TECHNICAL REPORT SUMMARY
DIATOMACEOUS EARTH RESOURCES AND RESERVES
COLADO OPERATION

Pershing County, Nevada

Prepared For

U.S. SILICA COMPANY

Katy, Texas

By

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Mining and Geological Consultants

Pittsburgh, Pennsylvania

Report No. 3076.017

FEBRUARY 2023

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Attention: Mr. Terry Lackey
Mining Director

Subject: Technical Report Summary
Diatomaceous Earth Resources and Reserves
Colado Operation
Pershing County, Nevada

Ladies and Gentlemen:

The John T. Boyd Company (BOYD) was retained by U.S. Silica Company (U.S. Silica) to complete an independent technical assessment of the diatomaceous earth (DE) resource and reserve estimates for the Colado Operation as of December 31, 2022.

This technical report summary: (1) summarizes material technical and geoscientific information for the subject mining property, (2) provides the conclusions of our technical assessment, and (3) provides a statement of DE resources and reserves for the Colado Operation.

Respectfully submitted,

JOHN T. BOYD COMPANY
By:

John T. Boyd II
President and CEO

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LETTER OF TRANSMITTAL

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GLOSSARY OF ABBREVIATIONS AND DEFINITIONS

000	:	Thousand(s)
$	:	US dollar(s)
%	:	Percent or percentage
AMSL	:	Above mean sea level
ARO	:	Asset Retirement Obligation(s)
ASP	:	Average Selling Price
ASTM	:	ASTM International (formerly American Society for Testing and Materials)
BLM	:	Bureau of Land Management. A division of the U.S. Department of the Interior.
BOYD	:	John T. Boyd Company
CAGR	:	Compound Annual Growth Rate
CapEx	:	Capital Expenditures
Constant Dollar	:	A monetary measure that is not influenced by inflation and used to compare time periods. Sometimes referred to as “real dollars”.
DCF	:	Discounted Cash Flow
DE	:	Diatomaceous Earth
Diatomaceous Earth	:	Diatomaceous earth, commonly known as diatomite, is a naturally occurring sedimentary rock that is a result of the accumulation of skeletal remains of diatoms, which are microscopic single-celled aquatic algae.
Diatomaceous Earth Reserve	:	Diatomaceous earth reserve is an estimate of tonnage and grade or quality of indicated and measured diatomaceous earth resources that, in the opinion of the qualified person, can be the basis of an economically viable project. More specifically, it is the economically mineable part of a measured or indicated diatomaceous earth resource, which includes diluting materials and allowances for losses that may occur when the material is mined or extracted.

Diatomaceous Earth Resource	:	Diatomaceous earth resource is a concentration or occurrence of diatomaceous earth material of economic interest in or on the Earth's crust in such form, grade or quality, and quantity that there are reasonable prospects for economic extraction. A diatomaceous earth resource is a reasonable estimate of mineralization, taking into account relevant factors such as cut-off grade, likely mining dimensions, location or continuity, that, with the assumed and justifiable technical and economic conditions, is likely to, in whole or in part, become economically extractable. It is not merely an inventory of all mineralization drilled or sampled.
Discount Rate	:	A rate of return used to discount future cash flows based on the return investors expect to receive from their investment.
EBIT	:	Earnings before interest and taxes
EBITDA	:	Earnings before interest, taxes, depreciation, and amortization
EP Minerals	:	EP Minerals, LLC., a wholly owned subsidiary of U.S. Silica.
ft	:	Foot/feet
Indicated Diatomaceous Earth Resource	:	That part of a diatomaceous earth resource for which quantity and quality are estimated based on adequate geological evidence and sampling. The level of geological certainty associated with an indicated diatomaceous earth resource is sufficient to allow a qualified person to apply modifying factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Because an indicated diatomaceous earth resource has a lower level of confidence than the level of confidence of a measured diatomaceous earth resource, an indicated diatomaceous earth resource may only be converted to a probable diatomaceous earth reserve.
Inferred Diatomaceous Earth Resource	:	That part of a diatomaceous earth resource for which quantity and quality are estimated based on limited geological evidence and sampling. The level of geological uncertainty associated with an inferred diatomaceous earth resource is too high to apply relevant technical and economic factors likely to influence the prospects of economic extraction in a manner useful for evaluation of economic viability. Because an inferred diatomaceous earth resource has the lowest level of geological confidence of all diatomaceous earth resources, which prevents the application of the modifying factors in a manner useful for evaluation of economic viability, an inferred diatomaceous earth resource may not be considered when assessing the economic viability of a mining project, and may not be converted to a diatomaceous earth reserve.
IRR	:	Internal rate-of-return
ISO		International Organization for Standardization

GLOSSARY OF ABBREVIATIONS AND DEFINITIONS - Continued

lb	:	Pound
LOM	:	Life-of-Mine
Measured Diatomaceous Earth Resource	:	That part of a diatomaceous earth resource for which quantity and quality are estimated based on conclusive geological evidence and sampling. The level of geological certainty associated with a measured diatomaceous earth resource is sufficient to allow a qualified person to apply modifying factors, as defined herein, in sufficient detail to support detailed mine planning and final evaluation of the economic viability of the deposit. Because a measured diatomaceous earth resource has a higher level of confidence than the level of confidence of either an indicated diatomaceous earth resource or an inferred diatomaceous earth resource, a measured diatomaceous earth resource may be converted to a proven diatomaceous earth reserve or to a probable diatomaceous earth reserve
Mesh	:	A measurement of particle size often used in determining the size distribution of granular material.
Mineral Reserve	:	*See "Diatomaceous Earth Reserve"*
Mineral Resource	:	*See "Diatomaceous Earth Resource"*
Modifying Factors		The factors that a qualified person must apply to indicated and measured diatomaceous earth resources and then evaluate to establish the economic viability of diatomaceous earth reserves. A qualified person must apply and evaluate modifying factors to convert measured and indicated diatomaceous earth resources to proven and probable diatomaceous earth reserves. These factors include but are not restricted to: mining; processing; infrastructure; economic; marketing; legal; environmental compliance; plans, negotiations, or agreements with local individuals or groups; and governmental factors. The number, type and specific characteristics of the modifying factors applied will necessarily be a function of and depend upon the mineral, mine, property, or project.
MSHA	:	Mine Safety and Health Administration. A division of the U.S. Department of Labor.
NDEP	:	Nevada Division of Environmental Protection
NPV	:	Net Present Value

Probable Diatomaceous Earth Reserve	:	The economically mineable part of an indicated and, in some cases, a measured diatomaceous earth resource.
Production Stage Property	:	A property with material extraction of diatomaceous earth reserves.
Proven Diatomaceous Earth Reserve	:	The economically mineable part of a measured diatomaceous earth resource which can only result from conversion of a measured diatomaceous earth resource.
PSI	:	Pounds per square inch
QP	:	Qualified Person
Qualified Person	:	An individual who is: 1. A mineral industry professional with at least five years of relevant experience in the type of mineralization and type of deposit under consideration and in the specific type of activity that person is undertaking on behalf of the registrant; and 2. An eligible member or licensee in good standing of a recognized professional organization at the time the technical report is prepared. For an organization to be a recognized professional organization, it must: a. Be either: i. An organization recognized within the mining industry as a reputable professional association; or ii. A board authorized by U.S. federal, state, or foreign statute to regulate professionals in the mining, geoscience, or related field; b. Admit eligible members primarily based on their academic qualifications and experience; c. Establish and require compliance with professional standards of competence and ethics; d. Require or encourage continuing professional development; e. Have and apply disciplinary powers, including the power to suspend or expel a member regardless of where the member practices or resides; and f. Provide a public list of members in good standing.
ROM	:	Run-of-Mine. The processing feed material, including diatomaceous earth and any inseparable waste, excavated from the mine.
SEC	:	U.S. Securities and Exchange Commission

S-K 1300	:	Subpart 1300 and Item 601(b)(96) of the U.S. Securities and Exchange Commission's Regulation S-K
SPCC	:	Spill Prevention, Controls and Countermeasure
Ton	:	Short Ton. A unit of weight equal to 2,000 pounds
UP	:	Union Pacific
USGS	:	U.S. Geological Survey
U.S. Silica	:	U.S. Silica Company, its parent company (U.S. Silica Holdings, Inc.) and its consolidated subsidiaries as a combined entity.

1.0 EXECUTIVE SUMMARY

1.1 Introduction

U.S. Silica's Colado Operation is an active surface DE mining and processing operation that has been in existence for over 65 years.

BOYD prepared this technical report summary for U.S. Silica in support of their disclosure of DE resources and reserves for the Colado Operation in accordance with Subpart 1300 and Item 601(b)(96) of the SEC's Regulation S-K (S-K 1300). The purpose of this report is threefold: (1) to summarize material technical and geoscientific information for the subject mining property, (2) to provide the conclusions of our technical assessment, and (3) to provide a statement of DE resources and/or reserves for the Colado Operation.

Information used in our assessment was obtained from: (1) files provided by U.S. Silica, (2) discussions with U.S. Silica personnel, (3) records on file with regulatory agencies, (4) public sources, and (5) nonconfidential information in BOYD's possession.

Unless otherwise noted, the effective date of the information, including estimates of DE resources and reserves, is December 31, 2022.

Weights and measurements are expressed in the US customary measurement system throughout this report.

1.2 Property Description

Located in Pershing County, Nevada, U.S. Silica's Colado Operation comprises a surface mining operation (the "Colado Mine") and a processing plant (the "Colado Processing Plant"). The mine and plant are in Pershing County, Nevada, approximately 80 miles northeast of the City of Reno. The general location of the Colado Operation is provided in Figure 1.1, following this page.

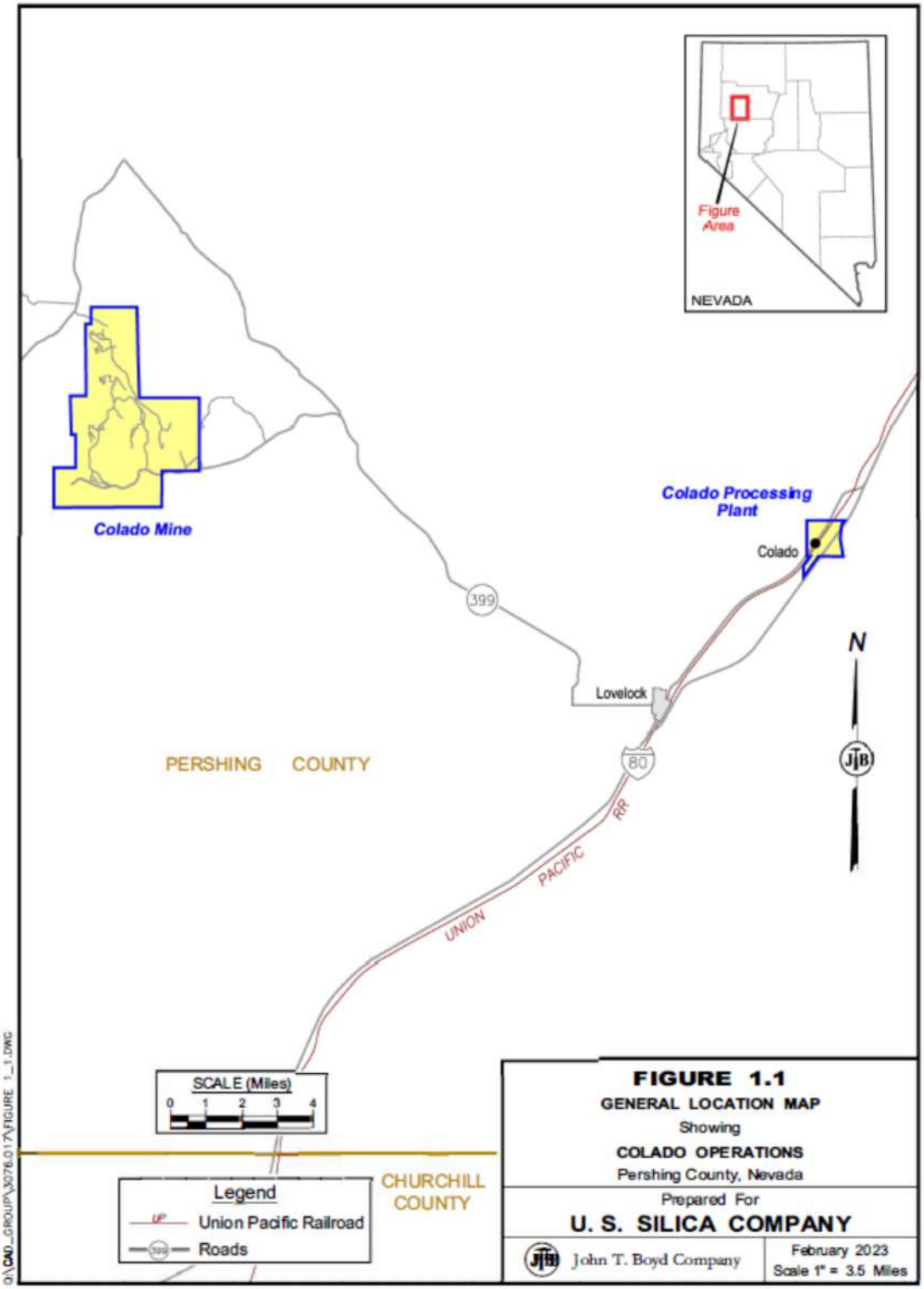


Figure Area
NEVADA
Colado Mine
Colado Processing Plant
Colado
399
Lovelock
80
N
PERSHING COUNTY
UNION PACIFIC RR
SCALE (Miles)
0 1 2 3 4
CHURCHILL COUNTY
Legend
Union Pacific Railroad
Roads
FIGURE 1.1
GENERAL LOCATION MAP
Showing
COLADO OPERATIONS
Pershing County, Nevada
Prepared For
U. S. SILICA COMPANY
John T. Boyd Company
February 2023
Scale 1" = 3.5 Miles
Q:\CAD_GROUP\3076.017\FIGURE 1-1.DWG

U.S. Silica holds surface and/or mineral rights to approximately 9,526 acres across the two sites that comprise the Colado Operation. The Colado Mine property comprises ±8,993 acres of private and federal lands leased from the Franco-Nevada U.S. Corporation (Franco-Nevada) and the U.S. Department of the Interior's Bureau of Land Management (BLM), respectively. The Colado Processing Plant property encompasses ±533 acres owned in fee by U.S. Silica or leased from the BLM. BOYD is not aware of any encumbrances, litigation, or orders which would hinder continued development of the property.

1.3 Geology

Exploration and mining activities have identified several near-surface DE deposits on the Colado Mine property. DE, commonly known as diatomite, is a naturally occurring sedimentary rock that is a result of the accumulation of skeletal remains of diatoms, which are microscopic single-celled aquatic algae. Diatom skeletons are composed primarily of amorphous silica (non-crystalline SiO_2). The cylindrical shape and high pore volume of these diatom skeletons provide high mechanical strength, natural filtration, and absorption capabilities.

The mineable DE on the Colado property is typically observed as consisting of between one to four beds (varies by pit) separated by friable tuffaceous (compacted volcanic ash) units. The DE beds are generally white or light pink in color and tend to be very clean, while the interbedded tuffaceous units are generally gray in color. The contrast in bed coloring makes visual selection during mining relatively easy.

Welded and lithic tuffs directly overly the DE beds, with Miocene to Pliocene (Tertiary) age basalt flows forming a weathering-resistant capping unit, which has helped preserve the underlying strata from being eroded.

Structure within the immediate area is considered to be relatively simple when compared to other uplifted blocks, as low dip angles (generally less than 10 degrees) are noted in most of the DE beds being mined.

Several high-angle displacement faults are present at the Colado Mine, however throughout the typical course of mining (overburden removal and benching into deeper DE beds), these areas are well exposed, allowing modified mining operations when required.

1.4 Exploration

The Colado Mine has been extensively explored and mined since the late 1950s. Throughout various exploration campaigns, the subject DE deposits have been identified and delineated through geologic mapping, outcrop sampling, trenching, geophysical surveys, and extensive exploration drilling. BOYD was provided source records (drilling logs, testing results, and core photographs), summary reports, and/or databases compiling the results 1,153 drill holes located in and around the Colado Mine property. These data were utilized to delineate the lateral extent, thickness, and quality of the remaining DE resources and reserves at the Colado Operation.

BOYD's audit indicates that in general: (1) U.S. Silica has performed extensive drilling and sampling work on the subject property, (2) the work completed has been done by competent personnel, and (3) the amount of data available combined with extensive knowledge of and historic production from subject DE beds are sufficient to confirm the thickness, lateral extents, and quality characteristics of the Colado Operation's DE resources and reserves.

1.5 Diatomaceous Earth Resources and Reserves

As shown in Table 1.1, below, U.S. Silica owns approximately 689,000 in place tons of inferred DE resources, *exclusive* of DE reserves, at the Colado Operation, as of December 31, 2022.

Table 1.1: Colado Operation Diatomaceou Earth Resources[1] (as of December 31, 2022)

Classification	In-Place Tons (000)
Inferred	689

Notes:
1. Diatomaceous earth resources are reported *in addition* to diatomaceous earth reserves.

While these "additional" DE resources have not been included in the Colado Operation's life-of-mine (LOM) plan, they are considered to have prospects for eventual economic extraction by virtue of their similarity—in terms of demonstrated extraction methods and expected finished product qualities—to those converted to DE reserves.

U.S. Silica's estimated surface mineable DE reserves for the Colado Operation total 3.7 million saleable product tons remaining as of December 31, 2022. The DE reserves are fully controlled by U.S. Silica and are summarized in Table 1.2, below.

Table 1.2: Colado Operation Diatomaceo Earth Reserves (as of December 31, 2022)

	Tons (000)	
Classification	Mineable	Saleable
Proven	1,671	1,364
Probable	2,808	2,291
Total	4,479	3,655

The Colado Operation has a well-established history of mining, processing, and selling DE products into various markets. BOYD has concluded that sufficient studies have been undertaken to enable the DE resources to be converted to DE reserves based on proposed operating methods and forecasted costs and revenues.

1.6 Operations

1.6.1 Mining

The DE mining horizons at the Colado Mine are relatively shallow, quite thick, and are moderately dipping. These characteristics favor conventional surface mining techniques using excavators and trucks. Mining occurs on benches, in a stair-like fashion, to remove the overburden waste material and expose the DE beds.

Excavation of the DE beds occurs from late spring until early fall, a period of roughly 200 days, before wet winter weather impedes moisture control in the ROM stockpiles. During the winter months, the removal of overburden and other support activities continues as access to the site is typically available year-round. The Colado Mine maintains a stockpile of approximately 600,000 cubic yards at the mine site to meet the demands of the processing plant. U.S. Silica's LOM Plan requires mining 141,000 to 196,000 ROM tons annually, well within the capacity of the current mining fleet.

BOYD reviewed the LOM plans for U.S. Silica's Colado Operation to determine whether the plans: (1) utilize generally accepted engineering practices, and (2) align with historical and industry norms. Based on our assessment, it is BOYD's opinion that the forecasted production levels for the Colado Operation are reasonable, logical, and

consistent with typical surface mining practices and historical results achieved by U.S. Silica.

1.6.2 Processing

The production of finished DE products begins when the plant receives raw DE from the mine by truck. From this raw feed material, numerous products are generated through various processing methods, including kiln drying, milling, and sizing.

Since its construction in the late 1950s, the Colado Processing Plant has been upgraded and expanded several times as needed to meet specific market demands. The plants currently run 24 hours a day, nearly 300 days a year, with a nominal capacity of 162,000 tons of finished DE products per year.

Based on our review, it is BOYD's opinion that the processing methods and existing equipment at the plant will be sufficient for the forecasted production levels over the life of the operation.

1.6.3 Other Infrastructure

The Colado Mine is remote with little installed mine-related infrastructure. The mine site is accessible by private and state roads. Energy for the mine site is provided primarily by diesel powered equipment. Fuel and water is trucked to the site by local suppliers and stored in tanks.

The Colado Processing Plant has been operating in its present location for over 60 years and is supplied with reliable and sufficient power and natural gas from regional utility companies. Water for the Colado plant comes from municipal sources. Waste disposal and handling capacity and capability is sufficient for projected production levels. Transportation of supplies and finished products is facilitated by interstate highways and railroad access.

1.7 Financial Analysis

1.7.1 Market Analysis

The Colado Operation produces a wide range of finished DE products, which generally fall into one of the following categories:

- Food grade products (filter-aids) sold into the filtration markets are used extensively to filter out contaminants from fruit juices, wine, beer, sugar, bio-diesel fuel, high fructose corn syrup, and water.
- Fine-filler products are used as additives in paints, rubber, paper, and plastics.

- Aggregate products, which are used primarily as industrial absorbents, catalysts, and carriers for pesticides.

Based on estimates provided by the U.S. Geological Survey (USGS), the Colado Operation accounted for approximately 10% of the total production of finished DE products in the U.S. during 2022.

The market for DE is driven by the increasing demand for natural and eco-friendly products, the growing awareness of the benefits of DE in agriculture and sanitation, and the increasing use of DE in the construction, paint, and coatings industries. Based on the USGS's estimates, the compound annual growth rate (CAGR) for domestic DE production between 2018 and 2022 is 3.5%, while the post-COVID (2019–2022) CAGR is 12.7%.

Strong growth in demand and prices for finished DE products from the Colado Operation is expected. BOYD believes it is reasonable to assume that pricing will sustain over the remaining life of the Colado Operation.

1.7.2 Capital and Operating Cost Estimates

The Colado Operation's financial performance over the last years is summarized as follows:

- Average realization (selling price) for finished DE products increased from $491.94 per ton sold in 2020 to $697.27 per ton sold in 2022.
- Total cash cost of sales also increased from $328.86 per ton sold in 2020 to $545.48 per ton sold in 2022.
- EBITDA margin decreased from 33.2% in 2020 to 21.8% in 2022.
- Capital expenditures totaled almost $12.5 million over the last three years, averaging $35.97 per ton sold.

Forward-looking production and unit cost estimates are based on actual past performance and subject to U.S. Silica's customary internal budget review and approvals process. In BOYD's opinion, operating volumes are well-defined and understood, as are mining and processing productivities.

The Colado Operation and related facilities are fully developed and should require no near-term major capital investment to maintain full commercial production. Historically, the timing and amount of capital expenditures has been largely discretionary and within U.S. Silica's control. Their budgetary allocations for sustaining and discretionary capital

expenditures over the next three years totals $17.3 million. Thereafter, capital expenditures are expected to rise 3% year-over-year from 2025's $5.9 million. BOYD considers the near-term detailed capital expenditure schedule as presented by U.S. Silica to be reasonable and representative of the capital necessary to operate the Colado Operation.

Operating cost estimates were developed based on recent actual costs and considering specific operational activity levels and cost drivers. In the near-term, U.S. Silica expects their unit operating costs to stay relatively level (on an uninflated basis). As such, the projected total cash cost of sales over the life of the mine is $545.48 per ton sold. As the operation is in a steady state, BOYD considers the future operating cost estimates to be reasonable and appropriate.

1.7.3 Economic Analysis

An economic analysis of the Colado Operation was prepared in-house by U.S. Silica as part of their annual budgeting process. The financial model forecasts future free cash flow from DE production and sales over the life cycle of the Colado Operation using the annual forecasts of production, sales revenues, and operating and capital costs.

Table 1.3, below, provides a summary of the estimated financial results for remaining life of the Colado Operation.

Table 1.3: Financial Results

	Units	Remaining Life of Mine Total
Remaining Life	years	25
Production:		
ROM Production	000 tons	4,479
Product Sales	000 tons	3,655
Total Revenues	$ millions	2,548.4
Total Cash Costs of Sales	$ millions	1,993.7
Capital Expenditures	$ millions	202.1
Pre-Tax:		
Cash Flow	$ millions	350.8
$NPV_{12.5}$	$ millions	109.8
After-tax:		
Cash Flow	$ millions	253.0
$NPV_{12.5}$	$ millions	81.6

JOHN T. BOYD COMPANY

Table 1.4 summarizes the results of the pre-tax and after-tax discounted cash flows (DCF) and net present value (NPV) analyses for the Colado Operation.

Table 1.4: DCF-NPV Analysis

	NPV ($ millions)		
	10%	12.5%	15%
Pre-Tax	131.2	109.8	93.8
After-Tax	97.0	81.6	70.0

The NPV estimate was made for purposes of confirming the economic viability of the reported DE reserves and not for purposes of valuing the U.S. Silica, Colado Operation, or its assets. Internal rate-of-return (IRR) and project payback were not calculated, as there was no initial investment considered in the financial analysis presented herein.

BOYD reviewed the financial model and its inputs in detail, and opined that the model provides a reasonable and accurate reflection of the Colado Operation's expected economic performance based on the assumptions and information available at the time of our review.

1.8 Permitting and Compliance

Numerous permits are required by federal and state law for mining, processing, and related activities at the Colado Operation, which U.S. Silica reports are in place or pending approval. New permits or permit revisions may be necessary from time to time to facilitate future operations. Given sufficient time and planning, U.S. Silica should be able to secure new permits, as required, to maintain its planned operations within the context of current regulations.

U.S. Silica reports having an extensive environmental management and compliance process designed to follow or to exceed industry standards.

Mine safety is regulated by the U.S. Department of Labor's Mine Safety and Health Administration (MSHA). MSHA inspects the facilities a minimum of twice yearly. U.S. Silica's safety record compares favorably with its regional peers.

BOYD is not aware of any regulatory violation or compliance issue which would materially impact the DE reserve estimate.

1.9 Conclusions

It is BOYD's overall conclusion that U.S. Silica's estimates of DE reserves, as reported herein: (1) were prepared in conformance with accepted industry standards and practices, and (2) are reasonably and appropriately supported by technical evaluations, which consider all relevant modifying factors.

Given the lengthy operating history and status of evolution, residual uncertainty (future risk) for this operation is considered minor under the current and foreseeable operating environment.

It is BOYD's opinion that extraction of the DE reported herein is technically, legally, and economically achievable after the consideration of potentially material modifying factors. The ability of U.S. Silica, or any mine operator, to recover all of the reported DE reserves is dependent on numerous factors that are beyond the control of, and cannot be anticipated by, BOYD. These factors include mining and geologic conditions, the capabilities of management and employees, the securing of required approvals and permits in a timely manner, future product prices, etc. Unforeseen changes in regulations could also impact performance.

2.0 INTRODUCTION

2.1 Registrant

U.S. Silica is a US-based mining company headquartered in Katy, Texas. The company's common stock is listed on the New York Stock Exchange (NYSE:SLCA). U.S. Silica is actively engaged in the production and marketing of commercial DE and performance materials (DE, calcium bentonite clay, calcium montmorillonite clay, and perlite products). Their whole grain silica products are used as frac (proppant) sand for oil and natural gas recovery, and in the manufacture of glass, foundry, and building products. U.S. Silica's performance materials are used in: (1) filtration for foods and beverages, pharmaceuticals, and swimming pools; (2) as additives in paint and coatings, plastics and rubber, and agriculture products; and (3) for bleaching, catalysis and adsorption in edible oil processing, aromatics purification, and industrial and chemical applications. Additional information regarding U.S. Silica can be found on their website: www.ussilica.com.

2.2 Terms of Reference and Purpose

U.S. Silica retained BOYD to complete an independent technical assessment of their internally-prepared DE resource and reserve estimates and supporting information for the Colado Operation.

BOYD prepared this technical report summary for U.S. Silica in support of their disclosure of DE reserves for the Colado Operation in accordance with S-K 1300. The purpose of this report is threefold: (1) to summarize material technical and geoscientific information for the subject mining property, (2) to provide the conclusions of our technical assessment, and (3) to provide a statement of DE resources and/or reserves for the Colado Operation.

BOYD's findings are based on our detailed examination of the supporting geologic and other scientific, technical, and economic information provided by U.S. Silica, as well as our assessment of the methodology and practices applied by U.S. Silica in formulating the estimates of DE resources and reserves disclosed in this report. We did not independently estimate DE resources or reserves from first principles.

We used standard engineering and geoscience methods, or a combination of methods, that we considered to be appropriate and necessary to establish the conclusions set forth herein. As in all aspects of mining property evaluation, there are uncertainties

inherent in the interpretation of engineering and geoscience data; therefore, our conclusions necessarily represent only informed professional judgment.

The ability of U.S. Silica, or any mine operator, to recover all of the estimated DE reserves presented in this report is dependent on numerous factors that are beyond the control of, and cannot be anticipated by, BOYD. These factors include mining and geologic conditions, the capabilities of management and employees, the securing of required approvals and permits in a timely manner, future DE product prices, etc. Unforeseen changes in regulations could also impact performance. Opinions presented in this report apply to the site conditions and features as they existed at the time of BOYD's investigations and those reasonably foreseeable.

This report is intended for use by U.S. Silica, subject to the terms and conditions of its professional services agreement with BOYD. We also consent to U.S. Silica filing this report as a technical report summary with the SEC pursuant to S-K 1300. Except for the purposes legislated under US securities law, any other uses of or reliance on this report by any third party is at that party's sole risk.

2.3 Expert Qualifications

BOYD is an independent consulting firm specializing in mining-related engineering and financial consulting services. Since 1943, BOYD has completed over 4,000 projects in the United States and more than 60 other countries. Our full-time staff comprises mining experts in: civil, environmental, geotechnical, and mining engineering; geology; mineral economics; and market analysis. Our extensive experience in DE resource and reserve estimation combined with our knowledge of the subject property, provides BOYD an informed basis on which to opine on the reasonableness of the estimates provided by U.S. Silica. An overview of BOYD can be found on our website at www.jtboyd.com.

The individuals primarily responsible for completing this technical assessment and the preparation of this report are by virtue of their education, experience, and professional association considered qualified persons (QPs) as defined in S-K 1300.

Neither BOYD nor its staff employed in the preparation of this report have any beneficial interest in U.S. Silica, and are not insiders, associates, or affiliates of U.S. Silica. The results of our assessment were not dependent upon any prior agreements concerning the conclusions to be reached, nor were there any undisclosed understandings concerning any future business dealings between U.S. Silica and BOYD. This report was prepared in return for fees based upon agreed commercial rates, and the payment for

our services was not contingent upon our opinions regarding the project or approval of our work by U.S. Silica and its representatives.

2.4 Principal Sources of Information

Information used in this assignment was obtained from: (1) files provided by U.S. Silica, (2) discussions with U.S. Silica personnel, (3) records on file with regulatory agencies, (4) public sources, and (5) nonconfidential information in BOYD's possession.

The following information was provided by U.S. Silica:

- Year-end reserve statements and reports for 2021 and 2022.
- Exploration records (e.g., drilling logs and lab sheets).
- Geologic databases of lithology and sample results.
- Computerized geologic models.
- Mapping data, with:
  - Land ownership boundaries.
  - Infrastructure locations.
  - Easement and right-of-way boundaries.
  - Surveyed topography (surface elevation).
- Mine plans, production schedules, and supporting data.
- Overview of processing operations and detailed flow sheets.
- Copies of mining and operating permits.
- Historical information, including:
  - Production reports.
  - Financial statements.
  - Product sales and pricing.

Information from sources external to BOYD and/or U.S. Silica are referenced accordingly.

The data and work papers used in the preparation of this report are on file in our offices.

2.5 Personal Inspections

A site visit and inspection of the Colado Operation was completed on October 12, 2022, by BOYD's QPs responsible for the preparation of this report. The site visit included: (1) observation of the active mining operations, (2) a tour of the mine site's surface infrastructure, and (3) a tour of the process plant and truck loadouts. BOYD's representatives were accompanied by senior U.S. Silica engineering and management personnel who openly and cooperatively answered questions regarding, but not limited

to: site history; deposit geology; mining and processing operations; near- and long-range mining plans; and DE marketing.

2.6 Report Version

The DE resources and reserves presented in this Technical Report Summary are effective as of December 31, 2022. The effective (i.e., “as of”) date of the report is December 31, 2022.

This is the third Technical Report Summary filed by U.S. Silica for the Colado Operation and supersedes the following previously filed reports:

Westward Environmental; February 2022; Technical Report Summary Colado Site, Lovelock, Pershing County, Nevada.

Westward Environmental; September 2022; Technical Report Summary Colado Site, Lovelock, Pershing County, Nevada.

The user of this document should ensure that this is the most recent disclosure of DE resources and reserves for the Colado Operation as it is no longer valid if more recent estimates have been issued.

2.7 Units of Measure

The US customary measurement system has been used throughout this report. Tons are short tons of 2,000 pounds-mass. Unless otherwise stated, currency is expressed in US Dollars ($). Historic prices and costs are presented in nominal (unadjusted) dollars. Future dollars values are expressed on a constant (unescalated) basis.

3.0 PROPERTY DESCRIPTION

3.1 Location

Located in Pershing County, Nevada, U.S. Silica's Colado Operation comprises a surface DE mining operation and a DE processing plant. The Colado Mine and Colado Processing Plant are located in Pershing County, Nevada, approximately 80 miles northeast of the City of Reno. Figure 1.1 (page 1-2) shows the general location of the Colado Operation.

The Colado Processing Plant is located seven miles northeast of the City of Lovelock, sandwiched between Business Highway 95 (Upper Valley Road) and Interstate 80 (I-80). The Colado Mine is located approximately 19 miles northwest of the plant via the paved Seven Troughs Rd. (CR 399).

Geographically, the southeastern-most access to the Colado Mine is located at approximately 40° 16' 29.66" N latitude and 118° 43' 41.51" W longitude. The Colado Processing Plant is located at approximately 40° 14' 45.51" N latitude and 118° 23' 25.35" W longitude.

3.2 Property Rights

U.S. Silica holds surface and/or mineral rights to approximately 9,526 acres across the two sites that comprise the Colado Operation. The Colado Mine property comprises ±8,993 acres of private and federal lands leased from the Franco-Nevada and the BLM, respectively. The Colado Processing Plant property comprises ±533 acres owned in fee by U.S. Silica or leased from the BLM. Surface and mineral control associated with the Colado Operation is summarized in Table 3.1, below.

Table 3.1: Property Control Summary

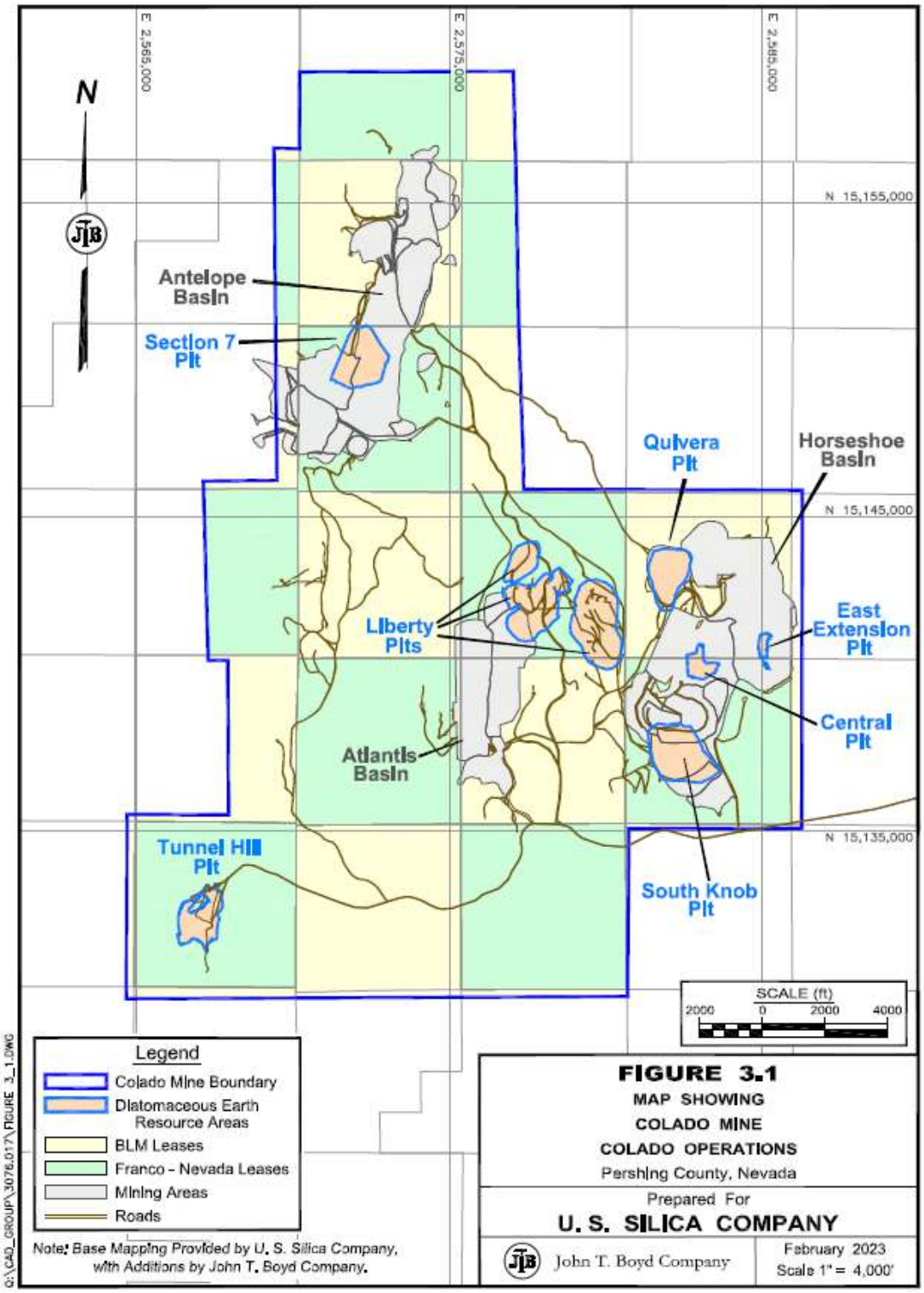
			Acres	
Site	Control Type	Landowner	Surface	Mineral
Colado Mine	Lease	Franco-Nevada	3,842	3,842
	Lease/Claims	BLM	5,151	3,174
	Subtotal		8,993	7,016
Colado Plant	Fee	U.S. Silica	493	-
	Lease	BLM	40	-
	Subtotal		533	-
Total			9,526	7,016

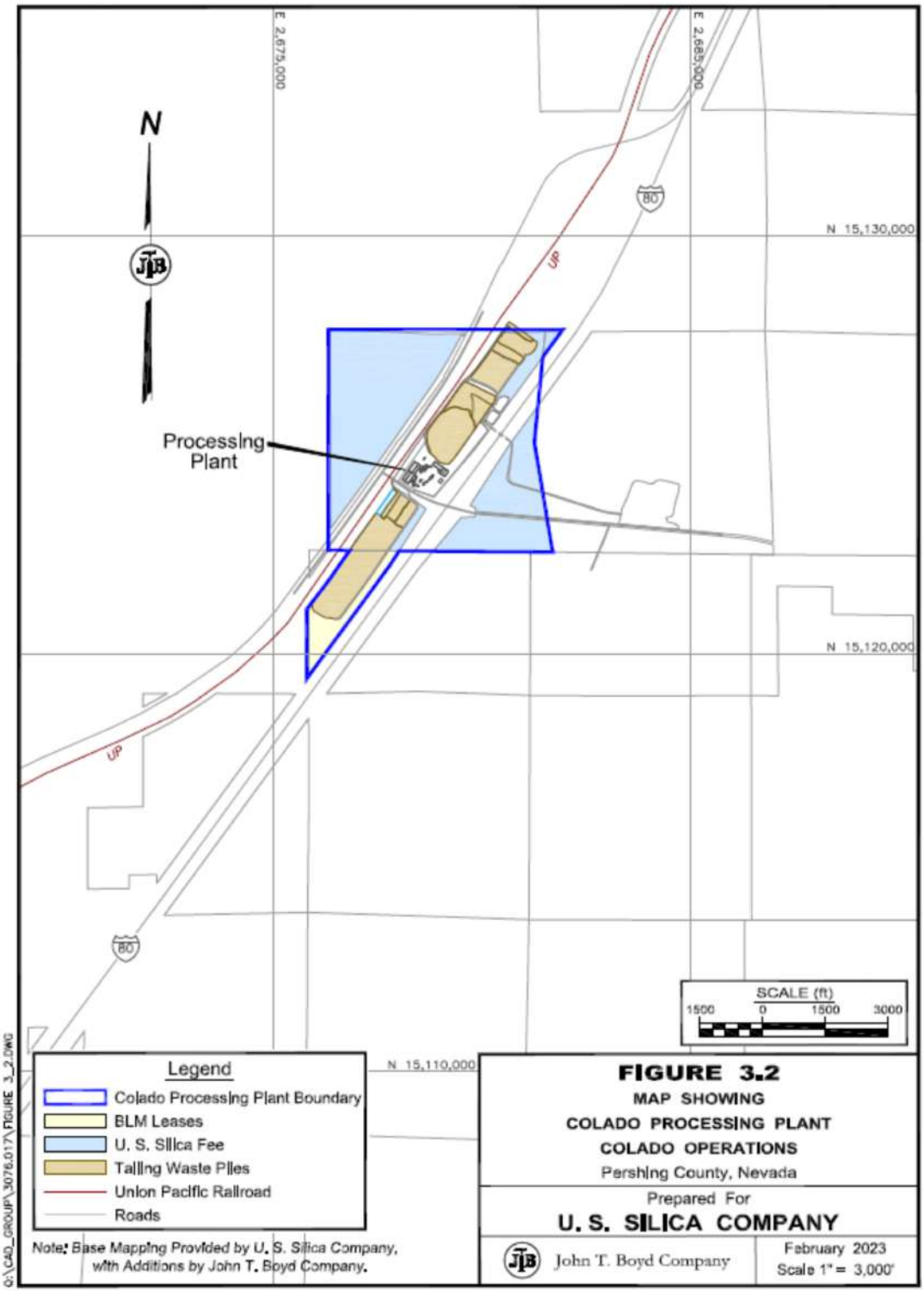
Figures 3.1 and 3.2, on the following pages, illustrate the general layout (including property ownership) of the Colado Mine and Colado Processing Plant, respectively.

The Franco-Nevada lease provides U.S. Silica with approximately 3,842 acres of surface and mineral control at the Colado Mine. The lease dates back to 1966 and has been amended several times. The current lease amendment expires in December 2034 and is expected to be renewed at that time. The Franco-Nevada lease requires annual royalty payments.

The BLM leases provide U.S. Silica with surface control on federal lands at both the Colado Mine and Colado Processing Plant properties. Mineral rights on the BLM-administered lands at the Colado Mine are provided to U.S. Silica by way of 148 active mineral claims, of which 132 are placer claims. Mineral claims are renewed on an annual basis and require nominal maintenance fees.

As shown is Table 3.1, U.S. Silica owns in fee approximately 493 acres upon which the Colado Processing Plant is situated.


N
E 2,565,000
E 2,575,000
E 2,585,000
N 15,155,000
N 15,145,000
N 15,135,000
Antelope Basin
Section 7 Pit
Quivera Pit
Horseshoe Basin
Liberty Pits
East Extension Pit
Central Pit
Atlantis Basin
Tunnel Hill Pit
South Knob Pit
SCALE (ft)
2000 0 2000 4000
Legend
Colado Mine Boundary
Diatomaceous Earth Resource Areas
BLM Leases
Franco - Nevada Leases
Mining Areas
Roads
Note: Base Mapping Provided by U. S. Silica Company, with Additions by John T. Boyd Company.
FIGURE 3.1
MAP SHOWING
COLADO MINE
COLADO OPERATIONS
Pershing County, Nevada
Prepared For
U. S. SILICA COMPANY
John T. Boyd Company
February 2023
Scale 1" = 4,000'
G:\CAD_GROUP\3076.017\FIGURE 3_1.DWG


E 2,675,000
E 2,685,000
N
N 15,130,000
N 15,120,000
N 15,110,000
UP
UP
80
80
Processing Plant
SCALE (ft)
1500 0 1500 3000
Legend
Colado Processing Plant Boundary
BLM Leases
U. S. Silica Fee
Tailing Waste Piles
Union Pacific Railroad
Roads
Note: Base Mapping Provided by U. S. Silica Company, with Additions by John T. Boyd Company.
FIGURE 3.2
MAP SHOWING
COLADO PROCESSING PLANT
COLADO OPERATIONS
Pershing County, Nevada
Prepared For
U. S. SILICA COMPANY
John T. Boyd Company
February 2023
Scale 1" = 3,000'
O:\CAD_GROUP\3076.017\FIGURE 3_2.DWG

3.3 Encumbrances

3.3.1 Fees and Royalties

To maintain ownership of the Colado Operation properties, U.S. Silica must pay property taxes to the local government in Pershing County. To BOYD's knowledge, there are no liens against the properties.

The Franco-Nevada lease agreement requires: (1) annual payment of $45,000, (2) an indexed "per product ton shipped" royalty which is adjusted annually, and (3) a surcharge of 2.5% of total royalties. For 2022, approximately 54,830 tons were produced from the Franco-Nevada leases and subject to a $5.75 per ton ($5.90 per ton after 2.5% surcharge) royalty.

In 2022, the annual maintenance fees payable to the BLM were $165 per placer claim.

It is BOYD's understanding that there are no other royalties, overriding or limited royalties, working interests, production payments, net profit interests, or other mineral interests in the Colado Operation properties.

3.3.2 Permitting Requirements

Mining and processing activities at the Colado Operation are regulated by several federal and state laws. As mandated by these laws and regulations, numerous permits are required for mining, processing, and other incidental activities. U.S. Silica reports that necessary permits are in place or applied for to support immediate operations. New permits or permit revisions may be necessary from time to time to facilitate future operations. Given sufficient time and planning, U.S. Silica should be able to secure new permits, as required, to maintain its planned operations within the context of the current regulations. Permitting and permitting conditions are discussed further in Chapter 17 of this report.

In BOYD's opinion, U.S. Silica has demonstrated their ability and cooperation to align their operating plans with any permitting requirements that may be encountered during the normal course of business.

BOYD is not aware of any current material violations or fines imposed by regulators on the Colado Operation.

3.3.3 Mining Restrictions

No significant encumbrances exist at the Colado Mine site.

3.3.4 Other Significant Factors or Risks

To the extent known to BOYD, there are no other significant factors and risks that may affect access, title, or the right or ability to perform work on the Colado Operation that are not discussed in this report. However, the reported DE resources and reserves may be materially impacted by: U.S. Silica's failure to comply with permit conditions and rules; delays in obtaining required government or other regulatory approvals or permits; U.S. Silica's inability to obtain such required approvals or permits; or unforeseen changes in governmental regulations.

4.0 PHYSIOGRAPHY, ACCESSIBILITY, AND INFRASTRUCTURE

4.1 Topography, Elevation, and Vegetation

The Colado Operation lies within the Great Basin section of the Basin and Range physiographic province. The terrain is characterized as a north-south trending series of alternating mountain ranges and wide, flat valleys.

The Colado Mine is located on the western flank of the Trinity Range, a short north-south mountain range extending for about 58 miles. The Trinity Range is flanked to the west by Granite Springs and Sage Valley. The range is characterized by well-dissected topography with low to moderately steep slopes. Topographic relief within the project area is approximately 1,300 ft. Elevations range from 4,400 ft above mean sea-level (AMSL) in the northwest, to over 5,700 ft AMSL in the southeast.

There are not any natural surface waters present in and around the Colado Mine.

Vegetation is typical of the Basin and Range physiographic province. The property is covered by sagebrush, grass, and various other desert shrubs.

4.2 Accessibility

General access to the Colado Operation is via a network of primary and secondary roadways serviced by state and local governments. The existing roadways provide direct access to the mine and processing facilities and are generally accessible year-round.

Primary vehicular access to the mine and plant is via I-80, which runs northeast-southwest, from Reno through Lovelock, and adjacent to the Colado Processing Plant. A combination of state highways and county roads lead to the Colado Mine property, which is approximately 19 miles northwest of Lovelock, in a rather remote location.

4.3 Climate

The regional climate around the Colado Operation is typical of a high elevation arid desert: little rainfall, warm daytime temperatures, and cool nighttime temperatures, with seasonably hot summers and cold winters. Average daily high temperatures are well above freezing 12 months of the year, while daily low temperatures may drop below freezing roughly half of the year.

The primary cause of the region's arid climate is the rain shadow effect imparted on the area due to the height of the Sierra Nevada Mountains to the west. Annual precipitation in the region is approximately 6 to 9 in, however totals may vary widely from year to year. The evaporation potential greatly exceeds the precipitation on an average annual basis, which aids in drying the mined DE before processing.

4.4 Infrastructure Availability and Sources

The Colado Processing Plant is located adjacent to the Coal Canyon exit (Exit 112) of I-80 , facilitating the use of semi-trailer trucks to transport most of the Colado Operation's finished DE products to customers.

The Colado Processing Plant is also located on a Union Pacific (UP) rail line and can utilize bulk hopper rail cars to transport finished products, as needed.

Several regional airports are located within a 75-mile radius of the Colado Operation and the Reno-Tahoe International Airport located just over a 100-mile drive away.

Reliable sources of electrical power, water, gas, supplies, and materials are readily available for the Colado Processing Plant. Utilities are provided to the plant via suppliers that service the town of Lovelock. The Colado Mine uses diesel generators and solar panels to provide power to the repair shop and portable job-site office buildings. Diesel fuel must be trucked from the local supplier and is stored in tanks on site. Water for dust suppression is delivered by the local municipality using tanker trucks and stored on site in tanks.

5.0 HISTORY

5.1 Reserve Acquisition

U.S. Silica owns the Colado Operation as a direct result of their purchase of EP Minerals, LLC (EP Minerals) in May 2018. EP Mineral's history of developing the Colado Operation dates to the late 1950s, when EP Minerals predecessor, Eagle-Picher, Industries, Inc., first submitted an operational plan to conduct DE mining on what is the present-day Colado Mine property.

5.2 Exploration and Development

Extensive exploration and mining activities have been conducted at the Colado Mine since the late 1950s. Exploration programs ranging from geologic mapping, field sampling, drilling campaigns, and specialized survey techniques have been conducted to investigate the subsurface geology on the property. Early reconnaissance mapped the locations of DE outcrops at the surface of the Colado Mine property. Field samples were obtained while conducting mapping exercises to gain a general understanding of the physical and chemical characteristics of the various DE beds located throughout the property. Mapping data and sample testing results were utilized to identify areas to conduct exploration drilling and sampling. Throughout development of the Colado Mine, over 1,150 drill holes have been completed.

6.0 GEOLOGICAL SETTING, MINERALIZATION, AND DEPOSIT

6.1 Regional Geology

The Colado Operation is situated within the Great Basin, a geographical subdivision of the greater Basin and Range province of the western US. The Great Basin is bounded by the Sierra Nevada Mountains to the west and the Rocky Mountains to the east, covering much of the State of Nevada, and partially extending into portions of contiguous surrounding states.

Geologically, the Great Basin is predominantly characterized by regional crustal extension. One key characteristic related to this crustal extension is that all water that falls within the Great Basin watershed drains internally into low-lying areas. This is known as an endorheic watershed. This process occurs on a regional scale across the entire Great Basin; however smaller-scale sets of horst-graben structures are locally apparent, and are characterized by the numerous and repetitive sets of generally north-south trending mountains (horsts) and valleys (grabens). These mountains and valleys are respectively defined by parallel faulting. The lower-lying graben features, over time, would concentrate drainage, forming playa lakes. As a result, lacustrine (lake) sedimentation was deposited (DE and volcanic ash sequences mainly). These spatially and temporally related deposits resulted in the accumulation of similarly characteristic sequences of DE being deposited between 15 to 23 million years ago in the area of the Colado Operation.

6.2 Local Geology

6.2.1 Stratigraphy

The mineable DE on the Colado property is typically observed as consisting of between two to four beds (varies by pit) separated by friable tuffaceous (compacted volcanic ash) units. The DE beds are generally white or light pink in color and tend to be very clean, while the interbedded tuffaceous units are generally gray in color. The contrast in bed coloring makes visual selection during mining relatively easy.

Welded and lithic tuffs directly overlie the DE beds, with Miocene to Pliocene (Tertiary) age basalt flows forming a weathering-resistant capping unit, which has helped preserve the underlying strata from being eroded.

Bi-modal Tertiary volcanic units of rhyolitic, basaltic-andesitic, and basaltic composition underlie the DE beds.

A generalized stratigraphic chart of the surface and near-surface geologic units in Pershing County, Nevada is presented in Figure 6.1.

System	Series	Geologic Unit
Quaternary	Holocene / Pleistocene	Undifferentiated Alluvium
Neogene	Pliocene	Gravels
	Pliocene / Miocene	Basalt Flows
	Miocene	Welded Tuffs, Diatamaceous Earth, Tuffs
		Bi-Modal Volcanic Units

Figure 6.1: Generalized Stratigraphic Chart, Surface and Near-Surface Geologic Units, Pershing County, Nevada

The following text discusses the strata encountered in and around the Colado Operation in depositional (ascending) order:

Tertiary Bimodal Volcanic Units

The volcanic units underlying the DE bed sequences on the Colado property consist primarily of andesitic volcanic flows; however, some degree of additional units have been noted as well, which consist of rhyolitic and basaltic volcanic units. The primary difference between these types of volcanic deposits is the silica content present in the makeup of the magma at the time of the eruptions. The exact composition and thickness of the underlying volcanic units is currently unknown.

Tertiary Diatomaceous Earth and Tuff Beds

Miocene age deposits of DE began accumulating during earlier basin-and-range extensional periods in freshwater playa lake environments, continuing up to approximately 15 million years ago. Intense volcanism during DE depositional periods resulted in numerous sequences of the accumulating white DE beds being visibly interrupted by intervals of grey friable tuffs. These sequences are clearly visible in the open pits at the Colado Mine today, where the various DE and tuff beds within the property may vary in thickness from a few inches thick to more than 50 ft.

Tertiary Tuffs and Basalt Flows

The DE beds are immediately covered by a series of welded and lithic tuffs, most likely deposited after the playa lake environments that were accumulating the DE intervals had dried up. Welded and lithic tuffs are simply tuffs that were of such high temperatures when deposited, that they ended up fusing together while cooling.

These tuffs were then covered by sequences of basaltic lava flows, which may tend to cover very wide areas during eruptions. These lavas cooled, forming a weathering-resistant cap rock that helped to protect the underlying DE beds from erosion.

Quaternary Alluvium
Often, a thin cover stratum is present, consisting of mixed deposits of alluvium, gravels, sands, soils, or clays, which are typically concentrated in lower-lying areas where these materials are able to accumulate.

6.2.2 Structural Geology

The Trinity Range is the result of regional uplifting that occurred later during basin-and-range extension, after the target DE beds were deposited. Structure within the immediate area is considered to be relatively simple when compared to other uplifted blocks, as low dip angles (generally less than 10 degrees) are noted in most of the DE beds being mined.

Several high-angle displacement faults are present in and around the Colado Mine property, however throughout the typical course of mining (overburden removal and benching into deeper DE beds), these areas are well exposed, allowing modified mining operations when required.

6.3 Property Geology

Exploration and mining activities have identified several near-surface DE deposits—notably, the Antelope Basin, Atlantis, Horseshoe Basin, Liberty, Quivera, and Tunnel Hill deposits—on the Colado Mine property. The location of these deposits is illustrated in Figure 6.2, following this text. Figures 6.3 to 6.6, provide typical cross-sections through the various DE deposits on the property.

Surface stratigraphy at the Colado Mine property consists primarily of a combination of Quarternary Alluvium and Tertiary Age volcanic deposits overlying the target DE beds. U.S. Silica's drilling logs note variations in overburden materials consisting of soil, ash, clay, sand, and gravel units over different portions of the Colado Mine. These cover units may be completely absent, exposing DE at the surface, or they may reach thicknesses in

excess of 200 ft. When present, the alluvial units typically overlie an interval of more competent basalt material, which overlies a series of welded and lithic tuffs. The competent overburden intervals must be drilled and blasted in order to expose the DE beds prior to mining.

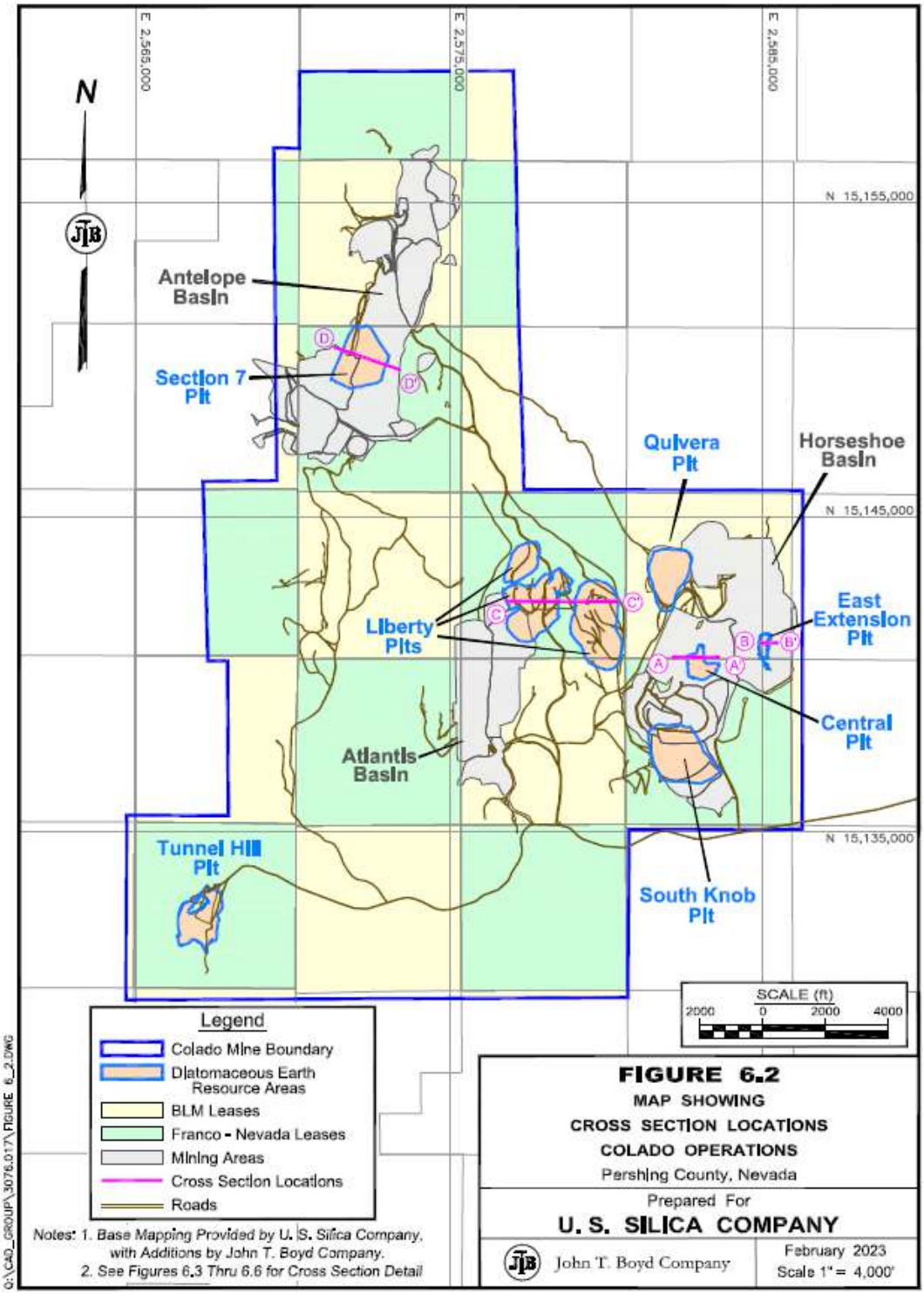
The DE beds horizons present as one or more tabular sedimentary units with varying depths, thicknesses, and physical and chemical characteristics. The DE beds at the Colado Mine are relatively shallow, quite thick, and are moderately dipping. Generally, the high-quality DE strata are easily distinguished from the surrounding interbedded tuffs and other inclusions by a distinct difference in color clearly visible in the exposed mining faces.

6.4 Diatomaceous Earth

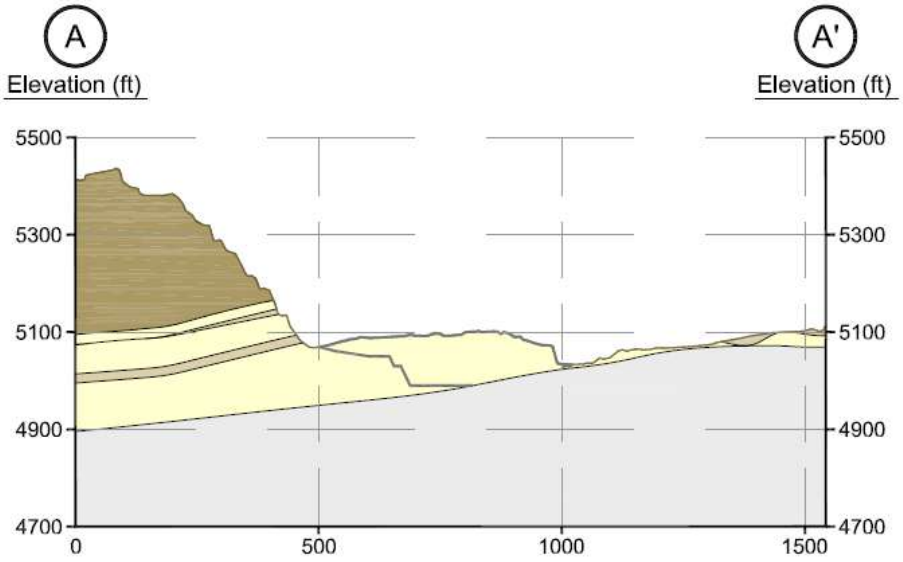
DE, commonly known as diatomite, is a naturally occurring sedimentary rock that is a result of the accumulation of skeletal remains of diatoms, which are microscopic single-celled aquatic algae.

Diatoms thrive in various pond, lake, and ocean environments with numerous specialized species in existence, depending on environmental characteristics. Diatoms convert carbon dioxide into oxygen and organic sugars through the process of photosynthesis during their short (usually only days long) lifecycle. It is estimated that diatoms produce 20–30% of Earth's oxygen and serve as a base food source for the entire aquatic food chain.

Diatom skeletons are composed primarily of amorphous silica (non-crystalline SiO_2). The cylindrical shape and high pore volume of these diatom skeletons provide high mechanical strength, natural filtration, and absorption capabilities. The properties which make DE valuable include low density, high porosity, high surface area, abrasiveness, insulating properties, inertness, absorptive capacity, brightness, and high silica content. It is mainly used as filter aids, fillers, and absorbents.


E 2,565,000
E 2,575,000
E 2,585,000
N
N 15,155,000
N 15,145,000
N 15,135,000
Antelope Basin
Section 7 Pit
Quivera Pit
Horseshoe Basin
Liberty Pits
East Extension Pit
Central Pit
Atlantis Basin
Tunnel Hill Pit
South Knob Pit
A
A'
B
B'
C
C'
D
D'
SCALE (ft)
2000 0 2000 4000
Legend
Colado Mine Boundary
Diatomaceous Earth Resource Areas
BLM Leases
Franco - Nevada Leases
Mining Areas
Cross Section Locations
Roads
Notes: 1. Base Mapping Provided by U. S. Silica Company, with Additions by John T. Boyd Company.
2. See Figures 6.3 Thru 6.6 for Cross Section Detail
FIGURE 6.2
MAP SHOWING
CROSS SECTION LOCATIONS
COLADO OPERATIONS
Pershing County, Nevada
Prepared For
U. S. SILICA COMPANY
John T. Boyd Company
February 2023
Scale 1" = 4,000'
Q:\CAD_GROUP\3076.017\FIGURE 6_2.DWG

Q:\CAD_GROUP\3076.017\FIGURE 6_3.DWG



Legend
- Plt
- Tuffs with Basalt Cover
- Tuffs
- Diatomaceous Earth
- Bimodal Volcanic Units

FIGURE 6.3
CROSS SECTION A - A'
HORSESHOE BASIN CENTRAL
COLADO OPERATION
Pershing County, Nevada

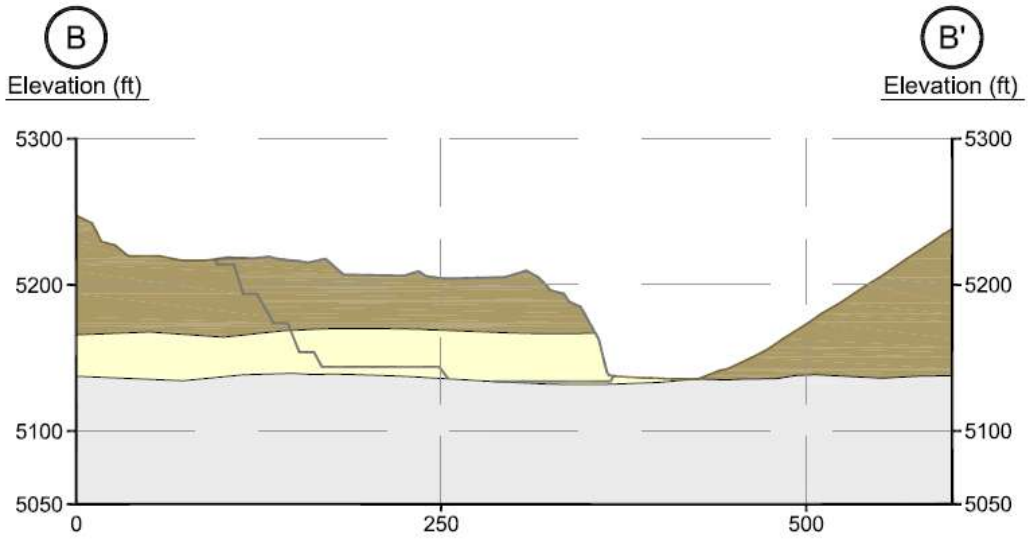
Prepared For
U. S. SILICA COMPANY

John T. Boyd Company

February 2023
Scale 1" = 300'

Note : See Figure 6.2 For Cross Section Location.

Q:\CAD_GROUP\3076.017\FIGURE 6_4.DWG



Legend
- Plt
- Tuffs with Basalt Cover
- Tuffs
- Diatomaceous Earth
- Bimodal Volcanic Units

Note : See Figure 6.2 For Cross Section Location.

FIGURE 6.4
CROSS SECTION B - B'
HORSESHOE BASIN EAST
COLADO OPERATION
Pershing County, Nevada

Prepared For
U. S. SILICA COMPANY

John T. Boyd Company

February 2023
Scale 1" = 100'

Q:\CAD_GROUP\3076.017\FIGURE 6_5.DWG

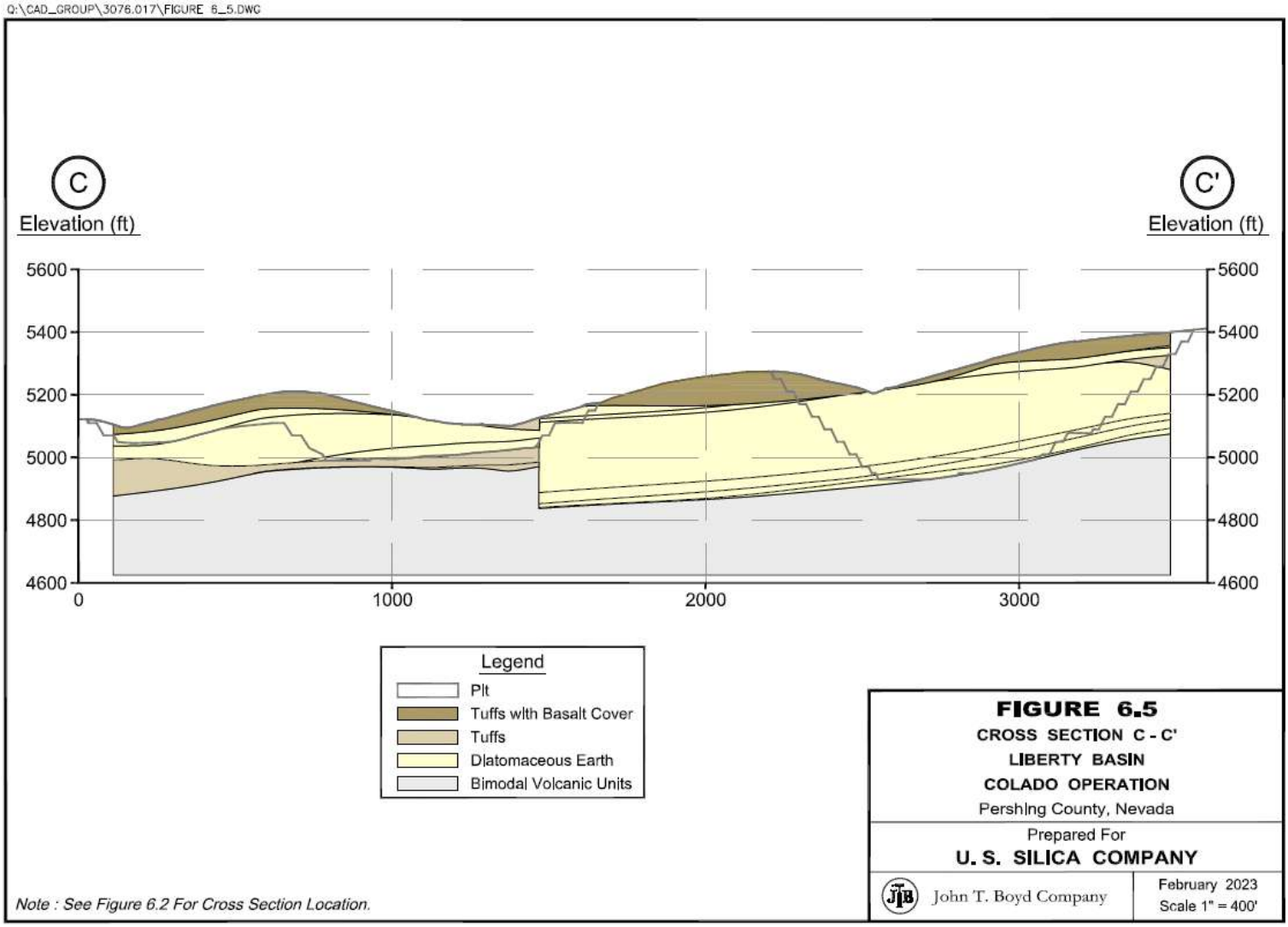


FIGURE 6.5
CROSS SECTION C - C'
LIBERTY BASIN
COLADO OPERATION
Pershing County, Nevada

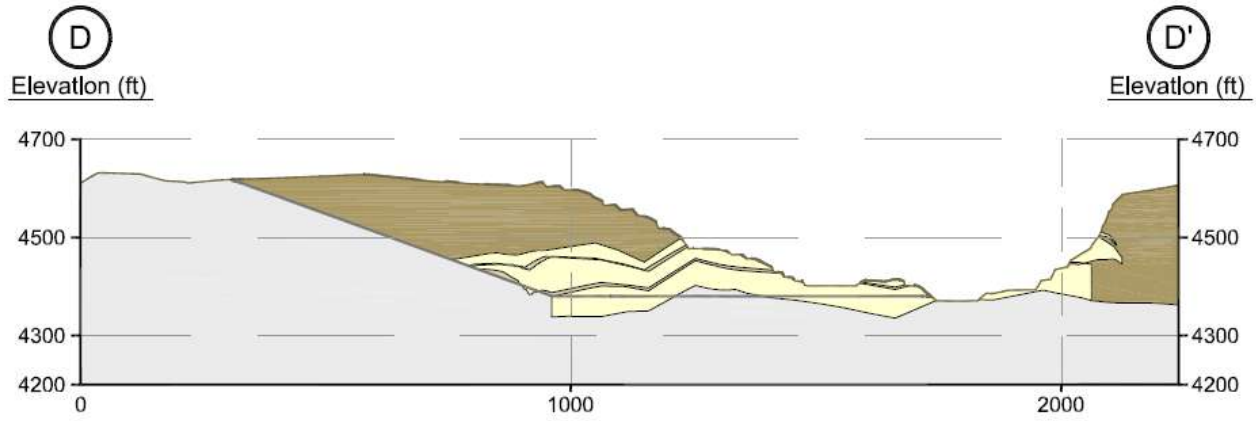
Prepared For
U. S. SILICA COMPANY

John T. Boyd Company

February 2023
Scale 1" = 400'

Note : See Figure 6.2 For Cross Section Location.

Q:\CAD_GROUP\3076.017\FIGURE 6_6.DWG



Legend
- Plt
- Tuffs with Basalt Cover
- Tuffs
- Diatomaceous Earth
- Bimodal Volcanic Units

FIGURE 6.6
CROSS SECTION D - D'
ANTELOPE BASIN
COLADO OPERATION
Pershing County, Nevada

Prepared For
U. S. SILICA COMPANY

John T. Boyd Company

February 2023
Scale 1" = 300'

Note : See Figure 6.2 For Cross Section Location.

7.0 EXPLORATION DATA

7.1 Background

The Colado Mine has been extensively explored and mined since the late 1950s. Throughout various exploration campaigns, the subject DE deposits have been identified and delineated through geologic mapping, outcrop sampling, trenching, geophysical surveys, and extensive exploration drilling.

BOYD was provided source records (drilling logs, testing results, and core photographs), summary reports, and/or databases compiling the results of 1,153 drill holes located in and around the Colado Mine property. Records indicate that these exploration data have been collected since the late 1950s.

Much of the exploration data collected prior to U.S. Silica's purchase of the Colado Mine, is available only in summarized form (i.e. source records no longer exist). Data verification methodologies outlined by U.S. Silica specifically notes the use of "judgement calls" to verify or validate exploration data originating before 2010. Verification of the data is often supported by observed geologic conditions in the expansive mine workings.

7.2 Exploration Procedures

BOYD's review of the reported methodologies and procedures indicate the exploration data obtained and utilized by U.S. Silica for the Colado Mine were collected, prepared, and documented, in reasonable compliance with prevailing industry standards, and are appropriate for use of evaluating and estimating DE resources and reserves.

7.2.1 Geologic Mapping

Basic surficial and mine mapping have been used extensively at the Colado Mine to develop understanding of the stratigraphic, depositional, and structural relationship of the various rock units.

7.2.2 Drilling

A variety of drilling techniques have been used during the various campaigns, including diamond core, air rotary, sonic, and reverse circulation.

Air rotary drilling was the primary method utilized to explore the Colado Mine. Records indicate that a truck mounted Reichdrill T-650-WII air rotary drill was commonly utilized.

The drill is equipped with a 6-in. hammer assembly, utilizes a 6-in. drill bit and 20-ft drill pipe, and is capable of drilling to depths of approximately 500 ft. Chipped sample material is continuously obtained during air rotary drilling by placing a 48-in diameter galvanized pan under the cuttings chute to catch the drill cuttings that are blown back up as the drill bit advances down the hole.

Diamond core drilling methods have also been utilized at the Colado Mine when higher quality samples of the DE intervals are required for chemical and physical testing. Diamond coring is also utilized in areas that exhibit more complex geologic structures, as complete core records assist in the definition of bed structure and thickness in such areas. Records indicate that wireline HQ (2.5 in diameter) drilling methods, capable of reaching depths of 400 ft, were utilized during diamond core drilling campaigns.

Discussions with U.S. Silica personnel indicated that the same general procedural standards in-place at their other operations have also been implemented since their involvement with the Colado Operation, in order to ensure consistent internal standards are being followed during drilling and sampling.

7.2.3 Sampling Procedures

Samples collected from the air rotary drilling rig were gathered in five-ft intervals. The cuttings recovered for each interval were mixed for two minutes in a paddle mixer and then split with a Gilson splitter in the field. The mixing and splitting allows field personnel to obtain smaller, but representative, samples of each five-ft interval. Samples were placed into canvas or woven cloth bags and labeled with drill hole identification and sample top and bottom depths. At the end of each day, bagged samples were delivered to a limited access area at the mine where they were stored before being taken to the company's internal "dry lab" at their Vale, Oregon plant for chemical and physical testing.

Cored DE samples, from diamond core drilling, were boxed and labeled at the drill site by U.S. Silica personnel. Boxed core samples were taken to U.S. Silica's Fernley, Nevada plant location daily, where the core was examined and geologically logged by geology staff before being transferred to the dry lab for testing.

7.2.4 Ore Testing

DE samples were analyzed at U.S. Silica's dry lab, at their Vale, Oregon operation. At the dry lab, the samples were dried, split, and prepared for chemical and physical testing. Testing was performed on the "natural" split sample and on a muffle burned split. Standard testing on all samples includes wet bulk density, permeability, and brightness. The muffle burden samples were tested for soluble metal concentrations.

Additional standardized testing may be performed for filter aid products on white and pink natural ore, and for natural filler products when necessary. Non-routine testing, such as x-ray fluorescence, centrifuge wet density, x-ray diffraction, and scanning electron microscope evaluations to determine diatom genus, are commonly performed at U.S. Silica's Research and Development Laboratory in Reno, Nevada.

7.2.5 Other Exploration Methods

BOYD notes that limited trenching and geophysical (gravity, seismic, remote sensing, resistivity) surveys have reportedly been conducted on the property; however, results from these studies were not provided for review.

7.3 Exploration Results

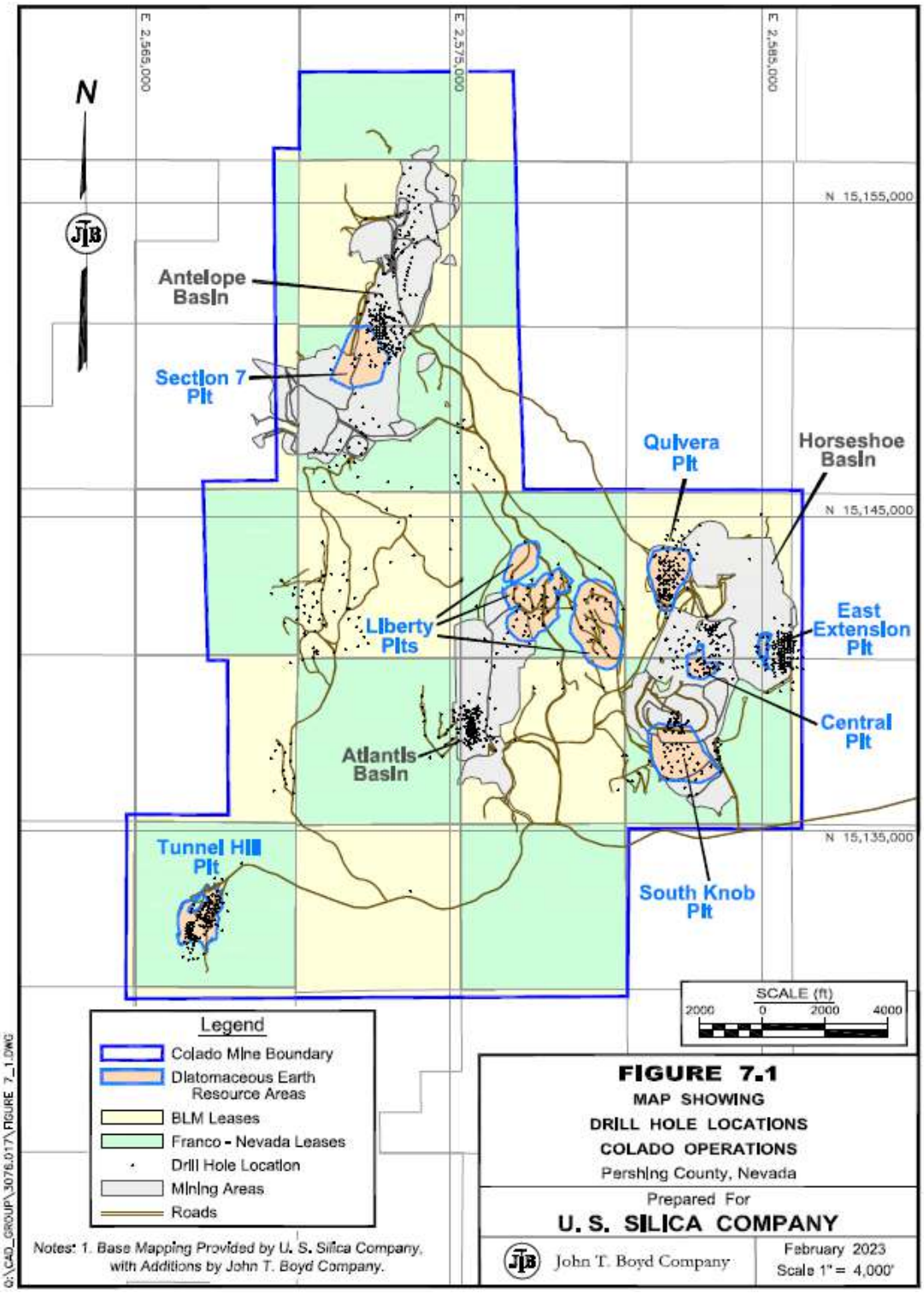
7.3.1 Summary of Exploration

Drilling records and summary data indicate that 1,153 drill holes totaling almost 165,000 ft in length—have been completed at the Colado Mine. The distribution of these drill holes is shown on Figure 7.1, following this page.

A summary of the drilling completed in and around the various DE deposits on the Colado Mine property is presented in Table 7.1:

Table 7.1: Drill Hole Summary By Area

Deposit	Number of Drill Hole Records	Total Drilled Length (ft)
Atlantis	162	20,488
Antelope Basin	241	29,381
Horse Shoe Basin	330	55,659
Liberty	78	24,618
Quivera	124	11,793
Tunnel Hill	122	12,357
Other Areas	96	10,420
Total	1,153	164,715


N
E 2,565,000
E 2,575,000
E 2,585,000
N 15,155,000
N 15,145,000
N 15,135,000
Antelope Basin
Section 7 Pit
Quivera Pit
Horseshoe Basin
Liberty Pits
East Extension Pit
Central Pit
Atlantis Basin
Tunnel Hill Pit
South Knob Pit
SCALE (ft)
2000 0 2000 4000
Legend
Colado Mine Boundary
Diatomaceous Earth Resource Areas
BLM Leases
Franco - Nevada Leases
Drill Hole Location
Mining Areas
Roads
Notes: 1. Base Mapping Provided by U. S. Silica Company, with Additions by John T. Boyd Company.
O:\CAD_GROUP\3076.017\FIGURE 7_1.DWG
FIGURE 7.1
MAP SHOWING
DRILL HOLE LOCATIONS
COLADO OPERATIONS
Pershing County, Nevada
Prepared For
U. S. SILICA COMPANY
John T. Boyd Company
February 2023
Scale 1" = 4,000'

7.3.2 Ore Quality

The Colado Operation produces a wide variety of finished DE products for numerous customers. While not all of the finished products must adhere to a published set of specifications, U.S. Silica utilizes samples obtained during exploration to ascertain the suitability of the various DE beds for producing the materials it supplies to customers. Additionally, U.S. Silica's extensive testing of stockpiled ore provides them flexibility in what, and how much, of a certain mined DE bed is delivered to the Colado Processing Plant. As such, the Colado Operation has flexibility to meet varying product demands over short timeframes.

7.4 Data Verification

For purposes of this report, BOYD did not verify historic drill hole data by conducting independent drilling. It is customary in preparing similar mining resource and reserve estimates to accept basic drilling and sample quality data as provided by the client subject to the reported results being judged representative and reasonable.

BOYD's efforts to judge the appropriateness and reasonability of the source exploration data included reviewing representative samples of provided drilling logs, sampling procedures, sample testing results, and discussing various aspects of the mining and processing operations with U.S. Silica personnel during our site visit. Reviewed drilling records were compared with their corresponding database records for transcription errors; of which none were found. Exploration data points were compared via visual and statistical inspection with geologic mapping and cross-sections.

7.5 Adequacy of Exploration and Sampling

BOYD's review indicates that in general, an acceptable level of drilling and sampling work has been performed at the Colado Operation. The work completed has been done so by competent personnel in a manner consistent with industry practices. The amount of data available, combined with the extensive history of mining and producing DE products at the Colado Operation are sufficient to confirm the extents, uniformity, and continuity of the delineated DE deposits. Similarly, BOYD's review of sampling data provided by U.S. Silica suggests that the analyses completed are generally appropriate to determine DE characteristics and determine the subsequent quality of finished DE products. As such, it is BOYD's opinion that the exploration and sampling data are suitable for use in the estimation of DE resources and reserves for the Colado Operation.

8.0 SAMPLE PREPARATION, ANALYSIS, AND SECURITY

The reader is referred to Sections 7.2 and 7.3 of this report for details regarding sample preparation, analysis, and security.

9.0 DATA VERIFICATION

BOYD, by way of the data verification processes described in various sections of this report, has used only that data, which were deemed by the QPs to have been generated with proper industry standard procedures, were accurately transcribed from the original source, and were suitable to be used for the purpose of preparing estimates of DE resources and reserves.

BOYD's subject-specific data verification efforts and our conclusions arising therefrom are discussed in the following sections of this report:

Topic	Report Section(s)
Exploration Data	Section 7.4
Sample Preparation, Analysis, and Security	Section 7.4
Diatomaceous Earth Resource Estimates	Section 11.2
Operating Plans	Chapters 13 and 1
Capital and Operating Costs	Chapter 18
Economic Analysis Inputs	Chapter 19

Based on our review, it is BOYD's overall conclusion that the information made available to us at the time of this report is representative and reliable for use in estimating the DE resources and reserves of the Colado Operation.

BOYD is not aware of any other limitations on nor failure to conduct appropriate data verification.

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10.0 MINERAL PROCESSING AND METALLURGICAL TESTING

Please refer to Chapter 7 for information regarding mineralogical and chemical testing of the Colado DE deposit.

11.0 DIATOMACEOUS EARTH RESOURCE ESTIMATE

11.1 Applicable Standards and Definitions

Unless noted, DE resource estimates disclosed herein are done so in accordance with the standards and definitions provided by S-K 1300. It should be noted that BOYD considers the terms “mineral” and “diatomaceous earth” to be generally interchangeable within the relevant sections of S-K 1300.

Estimates of mineral resources are always subject to a degree of uncertainty. The level of confidence that can be applied to a particular estimate is a function of, among other things: the amount, quality, and completeness of exploration data; the geological complexity of the deposit; and economic, legal, social, and environmental factors associated with mining the resource. By assignment, BOYD used the definitions provided in S-K 1300 to describe the varying degree of certainty associated with the estimates reported herein.

The definition of mineral resource provided by S-K 1300 is:

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

Estimates of mineral resources are subdivided to reflect different levels of geological confidence into measured (highest geologic assurance), indicated, and inferred (lowest geologic assurance). Please refer to the Glossary of Abbreviations and Definitions for the meanings ascribed to these terms.

11.2 Diatomaceous Earth Resources

11.2.1 Methodology

Based on provided information, U.S. Silica's geologic modeling and DE resource estimation techniques generally consist of the following:

1. The top and bottom elevations of various DE beds, and the interbedded waste material intervals (tuff interburden beds), are interpreted from drill hole records.
2. Interpreted drill hole records are compiled and validated. The compiled drill hole data are imported into GEOVIA Surpac™ geologic modeling and mine planning software.
3. Wireframe models were developed for each correlated DE bed and geologic block models of the deposits were developed using industry standard stratigraphic modeling methods. The geologic models delineate the various DE beds and waste units utilizing blocks sizes ranging from 10 ft by 10 ft by 5 ft to 25 ft by 25 ft by 5 ft (in X, Y, and Z directions), depending on the deposit geology.
4. Sampling results (assays) were composited on 5-ft lengths constrained within the DE solid models. No grade capping was used.
5. Block grade values were estimated from composited assay values using inverse distance cubed weighting. Search ellipsoids using 10:10:1 anisotropy were oriented according to the local structure of the various deposits. Three passes with increasing search distances—200, 400, and 800 ft—were used to estimate the majority of the DE blocks. A maximum number of eight samples were utilized to estimate the grades of each block.
6. LOM pit shells with designed benches and access ramps were developed with Hexagon Project Evaluator's pit optimization and mine planning software. Optimization parameters were derived from historical operating costs and product prices.
7. Estimates of in-place waste and DE volumes were derived from the LOM pit shells and recent topographic (surface elevation) surveys.
8. An in-place dry bulk density of 0.35 tons per bank cubic yard (0.42 g/cm3) is used to convert the in-place DE volumes to tons.

11.2.2 Estimation Criteria

Development of the DE resource estimate for the Colado Operation assumes mining and processing methods and equipment which have been utilized successfully at the site for decades.

Within each mining area, the target DE mining horizons present as one or more tabular sedimentary units with varying depths, thicknesses, and physical and chemical characteristics. Generally, the high-quality DE strata are easily distinguished from the surrounding interbedded tuffs and other inclusions by a distinct difference in color clearly

visible in the exposed mining faces. Selective mining enables the extraction of relatively clean DE.

U.S. Silica has developed numerous pits at the Colado mine where various qualities of DE are mined. Extensive stockpiling capacity allows for targeted blending to meet finished product specification requirements. Additionally, the Colado Operation has a lengthy commercial history of producing numerous products with various specifications, allowing nearly all of the identified and mineable DE intervals to be utilized. As such, the application of cut-off grades is not generally considered in the estimation of DE resources for the Colado Operation.

The limits of the DE resources are constrained to those portions of the interpreted lithologies that:

- Are reasonably defined by available drilling and sampling data.
- Can produce finished DE products that meet generally accepted specifications.
- Honor any legal mining constraints (e.g., property boundaries, environmental setbacks, utility and infrastructure setbacks, etc.).
- Adhere to physical mining constraints.
- Contain products that can be sold at a profit (i.e., be economic).

DE resources for the Colado Operation are assessed for reasonable prospects for eventual economic extraction by reporting: (1) only those resources which have been subsequently converted to DE reserves after the application of all material modifying factors, or (2) those resources which have similar characteristics (i.e., mining conditions, and expected product yields and qualities) to those converted to DE reserves. The LOM pit shells which constrain the DE resources have been developed using standard pit optimization techniques and economic parameters derived historical performance.

BOYD has reviewed the criteria employed by U.S. Silica in developing their estimates of DE resources. The parameters are supported by historical results and align with those employed at similar operations. As such, it is BOYD’s opinion that the stated criteria are reasonable and appropriate for the estimation of DE resources at the Colado Operation.

11.2.3 Classification

Classification is generally based on the concentration or spacing of exploration data, geological understanding, continuity of mineralization relative to the style of mineralization, and data quality. The geologic models for the Colado Operation, and

consequently the estimates of DE resources derived from them, have been classified on basis of distance from and the number of assay composites uses to estimate block grades. That is, classification is assigned based on the number of samples available within defined distances. Table 11.1 provides the general criteria employed in the classification of the DE resources.

Table 11.1: Diatomaceous Earth Resoruce Classification Criteria

Classification (Geologic Confidence)	Maximum Search Distance (feet)	Minimum Number of Assay Composites
Measured	200	5
Indicated	400	3
Inferred	800	3

BOYD reviewed the classification criteria employed by U.S. Silica with regards to data density, data quality, geological continuity and/or complexity, and estimation quality. We believe these criteria appropriately reflect the interpreted geology and the estimation constraints of the deposit. DE resources are well-defined throughout all areas of the mine plan. Observed drill hole spacing averages approximately 75 ft to 100 ft through a majority of the active mining areas, with future mining areas exhibiting a general drill hole spacing averaging approximately 100 ft to 500 ft.

11.2.4 Diatomaceous Earth Resource Estimate

Resource estimates of in-situ DE at the Colado Operation as of December 31, 2022, as reported by U.S. Silica are shown in Table 11.2 below. Except as noted, the DE resources presented are inclusive of reserves, not in addition to reserves.

Table 11.2: Colado Operation Diatomaceous Earth Re
(as of December 31, 2022)

Classification	In-Place Tons (000)		
	Planned[1]	Additional[2]	Total
Measured	2,128	-	2,128
Indicated	3,736	-	3,736
Total Measured + Indicated	5,864	-	5,864
Inferred	-	689	689

Notes:
1. "Planned" resources are those included in the approved LOM plan.
2. "Additional" resources are those reported in addition to diatomaceous earth reserves.

As shown, U.S. Silica controls approximately 5.9 million in-place tons of measured and indicated DE resources, inclusive of DE reserves. In addition, they control approximately 689,000 in-place tons of inferred DE resources. DE resources are not DE reserves and do not have demonstrated economic viability.

The DE resources shown under the “Planned” column of Table 11.2 include only those in-place tons which are included in U.S. Silica’s LOM plan for the Colado Operation and therefore considered for conversion to DE reserves. The DE resources shown under the “Additional” column of Table 11.2 have not been included in the LOM plan and are considered exclusive of (i.e., “in addition to”) the reported DE reserves. These “Additional” DE resources are considered to have prospects for eventual economic extraction by virtue of their similarity, in terms of demonstrated extraction methods and expected finished product qualities, to those converted to DE reserves. However, further studies are required to convert the “Additional” DE resources to DE reserves.

11.2.5 Validation

BOYD was provided with U.S. Silica’s exploration data, geologic models, and volumetric estimates. We have reviewed this information, on a representative basis, by:

- Verifying the accuracy of geologic model inputs by comparison with drilling logs and laboratory reports.
- Comparing the geologic model with compiled drilling data.
- Confirming estimates of in-place tons and average grades for each pit shell.

It is BOYD’s opinion that the geologic model is representative of the informing data and that the data are of sufficient quality to support the DE resources estimate provided herein. Furthermore, it is our opinion that the estimation methods and criteria employed

are both appropriate and reasonable for the deposit type and proposed extraction methods.

BOYD is not aware of any technical, legal, economic, or other relevant factors that could materially affect the DE resource estimate. The accuracy of DE resource estimate is, in part, a function of the quality and quantity of available data and of engineering and geological interpretation and judgment. Given the data available at the time this report was prepared, the estimates presented herein are considered reasonable. However, they should be accepted with the understanding that additional data and analysis available after the date of the estimate may result in a change to the current estimate. These revisions may be material. There is no guarantee that all or any part of the estimated resources will be recoverable.

12.0 DIATOMACEOUS EARTH RESERVE ESTIMATE

12.1 Applicable Standards and Definitions

Unless noted, DE reserve estimates disclosed herein are done so in accordance with the standards and definitions provided by S-K 1300. It should be noted that BOYD considers the terms “mineral” and “diatomaceous earth” to be generally interchangeable within the relevant sections of S-K 1300.

Estimates of mineral reserves are always subject to a degree of uncertainty. The level of confidence that can be applied to a particular estimate is a function of, among other things: the amount, quality, and completeness of exploration data; the geological complexity of the deposit; and economic, legal, social, and environmental factors associated with mining the reserve. By assignment, BOYD used the definitions provided in S-K 1300 to describe the varying degree of certainty associated with the estimates reported herein.

The definition of mineral reserve provided by S-K 1300 is:

> *Mineral reserve is an estimate of tonnage and grade or quality of indicated and measured mineral resources that, in the opinion of the qualified person, can be the basis of an economically viable project. More specifically, it is the economically mineable part of a measured or indicated mineral resource, which includes diluting materials and allowances for losses that may occur when the material is mined or extracted.*

Estimates of mineral reserves are subdivided to reflect geologic confidence, and potential uncertainties in the modifying factors, into proven (highest assurance) and probable. Please refer to the Glossary of Abbreviations and Definitions for the meanings ascribed to these terms.

Figure 12.1, below, illustrates the relationship between mineral resources and mineral reserves.

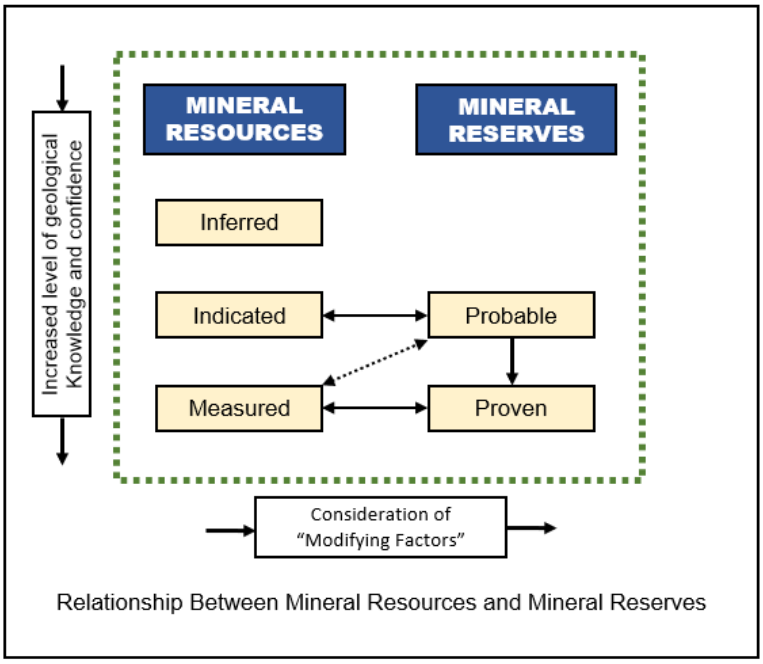


Figure 12.1: Relationship Between Mineral Resources and Mineral Reserves

By industry convention, DE reserves are presented on two bases: mineable and saleable. Mineable reserves represent the ROM tonnage available for excavation and processing. Saleable reserves represent the tonnage of finished DE available for sale after processing the mineable reserves.

12.2 Diatomaceous Earth Reserves

12.2.1 Methodology

Estimates of DE reserves for the Colado Operation are derived contemporaneously with estimates of DE resources. The Colado Operation utilizes commercially proven mining and processing methods to extract and process DE from the subject property. The operation's production plans are revised periodically to assure that the conversion of in-place to saleable product are: (1) in reasonable conformity with present and recent historical operational performance, and (2) reflective of expected mining and processing operations.

To derive estimates of mineable tons and saleable product tons (i.e., proven and probable DE reserves), the following modifying factors were applied to the in-place measured and indicated DE resources underlying the respective mine plan areas:

- Mining recovery factors vary by pit according to expected geologic and mining conditions, and are based on historical performance. In the LOM plan, mining recovery factors range from 60% to 85%, and average 76.4%. As such, the LOM plan assumes that approximately 23.6% of the mineable (in-place) DE resource will not be recovered for various reasons. Applying this recovery factor to the in-place resource results in the estimated ROM DE tonnage (i.e., the mineable DE reserves) that will be delivered to the process plant.
- An overall 81.6% processing yield. This factor accounts for removal of interbedded waste material and losses in the Colado Processing Plant due to minor inefficiencies.

The overall product yield (after mining and processing losses) for the Colado Operation is estimated at approximately 62.3%. That is, for every 100 tons of in-place DE, approximately 62 tons will be recovered and sold as product. Mining recovery and processing yield factors are derived from historical operating results.

Economic availability of the DE reserves is established by the financial analysis presented in Chapter 19. A long-range average selling price of $697.27 per product ton has been used to estimate DE reserves for the Colado Operation.

12.2.2 Classification

Proven and probable DE reserves are derived from measured and indicated DE resources, respectively, in accordance with S-K 1300. BOYD is satisfied that the stated DE reserve classification reflects the outcome of technical and economic studies.

12.2.3 Diatomaceous Earth Reserve Estimate

U.S. Silica's estimated surface mineable DE reserves for the Colado Operation total 3.7 million saleable product tons, as of December 31, 2022. The DE reserves reported in Table 12.1, on the following page, are based on the approved LOM plan which, in

BOYD's opinion, is technically achievable and economically viable after the consideration of all material modifying factors.

Table 12.1: Colado Operation
Diatomaceous Earth Reserves
(as of December 31, 2022)

	Tons (000)	
Classification	Mineable	Saleable
Proven	1,671	1,364
Probable	2,808	2,291
Total	4,479	3,655

All of the reported DE reserves are fully controlled by U.S. Silica through the various lease agreements and mineral claims described in Chapter 3.

The DE reserves of the Colado Operation are well-explored and defined. It is our conclusion that over 37% of the stated reserves can be classified in the proven reliability category (the highest level of assurance) with the remainder classified as probable. Given the overall geologic uniformity and history of mining the DE on the Colado property, it is reasonable to assume that some or all of the probable reserves will be converted to proven reserves upon completion of additional exploration and testing.

The Colado Operation has a well-established history of mining, processing, and selling DE products into various markets. BOYD has assessed that sufficient studies have been undertaken to enable the DE resources to be converted to DE reserves based on current and proposed operating methods and practices. Changes in the factors and assumptions employed in these studies may materially affect the DE reserve estimate.

The extent to which the DE reserves may be affected by any known geological, operational, environmental, permitting, legal, title, variation, socio-economic, marketing, political, or other relevant issues has been reviewed as warranted. It is the opinion of BOYD that U.S. Silica has appropriately mitigated, or has the operational acumen to mitigate, the risks associated with these factors. BOYD is not aware of any additional risks that could materially affect the development of the DE reserves.

Based on our independent review, we have a high degree of confidence that the estimates shown in this report accurately represent the available DE reserves controlled by U.S. Silica, as of December 31, 2022.

12.2.4 Reconciliation with Previous Estimates

When comparing U.S. Silica's DE reserve estimates as of December 31, 2022, with the estimates presented[1] for December 31, 2021, we note a net increase of approximately 18,000 mineable tons generally resulting from: (1) depletion due to mining of approximately 175,000 mineable tons, and (2) revisions to mine plans resulting in increases of approximately 193,000 mineable tons. BOYD does not consider this increase to represent a material change to the DE reserves of the Colado Operation.

[1] U.S. Silica did not present reserves on a Saleable Tons basis for the 2021 financial year.

13.0 MINING METHODS

13.1 Mining Operations

DE mining has been conducted at the Colado Operation since the late 1950s. A number of mining pits have been developed across the various DE deposits identified on the property. Many of these mine areas have been idled, some depleted, and others included in the LOM plan for future mining. Table 13.1, below, lists the various mine areas of the Colado Operation.

Table 13.1: Colado Operation Mining Areas

Mine Area	Operating Status
Antelope Basin:	
Section 6	Idle
Section 7	Idle
Atlantis	Active
Horseshoe Basin:	
Central	Active
East Pit Extension	Idle
South Knob	Active
Liberty	Undevelopec
Quivera	Idle
Tunnel Hill	Idle

In 2022, mining activities took place in the Atlantis Pit, and in the Central and South Knob areas of the Horseshoe Basin deposit. All the other pits are currently idled. Decisions on which deposit(s) to mine is based on several factors including geology, operating costs, remaining DE reserves, and market demand.

The DE mining horizons at the Colado Mine are relatively shallow, quite thick, and are moderately dipping. These characteristics favor conventional surface mining techniques using excavators and trucks. Mining occurs on benches, in a stair-like fashion, to remove the overburden waste material and expose the DE beds. Bench heights vary at each pit but are generally between 20 and 40 ft high.

Sparse organic overburden consisting of sagebrush, juniper, and other desert vegetation is removed along with the basalt cap rock during overburden stripping campaigns. The basalt cap rock is drilled and blasted by an outside contractor during the winter months and is subsequently stockpiled for ongoing reclamation activities.

Interburden tuff, which is common between the layers of DE, is removed in a similar manner as the basalt cap rock. A third-party contractor is brought in as needed to drill and blast the interburden. This material is also used for backfilling depleted mining pits and other reclamation activities.

The DE beds are highly friable; as such, drilling and blasting is not needed to facilitate their excavation. Instead excavators “free dig” the DE material from the deposit and directly load it into haul trucks. Generally, several passes are needed to fully excavate each DE bed before the final bench height is reached due to mechanical limitations of the excavator fleet. Figure 13.1, below, shows the loading operations in the Colado Mine.

Figure 13.1: Loading Operations at the Colado Operation

Excavation of the DE beds occurs from late spring until early fall, a period of roughly 200 days, before wet winter weather impedes moisture control in the ROM stockpiles. During the winter months, the removal of overburden and other support activities continues as access to the site is typically available year-round.

The excavated DE is hauled to one of several different stockpiles located on the Colado Mine property where it is stockpiled for year-round transportation to the Colado Processing Plant. The Colado Operation maintains a stockpile of approximately 600,000 cubic yards at the mine site to meet the demands of the processing plant. Stockpiled DE usually remains stockpiled for at least one year to allow the material to dry. This “solar drying” process helps reduce the costs of drying the DE at the Colado Processing Plant.

A loader fills over-the-road semi-trailer trucks with stockpiled ROM material for transportation to the Colado Processing Plant. Transportation of the ROM material to the processing plant occurs day and night, most of the year.

Waste material from the processing operations is returned to the Colado Mine by the same semi-trailer trucks, where it is unloaded and used as backfill in exhausted pits.

13.2 Mine Equipment and Staffing

13.2.1 Mine Equipment

The primary mobile equipment involved in mining and transport at the Colado Mine includes:

- 7 Loaders.
- 3 Dozers.
- 13 Articulated Haul Trucks.
- 5 Excavators.
- 10 Semi-trailer Trucks.
- Motor Grader, Water Truck, and other ancillary equipment.

The mobile equipment fleet is comprised of both leased and owned equipment. Regular maintenance requirements and major rebuilds/repairs of mobile equipment are performed by U.S. Silica personnel or equipment service providers on site at the mine.

If maintained in good condition, the mobile equipment fleet should be capable of achieving production levels required by the LOM plan.

13.2.2 Staffing

The Colado Operation is staffed by 134 hourly and salaried personnel.

Table 13.2: Employees by Classification

Classification	Employees
Mine Operations	16
Mine & Shop Maintenance	6
Load and Haul Operations	7
Processing Operations	99
Salaried	6
Total	134

Staffing levels across the Colado Operation have largely been static since 2018, when U.S. Silica took over operations. The workforce can be expanded or reduced based on market and seasonal demands. Most employees live nearby in the town of Lovelock, Nevada.

13.3 Engineering and Planning

The primary mine planning consideration is the safe, economical, and regular supply of raw DE to the processing plant. In commercial mining terms, the quantities of overburden removed, and DE mined each year at the Colado Operation are considered modest. The DE deposits afford easy access with its shallow depth and large areal extents. As such, mining plans for the Colado Mine are relatively simple and very flexible, able to be modified based on demand in a relatively short time frame.

The following mine design criteria are used to develop the pits shells which constrain the estimated DE resources:

- Interramp (overall wall) angle of 45 degrees and bench face angle of 65 degrees.
- Bench heights of 20 or 40 ft depending on the dip of DE beds.
- Catch benches at least every 40 ft.

Dewatering before or during mining activities should be manageable with drainage ditches and sumps. Flood waters from localized flash floods are a manageable risk. Onsite water ponds can be used to hold any excessive storm water.

13.4 Mining Sequence and Production

Recent annual mine production results and forecasted production over the expected life of the Colado Mine are provided in Figure 13.2, below.

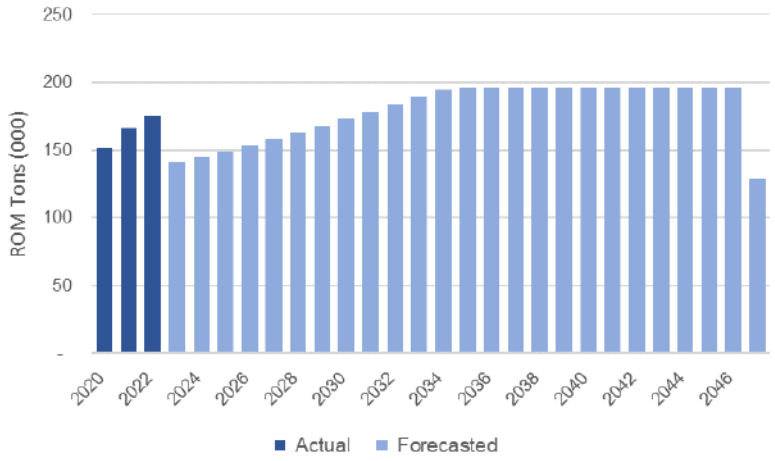


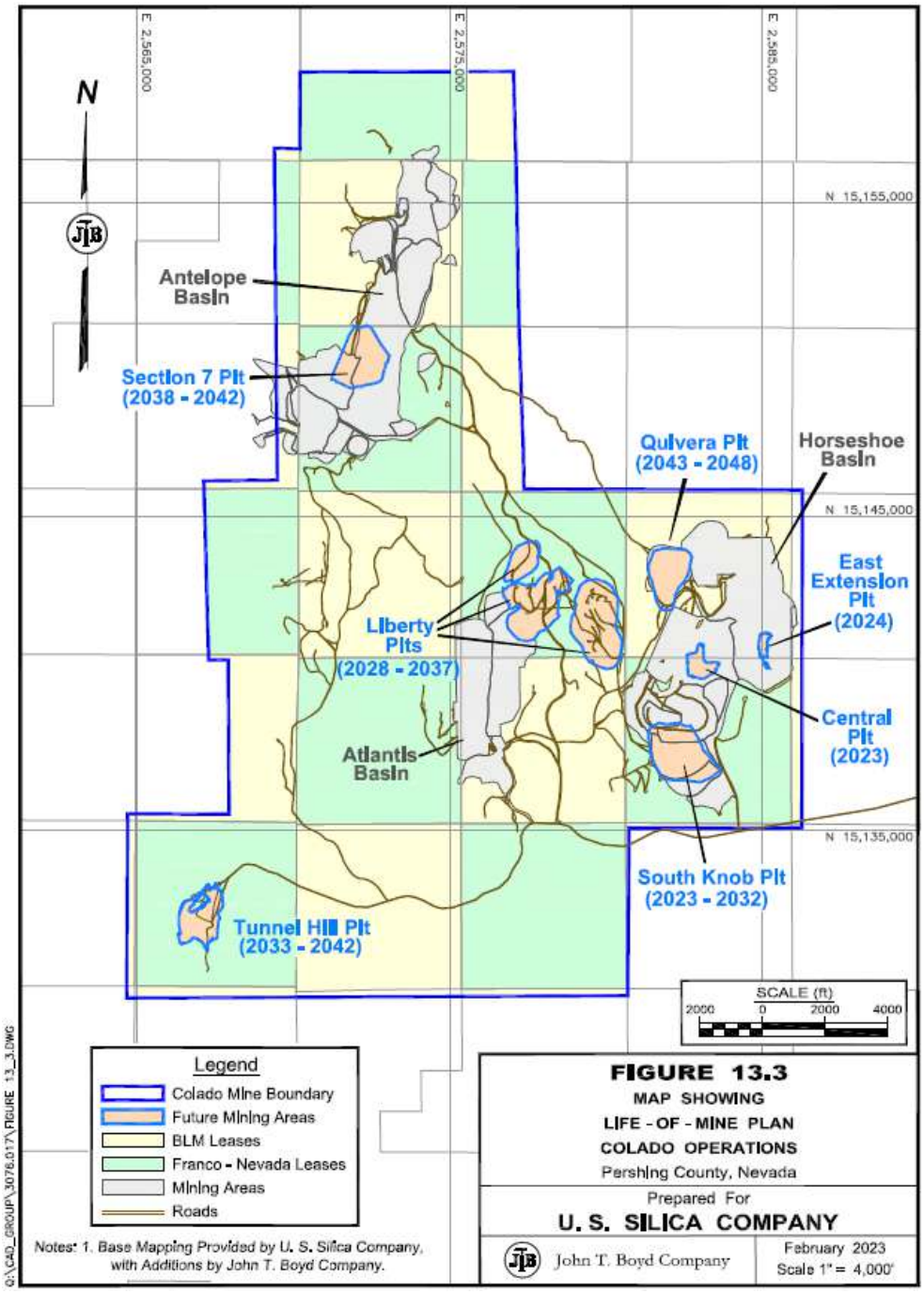
Figure 13.2: Recent Historical and LOM Forecasted Mining Production

The proposed mining sequence is illustrated in Figure 13.3, on the following page, and summarized in Table 13.4, below.

Table 13.3: Colado Operation Generalized Mining Sequence

Mine Area	2023	2024	2025	2026	2027	2028 to 2032	2033 to 2042	2042 to 2047
Antelope Basin - Section 7							■	
Horseshoe Basin	■							
Horseshoe Basin - East Pit Extension		■						
Horseshoe Basin - South Knob	■	■	■	■	■	■		
Liberty						■	■	
Quivera								■
Tunnel Hill							■	

BOYD reviewed the LOM plans for U.S. Silica's Colado Operation to determine whether the plans: (1) utilize generally accepted engineering practices, and (2) align with historical and industry norms. Based on our assessment, it is BOYD's opinion that the forecasted production levels for the Colado Operation are reasonable, logical, and consistent with typical surface mining practices and historical results achieved by U.S. Silica.


E 2,565,000
E 2,575,000
E 2,585,000
N
N 15,155,000
N 15,145,000
N 15,135,000
Antelope Basin
Section 7 Pit (2038 - 2042)
Quivera Pit (2043 - 2048)
Horseshoe Basin
East Extension Pit (2024)
Liberty Pits (2028 - 2037)
Central Pit (2023)
Atlantis Basin
South Knob Pit (2023 - 2032)
Tunnel Hill Pit (2033 - 2042)
SCALE (ft)
2000 0 2000 4000
Legend
Colado Mine Boundary
Future Mining Areas
BLM Leases
Franco - Nevada Leases
Mining Areas
Roads
Notes: 1. Base Mapping Provided by U. S. Silica Company, with Additions by John T. Boyd Company.
FIGURE 13.3
MAP SHOWING
LIFE - OF - MINE PLAN
COLADO OPERATIONS
Pershing County, Nevada
Prepared For
U. S. SILICA COMPANY
John T. Boyd Company
February 2023
Scale 1" = 4,000'
Q:\CAD_GROUP_3076.017\FIGURE 13_3.DWG

14.0 PROCESSING OPERATIONS

14.1 Overview

The Colado Operation's processing facilities are located 24 road miles east of the active mining area near the City of Lovelock, Nevada. Construction of the processing plant and related infrastructure began in 1959 and was completed shortly thereafter. U.S. Silica acquired the plant with the rest of the Colado Operation when it bought EP Minerals in 2018.

The production of finished DE products begins when the plant receives raw DE from the mine by truck. From this raw feed material, numerous products are generated through various processing methods. Figure 14.1, on the next page, presents a simplified process flow from raw feed delivery to the product distribution.

The processing facility operates 24 hours a day and close to 300 days a year based on a reported 82% average mechanical availability. The nominal capacity of the facility is currently at 162,000 tons of finished DE products.

BOYD is unaware of any reported interruptions, outages, shortages, or failures related to processing operations which have materially affected the Colado Operation. Given the operation is well-established, we believe the risk of such events materially affecting the estimates of DE reserves presented herein is low.

14.1.1 Colado Processing Plant

The processing plant receives its raw DE feed from a stockpile supplied by the mine that is transported by a fleet of semi-trailer trucks. The raw DE is fed into a hopper at the plant before it is conveyed into a crusher where it is appropriately sized for plant processes. Oversized material is returned to this crusher until the material is fine enough for processing.

The crude DE is fed into one of three product lines. If needed, crude DE from the bins is metered into a pneumatic conveying system which dries the material with hot air as it is conveyed. Various mills and cyclones beneficiate the in-process ore before it is introduced into one of three horizontal rotary kilns. Soda ash is introduced with the DE before entering the kilns as a flux. This helps the milling process and assists with product coloration. After calcining in the kiln, the DE goes through one final series of mills and sizing screens before it is: packaged in individual consumer bags and

Q:\CAD_GROUP\3076.017\FIGURE 14_1.DWG

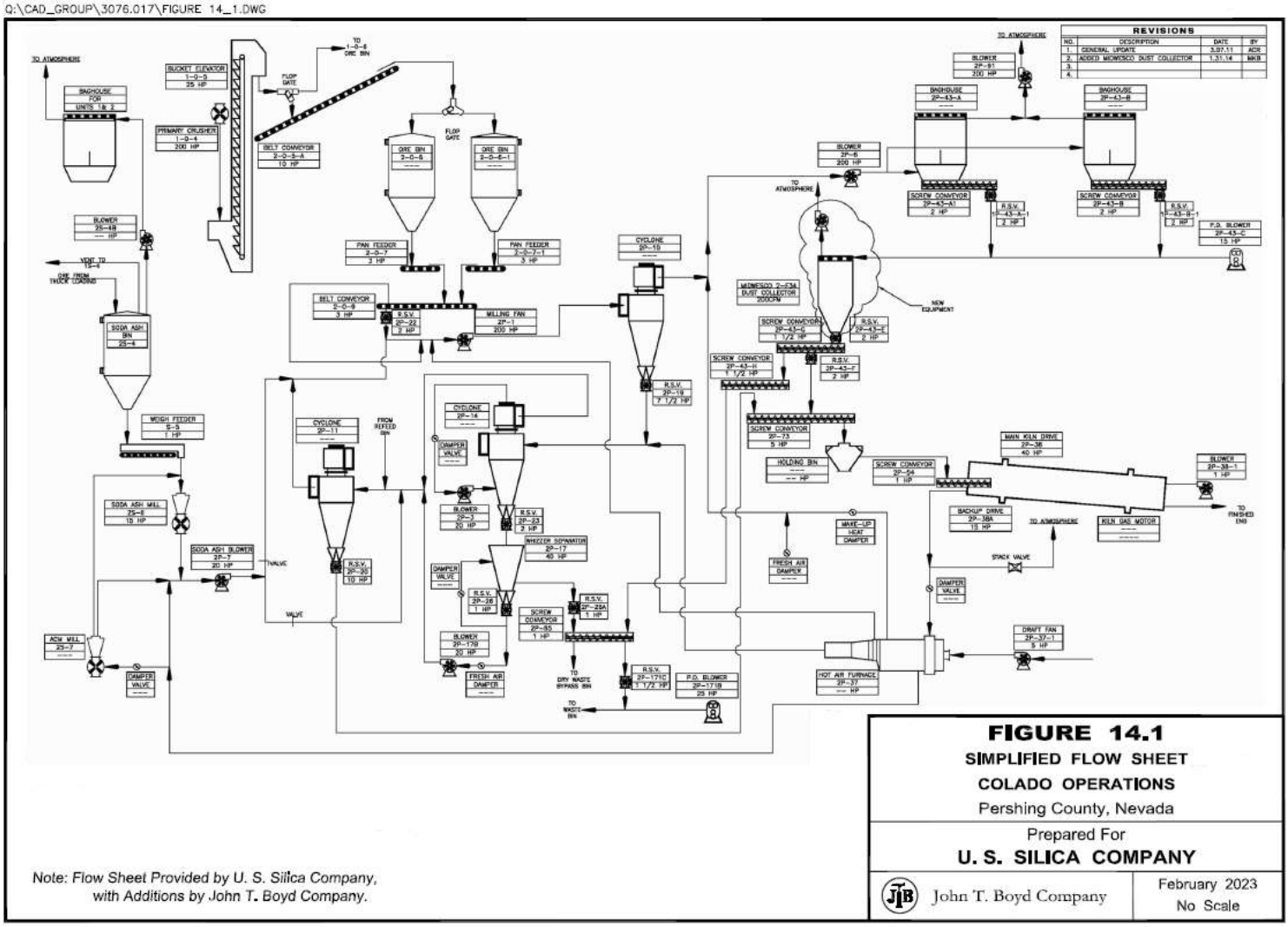


FIGURE 14.1
SIMPLIFIED FLOW SHEET
COLADO OPERATIONS
Pershing County, Nevada

Prepared For
U. S. SILICA COMPANY

John T. Boyd Company

February 2023
No Scale

Note: Flow Sheet Provided by U. S. Silica Company, with Additions by John T. Boyd Company.

palletized; packaged in bulk bags to supply larger industrial customers; or, loaded directly into rail cars.

14.2 Production

The Colado Operation's LOM plan forecasts increased production from the processing plant until the nominal production capacity is reached. Recent annual production results and forecasted production over the expected life of the operation are provided in Figure 14.2.

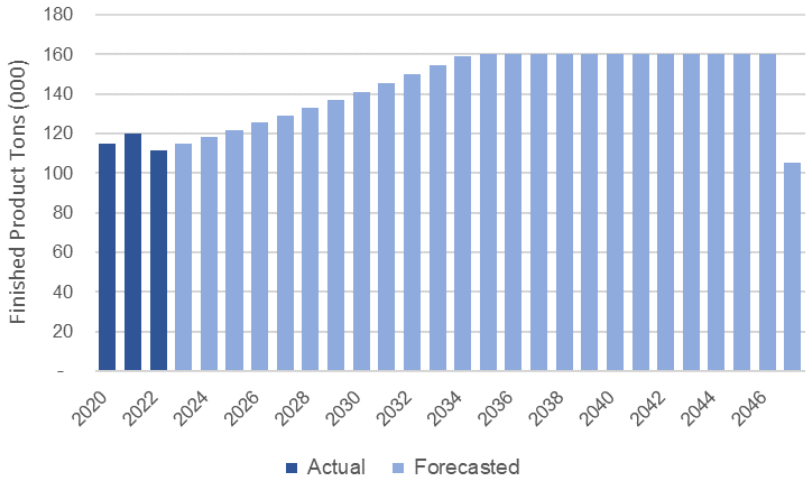


Figure 14.2: Recent Historical and Forecasted Saleable Processing Plant Production

14.3 Conclusion

Based on our review, it is BOYD's opinion that the processing methods and existing equipment at the Colado Processing Plant will be sufficient for the forecasted production of finished DE products.

15.0 MINE INFRASTRUCTURE

15.1 Overview

All of the basic infrastructure required for the ongoing operations is in place at the Colado Operation. Figures 3.1 and 3.2 (pages 3-3 and 3-4, respectively) illustrate the general layout of the infrastructure at the Colado Mine and Colado Processing Plant, respectively.

The surface facilities currently located at the operation are well constructed and have the necessary capacity/capabilities to support the Colado Operation's near-term operating plans. Operational preference may lead to the upgrading of some existing facilities if the operation expands in the future.

BOYD is unaware of any reported interruptions, outages, shortages, or failures related to infrastructure requirements which have materially affected the Colado Operation. Given the operation is well-established, we believe the risk of such events materially affecting the estimates of DE reserves presented herein is low.

15.2 Transportation

The Colado Operation is serviced by several roads maintained by the local municipality, county, and state governments. The Colado Mine site is accessed by using CR 399 (7 Troughs Road) which connects to I-80 near Lovelock, Nevada. The processing plant has access to Business Highway 95 (Upper Valley Road), which also provides direct access to I-80, east of the plant. These roads are either paved or well-maintained graded roadways. Road access is typically available year-round.

A rail siding for bulk transportation is in place at the Colado Processing Plant. This railhead is the mainline owned by the UP railroad along the I-80 corridor. U.S. Silica owns and operates rail loading infrastructure at the plant. In-plant switching is handled by U.S. Silica with a Trackmobile Railcar Mover to bring in empty cars from the mainline and return loaded ones for the UP to haul away.

15.3 Utilities

Electric power at the mine site is provided by diesel generators and solar power. The processing plant is supplied electric power by Nevada Energy. The power is delivered by an above-ground network of utility poles running parallel to I-80 from the east and into

the plant substation. Power is then distributed by a combination of above and below ground power lines.

Natural gas used by the processing plant is currently supplied by Paiute Pipeline Company (a subsidiary of Southwest Gas) via an underground pipeline that runs parallel to I-80. The mine site is not supplied with natural gas.

Water for the mine site is primarily used for dust suppression and is trucked in by tanker from a municipal water source. Potable water is provided by bottles and jugs. Both industrial and potable water for the processing plant is provided by the local municipality utility company and is delivered via a series of underground pipes.

15.4 Tailings Disposal

The processing of DE at the Colado Processing Plant creates a substantial amount of waste tailings. This waste byproduct is primarily a combination of opalite, basalt, and clay. The tailings are hauled by U.S. Silica's semi-trailer truck fleet on their return trip to the mine site. At the mine site, the tailings are dumped into exhausted pits to be used as fill material during reclamation.

15.5 Other Structures

The mine site has few structures. Currently a maintenance shelter used to service the mining equipment and a small portable office reside on site.

The processing plant has undergone several upgrades and changes over its 50+ years of operation. In addition to the plant itself, the site also contains:

- Office buildings that host engineering, financial and administrative staff.
- Several support buildings for housing machinery and maintenance activities.
- A warehouse for material storage and product bagging.
- Several product loadouts.
- Various pump structures and outbuildings.

16.0 MARKET STUDIES

16.1 Product Specifications

The Colado Operation is part of U.S. Silica's Industrial & Specialty Products (ISP) business segment. The ISP unit produces products that are used as filter aids, absorbents, and functional additives for a variety of industries including food and beverage, biofuels, recreational water, oil and gas, farm and home, landscape, sports turf, paint, plastics, and insecticides.

The Colado Operation produces a wide range of finished DE products, which generally fall into one of the following categories:

- Food grade products (filter-aids) sold into the filtration markets are used extensively to filter out contaminants from fruit juices, wine, beer, sugar, bio-diesel fuel, high fructose corn syrup, and water.
- Fine-filler products are used as additives in paints, rubber, paper, and plastics.
- Aggregate products, which are used primarily as industrial absorbents, catalysts, and carriers for pesticides.

In terms of sales volume, the aggregate products are significantly smaller compared to the filtration and filler products.

16.2 Historical Sales

Recent historical sales figures provided by U.S. Silica for the Colado Operation are summarized in Table 16.1, below.

Table 16.1: Historical Sales Data

	Units	2020	2021	2022
Product Sales	000 tons	115	120	111
Average Selling Price	$/ton sold	491.94	565.91	697.27

Over the past three years, the average selling price (ASP) for the Colado Operation's finished DE products increased almost 42%.

According to sales information provided by U.S. Silica for the Colado Operation:

- Contract sales account for roughly 30% of total product sales.
- The top-five customer by sales revenue account for approximately 18% of total sales.

Based on estimates provided by the USGS, the Colado Operation accounted for approximately 10% of the total production of finished DE products in the U.S. during 2022.

BOYD is not aware of any material contracts for the sale of finished DE products from the Colado Operation.

16.3 Market Outlook

The market for DE is driven by the increasing demand for natural and eco-friendly products, as well as the growing awareness of the benefits of DE in agriculture and sanitation, as well as the increasing use of DE in the construction, paint, and coatings industries.

The DE market is segmented by product type, application, and geography. By product type, the market is segmented into food and filter grade. By application, the market is segmented into agriculture, construction, paint and coatings, animal feed, and others. Geographically, the market is driven by transportation costs. While many materials can be substituted for DE, its unique properties assure its continued use in many applications.

According to the USGS, the amount of produced DE sold in US has generally increased year-over-year, excepting a small dip in 2019 and 2020 as the result of decreased demand due to the COVID-19 pandemic. It should be noted that the Colado Operation production did not suffer a similar dip during COVID-19 pandemic. Based on the USGS's estimates, the CAGR for domestic DE production between 2018 and 2022 is 3.5%, while the post-COVID (2019–2022) CAGR is 12.7%.

Strong growth in demand and increased prices for finished DE products from the Colado Operation are expected. BOYD believes it is reasonable to assume that pricing will sustain over the remaining life of the Colado Operation.

17.0 PERMITTING AND COMPLIANCE

17.1 Permitting

Numerous permits are required by federal, state, and municipal law for mining, processing, and related activities at the Colado Operation. U.S. Silica reports that necessary permits to support current and near-term operations are in place or pending approval. New permits or permit revisions may be necessary from time to time to facilitate future operations. Given sufficient time and planning, U.S. Silica should be able to secure new permits, as required, to maintain its planned operations within the context of current regulations.

A description of the salient permitting requirements for the Colado Operation follows.

Surface mining of private and BLM land at Colado is authorized under U.S. Silica's Mine Plan of Operations NVN-065329 and Nevada Reclamation Permit No. 0182. U.S. Silica has updated or amended the permits over the course of operation to enable mining of increasing areas of the property. Surety bonds totaling approximately $16.1 million have been submitted to the BLM in Nevada to underwrite permit reclamation requirements.

U.S. Silica utilizes a Spill Prevention, Controls and Countermeasure (SPCC) Plan at the Colado Operation to address requirements of the Federal Oil Pollution Prevention Regulations (40 CFR Part 112). The SPCC Plan establishes oil spill preparedness, prevention, planning, response, and notification procedures per the federal regulations and addresses state-specific oil spill reporting notification and response requirements as administered by the Nevada State Emergency Response Commission.

The Nevada Division of Water Resources authorizes the annual use of up to 1,052 acre-feet of groundwater through Permit Nos. 87089, 18091, 24074, 7558, and 5238. Monthly reporting and metering are required. This water is trucked to the mine site for dust suppression.

U.S. Silica holds several permits authorized by the NDEP, including a Class I Air Quality Operating Permit No. AP1499-3768, Class II Surface Area Disturbance Permit No. AP1499-0862.04, and a Class III Landfill Waiver No. SWW1713.

The Nevada State Fire Marshal has issued the following Hazardous Materials Permits to U.S. Silica:

- Hazardous Materials Permit No. 95886 for hazardous materials/fuels at the mine.
- Hazardous Materials Permit No. 95888 for hazardous materials/fuels at the mine shop.
- Hazardous Materials Permit No. 101676 for hazardous materials/fuels at the processing plant.

U.S. Silica is in the process of acquiring a Nevada Industrial Stormwater Multisector General Permit No. NVR050000 which will authorize the discharge of water from the processing plant site in the event of a 2-year, 24-hour storm. This permit is currently pending approval.

17.2 Compliance

U.S. Silica reports having an extensive environmental management and compliance process designed to follow or to exceed industry standards.

In their 2021 corporate sustainability report, U.S. Silica reports:

- Increasing the use of renewable energy sources.
- Improving the quality of local water by utilizing best-in-class tailings management techniques.
- Recycling or reusing tailings waste for land reclamation.

Mine safety is regulated by the MSHA. MSHA inspects the facilities a minimum of twice yearly. U.S. Silica's safety record compares favorably with its regional peers.

Based on our review of information provided by U.S. Silica and available public information, it is BOYD's opinion that the Colado Operation's record of compliance with applicable mining, water quality, and environmental regulations is generally typical for that of the industry. BOYD is not aware of any regulatory violation or compliance issue which would materially impact the DE reserve estimate.

17.3 Post-Mining Land Use and Reclamation

Disturbed areas at the Colado Operation must be reclaimed in accordance with approved reclamation and abandonment plans. These plans are a condition of U.S. Silica's operating permits and licenses and generally require:

- Regrading and landscaping of all disturbed areas.
- Regrading and landscaping of stockpiles.
- Removal of all equipment and structures.
- Regrading and landscaping of disused roads.
- Destruction or breaching of any dams or impoundments.
- Disposal of all hazardous wastes.

Mine site reclamation costs are funded from U.S. Silica's Asset Retirement Obligations (ARO) account. Funding of the ARO account is included in the Colado Operation's operating costs discussed in Chapter 18 and included in the economic analysis presented in Chapter 19. ARO costs estimates are reviewed annually and current estimated at approximately $16.1 million for the Colado Operation. As a matter of good mining practice, U.S. Silica seeks to conduct progressive reclamation throughout the operation's mining life to minimize risk and costs at closure.

17.4 Community Engagement

The Colado Operation has been a fixture in the Lovelock, Nevada community since the late-1950s. U.S. Silica is one of the major employers and economic contributors in the area. BOYD is unaware of any plans, negotiations, agreements with local individuals or groups or commitments to ensure local procurement and hiring.

U.S. Silica's corporate sustainability report outlines the components of its core community engagement initiatives. It's stated priorities include increasing charitable contributions to organizations that support the local community and actively seeking opportunities for volunteering and community engagement.

18.0 CAPITAL AND OPERATING COSTS

18.1 Historical Financial Performance

Table 18.1 summarizes the past three years of financial data for the Colado Operation.

Table 18.1: Historical Financials

	Units	2020	2021	2022
Production:				
ROM Production	000 tons	151	166	175
Process Yield	%	76.1	72.3	63.7
Product Sales	000 tons	115	120	111
Gross Revenues	$ 000	56,544	67,948	77,719
Average Selling Price	$/ton sold	491.94	565.91	697.27
Total Cash Costs of Sales	$ 000	37,799	48,367	60,800
Average Cash Cost of Sales	$/ton sold	328.86	402.84	545.48
Capital Expenditures	$ 000	1,731	4,835	5,897

Gross revenues include income from product sales and shipping.

Total cash costs of sales include operating costs (i.e., mining, ongoing reclamation, processing, product loadout, and other related costs) in addition to selling, general, and administrative expenses.

Capital expenditures include maintenance (sustaining) expenses and discretionary spending on continuous improvement projects to drive and maintain cost efficiencies.

Based on the financial data presented above:

- Average realization (selling price) for finished DE products increased from $491.94 per ton sold in 2020 to $697.27 per ton sold in 2022.
- Total cash cost of sales also increased from $328.86 per ton sold in 2020 to $545.48 per ton sold in 2022.
- EBITDA margin decreased from 33.2% in 2020 to 21.8% in 2022.
- Capital expenditures totaled almost $12.5 million over the three years, averaging $35.97 per ton sold.

18.2 Estimated Costs

The production and unit cost estimates provided by U.S. Silica are based on actual past performance and their customary internal budget review and approvals process. Operating volumes are well-defined and understood, as are mining and processing productivities. As such, it is BOYD's opinion that the production and financial projections are reasonable and are likely to be within ±20% accuracy level.

This section contains forward-looking information related to capital and operating cost estimates for the Colado Operation.

There are inherent known and unknown risks and uncertainties associated with all mining operations. These risks, uncertainties, and other factors are not quantifiable, but include or are not limited to, adverse general economic conditions, operating hazards, inherent uncertainties in interpreting engineering and geologic data, fluctuations in commodity prices and prices for operational services, government regulation and political risks, as well as other risks commonly associated with the mining industry.

18.2.1 Projected Capital Expenditures

The Colado Operation and related facilities are fully developed and should not require any near-term major capital investment to maintain full commercial production. Historically, the timing and amount of capital expenditures has been largely discretionary and within U.S. Silica's control. Their budgetary allocations for sustaining and discretionary capital expenditures over the next three years is provided in Table 18.2, below.

Table 18.2: Projected Capital Costs

Year	CapEx ($ 000)
2023	5,527
2024	5,883
2025	5,876
Total	17,286

BOYD considers the near-term detailed capital expenditure schedule as presented by U.S. Silica to be reasonable and representative of the capital necessary to operate the Colado Operation.

After 2025, capital expenditures are projected to increase 3% per year from 2025s level until the end of operation’s life. As the Colado Operation is in a steady state of production, the projected capital expenditures are considered reasonable and expected.

18.2.2 Projected Operating Costs

Operating cost estimates were developed based on recent actual costs and considering specific operational activity levels and cost drivers. The estimates consider current and expected labor headcount and salaries, major consumables and unit prices, power costs, and equipment and maintenance costs. The total operating cost estimate includes all site costs related to mining, processing, and general and administrative activities.

In the near-term, U.S. Silica expects their unit operating costs to stay relatively consistent (on an uninflated basis). As such, the projected total cash cost of sales over the life of the mine is $545.48 per ton sold. As the operation is in a steady state, BOYD considers the future operating cost estimates to be reasonable and appropriate.

19.0 ECONOMIC ANALYSIS

19.1 Approach

The economic analysis presented in this chapter was made for the purposes of confirming the commercial viability of the Colado Operation's reported DE reserves and not for the purposes of valuing U.S. Silica, the Colado Operation, or its assets. The economic analysis contains forward-looking information related to the projected operating and financial performance of the Colado Operation and therefore involves inherent known and unknown risks and uncertainties, some of which may be outside of U.S. Silica's control. U.S. Silica, as with all mining companies, actively evaluates, changes, and modifies business and operating plans in response to various factors that may affect operational and/or financial results. Actual results, production levels, operating expenses, sales realizations, and all other modifying factors could vary significantly from the assumptions and estimates provided in this analysis. Risk is subjective, as such, BOYD recommends that each reader should evaluate the project based on their own investment criteria.

The financial model used for the purposes of the economic analysis has been prepared in-house by U.S. Silica as part of their annual budgeting process. The model forecasts future free cash flow from DE production and sales over the life cycle of the Colado Operation using the annual forecasts of production, sales revenues, and operating and capital costs discussed earlier in this report. A DCF analysis, in which future free cash flows are discounted to present value, is used to derive a NPV for the DE reserves. Use of DCF-NPV analysis is a standard method within the mining industry to assess the economic value of a project after allowing for the cost of capital invested.

The financial evaluation of the Colado Operation has been undertaken on a simplified after-tax basis and does not reflect U.S. Silica's corporate tax structure. NPV is calculated using an after-tax discount rate of 12.5% ($NPV_{12.5}$). Cash flows were assumed to occur in the middle of each year and are discounted to mid-year 2022. Cost estimates and other inputs to the cash flow model for the project have been prepared using constant 2022 money terms, i.e., without provision for inflation. IRR and project payback were not calculated, as there was no initial investment (sunk costs) considered in the financial model provided herein.

A suite of sensitivities was calculated to evaluate the effect of the main drivers of economic performance, including variations in sales prices, operating costs, and capital costs.

BOYD has reviewed the financial model and its inputs in detail. It is our opinion that the financial model provides a reasonable and accurate reflection of the Colado Operation's expected economic performance based on the assumptions and information available at the time of our review.

19.2 Assumptions and Limitations

Cash flow projections for the Colado Operation have been generated from the annual forecasts of production, sales revenues, and operating and capital costs discussed earlier in this report. A summary of the key assumptions and limitations is provided below:

- Sales volumes of finished DE are expected to increase 3% per annum (limited by processing plant capacity of 160,000 product tons per year) while maintaining a consistent product mix.
- ROM production requirements are based on an expected processing yield of 81.6% (the historic average) and are also projected to increase 3% per annum until plant capacity is reached. Forecasted ROM production is at or below the capacity of the existing mining equipment and related infrastructure.
- Forecasted revenues are based on sales of various grades of finished DE with a weighted-average sales price of $697.27 per ton.
- Capital and operating costs are discussed in Chapter 18. Capital expenditures are derived from budgetary allocations for the first three years of the forecast and escalated thereafter at 3% per annum. Unit operating costs are expected to remain relatively constant over the life of the operation at $545.48 per sold ton.
- Taxes are based on combined Federal and State Tax rates totaling 26%.
- Buildup of net working capital is equal to 25% of positive cash (operating) margins.
- Depreciation and amortization expenses are estimated as the average of the proceeding three years.
- No asset recovery/salvage values were included in the valuation.

19.3 Financial Model Results

Estimated LOM pre-tax and after-tax cash flows for DE production from the Colado Operation are presented in Table 19.1, on the following page.

Table 19.1

ANNUAL PRODUCTION AND CASH FLOW FORECAST
COLADO OPERATION
Prepared For
U.S. SILICA COMPANY
By
John T. Boyd Company
Mining and Geological Consultants
February 2023

Description	Units	2023	2024	2025	2026	2027	2028 to 2032	2033 to 2042	2043 to 2047	Total
Production:										
ROM Production	000 tons	141	145	149	154	158	866	1,952	914	4,479
Product Sales	000 tons	115	118	122	125	129	707	1,593	746	3,655
Total Revenues	$ 000	80,051	82,452	84,926	87,474	90,098	492,692	1,110,896	519,839	2,548,427
Average Selling Price	$/ton sold	697.27	697.27	697.27	697.27	697.27	697.27	697.27	697.27	697.27
Total Cash Costs of Sales	$ 000	62,624	64,503	66,438	68,431	70,484	385,437	869,063	406,675	1,993,655
Average Cash Cost of Sales	$/ton sold	545.48	545.48	545.48	545.48	545.48	545.48	545.48	545.48	545.48
EBITDA	$ 000	17,426	17,949	18,488	19,042	19,614	107,255	241,833	113,165	554,772
Depreciation & Amortization	$ 000	7,154	7,186	7,102	7,147	7,145	35,689	71,388	35,694	178,506
EBIT	$ 000	10,272	10,763	11,386	11,895	12,468	71,566	170,445	77,471	376,265
Taxes	$ 000	2,671	2,798	2,960	3,093	3,242	18,607	44,316	20,142	97,829
Operating Income	$ 000	7,601	7,965	8,425	8,802	9,227	52,958	126,129	57,328	278,436
Capital Expenditures	$ 000	5,527	5,883	5,876	6,052	6,234	34,089	85,332	53,110	202,103
Net Working Capital Contribution	$ 000	127	131	135	139	143	781	387	-	1,842
Net Income	$ 000	1,948	1,951	2,415	2,611	2,850	18,088	40,410	4,219	74,491
Pre-tax Cash Flow	$ 000	11,773	11,935	12,477	12,851	13,237	72,385	156,114	60,055	350,827
Discounted at 12.5%	$ 000	11,099	10,003	9,295	8,510	7,791	30,130	28,519	4,459	109,805
After-tax Cash Flow	$ 000	9,102	9,137	9,517	9,759	9,995	53,778	111,798	39,912	252,998
Discounted at 12.5%	$ 000	8,581	7,657	7,089	6,462	5,883	22,412	20,533	2,982	81,600

Table 19.2, below, provides a summary of the estimated remaining life of mine financial results for the Colado Operation.

Table 19.2: Financial Results

	Units	Remaining Life of Mine Total
Remaining Life	years	25
Production:		
ROM Production	000 tons	4,479
Product Sales	000 tons	3,655
Total Revenues	$ millions	2,548.4
Total Cash Costs of Sales	$ millions	1,993.7
Capital Expenditures	$ millions	202.1
Pre-Tax:		
Cash Flow	$ millions	350.8
$NPV_{12.5}$	$ millions	109.8
After-tax:		
Cash Flow	$ millions	253.0
$NPV_{12.5}$	$ millions	81.6

DCF-NPV on a pre-tax and after-tax basis, using discount rates of 10%, 12.5% (the base case), and 15%, were calculated utilizing the projected cash flows. Table 19.3 summarizes the results of the pre-tax and after-tax DCF-NPV analyses:

Table 19.3: DCF-NPV Analysis

	NPV ($ millions)		
	10%	12.5%	15%
Pre-Tax	131.2	109.8	93.8
After-Tax	97.0	81.6	70.0

As shown, the pre-tax DCF-NPV ranges from approximately $93.8 million to $131.2 million. The after-tax DCF-NPV ranges from approximately $70 million to $97 million.

The economic analysis confirms that the Colado Operation generates positive pre- and after-tax financial results and a real $NPV_{12.5}$ of $81.6 million. As such, it is BOYD's opinion that the Colado Operation's DE reserves have demonstrated economic viability.

19.4 Sensitivity Analysis

Table 19.4, below, shows the sensitivity of the project after-tax for a cash flow discounted at 12.5% ($NPV_{12.5}$) to a variation over a range of 20% above and below the base case in: (1) average selling prices and (2) operating costs.

Table 19.4: After-Tax $NPV_{12.5}$ Sensitivity Analysis ($ millions)

Cash Costs of Sales \ Revenues	-20%	-15%	-10%	-5%	0%	5%	10%	15%	20%
-20%	57.3	85.1	112.2	139.2	166.3	193.4	220.4	247.5	274.6
-15%	35.5	63.4	91.0	118.1	145.1	172.2	199.3	226.3	253.4
-10%	13.9	41.6	69.5	96.9	123.9	151.0	178.1	205.2	232.2
-5%	-	19.8	47.7	75.6	102.8	129.8	156.9	184.0	211.0
0%	-	0.7	25.9	53.7	**81.6**	108.7	135.7	162.8	189.9
5%	-	-	5.2	31.9	59.8	87.5	114.6	141.6	168.7
10%	-	-	-	10.6	38.0	65.9	93.4	120.5	147.5
15%	-	-	-	-	16.3	44.1	72.0	99.3	126.3
20%	-	-	-	-	-	22.3	50.1	78.1	105.2

As might be expected, the project is most sensitive to changes in product pricing and operating costs. The Colado Operation generates negative value only if costs are increased substantially and/or selling prices are reduced significantly.

The project is less sensitive to capital costs. There is little to no impact varying the capital costs from 70% to 130% of the base case.

This analysis demonstrates the project value to be relatively robust; with positive NPVs reported across the range of values assessed.

20.0 ADJACENT PROPERTIES

There is no information used in this report that has been sourced from adjacent properties. BOYD is unaware of any mining or exploration activities having occurred on the adjacent properties.

21.0 OTHER RELEVANT DATA AND INFORMATION

BOYD is not aware of any additional information which would materially impact the DE resource and reserve estimates reported herein.

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22.0 INTERPRETATION AND CONCLUSIONS

22.1 Audit Findings

BOYD's independent technical assessment was conducted in accordance with S-K 1300 and concludes:

- Sufficient data have been obtained through site exploration and sampling programs and mining operations to support the geological interpretations of the DE deposit within the controlled property of the Colado Operation. The data are of sufficient quantity and reliability to reasonably support the DE resource and reserve estimates presented in this report.
- BOYD is of the opinion that our data verification efforts: (1) adequately confirm the reasonableness of the geologic interpretations, resource estimation criteria, and economic assumptions; and (2) support the use of the data in DE resource/reserve estimation.
- The nearly 3.7 million saleable product tons of DE reserves (as of December 31, 2022) identified on the property are reasonably and appropriately supported by technical studies, which consider expected geologic conditions, planned mining and processing operations, forecasted product revenues, and operating and capital cost estimates. As such, BOYD is of the opinion that there are reasonable expectations that the stated DE reserves for the Colado Operation are technically, economically, and legally extractable as of December 31, 2022.
- In addition to the reported reserves, U.S. Silica controls approximately 689,000 in-place tons of inferred DE resources at the Colado Operation. It is BOYD's opinion that the stated DE resources have been reported using economic and mining assumptions which support the reasonable potential for eventual economic extraction.
- There is no other relevant information material to the Colado Operation that is necessary to make this technical report summary not misleading.

22.2 Significant Risks and Uncertainties

As a mining operation with a lengthy operating history, the purpose of U.S. Silica's periodic mine planning exercises is to: (1) collect and analyze sufficient data to reduce or to eliminate risk in the technical components of the project, and (2) to refine economic projections based on current data. There is a high degree of certainty for this project under the current and foreseeable operating environment. A general assessment of risk is presented in the relevant sections of this report.

23.0 RECOMMENDATIONS

Based on the scope of our assignment, BOYD has no recommendations regarding the Colado Operation. It is our understanding that U.S. Silica continuously reviews and improves operating practices as a matter of course.

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24.0 REFERENCES

A list of supporting information is provided in Section 2.4. Additional references are cited as footnotes in the report as required.

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25.0 RELIANCE ON INFORMATION PROVIDED BY REGISTRANT

In the preparation of this report, BOYD has relied, exclusively and without independent verification, upon information furnished by U.S. Silica as presented in Table 25.1, below.

Table 25.1: Information Relied Upon from Registrant

Subject Matter	Information	Report Chapter(s)
Environmental	Permits, bond, and reclamation liability	3, 17
	Sustainability initiatives	17
	Surface tailings management	15
	Mine closure requirements and plans	17
	Monitoring/compliance requirements for protected areas/species	3, 17
Governmental	Income tax rates	19
Legal	Property title and status	3
	Encumbrances, easements, and right-of-ways	3
Macroeconomics	Inflation, interest, and discount rates	19
Markets	Market overview and strategy	16
	Long-term product price projections	11, 12, 16, 19
	Product specifications	16
	Marketing and sales contracts	16
Social	Community relations	17

BOYD exercised due care in reviewing the information provided by U.S. Silica within the scope of our expertise and experience (which is in technical and financial mining issues) and concluded the data are reasonable and appropriate considering the status of the subject properties and the purpose for which this report was prepared. We have no reason to believe that any material facts have been withheld or misstated, or that further analysis may reveal additional material information. However, the accuracy of the results and conclusions of this report are reliant on the accuracy of the information provided by U.S. Silica.