1. PROJECT BACKGROUND AND PURPOSE AND NEED

1.1 Introduction

The U.S. Army Corps of Engineers Charleston District (USACE) is examining the potential impacts of the proposed Haile Gold Mine Project (proposed Project or Project), located in Lancaster County in north-central South Carolina. The proposed open-pit mining and associated ore processing facilities would produce gold for sale. Active mining would take place over an approximately 12-year period,[1] and mine closure and monitoring activities would extend for many years thereafter. Appendix A provides a detailed Project description. Haile Gold Mine, Inc. (Haile or the Applicant), a subsidiary of Romarco Minerals, Inc. (Romarco), has applied for a Department of the Army (DA) permit from the USACE to allow discharge of dredged or fill material into waters of the United States[2] pursuant to Section 404 of the Clean Water Act (CWA) during the mining process. The Project involves a federal action because the fill activities associated with gold mining in wetlands and other waters of the United States (Waters of the U.S.) require authorization through a DA permit under Section 404 of the CWA (33 U.S. Code [USC] 1344). Under Section 404, the USACE was delegated authority to issue permits for discharges of dredged or fill material into Waters of the U.S. The USACE serves as the lead agency for jurisdictional determinations[3] and permit actions, and has set forth implementing regulations in Title 33 Code of Federal Regulations (CFR) Parts 320–332.

The USACE has determined that the proposed Haile Gold Mine could significantly affect the quality of the human and natural environment, and that the DA permit decision would constitute a major federal action. Based on these determinations, this Draft Environmental Impact Statement (Draft EIS) has been prepared pursuant to (1) Section 102(2)(c) of the National Environmental Policy Act (NEPA) of 1969 (42 USC 4321 et seq.); (2) the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (40 CFR 1500-1508); (3) Section 404 of the CWA on permitting disposal sites for dredged or fill material (33 USC 1344), as amended; and (4) USACE regulations found at 33 CFR 320–332, including Appendix B, *NEPA Implementation Procedures for the Regulatory Program*.

A primary purpose of a USACE regulatory program EIS is to provide full and fair discussion of the significant environmental impacts of a proposal or project submitted by an applicant seeking a DA permit. An EIS is used to inform agency decision makers and the public of the potential environmental effects of a proposed project and alternatives to an applicant's project that might avoid or minimize adverse impacts, or enhance the quality of the human environment. An EIS is not a regulatory decision document. It is used by agency officials in conjunction with other relevant information in a permit application file, including public and agency comments presented in the Final EIS, to inform the final decision on a permit application.

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[1] The mining phase of the Project is estimated to last approximately 15 years. This includes 1 year of pre-production and construction, 12 years of active mining, and 2 years of low grade ore processing after active mining is completed.

[2] The definition of *Waters of the United States* can be found at http://water.epa.gov/lawsregs/guidance/wetlands/CWAwaters.cfm.

[3] Jurisdictional determination (JD) means a written USACE determination that a wetland and/or waterbody is subject to regulatory jurisdiction under Section 404 of the Clean Water Act (33 USC 1344) or a written determination that a waterbody is subject to regulatory jurisdiction under Section 9 or 10 of the Rivers and Harbors Act of 1899 (33 USC 401 et seq.). An approved JD precisely identifies the limits of those waters on the project site determined to be "jurisdictional."

This chapter of the EIS provides a description of the proposed Haile Gold Mine Project; the Project purpose and need; the mine development process; the scope of the EIS analysis; agency roles and responsibilities; and permits, licenses, and other approvals.

1.2 Project Location and Property

The proposed Haile Gold Mine Project site is located 3 miles northeast of the town of Kershaw in southern Lancaster County, South Carolina (Figure 1-1).

Lancaster County lies in the north-central part of the state. The Haile Gold Mine site is approximately 17 miles southeast of the city of Lancaster, the county seat, which is approximately 30 miles south of Charlotte, North Carolina. It is also approximately 50 miles northeast of Columbia, South Carolina. The approximate geographic center of the property is at 34° 34’ 46” N latitude and 80° 32’ 37” W longitude. The proposed Haile Gold Mine is located within the Carolina Slate Belt of the southeastern United States, a unique geologic feature that trends from Georgia to Virginia (Figure 1-2). The Carolina Slate Belt, covering five states, is the location of numerous known gold deposits. Gold ore occurs throughout the Carolina Slate Belt in potentially mineable concentrations (USGS 2012a). The Haile Gold Mine is located between two past gold mines—the Ridgeway Mine and the Brewer Mine (Figure 1-2).

Carolina Slate Belt

- The Carolina Slate Belt is a geologic region extending from Alabama to Virginia formed by volcanic eruption and sedimentation and which has considerable gold resources (Figure 1-2).
- Historically, the Carolina Slate Belt deposits have produced gold ore ranging from approximately 1 metric ton from small operations to well over 50 metric tons (USGS 2012a).

The Project boundary encompasses a total of 4,552 acres, of which approximately 2,612 acres[4] would be used for Project features. Proposed mining activities would focus on areas affected by past mining activities and additional land purchased by the Applicant to support proposed mining activities.

1.3 Project Background and Overview

1.3.1 History of Mining at the Haile Gold Mine Site

The Haile Gold Mine site has a long history of gold and mineral mining, starting in the 1800s and extending to 2010 (Figure 1-3). The site is currently in reclamation. Gold was first discovered in 1827 in the gravels of Ledbetter Creek (now Haile Gold Mine Creek), leading to placer mining[5] and prospecting until 1829, when lode deposits at the Haile-Bumalo pit site were found. Surface pit and underground work continued at the Haile-Bumalo site for many years. In 1837, a mill was built on the site. Gold production and pyrite-sulfur mining for gunpowder continued through the Civil War.

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[4] The area estimated for Project features does not include the area of a disturbance buffer around the design footprint of each mine component (see Table A-1 in Appendix A).

[5] *Placer mining* is the mining of loose, unconsolidated soils or sediments for minerals. This may be done by open-pit mining or by various surface excavating equipment or tunneling equipment.

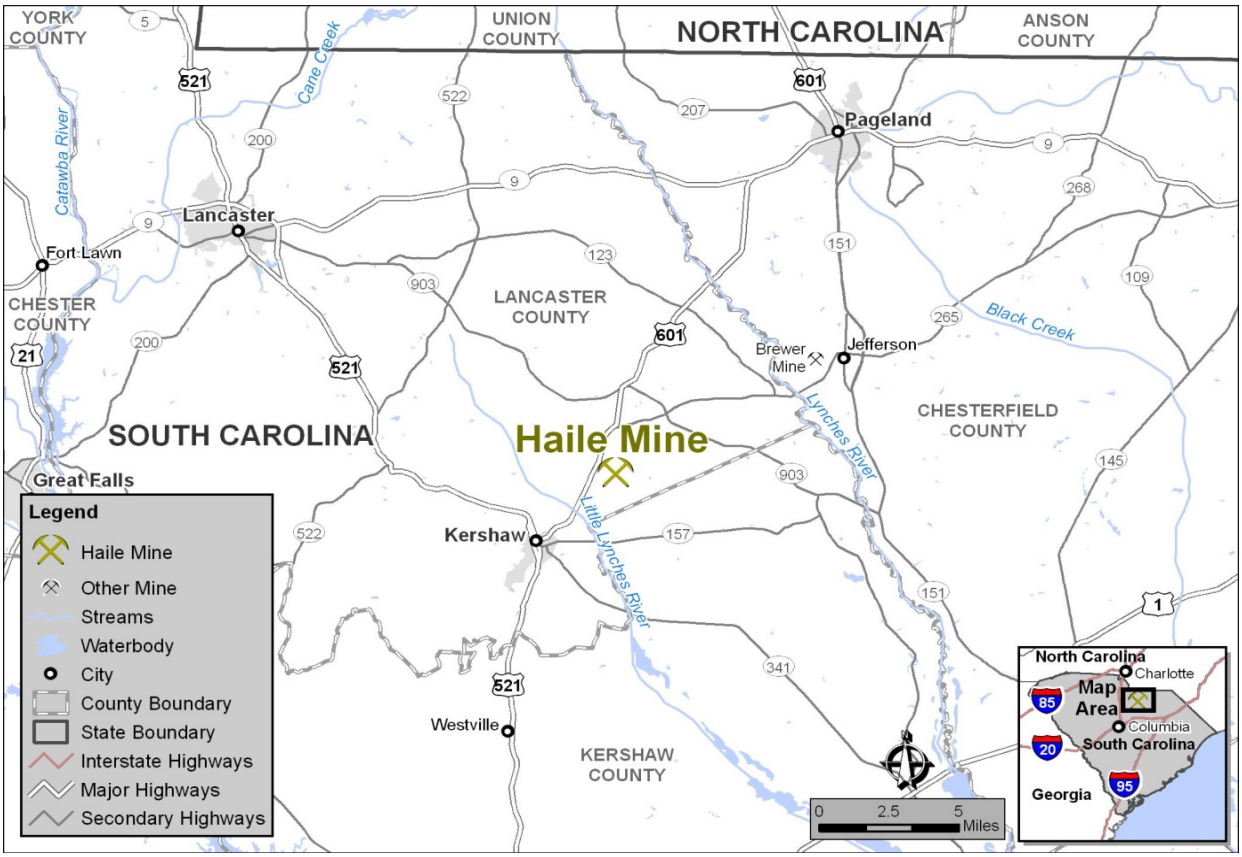
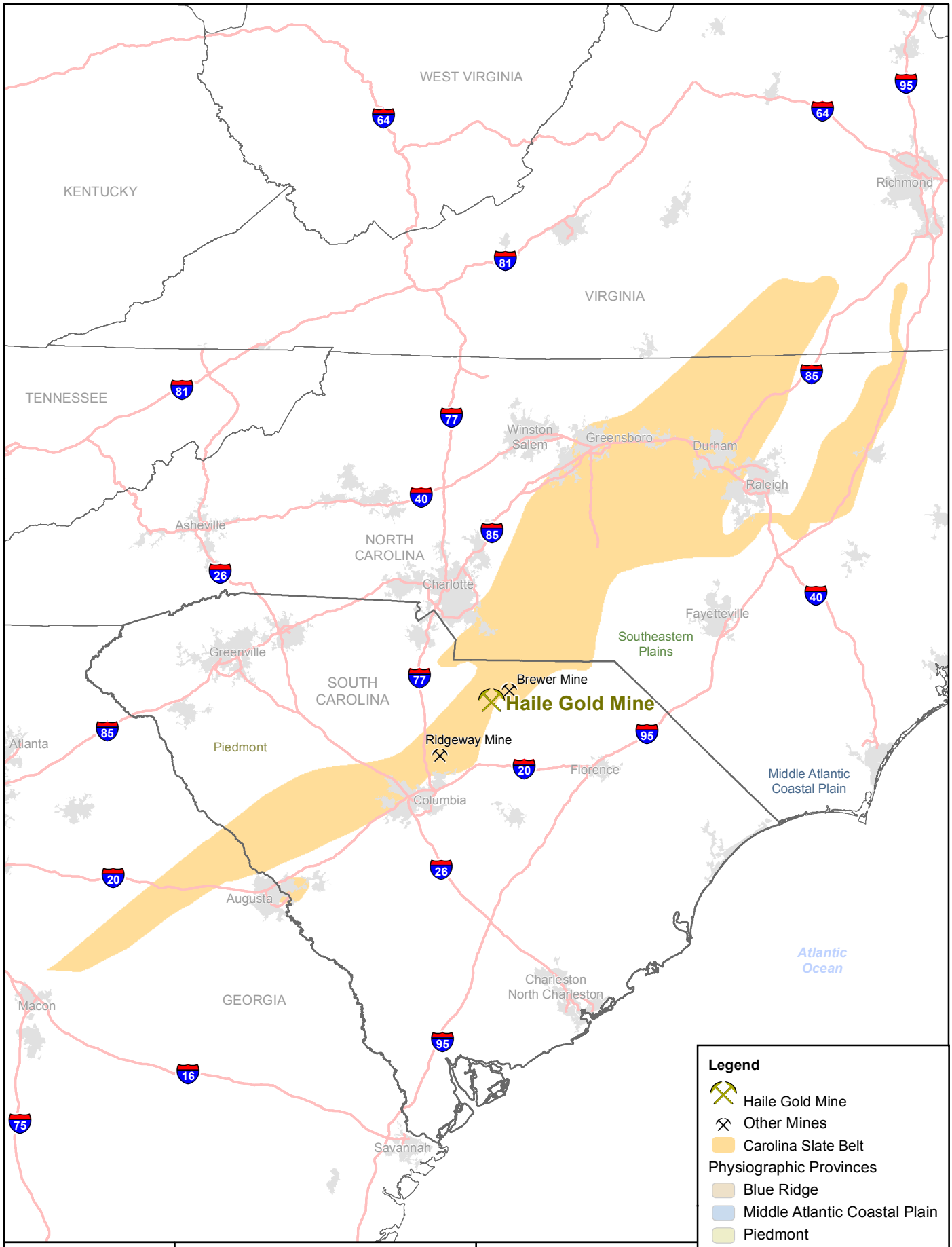


Figure 1-1 Location of the Proposed Haile Gold Mine Project

In 1882, a larger mill was constructed and operated continuously until 1908; use of a barrel chlorination extraction process on the site improved gold recovery from sulfides (Pardee and Park 1948). During this 26-year operation period, mining grew to include other areas close to or within the current Project boundary. Pyrite used to produce sulfuric acid was mined at the Haile Gold Mine site from 1914 to 1918 (Newton et al. 1940).

From mid-1937 to 1942, larger-scale mining was undertaken on the site by the Haile Gold Mine Company (not the current applicant, Haile Gold Mine, Inc.). The property then consisted of owned or leased land totaling approximately 3,300 acres, not all of which was mined (M3 Engineering & Technology Corporation 2010). Most of the main pits were mined to the 150-foot level, although some underground operations at Haile-Bumalo reached the 350-foot level (Pardee and Park 1948). This period also was significant because the Red Hill Deposit was discovered. This fairly large operation was shut down by presidential decree in 1942 because of World War II.



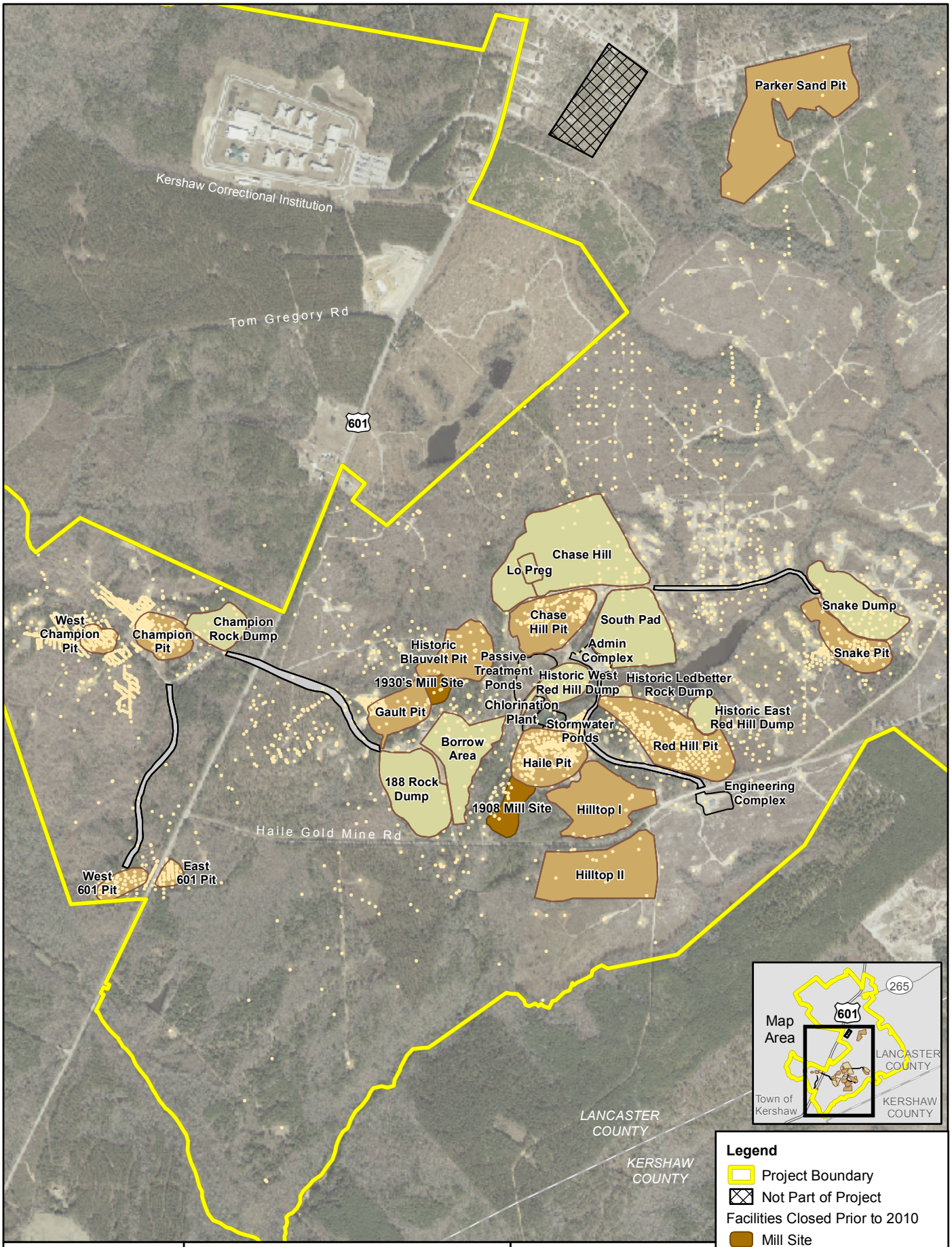
Haile Gold Mine Environmental Impact Statement
www.HaileGoldMineEIS.com

Figure 1-2

Location of Haile Gold Mine and Past Mines in the Carolina Slate Belt

0 15 30 Miles
0 20 40 Kilometers

Sources: ESRI 2008, USEPA 2011, USGS 1979.



Haile Gold Mine Environmental Impact Statement
www.HaileGoldMineEIS.com

Figure 1-3

Major Features of Prior Mining Activity at the Haile Gold Mine Site

From 1951 to 2010, the Mineral Mining Company mined Mineralite® from open pits around the Haile property. This industrial product that is a mixture of sericite, kaolinite, quartz, and feldspar is used in manufacturing insulators and paint base (M3 Engineering & Technology Corporation 2010).

In 1966, Earl M. Jones conducted exploration work in the area and eventually interested the Cyprus Exploration Company in a project. Cyprus worked the Haile mine site from 1973 to 1977. Following this, many companies explored the area around the Haile mine, including Amselco; Amax; Nicor; Callaghan Mining; Westmont; Asarco; Newmont; Superior Oil; Corona; Cominco; American Copper and Nickel; Kennecott; and Hemlo (M3 Engineering & Technology Corporation 2010).

Between 1981 and 1985, Piedmont Land and Exploration Company, later Piedmont Mining Company (Piedmont), explored the historic Haile Mine and surrounding properties. Piedmont mined the Haile deposits from 1985 to 1992, producing 85,000 ounces of gold from open-pit heap leach operations that processed oxide and transitional ores. New areas mined by Piedmont included the Gault Pit, the 601 pits by US Highway 601 (US 601), and the Champion Pit (Figure 1-3). They also expanded the Chase Hill and Red Hill Pits and combined the Haile-Bumalo Zone into one pit (the Haile Pit) (Figure 1-3). In addition, Piedmont discovered the large Snake ore deposit sulfide gold resource and mined its small oxide cap. Piedmont extracted gold ores from a mineralized trend 1 mile long, from east to west.

In June 1991, Amax signed an agreement to evaluate the site to determine whether it should enter a joint venture on the Haile property. During that evaluation period, core drilling that stopped north of the Haile-Bumalo area resulted in the discovery of the new sulfide resource at the Mill Zone. With the satisfactory verification of Piedmont data, Amax and Piedmont entered into a joint venture agreement and established the Haile Mining Company in May 1992.

From 1992 to 1994, Haile Mining Company completed a program of exploration/development drilling, property evaluation, mineral resource estimation, and technical report preparation. During this period, the Ledbetter resource zone was discovered under a mine haul road. At the end of the Amax/Haile Mining Company program in 1994, the gold reserve was stated by Haile Mining Company as 780,000 ounces of gold contained within 8,736,000 tons of ore, with an average grade of 0.089 ounce per ton. Because of unfavorable economic conditions at the time, Amax did not proceed with mining, but began a reclamation program to mitigate acid mine drainage conditions at the site.

Reclamation and Closure

- Reclamation is the reasonable rehabilitation of the affected land for useful purposes and protection of the natural resources of the surrounding area. Closure activities are a part of reclamation.

  (SCMA Section 48-20-40)

- *Closure* is the act of rendering a mine facility or portion of a mine facility to an inoperative state that prevents the gradual or sudden release of contaminants that are harmful to the environment.

Kinross acquired Amax in 1998, assumed Amax's portion of the Haile Mining Company joint venture, and later purchased Piedmont's interest. For business reasons Kinross decided not to reopen the mine and instead completed closure of the mine pursuant to the South Carolina Mining Act in 2006.

1.3.2 Mine Development by Haile Gold Mine, Inc.

Haile Gold Mine, Inc. purchased the property in October 2007 and Kinross transferred the State Mine Operating Permit to Haile. Haile assumed Kinross' post-closure monitoring obligations and liabilities. At

the time of purchase, there was an established reserve of 781,000 ounces of gold (Romarco 2007). Upon closing the transaction, Haile began a confirmatory drilling program, which it completed in early 2008, and then began infill and exploration drilling. The exploratory drill program was accelerated in early 2009 with a major reverse circulation drilling program that continued into 2010. Data from the drill program that were available as of September 30, 2010, were used in the *Haile Gold Mine Project NI 43-101 Technical Report Feasibility Study* (Feasibility Study) (M3 Engineering & Technology Corporation 2010)[6].

The proposed Haile Gold Mine represents the culmination of exploration, resource evaluation, feasibility studies, engineering design, and environmental studies completed by Haile over a period of 6 years (see Chapter 2, Section 2.2 for additional discussion). The Applicant's exploration in the Carolina Slate Belt region has included prospecting, sampling, mapping, drilling, and other activities involved in searching for ore, as summarized in Romarco's *2012 Annual Report* (Romarco 2013).

1.3.3 Ongoing Reclamation and Monitoring Activities at Haile

Although the site was previously mined for gold and other materials for many years, at present there is no active mining. The site is currently undergoing reclamation of the former mine workings (Figures 1-3 and 1-4) and has no other ongoing commercial, industrial, or urban activities.

1.3.4 Haile's Original Application for a DA Permit

On December 8, 2010, the USACE received an application for a DA permit for the proposed Project. The DA permit application was advertised in a Joint Public Notice (JPN) (SAC 1992-24122-4IA) on January 28, 2011. The original Project boundary included a total of 4,231 acres, of which approximately 2,042 acres would be disturbed and used for Project activities. Construction and operation of the initially proposed Project would have directly affected[7] approximately 161.81 acres of wetlands and open waters and 38,775 linear feet of streams within the Project boundary. Simultaneously, the Applicant submitted a wetland and stream Compensatory Mitigation Plan that included restoration and enhancement of 64,486 linear feet of streams, preservation of 32,585 linear feet of streams, restoration and enhancement of 190.11 acres of wetlands, and preservation of 17.6 acres of wetlands.

1.3.5 Haile's Revised Application for a DA Permit

Following further evaluation of the mine site plan to avoid and minimize impacts on aquatic resources, Haile submitted a revised application on August 16, 2012. The revised DA permit application included a revised site layout and mine plan, and proposed a reduction from the originally proposed direct impacts on Waters of the U.S (Appendix A). The major changes to the proposed Project included reorienting the Mill site and acquiring additional land parcels. The additional land expanded the Project area from approximately 4,231 acres to approximately 4,552 acres and enabled relocation of several facilities. Construction and operation of the revised Project would directly affect approximately 120.46 acres of wetlands and open waters and 26,460.54 linear feet of streams.

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6 *National Instrument (NI) 43-101* is the NI for the Standards of Disclosure for mineral projects. The instrument is a codified set of rules and guidelines for reporting and displaying information related to mineral properties owned by, or explored by, companies which report these results on stock exchanges within Canada.

7 Direct effects are caused by the action and occur at the same time and place (40 CFR 1508.8).

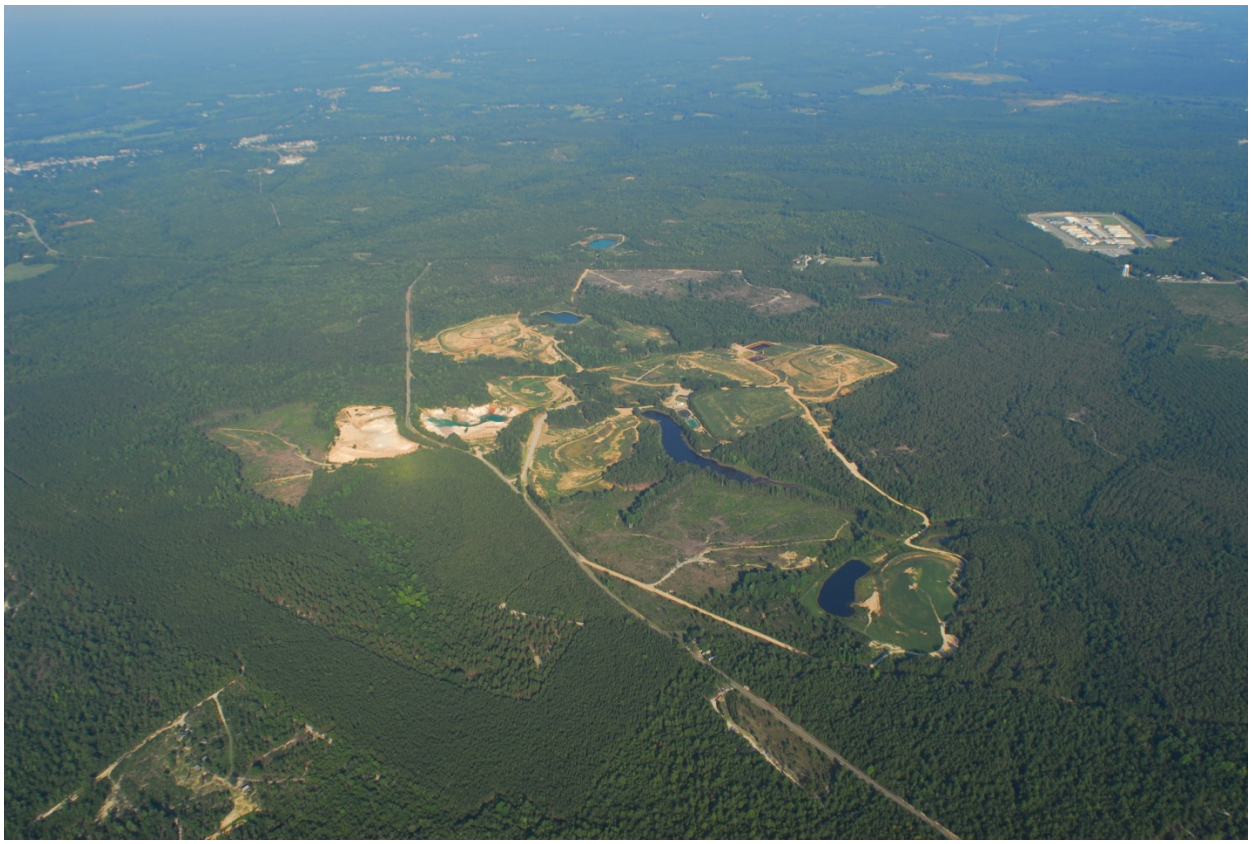

Figure 1-4 Aerial View of Existing Haile Gold Mine Showing Ongoing Reclamation

Source: Photo was taken on August 9, 2008, and provided by Haile Gold Mine, Inc.

The Applicant submitted a revised wetland and stream Compensatory Mitigation Plan that took the form of preservation by transferring fee simple ownership of 642 acres of conservation land adjacent to the Forty Acre Rock Heritage Preserve and Wildlife Management Area, designated as a National Natural Landmark (Genesis Consulting Group 2011). A revised Compensatory Mitigation Plan has since been proposed (Haile 2013a).

The USACE has recognized from Haile's initial permit application that the proposed Haile Gold Mine represents substantial impacts on Waters of the U.S., including streams, wetlands, and other waters. On this basis, there is a need for high-quality, outstanding resource compensatory mitigation to offset these impacts. In the USACE's judgment, the original mitigation plan did not demonstrate that it could fulfill this need (USACE 2013). Haile then worked closely with the South Carolina Department of Natural Resources (SCDNR) to develop a proposal that would represent a landscape-scale approach that focused on outstanding resources and public use opportunities for the benefit of the State of South Carolina. The SCDNR expended considerable effort to locate compensatory mitigation opportunities within the Lynches River watershed that would protect high-quality, outstanding resources at the landscape scale, but to no avail (SCDNR 2013). After this exhaustive search, the SCDNR advised Haile of the Goodwill Plantation and Cooks Mountain properties outside of the Lynches River watershed, and Haile elected to pursue these properties and include them in their revised compensatory mitigation proposal.

Haile then developed and summited the currently proposed Compensatory Mitigation Plan (Haile 2013), which is a permittee-responsible Compensatory Mitigation Plan involving perpetual preservation of three ecologically valuable properties totaling 4,388.8 acres: Goodwill Plantation and Cooks Mountain in the Wateree River watershed and Rainbow Ranch in the Lynches River watershed. The proposed plan includes $9.4 million to the SCDNR in endowments, divided into $4.5 million for maintenance and management of the mitigation sites and $4.9 million for projects benefiting the Carolina heelsplitter mussel (*Lasmigona decorata*). The plan proposes to convey ownership of the three properties to the SCDNR as Heritage Preserve under SCDNR's Heritage Trust Program, to be protected in perpetuity for the benefit of present and future generations. The proposed endowment for long-term management is an outstanding financial trust that would allow the SCDNR to manage the properties in a holistic, ecological manner and provide ample opportunities over the long term to restore and enhance wetlands and streams on all three tracts (SCDNR 2013).

1.4 Overview of the Proposed Haile Gold Mine Project

This section presents a brief summary of the proposed Haile Gold Mine Project. Full details of the Project are provided in Appendix A, "Description of the Proposed Haile Gold Mine Project"; a more complete summary of the proposed Project is found in Chapter 2. The Glossary contains definitions of the scientific and mining terms used in this EIS.

The proposed Project consists of opening new mine pits and processing available reserves to extract gold and other associated precious metals from the ore. The proposed Project would consist of the sequential mining of open pits to process 7,000 tons of ore per day, 365 days per year. The mine plan (Figure 1-5) consists of eight open pits that would be mined over a period of approximately 12 years. Because the mine pits must be dry during mining, the groundwater table would be lowered to dewater the pits. Further discussion of the groundwater lowering process and impacts can be found in Sections 4.1 and 4.3.

An ore processing Mill would be constructed to extract and refine gold; the Mill would be supported by associated storage, warehouse, maintenance, water treatment, and administrative facilities. Spent ore from the Mill would be piped as a slurry to the Duckwood Tailings Storage Facility (TSF), a lined facility capable of storing up to approximately 40 million tons of spent ore from the Mill.

Topsoil and near-surface overburden (also referred to as *growth media*) would be removed and stored for later use during the reclamation process. Overburden soil and rock that overlies the ore would be removed and stored in six overburden storage areas (OSAs), one of which would be reserved and specially constructed for storage of overburden with the potential to generate acid drainage.

All mine areas would be reclaimed under a State-approved reclamation plan. Each OSA would be concurrently reclaimed during mining as the design capacity is reached. Four of the mine pits would be fully backfilled with overburden and concurrently reclaimed as the ore has been extracted. Three pits would not be backfilled or would be partially backfilled; these pits eventually would fill with groundwater and runoff to become pit lakes.

1.5 Project Purpose and Need

In accordance with NEPA, the USACE must specify the underlying purpose and need for the proposed Project (40 CFR 1502.13). The purpose and need establish part of the framework for identifying the range of alternatives to a proposed action to be evaluated in an EIS.

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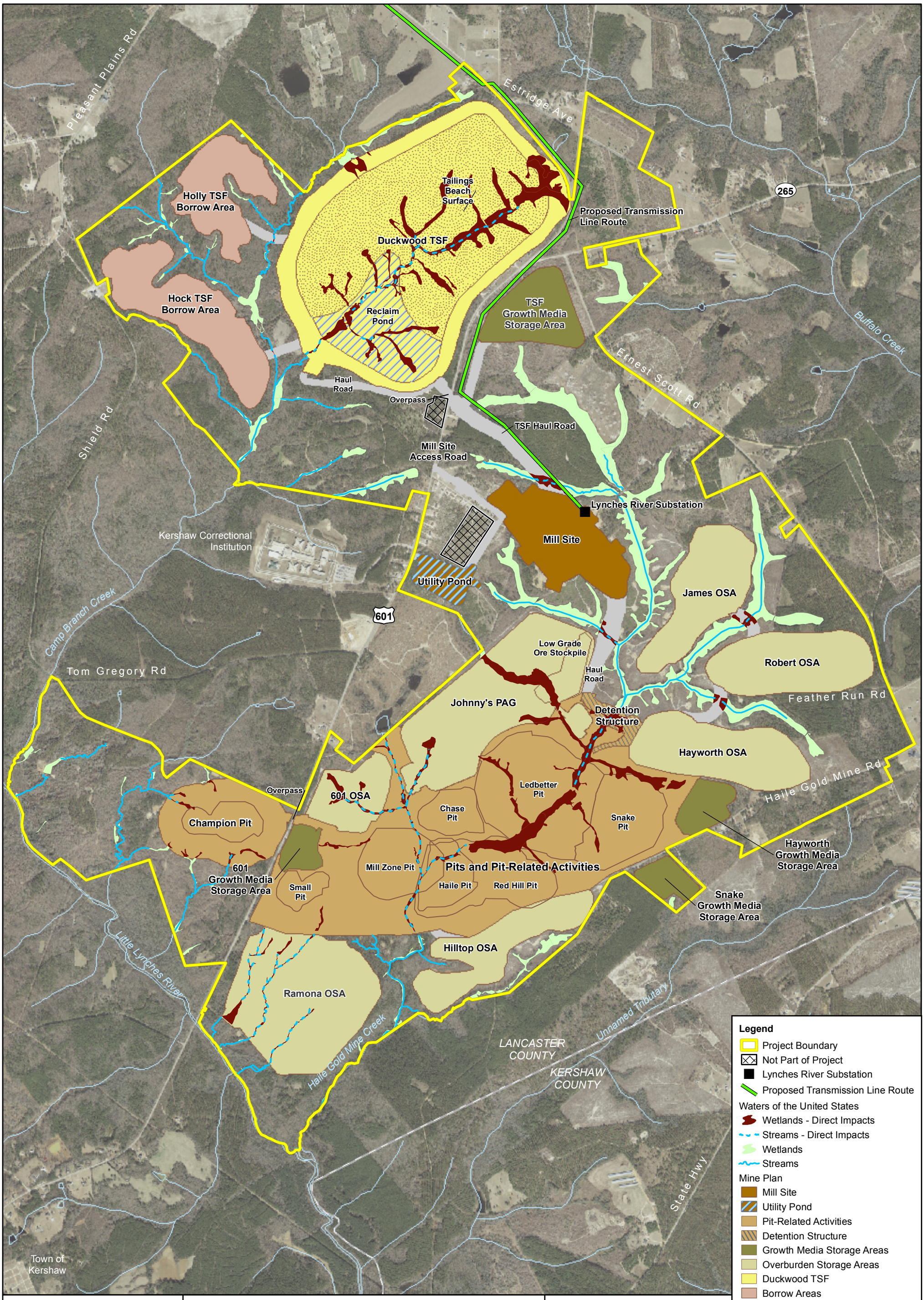

Figure 1-5

Proposed Haile Gold Mine Project Mine Plan and Facilities

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USACE regulations[8] define three ways of stating the purpose of a project. As described below, one statement is provided by the applicant, and the other two are determined by the USACE:

- The Applicant included a stated purpose and need in the application to the USACE for a DA permit.
- The USACE determines the "basic" purpose of the project, which is used to determine whether the project is water dependent under Section 404(b)(1) of the CWA.
- The USACE determines the "overall" purpose of the project, which is used to determine the range of practicable alternatives to the proposed project to be considered during preparation of an EIS.

1.5.1 Applicant's Stated Need

The applicant's stated need is an expression, typically in the applicant's own words, of the underlying goals for a proposed project. The USACE takes an applicant's stated need into account when making its determination of the overall project purpose.

Haile's stated need for the Project is:

> *To produce gold for sale from the mineralized gold-bearing zones on the Haile property* (Haile 2012a).

Haile's stated need for the Project is to provide for increased domestic gold production to meet world demand. Haile has presented information demonstrating that gold is an important precious metal used worldwide for jewelry, currency/bullion, electronics, and medical purposes—and that gold demand has continued to increase in recent years, with stable prices allowing for profitable operations (Genesis Consulting Group 2011).

1.5.2 USACE's Basic Project Purpose and Determination of Water Dependency

The Section 404(b)(1) guidelines[9] require that the USACE determine whether a project is water dependent. *Water dependent* means that the project by its very nature requires access or proximity to, or siting within, a special aquatic site[10] to fulfill its "basic purpose." If a project is determined not to be water dependent, the guidelines presume that

> *(1) "…practicable alternatives that do not involve special aquatic sites are presumed to be available, unless clearly demonstrated otherwise"; and (2) "…all practicable alternatives to the proposed discharge which do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise." (40 CFR 230.10 [a][3])*

The regulations further require that the USACE alternatives analysis identifies the least environmentally damaging practicable alternative (LEDPA).

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8 33 CFR 325 Appendix B *NEPA Implementation Procedures for the Regulatory Program*; 40 CFR 230.10(a).

9 *Section 404(b)(1) guidelines* constitute the substantive environmental criteria used in evaluating activities regulated under Section 404 of the Clean Water Act.

10 *Special aquatic sites* include six categories identified by the U.S. Environmental Protection Agency in Section 404 of the Clean Water Act, including sanctuaries and refuges, wetlands, mudflats, vegetated shallows, coral reefs, and riffle and pool complexes.

The USACE has determined that the "basic purpose" of the Applicant's discharges of dredged or fill material is:

> *to extract and process gold*.

Extraction and processing of gold ore in and of itself does not require access or proximity to, or siting within, a special aquatic site to fulfill its "basic purpose." Therefore, the USACE has found that the Project is not water dependent (USACE 2011).

1.5.3 USACE's Overall Project Purpose and Alternatives Analysis

Under NEPA regulations, alternatives to be evaluated in an EIS must be reasonable. Section 404(b)(1) guidelines also require evaluation of practicable alternatives. The USACE uses the overall project purpose to identify the range of potential alternatives that will be evaluated. If an alternative does not meet the applicant's need, as determined by the USACE, it may be rejected from further consideration.

The USACE regulatory guidelines state:

> *… The applicant's needs, and the type of project being proposed, should be considered. The overall project purpose should be specific enough to define the applicant's needs, but not so restrictive as to constrain the range of alternatives that must be considered under the 404(b)(1) guidelines.* (USACE 2009).

The USACE has determined that the overall Project purpose of the Haile Gold Mine Project is:

> *to open and operate a gold mining operation using gold-bearing mineral reserves in the Carolina Slate Belt region.*

While the Applicant more narrowly defined the Project purpose to the mineralized gold-bearing zones on the Haile property in its alternatives analysis, the USACE must evaluate a broader geographic range. As noted earlier, gold ore occurs throughout the Carolina Slate Belt in potentially mineable concentrations (USGS 2012a).

The Applicant has stated that full development of gold resources beyond the currently defined gold reserves may be considered in the future, although additional feasibility studies would be needed to provide the required definition of *probable* or *proven* gold reserves. The potential or likelihood of future development cannot be assessed until further delineation of ore reserves has been completed, as was done for the proposed Haile Gold Mine Project reserves.[11]

1.5.4 Basis for Applicant's Stated Need and Mine Plan

As noted previously, Haile Gold Mine, Inc. has undergone a long and extensive process to establish the basis for its mine plan and the proposed Project, including exploration, resource evaluation, feasibility, engineering design, and environmental studies completed by Haile over a period of 6 years. Romarco's exploration in the Carolina Slate Belt region has included prospecting, sampling, mapping, drilling, and other activities involved in searching for ore, as summarized in Romarco's *2012 Annual Report* (Romarco 2013).

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[11] Impacts associated with potential expansion of the Haile Gold Mine are discussed in the cumulative impacts analysis section of the EIS.

The Applicant has provided extensive information, reports, and feasibility studies to support the decision to mine at the proposed location and has described the rationale for the proposed mine plan. The basis for Haile's proposed Project is briefly described below. Elements of the Applicant's statements of mineral resources and reserves, the Feasibility Study (M3 Engineering &Technology Corporation 2010), and the mine design and operations plan are important from the USACE's perspective, as they establish the basis for the Project.

1.5.4.1 Mine Development Process

The process of developing, operating, and reclaiming a gold mine requires exploration, discovery, resource definition, feasibility study, finance approval, mine construction, production, closure, reclamation, and post-closure care (Deloitte Touche Tohmatsu 2003; Global Speculator 2013). Mining companies carry out the various stages of development necessary prior to production over a long period of time, at high cost, and in some cases, with a high level of risk and uncertainty as to future commercial benefits.

Mineral Resources and Mineral Reserves

- *Mineral resources* are mineral deposits that are potentially valuable, and reasonable prospects exist for their eventual economic extraction.
- *Mineral reserves* are mineral deposits that are valuable and legally, financially, and technically feasible to extract.

Several distinct steps are required to progress from the discovery of an ore body through developing a commercially viable mine plan that meets commercial and industry standards.[12] The process starts with prospecting or exploration to find and define the location, extent, and value of an ore body. This leads to mineral resource estimation, determining the size and grade (the concentration of gold in the rock in ounces per ton) of the deposit based on the results of exploratory drilling, and measuring the concentration of ore deposits at various depths and locations within the ore body. This estimation is typically used to conduct a pre-feasibility study to determine the theoretical financial analysis of the ore deposit. This helps to identify early in the process whether further investment in estimation and engineering studies is warranted, and the key risks and areas for further work.

By industry standard, mineral deposits are classified[13] as mineral resources or mineral reserves.

- *Mineral resources* are defined as mineral deposits that are potentially valuable and for which reasonable prospects exist for eventual economic extraction. Mineral resources are classified as "measured," "indicated," or "inferred," depending on the degree of confidence about their value and the feasibility of extraction.

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[12] Romarco Minerals, Inc. is a public exploration and development stage gold company, headquartered in Toronto, Canada, hosting projects in the United States.

[13] Classification of mineral deposits, because it is an economic function, is governed by statutes, regulations, and industry best practice norms. Security regulatory agencies in certain countries have policies or standards for describing the phases in gold mining development to distinguish the level of information (and thus risk) available at each phase. The U.S. Securities and Exchange Commission "Industry Guide 7" provides definitions for industries engaged in significant mining operations. In 2005, the Canadian Institute of Mining, Metallurgy and Petroleum released "Definition Standards on Mineral Resources and Reserves," which established a standard vocabulary for the mining industry to report exploration information, mineral resources, and mineral reserves in Canada (CIM 2005). There is no single, internationally applicable set of standards.

- *Mineral reserves* are defined as mineral deposits that are valuable and legally, financially, and technically feasible to extract. Because quantities of minerals beneath the earth's surface cannot be known with absolute precision, reserves are usually categorized as *proven* or *probable*, depending on the degree of confidence about the accuracy of the disclosed quantity. The estimation of mineral resources as proven or probable ore reserves is complex and requires substantial analysis and professional judgment. Only those parts of a company's mineral resources that have been determined to be financially extractable can be classified as reserves.

After mineral reserves have been identified, a feasibility study is completed to evaluate the financial viability, technical and financial risks of the project. A mining feasibility study evaluates a proposed mining project to determine whether the mineral resource can be mined economically; the feasibility study is the basis upon which a project moves forward. The feasibility study includes development of a mine plan to evaluate the financially recoverable portion of the deposit, the metallurgy and ore recoverability, the marketability of the ore concentrates, engineering and environmental concerns, milling and infrastructure costs, finance and equity requirements, and an analysis of the proposed mine from the initial excavation through reclamation. It also includes detailed characterization of the overburden material; removal and management of overburden are a major cost element in the mine plan.

The forecasted price of gold assumed for any financial analysis in a feasibility study is a key element because it affects the mine plan, including the amount and location of ore to be extracted and processed; the location, size, and depth of the pits (the pit shell); the order of the pit excavation sequence; and the amount and storage of overburden and ore. The mine plan is closely tied to the assumed average price of gold during the mining period.

A completed feasibility study is essential for making a decision to proceed with a mining project and to obtain equity financing to explore and develop a mine. Changes in the forecasted prices of commodities, exchange rates, production costs, or recovery rates may significantly affect the financial assessment of the mineral resources.

Mine feasibility studies contain a financial analysis of the project and illustrate various financial indicators (e.g., the internal rate of return, net present value, and payback period), annual cash flow projections over the life of the mine based on capital expenditures, production costs, transportation and refining charges, and sales revenue. The financial performance of the mine usually is evaluated for a range of gold prices; however, one assumed gold price typically is defined as the basis for the mine plan.

Evaluation and feasibility expenditures are the costs incurred to establish the technical and commercial viability of developing mineral deposits identified through exploration activities or by acquisition. To date, Romarco has expended approximately $268 million (Haile 2013b) for land acquisition, exploration, feasibility studies, equipment and plant, and other development associated with the proposed Haile Gold Mine. The Applicant's mine development activities have progressed well into the detailed engineering phase and the purchase of mining machinery and equipment (Romarco 2013).

1.5.4.2 Basis for Haile's Mine Plan – The Feasibility Study and the $950 Reserve

Haile completed the Feasibility Study for the proposed Haile Gold Mine Project on December 29, 2010 (M3 Engineering & Technology Corporation 2010). The Feasibility Study established that a quantity of financially extractable gold-bearing ore was present at the mine site as measured by industry and financial standards. The Applicant filed the Feasibility Study with the Canadian Securities Administrators on

February 22, 2011.[14] (Romarco is listed on the Toronto Stock Exchange [TSX]). Haile Gold Mine Inc. is a wholly-owned subsidiary of Romarco. As a company listed on a Canadian exchange, Romarco follows the Canadian Institute of Mining, Metallurgy and Petroleum definitions and standards for reporting and disclosure. Haile is not separately listed on any stock exchange. Haile Gold Mine Inc. is incorporated in Delaware. Haile stated that it intends to comply with all applicable provisions of U.S. law, including U.S. environmental permits and regulations.

As described in National Instrument (NI) 43-101, *Standards of Disclosure for Mineral Projects*, a feasibility study is a comprehensive study of a mineral deposit in which all geological, engineering, legal, operating, economic, social, environmental, and other relevant factors are considered in sufficient detail for the study to reasonably serve as the basis for a decision by a financial institution to finance development of the deposit for mineral production. Haile's Feasibility Study sets the basic plan for the mine, including the amount of economically extractable gold ore that the Applicant has targeted for extraction and processing. An important decision at the feasibility stage is selecting the gold price[15] that will be used to establish the mineral reserve. In the Feasibility Study (M3 Engineering & Technology Corporation 2010) and subsequent filings (Haile 2012b), the Applicant clarified that the Feasibility Study was based on proven and probable gold reserves which were estimated at approximately 2 million troy ounces,[16] of which the Applicant estimates that approximately 1,682,000 ounces of gold could be recovered. The size of the reserve and the weight of gold recovered are based on a price of $950 per ounce. Projections in the Feasibility Study assume particular costs and other factors for extracting that amount of gold (Table 1-1).Figure 1-6 depicts the reserves, with the pits identified and the expected zone of mining indicated as the reserve ore. The location noted as "South Pit" in this figure contains the Mill Zone, Haile, and Red Hill Pits. As reported in public disclosures by the Applicant, Figure 1-6 also shows deeper ore resources (mineralization) outside of the "reserve pit" as defined by the $950 Reserve. Portions of these deeper resources are shown in Figure 1-6 as "Palomino," "Mustang," and "Horseshoe." These resources have been identified through extensive exploration and are found largely at greater depths than the reserves. The Applicant has much less information about these resources than for the $950 reserves. Mining of these resources is not part of the mine plan, nor part of the Applicant's DA permit application.

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[14] On February 7, 2012, Haile released the results of an updated mineral resource estimate for the Haile Gold Mine Project. On March 19, 2012, Haile filed a National Instrument (NI) 43-101-compliant technical report entitled *Haile Gold Mine Project, Resource Estimate Form 43-101 Technical Report, Lancaster County, South Carolina* (the Technical Report). Resources were calculated for both open-pit and underground mineralization using a $1,200 per ounce gold price and based on drill data through November 16, 2011. The total Haile gold resource approximates 4.0 million ounces of gold in the measured and indicated resources category, with an additional 0.8 million inferred ounces of gold. The mine plan for the proposed Project is not changed by virtue of the March 19, 2012 Technical Report. Rather, the Technical Report updates the amount of gold resources. The Feasibility Study continues to be an accurate analysis of the Project and its financial elements in all material respects, and Haile currently intends to operate the Project substantially in the manner described in the Feasibility Study.

[15] A policy of the Committee for Mineral Reserves International Reporting Standards, also applied by the Securities and Exchange Commission, requires that a feasibility study for a U.S.-traded company must use metal prices that are equal to or less than the 3-year trailing average of metal prices. The gold price of $950 per ounce that was applied to establish the mineral reserve at the proposed Haile Gold Mine is slightly below the 3-year trailing average on September 30, 2010, of $975/ounce. The Applicant has stated that this was an appropriate judgment, fully disclosed in the Feasibility Study. The $950 per ounce gold price established what is referred to as the "$950 Reserve," that portion of the available reserves to be extracted based on a corresponding mine plan. The $950 Reserve then also identifies the projected boundary of the ore to be extracted (Figure 1-6).

[16] The troy ounce is the only measure of the troy weighting system that is still used in modern times. It is used in the pricing of metals such as gold, platinum, and silver. When the price of gold is said to be US$950/ounce, the ounce referenced is a troy ounce, not a standard ounce. There are 14.58 troy ounces in 1 pound. Herein, when the term *ounce* is used in connection with amounts of gold or the price of gold, it refers to a troy ounce.

Table 1-1 Project Parameters and Financial Data

Project Detail	Measurement/ Description	Project Detail	Measurement/ Description
Open-pit mine life	13 years	Reclamation remediation costs	$52 million
Milling of low-grade stockpile	3 years	Payable metals	Gold
Total life	15 years (low grade ore processed in Years 13 and 14)	Average ore grade, gold	0.060 ounce/ton
Mine type	Open pit	Average Mill recovery	83.73 %
Process description	Crushing, grinding, flotation, cyanide leach	Average annual gold	120,000 ounces (173,000 ounces in Mine Year 1)
Mill throughput	7,000 short tons per day	Byproduct	Silver
Initial capital costs	$275.5 million	Grade	1.5 x the grade of gold
Sustaining capital costs	$119.2 million	Recovery	50%
Metals Price Assumptions	Low Case	Base Case	High Case
Gold	$760 per ounce	$950 per ounce	$1,140 per ounce
After tax project internal rate of return[a]	6.3%	15.7%	23.4%
Rate	$21.5 million	$191.1 million	$352.4 million
Benefit cost ratio at 5% discount rate	1.1	1.8	2.5
Payback	8.6 years	4.8 years	3.5 years

Unit Operating Cost		Average Cost per Ounce of Gold	
Mining cost per total ton material	$1.25	Operating cost	$379.27 (including refining and byproduct credit)
Mining cost per processed ore ton	$9.62	Royalties cost	Not applicable
Milling cost per processed ore ton	$7.62	Cash cost	$379.27
G&A per processed ore ton	$2.20		
Refining cost per processed ore ton	$0.17		
Cash cost per processed ore ton	$19.72		
Total cost including $0.80 byproduct credit	$18.92		

Note: All U.S. dollars.

[a] After-tax net present value at 5% discount.

Source: M3 Engineering & Technology Corporation 2010.

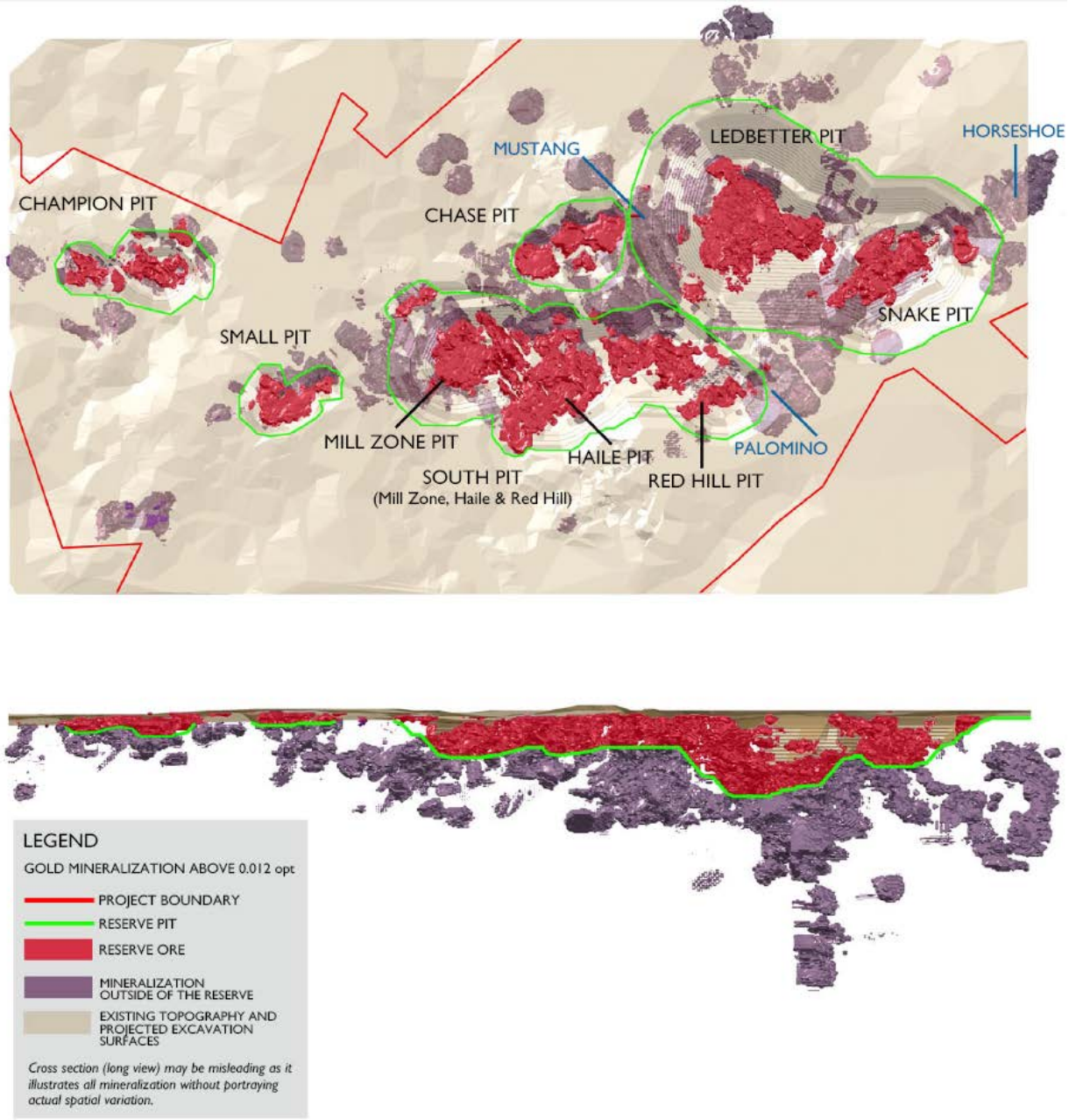

Figure 1-6 Gold Reserves and Resources at Haile Gold Mine (plan view – upper; cross section – lower)

Notes:

opt = ounces per ton

The images in Figure 1-6 are representational only because they cannot fully depict the vertical or horizontal separation of the drilling results, leaving the impression that both the reserves and the resources extend almost solidly through the area. The upper image in Figure 1-6 shows a plan view of the proposed pits, the reserves, and identified gold mineralization outside of the reserve pits. The lower image in Figure 1-6 is a cross-section view looking to the north of the same features. A green line has been added to show the outline of the reserve pits. Together, these images provide a general representation of the spatial location, depth, and shape of the mineralization.

Source: Modified from Romarco 2011.

Before mining of Palomino, Mustang, or Horseshoe could occur, additional studies and permitting may be needed.

The Feasibility Study also includes a sensitivity analysis assuming different gold prices (Table 1-1). The sensitivity analysis discloses different projected results based on the price of gold, varying from $760 to $1,140 per ounce, assuming the same costs. As described by the Applicant (Haile 2012b), the information about sensitivity to gold prices allows investors to evaluate the risks, knowing that a higher gold price would reap greater returns. The disclosure does not eliminate risk nor promise a particular result. It does assist in assessing the risks of the proposed Project in the event that gold prices change.

1.5.4.3 Haile's Proposed Mine Plan

The Applicant's proposed mine plan was developed using the results of the Feasibility Study and the $950 Reserve. The mine plan represents a financially optimized plan showing how Haile proposes to extract, handle, process, and produce the gold. The mine plan also shows the process of constructing the mine, managing the active mine site, closing and reclaiming the mine site, and monitoring the site after closure.

1.5.4.4 Additional Mineral Resources at Haile Gold Mine

In addition to gold-bearing mineral reserves to be exploited through the proposed Project, Haile's exploration and testing program has identified other gold-bearing mineral resources (Figure 1-6). These resources are not yet proven reserves and are not planned for development as part of the current mine plan and proposed Project. The Applicant continues to explore at the existing mine and its other regional properties within the Carolina Slate Belt. Should additional feasibility studies confirm the presence of additional mineral reserves and should Haile wish to exploit those reserves, additional or new permits and environmental review would be required.

1.5.5 USACE Evaluation of Applicant's Need Statement

The USACE has general policies that guide the review of DA permit applications. One such policy is the public interest review. The concept of public and private need for the proposed project is important to the balancing process of the USACE's public interest review. Regulations at 33 CFR 320.4(a)(2) state that part of the public interest review in the evaluation of every application is to consider the relative extent of the public and private need for the proposed structure or work. It is assumed that the private enterprise applicant has considered economic viability and need in the market place. However, regulations indicate that the USACE should make an independent review of the need for a project from the perspective of the overall public interest. This independent review is relevant to the USACE's permit decision. The USACE will question the public need for a project if the proposed project appears to be unduly speculative.

The USACE has evaluated the Haile's stated need for the proposed Project (Genesis Consulting Group 2011) and has evaluated other independent market information on the need and demand for gold. Gold is used throughout the world's economies. Investment demand for gold is also substantial and has increased in recent years because of financial and economic uncertainties. Investment demand is comprised of purchases of gold bars, coins, and medals, in addition to exchange-traded funds (37 percent). Of the total annual worldwide production in 2011, the largest portion (43 percent) was used in jewelry production (World Gold Council 2012). Gold is also used in other forms of manufacturing and fabrication, namely electronics (7.0 percent), other industrial uses (2.0 percent), and dentistry applications (0.9 percent), with the remainder being various other uses.

To meet worldwide demand, gold is produced by mining from known reserves or by recycling manufactured products. The total production of gold in 2011 was approximately 4,505 metric tons. Of this total, mine production accounted for approximately 63 percent of total supplies; the remaining 37 percent was produced by recycling, which is trending upward (World Gold Council 2012). Worldwide gold production from mining reached approximately 2,800 metric tons in 2011, from reserves estimated at 51,000 metric tons (USGS 2012b). Of this amount, 237 metric tons were produced domestically in the United States with an associated value of approximately $12.2 billion. This production represents approximately 8.8 percent of worldwide production (USGS 2012b).

Because of the limited amount and distribution of economically viable reserves in the United States, domestic gold production has been concentrated in a small number of mines in limited regions of the country. In 2010, just 30 mining operations yielded over 99 percent of the gold produced in the United States (USGS 2012c). The leading producer has been the State of Nevada, which accounted for over 72 percent of the total domestic production in 2010 (Genesis Consulting Group 2011). The South Carolina Slate Belt is another region that has produced gold over a long period of time. In 1992, South Carolina ranked 6th in domestic production, but high extraction costs reduced production in this region in later years (Genesis Consulting Group 2011). Recent gold prices have tripled from $551 per ounce in 1992 to $1,572 per ounce in 2011 (2011 dollars) (Genesis Consulting Group 2011). These long-term price trends have renewed interest in gold production in the Carolina Slate belt and in increasing the overall production of gold in the United States.

The USACE has found, based on the Applicant's information and its own independent review, that there is a demonstrable demand for gold and the Applicant's stated need in not unduly speculative.

1.6 Public, Agency, and Tribal Involvement and Participation

NEPA regulations provide for an active program of direct public, agency, and tribal participation in the process of preparing the EIS. The participation program implemented by the USACE for the Haile Gold Mine Project has included (1) broadly distributing and providing access to information regarding development of the Draft EIS; (2) promoting an understanding of the NEPA process, studies, alternatives evaluation, and environmental analyses; and (3) providing opportunities for input to the process for determining the scope of the EIS, and for reviewing and providing comment on the Draft EIS.

The public participation program has included a public website for the Project (http://www.hailegoldmineeis.com), public meetings, community outreach meetings, mailings to community residents and immediately adjacent landowners, and briefings. Two advisory groups also were established: the Interagency Technical Group and the Public Involvement Advisory Group. Further description of the public participation program is provided in Chapter 8 of this Draft EIS and on the USACE Haile Gold Mine EIS website at http://www.hailegoldmineeis.com.

To promote an understanding of the Project's proposed mine process, the USACE developed an interactive visual simulation, the Mine Interactive Experience (MinE); the simulation is available at http://www.hailegoldmineeis.com. This website allows interested individuals to take a virtual tour of the mine site and to learn more about the proposed Haile Gold Mine Project, construction and operations over the life of the mine; potential impacts on the natural and human environment; and mine closure and reclamation activities. This simulation was provided in direct response to community requests for information that would help the affected communities better understand the mine and its potential effects.

At the beginning of the NEPA process, the public, agencies, and the affected tribes were invited to attend a public scoping meeting and to submit written comments regarding the scope of environmental issues and alternatives that should be considered in the Draft EIS. Chapter 8, "Consultation and Coordination,"

describes the process used for conducting public scoping, Appendix D provides the Scoping Report, and Appendix E contains the formal agency correspondence received to date for the EIS.

This Draft EIS and all appendices are available to the public, agencies, and interested tribes, who will have an opportunity to review the document and provide comments to the USACE. The USACE and cooperating agencies will review and respond to each comment, as appropriate, during preparation of the Final EIS.

1.7 EIS Scope of Analysis

The scope of analysis for the USACE Regulatory Program has two distinct elements: determining (1) the USACE federal action area; and (2) how the District will evaluate direct and indirect adverse environmental effects. For the purposes of NEPA, the scope of analysis should be limited to the specific activity requiring a DA permit and any additional portions of the entire project over which there is sufficient federal control and responsibility to warrant NEPA review. Factors to consider in determining whether sufficient "control and responsibility" exist include: (1) whether the regulated activity comprises "merely a link" in a corridor-type project (e. g., a transportation or utility transmission project); (2) whether aspects of the upland facility in the immediate vicinity of the regulated activity would affect the location and configuration of the regulated activity; (3) the extent to which the entire project will be within USACE jurisdiction; and (4) the extent of cumulative federal control and responsibility.

The District must consider the direct and indirect effects of the proposed project needing the USACE's permit authorization (40 CFR 1508.8). *Direct effects* are those impacts that are caused by the action and occur at the same time and place. *Indirect effects* are those impacts caused by the action that take place later in time or farther removed in distance. The District should evaluate all of these categories of potential impacts and make final permit decisions and, to the extent appropriate, mitigation decisions based on this evaluation.

The NEPA scope of analysis for the Haile Gold Mine EIS is defined by the summation of the resource study areas. The study areas for each resource are described in Section 3.1 and more specifically in the resource subsections of Chapter 3, "Affected Environment." For some resource areas, such as geology and mineral resources, the spatial scope is limited to mined areas within the Project boundary. For other resource areas, such as socioeconomic conditions, the study area encompasses a broader area surrounding the Haile Gold Mine site and includes neighboring counties. For most resource areas, the geographic scope of analysis extends outside the Project boundary for some distance, depending on the resource and the reach of the potential impacts.

The NEPA scope of analysis for the Haile Gold Mine EIS looks approximately 50 years into the future. This is based on the anticipated duration of the active mining period (Mine Years 0 through 14), the post-mining and mine closure period, and the more extended post-closure monitoring period (expected to take place over 30 years after active mining ends). The 30-year post-closure monitoring period was established based on current estimates of the length of time required to refill Ledbetter Pit and form Ledbetter Pit Lake. The quality and quantity of information available diminish, however, as the analysis extends into the future. In some instances, models were used to simulate future conditions for long-term effects, such as recovery of groundwater levels after active mining, long-term water quality in groundwater, and groundwater contributions to streams.

The scope of analysis for cumulative impacts generally includes a four-county region around the proposed Haile Gold Mine site but considers a larger regional area for some resources. The scope of the cumulative impacts analysis is discussed in Chapter 5.

1.8 Agency Roles and Responsibilities

The USACE is the lead federal agency for preparation of this Draft EIS. Two agencies, the U.S. Environmental Protection Agency (USEPA) and the South Carolina Department of Health and Environmental Control (SCDHEC), and one Native American sovereign nation (the Catawba Indian Nation), have formally elected to be cooperating agencies under NEPA. A *cooperating agency* refers to an agency or Indian tribe with jurisdiction over some part of the project by law, or with special expertise with respect to any environmental impact to be addressed in an EIS. Responsibilities of cooperating agencies include assisting the USACE in identifying issues of concern and providing meaningful and timely comment and input throughout the NEPA process.

The cooperating agencies have been actively involved in the NEPA process for the Haile Gold Mine Project, have made staff available to enhance interdisciplinary expertise, and have actively participated in the preparation of this Draft EIS. Cooperating agencies have participated in technical coordination meetings, assisted with the environmental analysis, reviewed technical reports and findings, and assumed responsibility for developing portions of the EIS for which the cooperating agency has special expertise. The purpose of this cooperation is to "utilize a systematic interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision-making which may have an impact on man's environment" (42 USC 4332[2][a]).

1.8.1 U.S. Army Corps of Engineers

The USACE must determine whether the proposed Project activities should be authorized and permitted. In order to do so, the USACE will undertake the following actions.

- **Prepare Draft EIS and Final EIS –** Based on preliminary information provided by the Applicant, the USACE determined that the proposed Project had the potential to significantly affect the quality of the human environment so as to warrant the preparation of an EIS. Under NEPA, a Draft EIS and Final EIS are required. These documents disclose potential impacts associated with the Applicant's Proposed Project and a range of alternatives. The USACE will obtain public and agency input on the Draft EIS to create a final document. The USACE will consider the potential impacts and associated mitigation disclosed in the Final EIS to inform its permit decision. The alternatives and impact analysis in the Final EIS also provide a basis for determining compliance with the 404(b)(1) guidelines.
- **Prepare a Record of Decision** – The USACE will prepare a Record of Decision (ROD) documenting the agency's findings and stating whether the permit is denied or granted,[17] based on the findings of the following.
    - **Determine Compliance with 404(b)(1) Guidelines –** Under Subpart B of the 404(b)(1) guidelines, the USACE's evaluation of the Haile Gold Mine Project will result in four determinations that conclude in a finding of whether the proposed Project complies with the 404(b)(1) guidelines. The first of these determinations results in identification of the LEDPA. Key to this determination is that the USACE can only issue a permit for a project that is the LEDPA. The remaining determinations establish whether other applicable laws

[17] In a Statement of Findings, the decision options available to the USACE, which embrace all of the applicant's alternatives, are to issue the permit, issue the permit with modifications, or deny the permit. Modifications are limited to those project modifications within the scope of established permit conditioning policy (see 33 CFR 325.4). A decision to deny the permit results in the No Action Alternative (no activity requiring a USACE permit) [33 CFR 325 Appendix B]. In those cases involving an EIS, the statement of findings will be called the record of decision.

would be violated, whether the discharge would cause or contribute to the degradation of Waters of the U.S., and whether steps have been taken to minimize potential impacts. The 404(b)(1) guidelines evaluation document builds on the alternatives and impact analyses developed in the Draft EIS and Final EIS, with a focus on the specific decision-making framework required by the 404(b)(1) guidelines.

- **Conduct a Public Interest Review –** The USACE will evaluate the Applicant's proposal against the public interest factors (33 CFR 320.4[a]). The importance of each factor and how much weight it is given are unique to each proposal. The USACE establishes the weight of each factor by its relevance to the proposal. Weighing these factors allows the USACE to determine whether the proposed project is contrary to the public interest. In addition to evaluation of the public interest factors, the USACE must consider the extent of the public/private need for the proposal, the practicability of using reasonable alternative locations and methods if there are unresolved conflicts as to resource use, and the extent and permanence of the beneficial and/or detrimental effects of the proposal.

- **Make a Permit Decision –** If the decision is to deny the permit, discharge of fill material into Waters of the U.S. would not be allowed.[18] If the decision is to issue a permit, the permit would describe the project, any conditions, and the mitigation required. If the decision is to issue a permit, the Applicant would be given the opportunity to review the permit and conditions, and to decide whether to accept all terms and conditions therein or to appeal the decision.

1.8.2 U.S. Environmental Protection Agency

The USEPA was established by Congress as the primary federal environmental regulatory agency for the purpose of protecting human health and the environment by writing and enforcing regulations based on laws passed by Congress. Federal environmental programs were designed by Congress to be administered at the state and local levels wherever possible. The intent of this design is to use the strengths of federal, state, and local governments in a collaborative partnership to protect public health and the nation's air, water, and land. States that have accepted primary responsibility (primacy) work with USEPA's leadership to ensure national compliance with environmental quality standards. Collaborative regulatory reviews for this document include, but are not limited, to the following.

1.8.2.1 Section 309 of the Clean Air Act

Section 309 of the Clean Air Act (CAA) authorizes the USEPA to review proposed actions of other federal agencies in accordance with NEPA and to make those reviews public. Section 309 confers upon the USEPA broad review responsibilities for proposed federal actions. CEQ regulations designate the USEPA as the official recipient of all final EISs. The USEPA collaborates with other federal and state regulatory agencies in the NEPA review process to provide cross-media and regulatory review, allowing the permitting agencies to obtain resource information to advance the permitting process and to expedite the permitting process.

The CWA provides the USEPA with the statutory basis for the water permit programs and the basic structure for regulating the discharge of pollutants from point sources to Waters of the U.S. Under the

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[18] 40 CFR 230.10(a):

No discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.

CWA, states establish state water quality standards, which include designated uses for waterbodies within the state, water quality criteria that ensure that such uses are protected, and an antidegradation policy. Section 402 of the CWA specifically required the USEPA to develop and implement the National Pollutant Discharge Elimination System (NPDES) permitting program. NPDES permits authorize the discharge of pollutants other than dredged or fill material into Waters of the U.S. The CWA requires anyone who wants to discharge pollutants to first obtain an NPDES permit.

1.8.2.2 Section 404(b)(1) Guidelines

Section 404 of the CWA is not a state-delegated program in South Carolina. The USACE is the permitting agency for Section 404 permits, with the USEPA as a cooperating agency. The Section 404(b)(1) guidelines promulgated by the USEPA in conjunction with the Secretary of the Army established the substantive environmental standards for proposed discharges of dredge and fill material in Waters of the U.S. The 404 (b)(1) guidelines establish a sequence of review requirements: (1) an evaluation of all practicable alternatives that meet the project's basic purpose to ensure that only the LEDPA is permitted; (2) taking all appropriate and practicable steps to minimize potential adverse impacts and ; (3) compensating for all remaining unavoidable impacts on aquatic resources. In addition, the 404(b)(1) guidelines require that no discharge may be permitted that would cause or contribute to significant degradation of Waters of the U.S.

1.8.2.3 Executive Order 12898

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* was issued to focus federal attention on the environmental and human health conditions of minority and low-income populations with the goal of achieving environmental protection for all communities. The EO directs federal agencies to develop environmental justice strategies to help them address the disproportionately high and adverse human health or environmental effects of their programs on minority and low-income populations. The USEPA's Office of Environmental Justice coordinates the efforts to protect the environment and public health in minority, low-income, tribal, and other vulnerable communities by integrating environmental justice into all programs, policies, and activities.

1.8.3 South Carolina Department of Health and Environmental Control

The SCDHEC is the public health and environmental protection agency for the state. Its mission is "to promote and protect the health of the public and the environment." In keeping with this mission, the primary goal of public health is to secure health; promote wellness for both individuals and communities by addressing the societal, environmental, and individual determinants of health; and protect the environment.

The role of the SCDHEC is particularly important in the permitting and approval process. Various bureaus under Environmental Quality Control, including the Bureau of Air Quality, Bureau of Water, Bureau of Environmental Health Services, and Bureau of Land and Waste Management, have reviewed and will continue to review permit applications by Haile and make decisions to approve or deny a number of permits and certifications for the Project (see "Permits, Licenses, and Other Approvals" below), make consistency determinations, and provide any needed permit conditions or other special conditions to meet their legal authorities and agency mission.

As noted, the USEPA has delegated many federal environmental programs to the State of South Carolina.[19] The SCDHEC administers the programs through permitting, inspections, monitoring, and enforcement—and often through establishing standards. The SCDHEC will continue to play a central role in evaluating permit applications and making decisions regarding permits, certifications, and relevant conditions under the CAA, CWA, Safe Drinking Water Act (SDWA), and other regulations. The SCDHEC also will be the lead agency at the state level to ensure compliance with state regulations and policies through its various bureaus.

1.8.4 Catawba Indian Nation

The proposed Project is located within the 144,000 acres of aboriginal homelands of the Catawba Indian Nation. The Catawba Indian Nation retains and exercises their sovereign rights to hunt, fish, and gather within the State of South Carolina; therefore, the tribe is interested in maintaining and protecting environmental resources in the region (Catawba Indian Nation 2012). The Catawba Indian Nation's participation as a cooperating agency has included providing technical expertise for review of the EIS, with emphasis on issues related to Native American cultural resources, air quality, water quality, and wetlands. The Catawba Indian Nation is also a consulting party under Section 106 of the National Historic Preservation Act (NHPA).

1.9 Permits, Licenses, and Other Approvals

As an existing mine property, the Haile Gold Mine currently operates under a number of state-issued permits. Most of these permits are related to management of surface water and surface water discharges under the NPDES program. In addition to receiving a DA permit from the USACE, many of the existing permits would require modification and/or reissuance to authorize the proposed Project. Issuance of new permits and modification of existing permits would require conducting various federal, state, and local agency reviews; completing actions; and following procedures before construction or operation could be initiated.

Existing permits that may require modification or renewal are listed in Table 1-2. This list may not be comprehensive, and other permitting and approval needs may arise throughout the duration of the Project. The Applicant, the SCDHEC, and the USACE (as necessary) would coordinate with federal, state, and local agencies throughout the life of the Project to ensure that permitting needs are addressed. Appendix F, "Laws, Policies, and Plans Applicable to the Haile Gold Mine Project," provides more detailed information regarding the permits and regulatory approvals needed for the Project.

[19] Most federal environmental programs were intended to be administered by the states. The assumption of partial or full control over one of these programs is known as *delegation*. For delegation to occur, the State legislature must pass authorizing legislation that is at least as stringent as the federal standard and demonstrate that the State has adequate resources to run the program. The State then files a petition with the USEPA. For state delegations applicable to the Clean Air Act, refer to http://www.ecos.org/section/states/enviro_actlist/states_enviro_actlist_caa.

Table 1-2 Existing Permits, Licenses, and Approvals Held by Haile Gold Mine, Inc. for Past Mining and Ongoing Reclamation

Agency	Permit Number	Description
Federal		
U.S. Army Corps of Engineers	Permit 2004-1G-157	Permit to fill a portion of the old North Fork Creek
Mine Safety and Health Administration (MSHA)	MSHA ID: 38-00600	Operate mine within MSHA standards
Federal Communications Commission	Call Sign: WQJB814	One base station frequency, six local frequencies
State		
South Carolina Department of Health and Environmental Control (SCDHEC), Division of Mining and Solid Waste Management	Mining/Operating Permit No. 601	Mining Permit – Regulation of closure and reclamation
SCDHEC, Division of Mining and Solid Waste Management	Mining/Operating Permit No. 214	Mining Permit – Regulation of closure and reclamation of Hilltop Pits (*permit cancelled April 12, 2011; Haile Gold Mine, Inc. performed reclamation of Hilltop II Pit, and total acreage has been incorporated into proposed modification of Permit No.601).*
SCDHEC, Division of Mining and Solid Waste Management	Mining/Operating Permit No. 440	Mining Permit – Regulation of closure and reclamation of Parker Pit (*permit cancelled on April 12, 11; Haile Gold Mine, Inc. stabilized Parker Pit, and the total acreage has been incorporated into proposed modification of Permit No. 601)*
SCDHEC, Bureau of Drinking Water Protection	Public Water Permit No. 2930013	Former onsite water supply; closed on June 23, 2011
SCDHEC, Bureau of Solid and Hazardous Waste Management	Permit No. SCD987596806	Conditionally exempt small quantity generator
SCDHEC, Industrial Wastewater (IW) Permitting Section	National Pollutant Discharge Elimination System Discharge Permit No. SC0040479	Permit to discharge treated water from the mine operation / reclamation areas. Outfall 002 & 003
SCDHEC, Industrial Wastewater Permitting Section	ND Discharge Permit No. ND0085561	Permit to discharge sulfate-reducing bioreactor (SRBR) water to two percolation basins
SCDHEC, Industrial Wastewater Permitting Section	Operating Permit #18, 731-IW	Addition of pH adjustments to 002 outfall discharge for various units. Modified as needed during mine operations and closure.
SCDHEC, Industrial Wastewater Permitting Section	Operating Permit #18, 873-IW	Permit to construct and operate semi-passive SRBR (best management practice cells)
SCDHEC, Stormwater Permitting Section	Industrial Stormwater Permit No. SCR0004763	Stormwater permit for mine operations and reclamation areas
SCDHEC, Industrial Wastewater Permitting Section	General Stormwater Permit for Non-Metal Mining Facilities, Permit No. SCG730398	Stormwater permit for Hilltop II Pit (*permit cancelled on June 7, 2011; stormwater now managed pursuant to SCR 004763*)
SCDHEC, Industrial Wastewater Permitting Section	General Stormwater Permit for Non-Metal Mining Facilities, Permit No. SCG730217	Stormwater permit for Parker Pit (*cancelled on June 7, 2011; stormwater now managed pursuant to SCR004763*)

In addition to a DA permit application, Haile has been actively applying for State-administered permits and already has obtained a number of permits for the proposed Project, as identified in Table 1-3.

Table 1-3 State Permits, Licenses, and Approvals Granted for the Proposed Haile Gold Mine Project

Agency	Permit Number	Description
South Carolina Department of Health and Environmental Control (SCDHEC), Bureau of Water, Industrial, Agricultural, and Storm Water Permitting Division	Dams & Reservoirs Safety Permit 29-0007 (Issued October 7, 2013)	Dam Safety Permit – Significant Hazard (Construction). Stability during earthquake-induced ground motion was evaluated by SCDHEC prior to issuance of the TSF construction permit. Seismic stability was evaluated pursuant to the International Commission of Large Dam (ICOLD) seismic design and performance standards; www.icold-cigb.org
SCDHEC, National Pollutant Discharge Elimination System (NPDES) Program, Water Facilities Permitting Division	General Permit for Stormwater Discharges for Small and Large Construction (Activities Permit) SCR100000	Discharge of stormwater in connection with construction of structures not covered under the Industrial General Permit – requires submittal of Storm Water Pollution Prevention Plan (SWPPP) and public notice prior to construction
SCDHEC, NPDES Program, Water Facilities Permitting Division	Stormwater discharges associated with industrial activity SCR000000, Permit No. SCR004763	Discharge of stormwater in connection with industrial activities, Industrial General Permit
SCDHEC, NPDES Program, Industrial Wastewater Permitting Section	NPDES permit for discharge to surface waters, Permit No. SC0040479	Discharge of industrial wastewater, Sector G – Metal Mining, for three outfalls to receiving waters Haile Gold Mine Branch (Creek)
SCDHEC, Office of Environmental Quality, Bureau of Air Quality	Bureau of Air Quality, State Construction Permit No. 1460-0070-CA	Authorizes construction of the proposed facility and equipment specified in Haile Gold Mine, Inc.'s application for a Department of Army permit; a permit to operate also is required

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