

# Scoping Report for the Kings Mountain Mine

Environmental and Social Impact Assessment

June 2024

Document No. KM60-EN-RP-9478

Revision: 4.0



## Disclaimer

This Scoping Report, an initial step to elicit stakeholder feedback prior to preparation of an Environmental and Social Impact Assessment (ESIA), is being prepared voluntarily by Albemarle U.S., Inc. (Albemarle) to align with the Initiative for Responsible Mining Assurance (IRMA) Standard. It is not required by U.S. federal, state, or local government laws and regulations.

## Key Points of Contact

Local stakeholders and neighboring communities are invited to ask questions and provide feedback on the information presented in this Scoping Report. The Albemarle team may be contacted through the following channels:

- Email: [kmcommunity@albemarle.com](mailto:kmcommunity@albemarle.com)
- Website: <https://albemarlekingmountain.com/>
- Phone: 1-704-734-2775
- In person at the Albemarle Project Center: 129 West Mountain Street, Kings Mountain, NC 28086

© Albemarle Corporation. All rights reserved. | Printed copies should be used with caution. The user of this document must ensure the current approved version of this document is being used.

## CONTENTS

<b>1. Introduction</b> .....	<b>1</b>
1.1. Project Location .....	1
1.2. Project Background .....	6
1.3. Project Purpose and Need.....	8
1.4. Commitment to Responsible Mining .....	9
1.4.1. Initiative for Responsible Mining Assurance .....	9
<b>2. Project Description</b> .....	<b>11</b>
2.1. Project Phases.....	11
2.1.1. Site Preparation .....	11
2.1.2. Construction .....	12
2.1.3. Operations.....	12
2.1.4. Mine Closure and Reclamation .....	13
2.2. Proposed Project Features .....	13
2.2.1. Open-pit Mine.....	15
2.2.2. Tailings Storage Facility .....	17
2.3. Mine Sequencing .....	17
2.4. Alternatives Analysis.....	17
2.4.1. Project versus No Project.....	18
2.4.2. Location Alternatives.....	18
2.4.3. Process, Technology, and Design Alternatives.....	18
2.4.4. Approach to the Alternatives Analysis.....	19
<b>3. Environmental and Social Impact Assessment Process</b> .....	<b>20</b>
3.1.1. Scoping Report .....	21
3.1.2. Completed Baseline Studies to Date .....	21
3.1.3. Environmental and Social Impact Assessment .....	21
3.1.4. Impact Mitigation .....	21
<b>4. Area of Influence</b> .....	<b>22</b>
4.1. Preliminary Environmental Area of Influence.....	22
4.2. Preliminary Social Area of Influence .....	25
4.3. Preliminary Combined Area of Influence .....	27
<b>5. Overview of Environmental and Social Setting</b> .....	<b>29</b>
5.1. Physical Setting .....	29
5.1.1. Existing Data Sets Informing Preliminary Baseline Characterization.....	29
5.1.2. Climate and Meteorology .....	29
5.1.3. Air Quality and Greenhouse Gases .....	30
5.1.4. Noise and Vibration.....	31
5.1.5. Geology.....	33
5.1.6. Physiography, Topography, and Soils .....	35
5.1.7. Surface Water .....	38

5.1.8. Groundwater .....	42
5.1.9. Natural Hazards .....	45
5.2. Biological Setting .....	45
5.2.1. Existing Data Sets Informing Preliminary Baseline Characterization .....	45
5.2.2. Terrestrial Flora and Fauna.....	46
5.2.3. Critical Habitat Assessment .....	50
5.2.4. Ecosystem Services .....	51
5.3. Social Setting.....	51
5.3.1. Data Gathering Approach .....	51
5.3.2. Demographics .....	52
5.3.3. Education .....	54
5.3.4. Economy and Industry .....	54
5.3.5. Vulnerable Groups .....	56
5.3.6. Community Health and Safety .....	58
5.3.7. Land Use.....	59
5.3.8. Recreational Areas.....	60
5.3.9. Social Infrastructure .....	60
5.3.10. Visual Resources.....	66
5.3.11. Cultural Heritage.....	66
<b>6. Stakeholder Engagement .....</b>	<b>67</b>
6.1. Introduction .....	67
6.2. Objectives .....	67
6.3. Stakeholder Identification and Mapping.....	68
6.4. Stakeholder Engagement Activities .....	69
6.4.1. Methods of Engagement.....	69
6.4.2. Early Engagement.....	70
6.4.3. Future Engagement and Stakeholder Next Steps.....	76
<b>7. Scoping Results .....</b>	<b>77</b>
7.1. Potential Environmental and Social Risks and Impacts.....	77
7.2. Conclusion .....	82
<b>8. Next Steps in the Environmental and Social Impact Assessment Process .....</b>	<b>83</b>
<b>Appendix A ERM Environmental and Social Impact Assessment Methodology</b>	
<b>Appendix B Preliminary Table of Contents for the Environmental and Social Impact Assessment</b>	
<b>Appendix C References</b>	



## List of Tables

Table 1-1: Scoping Requirements per the IRMA Standard.....	10
Table 2-1: Project Phase Time Periods and General Activities .....	17
Table 5-1: Meteorological Conditions .....	30
Table 5-2: Indoor and Outdoor Noise Levels .....	31
Table 5-3: Ambient Noise Monitoring Data from KMM Site Vicinity .....	32
Table 5-4: Material Types and Geochemical Characteristics .....	33
Table 5-5: Mapped Soil Units.....	36
Table 5-6: Summary of Onsite Aquatic Features.....	39
Table 5-7: Baseflow Estimates for Kings Creek (KMM) and Dixon Branch (TSF) .....	40
Table 5-8: Existing Groundwater Well Summary .....	42
Table 5-9: Summary of Brownfield Screening Analyses .....	44
Table 5-10: USFWS Federally Listed Species with Potential to Occur within the KMM and TSF Sites .....	47
Table 5-11: Population Growth in the Social Area of Influence .....	52
Table 5-12: Racial Breakdown in the Social Area of Influence .....	53
Table 5-13: Land Use Type by County .....	59
Table 5-14: Housing Availability.....	61
Table 5-15: Number of Recorded Traffic Crashes Grouped by Intersection, 2018–2022.....	62
Table 6-1: Stakeholder Categorization and Approach for Engagement .....	68
Table 6-2: Preliminary List of Stakeholder Groups Identified.....	68
Table 6-3: Record of Engagement Activities (2022 to Current) .....	70
Table 6-4: Summary of Key Project-Related Concerns Raised by Stakeholders .....	74
Table 6-5: Future Engagement Activities .....	76
Table 7-1: Preliminary Identification of Resources and Receptors and Potential Impacts and Risks to Assess in the ESIA.....	78

## List of Figures

Figure 1-1: Project Location Map.....	3
Figure 1-2: Aerial Location Map of KMM Site .....	4
Figure 1-3: Aerial Location Map of TSF Site .....	5
Figure 1-4: Geology Map .....	7
Figure 2-1: Kings Mountain Mine Site Layout .....	16
Figure 4-1: Preliminary Environmental Area of Influence .....	24
Figure 4-2: Preliminary Social Area of Influence.....	26
Figure 4-3: Preliminary Combined Area of Influence .....	28
Figure 5-1: Major Roads in the Social Area of Influence .....	63
Figure 5-2: Intersection off I-85 into Kings Mountain .....	64
Figure 5-3: Intersection off U.S. 74 into Kings Mountain .....	65

## Acronyms and Abbreviations

Acronym	Definition
Albemarle	Albemarle U.S., Inc.
amsl	above mean sea level
Aol	Area of Influence
CAP	Community Advisory Panel
CAT	Community Affairs Team
CBG	census block group
CT	census tract
CO	carbon monoxide
dBA	A-weighted decibel
DOE	U.S. Department of Energy
EAol	Environmental Area of Influence
EJ	environmental justice
ERM	ERM NC, Inc.
ESA	Endangered Species Act
ESHS	Environmental, Social, Health, and Safety
ESIA	Environmental and Social Impact Assessment
ETJ	extraterritorial jurisdiction
FEMA	Federal Emergency Management Agency
Gateway Trail	Kings Mountain Gateway Trail
GHG	greenhouse gas
gpm	gallons per minute
gpm/acre	gallons per minute per acre
I-85	Interstate 85
IIoT	Industrial Internet of Things
IRMA	Initiative for Responsible Mining Assurance
KMM	Kings Mountain Mine
KMSZ	Kings Mountain Shear Zone
MSF	Materials Storage Facility

Acronym	Definition
NAAQS	National Ambient Air Quality Standards
NAG	non-acid generating
NC	North Carolina
NCDEQ	North Carolina Department of Environmental Quality
NCDOT	North Carolina Department of Transportation
NCWRC	North Carolina Wildlife Resources Commission
NGO	nongovernment organization
NO <sub>2</sub>	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NPI	non-process infrastructure
O <sub>3</sub>	ozone
PAG	potentially acid generating
PCB	polychlorinated biphenyl
PFAS	per- and polyfluorinated substances
PM	particulate matter
PM <sub>2.5</sub>	particulate matter with an aerodynamic diameter of 2.5 microns or less
PM <sub>10</sub>	particulate matter with an aerodynamic diameter of 10 microns or less
Project	Kings Mountain Lithium Mine Project
PSS	palustrine scrub-shrub
PUB	palustrine uncontrolled bottom
ROM	run-of-mine
RSF	rock storage facility
SAol	Social Area of Influence
SNAP	Supplemental Nutrition Assistance Program
SO <sub>2</sub>	sulfur dioxide
SRK	SRK Consulting U.S., Inc.
SVOCs	semivolatile organic compounds
SWCA	SWCA Environmental Consultants
TSF	tailings storage facility

<b>Acronym</b>	<b>Definition</b>
U.S.	United States
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VEC	valued environmental component
VOC	volatile organic compound
WSB	water storage basin
WTP	water treatment plant

## Glossary of Terms

Term	Definition
Area of Influence	The area within which a project may potentially directly or indirectly cause impacts.
affected community	A community that is subject to risks or potential impacts from a project.
baseline	Environmental and social conditions prior to Project activities.
Direct Area of Influence	The physical mine site footprint, areas adjacent to the mine site that are affected by emissions and effluents, power transmission corridors, pipelines, borrow and disposal areas, etc., and the area affected by associated facilities that, although not part of the project that is being assessed, would not have been constructed in the absence of the Project.
Indirect Area of Influence	The physical footprint of non-Project activities in the surrounding area that are caused or stimulated by the Project and the area affected by their emissions and effluents.
mitigation measure	An action taken to reduce the likelihood and/or consequence of a certain adverse impact occurring.
mitigation hierarchy	A set of prioritized steps to alleviate environmental or social harm as far as possible through avoidance, minimization, and/or restoration/compensation.
receptor(s)	Features of the physical, biotic, or social environment that are affected by a project action. For example, a body of water that receives stormwater discharges from a project site is a receptor.
residual impacts	Project-related impacts that remain after mitigation measures (avoidance, minimization, and/or restoration/compensation) have been applied.
stakeholders	Persons or groups who are directly or indirectly affected by a project, such as rights holders, as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively.
TSF site	The tailings storage facility location

Source: IRMA 2018

## 1. INTRODUCTION

Albemarle U.S., Inc. (Albemarle), headquartered in Charlotte, North Carolina, is a leading global producer of lithium-based chemicals. Albemarle currently operates a lithium compound and metal production facility at the legacy Kings Mountain Mine (KMM) (legacy mine) located in the city of Kings Mountain in Cleveland County, North Carolina. To meet current and expected demand for lithium products, Albemarle intends to reopen the legacy mine to produce spodumene concentrate from the spodumene resource at the site. The spodumene will be extracted by deepening and expanding the legacy mine footprint from an existing, inactive open pit. Non-ore-bearing rock, ore sorting rejects, and dense media separation coarse tails generated during mining operations may be managed onsite, while tailings will be transported to an offsite tailings storage facility (TSF) approximately 3 miles southwest of the KMM, called the Archdale TSF (hereafter “the TSF”). Together, the KMM site and TSF constitute the Kings Mountain Lithium Mine Project (Project).

This Scoping Report is an initial step to elicit stakeholder feedback prior to preparation of an Environmental and Social Impact Assessment (ESIA). Albemarle has voluntarily committed to aligning with Initiative for Responsible Mining Assurance (IRMA) Standard, version 1.0 (IRMA Standard). This Scoping Report and the ESIA document that will be produced later in the process are being prepared to align with the IRMA Standard and are not required by U.S. federal, state, or local government laws and regulations.

### 1.1. PROJECT LOCATION

The KMM site is in Cleveland County, North Carolina, approximately 30 miles west of Charlotte, North Carolina, and 2.6 miles north of the North Carolina / South Carolina state line (Figure 1-1). The KMM site is comprised of approximately 1,115.5 acres of disturbed, undisturbed, and developed land that is bisected by Interstate 85 (I-85), with a larger land area located on the northern side of the interstate and a smaller land area south of the interstate.

The northern portion is bordered by South Battleground Avenue (Highway 216) to the north, Tin Mine Road to the west, Quarry Road to the east, and I-85 to the south. Martin Marietta operates an active aggregate mine that borders the KMM site to the east. The southern portion is bordered by I-85 to the north and York Road to the east. Land use surrounding the KMM site consists of mixed industrial/commercial/residential/utility rights-of-way with discontinuous areas of pine and mixed hardwoods. Past land use includes the former lithium mine open pit and supporting infrastructure, and a retired recreational vehicle park and retired textile mill, both located in the northwestern portion of the KMM site.

The TSF is located 3 miles southwest of the KMM site and 1.2 miles north of the North Carolina / South Carolina state line. The TSF site, approximately 131.2 acres,<sup>1</sup> is situated between I-85

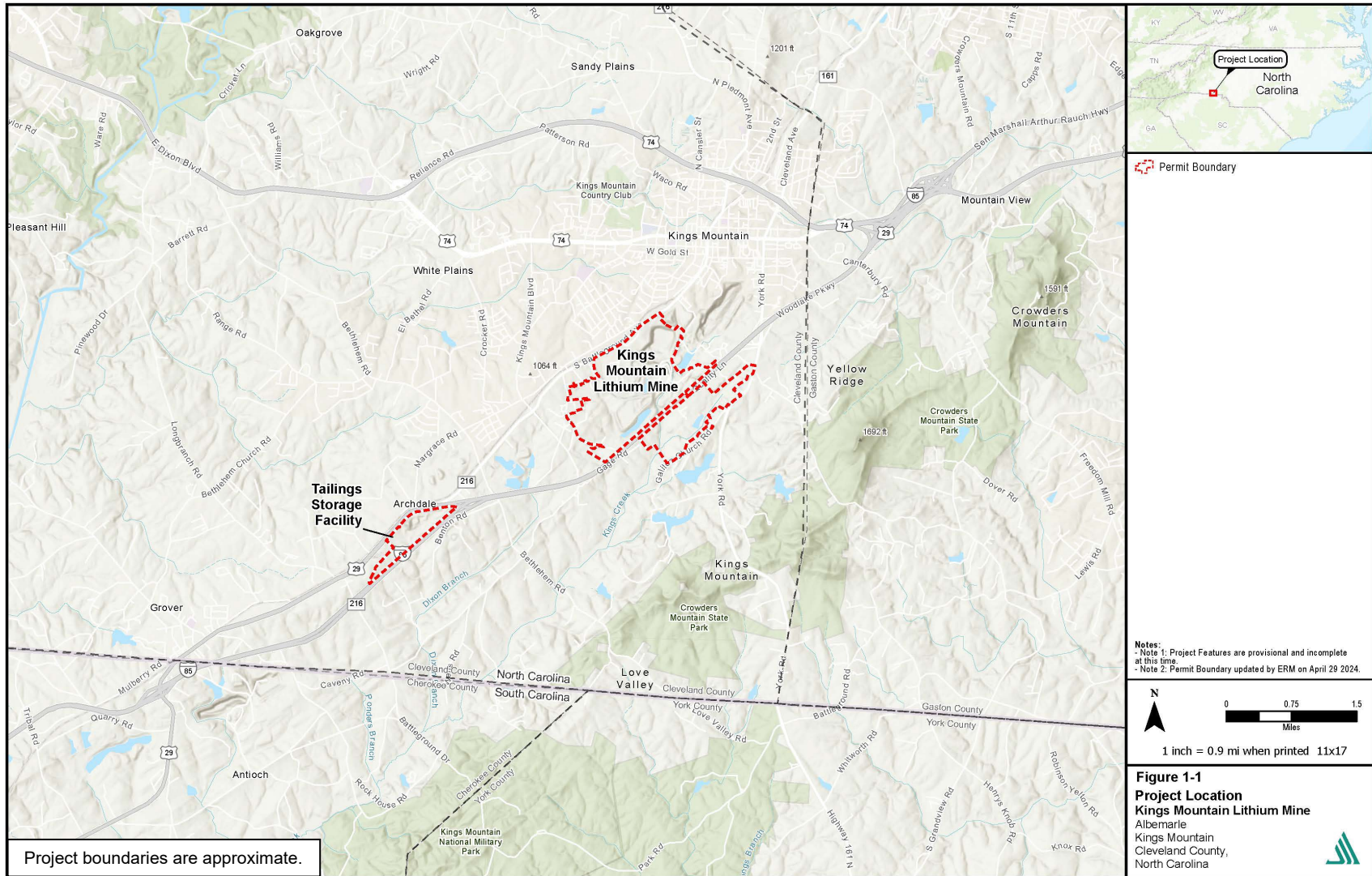
---

<sup>1</sup> TSF site West: 50.9 acres; TSF site East: 80.3 acres

to the south-southeast and North Carolina Highway 29 to the northwest and is currently used for industrial operations.

Figures 1-2 and 1-3 present an aerial view of the KMM site and TSF site, respectively.

**Figure 1-1: Project Location Map**



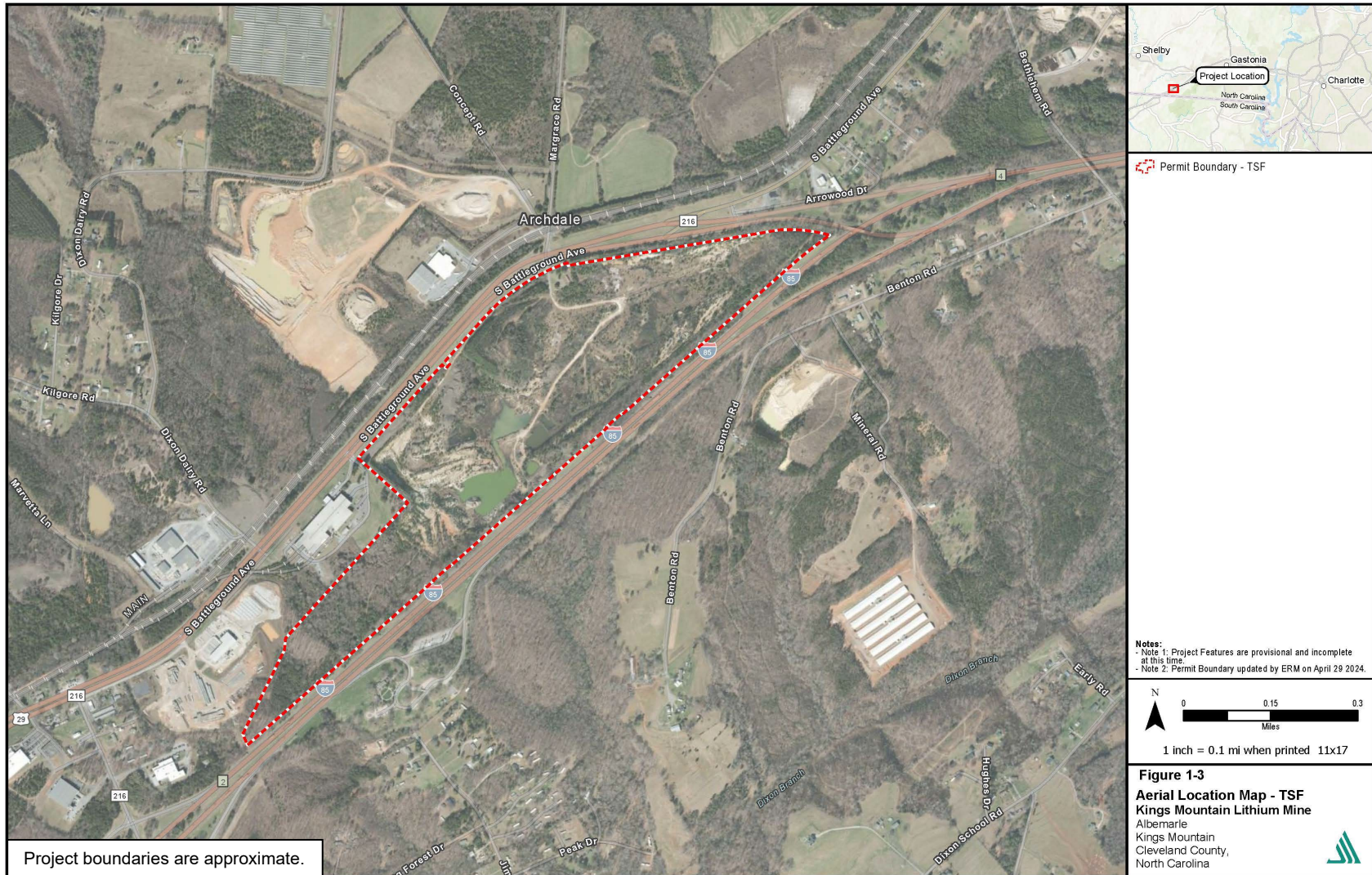


**Figure 1-2: Aerial Location Map of KMM Site**





**Figure 1-3: Aerial Location Map of TSF Site**



## 1.2. PROJECT BACKGROUND

The Project is located along the Carolina Tin-Spodumene Belt, which contains a hardrock lithium-bearing pegmatite intrusion. The pegmatite field at the KMM site is approximately 1,500 feet wide at the widest point and 400 to 500 feet wide at the narrowest point. The relatively narrow Carolina Tin-Spodumene Belt extends for approximately 30 miles between Lincolnton and Grover, North Carolina (Figure 1-4).

Mining at the legacy mine started in 1883 with the discovery of cassiterite, a tin-bearing mineral within the outcropping pegmatites. Subsequently, open-pit mining for tin occurred sporadically between 1903 and 1937. Between 1943 and 1945, under sponsorship from the U.S. government, Solvay established a processing plant and mined spodumene from the outcroppings of pegmatites at the legacy mine. In the early 1950s, Foote Mineral Corporation, a subsidiary of Newmont Mining Corporation, purchased the property and began open-pit mining to extract lithium from the spodumene for a short period of time in the 1970s and 1980s.

During these operations, ore from the pit was processed onsite and tailings were transported by slurry to an onsite tailings pond. Non-ore-bearing rock was stored at a rock storage facility (RSF) currently known as Cardio Hill or the butterfly garden area, as well as in several other unnamed locations throughout the KMM site. Runoff from the site was managed through the South Creek Reservoir and the tailings pond.

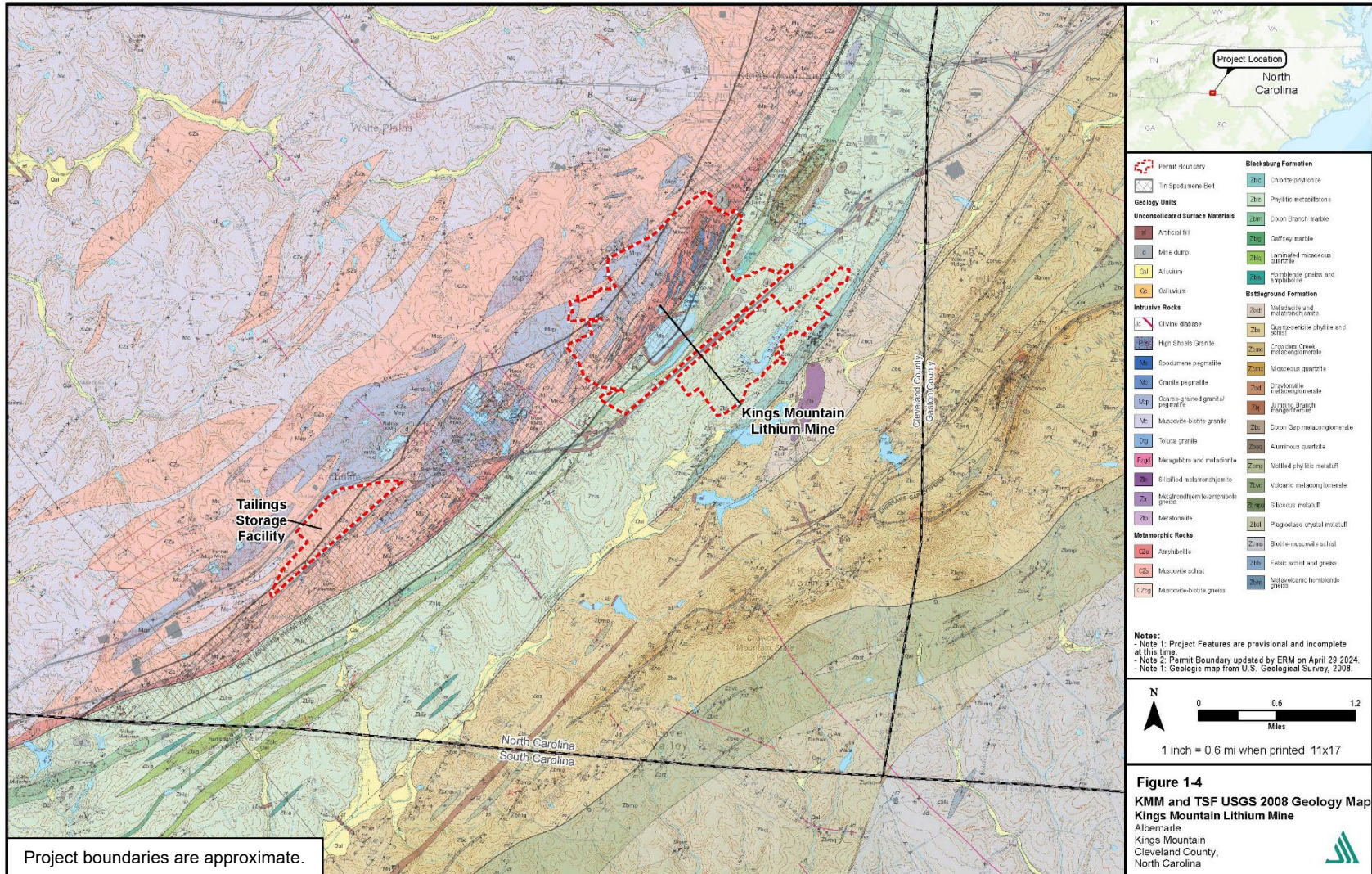
In 1993, exploration and mining operations ceased when the open-pit bottom reached approximately 600 feet above mean sea level (amsl). In early 1994, an open-pit lake started to form due to rebounding groundwater, and the surface of the pit lake ultimately reached an elevation of 817 feet amsl. During the groundwater rebounding period (from approximately 1994 to present), water was pumped sporadically from the pit lake to an adjacent aggregate quarry to support operations.

The KMM currently operates under Mining Permit Numbers 23-01 and 23-34, in accordance with the provisions of the North Carolina Mining Act of 1971. Prior to the development of this Project, approximately 509 acres were heavily disturbed by historical mining activities. The activities associated with the Project's resumption of open-pit mining operations at the KMM site will disturb an additional 636.6 acres, creating a total area (disturbed and undisturbed) of 1,145.6 acres.

The TSF site was formerly a mica mine believed to have commenced operations in the mid-1990s and ceased between 2012 and 2014. Previous mining activities at this site created multiple deeply incised pits, water impoundments, ponds, large areas of waste rock, and access roads. Like the open pit at the KMM site, the legacy pits at the TSF site have since filled with water, and much of the land surrounding the water features has naturally revegetated since cessation of mica mining operations.



Figure 1-4: Geology Map



### 1.3. PROJECT PURPOSE AND NEED

The overall purpose of this project is to provide a domestic source of lithium to meet the growing demand for this critical mineral that is required to help the United States achieve its sustainable clean energy goals. Lithium-ion batteries are an essential part of the nation's alternative energy strategy to reduce its reliance on fossil fuels. Lithium is used in batteries for electric vehicles, solar panels, renewable energy storage, and other emerging green energy technologies. The proposed project will help meet several national priorities presented in recent presidential Executive Orders. The 2021 Executive Order 14008 on Tackling the Climate Crisis at Home and Abroad addresses the climate crisis and the government's agenda to build a clean and equitable energy economy that achieves carbon-pollution-free electricity by 2035 and puts the United States on a path to achieve net-zero emissions, economy-wide, by no later than 2050.

The strategic vulnerabilities to critical minerals, including lithium, were recognized in the 2017 Executive Order 13817 on Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals to reduce the nation's vulnerability to disruptions in the supply of critical minerals, and again in the 2020 Executive Order 13953 on Addressing the Threat to the Domestic Supply Chain from Reliance on Critical Minerals from Foreign Adversaries and Supporting the Domestic Mining and Processing Industries. In 2021, the U.S. Department of Energy (DOE) Office of Energy Efficiency & Renewable Energy released the National Blueprint for Lithium Batteries, 2021–2030, which included goals for securing access to raw and refined materials, discovering alternatives for critical minerals for commercial and defense applications, and supporting the growth of a U.S. materials processing base able to meet domestic battery manufacturing demand.

As such, the U.S. government is seeking to strengthen U.S. lithium-ion battery production by providing funding and resources for domestic lithium mining to reduce the country's reliance on foreign lithium supply and increase the nation's energy self-sufficiency. To this end, Albemarle applied for and received a \$150 million grant from the DOE as part of the Bipartisan Infrastructure Law: Battery Materials Processing and Battery Manufacturing (DE-FOA-0002678) to expand domestic manufacturing of batteries for electric vehicles and the electrical grid and for materials and components currently imported from other countries. The grant funding is intended to support a portion of the anticipated cost to construct a new, commercial-scale U.S.-based lithium materials processing plant that uses sustainably extracted spodumene minerals from the reopened mine at the Kings Mountain. This project would support DOE's Energy Strategic Goal of, "protecting our national and economic security by promoting a diverse supply and delivery of reliable, affordable, and environmentally sound energy."

The United States produces less than 2 percent of the world's supply of lithium, which comes from a single brine operation, Albemarle's Silver Peak site, located in Nevada. Thus, additional domestic lithium sources are needed to meet domestic demands for lithium in the United States. The KMM site was a major supplier of lithium from the mid-20th century into the 1980s but shut down when cheaper lithium sources became available in other countries. The present demand



for domestically produced lithium has made reopening of the Kings Mountain spodumene mine financially feasible.

Therefore, Albemarle proposes to reopen the spodumene mine at Kings Mountain, which contains hard rock lithium deposits, and construct a modern-day commercial-scale processing facility to extract and refine mineralized spodumene to a high-quality lithium-bearing spodumene concentrate that, upon conversion to battery-grade lithium hydroxide offsite, will provide a domestic source of lithium to meet growing demands in the United States.

## **1.4. COMMITMENT TO RESPONSIBLE MINING**

### **1.4.1. Initiative for Responsible Mining Assurance**

Albemarle is committed to responsible mining and acting as a good neighbor. As part of this commitment, Albemarle became a member of the Initiative for Responsible Mining Assurance (IRMA<sup>2</sup>) in 2022. IRMA was founded in 2006 by a coalition of nongovernment organizations (NGOs), businesses that purchase minerals and metals for the products they make and sell, trade unions, affected communities, and mining companies. IRMA leaders believe that many of the negative social and environmental impacts associated with mining can be avoided if mines operate according to established best practices (IRMA 2020). The IRMA vision is:

*“A world where the mining industry: is respectful of the human rights and aspirations of affected communities; provides safe, healthful and respectful workplaces; avoids or minimizes harm to the environment; and leaves positive legacies.” (IRMA 2018)*

The IRMA Standard for Responsible Mining Version 1.0 (IRMA 2018) is considered the most comprehensive and rigorous certification standard for responsible mining assurance, specifically for environmentally and socially responsible mining practices. The IRMA Standard draws on several other highly credible and widely used standards and guidelines such as the International Finance Corporation Performance Standards on Environmental and Social Sustainability (2012), the United Nations Voluntary Principles on Security and Human Rights, the Global Industry Standard on Tailings Management, and the United Nations Guiding Principles on Business and Human Rights.

As an IRMA member, Albemarle is committed to developing and operating the Project according to national and local regulations and the IRMA Standard. Once operational, the KMM may request a full third-party verification assessment, conducted by an IRMA-approved certification body. During the assessment, auditors measure Albemarle’s performance against the IRMA Standard and invite members of the community to participate and provide commentary on whether they believe Albemarle is acting as a responsible mining company. Stakeholder input is considered in the assessment findings. After an initial IRMA assessment, the KMM can anticipate receiving an achievement level that reflects the mine’s performance against the standard and the assessment outcomes. IRMA then shares the assessment publicly. The IRMA Standard makes provision for a three-year assessment cycle designed to encourage continuous

---

<sup>2</sup> For more information, see: <https://responsiblemining.net/>.

improvement. The KMM can expect to go through a re-assessment every three years, with an interim assessment to be required within 18 months of each verification assessment.

Chapter 2.1, Environmental and Social Impact Assessment and Management, of the IRMA Standard requires that the project developer prepare an integrated Environmental and Social Impact Assessment (ESIA) prior to the development of a mine. The ESIA process is not required by federal, state, or local government laws or regulations.

The ESIA includes conducting a scoping process that identifies the potential key environmental and social risks and impacts to be assessed in the ESIA and that is shared with stakeholders (in line with requirements in Chapter 1.2, Community and Stakeholder Engagement, of the IRMA Standard). This Scoping Report summarizes the findings of the Scoping process and follows the requirements in Section 2.1.3 of the IRMA Standard for scoping (Table 1-1).

**Table 1-1: Scoping Requirements per the IRMA Standard**

IRMA Chapter	Requirement	Cross Reference to Scoping Report Chapter
2.1.3.1	The operating company shall carry out a scoping process to identify all potentially significant social and environmental impacts of the mining project to be assessed in the ESIA. <sup>3</sup>	This Scoping Report
2.1.3.2	During scoping, the operating company shall identify stakeholders and rights holders (hereafter collectively referred to as “stakeholders”) who may be interested in and/or affected by the proposed project.	Section 6, Stakeholder Engagement
2.1.3.3	Scoping shall include consideration of: <ul style="list-style-type: none"> <li>• Social impacts (including potential impacts on communities and workers) and environmental impacts (including potential impacts on wildlife, air, water, vegetation, and soils) during all states of the project life cycle, from pre-construction through post-closure;</li> <li>• Direct, indirect, and cumulative impacts; and</li> <li>• Potential impacts of extreme events.</li> </ul>	Section 7, Scoping Results
2.1.3.4	Scoping shall result in the identification of: <ul style="list-style-type: none"> <li>• Potentially significant environmental and social impacts of the proposed project;</li> <li>• Alternative project designs to avoid significant adverse impacts;</li> <li>• Other actions to mitigate identified adverse impacts; and</li> <li>• Additional information and data needed to understand and assess the potential impacts.</li> </ul>	Section 2, Project Description, and Section 2.4, Alternatives Analysis Section 7, Scoping Results

Prior to restarting mining operations, Albemarle will obtain all local, state, and federal permits needed to construct, operate, and close the Project. Further details on responsible mining commitments are outlined in Section 1.4.1, Initiative for Responsible Mining Assurance, while the ESIA process is described in Section 3, Environmental and Social Impact Assessment Process.

<sup>3</sup> Scoping refers to the early, open and interactive process of determining the major issues and impacts that will be important in decision-making on the proposal and need to be addressed in an ESIA.

## 2. PROJECT DESCRIPTION

Albemarle will deepen and widen the existing open pit at KMM to extract material and produce spodumene concentrate. Filtered tailings produced from the mining operations will be transported to the TSF site to be permanently dry stacked. As mining activities have historically occurred at both sites, remnant infrastructure and open pits are present at each.

The Project consists of five major phases including:

1. Site preparation and access
2. Construction
3. Operations
4. Closure and final reclamation

### 2.1. PROJECT PHASES

#### 2.1.1. Site Preparation

Before mining operations commence, the existing open pit at the KMM site will be dewatered to allow for material extraction. Pit dewatering and associated discharge conditions were permitted under National Pollutant Discharge Elimination System (NPDES) Permit No. NC0090212.

Site preparation activities at the KMM and TSF sites include the following activities:

- Clearing and grubbing.
- Relocation of utilities, including relocation of sewer lines, a gas distribution line, and overhead transmission lines.
- Installation of six communications towers at the KMM site. The towers will be used to provide wireless, cellular, and LoraWan communications to the KMM personnel, applications, mining vehicles, and Industrial Internet of Things (IIoT) sensors during the pre-/post construction phases of the mine.
- Road and right-of-way abandonment and road rerouting. The following roads are pending either full or partial removals to accommodate the Project:
  - Castle Rock (North Carolina Department of Transportation [NCDOT])
  - Park Grace (NCDOT)
  - Beta Place (NCDOT)
  - Beta Circle (private)—to be confirmed
  - Goodall Drive (NCDOT and partial private)
  - Miracle Drive (private)—to be confirmed
  - Holiday Inn Drive (partial NCDOT)
  - Quality Lane / Industrial Drive (partial NCDOT)



## 2.1.2. Construction

At the KMM site, construction of the concentrator and associated Project infrastructure including the crushing circuit, RSFs, Water Storage Basin 1 (WSB-1), water treatment plant (WTP), haul roads, access roads, I-85 bridge, non-process infrastructure (NPI) areas, concentrate and tailings loadouts, railway, stormwater management system and supporting utilities will be completed in an anticipated 2-to-3-year period.

The sequence of construction activities is as follows:

- Implement sediment and erosion control measures.
- Execute clearing and grubbing activities. Stockpile vegetation and soil separately in designated areas.
- Develop access roads, temporary site service roads, and laydown areas.
- The mining fleet will begin moving bulk waste rock filling areas on the north side of the interstate between Kings Creek and the interstate for facility locations.
- Commence grading to bulk cut and fill requirements.
- Place fill and install permanent drainage systems and erosion control structures (run-of-mine [ROM] pad wall).
- Develop utilities infrastructure.
- Develop permanent haul site service roads.
- Excavate for foundations and conduct piling as required.
- Construct permanent infrastructure.

At the TSF site, construction will consist of dewatering, clearing, and grubbing of existing vegetation, implementation of stormwater BMPs, construction of access and haul roads and an embankment and perimeter berm around the former mine pit to allow storage of filtered tailings above the base topography in the area.

## 2.1.3. Operations

During general mine operation, the KMM open pit footprint will be expanded by first removing the suitable growth media to be transported to the growth media storage area. After the ore is drilled, blasted, and loaded, it will be hauled to the ROM pad by haul trucks. Ore on the ROM pad will be fed through a three stage (primary, secondary, tertiary) crushing system prior to being conveyed to the plant ore stockpile located south of I-85 next to the concentrator. The concentrator will process an average of 3.25 million short tons per annum (8,900 short tons per day) of ROM ore to produce 420,000 to 440,000 short tonnes per annum of a spodumene concentrate. The spodumene concentrate will be transported by rail to an offsite conversion plant for further refinement into lithium hydroxide monohydrate. Tailings from the spodumene concentrate process will be filtered to approximately 15 percent moisture content by weight and transported via truck to the TSF site. Non-ore bearing rock and other materials separated from

ore in the crushing and concentrating processes will be stored onsite in either RSF-A or RSF-X, depending on the acid generating nature of the rock. The non-ore bearing rock with economic value as aggregate will be transported by haul truck to the adjacent Martin Marietta quarry.

### **2.1.4. Mine Closure and Reclamation**

After mine activities cease, Albemarle will implement best management approaches to develop post-mining land uses that are agreeable to all stakeholders. Financial planning will be provided at a later stage as mine planning progress. However, financial assurance mechanisms for closure will be in place throughout the entirety of the mine closure phase.

Key elements of closure and reclamation include:

- **Vegetation:** The mine reclamation plan includes year-round seeding, the amount and type of seed, type of fertilizer, lime, and mulch per acre.
- **Stormwater management:** As closure covers are placed over the RSFs, contact water diversion channels will be removed to allow runoff from the reclaimed surfaces to flow into the non-contact water diversion channels. This flow will be routed through sediment ponds or in-line sediment controls, such as rock check dams to control sediment as the vegetation is established.
- **Open pit:** The open pit will be partially backfilled with local material. The open pit will recharge from groundwater inflows and precipitation, which will eventually discharge through shallow groundwater and surface water outflow into Kings Creek.
- **Rock storage facilities:** During closure, material segregated during operations will be backfilled into the open pit, which will eventually be submerged as the pit lake begins to form. Remaining material will not create long-term acid generation issues, as it is composed of non-acid generating (NAG) rock. At closure, RSF-A will be graded and covered with approximately 2 feet of growth media.

## **2.2. PROPOSED PROJECT FEATURES**

Key features that will either remain in place with modifications from the legacy mine, or that will be newly added for the Project are described below. Key Project features include the following:

- **Mineral processing facility**—a facility designed to physically separate spodumene from pegmatite ore.
- **Conveyors**—a conveyor system that will be used to transport material including over I-85.
- **Crushing and screening circuit**—a three-stage crushing circuit where the ore will be reduced in size to facilitate separation of the spodumene from non-lithium-bearing materials.
- **Growth media storage**—an area where growth media will be stockpiled for future use as soil coverage.
- **Haul roads/service roads**—internal roads that will either be modified or newly constructed to transport material across the KMM site. Haul roads may be relocated during mining

operations, as the pit expands. Haul road will be primarily used by on-site haul trucks. Service roads will be used by dump trucks to take material to the TSF site.

- Kings Creek—a natural creek that has been historically altered from legacy mine operations at the KMM site and from ongoing operations at the adjacent Martin Marietta mine. The creek enters the KMM site from the adjacent Martin Marietta facility. It will receive discharge from Project stormwater outfalls, South Creek Reservoir, and WSB-1 before ultimately discharging offsite.
- Mobile equipment—equipment that will be used to perform operations.
- MSF—an area used for storage of non-lithium rock and residual soils excavated from the RSF. The removal of this material from the RSF will help meet stability requirements for the stockpile facilities.
- NPI—support infrastructure including, but not limited to, non-haul roads, offices, fueling facilities, hazardous material storage, and vehicle maintenance and wash areas. Two NPI areas are located at the KMM site (north and south of I-85), to support mining and processing operations.
- Open pit—the existing open pit that was originally excavated during previous mining operations. The pit footprint will be expanded during Project operations.
- Plant feed stockpile—an area used to stockpile ore produced from the crushing circuit, and to serve as feed to the mineral processing facility plant.
- Ponds—temporary ponds for retention of runoff and sedimentation control specific to the water source (contact water, non-contact stormwater, potentially acid generating [PAG] runoff, NAG runoff).
- RSF—an area used for storage of non-ore-bearing rock excavated from the open pit.
- RSF-A—an area used for storage for NAG rock, legacy tailings, and coarse embankment material to be removed from the legacy TSF at the KMM site.
- RSF-X—an area used for storage for PAG rock, sorted ore rejects, and dense media separation rejects.
- ROM pad—an area used to stockpile ore mined from the open pit before further processing.
- South Creek—a natural creek that was historically impounded to support legacy mine operations. It enters the KMM site from an adjacent property and flows generally south through the KMM site before discharging into South Creek Reservoir. The South Creek Reservoir dam contains a spillway that conveys water to Kings Creek.
- TSF—the TSF that will be used to store filtered and compacted tailings generated in the mineral processing facility plant.
- Transportation route—the route by which tailings will be transferred from the KMM site to the offsite TSF via trucks: from Tin Mine Road to Dixon School Road then north to Highway 216,

and west via U.S. 29 / Highway 216. Saprolite from Archdale will be hauled on the same route to Kings Mountain.

- WSB-1—the legacy TSF that will be modified to serve as water storage for discharges from the WTP and all contact water (treated and untreated). It will also act as a sedimentation pond and supply of makeup water (water that is lost during operations) to the mineral processing facility and other mining operations.
- WTP—a WTP that will be used to treat PAG contact water runoff from RSF-X, and excess water used in the mineral processing facility.

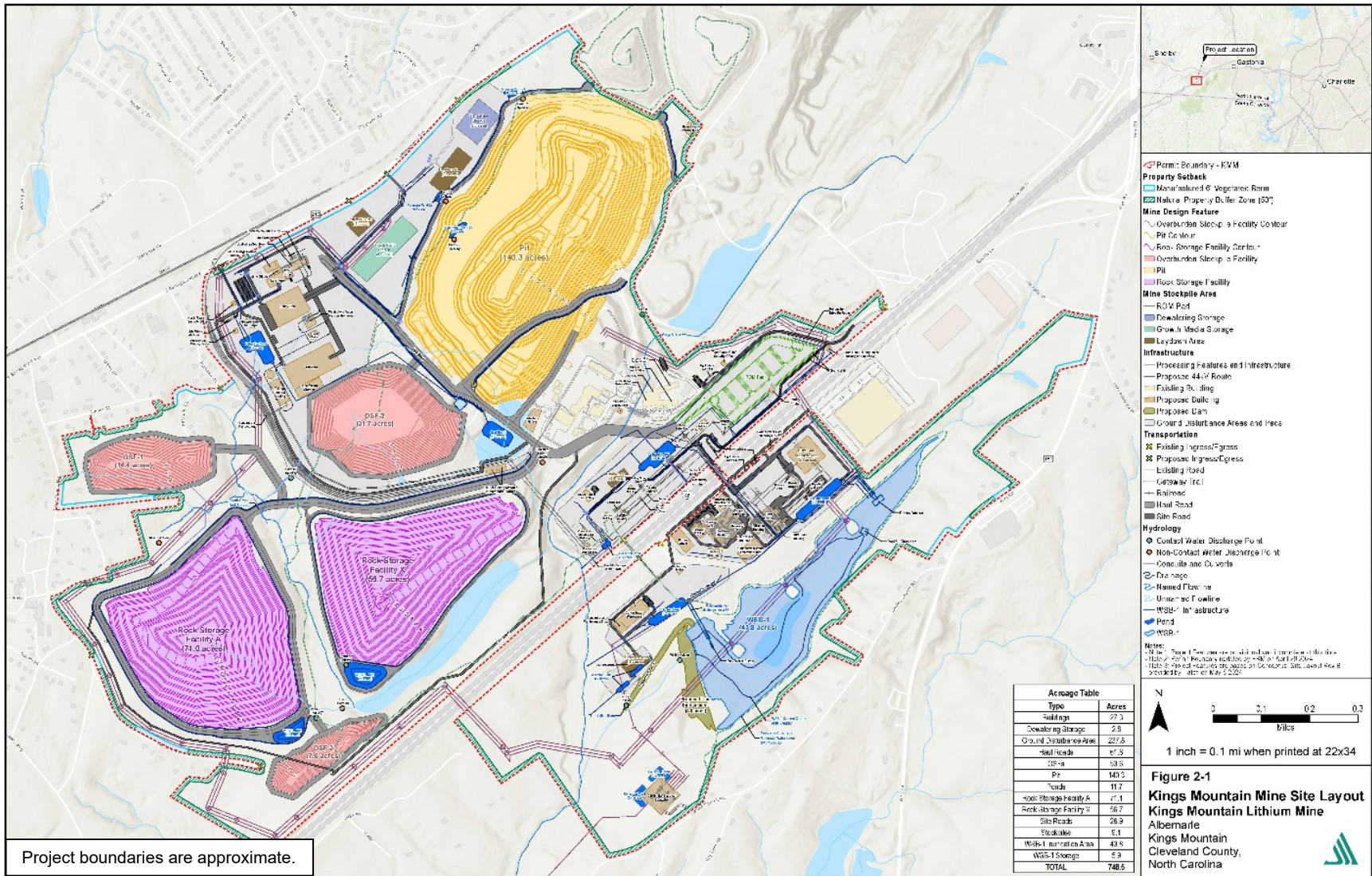
### **2.2.1. Open-pit Mine**

The proposed Project layout at the KMM site illustrates the locations of the main Project facilities and associated infrastructure (Figure 2-1). The crushing circuit, RSFs, MSFs, growth media storage, and ROM pad will be constructed north of I-85 to support operations on the south side of I-85. Internal haul roads will connect the open pit to the ROM pad, the Martin Marietta property, mineral processing facility and RSFs during operations for the processing and storage of mined materials. A tailings loadout area will be located to the southwest of the RSFs and a concentrate loadout area will be located west of the open pit. A new bridge, or conveyor, will be constructed over I-85 to connect the ROM pad / crushing circuit to the mineral processing facility and south NPI area located immediately south of I-85.

WSB-1 will be located south of the mineral processing facility area and will collect all contact water, non-contact stormwater water, and treated effluent from the WTP before being discharged from the site. WSB-1 is designed to provide surface water control, act as a sedimentation pond, and supply water to the mineral processing facility.

Filtered tailings will be transported across the I-85 bridge via a new conveyor to the filtered tailings loadout area located on the north area of the KMM site.

Figure 2-1: Kings Mountain Mine Site Layout





## 2.2.2. Tailings Storage Facility

The filtered tailings from the KMM site will be transported to the TSF site and placed and compacted in a legacy open pit in a dry stack configuration. Over the life of the Project, the TSF embankment will be raised in six phases, and the filtered tailings will continue to be stored to a maximum embankment crest elevation of 960 feet amsl. Contact water from the interior of the TSF will be collected in an underdrain system and seepage collection drain and directed to a contact water management pond. Water in this pond will be monitored for water quality prior to discharge into an unnamed tributary that flows under I-85 to the south, where it joins Dixon Branch south of the TSF site.

## 2.3. MINE SEQUENCING

Activities that will occur during the construction, operation, closure, and post-closure/reclamation phases and their approximate timing are described in Table 2-1, below.

**Table 2-1: Project Phase Time Periods and General Activities**

Project Phase (Approximate Duration/Timing)	Key Activities <sup>a,b,c</sup>
Construction (2.5 years duration)	Infrastructure construction: ROM pad, crushing circuit, I-85 mineral processing facility bridge or conveyor, Kings Creek haul road culvert, RSF-A, RSF-X (initial phase), WSB-1, NPI, concentrate loadout, growth media storage, WTP.
Operations (Year 0)	Infrastructure in place (RSF-X still in initial phase configuration). Haul roads constructed including the in-pit haul road. Pit mining and mineral processing facility commences.
Operations (10 years duration)	Pit shell expanded to include consumption of the in-pit haul road. Rock continues to be stockpiled, concentrate produced, tailings generated and stored. Construction of new haul road along the pit rim to transport material.
Closure (Years 10-11)	Mining complete.
Post-Closure/Final Reclamation	Removal or reclamation of surface mine facilities, relocation of PAG rock from RSF-X to the pit as backfill. Other reclamation activities as identified in the mine closure plan.

Notes:

<sup>a</sup> Stormwater management is required during all Project phases.

<sup>b</sup> Table includes only key activities for each phase.

<sup>c</sup> Blasting activities and aggregate mining from the open pit and hauling offsite is associated with the 9.4-year open pit life of mine (development and production mining).

NPI = non-process infrastructure; PAG = potentially acid generating; ROM = run-of-mine; RSF = rock storage facility; WSB = water storage basin

## 2.4. ALTERNATIVES ANALYSIS

An alternatives analysis in an ESIA typically evaluates three main types of alternatives:

- Project versus no project.

- Alternative locations and site configurations.
- Process, technology, and design alternatives.

### 2.4.1. Project versus No Project

Section 1.3, Project Purpose and Need, highlights the importance of the proposed project in securing a reliable source of lithium to help achieve national sustainable clean energy goals.

With the no project alternative, the United States would miss the opportunity to exploit readily available lithium from a site that has already been under mining uses.

### 2.4.2. Location Alternatives

Albemarle’s intent to reopen the KMM site for lithium limits the location alternatives. Albemarle is considering the following alternatives:

- Alternative 1—perform all activities within the KMM site
- Alternative 2—include some activities at nearby sites that have been under mining uses (Albemarle has not considered undisturbed sites)
  - Alternative 2a—include some activities at the Archdale site
  - Alternative 2b—include some activities at the Martin Marrietta site
  - Alternative 2c—include some activities at both the Archdale and Martin Marrietta sites

Albemarle also included the acquisition of additional parcels around the KMM to buffer nearby communities from project impacts.

### 2.4.3. Process, Technology, and Design Alternatives

As the mine design progresses, Albemarle will continue to evaluate design refinements to avoid, minimize, and mitigate environmental and social impacts in line with the mitigation hierarchy and the IRMA Standard (see insert). For example, the configuration of facilities within the site can be adjusted to minimize visual impacts on the nearby community; similarly, selecting appropriate equipment can help reduce emissions during construction and operations.

#### Alternatives Analysis and the Mitigation Hierarchy

The IRMA Standard promotes the application of the mitigation hierarchy, which is a set of prioritized steps to alleviate environmental and social harm as far as possible through avoidance, minimization, and restoration of adverse impacts. The application of the mitigation hierarchy in the analysis of alternatives for a project can be summarized as follows:

Avoidance: measures taken to avoid creating impacts from the outset. For example, re-routing an access road to avoid the removal of natural habitat.

Minimization: Measures taken to reduce the duration, intensity and/or extent of impacts that cannot be completely avoided, as far as is practically feasible. For example, re-routing an access road to minimize the removal of natural vegetation (when avoidance is impossible).

Restoration: measures taken to assist the recovery of ecosystems that have been degraded, damaged, or destroyed. For example, restoring the area of a temporary access road once the road is not in use any longer.

Offset: Measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse impacts. For example, restoring an adjacent area to compensate for the loss of natural habitat caused by the project.

## **2.4.4. Approach to the Alternatives Analysis**

The ESIA document will provide the complete analysis of both location and design/technology alternatives and the rationale for selecting the preferred alternative. Alternatives will be compared across multiple environmental and social parameters including, for example, acres of natural vegetation to be removed, visual impacts, equipment emissions, noise levels in the vicinity, and traffic generated, among others.

The following subsections summarize the steps of the alternatives analysis.

### ***2.4.4.1. SCREENING OF ALTERNATIVES***

The initial stage involves screening a broad range of potential alternatives. This screening process will consider two primary criteria:

- **Financial Feasibility:** Can the alternative be realistically funded and generate sufficient revenue to be sustainable? This includes factors like capital costs, operational expenses, and projected market prices for lithium.
- **Technical Feasibility:** Does the alternative have the technological capability to achieve the project's objectives? This considers factors like available extraction methods, processing technologies, and infrastructure requirements.

These criteria will provide the basis for selecting a shortlist of the most viable alternatives for further analysis.

### ***2.4.4.2. COMPARATIVE ANALYSIS OF IMPACTS***

The potential social and environmental impacts of the shortlisted alternatives will be compared. The comparison will consider the following aspects:

- **Social Impacts:** This will assess potential effects on local communities, such as employment opportunities, social infrastructure demands, cultural heritage considerations, and potential for community displacement.
- **Environmental Impacts:** This will evaluate potential impacts on various environmental factors including:
  - **Air Quality:** Dust generation, emissions from processing facilities.
  - **Water Quality:** Water usage, potential for contamination of surface and groundwater.
  - **Land Use:** Land disturbance, habitat fragmentation, visual impacts.
  - **Biodiversity:** Impacts on flora and fauna, potential for threatened or endangered species.
  - **Waste Management:** Generation and disposal of solid and liquid waste products.

For each impact category, a standardized method will be employed to assess the significance of the impacts. This may involve using quantitative data where available and qualitative assessments where necessary.



#### **2.4.4.3. NO-ACTION ALTERNATIVE**

The comparative analysis will consider the no-action alternative. This alternative represents the scenario where the proposed lithium mine is not developed. The analysis of the no-action alternative will describe the existing social and environmental conditions at the project site and forecast any potential future changes without the project.

#### **2.4.4.4. SELECTION OF PREFERRED ALTERNATIVE**

Following the comparative analysis, a transparent and well-documented process will be used to identify the preferred alternative. This process will consider the trade-offs between the project's potential benefits, both economic and social, and the potential environmental and social impacts associated with each alternative. Stakeholder input will also be incorporated during the selection process.

### **3. ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROCESS**

Albemarle appointed ERM NC, Inc. (ERM) to undertake an ESIA process aligned with the IRMA Standard, which will produce an ESIA document aligned with the IRMA Standard. For clarity, this Scoping Report refers to the ESIA process and the ESIA report as appropriate based on context.

An ESIA is a multi-phase process. Stakeholders interested in the Project will have the opportunity to learn about the progress of the ESIA process and outcomes and provide feedback during the ESIA process. For the initial phase, Scoping, potentially affected and interested stakeholders in potentially affected communities are invited to provide feedback through the following channels:

- Email: [kmcommunity@albemarle.com](mailto:kmcommunity@albemarle.com)
- Website: <https://albemarlekingsmountain.com/>
- Phone: 1-704-734-2775
- In person at the Albemarle Project Center: 129 West Mountain Street, Kings Mountain, NC 28086

Stakeholder feedback during the scoping process will be used to refine identified risks and potential impacts to be evaluated as part of the ESIA.

### 3.1.1. Scoping Report

Scoping is the first step in the ESIA process. The IRMA Standard defines scoping as "...the early, open, and interactive process of determining the major issues and impacts that will be important in decision-making on the proposal and need to be addressed in an ESIA" (IRMA 2020). During scoping, the project proponent identifies potential interactions between the project and environmental and social resources and receptors and prioritizes the key risks and potential impacts (see insert).

The Scoping Report is shared with stakeholders, including the Kings Mountain community, to gather feedback on the potential effects of the development and operation of the Project that are of most concern to stakeholders. The ESIA will consider the results of the Scoping process and stakeholder input in prioritizing the key risks and potential impacts to be analyzed.

#### Risks and Impacts in ESIA

In an ESIA, risks and impacts have specific connotations and use:

Risks refer to negative or challenging situations that may arise because of the project. For example, the risk of workers accidents during the execution of project work, which is addressed by implementing effective H&S protocols.

Impacts refer to effects of the project on the environment. For example, removing natural vegetation, which is mitigated by restoring other areas of natural vegetation; or discharging effluents into a water body, which is avoided or minimized by treating the effluent to reach a water quality equal or better than the receiving body.

### 3.1.2. Completed Baseline Studies to Date

The description of existing baseline conditions provides information on resources and receptors identified during scoping that have the potential to be affected by the Project. Albemarle has been gathering environmental and social baseline information since 2022 and will continue to gather additional information as needed. An overview of the Project's environmental and social setting is presented in Section 5, Overview of Environmental and Social Setting. The ESIA report will include a detailed description of the environmental and social baseline.

### 3.1.3. Environmental and Social Impact Assessment

The purpose of an ESIA is to identify and assess the potential environmental and social impacts that could occur due to the various phases of the Project. Risks and potential impacts will be evaluated based on their level of significance. The ESIA will assess risks and potential impacts from the site preparation, construction, operation, closure, and post-closure phases of the Project.

### 3.1.4. Impact Mitigation

The ESIA process informs the Project planning and design through the development of recommended management measures to avoid, minimize, and/or mitigate potential adverse risks and impacts and enhance potential beneficial impacts.

## 4. AREA OF INFLUENCE

The Area of Influence (AoI) in an ESIA establishes the geographic boundaries in which potential impacts caused by a project are assessed. This Scoping Report applies the IRMA Standard definition for AoI:

*“The area within which a project may potentially directly and indirectly cause impacts. The area of direct impacts caused by mining-related activities includes the physical mine site footprint, areas adjacent to the project site that are affected by emissions and effluents, power transmission corridors, pipelines, borrow and disposal areas, etc., and the area affected by associated facilities that, although not part of the project that is being assessed, would not have been constructed in the absence of the project. Areas indirectly affected by mining-related activities include the physical footprint of non-project activities in the surrounding area that are caused or stimulated by the project plus the area affected by their emissions and effluents.” (IRMA 2018)*

In accordance with the IRMA Standard definition above, a preliminary Environmental AoI (EAoI) and a preliminary Social AoI (SAoI) have been established for the Project to assess potential environmental and social direct, indirect, and cumulative impacts.<sup>4</sup> The EAoI is defined using the potential extent of the Project’s impacts on physical and biological resources such as air quality, noise and vibration, and biodiversity (Section 4.1, below). The EAoI will be refined as needed as the ESIA process progresses. The SAoI is defined using the potential extent of the Project’s impacts on resources such as the local economy, land use, social infrastructure and services, community health, and cultural heritage (Section 4.2, below). The EAoI and SAoI together comprise a combined AoI for the Project (Section 4.3, below).

Further, the EAoI and SAoI are each divided into a Direct AoI (associated with potential primary impacts)<sup>5</sup> and an Indirect AoI (associated with potential secondary impacts).<sup>6</sup> Note that at this stage, the SAoI has been subdivided into preliminary Direct and Indirect SAoIs, while the EAoI has not yet been subdivided. The EAoI subdivision into Direct and Indirect EAoIs will be completed at a later stage of the ESIA, as needed.

### 4.1. PRELIMINARY ENVIRONMENTAL AREA OF INFLUENCE

The preliminary EAoI is a 1-mile buffer surrounding the boundaries of the KMM site and TSF site. The EAoI will include the access roads as well as the modeled extent of impacts related to

---

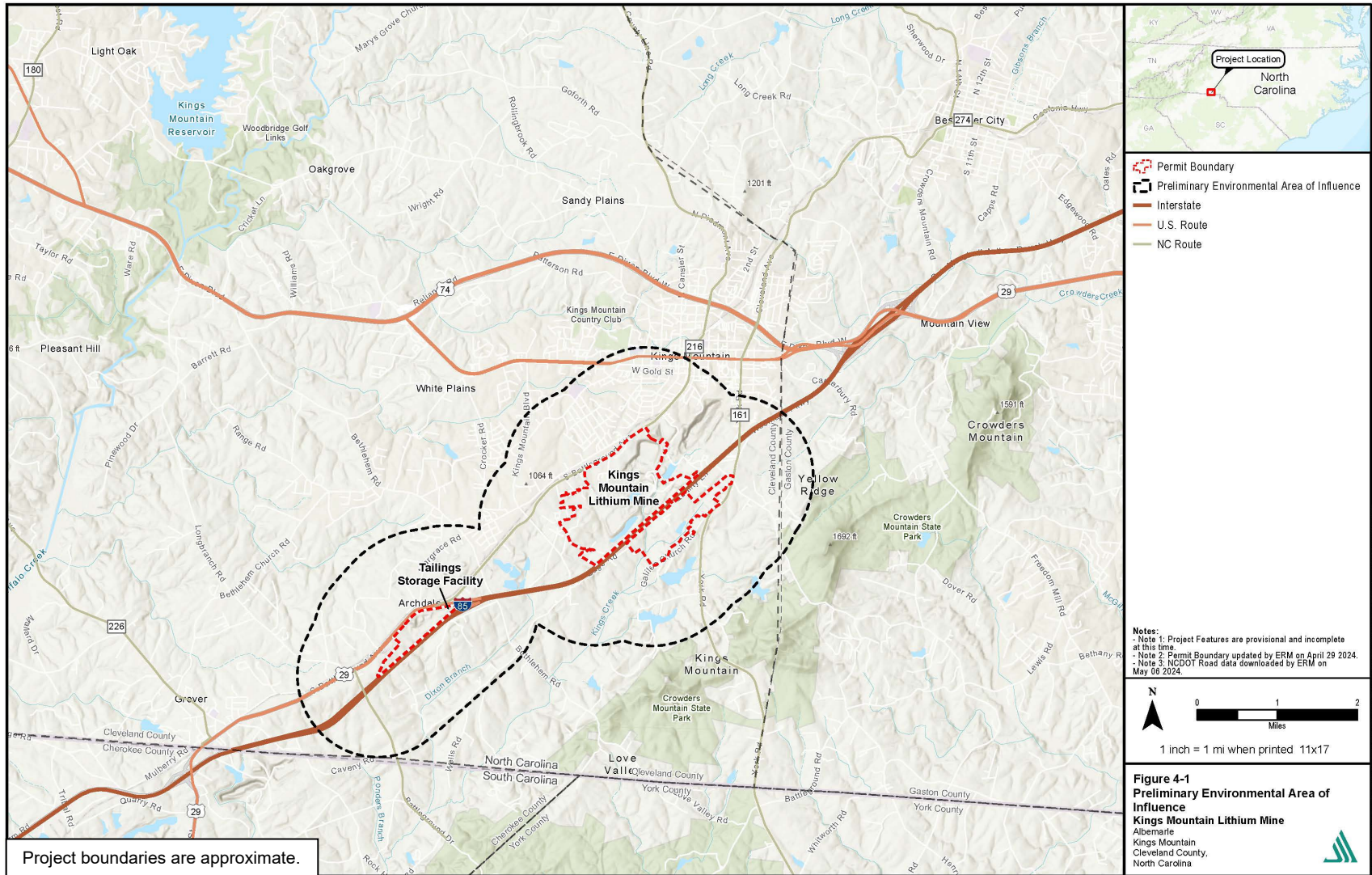
<sup>4</sup> A cumulative impact assessment is one that considers combined impacts from the Project and other projects the same resources/receptors. How the potential impacts are assessed is strongly influenced by the status of the other activities (i.e., already in existence, approved, or unapproved but reasonably foreseeable) and how much data are available to characterize the contribution of the other projects to potential cumulative impacts. The approach to assessing cumulative impacts is to screen potential overlaps between the Project and other projects based on projects that are already in existence and are operating, projects that are approved but not yet built or operating, and projects that are not yet approved whose approval and implementation are reasonably foreseeable.

<sup>5</sup> Primary or direct impacts are those impacts that occur at the same time and place as a Project activity.

<sup>6</sup> Secondary or indirect impacts are those impacts that occur at a different time and/or place as the result of a Project activity.

emissions or discharges from the Project (e.g., air emissions, noise and vibration, surface water discharges). Figure 4-1 presents the preliminary EAol.

**Figure 4-1: Preliminary Environmental Area of Influence**



The EAol will be refined in the ESIA based on the outcomes of this Scoping Report, as more information on the Project becomes available.

## **4.2. PRELIMINARY SOCIAL AREA OF INFLUENCE**

The SAol guides the assessment of potential Project impacts on the social environment, including impacts to the economy, local communities, social infrastructure and services, recreational activities, cultural heritage, and community health, among other social resources. For this Project, the preliminary Direct SAol has been defined as the City of Kings Mountain, areas to be used by the Project within the extraterritorial jurisdiction (ETJ) of Kings Mountain<sup>7</sup> (see purple polygon on Figure 4-2, below), and associated residential areas.<sup>8</sup> The preliminary Indirect SAol includes Cleveland County, where the Project is located, and Gaston County, the adjacent county to the east (see orange area on Figure 4-2, below).

The definition of the SAol is based on ERM's current understanding of the Project and the social context of the area. The SAol may be refined or updated during the ESIA process as more information on potential Project impacts is developed. The preliminary SAol is shown on Figure 4-2 (below). The Direct SAol and Indirect SAol together encompass the combined SAol.

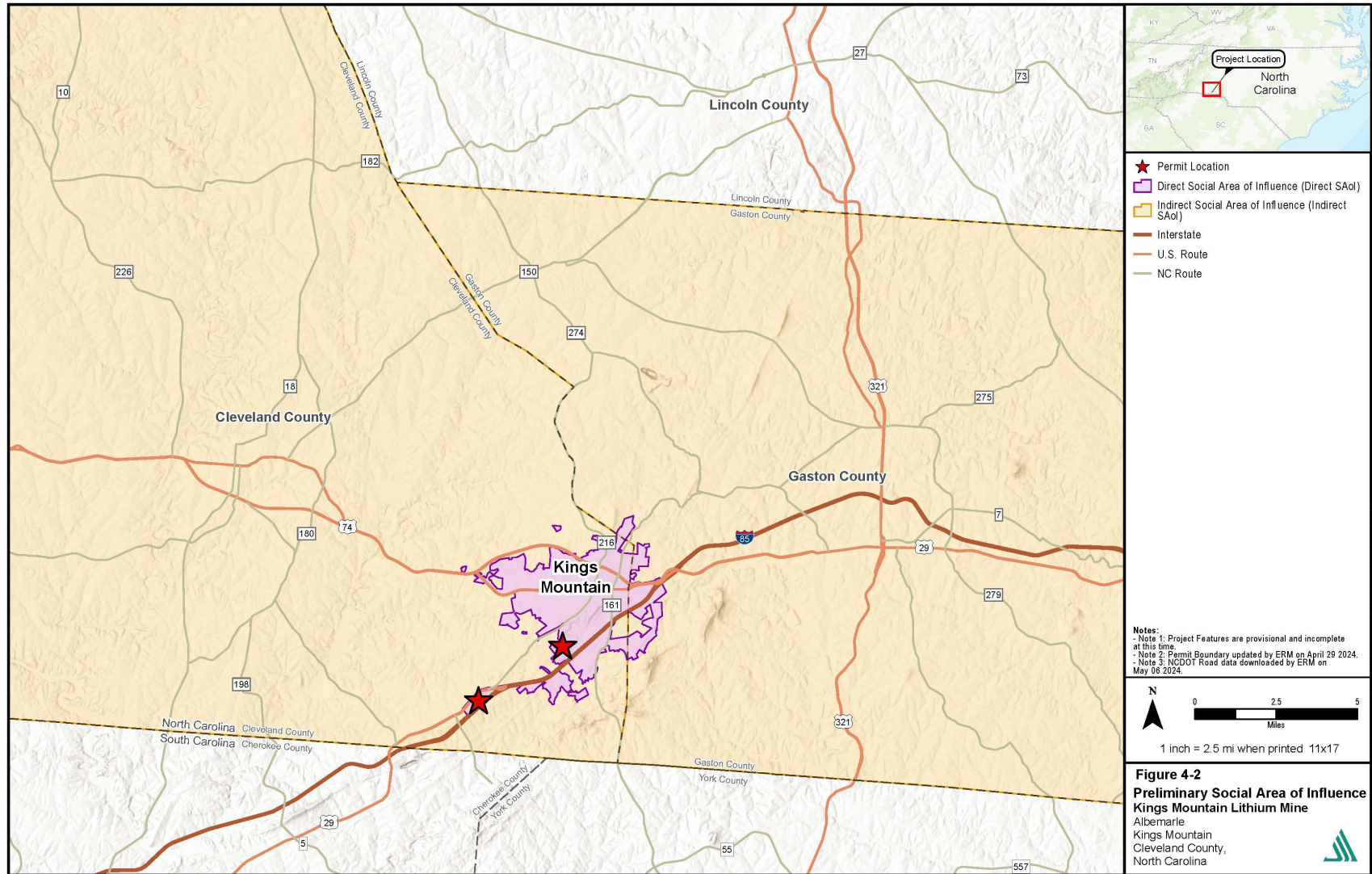
---

<sup>7</sup> The area in the ETJ of Kings Mountain, called Archdale, is in the proximity of the area to be used for the TSF.

<sup>8</sup> A small number of residential areas in the eastern portion of Kings Mountain fall within Gaston County, rather than Cleveland County. While these residential areas have a Kings Mountain address, they are technically not part of the City of Kings Mountain, nor Cleveland County. However, for the purposes of the ESIA, they will be considered part of the Direct SAol, as they may still experience direct impacts because of the Project.



**Figure 4-2: Preliminary Social Area of Influence**

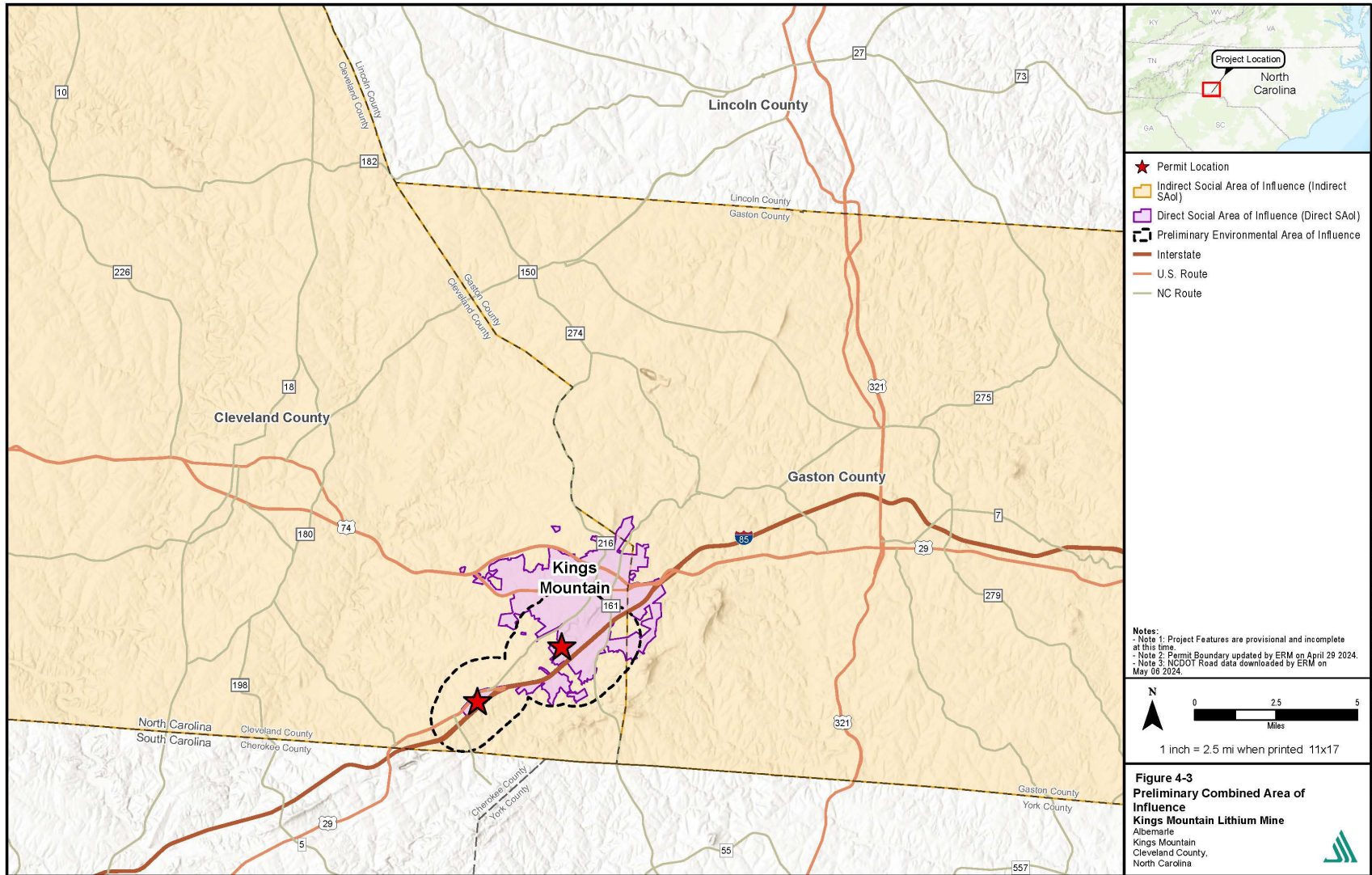


### **4.3. PRELIMINARY COMBINED AREA OF INFLUENCE**

The preliminary combined Aol includes the overlaid preliminary EAol and SAol (see Figure 4-3, below). The combined Aol will be refined and presented in the ESIA Report following additional assessment and stakeholder input on the material presented in this Scoping Report.



**Figure 4-3: Preliminary Combined Area of Influence**



## 5. OVERVIEW OF ENVIRONMENTAL AND SOCIAL SETTING

This section summarizes the preliminary characterization of existing conditions for the physical, biological, and social resources in the AoI. This characterization informs the identification of potential impacts described in the Scoping Report and will be further developed during subsequent stages of the ESIA.

### 5.1. PHYSICAL SETTING

#### 5.1.1. Existing Data Sets Informing Preliminary Baseline Characterization

As discussed further below, primary data from the following data collection activities were used to develop a preliminary characterization of existing conditions for physical resources:

- Air quality monitoring for particulate matter (PM) (SWCA 2022a, 2023g);
- Meteorological data monitoring from an installed tower at the KMM site (SWCA 2022g);
- Quarterly noise monitoring at 21 locations around the KMM site (SWCA 2022b);
- Soil unit mapping at the KMM site (SWCA 2023c, 2024);
- Surface water identification (including wetlands and waterbodies) and monitoring (SWCA 2023d);
- Groundwater quality memo (SRK 2024c);<sup>9</sup> and
- Geochemical characterization to understand potential for acid generation (SRK 2022).

#### 5.1.2. Climate and Meteorology

The Project is in the North Carolina Piedmont province, east of the Appalachian Mountains, with prevailing westerly winds. The region receives moisture from its proximity to the Atlantic Ocean, as well as from being in the path of frequent jet streams, allowing fronts and areas of low pressure into the region. The area receives light to moderate rainfall in short and long durations throughout the year, with the greatest rainfall typically occurring from spring through fall. Extreme precipitation events are produced by thunderstorms, synoptic events, and tropical systems.

To collect baseline data at the KMM site and for use in future air quality dispersion modeling for ESIA completion, Albemarle contracted SWCA Environmental Consultants (SWCA) to install and operate a 10-meter-tall meteorological station at the KMM site. The meteorological station was installed in July 2022 and meteorological data were collected between July 19 and

---

<sup>9</sup> Water quality monitoring included: water quality sampling, Kings Creek sediment samples, pit lake samples, bathymetric surveys, wetland and waterbody delineation surveys, water balance studies, brownfield investigation sampling, seeps and springs surveys, and hydrogeologic characterization.

December 31, 2022, per U.S. Environmental Protection Agency (USEPA) guidelines. Data collected during the period are summarized in Table 5-1 (below).

**Table 5-1: Meteorological Conditions**

Parameter	Result (Monthly Average)					
	Jul	Aug	Sep	Oct	Nov	Dec
Wind speed (meters per second)	1.6	1.3	1.7	1.4	1.7	1.4
Air temperature, 2 meters (degrees Celsius)	26.5	24.8	21.1	13.9	11.4	4.9
Air temperature, 10 meters (degrees Celsius)	27.1	25.1	21.5	14.5	11.8	5.3
Relative humidity (millibar)	80.1	79.3	72.1	73.2	71.9	75.2
Barometric pressure (millibar)	992.2	994.6	993.6	998.3	1002.4	1002.7
Rainfall (inches)	1.4	5.9	3.8	0.9	3.9	3.3
Solar intensity (watts per square meter)	1,023	1,039	952	845	701	620
Delta temperature (degrees Celsius)	0.6	0.3	0.4	0.6	0.5	0.5

Source: SWCA 2023a

### 5.1.3. Air Quality and Greenhouse Gases

North Carolina’s net greenhouse gas (GHG) emissions decreased by 23 percent between 2005 and 2018. By the year 2025, net GHG emissions are projected to decrease by 30 percent compared to 2005 values (NCDEQ 2022a). However, the Executive Orders passed by North Carolina Governor Roy Cooper establish more ambitious targets, including reaching a statewide reduction of 40 percent below 2005 GHG values by 2025 (Cooper 2018).

In accordance with the Clean Air Act, the USEPA set National Ambient Air Quality Standards (NAAQS) for a set of principal criteria pollutants with the potential to harm public health and the environment. The criteria pollutants are ground-level ozone (O<sub>3</sub>), carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), PM with an aerodynamic diameter of 10 microns or less (PM<sub>10</sub>), PM with an aerodynamic diameter of 2.5 microns or less (PM<sub>2.5</sub>), and lead. The quantity of the pollutant reasonably permitted in the air is defined based on primary and secondary standards. Primary standards provide public health protection, including protecting the health of “sensitive” populations such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Since 2015, all areas of North Carolina have been characterized by the USEPA as meeting the NAAQS (NCDEQ 2022b).<sup>10</sup> Albemarle has an Ambient Air Quality Monitoring Protocol (dated October 2023) that specifies conducting air quality analysis in line with NAAQS and European Union Air Quality Standards (European Commission 2013).

Two air quality monitoring campaigns to characterize ambient PM<sub>10</sub> concentrations were carried out at the KMM site. The first campaign was conducted by SWCA during Q4-2022 with measurements taken between October 1, 2022, and December 31, 2022, at two monitoring

<sup>10</sup> According to data last updated in August 2022.

stations. All results obtained were well below the NAAQS standard for PM<sub>10</sub>. Maximum 24-hour average concentrations of PM<sub>10</sub> were also below the international standard established by the World Health Organization Air Quality Guidelines (IFC 2007a) (the international standard is more stringent than the NAAQS).

The second campaign was conducted by Field Data Solutions in August 2023 (with samples collected daily from August 1, 2023, to August 31, 2023). Measurements were taken at three monitoring stations around the KMM site. All measurements obtained were well below the NAAQS standard for PM<sub>10</sub> and the international standard for PM<sub>10</sub>.

The ESIA will include an expanded set of air quality monitoring data as well as baseline air quality monitoring data and analysis for the TSF.

### 5.1.4. Noise and Vibration

Noise in the context described herein can be understood as unwanted sound. Whether a sound is considered a disturbance is dependent on the frequency and duration of the sound, the sound in relation to the ambient sound environment, and the situation in which the sound is experienced (i.e., sudden loud noises may interrupt activities occurring in a quiet setting, but the same loud noise may not interrupt activities occurring in a busy noise environment). Average indoor and outdoor noise levels experienced on a day-to-day basis are provided in Table 5-2 (below).

**Table 5-2: Indoor and Outdoor Noise Levels**

Outdoor Noise	Indoor Noise	Noise Level (dBA)
Jet flyover (1,000 feet)	Inside a New York subway train	100
Diesel truck (50 feet)	Food blender (3 feet)	90
Noisy urban area (daytime)	Garbage disposal (3 feet)	80
Gas lawn mower (100 feet)	Vacuum cleaner (10 feet)	70
Commercial area	Normal speech (3 feet)	65
Quiet urban area (daytime)	Dishwasher (next room)	50
Quiet urban area (nighttime)	Large conference room background noise	45
Quiet suburban area (nighttime)	Library	40
Quiet rural area (nighttime)	Bedroom at night	35

Source: AASHTO 1993  
 dBA = A-weighted decibel

The area surrounding the KMM and TSF sites can be described as a “very noisy urban residential” sound environment, which experiences estimated ambient noise levels of 67 dBA (ANSI 2013). Land use is made up of industrial and commercial businesses with the loudest noise-emitting source being the Senator Marshall Arthur Rauch Highway (I-85) with the potential for noise levels to reach 89.9 A-weighted decibels (dBA).<sup>11</sup> A smaller public road, Battleground

<sup>11</sup> dBA measurements are based on simplified noise modeling and represent potential noise exposure to understand sound level trends.

Avenue, runs from the northwest to the southwest of the KMM site and may experience traffic-related noise levels of up to 59.9 dBA. Likewise, York Road, which runs from the northeast to the southeast of the Mine, may generate noise levels up to 59.9 dBA.

SWCA conducted a preliminary noise measurement program to quantify the ambient sound environment of the KMM site. Monitoring began in Q2-2022 and was conducted quarterly through Q1-2023. Results obtained during Q1-2023 (from March 21 to 28, 2023) are provided in Table 5-3 (below). Additional noise measurement programs will be conducted.

**Table 5-3: Ambient Noise Monitoring Data from KMM Site Vicinity**

Monitoring Station	Averaging Period <sup>a</sup>	Dominant Background Noise Source	Result (dBA)
LT1	161 hours, 53 minutes	Road traffic, onsite traffic	52.0
LT2	156 hours, 27 minutes	Road traffic, onsite traffic	53.5
LT4	168 hours	I-85, onsite traffic	63.3
ST-1	15 minutes	Road traffic	65.0
ST-2	15 minutes	Road traffic	57.4
ST-3	15 minutes	Road traffic	44.9
ST-4	15 minutes	Road traffic	57.0
ST-5	20 minutes	Road traffic	48.7
ST-6	15 minutes	Road traffic	52.5
ST-7	15 minutes	Road traffic	54.1
ST-8	15 minutes	Road traffic	50.9
ST-9	15 minutes	Road traffic, drilling	69.9
ST-10	15 minutes	Road traffic	56.1
ST-11	15 minutes	Road traffic	51.3
ST-12	15 minutes	Road traffic	57.2
ST-13	15 minutes	Road traffic	57.8
ST-14	5 minutes	Road traffic	54.2
ST-15	5 minutes	Road traffic	50.1
ST-16	15 minutes	Road traffic	52.9
ST-17	14 minutes	Road traffic	53.9
ST-18	15 minutes	Road traffic	65.1

Source: SWCA 2023b

Note: Measurements recorded above levels typical of this environment are highlighted in orange.

<sup>a</sup> The averaging periods utilized by SWCA in the preliminary measurement programs are not aligned with the averaging period (1 hour) specified in the International Finance Corporation Environmental, Health, and Safety General Guidelines for Noise Management, the standard required under IRMA, for determining alignment with maximum permissible limits.

dBA = A-weighted decibel; I-85 = Interstate 85

As stated, the area can be categorized as a “very noisy urban residential” sound environment, which experiences an average noise level of 67 dBA, according to ANSI S12.9-2013/Part 3



(SWCA 2023b). Based on results reported in Q1-2023, ambient noise levels experienced at the KMM site are below this average at most monitoring locations. Measurements in exceedance of this typical sound environment are highlighted in orange in Table 5-3 (above). The additional noise measurement programs started in April 2024 and includes areas around the TSF site.

Perceptible ground borne vibration associated with typical mining construction equipment is normally limited to small distances from where the equipment operates (i.e., 50 feet). Existing vibration levels were therefore not measured. The ESIA will identify potential sources of vibration and any potential impacts.

### 5.1.5. Geology

The Kings Mountain deposit lies within North Carolina’s tin-spodumene belt and is located within a larger-scale shear zone (the Kings Mountain Shear Zone [KMSZ]). The KMSZ is a northeast-striking, steeply to moderately dipping zone of ductile and semi-brittle deformation. The zone is at least 37 miles long and a few hundred feet wide.

The King’s Mountain deposit is a lithium-bearing rare-metal pegmatite intrusion that has penetrated along the KMSZ. The intrusion is approximately 1,500 feet wide at its widest point in the legacy pit area and narrows to 400 to 500 feet south of the legacy pit. The deposit geology for the footprint of the open pit is metamorphic units with beds that strike northeast, with spodumene pegmatite intrusions cutting schist units. SRK Consulting U.S., Inc. (SRK) carried out a baseline geochemical characterization using static testing<sup>12</sup> methods to inform decision-making regarding storage options and management options for potential acid rock drainage (i.e., the drainage produced when rocks with sulfide or other acid-producing mineral are exposed to water and oxygen and generate an acidic water stream) and metal leaching of future non-ore-bearing rock and ore, future tailings material, legacy mining waste, cover material, and Kings Creek stream sediment.

Results of static testing for future non-ore-bearing rock and ore are provided in Table 5-4 (below). Geochemical characterization determined non-ore-bearing rock acid generation is variable and ore is net neutralizing. Amphibole gneiss schist is the main non-ore-bearing type and demonstrates a low potential for acid generation and metal leaching.

**Table 5-4: Material Types and Geochemical Characteristics**

Category	Main Material Type	General Characterization of Acid Generating Potential
Non-ore-bearing	Overburden	Low Potential
	Amphibolite Gneiss-Schist	Variable, Generally Low Potential <sup>c</sup>

<sup>12</sup> Static tests indicate the amount of acid-generating and acid-neutralizing components that are present in the material and provide information on the bulk geochemical properties (e.g., metal composition, mineralogical composition, and leaching potential). Static testing methods do not account for temporal changes that may occur in the material as chemical weathering proceeds.

Category	Main Material Type	General Characterization of Acid Generating Potential
	Biotite Gneiss	Variable, Generally Low Potential <sup>c</sup>
	Mica Schist	Variable, Generally Low Potential <sup>c</sup>
	Pyrrhotite Mica Schist	Variable Potential
	Upper Mica Schist	Variable Potential
	Shear Schist	Variable, Generally Low Potential <sup>c</sup>
	Silica Mica Schist	Low Potential
	Diabase	Low Potential
	Granite	Low Potential
Ore	Pegmatite	Variable, Generally Low Potential <sup>c</sup>
	Spodumene Pegmatite	Variable, Generally Low Potential <sup>c</sup>

Source: Summarized from SRK 2023c based on values presented by SRK for neutralization potential ratio <sup>a</sup> and average net acid generation (pH) <sup>b</sup>.

<sup>a</sup> Neutralization Potential Ratio values < 1 indicate a higher potential for acid generation and > 3 indicate significant acid neutralization.

<sup>b</sup> Non-potentially acid-generating (PAG) materials have a pH greater than or equal to 5. A pH of less than or equal to 2.5 can be classified as moderate to strong potential acid generation. A pH greater than 2.5 but less than 5 represent a low risk for potential acid generation.

<sup>c</sup> This indicates generally low potential for acid generation but there were some tested samples that had higher potential.

Static testing for future tailings material and process waste streams indicates that sulfide sulfur content is low or below the detection limit for the flotation tailings and dense media separation rejects. Neutralization potential is also relatively low. In comparison, ore sorting reject and magnetic separation reject samples had a higher sulfide sulfur content than other waste streams, and therefore, a higher potential for acid generation. This indicates that the ore sorting and magnetic separation process are likely to result in the effective removal of sulfide sulfur concentrations that can generate acid conditions.

Static tests for non-ore-bearing rock determined samples can be characterized by low sulfur contents, and no samples are potentially acid-generating materials. Total sulfur and sulfide sulfur content of the legacy non-ore bearing rock samples is also low. Sulfide sulfur concentrations in legacy tailings were also below detection limits and are classified as non-potentially acid generating.

Static tests for cover material (consisting of alluvium/overburden and saprolite) determined most samples have low sulfur contents and are non-potentially acid generating. Seventy-three percent of alluvium and saprolite samples can be characterized as non-potentially acid generating, and 6 percent as PAG, with the remainder showing uncertain acid generation characteristics. Further, soil baseline studies determined there are no significant geochemical differences between the alluvium and saprolite material and they can be used interchangeably for reclamation purposes.

Stream sediments from Kings Creek are characterized by variable sulfide contents and are either non-potentially acid generating or show low potential for acid generation. Synthetic

precipitation leaching procedure<sup>13</sup> testing indicated that arsenic, antimony, fluoride, iron, lithium, manganese, and sulfate are leachable at low, but detectable dissolved concentrations from the stream sediments.

The TSF site geology at the regional scale lies within the central part of the Piedmont Plateau, which includes rocks that are igneous and sedimentary in nature and is also characterized by metamorphic activity that has modified bedrock types. The metamorphism produces varieties of crystalline rocks that are in a transitional state and not in a purely igneous or sedimentary state. Regional geologic maps sourced for available U.S. Geological Survey 2006 data based on a 2024 study by SRK (2024b) indicate geology consists predominately of muscovite schist and granite. The 2024 hydrogeologic study by SRK (SRK 2024b) was undertaken, which included 344 geotechnical and hydrogeological samples. The field study for explorations was limited to depths of 30 feet.

Specific characterizations for the TSF site geology are based on the 2024 hydrogeologic study by SRK, as no other historical data are available at the time of this report for the TSF site. The site is generally characterized by overburden soils, underlain by saprolite, underlain by weathered bedrock, underlain by competent bedrock—reported as mica schist. The local geology has been altered by past mining activities, which has included removal of overburden and saprolite, and disturbance of the underlying weathered bedrock and competent bedrock. The specific competent bedrock reported by the SRK study was Muscovite pegmatite and/or Cherryville granite, and this was based on one core sample. Uncertainties still exist with respect to vertical extents of the saprolite and weathered bedrock units due to limitations in locations and number of drilling locations.

### **5.1.6. Physiography, Topography, and Soils**

The North Carolina Piedmont province is characterized by rolling to hilly uplands with well-defined drainage networks consisting of well-established streams, creeks, and erosional channels that have incised the Piedmont plateau. Physiography of the Kings Mountain region is characteristic of the eastern U.S. Piedmont, a dissected plateau with an average elevation of 1,007 feet characterized by relatively low relief with rolling hills and narrow river and stream valleys. The KMM site elevation ranges from 755 to 1,074 feet amsl and the TSF site elevation ranges from 850 to 1,050 feet amsl.

The Project lies within the USEPA Level III Ecoregion (Griffith et al. 2002). Once largely cultivated, much of this region is planted pine or has reverted to successional pine and hardwood woodlands. Field observations, Google Earth imagery, and National Land Cover Database mapping show this landscape has been significantly altered due to historical mining, including a formal brownfield mine site that produced lithium up until the 1980s and the former Kings Mountain Quarry owned and operated by Martin Marietta.

SWCA reviewed information obtained from the Gridded Soil Survey Geographic Database to evaluate soil resources across the Project area. All soil types observed in the Project area are

---

<sup>13</sup> The synthetic precipitation leaching procedure is a method used to determine the mobility of organic and inorganic materials present in liquids, soils, and wastes.

classified as well drained, except for one soil type (Chewacla loam [ChA]), which is classified as hydric and represents a minor component of the soil map unit for the KMM site (hydric soils are more likely to support wetland conditions). Nine of the mapped soil units at the KMM site are special status soils including prime farmland (n=4), farmland of statewide importance (n=4), and prime farmland if drained (n=1). None of the undeveloped soil types at the TSF site (Hulett gravelly sandy loam [HtC], Madison-Bethlehem complex [MbB2], Madison-Bethlehem complex [McC2], and Udorthents loam [UdC]) are prime farmland; however, three developed (disturbed) soil types at the TSF site (Appling sandy loam [ApB], Hulett gravelly sandy loam [HhB], and Madison gravelly sandy clay loam [MaB2]) are prime farmland. According to definitions from the U.S. Department of Agriculture, prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses (USDA 2015). Farmland of statewide importance can be understood as areas of soil that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods (USDA Undated). Mapped soil units and their characterization are summarized in Table 5-5 (below).

**Table 5-5: Mapped Soil Units**

Soil Name	Hydric Status	Drainage Class	Farmland Classification
<b>KMM Site</b>			
Cecil sandy clay loam, 2 to 8 percent slopes, moderately eroded (CaB2)	No	Well drained	Prime farmland
Chewacla loam, 0 to 2 percent slopes, frequently flooded (ChA)	Yes <sup>a</sup>	Somewhat poorly drained	Prime farmland if drained
Dam (DAM)	N/A	N/A	N/A
Grover gravelly sandy loam, 15 to 30 percent slopes, rocky (GrD)	No	Well drained	Not prime farmland
Hulett gravelly sandy loam, 2 to 8 percent slopes (Hhb)	No	Well drained	Prime farmland
Hulett gravelly sandy loam, 8 to 15 percent slopes, stony (HtC)	No	Well drained	Not prime farmland
Madison-Bethlehem complex, 2 to 8 percent slopes, stony, moderately eroded (MbB2)	No	Well drained	Not prime farmland
Madison-Bethlehem complex, 8 to 15 percent slopes, very stony, moderately eroded (McC2)	No	Well drained	Not prime farmland
Madison-Bethlehem-Urban land complex, 2 to 8 percent slopes (MnB)	No	Well drained	Not prime farmland
Pit (Pw)	N/A	N/A	N/A
Tatum-Montonia complex, 2 to 8 percent slopes (TaB)	No	Well drained	Farmland of statewide importance
Tatum-Montonia complex, 8 to 15 percent slopes (TaC)	No	Well drained	Farmland of statewide importance

Soil Name	Hydric Status	Drainage Class	Farmland Classification
<b>KMM Site</b>			
Tatum-Montonia complex, 15 to 30 percent slopes (TaD)	No	Well drained	Not prime farmland
Udorthents, loamy, 0 to 15 percent slopes (UdC)	No	Well drained	Not prime farmland
Uwharrie silt loam, 2 to 8 percent slopes (UtB)	No	Well drained	Prime farmland
Uwharrie silty clay loam, 2 to 8 percent slopes, moderately eroded (UuB2)	No	Well drained	Prime farmland
Uwharrie-Tatum complex, 8 to 15 percent slopes (UvC)	No well drained	Well drained	Farmland of statewide importance
Uwharrie-Tatum complex, 8 to 15 percent slopes, moderately eroded (UwC2)	No	Well drained	Farmland of statewide importance
Water (W)	N/A	N/A	N/A
<b>TSF Site</b>			
Appling sandy loam, 1 to 6 percent slopes (ApB)	No	Well drained	Prime farmland <sup>b</sup>
Hulett gravelly sandy loam, 2 to 8 percent slopes (HhB)	No	Well drained	Prime farmland <sup>b</sup>
Hulett gravelly sandy loam, 8 to 15 percent slopes, stony (Htc)	No	Well drained	Not prime farmland
Madison gravelly sandy clay loam, 2 to 8 percent slopes, stony, moderately eroded (MaB2)	No	Well drained	Prime farmland <sup>b</sup>
Madison-Bethlehem complex, 2 to 8 percent slopes, stony, moderately eroded (MbB2)	No	Well drained	Not prime farmland
Madison-Bethlehem complex, 8 to 15 percent slopes, very stony, moderately eroded (McC2)	No	Well drained	Not prime farmland
Udorthents, loamy, 0 to 15 percent slopes (UdC)	No	Well drained	Not prime farmland

Source: SWCA 2023c, 2023d

Notes:

<sup>a</sup> Minor soil components of the map units are classified as hydric.

<sup>b</sup> Occur on developed (disturbed) land.

KMM = Kings Mountain Mine; N/A = not applicable; TSF = tailings storage facility

Of the soil forming processes, chemical weathering due to the long-term mild climate appears to have the greatest influence, leaching nutrients and base cations (i.e., calcium, magnesium, potassium, sodium) out of the A horizon and accumulating in the B and C horizons. Field surveys indicate that A horizons are generally poorly developed and thin (1 to 2 inches thick) and have organic matter accumulation with loss of iron, aluminum, and clay. B horizons are generally thin and have an accumulation of iron, aluminum, clay, and organic matter (humus). C horizons are characterized by the accumulation and clay and iron oxides, overlying weathered bedrock.



### 5.1.7. Surface Water

Albemarle's surface water quality monitoring program provides data on baseline conditions for all major surface water features within the KMM site, considered a brownfield due to legacy mining activity. These include flowing streams (Kings Creek and South Creek), as well as human-made impoundments (No. 1 Mill Pond, South Reservoir, WSB-1, and several stormwater impoundments). Streams and wetlands originating outside of the KMM site are not included in this section but will be discussed in the ESIA where relevant.

Quarterly surface water quality monitoring began in 2018. Surface water quality monitoring locations have included the following:

- **Kings Creek.** Kings Creek flows uninterrupted through the KMM site from north to south, before crossing under I-85 and continuing to the southwest. Kings Creek receives flow from groundwater and springs along its length, but much of the flow comes from the Martin Marietta quarry dewatering discharges north of the KMM site. Monitoring is intended to establish a baseline along the entire length of Kings Creek.
- **South Creek.** South Creek flows south toward the existing Foote Mineral Tailings Impoundment before entering the South Creek Reservoir.
- **No. 1 Mill Pond.** This is an impoundment used as part of stormwater management.
- **South Creek Reservoir.** Much of the southwestern portion of the KMM site is drained by South Creek, which flows into South Creek Reservoir, which in turn discharges to Kings Creek upstream of Weir #3.<sup>14</sup> South Creek Reservoir is used as part of the stormwater management on the KMM site.
- **Mud Pond #1 and Mud Pond #2.** These are stormwater impoundments or collection points located at the KMM site north of I-85.

#### 5.1.7.1. Summary of Onsite Aquatic Resources

In spring 2022 and summer 2023, SWCA delineated aquatic resources on the KMM site (approximately 1,394 acres of wetlands and waterbodies) using the U.S. Army Corps of Engineers' (USACE) Wetlands Delineation Manual (USACE 1987) and the 2012 Eastern Mountains and Piedmont Regional Supplement (USACE 2012). Streams were also evaluated using the North Carolina Stream Assessment Method (NCDEQ 2010).

Wetlands and other jurisdictional waters were identified and approximated through the combined use of existing publicly available baseline data (desktop analysis) and field investigations. Jurisdictional status was preliminarily assigned to each resource. Based on field investigations, SWCA biologists identified 60 wetlands (total of 58.07 acres), 71 streams, 12 other surface water bodies (ponds, lakes, mining pits) (total of 77.53 acres), and 13 non-jurisdictional upland features (i.e., erosional gullies, roadside ditches) at the KMM site. An

---

<sup>14</sup> A weir is a low-head dam that serves as a barrier across the width of a river that alters the flow characteristics of water. Weir 3 is located on Kings Creek below the confluence with South Creek and upstream of the culvert crossing under I-85.

additional 7.63 acres of palustrine scrub-shrub (PSS) wetlands and six distinct palustrine unconsolidated bottom (PUB) aquatic features totaling 9.42 acres were delineated by SWCA at the TSF site. The referenced features at the TSF site would not be considered jurisdictional by the USACE or North Carolina Department of Environmental Quality (NCDEQ) (SWCA 2023d). No streams were identified at the TSF site. A summary of onsite aquatic features at each parcel is provided in Table 5-6 (below).

**Table 5-6: Summary of Onsite Aquatic Features**

KMM Site	TSF Site
<ul style="list-style-type: none"> <li>• Wetlands (USACE jurisdictional): approx. 54.12 acres</li> <li>• Wetlands (USACE non-jurisdictional): approx. 3.95 acres</li> <li>• Waterbodies (USACE jurisdictional): approx. 20.27 acres</li> <li>• Waterbodies (USACE non-jurisdictional): approx. 57.26 acres</li> <li>• Waterways (streams) (USACE jurisdictional): approx. 56,583.9 linear feet</li> <li>• Waterways (streams) (non-jurisdictional): approx. 5,108.1 linear feet</li> </ul>	<ul style="list-style-type: none"> <li>• Wetlands (USACE non-jurisdictional): approx. 7.63 acres</li> <li>• Palustrine unconsolidated bottom aquatic features (USACE non-jurisdictional): approx. 9.42 acres</li> </ul>

Source: SWCA 2023d, jurisdictional determinations

KMM = Kings Mountain Mine; TSF = tailings storage facility; USACE = U.S. Army Corps of Engineers

SWCA conducted a field investigation of the TSF site in September 2023. SWCA biologists identified one PSS wetland complex and six palustrine unconsolidated bottom waterbodies. These delineated aquatic features were all located within portions of the TSF site that had previously been excavated for surface mining operations. The six PUBs were associated with historical mine and sediment ponds and surface runoff channels. The PSS wetlands occurred within the basin that has collected water and naturally revegetated. No portion of the Project area is connected to relatively permanent waters or continuous surface water connections that drain to traditional navigable water. As such, it is SWCA’s opinion that the vegetated wetland feature and six waterbodies would be considered non-jurisdictional by both the USACE and the NCDEQ.

**5.1.7.2. Seeps and Springs**

There are 16 identified seeps<sup>15</sup> and 23 identified springs<sup>16</sup> at the KMM site. Most springs form into intermittent streams that are tributaries to larger streams within the KMM site. The amount of flow or saturation of seeps and springs remained generally consistent across surveys.

<sup>15</sup> Seeps can be understood as areas where groundwater emerges in a dispersed manner, often forming a wetland.

<sup>16</sup> Springs can be understood as the emergence of groundwater at a particular point, often eventually forming a stream.

### 5.1.7.3. Stream Flow

Surface water flows at the KMM site are monitored at two locations. The first site is located at Kings Creek below the confluence with South Creek and upstream of the culvert crossing under I-85 (Weir #3). The second site is located at the outlet of South Creek Reservoir just upstream of the confluence with Kings Creek at the South Reservoir. Based on the monitoring data, baseline flows range from 0.067 gallons per minute per acre (gpm/acre) to 0.46 gpm/acre. The baseflow estimates for Kings Creek are shown in Table 5-7 (below).

**Table 5-7: Baseflow Estimates for Kings Creek (KMM) and Dixon Branch (TSF)**

Location	Measured Flow (gpm)	Baseline Estimate (gpm/acre)
Kings Creek below Weir #3	117	0.067
South Creek Reservoir Inlet	70	0.320
South Creek northern end of existing TSF	125–148	0.390–0.460
South Creek above Weir #3	178	0.320
Unnamed Tributary to Dixon Branch	2213	8.02

Source: SRK 2023d

gpm = gallons per minute; gpm/acre = gallons per minute per acre; TSF = tailings storage facility

### 5.1.7.4. Pit Lakes

#### KMM Pit Lake

The existing pit lake of the legacy KMM site open pit requires dewatering for future expansion of the KMM site. Albemarle commissioned studies to determine if pit lake dewatering could cause groundwater level decline and affect neighboring water supply wells, including 23 confirmed and 226 suspected wells within a 2-mile radius of the KMM site. Between 2018 and mid-2023, hydrogeological data were collected from 104 boreholes. A total of 124 hydraulic tests were completed at various boreholes, including 26 packer tests (which measure permeability of the ground in sections of boreholes), 51 slug tests (which determine how easily water can pass through soil or rock), 15 short-term pumping tests and 7 long-term pumping test (which estimate the hydraulic properties of aquifers), and installation of spinner logs in 25 wells (which measure flow velocity in a specific well).

SRK used the data collected to develop a groundwater model for the Project during mining operation. The model predicted the following under a calibrated Base Case (SRK 2023):

- Groundwater inflow rates to the proposed pit will range from 100 to 270 gpm.
- During the mining phase, future dewatering of the existing pit lake, excavation of the proposed pit, and in-pit dewatering will cause the water table to lower, and drawdown to propagate laterally away from the pit; however, due to the geology, the influence of drawdown away from the existing pit lake was predicted to be limited.

- The shallower regolith units are expected to be the most impacted by the dewatering and drawdown propagation, while changes in the underlying low-permeability bedrock are expected to be limited in comparison to those in the regolith.
- From the center of the existing pit lake, a maximum of 5 feet of groundwater drawdown was predicted to extend 0.29 miles to the southeast, 0.52 to 0.53 miles to the northwest and northeast, and 1.22 miles to the southwest. The maximum drawdown extent in various directions will occur at different times, from approximately 11 to 30 years after end of mining.
- Overall, the predicted outer boundary of the cone of drawdown is close to the pit boundary due to the relatively low hydraulic conductivity of the rock material around the pit and is mostly confined to the area associated with historical mining.
- While drawdown is expected to propagate to confirmed and suspected wells identified in the well survey (see below), these are unlikely to be significantly affected due to the small amount of drawdown expected.
- The maximum predicted reduction in baseflow in Kings Creek within the model domain is 88 gpm (or 1.4 percent). Maximum reduction will occur 18 years after end of mining. The model did not predict any changes to baseflow in Long Creek.

Post-mining, the SRK study (SRK 2023) concluded:

- Saturation of partial backfill placed in the proposed pit, with backfill top elevation of 570 feet amsl, will occur approximately 3 years post-mining.
- The elevation of the pit lake surface will rise until it will reach a spillover elevation of approximately 850 feet amsl approximately 56 years post-mining.
- Groundwater inflow to the pit lake is anticipated to gradually decrease over time. The initial groundwater inflow rate of 270 gpm at the end of mining operations, is expected to decline and stabilize at approximately 63 gpm after 68 years of recovery.
- The pit lake will begin to outflow to the groundwater system after approximately 46 years of lake infilling, predominantly in the southeast direction of the pit lake. The outflow rate was projected to gradually increase over time and ultimately reach approximately 27 gpm.
- The pit lake spillover rate to downstream surface water drainages was estimated at 198 gpm.

### **Tailings Storage Facility Pit Lakes**

Legacy open-pit mica mining activities occurred at the TSF site by previous mine operators. Reclamation activities occurred after 2013 and included slope regrading, disturbed ground revegetation, and allowing several of the open pits to fill with fresh water through natural hydrologic processes.

## Archdale Pit Lakes

The pit lakes at the Archdale TSF, where the filtered tailings will be deposited, will be dewatered by Imerys, the mine operator who currently holds the water discharge permit related to pit dewatering, before Albemarle begins depositing tailings from the Project.

### 5.1.8. Groundwater

#### 5.1.8.1. Groundwater Well Inventory

In 2022, AECOM conducted a survey of private residential water wells within a 2-mile radius of the KMM Project site. Approximately 260 confirmed or suspected wells were identified within the search area, 56 of which were positively identified (listed in Table 5-8, below).

**Table 5-8: Existing Groundwater Well Summary**

Parcel Street Name (Cleveland County)	Number of Suspected Wells	Number of Confirmed Wells	Parcel Street Name (Cleveland County)	Number of Suspected Wells	Number of Confirmed Wells
Adele Lane	3	0	Margrace Road	3	1
Afton Drive	2	0	Marys Grove Church	0	1
Alex D Owens Drive	15	6	Montcliff Drive	4	2
Alexander Street	2	0	Mountain Crest Drive	4	0
Ark Street	2	0	Mountain Crest Drive (Gaston County)	3	0
Bain Road	3	0	Mount Olive Church	2	0
Bennett Street	2	0	North Cansler Street	2	0
Beta Court	2	0	North Roxford Road	1	0
Beta Place	3	0	Old Home Place	1	0
Bethlehem Road	0	3	Parkdale Circle	12	0
Cane Drive	1	0	Parkgrace Road	6	0



Parcel Street Name (Cleveland County)	Number of Suspected Wells	Number of Confirmed Wells	Parcel Street Name (Cleveland County)	Number of Suspected Wells	Number of Confirmed Wells
Carpet Lane	9	0	Patterson Road	1	1
Castle Court	0	3	Pearce Court	0	1
Castlerock Road	5	0	Pearce Drive	0	2
Chestnut Ridge	0	1	Pennant Drive	3	0
Churchill Drive	1	0	Persimmon Creek	0	1
Compact School	4	1	Philfer Road	1	0
Countryside Road	0	1	Plum Tree Drive	0	1
Crescent Circle	1	0	Princeton Drive	1	0
Curry Road	2	0	Quarry Road	0	1
Dixon School Road	13	0 (5 abandoned wells identified)	Range Road	0	3
Dove Cove Lane	0	1	South Battleground	14	1
Drew Court	1	0	South Roxford Road	1	0
Ferguson Drive	0	1	Watterson Street	1	0
Fulton Street	4	0	School Street	5	0
Fulton Drive	2	0	Shelby Road	16	0
Gage Road	1	0	Southridge Drive	2	0
Galilee Church road	10	0	Timms Street	5	1
Gantt Street	1	0	Timms Circle	1	0
Gene Court	0	1	Tin Mine Road	4	0
George Lewis Road	1	0	Urban Drive	10	0

Parcel Street Name (Cleveland County)	Number of Suspected Wells	Number of Confirmed Wells	Parcel Street Name (Cleveland County)	Number of Suspected Wells	Number of Confirmed Wells
Gold Mine School	2	0	Vandyke Road	0	1
Goodall Road	2	0	West Gold Ext	1	0
Holiday Inn Drive	0	1	West Gold Street	3	0
Hunters Field Way	0	2	Waco Road	7	0
Joann Drive	0	1	Walker Street	4	0
Kristie Lane	0	1	Washington Street	3	0
Lake Montonia Road	12	0	Westover Church	1	0
Landing Street	1	0	Wilson Street	2	0
Latham Drive	1	0	Wren Lane	1	0
Maner Road	1	0	York Road	4	1

Source: AECOM 2022

### 5.1.8.2. Brownfield Screening

Albemarle commissioned SWCA to conduct a comprehensive brownfield screening to identify constituents in surface and/or groundwater that would indicate water quality issues caused by historical use of the Albemarle property (at KMM) or adjacent land use. Sampling was conducted between March 21 and March 30, 2023, at three locations in the legacy pit lake and from 19 groundwater monitoring wells. The samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and per- and polyfluorinated alkylated substances (PFAS).

Sample analysis detected nine VOCs and two SVOCs, all at values below federal regulatory standards (see Table 5-9, below). No PCBs were detected in any of the samples.

**Table 5-9: Summary of Brownfield Screening Analyses**

Parameter	Detections
<b>VOC</b>	
Acetone	2 pit lake samples 3 groundwater samples
Methyl ethyl ketone	2 pit lake samples 7 groundwater samples
Benzene	1 groundwater sample

Parameter	Detections
Carbon disulfide	1 groundwater sample
Chloroform	2 groundwater samples
Cis-1,2-dichloroethene	6 groundwater samples
1,1-dichloroethene	1 groundwater sample
2-hexanone	2 groundwater samples
Toluene	1 groundwater sample
<b>SVOC</b>	
Chrysene	1 groundwater sample
Indeno(1,2,3-cd)pyrene	1 groundwater sample (detected concentration exceeded the regulatory standard by 0.000033 milligrams per liter)

Source: SWCA 2023e

SVOC = semivolatile organic compounds; VOC = volatile organic compounds

## 5.1.9. Natural Hazards

### 5.1.9.1. Flooding

A review of the Federal Emergency Management Agency (FEMA) National Flood Hazard Layer showed that approximately 21 acres of the KMM site are located within Zone AE (areas subject to inundation by the 1 percent annual chance flood; the 100-year floodplain) (FEMA 2021).

There are no FEMA defined floodplains in the TSF site.

### 5.1.9.2. Seismology

Earthquakes in the region are rare but can be significant. The most significant earthquake near the KMM site occurred in 1886 in Charleston, South Carolina; this was a 7.1 magnitude earthquake. More recently, a 5.1 magnitude event occurred in 2020 near Sparta, North Carolina (NCDENR 2023). Charleston, South Carolina and Sparta, North Carolina are located approximately 200 and 125 miles from the KMM site, respectively.

## 5.2. BIOLOGICAL SETTING

### 5.2.1. Existing Data Sets Informing Preliminary Baseline Characterization

As discussed further below, primary data from the following data collection activities were used to develop a preliminary characterization of existing conditions for biological resources at the KMM and TSF site:

- General field reconnaissance (SWCA 2022b)
- Comprehensive wetland delineation (SWCA 2022b)
- Migratory bird nest surveys (SWCA 2022b)
- Aquatic habitat assessment (SWCA 2022b)

- Bat acoustic surveys (SWCA 2022d)
- Monarch butterfly (*Danaus plexippus*) habitat assessment (SWCA 2022a)
- Presence and/or absence surveys for the federally listed dwarf-flowered heartleaf (*Hexastylis naniflora*) (USFWS 2017)
- Federal and state-listed species report (SWCA 2022c)

The data will be used to understand the potential impacts to the biological systems that might occur during Project construction and operations, including discharge of water to Kings Creek during pit dewatering.

## 5.2.2. Terrestrial Flora and Fauna

Biological surveys identified common mammals including white-tail deer (*Odocoileus virginianus*), eastern gray squirrel (*Sciurus carolinensis*), eastern cottontail (*Sylvilagus floridanus*), and raccoon (*Procyon lotor*). Additionally, black bears (*Ursus americanus*) have been observed occasionally within the KMM site. Common reptiles observed include eastern rat snake (*Pantherophis alleghaniensis*), northern water snake (*Nerodia sipedon*), Carolina anole (*Anolis carolinensis*), five-lined skink (*Plestiodon fasciatus*), eastern fence lizard (*Sceloporus undulatus*), eastern box turtle (*Terrapene uratus*), eastern mud turtle (*Kinosternon subrubrum*), and common musk turtle (*Sternotherus odoratus*). Common amphibians observed included American toad (*Anaxyrus americanus*), green frog (*Lithobates clamitans*), bullfrog (*Lithobates catesbeianus*), northern cricket frog (*Acris crepitans*), spring peeper (*Pseudacris crucifer*), northern dusky salamander (*Desmognathus fuscus*), and spotted salamander (*Ambystoma maculatum*; egg masses only). The bird species observed are all species observed regularly in the region and include northern cardinal (*Cardinalis cardinalis*), American crow (*Corvus brachyrhynchos*), and blue jay (*Cyanocitta cristata*).

### 5.2.2.1. Federally Listed Species

Federally listed species are those designated by the U.S. Fish and Wildlife Service (USFWS) as threatened, endangered, proposed, candidate, or under review under the Endangered Species Act (ESA) (USFWS 1973). Table 5-10 details federally listed species with the potential to occur in the KMM site and TSF site, including one federally listed endangered species, one proposed endangered species, one species currently under review, one candidate species, and one threatened species. All the species with the potential to occur in the KMM site also have the potential to occur at the TSF site, aside from Northern long-eared bat (*Myotis septentrionalis*).

**Table 5-10: USFWS Federally Listed Species with Potential to Occur within the KMM and TSF Sites**

Common Name (Scientific Name)	Listed Status	Habitat	Potential to Occur within KMM Site (Very Low, <sup>a</sup> Low, <sup>b</sup> Moderate, <sup>c</sup> High <sup>d</sup> )
Northern long-eared bat ( <i>Myotis septentrionalis</i> )	Endangered <sup>e</sup>	Summer roosting in trees with loose bark over 3 inches in diameter, winters in caves, forages in forest understory.	<p><b>KMM Site</b>                      Low; on edge of range and not detected during 2022 bat acoustic surveys (SWCA 2022d).</p> <p><b>TSF Site</b>                      (Not reported).</p>
Tricolored bat ( <i>Perimyotis subflavus</i> )	Proposed endangered	During the spring, summer, and fall (i.e., non-hibernating seasons), it primarily roosts among live and dead leaf clusters of live or recently dead deciduous hardwood trees. During winter, it hibernates in caves, culverts, and abandoned water wells. Forages both in treetops and closer to ground.	<p><b>KMM Site</b>                      High; detected throughout the KMM site during 2022 bat acoustic surveys (SWCA 2022d).</p> <p><b>TSF Site</b>                      Moderate; forested habitat present; detected during SWCA's 2022 bat acoustic surveys at the KMM site approximately 2 miles east of the TSF site.</p>
Little brown bat ( <i>Myotis lucifugus</i> )	Under review	Roosts include trees, buildings, wood piles, and under rocks. Forages around water sources, forest edge.	<p><b>KMM Site</b>                      Low; not detected during 2022 bat acoustic surveys (SWCA 2022d).</p> <p><b>TSF Site</b>                      Moderate; forested habitat present; however, was not detected during 2022 bat acoustic surveys at the KMM site approximately 2 miles east of the TSF site.</p>
Monarch butterfly ( <i>Danaus plexippus</i> )	Candidate	Prairies, meadows, grasslands, and roadsides with milkweed ( <i>Asclepias spp.</i> ) and flowering plants.	<p><b>KMM Site</b>                      Low; very limited suitable habitat along utility rights-of-way; individuals not identified during 2022 habitat surveys (SWCA 2022a).</p>



Common Name (Scientific Name)	Listed Status	Habitat	Potential to Occur within KMM Site (Very Low, <sup>a</sup> Low, <sup>b</sup> Moderate, <sup>c</sup> High <sup>d</sup> )
			<b>TSF Site</b> Low; limited suitable habitat.
Dwarf-flowered heartleaf ( <i>Hexastylis naniflora</i> )	Threatened	Acidic soils along bluffs and adjacent slopes, boggy areas next to streams and creek heads, and along slopes of nearby hillsides and ravines. Endemic to upper Piedmont of North Carolina and South Carolina.	<b>KMM Site</b> Low; suitable habitat observed; however, this species was not identified during presence/absence surveys in 2022.  <b>TSF Site</b> Low; limited suitable habitat.

Source: USFWS Undated-a, Undated-b

Note: In September 2022, the USFWS proposed to list the tricolored bat as an endangered species in response to observed population declines resulting primarily from white-nose syndrome (Federal Register 87:56381). A final decision regarding the species status is still pending.

<sup>a</sup> Very low: The KMM site is outside the known range of the species or is within the range, but there is no suitable habitat, or the species is historical.

<sup>b</sup> The KMM site is located within the known range of the species, but there is limited suitable habitat, or the species has not been observed in the vicinity.

<sup>c</sup> Moderate: Known species' range includes the KMM site, and suitable habitat is present.

<sup>d</sup> High: There are known species occurrences within the KMM site.

<sup>e</sup> Reclassification from threatened to endangered became effective January 30, 2023.

KMM = Kings Mountain Mine; SWCA = SWCA Environmental Consultants; TSF = tailings storage facility

### 5.2.2.2. State-Listed Special Concern Species

#### Regulatory Background

In North Carolina, endangered, threatened, and special concern animals (referred to as “state-listed” for this report) are protected by the North Carolina Wildlife Resources Commission (NCWRC) via the North Carolina Endangered Species Act of 1987 (General Assembly of North Carolina 1987); and plants are legally protected by the North Carolina Plant Conservation Program via the North Carolina Plant Protection and Conservation Act of 1979 (General Assembly of North Carolina 1979). State endangered species are those determined by the NCWRC to be in jeopardy. State threatened species are likely to become an endangered species within the near future throughout all or a significant portion of their range. State special concern species are determined by the NCWRC to require monitoring but may be taken under adopted regulations.

#### Species List

According to occurrence records provided by the North Carolina Natural Heritage Program (NCNHP 2022a, 2022b), no state-listed threatened, endangered, or special concern plant/animal species have been identified within the KMM site. Five state-listed species have been observed within 1 mile of the KMM site. Four of these species observations occurred

within Crowders Mountain State Park (timber rattlesnake [*Crotalus horridus*], Carolina pygmy rattlesnake [*Sistrurus miliarius miliarius*], dwarf juniper [*Juniperus communis* var. *depressa*], and bear oak [*Quercus ilicifolia*]). The other species observed within 1 mile of the KMM site, oldfield deer mouse (*Peromyscus polionotus*), has not been recorded since 1977.

Regarding state listed species for the TSF site, concurrence letters provided by North Carolina Natural Heritage Program state no state-listed threatened, endangered, or special concern plant or animal species occurring within the TSF site. One state-listed species, the yellowfin shiner (*Notropis lutipinnis*), has been observed within 1 mile of the TSF site; however, no streams are present within the TSF site to support this species (NCNHP 2023a, 2023b).

The closest known occurrences of Bald eagle individuals are approximately 6.5 miles northwest of the KMM site at Moss Lake (eBird Undated; NCWRC Undated). There are no large bodies of water to support Bald eagles within the KMM site or TSF site; therefore, the potential for this species to occur is low.

### **5.2.2.3. Migratory Birds**

The bird species observed in the KMM site are all species observed regularly in the region (LeGrand et al. Undated) and are regularly recorded during the annual Breeding Bird Survey, a volunteer-based program designed to monitor the status and trends of North American breeding bird populations (USGS 2023). Species include: Tufted titmouse (*Baeolophus bicolor*), Northern cardinal (*Cardinalis cardinalis*), American crow (*Corvus brachyrhynchos*), Blue jay (*Cyanocitta cristata*), Downy woodpecker (*Dryobates pubescens*), House finch (*Haemorhous mexicanus*), Northern mockingbird (*Mimus polyglottos*), Indigo bunting (*Passerina cyanea*), Eastern towhee (*Pipilo erythrophthalmus*), Summer tanager (*Piranga rubra*), Carolina chickadee (*Poecile carolinensis*), Northern parula (*Setophaga americana*), Prairie warbler (*Setophaga discolor*), Pine warbler (*Setophaga pinus*), Eastern bluebird (*Sialia sialis*), American goldfinch (*Spinus tristis*), Field sparrow (*Spizella pusilla*), Carolina wren (*Thryothorus ludovicianus*), White-eyed vireo (*Vireo griseus*), and mourning dove (*Zenaida macroura*). None of the bird species observed at the KMM site are USFWS Birds of Conservation Concern (USFWS 2021).

### **5.2.2.4. Vegetation Communities**

The KMM site consists primarily of deciduous forest, mixed forest, and evergreen forest with smaller portions of pasture/herbaceous, medium to high intensity development, open water (e.g., ponds, lakes, mining pits), and wetland habitats.

Wetlands are regulated in the United States and the project will submit a permit application for impacts to about 9 acres of wetlands. Wetland vegetative communities included:

- Palustrine Emergent Wetland: Communities with a prevalence of hydrophytic non-woody vegetation less than 3 feet in height, generally located in open areas without a tree canopy layer.

- Palustrine Forested Wetland: Communities consist of a prevalence of hydrophytic woody species 20 feet or greater in height and 3 inches or greater in diameter at breast height (dbh).

#### **5.2.2.5. Aquatic Biota**

No threatened or endangered species were trapped during the 2022 survey period. In total, 957 fish were trapped at the KMM site using minnow traps and hoop nets. In pond habitats, bluegill (*Lepomis macrochirus*) was the most common fish species, accounting for 98.4 percent of observations. Other fish species recorded included redbreast sunfish (*Lepomis auritus*), spotted bass (*Micropterus punctulatus*), largemouth bass (*Micropterus salmoides*), and pumpkinseed (*Lepomis gibbosus*). Other fauna in pond habitats included mud turtles (*Kinosternon subrubrum*), musk turtles (*Sternotherus odoratus*), painted turtles (*Chrysemys picta*), a yellow-bellied slider (*Trachemys scripta scripta*), a northern water snake (*Nerodia sipedon*), and bullfrog tadpoles and adults (*Lithobates catesbeianus*).

In stream habitats, a total of 895 fish from 11 species were observed in Kings Creek, South Creek, and two unnamed streams. The most abundant species observed in the stream habitats was creek chub (*Semotilus atromaculatus*), which accounted for 51 percent of observed individuals. Other fish species in creek habitats included bluehead chub (*Nocomis leptocephalus*) and rosyside dace (*Clinostomus funduloides*).

All fish, crustacean, and bivalve species observed have an International Union for Conservation of Nature status of Least Concern, indicating they are not endangered, vulnerable, threatened, near threatened, or conservation-dependent (IUCN Undated).

No native bivalves were observed in the four streams surveyed. The only freshwater bivalve observed was Asian clam (*Corbicula* sp.), which is an introduced species of mollusk that is considered invasive. No aquatic snail species were observed. One unidentified crayfish was observed, but not caught, in Kings Creek. No species within the KMM site are considered rare.

#### **State-Listed Special Concern**

Seven state-listed aquatic species were identified as having the potential to occur in Cleveland County, although none were listed as state threatened or endangered. These species include “Carolina” quillback (*Carpionodes* sp. Cf. *Cyprinus*), seagreen darter (*Etheostoma*), yellowfin shiner (*Notropis lutipinnis*), Carolina foothills crayfish (*Cambarus johnei*), Broad River stream crayfish (*Cambarus lenati*), French Broad River crayfish (*Cambarus reburus*), and Broad River spiny crayfish (*Cambarus spicatus*).

#### **5.2.3. Critical Habitat Assessment**

The USFWS is the lead agency for complying with Section 7 of the ESA. At present, there are no USFWS-designated Critical Habitats for federally listed species within the KMM site or TSF site (USFWS Undated-b) and no federally listed species have been identified within the KMM site. USFWS is the lead agency for complying with the essential fish habitat provisions of the Magnuson-Stevens Act. There is no essential fish habitat in this district’s area of responsibility.

## 5.2.4. Ecosystem Services

The World Resources Institute provides a process for identifying priority ecosystem services.<sup>17</sup> Ecosystem services are broken up into four categories: provisioning, the goods or products obtained from ecosystems; regulating, the benefits obtained from an ecosystem's control of natural processes; cultural, the nonmaterial benefits people obtain from ecosystem services; and supporting, the underlying processes such as the formation of soil, photosynthesis, and nutrient cycling (WRI 2008). Identified ecosystem services in the EAol and greater North Carolina ecosystem will be identified and assessed in the ESIA in accordance with the approach adopted by the World Resources Institute, which complies with the requirements of IRMA.

## 5.3. SOCIAL SETTING

This section describes the current social conditions within the SAol. The information presented in this section comes from publicly available, up-to-date official sources, such as the U.S. Census (secondary data), and fieldwork that was carried out by ERM in October 2022 (primary data). Findings from desktop-based research and fieldwork were presented to the Albemarle Kings Mountain Community Advisory Panel (CAP)<sup>18</sup> on April 20, 2023, for verification. Feedback received from the CAP was incorporated into the baseline data collection to present a comprehensive and accurate description of the SAol. Some topics raised by the CAP as important issues in the community, such as food insecurity, are not presented in this Scoping Report, but will be presented in the full social baseline of the ESIA.<sup>19</sup>

### 5.3.1. Data Gathering Approach

A dual-pronged approach for data collection was used and includes the following:

- A desktop study to gather secondary data from up-to-date official sources; and
- Fieldwork and stakeholder engagement to gather primary data, including stakeholder perceptions and concerns regarding the Project.

ERM carried out fieldwork for baseline data collection from October 25 to October 29, 2022. Analysts conducted a “windshield tour”<sup>20</sup> of Kings Mountain, in addition to 23 semi-structured interviews with key informants (also referred to as stakeholders) in the community and surrounding areas. ERM also conducted virtual interviews with some community members prior

---

<sup>17</sup> The World Resources Institute defines ecosystem services as “the benefits of nature such as food, fuel, natural hazard protection, pollination, and spiritual sustenance” (WRI 2008).

<sup>18</sup> The Albemarle Kings Mountain CAP is an organization of Kings Mountain residents that serves as a forum for two-way dialogue between company representatives and members of the community. CAP discussions are typically focused on company health, safety, and environment performance, and the CAP offers Albemarle and members of the community an opportunity to partner and engage on matters that involve and impact residents, local businesses, and organizations.

<sup>19</sup> The full socioeconomic baseline will include a description of communities surrounding the Mine and TSF to include the full extent of the Project site, as shown in the SAol presented in Section 4.2, Preliminary Social Area of Influence.

<sup>20</sup> A windshield tour provides an in-depth look at community characteristics through driving and walking through the community. The goal is to observe housing, health care facilities, schools, public transportation, recreational facilities, grocery stores, pharmacies, and the road network. Information and photographs from the ERM windshield tour of Kings Mountain are provided in the socioeconomic baseline.

to fieldwork (to gain insight into the community) and after fieldwork (to address follow-up themes that arose). The results of these interviews have been integrated with the desktop-based research to generate a comprehensive baseline. A complete description of all ERM fieldwork and interviews will be included in the ESIA.

## 5.3.2. Demographics

### 5.3.2.1. Population

The City of Kings Mountain spans two counties. The western portion of Kings Mountain sits in Cleveland County, and the eastern-most portion is in Gaston County. Gaston County is located immediately west of Mecklenburg County, which is the state’s second largest county and home to Charlotte, the state’s largest city (Tippett 2022).

The population of Kings Mountain was 11,409 in 2021, with a population density of approximately 830 people per square mile (U.S. Census Bureau 2021a). The population in Kings Mountain increased from 10,296 in 2010 to 11,409 in 2021, a 10.8 percent increase. In 2021, the total population in Cleveland County was 100,359, with a population density of 214.7 people per square mile. Both Cleveland and Gaston counties are located west of the Charlotte metropolitan area and, according to the North Carolina Rural Center, Cleveland County is considered a rural county and Gaston County is considered a regional city and suburban county (NC Rural Center Undated). Population growth in the SAol is shown in Table 5-11 (below).

**Table 5-11: Population Growth in the Social Area of Influence**

Area	2010 Population	2021 Population	Percent Growth since 2010	Population Density (people per square mile)	Males (%)	Females (%)
Kings Mountain	10,296	11,409	10.8	830.4	46.1	53.9
Shelby	20,323	21,947	8.0	982.3	43.9	56.1
Gastonia	71,741	81,161	13.1	1,555.9	47.8	52.2
Bessemer City	5,340	5,507	3.1	1,038.9	47.0	53.0
Charlotte	731,424	879,709	20.3	2,836.9	48.0	52.0
Cleveland County	98,078	100,359	2.3	214.4	48.9	51.1
Gaston County	206,089	230,856	12.0	640.7	48.4	51.6
North Carolina	9,535,483	10,551,162	10.7	214.7	49.9	51.1

Source: U.S. Census Bureau 2021b

Note: Some data on Shelby, Gastonia, and Bessemer City are included in this social baseline, as they are the main cities within the Indirect SAol and have direct transportation routes to Kings Mountain. Shelby is in Cleveland County, while Bessemer City and Gastonia are in Gaston County.

In Kings Mountain, approximately 56.8 percent of the population is of working age or between ages 16 and 64 (U.S. Census Bureau 2021a). Almost 30 percent of the population in Kings Mountain is over 60 years of age. Of the cities in the SAol, Bessemer City has the youngest



median age of 35.3 years and a mode age between ages 25 and 29 (10.6 percent of the population).

### 5.3.2.2. Race and Ethnicity

Most residents in Kings Mountain identify as either White (65.2 percent) or Black/African American (27.3 percent). Approximately 3.7 percent of Kings Mountain residents identify as two or more races, 1.6 percent identify as Asian and 2 percent as Hispanic/Latino. Within the SAoI, most residents identify as White, followed by Black/African American and Hispanic. Gastonia has the highest proportion of individuals who identify as Hispanic/Latino at 10 percent. The full racial breakdown is shown in Table 5-12 (below).

**Table 5-12: Racial Breakdown in the Social Area of Influence**

Race	Kings Mountain	Shelby	Gastonia	Bessemer City	Cleveland County	Gaston County
White alone	65.2%	57.8%	55.6%	75.9%	71.8%	70.4%
Black or African American alone	27.3%	31.7%	29.4%	12.4%	20.2%	16.9%
American Indian and Alaska Native alone	0.0%	0.0%	0.1%	0.0%	0.1%	0.2%
Asian alone	1.6%	0.9%	1.3%	0.0%	0.9%	1.7%
Native Hawaiian and Other Pacific Islander alone	0.0%	0.3%	0.0%	0.0%	0.1%	0.1%
Some other race alone	0.1%	0.0%	0.2%	0.2%	0.2%	0.2%
Two or more races	3.7%	5.2%	3.3%	1.9%	2.8%	2.9%
Hispanic or Latino	2.0%	4.2%	10.0%	9.6%	3.9%	7.7%

Source: U.S. Census Bureau 2021c

Note: Percent totals are greater or less than 100 percent due to rounding.

In Kings Mountain, English is the most widely spoken language among residents ages 5 years and older (U.S. Census Bureau 2021d). Ninety-seven percent of the population in Kings Mountain speaks English, while 1.6 percent speaks Spanish, and 1.7 percent speaks Asian and Pacific languages. Within the SAoI, English is also the most widely spoken language; however, both Bessemer City and Gastonia have sizable Spanish speaking populations at 8.8 percent and 8.3 percent, respectively.

### 5.3.2.3. Archdale

Archdale is an unincorporated area within Cleveland County located between the city limits of Kings Mountain, North Carolina, and Grover, North Carolina, a small portion of which falls within the ETJ of Kings Mountain.<sup>21</sup> The Archdale areas north of the TSF site are in census tract (CT)

<sup>21</sup> The area in the ETJ of Kings Mountain, called Archdale, is in proximity of the TSF site. See Section 4.2, Preliminary Social Area of Influence, for details.

9506.03 and census block group (CBG) 2,<sup>22</sup> and have a total population of 1,614 and approximately 545 households (USEPA 2022a). This CBG is primarily industrial and agricultural, with some residences. Approximately 17 percent of the CBG population is low-income,<sup>23</sup> which is lower than that of Kings Mountain, at 47 percent (USEPA 2022a). Twelve percent of the population are considered people of color,<sup>24</sup> compared to 32 percent in Kings Mountain.

### **5.3.3. Education**

Within Kings Mountain, there are four elementary schools, one intermediate school (fifth and sixth grade), one middle school, and one high school. During the 2020 to 2021 school year, Kings Mountain High School was ranked first in Cleveland County high schools and 145/686 for all North Carolina high schools (U.S. News Undated). Approximately 42 percent of the students enrolled in Kings Mountain High School are below the poverty line (ERM 2022).

There are two community colleges within the SAoI: Cleveland Community College and Gaston College. Cleveland Community College has positioned itself to be tightly aligned with workforce development and is investing in vocational programs including manufacturing trades, industrial systems, mechanical drafting, plumbing, information technology, and electric systems (ERM 2022). Cleveland Community College recently opened a new Advanced Technology Center, which includes 45,000 square feet of space, high-bay training spaces, and a crane for industry training (George 2021; ERM 2022). Gardner-Webb is the closest 4-year college to Kings Mountain, less than 20 miles west of the city (City of Kings Mountain Undated-a).

### **5.3.4. Economy and Industry**

According to stakeholders, the economy in Kings Mountain stalled after the loss of the textile manufacturing industry during the implementation of the North American Free Trade Agreement in 1994, as manufacturers began to relocate their factories to Mexico in the mid-1990s (ERM 2022). This resulted in the loss of an entire sector of jobs within Kings Mountain, and stakeholders reported that family members who lost factory jobs had difficulty being re-skilled for other lines of work. However, businesses and other industries are starting to come back to the area, including Utz, Coca-Cola, and Walmart (ERM 2022). In Kings Mountain, 59.2 percent of the population ages 16 years and older are in the labor force, compared to 62.4 statewide in North Carolina (U.S. Census Bureau 2020a). Within the SAoI, labor force participation is lower in Shelby (55.9 percent) and Cleveland County (56.7 percent), but higher in Gastonia (64.3 percent), Bessemer City (60.5 percent), and Gaston County (62.4 percent).

---

<sup>22</sup> Data for Archdale is presented at the CT and CBG level due to this area being an unincorporated location within the ETJ of Kings Mountain. CTs are small permanent statistical subdivisions of a county, while CBGs are the smallest geographic area for which the U.S. Census Bureau collects data. (U.S. Census Bureau 1997, 2014)

<sup>23</sup> These data are taken from the EJScreen Tool, which defines "low-income" as "The percent of a block group's population in households where the household income is less than or equal to twice the federal poverty level." It is important to note that this definition is distinct from the definition of "in poverty" from the U.S. Census Bureau, which is defined as "if a family's total income is less than the family's threshold or measure of need." (USEPA 2023; U.S. Census Bureau 2023)

<sup>24</sup> EJScreen defines "people of color" as "The percent of individuals in a block group who list their racial status as a race other than white alone and/or list their ethnicity as Hispanic or Latino" (USEPA 2023).

Over 31 percent of Kings Mountain residents are employed in production, transportation, and material moving occupations (U.S. Census Bureau 2021e). In both Cleveland and Gaston counties, most residents are employed in management, business, science, and arts occupations. The largest industries in Kings Mountain are manufacturing (24 percent); educational services, health care, and social assistance (18 percent); and retail trade (11 percent).

Currently, Albemarle's operations in Kings Mountain employ roughly 250 people, many of which are involved in highly technical engineering positions. There are a total of 79 positions at the conversion plant (Albemarle 2023).

#### **5.3.4.1. Employment and Household Income**

The median household income in Kings Mountain is \$42,336 (U.S. Census Bureau 2021e). The median household income in Gastonia is the highest out of all the towns in the Project's SAol at \$52,990, though this is still lower when compared to the Gaston County median income (\$56,819) and the state median income (\$60,516).

The unemployment rate in Cleveland County (7.1 percent) is higher than that of North Carolina (5.3 percent) and the national average (5.3 percent). The percentage of families and people whose income from 2020 to 2021 was below the poverty level in Cleveland County is 14.6 percent, higher than the state average of 12.9 percent. Cleveland County's average per capita income of \$24,505 is lower than the North Carolina income per capita average of \$34,209; however, Gaston County's average per capita income of \$30,607 is more closely aligned with the state average. The Cleveland County median household income at \$45,646 is also lower than the North Carolina (\$60,516) and U.S. averages (\$64,994).

There are stark differences in per capita income by race in the SAol. On average, individuals who live in Kings Mountain and identify as White have a per capita income of \$25,074, which is higher than individuals who identify as Black or African American, with a per capita income of \$14,010 (U.S. Census Bureau 2020b). In Shelby, individuals who identify as White have a per capita income of \$31,677, 1.5 times more than individuals who identify as Black or African American, with a per capita income of \$12,963. Individuals who live in Kings Mountain and identify as "some other race" have the lowest per capita income at \$11,743, followed by individuals in Shelby who identify as Asian at \$11,896.

#### **5.3.4.2. Economic Vulnerability**

Kings Mountain and Shelby have the highest poverty<sup>25</sup> rates in the SAol, at 20.7 percent and 19 percent, respectively (U.S. Census Bureau 2021a). Kings Mountain also has the highest unemployment rate in the SAol at 8.1 percent, followed by Bessemer City at 6.4 percent. The poverty rate and unemployment rate for Cleveland County are 14.6 percent and 7.1 percent, respectively. In Cleveland County, the poverty rate of all people is 18 percent, and 17.2 percent

---

<sup>25</sup> "Poverty" as defined by the U.S. Census Bureau is "a set of money income thresholds [measure of a family's need] that vary by family size and composition...if a family's total income is less than the family's threshold, then that family is considered in poverty" (U.S. Census Bureau 2023).

of households are receiving food stamps or Supplemental Nutrition Assistance Program (SNAP) benefits. Within the SAol, the percentage of individuals receiving Food Stamps or SNAP benefits ranges from 19.5 percent in Bessemer City to 22.9 percent in Kings Mountain (U.S. Census Bureau 2021e).

Over 47 percent of children in Kings Mountain are in single-parent families, and 18.1 percent of the population aged 19 to 64 are uninsured. According to stakeholders, two of the most common barriers to employment are transportation and childcare (ERM 2022). There are no public transit options in Kings Mountain, and many individuals lack reliable transportation to get to work, particularly if they do not own cars. Community members told ERM that childcare is insufficient both at the regional level and within the city of Kings Mountain. These barriers with transportation and childcare force many parents to stay home and take care of children rather than joining the workforce (ERM 2022).

### **5.3.5. Vulnerable Groups**

Vulnerable Groups are those who could experience negative impacts from a project more severely than others, or who would have more difficulty coping or adapting to project-related changes brought due to having a lower resilience to changes or impacts. Vulnerable Groups may not be able to take advantage of a project benefit or opportunity to the same extent as other groups in a community. This disadvantage may stem from an individual or group's race, gender, ethnicity, religion, political or other affiliation, physical or mental disability, poverty, economic disadvantage (see Section 5.3.4.2, Economic Vulnerability, for details), health status, or dependence on unique natural resources. This includes potential environmental justice (EJ) communities as well as other groups who are underserved in the SAol.

#### ***5.3.5.1. Environmental Justice***

According to the USEPA, EJ is the “fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies” (USEPA 2013). Albemarle understands that potential EJ communities may face a disproportionate burden from Project-related activities. To minimize this disproportionate burden, Albemarle has committed to conducting robust EJ community research to facilitate effective engagement with any potentially disadvantaged community or neighborhood.

Albemarle used best practice guidance from the USEPA, the Council for Environmental Quality, and the NCDEQ to identify potential EJ communities within a 3-mile radius of the KMM site. The CBG<sup>26</sup> level was assessed as the appropriate unit of geographic analysis for identification of potential EJ communities for the Project and these constitute the EJ Study Area used in this Scoping Report.<sup>27</sup> Albemarle also used available data (2020 and 2021 U.S. Census Bureau) to

---

<sup>26</sup> A CBG is the smallest geographical unit for which the U.S. Census Bureau publishes data. CBGs are generally defined to contain between 600 and 3,000 people. (U.S. Census Bureau 2022a).

<sup>27</sup> Note that the EJ Study Area is distinct from the SAol used in this Scoping Report, though these areas overlap significantly.

better understand Kings Mountain's composition of race, ethnicity, and poverty at the CBG level (i.e., the U.S. Census American Community Survey Files #B17017, #B03002, and #DP03).

According to the NCDEQ, a community may be considered a potential EJ community if they meet the following criteria:

- Racial composition:
  - Share of nonwhites is over 50 percent; or
  - Share of nonwhites is at least 10 percent higher than county or state share.
- Poverty rate:
  - Share of population experiencing poverty is over 20 percent; and
  - Share of in-poverty households is at least 5 percent higher than the county or state share.

A total of 14 CBGs were identified in a 3-mile radius of the KMM site. Out of the 14 CBGs identified, seven were considered to have a meaningfully greater minority population, eight were considered to have a meaningfully greater percent below poverty population, and three were considered to have linguistically isolated populations.

In 2021, approximately 13.3 percent of households in North Carolina were in poverty (U.S. Census Bureau 2021f). In Kings Mountain, 21.1 percent of households were below the poverty level<sup>28</sup> in 2021, a higher proportion than those below the poverty level statewide in North Carolina (U.S. Census Bureau 2021f). Most individuals in Kings Mountain identify as White alone (65.2 percent), followed by those who identify as Black or African American (27.3 percent) and two or more races (3.7 percent). The unemployment rate in Kings Mountain in 2020 was 8.1 percent, higher than the Cleveland County rate of 7.1 percent (U.S. Census Bureau 2021e).

### ***5.3.5.2. Indigenous Peoples***

There are eight state-recognized Tribes in North Carolina (NCDOA 2023):

- Coharie Tribe
- Eastern Band of Cherokee Indians
- Haliwa-Saponi Indian Tribe
- Lumbee Tribe of North Carolina
- Meherrin Indian Tribe
- Occaneechi Band of the Saponi Nation
- Sappony
- Waccamaw Siouan Tribe

---

<sup>28</sup> Poverty level as defined by the NCDEQ and American Community Survey (NCDEQ 2022c).

Traditionally, the land in the Direct Aol was occupied by the Eastern Band of the Cherokee Nation (Tsalaguwetiyi), the Sugaree, and the Catawba Nation Tribes (Native Land 2023). The Eastern Band of Cherokee Indians is the only federally recognized Tribe in North Carolina. Today, the Eastern Band of Cherokee Indians is primarily located in the western part of North Carolina, in the Smoky Mountains; and the present-day Catawba Reservation is a 600-acre plot of land located in Rock Hill, York County, South Carolina, bordering the Catawba River to the northeast (Catawba 2022). The Sugaree survivors of the Yemassee War of 1715 likely joined neighboring Tribes, such as the Catawba (SCIWAY 2023). The Catawba are currently operating a temporary casino located southwest of the KMM site.

### **5.3.6. Community Health and Safety**

#### ***5.3.6.1. Community Health Indicators***

Health data in North Carolina are available at the state and county level. This section relies on health data from the following public health sources:

- Centers for Disease Control and Prevention
- North Carolina Department of Health and Human Services
- Cleveland County Public Health Department
- County Health Rankings and Roadmaps

Where baseline data were not available at the community level, data at the county level were used to determine health indicators within the SAol. The data are used to understand health status in the SAol at the most local level possible. To understand the health rankings of each county, health outcomes<sup>29</sup> are calculated using data on quality of life and length of life. Health factors<sup>30</sup> are calculated considering data on health behaviors and physical environment.

Cleveland County falls in the 0 to 25th percentile for health outcomes and ranks in the lower-middle range of counties in North Carolina for health factors, scoring in the 25th to 50th percentile (County Health Rankings & Roadmaps 2022a). Conversely, Gaston County ranks in the higher-middle range of counties in North Carolina for health outcomes, falling between the 50th and 75th percentile. For health factors, Gaston County is ranked in the lower-middle range of counties, falling between the 25th and 50th percentile (County Health Rankings & Roadmaps 2022a).

Cleveland County and Gaston County both have a higher percentage of the population who experience poor or fair health (23 percent and 21 percent, respectively) than the state average (18 percent for North Carolina). Cleveland County and Gaston County both rank higher than North Carolina for adult smoking, at 23 percent and 21 percent respectively, while the state

---

<sup>29</sup> Health outcomes are calculated based on data about the length of life and quality of life (County Health Rankings & Roadmaps 2022b).

<sup>30</sup> Health factors are calculated taking using weighted averages of health behaviors (30 percent), clinical care (20 percent), social and economic factors (40 percent) and physical environment (10 percent) (County Health Rankings & Roadmaps 2022b).



average is 19 percent. ERM validated this statistic while conducting fieldwork, as multiple health care professionals discussed the high levels of adult cigarette use in Cleveland County and the public health initiatives aimed at reducing the quantity of smokers (ERM 2022).

Cleveland County and Gaston County have fewer healthcare professionals and hospital beds per person than the state of North Carolina. Regarding physical environment, Cleveland and Gaston counties rank similarly to the state of North Carolina on severe housing problems, at 15 percent for all areas. When compared to state-level data, Cleveland County has a higher rate of diseases of the heart (260.2 versus 181.9 per 100,000), cancer of all types (252 versus 191.6 per 100,000), and chronic lower respiratory diseases (84.6 versus 52.1 per 100,000). The leading causes of death in Cleveland County include diseases of the heart, cancer (all types), chronic lower respiratory diseases, and cerebrovascular disease (County Health Rankings & Roadmaps 2022a).

### 5.3.6.2. Emergency Services

The Kings Mountain Fire Department has two stations to serve the Kings Mountain community; one located in downtown Kings Mountain and the other located in western Kings Mountain. Fire and emergency response calls have generally increased over the past 3 years, from 643 calls in 2020 to 1,567 calls in 2022 (City of Kings Mountain Undated-b). Currently, the Kings Mountain Fire Department responds to approximately four to five calls per day, with calls ranging from minor to serious events (ERM 2022). According to stakeholders, the Kings Mountain Fire Department has a good relationship with the Shelby and Gastonia Fire Departments, both of which will respond to Kings Mountain if needed.

### 5.3.7. Land Use

Table 5-13 summarizes land use/land cover as of 2018.

**Table 5-13: Land Use Type by County**

Land cover type	Cleveland County (square miles)	Percentage (%)	Gaston County (square miles)	Percentage (%)
Open water	3.6	0.77%	6.5	1.79%
Developed	80.5	17.19%	118.9	32.7%
Barren	0.5	0.11%	0.3	32.7%
Forest (Deciduous, evergreen, mixed)	205	43.77%	162.4	44.66%
Shrub/Scrubs	13.1	2.8%	6.4	1.76%
Herbaceous	8.7	1.86%	6.4	1.76%
Hay/Pasture	126.9	27.09%	53.5	14.71%
Cultivated	26.1	5.57%	6.3	1.73%
Wetlands	4.0	0.85%	3.5	0.96%

Source: USGS 2018

Developed land in Kings Mountain is made up of industry, residential and rural. The Kings Mountain Comprehensive Plan's aim to guide future land use planning and the "development and redevelopment while preserving community character." This is an approach to keep a variety of the land use between open space, rural and semi-rural, and urbanized environment (Kings Mountain North Carolina 2022).

### **5.3.8. Recreational Areas**

Kings Mountain is in the foothills of the Blue Ridge Mountains in an area with a variety of recreational areas and parks. Kings Mountain has a variety of parks and playgrounds for residents to recreate in, including the Deal Park Walking Track, Patriots Park, and the Rick Murphey Children's Park (City of Kings Mountain Undated-c). The Moss Lake Campground, also known as the John H. Moss Lake Recreation Park, is located on the Kings Mountain Reservoir (City of Kings Mountain Undated-c).

The City of Kings Mountain has a Tourism Development Authority Board, which helps to promote tourism and travel in Kings Mountain. The Tourism Development Authority Board has eight members, three of which are representatives of local hoteliers, and meets monthly.

#### ***5.3.8.1. The Kings Mountain Gateway Trail***

The Kings Mountain Gateway Trail (Gateway Trail), established in 2009, has become a social and cultural landmark for Kings Mountain. The trail was built in coordination with the National Park Service, Cleveland County, the City of Kings Mountain, and the State of North Carolina, and was created as a public-private partnership between Cleveland County and the Kings Mountain Gateway Trails non-profit. The Gateway Trail has received grants from a variety of organizations including North Carolina Adopt-A-Trail, the North Carolina Parks and Recreation Trust Fund, the Carolina Thread Trail, and more (ERM 2022).

Multiple stakeholders in the SAoI expressed the importance of having the Gateway Trail in the community (ERM 2022). Some stakeholders expressed concerns and complaints that portions of the trail, which cross into KMM site, are closed without warning. Albemarle is working with Gateway Trail representatives to relocate the portions of the trail that overlap with KMM site to maintain public access (ERM 2022; NPS 2012).

### **5.3.9. Social Infrastructure**

#### ***5.3.9.1. Housing Market***

During fieldwork, stakeholders noted that Kings Mountain has experienced significant growth in population as the Charlotte metro area continues to expand farther west toward Cleveland County. This has, in turn, increased the demand for housing in Kings Mountain (ERM 2022). The City Council set up a Housing Committee to evaluate housing inventory and proposed plans for new subdivisions that are currently undergoing an approval process. One development goal identified by the city is to continue to diversify housing options. Currently, all apartments in Kings Mountain are either Section 8 or tax credit housing. For this reason, the Housing Committee will also consider Fair Housing Act concerns, minimum housing standards, and code

enforcement to meet the city’s housing goals (City of Kings Mountain Undated-d). Like the housing market at the national level, housing prices in Kings Mountain increased dramatically in 2021 and 2022. A detailed breakdown of housing at the local level is provided in Table 5-14 (below).

**Table 5-14: Housing Availability**

Area	Total Housing Units	Occupied (%)	Owner Occupied	Renter Occupied	Vacant (%)	Single-Unit (%)	Mobile Home (%)
Kings Mountain	4,867	90	63	37	10	77	7
Shelby	10,370	83	58	42	17	74	3
Gastonia	35,696	93	54	46	7	73	2
Bessemer City	-	-	47	-	-	-	-
Cleveland County	43,872	92	75	25	8	68	22
Gaston County	100,055	94	67	33	6	76	9

Source: U.S. Census Bureau 2022b

Note: Dashes in the table indicate data are not available.

### **5.3.9.2. Transportation**

#### **Airports**

Commercial air service to North Carolina is provided by four international airports (Charlotte/Douglas International Airport, Raleigh-Durham International Airport, Piedmont Triad International Airport, and Wilmington International Airport) and six regional or local airports with scheduled flights. Charlotte/Douglas International is the closest commercial airport to the Project.

#### **Road Networks and Traffic**

Figure 5-1 (below) presents a map of the road network in the SAoI.<sup>31</sup> During fieldwork, ERM found that the exit off I-85 into Kings Mountain (toward town) presented a complex intersection, with a high volume of traffic and multiple types of vehicles, including heavy construction vehicles (ERM 2022) (see Figure 5-3, below). In addition, the exit off U.S. 74 into town presented some complexities, such as left turns into fast-moving traffic (ERM 2022) (see Figure 5-3, below).

The I-85 interchange with NC 161 (particularly northbound movements on NC 161 toward Kings Mountain) is a complex intersection, with high traffic volumes and multiple types of vehicles, including heavy construction vehicles (ERM Fieldwork 2022). In addition, the I-85 interchange

<sup>31</sup> Note that baseline conditions of the road network from the TSF to Kings Mountain and roadways around the TSF site will be included in the full baseline as part of the ESIA.

with U.S. 74 (particularly westbound movements toward Kings Mountain) also present some complexities, such as left turns into fast-moving traffic (ERM Fieldwork 2022).

Locations with a relatively high number of crashes include the I-85 interchange with NC 161; the U.S. 74 interchange with U.S. 74 Business west of the City of Kings Mountain; and the U.S. 74 Business (King Street) intersections with NC 216 and NC 161 in downtown Kings Mountain.

**Table 5-15: Number of Recorded Traffic Crashes Grouped by Intersection, 2018–2022**

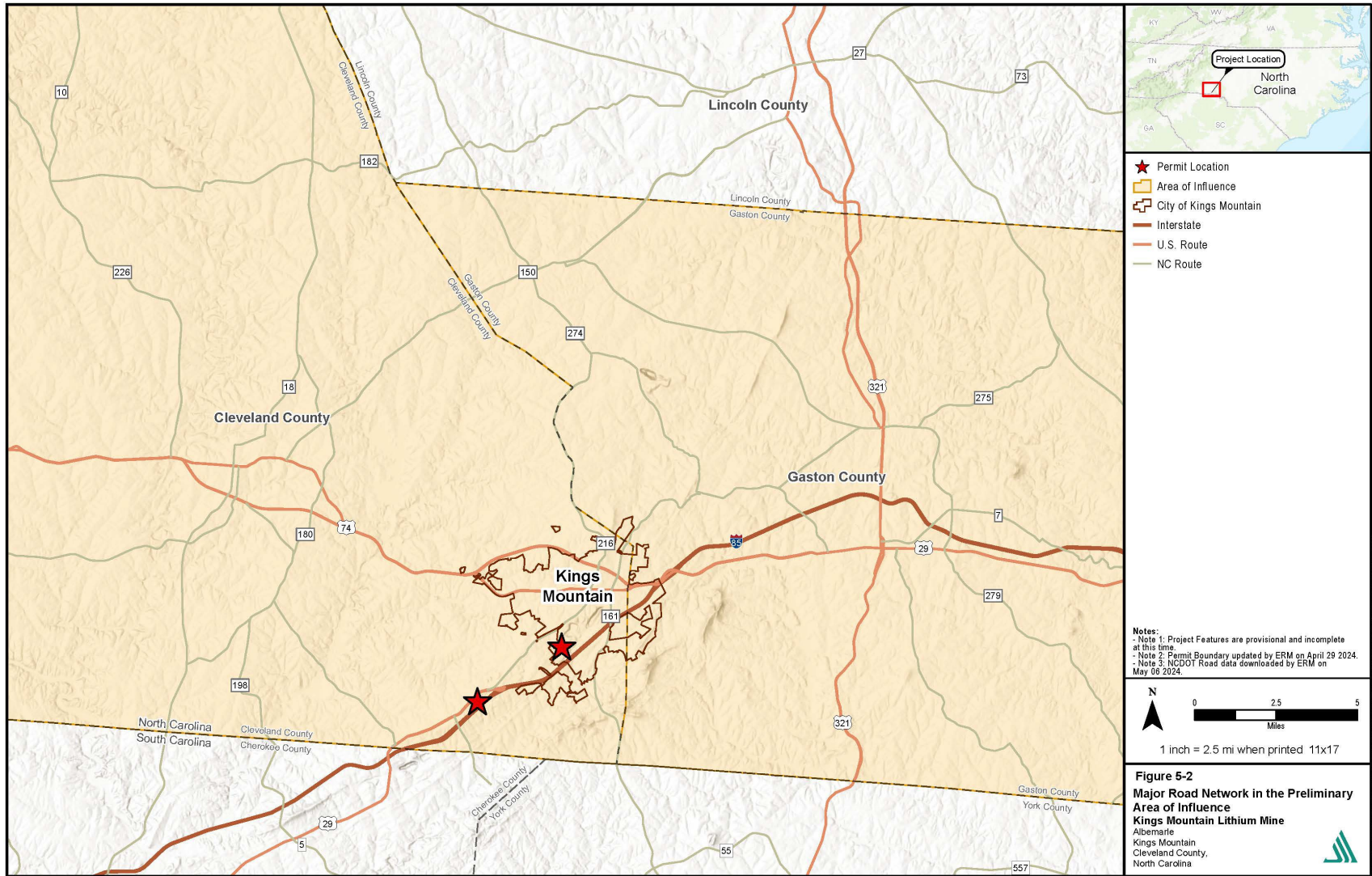
Intersection	Number of Crashes
I-85 and NC 161	40
I-85 and Kings Mountain Blvd	14
I-85 and NC 216	18
U.S. 74 and U.S. 74 Business	36
U.S. 74 and NC 161	18
U.S. 74 Business and Kings Mountain Blvd	12
U.S. 74 Business and NC 216	43
U.S. 74 Business and NC 161	55
U.S. 29 and Long Branch Road (west of I-85 merge)	12
NC 216 and Kings Mountain Blvd	9
NC 161 and Lake Montonia Road	7
NC 161 and Holiday Inn Drive / Broadview Drive	9
Kings Mountain Blvd and Margrace Road	17

Source: NCDOT 2024

I-85 = Interstate 85; NC = North Carolina; U.S. = United States

The 2018 Kings Mountain Economic Development Plan recommends the development of a City Transportation Plan as an economic development initiative. The City Transportation Plan would address road transportation and would provide guidance for pedestrian and bicycle connectivity with trails and downtown business district (City of Kings Mountain 2018).

**Figure 5-1: Major Roads in the Social Area of Influence**



Source: ERM 2023



**Figure 5-2: Intersection off I-85 into Kings Mountain**



Source: Google Earth Pro 2022



**Figure 5-3: Intersection off U.S. 74 into Kings Mountain**



Source: Google Earth Pro 2022

### **5.3.10. Visual Resources**

The area around Kings Mountain, North Carolina, is characterized by open valleys, rolling hills, and taller mountains that frame the landscape. Forested areas are common and provide contrast, verticality, and texture while providing a buffer or screen between other common lands uses (e.g., agriculture, residential, commercial). Given the prevalence of trees and other deciduous vegetation, the landscape appearance and colors change throughout the year depending on the season. This creates variation and interest that contributes to the overall scenic value of the regional landscape. The rolling topography, forested areas, and current development (e.g., buildings and other structures) limit wider landscape views in many locations, but elevated areas (e.g., hilltops, peaks, etc.) provide open vistas from which to view the regional landscape.

### **5.3.11. Cultural Heritage**

#### ***5.3.11.1. Project-Based Archaeological Survey Information***

In consultation with the North Carolina State Historic Preservation Office, Albemarle completed a Phase I archaeological and geoarchaeological survey, compliant with the National Historic Preservation Act, for the KMM site. SWCA conducted a cultural survey between June 6 and August 22, 2022, and July 26 and September 19, 2023 (SWCA 2023f). SWCA recorded 24 archaeological sites, of which two sites (31CL180 and 31CL185) were determined to be potentially eligible for inclusion on the National Register of Historic Places. Site 31CL180 is a historic-era, mid-1800s to mid-1900s, mill and prospecting site containing historic debris scatters and mining features. Site 31CL185 is a historic-era, mid-1800s to mid-1900s, domestic debris scatter and associated stone foundation (SWCA 2023f). SWCA has recommended avoiding subsurface disturbance of these site locations. If they cannot be avoided, the sites will require further study to determine their potential cultural value. In addition, some floodplain areas could possibly have archaeological sites deep underground. If those areas are to be disturbed, additional testing is recommended. The North Carolina State Historic Preservation Office issued full concurrence on SWCA's report on the KMM site; assessments of the TSF site and new stockpile locations are in review.

#### ***5.3.11.2. Historic Places and Cemeteries***

Cleveland County, North Carolina, has 22 historic landmarks listed on the National Register of Historic Places, some of which are in or near the SAoI. Some landmarks are listed because of architectural and engineering significance, while others due to an important event at the site that currently can be used for educational purposes (Cleveland County North Carolina Undated).

## 6. STAKEHOLDER ENGAGEMENT

### 6.1. INTRODUCTION

Stakeholder engagement is an inclusive two-way dialogue to share information about a project, understand the concerns of stakeholders and impacted communities, and build relationships based on collaboration. This process allows stakeholders<sup>32</sup> to understand the risks, potential impacts, and opportunities of a project to minimize adverse impacts and maximize positive potential outcomes. Meaningful public participation that is proactive, inclusive, accountable, and transparent increases the potential for best outcomes for all parties (IRMA 2020).

### 6.2. OBJECTIVES

Albemarle's stakeholder engagement process is guided by the IRMA Standard. The key stakeholder engagement objectives for the Project are to:

- **Ensure understanding** by providing an inclusive and transparent process of culturally appropriate engagement and communication to ensure stakeholders are informed about the Project. Communications should be timely and provide effective stakeholder consultation, review, and commentary on the development of environmental and social management measures.
- **Facilitate participation** by providing affected and interested parties with the means to participate in Project decision-making, regardless of their age, disability status, gender, ethnicity, or other socioeconomic factors, to minimize disproportionate adverse impacts. Stakeholders should also be involved, as appropriate, in the collection of data for the ESIA and the development of alternatives to mitigate potential impacts.
- **Engage Vulnerable Groups** to enable them to have equal access to Project-related information and provide them with a platform to voice their concerns, and have such concerns considered by the Project.
- **Ensure compliance** by aligning with local, state, and federal regulatory requirements and the IRMA Standard.
- **Record communications** with all stakeholders, including comments received in relation to this scoping process and the overall ESIA process.

To facilitate meaningful public participation and stakeholder engagement, a Stakeholder Engagement Plan has been developed for the Project, in accordance with local, state, and federal requirements and the IRMA Standard.

---

<sup>32</sup> Stakeholders are persons or groups who are directly or indirectly affected by a project, such as rights holders, as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively (IRMA 2018). For this Project, stakeholders are understood to include, at a minimum, all community members in Kings Mountain and those in surrounding communities within the SAol.



### 6.3. STAKEHOLDER IDENTIFICATION AND MAPPING

The IRMA Standard defines stakeholders as:

*“Persons or groups who are directly or indirectly affected by a project, such as rights holders, as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively.” (IRMA 2020)*

In keeping with this definition, Project stakeholders were identified and then classified based on their anticipated level of interest in the Project, their potential to be affected by the Project (positively or adversely), and their level of influence relative to the Project. To develop an appropriate approach for engagement, ERM categorized each stakeholder based on influence and/or interest (see Table 6-1, below).

**Table 6-1: Stakeholder Categorization and Approach for Engagement**

Interest/Influence Rating	Approach for Engagement
Low-medium interest, low-medium influence	Keep informed, monitor stakeholder influence, impact, and interest for changes.
Medium-high interest, low-medium influence	Work together to understand concerns and provide feedback on how impacts are managed.
Low-medium interest, medium-high influence	Update information on a regular basis, obtain feedback on issues, and engage in two-way communication.
Medium-high interest, medium-high influence	Engage early, establish partnerships on key issues, incorporate stakeholder advice as much as possible.

A preliminary list of key stakeholder groups identified are listed in Table 6-2 (below). Stakeholder mapping is an ongoing process throughout the life of the Project. New individuals or organizations will be mapped as they are identified, and other stakeholders will be re-evaluated as the Project progresses. Details of stakeholders’ level of influence and key concerns associated with the Project will be further consolidated in the ESIA.

**Table 6-2: Preliminary List of Stakeholder Groups Identified**

Preliminary List of Stakeholders Identified
<ul style="list-style-type: none"> <li>• Residents of the city of Kings Mountain and surrounding areas.</li> <li>• The (former) property owners whose land and homes have been and may be purchased by Albemarle.</li> <li>• The immediate neighbors of the KMM site or Archdale TSF site who will presumably continue to live in that location throughout the life of the Project.</li> <li>• Potential Vulnerable Groups, which includes potential EJ communities (disadvantaged and underserved communities, low-income households, and people of color).</li> <li>• Indigenous peoples, including the Eastern Band of Cherokee Indians and the Catawba Nation whose ancestral lands overlap with the region in which the Project will be located.</li> <li>• Key local elected officials and staff, community leaders, and influencers in the city of Kings Mountain, Cleveland County, and Gastonia; elected officials at the state and federal levels.</li> </ul>

### Preliminary List of Stakeholders Identified

- Potential shared-value partners, such as business, civic, education, and environmental organizations, state trade associations, labor and other groups and individuals who can realize benefits from the Project.
- NGOs concerned with mining or employment opportunities.
- Permitting agency staff and leadership, including NCDEQ and USACE staff.
- Earned media, including media organizations that discuss Project activities.

EJ = environmental justice; KMM = Kings Mountain Mine; NCDEQ = North Carolina Department of Environmental Quality; NGO = nongovernment organizations; TSF = tailings storage facility; USACE = U.S. Army Corps of Engineers

## 6.4. STAKEHOLDER ENGAGEMENT ACTIVITIES

### 6.4.1. Methods of Engagement

Albemarle's Community Affairs Team (CAT) began implementing engagement efforts with stakeholders in early 2022, with the goal of informing area residents about the Project and building relationships with stakeholders. Albemarle has initiated the following methods of stakeholder engagement:

- *Kings Mountain CAP Meetings*: CAP members are from various interest groups including education, elected officials, environmental NGOs, faith-based groups, health and safety organizations, impacted communities near the KMM site or Archdale TSF site, public administration, small businesses, tourism, and youth. CAP meetings occur monthly to discuss matters that involve and affect residents, local businesses, and organizations.
- *Town Halls*: Albemarle hosts regular Town Hall meetings to keep the community informed, identify issues of concern, and provide opportunities for feedback on the baseline studies and throughout the ESIA process.
- *Website*: A website has been created for the Project and serves as a reference for interested parties. The website contains information on Project activities, and will serve as a channel for submitting questions, comments, and/or concerns to the Community Feedback Process.
- *Newsletters (Print/Email)*: Albemarle distributes newsletters in print and via email/e-newsletter to communicate with key stakeholders. The newsletter, called *The Element*, is distributed monthly to interested parties.
- *Downtown Project Center*: To boost the Project's visibility and provide community members with access to information about the Project, Albemarle has opened a Project Center in downtown Kings Mountain. Interested parties can stop by the office and ask questions, voice concerns, and/or provide feedback about Albemarle's operations. The office is located at 129 W Mountain Street, Kings Mountain, NC 28086. The distance between the Project Center and the KMM site is 2.7 miles (approximately an 8-minute drive).
- *Mine Tours*: Albemarle began inviting select stakeholders and community members on tours of the KMM site in 2022. Interested parties are provided with a first-hand look at the KMM

site and learn about the benefits of mining, as well as an overview of the geology, history, and plans for the Project.

- *Vulnerable Group Engagement:* Albemarle is implementing a strategy to promote consultation with Vulnerable Groups (including potential EJ communities) regarding Project-related activities. This strategy includes proactively collaborating with members of EJ communities and Vulnerable Groups to identify, address, and mitigate issues that could impact communities.

## 6.4.2. Early Engagement

Key stakeholders were consulted through several rounds of engagement in 2022 and 2024. To achieve alignment with the IRMA Standard, communication objectives included the following:

- Updating the Kings Mountain community on baseline studies, assessments, and the Project design;
- Helping prevent and/or mitigate potential adverse impacts of activities taking place prior to construction (e.g., baseline studies, scoping, Project design alternatives, environmental and social management measures);
- Informing the community on Project design, potential impacts, and permitting;
- Encouraging community participation during the ESIA and permitting processes; and
- Earning trust and reducing social risk for the Project.

Early engagement focused on conducting outreach with CAP members, NGOs, Tribes, affected communities, Vulnerable Groups, and relevant state, local, and federal agencies. The Albemarle CAT, in coordination with ERM stakeholder engagement teams, worked closely to determine whether additional outreach or engagement activities were required for other interested parties. A summary of these engagement activities is discussed in the following section.

### 6.4.2.1. Summary of Early Engagement

Table 6-3 (below) highlights the record of engagement from 2022 through April 2024.

**Table 6-3: Record of Engagement Activities (2022 to Current)**

Activity	Description and Purpose
<b>2022 Activities</b>	
Socioeconomic Baseline Data Collection	Fieldwork: October 25–29, 2022: <ul style="list-style-type: none"> <li>• Held 23 in-person semi-structured interviews with key informants and stakeholders in the community</li> </ul>
CAP Meetings	CAP meetings were held on the following dates, with the associated topics: <ul style="list-style-type: none"> <li>• October 13, 2022: Overview of CAP, Overview of the Kings Mountain Lithium Mine</li> <li>• November 17, 2022: Kings Mountain Site Overview</li> </ul>



Activity	Description and Purpose
	Albemarle also invited individuals to tour the KMM site on November 19, 2022, and provided a question-and-answer session.
Town Halls	The first Town Hall was held on March 28, 2022. A second was held on September 22, 2022, where Project updates were discussed with the broader community.
Vulnerable Groups Outreach	Interviews were conducted with members of potential EJ communities. EJ-specific outreach was conducted with the NCDEQ to identify the requirements for enhanced participation.
CAP Mine Tour	Albemarle began to offer mine tours to public officials and other groups in March 2022.
<b>2023 Activities</b>	
CAP Meetings	<p>CAP meetings were held on the following dates, with the associated topics:</p> <ul style="list-style-type: none"> <li>• January 26, 2023: 2023 planning overview, water study overview, mineral processing facility process</li> <li>• February 23, 2023: mine operations 101 discussion, end land use discussion</li> <li>• March 16, 2023: geochemistry overview, end land use discussion</li> <li>• April 20, 2023: ESIA process announcement, socioeconomic baseline study feedback, Cleveland County economic and workforce development overview, community affairs update, community feedback process development and an overview of Albemarle's End Land Use and Closure Community Workshop on March 30, 2023</li> <li>• May 18, 2023: drilling program, water study update</li> <li>• June 15, 2023: May and June end land use workshop update, communications update, social investment visioning exercise</li> <li>• August 17, 2023: presentation of mine pit dewatering, interactive mine blasting map, and ESIA process reminder</li> <li>• September 21, 2023: overview of the ESIA process, non-ore-bearing rock and tailings, and partnership with Cleveland Community College</li> <li>• October 26, 2023: expectations for mine plan reveal</li> <li>• November 16, 2023: closure, community investment, mine layout</li> <li>• No CAP meeting occurred in December 2023 (holiday recess)</li> </ul>
Town Halls	<p>Town Halls were held on the following dates, with the associated topics:</p> <ul style="list-style-type: none"> <li>• February 2, 2023: Project updates, water study</li> <li>• May 22, 2023: ESIA process announcement, drilling, hydrogeology</li> <li>• June 26, 2023: pit design, scoping report</li> </ul>

Activity	Description and Purpose
	<ul style="list-style-type: none"> <li>• August 31, 2023: Albemarle Project Center open house, “science fair”</li> <li>• September 28, 2023: ESIA process update, water, geology, operations, mineralogy/ mineral processing facility, lithium in everyday life, safety</li> <li>• No Town Halls occurred in November or December 2023 (holiday recess)</li> </ul>
Social Media	<p>Albemarle has started a social media strategy for Project communications. Albemarle is using Facebook to inform community members and interested parties of Town Hall meetings.</p>
End Land Use Closure Working Group	<p>A cross-section of stakeholders from Kings Mountain and surrounding communities gathered on March 30, 2023 to provide feedback and ideas on end land use and closure. Additionally, Albemarle held an End Land Use and Closure Brainstorm Workshop on May 17, 2023 with Albemarle Kings Mountain employees and two workshops on May 18, 2023 with students at Kings Mountain High School (morning and afternoon sessions).</p>
Mine Tours	<p>In April 2023, Albemarle opened mine tours to the public. Mine tours consist of a visit to the KMM site, an overview of the benefits of mining, and opportunities to ask questions.</p>
Sponsored Community Events	<ul style="list-style-type: none"> <li>• May–October 2023: Live Music at Patriots Park Kings Mountain Summer Concert Series in Kings Mountain, NC.</li> <li>• October 20, 2023: Kings Mountain Rotary Club Annual Spaghetti Supper in Kings Mountain, NC, at the Kings Mountain High School Cafeteria.</li> <li>• September 16, 2023: Sound the Alarm campaign. Albemarle partnered with the American Red Cross and the Kings Mountain Fire Department to install smoke alarms in Kings Mountain residences.</li> <li>• September 28–October 8, 2023: Cleveland County Fair 2023 is a county fair that is held at Cleveland County Fairgrounds in Shelby, NC. Members of Albemarle’s CAT engaged with approximately 775 attendees. Albemarle provided attendees with the opportunity to take a virtual tour of the KMM site via drone footage. Albemarle had a presence at the main gate’s heavy equipment display to highlight its partnership with Cleveland Community College. Albemarle representatives and attendees engaged in two-way dialogue about the following topics: environmental impacts, geology, mining, future job opportunities and internships, land acquisition, safety, the Gateway Trail, pit de-watering, the difference between the Albemarle KMM and other local mines, and wildlife relocation.</li> <li>• November 18, 2023: Murphey’s Annual Toy Run, a charity event centered around collecting toys and donations for children and their families held in Kings Mountain, NC.</li> <li>• December 8, 2023: Community Building Initiative Stakeholder Breakfast at Friendship Conference Center in Charlotte, NC.</li> </ul>

Activity	Description and Purpose
Project Notices	Various flyers announcing town halls and Project notices were placed around Kings Mountain in August and September 2023 in grocery stores, nursing homes, Mauney Memorial Library, community centers, apartment complexes, city government offices, and laundromats.
<b>2024 Activities</b>	
CAP Meetings	<p>CAP meetings were held on the following dates, with the associated topics:</p> <ul style="list-style-type: none"> <li>• January 18, 2024: safety moment; external affairs update; operations update; community affairs update.</li> <li>• February 25, 2024: safety moment: Chief Capital Projects Officer, Supplier Diversity Coordinator; community meetings; mine roll-out plan strategy and feedback; old business - interactive map feedback.</li> <li>• March 21, 2024: safety moment; energy storage business unit update, Kings Mountain project update: pit dewatering; federal grant funding; community events update; old business - mine rollout plan follow up.</li> </ul>
Community Meetings	<p>Community Meetings were held on the following dates, discussing Project background and future engagement:</p> <ul style="list-style-type: none"> <li>• Saturday, January 27, 9–10 am; Mt. Olive Baptist Church, Kings Mountain, NC</li> <li>• Tuesday, January 30, 11 am–12 pm; Bethlehem Baptist Church, Kings Mountain, NC</li> <li>• Wednesday, January 31, 6 pm–7 pm; Kings Mountain High School, Kings Mountain, NC</li> <li>• Thursday, February 1, 11 am–12 pm; Bethlehem Baptist Church, Kings Mountain, NC</li> <li>• Tuesday, February 6, 5:30 pm–6:30 pm; Kings Mountain YMCA, Kings Mountain, NC</li> <li>• Wednesday, February 7, 7:30 am–8:30 am; Kings Mountain YMCA, Kings Mountain, NC</li> <li>• Tuesday, April 2, 10 am–12 pm; Patrick Senior Center, Kings Mountain, NC</li> <li>• Saturday, April 27, 10 am–12 pm; Mt. Zion Baptist Church, Kings Mountain, NC</li> </ul>
Town Hall Meetings	There have been no Town Halls in 2024 thus far; the first one is scheduled for May.
Social Media	Albemarle has continued the social media strategy for Project communications. Albemarle is using Facebook to inform community members and interested parties of Community Meetings and upcoming Town Hall meetings.
Mine Tours	<p>Mine tours have continued in 2024. Individuals can join a mine tour by emailing <a href="mailto:Cynthia.Estridge@albemarle.com">Cynthia.Estridge@albemarle.com</a> at least 48 hours in advance of the scheduled tour date. Tour dates can be found on Albemarle’s event calendar on their website: <a href="https://albemarlekingsmountain.com/events-calendar">https://albemarlekingsmountain.com/events-calendar</a></p>

Activity	Description and Purpose
Project Notices	Various flyers announcing Community Meetings were placed around Kings Mountain in January and February 2024 in City of Kings Mountain City Hall, post offices, grocery stores, gas stations, Mauney Memorial Library, churches, businesses, and coffee shops.

CAP = Community Advisory Panel; CAT = Community Affairs Team; EJ = environmental justice; ESIA = Environmental and Social Impact Assessment; KMM = Kings Mountain Mine; NC = North Carolina; NCDEQ = North Carolina Department of Environmental Quality

Key issues raised by stakeholders during the engagement activities listed above will be considered as part of the ESIA and are summarized in Table 6-4 (below). Comments and questions received throughout the ESIA process will be captured in a Comments and Responses Register, with Albemarle’s response, and will be documented in the ESIA.

**Table 6-4: Summary of Key Project-Related Concerns Raised by Stakeholders**

Topic	Issue
Lack of clarity on Project site and operational impact	Early in the process, stakeholders voiced concerns about receiving insufficient information on mining operations and their impacts on community life. Stakeholders did not understand the connection between presentations on the general mining process and existing social conditions. Stakeholders would like to understand mining operations in more detail, receive more information on Project plans, and evaluate positive and negative impacts on daily life, economic opportunity, and land changes.
Changes to KMM site and potential for land acquisition	Stakeholders did not originally understand existing or planned Project boundaries. Stakeholders were interested in knowing the purpose of the Project and plans for different site parcels. Stakeholders also expressed concern about impacts on homeowners who refused to sell their properties adjacent to the KMM site, and broader impacts on residential and recreational life from changes to the KMM site. Stakeholders expressed concern about property acquisitions, how many homes would be purchased, and how displaced families would afford new homes.
Employment opportunities and effects on local workforce, as well as incoming labor	Stakeholders were concerned about community impacts from temporary labor for the Project. Additionally, stakeholders wondered how the operation of the Project could improve local workforce development and educational resources. Stakeholders were hopeful for positive workforce impacts from Project operations but concerned about the amount of time it would take to build out a local workforce. Stakeholders were curious how many jobs would be created and what the average salary would be for them.
Mine closure and reclamation plans	Stakeholders would like mine closure and reclamation plans to result in outdoor recreation or commercial opportunities and spoke frequently about visions for biodiversity restoration at the time of post-closure. Stakeholders are concerned that Albemarle may leave a large, open pit post-closure.
Changes to the Gateway Trail and impacts on recreation	Stakeholders were concerned about visual, noise, and air quality impacts to this nearby outdoor recreational area. Stakeholders wondered how noise from the Project would be minimized, which parts of the trail may be closed, and how mining operations may affect the air quality of the trail. Additionally, stakeholders wanted to know if there would be adverse ecological effects on the trail. Some stakeholders asked about a closure schedule for the

Topic	Issue
	Gateway Trail, as there is a lack of understanding when certain portions of the trail may be closed due to Project activities.
By-products from the Project and their impacts on land, air, and water quality	Stakeholders expressed concern over Project impacts on land, air, and water quality, noise, and related community health concerns. Stakeholders wanted to understand how mining might increase air and noise pollution, as well as ambient levels of carcinogens, and potential health effects. Additionally, stakeholders expressed concern over traffic impacts, dust management, waste management, and lithium storage, and impacts to local biodiversity. Stakeholders wanted to understand water quality testing methods and water contamination prevention and how water will be supplied to the Project. Stakeholder concerns about impacts on land, air, and water were also related to effects on property value and city-wide economic implications.
Lack of clarity on Project impacts on community life, education, and economic development	Stakeholders communicated confusion about how the Project life cycle <sup>33</sup> would impact the community in the long term. Stakeholders had questions about how the Project would integrate residents into the Project workforce, and the effects of the Project on economic development. Stakeholders had questions about workforce education. Stakeholders also had questions about potential social benefits from mining operations, such as improved health care, and were interested in more communication about the benefits their community would receive.
Permitting, siting, and purpose	Stakeholders wanted more information on why Albemarle chose this site to supply lithium, what their plans were for land purchased south of I-85 in South Carolina. Stakeholders also wanted to know how the lithium would be used, whether it would be used domestically, who was financing the Project, and how the permitting process to open the mine would progress.

I-85 = Interstate 85; KMM = Kings Mountain Mine

### 6.4.2.2. *ESIA Announcement*

The following methods of engagement were undertaken to announce the ESIA to the community:

- First Announcement—Initial Community Disclosure: ESIA was first announced during a monthly scheduled CAP meeting on April 20, 2023.
- Second Announcement—Public ESIA Announcement: ESIA was publicly announced during a Town Hall meeting on May 22, 2023.
- Third Announcement—ESIA Reminder: ESIA was discussed during a monthly scheduled CAP meeting on August 17, 2023.
- Fourth Announcement—Public ESIA Announcement: ESIA was publicly discussed during a Town Hall meeting on September 28, 2023.

<sup>33</sup> Project site preparation through closure.

### 6.4.3. Future Engagement and Stakeholder Next Steps

#### 6.4.3.1. CAP Meetings, Town Halls, and Community Engagement

Albemarle will continue to host CAP meetings and Town Halls with community members in 2024. Future CAP and Town Hall meeting dates for the remainder of 2024 have not yet been confirmed but will be posted on the Albemarle website.

**Table 6-5: Future Engagement Activities**

Activity	Description and Purpose
<b>Planned 2024 Activities</b>	
Preparation and Distribution of a Project Factsheet	A Project Factsheet is available on Albemarle’s Kings Mountain website. The Project Factsheet provides information on Albemarle, the proposed Project, and other commonly asked questions and answers.
CAP Meetings	CAP meetings will continue to take place monthly in 2024. These meetings will be held to present updates for the Project and solicit input from stakeholders regarding the scoping and ESIA processes.
Town Halls	<ul style="list-style-type: none"> <li>• Public Town Hall meetings will be held in 2024 in various locations in Kings Mountain.</li> <li>• Stakeholders will be notified about public meetings through various notification channels including social media (Facebook), eNewsletter, home mailers, and newspaper advertisements.</li> <li>• These meetings will be held to present updates for the Project and solicit input from stakeholders throughout the ESIA process.</li> <li>• Dates for 2024 Town Halls have not yet been confirmed but will be available on the Albemarle Kings Mountain website in advance of any meeting.</li> </ul>
Development of an Initial Comments and Response Report	All comments received will be recorded in a Comments and Response Report.
Community Meetings	Additional community meetings will be held in 2024. These meetings will be held to present updates for the Project and solicit input from stakeholders regarding the scoping and ESIA processes.
Project Notices	Various flyers announcing Town Halls and Project notices will be placed around Kings Mountain in grocery stores, nursing homes, the Mauney Memorial Library, community centers, apartment complexes, city government offices, laundromats, and other identified public spaces.

CAP = Community Advisory Panel; ESIA = Environmental and Social Impact Assessment

#### 6.4.3.2. Consideration of Vulnerable Groups

Vulnerable Groups (including potential EJ Communities) will be provided with information about the Project and the opportunity to provide feedback to Albemarle. Albemarle will work to facilitate these groups having easy access to the Feedback and Grievance Management



Procedure, this Scoping Report, and the ESIA (once complete). Albemarle plans to host multiple meetings within the SAOI to facilitate two-way conversations and provide opportunities for inclusive engagement.

## 7. SCOPING RESULTS

The key objective of the scoping process is the preliminary identification of how the Project may impact, positively and negatively, the surrounding environmental and social resources or receptors. Resources are physical features such as air, water, and soil that can be affected by Project activities, while receptors are people and wildlife (biota) that can be affected by Project activities.

The impacts that are identified as *potentially* significant during the scoping process provide focus for the detailed ESIA. *Once the scoping process is complete and priority resources and receptors have been identified and validated through the stakeholder engagement process and professional opinion and evaluation, Albemarle will thoroughly assess the potential significant impacts and will document the assessment in the ESIA Report.*

### 7.1. POTENTIAL ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS

This section presents a preliminary identification of potential environmental and social impacts and risks for the Project to guide the detailed assessment in the ESIA phase. The identification of potential impacts and risks are based on national and international experience from other similar mining projects, ERM's experience and professional judgment, stakeholder feedback from engagement activities undertaken to date (refer to Chapter 6), and baseline data gathered to date.

Table 7-1 (below) presents a list of resources and receptors that have been identified in the scoping process, together with a description of how the Project might impact them. Resources and receptors considered are based on anticipated risks and impacts typical of a brownfield mining project<sup>34</sup> of this nature within a peri-urban setting and have been adapted from the Social Responsibility Requirements (Chapter 3) and Environmental Responsibility Requirements (Chapter 4) of the IRMA Standard.

Table 7-1 provides a preliminary list of potential Project impacts and risks, which will guide the detailed impact and risk assessment process of the ESIA phase. Potential impacts and risks shown in **green** are considered by ERM to possibly be significant in the absence of mitigation

---

<sup>34</sup> Impacts typical of a brownfield mining project of this nature have well established mitigation measures that will be implemented throughout the Project life cycle.

measures implemented in addition to embedded controls<sup>35</sup>; therefore, these potential impacts and risks will be evaluated during the ESIA phase.

**Table 7-1: Preliminary Identification of Resources and Receptors and Potential Impacts and Risks to Assess in the ESIA**

Resources/Receptors	Potential Impacts and Risks to Assess in the ESIA
<b>Environmental</b>	
<b>Air Quality and GHG</b>	Emissions of NO <sub>2</sub> , SO <sub>2</sub> , PM, CO, VOCs, GHGs (carbon dioxide, methane, and nitrous oxide) from fuel combustion and mineral processing facility processing facilities could increase ambient concentrations of these constituents. Dust emissions created by Project activities (e.g., earthworks, blasting, demolition, and operation of machinery and vehicles) could change local ambient air quality and introduce aesthetic impacts.
<b>Noise and Vibrations</b>	Vehicle traffic along main transport/access routes during construction and operations may create noise and vibration that could change ambient levels. Blasting during operations will cause noise and vibrations with potential impacts on receptors in the immediate surrounding area. The construction and operation of processing equipment and machinery could create noise and vibrations that could change ambient noise levels.
<b>Surface Water</b>	<p>KMM Site</p> <p>The Project will impact about 0.14 acres of ponds (excluding inundation) and about 4,720 linear feet of stream (2,108 linear feet of intermittent stream and 2,612 linear feet of perennial stream). Nine surface water areas have been identified as potentially impacted:</p> <ul style="list-style-type: none"> <li>• Impact area #1 is the construction of infrastructure in the North NPI area. The activity will impact 96 linear feet of intermittent streams and 1,272 linear feet of perennial streams.</li> <li>• Impact area #2 consists of the South Creek Road crossing, with temporary impacts of 89 linear feet of perennial stream to allow access to RSF-A.</li> <li>• Impact areas #3 and #4 result from construction of the RSF to provide slope stability, access, and stormwater management systems. Impact area #3 will impact 139 linear feet of intermittent streams. Impact area #4 RSF-A will impact 1,361 linear feet of intermittent stream and 527 linear feet of perennial streams.</li> <li>• Impact area #5 is the Kings Creek Haul with impacts to 162 linear feet of perennial streams for a bridge span.</li> <li>• Impact area #6 is the ROM pad and will impact 561 linear feet of perennial streams.</li> <li>• Impact area #7 is the WSB-1 Dam improvements and will impact 226 linear feet of intermittent streams.</li> <li>• Impact area #8 is the WSB Inundation of Executive Club Lake with impacts to 286 linear feet of intermittent stream.</li> </ul>

<sup>35</sup> Embedded controls are the physical or procedural controls that are planned as part of the Project design (i.e., not added solely based on a mitigation need identified by the impact significance assignment process). These are considered from the very start of the impact assessment process as an intrinsic part of the Project. Embedded controls may be informed by the applicable federal, state, and local regulations.

Resources/Receptors	Potential Impacts and Risks to Assess in the ESIA
	<ul style="list-style-type: none"> <li>Impact area #9 pertains to pipe corridor discharges and is not expected to result in impacts to surface water bodies (ponds or streams).</li> </ul> <p>Pit Lake</p> <ul style="list-style-type: none"> <li>On Closure, the pit lake will receive stormwater runoff and direct precipitation. Stormwater runoff is anticipated to be of sufficient quality for discharge based on material characterization and the current water quality in the existing pit lake.</li> </ul>
<b>Groundwater</b>	<p>KMM Site</p> <p>Potential impacts to groundwater include potential contamination of shallow or deep groundwater resources, and changes in groundwater flow direction or levels due to dewatering and mining operations.</p> <p>Pit Lake</p> <p>The pit lake will receive inflows from groundwater. The groundwater seepage is anticipated to be of sufficient quality for discharge without treatment, based on material characterization and the current water quality in the existing pit lake.</p>
Geology and Soils	<p>Soil properties at the KMM site and TSF site could be altered due to site preparation. Clearing and grading during construction could cause instability of slopes. Soil quality and properties could be altered through compaction created by Project ground disturbance activities. Accidents/unplanned events: depending on the method of waste disposal, soils could be directly impacted through unintended release of contaminants to the soil surface, resulting in potential impacts on surface or groundwater, flora and fauna and/or local communities.</p>
Biodiversity (Aquatic Resources, Vegetation, Terrestrial Wildlife)	<p>KMM Site</p> <ul style="list-style-type: none"> <li>There are no state-listed plant or animal species categorized as threatened, endangered, or of special concern within anticipated presence at the KMM site.</li> <li>No impacts to northern long-eared bat, little brown bat, dwarf-flowered heartleaf, or monarch butterfly are anticipated, as these species have a low likelihood of occurring in the KMM site.</li> <li>The <b>tricolored bat</b> (proposed endangered) is known to occur in the general area in which the Project will be located and may be if project activities affect their habitat during their roosting season.</li> </ul> <p>Pit Lake</p> <p>Mine expansion includes dewatering the existing pit lake and transferring the water into South Creek Reservoir. During dewatering of the existing pit lake, fish, and other aquatic species (e.g., turtles) will be collected and relocated to other waterbodies on the KMM site. Accordingly, there will be some level of impact related to aquatic wildlife disturbance. No federally protected species are expected to occur in the pit lake.</p>
Wetlands	<p>KMM Site</p> <p>The Project may result in impacts to 8.39 acres of wetlands (current estimate).</p>

Resources/Receptors	Potential Impacts and Risks to Assess in the ESIA
	<p>Pit Lake</p> <p>No jurisdictional wetlands will be impacted with the expansion of the existing pit lake.</p>
Ecosystem Services	<p>Changes to ecosystem services (known as natural capital) that provide for human well-being and quality of life. The World Resources Institute defines ecosystem services as “the benefits of nature such as food, fuel, natural hazard protection, pollination, and spiritual sustenance” (WRI 2008). In the context of this Project, ecosystem services that might be affected include regulating services such as visual screening through vegetation and flood prevention along riverbanks, and recreation and athletics services such as the Gateway Trail.</p>
<b>Social</b>	
<b>Local and Regional Economy</b>	<p>The Project will generate potential impacts on local and regional economies through the addition of jobs and skills enhancement opportunities, procurement of local goods and services, workforce spending at local businesses, increased tax base through higher paying salaries, and decrease in the unemployment rate. During operations, there will be continued opportunities for employment, procurement of local goods and services, and increased spending in the community. The Project may have adverse impacts to the local economy through contribution to an increased cost of living or increased price of homes due to increased demand on housing associated with influx of imported labor.</p>
<b>Social Infrastructure and Services</b>	<p>An increase in population related to the Project workforce may place pressure on community infrastructure and services such as fire departments, police stations, public water supply, waste and wastewater treatment, medical and emergency centers, public health services, road networks, public educational institutions, and housing.</p>
<b>Transportation</b>	<p>Changes in local traffic patterns, traffic volumes, and types of vehicles used on local roads due to the vehicle trips generated by the Project could impact users of road networks. Albemarle has commissioned a Traffic Impact Analysis that will evaluate the potential impacts of Project trips (including heavy vehicles) on traffic volumes, road capacity, and transportation safety.</p>
<b>Landowners</b>	<p>The Project’s land acquisition will affect former homeowners and/or landowners. Homeowners and/or landowners who live next to or near the KMM site or TSF site may experience a decrease in property value and increase in exposure to dust, noise, vibration, and traffic.</p>
<b>Recreation</b>	<p>Changes in land use may result in temporary and/or permanent changes in access to recreational facilities and activities, such as the use of the Gateway Trail, portions of which currently run through the KMM site.</p>
<b>Community Safety</b>	<p>There is potential for real or perceived changes to community safety including increased crime, loss of security, and increased risk of traffic accidents due to increased traffic volumes associated with the Project. The community could also be affected by an unplanned event that takes place at the Project and results in effects that extend outside the Project boundary.</p>

Resources/Receptors	Potential Impacts and Risks to Assess in the ESIA
Land Use	The Project will result in a change of land use, particularly on the KMM site and TSF site. There is potential for conflicting land use objectives between the Project and other proposed developments within Kings Mountain, such as the entertainment district centered around the Two Kings Casino.
Community Health	The Project could change air quality, generate noise and vibration, increase the incidence of communicable diseases through influx of non-local workforce, and generate additional pressure on healthcare resources within the community.
Labor and Working Conditions	The Project entails potential occupational health and safety risks on the Project workforce, as well as potential impacts associated with working conditions, accommodations (in the instance of onsite accommodations), and handling of hazardous materials.
Cultural Heritage Resources	The Project will have the potential to disturb cultural heritage resources in the area such as cultural heritage sites (including historic buildings and churches), archaeological sites or artifacts, or paleontological resources. The Project has the potential to uncover previously undiscovered cultural heritage, particularly during construction.
Demographics	Construction will require a sizable workforce, some of whom will temporarily relocate to Kings Mountain and surrounding areas. This may create temporary changes in the local population, including changes to age composition, ethnicity or race composition, gender composition, and language distribution. This could in turn generate potential impacts on social cohesion in the community.
Aesthetics and Visual Landscape	Changes in scenic value or visual landscape (for example, lighting from trucks and facilities, shielding, vertical profile of TSF or RSF, and glare) due to Project construction activities and the operation of the Project.
Social Cohesion and Social Fabric	The presence of an outside workforce, the construction and operation of the Project could result in changes to the fabric, feel, or nature of the Kings Mountain community. Changes to community dynamics could include changes to locally established norms and culture, social cohesion, changes in sense of place, or a change to an individual's perception of their surroundings.

Source: ERM 2023

Potential key impacts are identified in **green**.

CO = carbon monoxide; ESIA = Environmental and Social Impact Assessment; Gateway Trail = Kings Mountain Gateway Trail; GHG = greenhouse gas; KMM = Kings Mountain Mine; NPI = non-process infrastructure; NO<sub>2</sub> = nitrogen dioxide; O<sub>3</sub> = ozone; PM = particulate matter; ROM = run-of-mine; RSF = rock storage facility; TSF = tailings storage facility; SO<sub>2</sub> = sulfur dioxide; VOC = volatile organic compound; WSB = water storage basin

In addition to the assessment of the potential impacts and risks identified above, the ESIA Report will include an assessment of potential cumulative impacts.<sup>36</sup> Other projects that have been preliminarily identified as generating impacts that could overlap with potential impacts of the Project are listed below. Stakeholders are invited to ask questions and provide feedback on this preliminary list prior to the complete assessment of cumulative impacts in the ESIA.

<sup>36</sup> Cumulative impacts are impacts that act together with other impacts (including those from concurrent or planned future third-party activities) to affect the same resources and/or receptors as the Project.

- Catawba Nation Casino (Two Kings Casino)
- Kings Mountain Quarry (Martin Marietta)
- Piedmont Lithium
- The Dixon Ridge Development Project
- Utz Manufacturing

## 7.2. CONCLUSION

**A key outcome of scoping is to guide the remainder of the ESIA process to further evaluate the potential impacts and risk to environmental and social resources and receptors, and to inform the development of avoidance, minimization, mitigation, and management measures.** Based on ERM's current understanding of the Project description and stakeholder feedback received to date (see Table 7-1, above), the key potential impacts and risks of concern that will be further evaluated in the ESIA include the following:

- Increased exposure to **dust (air quality), noise, and vibration** for receptors adjacent to the Project and along transport corridors.
- Changes to water quality of rivers, lakes, and other **surface water** bodies affected by construction and operation of the Project.
- Changes to water quality of shallow or deep groundwater resources and associated impacts to water rights, changes in **groundwater** flow direction or levels.
- Increased local employment and local procurement, which will positively impact the **local and regional economy**.
- Change in residence for homeowners and/or **landowners** whose property is purchased by Albemarle.
- Potential impacts to **tricolor bat's habitat**.
- Increased traffic, which could impact **community safety** and strain road networks used as part of **social infrastructure and services**.
- Changes in land use which could result in temporary and/or permanent changes in access to **recreation**, such as the use of the Gateway Trail.

Potential impacts of concern identified in this Scoping Report will be updated based on further feedback from stakeholders and assessed as part of the ESIA.

Stakeholders are invited to ask questions and provide feedback on the information presented in this Scoping Report. The ERM and Albemarle teams may be contacted through the following channels:

- Email: [kmcommunity@albemarle.com](mailto:kmcommunity@albemarle.com)
- Website: <https://albemarlekingsmountain.com/>



- Phone: 1-704-734-2775
- In person at the Albemarle Project Center: 129 West Mountain Street, Kings Mountain, NC 28086

## **8. NEXT STEPS IN THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROCESS**

Albemarle and its consultants will carry out further baseline data collection and technical studies, along with stakeholder engagement activities. As the ESIA process progresses, Albemarle will share the complete ESIA (once complete), as well as non-technical summaries of key ESIA findings with stakeholders, both electronically and in hard copy at convenient and easily accessible locations. Albemarle will also host a series of meetings to share the ESIA findings and invite stakeholders to ask questions and comment on the ESIA findings. Stakeholders will be able to submit written comments via the Project website, comment sheets, and the various methods listed above, as well as directly during stakeholder meetings.

The next steps of the ESIA process are summarized below:

- Following a 60-day comment period, this draft Scoping Report will be updated and finalized based on stakeholder feedback. Responses to comments received on the draft Scoping Report will be compiled into a comments and responses report. Stakeholders may provide feedback through the communication channels described listed in this report.
- A final version of this Scoping Report, together with the comments and responses report, will be made available to stakeholders.
- The environmental and social baseline will be updated and expanded with input from additional specialist baseline studies and reports.
- The potential environmental and social impacts from the Project will be assessed using a standard methodology (Appendix A). The outcomes will be included in the ESIA Report along with proposed management measures.
- The outcome of the ESIA process and the resulting ESIA report will be shared with stakeholders, who will have the opportunity to participate in meetings to learn more about the ESIA process and its findings, including proposed management measures. The draft ESIA report will be available electronically and hard copies will be available in public locations.
- Following a 60-day comment period, the ESIA report will be updated based on stakeholder feedback received on the draft ESIA report. The Project team will address and respond to stakeholder comments on the draft ESIA report and will compile responses into a comments and responses report.
- A final version of the ESIA report, together with the comments and responses report, will be made available to stakeholders.

- The Project team will maintain and update its risk register based on potential impacts identified during the ESIA including direct, indirect, and cumulative impacts.

**APPENDIX A    ERM ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT  
METHODOLOGY**

## A1. ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT METHODOLOGY

The primary objective for the Environmental and Social Impact Assessment (ESIA) for the Kings Mountain Lithium Mine Project (Project), is to provide for the identification and management of potential environmental and social impacts and risks associated with the Project, including avoidance and minimization during planning and design phases of the Project. To this end, the ESIA methodology uses a process that identifies the potential Project impacts and risks to environmental or social resources/receptors<sup>37</sup> and characterizes them in terms of their significance (or risk, in the case of unplanned events), to inform decisions on the need for development of recommendations for additional mitigation measures to effectively manage these impacts and risks. There is no statutory or universally agreed-upon international definition of significance. However, ERM has a standard impact assessment methodology that will be employed for this ESIA, with significance ratings representing the general principles outlined in Table A-1:

**Table A-1: General Principles for Impact Significance Ratings**

Significance Rating	Definition
Negligible	An impact where a resource will essentially not be affected, or the predicted impact is deemed to be imperceptible or is likely to be indistinguishable from natural background variations.
Minor	An impact where a resource will experience a noticeable impact, but the impact is relatively small and/or the resource is of relatively low sensitivity. In either case, the magnitude of the impact is expected to be within accepted limits.
Moderate	An impact that is within accepted limits but falls somewhere in the range from a threshold below which the impact is minor, up to a level that is short of breaching a critical threshold.
Major	An impact where an accepted limit may be exceeded or a critical threshold may be crossed, or the impact affects a highly sensitive resource that may not be able to recover from the impact (at all or without assistance).
Positive	

The scoping stage of the ESIA identified which resources could potentially be impacted by the Project and how the Project may impact the existing conditions for these resources. Preliminary identification of potential impacts on or risks to resources are presented in Section 7, Scoping Results.

The ESIA will assess the way the Project may impact elements of the physical, biological, or social environment. As described in greater detail below, potential impacts will be characterized based on their type, intensity, frequency, and duration. Risks from unplanned events will be

---

<sup>37</sup> For ease of review, resources/receptors are hereafter collectively referred to collectively as “resources” in this appendix.

---

characterized based on these same criteria, as well as considering the likelihood of the unplanned event occurring.

Management of any residual impacts or risks through an ESIA are essential to the execution of an Initiative for Responsible Mining Assurance (IRMA)-driven project. Further, based on the ESIA findings, the Project will develop a management system to address the predicted impacts and risks. The management system will incorporate a continuous improvement concept (plan, do, check, act) such that potential environmental and socioeconomic impacts and risks are proactively managed throughout the Project life cycle.

## **A1.1. ASSESSMENT OF IMPACTS AND IDENTIFICATION OF MITIGATION AND MANAGEMENT MEASURES**

The purpose of the ESIA is to assess the potential impacts resulting from planned activities of the Project and the risks from potential unplanned events that could occur as a result of the Project, as well as to identify measures to avoid, reduce, or remedy these potential impacts and risks. A standardized methodology will be used to identify potential impacts from planned activities and assess their significance, as well as to identify and assess risks from unplanned events.

Potential impacts include impacts on physical, biological, and social resources and can be “direct,” “indirect,” or “induced,” as defined below:

- Direct—impacts that result from a direct interaction between the Project and a resource (e.g., disturbance of a terrestrial habitat, increase in employment);
- Indirect—impacts that follow from direct interactions between the Project and other resources (e.g., impacts on terrestrial fauna that lives in an affected habitat, increased opportunities for supporting industries); and
- Induced—impacts that result from other non-Project activities that occur because of the Project (e.g., impacts from an influx of job seekers, increased regional economic activity).

The ESIA will evaluate potential Project impacts by predicting and quantifying, to the extent possible, the magnitude of the impacts on resources and the sensitivity/vulnerability/importance<sup>38</sup> of the impacted resources.

### **A1.1.1. Predicting Magnitude of Impacts**

Magnitude essentially describes the nature and degree of change that the potential impact is likely to impart upon the resource. Depending on the impact, magnitude is a function of some or all the following impact characteristics:

- Intensity (including geographic/spatial extent)
- Frequency

---

<sup>38</sup> For ease of review, sensitivity/vulnerability/importance are collectively referred to as “sensitivity” for the purpose of this appendix.

---

- Duration

The magnitude of an impact takes into account the various dimensions of a particular impact to determine where the impact falls on the spectrum (in the case of adverse impacts) from **Negligible** to **Large**. Some impacts will result in changes to the resource that may be immeasurable or undetectable, which are characterized as having a **Negligible** magnitude.

Taking into account the impact characteristics identified above, the magnitude of each potential impact is assigned one of the following five ratings:

- Negligible
- Small
- Medium
- Large
- Positive

In the case of positive impacts, the ESIA does not characterize the magnitude of such impacts. Rather, they are simply reported as positive.

The definitions for intensity, duration, and frequency designations that will be used for the ESIA are provided in Tables A.1-1, A.1-2, and A.1-3, respectively.

Methods for predicting and evaluating the intensity of an impact cover a spectrum from those that are quantitative in nature to those that are qualitative. Quantitative methods are those that are measured or expressed numerically, while qualitative methods are those requiring a subjective assessment. Recognizing that impacts could be experienced differently by different resources, the designations for intensity will be defined on a resource-by-resource basis in the resource-specific sections of the ESIA. However, these resource-specific intensity definitions will generally follow the guiding definitions in Table A.1-1.

**Table A.1-1: Guiding Definitions for Intensity Designations**

<b>Intensity Designation</b>	<b>Guiding Definition (Defined in Detail for each Resource)</b>
Negligible	Immeasurable or undetectable change from baseline conditions and/or minute spatial extent
Low	Minor but measurable change from baseline conditions and/or affects a small area within or near the Project Footprint
Medium	Noticeable and readily measurable change from baseline conditions and/or affects a larger area beyond the Project Footprint
High	Substantial change from baseline conditions and/or extends over a larger regional area and may cross international boundaries



**Table A.1-2: Definitions for Duration Designations**

Duration Designation	Definition
Short-term	Instantaneous to less than a week in aggregate
Medium-term	More than a week but less than a year in aggregate
Long-term	More than 1 year in aggregate

**Table A.1-3: Definitions for Frequency Designations**

Frequency Designation	Definition
Episodic	Occurring occasionally and at irregular intervals
Continuous	Occurring more than occasionally or at regular intervals

To establish a consistent basis for assigning magnitude ratings based on the various impact characteristics (i.e., intensity, frequency, and duration), each of the possible combinations of characteristic designations are assigned a magnitude rating. Figure A.1-1 lists the various combinations of impact characteristics and the corresponding magnitude ratings that are assigned for each combination.

**Figure A.1-1: Impact Characteristics and Magnitude Ratings**

Intensity	Frequency	Duration	Overall Magnitude Rating
Negligible	Episodic	Short-term Medium-term	Negligible
Low	Episodic	Short-term	Negligible
		Medium-term	Small
Medium	Episodic	Short-term	Negligible
		Medium-term	Small
High	Episodic	Short-term	Negligible
		Medium-term	Small
Negligible	Episodic	Long-term	Negligible
Low	Episodic	Long-term	Small
Medium	Episodic	Long-term	Small
High	Episodic	Long-term	Medium
Negligible	Continuous	Short-term Medium-term	Negligible
Low	Continuous	Short-term	Small
		Medium-term	Small
Medium	Continuous	Short-term	Small
		Medium-term	Medium
High	Continuous	Short-term	Medium

Intensity	Frequency	Duration	Overall Magnitude Rating
		Medium-term	Medium
Negligible	Continuous	Long-term	Negligible
Low	Continuous	Long-term	Small
Medium	Continuous	Long-term	Medium
High	Continuous	Long-term	Large

### A1.1.2. Predicting Sensitivity

Multiple factors are taken into account when defining the sensitivity of a resource. Not all resources can be assessed according to the same criteria, so the sensitivity ratings for specific resources may be determined differently according to the resource (or the type of impact) being assessed. For physical resources (e.g., air quality), the resource’s sensitivity to change (sometimes assessed factoring in the sensitivities of other resources that make use of the physical resource) is typically considered. For biological or cultural resources (e.g., a forested area), the importance (e.g., local, regional, national, or international importance) of the resource or the vulnerability of the resource to the specific type of impact is typically considered. For social resources, the vulnerability of the potentially impacted individual, community, or wider societal group to changes in the resource is generally considered. Other factors may also be considered when characterizing sensitivity, such as legal protection, government policy, stakeholder views, and economic value. The specific criteria used to assign sensitivity ratings will therefore be discussed in the resource-specific sections.

While the approach for designating sensitivity ratings varies on a resource-by-resource basis, the following sensitivity designations are consistently used for all resources:

- Low
- Medium
- High

### A1.1.3. Resource-specific Significance Ratings

The process of impact evaluation considers predicted impacts with the potential to occur due to planned activities of the Project, and impacts that could potentially occur due to unplanned events (e.g., hazardous materials spills), but would not otherwise be expected to occur as a result of planned Project activities.

For potential impacts associated with planned activities of the Project, the significance of each potential impact is assigned based on evaluation of the magnitude of the impact and the sensitivity of the resource. The same significance ratings are used across all resources (i.e., **Negligible, Minor, Moderate, Major**) but significance rating definitions specific to each resource are used as the basis for assigning these ratings.

---

The impact significance component of risks from potential unplanned events that occur as a result of the Project (e.g., hazardous material spills, traffic accidents, or other events with a less-than-certain chance of occurrence) are assessed using the same significance criteria as for potential impacts from planned Project activities. In other words, the significance ratings relate to the potential impact of the unplanned event on the given resource should that unplanned event occur.

The matrix depicted on Figure A.1-2 is used for assigning impact significance ratings. The assignment of a significance rating enables decision-makers and stakeholders to understand and prioritize key potential Project impacts and consider what mitigation measures may be warranted.

The evaluation of impact significance is initially conducted assuming implementation of embedded controls that are factored into the Project design but excluding consideration of any additional mitigation measures. For this reason, the initial impact significance rating is referred to as a “pre-mitigation” significance rating.

For unplanned events, a risk rating (rather than an impact significance rating) is the ultimate outcome of the ESIA process. The risk rating considers the potential impact significance if the unplanned event were to occur and the likelihood of the unplanned event occurring. The “pre-mitigation” impact significance component of this risk rating is developed in a manner consistent with the above approach for assessing the significance of potential impacts from planned activities.

**Figure A.1-2: Impact Significance Rating Matrix**

		Sensitivity of Resource		
		Low	Medium	High
Magnitude of Impact	Negligible	Negligible	Negligible	Negligible
	Small	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Major
	Large	Moderate	Major	Major

### A1.1.4. Unplanned Event Risk Ratings

The pre-mitigation risk rating is assigned based on consideration of the pre-mitigation impact significance rating (assuming the unplanned event occurs) and the likelihood of the unplanned event occurring. Likelihood reflects the probability of occurrence of the unplanned event and is defined as follows:

- Unlikely—considered a rare event; there is a small likelihood that such an event would occur during the Project life cycle;
- Possible—the event has a reasonable chance to occur at some time during normal operations of the Project; and
- Likely—the event is expected to occur at some point during the Project life cycle.

Likelihood is estimated on the basis of experience and/or evidence that such an outcome has previously occurred. Likelihood is a measure of the degree to which the unplanned event is expected to occur, not the degree to which an impact is expected to occur as a result of the unplanned event occurring. The latter concept is referred to as uncertainty, and this is typically dealt with in a contextual discussion in the ESIA, rather than in the risk rating process.

Once impact significance and unplanned event likelihood are determined for a given risk to a resource from an unplanned event, the following risk matrix (Figure A.1-3) is used to rate the risk to resources associated with unplanned events.

**Figure A.1-3: Risk Rating Matrix for Unplanned Events**

		Impact Significance (if Unplanned Event Were to Occur)			
		Negligible	Minor	Moderate	Major
Unplanned Event Likelihood	Unlikely	Negligible	Minor	Minor	Moderate
	Possible	Negligible	Minor	Moderate	Major
	Likely	Negligible	Moderate	Major	Major

### A1.1.5. Recommendation of Mitigation Measures

The next step in the process is the identification of measures that can be taken to mitigate, as far as reasonably practicable, the identified potential impacts of the Project. A mitigation hierarchy is used, where the preference is always to avoid the impact before considering other types of mitigation. The following is the preferred hierarchy of measures followed in the ESIA:

- Avoid—remove the source of the impact by employing alternative designs or operations to avoid potential adverse interactions with resources;
  - Reduce—lessen the chance of adverse interaction between the Project and resources and/or lessen the consequence of adverse interactions that cannot be avoided (e.g., reduce the size of the Project Footprint); and
-

- Remedy—if adverse interactions between the Project and resources cannot be avoided or their consequences reduced, then repair the consequences of the impact after it has occurred through rehabilitation, reclamation, restoration, compensation, and/or other measures.

Mitigation measures are developed, where appropriate, to address potential impacts and risks identified in the ESHIA process. Mitigation measures are generally not developed for potential adverse impacts that are assessed as having a significance or risk rating of **Negligible**.

### **A1.1.6. Evaluation of Residual Impact Significance and Unplanned Event Risk**

The final step in the impact evaluation process for the ESIA is the assessment of significance and risk for what are termed residual impacts/risks. Residual impacts/risks are those impacts/risks predicted to remain after embedded controls and mitigation measures have been implemented. This typically involves repeating the process described above to re-evaluate the potential impact significance or risk rating, considering the implementation of proposed mitigation measures.

In cases where the residual impact significance or risk rating is **Moderate** or **Major**, the emphasis is on reducing the significance/risk to a level that is as low as reasonably practicable. This does not necessarily mean, for example, that all residual impacts/risks with a significance of **Moderate** or higher have to be reduced to **Minor**, but rather that these impacts/risks are being managed as effectively and efficiently as practicable.

Although a standard goal of an ESIA is to eliminate residual impacts/risks of a **Major** significance, for some resources, there may be residual impacts/risks rated as **Major** even after all practicable mitigation options have been exhausted. In these situations, decision-makers must weigh potential negative factors against positive ones in reaching a decision on the Project.

In the case of unplanned events, the residual risk rating reflects the risks remaining after consideration of embedded controls and mitigation measures. Changes from “pre-mitigation” to residual risk ratings may occur as a result of reduced impact significance if the unplanned event were to occur or as a result of reduced likelihood of the event occurring, or both.

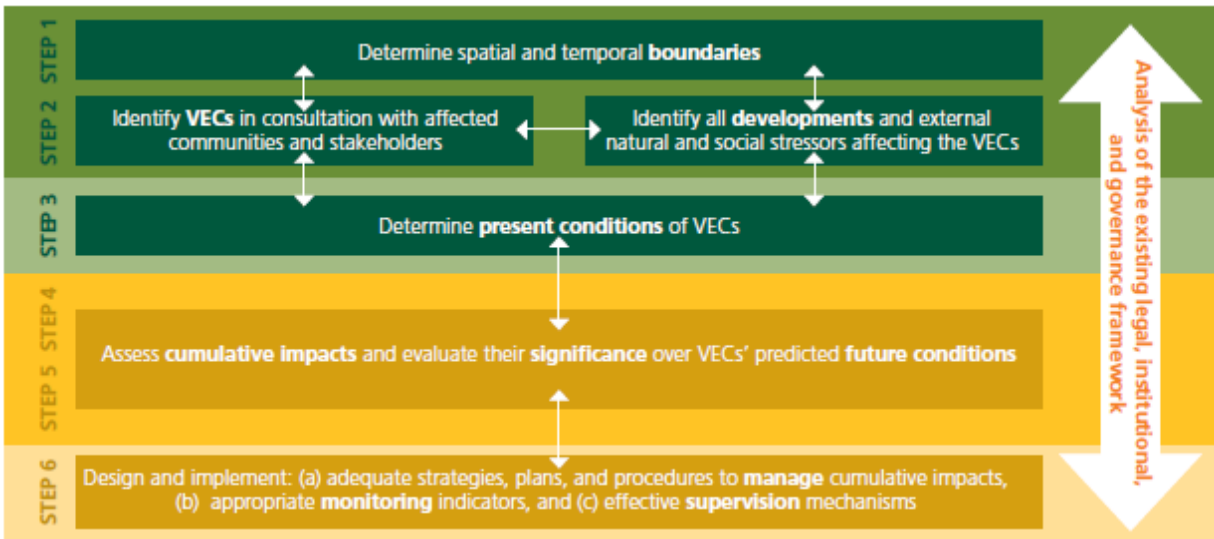
## **A1.2. EVALUATING CUMULATIVE IMPACTS**

The ESIA assesses cumulative impacts using an approach that follows the International Finance Corporation’s Good Practice Handbook: Cumulative Impact Assessment and Management: Guidance for Private Sector in Emerging Markets (“the Handbook”) (IFC 2013). This methodology focuses on environmental and social resources that are considered as important by stakeholders, referred to in the Handbook as Valued Environmental Components (VECs), which are: (1) rated as “highly valued/sensitive” by Project-Affected Communities and/or the scientific community; and (2) cumulatively impacted by the Project under evaluation, by other projects, and/or by natural environmental and social external drivers (IFC 2013).

---

The assessment of cumulative impacts in the ESIA considers the interactions between potential impacts from the Project and potential impacts from non-Project activities. The cumulative impact assessment considers relevant past, existing, or approved/planned activities that are considered reasonably foreseeable, existing conditions discussed in the ESIA, information available in the public domain, and information gathered during the stakeholder consultation process. Figure A.1-4 summarizes the key steps in the cumulative impact assessment process.

**Figure A.1-4: Cumulative Impact Assessment Process**



Source: IFC 2013



**APPENDIX B    PRELIMINARY TABLE OF CONTENTS FOR THE  
ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT**

**Table B-1: Preliminary Table of Contents for Environmental and Social Impact Assessment Report**

Section Number	Contents Heading	Contents
Non-Technical Summary / Executive Summary	-	Summary of entire ESIA Report.
1	Introduction and Overview of the Project	This section will outline the Project background, describe the previous mining history and existing mining rights at the KMM site, introduce the Project proponent (Albemarle), describe the purpose of the ESIA Report, and lay out the structure of the ESIA Report.
2	ESIA Process	This section will describe the ESIA process. It will cover the Scoping process, the process for reviewing and consideration of specialist studies, and the approach for assessing potential Project impacts and risks. This section will describe how desktop research and public participation were integrated into the Scoping Report. The section will discuss specialist study phases, including fieldwork analyses conducted and/or evaluated by ERM. The section will then include a description of approaches used to integrate scoping and specialist studies into the ESIA. Finally, this section will detail approaches to public participation following the public release of the draft ESIA.
3	Legal, Regulatory, and Policy Framework	This section will describe policy, legal, and institutional frameworks within which the ESIA has been conducted. The IRMA Standard and Albemarle's corporate policies will also be discussed.
4	Areas of Influence	This section will describe the geographic areas in which the Project's potential impacts are expected to extend. This section will include final descriptions of the EAoI and SAoI.
5	Project Description	This section will provide a description of the Project components, including the location, need, and benefits of the Project, and a review of the Project phases. This section will also describe the Project schedule and workforce expectations. Additionally, the sections will summarize anticipated Project emissions, discharges, and waste generation, as well as Project water, power, and fuel use demands.
6	Key Project Alternatives Considered	This section will detail alternatives considered in the design of the Project, including alternatives for waste and resources management. The section will detail the approach for considering alternatives, as well as the changes to Project design and Project waste generation and resource use. This section will conclude with a description of the process used to select preferred Project alternatives, including analyses of location, layout, and technology alternatives, as well as the "no action" alternative.
7	Stakeholder Consultation and Engagement	This section will detail the objectives, methods, and results of the Project stakeholder engagement process. After introducing the purpose and intended outcomes of stakeholder engagement, this section will include the

Section Number	Contents Heading	Contents
		methods and results of the stakeholder engagement process, including stakeholder mapping, recognizing communities of interest, and identifying key stakeholders and potentially Vulnerable Groups. This section will also include a discussion of the IRMA Standard for stakeholder engagement, including baseline and impact assessments, a review of key considerations for future engagement activities, and engagement plans during the ESIA disclosure process.
8	Impact Assessment and Methodology	This section will present the methodology for impact and risk assessment, including identifying and characterizing potential impacts and risks, determining impact magnitude, determining receptor sensitivity, and unplanned event likelihood, and for assessing the impact significance and unplanned event risk. The section will also describe the approach for assessing cumulative impacts.
9	Physical Baseline	This section will summarize the baseline conditions of the physical environment within the Project's EAol. Information for the physical baseline will come from fieldwork and desktop review.
10	Biological Baseline	This section will summarize the baseline conditions of the biological environment within the Project's EAol. Information for the biological baseline will come from fieldwork and desktop review.
11	Social Baseline	This section will summarize the baseline conditions of the social environment within the Project's SAol. Information for the social baseline will come from fieldwork, interviews, and desktop review including review of U.S. Census, EJ Screen, and regional data reports.
12	Assessment of Potential Impacts and Risks	This section will provide an assessment of potential impacts from planned Project activities and risks from unplanned events. Based on the results of the assessments, the section will outline recommended mitigation measures and will provide residual impact significance and unplanned event risk ratings, considering the implementation of these mitigation measures.
13	Assessment of Cumulative Impacts	This section will identify and assess the contribution of the Project, in combination with other projects, to cumulative impacts in the Aol. The specific objectives are to: identify VECs, as defined by stakeholders, that could be impacted by the Project; identify other existing and planned projects and external environmental and social drivers that could impact these same VECs; undertake a high-level assessment of these potential cumulative impacts on VECs, considering the Project and the other identified existing and planned projects and external drivers in the area; and recommend a management framework for the integrated management of potential cumulative impacts.
14	ESHS Management System Framework	The section focus will be on management and mitigation of risks throughout the Project life cycle. It will discuss the ESHS Management System Framework, which will manage

Section Number	Contents Heading	Contents
		<p>impacts and risks identified in the ESIA. It will describe the purpose and objectives of the ESHS Management System, the relationship between the ESMP and the ESHS Management System Framework and present the Project ESMP, which is based on potential and cumulative impacts. The ESMP is a delivery mechanism for mitigation measures and commitments made in the ESIA. The ESMP will draw together the possible mitigation measures; group them logically into components with common themes; define the specific actions required and timetable for implementation; identify training needs, institutional roles, and responsibilities for implementation; and develop a monitoring program and estimate the costs of the measures. The ESMP will also identify roles and responsibilities for the Project proponent and the engineering, procurement, and construction contractors. The ESMP will also recommend other stand-alone plans that will need to be developed by the Project proponent.</p>
15	Summary and Conclusions	<p>This section will summarize the ESIA and identify conclusions from the analysis.</p>
16	References	<p>This section will list all sources used to conduct the ESIA.</p>
Technical Appendices		<p>The technical appendices will comprise the data summaries and technical reports developed as part of, and/or considered by the ESIA process.</p>

Albemarle = Albemarle U.S., Inc.; EAoI = Environmental Area of Influence; EJ = environmental justice; ERM = ERM NC, Inc.; ESA = Endangered Species Act; ESHS = Environmental, Social, Health, and Safety; ESIA = Environmental and Social Impact Assessment; ESMP = Environmental and Social Management Plan; IRMA = Initiative for Responsible Mining Assurance; Mine = Kings Mountain Lithium Mine; Project = Kings Mountain Lithium Mine Project; SAoI = Social Area of Influence; VEC = valued environmental component

## **APPENDIX C    REFERENCES**

## REFERENCES

- AASHTO (American Association of State Highway and Transportation Officials). 1993. "Traffic Noise and Transportation." Center for Environmental Excellence by AASHTO (the American Association of State Highway and Transportation Officials). Accessed: April 2024. Retrieved from: <https://environment.transportation.org/education/environmental-topics/traffic-noise/traffic-noise-overview/>
- AECOM. 2022. *Water Supply Survey and Well Construction Information*. June 17.
- Albemarle (Albemarle Corporation). 2023. *Committed to Building a More Resilient World*. Accessed: December 2023. Retrieved from: <https://www.deq.nc.gov/energy-mineral-and-land-resources/land-quality/mining/mining-commission-minutes/mining-commission-albemarle-presentation-81523/download?attachment>
- ANSI (American National Standards Institute). 2013. S12.9-2013/Part 3 – Quantities and Procedures for Description and Measurement of Environmental Sound – Part 3: Short-term Measurements with an Observer Present. Accessed: April 2024. Retrieved from: <https://webstore.ansi.org/standards/asa/ansiasas122013part-1452563>.
- Catawba (Catawba Indian Nation). 2022. "About The Nation." Accessed: December 2023. Retrieved from: <https://www.catawba.com/about-the-nation>
- City of Kings Mountain. Undated-a. "A Rich History." Accessed: September 2022. Retrieved from: <https://www.cityofkm.com/246/A-Rich-History>
- City of Kings Mountain. Undated-b. "Kings Mountain Fire Department." Accessed: December 2023. Retrieved from: <https://www.cityofkm.com/179/Fire>
- City of Kings Mountain. Undated-c. "Moss Lake." Accessed: 2022. Retrieved from: <https://www.cityofkm.com/189/Moss-Lake>
- City of Kings Mountain. Undated-d. "Water Resources." Accessed: August 2022. Retrieved from: <https://www.cityofkm.com/224/Water-Department#:~:text=The%20City%20of%20Kings%20Mountain,Plant%20located%20at%20Moss%20Lake>
- City of Kings Mountain. 2018. *City of Kings Mountain Economic Development Strategic Plan*. Sponsored by Electricities of N.C., Inc. Prepared by Creative Economic Development Consulting, LLC. Accessed: December 2023. Retrieved from: <https://www.electricities.com/wp-content/uploads/2019/07/Kings-Mountain-Strategic-Plan-FINAL.pdf>
- Cleveland County North Carolina. Undated. "Landmarks and Historical Places." Accessed: December 2023. Retrieved from: [https://www.clevelandcounty.com/main/government/historic\\_buildings.php](https://www.clevelandcounty.com/main/government/historic_buildings.php)
-



- Cooper, R. 2018. *Executive Order No. 80, North Carolina's Commitment to Address Climate Change and Transition to a Clean Energy Economy*. State of North Carolina. October 29. Accessed: December 2023. Retrieved from: <https://governor.nc.gov/documents/files/executive-order-no-80-north-carolinas-commitment-address-climate-change-and-transition-clean-energy/open>
- County Health Rankings & Roadmaps. 2022a. "Gaston, North Carolina." County Health Rankings & Roadmaps. Accessed: December 2023. Retrieved from: <https://www.countyhealthrankings.org/app/north-carolina/2022/rankings/gaston/county/outcomes/overall/snapshot>
- County Health Rankings & Roadmaps. 2022b. *2022 State Report, North Carolina*. Accessed: December 2023. Retrieved from: [https://www.countyhealthrankings.org/sites/default/files/media/document/CHR2022\\_NC\\_0.pdf](https://www.countyhealthrankings.org/sites/default/files/media/document/CHR2022_NC_0.pdf)
- eBird. Undated. "eBird." An online database of bird distribution and abundance [web application]. eBird, Cornell Lab of Ornithology, Ithaca, New York. Accessed: December 2023. Retrieved from: <http://www.ebird.org>
- ERM. 2022. ERM Fieldwork. (ERM, Interviewer).
- European Commission. 2013. "EU air quality standards." Retrieved from: [https://environment.ec.europa.eu/topics/air/air-quality/eu-air-quality-standards\\_en](https://environment.ec.europa.eu/topics/air/air-quality/eu-air-quality-standards_en)
- European Commission. Undated. "Air." European Union Air Quality Standards. July. Accessed: December 2023. Retrieved from: [https://environment.ec.europa.eu/topics/air\\_en](https://environment.ec.europa.eu/topics/air_en)
- FEMA (Federal Emergency Management Agency). 2021. *FEMA National Flood Hazard Layer*. Federal Emergency Management Agency (FEMA). Accessed: December 2023. Retrieved from: <https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd&extent=-81.3958083496109,35.21347076493266,-81.31272424316342,35.24852542970284>
- General Assembly of North Carolina. 1979. Chapter 964 Senate Bill 717. NC Legislation. Accessed: December 2023. Retrieved from: <https://www.ncleg.net/enactedlegislation/sessionlaws/html/1979-1980/sl1979-964.html>
- General Assembly of North Carolina. 1987. Chapter 382 House Bill 664. North Carolina Legislation. Accessed: December 2023. Retrieved from: <https://www.ncleg.gov/EnactedLegislation/SessionLaws/PDF/1987-1988/SL1987-382.pdf>
- George, D. 2021. "Work begins on new building at Cleveland Community College." January 20, 2021. *The Star*. Accessed: April 2024. Retrieved from: <https://www.shelbystar.com/story/news/2021/01/20/work-begins-new-building-cleveland-community-college/4211630001/>
-

- Google Earth Pro. 2022. Accessed: December 2023. Retrieved from:  
<https://www.google.com/earth/versions/>
- Griffith, G., J. Omernik, and J. Comstock. 2002. *Ecoregions of South Carolina, Regional Descriptions*. July 31. Accessed: December 2023. Retrieved from:  
<https://www.nrc.gov/docs/ML1127/ML112710639.pdf>
- IFC (International Finance Corporation). 2007a. *Environmental, Health, and Safety Guidelines, General EHS Guidelines: Environmental, Air Emissions and Ambient Air Quality*. International Finance Corporation, World Bank Group. April 30. Accessed: December 2023. Retrieved from: <https://www.ifc.org/content/dam/ifc/doc/2000/2007-general-ehs-guidelines-air-emissions-and-ambient-air-quality-en.pdf>
- IFC. 2013. *Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets*. Accessed: Retrieved from:  
<https://www.ifc.org/content/dam/ifc/doc/mgrt/ifc-goodpracticehandbook-cumulativeimpactassessment.pdf>
- IRMA (Initiative for Responsible Mining Assurance). 2018. *IRMA Standard for Responsible Mining. IRMA-STD-001*. June 2018. Accessed: December 2023. Retrieved from:  
[https://responsiblemining.net/wp-content/uploads/2018/07/IRMA\\_STANDARD\\_v.1.0\\_FINAL\\_2018-1.pdf](https://responsiblemining.net/wp-content/uploads/2018/07/IRMA_STANDARD_v.1.0_FINAL_2018-1.pdf)
- IRMA. 2020. IRMA Standard for Responsible Mining-Guidance Document. Initiative for Responsible Mining Assurance. Accessed: December 2023. Retrieved from: [IRMA a Tool for U.S. Mining Law Reform Examples of Gaps in U.S. Framework Draft 26August2022 \(responsiblemining.net\)](https://responsiblemining.net/wp-content/uploads/2020/08/IRMA-Standard-for-Responsible-Mining-Guidance-Draft-26August2022.pdf)
- IUCN (International Union for Conservation of Nature). Undated. “International Union for Conservation of Nature (IUCN).” Accessed: 2022. Retrieved from Red List of Threatened Species: <https://www.iucnredlist.org/>
- Kings Mountain North Carolina. 2022. *Living Elevated: The Kings Mountain Comprehensive Plan*. Retrieved from: [Comprehensive Plan 2040 | Kings Mountain, NC \(cityofkm.com\)](https://www.cityofkm.com/comprehensive-plan-2040)
- LeGrand, H., L. Gatens, E. Corey, and T. Howard. Undated. “Mammals of North Carolina: Distribution and Abundance.” North Carolina Biodiversity Project and North Carolina State Parks. Accessed: 2022. Retrieved from:  
<https://auth1.dpr.ncparks.gov/mammals/accounts.php>
- Native Land. 2023. “Native Land.” Accessed: December 2023. Retrieved from: <https://native-land.ca/>
- NCDENR (North Carolina Department of Environment and Natural Resources). 2023. “North Carolina Regional Historic Earthquake Events: 1874 – Present.” North Carolina Department of Environment and Natural Resources. Accessed: December 2023. Retrieved from:  
<https://ncdenr.maps.arcgis.com/apps/dashboards/8e85c4cbca9e4e738b95be875fd2feae>
-

- NCDEQ (North Carolina Department of Environmental Quality). 2010. *Methodology for Identification of Intermittent and Perennial Streams and their Origins*. Raleigh, NC: North Carolina Department of Environment and Natural Resources, Division of Water Quality.
- NCDEQ. 2022a. *North Carolina Greenhouse Gas Inventory (1990-2030)*. January 2022. North Carolina Department of Environmental Quality. Accessed: December 2023. Retrieved from: <https://www.deq.nc.gov/air-quality/ghg-inventory-report-2022/download?attachment>
- NCDEQ. 2022b. "Attainment Status of National Ambient Air Quality Standards." North Carolina Department of Environmental Quality." Updated August 2022. Accessed: December 2023. Retrieved from: <https://www.deq.nc.gov/about/divisions/air-quality/air-quality-planning/attainment-status-national-ambient-air-quality-standards#:~:text=North%20Carolina%20Attainment%20Status,attainment%20with%20all%20federal%20NAAQS>
- NCDEQ. 2022c. *Environmental Justice Report, Biogas Digester General Permit Development*. June 30, 2022. Accessed: December 2023. Retrieved from: <https://www.deq.nc.gov/water-resources/animalops/biogas-general-permit-environmental-justice-report-6-2022/open>
- NCDOA (North Carolina Department of the Administration). 2023. NC Commission of Indian Affairs. North Carolina Department of the Administration. Retrieved from: <https://www.doa.nc.gov/boards-commissions/commission-indian-affairs>
- NCDOT (North Carolina Department of Transportation) 2024, Traffic Safety Data and Engineering. Accessed March 2024. Retrieved from: <https://www.ncdot.gov/initiatives-policies/safety/traffic-safety/Pages/default.aspx>
- NCNHP (North Carolina Natural Heritage Program). 2022a. *Natural Heritage Element Occurrences, Natural Areas, and Managed Areas Within a One mile Radius of the Project Area, Albemarle Main Boundary, Project No. 00070316-000-RDU*. North Carolina Natural Heritage Program.
- NCNHP. 2022b. Species/Community Search. Cleveland County. August. Accessed: December 2023. Retrieved from: <https://www.ncnhp.org/data/speciescommunity-search>
- NCNHP. 2023a. *Natural Heritage Element Occurrences, Natural Areas, and Managed Areas within a 1-mile Radius of the Project Area, Albemarle Kings Mountain Archdale Site, NCNHDE-23849*. November 1, 2023.
- NCNHP. 2023b. Species/Community Search. Cleveland County. Accessed: April 2024. Retrieved from: <https://www.ncnhp.org/>
- NC Rural Center. Undated. "North Carolina Rural Center." Accessed: 2022. Accessed: December 2023. Retrieved from: <https://www.ncruralcenter.org/about-us/>
-

- NCWRC (North Carolina Wildlife Resources Commission). Undated. "Species." North Carolina Species. North Carolina Wildlife Resources Commission. Accessed: August 2022. Retrieved from: <https://www.ncwildlife.org/Learning/Species>
- NPS (National Park Service, U.S. Department of the Interior). 2012. *Natural Resource Condition Assessment for Kings Mountain National Military Park*. Natural Resource Report NPS/KIMO/NRR—2012/522. U.S. Department of the Interior, National Park Service, Natural Resource Stewardship and Science, Fort Collins, Colorado. Accessed: April 2024. Retrieved from: <http://npshistory.com/publications/kimo/nrr-2012-522.pdf>
- SCIWAY (South Carolina Information Highway). 2023. *Yemassee Indians – Native Americans in SC*. Accessed: April 2024. Retrieved from: <https://www.sciway.net/hist/indians/yemassee.html>
- SRK 2023. *Draft Technical Report Prefeasibility Study Hydrogeologic Characterization Kings Mountain Mining Project*. SRK Consulting (U.S.), Inc.
- SRK. 2024b. *Hydrogeological Assessment Study for Archdale Tailings Facility, Kings Mountain Mining Project Prefeasibility Study*. SRK Consulting (U.S.), Inc.
- SRK 2024c. *Kings Mountain Groundwater Quality, Technical Memo*. SRK Consulting (U.S.), Inc.
- SKR 2022. *Prefeasibility Study Baseline Geochemistry Characterization Kings Mountain Mining Project, Rev02*. SRK Consulting (U.S.), Inc.
- SWCA (SWCA Environmental Consultants). 2022a. *Monarch Butterfly Habitat Assessment for the Kings Mountain Lithium Mine*. Cleveland County, North Carolina: SWCA Environmental Consultants.
- SWCA. 2022b. *Aquatic Habitat Assessment Report for the Kings Mountain Lithium Mine*. Cleveland County, North Carolina: SWCA Environmental Consultants.
- SWCA. 2022c. *Federally and State-Listed Species Report for the Kings Mountain Lithium Mine*. Cleveland County, North Carolina: SWCA Environmental Consultants.
- SWCA. 2022d. *Bat Survey Report for the Albemarle Kings Mountain Lithium Mining Project*. Cleveland County, North Carolina. SWCA Environmental Consultants.
- SWCA. 2023a. *Albemarle Kings Mountain Facility Quarterly Air Quality Monitoring Fourth Quarter 2022*. February.
- SWCA. 2023b. *First Quarter 2023 Noise Survey for the Kings Mountain Lithium Mine, Cleveland County, North Carolina*. May.
- SWCA. 2023c. *Baseline Soil Sampling and Analysis for the Albemarle Kings Mountain Lithium Mining Project Cleveland County, North Carolina*. April.
- SWCA. 2023d. *Wetland and Waterbody Delineation Report for the Albemarle Kings Mountain Lithium Mining Project*. Cleveland County, North Carolina: SWCA Environmental Consultants (SWCA).
-

- SWCA. 2023e. *Preliminary DRAFT Brownfields Investigation Sampling for the Albemarle Kings Mountain Lithium Project, North Carolina*. May.
- SWCA. 2023f. *Phase I Archaeological Survey and Geoarchaeological Investigation for the Proposed Kings Mountain Mining Project, Cleveland County, North Carolina*. SWCA Environmental Consultants, Inc.
- Tippett, R. 2022. "NC's fastest growing municipalities in Triangle and Brunswick." May 27, 2022. *The University of North Carolina (UNC) at Chapel Hill*. Accessed: April 2024. Retrieved from: <https://www.ncdemography.org/2022/05/27/ncs-fastest-growing-municipalities-in-triangle-and-brunswick/>
- U.S. Census Bureau. 1997. *Census Blocks and Block Groups*. United States Census Bureau. Accessed: December 2023. Retrieved from: <https://www2.census.gov/geo/pdfs/reference/GARM/Ch11GARM.pdf>
- U.S. Census Bureau. 2014. *Census Tracts*. United States Census Bureau. Accessed: December 2023. Retrieved from: <https://www2.census.gov/geo/pdfs/education/CensusTracts.pdf>
- U.S. Census Bureau. 2020a. "DP03: Selected Economic Characteristics." United States Census Bureau. Accessed: December 2023. Retrieved from: <https://data.census.gov/table?q=DP03+2020>
- U.S. Census Bureau. 2020b. "S1902: Mean Income in the Past 12 Months." United States Census Bureau. Accessed: December 2023. Retrieved from: <https://data.census.gov/table?q=S1902&tid=ACSST5Y2020.S1902>
- U.S. Census Bureau. 2021a. "QuickFacts Kings Mountain." United States Census Bureau. Accessed: August 2022. Retrieved from: <https://www.census.gov/quickfacts/kingsmountaincitynorthcarolina>
- U.S. Census Bureau. 2021b. "S0101: Age and Sex." United States Census Bureau. Accessed: December 2023. Retrieved from: <https://data.census.gov/table?q=0500000US47163&tid=ACSST1Y2021.S0101>
- U.S. Census Bureau. 2021c. "B03002: Hispanic or Latino Origin by Race." United States Census Bureau. Accessed: December 2023. Retrieved from: <https://data.census.gov/table?q=b03002>
- U.S. Census Bureau. 2021d. "B16004: Population 5 Years and Over." United States Census Bureau. Accessed: December 2023. Retrieved from: <https://data.census.gov/table?q=b16004&q>
- U.S. Census Bureau. 2021e. "DP03: Selected Economic Characteristics." United States Census Bureau. Accessed: December 2023. Retrieved from: <https://data.census.gov/table?q=DP03>
-

- U.S. Census Bureau. 2021f. "B17017: Poverty Status in the Past 12 Months by Household Type by Age of Householder." United States Census Bureau. Accessed: December 2023. Retrieved from: <https://data.census.gov/table?q=b17017&tid=ACSDT1Y2021.B17017>
- U.S. Census Bureau. 2022a. "Glossary." Page last revised April 11, 2022. United States Census Bureau. Accessed: December 2023. Retrieved from: [https://www.census.gov/programs-surveys/geography/about/glossary.html#par\\_textimage\\_4](https://www.census.gov/programs-surveys/geography/about/glossary.html#par_textimage_4)
- U.S. Census Bureau. 2022b. United States. Census Bureau. Accessed: 2022. Retrieved from: <https://censusreporter.org/profiles/16000US3761200-shelby-nc/>
- U.S. Census Bureau. 2023. "How the Census Bureau Measures Poverty." Page last revised June 15, 2023. United States Census Bureau. Accessed: December 2023. Retrieved from: <https://www.census.gov/topics/income-poverty/poverty/guidance/poverty-measures.html>
- U.S. News. Undated. "High Schools in Cleveland County Schools District." U.S. News & World Report. Accessed: December 2023. Retrieved from: <https://www.usnews.com/education/best-high-schools/north-carolina/districts/cleveland-county-schools-107539>
- USACE (U.S. Army Corps of Engineers). 1987. *U.S. Army Corps of Engineers Wetlands Delineation Manual*. Vicksburg, Mississippi: United States Army Engineers Waterways Experiment Station Environmental Laboratory.
- USACE. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region*. Vicksburg, Mississippi: United States Army Engineer Research and Development Center.
- USDA (U.S. Department of Agriculture). Undated. *Soil Data Access (SDA) Prime and Other Important Farmlands*. Accessed: December 2023. Retrieved from: [https://efotg.sc.egov.usda.gov/references/public/LA/Prime\\_and\\_other\\_Important\\_Farmland.html](https://efotg.sc.egov.usda.gov/references/public/LA/Prime_and_other_Important_Farmland.html)
- USDA. 2015. *Prime Farmland Definition*. FOTG, Section II; Soils Information, Prime and Statewide Important Farmland. NRCS, CO. March 2015. Accessed: April 2024. Retrieved from: [https://efotg.sc.egov.usda.gov/references/public/CO/5a\\_Prime\\_Farmland\\_Definition.pdf](https://efotg.sc.egov.usda.gov/references/public/CO/5a_Prime_Farmland_Definition.pdf)
- USEPA (U.S. Environmental Protection Agency). 2013. *Environmental Justice-Related Terms as Defined Across the PSC Agencies*. May 13, 2013. United States Environmental Protection Agency. Accessed: December 2023. Retrieved from: <https://www.epa.gov/sites/default/files/2015-02/documents/team-ej-lexicon.pdf>
- USEPA. 2022a. *Overview of Socioeconomic Indicators in EJScreen*. Accessed: December 2023. Available online: <https://www.epa.gov/ejscreen/overview-socioeconomic-indicators-ejscreen>.
-



- USEPA. 2023. "Overview of Socioeconomic Indicators in EJScreen." Page last updated on January 30, 2023. United States Environmental Protection Agency. Accessed: December 2023. Retrieved from: <https://www.epa.gov/ejscreen/overview-socioeconomic-indicators-ejscreen>
- USFWS (U.S. Fish and Wildlife Service). Undated-a. "Listed species believed to or known to occur in Cleveland, North Carolina." Accessed: November 2023. Retrieved from: <https://ecos.fws.gov/ecp/report/species-listings-by-current-range-county?fips=37045>
- USFWS. Undated-b. Information for Planning and Consultation (IPaC) - Explore Resources. Project Area List. United States Fish and Wildlife Service. United States Fish and Wildlife Service. Accessed: February 2022. Retrieved from: <https://ipac.ecosphere.fws.gov/location/52KWJIY2SZGELBJ5RMERHQX2CE/resources>
- USFWS. 1973. "Endangered Species Act." United States Fish and Wildlife Service. Accessed: December 2023. Retrieved from: <https://www.fws.gov/law/endangered-species-act>
- USFWS. 2017. Dwarf-flowered heartleaf (*Hexastylis naniflora*). United States Fish and Wildlife Service. Accessed: April 2022. Retrieved from: <https://www.fws.gov/species/dwarfflower-heartleaf-hexastylis-naniflora>
- USFWS. 2021. *Birds of Conservation Concern*. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management. Arlington, Virginia: United States Fish and Wildlife Service.
- USGS. 2023. Species List for North American Breeding Bird Survey Route Flay. Patuxent Wildlife Research Center, North American Breeding Bird Survey. Accessed: December 2023. Retrieved from: <https://www.pwrc.usgs.gov/bbs/>
- WRI (World Resources Institute). 2008. *Ecosystem Services: A Guide for Decision Makers*. World Resources Institute. Accessed: December 2023. Retrieved from: [https://files.wri.org/d8/s3fs-public/pdf/ecosystem\\_services\\_guide\\_for\\_decisionmakers.pdf](https://files.wri.org/d8/s3fs-public/pdf/ecosystem_services_guide_for_decisionmakers.pdf)
-