UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): May 11, 2023

5E ADVANCED MATERIALS, INC.

(Exact name of Registrant as Specified in Its Charter)

Delaware	001-41279	87-3426517
(State or Other Jurisdiction of Incorporation)	(Commission File Number)	(IRS Employer Identification No.)

19500 State Highway 249, Suite 125 Houston, Texas	77070
(Address of Principal Executive Offices)	(Zip Code)

Registrant's Telephone Number, Including Area Code: (346) 439-9656

(Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock	FEAM	The Nasdaq Global Select Market

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§ 230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§ 240.12b-2 of this chapter).

Emerging growth company ☒

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☒

Item 2.02 Results of Operations and Financial Condition.

On May 11, 2023, 5E Advanced Materials, Inc. (the "Company") announced its financial results for the three months ended March 31, 2023. A copy of the press release issued by the Company is attached as Exhibit 99.1 and is incorporated herein by reference.

The information in this current report on Form 8-K shall not be deemed “filed” for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liabilities of such Section nor shall it be incorporated by reference into a filing under the Securities Act or the Exchange Act, except as shall be expressly set forth by specific reference in such filing.

Item 8.01 Other Events

5E Advanced Materials, Inc. (the "Company") has completed an update to its Technical Report Summary for its Fort Cady Project, a copy of which is attached as Exhibit 99.2.

Item 9.01 Financial Statements and Exhibits.
(d) Exhibits.

Number	Exhibit
23.1	Consent of Louis Fourie, P. Geo., Principal, Terra Modeling Services
23.2	Consent of Mathew Banta, PH, Principal, Confluence Water Resources LLC
23.3	Consent of Paul Weibel, CPA, Chief Financial Officer, 5E Advanced Materials, Inc.
23.4	Consent of Christopher Knight, VP Operations, 5E Advanced Materials, Inc.
23.5	Consent of Cindi Byrns, CEM, Environmental Manager, 5E Advanced Materials, Inc.
23.6	Consent of Joshua Parrie, Wellfield Manager, 5E Advanced Materials, Inc.
99.1	Press release dated May 11, 2023
99.2	Initial Assessment Report (Updated)

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

5E Advanced Materials, Inc.

Date: May 11, 2023

By: /s/ Paul Weibel
Paul Weibel
Chief Financial Officer

Exhibit 23.1

CONSENT OF TERRA MODELING SOLUTIONS

To: U.S. Securities and Exchange Commission
Board of Directors of 5E Advanced Materials, Inc.

Re: Current Report on Form 8-K of 5E Advanced Materials, Inc. dated May 11, 2023 ("8-K")

Terra Modeling Solutions ("TMS"), in connection with the 8-K consents to:

- the public filing by the Company and use of the technical report titled Initial Assessment Report (Update) (the "Initial Assessment Update"), with an effective date of May 11, 2023, dated May 11, 2023 and that was prepared in accordance with Subpart 1300 of Regulation S-K promulgated by the U.S. Securities and Exchange Commission, as an exhibit to and referenced in the 8-K and related earnings release and its incorporation into the Company's Form S-1 registration statement (File No. 333-267803) and the Company's Form S-8 registration statement (File No. 333-264136) (the "Registration Statements") ;
- the use of and references to our name, including our status as an expert or "qualified person" (as defined in Subpart 1300 of Regulation S-K promulgated by the U.S. Securities and Exchange Commission), in connection with the 8-K and the Registration Statements; and
- any extracts from or a summary of the Initial Assessment Update in the Registration Statement and the use of any information derived, summarized, quoted or references from the Initial Assessment, or portions thereof, that was prepared by us, that we supervised the preparation of and/or that was reviewed and approved by us, that is included in the 8-K, the earnings release, other related Company disclosures and the Registration Statements and any amendments or supplements thereto.

TMS is responsible for authoring, and this consent pertains to, the Initial Assessment Update limited to those sections of the report identified on page 2 thereof. TMS certifies that it has read the 8-K and related documents, and that it both fairly and accurately represents the information in the update to the Initial Assessment.

Dated: May 11, 2023

By: /s/ Louis Fourie
Name: Louis Fourie, P.Geo.
Title: Principal, Terra Modeling Solutions

Exhibit 23.2

CONSENT OF CONFLUENCE WATER RESOURCES LLC

To: U.S. Securities and Exchange Commission
Board of Directors of 5E Advanced Materials, Inc.

Re: Current Report on Form 8-K of 5E Advanced Materials, Inc. dated May 11, 2023 ("8-K")

Confluence Water Resources, LLC ("CWR"), in connection with the 8-K consents to:

- the public filing by the Company and use of the technical report titled Initial Assessment Report (Update) (the "Initial Assessment Update"), with an effective date of May 11, 2023, dated May 11, 2023 and that was prepared in accordance with Subpart 1300 of Regulation S-K promulgated by the U.S. Securities and Exchange Commission, as an exhibit to and referenced in the 8-K and related earnings release and its incorporation into the Company's Form S-1 registration statement (File No. 333-267803) and the Company's Form S-8 registration statement (File No. 333-264136) (the "Registration Statements") ;
- the use of and references to our name, including our status as an expert or "qualified person" (as defined in Subpart 1300 of Regulation S-K promulgated by the U.S. Securities and Exchange Commission), in connection with the 8-K and the Registration Statements; and
- any extracts from or a summary of the Initial Assessment Update in the Registration Statement and the use of any information derived, summarized, quoted or references from the Initial Assessment, or portions thereof, that was prepared by us, that we supervised the preparation of and/or that was reviewed and approved by us, that is included in the 8-K, the earnings release, other related Company disclosures and the Registration Statements and any amendments or supplements thereto.

CWR is responsible for authoring, and this consent pertains to, the Initial Assessment Update limited to those sections of the report identified on page 2 thereof. CWR certifies that it has read the 8-K and related documents, and that it both fairly and accurately represents the information in the update to the Initial Assessment.

Dated: May 11, 2023

By: /s/ Mathew Banta
Name: Mathew Banta, PH
Title: Principal, Confluence Water Resources LLC

Exhibit 23.3

The undersigned hereby consents to:

(i) The filing of the update to the initial assessment report on 5E Advanced Materials Fort Cady Project dated May 11, 2023, filed as Exhibit 99.2 to the Current Report on Form 8-K dated March 11, 2023 (the “8-K”) of 5E Advanced Materials, Inc. (the “Company”) being filed with the United States Securities and Exchange Commission;

(ii) The incorporation by reference of such report attached as Exhibit 99.2 to the 8-K into the Company’s Form S-1 Registration Statement (File No. 333-267803), and any amendments thereto (the “S-1”);

(iii) The incorporation by reference of such report attached as Exhibit 99.2 to the 8-K into the Company’s Form S-8 Registration Statement (File No. 333-264136) and any amendment thereto (the “S-8”); and

(iv) The use of my name in the S-1 and the S-8.

The consent of the undersigned is limited to the sections of the report identified on page 2 thereof.

Date: May 11, 2023.

By: /s/ Paul Weibel
Name: Paul Weibel, CPA
Title: Chief Financial Officer, 5E Advanced Materials, Inc.

The undersigned hereby consents to:

(i) The filing of the update to the initial assessment report on 5E Advanced Materials Fort Cady Project dated May 11, 2023, filed as Exhibit 99.2 to the Current Report on Form 8-K dated March 11, 2023 (the "8-K") of 5E Advanced Materials, Inc. (the "Company") being filed with the United States Securities and Exchange Commission;

(ii) The incorporation by reference of such report attached as Exhibit 99.2 to the 8-K into the Company's Form S-1 Registration Statement (File No. 333-267803), and any amendments thereto (the "S-1");

(iii) The incorporation by reference of such report attached as Exhibit 99.2 to the 8-K into the Company's Form S-8 Registration Statement (File No. 333-264136) and any amendment thereto (the "S-8"); and

(iv) The use of my name in the S-1 and the S-8.

The consent of the undersigned is limited to the sections of the report identified on page 2 thereof.

Date: May 11, 2023.

By: /s/ Chris Knight
Name: Chris Knight
Title: VP of Operations, 5E Advanced Materials, Inc.

The undersigned hereby consents to:

(i) The filing of the update to the initial assessment report on 5E Advanced Materials Fort Cady Project dated May 11, 2023, filed as Exhibit 99.2 to the Current Report on Form 8-K dated March 11, 2023 (the “8-K”) of 5E Advanced Materials, Inc. (the “Company”) being filed with the United States Securities and Exchange Commission;

(ii) The incorporation by reference of such report attached as Exhibit 99.2 to the 8-K into the Company’s Form S-1 Registration Statement (File No. 333-267803), and any amendments thereto (the “S-1”);

(iii) The incorporation by reference of such report attached as Exhibit 99.2 to the 8-K into the Company’s Form S-8 Registration Statement (File No. 333-264136) and any amendment thereto (the “S-8”); and

(iv) The use of my name in the S-1 and the S-8.

The consent of the undersigned is limited to the sections of the report identified on page 2 thereof.

Date: May 11, 2023.

By: /s/ Cindi Byrns
Name: Cindi Byrns, CEM
Title: Environmental Manager

Exhibit 23.6

The undersigned hereby consents to:

(i) The filing of the update to the initial assessment report on 5E Advanced Materials Fort Cady Project dated May 11, 2023, filed as Exhibit 99.2 to the Current Report on Form 8-K dated March 11, 2023 (the “8-K”) of 5E Advanced Materials, Inc. (the “Company”) being filed with the United States Securities and Exchange Commission;

(ii) The incorporation by reference of such report attached as Exhibit 99.2 to the 8-K into the Company’s Form S-1 Registration Statement (File No. 333-267803), and any amendments thereto (the “S-1”);

(iii) The incorporation by reference of such report attached as Exhibit 99.2 to the 8-K into the Company’s Form S-8 Registration Statement (File No. 333-264136) and any amendment thereto (the “S-8”); and

(iv) The use of my name in the S-1 and the S-8.

The consent of the undersigned is limited to the sections of the report identified on page 2 thereof.

Date: May 11, 2023.

By: /s/ Joshua Parrie
Name: Joshua Parrie
Title: Wellfield Manager, 5E Advanced Materials, Inc.

5E ADVANCED MATERIALS RELEASES TECHNICAL REPORT SUMMARY AND REPORTS THIRD QUARTER 2023 RESULTS

HIGHLIGHTS

- Update to initial assessment Technical Report Summary:
  - Phased approach to scale production focused on achieving profitability and generating cash flow
  - New resource estimate reduces cut-off grade to 2% B_2O_3 (Boric Acid)
  - Measured, Indicated and Inferred Resource with 13.97 million short tons boric acid and 0.31 million short tons of Lithium Carbonate (LCE)
- Technical Report Summary estimated Project Economics:
  - US$101.2 million EBITDA and 62.1% EBITDA margin in FY 2027
  - Post-tax NPV_8 of US$2.4 billion and IRR of 22.6%
  - Phase 1 Capital Estimate US$288 million before contingency and owner's cost
- Phase 1 targets production of 90,000 short tons of boric acid and 1,100 short tons of lithium carbonate with a targeted go-live date of the second calendar quarter of 2026
- Construction of the Small-Scale Facility substantially complete with operation pending authorization from EPA
- Continued track record of zero lost time incidents with over 175,000-man hours recorded
- Appointment of new CEO, Ms. Susan Seilheimer Brennan

5E Advanced Materials, Inc. (Nasdaq: FEAM) (ASX: 5EA) ("5E" or the "Company"), a boron and lithium company with U.S. government Critical Infrastructure designation for its 5E Boron Americas (Fort Cady) Complex ("Project"), is pleased to announced it has updated its Technical Report Summary for the Project and released its financial results for the quarter ended March 31, 2023.

BUSINESS UPDATE

Technical Report Update and Larger Scale Facility

During the quarter, the 5E team spent significant time updating the Company's initial assessment Technical Report Summary, which has been filed with the Securities and Exchange Commission ("SEC") and prepared in accordance with the SEC S-K Regulations (Title 17, Part 229, Items 601 and 1300 until 1305). A dedicated internal and external team pooled their professional and technical expertise to publish a report that the Company believes highlights a world-class resource, management's firm understanding and direction for the business, and a phased approach to scale production, which can position the company to achieve profitability, generate cash flow, and reduce risk. The updated initial assessment includes a revised mineral resource estimate for boric acid and lithium carbonate, estimates for capital costs and operating expenses, and a bottoms-up economic analysis based on a phased approach to scaling production. The financial model for the economic analysis includes preliminary market studies and independent pricing forecasts for boric acid and lithium carbonate. As part of the updated technical report, the Company engaged two external EPC firms to assist management with the capital cost estimate, which the Company expects to use as the basis to stage a formal process to request proposals for detail design of the large-scale facility.

The updated Technical Report Summary outlines three phases for the larger-scale facility:

- Phase 1 targets production of 90,000 short tons of boric acid and 1,100 short tons of lithium carbonate with a targeted go-live date of the second calendar quarter of 2026.
- Phase 2 and Phase 3 targets incremental production increases of 180,000 short tons of boric acid and 2,200 short tons of lithium carbonate in each phase with a targeted go live date in the fourth calendar quarter of 2028 (Phase 2) and second calendar quarter of 2031 (Phase 3).
- Full operation includes targeting production of 450,000 short tons of boric acid and 5,500 short tons of lithium carbonate per annum.

The initial capital cost estimate outlined in the technical report for Phase 1 is $288 million before contingency and owner's costs. With the owner's cost and a 25% contingency, Phase 1 capital is estimated at $373 million. First year full-production cash costs are targeted at $686 per short ton and the table below includes targeted financial metrics for each phase's first full-year of operation:

	FY 2027 (Phase 1)	FY 2030 (Phase 2)	FY 2032 (Phase 3)
		($ in millions)	
Revenue - US$	$ 162.9	$ 575.1	$ 1,069.3
Operating margin - US$	64.4	264.3	431.4
EBITDA - US$	101.2	360.9	621.9
EBITDA margin - %	62.10%	62.80%	58.20%

Market Study Results

The Company commissioned an independent third-party research firm to perform a boron market study and forward pricing forecast. The market study indicates that overall demand for boric acid is expected to increase at a CAGR of 5.4% from 2022 through 2031 while capacity increases for the same period are projected at a 5.1% CAGR. Given that the market is already nearly balanced and existing suppliers have not demonstrated an ability to immediately ramp up capacity, a systematic market deficit is expected through the next decade, driving prices higher as projected in Figure 1 below. Figure 2 below outlines the supply and demand deficit.

Figure 1: Boric Acid Pricing per Kline and Company, Inc.

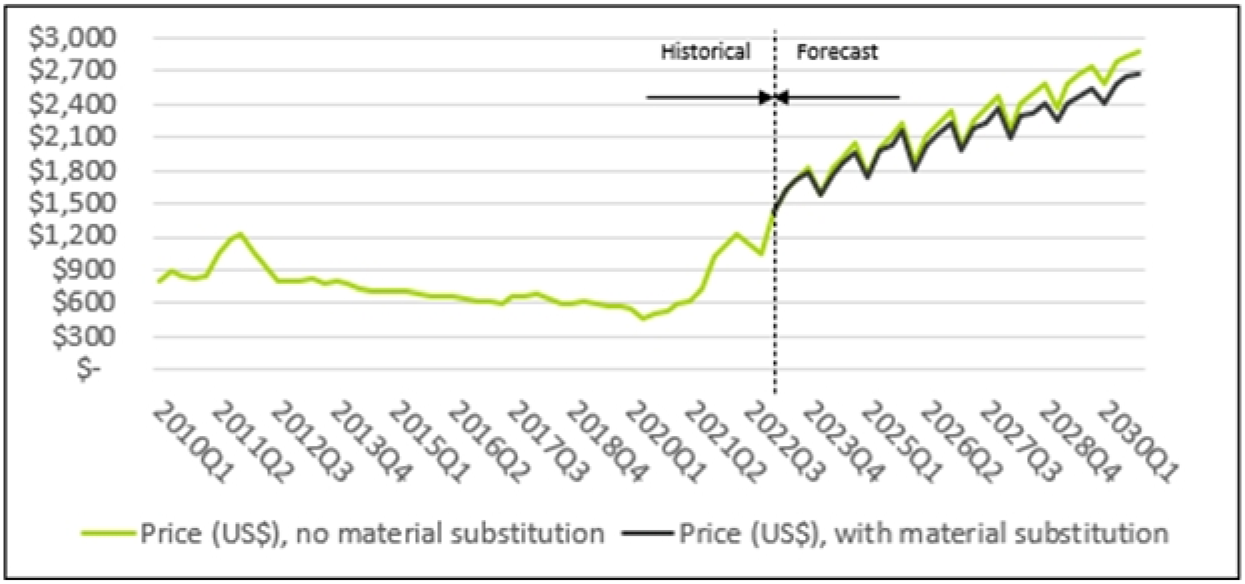
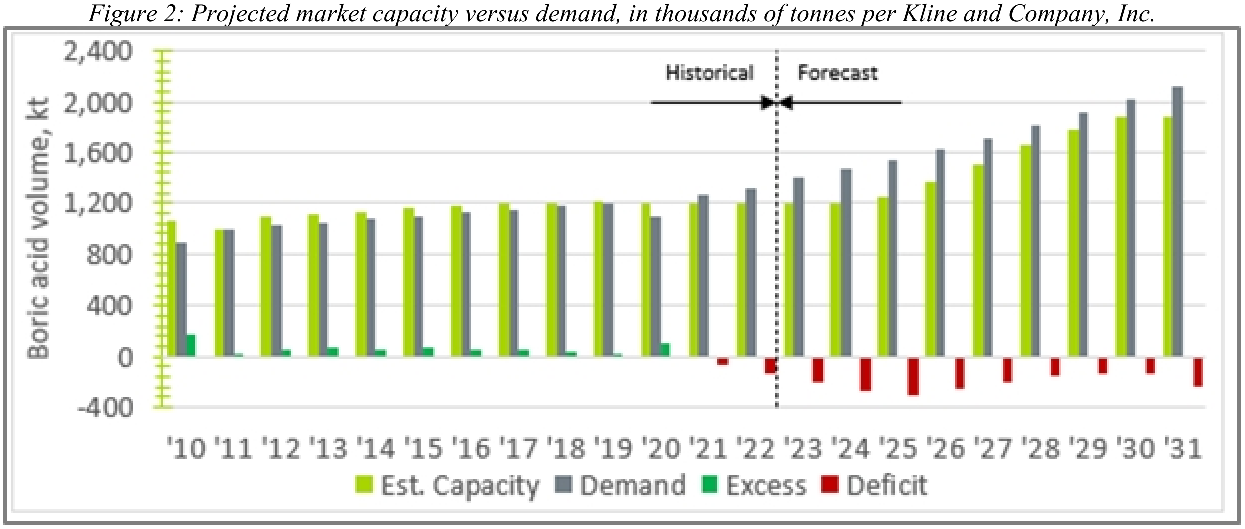


Figure 2: Projected market capacity versus demand, in thousands of tonnes per Kline and Company, Inc.



As the world focuses on decarbonization, food security and security of strategic and critical minerals, the forecasted pull-side demand for boron enabling future-facing applications is expected to pressure boric acid pricing higher. Further reinforcing the market study and pricing forecast is the lack of near-term supply. As 80% of the market is controlled by two producers, 5E is one of the only permitted boron resources with a proven commercially viable mineralization (calcium-based) that is likely to add meaningful supply in the next five to seven years.

Small-Scale Facility

During the quarter ended March 31, 2023, the Company substantially completed construction of the Small-Scale Facility and progressed commissioning activities. Initial production of boric acid will commence upon final clearance from the U.S. Environmental Protection Agency (EPA) under the Company's Underground Injection Control Permit as well as successful completion of commissioning activities. Key required reports and documentation were submitted to the EPA for their approval in 2022 and the Company believes it is in full compliance with the terms of the permit. Upon final review of required documentation by the EPA, the Company expects to receive authorization to commence mining operations. Data gathered from the construction and future operation of the Small-Scale Facility will be used to optimize and improve accuracy of capital and operating estimates for the larger-scale operations, provide customer samples for qualification and future off-take agreements, and offset future operating expenses.

CEO Appointment

During the quarter, the Company announced the appointment of Ms. Susan Seilheimer Brennan as its new Chief Executive Officer. Ms. Brennan started on April 24, 2023, and has an extensive global leadership background, particularly in the battery technology and electric vehicle industries. During Ms. Brennan's first two weeks, she has implemented general, administrative and fixed cost cutting measures and will relocate the Company's headquarters to California in an effort to focus on production of boric acid and lithium carbonate.

Third Quarter 2023 Results:

As of quarter-end, the Company maintained a cash balance of $36.2 million. Construction in progress was $61.5 million, compared to $46.9 million in the prior fiscal quarter ended December 31, 2022, as the Company neared mechanical completion of the Small-Scale Facility.

5E ADVANCED MATERIALS, INC.
CONDENSED CONSOLIDATED BALANCE SHEET
(Unaudited)
(In thousands, except share data)

5E ADVANCED MATERIALS, INC.

	March 31, 2023	June 30, 2022
ASSETS		
Current assets:		
Cash and cash equivalents	$ 36,170	$ 31,057
Prepaid expenses and other current assets	1,892	1,506
Total current assets	38,062	32,563
Mineral rights and properties, net	7,612	8,364
Construction in progress	61,533	25,625
Properties, plant and equipment, net	3,084	2,871
Reclamation bond deposit	1,086	1,086
Right of use asset	247	371
Other assets	6	6
Total assets	$ 111,630	$ 70,886
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable and accrued liabilities	$ 11,314	$ 7,212
Lease liabilities, current	158	164
Total current liabilities	11,472	7,376
Long-term debt, net	36,228	148
Lease liabilities	94	211
Accrued reclamation liabilities	676	489
Total liabilities	48,470	8,224
Commitments and contingencies (Note 12)		
Stockholders' Equity:		
Common stock, $0.01 par value; 180,000 shares authorized; 44,149 and 43,305 shares outstanding March 31 and June 30, respectively	441	433
Additional paid-in capital	190,455	169,593
Retained earnings (accumulated deficit)	(127,736)	(107,364)
Total stockholders' equity	63,160	62,662
Total liabilities and stockholders' equity	$ 111,630	$ 70,886

CONDENSED CONSOLIDATED STATEMENT OF OPERATIONS AND COMPREHENSIVE INCOME (LOSS)
(Unaudited)
(In thousands, except per share amounts)

	Three months ended March 31, 2023	Three months ended March 31, 2022	Nine Months Ended March 31, 2023	Nine Months Ended March 31, 2022
Operating expenses:				
Project expenses	$ 1,268	$ 2,039	$ 8,267	$ 9,816
General and administrative	6,004	30,832	18,591	44,497
Research and development	45	88	123	88
Impairment	908	—	908	—
Depreciation and amortization expense	53	36	132	76
Total operating expenses	8,278	32,995	28,021	54,477
Income (loss) from operations	(8,278)	(32,995)	(28,021)	(54,477)
Non-operating income (expense):				
Other income	13	29	49	39
Interest income	388	1	914	2
Derivative gain (loss)	—	—	11,743	—
Interest expense	(2,237)	(1)	(5,043)	(2)
Other income (expense)	(1)	(3)	(14)	961
Total non-operating income (expense)	(1,837)	26	7,649	1,000
Income (loss) before income taxes	(10,115)	(32,969)	(20,372)	(53,477)
Income tax provision (benefit)	—	—	—	—
Net income (loss)	$ (10,115)	$ (32,969)	$ (20,372)	$ (53,477)
Net income (loss) per common share — basic and diluted	$ (0.23)	$ (0.79)	$ (0.47)	$ (1.33)
Weighted average common shares outstanding — basic and diluted	44,104	41,895	43,737	40,148
Comprehensive income (loss):				
Net income (loss)	$ (10,115)	$ (32,969)	$ (20,372)	$ (53,477)
Reporting currency translation gain (loss)	—	(339)	—	(1,169)
Comprehensive income (loss)	$ (10,115)	$ (33,308)	$ (20,372)	$ (54,646)

U.S. HEADQUARTERS
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Houston, TX, 77070, USA
T: +1 (346) 439-9656
E: info@5Eadvancedmaterials.com

5E ADVANCED MATERIALS, INC.
CONDENSED CONSOLIDATED STATEMENT OF CASH FLOWS
(Unaudited)
(In thousands)

	For the nine months ended March 31, 2023	For the nine months ended March 31, 2022
Cash Flows From Operating Activities:		
Net income (loss)	$ (20,372)	$ (53,477)
Adjustments to reconcile net income (loss) to net cash used by operating activities:		
Depreciation and amortization	132	76
Share based compensation	4,251	4,428
Common stock issued for consulting fees	—	27,172
Unrealized (gain) loss on convertible note derivative instrument	(11,743)	—
Impairment	908	—
Accretion of reclamation liability	20	6
Amortization of debt issuance costs and discount — convertible note	3,454	—
Amortization of right of use asset	124	—
Interest earned on reclamation bond	—	(1)
Net foreign exchange (gain) loss	—	(965)
Change in:		
Prepaid expenses and other current assets	(386)	(3,050)
Accounts payable and accrued liabilities	(514)	2,421
Net cash used in operating activities	(24,126)	(23,390)
Cash Flows From Investing Activities:		
Construction in progress	(29,705)	(3,301)
Mineral rights and properties additions	—	(87)
Properties, plant and equipment additions	(333)	(1,222)
Net cash used in investing activities	(30,038)	(4,610)
Cash Flows From Financing Activities:		
Proceeds from issuance of convertible note	55,840	—
Payments on note payable	(29)	(104)
Proceeds from issuance of common stock	—	26,309
Share offering costs	—	(797)
Proceeds from exercise of stock options	3,466	3,124
Net cash provided by financing activities	59,277	28,532
Net increase (decrease) in cash and cash equivalents	5,113	532
Effect of exchange rate fluctuation on cash	—	(203)
Cash and cash equivalents at beginning of period	31,057	40,811
Cash and cash equivalents at end of period	$ 36,170	$ 41,140
Supplemental Disclosure of Cash Flow Information:		
Cash paid for interest	$ 5	$ —
Noncash Investing and Financing Activities:		
Accounts payable and accrued liabilities change related to construction in progress	$ 6,203	$ 2,022
Interest paid through issuance of additional convertible notes	1,710	—
Equipment acquired with notes payable	—	227
Recognition of operating lease liability and right of use asset	—	137
Increase (decrease) in asset retirement costs	167	—

About 5E Advanced Materials, Inc.

5E Advanced Materials, Inc. (Nasdaq: FEAM) (ASX: 5EA) is focused on becoming a vertically integrated global leader and supplier of boron specialty and advanced materials, complemented by lithium co-product production. The Company's mission is to become a supplier of these critical materials to industries addressing global decarbonization, food and domestic security. Boron and lithium products will target applications in the fields of electric transportation, clean energy infrastructure, such as solar and wind power, fertilizers, and domestic security. The business strategy and objectives are to develop capabilities ranging from upstream extraction and product sales of boric acid, lithium carbonate and potentially other co-products, to downstream boron advanced material processing and development. The business is based on our large domestic boron and lithium resource, which is located in Southern California and designated as Critical Infrastructure by the Department of Homeland Security's Cybersecurity and Infrastructure Security Agency.

Forward Looking Statements and Disclosures

This press release includes "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, as amended. All statements other than statements of historical fact included in this press release regarding our business strategy, plans, goal, and objectives are forward-looking statements. When used in this press release, the words "believe," "project," "expect," "anticipate," "estimate," "intend," "budget," "target," "aim," "strategy," "estimate," "plan," "guidance," "outlook," "intent," "may," "should," "could," "will," "would," "will be," "will continue," "will likely result," and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain such identifying words. These forward-looking statements are based on 5E's current expectations and assumptions about future events and are based on currently available information as to the outcome and timing of future events. We caution you that these forward-looking statements are subject to all of the risks and uncertainties, most of which are difficult to predict and many of which are beyond our control, incident to the extraction of the critical materials we intend to produce and advanced materials production and development. These risks include, but are not limited to: our limited operating history in the borates and lithium industries and no revenue from our proposed extraction operations at our properties; our need for substantial additional financing to execute our business plan and our ability to access capital and the financial markets; our status as an exploration stage company dependent on a single project with no known Regulation S-K 1300 mineral reserves and the inherent uncertainty in estimates of mineral resources; our lack of history in mineral production and the significant risks associated with achieving our business strategies, including our downstream processing ambitions; our incurrence of significant net operating losses to date and plans to incur continued losses for the foreseeable future; risks and uncertainties relating to the development of the Fort Cady project, including our ability to timely and successfully complete our Small-Scale Facility; our ability to obtain, maintain and renew required governmental permits for our development activities, including satisfying all mandated conditions to any such permits; and other risks. Should one or more of these risks or uncertainties occur, or should underlying assumptions prove incorrect, our actual results and plans could differ materially from those expressed in any forward-looking statements. No representation or warranty (express or implied) is made as to, and no reliance should be place on, any information, including projections, estimates, targets, and opinions contained herein, and no liability whatsoever is accepted as to any errors, omissions, or misstatements contained herein. You are cautioned not to place undue reliance on any forward-looking statements, which speak only as to the date of this press release.

For additional information regarding these various factors, you should carefully review the risk factors and other disclosures in the Company's Form 10-K filed on September 28, 2022. Additional risks are also disclosed by 5E in its filings with the U.S. Securities and Exchange Commission, throughout the year, including its Form 10-K, Form 10-Qs and Form 8-Ks, as well as in its filings under the Australian Securities Exchange. Any forward-looking statements are given only as of the date hereof. Except as required by law, 5E expressly disclaims any obligation to update or revise any such forward-looking statements. Additionally, 5E undertakes no obligation to comment on third party analyses or statements regarding 5E's actual or expected financial or operating results or its securities.

For further information contact:

J.T. Starzecki
Chief Marketing Officer
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Ph: +1 (612) 719-5076

Chris Sullivan
Media
chris@craftandcapital.com
Ph: +1 (917) 902-0617

Exhibit 99.2

Initial Assessment Report

(Update)

5E Advanced Materials Fort Cady Project

Report Date

MAY 11, 2023

List of Qualified Persons

	Section(s)	Date
Louis Fourie, P. Geo., Principal, Terra Modeling Services /s/ Louis Fourie	8, 9, 10, 11, 12	May 11, 2023
Paul Weibel, CPA, Chief Financial Officer, 5E Advanced Materials /s/ Paul Weibel	1, 2, 19, 21, 22, 23, 24, 25	May 11, 2023
Christopher Knight, VP Operations, 5E Advanced Materials /s/ Christopher Knight	14, 15, 16, 18	May 11, 2023
Cindi Byrns, CEM, Environmental Manager, 5E Advanced Materials /s/ Cindi Byrns	3, 4, 5, 6, 7, 17, 20	May 11, 2023
Joshua Parrie, Wellfield Manager, 5E Advanced Materials /s/ Joshua Parrie	11.4, 13	May 11, 2023
Mathew Banta, PH, Confluence Water Resources LLC /s/ Mathew Banta	7.3	May 11, 2023

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Glossary of Terms

Abbreviation	Definition
5E	5E Advanced Materials, Inc.
amsl	above mean sea level
AOR	Area of Review
APBL	American Pacific Borate & Lithium
BA	Boric acid
B_2O_3	Boron oxide
bgs	below ground surface
BLM	US Bureau of Land Management
B_2O_3	Boron trioxide (chemical formula)
BMI	Benchmark Mineral Intelligence
C	Celsius
$CaCl_2$	Calcium Chloride (chemical formula)
CAGR	Compound annual growth rate
CEQA	California Environmental Quality Act
cm/sec	centimeters per second
Duval	Duval Corporation
DXF file	Drawing Interchange Format File
E	East
EIR	Environmental Impact Report (California lead)
EIS	Environmental Impact Statement (BLM lead)
EPA	United States Environmental Protection Agency
F	Fahrenheit
FACE	Financial Assurance Cost Estimate
FCMC	Fort Cady Mineral Corporation
FEL	Front End Loading, a stage gated project management system (with a number to the corresponding stage, eg FEL2)
ft	foot or feet
Gal	Gallon(s)
g/l	Gram per liter
Gal/min	Gallons per minute
gpm	gallons per minute
H_2SO_4	Sulfuric Acid (chemical formula)
H_3BO_3	Boric acid (chemical formula)
HCl	Hydrochloric acid (chemical formula)
ID2	Inverse Distance Squared algorithm
IRR	Internal Rate of Return
JORC	Australian Joint Ore Reserves Committee
K	Hydraulic coefficient
k	Thousand
kg	kilogram
kWh	Kilowatt Hour
Kline	Kline & Company, Inc.
lb(s)	pound(s) mass
LCE	lithium carbonate equivalents
Li_2CO_3	Lithium Carbonate
m	meters(s)
mm	millimeter(s)
MDAQCD	Mojave Desert Air Quality Control District

MMBTU	Millions of British Thermal Units
MSME	Mountain States Mineral Enterprises Inc.
Mt	Million tons
M	Million
N	North
NAD 83	North American Datum 83 is a unified horizontal or geometric datum providing a spatial reference for mapping purposes
NEPA	National Environmental Policy Act
NN	Nearest neighbor
NPV	Net present value
pH	Potential Hydrogen – a numeric scale to specify the acidity or alkalinity of an aqueous solution
PLS	Pregnant leach solution
Ppm	Parts per million
psi	Pounds per square inch of pressure
QA/QC	Quality Assurance and Quality Control
QP	Qualified Person per SK1300 definition
ROD	The 1994 Record of Decision for the Fort Cady Project was issued after the EIS/EIR evaluations.
S	Storage coefficient
SBC-LUP	San Bernardino County Land Use Services Department
SBM	San Bernardino Meridian
SCE	SoCal Edison
SEC	Securities and Exchange Commission
SOP	Sulphate of Potash
stpa	short tons per annum
tpy	tons per year
UIC	Underground Injection Control Class III Area Permit
USDW	Underground source of drinking water
US	United States
US$	United States dollars
UTM	Universal Transverse Mercator coordinate system for mapping
XRF	X-Ray Fluorescence Spectrometry

1 Executive Summary

This report was prepared as an initial assessment Technical Report Summary in accordance with the Securities and Exchange Commission (SEC) S-K regulations (Title 17, Part 229, Items 601 and 1300 through 1305) for 5E Advanced Materials, Inc. and its subsidiary 5E Boron Americas, LLC, (together 5E or the Company) Fort Cady Project (the Project). The Project described herein is part of 5E's strategy to become a globally integrated supplier of boric acid, lithium carbonate and advanced boron derivatives. The Project is in the Mojave Desert, near the town of Newberry Springs, California.

Using the volumes, market inputs, and anticipated operating and capital costs, a detailed economic model was created with a forecasted net present value (NPV) of approximately US$2,410M and internal rate of return ("IRR") of 22.6% assuming measured, indicated, and inferred resources are mined (approximately US$829M and 18.7% using only measured and indicated resources). Further details, including key model assumptions, are included in Section 19.

The Project includes private land owned by 5E and an electrical transmission corridor runs through the Project where Southern California Edison has surface and subsurface control to a depth of 500 ft. While this limits surface access to the area within the right-of-way of the transmission lines, mineral rights are owned by 5E, and mineralization remains accessible as the ore body occurs at depths more than 1,000 ft. The Project also includes two unpatented lode claims, and 117 unpatented placer claims from the Bureau of Land Management within the U.S. Department of the Interior. On the southwestern side of the Project, 5E owns the surface area and the State of California owns the mineral rights.

There is a history of exploration and mining of the ore body, beginning in 1964 with the resource discovery and includes production of boric acid and synthetic borates by Duval Corporation (Duval) and Fort Cady Mineral Corporation (FCMC). Geologically, the deposit is bounded by faults on both east and west sides and is the site of prior volcanic activity from the Pisgah Crater. Mineralization occurs in a sequence of lacustrine lakebed sediments ranging in depths from 1,300 ft to 1,500 ft below ground surface.

Exploration drilling has led to a geologic interpretation of the deposit as lacustrine evaporite sediments containing colemanite, a hydrated calcium borate mineral. The deposit also contains appreciable quantities of lithium. Geologic modeling based on drilling and sampling results depicts an elongate deposit of lacustrine evaporite sediments containing colemanite. The deposit is approximately 2.1 mi. long by 0.6 mi. wide and ranging in thickness from 70 to 262 ft. Mineralization has been defined in four distinct horizons defined by changes in lithology and B_2O_3 analyses.

A mineral resource has been estimated and reported using a cut-off grade of 2% B_2O_3. Measured, Indicated, and Inferred resources for the Project total 96.9 Mt of ore, 13.97 Mt of boric acid and 0.31 Mt of lithium carbonate equivalent. There are currently no mineral reserves (as defined).

This colemanite resource will be mined via in-situ leaching (ISL) using a hydrochloric acid solution. This leachate will be processed in the commercial-scale facility to initially produce 90,000 short tons per annum (kstpa) of boric acid along with lithium carbonate and gypsum co-products. A Class 1 level engineering estimate for the phase 1 plant was developed with input from several major EPC firms. A Small-Scale Facility (SSF) is currently being constructed on site to confirm key assumptions for mining of the orebody and subsequent optimization of process design.

Global boric acid demand remains robust across established markets and future-facing industries while supply continues to be tight across the industry operating network. A supply deficit is expected to continue to materially worsen in the future and lead to elevated pricing. The overall lithium market, based on well documented market studies, is projected to experience large structural supply deficits through 2040.

Capital cost expectations were determined to be $373M for the first stage, 90kT boric acid plant (inclusive of coproduct processing) based on thorough review of multiple third-party EPC firm estimates. This estimate includes a 25% contingency. Later expansion phases have been scaled from this figure. Operating costs are built upon detailed process material balances and escalated recent historical pricing of raw materials and utilities.

Operation of the SSF will improve accuracy and optimize operational expenditures as well as sustaining capital estimates. Progression to Front End Loading stage 2 Process Design Package ("FEL2") engineering will further define the accuracy and optimization of the capital cost estimates for the chemical processing plant and some additional exploration and in-fill drilling can reclassify the inferred resource to measured and indicated resource. Once the SSF is operational, samples of boric acid, lithium carbonate, and gypsum will be utilized to secure bankable offtake agreements for commercialization. Once these steps are completed, the Company is well positioned to update this initial assessment to a prefeasibility study.

2 Introduction

2.1 Registrant for Whom the Technical Report was Prepared

This report was prepared as an initial assessment level Technical Report Summary in accordance with the Securities and Exchange Commission S-K regulations Title 17, Part 229, Items 601 and 1300 through 1305 for 5E Advanced Materials, Inc. and its subsidiary 5E Boron Americas, LLC. The report was prepared by Company management as Qualified Persons (QPs) and Qualified Persons from third-party independent companies Terra Modeling Services (TMS) and Confluence Water Resources, LLC (CWR).

2.2 Terms of Reference and Purpose of the Report

The quality of information, conclusions, and estimates contained herein are based on the following:

a) information available at the time of preparation and

b) assumptions, conditions, and qualifications set forth in this report. This Technical Report Summary is based on initial assessment level engineering.

This report is intended for use by 5E Advanced Materials, Inc. and its subsidiary 5E Boron Americas, LLC, subject to the terms and conditions of its agreements with Terra Modeling Services and Confluence Water Resources, LLC and relevant securities legislation. TMS and CWR permit 5E to file this report as a Technical Report Summary with the U.S. securities regulatory authorities pursuant to the SEC S-K regulations, more specifically Title 17, Subpart 229.60, Item 601b96 – Technical Report Summary and Title 17, Subpart 229.1300 – Disclosure by Registrants Engaged in Mining Operations. Except for the purposes specified under U.S. securities law, any other uses of this report by any third party are at that party's sole risk. The responsibility for this disclosure remains with the Company.

The purpose of this Technical Report Summary is to disclose exploration results, report mineral resources, and inform parties with potential financial interests in 5E and the Project.

2.3 Sources of Information

This report is based in part on external consultant's expertise and their technical reports, internal Company technical reports, previous technical reports, maps, published government reports, company letters and memoranda, and public information cited throughout this report and listed in Section 25.

Reliance upon information provided by the registrant is listed in Section 25 when applicable.

2.4 Details of Inspection

All QP's have visited the property, inspected core samples, reviewed relevant intellectual property and reports, and have extensive knowledge of the Project.

2.5 Report Version Update

The user of this document should ensure that this is the most recent Technical Report Summary for the property. This Technical Report Summary is an update of a previously filed Technical Report Summary filed pursuant to 17 CFR §§ 229.1300 through 229.1305 subpart 229.1300 of Regulation S-K. The previously filed Technical Report Summary has a report date of February 7, 2022 and effective date of October 15, 2021.

2.6 Units of Measure

The U.S. System for weights and units has been used throughout this report. Tons are reported in short tons of 2,000 pounds (lb), drilling and resource model dimensions and map scales are in feet (ft). When included, metric tons are referred to as tonnes. All currency is in U.S. dollars (US$) unless otherwise stated.

2.7 Mineral Resource and Mineral Reserve Definition

The terms “mineral resource” and “mineral reserves” as used in this Technical Report Summary have the following definitions below.

2.7.1 Mineral Resources

17 CFR § 229.1300 defines a “mineral resource” as 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, considering 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.

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

An “indicated mineral resource” is that part of a mineral resource for which quantity and grade or quality are estimated on the basis of adequate geological evidence and sampling. The level of geological certainty associated with an indicated mineral resource is sufficient to allow a qualified person to apply modifying factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Because an indicated mineral resource has a lower level of confidence than the level of confidence of a measured mineral resource, an indicated mineral resource may only be converted to a probable mineral reserve.

An “inferred mineral resource” is that part of a mineral resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. The level of geological uncertainty associated with an inferred mineral resource is too high to apply relevant technical and economic factors likely to influence the prospects of economic extraction in a manner useful for evaluation of economic viability. Because an inferred mineral resource has the lowest level of geological confidence of all mineral resources, which prevents the application of the modifying factors in a manner useful for evaluation of economic viability, an inferred mineral resource considered when assessing the economic viability of a mining project must be presented along with economic viability excluding inferred resources and may not be converted to a mineral reserve.

2.7.2 Mineral Reserves

17 CFR § 229.1300 defines a "mineral reserve" as 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. A "proven mineral reserve" is the economically mineable part of a measured mineral resource and can only result from conversion of a measured mineral resource. A "probable mineral reserve" is the economically mineable part of an indicated and, in some cases, a measured mineral resource.

2.8 Qualified Persons

This report was compiled by 5E and its management, with contributions from Terra Modeling Services and Confluence Water Resources, LLC. Terra Modeling Services and Confluence Water Resources, LLC are third-party firms comprising mining experts in accordance with 17 CFR § 229.1302b1. 5E has determined that the third-party firms and internal management listed as qualified persons meet the qualifications specified under the definition of a qualified person in 17 CFR § 229.1300.

Terra Modeling Service prepared the following sections of the report:

Sections 8, 9, 10, 11, 12

Confluence Water Resources LLC prepared the following sections of the report:

Section 7.3

The following members of 5E management prepared the following sections of the report:

- Paul Weibel, CPA and Chief Financial Officer
  Sections 1, 2, 19, 21, 22, 23, 24, 25
- Christopher Knight, Vice President of Operations
  Sections 14, 15, 16, 18
- Cindi Byrns, CEM, Environmental Manager
  Sections 3, 4, 5, 6, 7, 17, 20
- Joshua Parrie, Wellfield Manager
  Section 11.4, 13

Section 16 Market Studies and Contracts was prepared by 5E. The company engaged Kline and Company, Inc. (Kline) to perform a preliminary market study and pricing forecast for boric acid. Kline was also engaged to perform a preliminary market study and provide historical pricing for gypsum. The company engaged Benchmark Minerals Intelligence (BMI) to perform pricing forecast for lithium carbonate. Forward pricing forecasts obtained from Kline and Company, Inc. and Benchmark Mineral Intelligence were utilized as part of the financial model outlined in Section 19, Economic Analysis, as well as the flat pricing forecast for gypsum. Kline and BMI were not engaged as Qualified Persons; however, 5E has obtained permission to refer to the work they have provided and cite accordingly.

3 Property Description and Location

3.1 Property Location

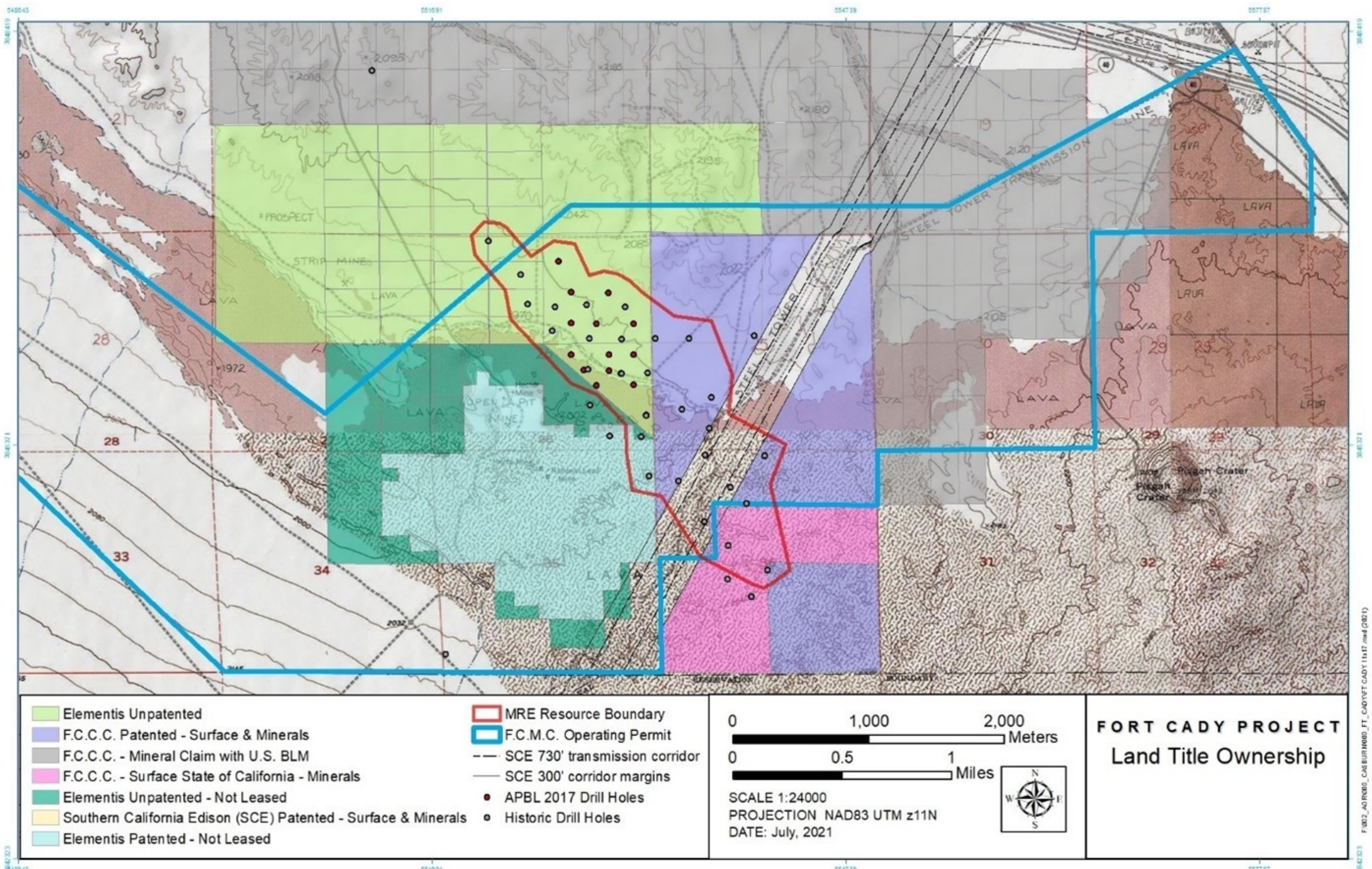
The Project is in the Mojave Desert region in the high desert of San Bernardino County, California. Figure3.1 outlines a map where the Project lies approximately 118 mi northeast of Los Angeles, approximately 36 mi east of Barstow and approximately 17 mi east of Newberry Springs. The approximate center of the project area is N34°45’25.20”, W116°25’02.02”. The Project is in a similar geological setting as Rio Tinto’s U.S. Borax operations in Boron, CA, and Searles Valley Minerals Operations in Trona, CA, situated approximately 75 mi west-northwest and 90 mi northwest of the Project, respectively.

Figure 3.1 General Location Map

3.2 Area of Property

Figure 3.2 shows the 5E property and adjacent properties, further discussed in Section 17.

Figure 3.2 Property Ownership



3.3 Mineral Title

5E owns fee simple (private) lands in Sections 25 and 36, T 8 N, R 5 E, SBM. An electrical transmission corridor, operated by Southern California Edison (SCE), tracts from the northeast to the southwest through the fee lands with SCE having surface and subsurface control to a depth of 500 ft, affecting approximately 91 acres of surface lands in the two sections. While this limits surface access to the land, mineralization remains accessible as the ore body occurs at depths more than 1,000 ft (~ 300 m.)

5E currently holds two 2 unpatented lode claims and 117 unpatented placer claims with the Bureau of Land Management within the U.S. Department of the Interior. Both lode claims were originally filed by Duval Corporation in 1978. Placer claims were filed between October 29, 2016, and February 24, 2017. A review of the US Bureau of Land Management (BLM) Mineral & Land Record System, the Mineral Land Record System (MLRS) database shows claim status as filed with next assessment fees due annually on September 1.

Lastly, in Section 36, T8N, R5E, 272 acres of land in Section 36 are split estate, with the surface estate owned by 5E and the mineral estate is owned by the State of California. These lands are available to 5E through a mineral lease from the California State Lands Commission. The remaining lands are owned by 5E, with the minerals underlying the transmission line available subsurface.

3.4 Mineral Rights

5E holds the rights to the mineral estate underlying Sections 25 and 36, except for the portion of the mineral estate held by the State of California in Section 36.

3.5 Incumbrances

5E maintains financial assurance bonds for reclamation and closure for current and planned operations at the Project. Additional information on reclamation and closure liabilities is included in Section 17. The amount of bonds and certificate of deposits posted with the applicable agency is present in Table 3.1.

Table 3.1 Current Financial Assurance Obligations

Regulatory Authority	Regulatory Obligation	Instrument	Instrument US$
United State Environmental Protection Agency	Groundwater restoration Groundwater monitoring Plugging and abandonment of AOR wells	Bond SU1166406	$ 1,514,385
County of San Bernardino	Reclamation and Closure	Certificate of deposits	$ 308,457

3.5.1 Remediation Liabilities

5E has submitted a Final Reclamation and Closure Plan to the Lahanton Regional Water Quality Control Board for closure of ponds constructed on the property in the 1980's. The bonding for closure of these ponds is included in the certificate of deposits with San Bernardino County and upon closure of the ponds, the bond will be reduced and a portion of the deposited amount returned to the company.

3.6 Other Significant Risk Factors

The mineral resource estimate (Section 11), excludes BLM land where Elementis Specialties, Inc (Elementis) has active placer claims. 5E previously leased those claims from Elementis, but the lease expired March 31, 2023. The Elementis claims were previously included in the mineral resource estimate; however, due to the expiration of the lease, the resources attributable to the Elementis lease have been removed in the mineral resource estimate provided by this report.

An exploration program to expand the resource is possible in Section 36 on the southeastern portion of the mineralization; however, this would require a mineral lease to be filed and executed with the California State Lands Commission for the State of California held mineral estate.

3.7 Royalties

There are no royalties associated with privately held lands in Section 25 and 36.

4 Accessibility, Climate, Local Resources, Infrastructure, and Physiography

4.1 Topography, Elevation, and Vegetation

The Project area is located on a gentle pediment with elevations ranging from approximately 1,970 ft above mean sea level (amsl) to approximately 2,185 ft amsl. Basalt lava flows cover most of the higher elevations or hilltops with flat ground and drainages covered in pale, gray-brown, silty soils. Basalt lava flows become more dominant south of the Project area with the Lava Bed Mountains located a few miles south of the Project area. The Project area's vegetation is dominated by burro weed, creosote, cactus, and scattered grasses.

4.2 Accessibility and Transportation to the Property

Access to the Project is via U.S. Interstate 40 (I-40), eastbound from Barstow to the Hector Road exit. From the exit, travel south to Route 66, then east approximately 1 mile to County Road 20796 (CR20796). Travel south on CR20796 for 2.2 mi to the unnamed dirt access road bearing east for another 1.1 mi to the Project.

The BNSF Railroad main line from Chicago to Los Angeles runs parallel to I-40. A BNSF rail loadout is in Newberry Springs. There are potential options to develop rail access closer to the Project.

San Bernardino County operates six general aviation airports with the closest airport to the Project being the Barstow-Daggett Airport located approximately 23 mi west of the Project off Route 66. Commercial flight service is available through five airports in the greater Los Angeles area and in Las Vegas, NV. A dedicated cargo service airport is located approximately 65 mi southwest of the Project.

4.3 Climate and Length of Operating Season

The Project is accessible year-round, located in the western Mojave Desert with arid, hot, dry, and sunny summers of low humidity and temperate winters. Based upon climate data from the nearby town of Newberry Springs, the climate over the past 30 years indicates average monthly high temperatures ranging from 55°F in December to 98.2°F in July. Monthly low temperatures range from 40.1°F in December to 74.3°F in August. Extremes range from a record low of 7°F to a record high of 117°F. Maximum temperatures in summer frequently exceed 100°F while cold spells in winter with temperatures below 20°F may occur but seldom last for more than a few days. Average rainfall is generally less than 10 inches per year with most precipitation occurring in the winter and spring.

4.4 Infrastructure Availability and Sources

5E continues to develop operating infrastructure for the Project in support of extraction and processing activities. A manned gate is located on the Project access road and provides required site-specific safety briefings and monitors personnel entry and exit to the site. Personnel are predominantly sourced from the surrounding area including Barstow, CA and Victorville, CA.

The BNSF Railroad main line from Las Vegas, NV to Los Angeles, CA runs parallel to I-40. A rail loadout is located approximately 1.2 mi north of the National Trails Highway on a road that bears north and located 0.4 mi west of CR20796. San Bernardino County operates six general aviation airports with the closest airport to the Project being the Barstow-Daggett Airport located approximately 23 miles west of the Project on the National Trails Highway. Commercial flight service is available through five airports in the greater Los Angeles area and in Las Vegas, NV. A dedicated cargo service airport is located approximately 65 miles southwest of the Project.

Construction of the Small-Scale Facility was performed by Matrix Service Company with additional local resources supporting contracting, construction materials, energy sources, employees, and housing. The Project has good access to I-40 which connects it to numerous sizable communities between Barstow, CA and the greater Los Angeles area offering excellent access to transportation, construction materials, labor, and housing. The Project currently has limited electrical service that is sufficient for mine office and storage facilities on site but will require upgrade for plant and wellfield facilities. The Small-Scale Facility will operate on liquid natural gas and 5E is currently exploring options for upgrading electrical services to the Project. An electrical transmission corridor operated by SCE extends northeastward through the eastern part of the Project. The Project has two water wells located nearby to support in-situ leaching operations. Currently there is no natural gas connected to the Project, but 5E is negotiating services with two suppliers in the region with three natural gas transmission pipelines running along Interstate 40 near the Project.

The plant site currently has a 1,600 ft^2 mine office building, a control room, storage buildings, an analytical laboratory, an approximately 20-acre production facility called the Small-Scale Facility, and an intended gypsum storage area occupying 17 acres. Gypsum is a byproduct of past pilot plant production and is intended to be a future byproduct that can be sold to the regional market.

5 History

Discovery of the Project borate deposit occurred in 1964 when Congdon and Carey Minerals Exploration Company found several zones of colemanite, a calcium borate mineral, between the depths of 1,330 ft to 1,570 ft (405m to 487m) below ground surface (bgs) in Section 26, TSN, R5E. Simon Hydro-Search, 1993.

5.1 Prior Ownership and Ownership Changes

In September 1977, Duval initiated land acquisition and exploration activities near Hector, California. By March 1981, Duval had completed 34 exploration holes (DHB holes), plus one 1 potential water well. After evaluation of the exploration holes, Duval considered several mining methods. Subsequent studies and tests performed by Duval indicated that in-situ mining technology was feasible. Duval commenced limited testing and pilot-scale solution mining operations in June 1981 per the Mining and Land Reclamation Plan, Fort Cady Project, 2019.

Mountain States Mineral Enterprises, Inc. (MSME) purchased the project from Duval in 1985 and, in 1986, conducted an additional series of tests. MSME eventually sold the project to Fort Cady Mineral Corporation in 1989. FCMC began the permitting process, which resulted in a 1994 Record of Decision (ROD) from the BLM and approval from San Bernardino County, the California lead agency.

5.2 Exploration and Development Results of Previous Owners

Duval commenced limited-scale solution mining tests in June 1981. Between 1981 and 2001, subsequent owners drilled an additional 17 wells, which were used for a series of injection testing and pilot-scale operations. In July 1986, tests were conducted by MSME, where dilute hydrochloric acid solution was injected into the ore body. The acid dissolved the colemanite and was then withdrawn from the same well.

The first phase of pilot plant operations was conducted between 1987 and 1988. Approximately 550 tons (500 tonnes) of boric acid were produced. The test results were positive; thus, the Project was viewed as commercially viable. In preparation for the permitting process, feasibility studies, detailed engineering and test works were completed with FCMC receiving the required permits for a commercial-scale operation. Final state and local approvals for commercial-scale solution mining and processing was attained in 1994.

A second phase of pilot plant operations occurred between 1996 and 2001, during which approximately 2,200 tons of a synthetic colemanite product, marketed as CadyCal 100, were produced. Commercial- scale operations were not commissioned due to low product prices and other priorities of the controlling entity. For many years, boron was used in traditional applications such as cleaning supplies and ceramics, which never formulated in a strong pull-side demand investment thesis where pricing justified further development of the Project. However, a group of Australian investors, through extensive due diligence identified green shoots that the market dynamics were fundamentally beginning to change.

5.3 American Pacific Borates Share Exchange of Atlas Precious Metals

In 2017, a group of Australian investors identified the Project and formed the investment thesis that the boron market had similar dynamics to the lithium market a decade earlier. Like the lithium market ten years prior, the market was dominated by a few companies with a compelling pull-side demand growth story fueled by future-facing applications targeting decarbonization and critical materials. Prior to lithium-ion batteries and electric vehicles, lithium was used in traditional everyday applications like boron's use in recent years. As a result of the investment thesis that boron is the next lithium, the group of Australian investors formed American Pacific Borates and Lithium Ltd (APBL) and issued shares to Atlas Precious Metals in exchange for the Fort Cady (California) Corporation, the entity holding the mineral and property rights of the Project. In 2017, APBL underwent an initial public offering on the Australian Stock Exchange and progressed exploration and development of the Project. In September 2021, APBL created a subsidiary, 5E, through a corporate reorganization which placed 5E at the top of the corporate structure. Upon 5E becoming the parent company of the organization, in March 2022 5E direct listed on the Nasdaq and became an SEC issuer. Shortly before becoming an SEC issuer, 5E Boron Americas, LLC was designated as Critical Infrastructure by the Department of Homeland Security Cybersecurity and Infrastructure Security Agency.

5.4 Historic Production

Limited historic production data, provided to 5E by previous operators, is summarized in Table 5.1 through Table 5.4. Little other information is available for these tests, the results could not be independently verified.

Table 5.1 Duval Testing Results

Test No.	Volume Injected Gal	Injection Rate Gal/min	Pump Pressure PSI	Acid %	Volume Recovered Gal	Recovery Rate Gal/min	Average Concentration HBO3 %	Maximum Concentration HBO3 %
1	680	1.5	150	16% HCl	700	1.0-2.0	0.3	
	1,500	2	275	5% H_2SO_4	1,500	1.0-2.0	0.5	1.5
	1,400	1.5-2.0	150	5% H_2SO_4	2,000	1.0-2.0	1.5	4.6
	1,500	2	275	23% H_2SO_4	1,500	1.0-2.0	1.0	4.0
2	2,250	2	300	8% H_2SO_4	2,000	1.5-2.0	1.5	4.0
3	5,358	2-2.5	275	6.9% H_2SO_4	28,927	1.0-1.5	3.0	6.9
	6,597	2-2.5	275	17.5% HCl			3.0	6.9
4	19,311	2-2.5	230-275	6.2% HCl & 2.4% H_2SO_4	67,995	1.0-1.5	3.0	6.5
5	20,615	2	290	16% HCL	112,637	1.0-1.5	2.5	5.2
6	21,569	20	275	1.6% HCl	63,460	1.0-1.5	1.1	1.7

Table 5.2 Mountain States Testing Injection Summary

	Date				Gallons		Pounds		Theoretical HBO3	
Series	From	To	Test Nos.	Wells SMT	Series	Σ	HCl	CO2	Series	Σ
1	8/4/1986	8/23/1986	1-3	6 & 9	67,972	67,972	23,286	—	59,540	59,540
2	11/4/1986	11/10/1986	4-7	6	45,489	113,461	15,500	—	39,431	98,971
3	12/9/1986	12/18/1986	8-11	6	53,023	166,484	15,398	—	39,173	138,144
4	6/18/1986	6/27/1987	12-15	9	47,640	214,124	—	4,313	18,184	156,328
Total					**214,124**	**214,124**	**54,184**	**4,313**	**156,328**	**156,328**

Table 5.3 Mountain States Testing Recovery Summary

	Date				Gallons		Pounds BA		% BA in Solution, by Surge Tank			Theoretical BA	
Series	From	To	Test Nos.	Wells SMT	Series	Σ	Series	Σ	High	End	Avg	Series	Σ
1	8/7/1986	10/17/1986	1-3	6 & 9	128,438	128,438	32,608	32,608	3.84	1.56	2.50	54.77	54.77
2	11/5/1986	11/13/1986	4-7	6	51,636	180,074	21,223	53,831	5.74	4.05	4.68	53.83	54.39
3	12/10/1986	1/13/1987	8-11	6	99,889	279,963	33,386	87,217	5.59	1.93	4.18	85.23	63.14
4	6/9/1987	7/0/1987	12-15	9	86,595	366,558	18,973	106,190	3.55	1.81	2.60	104.34	67.93
Total					**366,558**	**366,558**	**106,190**	**106,190**			**3.79**		**67.93**

In 2017, 5E completed an exploration drilling program to validate previous exploration efforts and expand mineral resources. Post drilling, an Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC) mineral resource estimate was prepared by Terra Modelling Services. TMS updated the JORC mineral resource estimate in December 2018. The 2018 JORC mineral resource estimate identified 4.63 million tonnes of measured resource, 2.24 million tonnes of indicated resource, and 7.07 million tonnes of inferred resource using a B_2O_3 cut-off grade of 5%.

Table 5.4 Fort Cady Mineral Corporation Production Summary

Date	Total Minutes	Flow to Plant: Gallons	Flow to Plant: Gal/min	pH	Free Acid g/l	Boric Acid %	Chloride g/l	Sulfate g/l	Boric Acid tons	B_2O_3 tons	CadyCal 100 tons
Jan-01	7,215	258,556	35.8	5.83		2.33	12.54	3.76	15	9	20
Feb-01	7,785	331,886	42.6	2.54	0.35	2.36	12.13	4.94	25	14	33
Mar-01	10,470	422,922	40.4	2.41	0.23	1.90	15.84	3.23	34	19	45
Apr-01	10,290	393,824	38.3	1.86	2.60	5.43	42.11	8.18	41	23	53
May-01	7,560	296,000	39.2	2.02	2.67	5.77	44.77	8.70	31	17	40
Jun-01	3,375	120,928	35.8	0.67	1.35	3.12	27.84	5.30	12	7	16
Jul-01	2,385	77,157	32.4	1.19	0.31	2.00	12.74	2.60	7	4	9
Aug-01	3,300	142,207	43.1	4.04	0.07	3.84	19.60	3.08	15	8	19
Sep-01	4,875	247,901	50.9	2.77	0.12	3.44	23.21	3.68	21	12	28
Oct-01	10,035	478,723	47.7	2.03	0.35	3.00	15.54	4.60	37	1	49
Nov-01	9,270	371,171	40.0	1.99	0.16	2.39	14.15	4.02	23	13	30
Dec-01	12,525	353,885	28.3	1.83	0.17	2.52	14.94	2.58	29	16	38
01-Total	89,085	3,495,160	39.2	2.44	0.73	3.19	21.37	4.74	291	164	381
00-Total	87,255	3,142,413	36.0	2.14	0.25	2.70	12.42	2.54	279	157	366
99-Total	92,820	2,475,770	26.7	1.59	0.48	2.82	10.13	6.84	201	113	263
98-Total	111,468	2,715,319	24.4	1.24	0.91	2.85	7.78	10.19	217	122	284
97-Total	109,040	2,692,940	24.7	0.99	1.84	3.10	3.52	13.00	252	142	329
96-Total	101,212	2,711,044	26.8	1.33	1.32	3.01	2.96	5.76	244	137	319

6 Geological Setting, Mineralization and Deposit

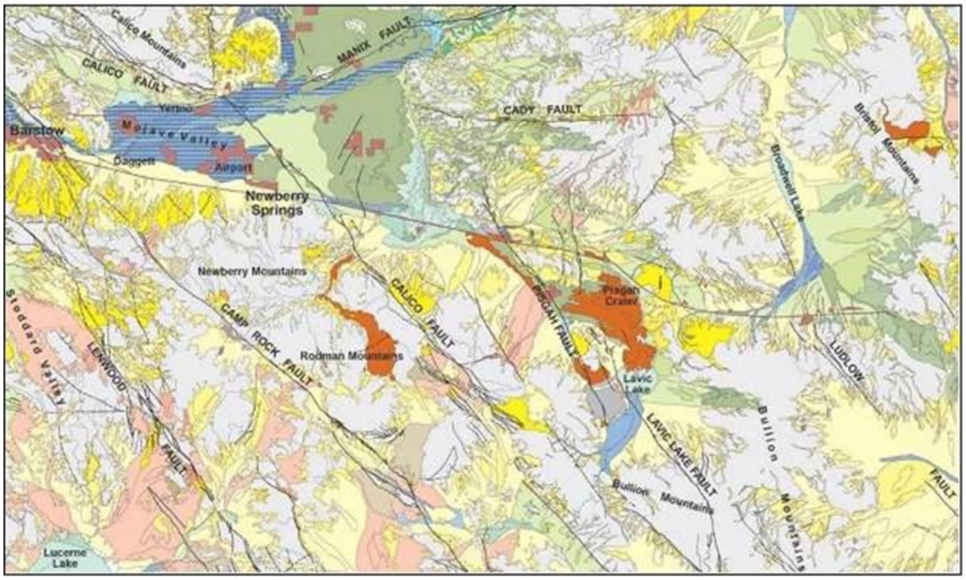
6.1 Regional Setting

The Project area is in the western Mojave Desert and is part of the Basin and Range Physiographic Province. The region is characterized by narrow faulted mountain ranges and flat valleys and basins, the result of tectonic extension that began approximately 17 million years ago. The Project lies within the Hector Basin of the Barstow Trough and is bounded on the southwest by the San Andreas fault zone and the Transverse Ranges, on the north by the Garlock fault zone, and on the east by the Death Valley and Granite Mountain faults. Numerous faults of various orientations are found within the area with various orientations though the predominant trend is to the northwest.

The Barstow Trough, a structural depression, extends northwesterly from Barstow toward Randsburg and to east-southeast toward Bristol. It is characterized by thick successions of Cenozoic sediments, including borate-bearing lacustrine deposits, with abundant volcanism along the trough flanks. The northwest-southeast trending trough initially formed during Oligocene through Miocene times. As the basin was filled with sediments and the adjacent highland areas were reduced by erosion, the areas receiving sediments expanded, and playa lakes, characterized by fine-grained clastic and evaporitic chemical deposition, formed in the low areas at the center of the basins.

Exposures of fine-grained lacustrine sediments and tuffs, possibly Pliocene in age, are found throughout the Project area. Younger alluvium occurs in washes and overlying the older lacustrine lakebed sediments. Much of the Project area is covered by recent olivine basalt flows from Pisgah Crater, which is located approximately two mi east of the site as shown in Figure 6.1 and Figure 6.2. Thick fine-grained, predominantly lacustrine lakebed mudstones appear to have been uplifted, forming a block of lacustrine sediments interpreted to be floored by an andesitic lava flow.

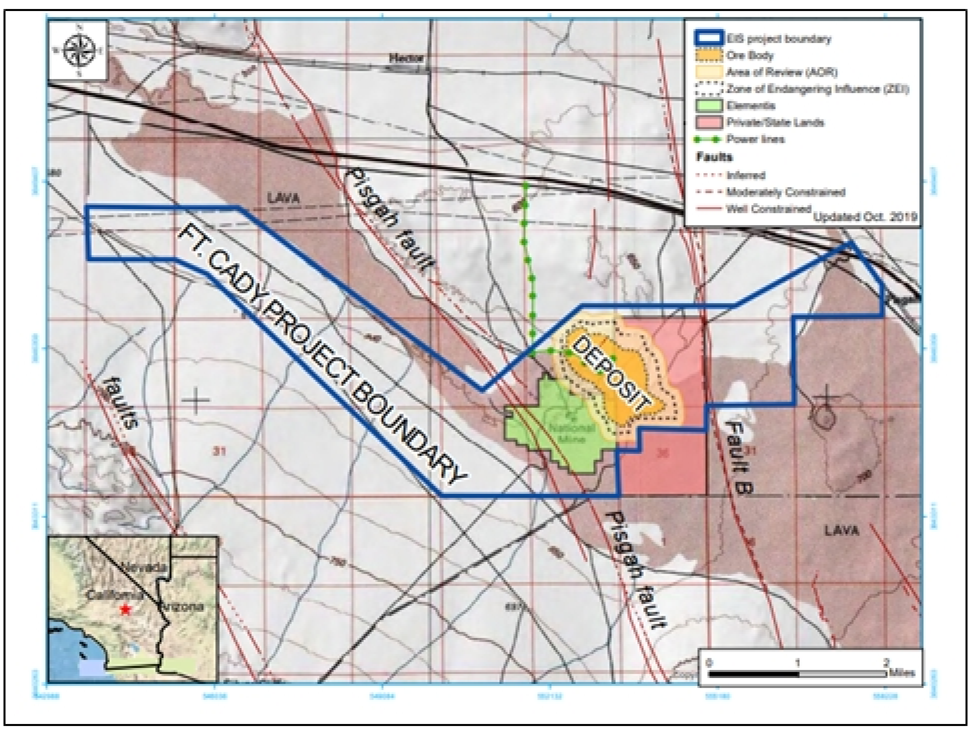
Figure 6.1 Surface Geology in the Newberry Springs Area



There are three prominent geologic features in the project area (Figure 6.2):

- Pisgah Fault, which transects the southwest portion of the project area west of the ore body;
- Pisgah Crater lava flow located approximately 2 mi east of the site: and
- Fault B, located east of the deposit.

Figure 6.2 Topographic Map with Faults and Infrastructure



The Pisgah Fault is a right-lateral slip fault that exhibits at least 250 ft of vertical separation at the Project. The east side of the fault is up-thrown relative to the west side. Fault B is located east of the ore body and also exhibits at least 250 ft of vertical separation; however, at Fault B, the east side is down dropped relative to the west side. The uplifted zone containing the borate ore body the Wedge is situated within a thick area of fine-grained, predominantly lacustrine lakebed mudstones, east of the Pisgah Fault and west of Fault B.

6.1.1 Mineralization

Mineralization occurs in a sequence of lacustrine lakebed sediments ranging in depths from 1,300 ft to 1,500 ft bgs. The mineralization is hosted by a sequence of mudstones, evaporites and tuffs, consisting of variable amounts of colemanite, calcium borate $2CaO \bullet 3B_2O_3 \bullet 5H_2O$, and lithium. Colemanite and lithium are the target minerals. Colemanite is a secondary alteration mineral formed from borax and ulexite. Colemanite is associated with thinly laminated siltstone, clay and gypsum beds containing an average of 9% calcite, 35% anhydrite plus 10% celestite ($SrSO_4$) per Wilkinson & Krier, 1985. In addition to colemanite and celestite, elevated levels of lithium have been found through chemical analyses of drill samples.

X-ray diffraction analysis of core samples from the deposit indicates the presence of the evaporite minerals anhydrite, colemanite, celestite, and calcite. The mineralogy of the detrital sediments include quartz, illite, feldspars, clinoptilolite, and zeolite. The deposit underlies massive clay beds which appear to encapsulate the evaporite ore body on all sides as well as above and below the deposit. This enclosed setting makes the deposit an ideal candidate for in-situ mining technology affording excellent containment of the leachate solution.

6.2 Mineral Deposit

Boron is believed to have been sourced from regional thermal waters which flowed from hot springs during times of active volcanism. These hot springs vented into the Hector Basin when it contained a large desert lake. Borates were precipitated as the thermal waters entered the lake and cooled or as the lake waters evaporated and became saturated with boron. Colemanite, being the least soluble mineral, would evaporate on the receding margins of the lake. The evaporite-rich sequence forms a consistent zone in which the borate-rich colemanite zone transgresses higher in the section relative to stratigraphic marker beds.

Based on drilling results, the deposit is elliptical in shape, with the long axis trending N40°W to N50°W. extending over an area of about 606-acres at an average depth of approximately 1,300 ft to 1,500 ft bgs. Beds within the colemanite deposit strike roughly N45°W and dip about 10° or less to the southwest. Using an isoline of 5% B_2O_3, mineralization has an approximate width of 2,800 ft and a length of 11,150 ft with thickness ranging from 70 to 262 ft exclusive of barren interbeds.

The western margin of mineralization appears to be roughly linear, paralleling the Pisgah Fault which lies approximately 1 mi to the west (Figure6.2). Duval geologists consider this boundary to be controlled by facies change from evaporite rich mudstones to carbonate-rich lake beds, because of syn-depositional faulting. The northeast and northwest boundaries of the deposit are controlled by facies changes to more clastic material, reducing both the overall evaporite content and the concentration of colemanite within the evaporites. The southeast end of the deposit is open-ended and additional drilling is necessary to define the southeastern limits of borate deposition per Wilkinson & Krier, 1985.

6.3 Stratigraphic Column

Drilling of the deposit by Duval in the late 1970’s and early 1980’s defined the following lithological sequence (Figure 6.3 and Figure 6.4). Four major units have been identified:

- Unit 1: is characterized by a 490 to 655 ft thick sequence of red-brown mudstones with minor sandstone, zeolitized tuff, limestone, and rarely hectorite clay beds. Unit 1 is located immediately below the alluvium and surface basaltic lavas.
- Unit 2: is a green-grey mudstone that contains minor anhydrite, limestone, and zeolitized tuffs. Unit 2 has a thickness ranging from 330 to 490 ft and is interpreted as lacustrine beds.
- Unit 3: is a 245-to-490-foot thick evaporite section which consists of rhythmic laminations of anhydrite, clay, calcite, and gypsum. Unit 3 contains the colemanite mineralization. Thin beds of air fall tuff are found in the

unit which provide time continuous markers for interpretation of the sedimentation history. These tuffs have variably been altered to zeolites or clays. Anhydrite is the dominant evaporite mineral, and the ore deposit itself is made up mostly of an intergrowth of anhydrite, colemanite, celestite, and calcite with minor amounts of gypsum and howlite.

- Unit 4: is characterized by clastic sediments made up of red and grey-green mudstones and siltstones, with locally abundant anhydrite and limestone. The unit is approximately 160 ft thick and rests directly on an irregular surface of andesitic lava flows. Where drilling has intersected this boundary, it has been noted that an intervening sandstone or conglomerate composed mostly of coarse volcanic debris is usually present.

Figure 6.3 Long-section and Cross-section through the Fort Cady Deposit

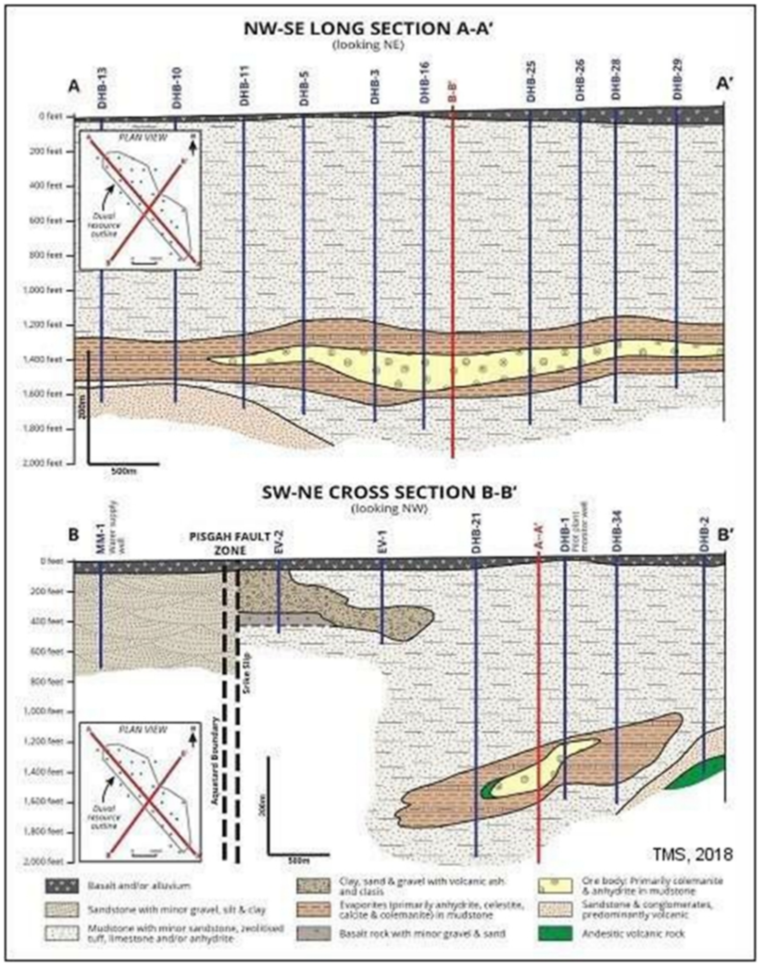
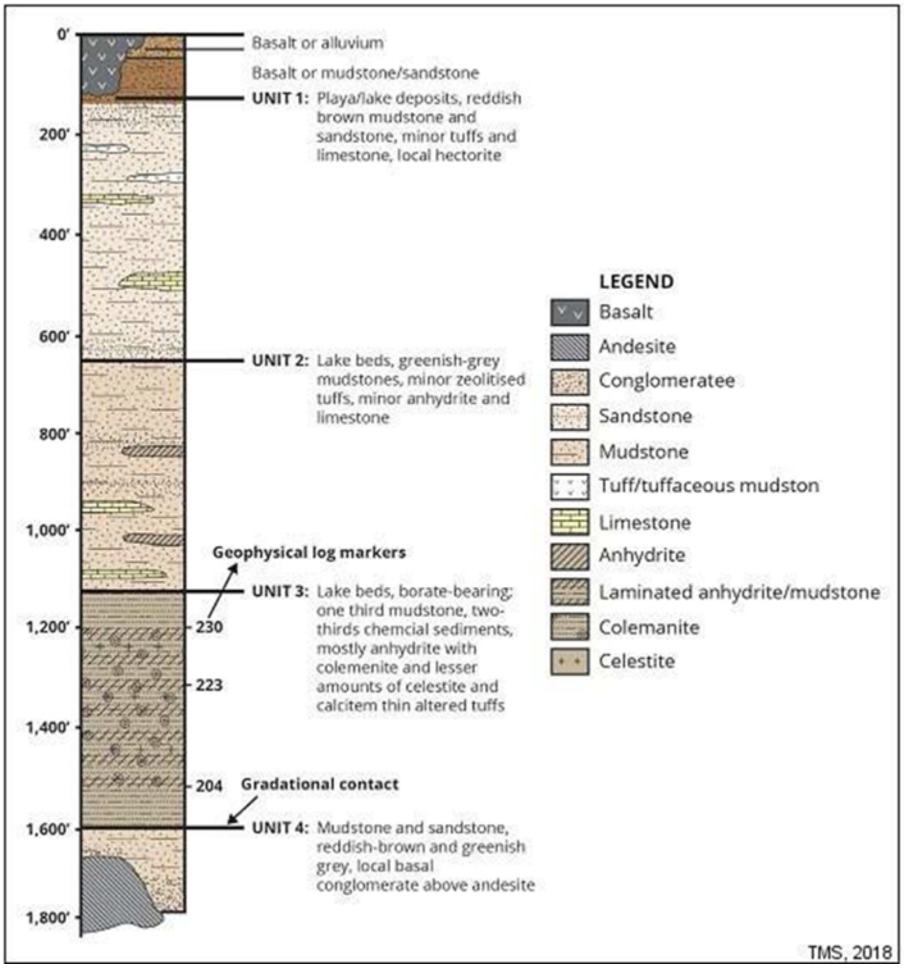


Figure 6.4 Generalized Lithological Column for the Fort Cady Deposit



7 Exploration

7.1 Non-drilling exploration

Non-drilling exploration has not been deemed appropriate for this deposit.

7.2 Drilling

7.2.1 Historic Drilling

As part of their exploration program, Duval completed 35 drill holes between 1979 and 1981. The DHB holes were drilled using a combination of rotary drilling through the overburden followed by core drilling through the evaporite sequence. DHB-32 was drilled as a water well southeast of the Project. Geologic logs of rotary cuttings and core were completed for all holes followed by geochemical analyses of the core. Duval paid particular attention in logging to identifying marker beds ash tuffs for correlation. In addition to geologic logging, down-hole geophysics were completed on 25 holes for gamma ray and neutron. A few holes had additional geophysical logs completed for compensated density, deviation, induction, elastic properties, and caliper.

In 1981 and 1982, after the exploration program, Duval drilled five solution mining test (SMT) wells which were used in injection/recovery tests. Like previous drilling, the wells were rotary drilled through the overburden and cored through the evaporite sequence. Following coring, a 5.5-inch casing was set through the cored interval. All SMT wells were logged, and analytical samples are available from the cored intervals of SMT-1, SMT-2, and SMT-3. Gamma ray and neutron logs were collected from all SMT wells. Caliper, compensated density, and induction logs were run on several, but not all the SMT wells. Three additional SMT wells were established in 1992 and 1993 (SMT-92 & 93 Holes) and these three wells were rotary drilled to full depth and no geologic samples were collected.

FCMC completed two drilling campaigns during their participation in the Project. Additional P-Series holes were completed between 1987 and 1996 as rotary holes for injection/recovery test wells. Cuttings were sampled for analysis at 5-foot intervals for holes P-1, P-2, and P-3. A ten-foot sampling interval was used for sampling on P-4. No geologic samples were collected for holes P-5, P-6, and P-7. FCMC completed three S-Series wells in 1990. All three wells were rotary drilled and no geologic sampling was performed. FCMC completed down-hole geophysics on all the P and S-series wells. Historic drilling completed by Duval and FCMC is summarized in Table 7.1.

Table 7.1 Historic Drilling Summary

	UTM 83-11 m				Rotary Interval ft		Cored Interval ft		
Drill Hole ID	**Easting**	**Northing**	**Collar Elev. ft**	**Depth ft**	**From**	**To**	**From**	**To**	**No. of Samples**
DHB-01	553,336	3,846,154	2,004	1,623	—	1,090	1,090	1,623	187
DHB-02	554,062	3,846,179	2,033	1,679	—	955	955	1,443	—
DHB-03	553,089	3,845,899	1,980	1,773	—	940	940	1,773	214
DHB-04	552,855	3,845,669	1,981	1,708	—	1,194	1,194	1,708	178
DHB-05	552,848	3,846,153	1,978	1,730	—	1,043	1,043	1,730	179
DHB-06	553,115	3,846,386	2,008	1,616	—	1,040	1,040	1,616	125
DHB-07	553,736	3,845,492	2,000	1,735	—	1,063	1,063	1,735	181
DHB-08	552,575	3,846,214	1,966	1,809	—	1,072	1,072	1,809	186
DHB-09	552,391	3,846,408	1,967	1,750	—	1,137	1,137	1,750	138
DHB-10	552,349	3,846,631	1,980	1,655	—	1,148	1,148	1,655	86
DHB-11	552,599	3,846,390	1,976	1,671	—	1,150	1,150	1,671	86
DHB-12	552,824	3,846,402	1,993	1,625	—	1,130	1,130	1,625	85
DHB-13	552,104	3,846,877	1,978	1,661	-	1,140	1,140	1,661	70
DHB-14	553,089	3,846,151	1,987	1,631	—	1,105	1,105	1,631	80
DHB-15	553,580	3,846,158	2,013	1,609	—	1,177	1,177	1,609	51
DHB-16	553,263	3,845,595	1,985	1,845	—	1,193	1,193	1,845	138
DHB-17	552,843	3,845,925	1,982	1,804	—	1,178	1,178	1,804	151
DHB-18	553,238	3,845,431	1,978	1,880	—	1,212	1,212	1,878	106
DHB-19	554,141	3,845,287	2,034	1,460	—	1,060	1,060	1,460	74
DHB-20	553,006	3,845,437	1,998	1,671	—	1,207	1,207	1,671	—
DHB-21	553,292	3,845,143	2,011	1,752	—	1,118	1,118	1,828	39
DHB-22	553,275	3,845,902	1,988	1,711	—	1,196	1,196	1,711	135
DHB-23	553,508	3,845,110	2,021	1,857	—	1,208	1,208	1,857	114
DHB-24	553,523	3,845,637	1,994	1,780	—	1,202	1,202	1,780	119
DHB-25	553,699	3,845,297	2,021	1,818	—	1,248	1,248	1,818	152
DHB-26	553,891	3,845,056	2,050	1,702	—	1,106	1,106	1,702	106
DHB-27	553,698	3,844,803	2,043	1,795	—	1,228	1,228	1,795	95
DHB-28	554,004	3,844,943	2,053	1,690	—	1,185	1,185	1,690	115
DHB-29	554,164	3,844,454	2,040	1,610	—	1,203	1,203	1,610	101
DHB-30	553,873	3,844,630	2,050	1,720	—	1,250	1,250	1,720	83
DHB-31	553,865	3,844,381	2,037	1,460	—	1,195	1,195	1,625	41
DHB-32	551,770	3,843,845	2,045	870	—	870	—	—	—
DHB-33	554,045	3,844,254	2,043	1,601	—	1,124	1,124	1,860	80
DHB-34	553,746	3,845,722	2,116	1,525	—	1,150	1,150	1,620	79
DHB-35	551,249	3,848,166	2,068	1,449	—	1,194	1,194	1,459	—
P1	553,093	3,845,908	1,984	1,500	—	1,500	—	—	20
P2	553,094	3,845,969	1,984	1,510	—	1,510	—	—	21
P3	553,033	3,845,902	1,981	1,510	—	1,510	—	—	18
P4	553,033	3,845,935	1,977	1,510	—	1,510	—	—	34
P5	553,193	3,845,874	1,985	1,547	—	1,547	—	—	—
P6	553,209	3,845,946	1,989	1,525	—	1,525	—	—	—
P7	553,217	3,846,023	1,992	1,475	—	1,475	—	—	—
SMT-1	553,323	3,846,144	2,004	1,315	—	1,235	1,235	1,315	59
SMT-2	553,310	3,846,135	2,004	1,679	—	1,234	1,234	1,316	55
SMT-3	553,211	3,845,897	1,988	1,679	—	1,325	1,325	1,518	69
SMT-6	553,210	3,845,934	1,988	1,450	—	1,341	1,341	1,450	—
SMT-9	553,194	3,845,837	1,985	1,497	—	1,341	1,341	1,497	—

This data, along with company drilling discussed in Section 7.2.2 and subsequent analysis discussed in Section 8, form the basis and confirmations for the geologic model.

7.2.2 Company Drilling

After acquisition of the Project in May 2017, American Pacific Borates and Lithium, Ltd, a predecessor entity to 5E, completed 14 drill holes, which confirmed previous drilling results and expanded the Mineral Resource Estimate. Table 7.2 provides a summary of the 2017 drilling program. A cross-section through the deposit is also displayed in Figure 7.1. Drilling through the overburden sequence was completed using rotary air blast drilling. This was followed by drilling a 2.5-inch core through the evaporite sequence. All drill holes were completed vertically with no greater than five degrees of deviation.

Table 7.2 2017 APBL Drilling Summary

	UTM 83-11 m				Rotary Interval ft		Cored Interval ft		
Drill Hole ID	Easting	Northing	Collar Elev. ft	Depth ft	From	To	From	To	No. of Samples
17FTCBL-01	552,638	3,846,716	2,006	1,569	—	1,204	1,204	1,569	82
17FTCBL-02	552,711	3,846,490	1,997	1,509	—	1,208	1,208	1,509	107
17FTCBL-03	552,981	3,846,485	2,019	1,459	—	1,153	1,153	1,459	91
17FTCBL-04	552,695	3,846,268	1,978	1,738	—	1,266	1,266	1,738	162
17FTCBL-05	552,930	3,846,267	1,995	1,589	—	1,237	1,237	1,589	150
17FTCBL-06	553,145	3,846,260	2,002	1,502	—	1,189	1,189	1,502	83
17FTCBL-07	552,772	3,846,041	1,977	1,775	—	1,196	1,196	1,775	207
17FTCBL-08	552,972	3,846,042	1,984	1,625	—	1,202	1,202	1,625	153
17FTCBL-09	553,179	3,846,037	1,992	1,560	—	1,169	1,169	1,560	120
17FTCBL-10	552,831	3,845,939	1,989	1,647	—	1,208	1,208	1,647	176
17FTCBL-11	553,078	3,845,899	1,983	1,778	—	1,332	1,332	1,778	155
17FTCBL-12	552,963	3,845,801	1,973	1,750	—	1,281	1,281	1,750	212
17FTCBL-13	553,153	3,845,818	1,992	1,769	-	1,313	1,313	1,769	155
17FTCBL-14	553,270	3,845,608	1,987	1,845	—	1,328	1,328	1,845	260

Core logging was completed on all drill holes and included lithological and geotechnical logging. Downhole geophysical logs included Gam Ray, Induction, and standard caliper, and were completed on all drill holes from surface to total depth except for 17FTCBL009 where adverse hole conditions resulted in only partial geophysical logging. All core is logged and photographed according to industry standard procedures. An example of core photos is shown in Figure 7.2.

A geotechnical drill hole, APBL023, was also completed in 2017. This well was cored for its entire length and a geologic log was completed to define mineralized horizons. No splitting or analytical samples were collected from this hole to preserve the core for subsequent geotechnical testing.

The QP considers the drilling program by APBL to be of sufficient quality to support a Mineral Resource Estimate.

Figure 7.1 Cross-section Through the Fort Cady Deposit

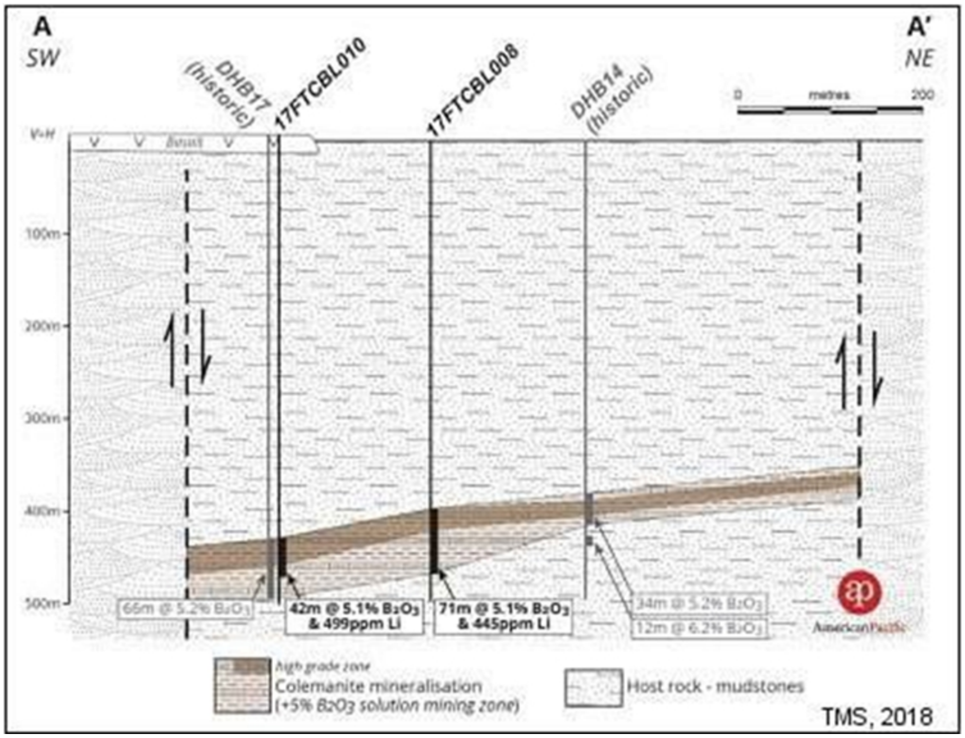


Figure 7.2 Core Photo, 17FTCBL-014

7.3 Hydrogeology

7.3.1 Hydraulic Setting

The Project deposit is in the California Hydrologic Unit Basin 12 Lavic Valley, sub-basin 180902081303. There is no name associated with the sub-basin and it is located north and west of the Lavic Lake and town of Lavic hydrologic sub basins. Basin 180902081303 is approximately 39,657 acres (160.48 square kilometers) in area and extends from the Rodman Mountains south and west of the Project in a north direction towards Highway 40, terminating at a topographical divide at the highway. The basin is bound to the south and east by the Pisgah Crater and Lavic Lake Volcanic Field.

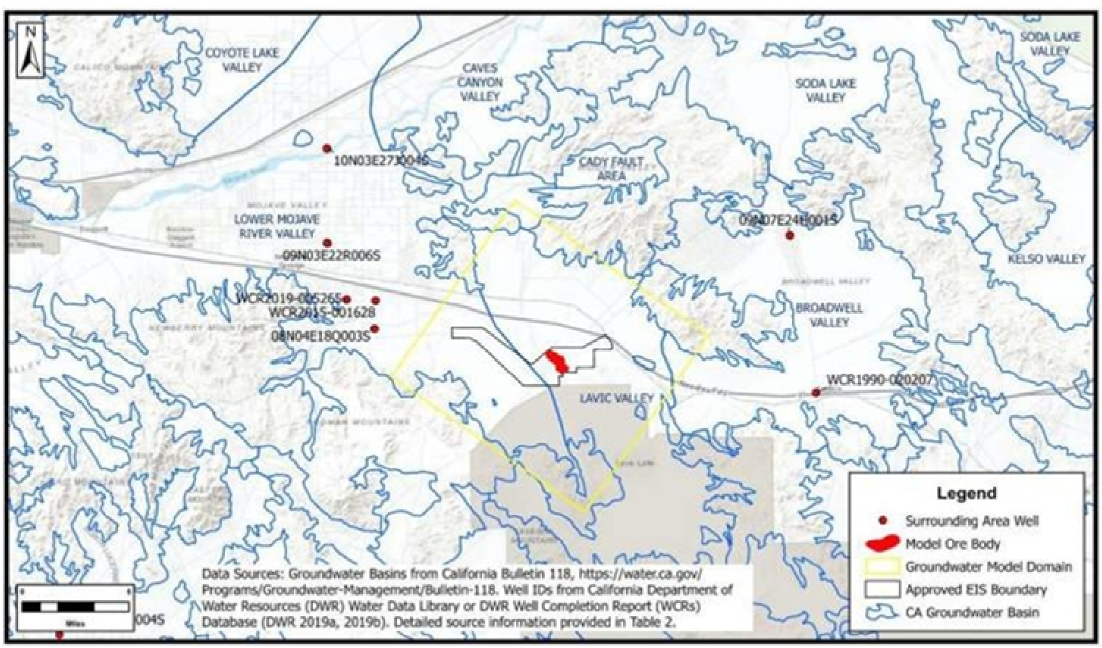
The Fort Cady Mountains bind Basin 12 to the north and the Rodman Mountains and Lava Bed Mountains bind Basin 12 to the south of the Project. Groundwater flow in the Lavic Valley basin is poorly defined, and outflow is interpreted to occur to the east of Broadwell Valley, with no localized groundwater discharge such as evapotranspiration or discharge to springs or a river.

The mineral deposit is bounded to the west by the Pisgah Fault and to the east by subordinate faults to include Fault B. *See UIC permit application and Confluence Water Resources CWR, 2019 Fault B Program Results, Technical Report*.

The nearest industrial well, owned by Candeo Lava Products, is located 3.5 miles east of the Project ore body. No other water wells are known to exist within the vicinity of the Project. Water level measurements from the Candeo Lava Products well were not available for this study but are greater than 96 ft bgs based on the CWR investigation in 2018. The next closest water well is located north and west of the Project at the Desert Oasis Highway Rest Stop. The well provides non-potable water to the rest stop facilities. This well is located approximately 7-miles northwest of the Project. Depth to water from the Rest Stop Well, Well 1807, was measured by CWR to be 54.75 ft bgs, approximate elevation of 1,758 ft amsl.

The location of the nearest known industrial groundwater wells in the region surrounding the Project are provided in Figure 7.3.

Figure 7.3 Project Area Groundwater Basins and Surrounding Area Wells, Fort Cady Project, San Bernardino, CA



Private domestic wells are associated with rural residences located greater than 6.5 miles west of the Project on the eastern edge of the town of Newberry Springs. Irrigation wells are located further west, the closest of which is approximately 10 miles west of the Project. The Pisgah Fault separates these residential and irrigation wells from the Project area, such that they are not within the same regional groundwater flow system and are not hydraulically connected.

The Project is located within a closed basin, although rarely present in the vicinity of the Project, surface water flows in a northwesterly direction past the Project area from the Rodman Mountains and the Pisgah Crater topographic divide. There are no springs or streams in the vicinity of the Project. There are no perineal surface water features in the vicinity of the ore body. Surface water-related features are seasonal, and ephemeral based on meteorological events. These features consist of unnamed dry washes that may carry water during heavy storm events. These washes generally drain west through the Project area toward the Troy Lake playa in Newberry Springs.

7.3.2 Project Area Wells

The orebody is "wedged" between the Pisgah Fault and Fault B. The static depths to groundwater in the vicinity of the orebody generally range between 240 and 350 ft bgs. The depths to groundwater in the wedge are generally shallower at wells collared at lower elevations and deeper at wells collared at higher topography. The groundwater elevation in the wedge ranges from between approximately 1,681 ft amsl at AOR-7A to 1,763 ft amsl at AOR-3A.

The groundwater elevation outside the wedge, west of the Pisgah Fault in the quaternary alluvial fan sediments of the Lower Mojave River Valley Groundwater Basin is approximately 1,785 ft amsl as measured in Project wells MWW-1, MWW-S1, and MWW-2.

The difference in groundwater elevation between Project wells presents a steepening of gradient from west to east across the Pisgah Fault. There is approximately a 20-foot water level differential on the east and west sides of the Pisgah Fault, which is regionally recognized as a barrier to groundwater flow and forms a groundwater basin boundary.

Groundwater in the vicinity of Fault B at Project wells TW-1, PW-1, and PW-2, is found at depths of approximately 350 to 390 ft bgs in coarser alluvial sediments to the east of Fault B (PW-1 and PW-2) and a mix of alluvial and fine playa sediments to the west of Fault B (TW-1).

No Underground Source of Drinking Water (USDW) aquifer has been encountered in the Wedge for at least 1,700 ft bgs. Monitoring wells drilled in 2021 by 5E as part of permit compliance did not encounter groundwater above the Unit 4 sediments with exception of a perched expression of groundwater localized to fine sand lenses underlaying surficial basalt above the contact with Unit 1. The results of the Shallow Groundwater Characterization Program, CWR, June 2022, *Shallow Groundwater Characterization Report on Mining Block 2 Near Pisgah Fault*, indicated that the expression of groundwater encountered during drilling of Series 7 wells is of low yield, of poor quality and likely of low storage.

The recharge originates from precipitation occurring in the Lava Bed Mountains, and drainage from Sunshine Peak, located southwest of the project. The upgradient precipitation drains into the shallow alluvium southwest of the Pisgah Fault. The shallow groundwater flows in a northeast direction through unconsolidated alluvial sediments, then drains under the basalt flow at a gradient of 0.002 into cemented sandstone and mudstone, where it is compartmentalized within the lithology influence by the fault. Interpretation of chip logs for all Series 7 and Series 3 wells, and the WSW and WMW wells, indicate the shallow cemented sandstone is not uniform and decreases in depth to the east of the project, where the mudstone is encountered higher in most wellbores. Likely, a result of pre-basalt flow topography and/or offset from faulting.

Since shallow groundwater was not encountered or observed through drilling of the Series 3 monitor wells, the Pisgah Fault is interpreted as being a strong influence on flow dynamics of the shallow groundwater system and plausibly influences the groundwater quality in Block 2. The lateral extent of the shallow groundwater system is anticipated to be confined to within the area underlying the surface basalt near the Series 7 wells and the extent of the Pisgah Fault zone northwest of the Project.

The Pisgah Fault is not the source of the shallow groundwater but compartmentalizes its lateral extent to within the western portions of the Project area. The results of the shallow groundwater characterization program do not support the existence of an USDW aquifer based on extremely low permeability, low yield, poor quality, and compartmentalization characteristics.

Below Unit 4 is andesite. Groundwater was encountered in the andesite in MW-3B. CWR, March 12, 2023, CWR Technical Memorandum, *Results of OW-3A and MW-3B Hydraulic Testing, Fort Cady California Project*, describe the results of groundwater testing between Unit 4 and the underlying andesite.

Proven water resources have been deemed acceptable through Phase 2 of the Project, with alternatives discussed in Section 18.

7.3.3 Hydraulic Properties

Testing for hydraulic properties of the colemanite and evaporates/mudstones containing the colemanite have occurred on several occasions. Beginning in 1980, Duval retained Core Laboratories, Inc. to conduct injectivity tests on one-inch cores from SMT-1. The samples were extracted with toluene, leached of salts with cool methanol, and dried in a controlled humidity oven. Permeability to air and Boyle's Law porosity were determined for each sample. The injectivity tests were performed at the reservoir temperature of (Simulated) formation water which flowed through the core until equilibrium occurred and a minimum of three pore volumes had been injected. The permeability of water was determined by the equipment. Sulfuric acid and hydrochloric acid solutions were injected through the core samples after which permeability to acid solutions was determined. While detailed information on the testing procedures conducted by Core Labs is available, detailed quality assurance and quality control (QA/QC) procedures are not available. Initial permeability was found to range from 1.35×10^{-9} to 2.9×10^{-10} cm/sec in 1990, after In-Situ, Inc. (In-Situ) conducted a multiple well constant rate injection test to determine direction tendencies of hydraulic properties of the mineral deposit.

In-Situ also investigated the effects of previous injection/recovery testing. Using a Badger flow meter, a HEREMIT data logger, and pressure transmitters, water-level responses were measured in the injection well and six nearby observation wells. In-Situ used the Cooper and Jacob method to analyze data from each well and applied the Papadopulos Method to determine directional permeability. In-Situ's work confirmed earlier work that permeability and transmissivity of the deposit are low.

Hydro-Engineering, 1996, summarized some of the testing and provided interpretations of prior testing conducted in 1981 and 1990. The mineralized sequence of rock transmissivity is estimated at 10 gal/day/ft, or 1.3 ft^2/day. Assuming the colemanite mineralized sequence occurs over an approximate 300 ft thickness, then the native hydraulic conductivity (K) over this thickness is estimated at 4.5×10^{-3} ft/day. This K value is of a similar magnitude as estimated by Simon Hydro-Search 1993 of 8.2 x 10-3 to 2.2×10^{-2} ft/day K converted from millidarcy units. The storage coefficient (S) of the ore body was estimated by Hydro-Engineering 1996 at 2.5×10^{-6}.

Increases in transmissivity, hydraulic conductivity and storage coefficient will occur as colemanite is dissolved from the formation. Hydro-Engineering, 1996, estimated the end-point permeability of the ore body formation after colemanite dissolution would be approximately 30 times higher, and a long-term storage coefficient may be approximately 1.1×10^{-5}. The end-point hydraulic properties are still low because much of the formation is evaporites, anhydrite, and claystone that will not be dissolved. The end-point porosity of the ore body formation after mining is predicted to be 15%. Core Laboratories, 1981, based on the colemanite content within the sediments and laboratory core analyses.

Injection and pumping tests were conducted in 1981 by Duval, 1986-1987 by MSME, and between 1996-2001 by FCMC. Injection was conducted at 150-300 psi pressures in the 1982 testing, with injection flow rates mostly of 1.5-2.5 gallons-per-minute (gpm), indicative of the hydraulically tight nature of the claystone hosting the deposit. In the 1986-1987 testing, rates of 1.3 to 5.3 gpm were observed over testing periods lasting from 6 to 71 days. The mudstone and claystone sediments above and below the ore body evaporites are also understood to be of very low transmissivity. Pump test results, CWR, 2019, provided an estimate of the hydraulic conductivity in the 10^{-5} range.

In 2018, CWR was retained by 5E to characterize hydrology east of Fault B, approximately 3,500 ft east of the colemanite deposit. CWR found a significant groundwater resource east of Fault B and that the fault is a barrier to groundwater flow. Stable isotope analytical results were compared against Nevada Meteoric Water Lines appropriate for desert terrains and found that the aquifer east of Fault B and the aquifer west of the Pisgah Fault have different origins and the limited groundwater found between the two faults is of a different origin than both aquifers. Recovery rates from wells between the two faults, which includes the colemanite deposit, are less than one gpm as would be expected in mudstones and claystone with very limited groundwater present.

The results of the testing in OW-3A, a newly installed monitor well, indicate the contact between Units 2 and 4 is of extremely low permeability, with hydraulic conductivity of approximately 4.3×10^{-5} feet/day. The results of testing in MW-3B indicate the permeability of the underlying andesite is several orders of magnitude higher, approximately 8.9×10^{-2} feet/day, CWR, March 12, 2023, CWR Technical Memorandum, *Results of OW-3A and MW-3B Hydraulic Testing, Fort Cady California Project.*

Based on the hydraulic conductivities derived from recovery rates from MW-3 and OW-3A wells, and the static water levels from Series 3 wells, CWR believes Unit 4 can be classified as an aquitard or partly leaking confining layer to underlying groundwater in the andesite. Unit 4 does not meet the qualifications to be considered a USDW and inhibits vertical migration of fluids by virtue of its low permeability and confining properties.

8 Sample Preparation, Analysis and Security

8.1 Sampling Method and Approach

Between September 2017 and October 2017, APBL completed 14 holes for 23,111 ft as part of a confirmatory resource drilling program. Assay results from all 14 drill holes were used in the mineral resource estimate. There are 2,113 samples from the 2017 drilling program representing 1,713 ft of core. In conjunction with the 2017 drilling program, 29 historical drill holes completed by Duval and four holes completed by FCMC have been utilized in the mineral resource estimate. There are 3,672 samples from the historic drilling representing a cumulative total 10,831.3 ft of core. The QA/QC procedures for the historic drilling are unknown though the work products compiled during the historic drilling suggests it was carried out by competent geologists following procedures considered standard practice at that time.

Discussions held with Pamela A.K. Wilkinson, who was an exploration geologist for Duval at the time of drilling and sampling, indicate that Duval had internal quality control and quality assurance procedures in place to ensure that assay results were accurate. Duval utilized their Tucson, West Texas Culberson Mine or New Mexico Duval Potash Mine laboratories for analytical work carried out at the Project. Geochemical analyses were carried out using X-Ray Fluorescence Spectrometry (XRF). XRF results were reportedly checked against logging and assay data.

Entire core sequences were sampled. Sample intervals were determined at the time of logging based on changes in lithology, mineralogy, and bedding. Sample intervals range from 0.2 to 6.6 ft with an overall average sample length of 2.66 ft. Following determination of sampling intervals, the core was split in half using a core splitter. One half of the core is used for the analytical sample with the remaining half core being returned to the core box for archiving. Samples are then placed into labeled plastic sample bags along with a pre-numbered sample tag. A companion sample tag is placed back in the core box marking the interval sampled. Samples were dispatched by commercial carrier to the Saskatchewan Research Council (SRC) for geochemical analysis. SRC has been accredited by the Standards Council of Canada and conforms with the requirements of ISO/IEC 17025.2005.

8.2 Sample Preparation, Analysis and Security

Upon receipt of samples from APBL, SRC would complete an inventory of samples received, completing chain of custody documentation, and providing a ledger system to APBL tracking samples received and steps in process for sample preparation and analysis. Core samples are dried in their original sample bags, then jaw crushed. A subsample is split out using a sample riffler. The subsample is then pulverized with a jaw and ring grinding mill. The grinding mill is cleaned between each sample using steel wool and compressed air or by using silica sand. The resulting pulp sample is then transferred to a barcode labeled plastic vial for analysis.

All samples underwent a multi-element Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES), using a multi-acid digestion for Ag, Al_2O_3, Ba, Be, CaO, Cd, Ce, Cr, Cu, Dy, Er, Eu, Fe_2O_3, Ga, Gd, Hf, Ho, K_2O, La, Li, MgO, MnO, Mo, Na_2O, Nb, Nd, Ni, P_2O_5, Pb, Pr, Sc, Sm, Sn, Sr, Ta, Tb, Th, TiO_2, U, V, W, Y, Yb, Zn, and Zr. Boron was also analyzed by ICP-OES but undergoes a separate digestion where an aliquot of the sample is fused in a mixture of NaO_2/$NaCO_3$ in a muffle oven, then dissolved in deionized water, prior to analysis. Major oxides Al_2O_3, CaO, Fe_2O_3, K_2O, MgO, MnO, Na_2O, P_2O_5 and TiO_2 are reported in weight percent. Minor, trace, and rare earth elements are reported in parts per million (ppm). The detection limit for B is 2 ppm and 1 ppm for Li.

For the 2017 drilling program, a total of 2,118 core samples and 415 control samples were submitted for multi-element analysis to SRC. APBL submitted control samples in the form of certified standards, blanks and coarse duplicates bags with sample identification supplied by APBL for SRC to make duplicate samples. In addition to these control samples, SRC also submitted their own internal control samples in the form of standards and pulp duplicates. A summary of all the QA/QC control samples submitted to SRC is shown in Table 8.1.

Table 8.1 Summary of QA/QC Control Samples

Submitted By	Drilling Type	Number of Holes	Meters Drilled	Standards	Blanks	Coarse Duplicates	Pulp Duplicates	Total Frequency	Primary Samples	Total
APBL	Rotary	14	4,692.10	—	—	—	—	—	—	—
	Diamond Tail	—	—	—	—	—	—	—	—	—
	Tail	14	2,353.70	144	135	136	—	—	2,118	2,533
	Total	14	7,045.80	144	135	136	—	—	2,118	2,533
		Frequency		6.80%	6.40%	6.40%	—	19.60%	83.60%	100%
SRC	SRC Internal QAQC			151			82			
		Frequency		7.10%			3.90%	11.00%		

Certified standards SRM 1835 and SRM 97b, prepared by the National Institute of Standards and Technology, were submitted as part of the APBL QA/QC procedures, the results of which are shown graphically on Figure 8.1 and Figure 8.2. Standard deviations shown are for the SRC assays. No two standards in any single batch submission were more than two standard deviations from the analyzed mean, implying an acceptable level of precision of SRC instrumentation.

Figure 8.1 Assay Results of Standard SRM1835

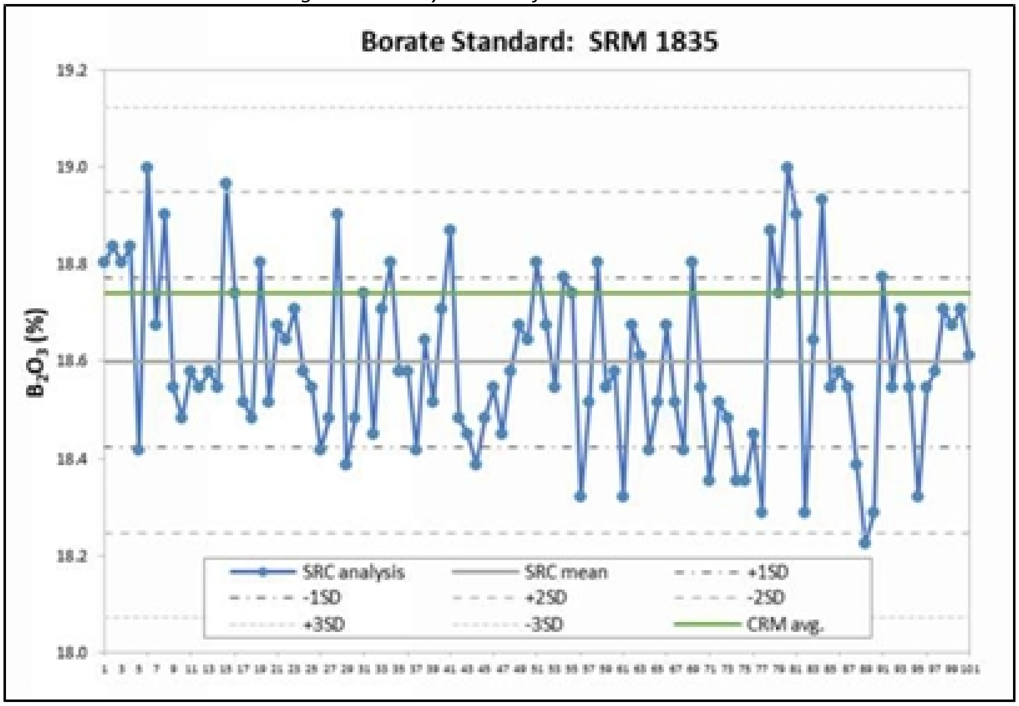
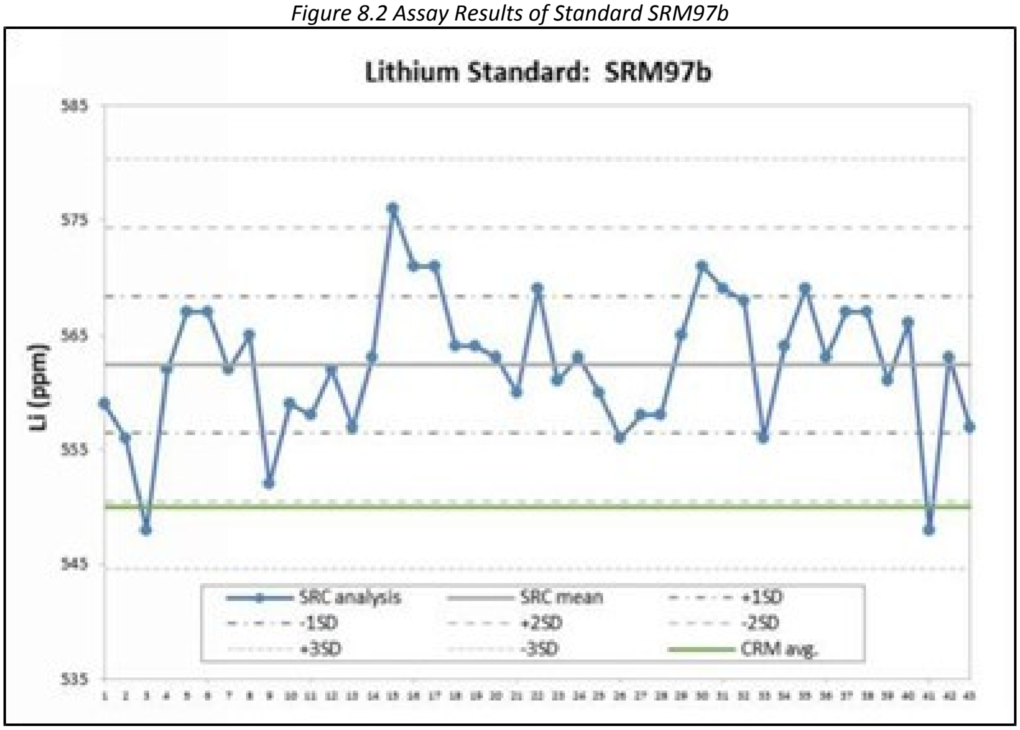


Figure 8.2 Assay Results of Standard SRM97b



SRC assayed two different standards, CAR110/BSM and CAR110/BSH, for its own QC protocol. CAR110/BSM is designated as a "medium boron standard." CAR110/BSH is designated as a "high boron standard." Figure 8.3 and Figure 8.4 display the analytical results for the certified standards. The analytical precision for analysis of both CAR110/BSM and CAR110/BSH is also reasonable, with no two standards in any single batch submission being more than two standard deviations from the analyzed mean.

Figure 8.3 Assay Results for SRC Standard CAR110/BSM

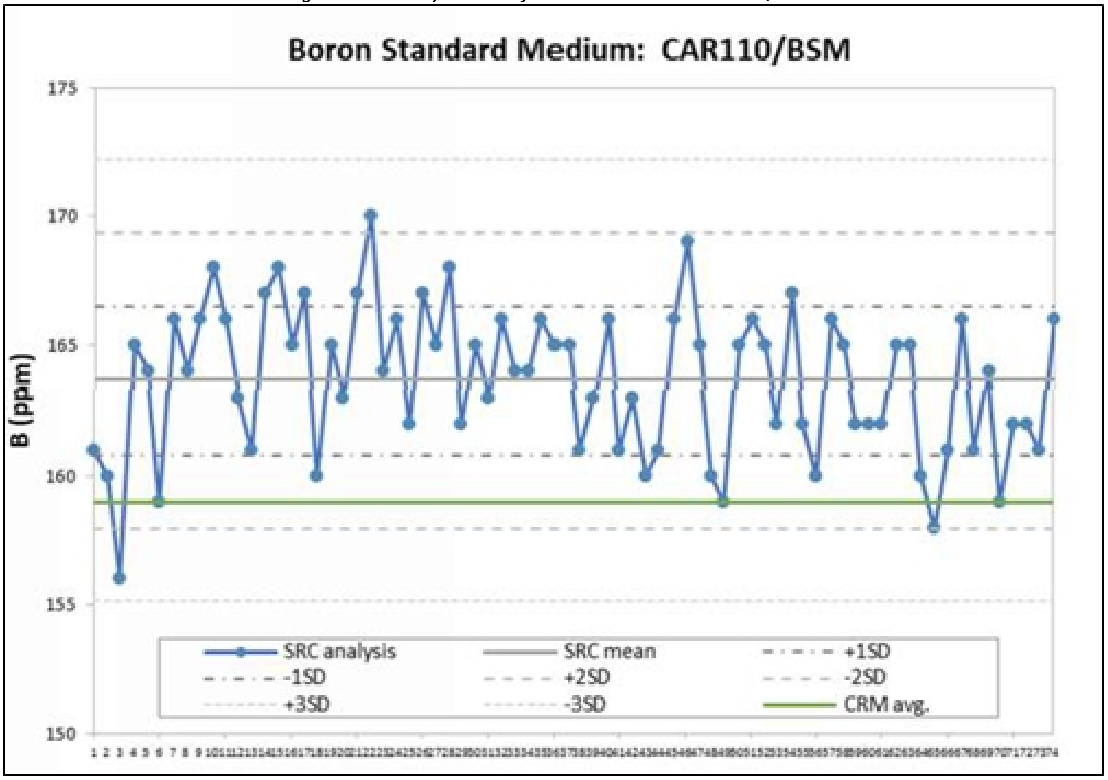
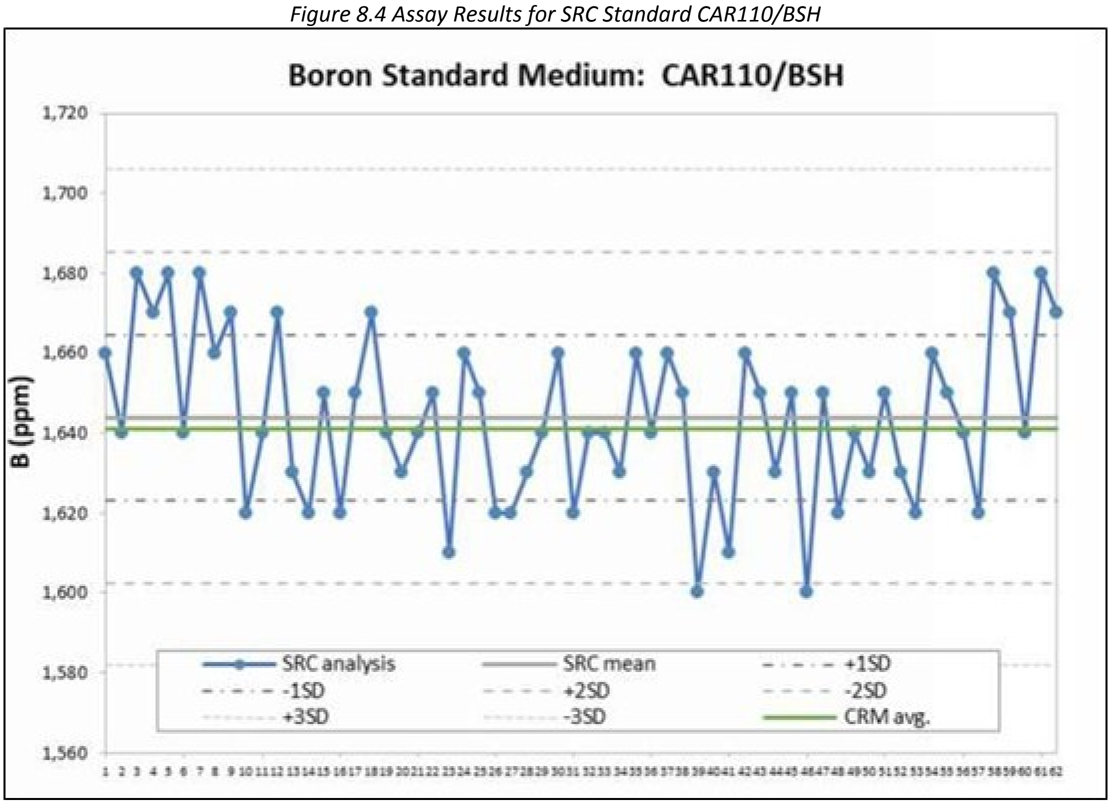


Figure 8.4 Assay Results for SRC Standard CAR110/BSH



Blank samples inserted by APBL consisted of non-mineralized marble. One hundred and thirty-five blank samples were submitted, all of which had assay results of less than 73 ppm B. The level of boron detected in the blanks is likely sourced from pharmaceutical borosilicate glass used during sample digestion. These boron concentrations are considered immaterial in relation to the boron levels detected in the colemanite mineralization and do not appear to represent carryover contamination from sample preparation. Lithium levels in the blank samples are also at acceptable levels with many assays <15 ppm Li. The four highest Li levels in the blanks immediately followed samples that contained relatively high Li concentrations. Overall, the concentration of the primary elements of interest B and Li in the blanks are at levels considered to be acceptable, implying a reasonable performance for sample preparation. The results of the blanks for B and Li are plotted in Figure 8.5 and Figure 8.6.

Figure 8.5 Sample Blank Assay Results for Boron

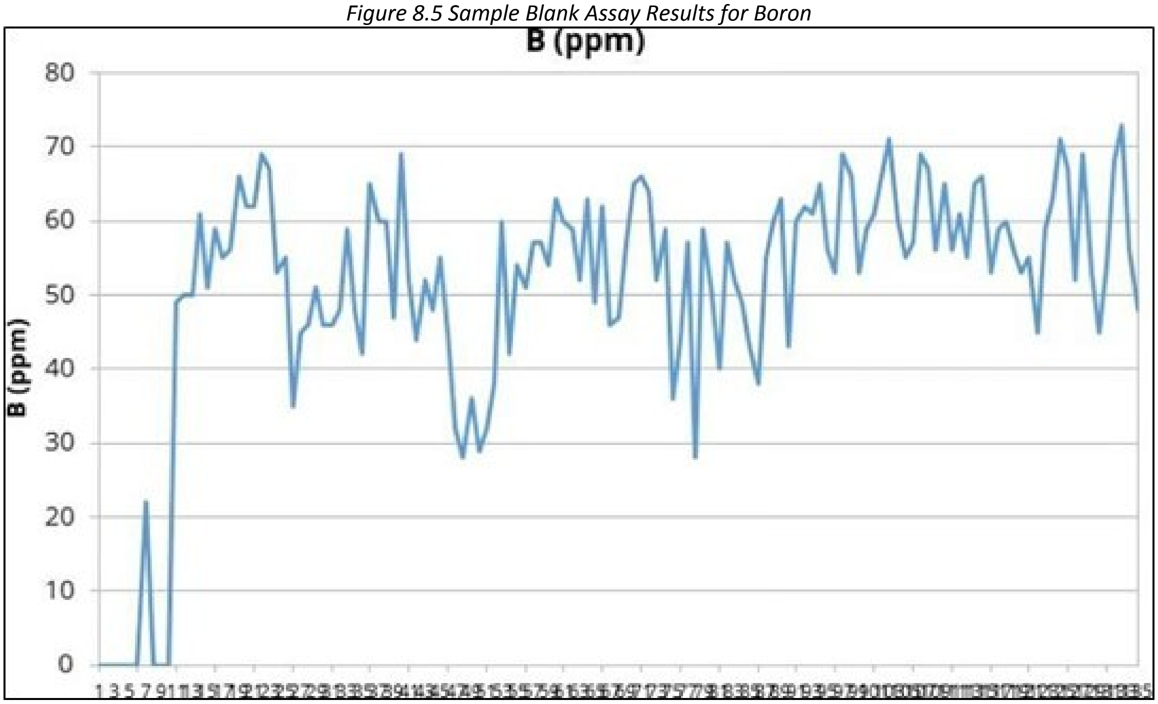
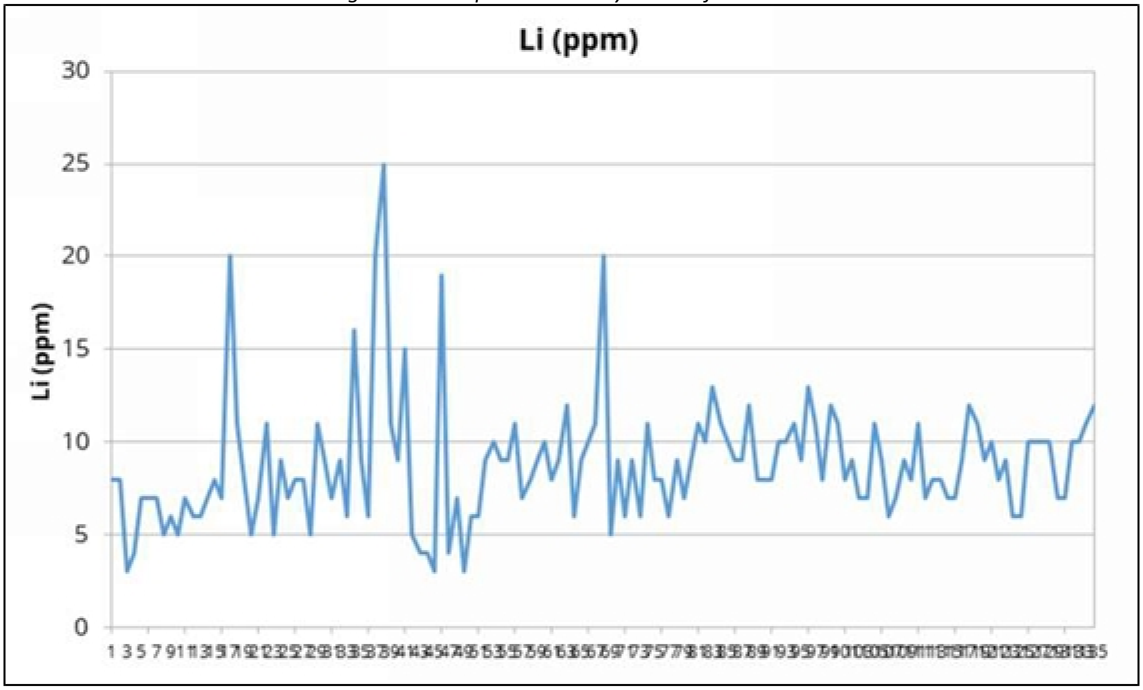


Figure 8.6 Sample Blank Assay Results for Lithium



A total of 136 duplicate samples were submitted to the SRC. APBL commissioned SRC to compose coarse duplicate samples using a Boyd rotary splitter. Figure 8.7 and Figure 8.8 show the assay results of duplicate samples for B and Li. As can be seen from the regressions, there is a good correlation between original and duplicate samples.

Figure 8.7 Duplicate Sample Results for Boron

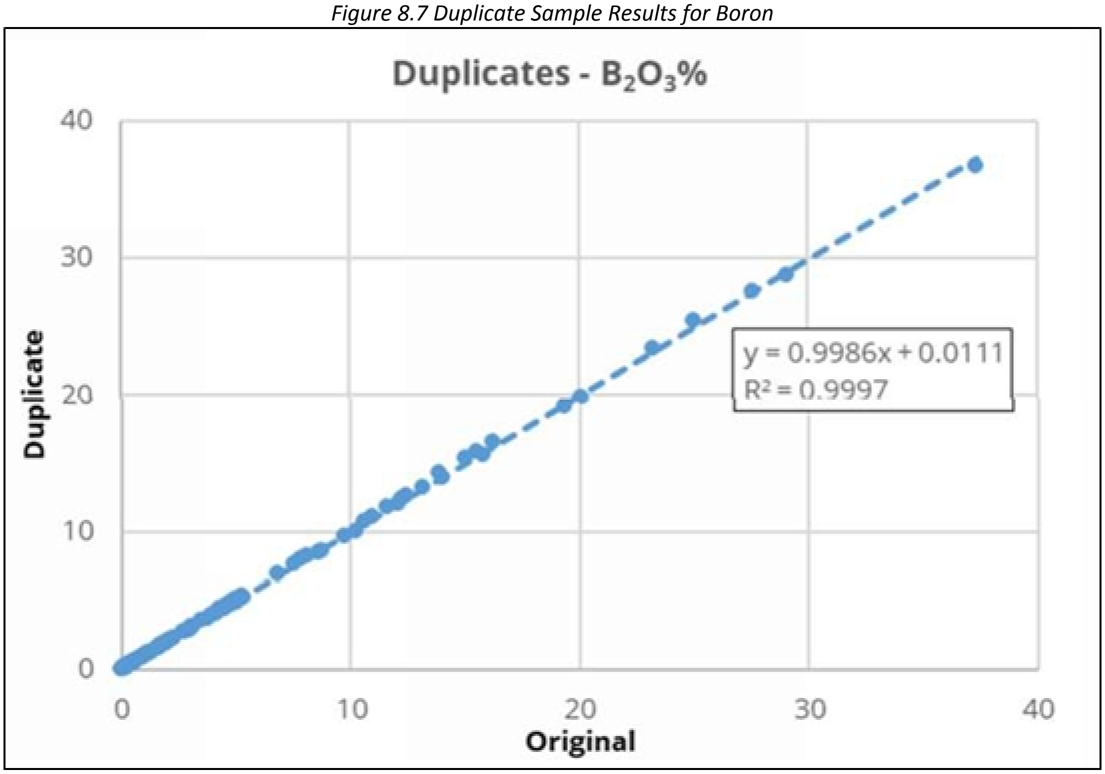


Figure 8.8 Duplicate Sample Results for Lithium

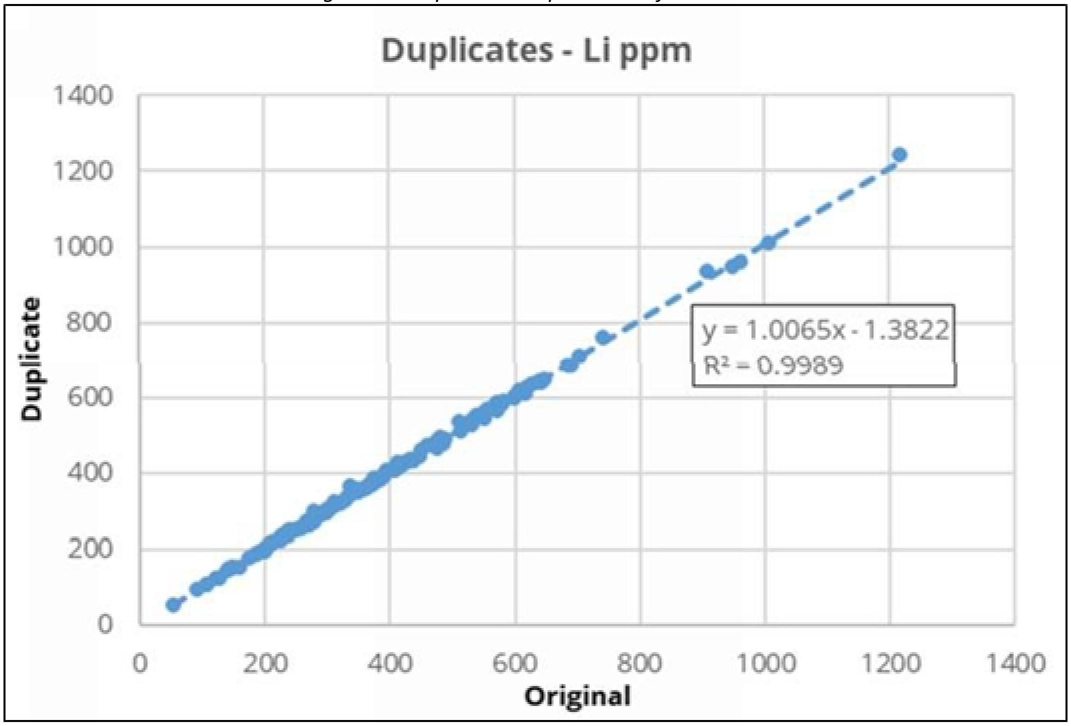


Figure 8.9 displays a HARD half absolute relative difference plot for the duplicates. This highlights reasonable precision for the duplicates. Regression and HARD results were also plotted for pulp duplicates assayed in SRC's own QC protocol shown in Figure 8.10 and Figure 8.11. These also show a reasonable level of precision.

Figure 8.9 HARD Diagram for APBL Duplicate Samples

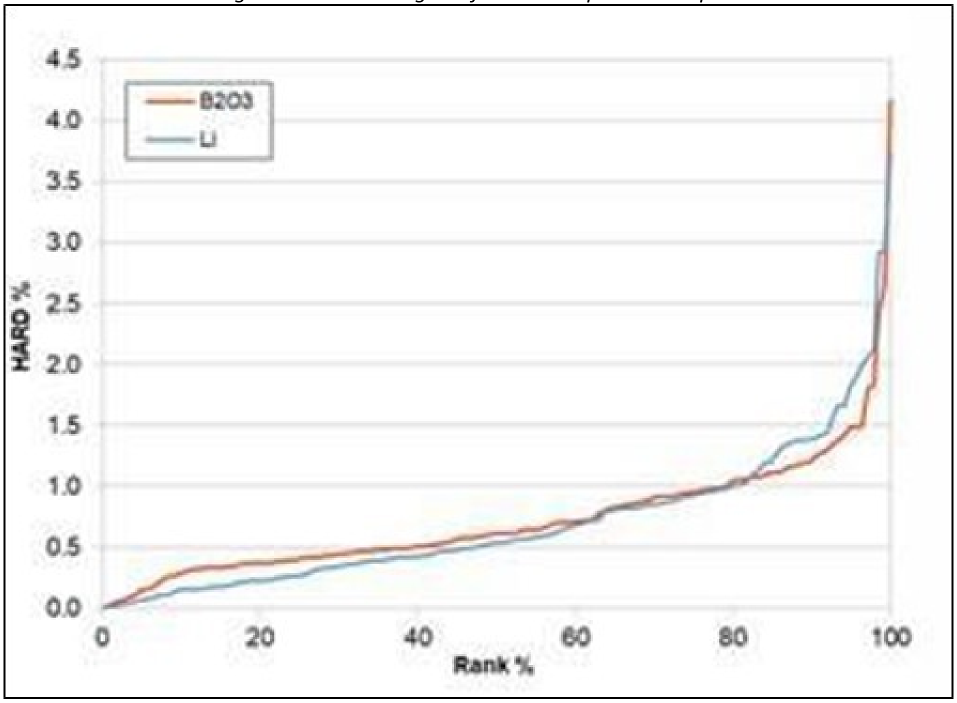


Figure 8.10 SRC Duplicate Results

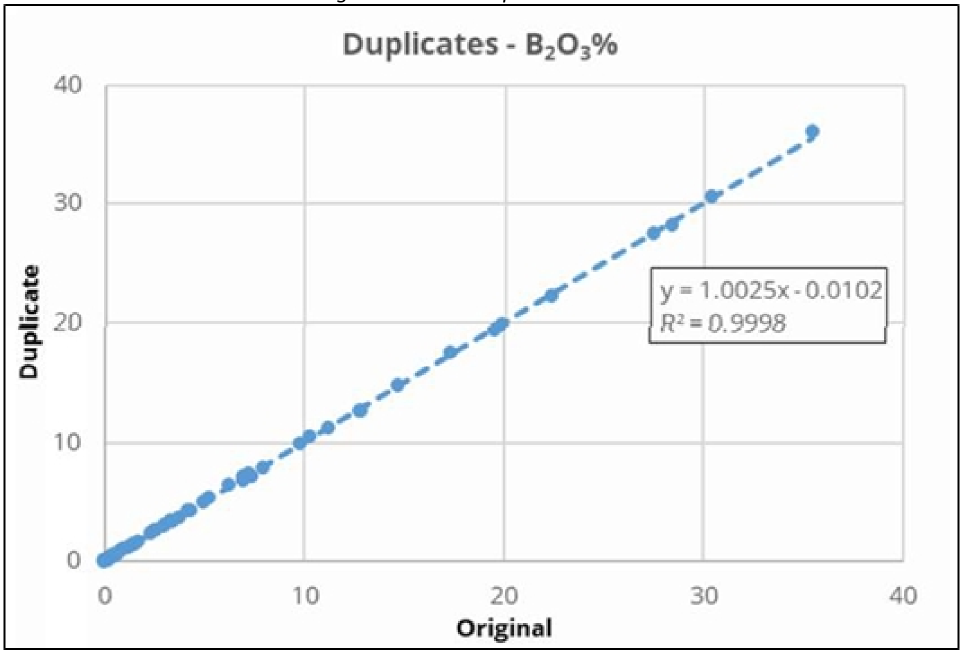
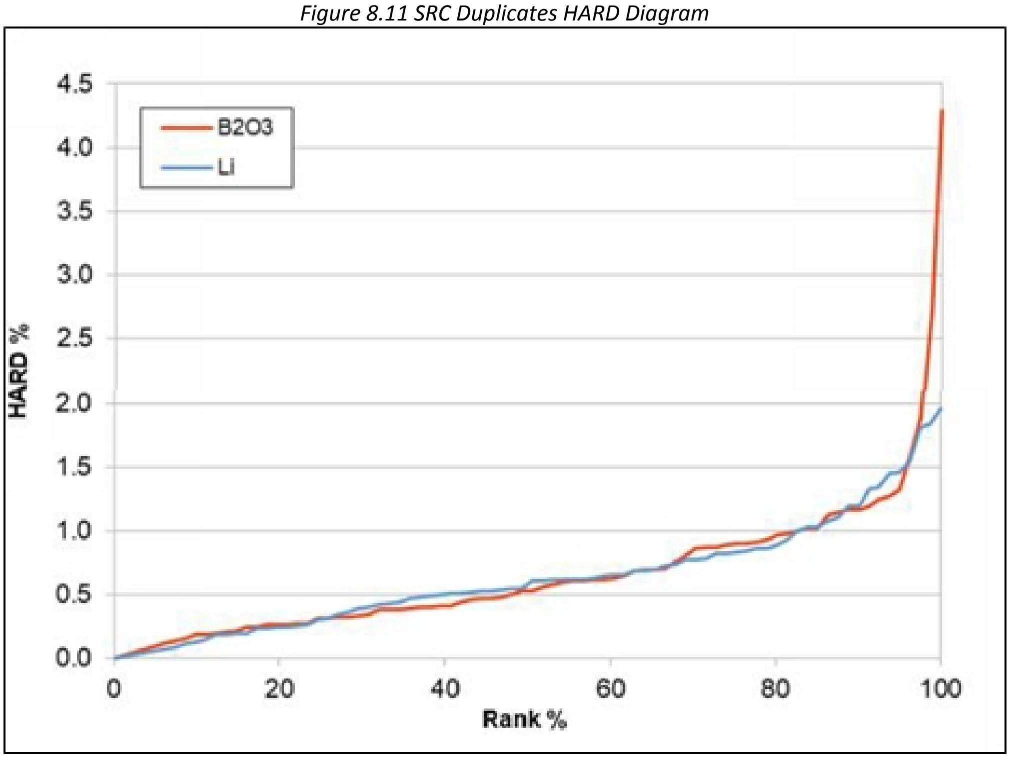


Figure 8.11 SRC Duplicates HARD Diagram



The QP believes reasonable care has been taken to collect and dispatch samples for analysis. The QA/QC program has shown the analyses are viable with a minimum of dispersion or contamination errors. The QP considers the sampling program to be of sufficient quality to support a mineral resource estimate.

9 Data Verification

9.1 Data Verification Procedures

During a site visit, the QP examined the core for five of the 2017 drill holes completed by 5E. Core has been safely stored in a designated storage building near the mine site office and is in good condition. The QP examined the core and compared the core to the geologic logs and sample interval records and found good agreement with the log descriptions and with no discrepancies with sample intervals.

The QP has done a visual check of drilling locations through Google Earth. Drill sites from the 2017 drilling program are still visible in imagery. Older sites completed by Duval and FCMC are not discernible on imagery.

Historic drilling location records were originally recorded in California State Plane coordinates or in metes and bounds. The QP checked historic drilling location data to ensure these records had been properly converted to Universal Transverse Mercator (UTM) coordinates, the coordinate system used in the 2017 drilling program. All historic location data has been properly converted to the current UTM coordinate system.

The QP received drilling records, sample intervals, and assay results in excel workbook files that were used as input for the drill hole database. Through a variety of data checks drill hole information was evaluated for duplicate entries, incorrect intervals, lengths, or distance values less than or equal to zero, out-of-sequence intervals and intervals or distances greater than the reported drill hole length. Historical drill hole records were also checked against relevant Duval and FCMC data sets. A review comparing original field logs and assay reports showed the data to have been transcribed accurately into the Excel files.

9.2 Data Limitations or Failures

The QP did not identify any data limitations or failures.

9.3 Data Adequacy

The QP believes adequate care has been taken in preserving and transcribing the historic data to digital format and 2017 drill hole data accurately corresponds back to the sample ledger and assay certificates. The QP believes that the data used is adequate and suitable for a mineral resource estimate.

10 Mineral Processing and Metallurgical Testing

10.1 Metallurgical Testing

Representative samples were collected and submitted for assay by Duval and APBL. The data is discussed below.

10.2 Representative Samples

Between September 2017 and October 2017, APBL completed 14 holes for 23,111 ft as part of a confirmatory resource drilling program. Assay results from all 14 drill holes were used in the mineral resource estimate. There are 2,113 samples from the 2017 drilling program representing 1,713 ft of core. In conjunction with the 2017 drilling program, 29 historical drill holes completed by Duval and four holes completed by FCMC have been utilized in the mineral resource estimate. There are 3,672 samples from the historic drilling representing a cumulative total 10,831.3 ft of core. The QA/QC procedures for the historic drilling are unknown though the work products compiled during the historic drilling suggests it was carried out by competent geologists following procedures considered standard practice at that time.

10.3 Testing Laboratory

Discussions held with Pamela A.K. Wilkinson, Lead Exploration Geologist at Fort Cady for Duval, indicate that Duval followed internal quality control and quality assurance procedures in place to ensure that assay results were accurate. Duval utilized their Tucson, West Texas Culberson Mine or New Mexico Duval Potash Mine laboratories for analytical work carried out at the Project. Geochemical analyses were carried out using X-Ray Fluorescence Spectrometry. XRF results were reportedly checked against logging and assay data.

10.4 Relevant Results

Assay results were used in the resource estimation model, discussed in Section 11.

10.5 Adequacy of Data

The QP believes adequate protocols were followed in the collection of core and submittal to acceptable metallurgical testing laboratories.

11 Mineral Resource Estimates

In December of 2018, Mr. Louis Fourie of TMS completed an updated JORC resource report for the Project. That report identified a Measured plus Indicated mineral resource estimate of 52.7 million tonnes (Mt) containing an average grade of 6.02% B_2O_3 and 367 ppm of Li. This was followed in 2021 by a revised initial assessment report (SK-1300) which utilized and verified the previous reporting, as there were no significant exploration activities undertaken on the Project between 2018 and 2021, although changes in the Mineral holdings did occur, and the mineral Resource was subsequently updated. Since 2021, there have been 13 additional wells drilled as part of a monitoring well and testing program. One well, IR2-01-01, was cored and assayed at the Saskatchewan Research Council (SRC), following the same methodologies as before. The data from this drill hole was quality assessed, and subsequently added to this Resource update, which has also been modified with changes in the mineral holdings as described in Section 3, as well as cut-off grade as described in Section 11.4 below.

11.1 Key Assumptions

Key assumptions used in the economic assessment include ISL mining operation delivering 7% boric acid in solution (head grade) to an above ground processing plant; operating costs of $686 per ton of boric acid produced; 92% conversion of boric acid in solution to saleable boric acid powder (recovery rate); 81.9% recovery of in-situ boron (extraction ratio), based upon a Hazen Research analytical report and a sales price of boric acid based on a forward-looking model from regression of historical pricing. A detailed financial model using a discount rate of 8% delivered a positive net present value to support the cut-off grade and more broadly the resulting mineral resource estimation.

11.2 QP's Estimate of Resource

11.2.1 Resource Database

The database used for resource estimate includes 34 holes completed by Duval, three holes completed by FCMC, and 15 holes completed by APBL/5E for a cumulative total of 52 drill holes and a cumulative sampled length of 82,994 ft (25,296.7 m). Table 11.1 summarizes the drilling database. The database has been updated with the data from hole IR2-01-01 and is current as of April 1, 2023. Drilling coordinates in the database are in UTM NAD 83-11, and depths and elevations are reported in meters. Borate is listed as weight percent (%) B_2O_3 and Li as ppm. The drilling database contains 5,920 analytical values for B_2O_3 and 5,082 analytical values for Li.

Core recovery for the 2017 drilling program ranged from 93% to 100% with an overall average of 97.60%. Core recovery records for earlier drilling conducted by Duval and FCMC are not available, but based on missing intervals in the drilling database, core recovery likely exceeded 90% in the core drilling.

The QP has completed a thorough review and verification of the drilling database and found the database to be sufficient for resource modeling.

Table 11.1 Summary of Drilling Database

Hole ID	Cumulative Core Length (m)	Cumulative Sample Length (m)	B2O3 Analyses	Li Analyses
APBL-01	111.13	88.90	82	82
APBL-02	91.74	87.74	107	107
APBL-03	93.11	92.80	91	91
APBL-04	143.77	142.71	162	162
APBL-05	107.35	104.76	150	150
APBL-06	95.34	90.47	83	83
APBL-07	176.27	166.09	207	207
APBL-08	128.96	127.20	153	153
APBL-09	119.33	118.51	120	120
APBL-10	133.81	126.50	176	176
APBL-11	135.72	134.79	155	155
APBL-12	142.77	138.42	212	212
APBL-13	138.99	136.75	155	155
APBL-14	157.43	156.99	260	260
DHB-01	162.49	158.41	184	184
DHB-03	212.90	212.12	213	213
DHB-05	207.26	207.26	179	179
DHB-06	175.57	155.42	124	124
DHB-07	204.83	204.06	179	179
DHB-08	224.63	224.63	186	186
DHB-09	170.69	170.69	138	138
DHB-10	139.08	81.79	86	86
DHB-11	112.90	73.28	86	86
DHB-12	120.67	74.04	85	-
DHB-13	102.57	61.17	70	70
DHB-14	117.63	75.71	80	-
DHB-15	125.70	56.18	51	51
DHB-16	145.48	122.62	138	138
DHB-17	141.25	104.49	151	151
DHB-18	139.48	92.32	105	105
DHB-19	106.68	59.40	74	74
DHB-21	26.33	25.93	39	39
DHB-22	135.94	101.81	135	135
DHB-23	136.24	100.80	114	114
DHB-24	146.00	120.00	119	119
DHB-25	173.74	134.87	152	152
DHB-26	121.37	81.99	106	106
DHB-27	132.71	67.07	95	95
DHB-28	128.62	80.07	115	115
DHB-29	120.64	75.28	101	101
DHB-30	137.53	68.49	83	83
DHB-31	49.00	57.36	41	-
DHB-33	111.19	92.17	80	-
DHB-34	68.76	87.47	79	-
P1	60.96	60.96	20	-
P2	54.87	64.01	21	-
P3	54.87	54.87	18	-
P4	83.82	54.87	34	-
SMT-1	23.77	23.25	57	57
SMT-2	103.57	24.14	55	-
SMT-3	512.00	24.35	69	-
IR-2-01-01	137.59	119.57	135	135
Total	**6,905.05**	**5,365.55**	**5,910**	**5,328**

11.2.2 Geologic Model

TMS developed a gridded geologic model of the Project using Vulcan™ software. The mineralization does not correlate to lithological markers as the entire sequence is predominantly lacustrine mudstone. However, detailed examination of the analytical results reveals distinct mineralized horizons. The deposit was delineated based on these patterns of mineralization into four mineralized horizons, two non- mineralized or weakly mineralized interbeds and two non-mineralized horizons bounding the deposit. These horizons are listed in Table 11.2.

Table 11.2 Modelled Horizons

Horizon	Abbreviation	Thickness Range (m)	Average Thickness (m)	Composite B2O3 Range (wt.%)	Composited Li Range (ppm)
Overburden	OBN	317.0 - 507.7	381.8	NA	NA
Upper Mineralized Horizon	UMH	0.1 - 12.5	4.3	0.87 - 14.45	99 - 588
Upper Interbed	UI	0.1 - 16.7	6.7	0.5 - 4.1	108 - 623
Major Mineralized Horizon	MMH	0.7 - 69.4	27.4	2.6 - 17.6	98 - 550
Medial Interbed*	MIB	6.5 - 5.2	9.7	0.3 - 1.9	386 - 492
Intermediate Mineralized Horizon	IMH	1.8 - 58.3	22.5	0.7 - 12.0	23 - 534
Lower Mineralized Horizon	LMH	0.0 -53.9	19.7	0.2 - 5.7	91 - 534
Lower Sandstone*	LSS	0.1 - 58.6	15.6	NA	NA

*** Horizon not fully penetrated, NA: Not Applicable**

The grid model was constructed across the deposit area, with a grid cell size of 25 m x 25 m. Grids represent the bounding elevation surfaces of key horizons, thicknesses, and analytical grades. Mineral horizon grids were interpolated using an Inverse Distance Squared (ID2) algorithm. Mineralization is spatially defined by a resource boundary using 150 m. from the last intersection of mineralization in a drill hole. Grids are masked to the outside of the resource boundary.

11.2.3 Grade Estimation & Resource Classification

Using composites for each mineralized horizon, variograph was successful for B_2O_3 grades for the Major Mineralized Horizon (MMH), Intermediate Mineralized Horizon (IMH), and the Lower Mineralized Horizon (LMH) and are summarized in Table 11.3. Variogram modelling was unsuccessful for the Upper Mineralized Horizon and with Li in all horizons. Grids representing B_2O_3 grades for the MMH, IMH, and LMH were constructed using Ordinary Kriging using the constructed variograms. ID2 interpolation was used with all remaining grade grids using the same spatial limits established with the horizon grids.

Table 11.3 Modelled Variograms

Horizon	Type	Nugget	First Structure	Second Structure
MMH	Spherical, omnidirectional	—	200.0	400
IMH	Spherical, omnidirectional	0.2	180.0	450
LMH	Spherical, omnidirectional	0.2	530.0	—

Based on the variogram above, the deposit was classified as follows:

- Measured Resource Category: based on a maximum spacing between mineralized drill holes for each horizon of 200m, limited to drill holes drilled by APBL and 5E.
- Indicated Resources Category: based on a maximum spacing between mineralized drill holes for each horizon of 400m, limited to drill holes drilled by APBL and 5E.
- Inferred Resources Category: based on a maximum spacing between mineralized drill holes for each horizon of 800m.

Drilling and sampling density is sufficient that no further limits on classification are required.

11.3 Model Validation

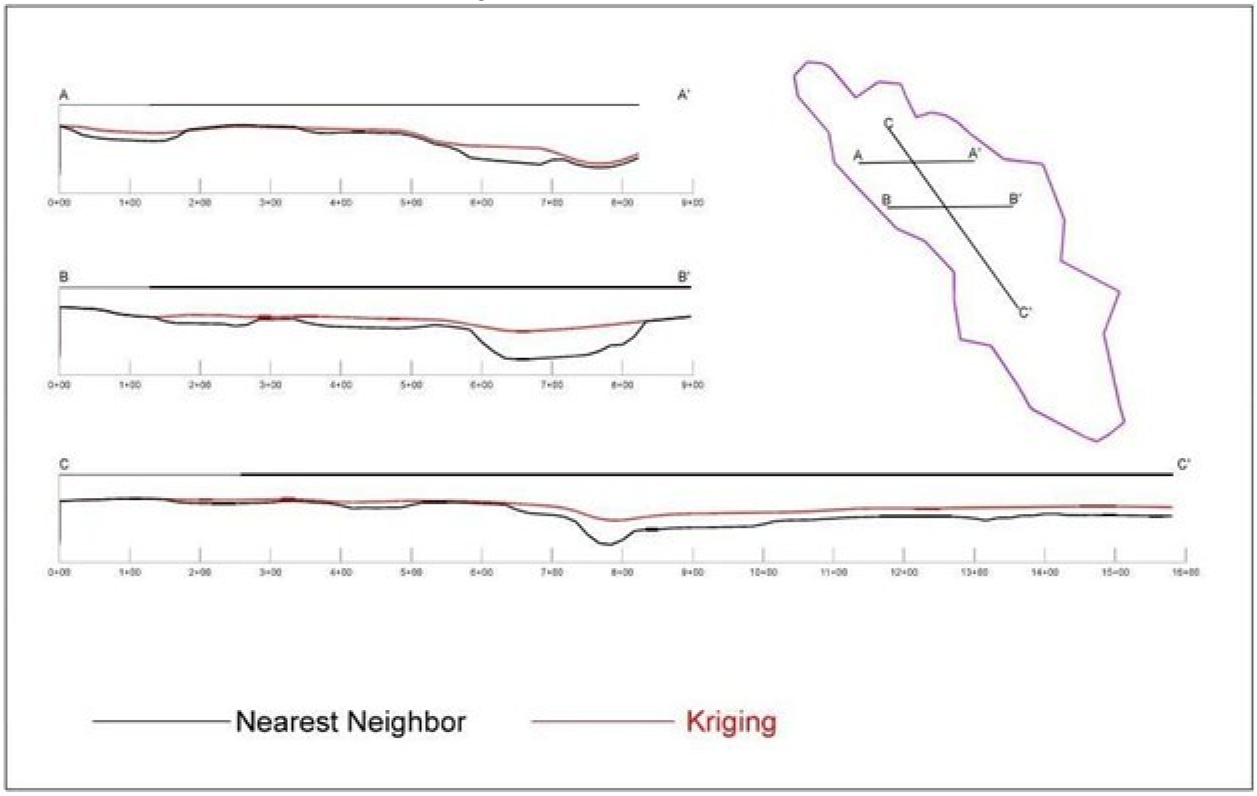
The modelling methodology and outcome was thoroughly vetted as follows:

The QP for the previous report loaded the resource database and grids provided by TMS into Carlson Mining®, a geology and mine planning software that competes directly with Vulcan. The audit and validation of the gridded model consisted of the following steps:

1. Drilling data was loaded into Carlson Mining to compare drill hole postings with the provided grids representing the top and bottom surfaces for each mineralized horizon. This comparison was done using a grid inspector tool in Carlson Mining that enables simultaneous viewing of drill hole data along with grid values at each drilling location. The QP found the resulting comparisons to be satisfactory. This step was repeated comparing drill hole composite grades from drill hole data with grids representing the grades of B_2O_3 and Li for each mineralized horizon. While there are some fluctuations with grid values generated by kriging and ID2, these fluctuations are small and within expected ranges.
2. The gridded model was evaluated using a series of swath plots. A swath plot is a graphical display of the grade distribution derived from a series of bands, or swaths, generated as sections through the deposit. Grade variations from the ordinary kriging model are compared to nearest neighbor(NN) searches on drill hole composites. On a local scale, the NN search does not provide reliable estimations of grade but on a much larger scale, it represents an unbiased estimation of the grade distribution based on the underlying data. If the model estimation completed by ordinary kriging is unbiased, the grade trends may show local fluctuations on a swath plot, but the overall trend should be like the NN distribution of grade. Three swath plots are shown in Figure 11.1
3. Finally, the QP completed a separate estimate in Carlson Mining following the parameters used by TMS to the defined resource boundary. This separate resource estimate was within 3.6% of the TMS estimate. The QP considers the difference negligible considering the comparison uses two different modelling software packages.

The QP for this report has examined the updated model, which contains one additional core hole, and is confident that it conforms to the necessary standard.

Figure 11.1 Grade Variation Swath



11.3.1 Density Measurements

The 2017 drilling program included the collection of 777 density measurements from core samples. Density determinations were made using the weight in air/weight in water method. The weighted average bulk density determined from the 381 samples collected through the mineralized horizons is 2.18 g/cm^3. and has been used as the bulk density in resource estimation.

11.4 Cut-off Grade

A 5.0% B_2O_3 cut-off grade was previously established by Duval and was carried forth by TMS in their JORC resource reporting, as well as by Millcreek Mining for the previous initial assessment. In the previous initial assessment, the QP indicated that the then- cut-off grade is conservative and that effective recovery along with detailed economic analysis will be needed for reserve estimation.

An in-depth assessment of cut-off grade was undertaken in 2022 and 2023, incorporating the result of leaching tests, mining and processing costs, and commodity pricing. Elevated boric acid pricing has allowed for a re-evaluation of grade cutoff and the ability to address lower grade areas in the orebody. This assessment is based on assumptions in the financial model detailed in Section 19 and as discussed below.

Sales pricing has risen over the past several years and months and is currently tracking in the upper $1,400's. For this evaluation, current pricing was used along with price forecasting based on work with Kline. Current spot pricing for lithium carbonate, provided by Benchmark Mineral Intelligence, was also used in the model. See Section 16 below.

Cutoff can be derived using the above assumptions and current spot pricing as detailed with a regression equation fit to the financial model data at multiple cash cost points, per Equation 1:

Equation 1 Cutoff Grade Calculation

$$Cutoff\ grade, \% = 100 \times 10^{\left[\frac{\log\left(regression\ coef.1 / boric\ acid\ spot\ price\right)}{regression\ coef.2}\right]}$$

The result of this exercise is a 2.0% financially viable driven grade cutoff, where our costs are near the current spot sales price for boric acid. The geologic model used the 2% B_2O_3 cutoff which has a Boric Acid equivalent cutoff of 3.55% boric acid (H_3BO_3).

11.5 Classification into Measured, Indicated and Inferred

Results of the mineral resource estimation are shown in Table 11.4. The resource estimate contains a combined 74.31 million short tons of Measured plus Indicated resources with an average grade of 4.15% B_2O_3 and 356 ppm Li, using a 2% cut-off grade for B_2O_3. The mineral resource estimate also identifies 96.90 million short tons of Inferred resources under mineral control by 5E with an average grade of 4.75% B_2O_3 and 321 ppm Li.

It is noted that these numbers are substantially different to previous reports, which is ascribed to the change in cut-off grade as detailed in Section 11.4 and Section 3.6.

Regulation S-K 1300 requires a current economic assessment to be completed which provides a reasonable basis for establishing the prospects of economic extraction of the mineral resource estimation.

Table 11.4 Fort Cady Project Mineral Resource Estimate, April 1, 2023*

Measured Resource	Horizon	Tonnage (MST)	B_2O_3 (wt%)	H_3BO_3 (wt%)	Lithium (ppm)	B_2O_3 (MST)	H_3BO_3 (MST)	LCE (MST)
5E Land Patented, surface & minerals	UMH	1.37	4.58	8.14	308	0.06	0.11	0.002
	MMH	12.26	6.26	11.12	409	0.77	1.36	0.027
	IMH	8.86	5.25	9.33	386	0.47	0.83	0.018
	LMH	8.46	2.30	4.09	261	0.19	0.35	0.012
Total Measured Resource		30.95	4.81	8.55	357	1.49	2.65	0.059

Indicated Resource	Horizon	Tonnage (MST)	B_2O_3 (wt%)	H_3BO_3 (wt%)	Lithium (ppm)	B_2O_3 (MST)	H_3BO_3 (MST)	LCE (MST)
5E Land Patented, surface & minerals	UMH	1.72	3.95	7.02	314	0.07	0.12	0.003
	MMH	20.21	5.50	9.77	368	1.11	1.97	0.040
	IMH	13.48	3.02	5.36	371	0.41	0.72	0.027
	LMH	7.94	2.36	4.19	302	0.19	0.33	0.013
Total Indicated Resource		43.35	4.09	7.27	355	1.77	3.15	0.082
Total Measured + Indicated Resource		74.31	4.15	7.37	356	3.26	5.80	0.141

Inferred Resource	Horizon	Tonnage (MST)	B_2O_3 (wt%)	H_3BO_3 (wt%)	Lithium (ppm)	B_2O_3 (MST)	H_3BO_3 (MST)	LCE (MST)
5E Land Patented, surface & minerals	UMH	4.98	3.21	5.70	303	0.16	0.28	0.008
	MMH	37.60	6.08	10.80	295	2.29	4.06	0.059
	IMH	13.88	2.59	4.60	346	0.36	0.64	0.026
	LMH	7.07	2.13	3.79	267	0.15	0.27	0.010
5E surface, State of California minerals	UMH	4.86	3.75	6.66	311	0.18	0.32	0.008
	MMH	16.93	6.73	11.95	366	1.14	2.02	0.033
	IMH	9.24	2.43	4.32	365	0.22	0.40	0.018
5E Land Patented, surface & minerals, SE	UMH	0.42	4.02	7.14	287	0.02	0.03	0.001
	MMH	1.18	5.38	9.56	339	0.06	0.11	0.002
	IMH	0.74	2.45	4.35	331	0.02	0.03	0.001
Total Inferred Resource		96.90	4.75	8.43	321	4.60	8.17	0.166

*** Using a 2% B_2O_3 cut-off grade, and no Lithium cut-off grade**

11.6 Uncertainties

The QP is not aware of any known environmental, permitting, legal, title, taxation, socio- economic, marketing, or other relevant factors or uncertainties that could affect the mineral resource estimate.

The accuracy of resource and reserve estimates 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 estimates may necessitate revision. These revisions may be material. There is no guarantee that all or any part of the estimated resources or reserves will be recoverable.

11.7 Individual Grade for Each Commodity

Included with Section 11.5.

11.8 Disclose Required Future Work

Currently, the resource estimate includes an inferred resource which has been established using historical drillings from Duval. It is recommended that 5E drill an additional six to ten exploration and in-fill holes in Section 25 and 36 on the southeastern side of the resource to convert the inferred resource to measured and indicated.

12 Mineral Reserve Estimates

There are currently no mineral reserve estimates to report. Construction is currently in progress for the Small-Scale Facility and operation of the Small-Scale Facility with further refined capital and operating estimates will provide the necessary parameters for determining the mineral reserve estimate.

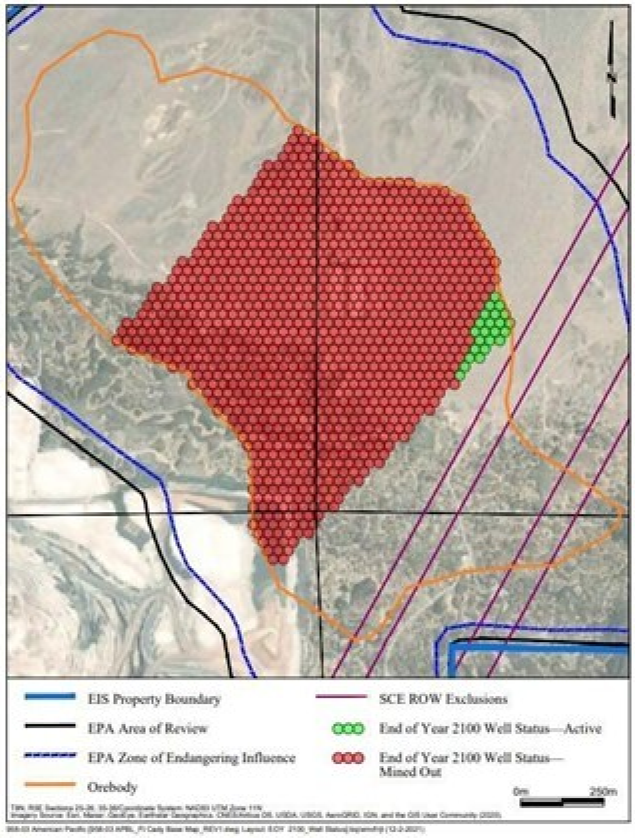
13 Mining Methods

The Project will be employing ISL as its mining method to recover boric acid and lithium carbonate from the mineralized horizons. Depth and grade of the deposit precludes conventional mining techniques as effective methods for economical extraction of ore. With ISL mining, there is no stripping of waste rock or underground development required for the Project. Mine development steps include constructing injection/recovery wells, installing extraction equipment pumping or airlifting on wells, and piping to transport leach solutions and PLS for chemical plant processing. Mining fleet and machinery are not required for the Project.

The process designed by both 5E and Hargrove and Associates (Hargrove) assumed an initial production rate of 90,000 stpa boric acid. This production rate should correspond to 640-650 gallons/min of PLS to the processing plant, assumes a head grade of 7% boric acid in the PLS, and 92% yield of boric acid in the processing plant.

Preliminary work completed by Agapito calls for the installation of 100-ft spaced injection/recovery wells using push-pull mechanics. These wells are to operate each as injection and recovery wells where leach solution is pumped into the well and, after a prescribed residence time, is retrieved from the same well for processing. This method will be used until dissolution of the colemanite in the deposit progresses to where conduit flow is established between wells. Once conduit flow is established, well control will be adjusted to short circuiting to optimize recovery. Preliminary mine planning estimates a recovery of 80.6% of the total resource tons before mining and plant losses.

Figure 13.1 Block 2 Mining Sequence Example



For the mine design, the mineral resource area has been subdivided into three blocks for development. Block 1 comprises the northern third of the resource area, Block 2 occupies the central portion of the resource area, and Block 3 comprises the southern third of the mineral resource area. The mine design calls for developing Block 2, the central region, first. Figure13.1 projects well development for Block 2 through the end of year 2100 assuming 90,000 tons of boric acid per year of production and is included for reference.

Mine recovery rate of 81.9% is applied to account for losses for leaching solution not reaching and reacting with the ore body, as well as for non-recoverable saturated solution underground. This is based on studies conducted by Rockandal and Hazen.

At this time a hydrological model has been built for the Project deposit, along with the installation of monitor wells. Pump tests on the monitor wells have been employed as a tool to locate any additional faults that could impact the mine design. Geophysical surveys of the deposit are planned for 2023 to further enhance clarity on stratigraphic and structural controls of the deposit for the mine design.

13.1 Solution Mining

5E will mine colemanite and Li salts via solution mining by injecting an acid solution via a series of wells into the mineralized horizons. The acid solution reacts with the colemanite forming a PLS containing H_3BO_3. There are various ways of developing the wellfield for in-situ solution mining, including “push-pull” where wells function as both injection and recovery wells; line drive; and multiple spot patterns. In addition to the vertical wells, directional drilling for well development is also being evaluated as a potential option for the Project. Wellfield development and pattern layout will ultimately depend on the hydrogeologic model and the cost benefit analysis of various patterns and options.

The recovery of colemanite will occur via injection of a solution with a dilute concentration of HCl into the deposit through the wells. The injection fluid will remain in the formation to react until sufficient contact time with the colemanite is achieved, and it can then be extracted from the wells. The concentration of HCl in the injection solution is one of the key control variables for the mining process. Higher concentrations of HCl promote reaction with the colemanite, while excessive HCl will increase the reaction with minor impurities such as aluminum, magnesium, iron, anhydrides, and calcite.

14 Processing and Recovery Methods

14.1 Mineral Characteristics

Colemanite, $2CaO \bullet 3B_2O_3 \bullet 5H_2O$, is a hydrated, calcium borate mineral with 50% B_2O_3 by weight and is found in evaporite deposits of alkaline lacustrine environments. The mineral is semi-hard with a Mohs hardness of 4.5 and forms as discreet monoclinic, prismatic crystals or masses. Colemanite typically forms as a translucent colorless, white, or gray crystal with a vitreous luster. Colemanite is insoluble in water but soluble to hydrochloric acid (HCl) and sulfuric acid (H_2SO_4).

In-situ solution mining is the proposed extraction technique for the Fort Cady deposit. In-situ solution mining depends on the following hydrologic characteristics: void spaces and porosity, permeability, ore zone thickness, transmissivity, storage coefficient, water table or piezometric surface, and hydraulic gradient (Bartlett, Solution Mining, 1998) as well as reaction and extraction method efficiencies.

14.2 Processing

Mineral processing and metallurgical testing are ongoing for the Project. 5E has considered the following methods of extraction of boric acid from PLS:

- Evaporative concentration of PLS followed by a crystallization process with final product washing and drying.
- Regeneration of hydrochloric acid via reactions of calcium chloride in the PLS with sulfuric acid, creating calcium sulfate gypsum.
- Extraction / concentration of lithium chloride via direct lithium extraction, purification, and conversion to lithium carbonate
- Regeneration of hydrochloric acid via the Mannheim process. This is an alternative process design.
- Concentration of boric acid in PLS via solvent extraction prior to crystallization. This is an alternative process design.

In 2019, Swenson Technology, Inc was engaged to perform crystallization tests; and Hazen Research Inc “Hazen” was engaged to perform solvent extraction tests. These tests were under the direction of Mike Rockandel Consulting LLC, which produced a process design based on these methods, utilizing Metsim® software. 5E then engaged Aquatech to produce equipment-specific modelling and to supply crystallization and evaporation equipment for a small-scale boron production plant. PLS leachate samples used for this testing were from a small quantity of concentrated material obtained from the deposit.

In 2021, 5E engaged Agapito Associates and Hazen to produce solid core leaching tests from representative core samples obtained from the 2017 drilling program. Hazen’s analytical facilities are certified by the National Institute of Standards and Technology and by the U.S. Environmental Protection Agency. Cores were selected by TMS from across the ore body to represent average content of boric acid and calcite, and 20 core samples were leach tested to estimate mine PLS content. Based on the chemical composition data obtained from these tests, additional equipment testing was planned along with process plant modelling. Also in 2021, 5E engaged Hargrove to lead a modified process design for the Small-Scale Facility and the commercial plant. Detailed engineering for the SSF was performed by Hargrove and Millcreek. The design package was turned over to Matrix with construction of the SSF starting in Summer 2022. Once operational, the Small-Scale Facility should provide many of the necessary parameters that will lead into an optimized design of the commercial processing plant for initial production of 90 kstpa boric acid and approximately 1,000 – 1,200stpa lithium carbonate.

Mike Rockandel Consulting LLC also developed an alternative processing design using solvent extraction. Solvent extraction has been modeled to achieve a recovery rate of 92%. Utilizing the crystallization process, Aquatech expects crystallization yield to be >90%. These figures will be verified and optimized in the Small-Scale Facility.

The above-mentioned companies have been selected as consultants and contractors, based on their reputation and capabilities, and have been established in the mining and mineral processing industry for a significant time. Certification information for their laboratories currently is not available.

Potentially negative factors that may impact processing and economic extraction include:

- High concentrations of iron and other metals in the PLS, which adds complexity to purification of boric acid, lithium carbonate and gypsum.
- High levels of corrosion
- Failing to provide continuous, steady, and acceptable head grades of boric acid in the PLS.

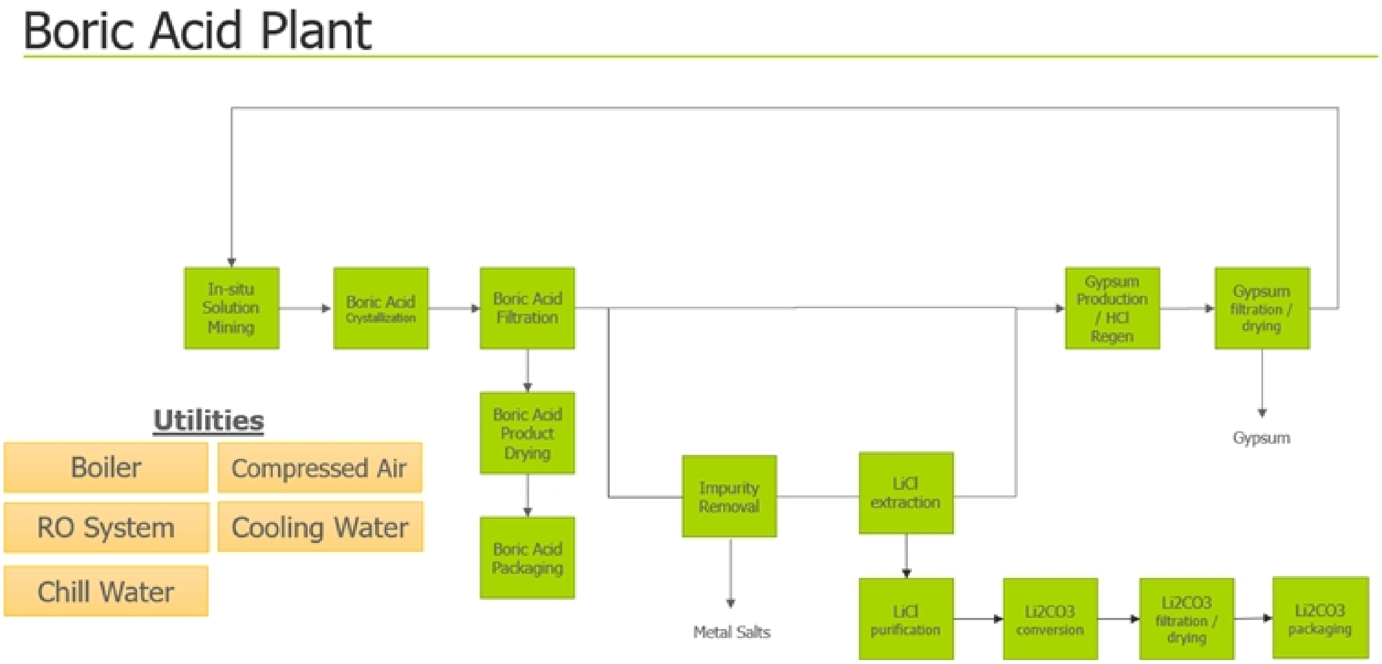
The QP is of the opinion that 5E has taken adequate steps in advancing testing and process engineering for the Project. Once operational, the Small-Scale Facility should provide most of the remaining inputs to proceed with final plant design and pre-feasibility or feasibility level economic analysis for the Project.

14.3 Operations

5E has selected crystallization as the method for recovering H_3BO_3. Crystallization has been selected because it's an established process for purification of other industrial materials, can be operated on a continuous basis reducing equipment size, is based on fundamental physical properties such as relative solubility, and doesn't require the use of flammable solvents.

The 5E processing plant is designed to operate continuously based on up-time of 87%. To produce 90,000 tons/yr of boric acid, the plant will require 640 - 650 gal/min of PLS from the mine on a continuous basis. Other inputs for the process based on a production rate of 90 ktons/yr are 102 ktons/yr of 97% sulfuric acid H_2SO_4, 13 ktons/yr of 35% HCl, 340 gal/min of water, 15 MW of power, and 300 MM BTU/hr of natural gas. The plant will employ approximately 133 people at these production rates. The block flow diagram for the process is included below in Figure 14.1.

Figure 14.1 Block flow diagram of the Small-Scale Facility



PLS that enters the plant will contain water, approximately 7% H_3BO_3, as well as calcium chloride ($CaCl_2$), trace metal salts, and any unreacted amount of HCl from the mining operation. The solubility of H_3BO_3 is such that it will precipitate first when concentrated. A crystallization process is utilized to perform this concentration. The crystallizer operates at a vacuum and 60°C. Fluid enters the crystallizer on a continuous basis and is pumped around through a pump around the heater. Steam is the source of heat. During this crystallization process, 70-80% of the water present is boiled along with HCl. An overhead condenser supplied with cooling water is used to condense and recover the water: HCl mixture which is recycled for reuse in the mine. Due to the presence of unused HCl for the mining operation being sent through crystallization, the process is constructed from acid resistant materials. These materials include acid-resistant fiberglass composites, specialized alloys high in nickel and chromium, fluoropolymers, or rubber lined steel.

In particular, the crystallizer has been specified with a full vacuum pressure rating, 250°F temperature rating, and will be constructed of rubber lined steel. The pump-around exchanger and overhead condenser have also been specified for full vacuum, 250°F and will be constructed from a specialized alloy high in nickel and chromium.

After crystallization, the resulting boric acid slurry contains boric acid crystals, $CaCl_2$, trace metal salts, and trace hydrochloric acid. This slurry is filtered on a vacuum belt filter producing a H_3BO_3 wet cake and an aqueous stream containing dissolved $CaCl_2$, trace metal salts including lithium, and trace HCl. Moisture from the H_3BO_3 wet cake discharged from the belt filter is removed in a dryer and loaded into customer-specific packaging including 25 kilogram (kg) bags, 1-ton flexible international bulk containers, and bulk trucks.

Liquid off the belt filter is sent for HCl regeneration where lime is added to adjust pH to neutral. At neutral pH, any remaining HCl is converted to $CaCl_2$ eliminating the need for acid resistant material elsewhere in the process. Trace metal salts are also precipitated once pH is adjusted. These metal salts are filtered out utilizing a filter press.

The liquid off the filter press contains dissolved lithium chloride and $CaCl_2$. The lithium chloride is first extracted and converted to lithium carbonate (Li_2CO_3). Lithium carbonate is expected to be made available for qualification and testing during operation of the Small-Scale Facility. 5E has been in discussion with interested parties for lithium supply and continues to remain engaged and prepared to provide samples as they are available.

The remaining aqueous stream is converted into HCl and gypsum via a reaction with H_2SO_4. Gypsum has a low solubility, so it precipitates out. The resulting gypsum and aqueous HCl slurry are filtered on a vacuum belt filter. The regenerated, aqueous HCl from the belt filter is recycled to the mining operation. Gypsum wet cake from the belt filter is dried for sale as a bulk product.

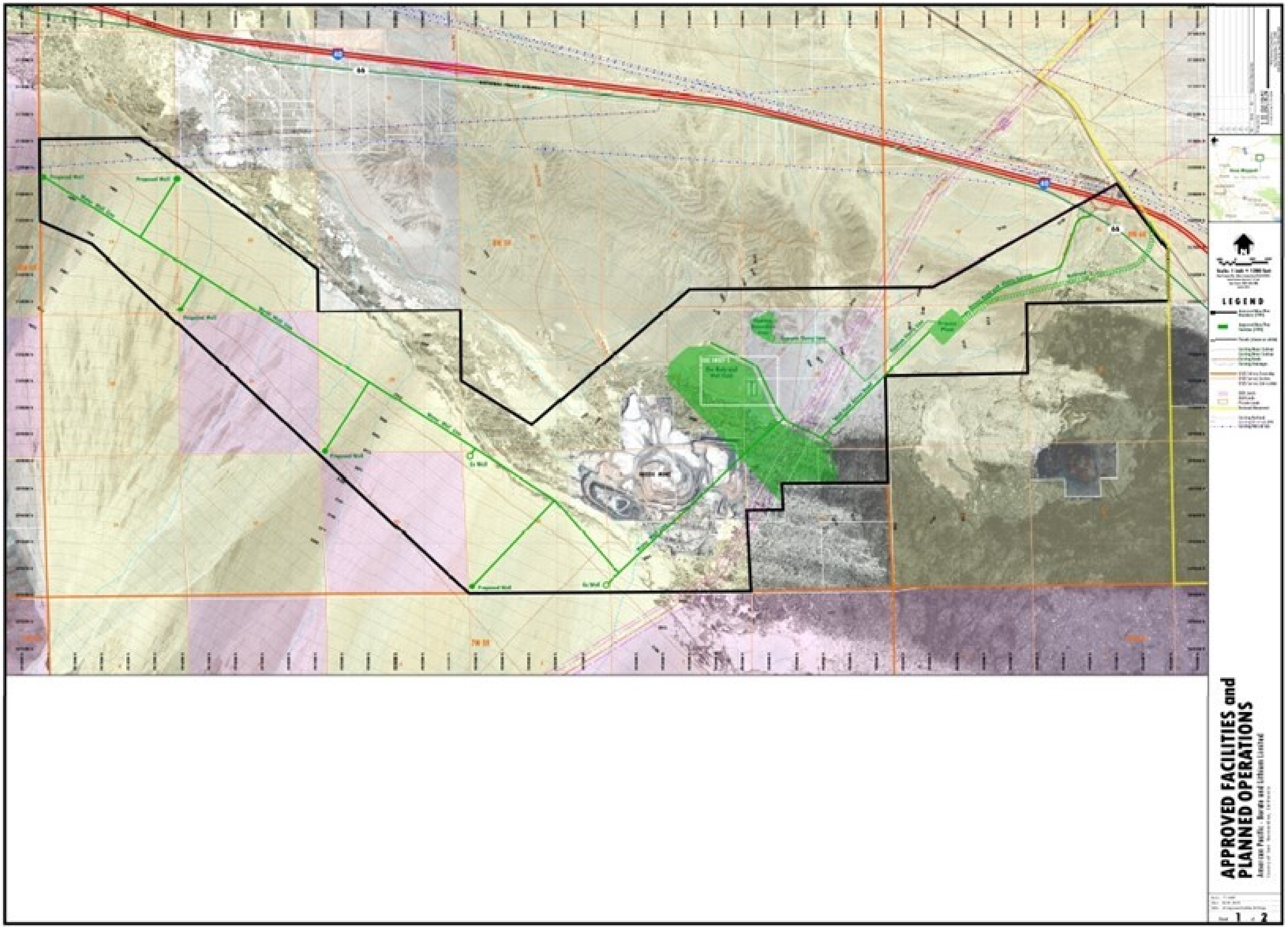
In addition to H_3BO_3, Lithium carbonate, and gypsum, another product could be produced as production volumes of H_3BO_3 increase. Sulfate of Potash (SOP) has previously been evaluated as a possible co-product. SOP is produced from a reaction between potash and H_2SO_4. This reaction also produces HCl which would be used for the mining operation. The reaction between potash and H_2SO_4 is commonly referred to as the Mannheim Process and utilizes a furnace which can be purchased from vendors specializing in SOP equipment.

15 Infrastructure

15.1 Access and Local Communities

The Project is located near Interstate-40 along with nearby access to rail and a natural gas transmission line. Currently, the Project receives electrical power from a 12kV powerline. Figure 15.1 shows general infrastructure needs for the Project.

Figure15.1 Fort Cady Project Infrastructure



15.2 Site Facilities and Infrastructure

Infrastructure required for the Project is expected to consist of the following:

- Natural gas – 5E will require a natural gas pipeline tied into the nearby transmission pipeline for the processing plant. Discussions are ongoing.
- Electrical power upgrade– an economic trade-off study is currently being conducted to evaluate co-generation, an upgraded powerline to the Project, and alternative renewable energy sources (solar PV, geothermal, or a combination of the two).
- Rail – connection to a rail spur adjacent to our EIS boundary is being considered for rail loading. In conjunction, a truck-to-rail transloading operation is being evaluated at another, existing rail spur location located 15 miles from the Project.
- Roads – Plant access roads will require upgrades and some roads may require paving. New access roads are also being considered.
- Water – 5E currently has adequate water resources for Phase 1 and Phase 2 of the project. Wells and pipelines will be expanded to accommodate these phases. For volumes beyond 270kTpa, alternate heat removal methods (such as air cooling) are planned to avoid increased water consumption until proved water resources are identified.
- Material storage – storage for materials products and consumables will need to be built near the plant site including a stacking system for gypsum. Off-site storage and distribution are being explored with potential partners.

15.3 Security

The Project currently has a 24-hour security service with gates at entrances to the Project area. 5E currently plans to construct a fence around the property.

15.4 Communications

The Project currently utilizes Starlink for internet services, which is fully functional. For larger operations, 5E is considering a dedicated fiber line to site or a dedicated cell tower amongst other potential options. Additionally, a strong cell phone signal is available.

15.5 Logistics Requirements and Off-site Infrastructure

15.5.1 Rail

Rail is not currently used by the Project; however, the BNSF rail is situated next to the Project and is being assessed for logistical requirements. Several transloading and rail service providers have also been contacted for potential off-site loading to rail transport.

15.5.2 Port and Logistics

The Port of Los Angeles, Long Beach, and San Diego are all within a half day drive to the Project on major highways. 5E has a truck scale on-site that can weigh deliveries to and from ports or rail.

15.5.3 Off-site storage and distribution

Storage and distribution locations off-site are being explored and discussions have been initiated with several potential providers. These costs are included as operating costs in the financial model in Sections 18 and 19.

16 Market Studies and Contracts

This section was completed with reference to multiple third-party market reports, including market studies by Global Market Insights (GMI), titled "Global Boron Minerals and Chemicals Market Report 2021-2027", Kline and Company, Inc. titled "Specialty Boron Products and Associated Applications" dated June 17, 2022, and a supplemental Kline study titled "Boric Acid Price Forecasting Model" dated November 2, 2022, with data updated in March 2023. Kline also conducted a market study focused on the US gypsum market dated January 24, 2023. For the lithium market, 5E obtained forward pricing and relevant market data from Benchmark Mineral Intelligence. Finally, 5E incorporated information obtained through consultation with industry experts, discussions with current end-use customers, and other publicly available sources to complete this section.

16.1 General Market Overview

Initially, 5E recognizes three primary products that can be recovered from ISL at the Project deposit: boric acid, lithium carbonate, and gypsum. 5E had done some preliminary work on production of SOP; however, SOP production could be considered for Phase 3. Previous process design work included using the Mannheim process to produce SOP from muriate of potash as a method of acid generation for ISL. The current boric acid flowsheet has a high level of recyclability of HCl and therefore the Mannheim process has been deferred to later stages of the project, if necessary.

16.2 Borates

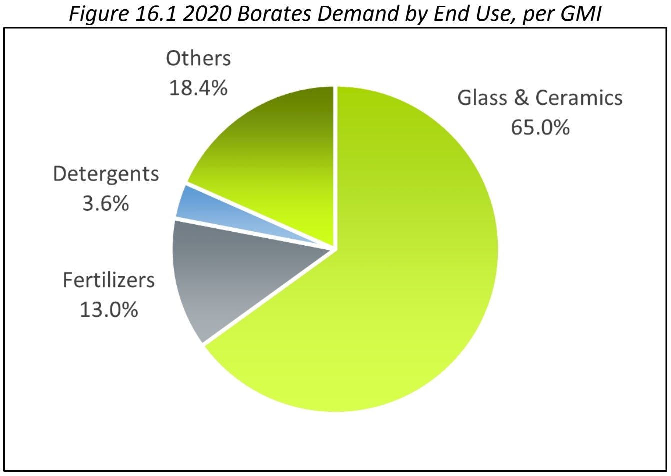
16.2.1 Market Overview

Per Kline, the global boron market was estimated to be valued at US$4.6 billion annually and consisted of approximately 4.6 Mstpa of boric acid equivalents in 2021.According to Global Market Insights, boron minerals and chemicals demand growth has had a compound annual growth rate (CAGR) of about 4% from 2016 through 2020. Kline estimates global demand for boric acid, specifically, will be 5.9% CAGR from 2021 through 2031 driven by traditional demand growth coupled with new applications.

Traditional applications for boron include borosilicate glass and textile fiberglass, insulation, ceramics, specialty fertilizers and biocides for the agricultural industry, detergents, fire retardants, and wood preservatives (Figure 16.1). New applications for boron include its use for:

- permanent magnets used in electric vehicles and re-chargeable electrical/battery equipment,
- semi-conductors and electronics,
- green energy/decarbonization in wind turbines, nuclear energy, and solar cells, and
- military vehicles and armor.

Figure 16.1 2020 Borates Demand by End Use, per GMI



Many existing, and future facing applications require boron specialty materials, high-value products that have few options for substitution. As a result, demand growth is expected to remain strong for borates into the foreseeable future.

16.2.2 Historical Pricing

Sodium borates and refined borates, which as defined by Kline includes boric acid and boron oxide, accounts for approximately 75% of all borate products by volume, with the other 25% represented by minerals and specialty products. Average pricing for borax and refined borates was $678 per short ton in 2021. Per Kline, Chinese boric acid market prices averaged $656 per short ton from 2013 until Q2 2021. Due to several factors including increased demand, production declines, temporary disruptions, and ongoing COVID logistic impacts, Chinese market pricing increased 60% to an average of $1,050 per short ton over the next 18 months through the end of 2022.

Large volume customers typically negotiate supply agreements for multiple years at price discounts versus spot pricing and it is not uncommon for contracts historically to range from three to five years. More recently, however, it has been reported that suppliers have been less willing to commit volume and pricing for more than one or two years, and in some cases requiring price adjustments on a quarterly or semi-annual basis due to market tightness, robust demand, and rising prices.

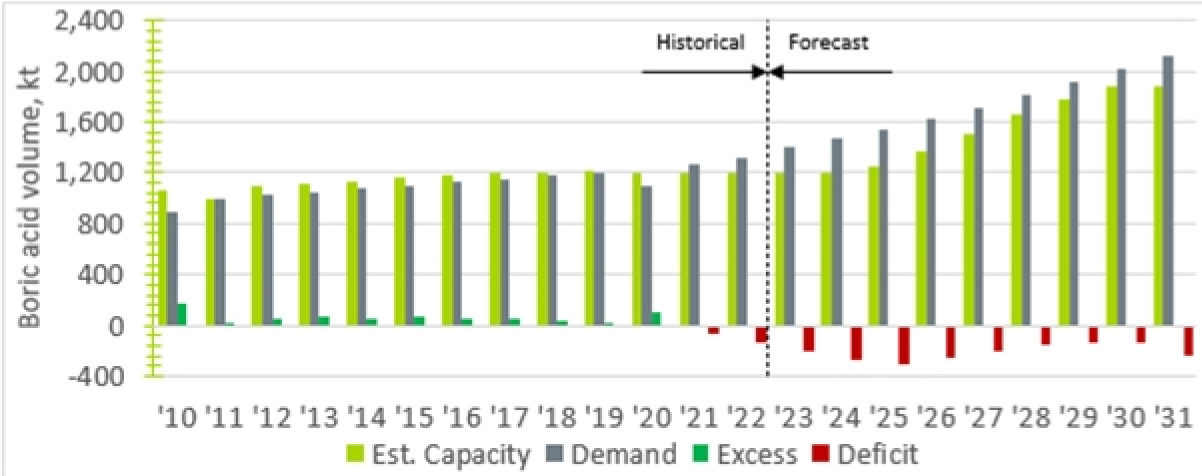
16.2.3 Market Balance

The global boron market is dominated by two companies: Eti Maden, a Government-Owned Turkish entity; and US Borax, a subsidiary of Rio Tinto. Together, this duo supplies approximately 80-85% of the global boron market. Eti Maden alone supplies over 60% of the world market and Eti Maden appears to be the only producer with meaningful reserves capable of bringing on additional boron supply capacity.

The concentration of the boron market reflects the rarity of economically viable borate deposits and there are only four main regions with large scale borate deposits: Anatolia Turkey, California USA, Central Andes South America, and Tibet Central Asia. Turkey has circa 73% of the world's total boron reserves. While a handful of boric acid projects have been announced globally, most remain in early stages of development, face permitting and/or social resistance, or have a mineralization that has not been produced commercially. This leaves 5E's Project as one of the only permitted boron resources with a proven commercially viable mineralization (calcium-based) that is likely to add meaningful supply in the next five to seven years.

Per Kline and publicly available disclosures, Rio Tinto Borates appears to have been operating at full capacity with approximately one million stpa of boric acid equivalent production. Kline's model of capacity and demand projections, show overall expected demand for boric acid increasing at a CAGR of 5.4% from 2022 through 2031. Overall capacity increases for the same period are projected at a 5.1% CAGR, which is in-line with recent public disclosures and market research. Given that the market is already nearly balanced and existing suppliers have not demonstrated an ability to immediately ramp up capacity, a systemic market deficit is expected through the next decade, driving pricing higher as projected in Figure 16.4. As the world focuses on decarbonization, food security and security of strategic and critical minerals, this is putting further pricing pressured as depicted below . Figure 16.2 represents the projected shortfall in supply. 5E believes this information bolsters the commercial case for the entrance of new market supply into the market and the US and Asia are 5E's primary markets.

Figure 16.2 Kline projected market capacity vs demand, thousands of tonnes (kt)



The above supply-side analysis presumes moderate expansion at existing suppliers, 5E's anticipated supply per schedule, and one additional major boric acid supplier entering the market per their publicly stated timeline. Demand-side analysis was built based on bottom-up analysis of expected and/or published end market expansion, moderated with the end market value in use as price pressures build on lower value applications. With existing market tightness, tailwinds for pricing exist as customers seek new supply sources outside of the existing oligopolistic market.

Kline's analysis of the substitutability of boric acid in end uses concluded that most large volume applications have low or no risk of substitutability. Specifically, boric acid provides unique functionality in applications such as specialty glass, boron steel, and permanent magnets that have limited, and in many cases, higher cost alternatives such as rare earth elements, or would require significant investment to reformulate. 5E management agrees with Kline that the likelihood of material levels of substitution of boric acid in major end use applications is low. Additionally, concerns for moderately substitutable applications have been identified as primarily other borate containing molecules (i.e., colemanite mineral), which are also expected to be tight in a declining mine supply scenario as anticipated for the next decade.

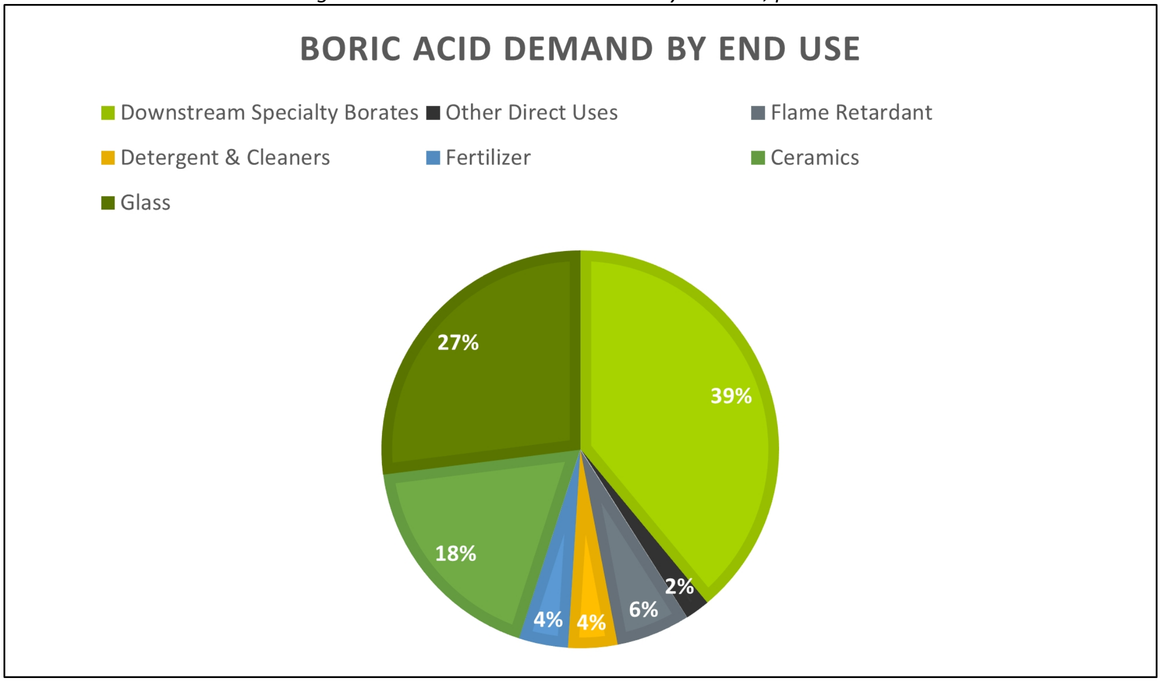
16.2.4 Market Costs

Expected operating cost for boric acid production is difficult to ascertain due to few producers publishing this information. One major producer is a state-owned entity that does not disclose operating costs publicly, and the other major producer combines all borate products into a single reported number in their annual report which is not an accurate measure for boric acid alone. However, overall borate operating costs have increased from this producer as indicated in these annual reports. 5E expected costs are given in Section 18.2.

16.2.5 Boric Acid Market

Boric acid is used in several industries and applications with varying levels of complexity. Customers range in size and quantity from large volume direct users to a fragmented group of smaller volume users who typically purchase through distributors. Applications vary from commodity to specialty, and many are considered high value-in-use where pricing is less critical than the unique functionality provided by boric acid and where substitution for other raw materials, if possible, has already occurred. In general, boron is a key enabling material for decarbonization, electrification, food sustainability and national defense, which reinforces the pull-side demand thematic driving price below. Specifically, boric acid is used in the market segments identified in Figure 16.3 and is the primary component in several downstream specialty boron derivatives, making it the preferred source of boron for many quality-conscious customers over boron ores such as colemanite or ulexite due to better boron content delivery and superior product performance.

Figure 16.3 2021 Boric Acid Demand by End Use, per Kline

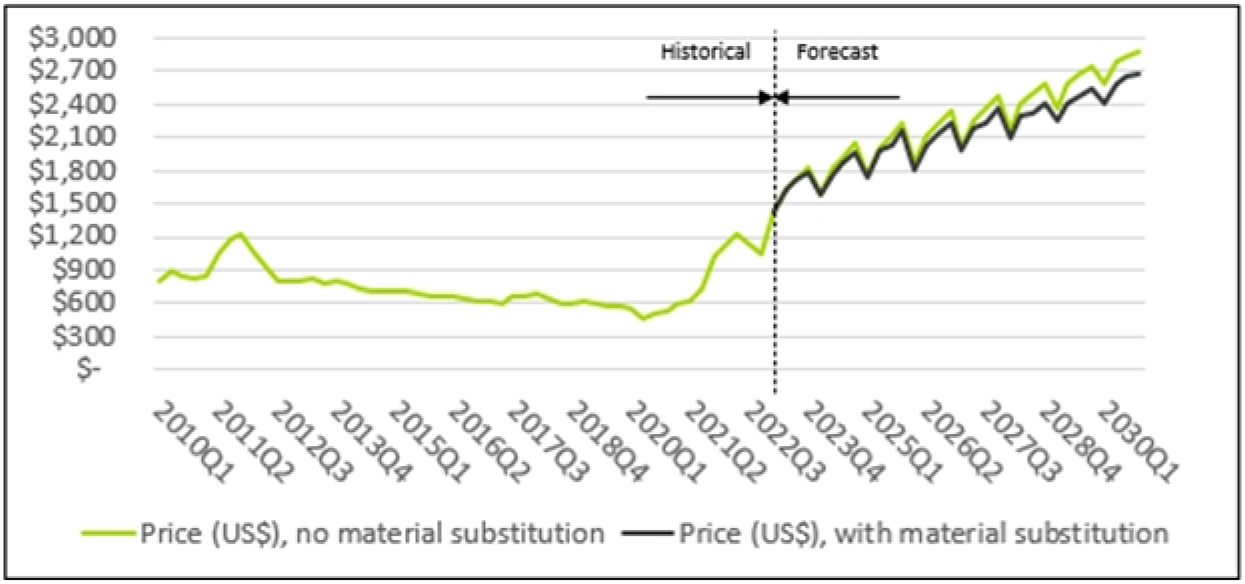


Packaging typically consists of large flexible international bulk containers and 25 kg bags, delivered on wood pallets by truck, or bulk shipments delivered by ocean liner or railcar, which typically get repacked closer to customer locations. The end market segments are located across the globe as the points of consumption are dictated by operating plants from various customers. Logistics and demand growth play a major role where incumbent suppliers have elected to focus their sales efforts, which are primarily based in Asia. Bulk ocean shipments are more economical than truck or railcars across the U.S. or ocean freight to Europe. As a result, some regions have seen significant supply concentration down to one primary supplier, creating customer interest in another industry participant for security in supply of boric acid. In addition, several government initiatives in the U.S. and EU have sought to stabilize supply chains and, in many cases, onshore production of critical and strategic materials.

These two catalysts are expected to create a subset of customers who are willing to pay a scarcity premium to ensure availability of boric acid supply and minimize exposure to state-owned entities and Chinese producers of critical downstream boron derivatives. 5E is in preliminary discussions with several end-use customers and distributors globally to allocate upcoming available capacity and establish terms and conditions for supply of boric acid.

Due to this opaqueness and complexity of the boric acid market, along with the duopoly nature of supply, there is no standard price index to reference. Forecasting boric acid pricing is highly governed by demand, value-in-use and resulting capacity utilization across the boric acid network. Kline developed a pricing forecast model (Figure 16.4) that considered historical pricing data along with several other factors such as capacity utilization, supply, demand, product substitutability, and key raw material input costs, which projects Chinese boric acid pricing to approach ~US$2,900/st by end of 2030.

Figure 16.4 Boric Acid Pricing, per Kline



16.2.6 Boric Acid Specifications

Boric acid expected technical grade specifications are as follows:

- Chemical Specification:
  - Analyte Guarantee
  - B_2O_3%: 56.25 – 56.5
  - Equivalent H_3BO_3%: 99.9 – 100.9
  - SO_4 ppm: ≤250
  - Cl ppm: ≤10
  - Fe ppm: ≤5
- Sieve Specification
  - U.S. Sieve Mesh Size mm % Retained Guarantee
  - No. 20, 0.850 mm ≤2.0%

16.3 Lithium

16.3.1 Market Overview

Lithium (Li) is a soft, silver-white alkali metal in its native form and has a wide range of energy storage and industrial applications. Lithium is the lightest of all metals and it has highly attractive physical properties including heat capacity, charge density and low thermal expansion. These properties enable high-performance end use applications such as lithium-ion batteries, polymers, and ceramics, among others. Lithium is rarely consumed in its pure form and is typically used in either base compounds lithium carbonate or carbide or higher-performance compounds lithium hydroxide. The rise in portable electronics, energy storage devices and other end use applications has led to significant advancements in lithium-based battery technologies and wide- scale adoption. High-end lithium compounds are commonly found in electric vehicles, specialty greases, pharmaceuticals, and other aerospace applications, and are expected to see dramatic market share gains within these spaces. There is significant expected demand growth for lithium, primarily driven by growing demand for lithium-ion batteries in electric vehicles and portable devices.

Base lithium compounds are produced through the extraction and processing of either brine or hard rock. After extraction from brine, the materials are further processed into higher concentration compounds such as lithium carbonate. Lithium carbonate is primarily used in energy storage, glass, and ceramic applications. Lithium carbonate is also used as feedstock for lithium hydroxide and specialty lithium compounds. Lithium carbonate is white in color, odorless, and its use in energy storage systems is generally limited to portable electronic devices and EV applications that require lower density, though conversion of lithium carbonate to lithium hydroxide could support high-performance end use applications such as lithium-ion batteries, polymers, and ceramics, among others.

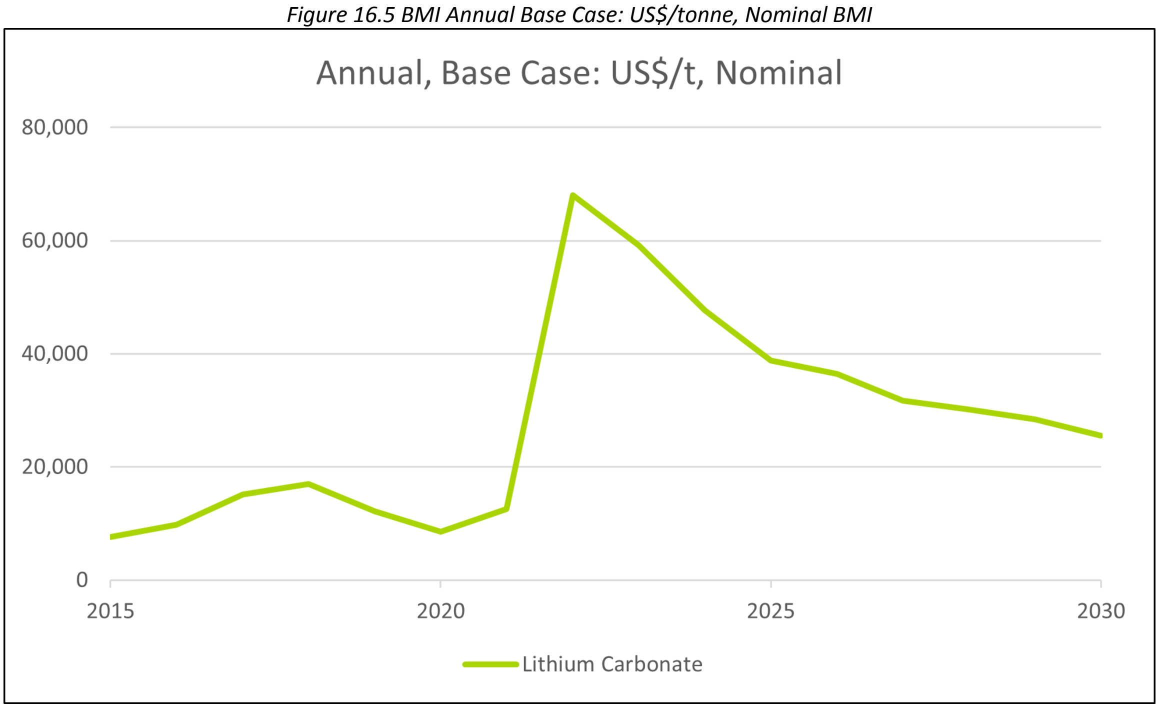
According to BMI, three companies account for approximately 56% of global lithium supply: SQM 24%, Albemarle 20% and Tianqi Lithium 12%. Multiple estimates exist for lithium demand growth, with BMI forecasting lithium carbonate equivalents (LCE) to exceed 1.3 M metric tonnes by 2025, and 2.6 M metric tonnes LCEs by 2030.

16.3.2 Historical Pricing

By 2017, prices had been propelled through successive multi-year highs from strong demand from the Li-ion battery industry set against a backdrop of uncertainty over future supply. This attracted significant attention to the Li sector and incentivized investment into exploration, mining, and processing capacity. Prices for all Li products subsequently fell as production at operations in China, Australia, Canada, and Chile ramped-up, and as a swath of greenfield projects mitigated fears of future supply shortages.

According to BMI, average annual battery-grade lithium carbonate prices in 2016 were US$9,752 per metric tonne. Lithium carbonate prices rose to US$16,979 per metric tonne by the end of 2018, before retreating below US$10,000 per metric tonne in 2020. At the start of 2021, lithium carbonate equivalent spot prices began to steadily increase reaching unprecedented highs of ~US$68,000 per metric tonne in 2022.

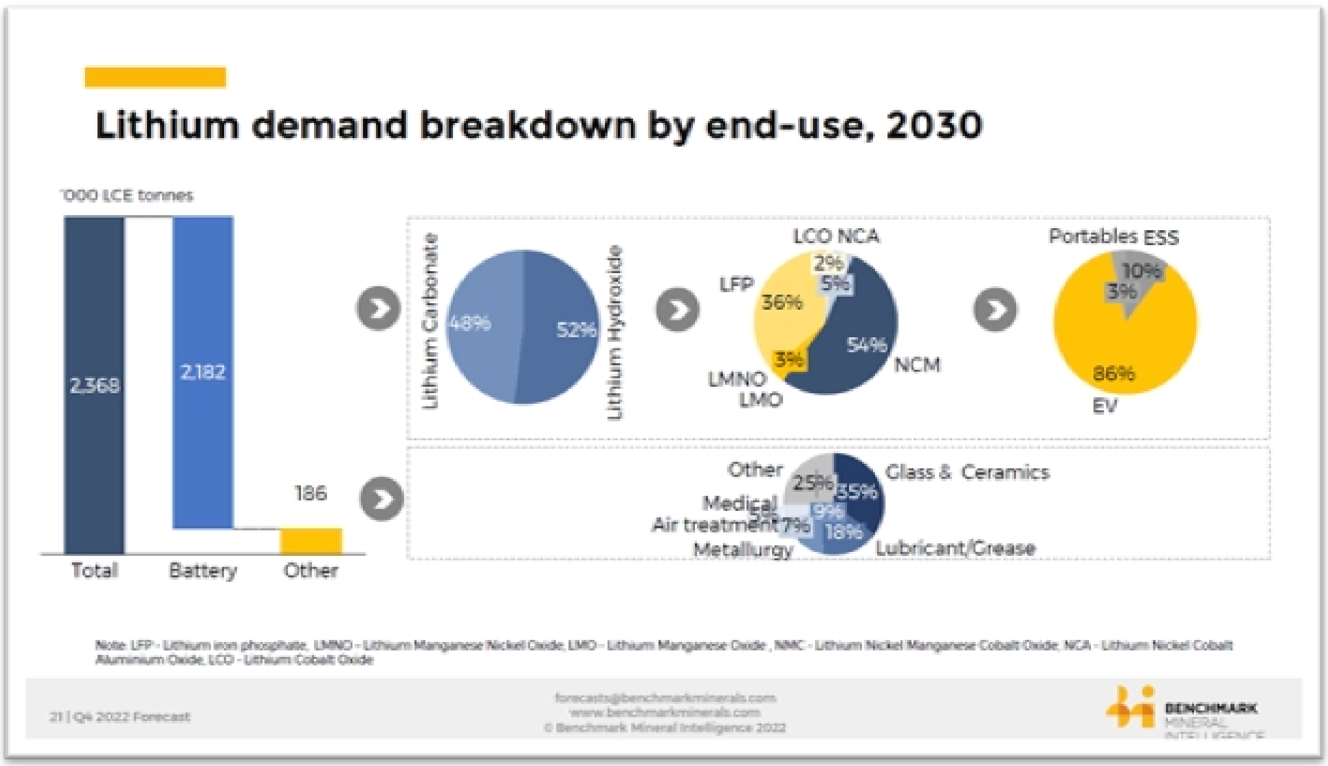
Figure 16.5 BMI Annual Base Case: US$/tonne, Nominal BMI



16.3.3 Market Balance

Per BMI, 2022 supply is estimated at 635kt LCE, 3% of which is from recycling. Supply is forecast to grow to 2,359kt LCE by 2032, 12% of which will be from recycling. Total adjusted lithium demand in 2023 is set to increase to 907kt LCE, up from 712kt LCE in 2022. Demand is set to grow to 2 million tonnes LCE by 2028. Further upward demand adjustments could be expected in the medium-long term in the North American market due to effects from the Inflation Reduction Act. Europe's growth will be driven by emission legislation changes which set new targets in 2030 and effectively ban internal combustion engine sales by 2035. Supply response remains limited in the short term. A balanced market is possible in 2025, depending on the success of various planned projects. However, it should be noted that demand estimates are conservative, and with higher supply, higher demand is likely to be supported. By 2030, BMI provides the breakdown of lithium demand being heavily consumed by batteries, representing over 92% of the total, with non-battery applications making up the balance, primarily in glass and ceramics, and lubricants/grease a shown in Figure 16.

Figure 16.6 Global demand for lithium, LCE basis, per BMI



16.3.4 Market Cost

Lithium carbonate cost curves are well-documented by BMI, with costs ranging from $3,000 to $9,000/MT-LCE for established brine processors and from $6,500 to $40,000/MT-LCE for operating spodumene processors, with non-integrated spodumene making up the higher end of the curve. Operating costs for lithium obtained from mica such as pegmatite and lepidolite average around $23,000/MT-LCE.

16.3.5 Lithium Carbonate Market

Per BMI "Lithium Forecast | Q4 2022", prices are expected to continue softening in Q1 of 2023 due to negative demand events in China, but strong underlying fundamentals should see a return to upwards trajectory throughout the rest of 2023. Strong prices are expected throughout 2024. From 2025, prices are expected to ease owing to the possibility of a balanced market, but this is highly dependent on the success of several new projects, many of which must prove technology capable of extraction from non-traditional resources and have the necessary permitting and financing.

16.3.6 Lithium Carbonate Specifications

Lithium carbonate specifications will be confirmed as the recovery process is tested in in the Small-Scale Facility and qualified with customers, but specs are expected to meet or exceed both technical and/or battery grade requirements.

16.4 Gypsum

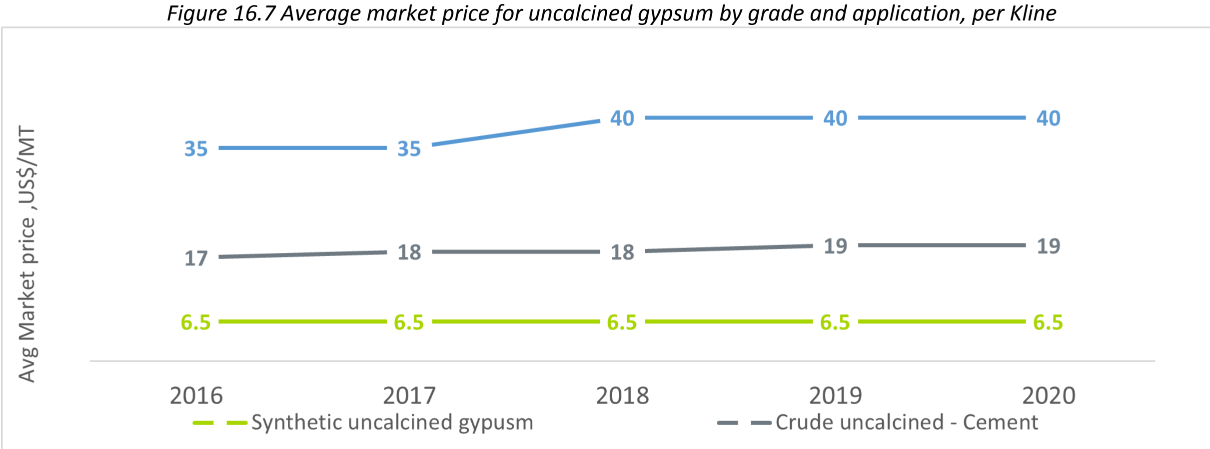
16.4.1 Market Overview

Gypsum is one of the most used minerals in the world. In the U.S., most gypsum is used for manufacturing drywall and plaster for residential and commercial construction. Other common uses include as an additive to concrete, soil conditioning, and as a food/dietary additive.

16.4.2 Historical Pricing

According to Kline's "Gypsum USA Market Study", mined or crude gypsum prices have ranged from US$17/MT to US$40/MT between 2016 and 2020, depending on the application, with a 10-15% increase observed over that time as shown in Figure 16.7. Demand for gypsum depends principally on construction industry activity, which accounts for just over half of demand and has grown at a 2.2% CAGR over the past 5 years through 2021. In recent years, mined crude gypsum has competed with synthetic gypsum. Synthetic gypsum production, however, is decreasing as more coal-fired stations are shut down or retired in favor of natural gas and renewable energy sources.

Figure 16.7 Average market price for uncalcined gypsum by grade and application, per Kline

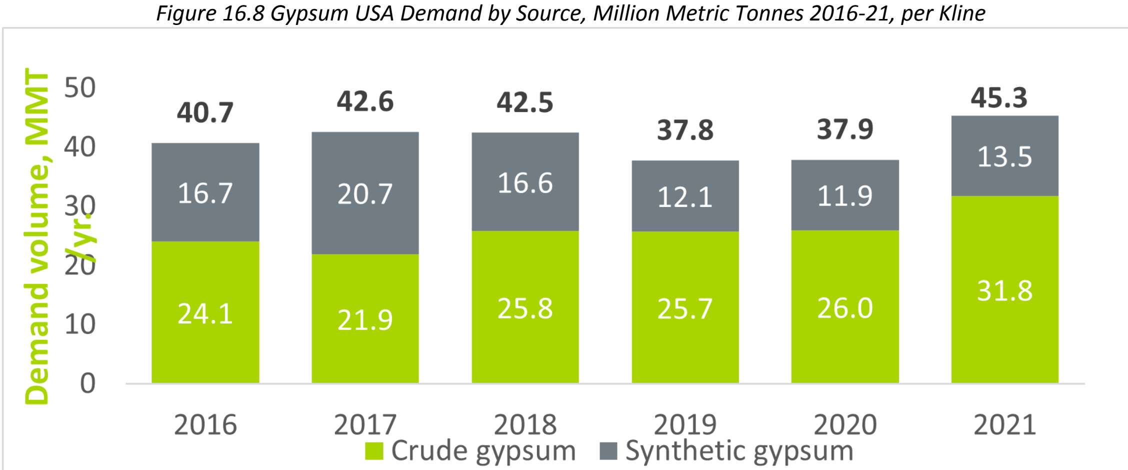


16.4.3 Market Imbalance

According to the United States Geologic Survey, in 2021, the United States was the leading producer of mined crude gypsum with 23 million tons, followed by Iran at 16 million tons and China at 13 million tons. Mined crude gypsum is currently mined in 16 states by 52 companies. Over the past five years, U.S. imports of gypsum have ranged from 4.8 to 6.9 million tons. A significant amount of produced gypsum in the U.S. comes from synthetic sources, primarily fly ash gypsum produced as a byproduct of reducing emissions in coal-fired power plants.

Approximately one third to one half of demand in the market is synthetic gypsum. The reduction in this stream, as coal fired power plants ramp down production, is likely to provide sufficient space to market synthetic gypsum from 5E. The Project is located near significant agricultural demand and several wallboard manufacturers are expected to provide an outlet for this coproduct.

Figure 16.8 Gypsum USA Demand by Source, Million Metric Tonnes 2016-21, per Kline



16.4.4 Market Costs

Gypsum cost curves are not available at this time, but a significant portion of the market (approximately 50%) is produced as a byproduct of sulfur removal from coal-fired power plant emissions, commonly referred to as fly-ash gypsum. Due to a large stream coming from a process where the intent is emissions control, rather than product creation, gypsum competitive costs are assumed to be almost immaterial.

16.4.5 Gypsum Market

As indicated above, byproduct gypsum created as part of the boric acid purification process is expected to be placed into the agricultural, cement, and wallboard markets. 5E has been in discussions with several nearby and local partners for gypsum supply. Market pricing for gypsum has traded in a narrow range since 2016, and no significant changes in this range are expected.

16.4.6 Gypsum Specifications

Final gypsum specifications are not confirmed at this time but will be confirmed during Small-Scale Facility operation and upon qualification with customers in various end-markets.

16.5 Conclusions

Boric acid is a versatile product with hundreds of end-use applications that are critical to food security, national defense, decarbonization, electrification, and consumer consumption, among others. Due to increased demand for existing applications and new projected demand from future-facing technologies, combined with two major suppliers operating at, or near capacity, supply of boric acid, and many downstream derivatives that require boric acid as feedstock, has been in tight supply, resulting in higher prices over the past 18 months. With existing suppliers unlikely, or unable, to add meaningful capacity, and only six new boric acid projects identified, of which only 5E is substantially permitted, the supply-demand deficit is expected to continue or worsen over the remainder of the decade. As a result, pricing will likely remain elevated and continue to rise. As a US-based producer, 5E is positioned to secure both domestic and strategic global supply chains for boric acid and other key boron derivatives that require boric acid. With the addition of lithium carbonate as a by-product of boric acid production, 5E would likely become one of a few US suppliers from mine-to-product for this critical material.

16.6 Contracts

5E is engaged in discussions with several direct end-users as well as distributors for supply of boric acid, lithium carbonate, and gypsum. 5E also has multiple signed non-binding letters-of-intent and/or proposal letters with terms agreed in principle which could result in definitive offtake agreements for multi-year supply. For boric acid specifically, these customers and distributors represent multiple end-use applications including specialty glass, insulation, defense, agriculture, and others, as well multiple geographic regions. Upon operation of the Small-Scale Facility, 5E can supply future customers with product samples for qualification, with the intent to secure contracts for most of the available phased capacity, while reserving a portion for spot market and upside for contract customers. Regarding lithium carbonate, due to the expected volume, 5E expects to have a minimal number of contract accounts for a significant majority of the available capacity, for long duration supply. It is possible that a small percentage will be reserved for spot market opportunities in either the industrial or battery grade segments. Gypsum discussions are in the early stages and will likely focus on customers within a certain geographical radius to minimize overall delivered costs.

17 Environmental Studies, Permitting, and Closure

17.1 Environmental Requirements for Solution Mining

Due to the depth and characteristics of both the ore body and overburden, in the 1980's the decision was made to recover the ore via solution mining. The Project ore body is an ideal candidate for solution mining as there are no associated USDW aquifers in the vicinity. Additionally, solution mining does not generate either waste rock or tailings; therefore, there are no waste or tailings permits.

17.2 Environmental Study Results

The Project is located on both public and private lands. The public lands are managed by the BLM under the National Environmental Policy Act (NEPA). The private lands are administered by San Bernardino County Land Use Planning (SBC – LUP) under the California Environmental Quality Act (CEQA).

A Plan of Operations (PoO) was submitted in 1990, which triggered the NEPA/CEQA review process. Based upon the activities described in the PoO, under the NEPA regulations, BLM determined that an Environmental Impact Statement (EIS) was required and under CEQA, and the SBC – LUP determined that an Environmental Impact Report (EIR) was required. Under a Memorandum of Understanding (MOU), the two agencies completed a joint EIS and EIR, respectively.

The EIS/EIR process follows clearly defined requirements for public participation and studies, such as threatened and endangered species, cultural resources, light, noise, and impacts to local communities. The studies were completed, as was the public participation process. Additional studies are currently not required.

In 1994, the EIS/EIR process resulted in the issuance of a ROD from the BLM and the Mining and Reclamation Permit from the SBC – LUP, see below.

17.3 Required Permits and Status

5E currently has the following permits in place:

1. The Mojave Desert Air Quality Control District (MDAQCD) has issued Authorization to Construct (ATC) permits for up to 270,000 tons per year (tpy) boric acid and 80,000 tpy SOP. Prior to commencement of operations for any permitted piece of equipment, the ATC will be replaced with an Operating Permit (OP). The permits have been renewed annually. Any modifications to or replacement of process equipment may require a modification to the existing permit. All modifications must meet National Ambient Air Quality Standards (NAAQS) and MDAQCD requirements.

There is no reclamation or closure requirement under MDAQCD.

2. The Lahontan Regional Water Quality Control Board (LRWQCB) issued the current Order Permit in 1988. The Permit includes all existing surface impoundments. 5E remains compliant with the permit by complying with the monitoring requirements and submitting quarterly reports. A Final Permanent Closure Plan has been submitted to LRWQCB for closure of the existing impoundments.

There is a reclamation and closure requirement by LRWQCB. The bond amount to close the ponds is included in the SBC – LUP Financial Assurance Cost Estimate (FACE). This is currently a cash bond.

3. The LRWQCB also issued a Notice of Non-applicability (NONA), verifying that the Project does not require a stormwater permit for either construction or operations. The NONA was issued as the Project is in a closed basin with no stormwater discharge.

There is no reclamation or bonding requirement associated with the NONA.

4. SBC- LUP issued the Mining and Reclamation Permit in 1994, based upon the 1990 PoO and subsequent EIR. The PoO was amended, and the permit was modified in 2019 to address changes such as relocation of the process plant, elimination of a highway rail crossing and additional rights to water. The Project is not located within a water district with adjudicated water rights. Therefore, water rights are granted by SBC - LUP

through the Mining and Reclamation Permit. The Mining and Reclamation Permit includes Condition of Approval requirements for engineering and planning, as well as requirements to eliminate impacts to desert tortoises. 5E will be modifying the PoO to 270,000 tpy, which will require a modification to the Mining and Reclamation Plan.

5E has submitted and maintains a cash bond with the California State Mining and Reclamation Agency, as administered by SBC – LUP. The FACE is updated annually. The FACE includes demolition of all existing structures, regrading, and revegetation of all disturbance on private lands. This bond also includes plugging and abandonment of all wells located outside the U.S Environmental Protection Agency (EPA) UIC purview.

5. The BLM issued a ROD in 1994, establishing the EIS boundary (Figure 3.2). The ROD authorizes mining borates at a rate of 90,000 tpy. The ROD also has requirements for company activities to eliminate adverse impacts to desert tortoises and cultural resources.

5E has submitted and maintains a cash bond with the BLM for grading and reclamation of disturbance on public lands.

6. The EPA retains primacy for Class 3 solution mining Underground Injection Control UIC permits in the State of California. EPA issued the UIC permit for the Project in August 2020. The permit defines the Area of Review (AOR) boundary. All subsurface solution mining activities, including monitoring wells, are located within the AOR boundary.

Per the permit conditions, 5E has installed five 5 upgradient and four 4 downgradient monitor wells for the initial mining block. The required Well Completion Reports were submitted to EPA in September 2022 and are under their review.

Analytical information was used to develop the permit required Alert Level Report, which establishes alert levels for each monitor well. This report was submitted to EPA in October 2022 and is under EPA review.

The first four 4 Injection/Recovery I/R wells have been installed and the required Well Completion Reports were submitted to the EPA in September 2022 and are under their review.

The UIC permit also required 5E to plug and abandon all existing open historic wells located within the AOR boundary. This was completed and all required reports were submitted to EPA in October 2022 and are under review.

Upon completion and review of the above referenced submittals, 5E will receive authorization to inject water, required to complete the final tests of the I/R wells. After which 5E will receive authorization to inject acid, which is the start of mining.

5E has submitted and maintains a surety bond with the EPA for plugging and abandonment of all wells within the AOR boundary.

7. Additional environmental permitting that will likely be required for the Project includes:

   a) The California Unified Control Act/Agency (CUPA) has primacy over EPA's Tier II reporting requirements. The Hazardous Material Business Plan (HMBP) has been submitted for construction related activities and will be updated with processing related chemicals that are expected to be utilized to operate the Small-Scale Facility.

   b) An EPA ID has been requested. The facility will be a very small generator of EPA hazardous waste. California considers petroleum products to be hazardous waste. Therefore, the EPA ID number is issued by the State of California Department of Toxic Substances Control.

   c) Given the MDAQCD permit allows for 270,000 tpy of boric acid production, any increase above this limit will require utilization of established alternative energy technologies or a permit modification.

18 Capital and Operating Costs

Capital and operating costs are incurred and reported in US dollars and are estimated at an initial assessment level with an accuracy of approximately +/-50%.

18.1 Capital Cost Estimates

Capital cost estimates are broken out into phases based on production and segmented into capital for the chemical plant to process boric acid, lithium carbonate and gypsum, and mining capital to mine PLS for chemical plant processing. Capital expended for the Small-Scale Facility is excluded as that is expected to become operational in 2023. Table 18.1 below outlines the phases, production trains, and production quantity. Trains have the capacity to produce 100k short tons but would incur 10% downtime as part of planned maintenance.

Table 18.1 Production Phases and Quantity

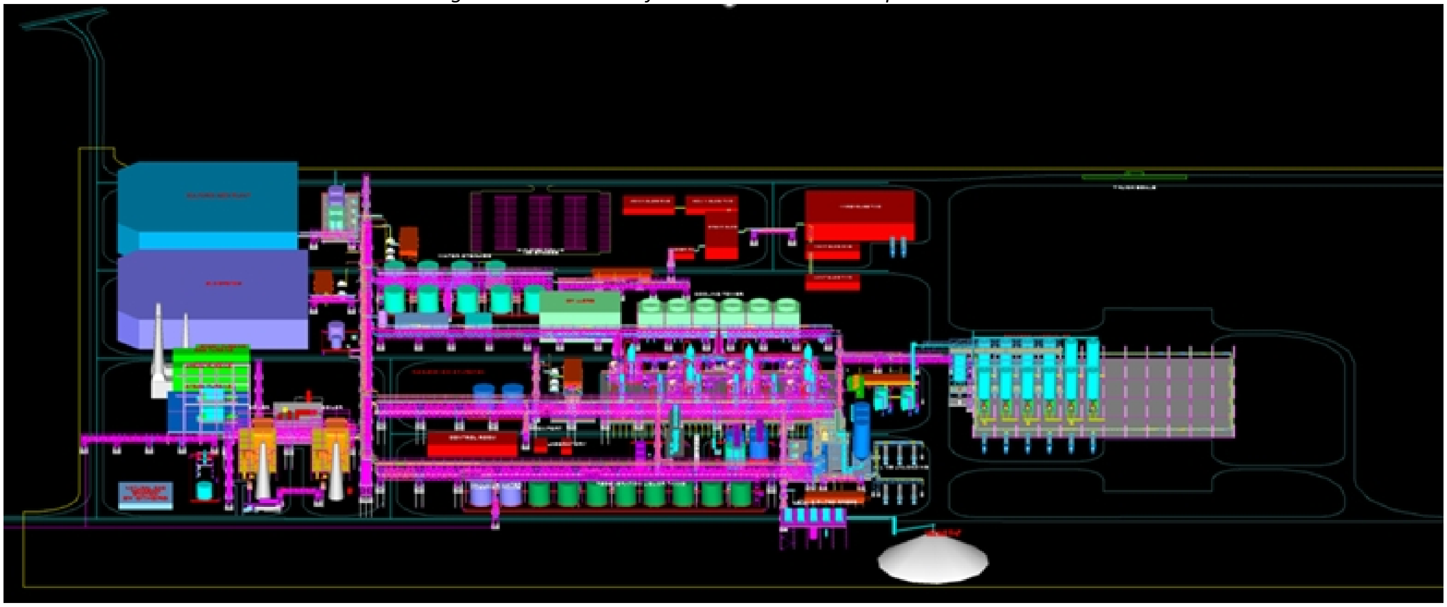
Phase	Trains	Production Quantity
Phase 1	One	90,000 short tons
Phase 2	Two	180,000 short tons
Phase 3	Two	180,000 short tons
Total	Five	450,000 short tons

The chemical processing plant will leverage the basic flowsheet of Figure 14.1. Costs estimated by 5E primarily relate to engineering, procurement of equipment, installation, construction, commissioning, and startup. Major items of equipment include crystallization units, boiler, boric acid filters and dryer, lined carbon steel or fiberglass storage tanks, gypsum reactors, lithium extraction unit, lithium carbonate reactor, water purification and cooling circuits, other utility equipment (RO unit, air compressors) as well as packaging equipment. Each train is expected to consist of dual crystallization with a production rate of 90k short tons of boric acid and capacity of 100k tons.

Table 18.2 Estimate of initial capital costs for each phase

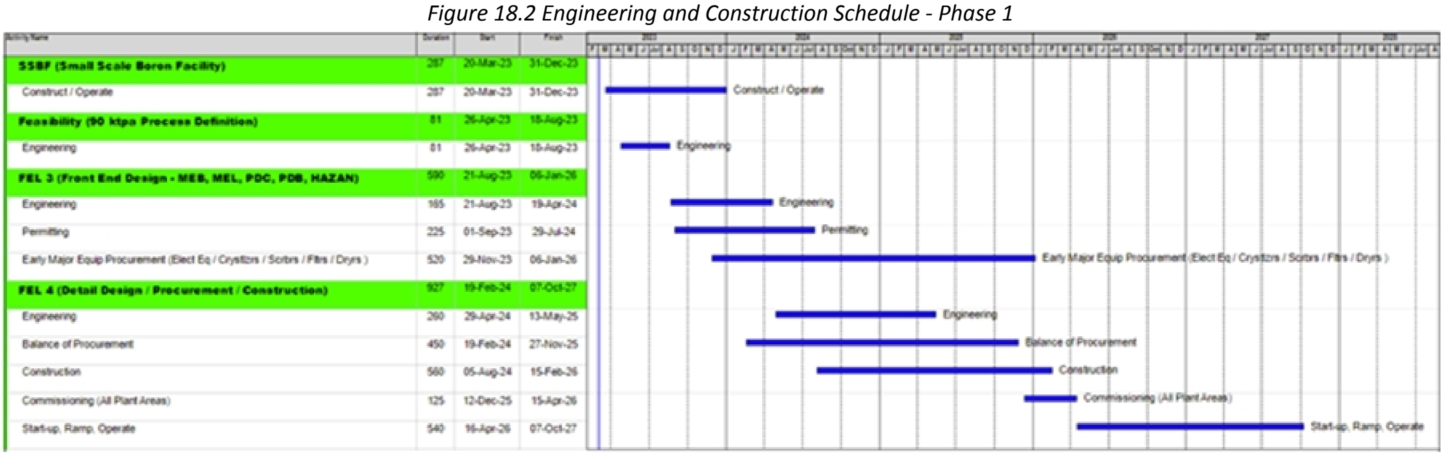
Amount in US$ (millions)	Phase 1		Phase 2		Phase 3		Total	
Processing Plant (BA + Li_2CO_3)	$ 160		$ 246		$ 246		$ 652	
OSBL + non-process areas	$ 16		$ 5		$ 15		$ 36	
Utilities (elect, SZ, air, water, septic)	$ 22		$ 33		$ 183		$ 238	
Wellfield (wells, piping, equip)	$ 21		$ 48		$ 48		$ 117	
TOTAL DIRECT COSTS		$ 219		$ 332		$ 492		$ 1,043
Engineering	$ 24		$ 30		$ 45		$ 99	
Construction	$ 45		$ 68		$ 74		$ 187	
TOTAL INDIRECT COSTS		$ 69		$ 98		$ 119		$ 286
CONTINGENCY (25%)	$ 72		$ 108		$ 153		$ 333	
Owner's Costs	$ 13		$ 15		$ 19		$ 47	
TOTAL CAPITAL REQUIRED		$ 373		$ 553		$ 783		$ 1,709

Figure 18.1 3D model for Phase 1 and 2 270kstpa Boric Acid



Below in Figure 18.2 is the indicative engineering and construction schedule for Phase 1 of the commercial processing plant.

Figure 18.2 Engineering and Construction Schedule - Phase 1



18.1.1 Mining Capital Cost

The operation is an owner operated mining operation. A third-party contractor will perform drilling of the in-situ injection recovery well field. Table 18.3 below outlines the quantity of injection recovery wells for each phase and mining capital cost associated with each phase. The cost for the wellfield in each phase includes the following – drill pad construction, 3rd party drilling, downhole material (casing, production tubing, and cement), above ground process equipment tanks, booster pumps, area scrubbers, compressors, clarifiers, monitoring wells, and headers to and from the processing plant.

Table 18.3 Mining Capital Cost Estimate US $000's

Phase	Quantity of Wells	Capital Cost[2] US$000's
Phase 1	28 [1]	34,860
Phase 2	64	79,680
Phase 3	64	79,680
Total		194,220

[1] Excludes four injection-recovery wells that have been incurred as part of the Small-Scale Facility.

[2] Includes direct costs, indirect costs associated with wellfield and contingency of 25%

18.1.2 Other Sustaining Capital

Sustaining capital includes replenishment of injection recovery wells. In the late 1980's, MSME drilled injection recovery wells at a spacing interval of 100 feet and mined PLS containing boron in solution. 5E has designed the wellfield with 65-70 feet radii (130-140 feet overall spacing) to achieve recovery rate estimates. Based on the work performed by MSME and 5E estimates, each 90kstpa incremental production of boric acid will require 32 injection recovery wells at an average useful life of five years. Replenishment wells are expected to cost $981k per well. This cost is the average per-well cost from Table 18.3 ($1.245M average) less the cost of the area headers to and from the processing plant as well as the monitoring wells needed in each phased expansion. Table 18.4 outlines the quantity of injection recovery wells estimated to replenish the wellfield as well as the sustaining capital associated with the replenishment over the life of mine.

Table 18.4 Sustaining Capital Wells and Total for each phase

Category	Quantity of Wells	Total US$000's
Phase 1	160	156,960
Phase 2	282	276,642
Phase 3	243	238,383
Total	685	671,985

18.1.3 Closure Costs

Closure costs are captured as a capital expenditure incurred during the final year of mine operation in the financial model. End of life closure costs include reclamation requirements per our EPA UIC permit for the injection recovery wells and there currently is an actual per well closure cost of $115,491 per well. Closure costs are factored and multiplied by the quantity of wells as well as the closure cost of each well today. Post closure costs include remediation for surface disturbance per the requirements with San Bernardino County and assume a cost of 10% of initial capital factored. Table 18.5 outlines reclamation and closure costs for the life of mine.

Table 18.5 Closure Cost Estimates

Category	Total US$000's
End of Life Closure Costs	243,983
Post Closure Costs	195,586
Total	439,569

18.1.4 Basis for Capital Cost Estimates

The mining capital estimates were based on actual equipment purchased, actual costs derived from the injection recovery wells for the Small-Scale Facility, and third-party quotes. The quantity of wells estimated to provide the chemical plant with PLS to produce boric acid and lithium carbonate was derived from historical data from MSME.

Mining equipment, initial wells, and sustaining capital cost estimates were based on the following:

- All injection recovery wells were based on new casing, production tubing, screens, and well heads.
- Costs for drilling, auxiliary, and overhead were based on third-party estimates.
- Mining capital is factored in our financial model at 3% per year to account for inflation.
- A 25% contingency was included in mining capital.
- Each well will have its own system of above-ground piping, a storage tank and booster pump with secondary containment, as well as all instrumentation for automated control.

- Every 8 wells will have a vent gas manifold, an area scrubber system (scrubber column, scrubber tank, circulating pump, instrumentation, and vent stack), a collective sampling manifold and an area safety shower/eye wash system.

The chemical plant capital estimates were based on actual equipment purchased, construction, and engineering for our Small-Scale Facility. Additionally, 5E obtained third-party estimates for sized equipment, construction, and engineering of Phase 1. Phase 2 and Phase 3 were estimated based on a factored analysis. The following assumptions derived our chemical processing plant capital estimate:

- The equipment and construction estimate were derived by third-party vendors who provided priced equipment lists and construction estimates which were assessed by 5E.
- Owner's costs – capitalized internal labor was incorporated at current rates with a forecast to build upon 5E's existing team necessary to effectively manage a third-party EPC firm during detailed engineering and construction.
- A 25% contingency and assumed 3% inflation escalation based on total estimated capital costs was included in the financial model.
- The estimate excludes inventory and working capital costs for initial commissioning and startup of the facility. These are included in the financial model.
- For phase 2, additional infrastructure is needed to handle the increased volume of incoming materials and finished product. To minimize capital, 5E has engaged with third parties interested in providing a rail spur and operating the rail at a fixed rate cost. Therefore, the capital required for a rail spur to the site for bulk shipments of raw materials, gypsum and boric acid was not included. An estimated cost of $30 per ton of boric acid produced was included in the financial model to cover the 3rd party operating cost of the rail facility and pay back their capital investment.
- For phase 3, additional utility expenditure is required to convert an evaporative cooling loop to an air-cooled refrigeration cooling loop to conserve water. Additional electricity costs would also be required as this is a larger energy demand and were also included in the financial model.
- For Phase 1, it is assumed to use 100% shore power. For Phase 2 and 3, 5E is evaluating the options between shore power, natural gas driven co-gen, and renewable energy (solar PV and geothermal). All capital for additional power is assumed off balance sheet, so no savings on electricity or natural gas for steam are reflected in the model.
- Sulfuric acid costs in operational expenditures reflect bulk delivery. Any site production of sulfuric acid is assumed to be by a 3rd party and, therefore, not reflected in the capital estimate.

Closure costs and post closure cost estimates were sourced from the most recent financial assurance estimates provided by third parties as part of our on-going permit obligations.

18.2 Operating Cost Estimates

Operating costs have been forecasted based on a material balance informed by historical work from MSME, lab-based analysis of 5E's core samples, and process development performed by 5E as well as its engineering partners. Operating costs are segregated as variable operating costs and fixed operating costs in the financial model. Variable operating costs include packaging, materials such as hydrochloric acid, sulfuric acid, lime, and soda ash as well as utilities such as natural gas and electricity. Fixed operating costs include administrative labor, operating labor, general and administrative overhead, offsite storage, repair labor, repair materials, depreciation as well as taxes and insurance. Freight is assumed to be ex-works and paid by buyers as part of negotiated agreements.
As with capital costs, operating costs are captured in US dollars and are estimated at an initial assessment level with an accuracy of approximately +/- 50%.

18.2.1 Variable Operating Cost

Variable operating costs are derived from a material balance with the following assumptions:

- 56% Calcite-to-Colemanite ratio driving gypsum production volumes and sulfuric acid consumption. This ratio is consistent with geological analysis of core samples pulled from the ore body,
- 99% HCl conversion rate,
- 95% HCl efficiency rate with 5% HCl lost in the process, and
- 7% boric acid concentration in the PLS.

Variable materials and pricing for boric acid and lithium carbonate as components of operating cost are shown in Table 18.6. Cost figures include estimated freight to 5E. Pricing for raw materials is based on historical costs over the last 12-24 months.

Table 18.6 Variable materials cost

Material	Units	Cost US$/short ton
HCl 36% solution basis	365 lb. /short ton H_3BO_3	160
Sulfuric acid	2,273 lb. /short ton H_3BO_3	133
Lime	491 lb. /short ton H_3BO_3	237
Soda Ash	1,691 kg /short ton Li_2CO_3	227

The basis for packaging and shipping included the following:

- $18 per short ton of boric acid.
- $18 per short ton of lithium carbonate.
- $30 per short ton boric acid for receiving of incoming bulk materials and shipping of bulk boric acid and gypsum orders via rail.
- $36 per short ton of lithium carbonate for freight.

The basis for utilities included the following:

- Steam generation via a conventional boiler requiring 25 MMBTU natural gas per short ton of boric acid with a head grade of 7%, $6.37 per MMBTU
- Phase 1 and 2 → 0.14 kW electricity per short ton of boric acid, $0.12 per kWh
- Phase 3 → 0.26 kW electricity per short ton of boric acid, $0.12 per kWh, reflecting the higher demand from an air-cooled refrigeration cycle

18.2.2 Fixed Operating Cost

Fixed operating cost includes the following:

- Operating labor
- Site administrative labor
- Site general overhead
- Off-site storage
- Repair labor and materials
- Taxes and insurance
- Depreciation

Operating labor was derived from a principle first plan of operations with 113 people required for phase 1, 217 people for phase 2, and 280 people for phase 3. Cost per person was estimated to start at $100,000 per person (including benefits) and is escalated throughout the financial model. Site administrative labor was forecasted at 28 employees for phase 1, 44 employees for phase 2, and 50 employees for phase 3, earning $120,000 per year and site general overhead was forecasted at $300,000 per quarter in the financial model. The basis for fixed overhead was derived by the current overhead rate of spend for 5E which is approximately $150,000 per quarter and this is assumed to double during phase 1. Off-site storage is expected to be required with 6,425 pallets stored per quarter at a rate of $16 per pallet. Repair labor and maintenance is estimated to be 2.50% of cumulative capital including sustaining capital. Taxes and insurance are assumed to be 1.5% of cumulative capital including sustaining capital. Depreciation assumes a 10-year useful life for initial capital as well as additional phases of the chemical plant and a 5-year useful life for sustaining capital based on additional wells.

18.2.3 Other Operating Costs / Credits

Other operating costs include costs and credits associated with the material balance and process flow sheet which include a byproduct credit for lithium carbonate and costs associated with metals precipitation waste. Gypsum is assumed to be a net neutral cost and sold in the market at cost. Table 18.7 provides the breakdown of units and cost associated with other operating costs and Figure 19.2 provides the total operating costs / credits over the life of mine.

Table 18.7 Other operating costs

Material	Units	Cost US$
Metals precipitation waste	517 lb. /short ton H_3BO_3	$ 45
Gypsum	3,990 lb. /short ton H_3BO_3	—

18.2.4 Basis for Operating Cost Estimates

Operating assumptions were based on the following assumptions:

- Phase 1 begins operating in the quarter ending June 30, 2026.
- Phase 2 begins operating in the quarter ending December 31, 2028.
- Phase 3 begins operating in the quarter ending June 30, 2031.
- Each phase begins operating with an 80% production ramp up profile in its first quarter of operation.
- Operating costs are escalated for inflation throughout the life of the financial model.
- Input costs use historical pricing over the last 12-24 months, with an escalation of 3% for inflation applied as appropriate.

Operating cost per short ton for book and cash values through the first ten years of operation are displayed in Table 18.8.

Table 18.8 Operating cost per short ton

US$	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035
Book cost	1,785	1,095	1,222	1,163	1,151	1,330	1,418	1,450	1,485	1,529
Cash Cost	1,273 [1]	686	813	785	793	939	994	1,022	1,049	1,079

[1]FY 2026 includes ramp up of Phase 1 and only six months of operation.

19 Economic Analysis

19.1 General Description

5E prepared a cash flow model to evaluate the Project's resources. This model was prepared on an annual basis from the resource effective date to the exhaustion of mineral resources. This section presents the main assumptions used in the cash flow model and the resulting indicative economics. The model results are presented in U.S. dollars US$, unless otherwise stated.

This assessment of economic analysis is preliminary in nature, and it includes depletion of inferred mineral resources in the financial model. Inferred mineral resources are considered too speculative geologically to have modifying factors applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that this economic assessment will be realized. As such, the economic analysis discloses with equal prominence, the results of the economic analysis excluding inferred mineral resources in addition to the results that include inferred mineral resources and 100% of the inferred resource was used in the economic analysis at a mining ratio of 81.9%.

All results in this section are presented on a 100% basis. As with the capital and operating forecasts, the economic analysis is inherently a forward-looking exercise. These estimates rely upon a range of assumptions and forecasts that are subject to change depending upon macroeconomic conditions, operating strategy and new data collected through operation of the Small-Scale Facility.

19.2 Basic Model Parameters

Key criteria used in the analysis are presented throughout this section. Basic model parameters are summarized in Table 19.1.

Table 19.1 Basic Model Parameters

Description	Value
Time Zero Start Date	July 1, 2023
Mine Life	30 years with partial first year using Measured, Indicated and Inferred Resource. 15 years with partial first year using Measured and Indicated Resource.
Chemical Plant Start-up	Calendar year 2026
Discount Rate	8%

All costs incurred prior to the model's start date are considered sunk costs. The potential impact of these costs on the economics of the operation is not evaluated. This includes contributions to depreciation, the Small-Scale Facility, and working capital as these items are assumed to have a zero balance at model start. The selected discount rate is 8%.

19.3 External Factors

19.3.1 Pricing

Modeled prices are based on the prices developed in the Market Studies and Contracts section of this report Section 16. The prices are modeled as:

- Boric Acid: $1,726 per short ton when production is forecasted to commence in the quarter ending June 30, 2026
- Technical Grade Lithium Carbonate: $30,316 per short ton when production is forecasted to commence in the quarter ending June 30, 2026

All products produced by the operation are modeled based on independent pricing forecasts as described in Section 16 and have been escalated in the financial model at the point where an independent price is no longer available. Modeled pricing for boric acid includes a 5% and 10% discount to pricing reflected in Section 16 for negotiated freight ex-works as well as discounts to spot price as part of long term negotiated supply agreements.

Benchmark Mineral Intelligence pricing forecast was utilized for pricing lithium carbonate in the financial model. Benchmark provides a battery-grade lithium carbonate forecast. Analyses of lithium carbonate samples produced from synthetic PLS (pregnant leach solution) in the lab indicate that 5E will be capable of producing battery grade lithium carbonate. However, for the purposes of this economic assessment, it is assumed that technical grade lithium carbonate will be produced and sold. Historical pricing has demonstrated an approximate $3,000 per metric tonne discount between battery-grade and technical-grade lithium carbonate. As such, the financial model utilized this discount for financial modeling purposes.

19.3.2 Taxes and Royalties

As modeled, the operation is subject to a combined 27.98% federal and state income tax rate. This tax rate is derived from 5E Boron Americas LLC tax rate as of June 30, 2023, the most recent fiscal year end. The model does not include any tax loss carryforwards and no existing depreciation pools are accounted for in the model. Any application of tax loss carryforwards would reduce the tax burden of the operation. Depreciation for the capital for phase 1, 2 and 3 is subject to depreciation over a 10-year period and sustaining capital is subject to depreciation over a 5-year period. There are no royalties to account for currently. The project is being evaluated as a standalone entity for this initial assessment without a corporate structure. As such, tax calculations presented here may differ significantly from the actuals incurred by 5E.

19.3.3 Working Capital

The assumptions used for working capital in this analysis are as follows:

- Raw Material Inventory: 15 days
- Product Inventory: 30 days
- Accounts Receivable: 30 days
- Accounts Payable: 30 days

19.4 Technical Factors

19.4.1 Mining and Production Profile

The modeled mining profile was developed by 5E. The details of the mining profile are presented previously in this report. No modifications were made to the profile for use in the economic model. The modeled profile is presented in Figure 19.1 and Figure 19.2.

Figure 19.1 Resource Extraction Profile

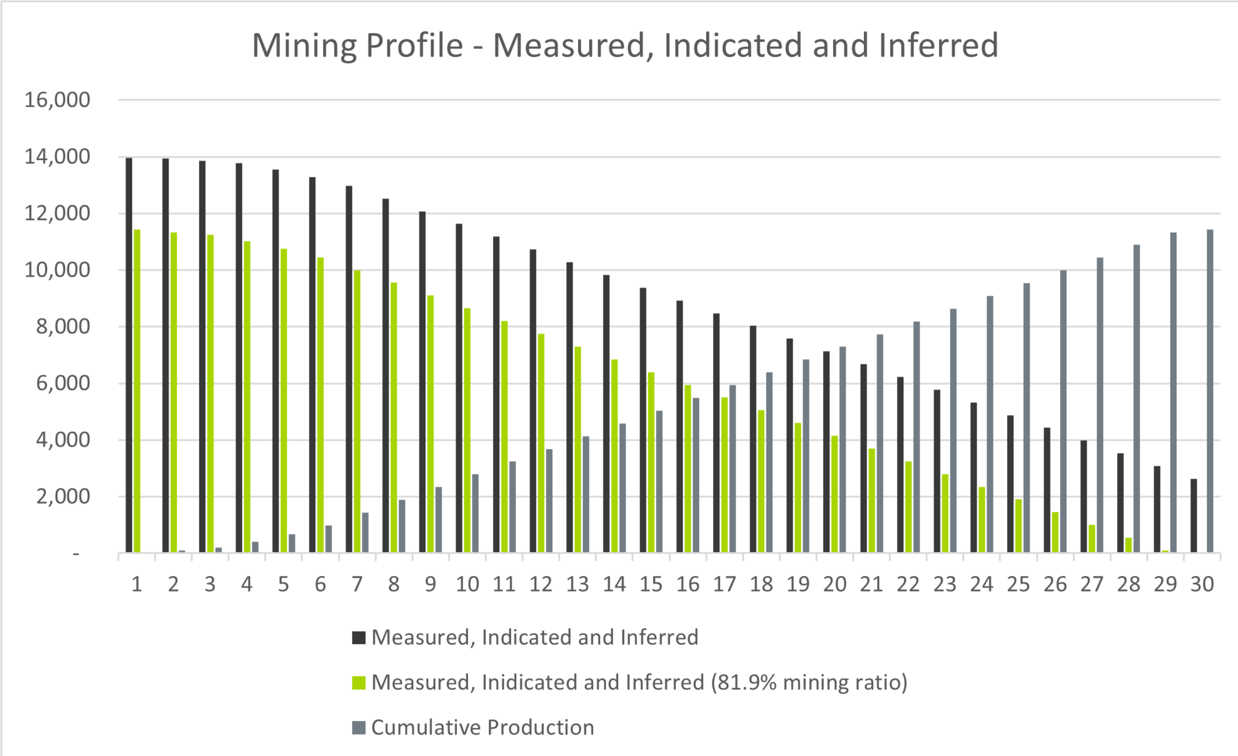
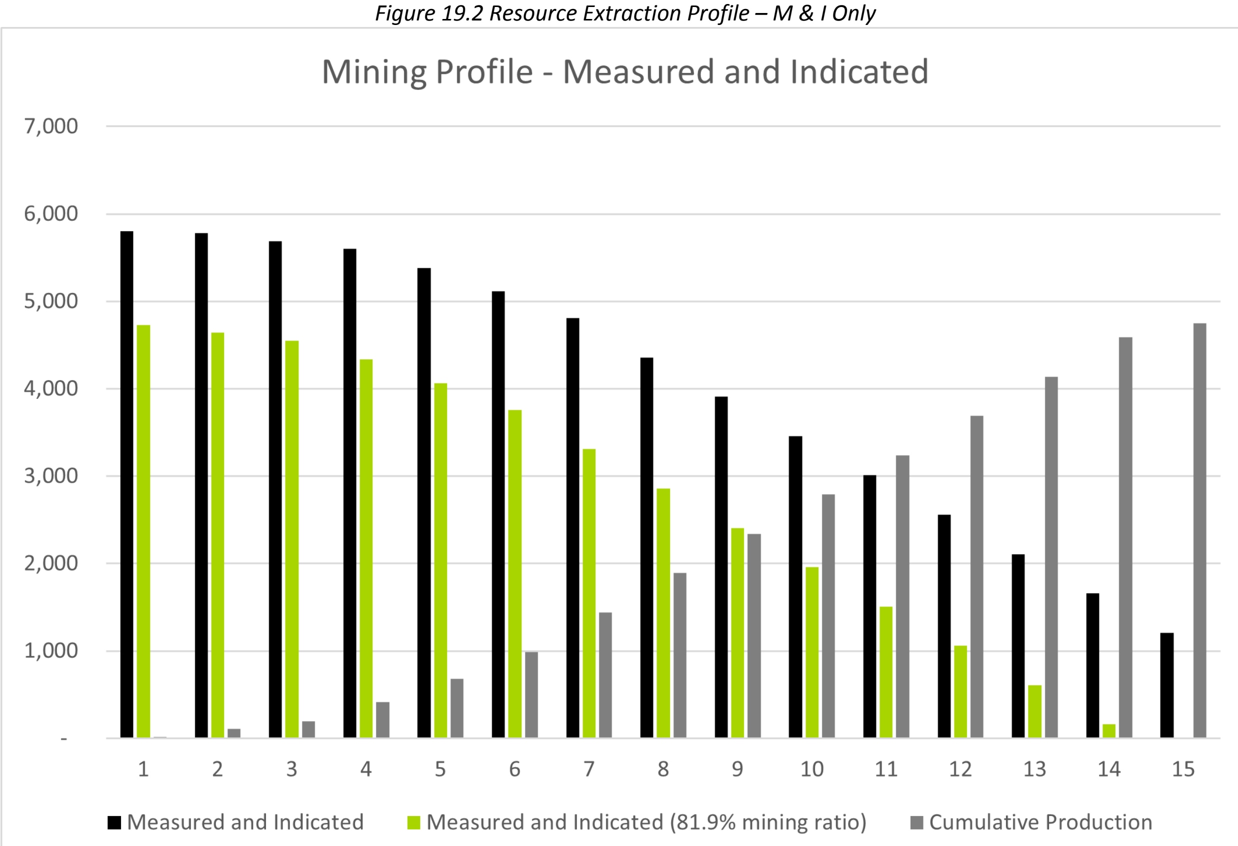


Figure 19.2 Resource Extraction Profile – M & I Only



A summary of the modeled life of mine profile is presented in Table 19.2 Life of Mine Summary.

Table 19.2 Life of Mine Summary

Description	Unit	Value – M, I, & I	Value – M & I
Life of mine	Years	30	15
Resource – Boric Acid	Short Tons	13.9 M	5.8 M
Quantity Boric Acid Produced	Short Tons	11.4 M	4.7 M
Modeled Extraction Ratio		81.90%	

19.4.2 Operating Costs

Operating costs modeled in US dollars can be categorized as variable, fixed and other operating costs credits. A summary of operating costs over the life of operation is presented in Figure 19.3 and Figure 19.4.

Figure 19.3 Operating costs over the life of the mine

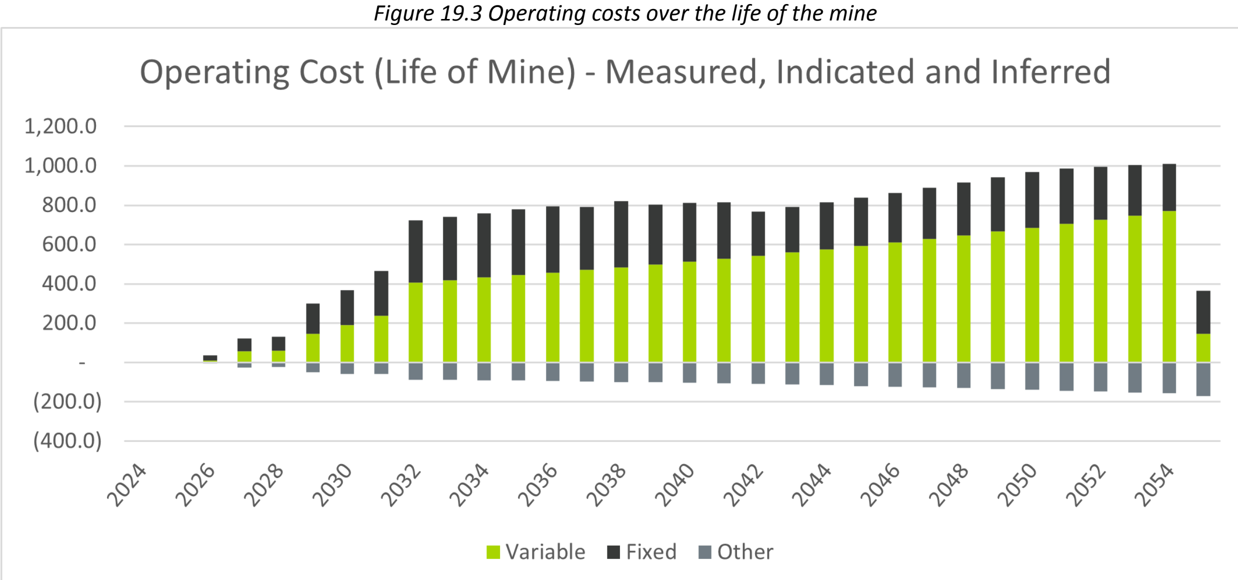
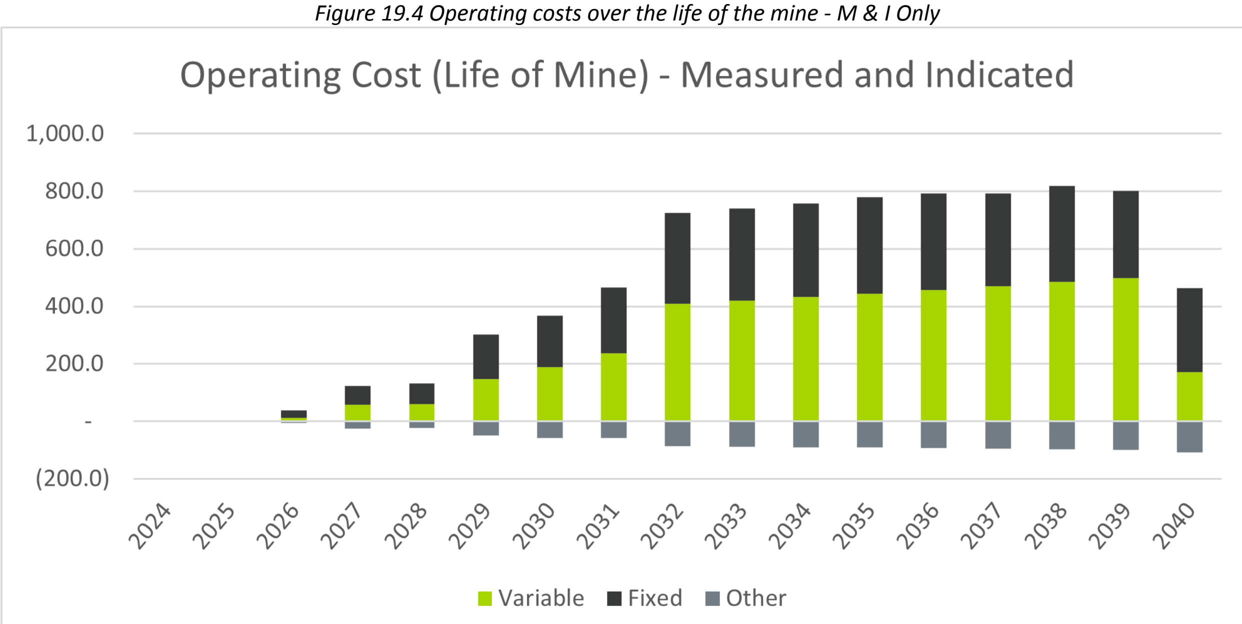


Figure 19.4 Operating costs over the life of the mine - M & I Only



19.4.3 Variable Costs

Total variable operating costs over the life of mine are provided in Table 19.3 and Table 19.4.

Table 19.3 Variable operating cost over life of mine

Variable operating cost (M, I & I):		Total US$000's
Materials	$	5,122,600
Rail logistics		343,262
Utilities		8,500,885
Total	$	13,966,747

Table 19.4 Variable operating cost over life of mine - M & I only

Variable operating cost (M & I):		Total US$000's
Materials	$	1,669,189
Rail logistics		142,464
Utilities		2,679,745
Total	$	4,491,398

19.4.4 Fixed Costs

Table 19.5 Total fixed operating cost over life of mine

Fixed operating cost (M, I & I):		Total US$000's
Administrative labor	$	255,647
Operating labor		1,267,227
General and administrative overhead		61,785
Offsite storage		273,073
Repair labor and materials		1,597,117
Taxes and insurance		969,322
Depreciation		3,034,156
Total	$	7,458,327

Table 19.6 Total fixed operating cost over life of mine - M & I only

Fixed operating cost (M & I):		Total US$000's
Administrative labor	$	93,334
Operating labor		449,511
General and administrative overhead		24,896
Offsite storage		88,980
Repair labor and materials		564,529
Taxes and insurance		349,768
Depreciation		2,041,066
Total	$	3,612,084

19.4.5 Other operating costs / credits

Table 19.7 Total other operating costs / credits over life of mine

Other operating cost / credit (M, I & I)		Total US$000's
Lithium carbonate	$	(3,280,668)
Metals precipitation waste		233,670
Gypsum		-
Total	$	(3,046,998)

Table 19.8 Total other operating costs / credits over life of mine - M & I only

Other operating cost / credit (M & I)		Total US$000's
Lithium carbonate	$	(1,144,954)
Metals precipitation waste		76,141
Gypsum		-
Total	$	(1,068,813)

19.4.6 Capital Costs

Capital is modeled on an annual basis and is used in the model as developed in previous sections with 25% contingency included to each phase and to sustaining capital. Closure costs are modeled as capital and are captured as a one-time payment in the final year of the model. The modeled capital profile is presented in Figure 19.5 and Figure 19.6.

Figure 19.5 Capital profile of the mine

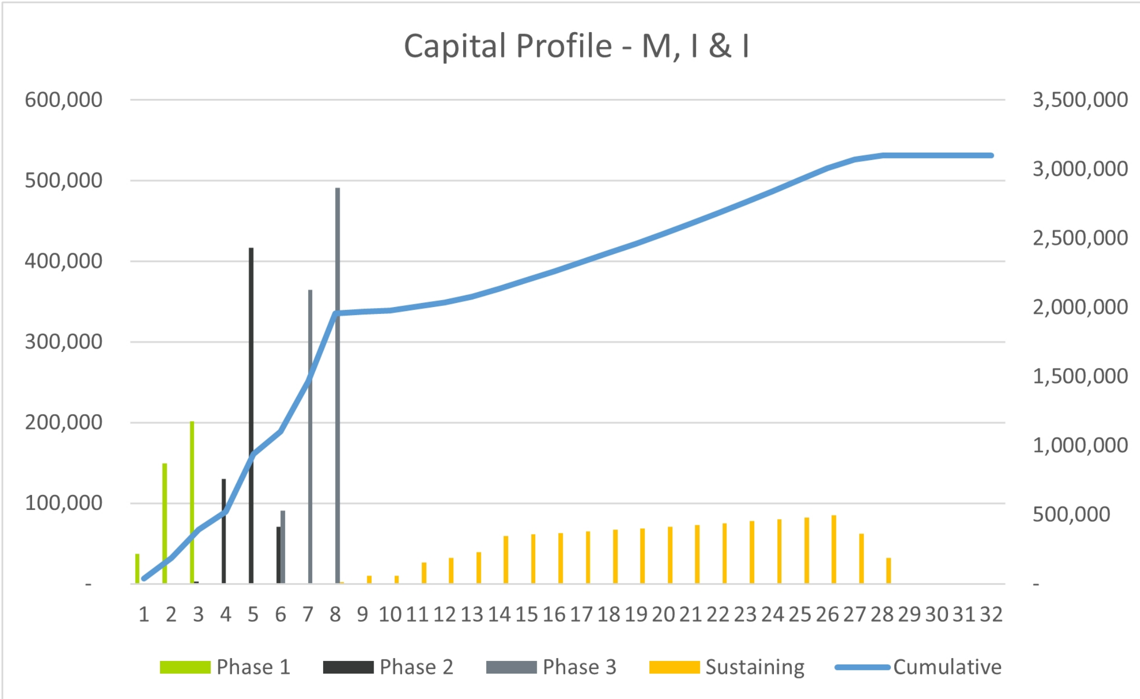
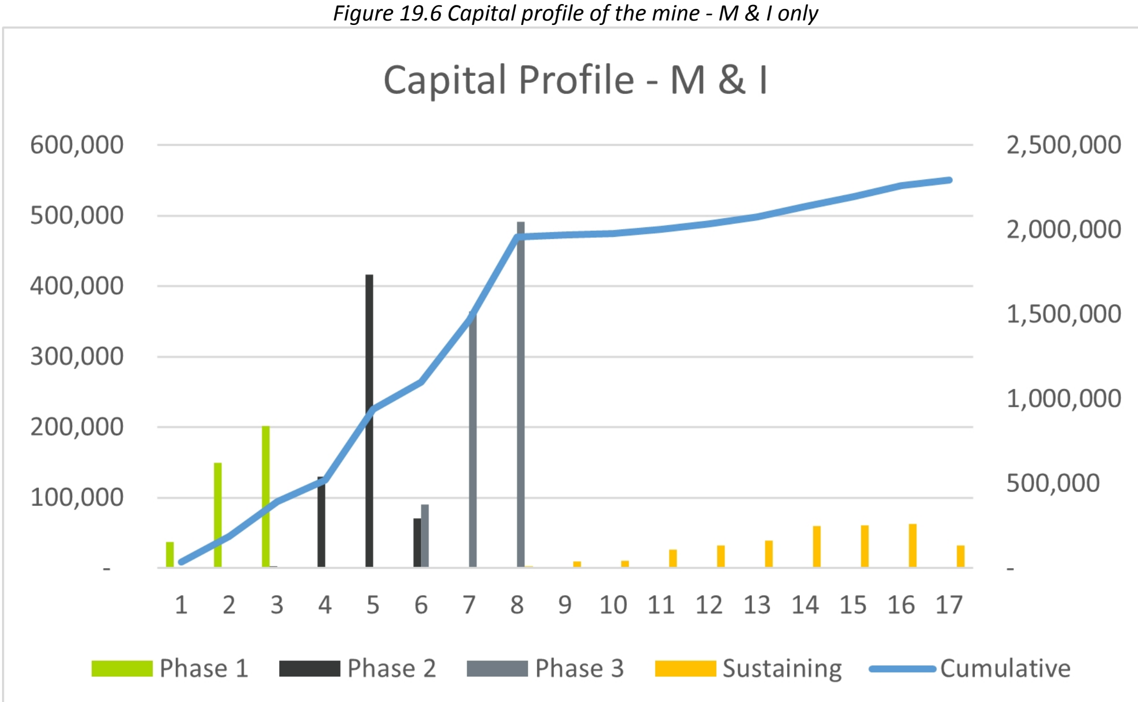


Figure 19.6 Capital profile of the mine - M & I only



19.4.7 Results

The economic analysis metrics are prepared on an annual after-tax basis in U.S. dollars. The results of analysis are presented in Table 19.9 and Table 19.10 Results of economic analysis - M & I only. Annual project after tax cash flow is presented in Figure 19.7 and Figure 19.8.

Figure 19.7 Cash flow projection

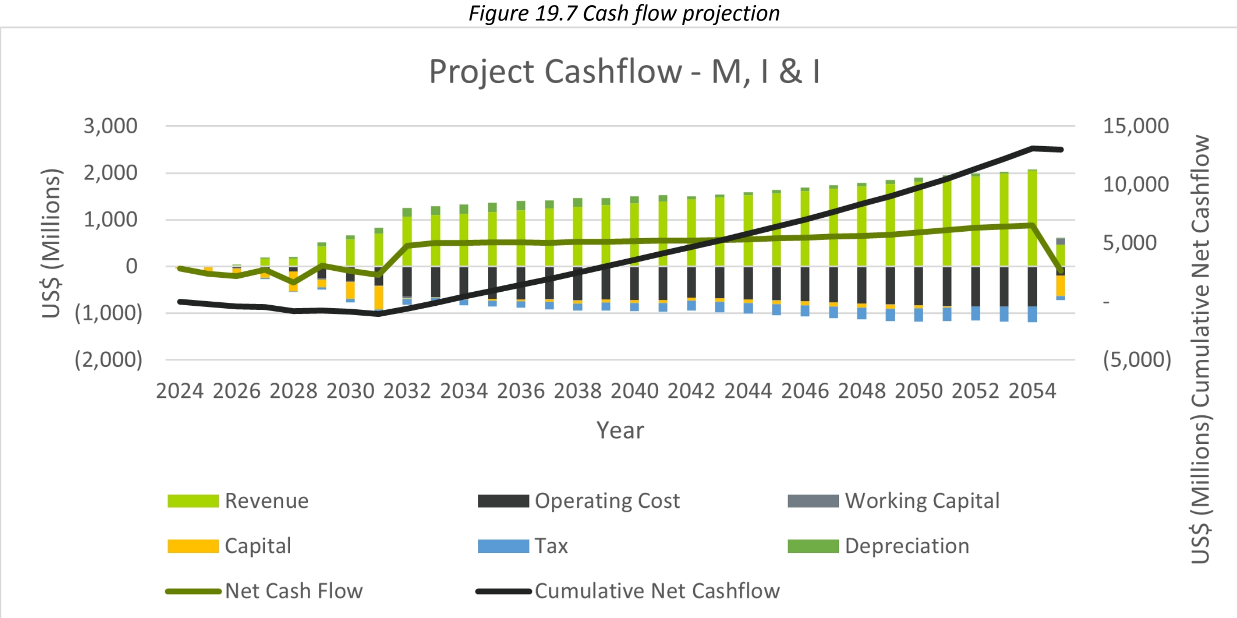


Figure 19.8 Cash flow projection - M & I only

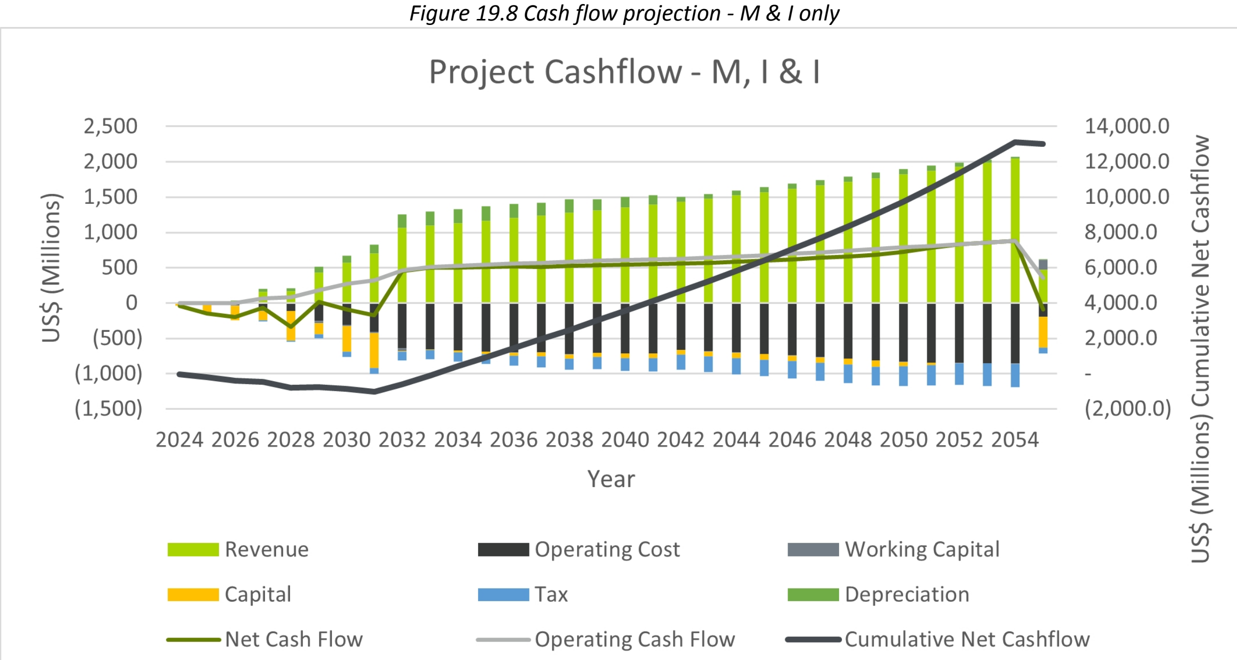


Table 19.9 Results of economic analysis

Life of Mine Cashflow (M, I & I)	Units	Value
Total Revenue	US$ Million	37,248.3
Operating Expenses	US$ Million	18,378.1
Operating Margin Ratio	%	50.7
Capital Outlay	US$ Million	3,541.2
Taxes Paid	US$ Million	5,280.9
Depreciation	US$ Million	3,034.2
Free Cash Flow	US$ Million	13,006.6
NPV @ 8%	US$ Million	2,410.3
IRR	%	22.6
Payback	Years	10.5

Table 19.10 Results of economic analysis - M & I only

Life of Mine Cashflow (M & I)	Units	Value
Total Revenue	US$ Million	12,055.7
Operating Expenses	US$ Million	7,034.7
Operating Margin Ratio	%	41.6
Capital Outlay	US$ Million	2,544.4
Taxes Paid	US$ Million	1,405.9
Depreciation	US$ Million	2,041.1
Free Cash Flow	US$ Million	3,035.7
NPV @ 8%	US$ Million	829.4
IRR	%	18.7
Payback	Years	10.5

The following table presents the income statement and financial metrics for the first full-year each phase is at full-run rates.

Table 19.11 Results of economic analysis - by Phase

M, I & I and M & I	Units	2027 (Phase 1)	2030 (Phase 2)	2032 (Phase 3)
Revenue US$	US$	162.9	575.1	1,069.3
Operating costs US$	US$	98.5	310.8	637.9
Operating margin US$	US$	64.4	264.3	431.4
Cash costs	US$ per short ton	686	793	994
EBITDA US$	US$	101.2	360.9	621.9
EBITDA Margin	%	62.1	62.8	58.2

19.4.8 Sensitivity Analysis

Sensitivity analysis for the financial model was performed based on changes to product recoveries (all products and coproducts included), operating costs (variable manufacturing costs), capital cost, pricing for lithium carbonate, pricing for boric acid, pricing for gypsum, and labor (fixed manufacturing costs). Using a ±10% change for each variable, NPV_8 is plotted in real dollars for comparison and arranged in order of total variability. Figure 19.5 shows 5E base-case NPV_8 changes based on measured, indicated, and inferred resources while Figure 19.6 provides NPV_8 changes based only on measured and inferred resources.

Figure 19.9 Sensitivity Analysis Base Case - Measured, Indicated, and Inferred

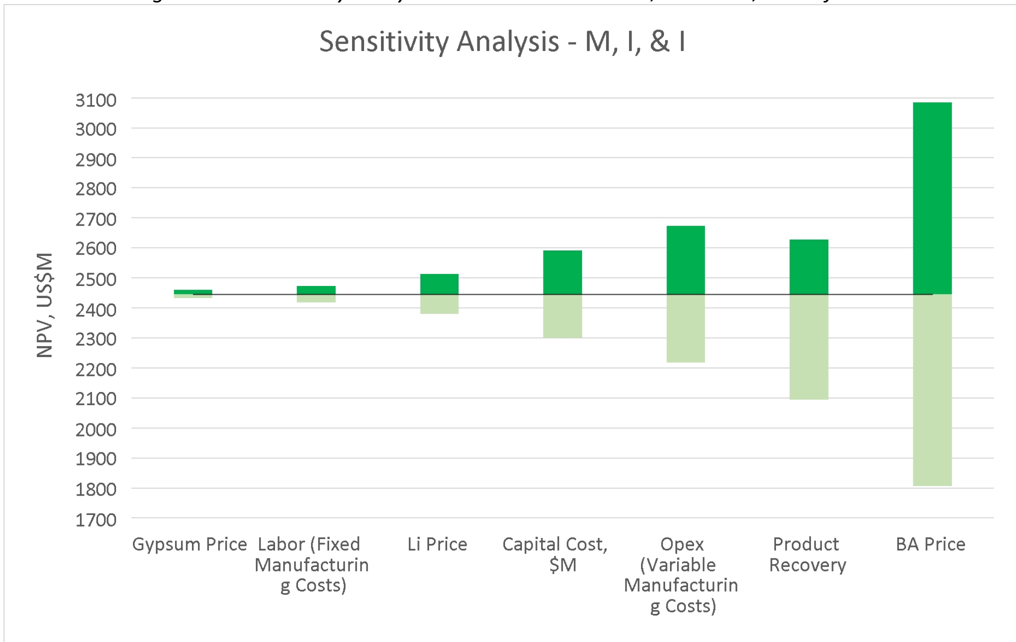
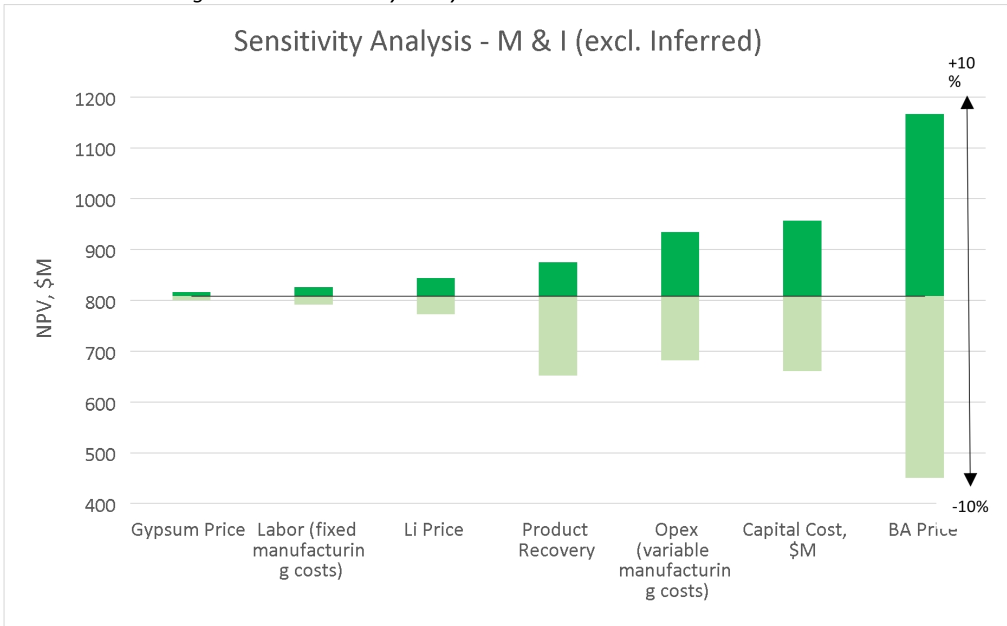


Figure 19.10 Sensitivity Analysis Alternate - Measured and Indicated



19.4.9 Cash Flow Snapshot

The annual cashflow, expressed in million U.S. dollars, is presented in Figure 19.11 and Figure 19.12.

Figure19.11 Summary of annual cash flow, US$ millions

Fiscal Year	Total	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Income																	
Revenue	37,248.3	-	-	31.1	162.9	171.4	430.7	575.1	705.4	1,069.3	1,101.3	1,134.4	1,168.4	1,203.5	1,239.6	1,276.7	1,315.0
Operational Expenditure																	
Variable	(13,966.7)	-	-	(11.3)	(58.0)	(59.6)	(147.2)	(189.3)	(237.3)	(408.1)	(420.0)	(432.2)	(444.7)	(457.7)	(471.0)	(484.7)	(498.9)
Fixed	(7,458.3)	(0.7)	(1.7)	(25.8)	(65.9)	(72.3)	(154.1)	(178.6)	(228.4)	(316.1)	(320.0)	(325.8)	(335.0)	(335.6)	(320.9)	(335.2)	(303.4)
Other operating / (credit)	3,047.0	(0.0)	(0.1)	4.9	25.3	22.0	50.2	57.1	58.5	86.3	87.5	89.5	91.6	93.7	95.8	98.0	100.3
Total	(18,378.1)	(0.7)	(1.8)	(32.1)	(98.6)	(109.9)	(251.1)	(310.8)	(407.1)	(637.9)	(652.4)	(668.4)	(688.2)	(699.6)	(696.1)	(721.8)	(702.0)
Working Capital Costs	(75.7)	(0.1)	(0.1)	(5.3)	(17.0)	(1.0)	(32.4)	(15.4)	(15.7)	(41.8)	(3.3)	(3.6)	(3.9)	(3.3)	(2.0)	(4.6)	(0.8)
Capital Costs																	
Phase 1	(388.9)	(37.3)	(149.8)	(201.8)	-	-	-	-	-	-	-	-	-	-	-	-	-
Phase 2	(620.4)	-	-	(2.9)	(129.9)	(417.0)	(70.5)	-	-	-	-	-	-	-	-	-	-
Phase 3	(946.5)	-	-	-	-	-	(90.8)	(364.6)	(491.1)	-	-	-	-	-	-	-	-
Sustaining capital	(1,145.8)	-	-	-	-	-	-	-	(2.4)	(9.9)	(10.2)	(26.4)	(32.6)	(39.6)	(59.6)	(61.4)	(63.2)
Reclamation	(439.6)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	(3,541.2)	(37.3)	(149.8)	(204.7)	(129.9)	(417.0)	(161.3)	(364.6)	(493.5)	(9.9)	(10.2)	(26.4)	(32.6)	(39.6)	(59.6)	(61.4)	(63.2)
Cashflow Before Tax	15,253.3	(38.0)	(151.7)	(211.1)	(82.5)	(356.6)	(14.2)	(115.7)	(211.0)	379.6	435.4	436.0	443.7	461.0	481.9	488.9	549.0
Tax Paid	(5,280.9)	-	-	-	(18.0)	(17.2)	(50.2)	(73.9)	(83.5)	(120.7)	(125.6)	(130.4)	(134.4)	(141.0)	(152.1)	(155.3)	(171.5)
Depreciation	3,034.2	-	-	9.2	36.8	36.8	81.7	96.6	119.8	190.6	192.6	196.3	202.7	200.3	182.0	192.1	156.1
Net Cashflow	13,006.6	(38.0)	(151.7)	(201.9)	(63.7)	(337.0)	17.3	(93.0)	(174.7)	449.4	502.4	501.9	512.0	520.3	511.8	525.7	533.6

Figure 19.11 Summary of annual cash flow, US$ millions (continued)

Fiscal Year	Total	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055
Income																	
Revenue	37,248.3	1,354.5	1,395.1	1,437.0	1,480.1	1,524.5	1,570.2	1,617.3	1,665.9	1,715.8	1,767.3	1,820.3	1,874.9	1,931.2	1,989.1	2,048.8	471.5
Operational Expenditure																	
Variable	(13,966.7)	(513.4)	(528.4)	(543.9)	(559.8)	(576.2)	(593.0)	(610.4)	(628.3)	(646.8)	(665.8)	(685.3)	(705.5)	(726.3)	(747.6)	(769.7)	(146.5)
Fixed	(7,458.3)	(299.3)	(287.1)	(225.3)	(232.1)	(239.0)	(246.1)	(253.5)	(261.1)	(268.9)	(276.9)	(282.4)	(281.0)	(269.5)	(255.8)	(241.8)	(219.1)
Other operating / (credit)	3,047.0	102.6	105.3	108.6	112.0	115.5	119.1	122.7	126.5	130.5	134.5	138.7	142.9	147.3	151.9	156.6	171.6
Total	(18,378.1)	(710.1)	(710.1)	(660.6)	(679.8)	(699.7)	(720.1)	(741.2)	(762.9)	(785.2)	(808.2)	(829.1)	(843.6)	(848.4)	(851.6)	(854.9)	(194.0)
Working Capital Costs	(75.7)	(3.3)	(2.8)	1.2	(4.6)	(4.8)	(4.9)	(5.1)	(5.2)	(5.4)	(5.5)	(5.5)	(5.1)	(4.4)	(4.4)	(4.5)	138.9
Capital Costs																	
Phase 1	(388.9)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phase 2	(620.4)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phase 3	(946.5)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sustaining capital	(1,145.8)	(65.1)	(67.1)	(69.1)	(71.1)	(73.3)	(75.5)	(77.7)	(80.1)	(82.5)	(84.9)	(62.1)	(32.0)	-	-	-	-
Reclamation	(439.6)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(439.6)
Total	(3,541.2)	(65.1)	(67.1)	(69.1)	(71.1)	(73.3)	(75.5)	(77.7)	(80.1)	(82.5)	(84.9)	(62.1)	(32.0)	-	-	-	(439.6)
Cashflow Before Tax	15,253.3	576.0	615.2	708.6	724.5	746.7	769.7	793.3	817.7	842.8	868.6	923.6	994.3	1,078.4	1,133.1	1,189.3	(23.1)
Tax Paid	(5,280.9)	(180.3)	(191.7)	(217.2)	(223.9)	(230.8)	(237.9)	(245.1)	(252.7)	(260.4)	(268.4)	(277.3)	(288.6)	(303.0)	(318.3)	(334.0)	(77.6)
Depreciation	3,034.2	147.6	130.8	64.4	66.4	68.4	70.4	72.5	74.7	77.0	79.3	79.1	73.0	58.3	42.0	25.2	11.5
Net Cashflow	13,006.6	543.2	554.3	555.8	566.9	584.3	602.3	620.7	639.8	659.3	679.5	725.4	778.7	833.7	856.8	880.5	(89.2)

Figure 19.12 Summary of annual cash flow, US$ millions - M & I only

Fiscal Year	**Total**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**
Income																		
Revenue	12,055.7	-	-	31.1	162.9	171.4	430.7	575.1	705.4	1,069.3	1,101.3	1,134.4	1,168.4	1,203.5	1,239.6	1,276.7	1,315.0	470.9
Operational Expenditure																		
Variable	(4,491.4)	-	-	(11.3)	(58.0)	(59.6)	(147.2)	(189.3)	(237.3)	(408.1)	(420.0)	(432.2)	(444.7)	(457.7)	(471.0)	(484.7)	(498.9)	(171.5)
Fixed	(3,612.1)	(0.7)	(1.7)	(25.8)	(65.9)	(72.3)	(154.1)	(178.6)	(228.4)	(316.1)	(320.0)	(325.8)	(335.0)	(335.6)	(320.9)	(335.2)	(303.4)	(292.7)
Other operating / (credit)	1,068.8	(0.0)	(0.1)	4.9	25.3	22.0	50.2	57.1	58.5	86.3	87.5	89.5	91.6	93.7	95.8	98.0	100.3	108.0
Total	(7,034.7)	(0.7)	(1.8)	(32.1)	(98.6)	(109.9)	(251.1)	(310.8)	(407.1)	(637.9)	(652.4)	(668.4)	(688.2)	(699.6)	(696.1)	(721.8)	(702.0)	(356.2)
Working Capital Costs	(76.1)	(0.1)	(0.1)	(5.3)	(17.0)	(1.0)	(32.4)	(15.4)	(15.7)	(41.8)	(3.3)	(3.6)	(3.9)	(3.3)	(2.0)	(4.6)	(0.8)	74.3
Capital Costs																		
Phase 1	(388.9)	(37.3)	(149.8)	(201.8)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phase 2	(620.4)	-	-	(2.9)	(129.9)	(417.0)	(70.5)	-	-	-	-	-	-	-	-	-	-	-
Phase 3	(946.5)	-	-	-	-	-	(90.8)	(364.6)	(491.1)	-	-	-	-	-	-	-	-	-
Sustaining capital	(337.9)	-	-	-	-	-	-	-	(2.4)	(9.9)	(10.2)	(26.4)	(32.6)	(39.6)	(59.6)	(61.4)	(63.2)	(32.6)
Reclamation	(250.6)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(250.6)
Total	(2,544.4)	(37.3)	(149.8)	(204.7)	(129.9)	(417.0)	(161.3)	(364.6)	(493.5)	(9.9)	(10.2)	(26.4)	(32.6)	(39.6)	(59.6)	(61.4)	(63.2)	(283.2)
Cashflow Before Tax	2,400.5	(38.0)	(151.7)	(211.1)	(82.5)	(356.6)	(14.2)	(115.7)	(211.0)	379.6	435.4	436.0	443.7	461.0	481.9	488.9	549.0	(94.1)
Tax Paid	(1,405.9)	-	-	-	(18.0)	(17.2)	(50.2)	(73.9)	(83.4)	(120.7)	(125.6)	(130.4)	(134.4)	(141.0)	(152.1)	(155.3)	(171.5)	(32.1)
Depreciation	2,041.1	-	-	9.2	36.8	36.8	81.7	96.6	119.8	190.6	192.6	196.3	202.7	200.3	182.0	192.1	156.1	147.6
Net Cashflow	3,035.7	(38.0)	(151.7)	(201.9)	(63.7)	(337.0)	17.3	(93.0)	(174.7)	449.4	502.4	501.9	512.0	520.3	511.8	525.7	533.6	21.3

20 Adjacent Properties

Elementis operates their hectorite mine adjacent to the west side of the Project. The mine produces hectorite, a specialty clay mineral used in ceramics, cosmetics, and other specialties requiring high viscosity or high thermal stability. While the mine is adjacent to the Project it produces a product that does not compete with 5E.

Land status around the Project area includes the following:

- To the west are the patented and unpatented lands of the Elementis hectorite mine as well as public lands managed by the U.S. Department of Interior, Bureau of Land Management. Both Elementis and BLM land are included within the EIS boundary.
- BLM land is to the north and east of the Project.
- Lands south of the Project area are part of the U.S. Marine Corps Twentynine Palms Marine Base. Figure 3.2 Property Ownership shows the mineral tenure for the project.

21 Other Relevant Data and Information

There is currently no other relevant information or data to present.

22 Interpretation and Conclusions

5E has an established mineral holding through ownership of fee lands and unpatented placer and lode claims. The property has undergone prior exploration primarily conducted in the 1980's along with more recent drilling conducted in 2017 which validated previous exploration and expanded known mineral occurrences. Drilling completed on the Project is sufficient for the delineation of a mineral resource estimate.

Exploration drilling has led to a geologic interpretation of the deposit as lacustrine evaporite sediments containing colemanite, a hydrated calcium borate mineral. The deposit also contains appreciable quantities of lithium. Geologic modeling based on drilling and sampling results depicts an elongate deposit of lacustrine evaporite sediments containing colemanite. The deposit is approximately 2.1 mi. long by 0.6 mi. wide, and ranges in thickness from 70 to 262 ft. with mineralization that has been defined in four distinct horizons defined by changes in lithology and B_2O_3 analyses.

A mineral resource has been estimated and reported using a cut-off grade of 2% B_2O_3. Measured, Indicated, and Inferred resources for the Project total 96.9 Mt of ore, 13.97 Mt of boric acid and 0.31 Mt of lithium carbonate equivalent. There are no mineral reserves currently identified. Much of the interpretation and mineral resource estimations were derived through a gridded model created from drilling and sampling data using Vulcan modeling software. Additional review and estimations of the model were conducted using Carlson Mining software. The details of the methodology are described in the text of this report.

Exploration to date has focused on an approximate 1,000 acres located in the east-central portion of 5E's mineral holding. Future exploration efforts will address mineral potential across other portions of the Project area. There is potential upside in resource by conducting additional drilling to the southeast in Section 36, along trend with resources identified in this report.

There are reasonable prospects for economic extraction for the mineral resource estimated and presented in this initial assessment. 5E has been diligent in validating the work completed by the previous operators and further expanding the size and classification assurance of the deposit. Current and previous evaluations of mining methods indicate a deposit well suited for ISL solution mining as a preferred method for economic extraction. Metallurgical testing and process engineering indicate the economic potential as well. 5E is currently commissioning its Small-Scale Facility, and operation will lead to detailed engineering for Phase 1 of the Project.

In conclusion, operation of the SSF will improve accuracy and optimize operational expenditures as well as sustaining capital estimates. Progression to FEL2 engineering will further define the accuracy and optimization of the capital cost estimates for the chemical processing plant and some additional exploration and in-fill drilling can reclassify the inferred resource to measured and indicated resource. Once the SSF is operational, samples of boric acid, lithium carbonate, and gypsum will be utilized to secure bankable offtake agreements for commercialization. Once these steps are completed, the Company is well positioned to update this initial assessment to a prefeasibility study.

23 Recommendations

It is the recommendations of the QP's to perform the following that will further benefit the operation:

- Geochemistry: Completion of a long-term leach test with associated thin section minerology evaluation which will provide characterization, determine chemical variability, and aid in process feed chemistry. Estimate of $200,000.
- Geophysics: Additional geophysics (seismic, resistivity, gamma) and interpretation to determine 2D and 3D faults to assess risk and complexity of the deposit. Estimate of $500,000 to $1,500,000.
- Exploration and in-fill drilling: Drill six to ten holes in Section 25 and 36 to expand inferred resource and reclassify existing inferred resource to measured and indicated. Estimate of $750,000 to $2,000,000.
- Water expansion: Drill additional wells to further establish storativity east of Fault B and west of the Pisgah fault. Estimate of $3,500,000 (included in the capital estimate in section 18).

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25 Reliance on Information Provided by the Registration

5E has provided the external QP's with a variety of materials for the preparation of this report. These materials include the following:

- Drilling records from the 2017 drilling program completed by APBL, which includes drilling locations, drill logs, sampling records, analytical results/certificates, geophysical logs, and core photos.
- Drilling records from Duval and FCMC, which include drill logs, sampling records, analytical results/certificates, and geophysical logs.
- Historical drilling maps and testing records.