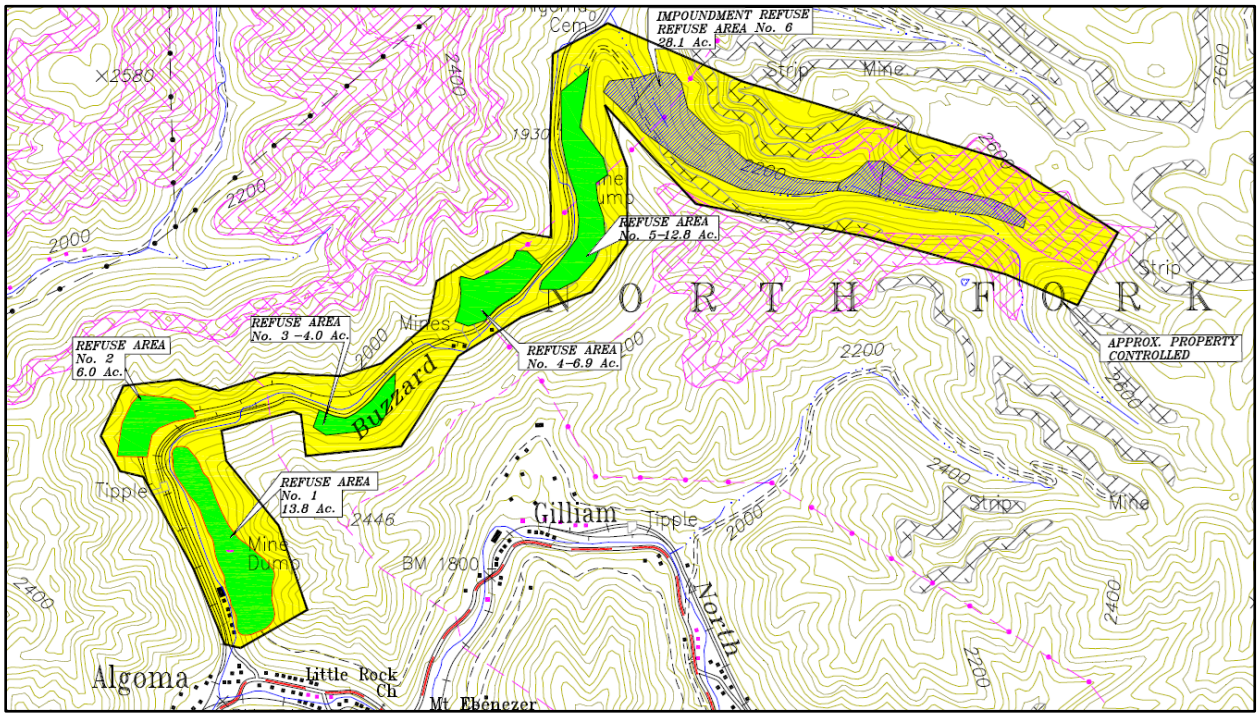

Figure 4-1: Topographic map (from Alchemy, 2017; Appendix 1) showing the property boundary (yellow), refuse pile outlines (green), and large impoundment (grey on yellow). (Appendix 9).

The land totals 180.64 acres. The initial 97.74 acres were acquired from E&E Land Company in a deed dated 3/12/1996 and recorded in Deed Book 437, page 67. The second parcel totaling 82.9 acres was purchased from Covol Technologies, Inc. in a deed dated 1/18/2000 and recorded in Deed Book 465, Page 362.

5: ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

The property described above is accessible by taking Tuscarora Dr./Moccasin Hill Rd north from Cherokee Road in Algoma, WV. Tuscarora Dr. turns into Moccasin Hill Rd, which follows the Buzzard Branch of the North Fork of Elkhorn creek up into the valley, and the water spring and coal refuse piles are located on improved dirt roads along this stream (Figure 4-1).

The region has snowy winters and an average rainfall of 45 inches (cm) per year. During both site visits we encountered rainy weather. The area is densely forested, especially in the valley floor. The Hatfield-McCoy recreational vehicle trail runs adjacent to the property on the north and western sides and during our two site visits we heard continuous traffic on this trail.

Coal refuse piles are located at elevations above Algoma, WV, between 1800 feet and 2300 feet, alternating on either side of Buzzard Branch creek going upstream (Figure 4-1).

6: HISTORY

For a detailed history of mining in Algoma and a general chronology of the area, there are two public websites available to date. These are as follows:

Abandoned website: https://abandonedonline.net/location/algoma/

Algoma High School: http://algomahighschool.com/main/algoma_history.htm

7: GEOLOGICAL SETTING AND MINERALIZATION

The geology of the Algoma area consists of several hundred feet of exposed, horizontal strata of lower Pennsylvanian units in the stream valleys and on hilltops, mostly covered by soil and forest. A general geologic map (West Virginia Virtual Mapping project) is presented in Figure 7-1.

Lithologies present in these units are sandstones, black and grey shales, and bituminous, low-volatile coal.

General stratigraphy of the southern Appalachian basin was described by Arkle (1974) and Figure 7-2 (below) is modified from this publication. The No. 3 coal seam of the Pocahontas Formation was mined in this valley and all the refuse piles are from this source (shown in Figure 7-2).

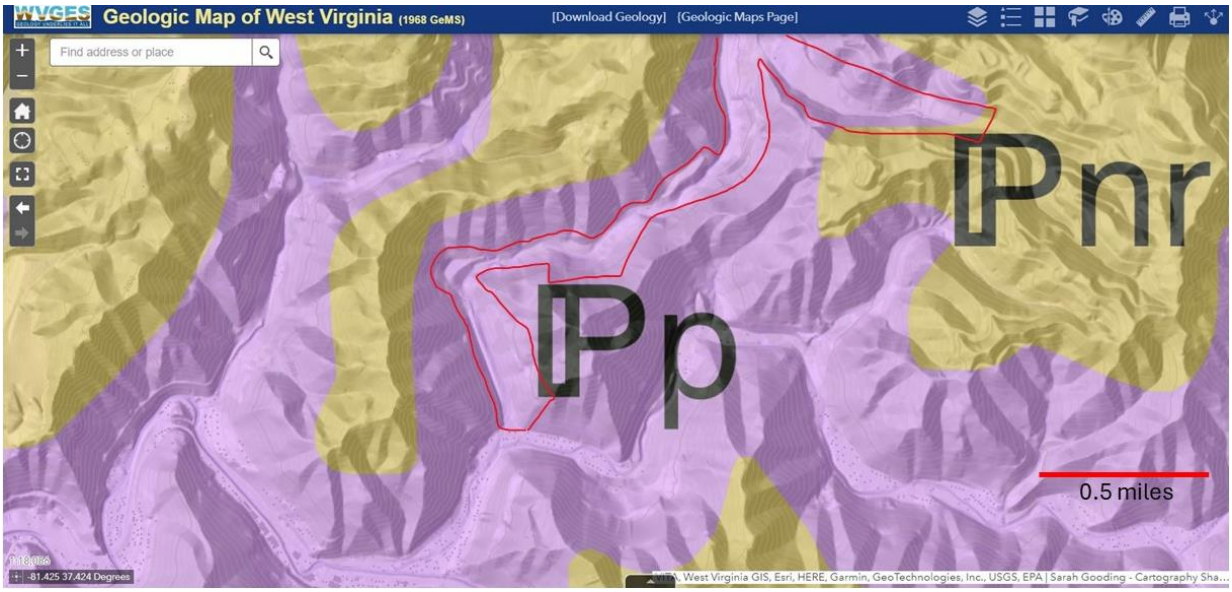

Figure 7-1: General geologic map of the Algoma area with the ARPP Property outlined in red. Pocahontas Formation is purple and New River Formation is tan. (Source: West Virginia Mapping Project Virtual Geology Map, https://www.wvgs.wvnet.edu/www/maps/geomap.htm)

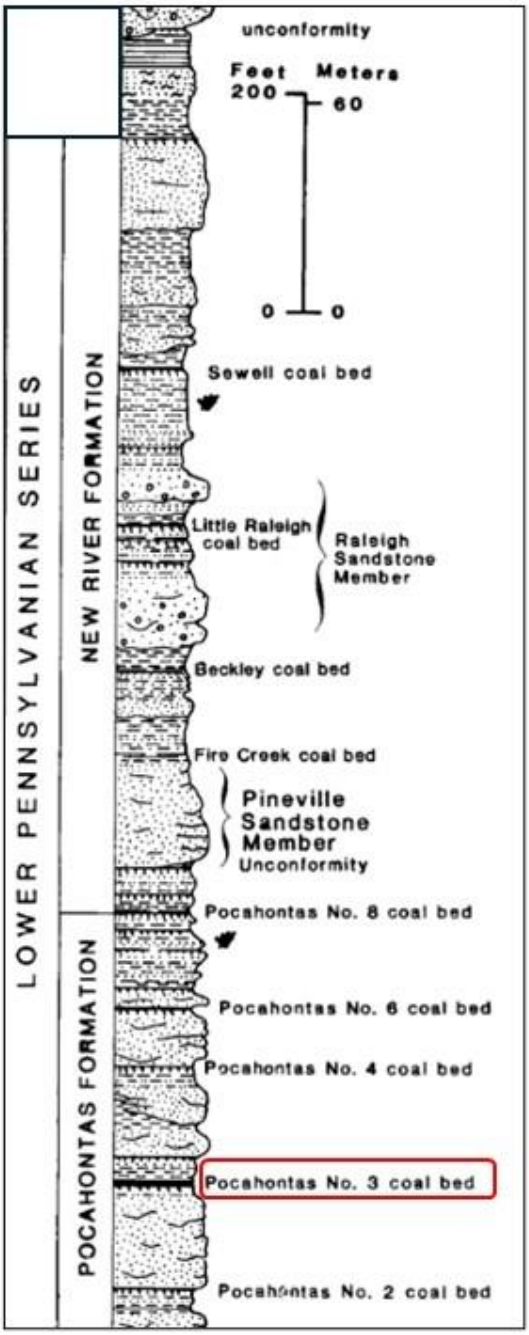

Figure 7-2: General stratigraphy of the southern Appalachian basin, with Pocahontas and New River Formations. The Pocahontas 3 seam is in red.

8: DEPOSIT TYPE

The deposit consists of 6 large refuse piles of coal mining waste from the Algoma mine, which is a closed underground mine in the Pocahontas No. 3 coal seam.

9: EXPLORATION

Black Diamond Enterprises, Inc. began exploration of coal refuse piles at the Algoma site in 1997 after the first tract of land was purchased, and this resulted in the Marshall Miller (1997) report. Those authors drilled each of the refuse piles to better constrain volume estimates calculated from historic topographic maps. We were able to confirm 14 borehole depths total, for Piles 1, 2, 4, and 5a. We were unable to locate boreholes for Piles 3, 5b, and 6.

5 test pits were dug into Pile 6 using a small excavator (in May, 2024 during our second site visit), to depths ranging from 6ft to 8ft, showing the presence of some coarse refuse beneath the fill.

10: DRILLING

Drilling of refuse piles for the Algoma Refuse Pile Project was performed by Marshall Miller and Associates (1997) and although this report was not available for review, 14 of the boreholes were re-located for this Report with labeled stakes indicating thickness of each of the refuse piles (we were unable to locate any boreholes for Piles 2, 5a, and 6). Figures 10-1 and 10-2 show Piles included in this report and the locations of boreholes re-located.

Figure 10-1: Google Earth image of the ARPP, showing locations and outlines of coal refuse Piles 1, 2, and 3, as well as locations of confirmed boreholes. Piles in yellow have no borehole data.

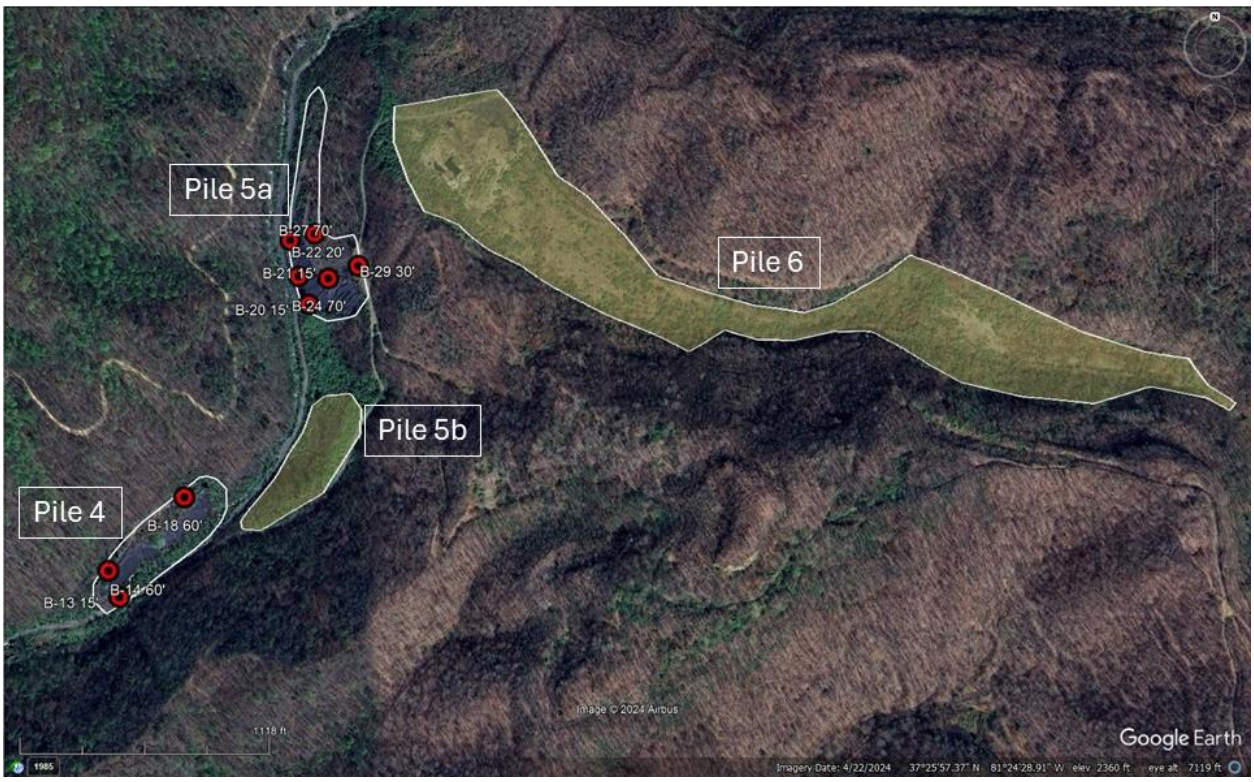

Figure 10-2: Google Earth image of the ARPP, showing locations and outlines of coal refuse Piles 4, 5b, 5, and 6, as well as locations of confirmed boreholes. Piles in yellow have no borehole data.

11: SAMPLE PREPARATION, ANALYSES, AND SECURITY

Samples for this Report were collected from refuse Piles 4 and 5 for bulk analysis for geochemistry (62 elements).

Sampling Methods- Samples were collected randomly at several locations on each pile, using plastic or wooden digging tools to avoid contamination of samples. Samples were then mixed thoroughly in their plastic storage containers and shipped to Activation Laboratories (Canada), a certified 3rd party laboratory.

The results from this Report are compared to several analyses from previous studies, all of which are listed in Table 11.1 below.

The data cited in this Report are from certified labs and are summarized in Table 1-1. Sampling protocols for these reports is not known.

Samples taken in 2024 by the authors and were prepared and analyzed by Activation Laboratories in British Columbia, Canada. Results of analysis were sent directly to the authors. Sample analyses from certified, 3rd party laboratories pre-dating 2024 are listed in Appendix 3, which shows all analytical results included in this Report.

There are no security concerns for any of the samples mentioned above.

12: DATA VERIFICATION

Data verification for volumes of stockpiles was performed through 2 site visits which included measuring pile sizes and locating boreholes. Careful study of historic topographic maps also aided in verification of refuse pile volumes.

Figure 12-1 shows one of the borehole stakes that was located for this Report, confirming pile thickness from topographic analysis and other field observations.

Figure 12-1: Photo of wooden stake and borehole from Marshall Miller (1997) confirming depth to natural ground (top is facing direction, Lat/Long, and including date)

13: MINERAL PROCESSING AND METALLURGICAL TESTING

Coal refuse processing and metallurgical testing were performed and reported by Freeman and Streather (2019). These authors demonstrated the removal of metals from the raw coal, managing to remove 7.256% out of 14.802% impurities, or about 50%.

Freeman and Streather (2019) determined that the grade of coal present at the Algoma Refuse Pile Project site is very suitable for making high quality graphene, and because of its high conductivity is well suited for energy storage devices and conductive inks, as well as a wide range of other applications (listed in Applications section of their report).

14: MINERAL RESOURCE ESTIMATES

A preliminary volume estimate was produced by Alchemy Engineering and Associates, Inc. (2009), and then updated in a Reserve Base Audit Estimate (Alchemy, 2017). The latter volume estimate (Alchemy, 2017) was based on the Reserve Estimation Report by Marshall Miller and Associates (1997).

It is important to note that the first pre-liminary estimate (Alchemy, 2009) excluded Pile 3, so we have adjusted data to match actual piles on the map using pile numbers from Alchemy (2017; Figure 4-1 above).

In order to estimate volume/raw tonnage correctly, we used our own field measurements from 2 site visits in 2024 (5 days total), measurements from Google Earth and historical topographic maps, and borehole depths. These results are compared with prior Reserve estimates in Table 14-1.

Table 14-1: Previous Reserve Estimates for the Algoma Refuse Pile Project.

	Total refuse pile surface area	Volume estimate (raw tonnage)
Alchemy, 2009	Not provided	5,195,355 tons
Marshall Miller, 1997/Alchemy, 2017	Not provided	4,500,000 tons
This Report (2024)	1,040,534 ft^2	1,032,214 tons

Notes to Accompany Table 14-1:

-Surface areas of piles were not included in previous reports, but were shown in location figures.
-Reserve Estimate for this Report only includes Indicated Reserves proven by borehole confirmation. Total tonnage for both Inferred Resources and Indicated Reserves is 4,869,806 tons.

Because borehole data was not recovered for Piles 2 and 6, but was previously reported and reproduced, we were able to generally confirm the volumes of these piles. We conservatively

designate these as Inferred Resources, until such time as there is borehole data on each (including depth to natural surface, and petrological data by depth).

Table

15: MINERAL RESERVE ESTIMATES

A Reserve Estimate for the Algoma Refuse Pile Project was reported by Marshall Miller and Associates in 1997, then data was reprinted by Alchemy Engineering and Associates (2017; also in Green, 2023).

A Reserve estimate is based off the selling price of refuse pile material, which changes based on the planned use. Original estimates were based on the value of low volatile coal, at $92.42/ton (Marshall Miller, 1997) with a higher estimate later of $235-$335/ton (Alternafuels, 2022). Current value of this coal for making graphene is outlined below:

With an Indicated Reserve of 1,032,214 tons, valued at $15,000 per ton, and considering the operating costs and recovery of graphene at 33%, the current Indicated Reserve is valued at $5,109,459,300, with $445,116,672 in projected revenue in the first 12 months.

16: MINING METHODS

Mining was performed historically on the Algoma Refuse Pile Project site resulting in large refuse piles, but no mining will be performed for this Project.

17: PROCESSING METHODS

Processing will occur offsite (in Big Four, WV) and includes the following: 1) crushing raw pile material to 200 mesh (~75 microns), 2) a modified Fischer–Tropsch process to remove volatiles and inerts (thus increasing the carbon content), 3) metal extraction (using a combination of techniques), 4) density floatation (to separate mineral material out), and production of graphite then graphene using a proprietary, 4-compartment furnace. Waste generated will be sold for production of soil additive/amendments.

18: PROJECT INFRASTRUCTURE

Infrastructure to support operations on site consists of existing, improved roads to various locations on each coal refuse pile.

A site for a processing facility has already been located in Big Four, WV, 8 miles from the Algoma Refuse Pile Project site. This processing plant will contain management and engineering offices, maintenance shop, warehouse space, and a graphite/graphene production line. The BDE ProForma (2024; Appendix 5) document outlines infrastructure needed at the processing plant site.

19: MARKET STUDIES AND CONTRACTS

19.1 Market Studies

A financial feasibility study was produced by Green (2023) which outlines the assets of the property and includes graphene market information. An updated BDE ProForma (2024; Appendix 5) and Executive Summary (BDE Executive Summary, 2024; Appendix 4) were also provided for this Report which supply additional information about the feasibility of this Project.

Detailed information about the current global graphene market (based on 8 separate market reports), with projections, can be found in the following article (dated June 17, 2024):

https://www.entoro.com/news/graphene-market-forecast-growth-drivers-and-future-prospects

To summarize, the global graphene market is expected to grow significantly between now and 2030 from an annual average of $506 million to more than $3 billion dollars. Key market drivers are rising global demand for graphene, research and development of graphene applications, and expanding applications in aerospace and automotive industries.

19.2 Contracts/Letter of Intent

Black Diamond Enterprises, Inc. has obtained a Letter of Intent (Wend, 2022; Appendix 10) for the purchase of graphene for two different products including 4,000 tons during year one, 8,000 tons during year two, and 40,000 tons during year three for pellet binder, and an additional 400,000 tons during year one and 800,000 tons during year two for microchips/EMI shielding.

20: ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

There are no environmental concerns with this Project. Coal refuse piles will be removed down to natural ground, and the area will be seeded with native plants during cleanup of the rest of the piles.

A Special Permit for Removal of Abandoned Coal Refuse Pile has already been applied for in 2023. This is the only permit needed on site for the Algoma Refuse Pile Project.

The processing plant will produce waste after floating the crushed coal, but this will be sold as soil amendment. The plant does not produce any other waste or significant emissions and will utilize electricity or natural gas for power.

21: CAPITAL AND OPERATING COSTS

Operating Costs and a breakdown of Capital Expenditures for the Algoma Refuse Pile Project are summarized here, based on Appendices 4, 5, & 6 (BDE Executive Summary, 2022; BDE ProForma, 2024; BDE Timing and Use of Funds, 2019) give a thorough breakdown of expenditures.

Total expenditure for this Project is $150,036,000, and working capital for the first 12 months of operations totals an additional $19,000,000 (BDE ProForma, 2024; Appendix 5). Total revenue for the first 12 months of operations is projected to be $445,116,672 (BDE ProForma, 2024). Below is a pie diagram showing the capital expenditures allocation is shown below in Figure 21-1.

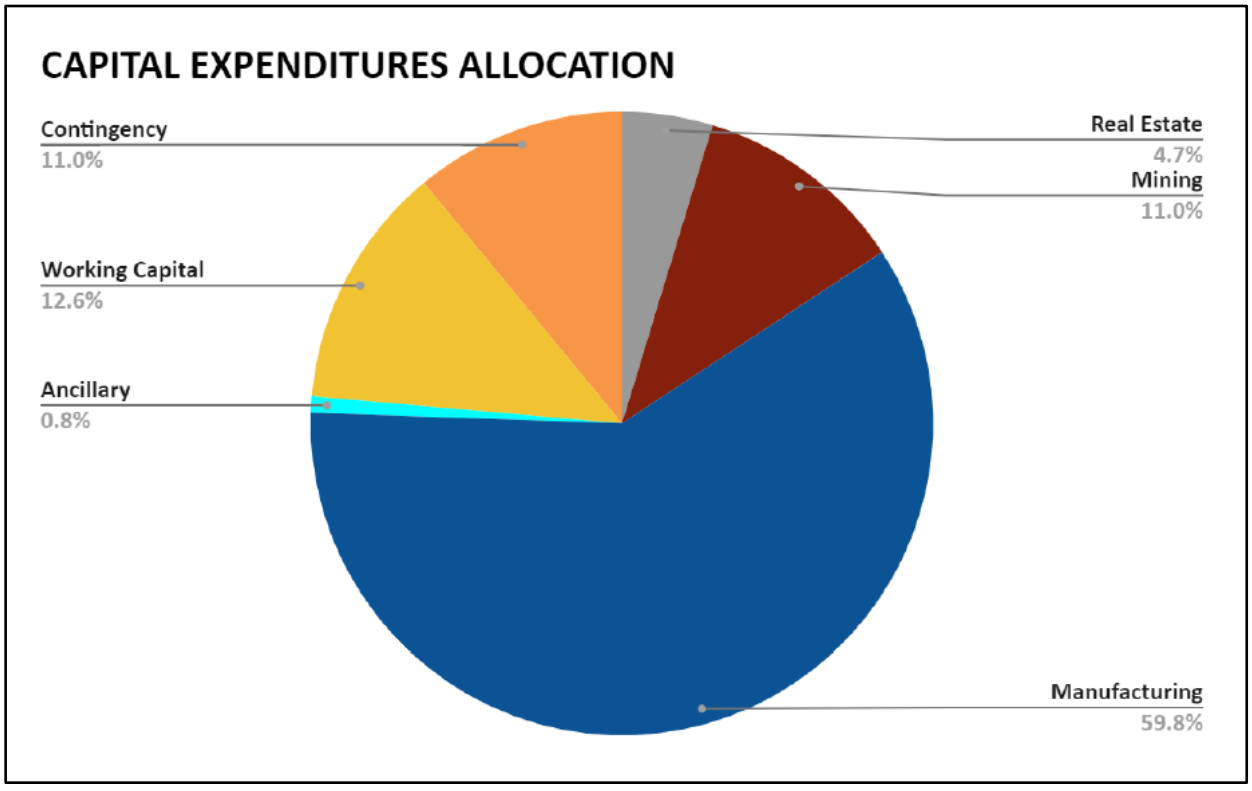

Figure 21-1: Capital Expenditures allocation for the Algoma Refuse Pile Project.

For additional information, such as a breakdown of revenue and operating costs, the reader is referred to the BDE ProForma (2024; Appendix 5) document and the BDE Timing and Use of Funds (2019; Appendix 6) document.

22: ECONOMIC ANALYSIS

Economic analysis of coal refuse piles for producing graphene requires an understanding of coal quality (mainly carbon content) as well as costs for production. Because there is no cost for extraction or extraction permitting, overhead costs for removal of material are minimal. Production is the majority of cost, and this is outlined in the ProForma document produced by Black Diamond Enterprises, Inc. (BDE ProForma, 2024; Appendix 5).

The Timing and Use of Funds (2019) document also outlines capital expenditures.

23: ADJACENT PROPERTIES

Adjacent properties have been mined for coal but are not presently utilizing the coal refuse piles or in production of coal.

24: OTHER RELEVANT DATA/INFORMATION

This section is not relevant to this Report.

25: INTERPRETATIONS AND CONCLUSIONS

The QPs note the following interpretations and conclusions based on the review of available data at the time of the writing of this Report.

The Algoma Refuse Pile Project contains 3,837,592 tons of Inferred Resources, based on previous studies and site observations, and 1,032,214 tons of Indicated Reserves, based on previous studies, field observations, and borehole data confirmation (total Resources and Reserves is 4,869,806 tons).

These refuse piles (and the impoundment) represent a significant source of carbon for graphene (~70% carbon content) which is currently at a sale price of $15000/ton. At this valuation, both the Inferred Resources and Indicated Reserves have an estimated value of $73,047,090,000.

26: RECOMMENDATIONS

Our list of recommendations for the Algoma Refuse Pile Project and the property itself are outlined in detail below.

26.1 Drilling and Sampling Recommendations

Drilling of additional confirmation boreholes (Piles 2, 5b, and 6) and a comprehensive sampling/analysis scheme (for metals) is recommended in order to better understand and re-designate previously reported Indicated Resources as Indicated Reserves. Once this data is acquired, an additional feasibility study for metal extraction and marketing are recommended. Pile 6 (**Figure 26-1**) represents a significant source of material that needs quantification of volume and sampling.

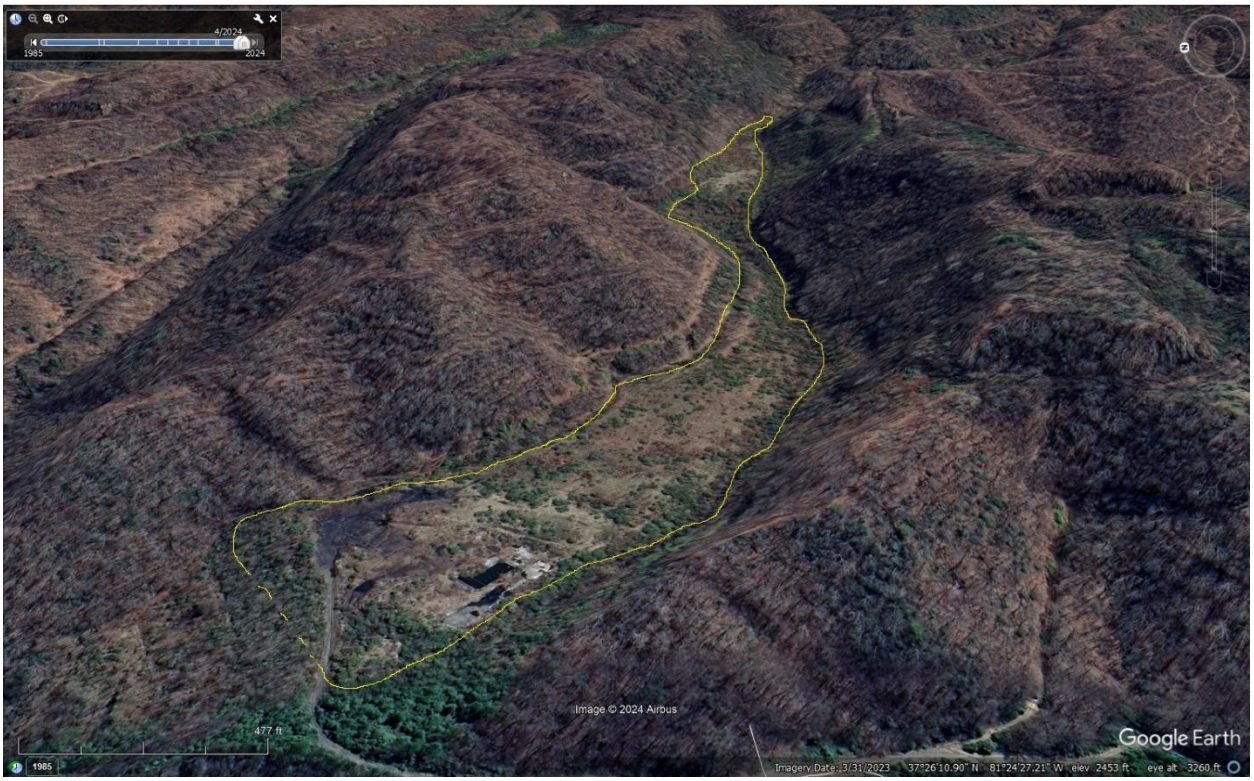

Figure 26-1: Google Earth image of Pile 6 (outlined in yellow), a large impoundment over 120 ft thick at the western end.

26.2 Recommendation for Metals

Recent studies on the presence and recovery of REEs from coal and coal-related sources are available (see Zhang and Honaker, 2019 for a list). REEs are documented in coals throughout West Virginia, and the Pocahontas 3 seam has already been documented as having REE enrichment (Table 2 of Zhang and Honaker, 2019). A large sampling and analysis scheme is recommended in order to understand the nature of the REE deposits in the coarse refuse piles at the Algoma site.

26.3 Recommendation for the Natural Spring

The natural spring located on the property (Figure 10-1 for location) is reported to have a flow rate of 6000 gallons per minute and was included in the feasibility study of Green (2023). Water quality analysis was performed by REIC labs (1996; Appendix 14) and the water was found to be potable. We recommend further water quality testing and a feasibility study for water bottling or possible other industrial use nearby.

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Figure 26-2: Photograph of the large spring on the property (see Figure 10-1 for location)

27. REFERENCES

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