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

FORM 10-K/A

(Amendment No.1)

☒ **Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934**

For the fiscal year ended December 31, 2021

or

☐ **Transition Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934**

For the transition period from to

Commission File Number: 001-34025

INTREPID POTASH, INC.
(Exact Name of Registrant as Specified in its Charter)

Delaware	**26-1501877**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
1001 17th Street, Suite 1050	
Denver,	
Colorado	**80202**
(Address of principal executive offices)	(Zip Code)

(303) 296-3006
(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol	Name of each exchange on which registered
Common Stock, par value $0.001 per share	IPI	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: **None**

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files.) Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☐	Accelerated filer	☒	Non-accelerated filer	☐
Smaller reporting company	☐	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. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

Indicate by check mark whether the registrant is a shell company (as defined by Rule 12b-2 of the Act). Yes ☐ No ☒

The aggregate market value of the registrant's common stock held by non-affiliates of the registrant, based upon the closing sale price of the common stock on June 30, 2021, the last trading day of the registrant's most recently completed second fiscal quarter, of $31.86 per share as reported on the New York Stock Exchange was $266 million. Shares of common stock held by each director and executive officer and by each person who owns 10% or more of the registrant's outstanding common stock and is believed by the registrant to be in a control position were excluded. The determination of affiliate status for this purpose is not a conclusive determination of affiliate status for any other purposes.

As of February 28, 2022, the registrant had 13,528,556 shares of common stock, par value $0.001, outstanding.

Auditor Name: KPMG Auditor Location: Denver, Colorado

DOCUMENTS INCORPORATED BY REFERENCE

Certain information required by Items 10, 11, 12, 13 and 14 of Part III is incorporated by reference from portions of the registrant's definitive proxy statement relating to its 2022 annual meeting of stockholders to be filed within 120 days after December 31, 2021.

EXPLANATORY NOTE

Intrepid Potash Inc. (IPI) is filing this Amendment No. 1 (this Amendment) to its Annual Report on Form 10-K for the fiscal year ended December 31, 2021, previously filed with the Securities and Exchange Commission (SEC) on March 8, 2022 (the Original Filing), for the sole purpose of filing corrected versions of Exhibits 96.1, 96.2, and 96.3, which inadvertently contained the incorrect versions of certain figures. Accordingly, Exhibits 96.1, 96.2, and 96.3 to this Amendment supersede and replace in their entirety Exhibits 96.1, 96.2, and 96.3 to the Original Filing.

Pursuant to Rule 12b-15 under the Securities and Exchange Act of 1934, as amended, this Amendment also includes as exhibits the certifications by IPI's principal executive officer and principal financial officer required in accordance with Rule 13a-14(a); however, paragraphs 3, 4 and 5 of the certifications have been omitted because this Amendment does not contain any financial statements nor does it contain or amend any disclosure with respect to Items 307 and 308 of Regulation S-K.

Except as described above, this Amendment does not amend, update or change any other items or disclosures contained in the Original Filing. This Amendment does not reflect or purport to reflect any information or events occurring after the date of the Original Filing nor does it modify or update the disclosures contained in the Original Filing that may be affected by subsequent events. Accordingly, this Amendment should be read in conjunction with the Original Filing and IPI's other filings made with the SEC subsequent to the filing of the Original Filing.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

(a) Financial Statements, Financial Statement Schedules and Exhibits

The following are filed as a part of this Annual Report on Form 10-K:

(1) Financial Statements

Management's Report on Internal Control over Financial Reporting
Report of Independent Registered Accounting Firm (PCAOB ID 185)
Consolidated Balance Sheets as of December 31, 2021, and 2020
Consolidated Statements of Operations for the years ended December 31, 2021, 2020, and 2019
Consolidated Statements of Stockholders' Equity for the years ended December 31, 2021, 2020, and 2019
Consolidated Statements of Cash Flows for the years ended December 31, 2021, 2020, and 2019
Notes to Consolidated Financial Statements

(2) Financial Statement Schedule

Schedule	Schedule Description
Schedule II	Schedule of Valuation and Qualifying Accounts

Schedule II is filed as part of this Annual Report on Form 10-K and is set forth immediately following the Notes to the Consolidated Financial Statements referred to above. All other financial statement schedules have been omitted because they are not required, are not applicable, or the information is included in the consolidated financial statements or notes thereto.

(3) Exhibits

The following exhibits are filed or incorporated by reference in this report:

		Incorporated by Reference from the Below-Listed Form (Each Filed under SEC File Number 001-34025)	
Exhibit Number	Exhibit Description	Form	Filing Date
3.1	Restated Certificate of Incorporation of Intrepid Potash, Inc.	8-K	April 25, 2008
3.2	Certificate of Amendment to Restated Certificate of Incorporation of Intrepid Potash, Inc.	8-K	May 26, 2016
3.3	Certificate of Amendment to Restated Certificate of Incorporation of Intrepid Potash, Inc.	8-K	August 14, 2020
3.4	Amended and Restated Bylaws of Intrepid Potash, Inc.	8-K	June 25, 2015
4.1	Description of Registrant's Securities	10-K	March 3, 2020
10.1	Form of Indemnification Agreement with each director and officer	8-K	April 25, 2008
10.2	Director Designation and Voting Agreement, dated as of April 25, 2008, by and among Intrepid Potash, Inc., Harvey Operating and Production Company, Intrepid Production Corporation, and Potash Acquisition, LLC	8-K	May 1, 2008
10.3	Registration Rights Agreement, dated as of April 25, 2008, by and among Intrepid Potash, Inc., Harvey Operating & Production Company, Intrepid Production Corporation, and Potash Acquisition, LLC	8-K	May 1, 2008
10.4	Acknowledgment and Relinquishment, dated as of December 19, 2011, by and among Intrepid Potash, Inc., Harvey Operating and Production Company, Intrepid Production Corporation, and Potash Acquisition, LLC	10-K	February 16, 2012

10.5	Amended and Restated Credit Agreement, dated as of August 1, 2019, by and among Intrepid Potash, Inc., the subsidiaries party thereto, Bank of Montreal, as administrative agent, swing line lender, lead arranger, and book runner, and the lenders party thereto.	8-K	August 1, 2019
10.6	First Amended and Restated Credit Agreement, dated as of April 17, 2020, by and among Intrepid Potash, Inc., the subsidiaries party thereto, Bank of Montreal, as administrative agent, swing line lender, lead arranger, and book runner, and the lenders party thereto.	8-K	April 23, 2020
10.11	Amended and Restated Employment Agreement, dated as of May 19, 2010, by and between Intrepid Potash, Inc. and Robert P. Jornayvaz III+	8-K	May 19, 2010
10.12	Amendment to Employment Agreement, dated February 23, 2011, by and between Intrepid Potash, Inc. and Robert P. Jornayvaz III+	8-K	March 1, 2011
10.13	Second Amendment to Employment Agreement, dated as of February 14, 2013, by and between Intrepid Potash, Inc. and Robert P. Jornayvaz III+	8-K	February 19, 2013
10.14	Third Amendment to Employment Agreement, dated as of March 22, 2016, by and between Intrepid Potash, Inc. and Robert P. Jornayvaz III+	8-K	March 23, 2016
10.15	Fourth Amendment to Employment Agreement, dated as of March 12, 2019, by and between Intrepid Potash, Inc. and Robert P. Jornayvaz III+	8-K	March 15, 2019
10.16	Amended and Restated Employment Agreement, dated as of May 19, 2010, by and between Intrepid Potash, Inc. and Hugh E. Harvey, Jr.+	8-K	May 19, 2010
10.17	Intrepid Potash, Inc. Amended and Restated Equity Incentive Plan+	8-K	May 24, 2019
10.18	Form of Restricted Stock Agreement under Intrepid Potash, Inc. Amended and Restated Equity Incentive Plan+	10-K	March 2, 2021
10.19	Form of Stock Option Agreement under Intrepid Potash, Inc. Amended and Restated Equity Incentive Plan+	10-K	March 2, 2021
10.20	Intrepid Potash, Inc. Amended and Restated Short-Term Incentive Plan+	8-K	May 26, 2016
10.21	Form of Change-of-Control Severance Agreement with Robert P. Jornayvaz III and Hugh E. Harvey, Jr.+	10-Q	November 3, 2011
10.22	Form of Change-in-Control Severance Agreement with Margaret E. McCandless and Mark A. McDonald+	10-K	March 12, 2019
10.23	Form of Noncompete Agreement with executives other than Robert P. Jornayvaz III+	10-K	February 28, 2017
10.24	Form of Retention Agreement+	10-K	March 12, 2019
10.25	Aircraft Dry Lease, dated as of January 9, 2009, by and between Intrepid Potash, Inc. and Intrepid Production Holdings LLC	8-K	January 12, 2009
10.26	First Amendment to Aircraft Dry Lease, dated as of September 1, 2014, by and between Intrepid Potash, Inc. and Intrepid Production Holdings LLC	8-K	August 18, 2014
10.27	Aircraft Dry Lease, dated as of September 1, 2014, by and between Intrepid Potash, Inc. and Odyssey Adventures, LLC	8-K	August 18, 2014
21.1	List of Subsidiaries†	10-K	March 8, 2022
23.1	Consent of KPMG LLP†	10-K	March 8, 2022
23.2	Consent of Agapito Associates, Inc.†	10-K	March 8, 2022
31.1	Certification of Principal Executive Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a)†	10-K	March 8, 2022
31.2	Certification of Principal Financial Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a)†	10-K	March 8, 2022
31.3	Certification of Principal Executive Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a)	*	
31.4	Certification of Principal Financial Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a)	*	
32.1	Certification of Principal Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002†	10-K	March 8, 2022

32.2	Certification of Principal Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002†	10-K	March 8, 2022
95.1	Mine Safety Disclosure Exhibit†	10-K	March 8, 2022
96.1	Technical Report Summary for Intrepid Potash - New Mexico	**	
96.2	Technical Report Summary for Intrepid Potash - Moab	**	
96.3	Technical Report Summary for Intrepid Potash - Wendover	**	
99.1	Transition Services Agreement, dated as of April 25, 2008, by and between Intrepid Potash, Inc., Intrepid Oil & Gas, LLC, and Intrepid Potash-Moab, LLC	8-K	May 1, 2008
99.2	Extension and Amendment to Transition Services Agreement dated July 14, 2009, to be effective as of April 25, 2009, between Intrepid Potash, Inc. and Intrepid Oil & Gas, LLC	10-Q	August 7, 2009
99.3	Third Amendment to Transition Services Agreement dated March 26, 2010, between Intrepid Potash, Inc. and Intrepid Oil & Gas, LLC	10-Q	May 5, 2010
99.4	Fourth Amendment to Transition Services Agreement dated March 25, 2011, between Intrepid Potash, Inc. and Intrepid Oil and Gas, LLC	10-Q	May 5, 2011
99.5	Sixth Amendment to Transition Services Agreement dated April 3, 2013, between Intrepid Potash, Inc. and Intrepid Oil & Gas, LLC	10-Q	May 2, 2013
99.6	Seventh Amendment to Transition Services Agreement dated March 24, 2015, between Intrepid Potash, Inc. and Intrepid Oil & Gas, LLC	10-Q	April 28, 2015
99.7	Eighth Amendment to Transition Services Agreement dated March 22, 2017, between Intrepid Potash, Inc. and Intrepid Oil & Gas, LLC	10-Q	May 2, 2017
99.8	Ninth Amendment to Transition Services Agreement dated February 20, 2019, between Intrepid Potash, Inc. and Intrepid Oil & Gas, LLC.	10-K	March 12, 2019
101.INS	XBRL Instance Document	*	
101.SCH	XBRL Taxonomy Extension Schema	*	
101.CAL	XBRL Extension Calculation Linkbase	*	
101.DEF	XBRL Extension Definition Linkbase	*	
101.LAB	XBRL Extension Label Linkbase	*	
101.PRE	XBRL Extension Presentation Linkbase	*	
104	Cover Page Interactive Date File (formatted as inline XBRL with applicable taxonomy extension information contain in Exhibits 101.		

* Filed herewith
** Furnished herewith
\+ Management contract or compensatory plan or arrangement
† Indicates documents previously filed or furnished, as applicable, with our Annual Report on Form 10-K for the year ended December 31, 2021, originally filed with the SEC on March 8, 2022, which is being amended hereby.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

	INTREPID POTASH, INC. (Registrant)
March 14, 2022	*/s/ Robert P. Jornayvaz III*
	Robert P. Jornayvaz III - Executive Chairman of the Board and Chief Executive Officer (Principal Executive Officer and Duly Authorized Officer)

Exhibit 31.3

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER

PURSUANT TO 15 U.S.C. SECTION 7241, AS

ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Robert P. Jornayvaz III, certify that:

1. I have reviewed this Amendment No. 1 to the annual report on Form 10-K/A of Intrepid Potash, Inc.; and
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report.

Dated: March 14, 2022

/s/ Robert P. Jornayvaz III

Robert P. Jornayvaz III

Executive Chairman of the Board, and Chief Executive Officer

Exhibit 31.4

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER

PURSUANT TO 15 U.S.C. SECTION 7241, AS

ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Matthew D. Preston, certify that:

1. I have reviewed this Amendment No. 1 to the annual report on Form 10-K/A of Intrepid Potash, Inc.; and
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report.

Dated: March 14, 2022

/s/ Matthew D. Preston

Matthew D. Preston

Chief Financial Officer

TECHNICAL REPORT SUMMARY
OF
2021 ESTIMATED RESOURCES AND RESERVES AT INTREPID POTASH-NEW MEXICO

Prepared for:

Intrepid Potash–New Mexico, LLC

Report Date:

February 18, 2022

Effective Date:

December 31, 2021

Prepared by:

AGAPITO ASSOCIATES, INC.
715 Horizon Drive, Suite 340
Grand Junction, CO 81506

1536 Cole Blvd., Bldg. 4, Suite 320
Lakewood, CO 80401

Agapito Associates, Inc.

CORPORATE SEAL

TECHNICAL REPORT SUMMARY OF 2021 ESTIMATED RESOURCES AND RESERVES AT INTREPID POTASH-NEW MEXICO

TABLE OF CONTENTS

List of Tables

List of Figures

List of Abbreviations

°	degree
%	percent
Agapito	Agapito Associates, Inc.
AMAX	AMAX/Horizon Mine
APR	Annual Percentage Rate
BLM	United States Bureau of Land Management
BNSF	Burlington Northern Santa Fe
CFR	Code of Federal Regulations
CL	Competitive Lease
COGS	cost of goods sold
CPD	Carlsbad Potash District
DMS	dense media separation
DOI	United States Department of Interior
EA	Environmental Audit
EIS	Environmental Impact Statement
EOY	end of year
F	Fahrenheit
FR	Federal Register
ft	feet or foot
ft^3	cubic foot
ft%	feet-percent
g	grams
g/cm^3	grams per cubic centimeter
gpm	gallons per minute
GT	grade thickness
hp	horsepower
ID^2	inverse distance squared
Intrepid	Intrepid Potash, Inc.
IPNM	Intrepid Potash–New Mexico, LLC
K_2O	potassium oxide
$K_2SO_4 \cdot 2MgSO_4$	langbeinite
KCl	sylvite or potassium chloride
KPLA	Known Potash Leasing Area
LOM	Life-of-Mine
NMED	New Mexico Environmental Department
M	million
MOP	Muriate of Potash
MSHA	Mine Safety and Health Administration
msl	mean sea level
mm	millimeter
Mt	million tons
Mtpy	million tons per year

NaCl	halite
NCL	Non-Competitive Lease
NPV	Net Present Value
NAD	North American Datum
OSHA	Occupational Safety and Health Administration
PFD	process flow diagrams
PRL	Preference Rights Lease
QP	Qualified Person
RC	reflux classifier
REC	Recognized Environmental Concerns
SEC	United States Securities Exchange Commission
SME	Society for Mining, Metallurgy & Exploration
SOE	statement of earnings
SOP	standard operating procedure
t	ton
TOC	Total Organic Carbon
tph	tons per hour
tpy	tons per year
TSF	Tailings Storage Facility
US	United States
USGS	United States Geological Survey
WIPP	Waste Isolation Pilot Plant
XRD	X-ray Diffraction

1 EXECUTIVE SUMMARY

Agapito Associates, Inc. (Agapito) was commissioned by Intrepid Potash, Inc. (Intrepid) to estimate the end-of-year (EOY) 2021 potash resources and reserves for the Intrepid Potash–New Mexico, LLC (IPNM) property. Resources and reserves are estimated according to United States (US) Securities and Exchange Commission (SEC) S-K 1300 regulations.

1.1 Property Description and Ownership

The property includes two operating mines, the East Underground and HB Solution Mines, one idled mine, the West Mine and the North Mine which was shut down in the early 1980's. The property is located in Eddy and Lea Counties, near Carlsbad, New Mexico.

The East Plant processes the underground langbeinite ore into Trio®. The HB Plant produces Muriate of Potash (MOP) from the solution mine brine. The long-term underground mining plan includes development and high-extraction, room-and-pillar mining in the 3rd, 4th, 5th, 7th, 8th, and 10th ore zones. Solution mining of the 1st and 3rd ore zones in previously mined-out areas of the property is planned to continue long term.

1.2 Geology and Mineralization

The geology of the potash-bearing beds of the Carlsbad area has been well documented. Overall, the potash-bearing beds may be described as bedded sedimentary rocks, deposited across the Delaware Basin and Northwest Shelf backreef from the Capitan Reef.

1.3 Status of Exploration, Development and Operations

The property has been in continuous operation by IPNM since 2004. Confirmation drilling, channel sampling, and mine development are an integral part of the mine operations.

1.4 Mineral Resource Estimates

The resource model created from the database of exploration and sampling data beginning in 2007 serves as the basis for this evaluation. The sampling data includes channel samples from the active mining horizon. The resources reported as mineralized rock in place, exclusive of mineral reserves effective December 31, 2021, are shown in Table 1-1.

1.5 Mineral Reserve Estimates

Using the mineral resource grids, applying a reserve cutoff, a 25-year detailed mine plan was developed. Table 1-2 shows the estimated reserve summaries in product tons effective December 31, 2021.

Table 1-1. Mineral Resource Estimate Summary effective December 31, 2021

IPNM—Summary of Mineral Resources in millions of tons of Sylvinite in Place effective December 31, 2021 based on 406 $/product ton mine site

	Resources			Mechanical Mining Cutoff[2]	Processing Recovery
	Sylvinite[1] (Mt)	Grade ($\%K_2O$)	Contained K_2O (Mt)	($ft\text{-}\%K_2O$)	(%)
Measured Mineral Resources	370	15	56	45–59	75–85
Indicated Mineral Resources	200	14	29	45–59	75–85
Measured + Indicated Mineral Resources	570	15	85		
Inferred Mineral Resources	—				

[1]Sylvinite is a mixed evaporite containing NaCl and KCl.
[2]Solution mining resource cutoff for flooded old workings is the mining extents boundary.
Mineral Resources were prepared by Agapito Associates, Inc., a qualified firm for the estimate and independent of Intrepid Potash.
Mineral Resources are reported exclusive of Mineral Reserves, on a 100% basis.
Mineral Resources are reported using Inverse Distance Squared (ID^2) estimation methods.
Mt = million tons, % = percentage, K_2O = potassium oxide, ft = feet

IPNM—Summary of Mineral Resources in millions of tons of Langbeinite Mineralized Rock in Place effective December 31, 2021 based on 425 $/product ton mine site

	Resources			Mechanical Mining Cutoff	Processing Recovery
	Langbeinite Mineralized Rock (Mt)	Grade ($\%K_2O$)	Contained K_2O (Mt)	($ft\text{-}\%K_2O$)	(%)
Measured Mineral Resources	50	10	5	32	68
Indicated Mineral Resources	60	10	6	32	68
Measured + Indicated Mineral Resources	110	10	11		
Inferred Mineral Resources	—				

Mineral Resources were prepared by Agapito Associates, Inc., a qualified firm for the estimate and independent of Intrepid Potash.
Mineral Resources are reported exclusive of Mineral Reserves, on a 100% basis.
Mineral Resources are reported using Inverse Distance Squared (ID^2) estimation methods.
Mt = million tons; % = percent; K_2O = potassium oxide; ft = feet

1.6 Summary of Capital and Operating Cost Estimates

Operating cash cost per ton of product is estimated to average $200.

Capital investment necessary to complete the mine plans includes a system to remove concentrated magnesium brine from the evaporation pond network, pipeline upgrades, and well infrastructure to bring the AMAX/Horizon Mine (AMAX) into solution mining production. This investment is in addition to the sustaining capital requirements.

Table 1-2. Mineral Reserve Estimate Summary effective December 31, 2021

IPNM—Summary of Potash Mineral Reserves effective December 31, 2021 based on 325 $/Product Ton Mine Site

	In-Place KCl (Mt)	In-Situ Grade[1] (%K_2O)	Product (Mt)	Brine Cutoff Grade[2] (%K_2O)	Processing Recovery (%)
Proven Mineral Reserves	5.5	20.8	4.1	2.0	85
Probable Mineral Reserves	0.3	19.2	0.2	2.0	85
Total Mineral Reserves	5.8	20.7	4.3		

[1]In-situ grade is the amount of K_2O in the contact area of the caverns.
[2]Brine cutoff grade is the amount of K_2O in the extracted brine necessary to cover the cash costs of production.
Mineral Reserves were prepared by Agapito Associates, Inc., a qualified firm for the estimate and independent of Intrepid Potash.
Mineral Reserves are reported exclusive of Mineral Resources, on a 100% basis.
Mineral Reserves are reported based on a flood elevation mining plan, dissolution factor of 96%, areal recovery of 100%, geologic factor of 94.2%, plant recovery of 85%, product purity of 97%, and cavern losses of 2%.
Mt = million tons, % = percent, K_2O = potassium oxide, ft = feet

IPNM—Summary of Langbeinite Mineral Reserves effective December 31, 2021 based on 340 $/Product Ton Mine Site

	ROM Ore (Mt)	In-Situ Grade[1] (Diluted) (%K_2O)	Product (Mt)	Cutoff Grade (ft-%K_2O)	Processing Recovery (%)
Proven Mineral Reserves	18.1	8.5	4.9	43	68
Probable Mineral Reserves	4.2	9.1	1.2	43	68
Total Mineral Reserves	22.3	8.6	6.1		

[1]In-situ grade (diluted) is the amount of K_2O in the ore body with consideration for dilution occurring during mining.
Mineral Reserves are reported exclusive of Mineral Resources, on a 100% basis.
Mineral Reserves were prepared by Agapito Associates, Inc., a qualified firm for the estimate and independent of Intrepid Potash.
Mineral Reserves are reported based on a detailed conventional mine plan, random impurities of 10%, plant recovery of 68%, and product purity of 95.6%.
Mt = million tons, % = percent, K_2O = potassium oxide, ft = feet, ROM = Run-of-Mine

1.7 Economic Analysis

The Net Present Value (NPV) at 8% Annual Percentage Rate (APR) for the before- and after-tax estimated cash flow is positive. The sensitivity to product price and operating cost for an 8% APR was evaluated. Varying costs and sales price plus and minus 10% the NPV remains positive.

1.8 Permitting Requirements

The mines are in operation and necessary state and federal operating permits are in place.

1.9 Conclusions and Recommendations

Agapito recommends that IPNM continue planning for the challenges in solution mining with the presence of low levels of carnallite and plan for the expansion pipeline to the AMAX in the later years of the mine plan. The East mine could likely reduce costs by operating at increased capacities closer to the design capacity when product demand is realized. Overall, the property is operating successfully, and no additional exploration work is recommended beyond the ongoing confirmation drilling.

2 INTRODUCTION

This document was prepared to report the IPNM mineral reserves in terms of saleable product at IPNM under the SEC S-K 1300 rules (2018). The Society for Mining, Metallurgy & Exploration (SME) *Guide for Reporting Exploration Information, Mineral Resources and Mineral Reserves* (SME 2017) (The SME Guide) supplements the modifying factors used to convert mineral resources to mineral reserves.

2.1 Terms of Reference

According to 17 Code of Federal Regulations (CFR) § 229.1301 (2021), the following definitions are included for reference:

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. 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, therefore, may not be converted to a 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. An indicated mineral resource has a lower level of confidence than the level of confidence of a measured mineral resource and may only be converted to a probable mineral reserve. As used in this subpart, the term *adequate geological evidence* means evidence that is sufficient to establish geological and grade or quality continuity with reasonable certainty.

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. As used in this subpart, the term *conclusive geological evidence* means evidence that is sufficient to test and confirm geological and grade or quality continuity.

Modifying factors are the factors that a qualified person must apply to indicated and measured mineral resources and then evaluate in order to establish the economic viability of mineral reserves. A qualified person must apply and evaluate modifying factors to convert measured and indicated mineral resources to proven and probable mineral reserves. These factors include but are not restricted to mining; processing; metallurgical; infrastructure; economic; marketing; legal; environmental compliance; plans, negotiations, or agreements with local individuals or groups; and governmental factors.

A *probable mineral reserve* is the economically mineable part of an indicated and, in some cases, a measured mineral resource.

A *proven mineral reserve* is the economically mineable part of a measured mineral resource. For a proven mineral reserve, the qualified person has a high degree of confidence in the results obtained from the application of the modifying factors and in the estimates of tonnage and grade or quality. A proven mineral reserve can only result from conversion of a measured mineral resource.

Throughout this report, reserves are presented in tons of K_2O and potassium chloride (KCl). Historically, assay data have been reported in terms of %K_2O and reserves in equivalent tons of K_2O. Sylvite is KCl and, in many historical reports, reserve tons or product tons are recorded in terms of tons of KCl. Pure KCl equates to 63.18% K_2O by mass. To convert tonnages from K_2O to KCl, multiply by 1.583.

2.2 Sources of Information

Agapito has previously completed reserve estimations under SEC Guide 7 (2008) rules for this property in New Mexico as shown in Table 2-1.

2.3 Personal Inspection

Personal inspection of the properties has occurred over the years by Agapito personnel. The most recent inspection of the property took place on November 6 and 7, 2019. The inspection included an underground and surface visit to the East, West, and HB Mines.

Table 2-1. Summary of Reserve Reports by Agapito

Effective EOY	Title	Notes	Reference
2006	Determination of Reserves for IPNM of the Carlsbad East and West Mines	Included North Mine reserves hoisted through the West Mine Facilities.	Agapito 2007
2007	Determination of Estimated Proven and Probable Reserves for the Planned HB Solution Mine for Intrepid Mining, LLC		Agapito 2008
2008	Reserve Update for the Carlsbad HB, East and West Mines for Intrepid Potash, Inc.		Agapito 2009
2009	Determination of Estimated Proven and Probable Reserves at Intrepid Potash–New Mexico, LLC		Agapito 2010
2010	Determination of Estimated Proven and Probable Reserves at Intrepid Potash–New Mexico, LLC	AAI updated the reserve estimate by adjusting for the mined-out areas of the LOMP.	Agapito 2011
2011	Determination of Estimated Proven and Probable Reserves at Intrepid Potash–New Mexico, LLC	Reserve estimate as of EOY 2011 based on depletion by extraction of the IPNM's LOMP.	Agapito 2012
2012	Determination of Estimated Proven and Probable Reserves at Intrepid Potash–New Mexico, LLC	New deposit information, lease boundaries, and an updated LOMP were incorporated into the reserve estimate.	Agapito 2013
2013	Determination of Estimated Proven and Probable Reserves at Intrepid Potash–New Mexico, LLC	EOY 2012 estimate was updated to account for depletion by extraction for the 2013.	Agapito 2014
2014	Determination of Estimated Proven and Probable Reserves at Intrepid Potash–New Mexico, LLC	EOY 2012 estimate was updated to account for depletion by extraction for the 2013 and 2014 reserve estimate.	Agapito 2015
2015	End-of-Year 2015 Intrepid Potash, Inc. Reserve for the Carlsbad HB Solar Solution, East and West Mines Intrepid Potash–New Mexico, LLC	Updated lease maps, geologic database as of June 24, 2015, monthly lease reports, production maps, planning maps, and financial documents including sales and costs associated with the HB Solar Solution, West, and East Mines.	Agapito 2016
2016	End-of-Year 2016 Intrepid Potash, Inc. Reserve for the Carlsbad HB Solar Solution, East and West Mines Intrepid Potash–New Mexico, LLC	Depletion by extraction in the 1st, 3rd, 5th, and 7th ore zones from the 2015 EOY.	Agapito 2017
2017	End-of-Year 2017 Intrepid Potash, Inc. Reserve for the Carlsbad HB Solar Solution, East and West Mines	Conventional extraction of langbeinite at the IPNM East Mine 5th ore zone and solution extraction in the 1st and 3rd ore zones at the IPNM HB Solar Solution Mine with updated economic cutoff grades and drill island impacts.	Agapito 2018
2018	2018 Determination of Estimated Proven and Probable Reserves for the Carlsbad HB Solar Solution, East and West Mines	Updated lease maps, geologic database as of July 7, 2018, monthly lease reports, production maps, planning maps, and financial documents including sales and costs associated with the IPNM HB Solar Solution, West, and East Mines.	Agapito 2019
2019	2019 Determination of Estimated Proven and Probable Reserves for the Carlsbad HB Solar Solution, East and West Mines	Extraction, cutoff changes due to economic parameters, new exploration and channel sample data, drill islands, and financial data.	Agapito 2020
2021	2020 Determination of Estimated Proven and Probable Reserves for the Carlsbad HB Solar Solution, East and West Mines	Depletion by extraction in the 1st, 3rd, 5th, and 7th ore zones 2020 EOY.	Agapito 2021

3 Property Description

3.1 Location and Area of the Property

The IPNM Carlsbad HB Solar Solution, East, West, and North Mines are located in southeastern New Mexico in Eddy and Lea Counties in the Carlsbad Potash District (CPD), as shown in Figure 3-1. The location is further defined by the boundary of the Known Potash Leasing Area (KPLA) as shown in Figure 3-2. This United States Bureau of Land Management (BLM) managed area consists of that part of the district where the co-development guidelines for oil and gas and potash are in effect for federal lands under the Secretary's Order 3324 dated December 4, 2012 (Federal Register [FR] 2012-29393). This order revises and supersedes the Order of the Secretary of the Interior, dated October 28, 1986 (51 FR 39425), and corrected on August 26, 1987 (52 FR 32171). The 2012 Secretary's Order does not alter the boundaries of the area. The area also contains state lands that are managed by the state under the New Mexico Oil Conservation Division Order R-111-P (State of New Mexico Energy, Mineral, and Natural Resources 1988). In general, the stated objective of the Secretary's Order and R-111-P is to prevent waste of petroleum and mineral resources and maximize the economic recovery of oil, gas, and potash minerals in the area.

3.2 Mineral Rights

IPNM controls the right to mine approximately 143,000 acres in New Mexico. Of that acreage, 32,000 acres are leased from the State of New Mexico, 106,000 acres are leased from the United States government through the BLM, and 240 acres of mineral rights are leased from private owners. IPNM owns 4,700 surface acres near the mine site, adjacent to the federal and state mining leases. Most mining operations are on properties leased from the state or the federal government. These leases generally contain stipulations that require IPNM to commence mining operations within a specified term and continue mining to retain the lease. The stipulations on IPNM leases are subject to periodic readjustment by the applicable state government and the federal government. Federal leases are for indefinite terms subject to readjustment of the lease stipulations, including the royalty payable to the federal government, every 20 years. Leases with the State of New Mexico are issued for terms of 10 years and for as long thereafter as potash is produced in commercial quantities and are subject to readjustment of the lease stipulations, including the royalty payable to the state. As of December 31, 2019, approximately 22% of IPNM's state, federal, and private lease acres at their New Mexico facilities will be up for renewal within the next 5 years. Table 3-1 lists the leases and the terms.

3.3 Significant Encumbrances

There are no significant encumbrances on the property. A reclamation bond is currently in place for $3.764M and is expected to be adjusted to $4.475M with agency approval over time.

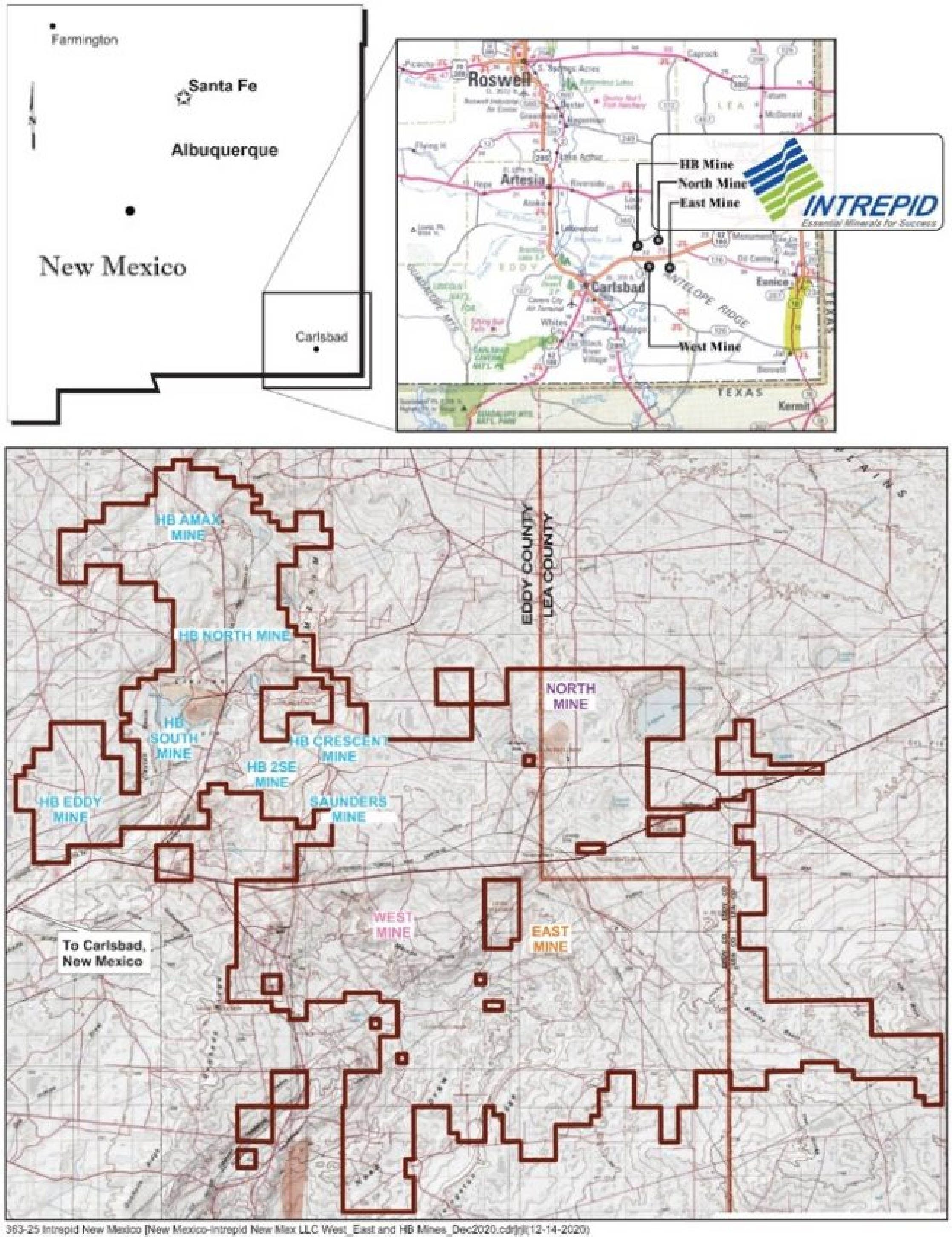

Figure 3-1. Location Map for the IPNM HB, East, and West Mines near Carlsbad, New Mexico

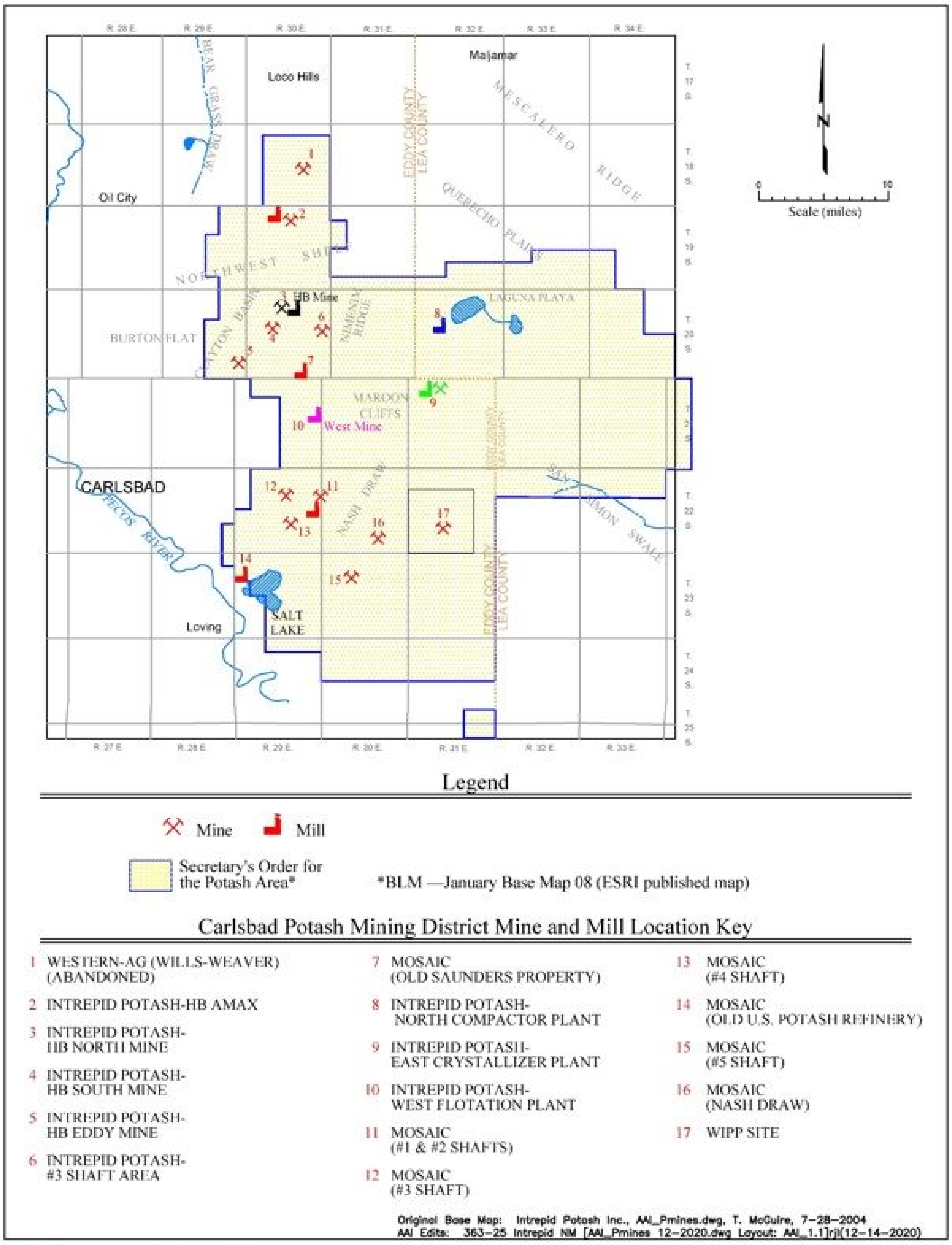

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Figure 3-2. Location Map Depicting the Secretary's Order for the Potash Area

Table 3-1. Property Lease Details

Federal Land Lease Number	Lease Type	Mine	Date	Royalty Rate	Acres (BLM)	Readjustment Due	Amount Paid	Date Paid
NMNM 029268401	Potassium PRL	East	1966		2,546	12/1/2026	$19,092.90	7/8/2019
NMNM 012181001	Potassium PRL	HB	1964	5% Leased Deposits	640	1/1/2025	$19,092.90	7/8/2019
NMNM 005728701	Potassium PRL	East	1963		2,461	1/1/2024	$19,092.90	7/8/2019
NMNM 002362301	Potassium PRL	HB	1961	5% Leased Deposits	400	2/1/2022	$19,092.90	7/8/2019
NMNM 001654001	Potassium PRL	West	1960		120	4/1/2050	$19,092.90	7/8/2019
NMNM 001474201	Potassium PRL	East	1963		640	8/1/2023	$19,092.90	7/8/2019
NMNM 000685901	Potassium PRL	East	1953		2,554	10/26/2033	$19,092.90	7/8/2019
NMNM 000610101	Potassium PRL	West	1957		1,200	2/1/2038	$19,092.90	7/8/2019
NMNM 0554864	Potassium PRL	East	1953		1,250	2/24/2033	$19,092.90	7/8/2019
NMNM 0554863	Potassium PRL	East	1953		200	2/24/2033	$19,092.90	7/8/2019
NMNM 0554862	Pot Fringe Acre NCL	East	1953		480	2/24/2033	$19,092.90	7/8/2019
NMNM 0220116	Potassium CL	HB	1961	5% Leased Deposits	2,552	12/1/2021	$19,092.90	7/8/2019
NMNM 0184150	Potassium PRL	West	1949		240	11/30/2029	$19,092.90	7/8/2019
NMNM 0184149	Potassium PRL	West	1954		80	1/1/2035	$19,092.90	7/8/2019
NMNM 0135065	Pot Fringe Acre NCL	HB	1961	5%+1cent mrt	200	6/1/2021	$19,092.90	7/8/2019
NMNM 131012	Pot Fringe Acre NCL	East	2016		1,320	3/1/2036	$19,092.90	7/8/2019
NMNM 131011	Pot Fringe Acre NCL	East	2016		2,000	3/1/2036	$19,092.90	7/8/2019
NMNM 131010	Pot Fringe Acre NCL	East	2016		1,280	3/1/2036	$19,092.90	7/8/2019
NMNM 120103	Pot Fringe Acre NCL	East	2012		1,920	10/1/2032	$19,092.90	7/8/2019
NMNM 120102	Pot Fringe Acre NCL	West	2012		1,560	10/1/2032	$19,092.90	7/8/2019
NMNM 120101	Pot Fringe Acre NCL	East	2012		2,240	10/1/2032	$19,092.90	7/8/2019
NMNM 118970	Potassium CL	East	2006		320	1/1/2028	$19,092.90	7/8/2019
NMNM 118969	Potassium CL	East	2006		320	1/1/2028	$19,092.90	7/8/2019
NMNM 113457	Pot Fringe Acre NCL	HB	2012	5% Leased Deposits	560	10/1/2032	$19,092.90	7/8/2019
NMNM 113456	Pot Fringe Acre NCL	HB	2012	5% Leased Deposits	2,480	10/1/2032	$19,092.90	7/8/2019
NMNM 113455	Pot Fringe Acre NCL	HB	2012	5% Leased Deposits	2,401	10/1/2032	$19,092.90	7/8/2019
NMNM 112199	Pot Fringe Acre NCL	HB	2007	Sliding Scale (POT); 5% Lang	434	2/1/2027	$19,092.90	7/8/2019
NMNM 110949	Pot Fringe Acre NCL	East	2004		1,918	12/1/2024	$19,092.90	7/8/2019
NMNM 0088285	Pot Fringe Acre NCL	HB	1960	5%+1cent mrt	120	8/1/2040	$19,092.90	7/8/2019
NMNM 080707	Pot Fringe Acre NCL	East	1963		2,520	8/1/2023	$19,092.90	7/8/2019
NMNM 0070607	Pot Fringe Acre NCL	West	1960		552	2/1/2050	$19,092.90	7/8/2019
NMNM 0063880	Pot Fringe Acre NCL	West	1959		120	7/1/2039	$19,092.90	7/8/2019
NMNM 054619	Pot Fringe Acre NCL	East	1983		2,092	3/1/2023	$19,092.90	7/8/2019
NMNM 0050249A	Potassium PRL	HB	1963	Sliding Scale (POT)	920	9/1/2023	$19,092.90	7/8/2019
NMNM 047021	Pot Fringe Acre NCL	East	1982		1,105	7/1/2022	$19,092.90	7/8/2019
NMNM 0045410	Potassium PRL	East	1958		2,438	6/1/2038	$19,092.90	7/8/2019
NMNM 041639	Pot Fringe Acre NCL	East	1981		120	7/1/2021	$19,092.90	7/8/2019
NMNM 040362	Pot Fringe Acre NCL	East	1980		280	12/1/2040	$19,092.90	7/8/2019
NMNM 040071	Potassium CL	North	1980		2,080	5/1/2020	$19,092.90	7/8/2019
NMNM 0036791	Potassium CL	HB	1957	5% Leased Deposits	1,840	10/1/1037	$19,092.90	7/8/2019
NMNM 0035383	Potassium CL	East	1957		2,400	1/1/2038	$19,092.90	7/8/2019
NMNM 0033696A	Potassium PRL	East	1957		1,241	3/1/2038	$19,092.90	7/8/2019
NMNM 0033696	Potassium PRL	West	1957		960	3/1/2038	$19,092.90	7/8/2019
NMNM 028916	Pot Fringe Acre NCL	West	1963		880	8/1/2023	$19,092.90	7/8/2019
NMNM 028915	Potassium PRL	East	1958		118	6/1/2038	$19,092.90	7/8/2019
NMNM 025234	Potassium PRL	West	1949		80	11/30/2029	$19,092.90	7/8/2019
NMNM 025233	Potassium PRL	West	1951		1,600	1/2/2032	$19,092.90	7/8/2019
NMNM 025232	Potassium PRL	West	1951		1,600	7/6/2031	$19,092.90	7/8/2019
NMNM 024522	Pot Fringe Acre NCL	West	1976		800	3/1/2022	$19,092.90	7/8/2019
NMNM 018417	Pot Fringe Acre NCL	East	1952		160	1/9/2032	$19,092.90	7/8/2019

Table 3-1. Property Lease Details (continued)

Federal Land Lease Number	Lease Type	Mine	Date	Royalty Rate	Acres (BLM)	Readjustment Due	Amount Paid	Date Paid
NMNM 0015064C	Potassium PRL	East	1953		1,049	10/25/2033	$19,092.90	7/8/2019
NMNM 0015064B	Potassium PRL	East	1953		1,280	10/26/2033	$19,092.90	7/8/2019
NMNM 0015064A	Potassium PRL	East	1953		1,600	10/26/2033	$19,092.90	7/8/2019
NMNM 013933	Pot Fringe Acre NCL	HB	1971	5% Leased Deposits	80	10/1/2031	$19,092.90	7/8/2019
NMNM 013932	Pot Fringe Acre NCL	West	1974		640	11/1/2034	$19,092.90	7/8/2019
NMNM 012763	Pot Fringe Acre NCL	HB	1971	5% Leased Deposits	160	6/1/2031	$19,092.90	7/8/2019
NMNM 0011777	Pot Fringe Acre NCL	North	1952	1% ORRI	1,118	1/9/2032	$19,092.90	7/8/2019
NMNM 0011776	Pot Fringe Acre NCL	North	1952	1% ORRI	2,559	1/9/2032	$19,092.90	7/8/2019
NMNM 0007005	Potassium PRL	West	1952		2,073	1/2/2032	$19,092.90	7/8/2019
NMNM 0003468	Pot Fringe Acre NCL	West	1958		960	7/1/2038	$19,092.90	7/8/2019
NMLC 007186801	Potassium PRL	East	1955		1,938	9/1/2035	$19,092.90	7/8/2019
NMLC 007014101	Potassium PRL	HB	1953	5%+1cent mrt	439	1/1/2039	$19,092.90	7/8/2019
NMLC 006839701	Potassium PRL	North	1948	1% ORRI	1,920	1/9/2032	$19,092.90	7/8/2019
NMLC 006602601	Potassium PRL	HB	1951	5% + 1cent mrt	200	9/1/2035	$19,092.90	7/8/2019
NMLC 006569301	Potassium PRL	West	1956		560	2/1/2038	$19,092.90	7/8/2019
NMLC 006556601	Potassium PRL	HB	1951	5% Leased Deposits; 1.0987% ORRI	720	9/28/2031	$19,092.90	7/8/2019
NMLC 006528601	Potassium PRL	North	1952	1% ORRI	2,554	1/9/2032	$19,092.90	7/8/2019
NMLC 006527501	Potassium PRL	North	1952	1% ORRI	2,551	1/9/2032	$19,092.90	7/8/2019
NMLC 006508101	Potassium PRL	HB	1950	Sliding Scale (POT); 1.0987% ORRI	560	12/6/2030	$19,092.90	7/8/2019
NMLC 006184701	Potassium PRL	West	1951	1.0987% ORRI	1,275	7/6/2031	$19,092.90	7/8/2019
NMLC 0050063F	Potassium PRL	HB	1938	5% Leased Deposits; 1.0987% ORRI	2,358	4/15/2039	$19,092.90	7/8/2019
NMLC 0050063B	Potassium PRL	HB	1934	5% Leased Deposits; 1.0987% ORRI	2,560	4/15/2039	$19,092.90	7/8/2019
NMLC 0046729D	Pot Fringe Acre NCL	HB	1933	5% Leased Deposits; 1.0987% ORRI	2,560	1/18/2033	$19,092.90	7/8/2019
NMLC 0046729C	Pot Fringe Acre NCL	HB	1933	5% Leased Deposits; 1.0987% ORRI	2,280	1/18/2033	$19,092.90	7/8/2019
NMLC 0046729A	Pot Fringe Acre NCL	HB	1933	5% Leased Deposits; 1.0987% ORRI	2,559	1/18/2033	$19,092.90	7/8/2019
NMLC 0044752	Pot Fringe Acre NCL	HB	1956	5% Lang	240	9/1/2036	$19,092.90	7/8/2019
NMLC 0043636C	Pot Fringe Acre NCL	West	1932		920	6/20/2032	$19,092.90	7/8/2019
NMLC 0043636B	Pot Fringe Acre NCL	West	1931		2,312	6/20/2032	$19,092.90	7/8/2019
NMLC 0043636A	Pot Fringe Acre NCL	West	1931		1,044	6/20/2032	$19,092.90	7/8/2019
NMLC 0036092C	Pot Fringe Acre NCL	West	1927		2,559	11/21/2029	$19,092.90	7/8/2019
NMLC 0036092B	Pot Fringe Acre NCL	West	1927		2,026	11/21/2029	$19,092.90	7/8/2019
NMLC 0036092A	Pot Fringe Acre NCL	West	1927		2,437	11/21/2029	$19,092.90	7/8/2019

State of New Mexico Land Lease Number	Lease Type	Issue Date	Acres (State)	Amount Paid	Date Paid
HP00050001	Potash	2005	3,200	$3,200	5/7/2020
HP00250000	Potash	2012	640	$640	9/3/2020
HP00260000	Potash	2012	640	$640	9/3/2020
HP00270000	Potash	2012	1,680	$1,680	9/3/2020
HP00280000	Potash	2010	80	$80	7/2/2020
HP00290000	Potash	2009	640	$640	11/19/2020
HP00480000	Potash	2012	1,200	$1,200	9/24/2020
HP00490000	Potash	2012	1,450	$1,450	9/3/2020
HP00500000	Potash	2012	2,280	$2,280	9/24/2020
HP00510000	Potash	2012	960	$961	9/3/2020
HP00520000	Potash	2012	1,435	$1,436	10/1/2020
M006510011	Potash	1936	17,486	$1,749	11/19/2020

NOTE—Coordinate System: Shifted from North American Datum (NAD) 27 New Mexico State Plane North to Local Mine Grid
PRL = Preference Rights Lease; CL = Competitive Lease; NCL = Non-Competitive Lease

3.4 Significant Factors

There are no significant factors or risks that may affect access, title, or the right or ability to perform work on the property.

4 ACCESSIBILITY

4.1 Topography, Elevation, and Vegetation

The topography is explained in the HB Mine Environmental Impact Statement (EIS) (United States Department of Interior [DOI] 2012) as a karst topography with sinkholes, caves, and enclosed depressions. The topography is the result of the dissolution of evaporite deposits in the subsurface. The vegetation cover in the permit area is typical of the Pecos Valley on the eastern edge of the Guadalupe Mountains. The area is dominated by desert scrub, mesquite upland scrub, and grasslands (DOI 2012). The mines are located at an approximate surface elevation of 3,500-ft mean sea level (msl).

4.2 Property Access

The mining facilities are accessible by both road and rail as shown in Figure 4-1. Adequate infrastructure is in place to meet production requirements. In fact, excess water conditioned with salt is currently being sold to other industrial users. Shipment of product is by truck and rail via paved United States Highway 180-W and the Burlington Northern Santa Fe (BNSF) rail link. The area is served by small air carriers at the Cavern City Terminal located in Carlsbad, New Mexico. The closest international airport is in El Paso, Texas, 160 miles away.

4.3 Climate

The climate is generally mild with an average temperature of 62.4 degrees Fahrenheit (°F). The precipitation, as rainfall during the monsoon season from May to September, averages 13.4 inches. Average annual snowfall is 3 inches (US Climate Data 2020). The weather is favorable to conducting solar evaporation. Operations continue throughout the year without significant weather disruption.

4.4 Infrastructure Availability

IPNM has sufficient water rights, reliable electric power, and a robust supply chain. As noted in the annual report to the SEC (Intrepid 2019a), the mines compete with other industries for qualified labor. Layoffs in market downturns may make it more difficult to re-hire personnel after the turndown.

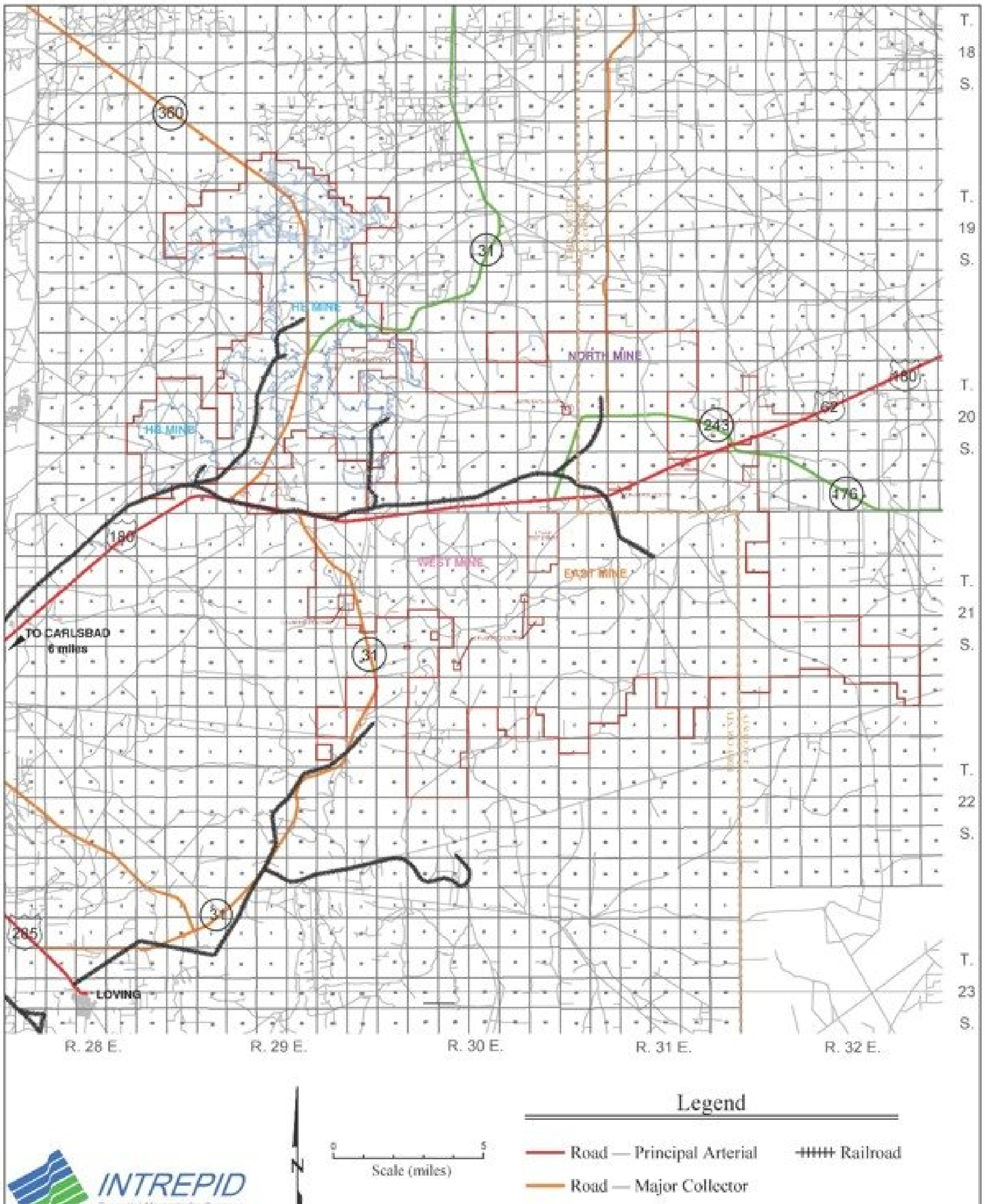


Figure 4-1. Mine Locations showing Property Access

5 History

Potash was first discovered in southwest New Mexico in 1925 in Eddy County, New Mexico, in Snowden McSweeney Well No. I on a V. H. McNutt permit near the center of the portion of what is now the KPLA. Commercial shipments began in 1931. The ownership history is listed in Table 5-1.

Table 5-1. Mine Ownership History

Property	Owner	Date
East Mine	Kerr-McGee Chemical Corporation	1961–1985
	New Mexico Potash Corporation (Trans Resources, Inc.)	1985–1996
	Mississippi Potash Inc.	1996–2004
	Intrepid Mining- NM, LLC	2004–Present
West Mine	U. S. Potash Company	1929–1956
	U.S. Borax and Chemical Corporation	1956–1968
	U.S. Potash and Chemical	1968–1970
	Continental American Royalty Corporation	1970–1972
	Teledyne	1972–1974
	Mississippi Chemical Company (MCC)	1974–1996
	Mississippi Potash, Inc. (MPI) (a subsidiary of MCC)	1996–2004
	Intrepid Mining - NM, LLC	2004–Present
North Mine	National Potash Company (Freeport Sulphur Company)	1957–1982
	New Mexico Potash Corporation (Trans Resources Inc.)	1982
	Mississippi Chemical Corporation	1985–1988
	Mississippi Chemical Corporation	1992–1996
	Mississippi Potash Inc.	1996–2004
	Intrepid Mining- NM, LLC	2004–Present
AMAX Mine	Southwest Potash Corporation	1948
	AMAX Potash	1986–1992
	Horizon Gold (Horizon Potash)	1992–1995
	Intrepid Mining - NM, LLC	2012–Present
HB Mine	Potash Corp of America	1934–1967
	Ideal Basic	1967–1985
	Lundberg Industries	1985–1987
	Trans-Resource (Eddy Potash)	1987–1996
	Mississippi Potash, Inc.	1996–2004
	Intrepid Mining NM, LLC	2004–Present

6 GEOLOGIC SETTING

The term "potash" is a generic term describing potassium in combination with chloride, sulfates, or nitrates. Potassium is one of the key nutrients for plants in fertilizer with nitrogen and phosphorus. Potash-bearing evaporites are typically formed as the result of evaporation of brine in basins with restricted outlets. Potash zones are found near the top of halite beds because potash is precipitated from the concentrated brines found at the end of the evaporation sequence. Important natural and commercial soluble potassium salts are sylvite (KCl) and langbeinite, a potassium magnesium double salt ($K_2SO_4 \cdot 2MgSO_4$) (Barker and Austin 1999).

6.1 Deposit Type

The geology of the potash-bearing beds of the Carlsbad area has been well documented. Overall, the potash-bearing beds may be described as bedded sedimentary rocks, deposited across the Delaware Basin and Northwest Shelf backreef from the Capitan Reef. The depositional sequences that developed in the Salado Formation consist of repetitive cycles that can be recognized by changes in mineralogy, sedimentary textures, and structures. Two types of cycles are differentiated Type I and Type II. A complete Type I cycle ranges in thickness from 3 ft to 33 ft and consists of (in ascending order):

- A basal, mixed siliciclastic and carbonate mudstone
- Laminated to massive anhydrite-polyhalite
- Halite
- Halite with mud (argillaceous halite)

Type II is a thinner, less complete sequence and consists of halite that grades upward into argillaceous halite (Lowenstein 1988). The anhydrite-polyhalite beds are laterally continuous over large distances and are used as marker beds for correlation. Potash beds are not included in these sequences because potash is secondary and formed later than the basic depositional sequence.

6.2 Regional Geology

The Carlsbad area falls within the Delaware Basin of Permian Age. The Delaware Basin has a maximum width of approximately 100 miles and a length of approximately 150 miles, extending from north of Carlsbad, New Mexico, to Pecos County, Texas.

The Permian Age sequence comprises the Ochoan, Guadalupe, Leonard, and Wolfcamp series in order of increasing age (Linn and Adams 1966). Laterally extensive, evaporite beds containing deposits of halite, sylvite, langbeinite, kainite, carnallite, and other evaporite minerals are found within the Ochoan Series, whose top ranges from a depth of 2,000 ft near the Texas State line to approximately 200 ft below surface north of Carlsbad.

The Ochoan Series is divided into four formations as follows, in order of increasing depth (Vine 1963):

- Dewey Lake Red Beds, which consist of 200 to 250 ft of fine-grained sandstone, siltstone, and shale of low permeability that is absent west of the Pecos River.

- Rustler Formation, which consists of approximately 350 ft of dolomite and anhydrite beds that outcrop along the Pecos River west of the potash area.
- Salado Formation, which was originally called the Upper Castile Formation and was separated from the underlying Castile based on a potash content of more than 1% K_2O (Kroenlein 1939). The Salado Formation contains 12 potash zones, of which 6 have been or are currently being mined.
- Castile Formation, which is laterally bounded by the Guadalupian Age Capitan Reef limestones that define the Delaware Basin and consists of calcite-banded anhydrite and halite formed in a deep-water environment (Cheeseman 1978).

The Salado Formation thickness ranges from 1,200 ft to 2,300 ft and consists of an unnamed Upper Member, the McNutt Potash Member, and an unnamed Lower Member. Much of the variation in thickness is due to removal of halite by dissolution. It is an evaporite sequence dominated by 650 to 1,300 ft of halite and argillaceous halite and contains over 42 informally named or numbered marker beds in addition to 11 numbered potash zones within the McNutt Potash Member (Table 6-1).

Table 6-1. The Potash Zones in the McNutt Potash Member

Marker Bed	Thickness (ft)	Approximate Depth from Top of Salado (ft)	Lithology
MB103	20	180	Anhydrite
MB109	20	320	Anhydrite, finely crystalline, interbedded with stringers of halite, polyhalite and mudstone
Vaca Triste	10	540	Siltstone and silty mudstone interbedded with halite
MB117			Polyhalite
MB119			Polyhalite
MB120			Anhydrite
MB121			Polyhalite
MB122			Polyhalite
Union Anhydrite	15-20	760	Anhydrite, finely crystalline with stringers of halite
MB123	5-10	845	Halite and polyhalite
MB124	5-10	870	Anhydrite, finely crystalline laminated. May have stringers of mudstone
MB125			Polyhalite
MB126			Polyhalite
MB134	10-15	1,260	Anhydrite
MB136	10-15	1,340	Anhydrite. May have interbeds of halite or polyhalite
MB142	15	1,550	Anhydrite with interbeds of halite and stringers of mudstone
Cowden Anhydrite	20	1,700	Anhydrite, finely crystalline, laminated. May have thin interbeds of magnesite and mudstone. Divided into two beds by intervening halite in SE Eddy County

Source: Backman (1984); Griswold (1982)

6.3 Property Geology

Sylvinite is currently being mined using solution methods in the 1st and 3rd ore zone. Historically, sylvinite has been conventionally underground mined in the 1st, 3rd, 5th, 7th, and 10th ore zones. Mechanical mining of langbeinite is currently occurring in the 3rd and 5th ore zones at the East

Mine. Langbeinite is prevalent in the 3rd and 4th ore zones in the southern part of the Delaware Basin, part of the Permian Basin, and occurs mixed with sylvite in the 5th ore zone.

6.3.1 East Mine

Historically, the East Mine primarily mined sylvinite in the 10th ore zone. Current mining is predominantly taking place on the 5th mixed and 3rd langbeinite ore zones. The 5th ore zone is a mixed ore consisting of variable amounts of K_2O as langbeinite and sylvite. The 5th ore zone, predominant in langbeinite, is mined and blended with the 3rd langbeinite ore. The common minerals found at the mine are halite, sylvite, clay (montmorillonite), sulfate minerals, and carnallite. The eastern sections of the mine have large deposits of carnallite and kieserite. The 10th ore zone is also characterized by isolated pods of barren clays. These clay pods range in size from a few square feet to several hundred thousand square feet. The location of these pods is random, and there is no known practical method of predicting their location.

6.3.2 West Mine

The potash deposits at the West Mine consist of mixed sylvite (KCl) and halite (NaCl) in two distinct zones within one of the flat-lying halite beds. This bed is located near the middle of the Salado Formation. Thin zones of enriched potash-bearing minerals are located within the 150-ft deposit.

Mining activities most recently took place in the 5th, 7th, and 10th ore zones. In most parts of the deposit, the vertical change from ore to barren salt is abrupt, while the lateral transition at the edges of the ore body is gradual. Barren masses of halite, known as “salt horses,” are scattered irregularly throughout the ore body. The ore is an intimate intergrowth of crystalline NaCl and KCl in various proportions, with sylvite typically less than 35%. Sylvite is milky or faintly bluish gray but is often stained red by iron oxide around the crystals. Halite commonly is clear, grayish, or orange/yellow with occasional red staining. Blue halite is occasionally found associated with the sylvite.

6.3.3 North Mine

In the vicinity of the North Mine, the 10th ore zone is encountered at depths of between approximately 1,400 and 1,900 ft below ground surface. The 10th ore zone consists of two sylvinite beds separated by a halite unit. The lower member, or zone 10C, is the target ore bed for the North Mine and may vary in thickness from 3 to 8 ft.

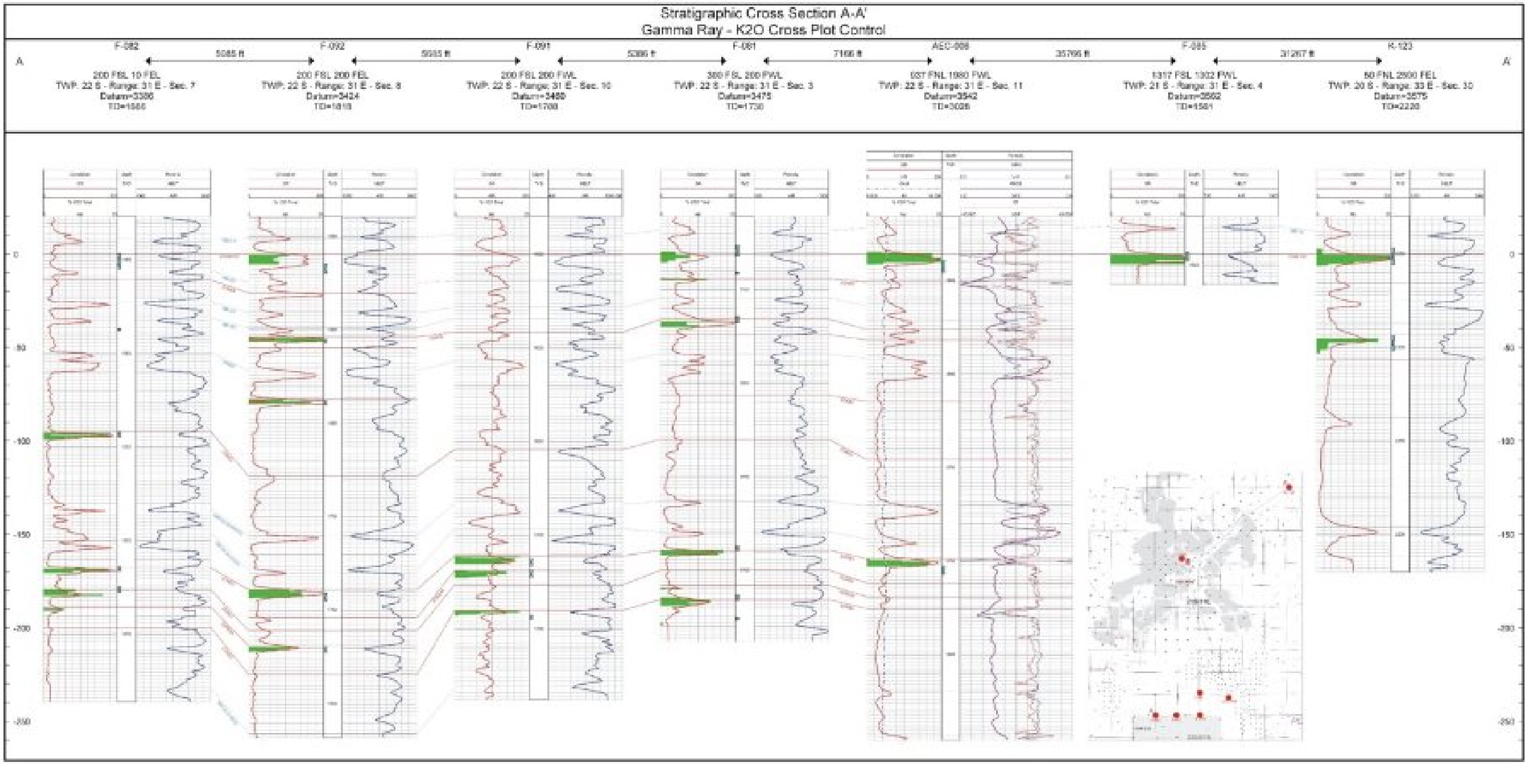


Figure 6-1. Carlsbad Potash District Regional Cross Section (Lewis 2007)

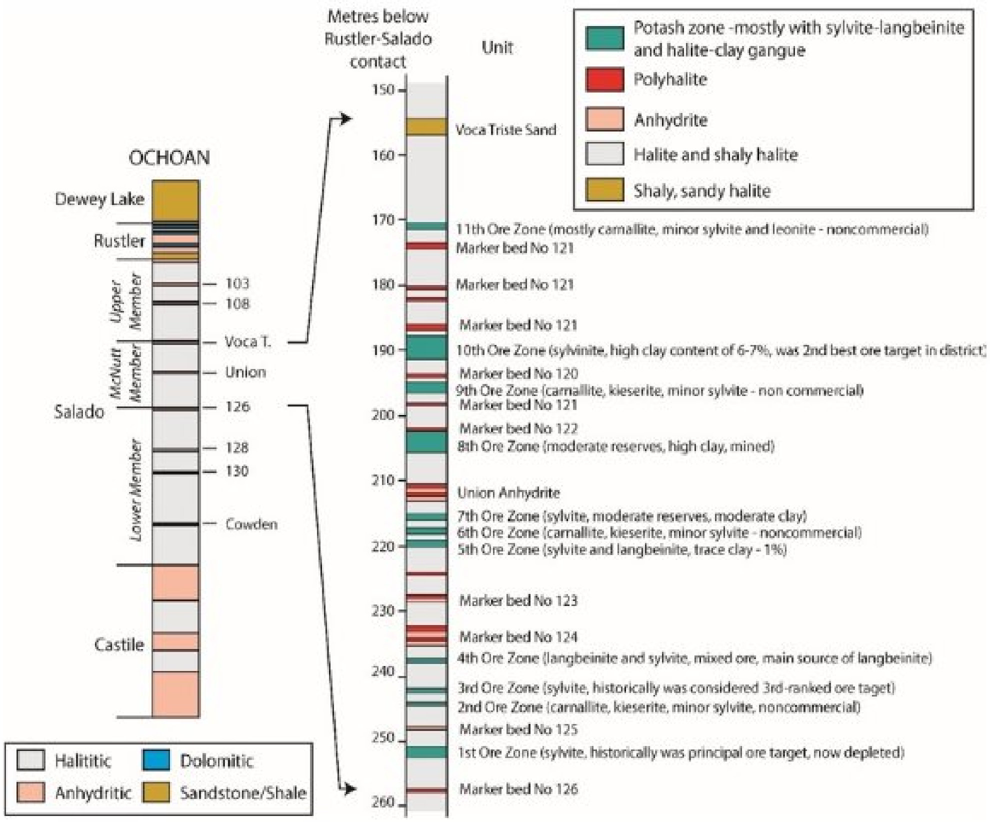


Figure 6-2. Typical Stratigraphic Column of the Ochoan (Warren 2018)

6.3.4 HB Solar Solution Mine

The HB Mine, which was formerly owned by the Eddy Potash, Co., and mined on the 1st and 3rd ore zones (Barker and Austin 1999), has been flooded and is currently being solution mined with brines to obtain potash from the remaining pillars.

6.4 Mineralization

In the Carlsbad Area, the potassium minerals, in order of decreasing abundance, are polyhalite, sylvite, carnallite, langbeinite, kainite, and leonite. Other potassium minerals occur only in minor amounts in association with the principal potassium minerals listed previously. The K_2O contents, chemical compositions, and elemental contents of the minerals found in the Carlsbad Area are given in Table 6-2.

Table 6-2. Carlsbad Area Minerals and Their Compositions

Ore Zone	Closest Marker Bed: Above Ore Zone	Closest Marker Bed: Below Ore Zone	Approximate Bed Depth (ft-bgs)	Bed Thickness (ft)	Clay Content (%)	Mineralogy	Minability and Status
Eleventh	Vaca Triste	MB117				Mostly carnallite, minor silvite and leonite	Not commercial
Tenth	MB119	MB120	700	5–12	5–7	Sylvite	Second best in District; in production
Ninth	MB120	MB121				Carnallite, kieserite, minor sylvite	Not commercial
Eighth	MB122	Union			6–7	Sylvite	Moderate size; unmined
Seventh	Union			5–9	3–4	Sylvite	Formerly mined; standby
Sixth	Union					Carnallite, kieserite, etc.	Not commercial
Fifth	Union	MB123	800	4.7–5	1	Sylvite and langbeinite	In production
Fourth	MB 124		850	4		Langbeinite and sylvite	Principal source of langbeinite; in production
Third	MB 124		865			Sylvite	In production for solution mining
Second	MB 124	MB125				Carnallite, kieserite, etc.	Not commercial
First	MB125	MB126	900	8–14	2	Sylvite	Long-time producer; currently flooded with brine for solution mining

Source: Barker and Austin (1993); Swales (1966); Pierce (1936); Haworth (1949); Bruhn and Miller (1954); Jones et al. (1954); Kirby (1974); Herne and McGuire (2001)

The minerals listed above can be described as follows (Schaller and Henderson 1932):

- Polyhalite is the most abundant potassium mineral in the Carlsbad Area. Beds of nearly pure polyhalite have thicknesses up to 8 ft and beds a foot or more thick are numerous.
- Sylvite often has a dark red or reddish-brown color due to hematite inclusions. Sylvite without the inclusions is a milky white color. Sylvite is typically mixed with halite and where clay is present in the mixture, it is in bands distinct from the sylvite.
- Carnallite is massive and compact showing no crystal faces. Crystals where seen are typically less than 1 millimeter (mm) in diameter. It occurs in small blebs with halite and sylvite.
- Langbeinite is found in distinct tetrahedral crystals that reach sizes up to ¾ inch. It is typically associated with halite and sylvite and often some kieserite. It has a distinct pink color in most samples and has a higher compressive strength than sylvite.
- Kainite is massive with poorly developed fibrous fracture surfaces and has a characteristic honey-yellow color. It is found in narrow bands between sylvite and langbeinite and is apparently a result of a reaction between the two.
- Leonite is typically found in small quantities in mixtures of other minerals, notably kainite and sylvite. Its color ranges from colorless to pale yellow. It is also found with polyhalite and anhydrite, but the relationship is unclear. It has also been found as a secondary replacement for kieserite.

6.5 Geologic Structure

The potash-bearing beds in the Carlsbad Area may be affected by several types of anomalies:

- “Salt horses” (Gunn and Hills 1978)
- “Mud horses” (Simmons 2013)
- Dissolution and collapse anomalies (“breccia chimneys”)

- Igneous dykes

The presence of high concentrations of non-economic evaporite minerals, insolubles, or geologic disturbances that influence the normal character of the potash-bearing beds is considered an “anomaly” and may be unsuitable for mining. These anomalies range from localized features significantly less than a square kilometer to disturbances that are regional (i.e., several square kilometers in extent).

7 EXPLORATION

7.1 Exploration Other than Drilling

No exploration other than confirmation drilling has been performed.

7.2 Drilling Exploration

Intrepid partakes in ongoing exploration as a part of operational long-term planning. Core holes are drilled from the surface and underground, and channel samples are collected as mining advances. Intrepid provided Agapito their dataset beginning in 2007. Since that time, multiple data points have been added and several drillholes were reassessed. Potash is also identified from gamma ray geophysical logs in oil and gas wells. Bed thickness and potash grade are estimated and quantified with input from 2,928 sample points. Extensive work was completed with geophysical tools in collaboration with the United States Geologic Survey (USGS) (Nelson 2007) to determine and verify potash grades from gamma logs (Lewis 2006). The sample database for this exploration work is shown in Table 7-1. The dataset is from oil and gas wells, surface core holes, underground core holes, channel samples, shaft samples, and roof bolt holes. The key sample types include 7,209 drillholes and channel samples and are broken down by mining zone. Figure 7-1 shows the exploration drillhole and channel sample locations and regional topography. The dataset used for this reserve evaluation is shown in Table 7-2.

Table 7-1. Data Sample Sets—All Available Holes

Ore Zone	Oil/Gas Wells	Surface Core Holes	Underground Core Holes	Channel Samples	Shaft	Roof Bolt	Total Samples
Zone 2	—	2	—	—	—	—	2
Zone 3	478	560	57	73	3	—	1,171
Zone 3A	—	1	—	—	—	—	1
Zone 4	480	544	62	5	3	—	1,094
Zone 4A	—	2	—	—	—	—	2
Zone 5	488	572	114	2,014	4	42	3,234
Zone 7	484	611	89	805	4	7	2,000
Zone 8	492	613	53	—	3	—	1,161
Zone 9	—	1	—	—	—	—	1
Zone 10C	506	843	7	181	3	—	1,540
Total	2,928	3,749	382	3,078	20	49	**10,206**

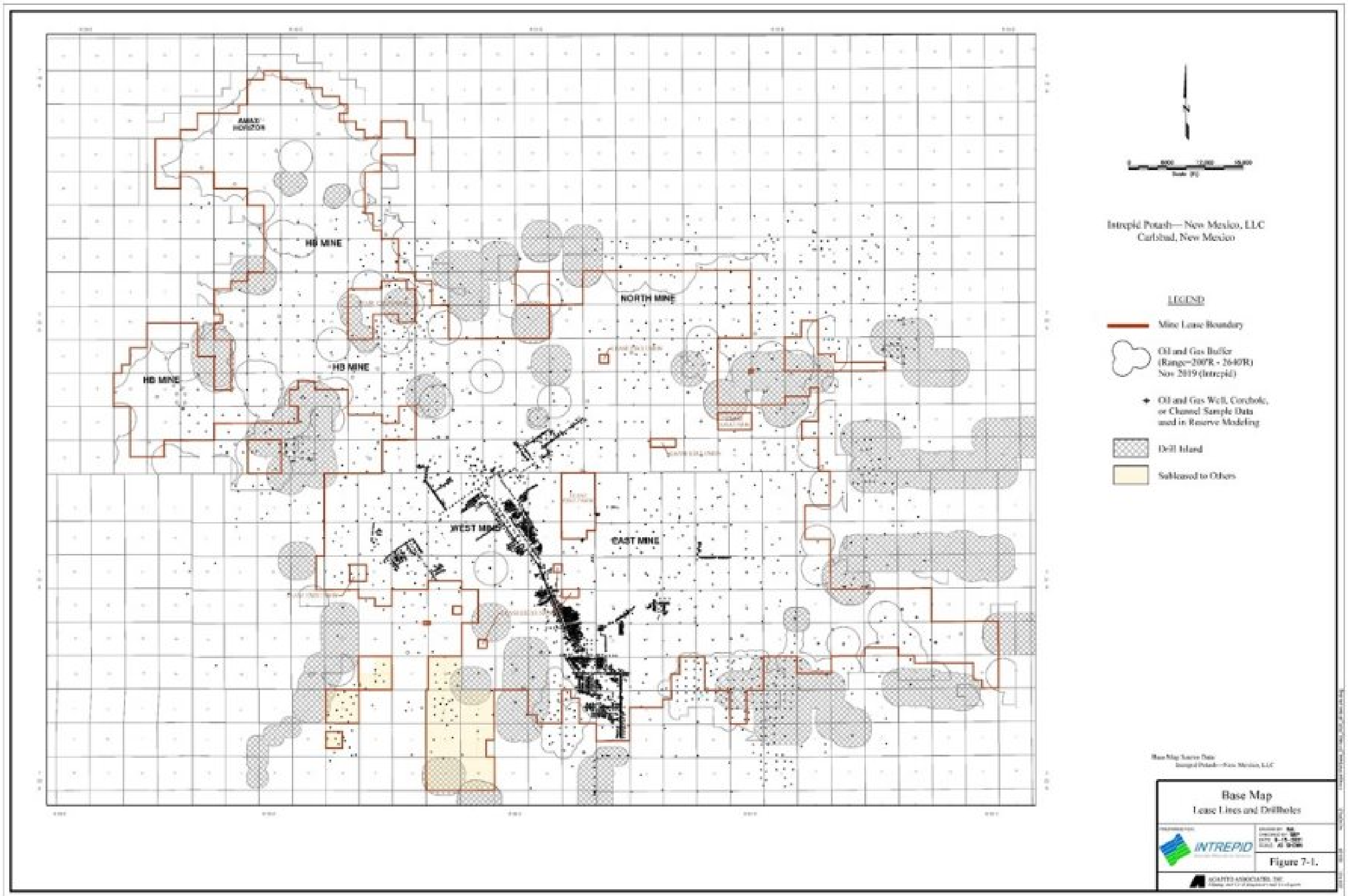


Figure 7-1. Base Map, Lease Lines and Drillholes

Table 7-2. Data Sample Sets—Resource Evaluation Dataset

Ore Zone	Oil/Gas Wells	Core Holes	Channel Samples	Total Samples
Zone 3	463	542	73	1,078
Zone 4	469	619	12	1,100
Zone 5	482	651	1,979	3,112
Zone 7	480	609	831	1,920
Zone 8	476	576	2	1,054
Zone 10	486	729	183	1,398

7.3 Characterization of Hydrogeology Data

The characterization of the hydrogeology was completed for the HB In-situ Solution Mine by AECCOM in 2011 and is included as part of the publicly available EIS (DOI 2012). The study confirmed the availability of water for the initial flooding of the solution mines at a pumping rate ranging from 177 to 1,440 gallons per minute (gpm).

7.4 Characterization of Geotechnical Data

Not applicable.

8 Sample Preparation

IPNM has standard operating procedures (SOP) in place for logging and sampling core from underground anpaged surface core drilling. According to the SOP's, the geologist uses gamma ray to initially select the sample interval prior to prepping the sample for analysis. The samples are assayed at the on-site laboratory. The site laboratory has the capability to conduct X-ray Diffraction (XRD), Total Organic Carbon (TOC), and flame photometry laboratory techniques.

The mineral analysis for all core and channel samples is analyzed with the XRD. A sample of approximately 300–500 grams (g) is collected. The sample is split down to around 100 g and run though a grinding mill to reduce the size down to approximately –100 mesh. A sample is weighed out to 5 g and put into a micronizing mill that reduces the particle size to ~10 microns and pressed into a sample holder. The sample is inserted into the instrument and a diffraction pattern is retrieved. The diffraction pattern is then analyzed using the Rietveld refinement software, reporting weight percent of solid mineral in the sample.

The sample preparation, security, and laboratory analytical procedures are conventional industry practice and are adequate for the reporting of resources and reserves.

9 DATA VERIFICATION

Due to the proximity of the location to the DOI Waste Isolation Pilot Plant (WIPP) site, and the intensive oil and gas drilling in the Permian Basin, there is geologic data publicly available for comparison. Data was also verified for beds with an extraction history by reconciling actual mining with the planned mining based on geologic modeling from the exploration database.

9.1 Data Verification Procedure

The site has been producing for many years. Mining and processing of the ore to successfully marketed products is verification of the exploration data.

9.2 Limitations on Verification

There are no limitations on the verification.

9.3 Adequacy of the Data

It is the opinion of the Qualified Person (QP) that the data is adequate for the determination of resources and reserves. The deposit has historically and continues to be mined with plans based on the data.

10 Mineral Processing and Metallurgical Testing

IPNM has a long history of processing ores on-site. Recovery estimates are based on past plant performance, current performance, and anticipated future performance based on laboratory or metallurgical testing of the anticipated plant feed. Over time, the appropriate capital modifications to the plants have been made to accommodate changes in ore feed and market requirements.

10.1 Adequacy of the Data

It is the opinion of the QP that the data is adequate for the determination of resources and reserves. The deposit has historically and continues to be processed successfully.

11 MINERAL RESOURCE ESTIMATES

According to 17 CFR § 229.1301 (2021), the following definitions of mineral resource categories are included for reference:

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. 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, therefore, may not be converted to a 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. An indicated mineral resource has a lower level of confidence than the level of confidence of a measured mineral resource and may only be converted to a probable mineral reserve. As used in this subpart, the term *adequate geological evidence* means evidence that is sufficient to establish geological and grade or quality continuity with reasonable certainty.

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. As used in this subpart, the term *conclusive geological evidence* means evidence that is sufficient to test and confirm geological and grade or quality continuity.

11.1 Key Assumptions, Parameters and Methods

The exploration drillhole and channel sample data were compiled to form the database that serves as the basis for estimating the resources. The geologic setting was evaluated, and bed assignments reviewed. Of the data within the lease boundary, all data points contribute bed thickness, and several have assay information.

The geology was modeled using Carlson Software (2020). A basic inverse distance-squared (ID^2) algorithm was used with a search radius of ¾ mile to prepare the 100-ft x 100-ft grids for bed thickness and grade. The search radius was applied for Measured and Indicated Resources of ¼ mile and ¾ mile, respectively. Where data is dense, the nearest 25 data points were used to assign values for the grid block. The grids were multiplied by each other to compile a grade-thickness (GT) grid within the lease boundaries held by IPNM. The base grid was adjusted for each ore type cutoff. Key assumptions and parameters for resource estimation are listed in Table 11-1.

The classification of cutoff in terms of GT in units of ft% was defined in the Secretaries Order dated October 21, 1986 (51 FR 39425) for mechanically mined potash deposits. The criteria

Table 11-1. Parameter Assumptions

	Resources	
	Measured	**Indicated**
Proximity to sample point	1,320 ft (1/4 mile)	3,960 ft (3/4 mile)
GT for sylvinite mechanical mining	40.0 ft% K_2O	
GT for high-insoluble sylvinite mechanical mining*	59.0 ft% K_2O	
GT for langbeinite mechanical mining	32.0 ft% K_2O	
Flood elevation HB South	2,525 ft	
Flood Elevation HB North	2,325 ft	
Flood Elevation HB Eddy	2,675 ft	
Flood Elevation HB AMAX	2,500 ft	
Carnallite content mechanical mining	Less than 6%	
Mineability	Reasonably expected to be feasible to mine	

*High-insoluble sylvinite zones 8 and 10

are not dependent on thickness or grade, but on the product of the thickness and grade. To evaluate the viability of mining the IPNM mechanically mined resources, a cutoff GT was established. Inputs to the estimation of the cutoff analysis are cost of goods sold, product sale price, mill recovery, and nominal grade. The cutoff for solution mining in flooded abandoned underground potash mines is a function of the grade of the brine being extracted which results in enough product tons to just cover the cost of production.

The estimated cost of goods sold (COGS) and sales price used in the cutoff evaluation are outlined in Table 11-2.

Intrepid has a long history of sales and marketing of their products. Sales are managed for all properties through the corporate office. Intrepid provided the historical demand and sales pricing through the statements of earnings (SOE) from 2012 to 2021. Forward-looking pricing was provided by Intrepid marketing and the sales price outlook was reviewed in The World Bank Report Pink Sheets (The World Bank 2021). The product sale prices selected for analysis of cutoff grade are shown in Table 11-2. These values are 25% greater than the product sales price for the reserve estimate.

Table 11-2. Cost of Goods Sold and Sales Price Assumptions

Product	Sale Price	Freight	Net Sales Price	Cost of Goods Sold
Langbeinite	$425	$90	$335	$200/t
Sylvite	$406	$30	$376	$200/t

Economic modeling indicates cutoff grades at the IPNM East Mine of 32 ft %K_2O for langbeinite resource. Modeling also indicates a cutoff of 59 ft% K_2O for the high-insoluble sylvinite resources in the 8^{th} and 10^{th} zones, which requires the capital investment of a new plant and refurbishment of shafts. A cutoff of 45 ft% K_2O is indicated for the West sylvinite resources which requires the processing plant, mine equipment, and associated infrastructure to be rehabilitated. Cutoff grades are listed in Table 11-3.

Table 11-3. Cutoff Grade Analysis for Mechanical Mining

Ore Mineral	Pure Mineral (%)	Nominal Grade Cutoffs (% K_2O)	Nominal Grade Cutoffs (% KCl or Lang)	Mill Recovery (%)	Grade-Thickness Cutoff[1] (ft%)	Applicable Ore Zones
Carlsbad East Mine						
Langbeinite[2]	22.70%	6.4%	28.2%	68%	32	East–3, 4 and 5, West–4
Carlsbad West/North Mine						
High-Insolubles Sylvite with CAPEX Burden	63.18%	13.2%	20.9%	75%	59	8 and 10
Carlsbad West Mine						
Sylvinite with CAPEX Burden	63.18%	10.1%	15.9%	80%	45	West–3, 4, 5, 7 North–3 and 4

[1]Equivalent to 5.0-ft-thick ore at nominal grades in the East Mine and 4.5-ft-thick ore at nominal grades in the West and North Mines.

[2]All langbeinite is processed at the East Plant.

CAPEX = capital expenditure

By definition, the cutoff grade is the grade that determines the destination of the material during mining. The cutoff grade for resources of abandoned underground sylvinite is not a parameter for use in the estimation of solution mining resources but does establish an operational minimum limit for the brine grade reserves. The solution mining resources are the pillars remaining after mining and the fringe boundary of the mine. Resources could also be unmined sylvinite left behind to provide geotechnical support. An operational limit of the flood elevation establishes the cutoff between resource and reserve for this deposit. When mining using solution methods in proximity to other mines, or other underground mines not within the control of IPNM, the critical factor in establishing a flood elevation is to keep adjoining properties dry or to protect structures such as shafts.

Resource maps for sylvinite by zones 10, 8, 7, 5, 4, 3, and 1 are included in Figures 11-1 through 11-7, respectively. The langbeinite mineral resource maps for zones 5, 4, and 3 are included in Figures 11-8 through 11-10.

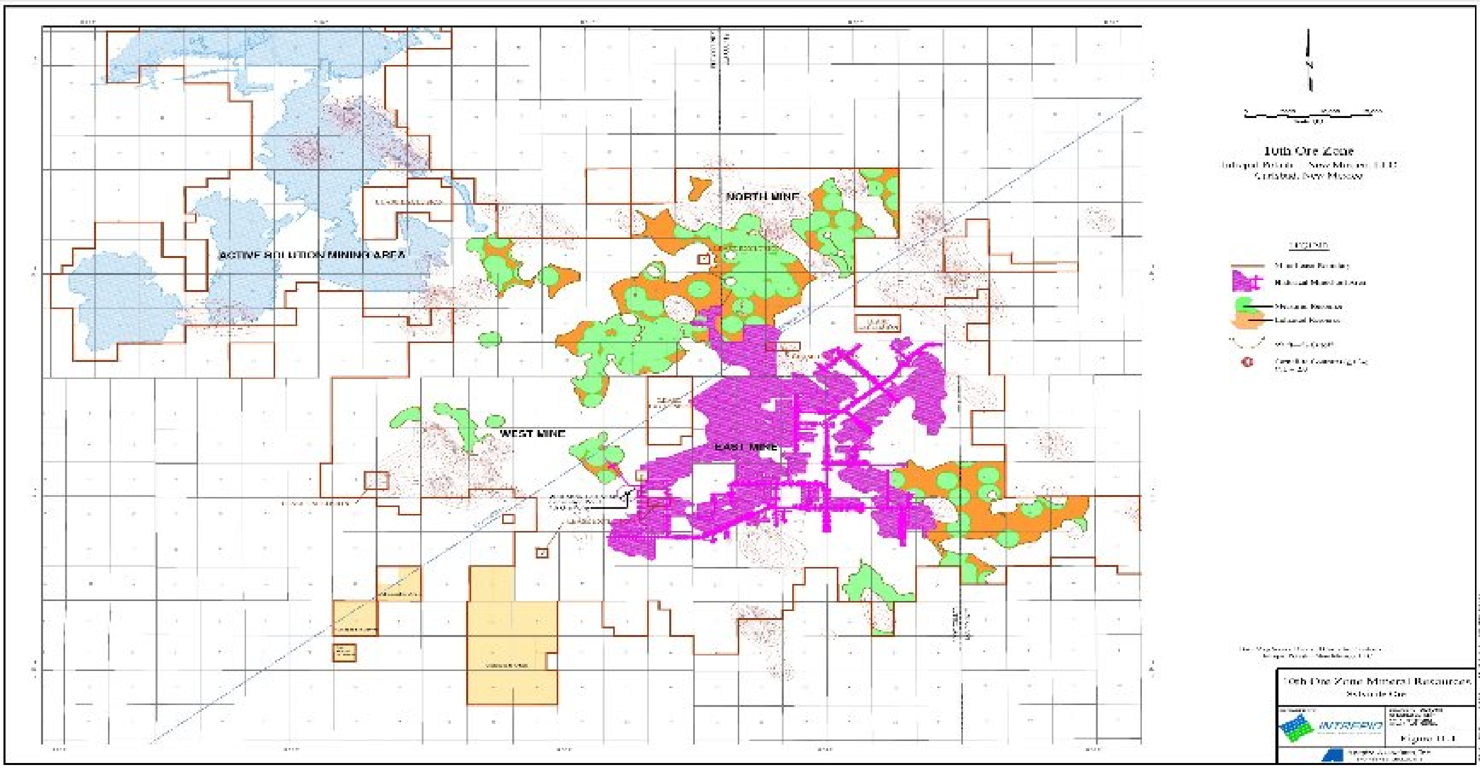


Figure 11-1. 10th Ore Zone Mineral Resources, Sylvinite Ore

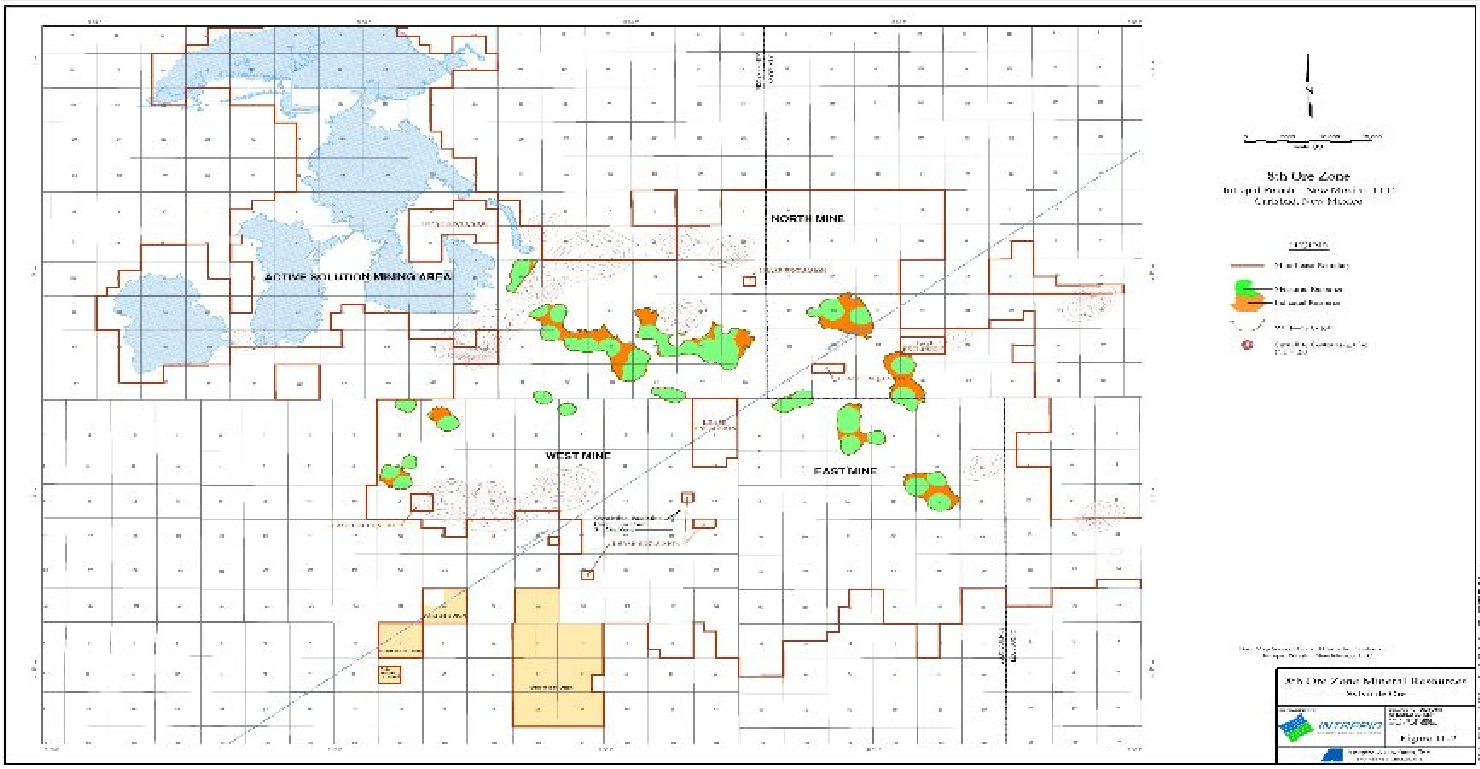


Figure 11-2. 8th Ore Zone Mineral Resources, Sylvinite Ore

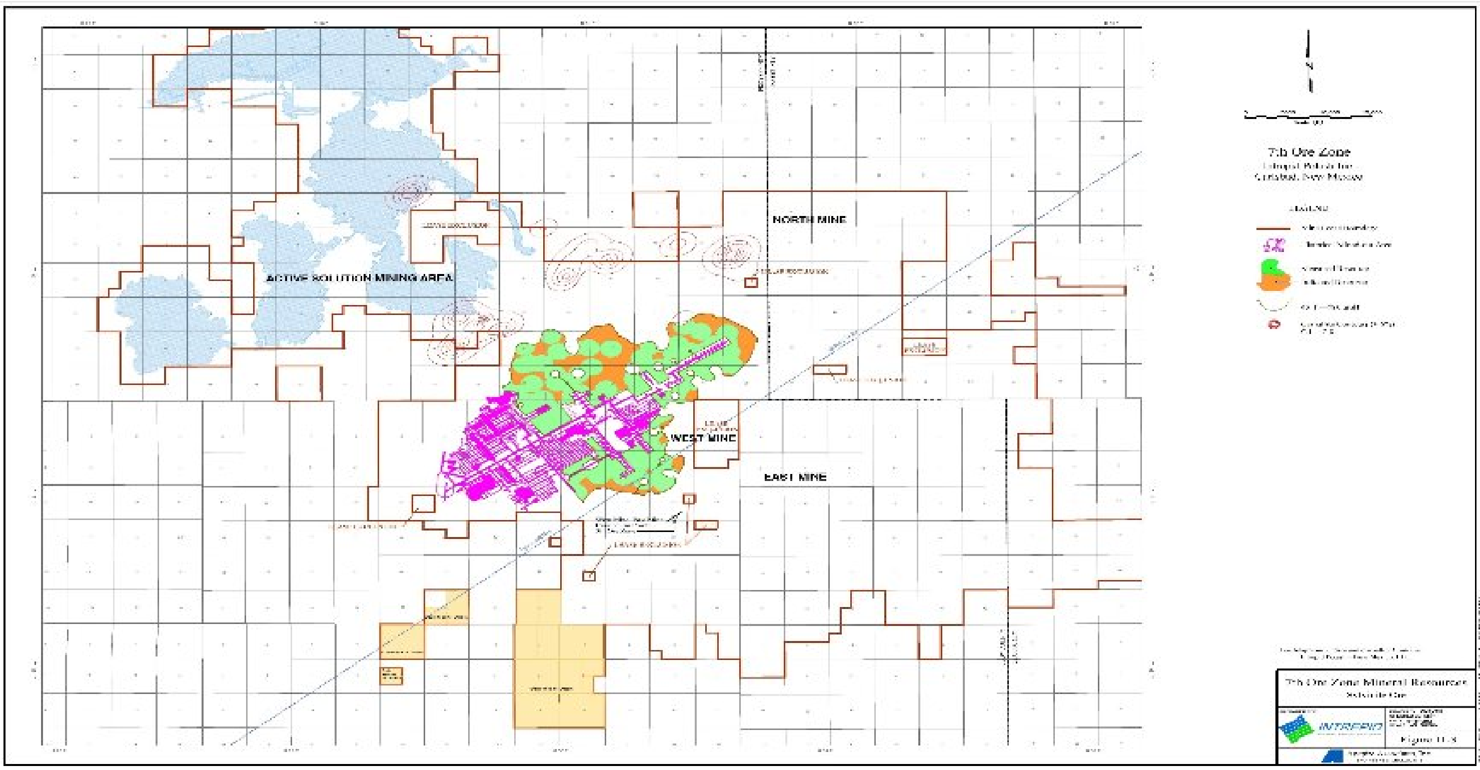


Figure 11-3. 7th Ore Zone Mineral Resources, Sylvinite Ore

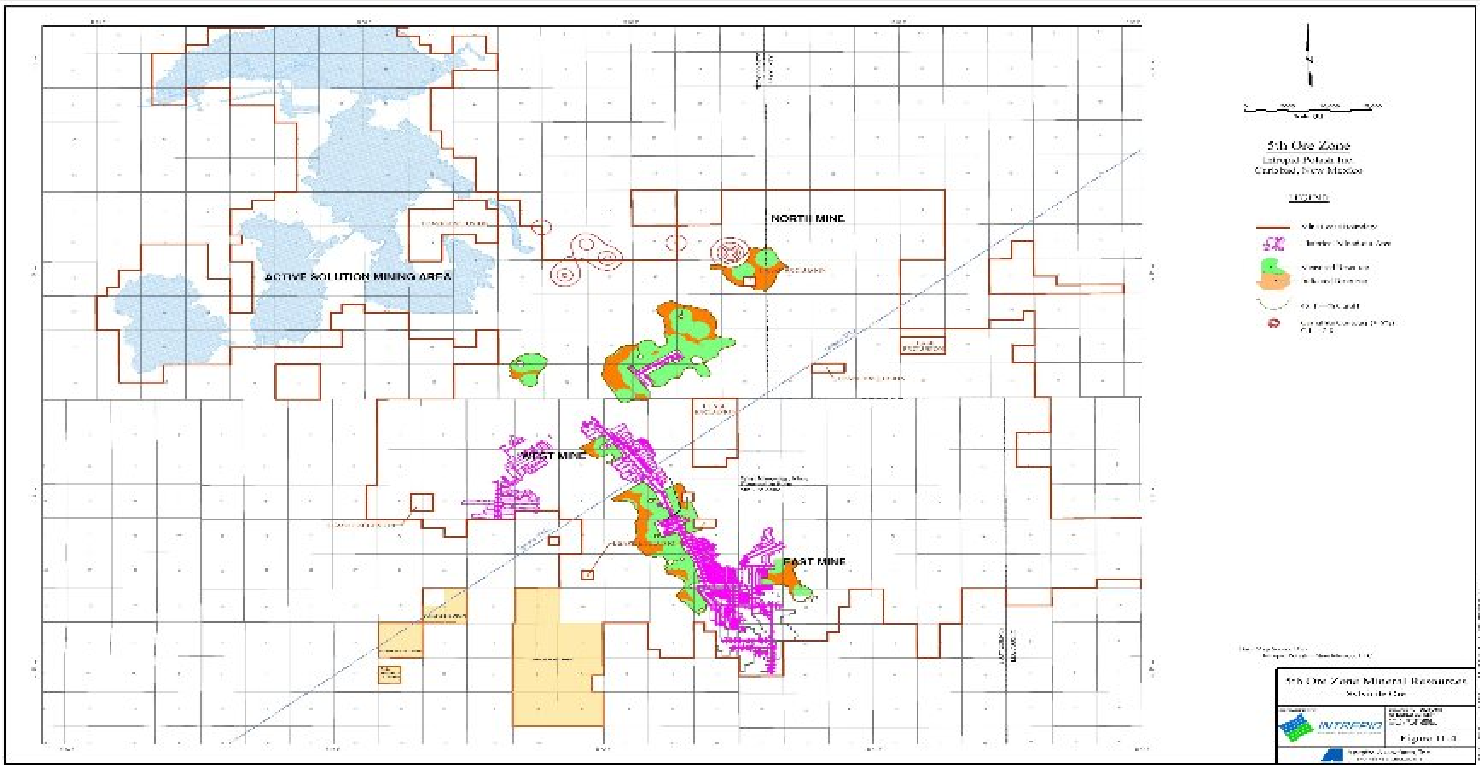


Figure 11-4. 5th Ore Zone Mineral Resources, Sylvinite Ore

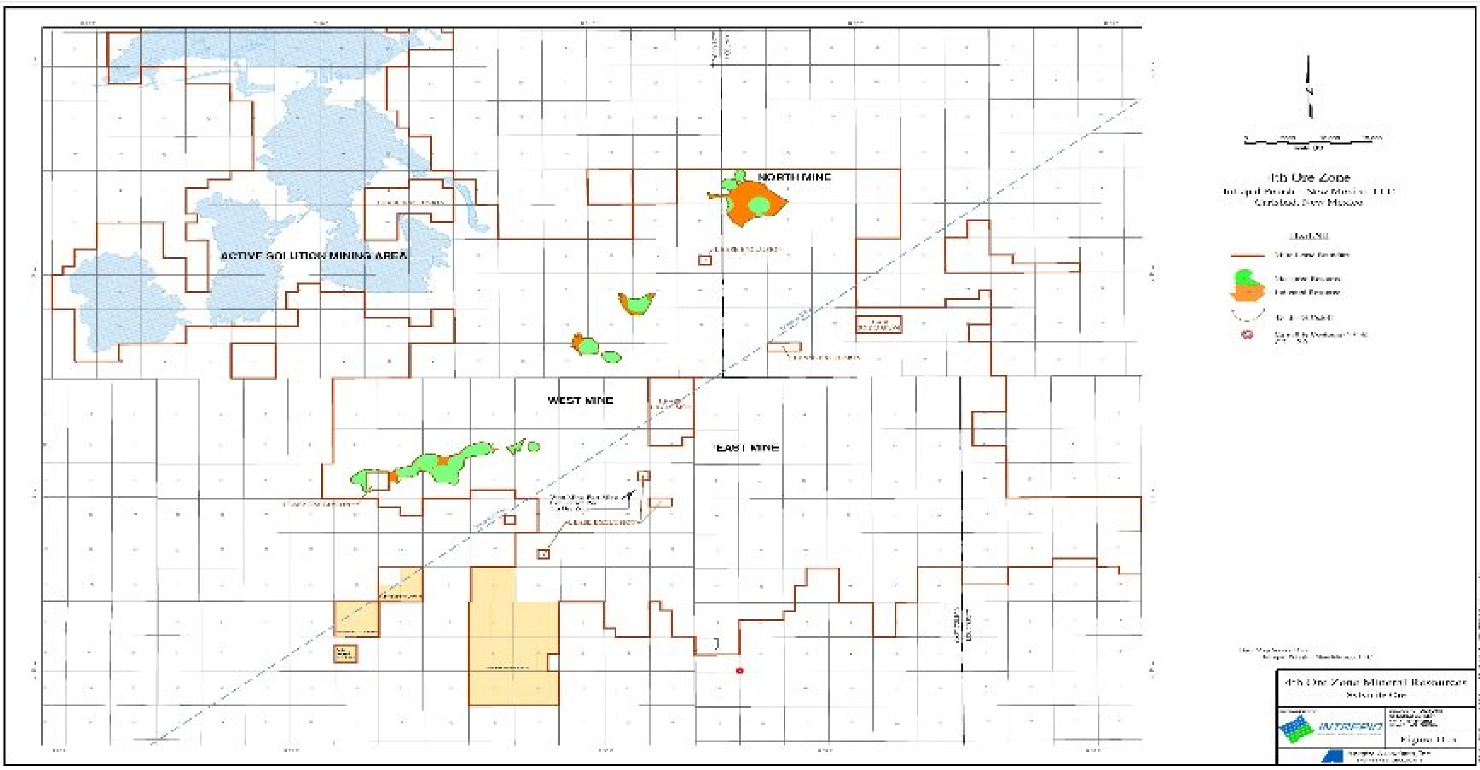


Figure 11-5. 4th Ore Zone Mineral Resources, Sylvinite Ore

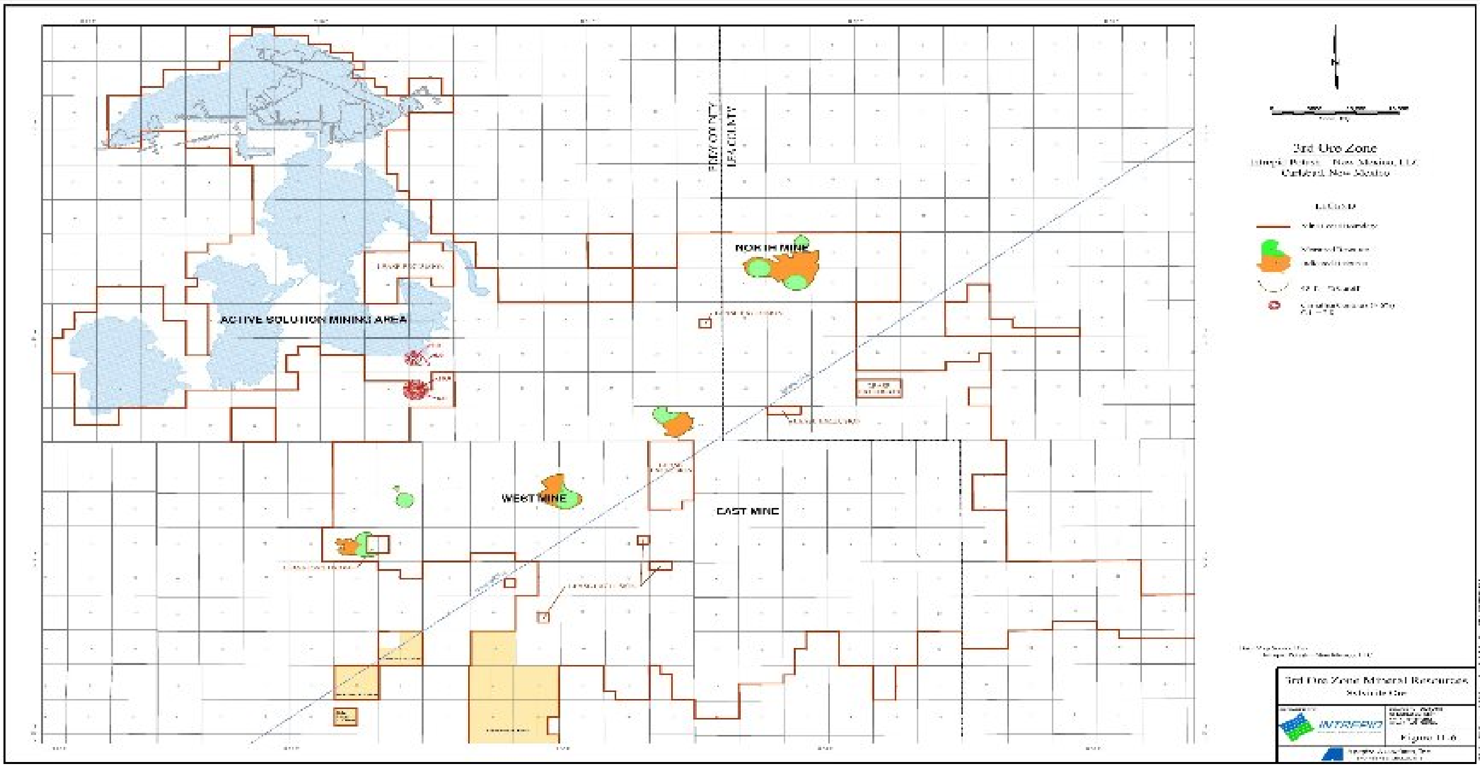


Figure 11-6. 3rd Ore Zone Mineral Resources, Sylvinite Ore

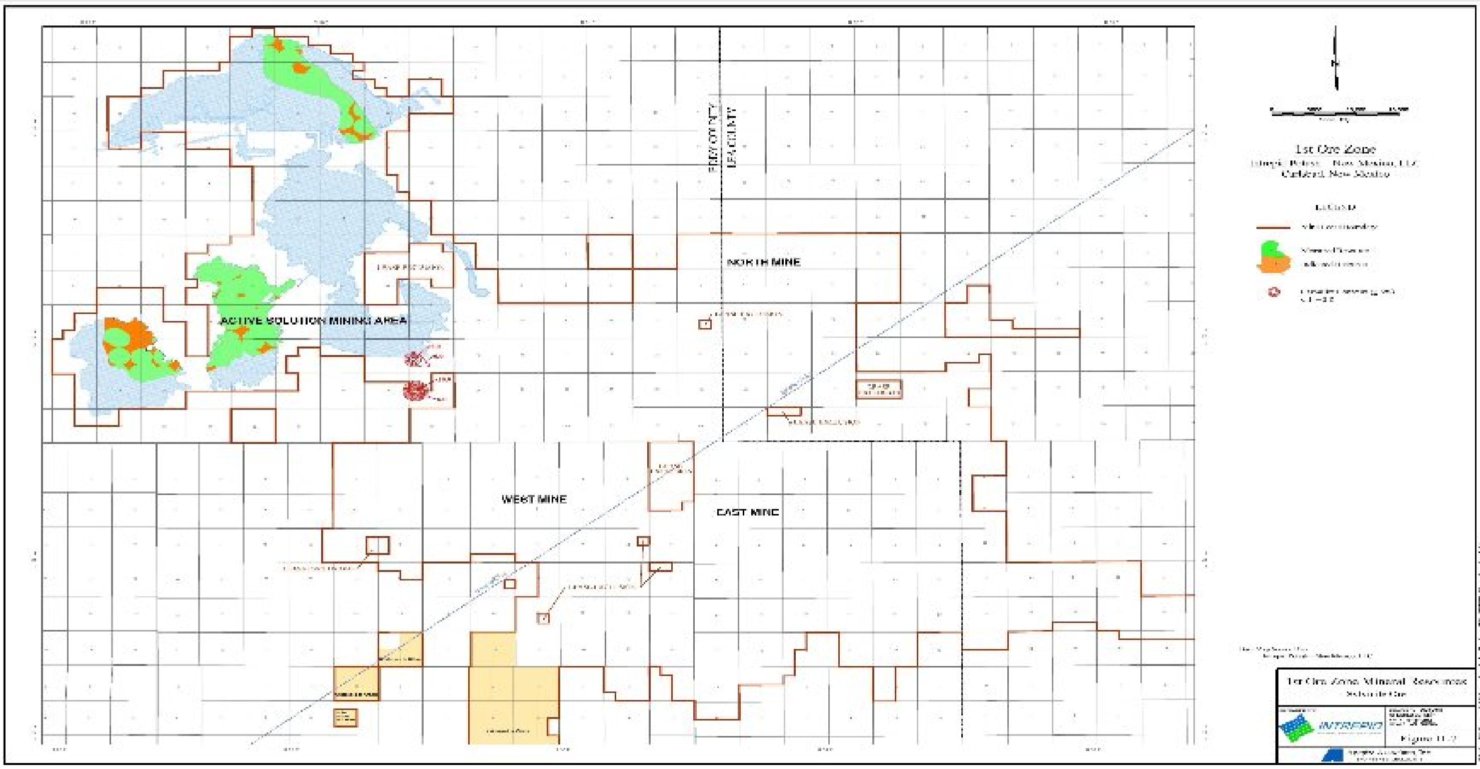


Figure 11-7. 1st Ore Zone Mineral Resources, Sylvinite Ore

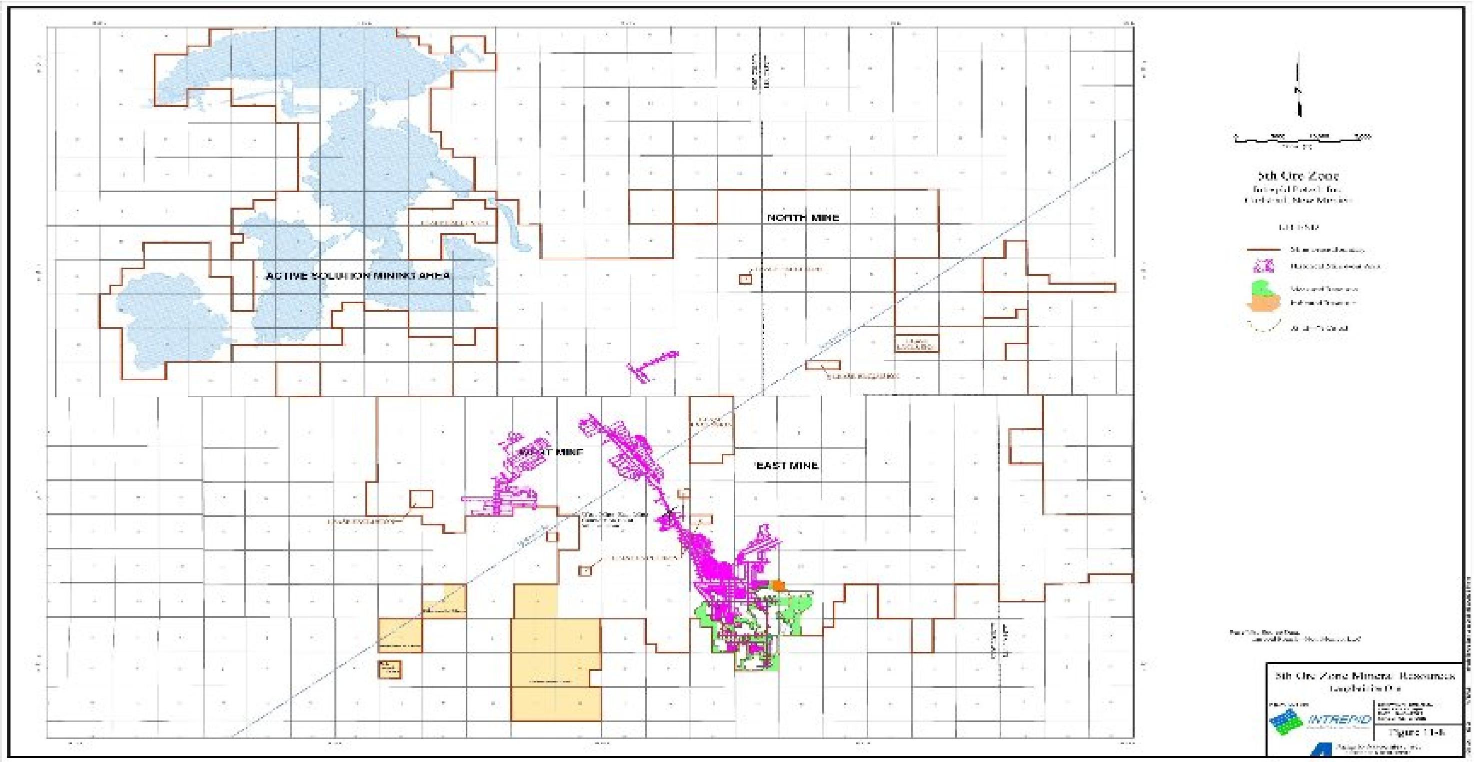


Figure 11-8. 5th Ore Zone Mineral Resources, Langbeinite Ore

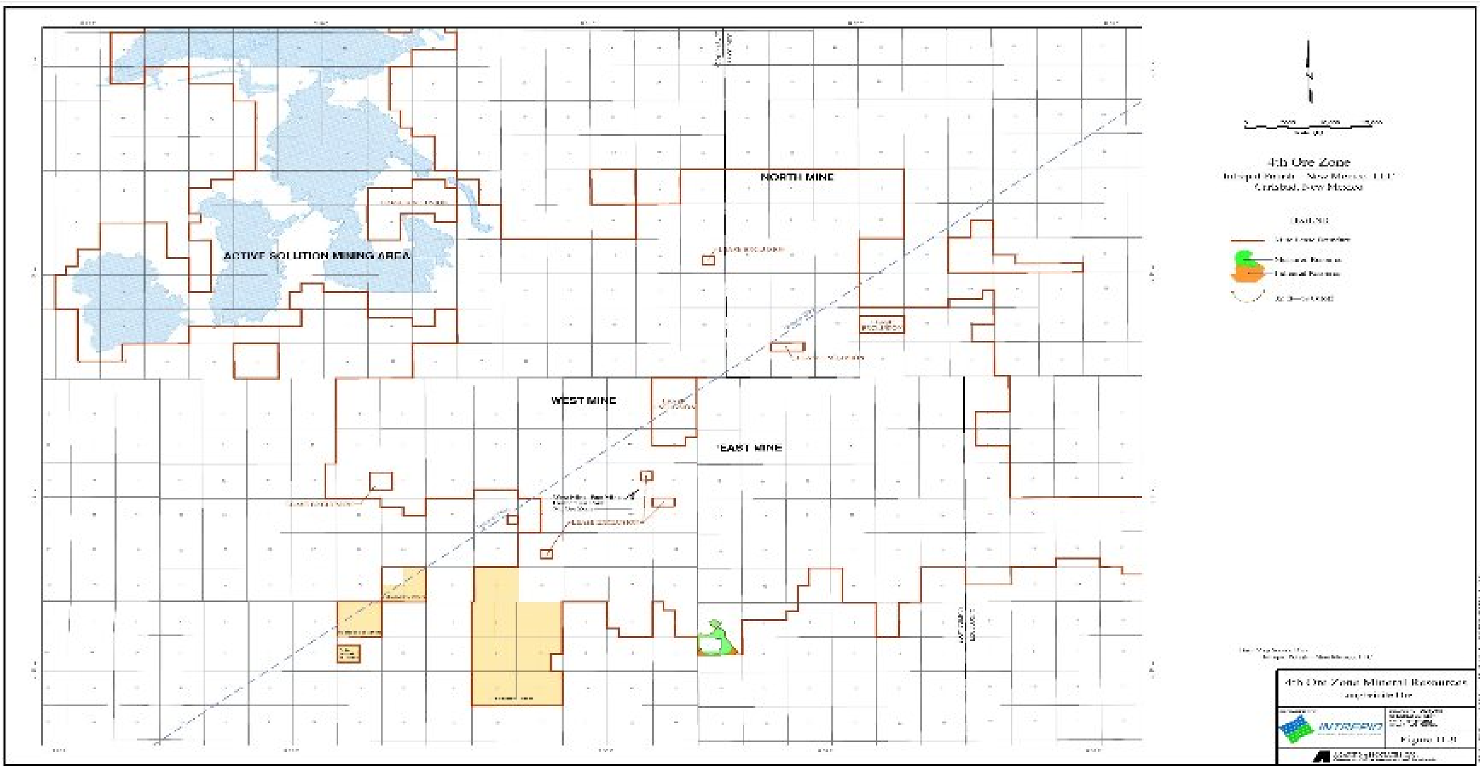


Figure 11-9. 4th Ore Zone Mineral Resources, Langbeinite Ore

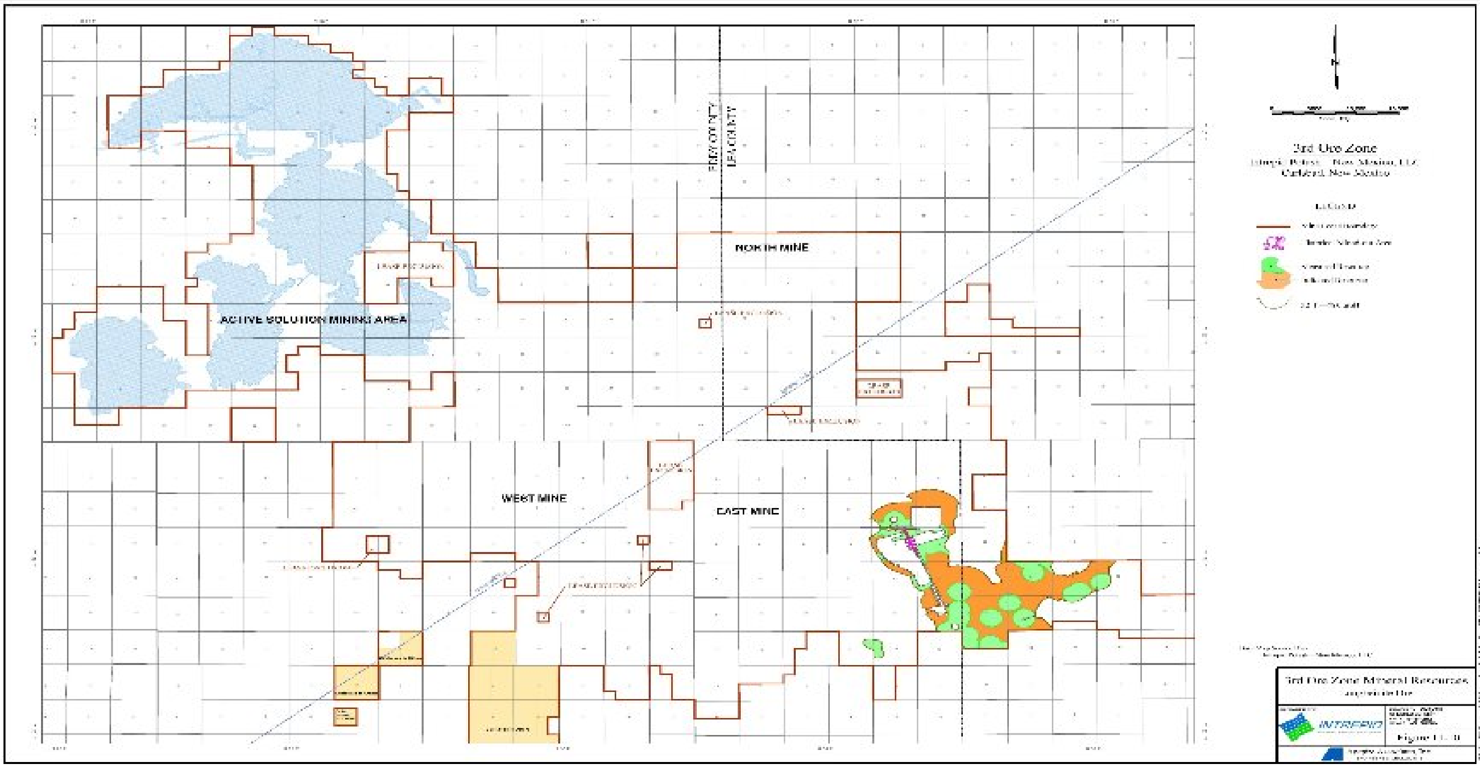


Figure 11-10. 3rd Ore Zone Mineral Resources, Langbeinite Ore

11.2 Mineral Resource Estimate

The estimate of measured and indicated mineral resources effective December 31, 2021 extracted from the application of the resource cutoffs to the geologic model is listed in Table 11-4.

Table 11-4. Mineral Resource Estimate Summary effective December 31, 2021

IPNM—Summary of Mineral Resources in millions of tons of Sylvinite effective December 31, 2021 based on 406 $/product ton mine site

	Resources			Mechanical Mining Cutoff[2] (ft-% K_2O)	Processing Recovery (%)
	Sylvinite[1] (Mt)	Grade (% K_2O)	Contained K_2O (Mt)		
Measured Mineral Resources	370	15	56	45–59	75–85
Indicated Mineral Resources	200	14	29	45–59	75–85
Measured + Indicated Mineral Resources	570	15	85		
Inferred Mineral Resources	—				

[1]Sylvinite is a mixed evaporite containing NaCl and KCl.

[2]Solution mining resource cutoff for flooded old workings is the mining extents boundary.

Mineral Resources were prepared by Agapito Associates, Inc., a qualified firm for the estimate and independent of Intrepid Potash.

Mineral Resources are reported exclusive of Mineral Reserves, on a 100% basis.

Mineral Resources are reported using Inverse Distance Squared (ID^2) estimation methods.

Mt = million tons, % = percentage, K_2O = potassium oxide, ft = feet

IPNM—Summary of Mineral Resource in millions of tons of Langbeinite Mineralized Rock in Place effective December 31, 2021 based on 425 $/product ton mine site

	Resources			Mechanical Mining Cutoff (ft-% K_2O)	Processing Recovery (%)
	Langbeinite Mineralized Rock (Mt)	Grade (% K_2O)	Contained K_2O (Mt)		
Measured Mineral Resources	50	10	5	32	68
Indicated Mineral Resources	60	10	6	32	68
Measured + Indicated Mineral Resources	110	10	11		
Inferred Mineral Resources	—				

Mineral Resources were prepared by Agapito Associates, Inc., a qualified firm for the estimate and independent of Intrepid Potash.

Mineral Resources are reported exclusive of Mineral Reserves, on a 100% basis.

Mineral Resources are reported using Inverse Distance Squared (ID^2) estimation methods.

Mt = million tons; % = percent; K_2O = potassium oxide; ft = feet

Discussion of Future Work

IPNM has historically and is currently producing from this property. There are no relevant technical or economic factors that need to be resolved.

12 MINERAL RESERVE ESTIMATES

Mineral reserves that are to be mined using mechanical methods are estimated by the application of a detailed mine plan for the measured and indicated resources within the boundaries of the cutoff GT for reserves. The plan sets the basis for the estimation of annual production of product. The income from product sales and the operating and capital costs to mine the resource is fundamental to the cash flow used to establish economic viability.

Mineral reserves that are mined using solution mining methods are not subject to the traditional application of a cutoff grade but instead of operational limitations. An operational limit of the flood elevation establishes the cutoff between resource and reserve for this deposit.

According to 17 CFR § 229.1301 (2021), the following definitions are included for reference:

A *probable mineral reserve* is the economically mineable part of an indicated and, in some cases, a measured mineral resource.

A *proven mineral reserve* is the economically mineable part of a measured mineral resource. For a proven mineral reserve, the qualified person has a high degree of confidence in the results obtained from the application of the modifying factors and in the estimates of tonnage and grade or quality. A proven mineral reserve can only result from conversion of a measured mineral resource.

12.1 Key Assumptions, Parameters, and Methods

By definition, modifying factors are the factors applied to indicated and measured mineral resources and then evaluated in order to establish the economic viability of mineral reserves. These factors for IPNM include mechanical and solution mining parameters; mineral processing; oil and gas drill islands and well locations; economic cutoff GT; deleterious minerology; and lease boundaries.

Intrepid has a long history of sales and marketing of their products. Sales are managed for all properties through the corporate office. Intrepid provided the historical demand and sales pricing through their SOEs from 2012 to 2020. Forward-looking pricing was provided by Intrepid marketing and the sales price outlook was reviewed in The World Bank Report Pink Sheets (2021). The product sale prices selected for analysis of cutoff grade for mechanically mined reserves is shown in Table 12-1.

Table 12-1. Product Sales Price (Reserves)

Product	Sale Price	Freight	Net Sales Price	Cost of Goods Sold
Langbeinite	$340	$90	$250	$200/t
Sylvite	$325	$30	$295	$200/t

Economic modeling indicates cutoff grades for reserves at the IPNM East Mine of 43 ft% K_2O for langbeinite resource (Table 12-2). Cutoff grade for brine production is listed in Table 12-3.

12.2 Mineral Reserves Estimate

The resource grids remaining after adjusting for cutoff grade, oil-and-gas pillars, drill islands, mined-out areas, and carnallite were used to create the detailed mechanical mine plan within the leased parcels. The mine plan boundary determines the technical feasibility of mining the reserves for zones. The modifying factors applied to the reserve are listed in Table 12-4. The detailed mechanical mine plan is shown in Figures 12-1, 12-2, and 12-3 for ore zones 5, 4, and 3, respectively. The mine plan layout for the solution mining is a flood elevation indicating the limit of the fluid injection boundary. The proven and probable reserves are included in Table 12-5 and are shown on Figures 12-4 through 12-7 for ore zones 5, 4, 3, and 1, respectively.

Table 12-2. Cutoff for Mechanically Mined Reserves

Ore Mineral	Pure Mineral (%)	Nominal Grade Cutoffs (%K_2O)	Mill Recovery (%)	Final Product Net Sale Value[1] ($)	Sale Value per Ore Ton at Cutoff Grade ($)	Mining Cost[2] ($)	Grade-Thickness Cutoff[3] (ft%K_2O)	Applicable Ore Zones
Carlsbad East Mine								
Langbeinite[4]	22.70%	8.7 %	68%	$250.00	$48.00	$48.00	43	East–3, 4, 5 and West–4

[1] Sale value at long term reserve price less shipping with a nominal pre-tax profit.
[2] Estimated costs of goods sold per ton of ore not including interest, depreciation, depletion or taxes.
[3] Equivalent to 5.0-ft-thick ore at nominal grade.
[4] All langbeinite is processed at the East plant.

Table 12-3. Cutoff for Solution Mined Reserves

Cost	
Total production costs ($)	$31,500,000
Net revenue from salt ($)	$4,680,000
Total Cost (less revenue from salt)	$26,820,000
Potash	
Tons sold	180,000
Net potash sales ($)	$44,100,000
Cutoff Analysis	
Net concentration of production brine (% KCl)	5.6 %
Cutoff net concentration (% KCl)	3.4 %
Cutoff net concentration (% K_2O)	2.2 %

Table 12-4. Modifying Factors for Reserves

	Reserves
Oil and gas mechanical mining offsets	200–2,640 ft radius
Drill islands sterilization	200 ft radius
GT for sylvinite mechanical mining	57.0 ft% K_2O
GT for high-insoluble sylvinite mechanical mining*	75.0 ft% K_2O
GT for langbeinite mechanical mining	43.0 ft% K_2O
Minimum mechanical mining height East Mine	6.5 ft
Extraction factor	0.84
Random impurities factor	0.9
Flood elevation HB South	2,525 ft
Flood elevation HB North	2,325 ft
Flood Elevation HB Eddy	2,675 ft
Flood Elevation HB AMAX	2,500 ft
Solution mining dissolution	0.96
Solution mining areal recovery factor	1
Solution mining geologic factor	0.93-0.99
Solution mining cavern losses	0.02
Carnallite content mechanical mining	Less than 6%
Mineability	Defined in a detailed mine plan

Table 12-5. Mineral Reserve Estimate effective December 31, 2021

IPNM—Summary of Potash Mineral Reserves effective December 31, 2021 based on 325 $/Product Ton Mine Site

	In-Place KCl (Mt)	In-Situ Grade[1] (%K_2O)	Product (Mt)	Brine Cutoff Grade[2] (%K_2O)	Processing Recovery (%)
Proven Mineral Reserves	5.5	20.8	4.1	2.0	85
Probable Mineral Reserves	0.3	19.2	0.2	2.0	85
Total Mineral Reserves	5.8	20.7	4.3		

[1]In-situ grade is the amount of K_2O in the contact area of the caverns.

[2]Brine cutoff grade is the amount of K_2O in the extracted brine necessary to cover the cash costs of production.

Mineral Reserves were prepared by Agapito Associates, Inc., a qualified firm for the estimate and independent of Intrepid Potash.

Mineral Reserves are reported exclusive of Mineral Resources, on a 100% basis.

Mineral Reserves are reported based on a flood elevation mining plan, dissolution factor of 96%, areal recovery of 100%, geologic factor of 94.2%, plant recovery of 85%, product purity of 97%, and cavern losses of 2%.

Mt = million tons, % = percent, K_2O = potassium oxide, ft = feet

IPNM—Summary of Langbeinite Mineral Reserves effective December 31, 2021 based on 340 $/Product Ton Mine Site

	ROM Ore (Mt)	In-Situ Grade (Diluted) (%K_2O)	Product (Mt)	Cutoff Grade (ft-%K_2O)	Processing Recovery (%)
Proven Mineral Reserves	18.1	8.5	4.9	43	68
Probable Mineral Reserves	4.2	9.1	1.2	43	68
Total Mineral Reserves	22.3	8.6	6.1		

[1]In-situ grade (diluted) is the amount of K_2O in the ore body with consideration for dilution occurring during mining.

Mineral Reserves are reported exclusive of Mineral Resources, on a 100% basis.

Mineral Reserves were prepared by Agapito Associates, Inc., a qualified firm for the estimate and independent of Intrepid Potash.

Mineral Reserves are reported based on a detailed conventional mine plan, random impurities of 10%, plant recovery of 68%, and product purity of 95.6%.

Mt = million tons, % = percent, K_2O = potassium oxide, ft = feet, ROM = Run-of-Mine

12.3 Risk Factors

Mineral reserves are an estimate from sparse data sampling points in a geologic setting that can be highly variable. The risk of material changes to the geologic interpretation is tempered by the application of the anomaly factor and the long history of mining in this deposit. Costs are subject to impact by the broader economy and can be impacted by the weather and other natural forces. A change in rules or regulations can result in unanticipated cost increases.

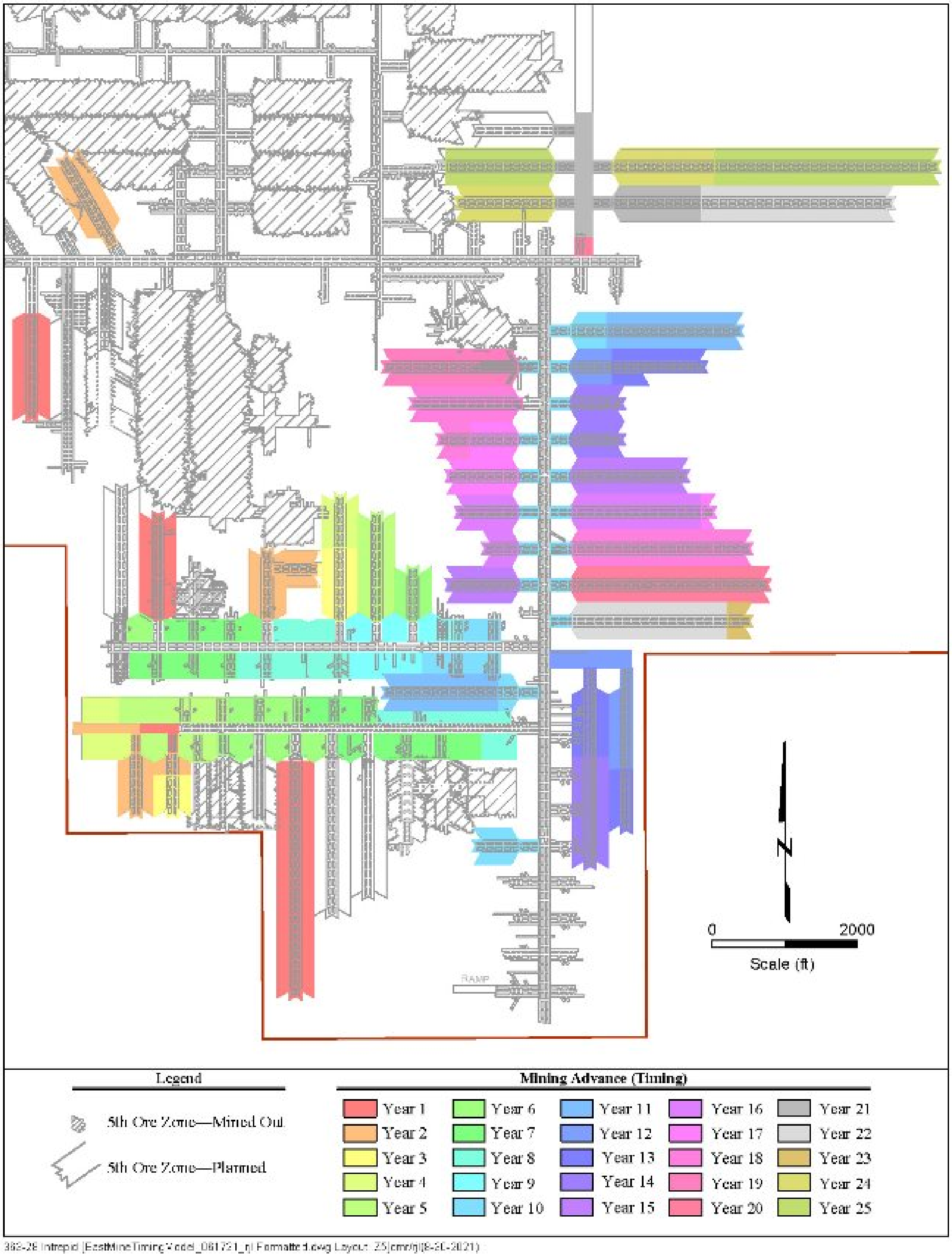


Figure 12-1. Detailed Mechanical Mine Plan—East Mine Langbeinite Zone 5

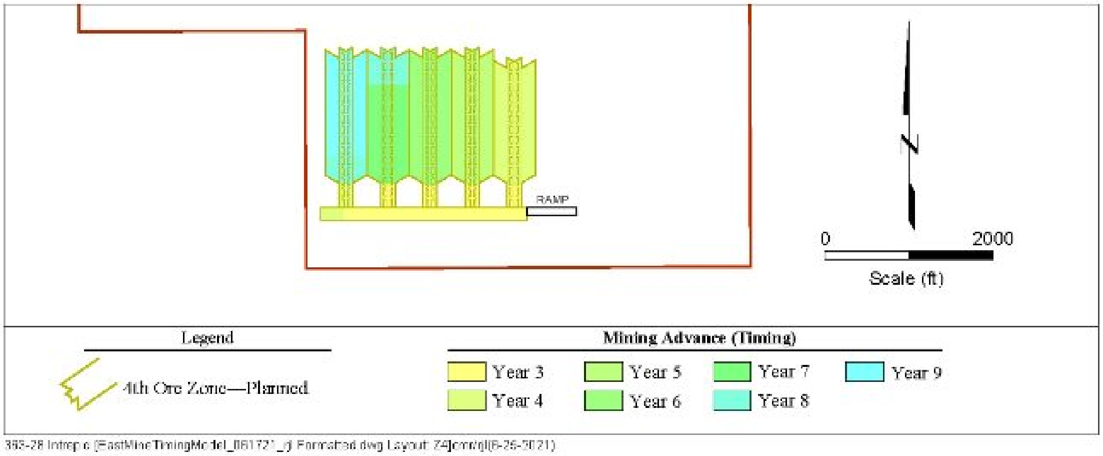


Figure 12-2. Detailed Mechanical Mine Plan—East Mine Langbeinite Zone 4

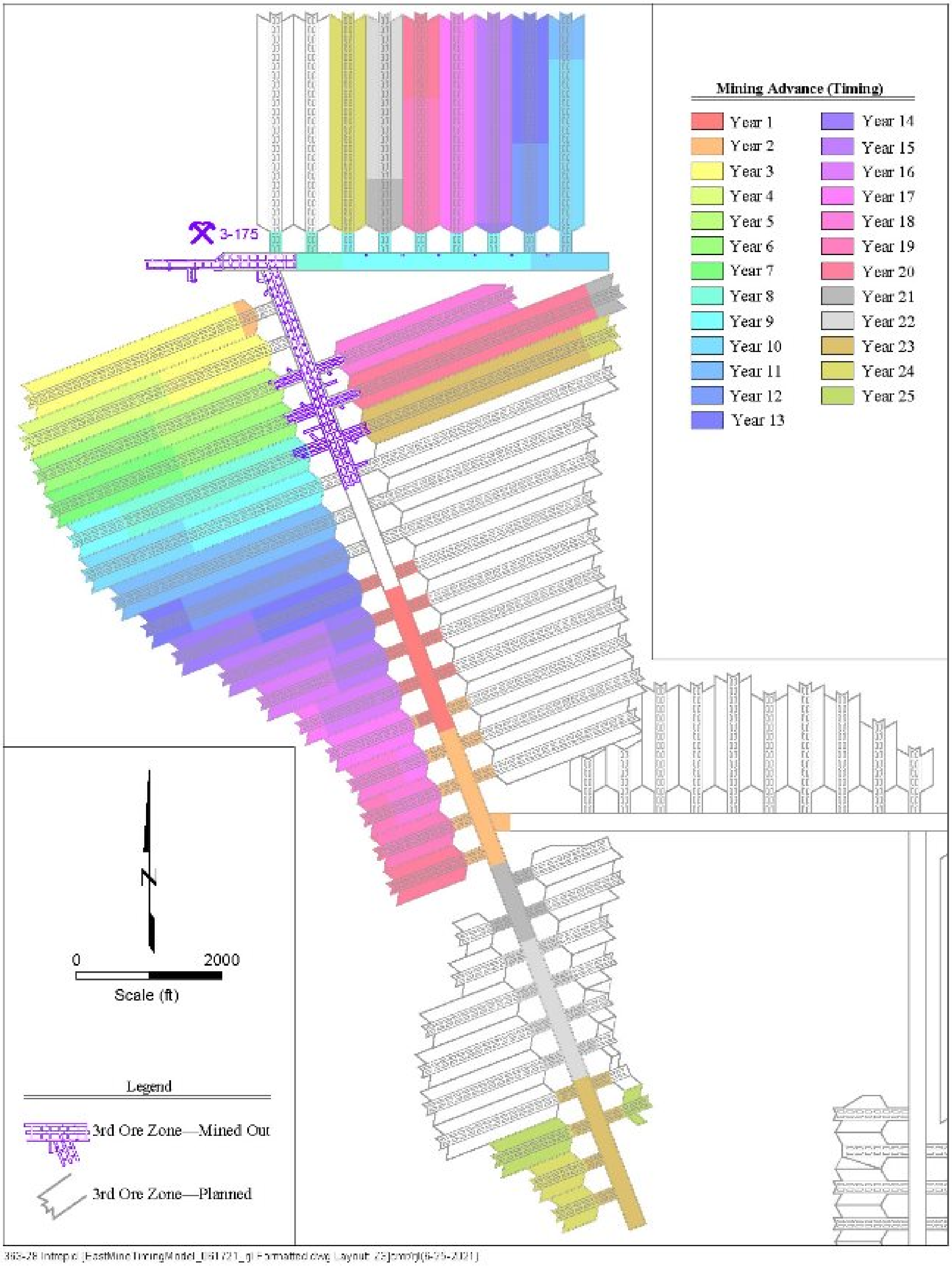


Figure 12-3. Detailed Mechanical Mine Plan—East Mine Langbeinite Zone 3

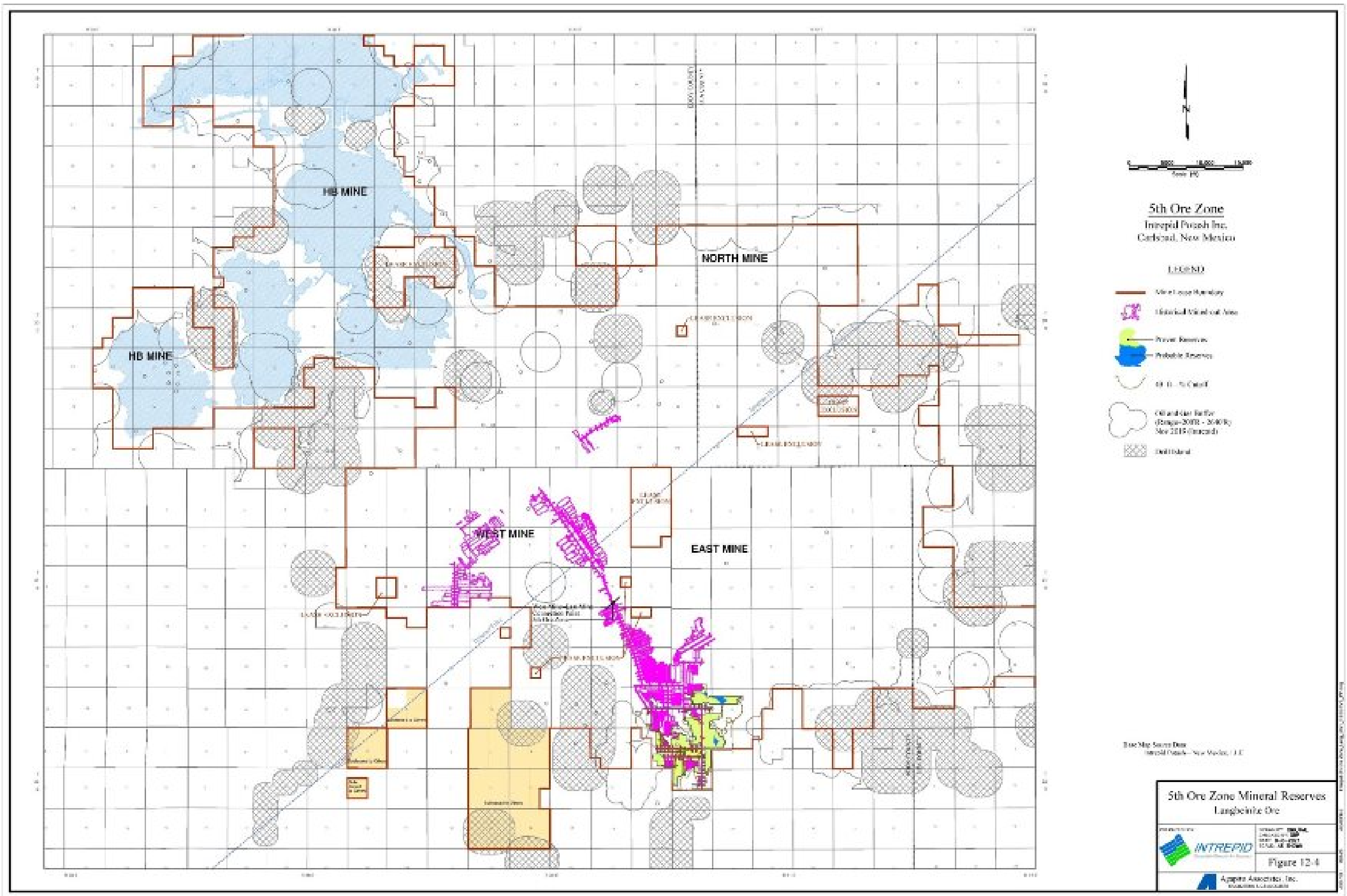


Figure 12-4. 5th Ore Zone Mineral Reserves, Langbeinite Ore

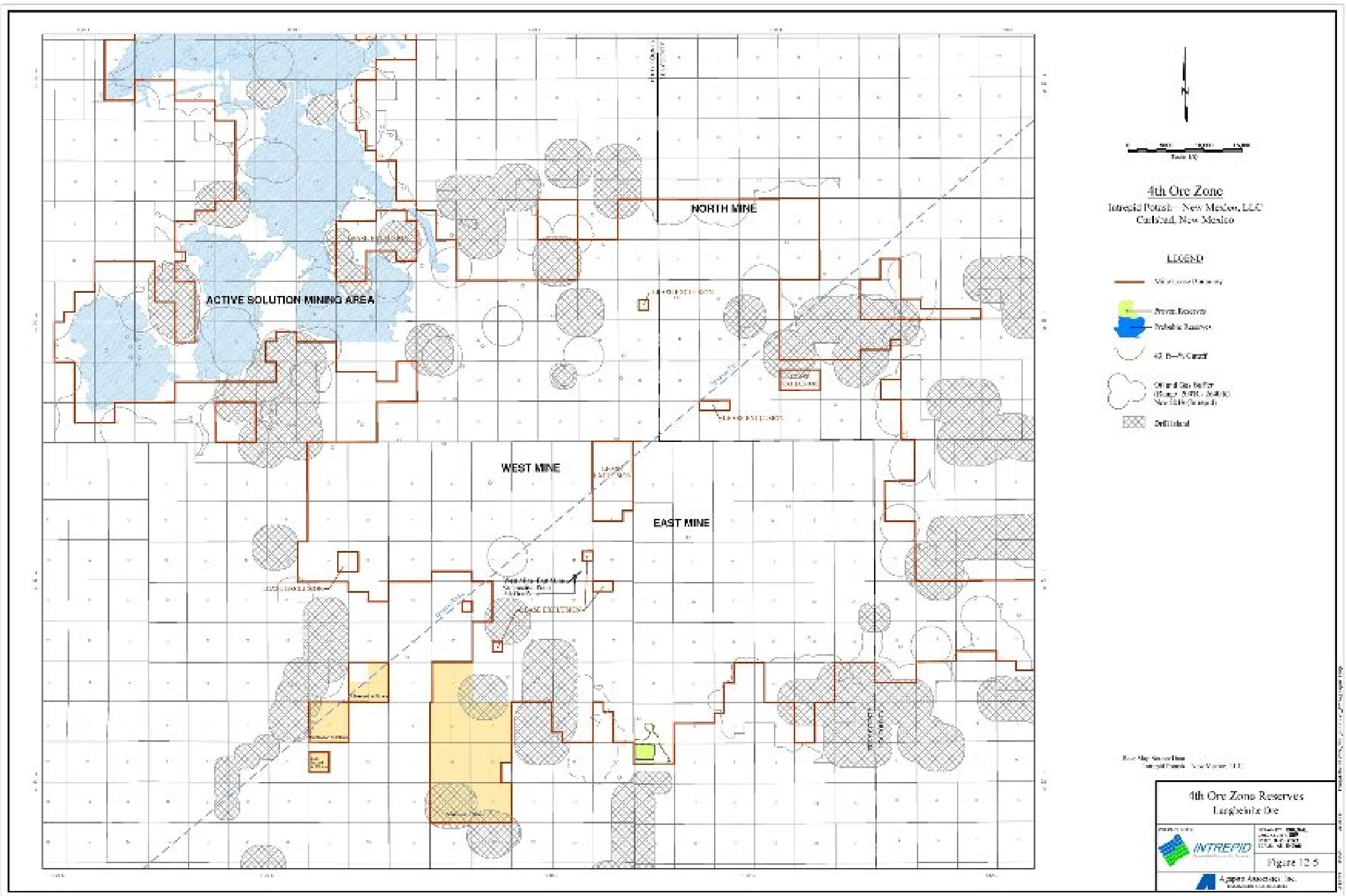


Figure 12-5.4th Ore Zone Reserves, Langbeinite Ore

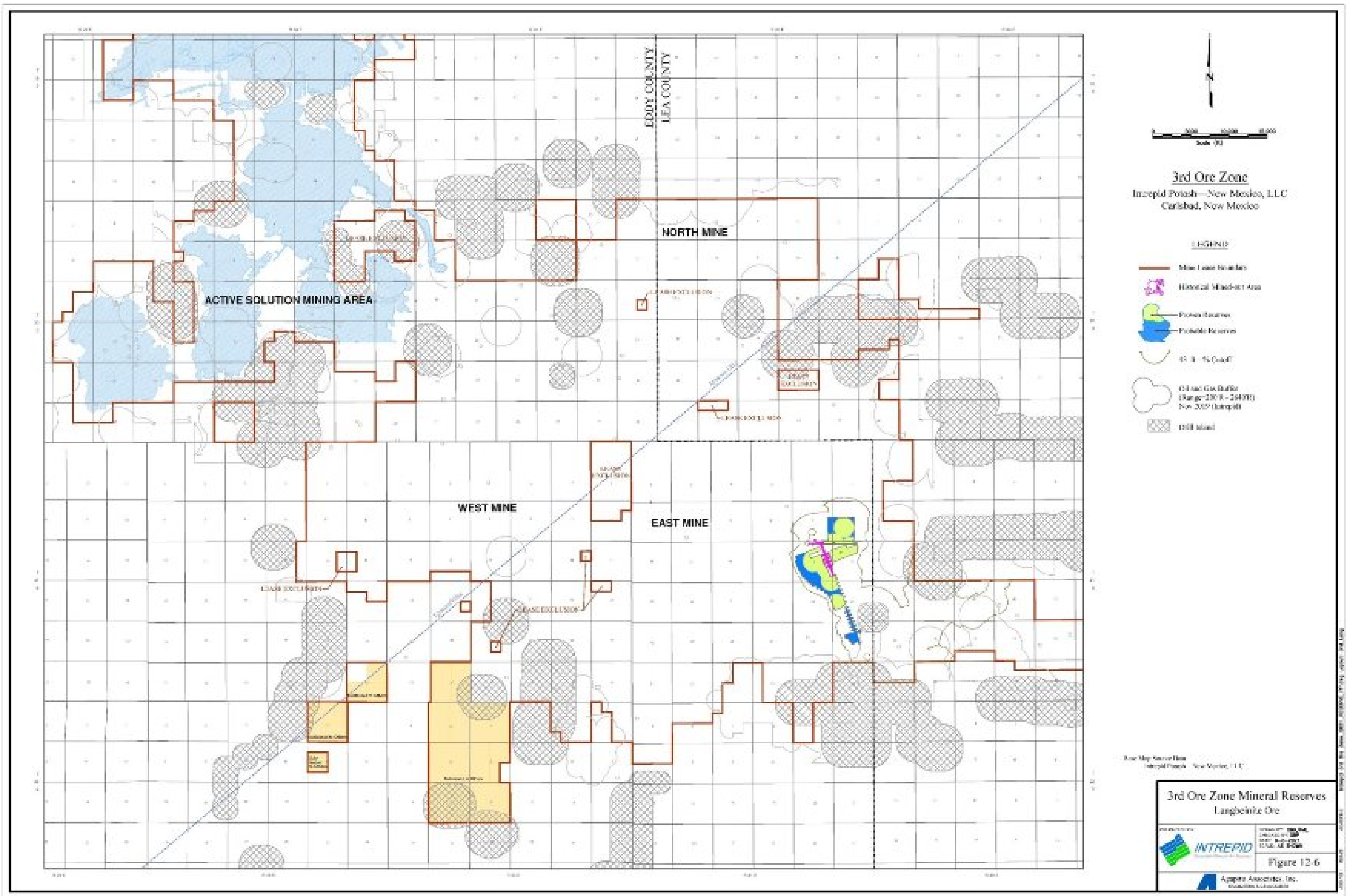


Figure 12-6.3rd Ore Zone Mineral Reserves, Langbeinite Ore

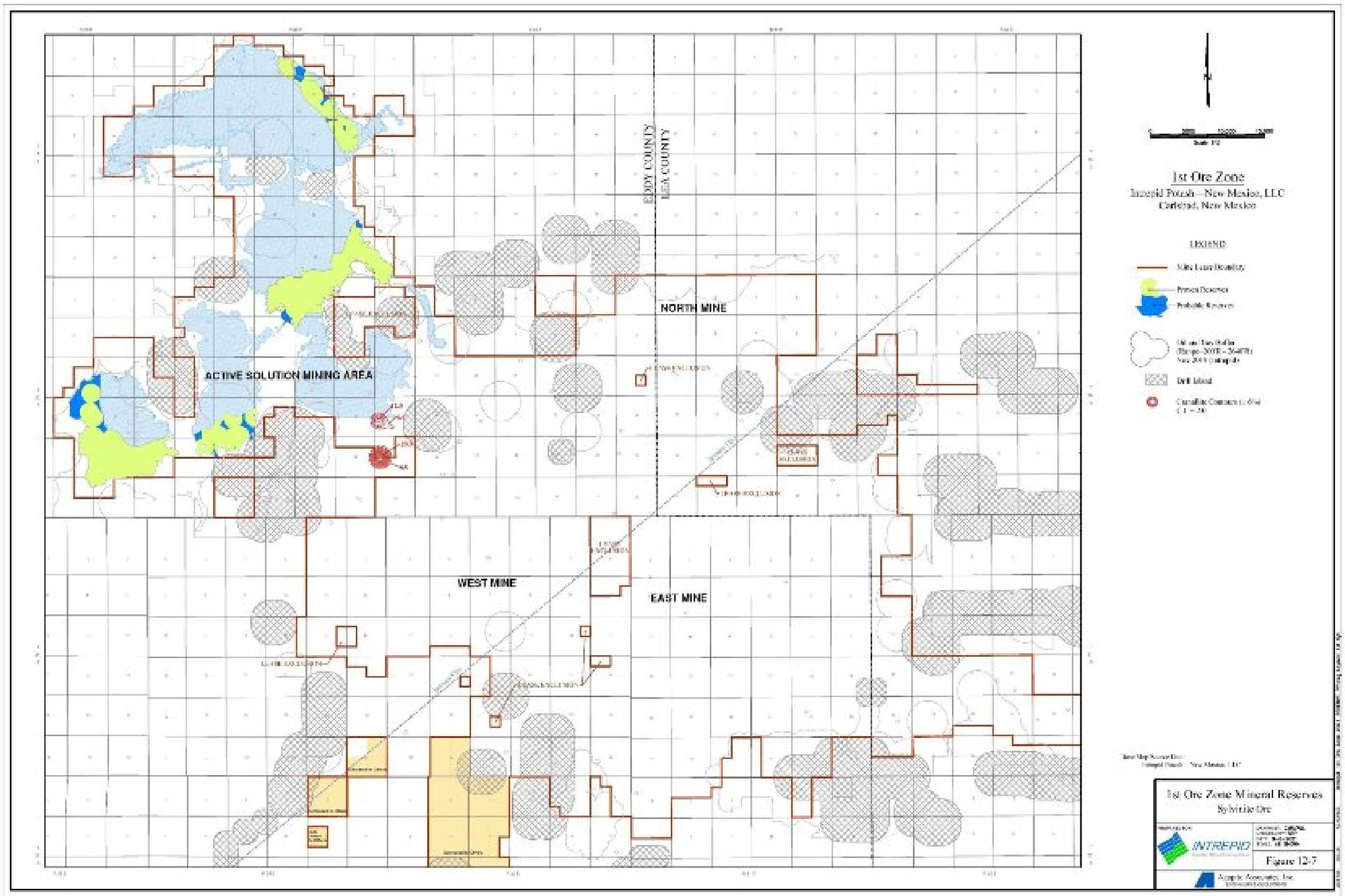


Figure 12-7. 1st Ore Zone Mineral Reserves, Sylvinite Ore

13 Mining Methods

The two mining methods currently in practice at IPNM are high-extraction mechanical underground room-and-pillar mining and solution mining. Mechanical mining is well suited to bedded deposits. All MOP production at IPNM comes from the HB Solar Solution Mine in the 1st and 3rd ore zones. Trio® production is from langbeinite mined using room-and-pillar mechanical mining methods at the East Mine in the 3rd, 4th, and 5th ore zones. Historically, MOP was sourced from the West Mine 5th, 7th, and 10th ore zones. Approximately 285 people are employed at the property.

The East Mine is a high-extraction, mechanical room-and-pillar mine. Potash was the primary product until mining progressed to the mixed langbeinite and potash ore in the 5th ore zone. The mixed ore was processed into two products: MOP sourced from the sylvinite portion of the mixed ore, and Trio® sourced from the langbeinite portion of the mixed ore. The East Mine plant was converted to a langbeinite-only operation in April 2016 and potash is no longer produced from the East Mine. The maximum productive capacity of the plant is 400,000 t of Trio® concentrate annually.

There are five active sections with a miner and a shuttle car loading onto a belt conveyor. Each mining section produces approximately 240,000 t of run-of-mine ore each year. The long-range production balanced with sales projections results in a long-term annual production of 1.2 Mt of ore for 250,000 t of Trio® annually.

Historical room-and pillar-mining operations at the HB complex recovered about 70% of the ore, leaving approximately 30% of the ore available for secondary recovery in pillars plus what can be recovered beyond the limits of the conventional mine works. Mining at the HB Solar Solution Mine recovers potash by injecting saturated saline NaCl brine into the old mine works to create underground leach lakes. Over time, the solution enriched with potash is pumped to the surface to solar evaporation ponds. Selective solar evaporation leaves behind a potash-enriched salt that is collected using scrapers, pumped, and processed at the HB Plant. The solution mine comprises six injection wells, five extraction wells, and three monitoring wells.

The North Mine operated from 1957 to 1982 when it was idled, mainly due to low potash prices and a change in the mineralogy of the readily accessible remaining reserves which negatively impacted mineral processing. Although the mining and processing equipment has been removed, the mine shafts remain open. The compaction facility at the North Mine is where the HB potash product is granulated, stored, and shipped. The North Facility receives compactor feed from the HB Solar Solution Mine via truck and converts the compactor feed to finished granular-sized product and standard-sized product.

The extents of the mine plans shown for this reserve estimate are shown in Figure 13-1. The life of the resources and reserves at IPNM exceeds 25 years.

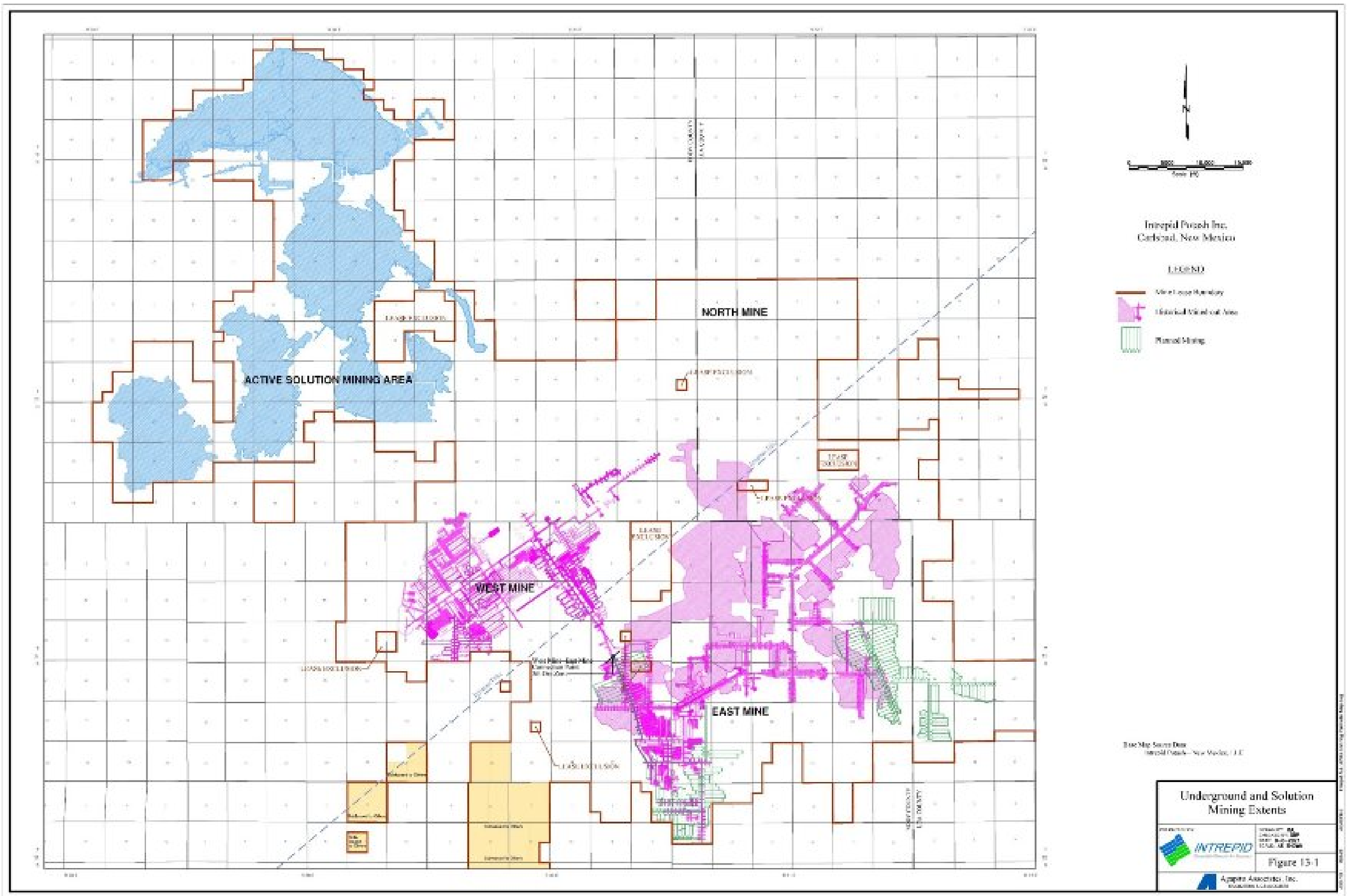


Figure 13-1. Underground and Solution Mining Extents

14 PROCESSING AND RECOVERY METHODS

All IPNM ores are processed on-site. There are two active processing plants: the East Plant and HB Solar Solution Plant. The West Plant was idled in 2016. The North Compactor was completed in early 2013 and is used to granulate, store, and ship product from the HB Plant.

Declining ore grades coupled with market conditions have resulted in IPNM shuttering much of it sylvite capacity in the past 5 years. Historically, the East Plant produced white sylvite by evaporative crystallization and langbeinite ($K_2SO_4 \cdot 2MgSO_4$) by dense media separation of the coarse fraction (+20 mesh) of ore mined from the 3rd, 4th, and 5th ore zones. In 2016, sylvite production permanently ceased and the East Plant became a langbeinite-only producer. Langbeinite recoveries have since improved to as high as 72%.

14.1 HB Processing Facility

In 2012, IPNM commenced filling the HB solar evaporation ponds (Figure 14-1). The extraction brine sourced from the mined-out areas of the 1st ore zones of the former underground workings of portions of HB Eddy, HB South, HB North, and the HB Crescent, collectively referred to as the HB Mine, contains approximately 21.7% NaCl and 7.0% KCl. The brine is collected and crystallized in 18 solar evaporation ponds. The HB flotation mill processes the harvested potash and salts from the solar evaporation ponds.

Conditioned injectate, made with NaCl-saturated brine, is injected to create underground leach lakes in the lower portions of abandoned subsurface mine workings. The solution mine comprises six injection wells, five extraction wells, and three monitoring/extraction wells.

As mining progresses, the brine strength is expected to decline and production is projected to fall from current levels of 180,000 tons per year (tpy) to less than 150,000 tpy by 2045. Following the separation of KCl, the HB Solar Solution Mine also recovers significant quantities of NaCl.

The simplified process flow diagram (PFD) is shown in Figure 14-2. NaCl-saturated brine is injected into the mines producing about 400 million gallons of brine at an estimated grade of 7.0% KCl and 21% NaCl. The evaporation ponds concentrate and crystallize the brine to produce about 680,000 tpy of crystal at 16–18% K_2O (26–30% KCl) with the remainder being largely halite. The crystals are mechanically harvested, re-pulped in double-saturated brine and pumped to the HB processing facility.

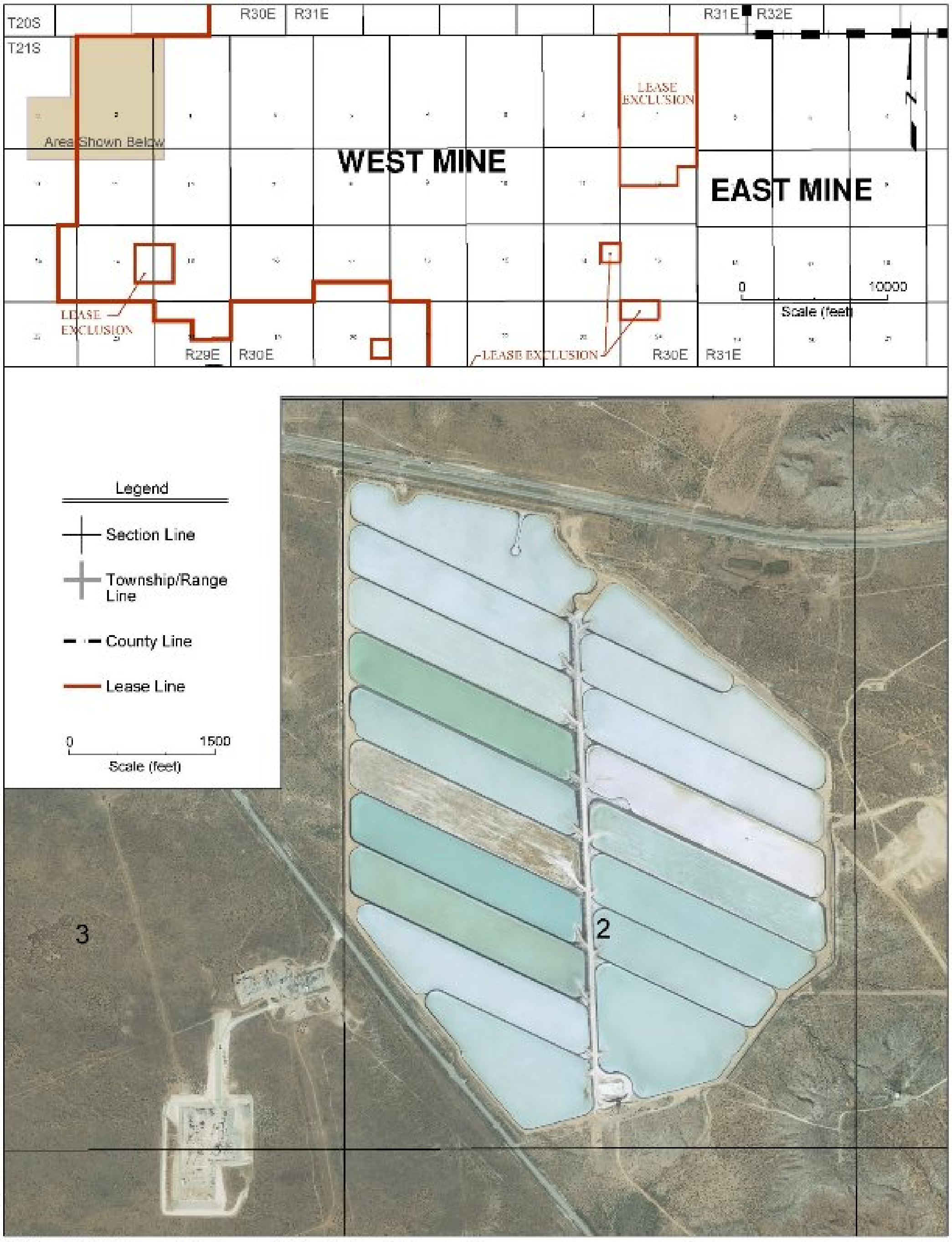


Figure 14-1. HB Evaporation Ponds

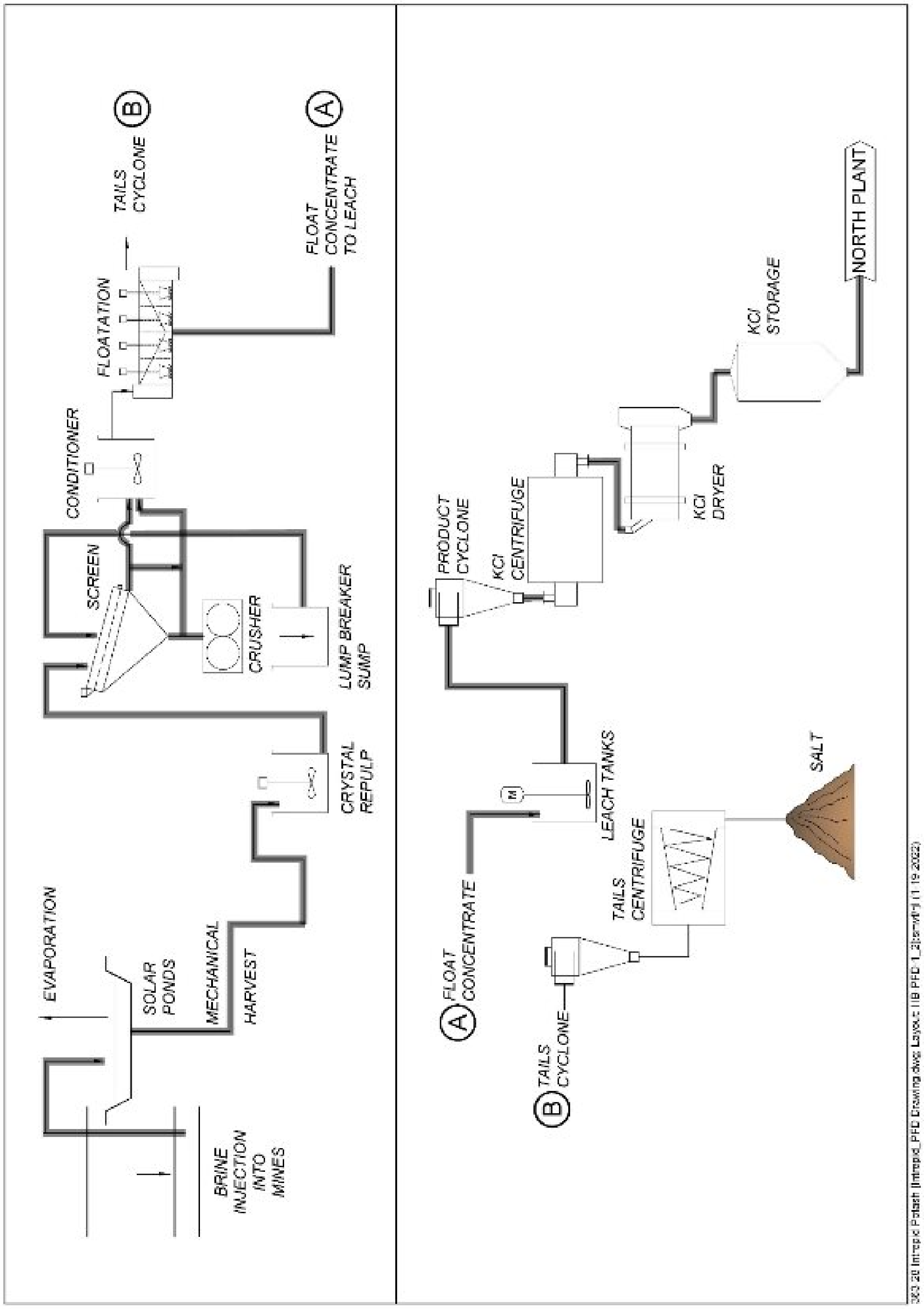


Figure 14-2. HB Process Flow Diagram

The crystals are statically screened with the oversize processed through a crusher and recycled. The screened crystal is combined with reagents and fed to flotation cells. The rougher flotation concentrate is forwarded to the agitated leach tank.

The leached solids are at a product grade of >95.5% KCl with 60.5% K_2O. The solids are dried, sampled, and conveyed to storage bins prior to transfer to the North Plant for compaction and shipment to sales.

14.2 Langbeinite Processing Facility

The East Plant was modified in 2003–2004 to allow dual processing to recover the K_2O value from both the sylvite and langbeinite fractions of the ore. In 2016, the sylvite circuit was permanently closed. Langbeinite, marketed as the organic fertilizer Trio® brand of products, is recovered using dense media separation and a fine langbeinite recovery circuit. A simplified process flow diagram is included as Figure 14-3.

Currently about 1 million tpy (Mtpy) of ore is processed at a rate of 300 tph. The ore is crushed, screened, pulped, and rescreened. Coarse material is forwarded to the dense media separation (DMS) circuit. The DMS concentrate is water leached, debrined, and dried. The coarse product is separated into the three Trio® products. Fine material from the screening process is recovered using gravity separation, leaching, debrining, and drying. Fine material is upgraded to premium product using pelletization.

14.3 North Compaction Plant

The North Plant provides classification, compaction, quality control, and load-out services for production from the HB Solar Solution Mine. A simplified flow diagram for the North Compaction Plant is presented in Figure 14-4.

Belly dump trucks unload HB product into a dump pocket. The material is then sent to surge bins. The product is screened, preheated, weighed, and sent to a compactor feed bin.

Material is fed to the roll compactor, and resulting flakes are further reduced in size with the subsequent flake breaker and crusher. Product is then screened and sent to the curing dryer and screened once again before being sent to final product storage.

The product is shipped to market in trucks or rail cars.

14.4 Tailings Facilities

There are three tailings storage facilities (TSF) at IPNM: East, West, and North.

The East TSF is shown in Figure 14-5. The New Mexico State Engineer in the Dam Safety Bureau required IPNM to evaluate as-built conditions and stability of the East TSF due to the lack

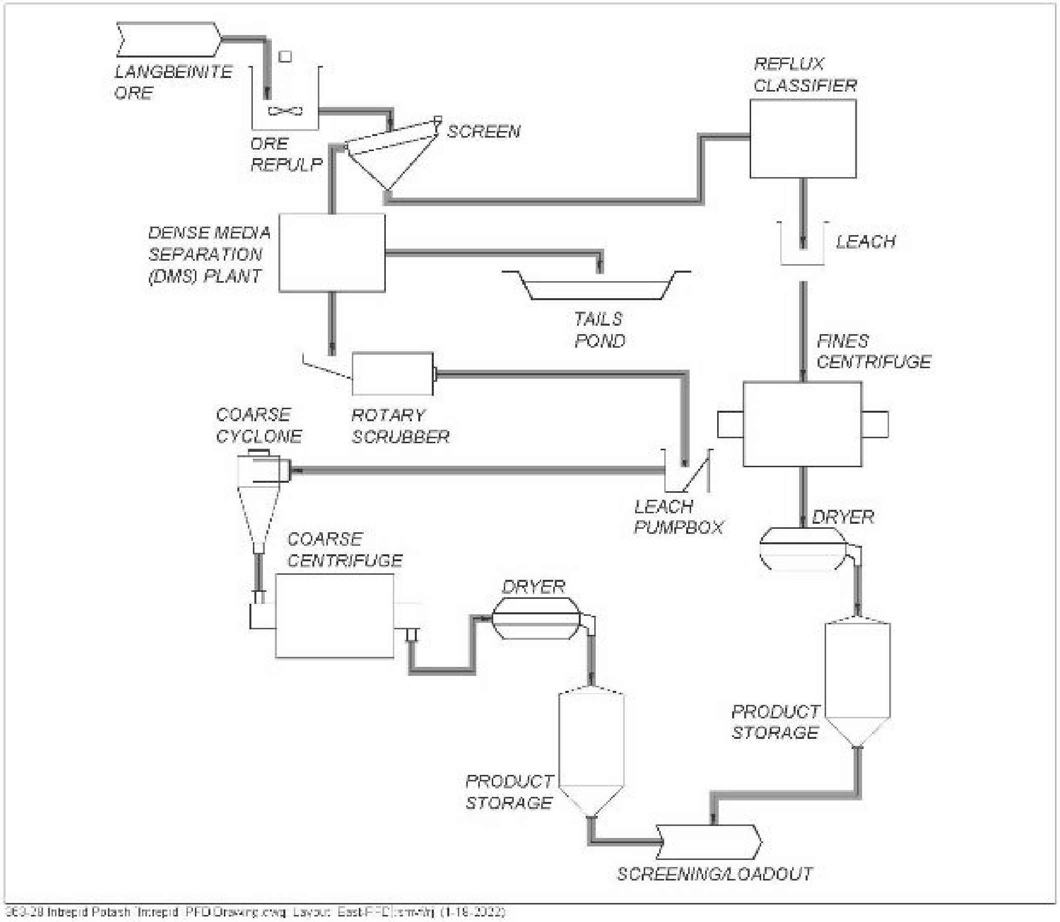
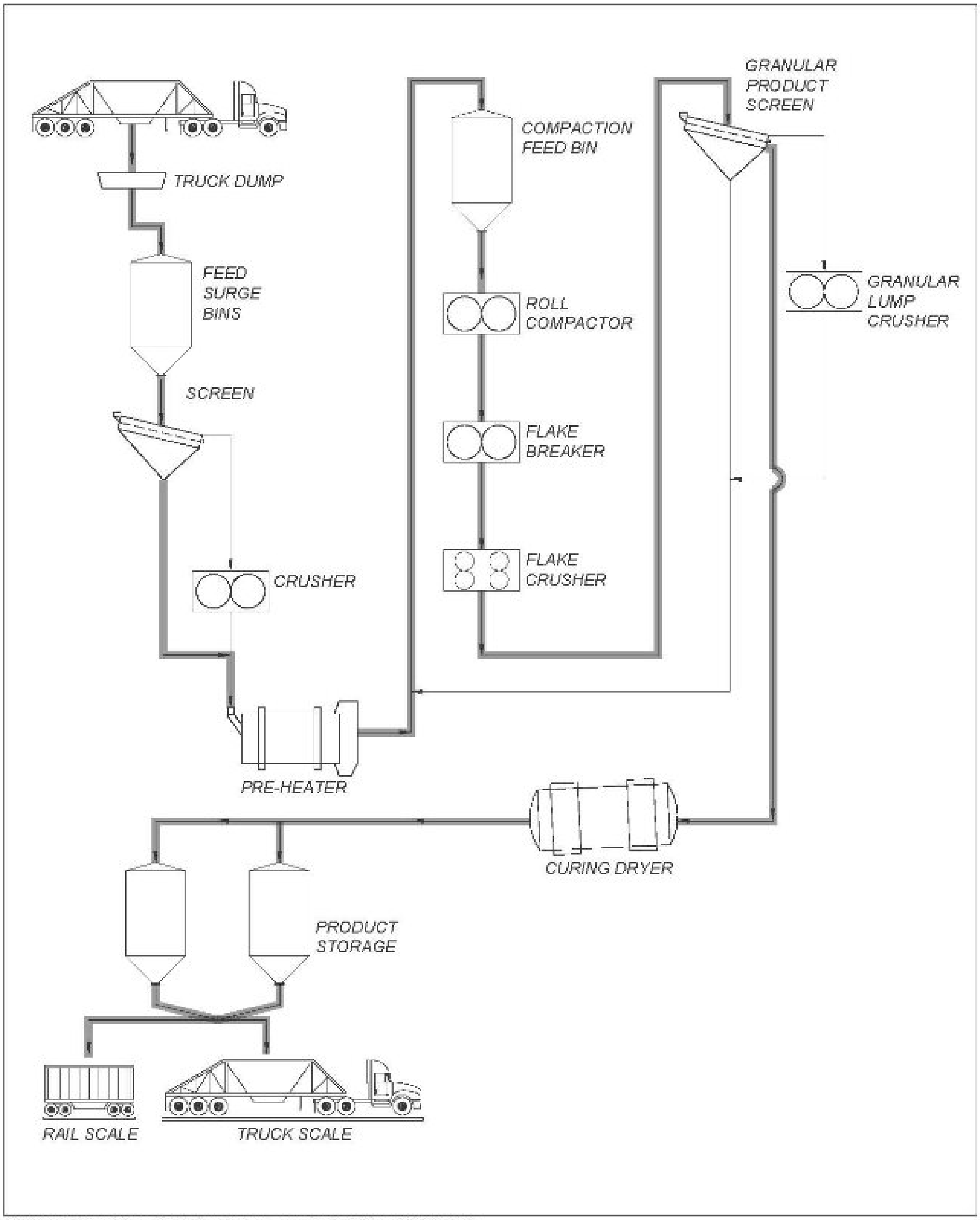


Figure 14-3. East Plant Process Simplified Flow Diagram

of original construction calculations and drawings. IPNM completed the required geotechnical evaluation assessment in 2018. Based on that evaluation, a conceptual improvement plan was developed to buttress slopes greater than 26 ft in height and to add a 3-ft lift to the crest of the facility to achieve minimum compliance requirements.

The West TSF, in Figure 14-6, is permitted for tailings disposal from the West Plant. The plant is currently not in operation. NaCl from the facility is used to condition the injectate stream for the HB Solution Mine.

The North TSF in Figure 14-7 is only used to handle excess brine/water and has ample capacity.



060-20 Intrepid Potash [Intrepid_PFD Drawing.dwg, Layout: North_PFD].smw(n) (1-20-2022)

Figure 14-4. North Plant Simplified Process Flow Diagram

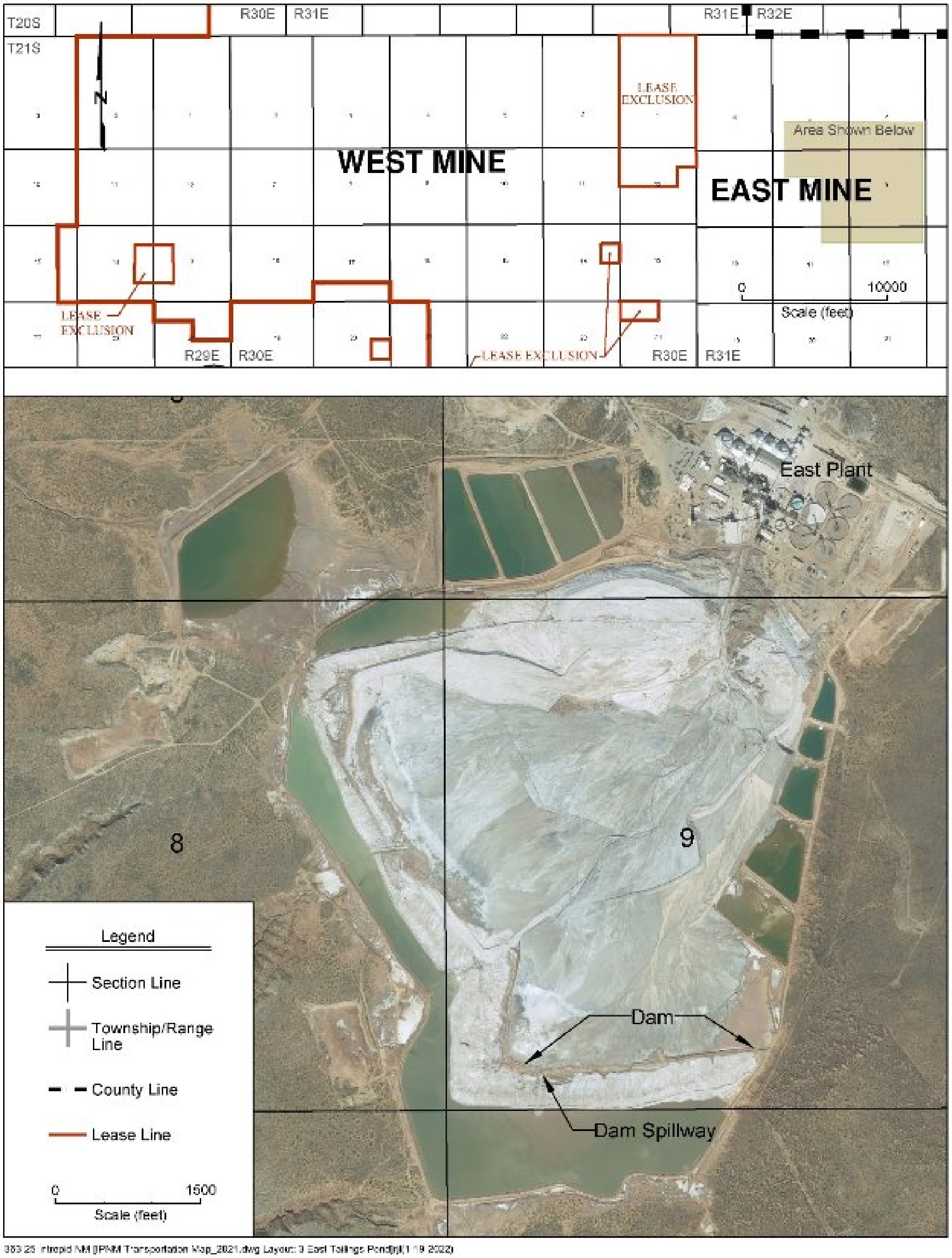


Figure 14-5. East Tailings Storage Facility

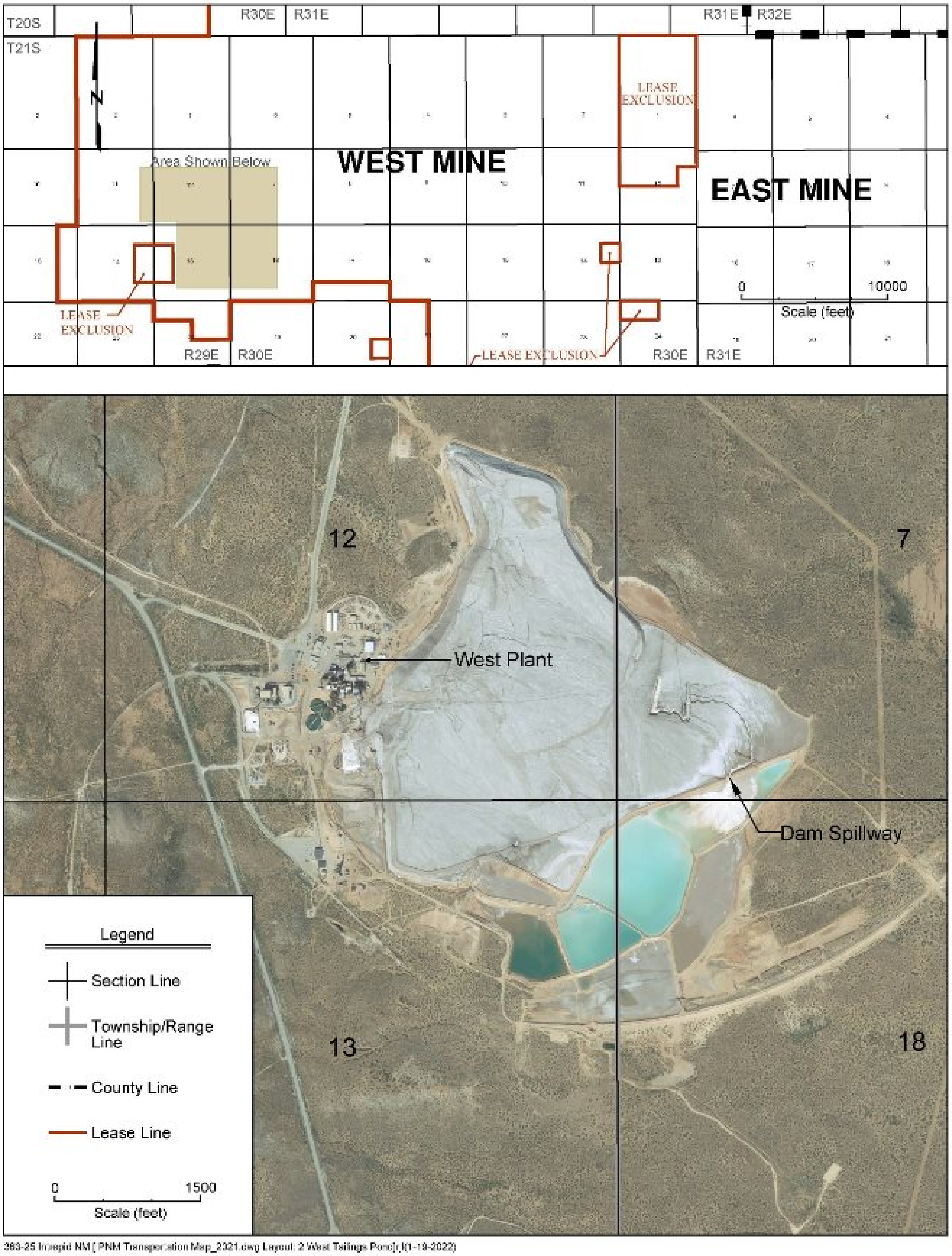


Figure 14-6. West Tailings Storage Facility (HB Brine Recirculation)

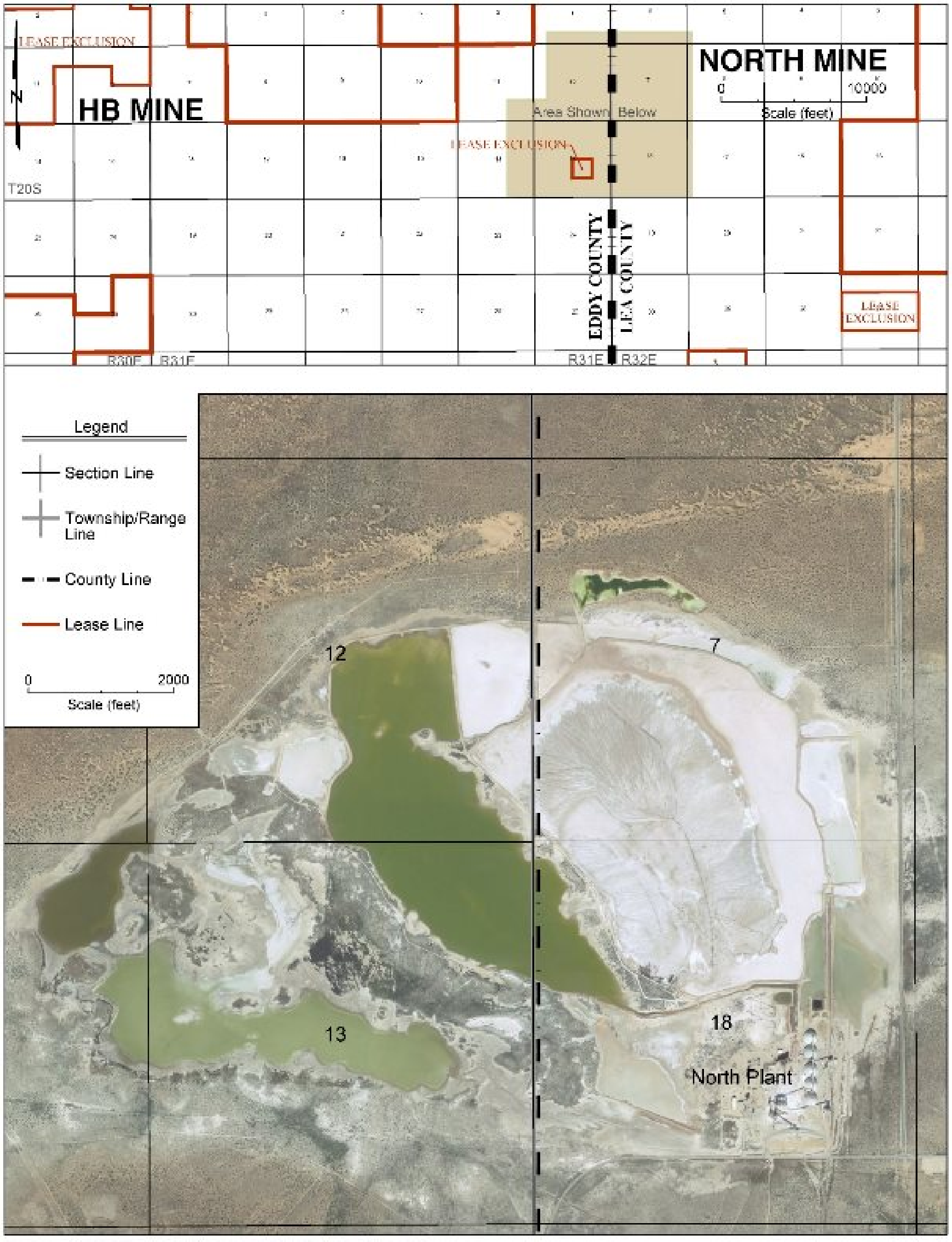
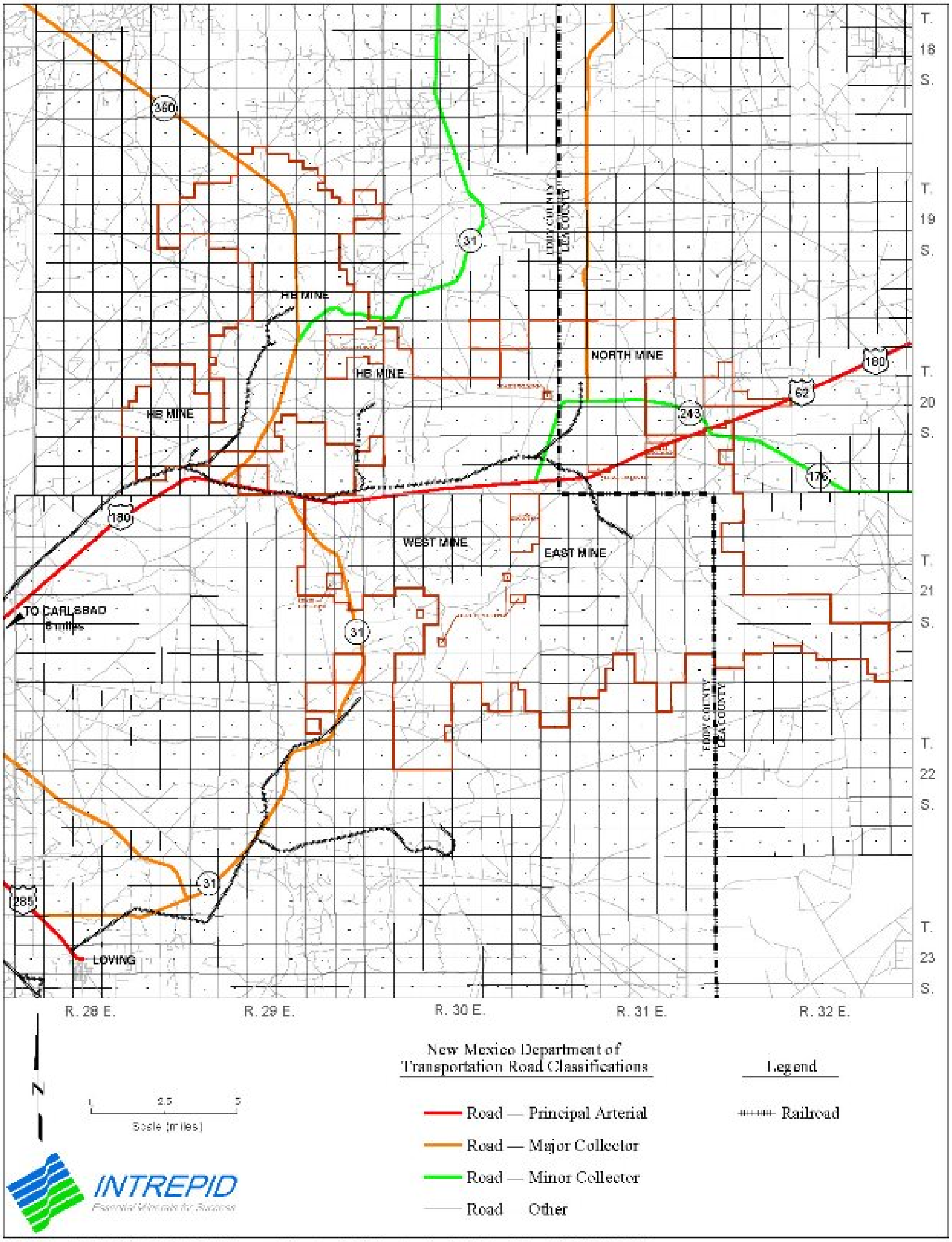


Figure 14-7. **North Tailings Storage Facility** (inactive)

15 INFRASTRUCTURE

The IPNM mines have a robust infrastructure in place. IPNM has adequate water rights at each of the mine properties. All of the mining operations are accessible by paved state or county highways and are accessible by rail. All of the operations obtain electric power from local utilities fed to recently upgraded substations. The infrastructure layout is shown on Figure 15-1.



AAI Files: 363-26 Intrepid NM [FNM Transportation Map_2021.dwg Layout: AAI_Roads_Railroads]rjl(3-17-2021)

Figure 15-1. Layout of the Infrastructure

16 MARKET STUDIES

Future pricing is difficult to predict and can fluctuate dramatically depending on the world market. IPNM does not conduct market studies to set the sales price.

17 ENVIRONMENTAL STUDIES, PERMITTING, AND PLANS

IPNM holds numerous environmental, mining, safety, and other permits and governmental approvals authorizing the operations at each of the facilities. Operations are subject to permits for, among other things, extraction of salt and brine, discharges of process materials and waste to air and surface water, and injection of brine. IPNM is obligated to reclaim and remediate disturbed lands when they cease operations.

17.1 Environmental Studies

IPNM has all necessary operating permits and is in production, both underground and solution mining, and through the permit reporting maintains environmental compliance. Environmental studies are conducted for major project expansions. The most recent Environmental Audit (EA) was completed in 2015 for the expansion of the HB In-situ Solution Mining project to include the solution mining of the abandoned AMAX potash mine. The work referenced the initial EIS for the HB In-Situ Solar Solution Mining Project EIS (DOI 2012).

17.2 Waste and Tailings Disposal, Site Monitoring, and Water Management During and After Mine Closure

The property has three tailings' impoundments, one of which is in current operation, that were described in Section 14. Tailings brine water is recycled for use in processing plants and solution wells. At closure, the tailings piles will dry and form a very hard, stable crust. No recontouring or revegetation of tailings piles are anticipated because the hard crust will provide adequate slope stability. The perimeter dikes will be stabilized for long-term integrity. Precipitation on the pile will dissolve some of the salt as it moves down into the brine pond, but is not anticipated to be saturated when it exits the pile. The tailings areas will be fenced off to minimize public access. No additional reclamation of the tailings piles is necessary at closure.

17.3 Permitting Status and Reclamation Bonds

The permitting status of each of the major permits is listed in Table 17-1. Bonds for mine closure and groundwater discharge are currently at a value of $3.764 million. The most recent update to the permits, currently awaiting BLM and New Mexico Environmental Department (NMED) approval, will increase the bond amount to $4.475 million.

17.4 Agreements with Local Individuals

There are no specific agreements with local individuals or groups.

17.5 Closure Plans

Closure plans include the repurposing, demolition, and removal of surface infrastructure and safely securing shafts for public safety. Mine operations and closure plans are periodically filed with the BLM. The proposed methods of abandonment are designed to protect unmined

Table 17-1. Permitting Status

Common Name	Issuing Agency	Permit ID	Effective Date	Expiration Date	Bond Value	Note
Air Permit	New Mexico Environment Department (NMED) Air Quality Bureau	New Source Review Permit 4332-M1R3	4-Apr-21	None	None	
Air Permit	New Mexico Environment Department Air Quality Bureau	Title V Air Operating Permit P261-R1	6-Nov-19	1-Nov-24	None	Title V operating permits have a 5 year permit term; renewal is required to be submitted 12 months prior to expiration.
Groundwater Discharge Permit	New Mexico Environment Department Ground Water Bureau (Water Quality Control Commission Regulations)	Discharge Permit No.: DP-1681	10-Jul-15	10-Jul-20	$ 3,349,000	Application for renewal submitted January 2020--still awaiting new permit. Existing permit remains in effect until agency issues the renewed permit. Current bond amount is shown. Intrepid provided an updated Mine Reclamation and Closure Plan and Closure Cost Estimate to NMED GWB in June 2021 for the amount of $4.475MM. Awaiting NMED acceptance before updating bond.
Liquid Waste Permit	NMED Health Bureau	West/HB Plant: 004446, 004447, 004448, 004449, 004450, 004451, 004452, 004453, and 008609	9-Jan-18	None	None	
Liquid Waste Permit	NMED Health Bureau	HB Slurry Pit Septic 008609	25-Sep-18	None	None	
Radioactive devices	NMED Radiation Control Bureau	None	7-Oct-19	30-Nov-24	None	
Waterfowl Hazing Plan and Reporting	Bureau of Land Management – Carlsbad Field Office	HB Project Solar Evaporation Ponds, Stepped Avian Monitoring and Mitigation Plan	1-Jan-12	None	None	
Storm Water Pollution Prevention Plan	N/A					
SPCC Plan	N/A					

Good Housekeeping Practices Plan	NMED AQB	Good Housekeeping Practices Plan required by NSR Air Permit 4332-M1	11-Aug-17	None	None	
CAM Plan	NMED AQB	Compliance Assurance Monitoring Plan required by Title V Air Operating Permit P261-R1	Same as Title V permit	Same as Title V permit	None	
Federal Explosives License	Bureau of Alcohol Tobacco and Firearms	Permit # 5-NM-015-33-9J-00293			None	License covers shell crackers for shotguns. Used to control or scare away waterfowl from the ponds at all sites. This license is for all of Intrepid NM, not just HB Solar.
Solid and Hazardous Waste Management Plan	Self written	*[Not a permit, HB Solar is a Very Small Quantity Generator]*	N/A	N/A	None	Updated plan internally January 2021
Mine Operations and Closure Plan	Bureau of Land Management – Carlsbad Field Office	HB Solar Mine Operations and Closure Plan	1-Mar-12	None	$415,000	Intrepid provided an updated Mine Reclamation and Closure Plan and Closure Cost Estimate to NMED GWB and concurrently with BLM in June 2021 for the amount of $4.475MM. It is our understanding that NMED and BLM has a MOU that will allow Intrepid to have 1 bond jointly. Awaiting NMED and BLM acceptance before updating the bond.
Well permits	NM Office of State Engineer	Injection, Extraction and Rustler Wells	1-Mar-12		None	Permit status is undetermined at this time.

recoverable reserves and other resources. While each mine area has specific detailed closure requirements, the major closure steps include closure of shafts and relief wells, tailings stabilization, asbestos removal, building demolition, reclamation of building footprints; reclamation of other areas, dispose of any contaminated soils, reclamation of landfills, reclamation of roads, and remediation of Recognized Environmental Concerns (REC).

Upon completion of solution mining operations at the HB Mine, all structures, wells, pipelines, and ancillary equipment located on Federal, State, and Intrepid fee land will be abandoned, demolished, razed, and hauled to an appropriately permitted local landfill for proper disposal.

17.6 Adequacy of Current Plans and Compliance

It is the QP's opinion that the current plans are adequate to address any issues related to environmental compliance, permitting, and local individuals or groups.

18 CAPITAL AND OPERATING COSTS

Intrepid has provided the mining costs history and sales data since 2007 and budgeted capital costs dated January 6, 2020. The East mine is operating at approximately 60% of capacity and is anticipated to continue operating at the current rate. At reduced capacity, three sets of mining units are running at any given time and five units are available. With the West Mine taken offline, many of the capital items were recovered from the West Mine for use in the East Mine, reducing the amount of new capital required to sustain East Mine operations from 2016-2021. East Mine sustaining capital requirements are expected to increase beginning in 2022 as the availability of West Mine assets repurposed for use at East has diminished.

18.1 Operating Cost Estimate

Intrepid provided the mining costs history and sales data since 2007. The cash production cost by mine including warehouse handling and royalties are provided in Table 18-1. These costs are subject to vary with changes in production. Cash production costs do not include interest, depreciation, depletion, or income taxes.

Table 18-1. Unit Mining Cost

Cost Category	Cost ($/product ton)
Labor	$91
Maintenance Supplies	$25
Operating Supplies Including Reagents	$20
Natural Gas, Electricity and Fuel	$15
Leases, Property Tax, Insurance, etc.	$25
Subtotal	$176
Warehouse	$11
Royalties	$13
Cost of Goods Sold	$200

18.2 Capital Cost Estimate

Capital items necessary to complete the mine plan include the treatment extension for the management of bitterns from the HB Solution Plant and the pipeline and injection/extraction wells for the AMAX extension of the HB Solar Solution Mines. The sustaining capital is outlined in the budget and includes major equipment replacement. No development in the conventional underground mine is planned beyond the ongoing mine extension. Mine advancement is included in the operating cost.

18.3 Accuracy Discussion

The cost estimates are based on actual costs from the producing mines. These cost estimates are considered highly accurate based on the current and anticipated operating conditions.

19 ECONOMIC ANALYSIS

To evaluate the viability of mining the IPNM mines' reserves, an economic analysis was conducted. Annual revenue and production cost schedules were used to build a projected cash flow to accompany the mine plan. The costs and sales price parameters were assumed to be in constant US dollars.

19.1 Key Assumptions, Parameters, and Methods

The property has a long history of operation at this location. The assumption list for the economic analysis is shown in Table 19-1.

Table 19-1. Economic Analysis Assumptions

Parameter	Assumption
Trio® Sale Price (mine site)	$340/t
Potash Sale Price (mine site)	$325/t
Shipping Trio®	$90/t
Shipping Potash	$30/t
Trio® Production Target	250,000 tpy
Potash Production Target	180,000 tpy
Interest Rate	0–12% APR
Income Taxes (State and Federal)	40%
Resource Tax	1.25%

19.2 Economic Analysis

For a property in operation, the economic viability has been established. The cash flow was developed using the mine plan and is listed in Table 19-2 and shown graphically in Figure 19-1. The NPV over the period of the detailed mine plan was calculated for an array of interest rates. This NPV analysis is included in Table 19-3. For a property in operation, the Internal Rate of Return and payback period are only necessary for major capital expansions.

19.3 Sensitivity Analysis

NPV sensitivity analyses were run using variants in commodity price and operating costs for the pre-tax cash flow. The results of the sensitivity analysis are shown in Table 19-4 and graphically in Figure 19-3.

Table 19-2. Estimated Pre-Tax Cash Flow

		2022–2026	2027–2031	2032–2036	2037–2041	2042–2046
Langbeinite						
	Ore Production (-million tons/year)	1.20	1.20	1.20	1.20	1.20
	Ore Grade (%K2O/year)	8.69	8.62	8.78	8.16	7.86
	Tons of K_2O (-000/year)	57.94	57.54	58.56	54.36	52.42
	Product (Langbeinite) (-000 tons/year)	265.78	263.96	268.62	249.34	240.46
	Handling Losses (-000 tons/year)	10.62	10.58	10.76	9.96	9.62
	Tons (Langbeinite) (-000 tons/year)	255.16	253.38	257.86	239.38	230.84
	Sale Price Langbeinite ($/product ton)	$340	$340	$340	$340	$340
	Shipping ($/ton)	$90	$90	$90	$90	$90
	Net Sale Price/year	$250	$250	$250	$250	$250
MOP	Production (MOP) (-000 tons/year)	180.00	180.00	180.00	180.00	180.00
	Sale Price MOP ($/product tons/year)	$325	$325	$325	$325	$325
	Shipping ($/product tons/year)	$30	$30	$30	$30	$30
	Net Sale Price	$295	$295	$295	$295	$295
	Salt Sales ($-million/year)	$2.50	$2.50	$2.50	$2.50	$3.00
REVENUE ($-million/year)		**$119.39**	**$118.95**	**$120.07**	**$115.45**	**$113.81**
EXPENSES						
	Major Capital ($-million/year)	$5.20	$1.00	$0.00	$3.00	$0.00
	Cost of Goods Sold					
	Expenses ($-million/year)	$84.83	$84.83	$84.80	$84.77	$79.38
	Income before Taxes ($-million/year)	$34.56	$34.11	$35.26	$30.67	$34.43
	Pre-tax Cash Flow ($-million/year)	$29.36	$33.11	$35.26	$27.67	$34.43

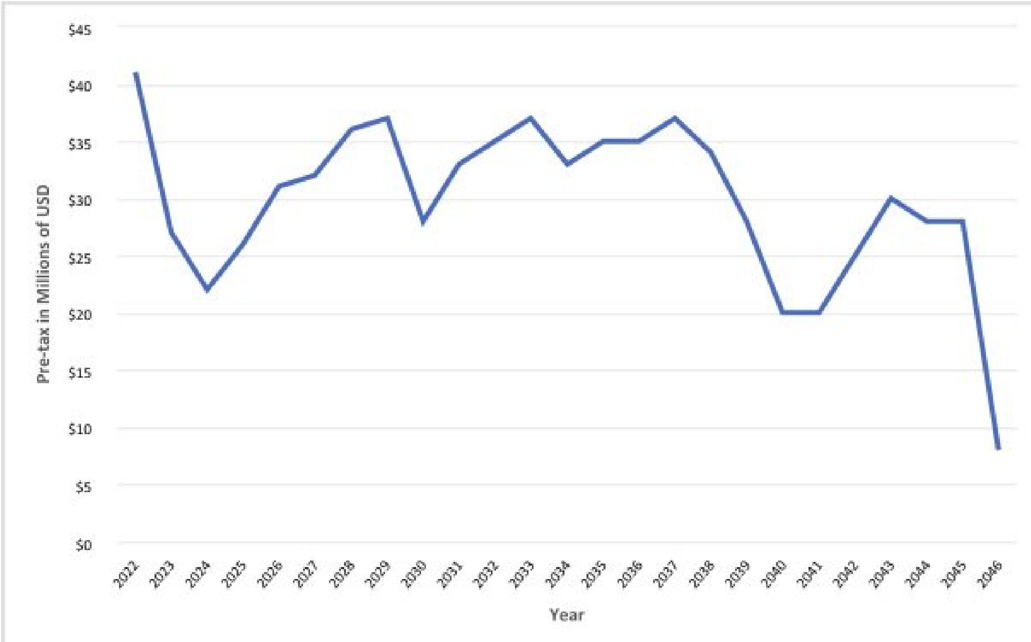


Figure 19-1. Estimated Annual Pre-Tax Cash Flow

Table 19-3. Estimated After-Tax Cash Flow

		2022–2026	2027–2031	2032–2036	2037–2041	2042–2046
Langbeinite						
	Ore Production (-million tons/year)	1.20	1.20	1.20	1.20	1.20
	Ore Grade (%K2O/year)	8.69	8.62	8.78	8.16	7.86
	Tons of K_2O (-000/year)	57.94	57.54	58.56	54.36	52.42
	Product (Langbeinite) (-000 tons/year)	265.78	263.96	268.62	249.34	240.46
	Handling Losses (-000 tons/year)	10.62	10.58	10.76	9.96	9.62
	Tons (Langbeinite) (-000 tons/year)	255.16	253.38	257.86	239.38	230.84
	Sale Price Langbeinite ($/product ton)	$340	$340	$340	$340	$340
	Shipping ($/ton)	$90	$90	$90	$90	$90
	Net Sale Price/year	$250	$250	$250	$250	$250
MOP	Production (MOP) (-000 tons/year)	180	180	180	180	156
	Sale Price MOP ($/product tons/year)	$325	$325	$325	$325	$325
	Shipping ($/product tons/year)	$30	$30	$30	$30	$30
	Net Sale Price	$295	$295	$295	$295	$295
	Salt Sales ($-million/year)	$2.50	$2.50	$2.50	$2.50	$3.00
REVENUE ($-million/year)		**$119.39**	**$118.95**	**$120.07**	**$115.45**	**$106.73**
EXPENSES						
	Major Capital ($-million/year)	$5.20	$1.00	$0.00	$3.00	$0.00
	Cost of Goods Sold					
	Expenses	$84.83	$84.83	$84.80	$84.77	$81.18
	Income before Taxes	$34.56	$34.11	$35.26	$30.67	$25.55
	Depreciation	$1.21	$1.87	$2.07	$1.15	$1.20
	Depletion	$16.04	$16.56	$16.81	$14.98	$12.77
	Taxable Income	$17.30	$15.69	$16.39	$14.54	$11.57
	Fed and State	$6.92	$6.28	$6.56	$5.82	$4.63
	Resource Excise Tax	$0.15	$0.15	$0.15	$0.14	$0.13
	Cash Flow (After-Tax)	$22.29	$26.69	$28.56	$21.71	$20.78

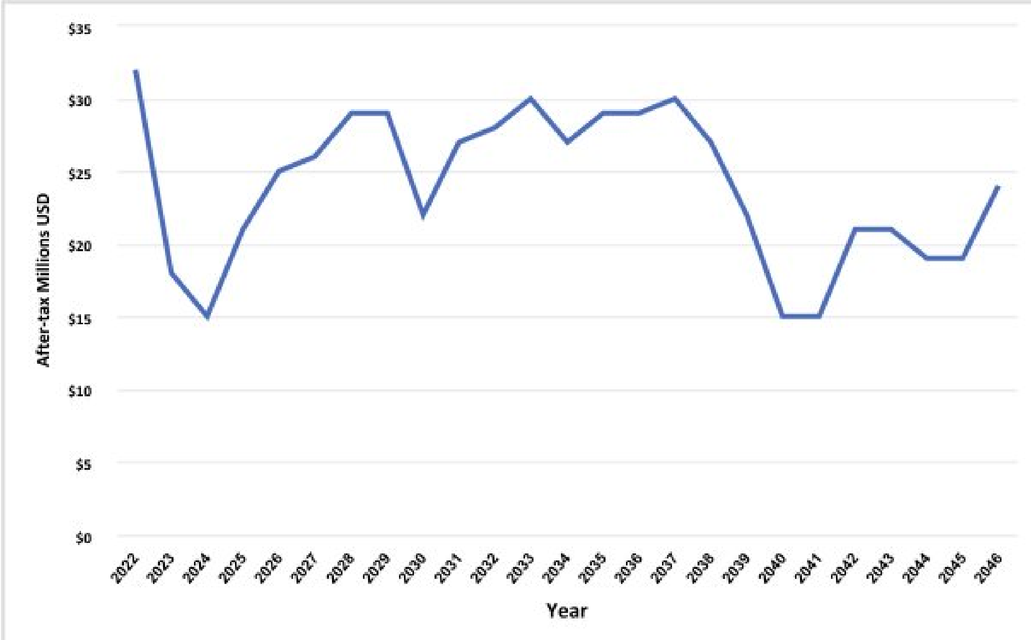


Figure 19-2. Estimated Annual After-Tax Cash Flow

Table 19-4. NPV Pre-Tax Estimate

Interest Rate (% APR)	NPV ($M)
0	$755
5	$456
8	$358
10	$311
12	$275

Table 19-5. NPV After-Tax Estimate

Interest Rate (% APR)	NPV ($M)
0	$600
5	$361
8	$282
10	$244
12	$215

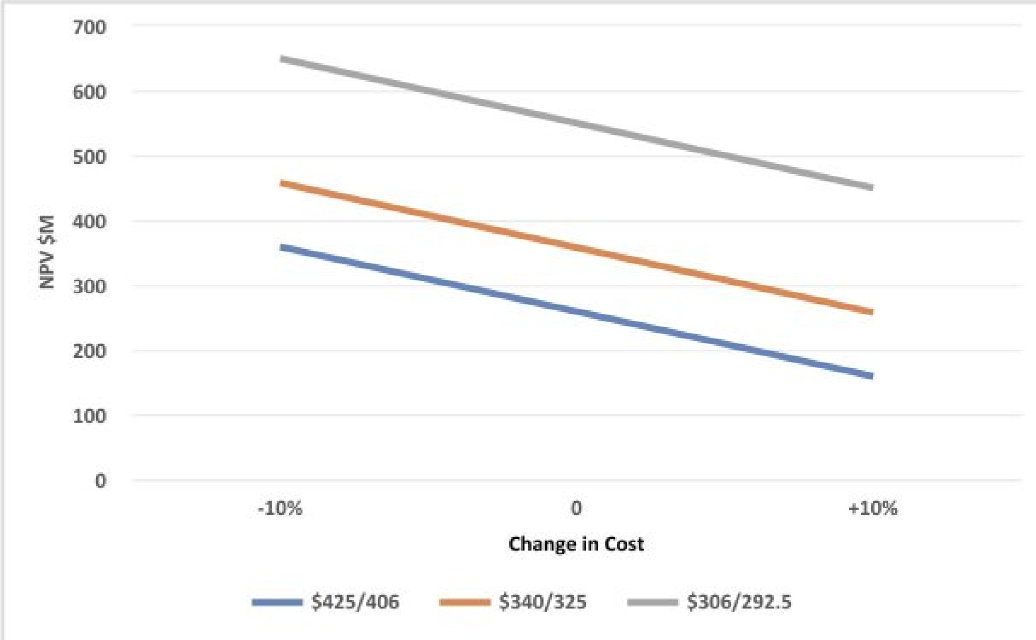


Figure 19-3. Pre-Tax NPV Sensitivity to Price and Costs

Figure 19-4. After-Tax NPV Sensitivity to Price and Costs

20 ADJACENT PROPERTIES

Not Applicable.

21 OTHER RELEVANT DATA AND INFORMATION

The Mine Safety and Health Administration (MSHA) is the governing agency for IPNM’s underground mines and related surface facilities in New Mexico. As required, these operations are regularly inspected by MSHA personnel. The HB Plant is governed by the Occupational Safety and Health Administration (OSHA).

22 Interpretation and Conclusions

Agapito's review and resource and reserve estimations were performed to obtain a reasonable assurance of the estimates from the data provided by Intrepid and IPNM. Based on the foregoing, Agapito believes its findings are reasonable and realistic and have been developed using accepted engineering practices.

As with all geologic estimations, there is a level of risk and uncertainty because of sparse data. These estimates are considered reliable based on the historical success of mining operations recovering langbeinite and potash from this deposit. There is more uncertainty in future mining of the ore zones that have not been historically mined.

23 RECOMMENDATIONS

Agapito recommends that IPNM continue planning for the challenges in solution mining with the presence of low levels of carnallite and plan for the expansion pipeline to the AMAX. The property is in operation, and no additional work is recommended.

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25 RELIANCE ON INFORMATION

Agapito relied on information provided by Intrepid and IPNM for this reserve evaluation.

TECHNICAL REPORT SUMMARY
OF
2021 ESTIMATED RESOURCES AND RESERVES AT INTREPID POTASH-MOAB

Prepared for:

Intrepid Potash–Moab, LLC

Report Date:

February 23, 2022

Effective Date:

December 31, 2021

Prepared by:

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Agapito Associates, Inc.

CORPORATE SEAL

TECHNICAL REPORT SUMMARY OF 2021 ESTIMATED RESOURCES AND RESERVES AT INTREPID POTASH-MOAB

TABLE OF CONTENTS

List of Tables

LIST OF FIGURES

LIST OF ABBREVIATIONS

°	degree
Agapito	Agapito Associates, Inc.
APR	Annual Percentage Rate
BLM	United States Bureau of Land Management
CFR	Code of Federal Regulations
cfs	cubic feet per second
CMC	carboxy-methyl cellulose
DRGW	Denver and Rio Grande Western Railroad
DSM	Dutch State Mines
EOY	end of year
F	Fahrenheit
ft	feet or foot
gpm	gallons per minute
Intrepid	Intrepid Potash, Inc.
Intrepid-Moab	Intrepid Potash–Moab, LLC
IRR	Internal Rate of Return
K_2O	potassium oxide
KCl	sylvite or potassium chloride
M	million
Ma	mega annum (one-million years)
mm	millimeter
MOP	Muriate of Potash
MSL	mean sea level
mm	millimeter
Mt	million tons
NaCl	sodium chloride
NPV	Net Present Value
NaCl	halite
%	percent
PFD	process flow diagrams
QP	Qualified Person
SEC	United States Securities Exchange Commission
SITLA	Utah School and Institutional Lands Administration
SME	Society for Mining, Metallurgy & Exploration
SOE	statement of earnings
t	ton
tpd	tons per day
tpy	tons per year
TRS	Technical Report Summary

1 Executive Summary

Agapito Associates, Inc. (Agapito) was commissioned by Intrepid Potash, Inc. (Intrepid) to estimate the end-of-year (EOY) 2021 potash resources and reserves for the Intrepid Potash–Moab, LLC (Intrepid-Moab) property. Resources and reserves are estimated according to United States (US) Securities and Exchange Commission (SEC) S-K 1300 regulations.

1.1 Property Description and Ownership

Intrepid-Moab's Cane Creek Mine is located approximately 20 miles west of Moab, Utah, which is 234 miles southeast of Salt Lake City, Utah. The Colorado River runs north–south along the eastern operations boundary. Intrepid-Moab's property covers an area of approximately 14,100 acres of land. Intrepid-Moab's potash leases include 10,100 acres from the State of Utah and approximately 200 acres from the US federal government through the U.S. Bureau of Land Management (BLM).

1.2 Geology and Mineralization

The depositional history of eastern Utah's vast salt and potash resources begins during the regionally arid Pennsylvanian Period, 330–310 million years ago. An immense block of the Earth's crust, in what is today western Colorado, was thrust upward to form the Uncompahgre Highlands and identified as the westernmost expression of the Ancestral Rocky Mountains. As is common throughout geologic history, dramatic uplift was coupled with subsidence in an adjoining area. The subsequent topographical basin was inundated by seawater as it subsided. Throughout the Pennsylvanian Period, sea levels rose and fell. With each retreat of the sea, the Paradox Basin, as it is called, became devoid of fresh sea water, allowing the process of evaporation to dominate which resulted in widespread precipitation of chloride minerals. This retreat/inflow cycle is known to have occurred a minimum of 29 times, with each marked by a specific and predictable sequence of sedimentary deposition. This series of depositional cycles is collectively known as the Paradox Formation. Potash is documented to exist in 17 of the 29 cycles, and it is from these formational cycles that commercial production of potash occurs.

1.3 Status of Exploration, Development and Operations

The property has been in continuous operation by Intrepid-Moab since 1999. Confirmation drilling and mine development are an integral part of the mine operations.

1.4 Mineral Resource Estimates

The ore resource model created from the exploration and sampling database beginning in 2007 serves as the basis for this evaluation. The resources reported, exclusive of mineral reserves effective December 31, 2021, are shown in Table 1-1.

Table 1-1. Sylvinite Mineral Resource Estimate effective December 31, 2021 based on 406 $/Product Ton Mine Site

	Resources			Cutoff[2]	Processing Recovery (%)
	Sylvinite[1] (Mt)	Grade (%K_2O)	Contained K_2O (Mt)		
Measured Mineral Resources	113	26	30	Minimum of 3-ft and 18.95%K_2O	83
Indicated Mineral Resources	190	25	47	Minimum of 3-ft and 18.95%K_2O	83
Measured + Indicated Mineral Resources	303	25	77		
Inferred Mineral Resources	38	23	9	Minimum of 3-ft and 18.95%K_2O	83

[1]Sylvinite is a mixed evaporite containing NaCl and KCl.

[2]Solution mining resource cutoff for flooded old workings is the mining extents boundary.

Mineral Resources were prepared by Agapito Associates, Inc., a qualified firm for the estimate and independent of Intrepid Potash.

Mineral Resources are reported exclusive of Mineral Reserves, on a 100% basis.

Mineral Resources are reported using Inverse Distance Squared (ID^2) estimation methods.

Mt = million tons, % = percent, K_2O = potassium oxide, ft = feet

1.5 Mineral Reserve Estimates

Using the ore mineral resource grids, a 25-year cavern mining plan was developed. Table 1-2 shows the estimated reserve summaries for EOY 2021.

Table 1-2. Potash Mineral Reserve Estimate effective December 31, 2021 based on 325 $/Product Ton Mine Site

Beds 5 and 9	In-Place KCl (Mt)	In-Situ Grade[1] (%K_2O)	Product (Mt)	Brine Cutoff Grade[2] (%K_2O)	Processing Recovery (%)
Proven Mineral Reserve	2.6	27.2	1.9	1.9	83
Probable Mineral Reserve	0.8	27.8	0.6	1.9	83
Total Mineral Reserves	3.4	27.5	2.5		

[1]In-situ grade is the amount of K_2O in the remaining pillars of the old works.

[2]Brine cutoff grade is the amount of K_2O in the extracted brine necessary to cover the costs of production.

Mineral Reserves were prepared by Agapito Associates, Inc., a qualified firm for the estimate and independent of Intrepid Potash.

Mineral Reserves are reported exclusive of Mineral Resources, on a 100% basis.

Mineral Reserves are reported based on a solution mine plan, dissolution factor of 89%, areal recovery of 94%, geologic factor 94%, plant recovery of 83%, product purity of 95%.

Mt = million tons, % = percent, K_2O = potassium oxide, ft = feet

1.6 Summary of Capital and Operating Cost Estimates

The operating cost per potash product ton from solution mining is estimated at $130/t.

Capital investment necessary to complete the mine plan includes the development of additional caverns at a cost of $8M. This investment is in addition to the sustaining capital requirements and occurs approximately every 10 years.

1.7 Economic Analysis

The Net Present Value (NPV) at 8% Annual Percentage Rate (APR) for the before- and after-tax estimated cash flow is positive. The sensitivity to product price and operating cost for an 8% APR was evaluated. Varying costs and sales price plus and minus 10% the NPV remains positive.

1.8 Permitting

The mines are in operation and necessary state and federal operating permits are in place.

1.9 Conclusions and Recommendations

There are significant potash resources within the area under the control of Intrepid-Moab such that the property can support a 100,000 ton per year (tpy) production rate for the foreseeable future.

2 INTRODUCTION

This document was prepared to report the Intrepid-Moab mineral reserves in terms of saleable product at Intrepid-Moab under the SEC S-K 1300 rules (2018). The Society for Mining, Metallurgy & Exploration (SME) *Guide for Reporting Exploration Information, Mineral Resources and Mineral Reserves* (SME 2017) (The SME Guide) supplements the modifying factors used to convert mineral resources to mineral reserves.

According to 17 Code of Federal Regulations (CFR) § 229.1301 (2021), the following definitions are included for reference:

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. 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, therefore, may not be converted to a 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. An indicated mineral resource has a lower level of confidence than the level of confidence of a measured mineral resource and may only be converted to a probable mineral reserve. As used in this subpart, the term *adequate geological evidence* means evidence that is sufficient to establish geological and grade or quality continuity with reasonable certainty.

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. As used in this subpart, the term *conclusive geological evidence* means evidence that is sufficient to test and confirm geological and grade or quality continuity.

Modifying factors are the factors that a qualified person must apply to indicated and measured mineral resources and then evaluate in order to establish the economic viability of mineral reserves. A qualified person must apply and evaluate modifying factors to convert measured and indicated mineral resources to proven and probable mineral reserves. These factors include but are not restricted to mining; processing; metallurgical; infrastructure; economic; marketing; legal; environmental compliance; plans, negotiations, or agreements with local individuals or groups; and governmental factors.

A *probable mineral reserve* is the economically mineable part of an indicated and, in some cases, a measured mineral resource.

A *proven mineral reserve* is the economically mineable part of a measured mineral resource. For a proven mineral reserve, the qualified person has a high degree of confidence in the results obtained from the application of the modifying factors and in the estimates of tonnage and grade or quality. A proven mineral reserve can only result from conversion of a measured mineral resource.

Throughout the report, reserves are presented in tons of K_2O and KCl. Historically, assay data have been reported in terms of % K_2O and reserves in equivalent tons of K_2O. Sylvite is potassium chloride (KCl) and, in many historical reports, reserve tons or product tons are recorded in terms of tons of KCl. Pure KCl equates to 63.18% K_2O by mass.

2.1 Sources of Information

Agapito has previously completed reserve estimations and analyses for the property as shown in Table 2-1. Previous reserve estimates for annual 10-K filings with the SEC were completed under SEC (2008) Industry Guide 7 rules and guidance.

Table 2-1. Summary of Reports by Agapito

Effective EOY	Title	Reference
2007	2007 Resource and Reserve Estimate for Solution Mine at Cane Creek Mine	Agapito 2007a
2007	Determination of Estimated Proven and Probable Reserves at Intrepid Potash—Moab, LLC	Agapito 2007b
2009	Determination of Estimated Proven and Probable Potash Reserves at Intrepid Potash—Moab, LLC	Agapito 2010
2012	Determination of Estimated Proven and Probable Potash Reserves at Intrepid Potash—Moab, LLC	Agapito 2013
2015	Determination of Estimated Proven and Probable Potash Reserves at Intrepid Potash—Moab, LLC	Agapito 2016
2018	2018 Determination of Estimated Proven and Probable Reserves at Intrepid Potash—Moab, LLC	Agapito 2019

2.2 Personal Inspection

Personal inspection of the properties has occurred over the years by Agapito personnel. The most recent inspection by Agapito took place on May 17, 2021. The inspection began with a tour of the tailings lake then the solar evaporating ponds. In addition, the wellfields (injection and extraction), processing plant, product packaging and shipping areas were all inspected. During the site visit, harvesting was occurring, and the plant was operating. The plant is typically idle during the peak evaporation season from June 1 to September 1.

3 PROPERTY DESCRIPTION

3.1 Location and Area of the Property

Intrepid-Moab's Cane Creek Mine is located approximately 20 miles west of Moab, Utah, which is 234 miles southeast of Salt Lake City, Utah (Figure 3-1). The Colorado River runs north–south along the eastern operations boundary. Intrepid-Moab's property covers an area of approximately 14,100 acres of land.

3.2 Mineral Rights

Intrepid leases approximately 10,100 acres from the State of Utah and approximately 200 acres from the U.S. federal government through the BLM. Intrepid-Moab owns approximately 3,800 surface acres overlying and adjacent to portions of the mining leases with the State of Utah as shown in Figure 3-2 and as described in the lease and property access in Table 3-1.

3.3 Significant Encumbrances

There are no significant encumbrances to the property, including current and future permitting requirements and associated timelines, permit conditions, and violations and fines.

3.4 Significant Factors

There are no significant factors and risks that may affect access, title, or the right or ability to perform work on the property.

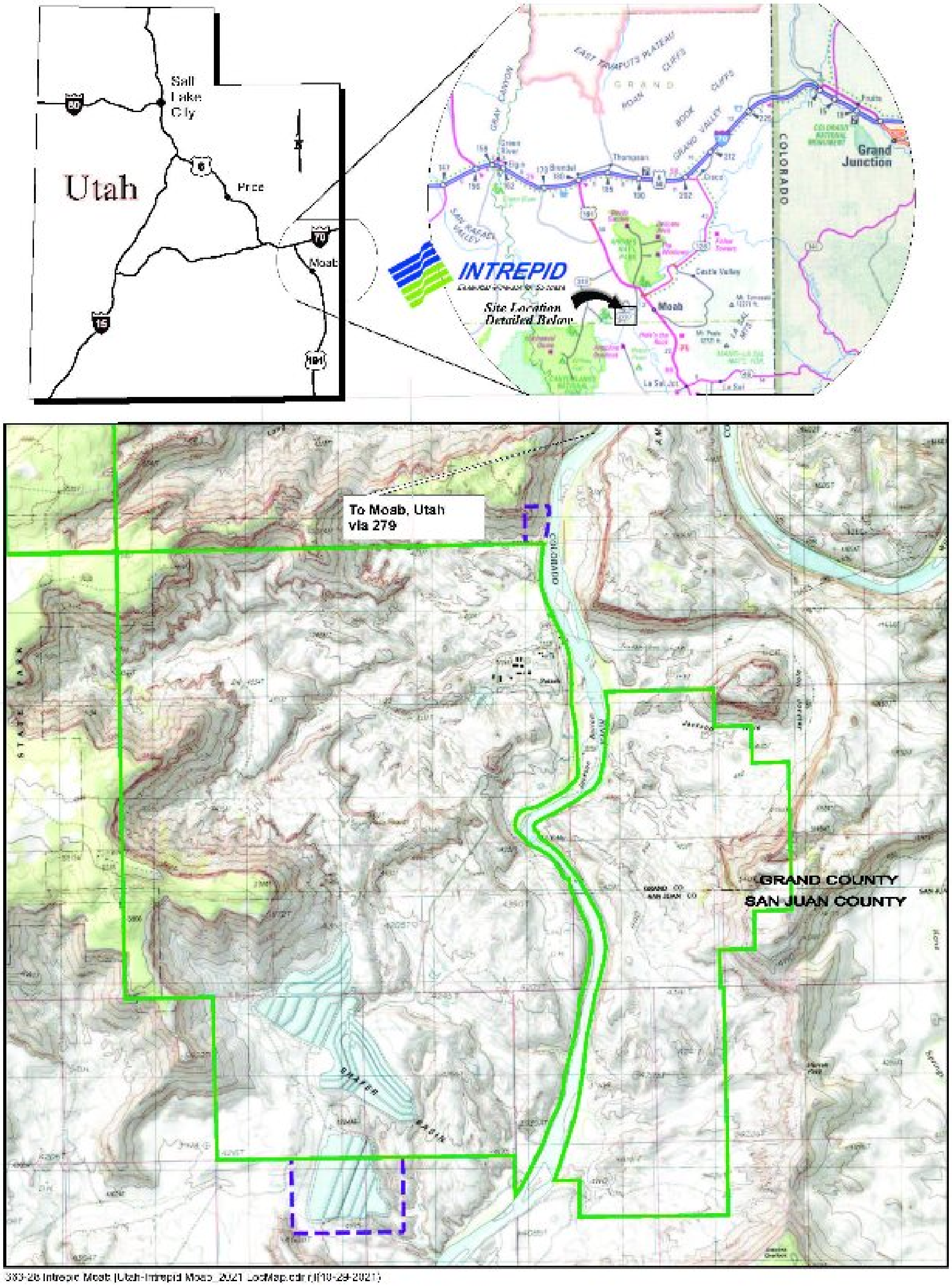
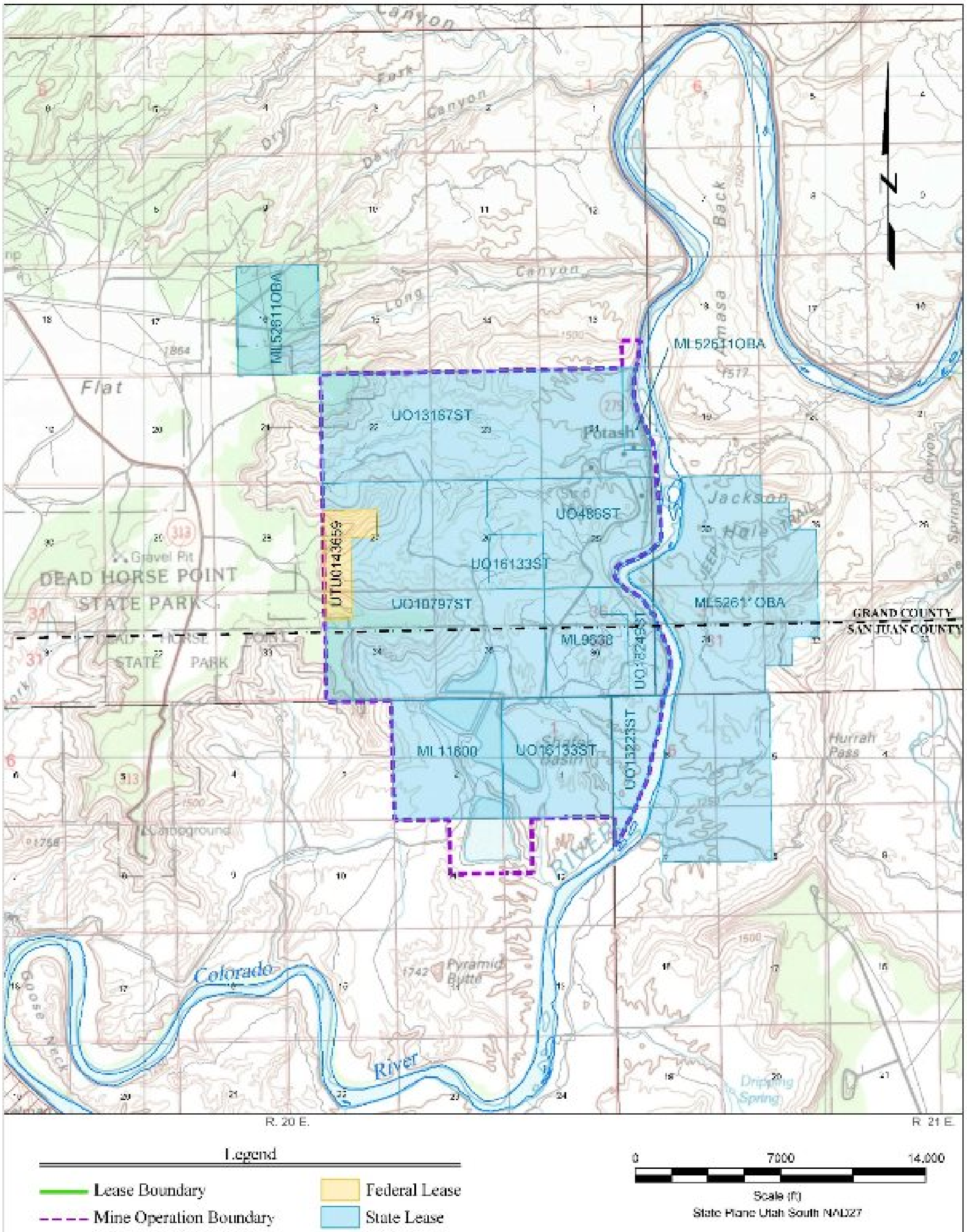


Figure 3-1. Intrepid-Moab Location Map



363-28 Intrepid Moab [Overall Area Map w Transportation.dwg Layout: AAI_Roads_Railroads(rj)(4-21-2021)
Topographic Map Reference: USGS 7.5' Series

Figure 3-2. Intrepid-Moab Lease Map

Table 3-1. Leases and Property Rights

Federal Land Lease Number	Lessee	Lease Type	Mine	Date	Royalty Rate	Readjustment Due	Acres (BLM)	Amount Paid
UTU0143659	Intrepid Potash-Moab, LLC	Pot Fringe Acre NC Lse	Moab	1959	Minimum royalty $3/acre	8/1/2039	200	
State of Utah Land Lease Number	**Lessee**	**Lease Type**	**Mine**	**Date**	**End Date**	**Rental Period**	**Acres (SITLA)**	**Rental Amount**
ML9638	Intrepid Potash-Moab, LLC	Potash	Moab	1955	12/31/2024	1/1/2021–12/31/2021	440	$1,760
ML11800	Intrepid Potash-Moab, LLC	Potash	Moab	1956	12/31/2024	1/1/2021–12/31/2021	699	$2,796
ML52611OBA	Intrepid Potash-Moab, LLC	Potash	Moab	2013	9/30/2023	10/1/2021–9/30/2021	3,030	$21,217
UO486ST	Intrepid Potash-Moab, LLC	Potash	Moab	1959	12/31/2024	1/1/2021–12/31/2021	818	$3,276
UO10797ST	Intrepid Potash-Moab, LLC	Potash	Moab	1959	12/31/2024	1/1/2021–12/31/2021	2,040	$8,160
UO13167ST	Intrepid Potash-Moab, LLC	Potash	Moab	1960	12/31/2024	1/1/2021–12/31/2021	1,800	$7,200
UO13223ST	Intrepid Potash-Moab, LLC	Potash	Moab	1960	12/31/2024	1/1/2021–12/31/2021	238	$956
UO16133ST	Intrepid Potash-Moab, LLC	Potash	Moab	1960	12/31/2024	1/1/2021–12/31/2021	885	$3,540
UO18249ST	Intrepid Potash-Moab, LLC	Potash	Moab	1960	12/31/2024	1/1/2021–12/31/2021	180	$724

SITLA = Utah School and Institutional Lands Trust Administration

NOTE—Coordinate System: Utah South Zone State Plane, NAD83

4 ACCESSIBILITY

4.1 Topography, Elevation, and Vegetation

The Intrepid-Moab property is a unique high-altitude desert landscape formed from the sandstone of ancient seafloors and sand dunes. Elevations range from 3,900 feet (ft) to 4,400 ft above mean sea level (MSL).

The sandy loam soil supports sparse perennial bunchgrasses such as galleta, alkali sacaton, three-awn, inland saltgrass, Indian ricegrass, and sand dropseed. Native plants include cold hardy agave, cactus, and yucca.

4.2 Property Access

Access to the property is predominantly via state highway 191 and state road 279, locally referred to as Potash Road. A Union Pacific/Denver and Rio Grande Western Railroad (DRGW) rail spur services the property. The nearest town to the Intrepid Potash-Moab property is Moab, Utah (with an estimated population of about 5,250). Salt Lake City, Utah (population of 198,000) and Grand Junction, Colorado (population of 62,000), are located approximately 240 and 120 miles to the west and east, respectively, by road, and are the nearest major industrial and commercial airline terminals. Moab also has a commercial airline terminal with scheduled flights to Salt Lake City. Figure 4-1 shows the means of access to the property.

4.3 Climate

Average temperatures range between a low of approximately 10 degrees Fahrenheit (°F) during winter months and a high of approximately 100°F during summer months. The area experiences about 300 days of sunshine and an average of 5 percent (%) relative humidity. The semi-arid climate experiences an annual rainfall at the mine site of about 7.3 inches, distributed evenly throughout the year. Most precipitation occurs in late summer and early autumn months. Much of this precipitation comes in the form of sudden summer thunderstorms and is lost in runoff to the Colorado River. The climate is favorable for year-round solution mining operations. The precipitation history has been recorded on site since 1988 and is included in Figure 4-2.

4.4 Infrastructure Availability

The nearby Colorado River provides the Intrepid-Moab mining operation with make-up water under existing water rights with the State of Utah for a water supply of 9 cubic feet per second (cfs).

The Intrepid-Moab mine has been in operation (solution mining) since 1970 and, as a result, has the infrastructure and available personnel. The local area population is sufficient to support the Intrepid-Moab mine.

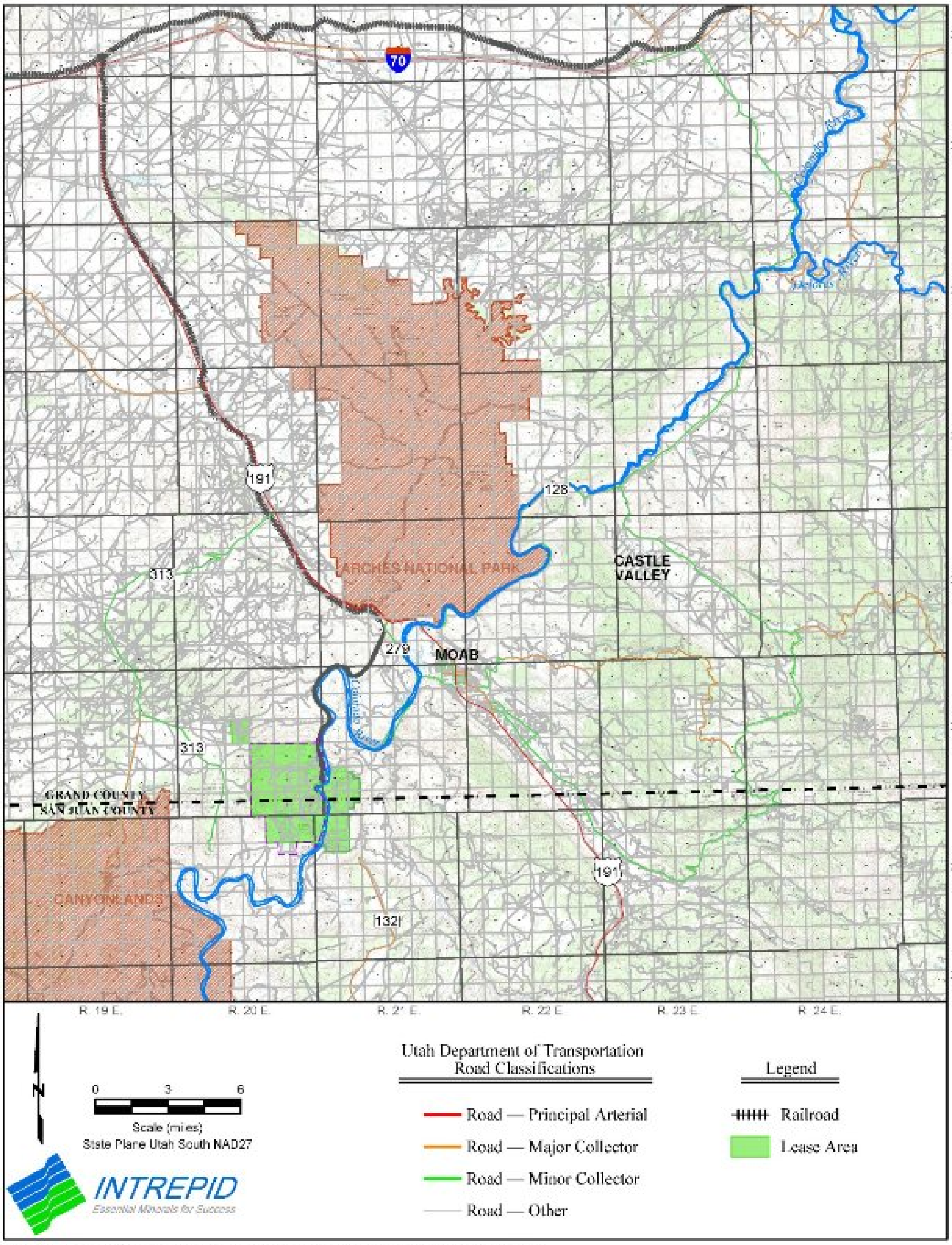


Figure 4-1. Property Access

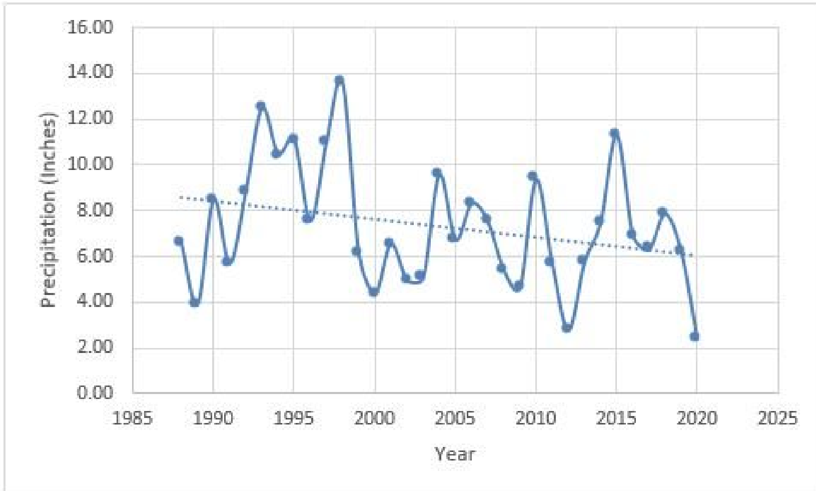
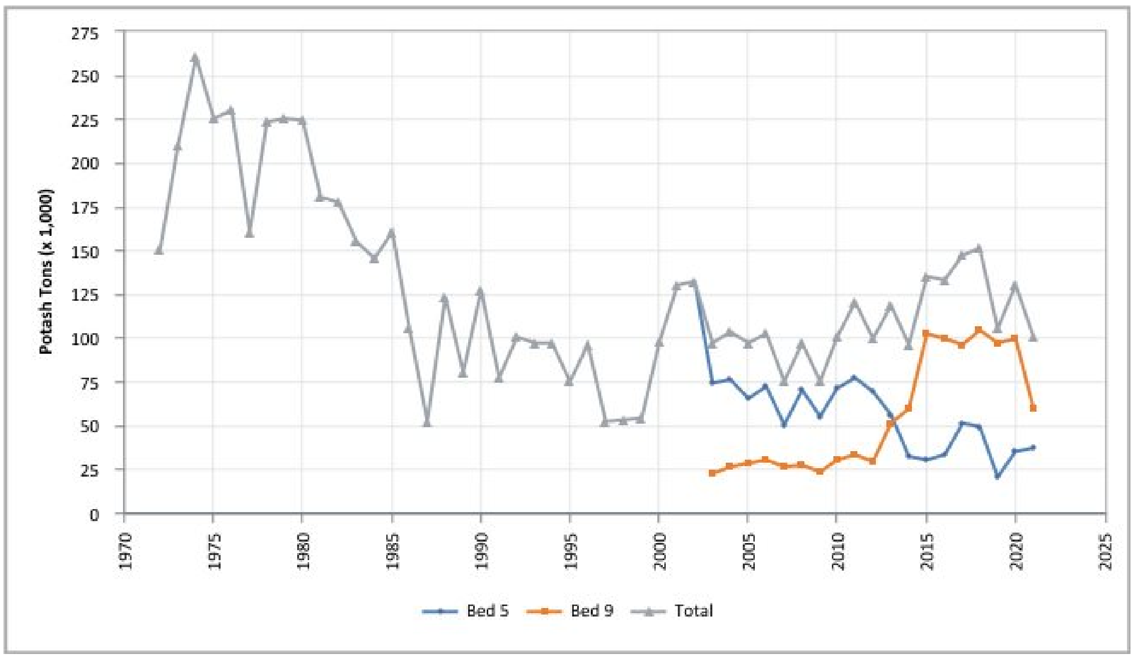


Figure 4-2. Site Precipitation Record

5 HISTORY

Conventional underground mining began in Bed 5 in 1964 by Texasgulf, Inc. (Texasgulf), but various mining problems caused management to convert to a system combining solution mining and solar evaporation in 1971. Prior to 1970, approximately 6.5 million tons (Mt) of sylvinite ore was mined and from that, 1.7 Mt of potash produced. Mining was by continuous miners and made difficult by the irregular floor, gas, and high rock temperatures. The height mined was typically 8 ft. The dip of the ore was such that maintaining the miners in the seam was difficult. The seam floor rolls and folds resulted in an irregular mine plan with many large areas left unmined as pillars. In some areas, secondary mining resulted in high extraction.

The Moab Salt operation was purchased by Intrepid in 1999. In 2000, Intrepid drilled two new recovery wells to revitalize production from Bed 5. Production from Bed 5 had declined from near 100,000 t in 1994 to 60,000 t in 1999 (see Figure 5-1). After completion of the two new recovery wells, the brine concentration improved, and production increased to near 100,000 t in 2001. Maintaining production at or near the target rate of 100,000 tpy was difficult from Bed 5 because of declining product concentration. It was believed that solution mining over the prior 32 years had solution mined most of the remnant pillars in the old workings and that active solution mining was restricted to the updip faces of the mine ribs.



5-1. Historical Product Tons of KCl from Beds 5 and 9

Methods to enhance the production rate were evaluated by Intrepid-Moab and resulted in the decision to develop solution mining in Bed 9. Bed 9 is located 800 to 1,000 ft below Bed 5 and is of higher KCl content. Bed 9 had not been solution mined previously, although, some test mining was completed by the prior owners in the late-1960s. A novel method of solution mining was adopted for recovery of potash from Bed 9. Moab Salt-27 and Moab Salt-28 were drilled “horizontally” in 2002 in

Bed 9 to connect and provide pathways for the liquor injected in Moab Salt-27 to contact the sylvinite and differentially dissolve the sylvite before being lifted from Moab Salt-28. Currently, Moab Salt-29 connects Moab Salt-27 and -28 and serves as an alternative to Moab Salt-27 for injection. Figure 5-1 presents the total (Beds 5 and 9) historical potash production KCl tons from 1965 to 2007. Also shown in Figure 5-1 are the types of mining activities for a particular time period.

6 GEOLOGIC SETTING

6.1 Regional Geology

The depositional history of eastern Utah's vast salt and potash resources begins during the regionally arid Pennsylvanian Period, 330–310 million years ago. An immense block of the Earth's crust, in what is today western Colorado, was thrust upward to form the Uncompahgre Highlands and identified as the westernmost expression of the Ancestral Rocky Mountains. As is common throughout geologic history, dramatic uplift was coupled with subsidence in an adjoining area. In this instance, the adjacent landscape to the southwest experienced significant down-warping. The subsequent topographical basin was inundated by seawater as it subsided. Throughout the Pennsylvanian Period, sea levels rose and fell with stunning regularity as reflected by Pennsylvanian strata worldwide. With each retreat of the sea, the Paradox Basin, as it is called, became devoid of fresh sea water, allowing the process of evaporation to dominate which resulted in widespread precipitation of chloride minerals. This retreat/inflow cycle is known to have occurred a minimum of 29 times, with each marked by a specific and predictable sequence of sedimentary deposition. This series of depositional cycles is collectively known as the Paradox Formation. Potash is documented to exist in 17 of the 29 cycles, and it is from these formational cycles that commercial production of potash occurs.

The Paradox Formation is bounded above by the Honaker Trail Formation and by the Pinkerton Trail Formation below. Collectively, these three units form the Hermosa Group and provide a comprehensive record of Pennsylvanian deposition within the Paradox Basin. Along the northeastern and eastern margins, the Hermosa Group is undifferentiated due to the considerable amount of uninterrupted alluvial fan and fluvial clastics sourced from the Uncompahgre Highlands.

The majority of the Paradox Basin lies in southeastern Utah and far southwestern Colorado, with minor extents into northwestern New Mexico and northeastern Arizona (Figure 6-1). The elongate, northwest–southeast trending basin is roughly 100 miles wide by 200 miles long and is broadly defined by the lateral extent of the formation for which it is named. The Paradox Basin gradually shallows to the southwest generating thickness patterns for Pennsylvanian sediments that are strongly asymmetric when viewed along a northeast to southwest transect (Figure 6-2). Along the northeast basin margin that abuts the Uncompahgre Highlands, thicknesses can exceed 18,000 ft, with compositions of coarse sandstones and clastic detritus eroded off the adjacent highlands. A short distance southwest, at roughly the basin center, exists the evaporite sequences described above. Continuing southwest, the Basin thins gradually with an increasing prevalence of carbonate rocks indicative of a shallow marine depositional environment.

Exploration of the carbonate sequences mentioned above and their potential as hydrocarbon reservoirs in the southern Paradox Basin, led petroleum geologists to informally subdivide the Paradox Formation into five vertically sequenced zones that include, from bottom to top, the Alkali Gulch, Barker Creek, Akah, Desert Creek, and Ismay zones. The five zones are

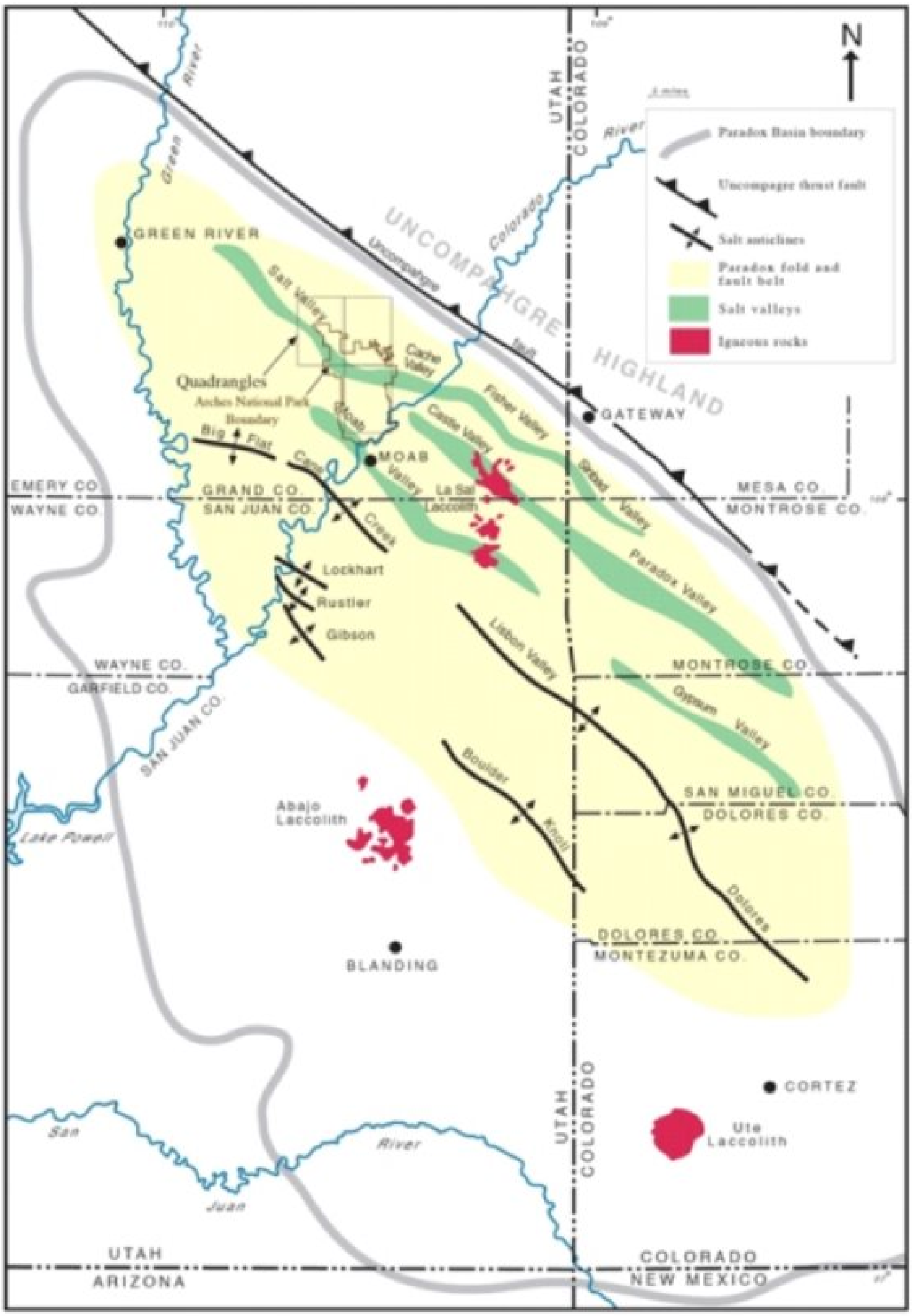


Figure 6-1. Regional Paradox Basin (after Doelling 1985)

Figure 6-2. Paradox Basin Cross Section (after Stevenson and Barrs 1986)

defined by marker beds at their top and/or base that, in many instances, correlate well with equivalent beds in the central basin. These shelf carbonate cycles, like their evaporite counterparts to the north, record a regular rise and fall of sea levels. Similarities beyond the shared marker beds are few; nevertheless, many of the designated zones and their given name may be used when grouping evaporite cycles. Figure 6-3 illustrates how the depositional cycles identified by Hite (1960) correlate with the five named zones.

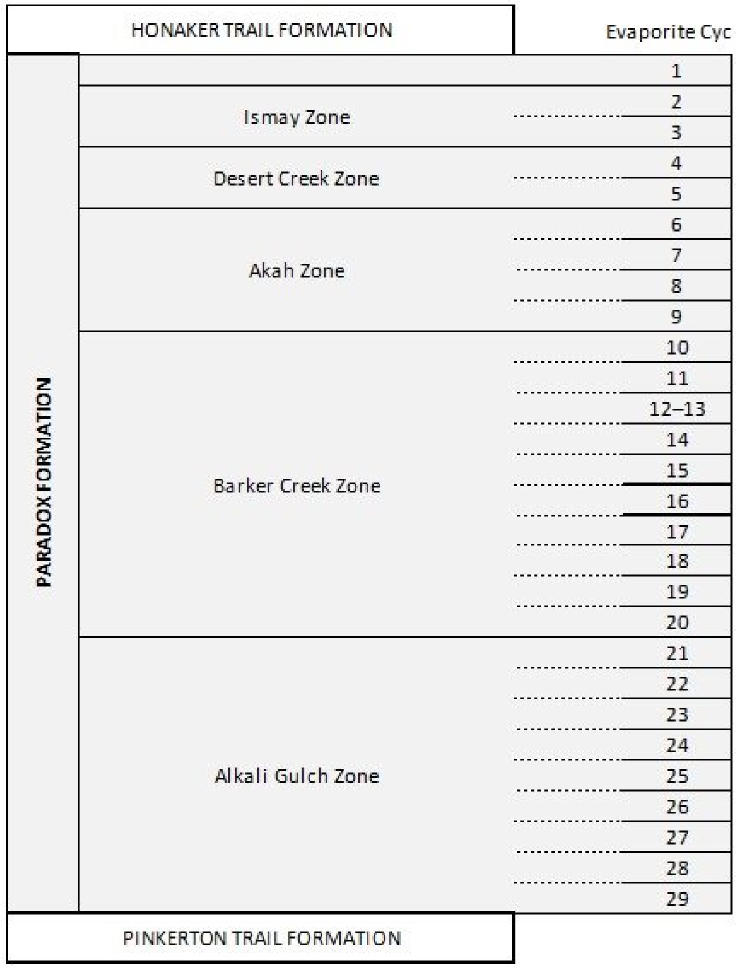


Figure 6-3. Evaporite Cycles, 29 Cycles, 5 Zones (after Hite 1960)

6.2 Local Geology

Locally, the documented stratigraphy ranges from Paleoproterozoic (2,500–1,500 mega annum [Ma]) igneous and metamorphic rocks to the surficial Mesozoic Era sedimentary units which form the majestic arches and monoliths commonly associated with nearby national parks. The following section describes this stratigraphic succession, beginning with the deepest occurring units and ascending through to those exposed at the surface.

The oldest, and deepest, rock unit within the Intrepid lease boundary is often referred to as the 'Precambrian Basement Complex.' This unit is Early- to Mid-Proterozoic in age and likely composed of biotite-quartz monzonite, a feldspathic gneiss and/or schist, or a related variety of coarse granitic rock based on surface outcrops to the east and through deep drillholes located within the Paradox Basin (Joesting et al. 1966). Resting unconformably upon the Precambrian Basement is a series of Cambrian and Devonian sedimentary and meta-sedimentary units with an aggregate thickness ranging from 1,100 to 1,800 ft. These are, from oldest to youngest, the Tintic Quartzite, the

Ophir Formation, the Maxfield Limestone, the Lynch Dolomite, and the Ignacio Quartzite. Next, the Mississippian Leadville Limestone ranges in thickness from 500 to 700 ft. The upper surface of Mississippian strata was exposed for a considerable time prior to further deposition and is therefore marked by substantial karstic erosional features. The subsequent Pennsylvanian Era was ushered in by deposition of the widespread Molas Formation. When present, the Molas Formation is composed of limestone, shale, dolomite, and sandstone that ranges in thickness from 0 to 150 ft.

Continuing up through the sequence, the Pennsylvanian Pinkerton Trail consists of varied rock types, but is dominated by gray, fossiliferous limestone, and gray-black, marine shales with a thickness up to 200 ft. Analysis of drill core recovered from the central Paradox Basin indicate the uppermost part of the Pinkerton Trail contains several thick beds composed of anhydrite. In terms of deposition, these beds are an indicator of increasing aridity and pose as a chronological precursor to the evaporitic deposits of the overlying Paradox Formation. Stratigraphically, the anhydrite beds serve as useful geologic markers for delineating formation boundaries.

Resting conformably upon the Pinkerton Trail is the unit of economic interest, the Paradox Formation. The depositional thickness of the Paradox exceeds 7,000 ft in the center of the Lisbon Valley anticline (Hite 1978) and gradually thins toward the west where it either pinches out entirely or interfingers with shallow-marine carbonate sequences of chronological equivalency. The Paradox Formation records multiple depositional cycles driven by climatic oscillations and their coincident sea level fluctuations throughout the middle Pennsylvanian Era. As large glacial events began in the polar regions, global sea levels fell, thereby restricting the flow of fresh sea water into the Paradox Basin from the open sea to the west. It was during these periods that evaporation dominated, resulting in prolific precipitation of evaporite minerals. Following each glacial maximum, as temperatures and sea levels rose, the isolated brines of the Paradox Basin were inundated with fresh sea water. These interglacial periods are marked by deposition of organic-rich black shale.

The late-Pennsylvanian Honaker Trail Formation conformably overlies the Paradox Formation and is the uppermost member of the Hermosa Group. Like the Pinkerton Trail, the Honaker Trail primarily consists of marine carbonates and shale, with the added presence of fluvial and eolian sandstones. Within the Intrepid lease boundary, the Honaker Trail-Paradox contact is placed at the top of the uppermost halite bed of the Paradox Formation. The Honaker Trail is further differentiated from the Paradox Formation by the generally recognized color differences between the red-, brown-, and buff-colored strata of the Honaker Trail and the predominantly gray, black, and occasional orange of the Paradox. The upper Honaker Trail marks the filling of the structural Paradox Basin. By the late-Pennsylvanian Age, an uninterrupted, low-relief slope extended from the topographic high of the Uncompahgre Highlands westward to the seashore in central Utah. In the central basin, the Honaker Trail has an average thickness of 0–5,000 ft.

Continuing up sequence, the Late Pennsylvanian-Permian Cutler Formation is predominantly composed of arkosic sandstones and conglomerates. Because the source of clastic material continued from the Uncompahgre Highlands throughout the Permian, the Cutler exhibits a general fining-westward of clast and grain size as distance from the highlands increases. As was true with the Pennsylvanian Hermosa Group, the depositional zone immediately adjacent to the Uncompahgre Highlands accumulated a thick homogeneous succession of coarse conglomerates and sandstones, leading the Cutler Formation in this area to be termed undifferentiated. However, with added westward distance from the high-relief source area, the Cutler becomes easily subdivided and is then referred to as the Cutler Group. Within the Intrepid lease boundary, the Cutler Group usually contains, in ascending order, the Lower Cutler Beds, the Cedar Mesa Sandstone, the Organ Rock Formation, and the White Rim Sandstone. Typical thickness of the Cutler Group in this area ranges from 0 to 8,000 ft.

Continuing up sequence, the brown to deeply reddish-colored Moenkopi and Chinle Formations of Triassic age are largely composed of mudstones, siltstones, and sandstones. The early-Jurassic Wingate Sandstone is a prominent cliff-forming unit whose large-scale cross-bedding marks a period of eolian deposition. The Wingate is capped by the Kayenta Sandstone, a ledge and bench-forming unit deposited by fluvial processes. The mid-Jurassic Navajo Sandstone marks yet another eolian period of deposition and may be up to 740 ft thick. The Navajo is bounded above by the San Rafael Group, which may or may not contain its basal Dewey Bridge Member. The Dewey Bridge Member, if present, is overlain by the reddish-orange Entrada Sandstone. Within the Intrepid lease boundary, one is not likely to encounter competent layers younger than the Entrada Sandstone, however, isolated occurrences of the late-Jurassic Morrison Formation may be found.

Perhaps the most significant aspect of local geology is the degree of structural deformation caused by the buoyancy of Paradox Formation salts. Soon after the thick evaporite sequences were deposited, the increasing load of overlying sediments caused lateral and vertical migration of the lower density salt bodies. Local upward movement predominantly occurred along elongate, northwest-trending zones resulting in large anticlines cored by rising salt. Vertical extension of overlying strata along the limbs of some anticlines has resulted in normal faulting and fault block rotation, as well as extremely high-angle bedding, and in some instances, overturned beds.

The soluble nature of the rising salt makes it particularly susceptible to dissolution by groundwater, which eventually leads to the collapse of overlying sedimentary layers. The Cane Creek anticline, which dominates the landscape of Intrepid-Moab’s property, is one such structure.

6.3 Property Geology

Intrepid-Moab’s mine operation boundary includes 7,656 acres straddling the Cane Creek anticline and is centered roughly 5 miles southwest of the town of Moab, Utah. The Cane Creek anticline is one of a series of northwest-trending anticlines with salt at the core that make up the fold fault belt of the north and northeast part of the Paradox Basin. Intrepid-Moab’s property overlies the Paradox Basin salts, which are up to 7,000 ft thick. The Colorado River runs approximately north–south along the eastern property boundary. The Intrepid-Moab property is a high-altitude desert landscape formed of sedimentary rock units, originally deposited in a wide range of environments and processes. Actual elevations range from 3,900 ft to 4,400 ft MSL.

Within the Intrepid lease boundary, the Paradox Formation consists primarily of halite rock with occasional potash salts and smaller amounts of anhydrite, dolomite, silty dolomite, limestone, siltstone, and shale. Hite (1960) identified 29 depositional cycles within the Paradox Formation. A typical evaporite cycle consists of, in ascending order, basal anhydrite, dolomite, carbon-rich black mudstone, dolomite, anhydrite, and finally halite (Figure 6-4). A singular evaporite cycle is often referred to as a ‘bed’ (i.e., there are 29 beds). When potash occurs, it often overlies the halite to form the top of the cycle, or it may be interbedded within the halite. Each cycle is marked, top and bottom, by sharp contacts interpreted as disconformities. The potash-bearing ore, sylvinite, is a mixture of sylvite or potassium chloride (KCl) and halite or sodium chloride (NaCl).

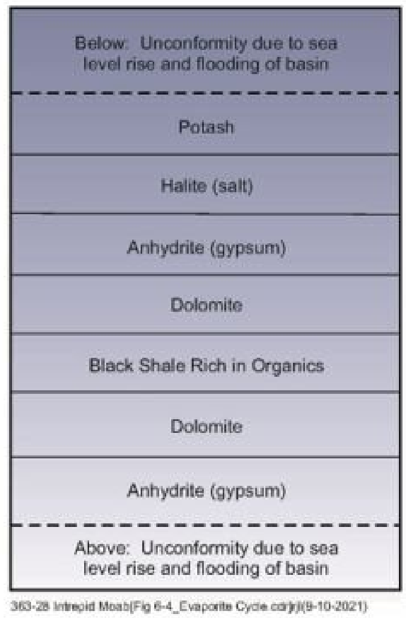


Figure 6-4. Evaporative Cycle (after Fillmore 2010)

6.4 Significant Mineralized Zones

Potash is documented to exist in 17 of the 29 evaporite cycles that comprise the Paradox Formation. Of these 17, two are principally targeted by Intrepid for commercial potash production: Bed 5 and Bed 9. Figure 6-5 stratigraphically illustrates the presence of potash beds 5 and 9 when depicted via a gamma-ray log.

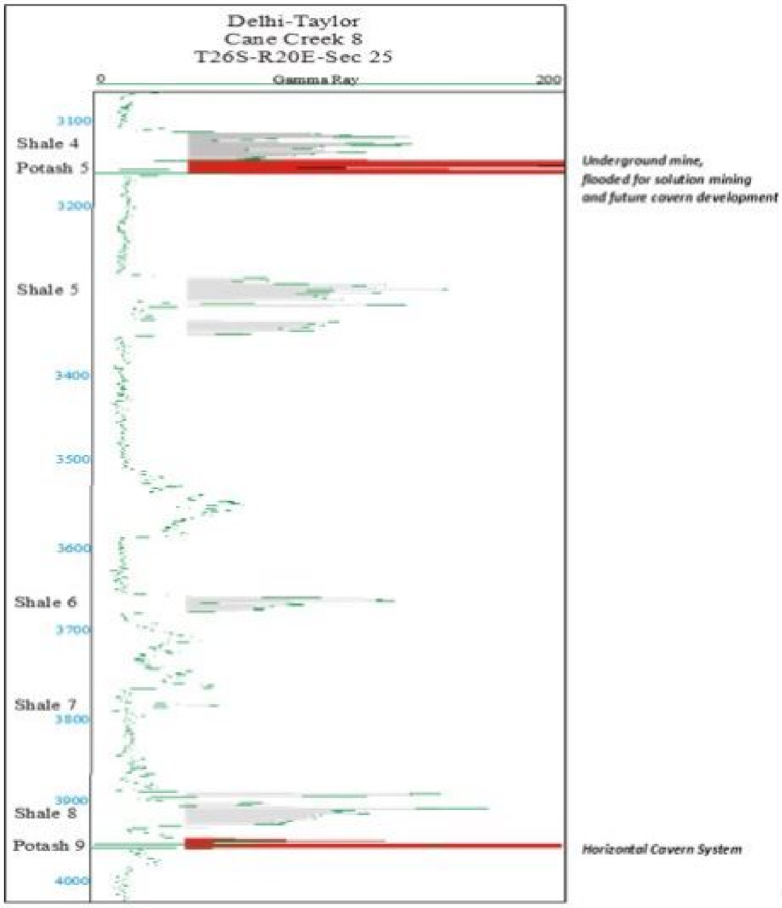


Figure 6-5. Stratigraphic Type Section (from Intrepid 2007)

Based on locally recovered drill core, geophysical logs, and on historical mining data, Bed 5 has an average thickness of 10.24 ft. Average depth to the top of Bed 5 is 3,113 ft and the average K_2O grade is 22.98%. Likewise, Bed 9 has an average thickness of 8.1 ft, an average depth of 4,013 ft, and an average K_2O grade of 29.75%. Although K_2O, or potassium oxide, is not the preferred chemical form used in commercial consumption, potash grades are typically reported as 'K_2O equivalent' to allow for a standard unit of comparison. In addition, it should be noted that K_2O is approximately 83% potassium by weight, whereas KCl is 52% potassium by weight. Thus, KCl provides less potassium than an equal amount of K_2O.

6.5 Mineral Deposit

Evaporite cycles within the Paradox Formation exhibit a lateral extent of over 11,000 square miles in southeastern Utah and southwestern Colorado (Hite 1960). The Pennsylvanian-age Paradox Formation records multiple episodes of evaporitic deposition, predominantly consisting of massive, crystalline halite with economically attractive occurrences of potash. Deposition of the evaporites occurred in a vast, flat basin resulting in each additional layer, or bed, being originally deposited in a horizontally planar orientation. Subsequent deposition of overlying sediments provided enough lithostatic pressure to initiate lateral and vertical migration of the more buoyant salt deposits. In many instances, salt flowed toward linear subsurface structures, such as a fault, and then upward to form what is known as a salt wall. The rising salt typically forms an anticline in overlying strata with surficial expressions of 30 to 75 miles long and 2 to 4 miles wide (Doelling 1985). This collection of northwest-trending, elongate structures is referred to as the Paradox Basin fold and fault belt. Due to the highly deformed nature of the evaporite deposits, it is not uncommon to encounter very high-angle and even overturned strata in exploratory drillholes. The Intrepid lease area is in the southwestern portion of the fold and fault belt where broad salt anticlines are more common than high-angle salt walls. Local examples of these domal salt-cored anticlines include the Big Flat, Cane Creek, and Lisbon Valley anticlines. Because strata within the Intrepid lease boundary have experienced considerably less movement of salt bodies compared to areas to the northeast, the potash deposits of economic interest are significantly less deformed and therefore more suitable for economic extraction.

Intrepid-Moab commercially produces potash from two zones, referred to as Bed 5 and Bed 9. These beds are part of a thick sequence of evaporite cycles predominantly composed of halite interspersed with sedimentary layers of black shale and anhydrite. Within Beds 5 and 9, the sylvinite is bounded above and below by occurrences of halite. Sylvite and halite are both water-soluble by nature. By using water already saturated with sodium, it is possible to selectively dissolve a greater amount of the potassium chloride ore. The term 'potash' is used to describe a number of potassium-bearing compounds. Of these, the mineral sylvite commands the greatest economic interest. Sylvite is commonly found mixed with halite, or sodium-chloride (NaCl), to form the mineral sylvinite. Sylvinite is known to have a K_2O content of up to 62% in its purest form.

7 EXPLORATION

7.1 Exploration Other than Drilling

No exploration other than drilling has taken place.

7.2 Drilling Exploration

Exploration information is available from cored holes, drilled holes with geophysical logs, and from the experience gained from mining within Bed 5. The data has been collected over many years, but primarily prior to commencement of underground mining in 1964. The corehole data was collected by Behre Dolbear & Company, Inc. (1961) for the original pre-mining feasibility studies. The original source data, such as assay data sheets, are generally not available. Comprehensive and detailed reports are available and form the basis of this report. Tables 7-1 and 7-2 list the corehole location, elevation, depth intervals, thickness, and grade for holes in Beds 5 and 9, respectively. The locations of the exploration holes are shown on a map in Figure 7-1.

The bed thicknesses listed in Tables 7-1 and 7-2 are from drillholes as reported by Intrepid-Moab, Agapito, or referenced sources; mining experience in the underground mine indicates that the seam thickness varies significantly over short distances. In the area of the Cane Creek anticline, the base of the seam is contorted, with areas where overthrusting is evident. In such areas, the apparent bed thickness can be significantly overestimated, and Intrepid-Moab and Agapito have used professional judgement to modify those thicknesses. For example, in Cane Creek 14, Bed 9 thickness was estimated to be 40 ft from the gamma log. However, the core assay indicates a thickness of 11.8 ft, but the source assay data are not available. It is possible that the core may have intersected a fault.

Potash is easily identified in the gamma log. In four cases, estimates of bed thickness and potash grade are based on geophysical logs. This reflects the high level of confidence in the logs and is particularly important because it provides a Bed 9 thickness in the area of active solution mining to the north of the data provided by Cane Creek 8 and Well 19. For more detail on estimating grade from gamma logs, see Nelson (2007) and Schlumberger (1989).

No usable exploration data are available from within the Bed 5 old mine workings. The floor structure has been used for flow direction estimation, but no channel sampling or bed thickness data were used. Albertson (1972) lists the grade and bed thicknesses in panels and mains for the old workings. Although data from the recently drilled wells into the old workings of Bed 5 indicate that additional resource could be located at the roof of the old workings, no attempt has been made to estimate this resource.

Agapito elected to exclude data from the geophysical logs and data from Government White Cloud 1. This hole is located approximately 4,000 ft north of the north lease boundary and

Table 7-1. Grade and Thickness Data for Bed 5

Operator	Well Name	Elevation (ft)	Total Depth (ft)	Collar Coordinates Easting (ft)	Collar Coordinates Northing (ft)	Top (ft)	Base (ft)	Assay Thickness (ft)	K_2O Grade (%)	Data Source*
Delhi-Taylor Oil Corp.	Cane Creek 1	3,964	2,805	2,526,652	675,049	2,678.4	2,690.8	12.33	27.56	1
Delhi-Taylor Oil Corp.	Cane Creek 2	4,223	2,968	2,522,913	672,932	2,764.3	2,780.2	15.87	28.69	1
Delhi-Taylor Oil Corp.	Cane Creek 3	4,115	3,378	2,522,011	680,646	3,244.6	3,249.8	5.23	24.13	1
Delhi-Taylor Oil Corp.	Cane Creek 4	4,127	4,297	2,523,864	668,532	2,658.2	2,662.7	4.50	24.89	1
Delhi-Taylor Oil Corp.	Cane Creek 5	4,148	3,653	2,528,066	668,040	2,617.8	2,623.2	5.42	27.75	1
Delhi-Taylor Oil Corp.	Cane Creek 6	4,563	4,082	2,519,798	675,445	3,175.0	3,187.5	12.50	25.37	2, 3
Delhi-Taylor Oil Corp.	Cane Creek 6W	4,564	4,014	2,519,798	675,445	3,207.6	3,216.8	8.73	29.56	1
Delhi-Taylor Oil Corp.	Cane Creek 7	4,215	3,553	2,532,098	671,106	2,715.5	2,728.1	12.60	8.41	3
Delhi-Taylor Oil Corp.	Cane Creek 8	4,049	4,080	2,525,307	678,492	3,140.7	3,147.7	7.02	27.45	1
Delhi-Taylor Oil Corp.	Cane Creek 9	4,275	3,851	2,524,410	676,115	3,044.8	3,061.9	17.10	26.3	1
Delhi-Taylor Oil Corp.	Cane Creek 10	4,239	3,719	2,525,456	672,215	2,881.8	2,899.0	17.23	28	1
Delhi-Taylor Oil Corp.	Cane Creek 11-A	4,571	4,314	2,517,119	680,144	3,415.5	3,431.4	15.89	24.04	1, 3
Delhi-Taylor Oil Corp.	Cane Creek 12	4,412	3,996	2,516,867	677,146	3,192.0	3,202.0	10.00	28.76	1, 2
Delhi-Taylor Oil Corp.	Cane Creek 13	4,342	4,025	2,519,273	670,115	3,199.0	3,202.0	3.00	10.00	1
Delhi-Taylor Oil Corp.	Cane Creek 14	4,394	4,265	2,520,679	672,576	3,292.8	3,303.7	10.87	27.84	1, 3
Delhi-Taylor Oil Corp.	Cane Creek 15	4,168	3,220	2,526,092	669,419	2,977.5	2,987.3	9.83	27.88	1, 3
Delhi-Taylor Oil Corp.	Cane Creek 17	4,101	3,928	2,532,165	672,825	3,052.8	3,060.4	7.60	19.77	1, 3
Texasgulf	Cane Creek 18	4,040	3,830	2,526,389	680,533	3,542.9	3,553.9	11.00	21.05	3
Texasgulf	Federal 1X	4,196	8,005	2,528,063	671,389	2,449.3	2,461.3	12.00	29.22	1, 2
Texasgulf	Test Well 17	3,991	3,533	2,528,501	678,540	3,472.0	3,483.0	11.00	22.00	8
Texasgulf	Test Well 18	4,001	3,522	2,528,508	678,589	3,488.0	3,498.0	10.00	21.50	8
Texasgulf	Well 19	3,961	4,192	2,528,421	677,817	3,326.0	3,336.5	10.45	19.90	7
Texasgulf	Well 21	3,996	3,560	2,527,998	679,249	3,554.5	3,560.4	5.87	12.70	4
Texasgulf	Well 22	4,010	3,603	2,527,338	679,700	3,553.3	3,574.0	20.69	20.87	5
Texasgulf	Well 23	4,011	3,842	2,527,840	680,492	3,789.4	3,798.0	8.51	21.65	6
Intrepid Mining	26-30	4,549	6,530	2,519,875	675,082	3,123.8	3,137.7	14.10	20.96	9
Intrepid Mining	IM-031	4,400	4,100	2,524,734	674,335	3,081.5	3,090.0	8.60	28.86	9
Intrepid Mining	IM-035	4,274	3,003	2,524,657	672,216	2,851.3	2,865.5	11.20	29.54	9
Intrepid Mining	IPI-037V	4,133	4,145	2,523,134	678,195	3,045.8	3,055.7	9.9	22.45	9
Intrepid Mining	IPI-038C	4,075	4,540	2,525,432	680,580			0.0		9
Intrepid Mining	IPI-039H	4,064	8,477	2,522,032	680,613	3,593.2	3,601.8	8.60	8.50	9
Intrepid Mining	IPI-041C	4,159	3,695	2,523,054	668,790	2,765.4	2,772.5	7.00	22.00	9
Intrepid Mining	IPI-042H	4,133	5,218	2,523,095	678,210	3,031.9	3,041.2	9.30	21.50	9
Intrepid Mining	IPI-043C	4,240	3,951	2,522,192	673,170	2,835.8	2,847.1	11.40	20.00	9
Intrepid Mining	IPI-044C	3,975	5,000	2,525,903	683,564	3,823.0	3,836.8	13.70	22.30	9

Notes:
NS = no survey data.
*Sources:
1. Behre Dolbear & Co. (1961).
2. Texasgulf Sulphur Company, Potash Occurrences in the Paradox Basin, K.J. Kutz, June 24, 1966.
3. Recapitulation sheets submitted to Hugh Harvey from Bob Hite, April 1, 1998.
4. Texasgulf Chemicals, Geology of Well 21, letter from D.A. Gahr to J.H. Huizingh, October 29, 1982.
5. Texasgulf Chemicals, Geology of Well 22, letter from D.A. Gahr to J.H. Huizingh, October 29, 1982.
6. Texasgulf Chemicals, Geology of Well 23, letter from D.A. Gahr to J.H. Huizingh, October 29, 1982.
7. Texasgulf Chemicals, Cane Creek Solution Mining Hole No. 19, memo from K.J. Kutz to K.O. Linn, September 10, 1979.
8. Texasgulf Chemicals, Geology of Wells 17 and 18, memo from E.L. Follis to C.H. Huff, August 18, 1976.
9. Drilled by Intrepid

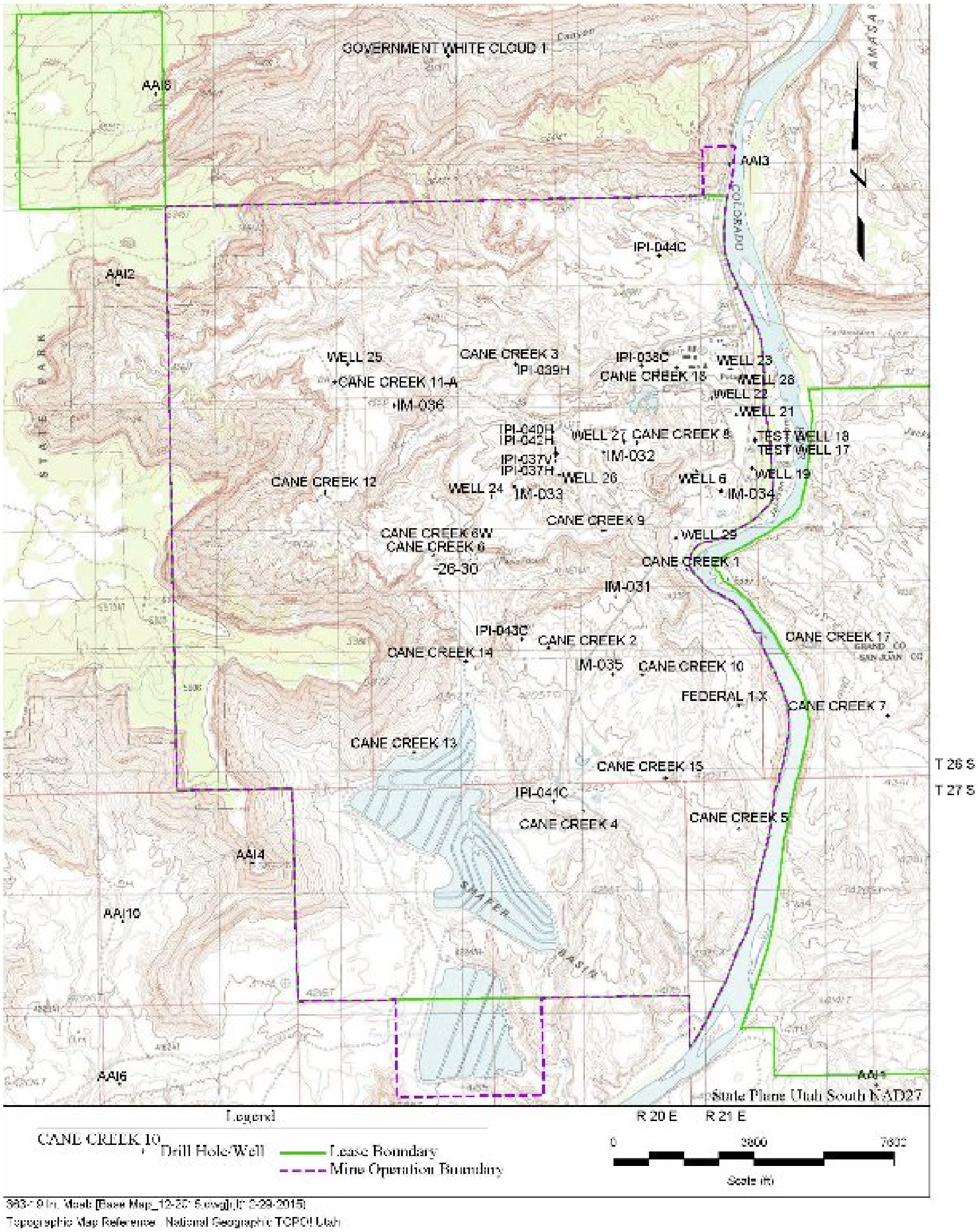


Figure 7-1. Plan View of Property Showing Drilling and Sample Locations

Table 7-2. Grade and Thickness Data for Bed 9

Operator	Well Name	Elevation (ft)	Total Depth (ft)	Collar Coordinates Easting (ft)	Collar Coordinates Northing (ft)	Top (ft)	Base (ft)	Assay Thickness (ft)	K_2O Grade (%)
Delhi-Taylor Oil Corp.	Cane Creek 9	4,275	3,851	2,524,410	676,115	4,002.90	4,016.00	13.0	26.50
Delhi-Taylor Oil Corp.	Cane Creek 8	4,049	4,080	2,525,307	678,492	3,945.36	3,949.87	5.0	19.90
Delhi-Taylor Oil Corp.	Cane Creek 6	4,538	4,085	2,519,798	675,445	3,931.70	3,941.00	8.0	26.00
Delhi-Taylor Oil Corp.	Cane Creek 5	4,148	3,653	2,528,066	668,040	3,554.33	3,569.75	14.9	28.00
Delhi-Taylor Oil Corp.	Cane Creek 17	4,124	3,928	2,532,165	672,825	3,901.00	3,913.00	10.7	30.40
Delhi-Taylor Oil Corp.	Cane Creek 14	4,368	4,265	2,520,679	672,576	4,265.00	4,273.00	11.8	33.10
Delhi-Taylor Oil Corp.	Cane Creek 12	4,412	3,996	2,516,867	677,146	3,973.88	3,983.60	9.7	30.80
Delhi-Taylor Oil Corp.	Cane Creek 10	4,239	3,719	2,525,456	672,215	3,696.00	3,711.00	12.9	31.60
Texasgulf	Well 19	3,961	4,192	2,528,421	677,817	4,132.44	4,138.50	6.0	31.60
Texasgulf	Federal 1-X	4,196	8,005	2,528,063	671,389	3,302.46	3,309.54	6.0	34.80
Utah Southern Oil Company	Frank Shafer 1	3,954	5,000	2,527,349	676,033	3,763.00	3,772.50	8.9	30.00
Delhi-Taylor Oil Corp.	Cane Creek 4	4,127		2,523,864	668,530			0.0	
Delhi-Taylor Oil Corp.	Cane Creek 7	4,215		2,532,099	671,107			0.0	
Moab Salt	Well 28	4,021	6,896	2,528,070	680,176	4,980.00	4,998.50	6.2	37.50
Intrepid Mining	26-30	4,549	6,530	2,519,875	675,082	3,958.00	3,969.84	11.8	24.40
Intrepid Mining	IM-031	4,400	4,100	2,524,734	674,335	3,861.22	3,863.06	1.8	20.02
Intrepid Mining	IPI-037V	4,133	4,145	2,523,133.6	678,195	3,886.78	3,882.78	8.00	31.28
Intrepid Mining	IPI-038C	4,075	4,540	2,525,431.6	680,580	4,337.30	4,345.80	8.50	30.30
Intrepid Mining	IPI-043C	4,240	3,951	2,522,192	673,170	3,700.40	3,711.50	10.10	30.12
Intrepid Mining	IPI-044C	3,975	5,000	2,525,903	683,564	4,589.95	4,598.46	7.00	34.60
Intrepid Mining	IPI-040H	4,134	6,817	2,523,101	678,239	4,470.00	4,445.01	10.20	34.26

16,000 ft from the nearest cored hole. Bed 9 is reported to be 13 ft thick, and Bed 5 is 9 ft thick. Data from this hole was not used because it strongly influences the estimates of bed thickness in areas to the north where data are sparse.

There are a limited number of holes that contain the thickness and grade values outside the property boundary. Such holes are desirable to provide control of grade and thickness beyond the existing data points. Artificial holes, designated Agapito1 through Agapito10, located outside the property boundary, were assigned zero thickness and grade for Beds 5 and 9. These artificial holes do not influence the grade and thickness within the existing drillholes nor influence the reserve within the mine plan. The artificial holes were created to conservatively estimate the resource within the property limits, recognizing that there is no known limit to the extent of Beds 5 and 9.

7.3 Characterization of Hydrogeology Data

No hydrogeology data was evaluated.

7.4 Characterization of Geotechnical Data

No geotechnical data was evaluated.

8 Sample Preparation

Intrepid-Moab has an internal protocol that provides for well-defined, safe practices and uniform guidelines for gamma-ray logging, core handling, and sample collection. The cores are collected and analyzed for ore zone identification. Cores are compared to the gamma-ray log to determine sampling intervals. Duplicate samples are collected with one sample sent to the on-site lab and the other stored with the corresponding core box from which the sample was sourced.

9 DATA VERIFICATION

The property is and has been in production for many years which verifies the exploration data.

9.1 Data Verification Procedure

Exploration data is used as a guide during the construction of the horizontal caverns by directional drilling. The successful construction and operation of the caverns validates the data.

9.2 Limitations on Verification

No limitations on the data verification process.

9.3 Adequacy of the Data

It is the opinion of the Qualified Person (QP) that the data is adequate for mine planning and production. The successful experience with current and historical production validates the data.

10 MINERAL PROCESSING AND METALLURGICAL TESTING

Solution mining test work was conducted in the early 1970s. This included test ponds, saturation tests, crystal habitat and product size, soil tests, solar evaporation product flotation testing, KCl–NaCl brine shale reaction test, NaCl face blinding test, and clastic strength test salt (Higgins 1970).

The conclusion of the solution mining test work was that solution mining the Cane Creek Potash deposit was feasible but dependent to a great extent on keeping the injection water out of the overlying salt. The test also concluded that the hard anhydrite layer continuous throughout the formation provides a good stable shield against dissolution of the overlying salt (Higgins 1970). Higgins also concluded that it was highly improbable that fluids would be lost to the formation through open fractures.

Between 1975 and 1982, Texasgulf started extensive work on expanding the potash reserves by drilling vertical holes along the periphery of the old mine workings in Bed 5 to test and gain experience in solution mining and to connect newly created cavities with the old workings to extend the life of the mine (Gruschow 2000).

It is the opinion of the QP that the mineral processing data is adequate for purposes of estimating reserves.

11 MINERAL RESOURCE ESTIMATES

According to 229.1301 (Item 1301), the following definitions of mineral resource categories are included for reference:

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. 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, therefore, may not be converted to a 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. An indicated mineral resource has a lower level of confidence than the level of confidence of a measured mineral resource and may only be converted to a probable mineral reserve. As used in this subpart, the term *adequate geological evidence* means evidence that is sufficient to establish geological and grade or quality continuity with reasonable certainty.

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. As used in this subpart, the term *conclusive geological evidence* means evidence that is sufficient to test and confirm geological and grade or quality continuity.

11.1 Key Assumptions, Parameters and Methods

The exploration drillhole and channel sample data were compiled to form the database that serves as the basis for estimating the resources. The geologic setting was evaluated, and zone assignments reviewed. All the core holes used in this resource estimation report both bed thickness and grade values that lie within the mine lease boundary. As an exception to this, the two potash exploration Wells 28 and IPI-037, which report bed thicknesses with no assay data, are included in the resource estimate for thickness modeling.

The rationale for the measured, indicated, and Inferred limits is based on industry practice in the potash industry. Measured resources are within ¼ of a mile (1,320 ft) of a hole, conveying the highest level of confidence. In addition, the indicated resources are selected to be within ¾ of a mile (3,960 ft) of a hole and the inferred resources are selected to be within 1½ miles (7,920 ft) of a hole. Indicated tons exclude measured tons, inferred tons excludes the indicated and measured tons. This convention is considered reasonable for the geologic characteristics of the Cane Creek potash deposit.

The mineral resource for the Cane Creek Mine was estimated using Carlson Software 2020 (Carlson 2020), a commercially available geology and mine modeling software package. The resources within the property were segregated in the model into 100-ft by 100-ft blocks. The resource estimates included in this report are based on the 2018 modeling.

A deterministic estimate of the potash mineral resource was made using the inverse distance-squared (ID^2) method. Invoking the theory that closer samples should be better predictors than those further away, the method assigns weights to samples inversely proportional to the separation distance between the estimation point and the sample point. The ID^2 method is useful for providing unbiased estimates of the overall resources (Society of Mining, Engineering, and Exploration, Inc. [SME] 1990).

The block grade and heights were generated within a 1.9-mile search radius. The 1.9-mile search radius was selected to capture more than one core hole in estimating block values in the areas of interest. The maximum number of drill holes for block estimation was limited to the 20 nearest drill holes. ID^2 behaves as an exact interpolator. When calculating a block value, the weights assigned to the data points are fractions, and the sum of all the weights is equal to 1.0. An average unit density of 130 pounds per cubic foot (pcf) was used to convert in-place volume to tons. NaCl (salt) is not reported.

The proportion of the mineral deposit that is considered a resource depends on the following key factors: deposit thickness, deposit grade, and geologic factors. Areas where a bed thickness and potassium oxide (K_2O) grade do not meet a 3-ft and 18.95% K_2O cutoff are excluded from the resource. The minimum thickness cutoff is used because sufficient recovery in thin beds by selective solution mining has not been demonstrated and because of difficulties in locating/maintaining horizontal holes within the bed. The grade cutoff is used because of the difficulty in selective mining in beds with less than 30% KCl content (18.95% K_2O), as described by Taylor et al. (1967).

11.2 Mineral Resource Estimate

The gross in-place sylvinite tonnage for each resource block was calculated by multiplying the net area of the block by the thickness of the bed and the density. The Measured, Indicated, and Inferred Mineral Resource tonnages were estimated within the prescribed radius from the sampling location.

11.2.1 Mineral Resource Estimates for Bed 5

The mineral resources for Bed 5 have been estimated using the EOY 2018 geologic model. Measured, Indicated, and Inferred resources were estimated by sampling blocks within a 1,320-ft, 3,960-ft, and 7,920-ft radius of influence (ROI), respectively, from a sample location (drill hole). Grade (% K_2O) and thickness block values for the Intrepid-Moab property are presented in Figures 11-1 and 11-2, respectively. The maps show the 100-ft by 100-ft blocks lying both within the area of influence of drill holes containing grade and thickness data and the property boundary. Figure 11-3 shows the Measured, Inferred, and Indicated Mineral Resources for Bed 5. Mineral Resources for Bed 5 are presented exclusive of Reserves in Table 11-1.

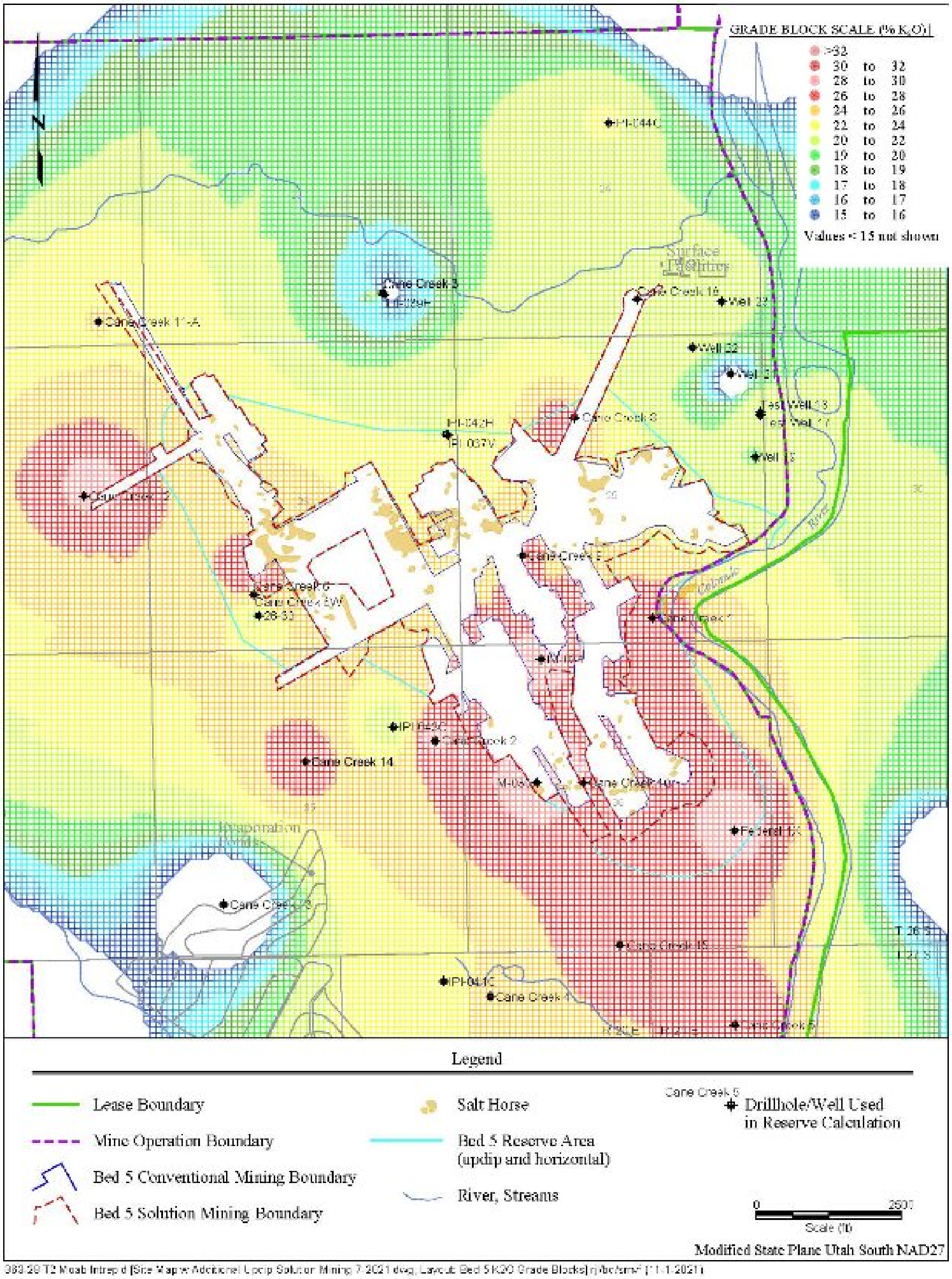


Figure 11-1. Bed 5 % K_2O Grade Blocks

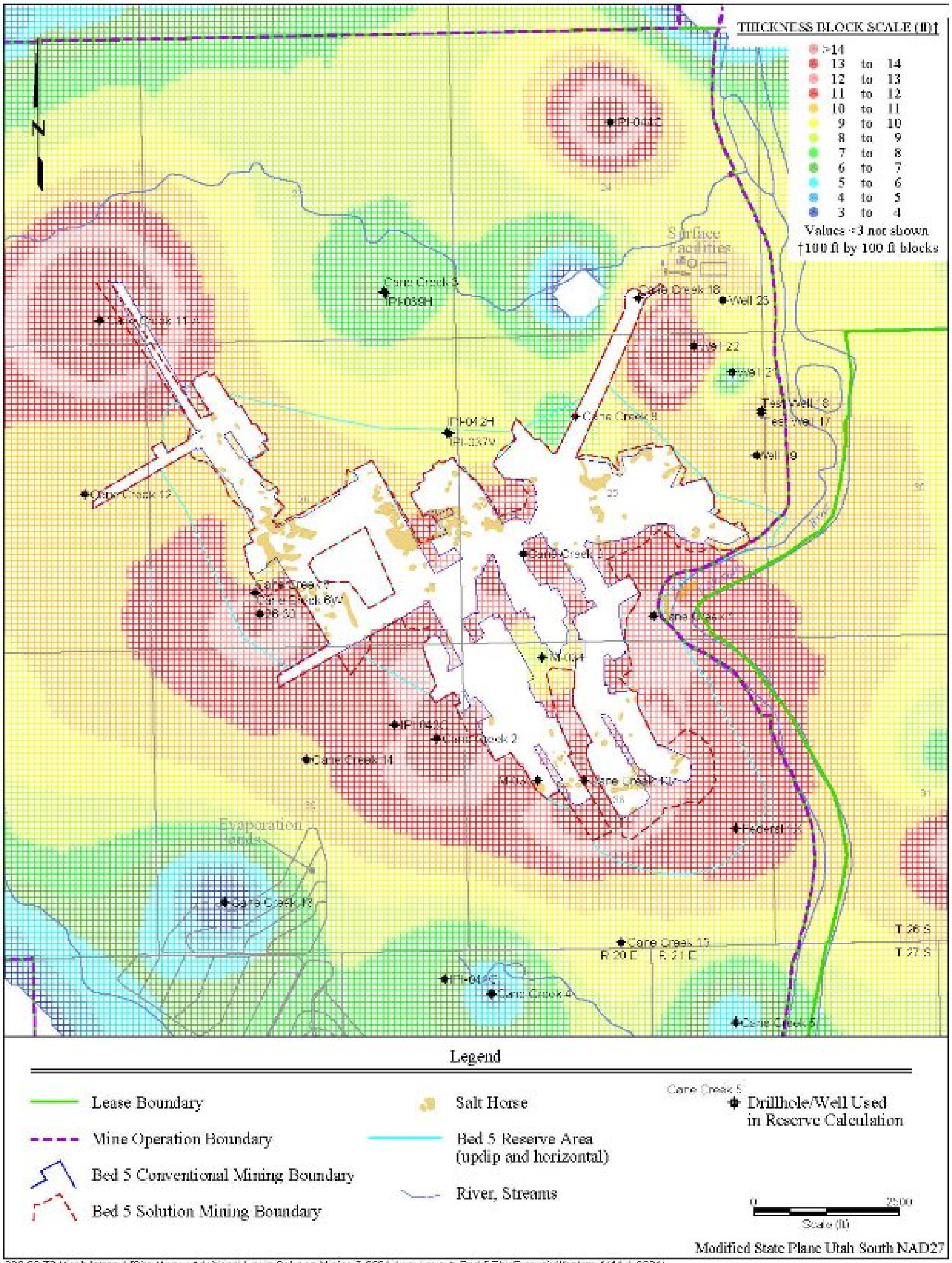
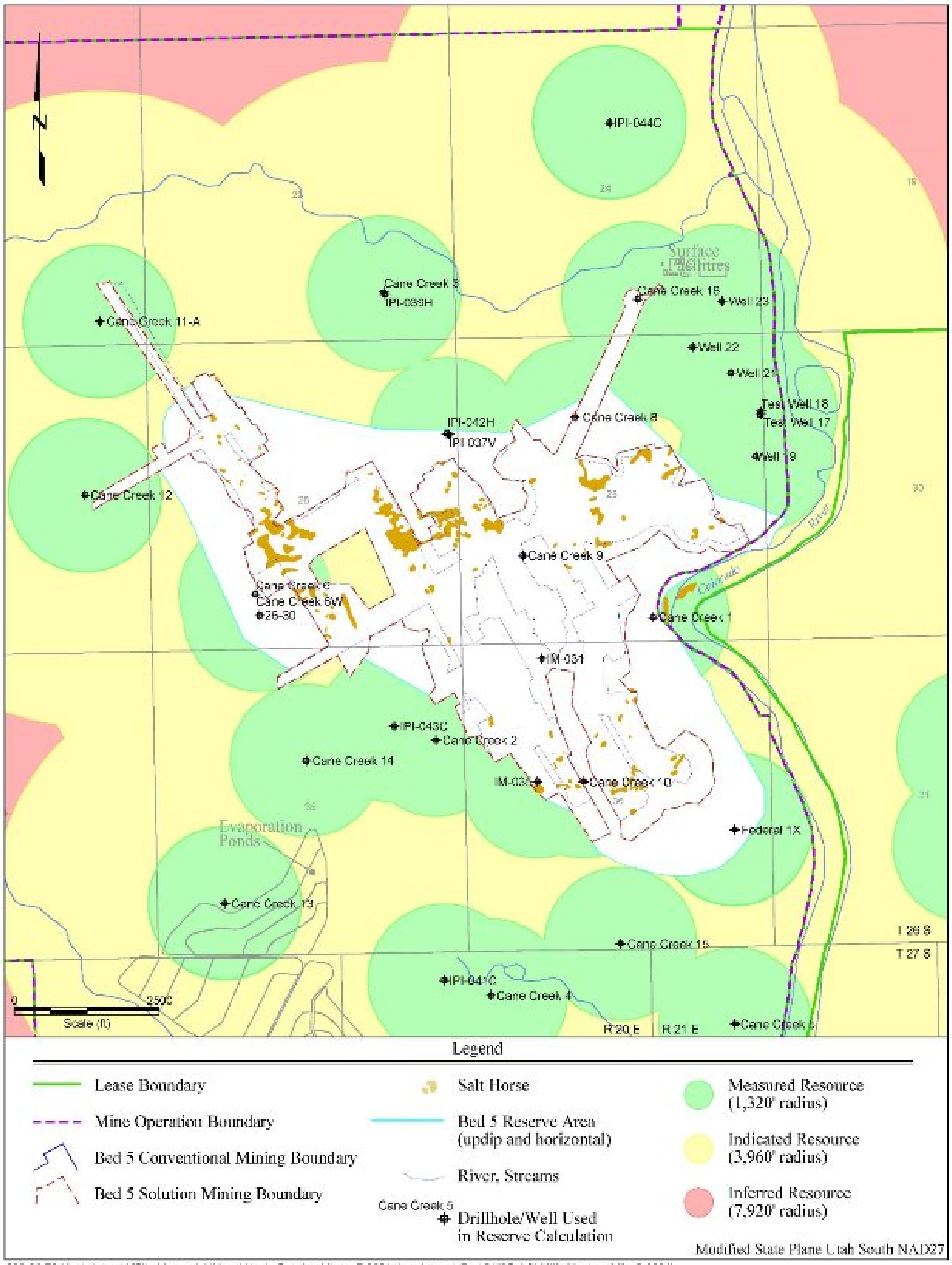


Figure 11-2. Bed 5 Thickness Blocks



363-26 T2 Moab Intrepid [Site Map w Additional Updip Solution Mining 7-2021.dwg: Layout: Bed 5 K2O AOI MII]:rjl/bq/smvf (9-15-2021)

Figure 11-3. Mineral Resources for Bed 5

Table 11-1. Bed 5 Sylvinite Mineral Resource Estimate effective December 31, 2021 based on 406 $/Product Ton Mine Site

Bed 5	Resources			Cutoff[2]	Processing Recovery (%)
	Sylvinite[1] (Mt)	Grade (% K_2O)	Contained K_2O (Mt)		
Measured Mineral Resources	70	25	18	Flooded mine extent	83
Indicated Mineral Resources	102	22	23	Flooded mine extent	83
Measured + Indicated Mineral Resources	172	23	41		
Inferred Mineral Resources	10	21	2	Flooded mine extent	83

[1]Sylvinite is a mixed evaporite containing NaCl and KCl.
[2]Solution mining resource cutoff for flooded old workings is the mining extents boundary.
Mineral Resources were prepared by Agapito Associates, Inc., a qualified firm for the estimate and independent of Intrepid Potash.
Mineral Resources are reported exclusive of Mineral Reserves, on a 100% basis.
Mineral Resources are reported using Inverse Distance Squared (ID^2) estimation methods.
Mt = million tons, % = percent, K_2O = potassium oxide, ft = feet

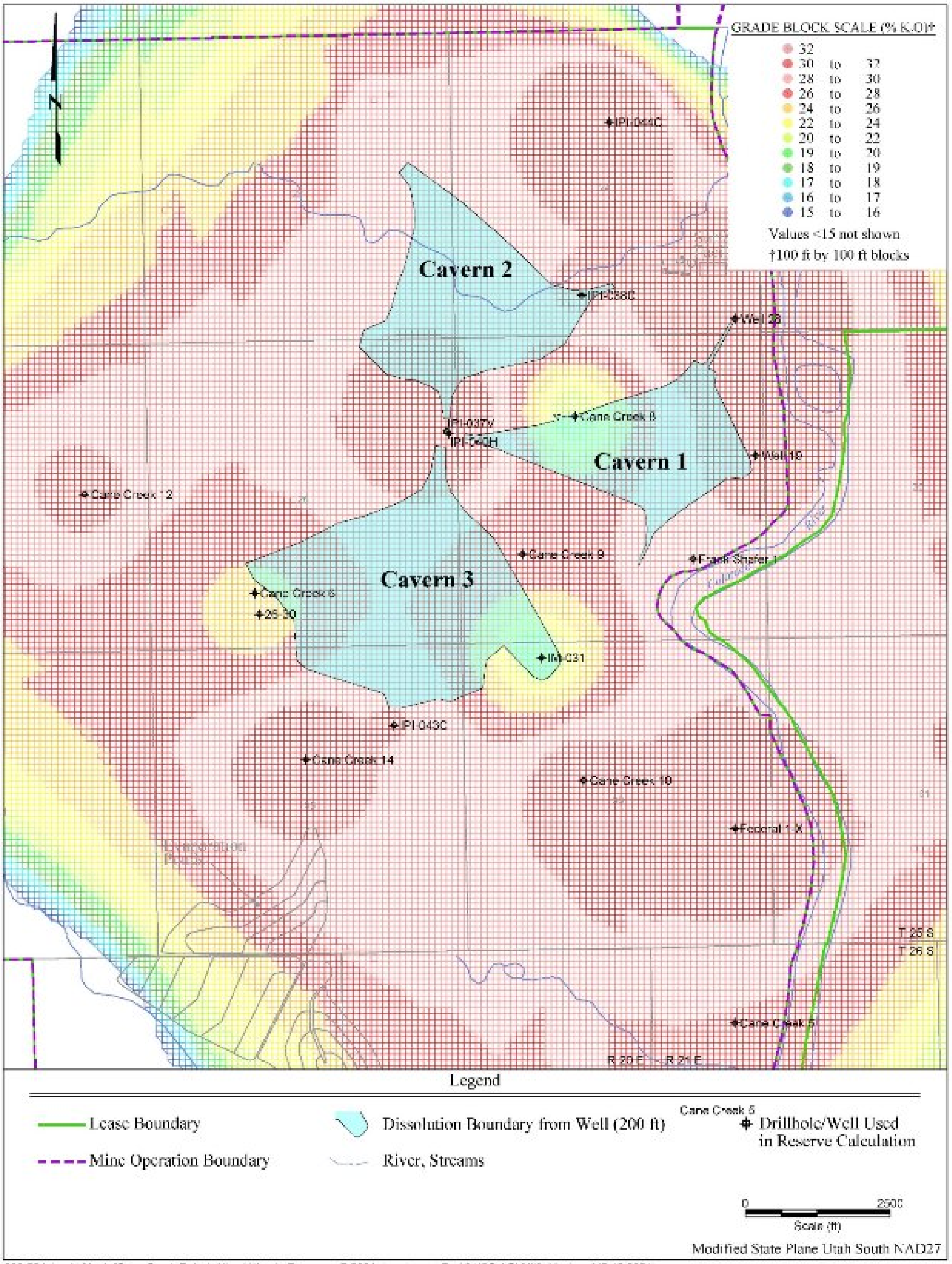
11.2.2 Mineral Resource Estimates for Bed 9

The resource estimate for Bed 9 is based on cored intervals and assay data from 21 holes (19 with grade and thickness). A similar methodology used for the Bed 5 resource estimation was used in the resource estimate for Bed 9. The maps show the 100-ft by 100-ft blocks lying both within the radius of influence of drill holes containing grade and thickness data and the lease boundary. Measured, Indicated, and Inferred resources were estimated by sampling blocks within a 1,320-ft, 3,960-ft and 7,920-ft ROI, respectively, from the drill hole sample point. Bed 9 grade (% K_2O) and thickness grids for the property boundary are presented in Figures 11-4 and 11-5, respectively. Figure 11-6 shows ROIs for Measured, Inferred, and Indicated Mineral Resources for Bed 9. Measured, Indicated, and Inferred Mineral Resources for Bed 9 are presented in Table 11-2.

Table 11-2. Bed 9 Sylvinite Mineral Resource Estimate effective December 31, 2021 based on 406 $/Product Ton Mine Site

Bed 9	Sylvinite[1] (Mt)	In-Situ Grade (% K_2O)	Contained K_2O (Mt)	Cutoff[2]	Processing Recovery (%)
Measured Mineral Resources	43	29	13	Minimum of 3-ft and 18.95% K_2O	83
Indicated Mineral Resources	89	27	24	Minimum of 3-ft and 18.95% K_2O	83
Measured + Indicated Resources	132	28	37		
Inferred Mineral Resources	28	24	7	Minimum of 3-ft and 18.95% K_2O	83

[1]Sylvinite is a mixed evaporite containing NaCl and KCl.
[2]Solution mining cutoff is the operational limitations.
Mineral Resources are reported exclusive of Mineral Reserves, on a 100% basis.
Mineral Resources were prepared by Agapito Associates, Inc., a qualified firm for the estimate and independent of Intrepid Potash.
Mineral Resources are reported using Inverse Distance Squared (ID^2) estimation methods.
Mt = million tons, % = percent, K_2O = potassium oxide, ft = feet



363-26 Intrepid Moab [Cane Creek Potash Nine Ultimate Reserves_7-2021.dwg Layout Bed 9 K2O AOI MII] rjb/gmw (7-12-2021)

Figure 11-4. Bed 9 Resource % K_2O Grade Blocks

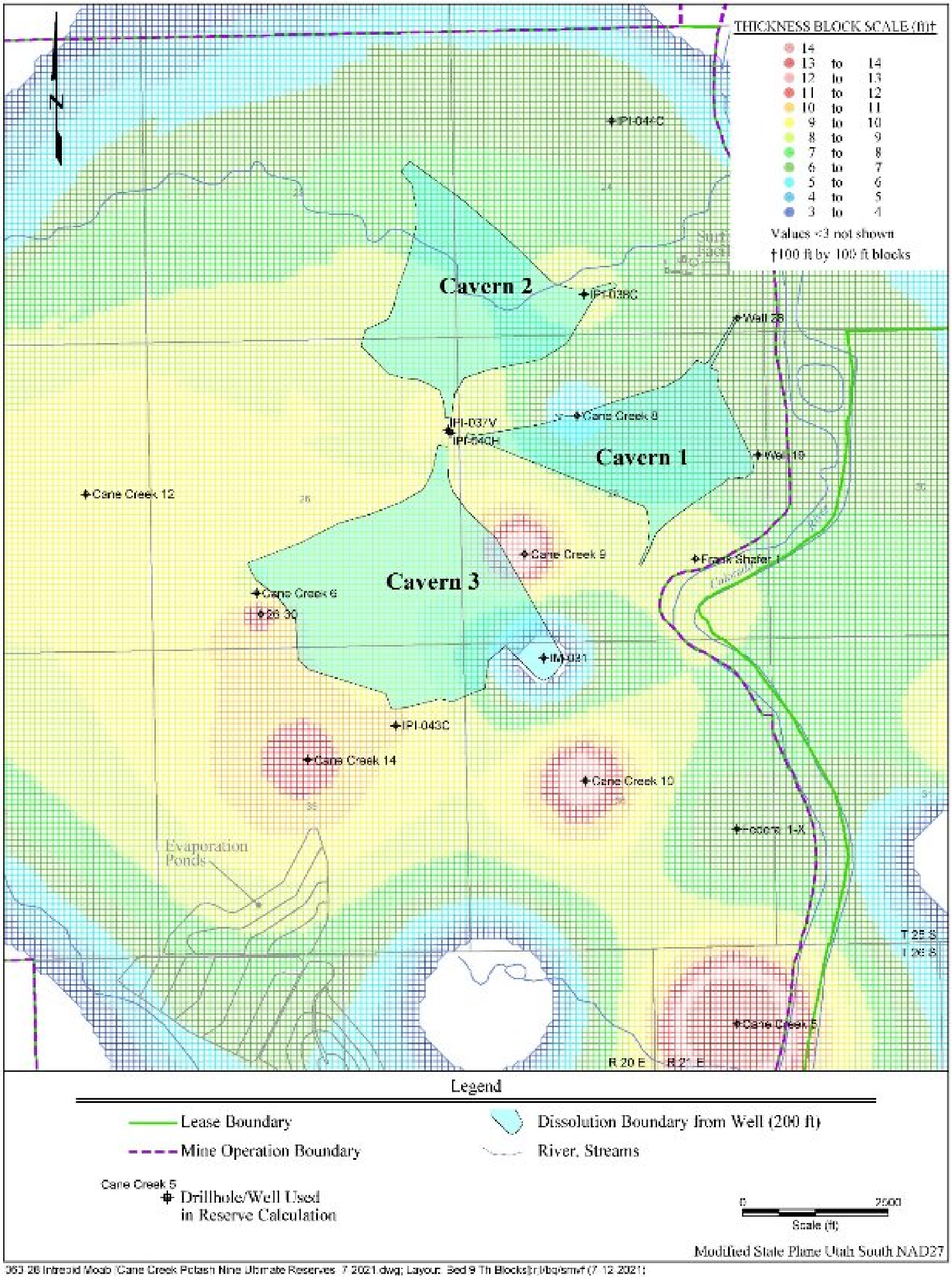


Figure 11-5. Bed 9 Resource Thickness Blocks

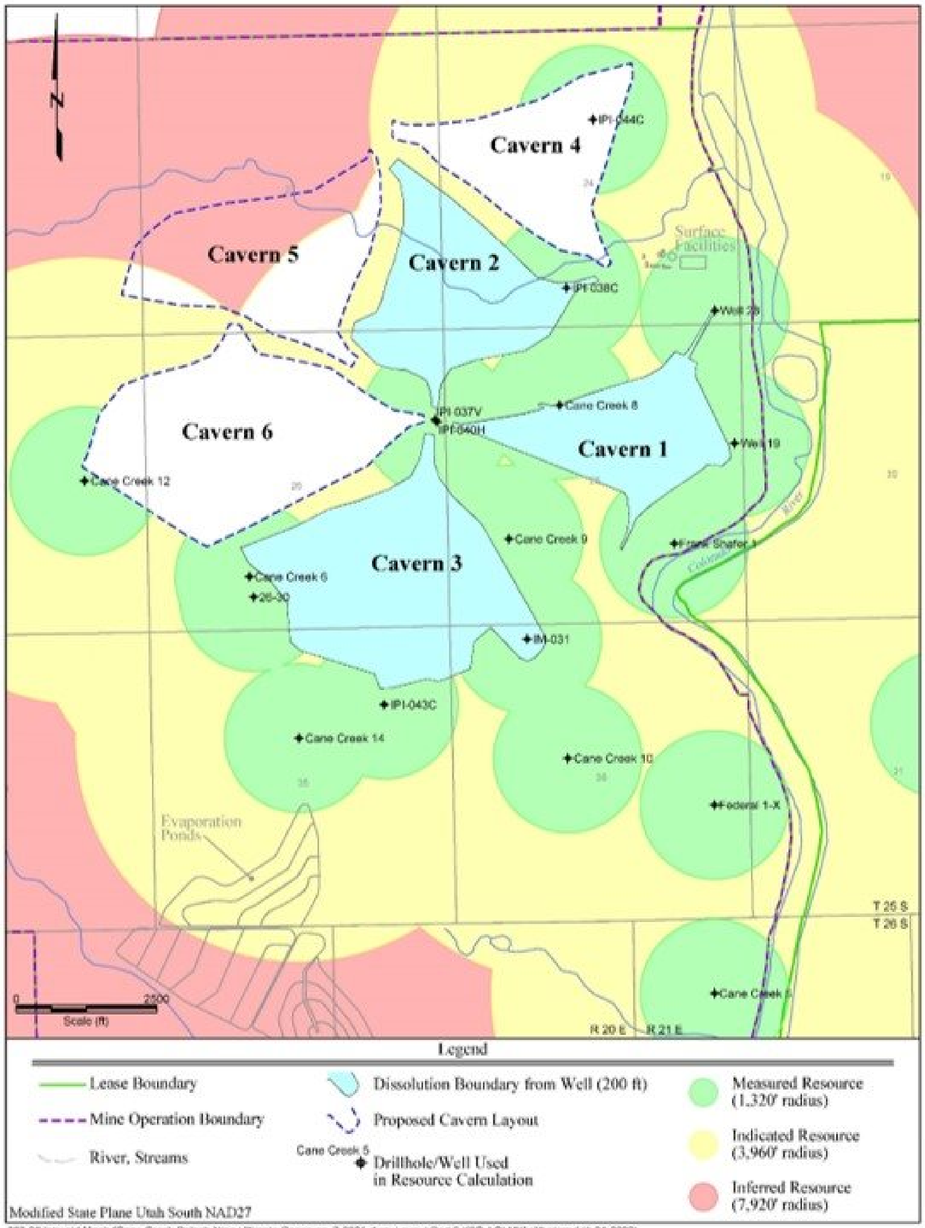


Figure 11-6. Mineral Resources for Bed 9

11.3 Mineral Resource Summary Bed 5 and Bed 9

Table 11-3 shows the summary of the mineral resources for Beds 5 and 9 for the Cane Creek Mine. Mineral resources are reported exclusive of mineral reserves with an effective date of December 31, 2021.

Table 11-3. Sylvinite Mineral Resource Estimate effective December 31, 2021 based on 406 $/Product Ton Mine Site

	Resources			Cutoff[2]	Processing Recovery (%)
	Sylvinite[1] (Mt)	Grade (%K_2O)	Contained K_2O (Mt)		
Measured Mineral Resources	113	26	30	Minimum of 3-ft and 18.95%K_2O	83
Indicated Mineral Resources	190	25	47	Minimum of 3-ft and 18.95%K_2O	83
Measured + Indicated Mineral Resources	303	25	77		
Inferred Mineral Resources	38	23	9	Minimum of 3-ft and 18.95%K_2O	83

[1]Sylvinite is a mixed evaporite containing NaCl and KCl.
[2]Solution mining resource cutoff for flooded old workings is the mining extents boundary.
Mineral Resources were prepared by Agapito Associates, Inc., a qualified firm for the estimate and independent of Intrepid Potash.
Mineral Resources are reported exclusive of Mineral Reserves, on a 100% basis.
Mineral Resources are reported using Inverse Distance Squared (ID^2) estimation methods.
Mt = million tons, % = percent, K_2O = potassium oxide, ft = feet

11.4 Qualified Persons Opinion – Further Work

No further work is needed to establish the mineral resources. Ongoing extraction from the deposit verifies the resource.

12 MINERAL RESERVE ESTIMATES

Mineral reserves that are mined using solution mining methods are not subject to the traditional application of a cutoff grade but instead of operational limitations. According to 17 CFR § 229.1301 (2021), the following definitions are included for reference:

A probable mineral reserve is the economically mineable part of an indicated and, in some cases, a measured mineral resource.

A proven mineral reserve is the economically mineable part of a measured mineral resource. For a proven mineral reserve, the qualified person has a high degree of confidence in the results obtained from the application of the modifying factors and in the estimates of tonnage and grade or quality. A proven mineral reserve can only result from conversion of a measured mineral resource.

12.1 Key Assumptions, Parameters, and Methods

By definition, modifying factors are the factors applied to a mine plan for the indicated and measured mineral resources and then evaluated in order to establish the economic viability of mineral reserves. The factors for Intrepid-Moab are solution mining parameters, mineral processing, and lease boundaries as shown in Table 12-1.

Intrepid has a long history of sales and marketing of their products. Sales are managed for all properties through the corporate office. Intrepid provided the historical demand and sales pricing through the statements of earnings (SOE) from 2007 to 2020. Forward-looking pricing was provided by Intrepid marketing and the sales price outlook was reviewed in The World Bank Report Pink Sheets (2021). The product sale prices selected for analysis of brine cutoff grade are shown in Table 12-1. A cost of goods sold was estimated to be $130/t of product. Economic modeling indicates brine grade equivalent to the production tonnage just to cover the cash expenses of 3.1% KCl, or in other words break-even.

The reserve estimate is based on a mine plan developed for the Cane Creek Mine. The estimate is based on the geologic model and assigned thicknesses and grades for the flooded old mine workings updip boundary (Bed 5) mapped to the decline curve and the individual caverns (Bed 9). The production plan is shown in Table 12-2. The plan is extended for 25 years. During that time, one set of new caverns will need to be constructed.

12.2 Mineral Reserves

12.2.1 Mineral Reserve Estimates for Bed 5

Neuman (2000) developed the estimated area of reserves that have been depleted through solution mining inside and around the perimeter of the old mine workings, with the exception of a large pillar within the perimeter. As such, this perimeter area has been excluded

Table 12-1. Modifying Factors

Parameter	Assumption
Sylvite Product ($/product ton mine site)	325
Freight ($/product ton)	50
Cost of Goods Sold ($/product ton)	130
Density (pounds per cubic foot)	130
KCl to K_20 Ratio	1/1.583
Dissolution Factor (%)	0.89
Areal Extraction (Bed 5)	1.00
Areal Extraction (Bed 9)	0.98
Geologic Factors (Salt Horse)	0.94
Process Recovery	0.83
Product Purity	0.95

Table 12-2. Mine Production Plan (tons KCl)

Year	Bed 5 (tons)	Bed 9 (tons)	Beds 5 and 9 (tons)
2022	25,480	70,000	95,480
2023	24,461	75,000	99,461
2024	23,483	80,000	103,483
2025	22,543	85,000	107,543
2026	21,642	85,000	106,642
2027	21,642	85,000	106,642
2028	20,783	85,000	105,783
2029	19,963	85,000	104,963
2030	19,183	85,000	104,183
2031	18,443	85,000	103,443
2032	17,743	85,000	102,743
2033	17,083	80,000	97,083
2034	16,463	80,000	96,463
2035	15,883	85,000	100,883
2036	15,343	90,000	105,343
2037	14,843	90,000	104,843
2038	14,383	90,000	104,383
2039	13,963	90,000	103,963
2040	13,583	90,000	103,583
2041	13,243	90,000	103,243
2042	12,942	90,000	102,942
2043	12,682	90,000	102,682
2044	12,462	90,000	102,462
2045	12,282	90,000	102,282
2046	12,142	90,000	102,142

from the reserve estimates for Bed 5. Reserves were estimated for updip and horizontal areas outside of Neuman's 2000 perimeter. The mineral reserves were estimated as the difference between the reserves from the resource area and the net KCl tons extracted since 2001.

Though Bed 5 resources can be solution mined with additional horizontal caverns, the reserves estimate in this report only focuses on the net reserves remaining in the old mine as the planned horizontal caverns in Bed 9 are more than enough to support the required mine life for this report. The sylvinite volume, tonnage, KCl grade, and average bed thickness within proven and probable reserve areas are included in Table 12-3.

Table 12-3. Potash Reserves Remaining Updip of Solution Mining from Bed 5 Old Workings effective December 31, 2021 based on 325 $/Product Ton Mine Site

Bed 5	In-Place KCl (Mt)	In-Situ Grade[1] (%K_2O)	Product (Mt)	Brine Cutoff Grade[2] (%K_2O)	Processing Recovery (%)
Proven Mineral Reserve	0.8	25.5	0.6	1.9	83
Probable Mineral Reserve					
Total Mineral Reserves	0.8	25.5	0.6		

[1]In-situ grade is the amount of K_2O in the remaining pillars of the old works.
[2]Brine cutoff grade is the amount of K_2O n the extracted brine necessary to cover the cash costs of production.
Mineral Reserves were prepared by Agapito Associates, Inc., a qualified firm for the estimate and independent of Intrepid Potash.
Mineral Reserves are reported exclusive of Mineral Resources, on a 100% basis.
Mineral Reserves are reported based on a solution mine plan, dissolution factor of 89%, areal recovery of 94%, geologic factor 94%, plant recovery of 83%, product purity of 95%.
Mt = million tons, % = percent, K_2O = potassium oxide, ft = feet

The dissolution factor assumes that the concentration of pregnant brine solution remaining in the caverns will be approximately 7.2% KCl by weight, the average historical value for the Bed 5 cavern.

The areal extraction factor assumes that some potash will not be recovered because of pillars left between caverns and potash not recovered from either the roof or the floor because of channeling, stagnant areas, or gas build-ups in the beds. The 97.5% areal extraction factor used to reduce the in-place tons of reserves for Bed 9 are based on a 200-ft dissolution boundary based on the mining experience at Intrepid-Moab.

The volume and tonnage of ore as listed in Table 12-3 represents the reserves from the measured and indicated resource area on the horizontal plane and updip areas of the old workings as shown in Figure 12-1.

12.2.2 Mineral Reserve Estimates for Bed 9

Figure 12-2 shows the proven and probable reserves for Bed 9 with three existing operating caverns and three additional planned caverns. Table 12-4 presents an estimate of the reserves within the current and future well system area using grade and thickness drillhole data and production to date. No estimate was made of the ore tons, average thickness, and average grade for the previously solution-mined areas from Bed 9, only the equivalent tons of K_2O and KCl were estimated. To date, about 950,000 t of KCl have been mined from Bed 9. The modifying factors required to convert the in-place tons into reserve tons are also listed. These factors are the same as those listed for Bed 5 with the exception of the dissolution factor. The Bed 9 dissolution factor was estimated using a concentration of 7.42% KCl by weight.

Table 12-4. Potash Reserve Estimate for the Current and Planned Bed 9 Well System Area effective December 31, 2021 based on 325 $/Product Ton Mine Site

Bed 9	In-Place KCl (Mt)	In-Situ Grade (%K_2O)	Product (Mt)	Brine Cutoff Grade[1] (%K_2O)	Processing Recovery (%)
Proven Mineral Reserve	1.8	28.7	1.3	1.9	83
Probable Mineral Reserve	0.8	28.8	0.6	1.9	83
Total Mineral Reserves	2.6	28.8	1.9		

[1]Brine cutoff grade is the amount of K_2O n the extracted brine necessary to cover the costs of production.
Mineral Reserves were prepared by Agapito Associates, Inc., a qualified firm for the estimate and independent of Intrepid Potash.
Mineral Reserves are reported exclusive of Mineral Resources, on a 100% basis.
Mineral Reserves are reported based on a solution mine plan, dissolution factor of 89%, areal recovery of 94%, geologic factor 94%, plant recovery of 83%, product purity of 95%.
Mt = million tons, % = percent, K_2O = potassium oxide, ft = feet

12.3 Reserve Summary

The estimated Bed 5 and Bed 9 reserves of the Intrepid-Moab property to be mined using in-situ dissolution are shown in Table 12-5.

12.4 Qualified Persons Opinion – Further Work

It is the opinion of the QP that no further work is needed to determine reserves. The mine is currently and has been historically successful at production of potash.

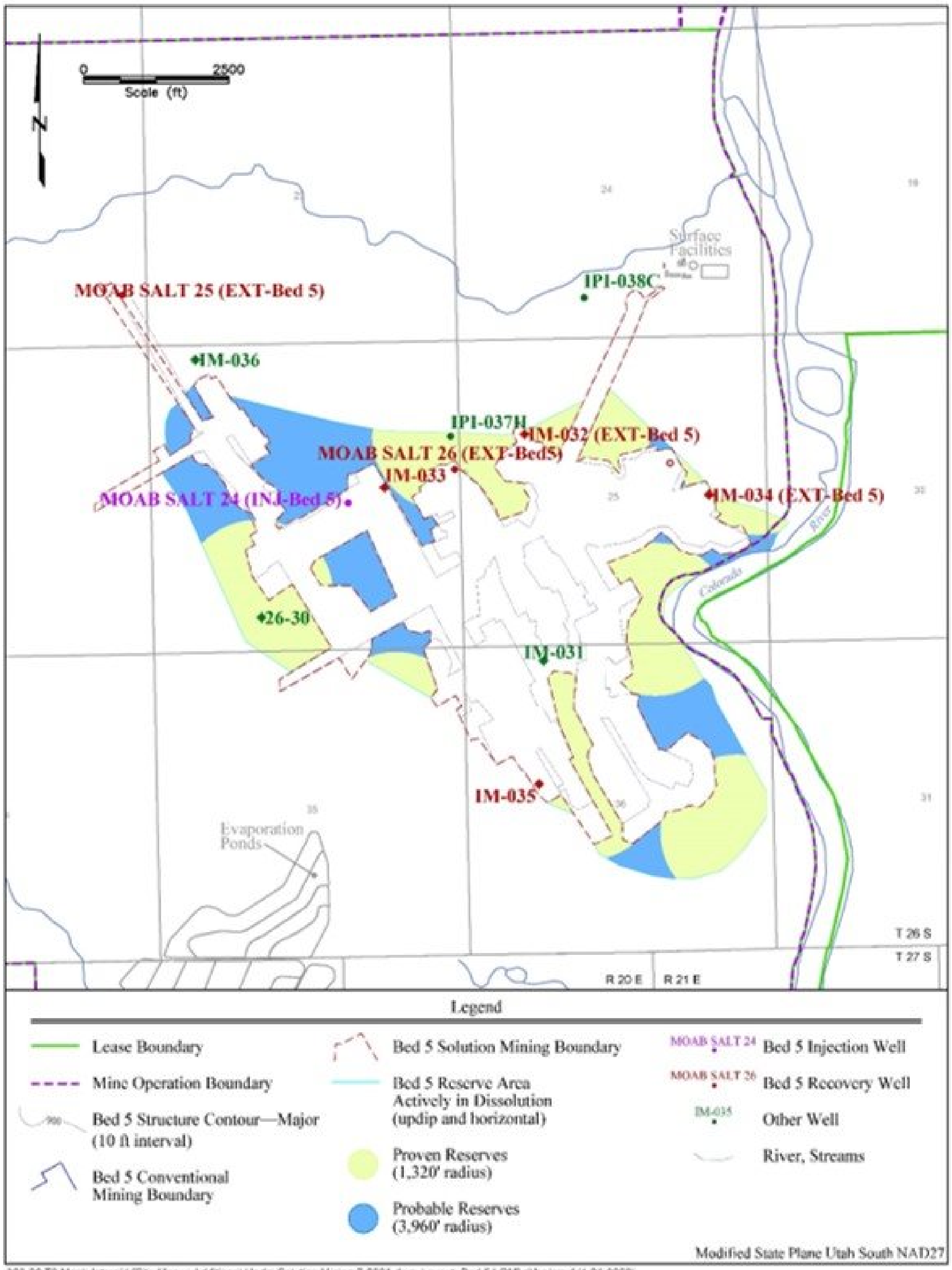


Figure 12-1. Bed 5 Proven and Probable Reserves

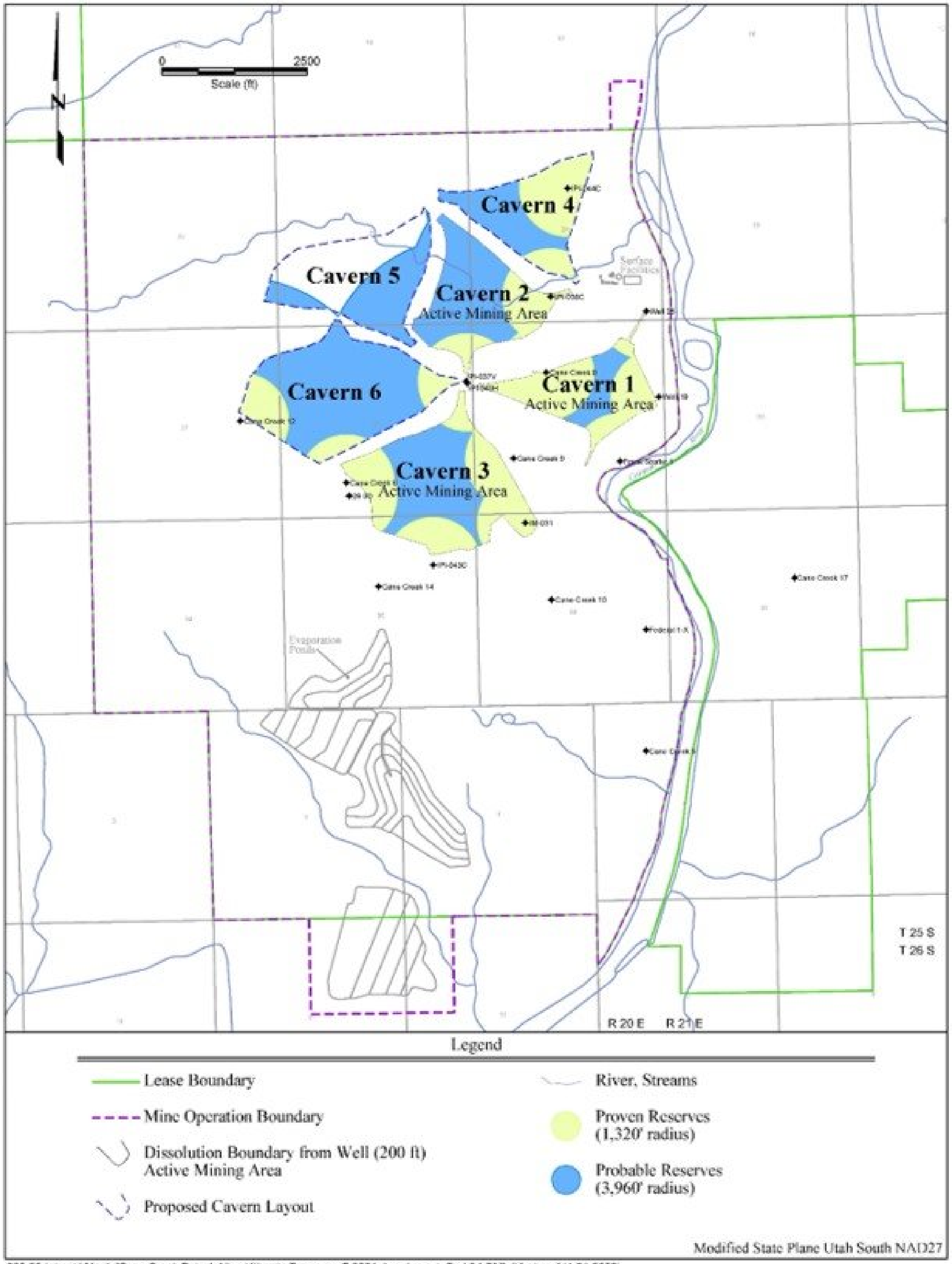


Figure 12-2. Bed 9 Proven and Probable Reserves

Table 12-5. Potash Mineral Reserve Estimate effective December 31, 2021 based on 325 $/Product Ton Mine Site

Beds 5 and 9	In-Place KCl (Mt)	In-Situ Grade[1] (% K_2O)	Product (Mt)	Brine Cutoff Grade[2] (% K_2O)	Processing Recovery (%)
Proven Mineral Reserve	2.6	27.2	1.9	1.9	83
Probable Mineral Reserve	0.8	27.8	0.6	1.9	83
Total Mineral Reserves	3.4	27.5	2.5		

[1]In-situ grade is the amount of K_2O in the remaining pillars of the old works.

[2]Brine cutoff grade is the amount of K_2O in the extracted brine necessary to cover the costs of production.

Mineral Reserves were prepared by Agapito Associates, Inc., a qualified firm for the estimate and independent of Intrepid Potash.

Mineral Reserves are reported exclusive of Mineral Resources, on a 100% basis.

Mineral Reserves are reported based on a solution mine plan, dissolution factor of 89%, areal recovery of 94%, geologic factor 94%, plant recovery of 83%, product purity of 95%.

Mt = million tons, % = percent, K_2O = potassium oxide, ft = feet

13 Mining Methods

Mining at Intrepid-Moab is by the solution mining technique referred to as "selective solution mining." Selective solution mining dissolves only the KCl component of the sylvinite and leaves the sodium chloride component underground. Intrepid-Moab employs 61 people.

Brine saturated in NaCl and partially saturated in KCl is injected into either the old mine workings of Bed 5 or the horizontal Bed 9 caverns via injection wells. Brine that is near saturation with KCl (pregnant brine solution) is withdrawn via extraction wells. The old works solution is essentially an underground lake. The horizontal caverns operate under pressure, thus requiring the injection and extraction to take place simultaneously. The pregnant brine solution is piped to shallow evaporation/solar ponds with an aerial expanse of approximately 400 acres.

KCl production is a function of brine grade and the well extraction rate and is limited by the solar ponds' evaporation rate. Brine grade is a function of retention time within each bed.

13.1 Solution Mining Bed 5

The production history for solution mining from the flooded workings in Bed 5 is presented in Figure 13-1. Since 1971, solution mining from Bed 5 has produced approximately 5.5 Mt of KCl.

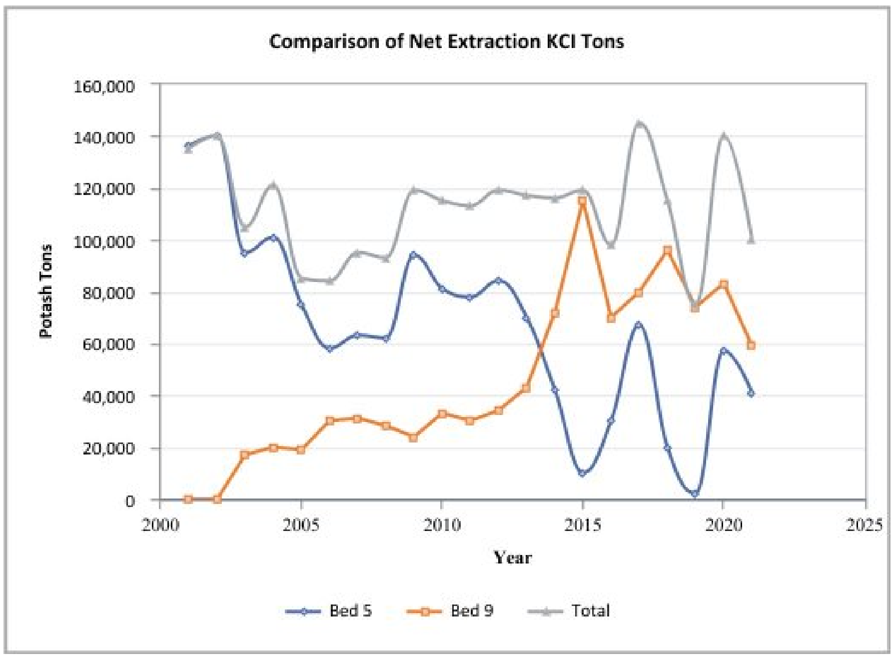


Figure 13-1. Solution Mining Product Tons of KCl by Bed

Since 2015, extracted brine from Bed 5 is a mixture of KCl from both beds and therefore, it is not possible to determine exactly how much of each bed's KCl is being produced. For this estimation, the assumption is made that all injected KCl is extracted on an annual basis. Therefore, Bed 5 KCl production is the difference in KCl extracted from the wells and Bed 9 injection. Extraction brine is currently sourced from seven wells.

Future production plans for the Intrepid-Moab operation include continued production from Bed 5 and Bed 9. In 2021, Bed 5 contributed approximately 41% of the total KCl produced by the Intrepid-Moab operation. Table 13-1 summarizes the net KCl tons sent to the evaporation ponds per year by bed from 2001 to 2021. Detailed allocation of where tons have been recovered within the footprint of the old workings is not possible with the available data.

Table 13-1. Comparison of Net Extraction KCl Tons for Beds 5 and 9 from 2001 to 2021*

Year	Bed 5 (tons)	Bed 9 (tons)	Total Net of KCl (tons)	Production by Bed 5 (%)	Production by Bed 9 (%)
2001	137,486	0	137,486	100.0	0.0
2002	139,855	0	139,855	100.0	0.0
2003	92,739	14,822	107,561	86.2	13.8
2004	101,873	20,061	121,934	83.5	16.5
2005	69,318	19,440	88,758	78.1	21.9
2006	57,723	29,758	87,481	66.0	34.0
2007	64,590	30,259	94,849	68.1	31.9
2008	63,816	28,044	91,860	69.5	30.5
2009	93,467	26,283	119,750	78.1	21.9
2010	82,125	31,139	113,264	72.5	27.5
2011	77,789	29,952	107,741	72.2	27.8
2012	84,671	34,664	119,335	71.0	29.0
2013	71,255	44,802	116,057	61.4	38.6
2014	43,238	70,463	113,701	38.0	62.0
2015	8,518	109,798	118,317	7.2	92.8
2016	28,488	68,883	97,371	29.3	70.7
2017	68,153	79,131	147,285	46.3	53.7
2018	20,178	93,843	114,020	17.7	82.3
2019	1,866	72,884	74,750	2.5	97.5
2020	56,033	84,098	140,131	40.0	60.0
2021	41,674	59,036	100,710	41.4	58.6
	1,404,855	**947,360**	**2,352,215**		

* Tonnages from Intrepid-Moab mass balance table.
Annual tons represent annual evaporation cycle (2021 = Sept. 2020 - Aug. 2021)

Future recovery of potash from solution mining in the existing Bed 5 cavern is possible from both updip and horizontal locations from the existing mine perimeter and from new Bed 5 horizontal caverns. The estimated solution mine perimeter is shown in Figure 13-2.

13.2 Solution Mining Bed 9

Solution mining in Bed 9 began on July 30, 2002, with the drilling of two horizontal wells. An additional well was drilled into this system in 2005. This series of three wells make up Cavern 1. An additional horizontal well was drilled into Cavern 1 in 2012 to stimulate additional production from this cavern. Two new caverns, Caverns 2 and 3, were drilled in 2012–2013 and consist of four wells. Injection into Cavern 2 began in early 2013. Cavern 3 injection began in 2014. Approximately 950,000 t of KCl have been produced from Bed 9 since 2003.

The development of horizontal caverns for solution mining in Bed 9 was novel and unprecedented in 2002 in the potash industry when Intrepid-Moab drilled the first wells. The horizontal holes were drilled with the intent of maintaining contact with Bed 9 and developing caverns laterally by selective solution mining. The net KCl tons sent from Bed 9 since 2003 are listed in Table 13-1 and indicate that, on average, 48,000 t of KCl have been extracted per annum. The proportion of tons extracted from Bed 9 is approximately 70% of total extracted tons since 2013. Since 2015, approximately 25% of the extraction from Bed 9 has been injected into the Bed 5 old workings cavern. The estimated solution mine perimeter is shown in Figure 13-2. Mine life is in excess of 25 years.

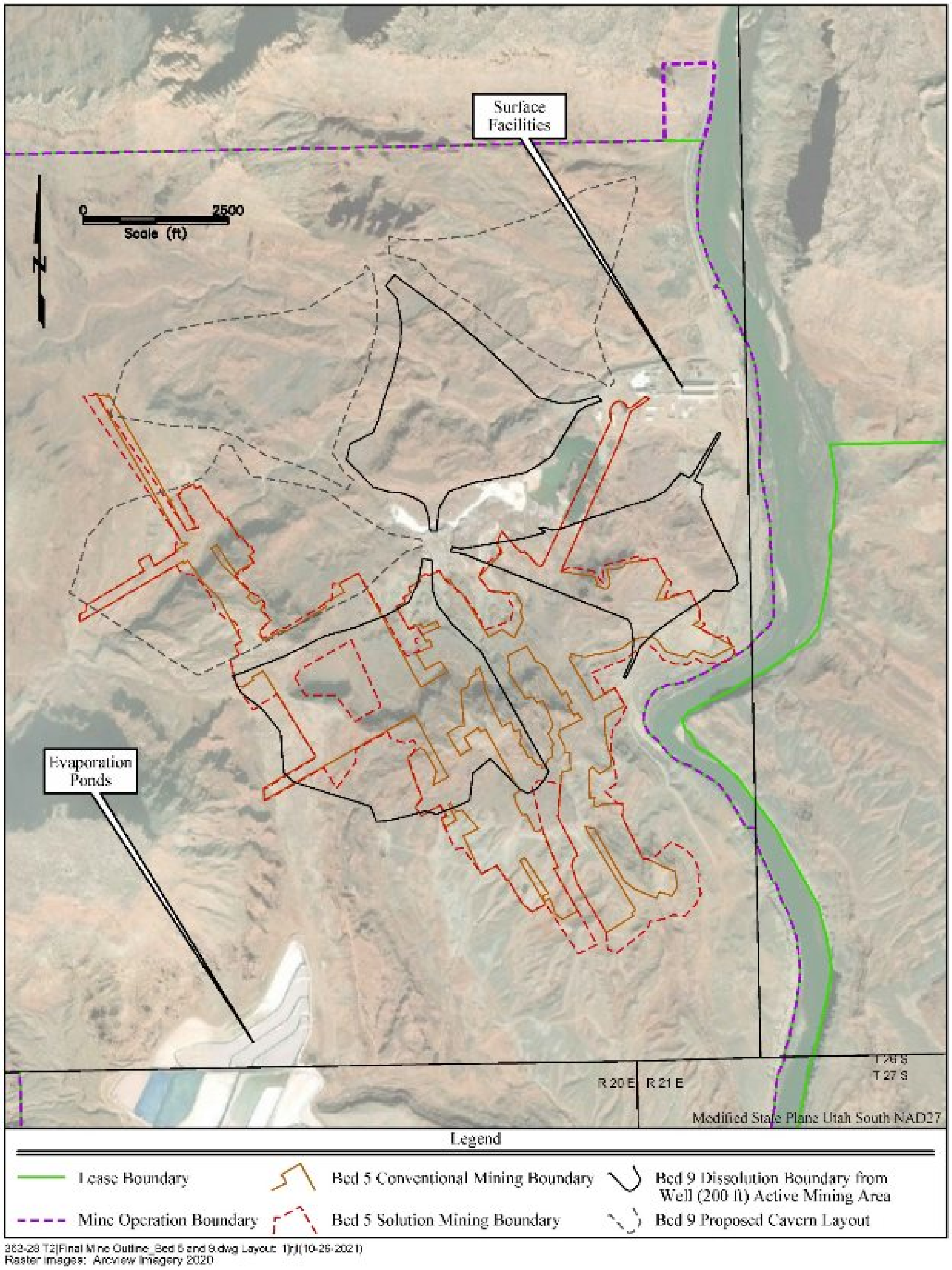


Figure 13-2. Footprint of Underground Workings

14 PROCESSING AND RECOVERY METHODS

Mining by solution methods ends with the delivery of the brine to the evaporation ponds. Mineral processing begins with pond sequencing to enhance crystallization of the potash. The crystals remaining in the ponds after solar evaporation are harvested and processed through the mill where the potash is separated from other salts, then concentrated by flotation. The concentrates are then dried, compacted, and screened into premium grades of white potash. Both potash and salt products are processed at the plant facility at a rate of 400 to 1,200 tons per day (tpd).

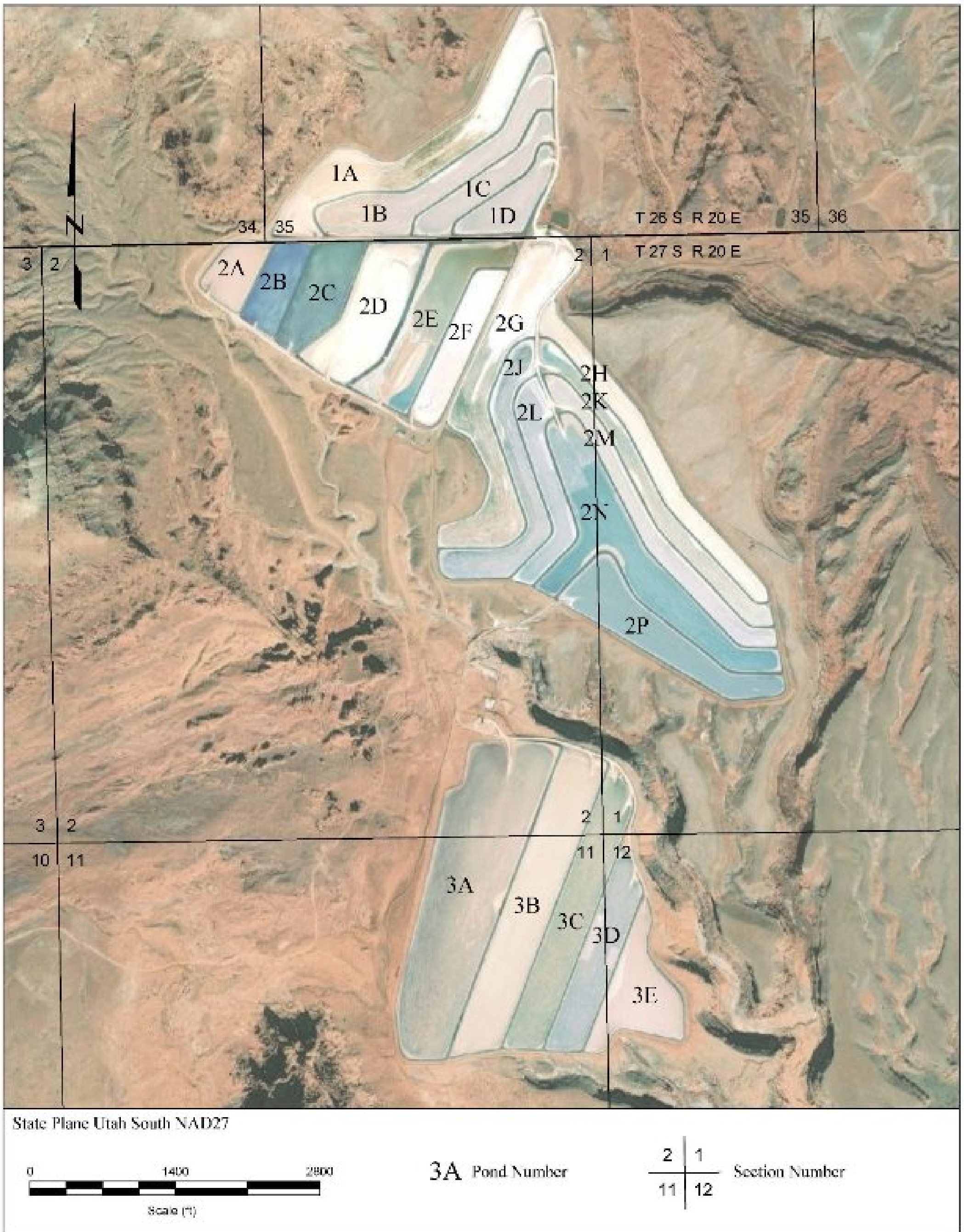
14.1 Process Description

The Intrepid-Moab processing plant uses nominally 350M gallons per year of river water to produce 350M gallons per year of NaCl-saturated (21% by weight) evaporation pond feed solution at 6.5–7.5% KCl. The injection liquor typically contains 2% KCl and is near NaCl saturation (21%). The evaporation ponds (Figure 14-1) concentrate and crystallize the brine to produce about 530,000 tpy of crystal at 15% K_2O (22-24% KCl) with the remainder being largely halite. As cavern development progresses, the overall production is projected to stay relatively consistent around 100,000 tpy.

A simplified processing flow diagram is included in Figure 14-2. The pond crystals are mechanically harvested, re-pulped in double-saturated brine, and pumped to the processing facility. The crystals are statically screened with the oversize processed through a crusher. The screened crystal is combined with reagents and fed to flotation cells.

The rougher flotation concentrate is sent to the agitated leach tank. The leached solids are at a product grade of 95.5% KCl with 60.5% K_2O. The solids are dried, sampled, and conveyed to storage bins prior to the granulation and sizing circuit.

Dried product material is granulated using a roll compactor and resulting flakes are further reduced in size with a crusher. Product is then sent to the curing dryer and screened before being sent to the final product storage. The product is shipped to market in trucks or rail cars.



363-28 Int Moab [Base Map_6-2021.dwg]djl(6-14-2021)
Topographic Map Reference: Arcview Imagery 2020

Figure 14-1. Evaporation Ponds at Intrepid-Moab

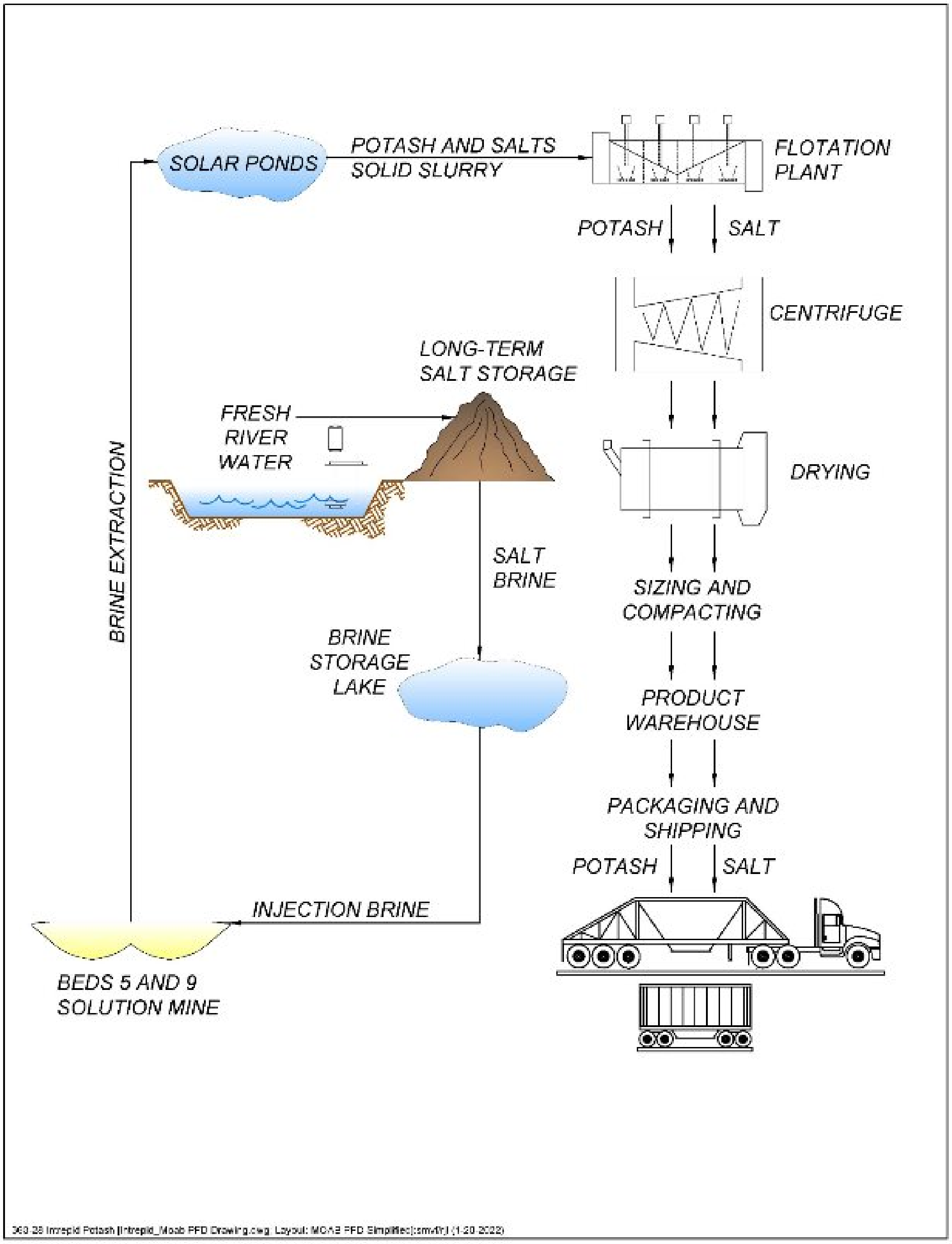


Figure 14-2. Intrepid-Moab Process Flow Diagram

15 INFRASTRUCTRE

The Intrepid-Moab mine has a robust infrastructure in place. They have adequate water rights on the Colorado River. The mining operation is accessible by a paved county road and accessible by rail. Electric power is fed from local utilities to a recently upgraded substation. The infrastructure layout is shown on Figure 15-1.

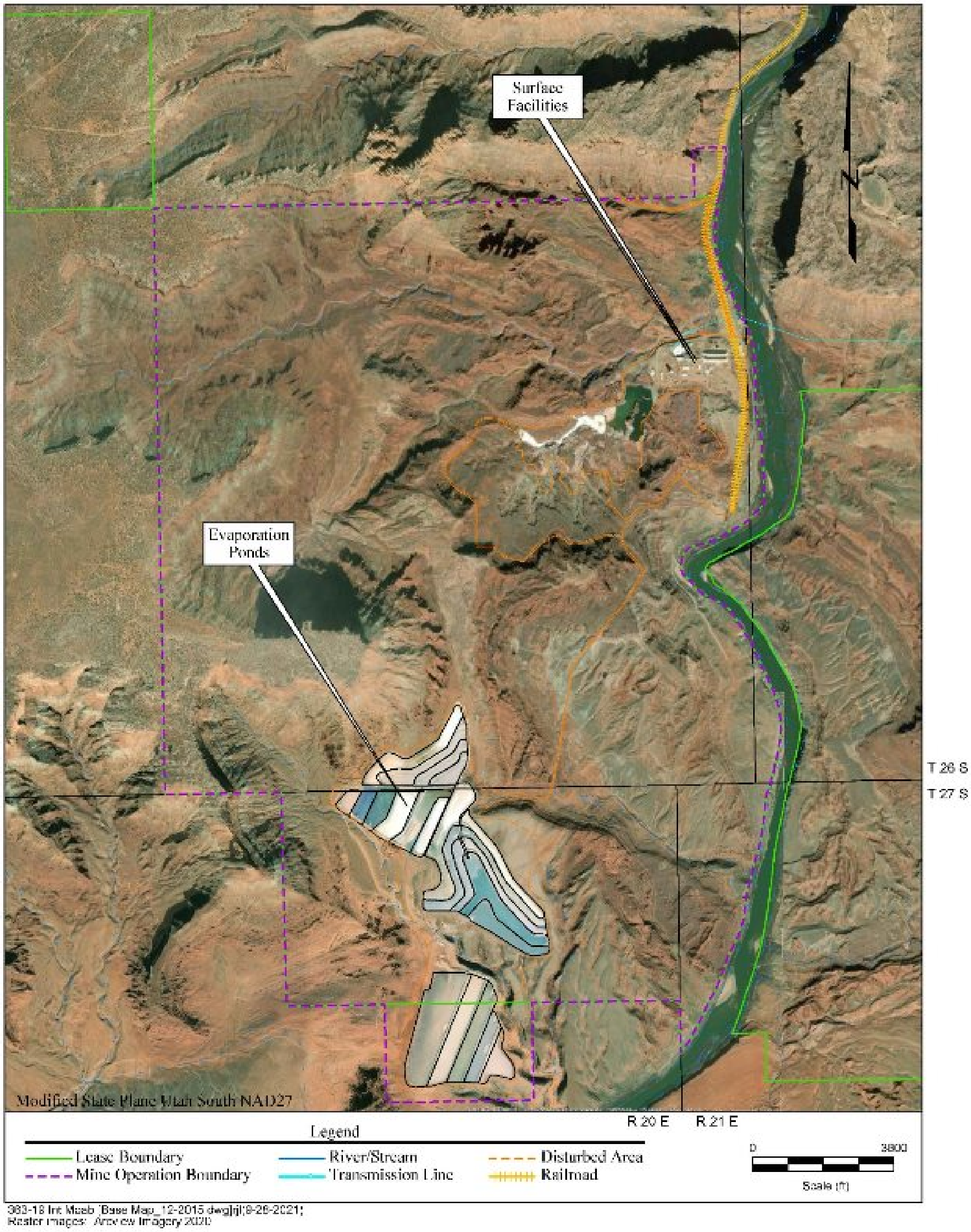


Figure 15-1. Site Infrastructure Layout

16 MARKET STUDIES

Future pricing is difficult to predict and can fluctuate dramatically depending on the world market. Intrepid-Moab does not conduct market studies to set the sales price but does look forward up to 10 years. There are no material contracts.

17 ENVIRONMENTAL STUDIES, PERMITTING AND PLANS

Intrepid-Moab holds numerous environmental and other permits and governmental approvals authorizing the operations at the facility. Operations are subject to permits for, among other things, injection and extraction of salt and brine, discharges of process materials and waste to air and surface water, and injection of brine. Intrepid-Moab is obligated to reclaim and remediate disturbed lands when they cease operations.

The solar ponds are lined to prevent brine from leaking into the ground and the Colorado River. A series of cutoff structures (ditches) have been constructed in drainages to intercept any seepage and return potassium-rich brine to the ponds.

17.1 Environmental Studies

Hydrologic modeling was conducted to evaluate the impact of potential releases from the solar ponds to the Colorado River. There is limited vertical permeability across the site. Cutoffs with pumps are in place to limit sediment releases during operation.

17.2 Waste and Tailings Disposal, Site Monitoring, and Water Management During and After Mine Closure

The property had legacy NaCl waste stored on site from the previous owner. This NaCl is being removed and replaced back into the underground during the solution mining process. The solution mining process in use at the mine does not generate waste. Regular monitoring is conducted per the permit.

17.3 Permitting Status and Reclamation Bonds

The property is in active production and holds all necessary permits. The permits and bond are listed in Table 17-1.

17.4 Agreements with Local Individuals

There are no specific agreements with local individuals. Hiring is typically done locally if the expertise is available.

17.5 Closure Plans

The closure plan includes plugging and abandoning wells, a disposal well to dispose of brine impacted waters followed by complete structure demolition, salt impacted media treatment, and reseeding. The post-mining site will be returned to pre-mine land use consideration. The final reclaimed site will contain no structural evidence of past mining operations.

Table 17-1. Permit Listing with Bond Values

Common Name	Issuing Agency	Permit ID	Effective Date	Expiration Date	Bond Value	Note
Air Permit	Utah Division of Air Quality	Approval Order #: DAQE-AN102510004-13	1-Oct-13	None		
UIC Permit	Utah Division of Water Quality	Underground Injection Control Program Permit No.: UTU-19-AP-1C3C2E8	6-May-15	Division to review after 5 years	$ 1,709,898	Application for renewal submitted July 6, 2020—still awaiting new permit.
Class IIIb Landfill Permit	Utah Division of Waste Management and Radiation Control	Waste Management and Radiation Control Board Permit# 0401R1	17-Feb-10	17-Feb-20	$ 190,540	Application for renewal submitted February 13, 2020—still awaiting new permit
Radioactive devices	Utah Division of Waste Management and Radiation Control	Radioactive Material License No.: UT 1000019, Amendment #12	30-Jun-14	30-Sep-19		Application for renewal submitted July 30, 2019—still awaiting new permit
Storm Water Pollution Prevention Plan	Utah Division of Water Quality	General Permit No.: UTR000000	Dec-12	Dec-21		Permit renews annually with payment of annual fee
SPCC Plan	Self-issued	Spill Prevention, Control and Countermeasure Plan	1-Jun-16	Review by Jun 1, 2021		5-year review is underway
Fugitive Dust Control Plan	Utah Division of Air Quality	Fugitive Dust Control Plan	Jan-14	None		
Solid and Hazardous Waste Management Plan	Self-issued	[Not a permit, IPM is a Very Small Quantity Generator]	21-Jan-04	None		
Mine and Reclamation Plan	Utah Division of Oil Gas and Mining	Notice of Intentions to Revise Mining Operations, File No.: M/019/005	20-Jun-16	20-Jun-21	$ 6,304,000	Applicaton for renewal submitted April 30, 2021—awaiting approval
Stockpile Dam	Utah Division of Water Rights	Emergency Action Plan for Dam ID# UT00438	13-Apr-15	16-Sep-25		Revised September 16, 2020

17.6 Adequacy of Current Plans and Compliance

It is the opinion of the QP that the current plans are sufficient, and operations are maintaining compliance.

18 CAPITAL AND OPERATING COSTS

18.1 Capital Cost Estimate

Future capital outlays will be required to maintain production at the Intrepid-Moab mine. The mine plan provided by Intrepid-Moab indicates that additional horizontal well sets are planned similar to wells drilled in 2013. Future needs call for caverns to be drilled approximately every 10 years. With that timing in mind, one cavern is planned for construction to begin around 2022. The actual timing for construction of the next caverns depends on the performance of the existing caverns.

The evaporative capacity of the ponds and the net concentration of the pregnant brine solution in the ponds limit the production rate from the facility. Future plans call for an average production of 100,000 tpy from Beds 5 and 9 combined, which will not require any evaporative pond expansions.

18.2 Operating Cost Estimate

Intrepid-Moab has been providing income statements for review since 2007. These income statements serve as the basis for establishing the operating cost as shown in Table 18-1.

Table 18-1. Unit Operating Cost Estimate

Cost Category	$/Product Ton	Cost Distribution	
Labor including Benefits	$43	33	%
Maintenance Supplies	$13	10	%
Operating Supplies including Reagents	$13	10	%
Natural Gas, Electricity, and Fuel	$24	18	%
Leases, Property Tax, Insurance etc.	$19	14	%
Subtotal	$112	86	%
Warehouse	$11	8	%
Royalties	$7	6	%
Cost of Goods Sold	$130	100	%

18.3 Accuracy Discussion

Costs are based on actuals and therefore, considered highly accurate.

19 Economic Analysis

To evaluate the viability of continued mining of the Intrepid--Moab potash reserves, an economic analysis was conducted. Annual revenue and production cost schedules were used to build a projected cash flow to accompany the mine plan. The costs and sales price parameters were assumed to be in constant US dollars.

19.1 Key Assumptions, Parameters, and Methods

The property has a long history of operation at this location. The assumption list for the economic analysis is shown in Table 19-1.

Table 19-1. Economic Analysis Assumptions

Parameter	Assumption
Potash Sale Price (mine site)	$325/t
Shipping Potash	$50/t
Potash Production Target	100,000 tpy
Interest Rate	0–12% APR
Income Taxes (State and Federal)	40%
Severance Tax	2.60%

APR = Annual Percentage Rate

19.2 Economic Analysis

For a property in operation, the economic viability has been established. The pre-tax cash flow was developed using the mine plan and is listed in Table 19-2. The after-tax cash flow is listed in Table 19-3. The cashflows are shown graphically in Figures 19-1 and 19-2 for pre- and after-tax, respectively. The NPV over the period of the detailed mine plan was calculated for an array of interest rates. This NPV analysis is included in Tables 19-3 and 19-4 for pre- and after-tax, respectively. For a property in operation, the Internal Rate of Return (IRR) and payback period are only necessary for major capital expansions.

19.3 Sensitivity Analysis

NPV sensitivity analyses were run using variants in commodity price and operating costs for the pre-tax cash flow. The results of the sensitivity analysis are shown graphically in Figures 19-3 and 19-4 for pre- and after-tax, respectively.

19.4 Discussion

Economic analysis using the price and cost assumptions show the operation is expected to continue to be profitable over the reserve life.

+Table 19-2. Estimated Pre-Tax Cash Flow

		2022– 2026	2027– 2031	2032– 2036	2037– 2041	2042– 2046
MOP	Production (-000 tons MOP/year)	102.5	104.2	99.9	103.6	102.3
	Sale Price MOP ($/product ton/year)	$325	$325	$325	$325	$325
	Shipping ($/product ton/year)	$50	$50	$50	$50	$50
	Net Sale Price/year	$275	$275	$275	$275	$275
REVENUE	**($-million/year)**	**$28.19**	**$28.66**	**$27.48**	**$28.50**	**$28.14**
EXPENSES						
	Major Capital ($-million/year)	$1.60	$0.00	$1.60	$1.60	$0.00
	Cost of Goods Sold					
	Expenses ($-million/year)	$13.33	$13.55	$12.99	$13.47	$13.30
	Income before Taxes ($-million/year)	$14.87	$15.11	$14.49	$15.03	$14.84
	Pre-tax Cash Flow ($-million/year)	$13.27	$15.11	$12.89	$13.43	$14.84

Table 19-3. Estimated After-Tax Cash Flow

		2022– 2026	2027– 2031	2032– 2036	2037– 2041	2042– 2046
MOP	Production (-000 tons MOP/year)	102.5	104.2	99.9	103.6	102.3
	Sale Price MOP ($/product ton/year)	$325 $	325 $	325 $	325 $	325
	Shipping ($/product ton/year)	$50	$50	$50	$50	$50
	Net Sale Price/year	$275	$275	$275	$275	$275
REVENUE	**($-million/year)**	**$28.19**	**$28.66**	**$27.48**	**$28.50**	**$28.14**
EXPENSES						
	Major Capital ($-million/year)	$1.60	$0.00	$1.60	$1.60	$0.00
	Cost of Goods Sold					
	Expenses ($-million/year)	$13.33	$13.55	$12.99	$13.47	$13.30
	Income before Taxes ($-million/year)	$14.87	$15.11	$14.49	$15.03	$14.84
	Depreciation ($-million/year)	$0.53	$0.53	$1.07	$0.53	$0.53
	Depletion ($-million/year)	$3.95	$4.01	$3.85	$3.99	$3.94
	Taxable Income ($-million/year)	$10.39	$10.57	$9.58	$10.50	$10.36
	Fed and State ($-million/year)	$4.15	$4.23	$3.83	$4.20	$4.15
	Severance Tax ($-million/year)	$0.73	$0.75	$0.71	$0.74	$0.73
	After-tax Cash Flow ($-million/year)	**$8.38**	**$10.14**	**$8.34**	**$8.48**	**$9.96**

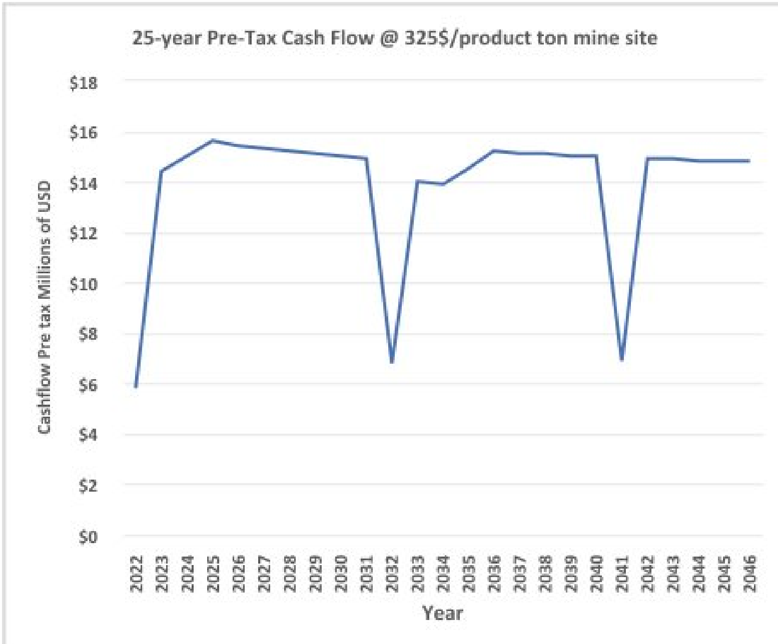


Figure 19-1. Estimated Annual Pre-Tax Cash Flow

Figure 19-2. Estimated Annual After-Tax Cash Flow

Table 19-4. NPV Pre-Tax Estimate

Interest Rate (% APR)	NPV ($M)
0	$348
5	$204
8	$158
10	$136
12	$119

Table 19-5. NPV After-Tax Estimate

Interest Rate (% APR)	NPV ($M)
0	$227
5	$132
8	$102
10	$87
12	$76

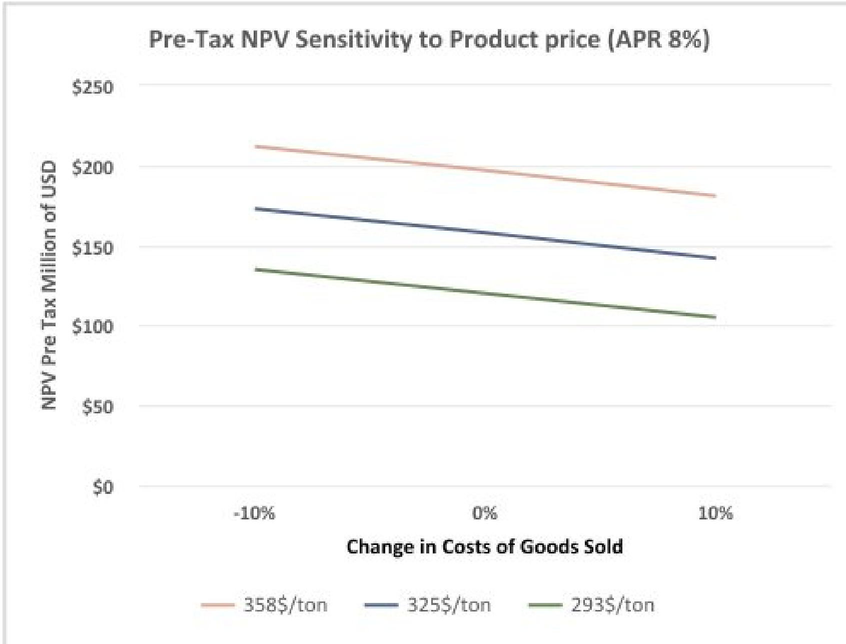


Figure 19-3. Pre-Tax NPV Sensitivity to Price and Costs (APR 8%)

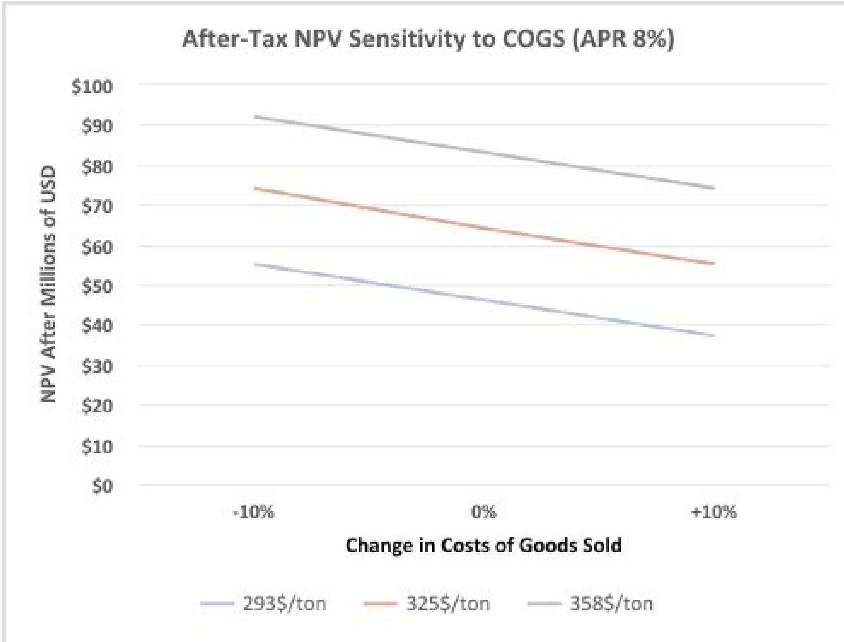


Figure 19-4. After-Tax NPV Sensitivity to Price and Costs (APR 8%)

20 ADJACENT PROPERTIES

Adjacent properties are not applicable.

21 OTHER RELEVANT DATA AND INFORMATION

No additional data or information is included.

22 INTERPRETATION AND CONCLUSIONS

Agapito's review and resource and reserve estimations were performed to obtain a reasonable assurance of the estimates from the data provided by Intrepid. Based on the foregoing, Agapito believes its findings are reasonable and realistic and have been developed using accepted engineering practices.

As with all geologic estimations, there is a level of risk and uncertainty because of sparse data. These estimates are considered reliable based on the historical success of mining operations recovering potash from this deposit. There is more uncertainty in future mining of the ore zones that have not been historically mined.

23 RECOMMENDATIONS

Geophysical data and regional geology suggest that faulting may occur in Beds 5 and 9 in the vicinity of Cane Creek 14 with an orientation parallel to the Cane Creek anticline. The cavern plan accounts for areas where Bed 9 is expected to have excessive dip, bed undulations, or unfavorable geology. These areas are subject to modification as more geologic data is collected and evaluated.

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25 RELIANCE ON INFORMATION

Agapito relied on information provided by Intrepid and Intrepid-Moab for this reserve evaluation.

TECHNICAL REPORT SUMMARY

OF

2021 ESTIMATED RESOURCES AND RESERVES AT INTREPID POTASH-WENDOVER

Prepared for:

Intrepid Potash–Wendover, LLC

Report Date:

February 24, 2022

Effective Date:

December 31, 2021

Prepared by:

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Agapito Associates, Inc.

CORPORATE SEAL

TECHNICAL REPORT SUMMARY

OF

2021 ESTIMATED RESOURCES AND RESERVES AT INTREPID POTASH-WENDOVER

TABLE OF CONTENTS

List of Tables

List of Figures

List of Abbreviations

Agapito	Agapito Associates, Inc.
APR	Annual Percentage Rate
BLM	United States Bureau of Land Management
BSF	Bonneville Salt Flats
CFR	Code of Federal Regulations
CMC	carboxy-methyl cellulose
EOY	end of year
ft	feet or foot
ft^2	square foot
gpd	gallons per day
I-80	Interstate 80
Intrepid	Intrepid Potash, Inc.
Intrepid-Wendover	Intrepid Potash–Wendover, LLC
IRR	Internal Rate of Return
K	potassium
KCl	sylvite or potassium chloride
lb/ft^3	pounds per cubic foot
M	million
Mg	magnesium
$MgCl_2$	magnesium chloride
$MgCl_2$•KCl•$6H_2O$	carnallite
MOP	Muriate of Potash
MSL	mean sea level
MRS	metal recovery salt
Mt	million tons
Na	sodium
NaCl	sodium chloride or halite
NPV	Net Present Value
NaCl	halite
%	percent
QP	Qualified Person
SEC	United States Securities Exchange Commission
SME	Society for Mining, Metallurgy & Exploration
SOE	Statement of Earnings
t	ton
tpd	tons per day
tpy	tons per year
UPRR	Union Pacific Railroad
YPB	years before present

1 EXECUTIVE SUMMARY

Agapito Associates, Inc. (Agapito) was commissioned by Intrepid Potash, Inc. (Intrepid) to estimate the end-of-year (EOY) 2021 potash resources and reserves for the Intrepid Potash–Wendover, LLC (Intrepid-Wendover) property. Resources and reserves are estimated according to United States (US) Securities and Exchange Commission (SEC) S-K 1300 regulations.

Potash at Intrepid-Wendover is produced through solar evaporation of naturally occurring brines collected from the sedimentary basin adjacent to the processing facility via brine collection ditches and extraction wells. The potash content of the collected brine is concentrated by solar evaporation to the point that solids are precipitated and can be collected. Harvested solids salts are hauled to the processing facility, where they are dried, sized, and stored for shipment. Potash, metal recovery salt (MRS), halite (NaCl), and magnesium chloride ($MgCl_2$) are shipped by both truck and rail via Interstate 80 (I-80) and the Union Pacific Railroad (UPRR) link.

1.1 Property Description, Mineral Rights, and Ownership

Intrepid-Wendover owns 57,534 acres located in Township 1 North, Range 18 West; Township 1 South, Ranges 17, 18 and 19 West; Township 2 South, Ranges 18 and 19 West; and Township 3 South, Ranges 18 and 19 West. Approximately 30,300 acres owned by the U.S. Bureau of Land Management (BLM) and the State of Utah are leased to Intrepid-Wendover

1.2 Geology and Mineralization

Intrepid's Wendover operation is located near the Nevada–Utah border along the western edge of Utah's Great Salt Lake Desert and is situated within the Bonneville Salt Flats (BSF). The BSF is an enclosed sub-basin that contains 150 square miles of salt crust.

Intrepid's Wendover operation produces potash by transporting subsurface potassium-rich brines to the surface where they are exposed to western Utah's arid climate. The aqueous portion of the brine is removed through evaporation, allowing the evaporite minerals to precipitate and be collected for further processing. Because the potash is derived from subsurface brines, the mineral deposit is best represented by characteristics of the aquifer(s) containing the brine.

1.3 Status of Exploration, Development, and Operations

The property has been in continuous operation by Intrepid-Wendover since 2004. Brine sampling is an integral part of the mine operations.

1.4 Mineral Resource Estimates

The ore resource model created from the database brine sampling data beginning in 2007 serves as the basis for this evaluation. The sampling data includes brine samples from the active mining horizon. The resources reported, exclusive of mineral reserves effective December 31, 2021, are shown in Table 1-1.

Table 1-1. Sylvinite Brine Mineral Resource Estimate effective December 31, 2021 based on 406 $/Product Ton Mine Site

	Resources				
	Sylvinite Brine[1] (Mt)	Grade (%K_2O)	Contained K_2O (Mt)	Cutoff[2] (%K_2O)	Processing Recovery (%)
Measured Mineral Resources					
Indicated Mineral Resources	80.5	0.50	5.0	0.19	85
Measured + Indicated Mineral Resources	80.5	0.50	5.0	0.19	
Inferred Mineral Resources	109.1	0.50	6.8	0.19	85

[1]Sylvinite brine is NaCl and KCl in solution at average concentrations by weight.
[2]Solution mining resource cutoff is grade at which production covers operating costs.
Mineral Resources were prepared by Agapito Associates, Inc., a qualified firm for the estimate and independent of Intrepid Potash.
Mineral Resources are reported exclusive of Mineral Reserves, on a 100% basis.
Mineral Resources are reported using Inverse Distance Squared (ID^2) estimation methods
Mt = million tons, % = percent, K_2O = potassium oxide, ft = feet

1.5 Mineral Reserve Estimates

Table 1-2 shows the estimated reserve summaries for EOY 2021 with reserves reported exclusive of mineral resources.

Table 1-2. Potash Mineral Reserves effective December 31, 2021 based on 325 $/Product Ton Mine Site

	Sylvinite Brine[1] (Mt)	In-Situ Grade[2] (%K_2O)	Product (Mt)	Brine Cutoff Grade[3] (%K_2O)	Processing Recovery (%)
Proven Mineral Reserves					
Probable Mineral Reserves	88.5	0.5	1.8	0.3	85
Total Mineral Reserves	88.5	0.5	1.8	0.3	

[1]Sylvinite brine is NaCl and KCl in solution at average concentrations by weight.
[2]In-situ grade is the amount of K_2O contained in the brine.
[3]Solution mining reserve cutoff is the grade at which production covers operating costs.
Mineral Reserves were prepared by Agapito Associates, Inc., a qualified firm for the estimate and independent of Intrepid Potash.
Mineral Reserves are reported exclusive of Mineral Resources, on a 100% basis.
Mineral Reserves are reported based on an overall recovery factor of 60% and a product purity of 95%.
Mt = million tons, % = percent, K_2O = potassium oxide, ft = feet

1.6 Summary of Capital and Operating Cost Estimates

Operating cost per potash product ton from brine mining is estimated at $133/t.

No major capital investment is necessary to complete the mine plan. To better control leakage through pond berms and manage pond flow, an investment of approximately $2M could be made in the future if desired.

1.7 Economic Analysis

The Net Present Value (NPV) at 8% Annual Percentage Rate (APR) for the before- and after-tax estimated cash flow is positive. The sensitivity to product price and operating cost for an 8% APR was evaluated. Varying costs and sales price plus and minus 10% the NPV remains positive.

1.8 Permitting Requirements

The mine is in operation and necessary state and federal operating permits are in place.

1.9 Conclusions and Recommendations

Estimates are dependent on data obtained from the natural environment. Although the mine has been in operation for many years, factors such as extended drought or natural disasters could influence the estimates. The general spacing between collection ditches is about 2,600 feet (ft), which may require a period of at least 100 years for the ditches to capture all the potash brine between the ditches. A future mining plan with optimized ditch spacing could affect the recovery factor and reserve estimation.

2 INTRODUCTION

2.1 Purpose and Basis of Report

This document was prepared to report the Intrepid-Wendover mineral reserves in terms of saleable product at Intrepid-Wendover under the SEC S-K 1300 rules (2018). The Society for Mining, Metallurgy & Exploration (SME) *Guide for Reporting Exploration Information, Mineral Resources and Mineral Reserves* (SME 2017) (The SME Guide) supplements the modifying factors used to convert mineral resources to mineral reserves.

2.2 Terms of Reference

According to 17 Code of Federal Regulations (CFR) § 229.1301 (2021), the following definitions are included for reference:

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. 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, therefore, may not be converted to a 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. An indicated mineral resource has a lower level of confidence than the level of confidence of a measured mineral resource and may only be converted to a probable mineral reserve. As used in this subpart, the term *adequate geological evidence* means evidence that is sufficient to establish geological and grade or quality continuity with reasonable certainty.

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. As used in this subpart, the term *conclusive geological evidence* means evidence that is sufficient to test and confirm geological and grade or quality continuity.

Modifying factors are the factors that a qualified person must apply to indicated and measured mineral resources and then evaluate in order to establish the economic viability of mineral reserves. A qualified person must apply and evaluate modifying factors to convert measured and indicated mineral resources to proven and probable mineral reserves. These factors include but are not restricted to mining; processing; metallurgical; infrastructure; economic; marketing; legal; environmental compliance; plans, negotiations, or agreements with local individuals or groups; and governmental factors.

A *probable mineral reserve* is the economically mineable part of an indicated and, in some cases, a measured mineral resource.

A *proven mineral reserve* is the economically mineable part of a measured mineral resource. For a proven mineral reserve, the qualified person has a high degree of confidence in the results obtained from the application of the modifying factors and in the estimates of tonnage and grade or quality. A proven mineral reserve can only result from conversion of a measured mineral resource.

Throughout the report, reserves are presented in tons of potassium chloride (KCl).

2.3 Sources of Information

Agapito has previously completed reserve estimations and analyses under SEC Guide 7 (SEC 2008) for this property as shown in Table 2-1. Intrepid provided Statements of Earnings (SOE), permitting documentation, and production and monitoring data.

Table 2-1. Summary of Reports by Agapito

Effective EOY	Title	Reference
2007	Potash Resource Estimation for Intrepid Potash–Wendover LLC	AAI 2007a
2007	Determination of Estimated Probable Reserves at Intrepid Potash–Wendover, LLC	AAI 2007b
2009	Determination of Estimated Probable Potash Reserves at Intrepid Potash–Wendover, LLC	AAI 2010
2012	Determination of Estimated Probable Potash Reserves at Intrepid Potash–Wendover, LLC	AAI 2013
2015	2015 Determination of Estimated Probable Potash Reserves at Intrepid Potash–Wendover, LLC	AAI 2016
2018	2018 Determination of Estimated Probable Reserves at Intrepid Potash–Wendover, LLC	AAI 2019

2.4 Personal Inspection

Personal inspection of the properties has occurred over the years by Agapito personnel. The most recent inspection of the property took place on May 19, 2021. The inspection included the Intrepid-Wendover potash plant, evaporation ponds, wellheads, and ditches.

3 Property Description

3.1 Location and Area of the Property

The Intrepid-Wendover potash operation is located in the westernmost part of Tooele County, Utah. The plant facilities and offices are located approximately 3 miles east of Wendover, Utah, on old US Highway 40. The site is approximately 3 miles east of the Nevada border and is primarily located south of I-80, although portions of the site are located north of I-80. The area of the Intrepid-Wendover mine operation is shown on Figure 3-1.

The facility, collection ditches, and evaporation systems cover approximately 87,834 acres (approximately 137 square miles). The majority of the ditch collection system is located to the south and east of the processing facilities.

3.2 Mineral Rights

Intrepid-Wendover owns 57,534 acres located in Township 1 North, Range 18 West; Township 1 South, Ranges 17, 18 and 19 West; Township 2 South, Ranges 18 and 19 West; and Township 3 South, Ranges 18 and 19 West. The site boundaries, property ownership, the former and active evaporation ponds, harvest ponds, process facility location; roads, the general distribution of the ditches, and all drillholes and wells are shown on Figure 3-2.

Approximately 30,300 acres owned by the BLM and the State of Utah are leased to Intrepid-Wendover, excluding lands used for highway and utility purposes. The State of Utah owns several state land trust sections within the site boundaries. Intrepid-Wendover holds leases from the federal government that include 24,700 acres adjoining the Intrepid-Wendover property to the east. Intrepid-Wendover also leases 5,600 acres of property from the State of Utah under special use and mineral leases. The state leases are interspersed among the Intrepid-Wendover property and the federal leases. Table 3-1 provides a description of each of the federal and state leases held by Intrepid-Wendover.

3.3 Significant Encumbrances

The reclamation bond on $8.9M in place for Intrepid-Wendover is calculated to cover the cost of site reclamation.

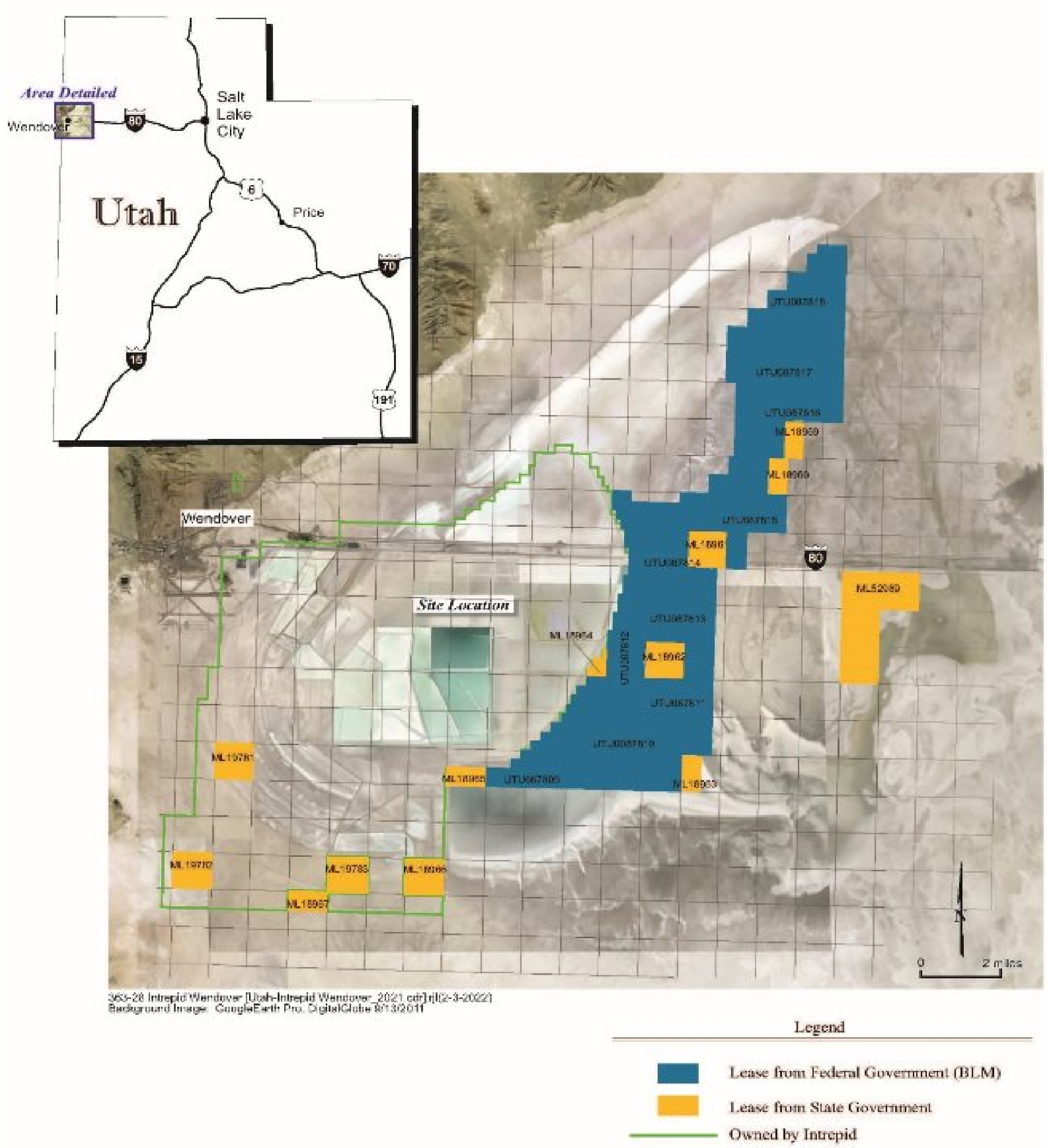


Figure 3-1. Location and Lease Area of Intrepid-Wendover Mine Operation

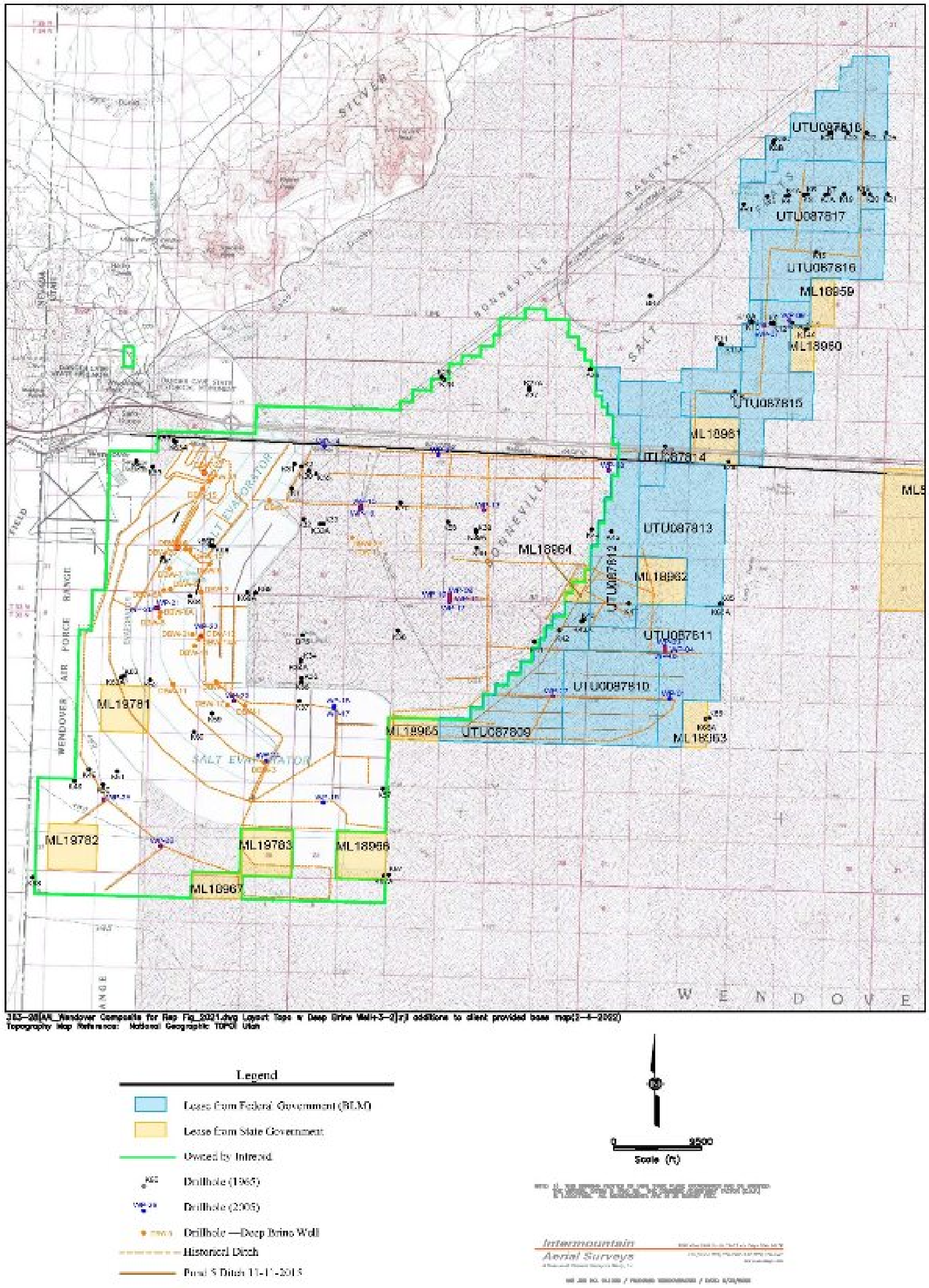


Figure 3-2. Sample Locations Intrepid-Wendover Mine Operation

Table 3-1. Property Lease Details, Intrepid-Wendover

Privately Owned Lands					**Acres**			
Intrepid Lands					57,534			
State of Utah Lease	**Section**	**Description**	**Township**	**Range**	**Acres**	**Lease Date**	**Effective Date**	**Readjustment Date**
ML-18959	36	W2	1N	17W	320	8/21/1961	1/1/2014	12/31/2023
ML-18960	2	Lots 3, 4, S2NW4, SW4	1S	17W	318		1/1/2014	12/31/2023
ML-18961	16	All	1S	17W	640		1/1/2014	12/31/2023
ML-18962	32	All	1S	17W	640		1/14/2014	12/31/2023
ML-18963	16	W2	2S	17W	320		1/14/2014	12/31/2023
ML-18964	36	S2SE4, NE4SE4, E2NW4SE4,E2SE4NE4	1S	18W	160		1/1/2014	12/31/2023
ML-18965	16	S2	2S	18W	320		1/1/2014	12/31/2023
ML-18966	32	All	2S	18W	640		1/1/2014	12/31/2023
ML-18967	2	Lots 1, 2, 3, 4, S2N2	3N	19W	320		1/1/2014	12/31/2023
ML-19781	16	All	2S	19W	640		1/1/2014	12/31/2023
ML-19782	32	All	2S	19W	640		1/1/2014	12/31/2023
ML-19783	36	All	2S	19W	640		1/1/2014	12/31/2023
ML-52989	19,203,031	All	1S	16W	2,500		12/1/2014	12/31/2023
					8,099			

Royalty on all state leases is 4% of the gross value of leased substances, 1/1/2023-12/31/2023 - 4.5%, 1/1/2024 thru end of term - 5%

Federal Lease	**Section**	**Description**	**Township**	**Range**	**Acres**	**Effective Date**	**Readjustment Date**
UTU-087811	4	Lots 2-4, SW4NE4, S2NW4, SW4, W2SE4	2S	17W	2,551	1/1/2003	1/1/2023
UTU-087813	20	E2, SW4	1S	17W	2,560	1/1/2003	1/1/2023
UTU-087815	35	S2	1N	17W	2,558	1/1/2003	1/1/2023
	3	Lots 1-3, S2NE4, SE4NW4, S2	1S	17W			
	8	E2SE4	1S	17W			
	9	S2	1S	17W			
	10	All	1S	17W			
	11, 15	W2	1S	17W			
UTU-087817	18	Lots 3, 4, E2SW4	1N	16W	2,519	1/1/2003	1/1/2023
	19	Lots 1, 2, E2NW4	1N	16W			
	13	S2	1N	17W			
	14	SE4, E2SW4, SW4SW4	1N	17W			
	22	E2	1N	17W			
	23,24	All	1N	17W			
UTU-087810	7	All	2S	17W	2,527	1/1/2003	1/1/2023
	8, 17	W2	2S	17W			
	18	All	2S	17W			
	12,13	E2	2S	18W			
UTU-087812	7	Lots 1, 2, E2NW4, E2SW4, E2NW4SW4	1S	17W	2,489	1/1/2003	1/1/2023
	18	E2E2NW4, E2	1S	17W			
	19	E2, E2SE4NW4, E2NE4SW4, SE4SW4	1S	17W			
	30	Lot 4, E2, E2W2, E2SW4NW4, E2NW4SW4	1S	17W			
	31	All	1S	17W			
	6	Lots 1-5, SE4NW4, S2NE4	2S	17W			

Table 3-1. Property Lease Details, Intrepid-Wendover (continued)

Federal Lease	Section	Description	Township	Range	Acres	Effective Date	Readjustment Date
UTU-087814	34	E2SE4	1N	17W	2,120	1/1/2003	1/1/2023
	3	Lot 4, SW4NW4	1S	17W			
	4	SE4	1S	17W			
	7	S2NE4, SE4	1S	17W			
	8	E2NE4, SW4N4E, S2NW4, SW4, W2SE4	1S	17W			
	9	N2	1S	17W			
	17	All	1S	17W			
	20	NW4	1S	17W			
UTU-087816	19	Lots 3, 4, E2SW4	1N	16W	2,319	1/1/2003	1/1/2023
	30	Lots 1-4, E2W2	1N	16W			
	25	All	1N	17W			
	26	All	1N	17W			
	27	E2E2	1N	17W			
	34	E2NE4	1N	17W			
	35	N2	1N	17W			
UTU-087818	6	Lots 5-7, SE4NW4, E2SW4	1N	16W	2,557	1/1/2003	1/1/2023
	7	Lots 1-4, E2W2	1N	16W			
	18	Lots 1, 2, E2NW4	1N	16W			
	1	SE4NE4, SE4	1N	17W			
	11	SE	1N	17W			
	12	All	1N	17W			
	13	N2	1N	17W			
	14	N2, NW4SW4	1N	17W			
	15	SE4	1N	17W			
UTU-087809	1	Lots 1, 2, S2NE4, SE4NW4, E2NW4SW4, NE4SW4, S2SW4, SE4	2S	18W	2,500	1/1/2003	1/1/2023
	11	E2NE4NE4, E2SW4NE4, SE4NE4, E2NE4SW4, E2SW4SW4, SE4SW4, SE4	2S	18W			
	12, 13	W2	2S	18W			
	14	All	2S	18W			
	15	E2NE4NE4, E2SW4NE4, SE4NE4, S2	2S	18W			
					24,700		

Royalty on all federal leases is 3% gross value at point of shipment

4 ACCESSIBILITY

4.1 Topography, Elevation, and Vegetation

The topography of the area is flat at an approximate elevation of 4,219-ft mean sea level (MSL). Vegetation is sparse.

4.2 Property Access

The Wendover potash operation is located in the westernmost part of Tooele County, Utah, on the BSF. The plant facilities and offices are located approximately 3 miles east of Wendover, Utah, on old U.S. Highway 40. The site is located approximately 3 miles east of the Nevada border and is primarily located south of I-80, although portions of the site are located north of I-80. The area of the Intrepid mine operation is shown on Figure 4-1.

4.3 Climate

The climate in western Utah is arid with low precipitation and low relative humidity. Average annual rainfall is 5 inches and average evaporation is 80 inches. Variation from these averages is the primary cause of fluctuations in plant production.

4.4 Infrastructure Availability

All infrastructure for the operation is located approximately 3 miles east of Wendover, Utah, on old US Highway 40. US I-80 bisects the property as shown on Figure 4-1.

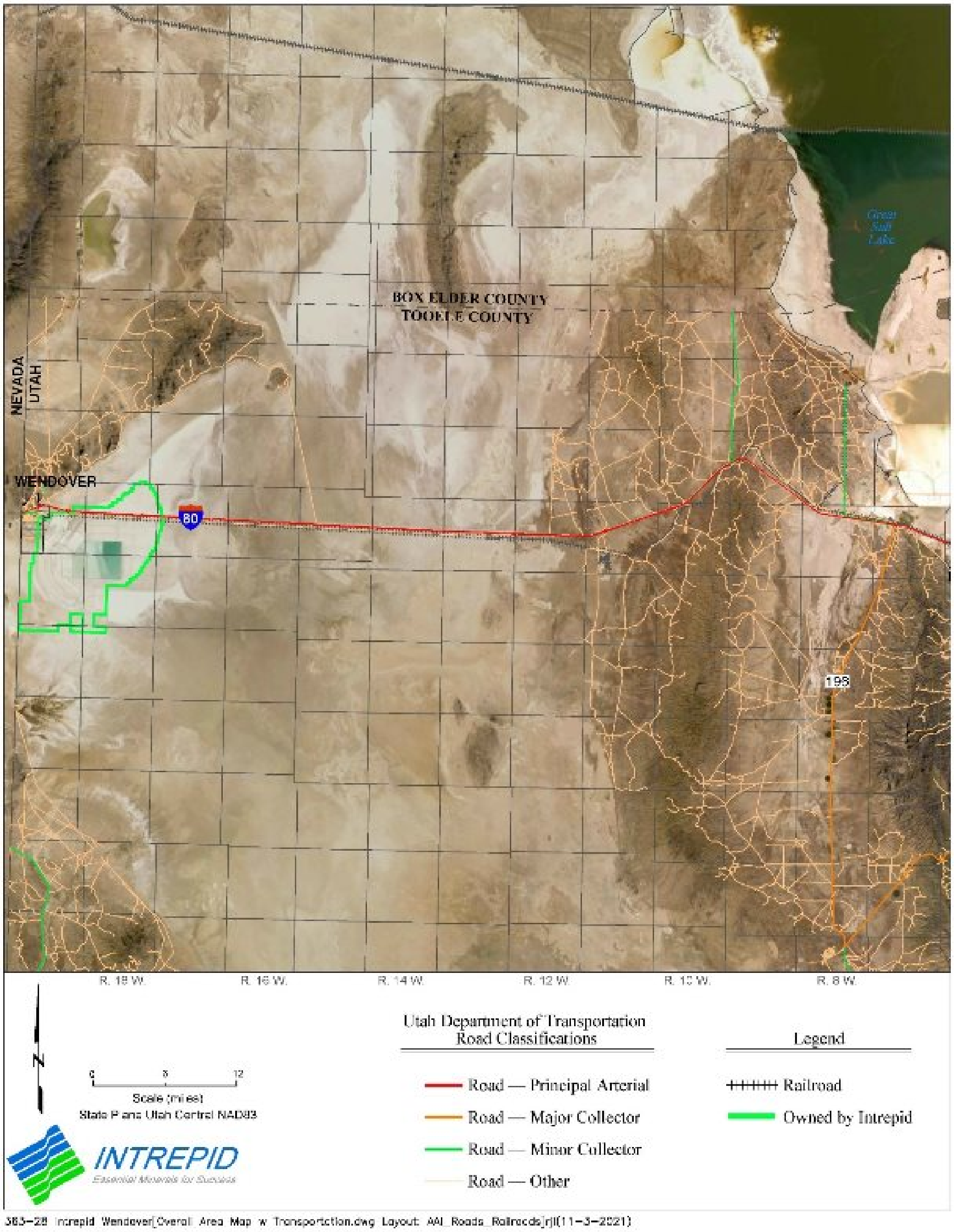


Figure 4-1. Mine Location showing Property Access

5 HISTORY

The Bonneville area was recognized in the early 1900s as a source for potash. The original operation was known as the Salduro Works, which operated until 1918 and then closed due to a decline in potash demand. The original Salduro Works was responsible for acquiring lands on which a system of collection ditches was constructed. In the mid-1930s, Bonneville Limited acquired more land to the west of the original property and constructed primary harvest ponds and additional infrastructure to support the mining operations. Between 1961 and 1963, various potash leases were acquired from the federal and state governments. Kaiser Aluminum & Chemical Corporation acquired Bonneville Limited in 1963. The property, including the ponds, processing operation, and lease land, was acquired by Reilly Industries, Inc. from Kaiser Aluminum & Chemical Corporation in 1988. Intrepid-Wendover acquired the property from Reilly Industries, Inc. in April 2004.

Figure 5-1 shows the KCl historical brine concentration pumped into the primary pond. Gaps in the figure are due to inadequate pumping data collection. Figure 5-2 shows the production history for the shallow-brine and deep-brine aquifers from 1968 to 2021.

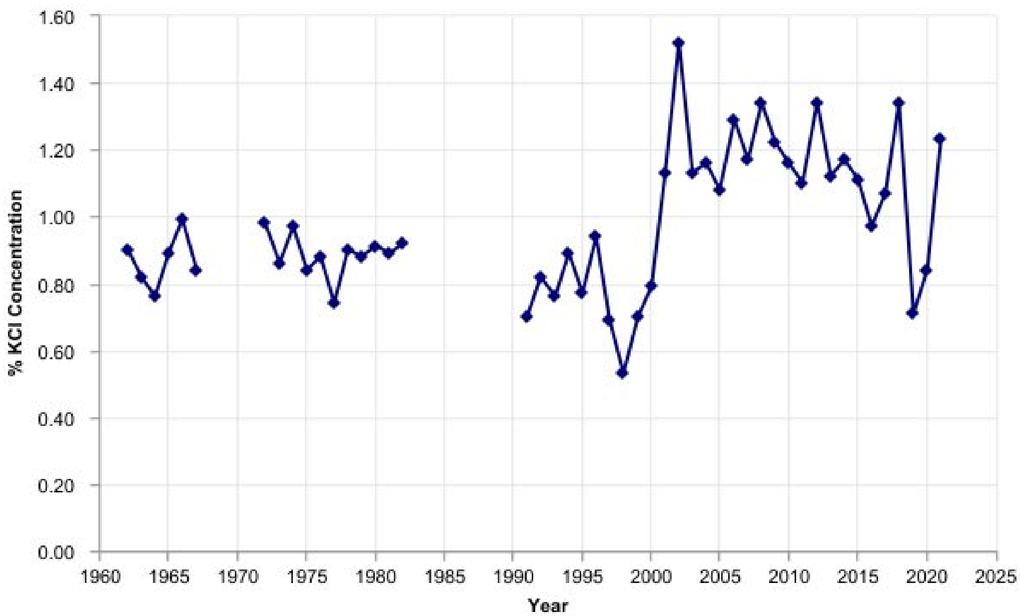


Figure 5-1. Historical Brine Concentration Pumped into Primary Pond

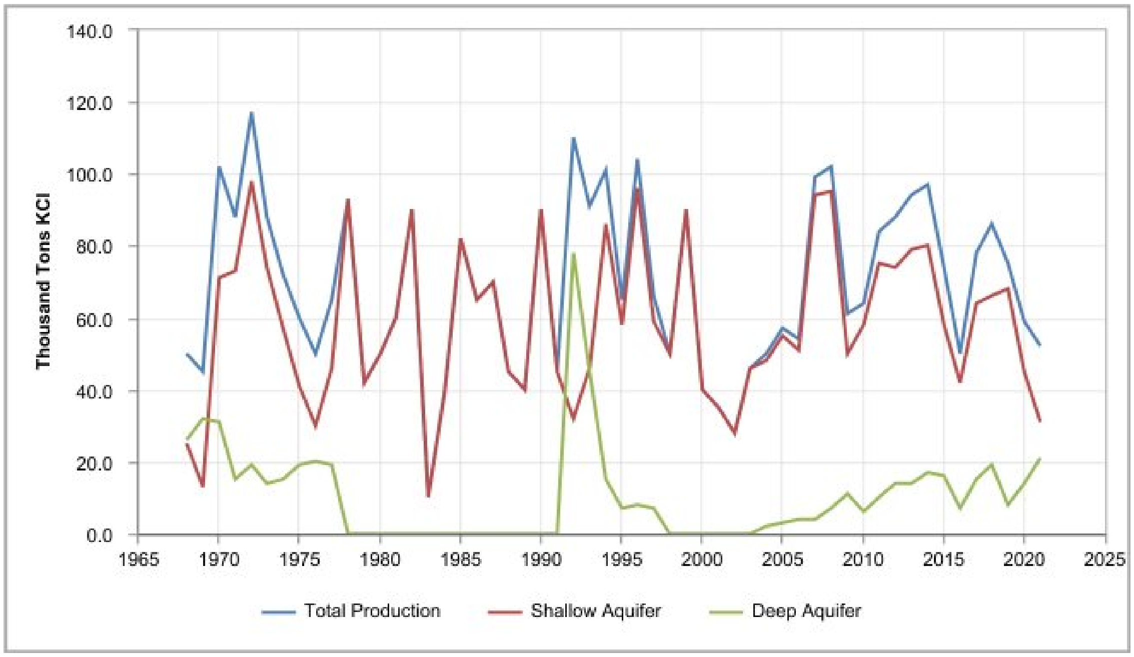


Figure 5-2. Historical KCl Production at Intrepid-Wendover, 1968–2021

6 GEOLOGIC SETTING

6.1 Regional, Local, and Property Geology

Intrepid's Wendover operation is located near the Nevada–Utah border along the western edge of Utah's Great Salt Lake Desert and is situated within the BSF. The BSF is an enclosed sub-basin that contains 150 square miles of salt crust. The average elevation on the playa is about 4,215 ft above MSL with very little to no relief recorded across the site (Lines 1979).

6.1.1 Regional Geology

The BSF and the associated potash-bearing brines occur within the Lake Bonneville basin which is part of the larger Basin and Range physiographic province. The Basin and Range province is generally characterized by north-trending ranges and basins developed over the last 20 million years. As the region experienced extension in a generally east–west direction, the brittle upper crust thinned and broke into north-trending blocks, which then either rotated or differentially subsided to produce the basins and ranges. Thinning of the crust was coupled with regional subsidence that in turn, produced the Lake Bonneville basin.

The Lake Bonneville basin has been an area of restricted internal drainage for the last 15M years, allowing lakes of varying size to exist throughout all or most of this history. However, Lake Bonneville was the youngest and deepest of the large Quaternary lakes to form within the basin in response to cyclical climate changes. Based on oxygen isotope analyses and carbon dating of sediment core, along with chronologically relatable topographic markers, Lake Bonneville is believed to have existed between 45,000 and 10,000 years before present (YBP) (Oviatt et al. 1992). At the lake's maximum extent, it covered nearly 20,000 square miles and was more than 9,880 ft deep. The lake reached its geomorphological highstand and began spilling over Red Rock Pass, Idaho, approximately 16,000 YBP. Catastrophic failure of unconsolidated material at Red Rock Pass released a deluge of floodwaters into the Snake River drainage of Idaho at roughly 14,500 YBP. Following this event, typically referred to as the Bonneville Flood Event, Lake Bonneville continued to outflow through Red Rock Pass until 14,000–13,000 YBP. With the termination of the last major ice age, lake levels declined substantially. Ten-thousand YBP is generally considered to mark the end of Lake Bonneville and the birth of its successor, Great Salt Lake (Currey et al. 1984). With the advent of a hotter, drier regional climate beginning roughly 8,000 YBP, the remnants of Lake Bonneville gradually disappeared primarily through evaporation.

The mountain ranges in the western part of the Great Salt Lake Desert are composed mainly of limestone, dolomite, shale, and quartzite of Paleozoic age. Because of block faulting and basin fill, the Paleozoic rocks are several-thousand feet below the land surface in the centers of the basin. The lower part of the fill underlying the BSF is composed mainly of extrusive volcanic rocks and associated sandstone, claystone, ash, and conglomerates of Tertiary age. The upper part of the fill is composed mainly of claystone, limestone, and gypsum of Quaternary age. Most of the sedimentary rocks that fill the basins are of fluvial or lacustrine origin, and much of the deposition took place in basins that predate Lake Bonneville (Lines 1979).

6.1.2 Local Geology

The modern Lake Bonneville basin interior is extremely dry, mostly devoid of vegetation, and exhibits very little topographic relief. The lithology of the interior, away from what once were islands and shoreline, is predominantly composed of lacustrine deposits and evaporite minerals, occasionally interbedded with layers of fluvial or fine-grained eolian sediments. Sand and gravel occur more often with increased proximity to the ancient shoreline. Igneous, metamorphic, and sedimentary rocks ranging in age from Cambrian to late-Tertiary form the barren slopes and mountain ranges surrounding the basin and provide eroded detrital material often deposited as alluvial fans (Figure 6-1).

All deposits exposed at the surface of the Bonneville and Pilot Valley playas were deposited by Lake Bonneville or by more recent, very minor lacustrine events. The local surface geology consists of evaporite mineral deposits. Evaporite minerals on the surface of the BSF are concentrated in three lateral zones (Figure 6-2): (1) a carbonate zone composed mainly of authigenic clay-sized carbonate minerals, (2) a sulfate zone composed mainly of authigenic gypsum, and (3) a chloride zone composed of crystalline halite referred to as 'the salt crust' (Lines 1979).

The upper 20 ft of the Lake Bonneville deposits underlying the two playas is composed mainly of dark-gray to dark-brown carbonate muds comprised of clay-size calcite, aragonite, and dolomites. Interbedded with the carbonate muds are gypsum evaporite deposits and the crystalline salt crust (Turk 1969). Underlying the carbonate mud layer are lacustrine deposits (0–200 ft thick), mainly composed of fine-grained sediments. When laterally extensive, these lacustrine deposits serve as a confining unit for meteoric fluids. However, the lacustrine deposits often intermingle with alluvial fan-deposited sand and gravel shed from the Silver Mountains to the northwest. Below the lacustrine and alluvial fan deposits, is a relatively thick sequence of volcaniclastics, conglomerates, tuffs, and sandstones known as the Salt Lake Formation (0–500 ft thick). The Salt Lake Formation is late-Miocene to Pliocene in age and formed through the shedding and reworking of sediments from the adjacent mountains as valley fill into the down-dropping graben of the western Great Salt Lake Desert. Interbedded within this layer are fine-grained units predominantly composed of gypsum, limestone, siltstone, and shale. Figure 6-3 illustrates the conceptual stratigraphic setting.

6.1.3 Property Geology

Intrepid's Wendover operations are situated in the western portion of the Great Salt Lake Desert, which itself is located within the Bonneville Lake basin. Because the basin is closed topographically and has no outlet, loss of water is ultimately through evaporation. The Wendover property produces potash from beneath an area termed the BSF. The BSF was formed through the prolonged accumulation of evaporite minerals in conjunction with periodic lacustrine events. Within the property boundary, surface topography is extremely low relief and predominantly composed of evaporitic 'salt crust.'

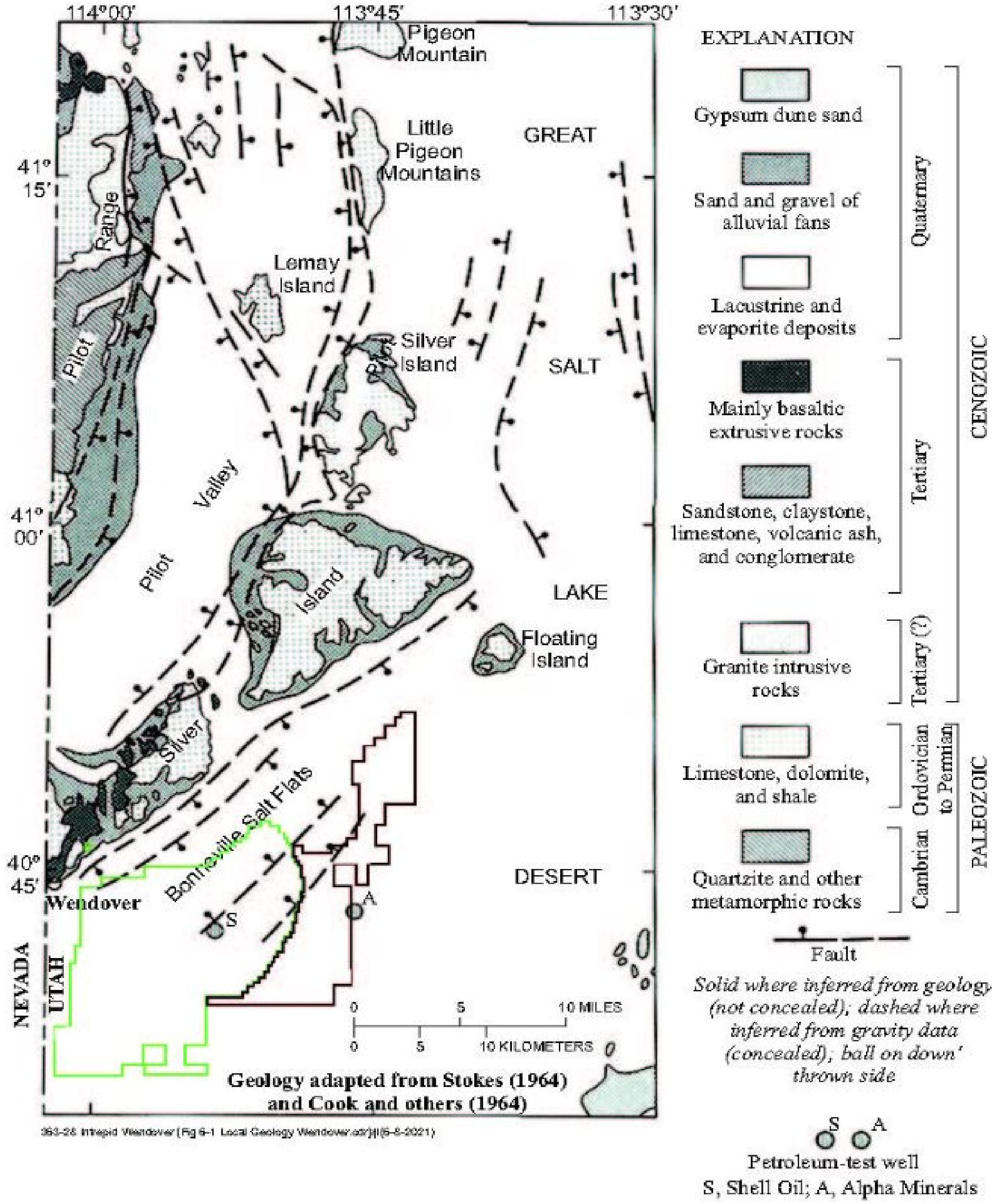


Figure 6-1. Geology of the BSF and Pilot Valley Region (after Lines 1979)

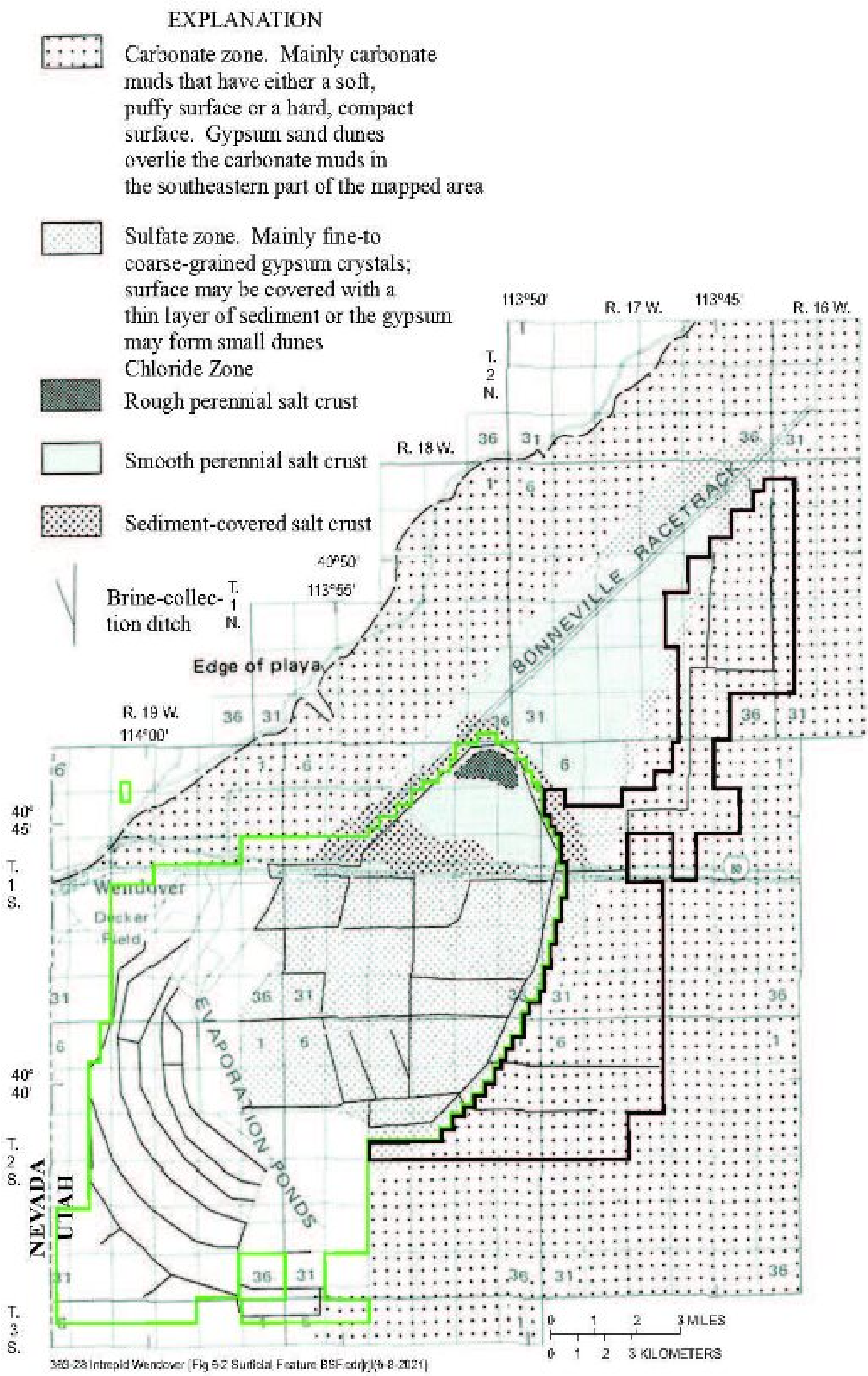


Figure 6-2. Salt Crust and Other Geomorphic Features on the BSF, Fall of 1975 (after Lines 1979)

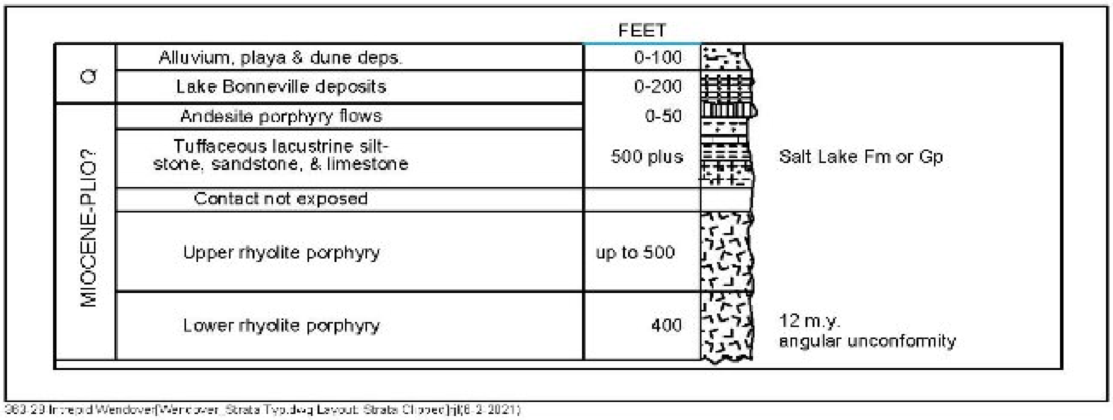


Figure 6-3. Conceptual Stratigraphic Column

Intrepid-Wendover produces potash from the rich saline brines that exist in the subsurface. There are three aquifers known to exist beneath the BSF. These aquifers are, in descending order, the shallow-brine aquifer, the alluvial-fan aquifer, and the deep-brine aquifer. Intrepid produces potash from both the shallow-brine aquifer and the deep-brine aquifer.

6.2 Significant Mineralized Zones

The zones of mineralization at Wendover are defined by the presence of potash-rich brines. These brines are known to occur in two out of three local aquifers: the shallow-brine aquifer and the deep-brine aquifer. The third aquifer, which is not potash-bearing and occurs stratigraphically between the other two, is the alluvial-fan aquifer.

The shallow-brine aquifer is a near-surface aquifer and serves as the primary source of potash-rich brine. It is contained in the highly permeable salt and gypsum crust and underlying fractured carbonate muds. The alluvial-fan aquifer, the middle of the three, resides in the sand and gravel interbedded with the lacustrine sediments remnant of Lake Bonneville that underlie the playa deposits of the BSF. The alluvial-fan aquifer is brackish, yet is not a source of potassium salts. The deep-brine aquifer exists within the volcaniclastics and conglomerates of the Salt Lake Formation. This aquifer typically occurs at depths greater than 250–300 ft.

6.3 Mineral Deposit

Intrepid's Wendover operation produces potash by transporting subsurface potassium-rich brines to the surface where they are exposed to western Utah's arid climate. The aqueous portion of the brine is removed through evaporation, allowing the evaporite minerals to precipitate and be collected for further processing. Because the potash is derived from subsurface brines, the mineral deposit is best represented by characteristics of the aquifer(s) containing the brine.

The shallow-brine aquifer, as it is called, exists within the near-surface carbonate mud layer. The carbonate mud transitions to the less-permeable lacustrine deposits at 20–30 ft depth. Brine extraction involves excavating a network of ditches, which allow the natural inflow of aquifer fluids, thereby exposing the brine to dry atmospheric conditions.

7 EXPLORATION

7.1 Exploration Other than Drilling

KCl grade monitored from 92 shallow brine wells during the period 1965–1967 by Turk (1969) is included in Table 7-1. A total of 27 monitoring wells were drilled in October 2005 and have been sampled at least yearly to evaluate brine quality in the shallow-brine aquifer. Table 7-2 lists the maximum KCl grade in each shallow aquifer monitoring well for the time period of July 2016 to July 2020.

7.2 Drilling Exploration

No traditional drilling exploration has taken place.

7.3 Characterization of Hydrology Data

Groundwater occurs in three distinct aquifers in much of the western Great Salt Lake Desert: (1) the deep-brine aquifer, (2) the alluvial-fan aquifer, and (3) the shallow-brine aquifer.

The most extensive aquifer, the deep-brine aquifer, yields brine to wells on the BSF from conglomerate in the lower part of the basin fill. The deep-brine aquifer consists of as much as 840 ft of conglomerate, is confined by its upper few hundred feet of relatively impermeable, lacustrine deposits, and thus, hydraulic connection between the aquifer and playa surfaces is poor (Lines 1979). Aquifer tests indicate that the transmissivity of the deep-brine aquifer in the area of the potash operation averages 13,000 square feet per day (ft^2/day), and the storage coefficient is about 4×10^{-4}. Pumping tests indicate the deep-brine aquifer as a quasi-infinite reservoir. The amount of recharge to the deep-brine aquifer cannot be determined from available data, while discharge is mainly from the well. Concentration of KCl in the deep-brine aquifer ranges from 0.36% to 0.47%, and $MgCl_2$ from 0.43% to 0.69%. Composition of the brine is relatively constant throughout the aquifer.

The alluvial-fan aquifer is composed of sand and gravel alluvial fans along the flanks of the Silver Island Mountains and the Pilot Range. The alluvial fans are interbedded with fine-grained lacustrine deposits which act as confining layers to the alluvial-fan aquifer. The degree of hydraulic connection between the deep-brine aquifer and the alluvial-fan aquifer is unknown. The degree of connection probably varies, as it is dependent on the continuity between the sand and gravel of the alluvial fans and the conglomerates in the basin fill (Lines 1979). No economic mineable potash is contained in the alluvial-fan aquifer.

The shallow-brine aquifer consists of both the near-surface carbonate muds and the crystalline halite and gypsum deposits on the surface of the playas. Sand and gravel of the alluvial fans are interbedded with the near-surface carbonate muds of the playas, and hydraulic connection is good. The average thickness of the shallow-brine aquifer is reported to be about 18 ft (Turk 1969; Shaw Environmental, Inc. 2006).

Table 7-1. Shallow-Brine Aquifer Sampling by Turk (1969)

Well No.	Eastings	Northings	Date	Depth Interval (ft)	Sampling Method	Specific Gravity	KCl %
K1	962,676	7,442,619	7/30/1965	0–15.75	P	1.2140	1.41
K2	963,693	7,445,090	7/30/1965	0–20.0	BP	1.2135	1.34
K3	1,018,182	7,475,549	10/4/1965	0–24.4	PT	1.2015	1.15
K4	1,016,238	7,475,425	9/28/1965	0–30.0	PT	1.2020	1.06
K4A	1,016,528	7,475,487	11/9/1965	0–23.0	BP	1.1950	1.07
K5	1,014,232	7,475,384	10/10/1966	0–25.0	P-10	1.2000	1.27
K6	1,018,575	7,475,611	7/27/1965	0–23.0	BP	1.2040	1.04
K7	1,020,772	7,475,591	6/18/1965	0–25.0	PT	1.2035	1.48
K7A	1,020,510	7,475,560	9/2/1965	0–25.0	BP		1.03
K8B	1,014,864	7,481,350	11/7/1965	0–23.0	PT-120	1.2035	1.18
K8C	1,014,932	7,481,655	10/4/1965	0–23.0	PT	1.2040	1.18
K9	1,014,631	7,461,172	8/23/1966	0–25.0	P-10	1.2000	1.26
K10	1,012,262	7,461,310	9/9/1967	0–25.0	P-10	1.1975	1.32
K10A	1,012,578	7,461,290	11/9/1965	0–23.0	B	1.1990	1.03
K11	1,009,097	7,458,833	10/19/1965	0–4.3	BP	1.2005	1.30
K11A	1,009,356	7,458,772	7/30/1965	0–25.0	BP	1.1990	1.17
K12	1,014,947	7,461,132	11/15/1965	0–25.0	PT		1.10
K13	1,016,921	7,461,172	6/9/1966	–		1.1920	1.18
K14	1,018,551	7,460,504	6/9/1966	–	BP	1.1935	1.03
K14A	1,018,311	7,460,452	8/15/1966	0–23.0	PT-120	1.1960	1.12
K15	1,019,524	7,469,125	7/30/1965	0–25.0	BP	1.2055	1.10
K16	1,010,705	7,453,473	9/30/1965	0–25.0	PT	1.2020	1.24
K17	1,003,115	7,447,319	10/5/1965	0–22.0	PT-50	1.1990	1.37
K18	1,024,728	7,475,692	11/16/1965	0–23.0	PT		0.71
K19	1,022,538	7,475,621	11/16/1965	0–23.0	PT-60		0.64
K20	1,025,326	7,475,621	11/16/1965	0–23.0	PT		0.69
K21	1,027,262	7,475,634	9/2/1965	0–23.0	B		0.67
K22	1,024,985	7,482,526	9/15/1967	0–25.0	B	1.1970	0.72
K23	1,022,944	7,482,518	10/19/1965	0–3.6	BP	1.2020	1.21
K24	1,020,889	7,482,429	7/26/1965	0–23.0	BP	1.1995	1.25
K24A	1,021,199	7,482,503	10/22/1965	0–4.8	BP	1.1970	1.26
K25	1,027,139	7,482,509	8/14/1966	0–23.0	PT-90	1.1940	0.74
K26	995,027	7,455,969	8/6/1967	0–23.0	P-10	1.2035	1.36
K27	988,378	7,453,641	11/8/1965	0–23.0	B	1.2100	1.04
K27A	988,405	7,453,922	10/28/1965	5.5–9.7	BP	1.2005	1.43
K28	979,130	7,454,831	9/30/1965	0–23.0	PT-50	1.2005	1.07
K29	978,860	7,455,100	7/26/1965	0–23.0	BP	1.2095	1.26
K30	964,500	7,444,599	10/7/1966	0–22.0	P-10	1.2060	1.36
K31	962,939	7,445,353	6/30/1965	0–9.5	BP	1.2230	3.28
K32	963,939	7,439,141	8/10/1965	0–23.0	BP	1.1855	0.95
K33	965,742	7,438,629	6/15/1966	0–23.0	BP	1.2060	1.40
K33A	966,064	7,438,629	10/9/1965	15.0–19.4	BP	1.2045	1.23
K34	963,621	7,423,385	9/11/1965	0–23.0	PT-60	1.1990	0.93
K34A	963,601	7,423,162	10/19/1965	0–1.5	BP	1.2095	0.87

Table 7-1. Shallow-Brine Aquifer Sampling by Turk (1969) *(continued)*

Well No.	Eastings	Northings	Date	Depth Interval (ft)	Sampling Method	Specific Gravity	KCl %
K35	963,695	7,421,346	7/27/1965	0–23.0	BP	1.2060	1.28
K36	963,695	7,420,909	11/6/1965	0–23.0	PT-60	1.2080	1.81
K37	963,459	7,418,772	10/11/1966	0–23.0	P-10	1.2095	1.90
K38	974,143	7,426,651	10/11/1966	0–23.0	P-10	1.2060	0.99
K39	982,608	7,437,966	11/10/1965	0–23.0	PT-120	1.2055	1.35
K39A	982,633	7,437,696	10/29/1965	0–23.0	B	1.2070	0.78
K40	982,719	7,435,951	11/10/1965	0–23.0	PT-60	1.2070	1.26
K41	988,959	7,425,422	10/11/1966	0–23.0	P-10	1.1980	2.14
K42	991,700	7,426,716	9/3/1965	0–23.0	BP	1.2065	2.22
K43	994,313	7,427,862	9/3/1965	0–23.0	BP	1.2055	2.02
K43A	994,083	7,427,734	9/3/1965	0–23.0	BP	1.2050	1.85
K44	995,160	7,438,027	9/3/1965	0–23.0	BP	1.2060	2.02
K45	997,308	7,437,814	10/11/1966	0–23.0	P-10	1.2020	1.93
K46	1,010,010	7,445,601	11/5/1965	0–23.0	PT	1.1845	0.77
K47	999,172	7,429,709	11/2/1965	5.5–10.5	BP	1.2070	1.97
K48	939,092	7,409,800	8/6/1967	0–23.0	P-10	1.0990	0.67
K49	940,671	7,411,111	6/1/1966	0–23.0	BP	1.1140	0.69
K50	942,174	7,409,400	8/24/1966	0–23.0	PT	1.2045	1.64
K51	943,715	7,410,883	6/15/1966	0–23.0	BP	1.1715	1.60
K52	947,297	7,421,114	11/8/1965	0–23.0	PT-60	1.2030	0.85
K53	947,587	7,445,048	9/15/1967	0–23.0	P-10	1.1360	0.73
K54	945,787	7,445,723	11/6/1965	0–23.0	PT-60	1.0785	0.64
K55	965,272	7,444,266	7/28/1965	0–23.0	BP	1.2085	1.26
K56	954,139	7,436,134	5/10/1966	0–23.0	B	1.2230	3.52
K56B	953,860	7,436,227	9/15/1965	0–23.0	PT	1.1935	1.76
K57	972,539	7,408,947	10/23/1965	0–4.0	BP	1.2095	2.65
K58	979,590	7,438,848	8/24/1966	0–23.0	PT	1.2010	1.46
K59	954,000	7,417,382	8/16/1965	0–23.0	BP	1.2115	1.00
K60	952,053	7,415,308	8/16/1965	0–23.0	BP	1.2095	0.71
K61	948,662	7,434,882	8/24/1966	0–23.0	PT	1.2235	2.92
K62	944,462	7,421,578	10/7/1965	10.0–15.0	BP	1.2060	1.17
K62A	944,133	7,421,447	10/7/1965	0–23.0	PT	1.2105	1.02
K63	949,842	7,448,000	10/27/1965	5.5–10.5	BP	1.1105	0.69
K63A	950,056	7,447,821	11/22/1965	0–19.0	PT	1.1010	0.61
K64	951,631	7,430,545	11/15/1965	0–19.0	PT-60	—	1.43
K65	1,009,347	7,429,688	8/8/1966	0–19.0	PT-420	1.1355	0.31
K65A	1,009,080	7,429,673	6/24/1966	0–19.0	B	1.1350	0.30
K66	1,007,859	7,416,856	8/10/1966	0–19.0	PT-420	1.1870	0.75
K66A	1,007,538	7,416,760	6/28/1966	0–19.0	BP	1.1915	0.78
K67	973,182	7,399,280	7/3/1966	0–19.0	B	1.1685	0.70
K67A	972,645	7,399,180	7/3/1966	0–19.0	B	1.1710	0.70
K68	934,533	7,398,971	8/16/1966	0–19.0	PT-360	1.1255	1.23
K69	958,717	7,430,910	9/12/1967	0–21.0	PT-240	1.1875	0.73
K69A	957,814	7,430,955	9/13/1967	0–10.2	PT-80	1.1885	0.76
K70	974,455	7,440,995	9/5/1967	0–21.0	PT-420	1.1995	0.86
BR1	1,011,668	7,474,495	7/21/1965	0–5.5	P	1.2035	1.42

Table 7-1. Shallow-Brine Aquifer Sampling by Turk (1969) *(continued)*

Well No.	Eastings	Northings	Date	Depth Interval (ft)	Sampling Method	Specific Gravity	KCl %
BR2	1,001,536	7,464,213	7/21/1965	0–5.5	P	1.2115	1.23
BP3	963,804	7,426,164	7/23/1965	0–5.5	BP	1.2095	0.60

B = Bailed *P = Pumped* *P-10 = Pumped 10 minutes*
BP = Bailed or pumped *PT = Pumping Test*

Table 7-2. Shallow Well Monitoring Data, June 2016 to July 2020

Well Designation	Eastings	Northings	Elevation (top of casing, ft)	KCl % 2016	KCl % 2017	KCl % 2018	KCl % 2019	KCl % 2020
WP-01	1,003,634	7,419,012	4,225	0.56	0.14	0.14	n/a	0.14
WP-02	990,917	7,419,329	4,225	0.16	0.28	0.42	n/a	0.29
WP-03	1,003,107	7,424,842	4,224	0.57	0.60	0.75	n/a	0.74
WP-04	1,003,104	7,424,592	4,224	0.50	0.61	0.69	n/a	0.57
WP-05	1,003,104	7,424,344	4,224	0.72	0.61	0.59	n/a	0.65
WP-07	1,013,890	7,460,902	4,220	0.75	n/a	n/a	n/a	n/a
WP-08	1,016,618	7,461,428	4,220	1.00	0.90	0.94	0.99	1.09
WP-09	979,750	7,430,719	4,218	1.18	1.26	1.43	1.43	1.60
WP-10	979,747	7,430,466	4,219	0.99	0.11	1.03	1.03	1.15
WP-11	979,746	7,430,170	4,218	1.25	1.25	1.26	1.39	1.41
WP-12	979,744	7,429,917	4,218	1.36	1.39	1.41	1.39	1.51
WP-13	983,472	7,440,160	4,218	0.94	0.94	1.05	0.95	1.20
WP-14	966,171	7,447,321	4,218	1.05	0.98	0.96	0.88	n/a
WP-15	970,135	7,440,579	4,218	0.65	0.66	0.79	0.57	0.71
WP-16	970,084	7,440,336	4,217	0.58	0.60	0.67	0.58	0.67
WP-17	967,219	7,417,997	4,221	0.69	0.23	0.14	0.04	0.36
WP-18	967,269	7,418,241	4,220	0.78	0.27	0.14	0.10	0.56
WP-19	966,072	7,407,393	4,222	0.21	0.28	0.26	n/a	0.30
WP-20	947,890	7,429,196	4,220	n/a	0.88	0.83	n/a	0.97
WP-21	948,141	7,429,202	4,220	n/a	0.95	0.80	0.80	0.94
WP-22	952,839	7,426,086	4,221	0.54	0.61	0.68	0.73	1.08
WP-23	959,883	7,411,991	4,221	0.72	0.76	0.68	0.73	0.75
WP-24	959,883	7,411,991	4,221	0.24	0.10	0.10	0.16	0.14
WP-25	942,234	7,407,710	4,223	0.16	0.38	0.40	n/a	0.34
WP-26	948,418	7,402,492	4,222	0.17	0.50	0.40	n/a	0.36
WP-27	978,531	7,446,381	4,216	0.94	1.07	1.01	1.10	1.15
WP-28	997,008	7,444,633	4,225	0.83	0.87	0.00	0.67	0.92

It is believed that most potash dissolved in the shallow-brine aquifer was from the clay underneath the salt crust (Nolan 1927; Turk 1969). The ultimate source of potash was brought to the Bonneville Basin by slow, lateral subsurface water inflow from adjacent sediments during long-term geologic time. Davis (1967) studied the lateral inflow through the periphery of the salt flats and found that fluid gradients there were less than 0.1 ft per mile. Even if the area had a transmissivity of 10,000 gallons per day per foot (gpd/ft), only 1,000 gallons per day per mile (gpd/mile) would have moved through the periphery of the salt flats.

Recharge to the shallow-brine aquifer is largely from local rainfall. Brine levels change seasonally induced by brine production. Turk (1969) found that during the period of 1965–1968, more than a 3-ft variation in brine levels occurred at some point on the salt flats. However, during each winter for which there were records, the brine level recovered to the surface. In drier years, the brine level may not recover completely, but winter precipitation can supply significant additional recharge during wet years. Infiltration capacity tests on the playa surface and hydrographs of observation wells indicate that rainfalls in excess of 0.1 inch during the summer and 0.05 inch during the winter recharge the area of thickest salt crust; only high rainfall will recharge very moist clay surfaces.

7.4 Characterization of Geotechnical Data

No geotechnical data is applicable to support this mining method.

8 SAMPLE PREPARATION

Intrepid-Wendover has internal quality assurance and quality control procedures for sample collection. During the evaporation season, daily brine samples are collected at brine advancement points. Brackish ponds and transfer pumps are sampled weekly. Samples are evaluated at the on-site lab with full analysis capabilities, including X-ray fluorescence (XRF).

9 DATA VERIFICATION

9.1 Data Verification Procedure

The site has been producing for many years. Mining and processing of the brine to successfully marketed products is verification of the deposit data.

9.2 Limitations on Verification

There are no limitations on the verification.

9.3 Adequacy of the Data

It is the opinion of the Qualified Person (QP) that the data is adequate for the determination of resources and reserves. The brines have historically and continue to be mined with plans based on the data.

10 MINERAL PROCESSING AND METALLURGICAL TESTING

Intrepid-Wendover has a long history of processing potash on site. Recovery estimates are based on past plant performance, current performance, and anticipated future performance based on laboratory or metallurgical testing of the anticipated plant feed. Over time, the appropriate capital modifications to the plants have been made to accommodate changes in ore feed and market requirements.

10.1 Adequacy of the Data

It is the opinion of the QP that the data is adequate for the determination of resources and reserves. The deposit has historically and continues to be processed into product that is successfully sold on a commercial scale.

11 Mineral Resource Estimates

This Technical Report Summary provides a mineral resource estimate and classification of resources. Mineral resources that are not mineral reserves do not meet the threshold for reserve modifying factors, such as estimated economic viability, that would allow for conversion to mineral reserves.

11.1 Introduction

According to 17 CFR § 229.1301 (2021), the following definitions of mineral resource categories are included for reference:

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. 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, therefore, may not be converted to a 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. An indicated mineral resource has a lower level of confidence than the level of confidence of a measured mineral resource and may only be converted to a probable mineral reserve. As used in this subpart, the term *adequate geological evidence* means evidence that is sufficient to establish geological and grade or quality continuity with reasonable certainty.

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. As used in this subpart, the term *conclusive geological evidence* means evidence that is sufficient to test and confirm geological and grade or quality continuity.

11.2 Key Assumptions, Parameters, and Methods

The estimating method for potash resources in the shallow-brine aquifer was based on KCl brine concentration, porosity, and aquifer thickness from historical reports. The brine-monitoring data were compiled to form the database that serves as the basis for estimating the resources.

An analysis was conducted to determine the economic cutoff brine grade. The basis of the analysis averaged costs based on statements or earnings provided by Intrepid and the forecasted long-term sale price of $406/t. These values are 25% greater than the product sales price for the reserve estimate. Intrepid has a long history of sales and marketing of their products. Sales are managed for all properties through the corporate office. Intrepid provided the historical demand and sales pricing through their SOE from 2012 to 2020. Forward-looking pricing was provided by Intrepid marketing and the sales price outlook was reviewed in The World Bank Report Pink Sheets (The World Bank 2021).

Table 11-1 lists the production cost, sales revenue, and the calculated cutoff brine grade. The cutoff grade of the brine pumped into the primary pond is estimated to be 0.30 wt% KCl. The brine pumped into the primary pond was assumed to have a grade of 0.82% KCl based on the KCl grade monitored in 27 wells in 2020.

Table 11-1. Resource Analysis to Estimate Cutoff KCl Grade

Cost	
Warehouse and handling costs ($)	1,500,000
Total production costs (excluding depreciation) ($)	12,700,000
Environmental remediation costs ($)	37,000
Cost of goods sold, non-inventory ($)	2,030,000
Byproducts	
$MgCl_2$, MRS, salt and miscellaneous ($)	(6,970,000)
Total Cost ($)	**9,297,000**
Potash	
Price per ton less shipping ($)	356
Production (t)	70,000
Net potash sales ($)	24,920,000
Cutoff Analysis	
Cost per ton ($)	133
Cutoff production (t)	26,000
Average grade pumped into primary pond (% KCl) based on data from 27 wells	0.82
Cutoff grade (% KCl)	**0.30**
Cutoff grade (% K_2O)	**0.19**

11.3 Mineral Resource Estimate

Resources are estimated by shallow- and deep-brine aquifers. Because of the unconventional nature of the deposit, no measured resources are estimated.

11.3.1 Potash Resources in the Shallow-Brine Aquifer

The potash indicated mineral resource in the shallow-brine aquifer was estimated from the difference of the KCl grade monitored from 92 wells during the period 1965–1967 and the current monitoring data with consideration of the cutoff grade derived from cost data sourced from operations data.

The general distribution of KCl in the shallow-aquifer brine during the period 1965–1967 studied by Turk (1969), in which data were mapped based on brine samples collected from 92 monitoring wells, was mapped in Figure 11-1. The data shows that brine quality at each point fluctuates over time, which is likely due to precipitation and evaporation within the Lake Bonneville basin. In order to minimize the number of anomalously low values caused by dilution from antecedent rainfall, only the maximum concentration measured at each well during that period was used in this estimate. The analysis shows that the area controlled by the 92 monitoring wells is 78.8 square miles, and the average KCl grade throughout the 92 monitoring well control area is

1.26%. Although the current ditch system collects brine from most of the 137-square-mile mining area, there is no systematic monitoring of brine quality across the entire area. For estimation of mineral resources, the actual monitoring well catchment area of 78.8 square miles is utilized.

One important parameter to determine potash content of the shallow-brine aquifer is porosity, which is represented as the non-solid fraction of geologic material in an aquifer. The total porosity of the shallow-brine aquifer averages about 0.45 according to numerous wet and dry bulk density measurements by the Utah State Highway Department (Kaiser Aluminum & Chemical Corporation 1974; Turk 1969). Thus, the brine content in the shallow-brine aquifer is estimated to be about 250 billion gallons, based on the ditch catchment area of 137 square miles, thickness of 18 ft, and porosity (0.45) of the aquifer.

According to Turk (1969), the effective porosity of the shallow-brine aquifer averages about 0.1. The brine from effective porosity represents the static free-draining portion of the brine from total porosity prior to extraction. It does not consider the impact of any groundwater recharge or solute transport which increases the amount of extractable brine above the static free-draining component over time. Therefore, the mineral resource is not calculated based on the effective porosity.

The maximum KCl grade in each of the 27 monitoring wells drilled in October 2005 was mapped with the Kriging gridding method with default linear variogram in the software, Surfer, version 15.4.354 (Golden Software, LLC 2018). The maximum KCl grade in each well that was mapped with the Kriging gridding method is shown in Figure 11-2.

The average KCl grade estimated over the 137-square-mile ditch catchment area was 1.32% for the 1965–1967 data. The average KCl grade estimated over the 137-square-mile ditch catchment area was 0.78% for the 2020 data. The calculated difference in brine concentration through the catchment area (Figure 11-3) indicates that after 57 years of mining, the average KCl grade has declined by 0.54%; this is equivalent to 3.644 Mt of KCl depletion over the ditch catchment area using a 60% recovery factor in the ponds.

There is no change in trend of KCl grade to the primary pond or in potash production. Figure 11-4 shows the average brine grade as it was pumped to the primary pond for years 1962 to 2020. The brine grade has held steady at about 0.97% for 58 years without declining. Annual production of KCl from the shallow-brine aquifer varies from year to year. Figure 11-5 shows the

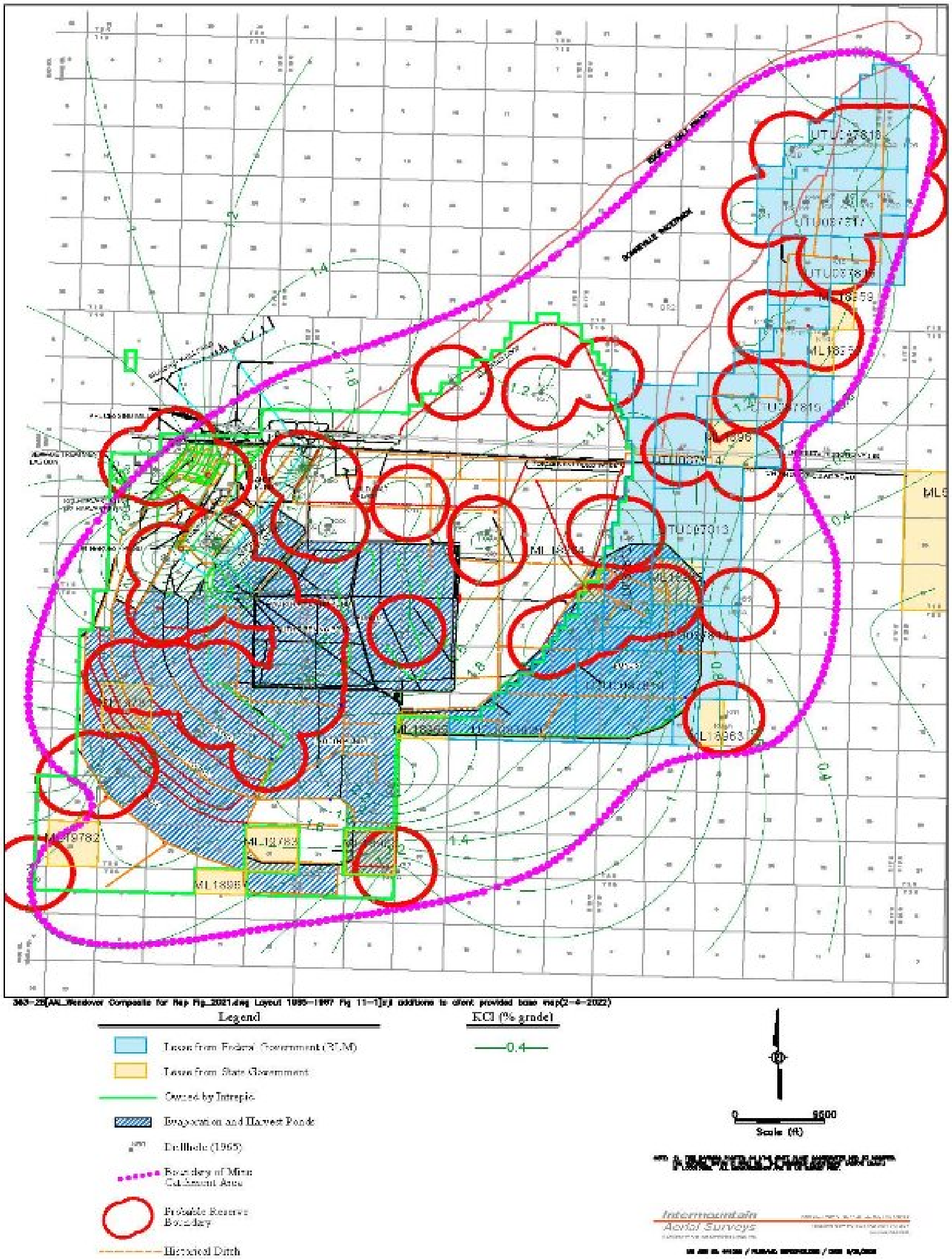


Figure 11-1. Isoconcentration Map of KCl in Shallow-Brine Aquifer 1965–1967

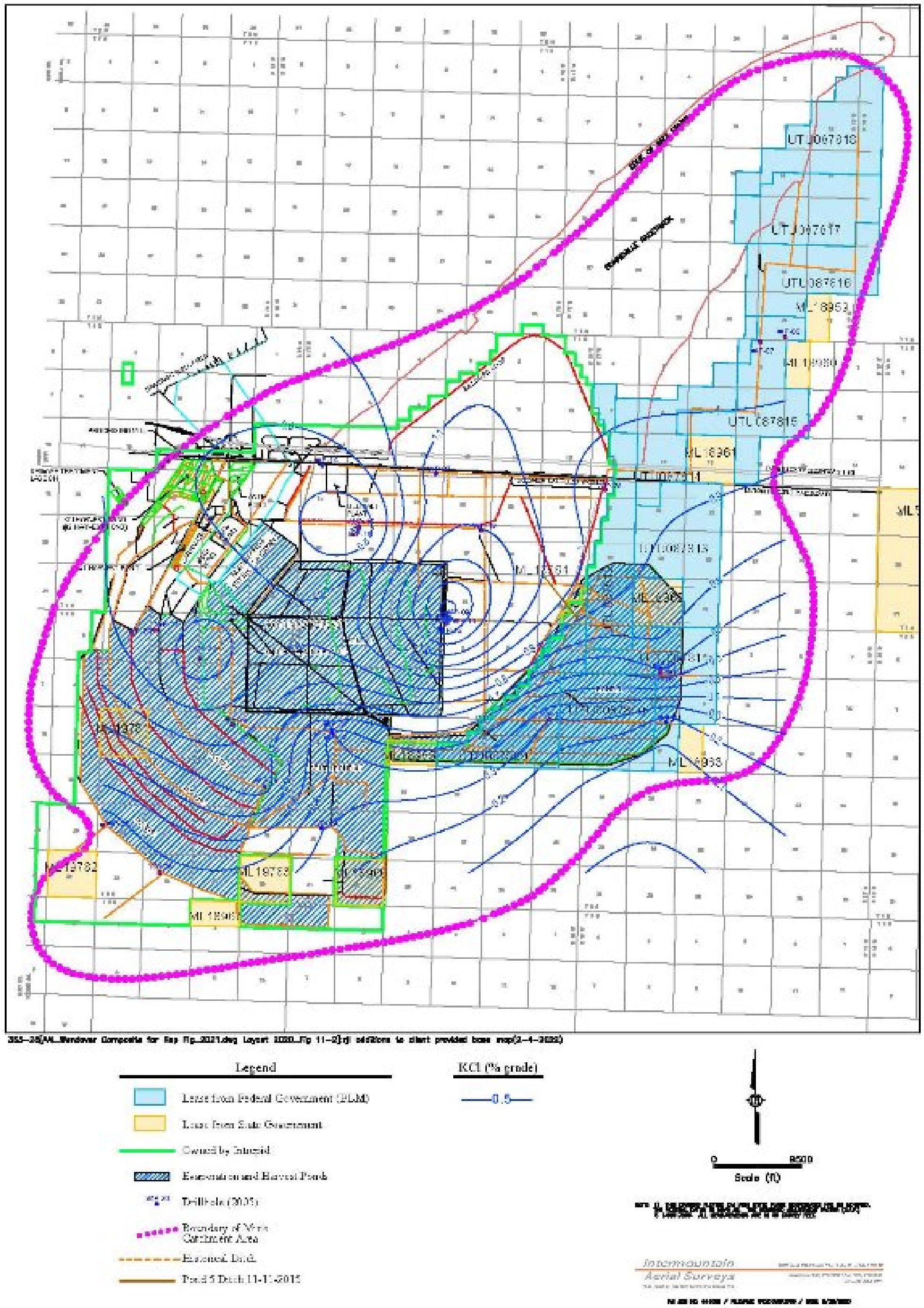


Figure 11-2. Isoconcentration Map of KCl in Shallow-Brine Aquifer 2021

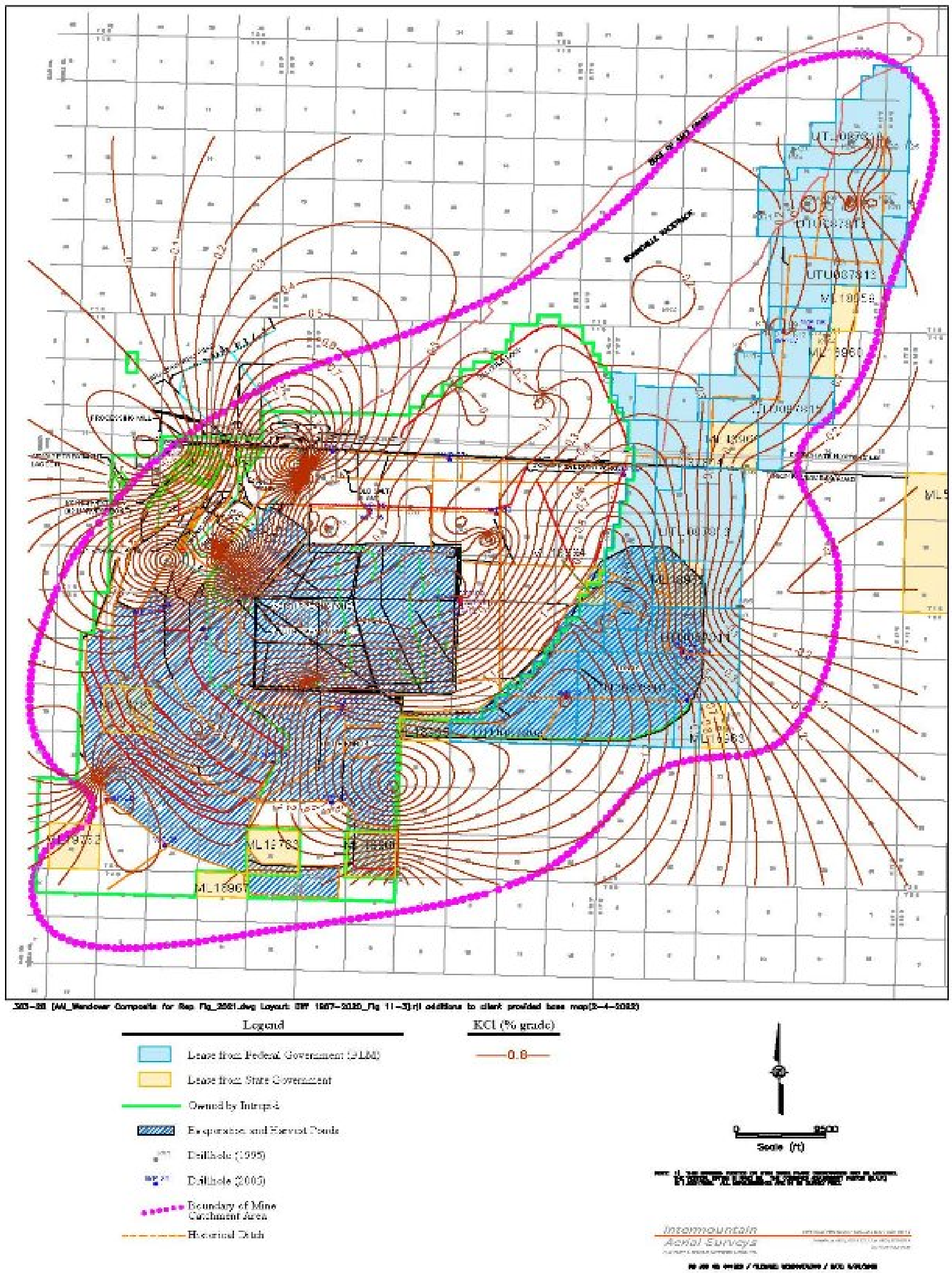


Figure 11-3. Isoconcentration Map of KCl Depletion in Shallow-Brine Aquifer between 1967 and 2021

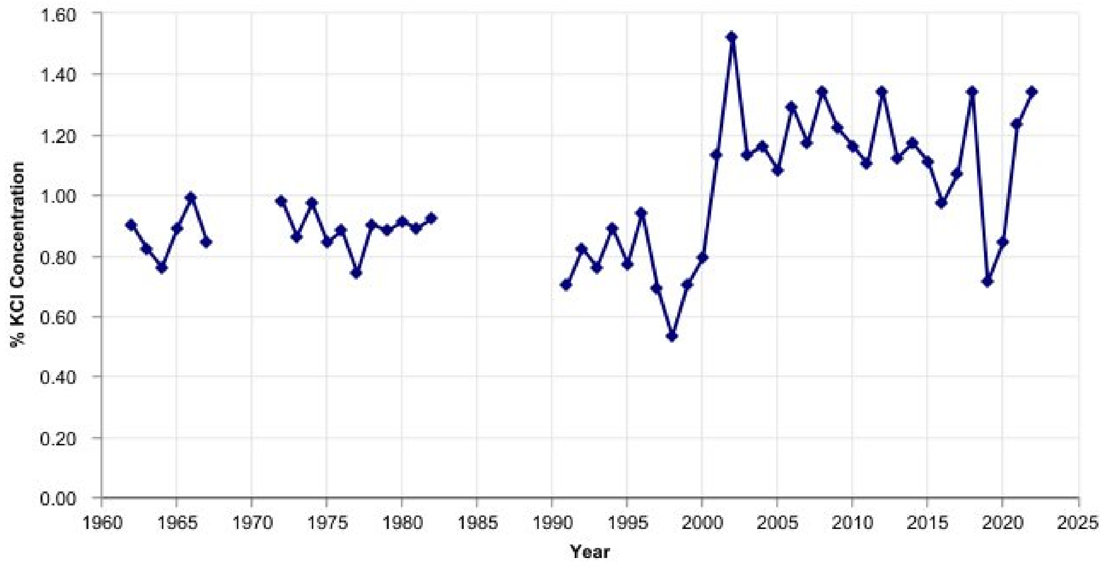


Figure 11-4. Historical Brine Concentration Pumped into Primary Pond

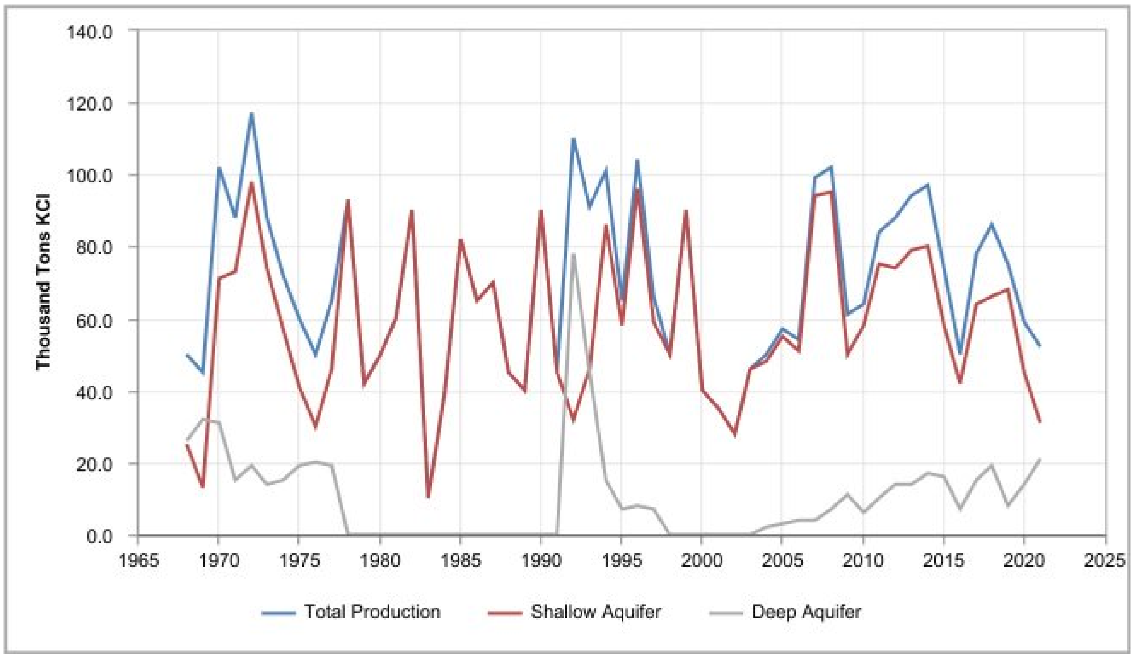


Figure 11-5. Historical KCl Production at Intrepid-Wendover, 1968–2021

KCl production history of the shallow- and deep-brine aquifers between 1968 and 2021. The average yearly production (58,800 t) was close to the median yearly production (57,500 t), indicating that there has been no clear declining trend for KCl production from 1968 to 2021.

Table 11-2 shows the shallow-brine aquifer potash resource estimate and its calculation methodology.

Table 11-2. Shallow-Brine Aquifer KCl Resource Estimate

Parameters	Calculation	Results
92 drillhole control indicated area (ft2) (*A*)		2,152,518,168
92 drillhole control inferred area (ft2) (*Q*)		2,915,597,689
Average thickness (ft) (*B*)		18
Porosity (C)		0.45
Average grade (1967) (% KCl) (*D*)		1.26
Brine density (lb/ft3) (*E*)		72.4
Cutoff grade (% KCl) (*F*)		0.30
Recovery factor (*G*)		60 %
Product purity (*H*)		95 %
Plant efficiency		85 %
Product per year (tpy) (I)		70,000
Resource Calculation (in thousand tons)		
In-place KCl in 1967 (*J*)	*J=A*B*C*D/100*E/2000000*	7,960
KCl depletion from 1967 to 2020 (*K*)		1,981
KCl under cutoff grade (*L*)	*L=(J-K)/D*F*	1,442
Remaining in-place KCl above cutoff grade (*M*)	*M=J-K-L*	4,537
Recoverable KCl (*N*)	N=M*G	2,722
25-year plan		1,550
Indicated resource exclusive of reserve (*O*)	O=M-N	1,815
Inferred resource (*R*)	R= Q*B*C*D/100*E/2000000	10,782

Note that brine quality does fluctuate with time; therefore, both isoconcentration maps in Figures 11-1 and 11-2 must be considered approximations of the actual conditions.

11.3.2 Potash Resources in the Deep-Brine Aquifer

Wells drilled into the deep-brine aquifer have been used to add brine to the collection ditches and to offset the fluctuations of brine availability within the brine collection system. Production of the deep-brine wells started in 1948. Brine from the deep-brine aquifer is typically 10% to 20% of the KCl produced. Annual KCl production from the deep-brine aquifer on one occasion reached as high as 78,000 t. As shown in Table 11-3, approximately 562,000 t of KCl have been produced from the deep-brine aquifer from 1968 to 2021.

Table 11-3. Historical Deep Well and Shallow Aquifer Production, 1968–2021

Full Calendar Year[1]	Wendover KCl Production (kt)	Deep Aquifer KCl Production (kt)	Shallow Aquifer KCl Production (kt)
1968	50.0	25.5	24.5
1969	45.0	32.3	12.7
1970	102.0	31.5	70.6
1971	88.0	15.3	72.7
1972	117.0	18.7	98.3
1973	88.0	14.5	73.6
1974	72.0	15.3	56.7
1975	60.0	18.7	41.3
1976	50.0	19.6	30.5
1977	65.0	18.7	46.3
1978	93.0	0.0	93.0
1979	42.0	0.0	42.0
1980	50.0	0.0	50.0
1981	60.0	0.0	60.0
1982	90.0	0.0	90.0
1983	10.0	0.0	10.0
1984	39.0	0.0	39.0
1985	82.0	0.0	82.0
1986	65.0	0.0	65.0
1987	70.0	0.0	70.0
1988	45.0	0.0	45.0
1989	40.0	0.0	40.0
1990	90.0	0.0	90.0
1991	45.0	0.0	45.0
1992	110.0	78.2	31.8
1993	91.0	45.1	46.0
1994	101.0	15.3	85.7
1995	65.0	6.8	58.2
1996	104.0	7.7	96.4
1997	66.0	6.8	59.2
1998	50.0	0.0	50.0
1999	90.0	0.0	90.0
2000	40.0	0.0	40.0
2001	35.0	0.0	35.0
2002	28.0	0.0	28.0
2003	46.0	0.0	46.0
2004	50.0	2.0	48.0
2005	57.4	2.6	54.8
2006	54.4	3.6	50.8
2007	98.5	4.1	94.4
2008	101.9	7.2	94.7
2009	60.7	11.2	49.5
2010	64.1	6.5	57.6
2011	84.4	9.7	74.6
2012	87.6	14.1	73.5
2013	93.5	14.1	79.3
2014	97.0	16.9	80.1
2015	73.7	16.1	57.5
2016	49.5	7.0	42.5
2017	78.4	14.7	63.7
2018	85.5	19.2	66.2
2019	75.4	7.9	67.6
2020	59.1	14.1	45.0
2021	52.0	21.0	31.0
Total	**3,706.9**	**561.8**	**3,145.2**

The potash resource estimate for the deep-brine aquifer in this report was based on current deep well draw-down, pumping rates, and historical brine concentration variations. The estimated resource for the deep-brine aquifer was classified as indicated resource due to hydrogeologic uncertainty of the aquifer.

Currently four deep wells, DBW-21, DBW-22, DBW-23, and DBW-24 (previously named Test Well 1), are being used at Intrepid-Wendover to aid in brine collection. The location of DBW-22 is close to DBW-13, where an aquifer of 254 vertical feet was encountered. DBW-23 is located near DBW-16 and DBW-10 where transmissivity ranges from 75,000 to 118,000 gpd/ft and the aquifer thickness is 48 ft. The aquifer thickness is approximately 88 ft at DBW-24.

DBW-21 pumped at about 812M gallons per year from 2004 to 2021; DBW-22 pumped at about 663M gallons per year from 2008 to 2021; DBW-23 pumped at about 880M gallons per year from 2009 to 2021; and DBW-24 pumped at about 188M gallons per year from 2013 to 2021. Typically the deep-well brine combines with the shallow-aquifer brine in the main collection ditch leading to the primary pond. The brine concentration produced from all deep wells is about 0.42% KCl by weight from 1967 to 2021.

Typically, the deep-brine wells were constructed to a depth of 1,000 to 1,500 ft with a useful life expectancy of approximately 15–20 years with maintenance of the pumps every 2–4 years. The deep-brine wells that are currently abandoned, out of service, or idle include DBW-1 through DBW-17. Figure 11-6 shows the location of the active and abandoned deep wells. A plot of the inferred conglomerate thickness contour is also shown in Figure 11-6.

Figure 11-7 shows the brine well pump history at DBW-21 and the monitored brine level. Figure 11-8 shows the pump histories for DBW-22, DBW-23, and DBW-24 (TW-1) up to 2015. Reliable draw-down data are not available in these wells. However, relatively constant pump rates indicate no or slow draw-downs in these wells. Since 2016, flows are monitored by monthly totalizer readings for each well. Figure 11-9 shows KCl grade in the deep-brine aquifer from 1967 to 2021. With the exception of some apparently abnormal data, the KCl brine grade from the deep-brine aquifer has remained constant since 1967. However, there is a slight downward trend in the deep-brine aquifer KCl grade beginning in 2007 (Figure 11-10). This could be due to the lifespan of the currently producing wells of 10 or more years. Figure 11-11 shows KCl grades in the four deep-brine wells that have been monitored since pumping commenced. Over the pumping life of these four wells, KCl brine grades have been relatively constant.

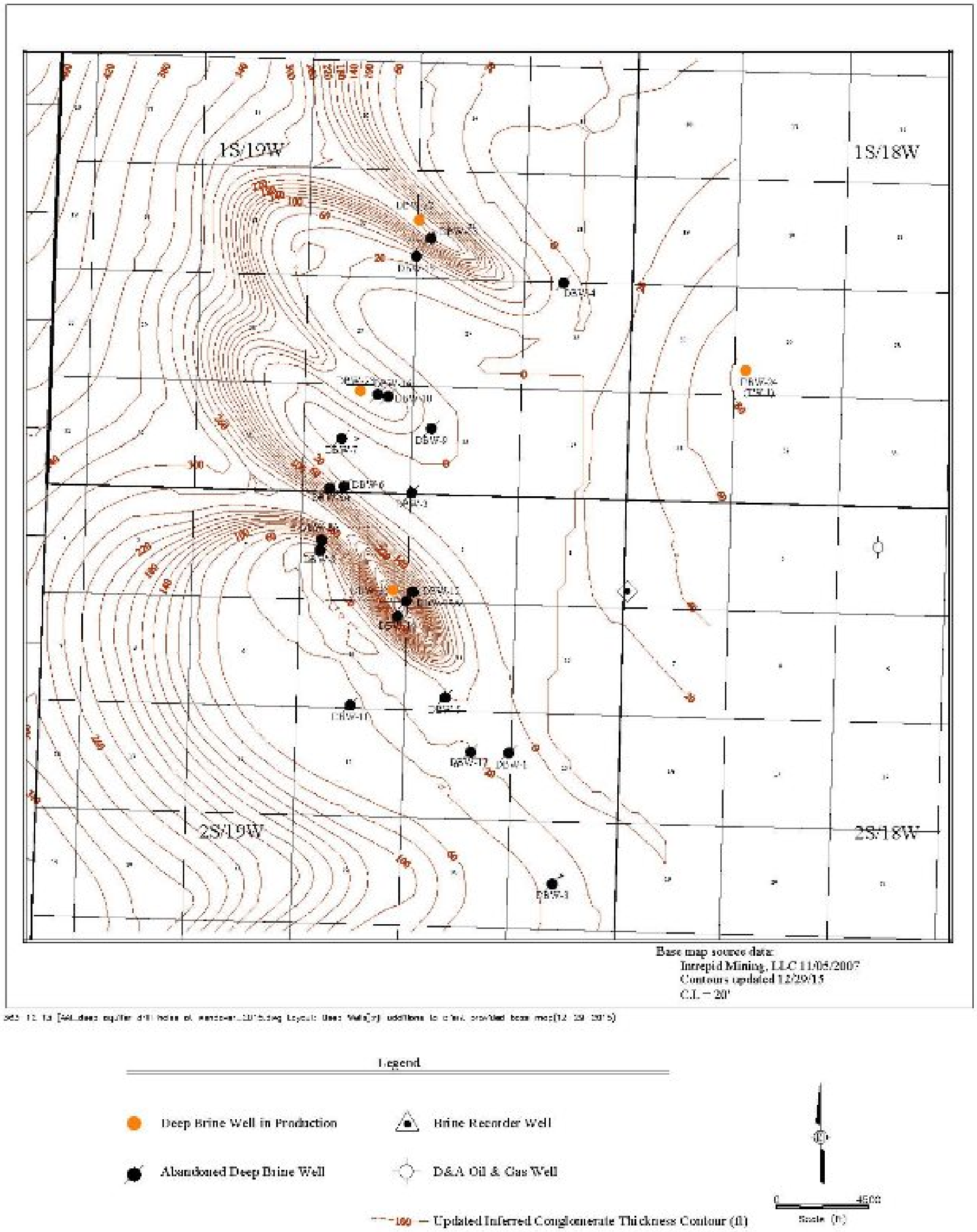


Figure 11-6. Deep-Brine Well Locations Thickness Isopach of Deep-Brine Aquifer

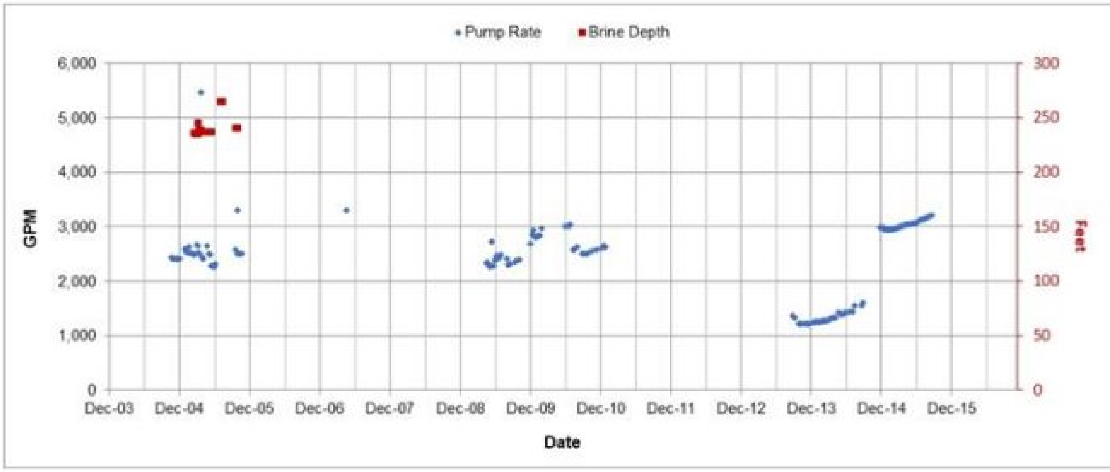


Figure 11-7. DBW-21 Pump History and Water Level Below Surface

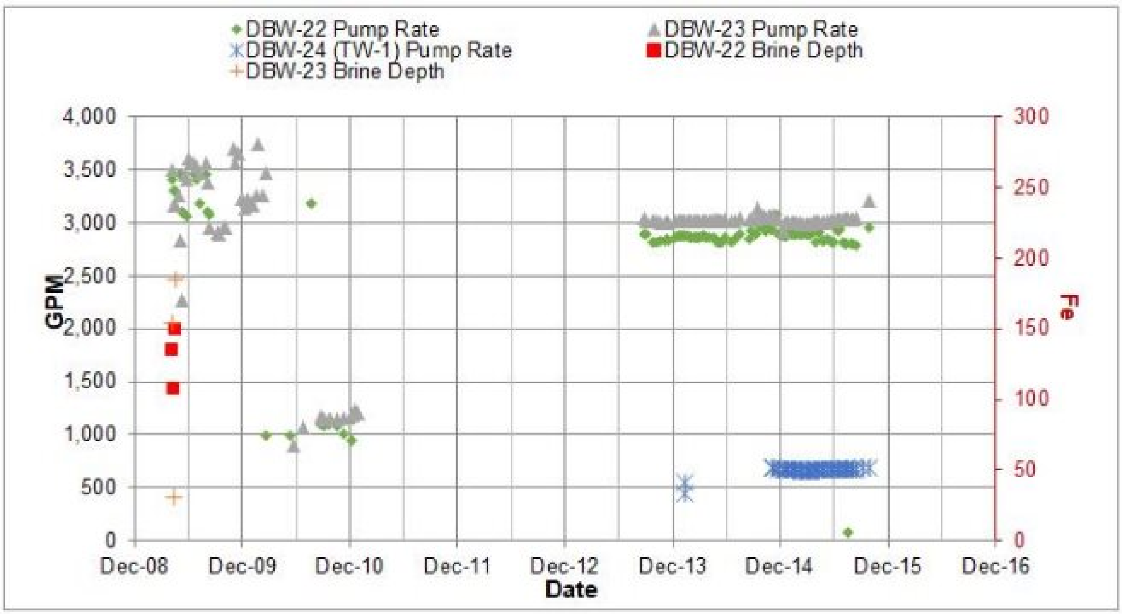


Figure 11-8. DBW-22, DBW-23, and DBW-24 Pump History

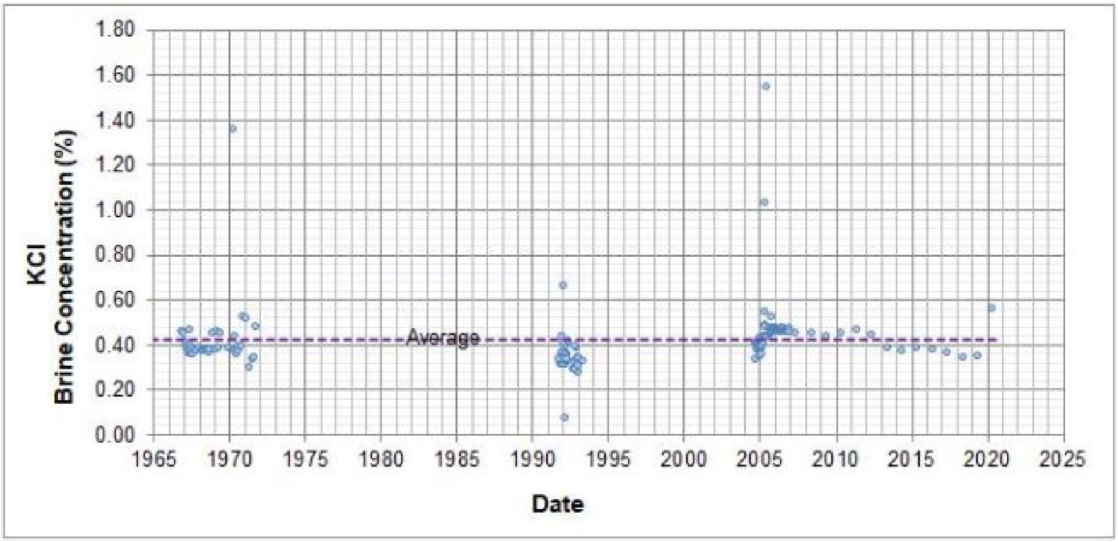


Figure 11-9. Historical KCl Grade at Deep-Brine Aquifer

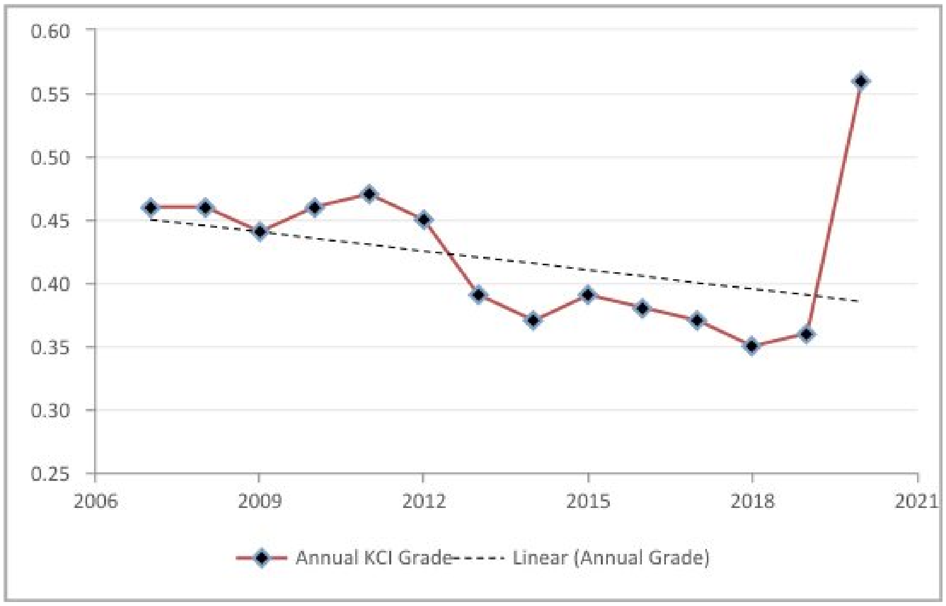
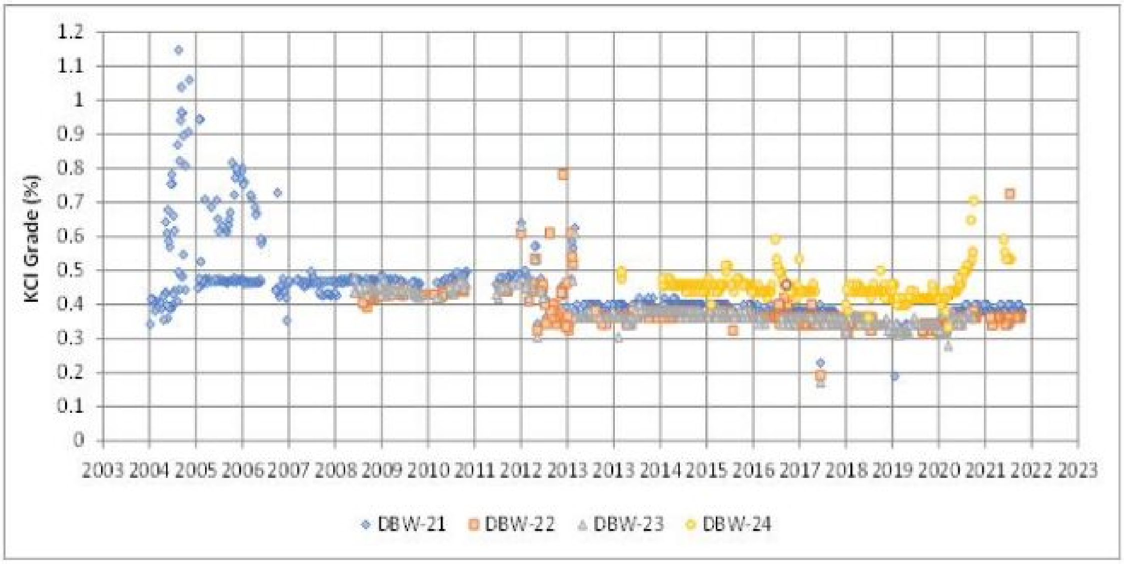


Figure 11-10. Historical KCl Grade at Deep-Brine Aquifer Since 2007



* Three outliers greater than 1.2% grade have been removed from the figure.

Figure 11-11. KCl Grades at DBW-21, DBW-22, DBW-23, and DBW-24

Based on well draw-down, pumping rates, and KCl grade records, the deep-brine aquifer is expected to be relied upon to support production of 8,000 tpy of Muriate of Potash (MOP) for at least 25 years. Higher production rates occurred when deep brines were pumped from multiple wells. When three or four wells are pumping at the same time, the production rate has reached more than 14,000 tpy since 2012 (Table 11-3).

11.4 Qualified Persons Opinion – Further Work

The QP is of the opinion that no further work is needed to determine the resource.

11.5 Resource Statement

Table 11-4 shows the summary of the mineral resources for Intrepid-Wendover effective December 31, 2021, exclusive of mineral reserves.

11.6 Discussion

Historical production data shows that total production for the shallow-brine aquifer from 1968 to 2021 was 3.145 Mt. The isoconcentration maps indicate a resource depletion greater than the recorded production from 1968 to 2021. This may be because the recovery factor of 60% used in the KCl depletion calculation is overestimated. It should be noted that the 27 wells drilled in 2005 are a limited sample of the "resource"; therefore, referring these 27 wells across the 137-square-mile catchment area could generate misleading results. Moreover, the estimation errors of the mining catchment area, the variability of the estimated porosity and thickness of the shallow-brine aquifer, and the KCl grade estimations, etc., could all impact the estimate.

Table 11-4. Sylvinite Brine Mineral Resource Estimate effective December 31, 2021 based on 406 $/Product Ton Mine Site

	Resources				
	Sylvinite Brine[1] (Mt)	Grade (%$K_2$0)	Contained K_2O (Mt)	Cutoff[2] (%K_2O)	Processing Recovery (%)
Measured Mineral Resources					
Indicated Mineral Resources	80.5	0.50	5.0	0.19	85
Measured + Indicated Mineral Resources	80.5	0.50	5.0	0.19	
Inferred Mineral Resources	109.1	0.50	6.8	0.19	85

[1]Sylvinite brine is NaCl and KCl in solution at average concentrations by weight.
[2]Solution mining resource cutoff is grade at which production covers operating costs.
Mineral Resources were prepared by Agapito Associates, Inc., a qualified firm for the estimate and independent of Intrepid Potash.
Mineral Resources are reported exclusive of Mineral Reserves, on a 100% basis.
Mineral Resources are reported using Inverse Distance Squared (ID^2) estimation methods

Mt = million tons, % = percent, K_2O = potassium oxide, ft = feet

12 MINERAL RESERVE ESTIMATES

Mineral Reserves at Intrepid-Wendover have been determined by applying current economic criteria that are valid for the Intrepid-Wendover Mine. These criteria limitations have been applied to the resource model to determine which part of the Measured and Indicated Mineral Resource is economically extractable.

12.1 Key Assumptions, Parameters, and Methods

The factors influencing the determination of the mineable reserves based on economic success of potash mining at Intrepid-Wendover are:

- KCl grade of the aquifer
- Thickness of the aquifer
- Geometry of the aquifer
- Presence of geologic anomalies that distort the aquifer
- Hydrogeological properties of the aquifer
- Impurities that impact solubility or the surface concentration, separation, crystallization, or packaging process
- Cost of Goods Sold
- Price of the final product

These factors can be grouped as geologic, operational, processing, and cost factors. At Intrepid-Wendover, the infrastructure is mature and the processing and cost factors are well understood. Costs are expected to remain constant with respect to the determination of the reserves. Geologic factors relate to the reserve (grade and thickness), bed geometry (dip and undulations), and geologic anomalies (faults, salt horses, and unknowns). Mining factors include the product concentration and the productivity of the wells (life of wells and total production per well). Additionally, reserves are also estimated using the experience gained from potash mining in the shallow- and deep-brine aquifers to date and the established mining costs and sales.

The long-term product sale price selected for this analysis of cutoff grade is $325/t. Intrepid has a long history of sales and marketing of their products. Intrepid provided the historical demand and sales pricing through their SOE's from 2012 to 2020. Forward-looking pricing was provided by Intrepid marketing and the sales price outlook was reviewed in The World Bank Report Pink Sheets (The World Bank 2021).

An economic cutoff has been evaluated for estimating reserves as included in Table 12-1.

Table 12-1. Cutoff Cost Estimate

Cost	
Warehouse and handling costs ($)	1,500,000
Total Production Costs (excluding depreciation) ($)	12,700,000
Environmental remediation costs ($)	37,000
Cost of goods sold, non-inventory ($)	2,030,000
Byproducts	
$MgCl_2$, MRS, salt and miscellaneous ($)	(6,970,000)
Total Cost ($)	***9,297,000***
Potash	
Price per ton less shipping ($)	275
Production (tons)	70,000
Net potash sales ($)	19,250,000
Cutoff Analysis	
Cost per ton ($)	133
Cutoff production (t)	34,000
Average grade pumped into primary pond (% KCl) based on data from 27 wells	0.82
Cutoff grade (% KCl)	0.40
Cutoff grade (% K_2O)	**0.25**

12.2 Mineral Reserves Estimate

The extent to which Intrepid-Wendover's potassium resources can be converted to reserves and ultimately economically extracted is a function of:

- The tonnage of potassium-rich mineralized brine within effective porosity
- The tonnage of potassium-rich mineralized brine within the total porosity
- The level of recharge from surface water inflow and rainfall
- The extent to which the recharge can liberate the potassium-rich mineral salts contained within the retained porosity into effective porosity over continued production cycles

12.2.1 Mineral Reserve Estimates for the Shallow-Brine Aquifer

It should be noted that not all the potash contained in the shallow-brine aquifer with grades above the cutoff grade could be recovered based on the current mining plan. A portion of the brine from total porosity, in addition to the brine from effective porosity, is considered to be extractable depending on the transient groundwater flow and transport conditions affecting the brine level during extraction. For a conservative estimate, an overall recovery factor of 60% was applied to the reserve estimate for the shallow-brine aquifer on a gross scale. The rationale behind this factor is due to the uncertainty of the recovery of KCl leakage from the unlined pond system and ditch plans.

According to the production records from 1990 to 2005, only a portion of the potash in the captured brine was harvested as the final product. The overall efficiency, which is the percentage ratio between KCl produced and estimated KCl pumped into the primary pond (based on the known brine flow to the ponds and the KCl grade of that brine), was 34% on average from 1990 to 2005. The low overall efficiency indicates that a large percentage of the KCl introduced into the evaporation ponds remained in the pond system or leaked back into the shallow-brine aquifer. Portions of the “KCl loss” to the pond system and shallow-brine aquifer could be recovered in subsequent years and ultimately sold as product.

The brine-collection ditch capture zone analysis conducted by Shaw Environmental, Inc. (2006) shows that the capture zone for each ditch appears to range between 250 and 500 ft laterally from the ditch. Outside the ditch catchment zone, groundwater in the shallow-brine aquifer is estimated to flow at a maximum rate of 13 ft/year. The general spacing between ditches is about 2,600 ft, which may require a period of at least 100 years for the ditches to capture all the potash brine between the ditches.

Total KCl content over the reserve area (the area of influence of the 92 monitoring wells or 78.8 square miles) was estimated based on 1965–1967 KCl brine grades, average porosity (0.45), and thickness (18 ft) of the shallow-brine aquifer. KCl depletion of 2 Mt since 1968 over the 92 drillhole control area was estimated using the KCl production from 1968 to 2021 over the 137-square-mile ditch catchment area and applying a product purity of 95% and process efficiency of 85%. The KCl reserve was adjusted to account for the KCl depletion, the KCl tons below the cutoff grade of 0.40%, and an overall recovery factor of 60%. The total MOP reserve for the shallow-brine aquifer is 1.55 Mt.

12.2.2 Mineral Reserve Estimates for the Deep-Brine Aquifer

Based on well draw-down, pumping rates, and KCl grade records, Agapito predicts that the deep-brine aquifer can be relied upon to support production of 8,000 tpy of MOP for over 25 years. The total MOP reserve for the deep-brine aquifer is 0.19 Mt.

12.3 Qualified Persons Opinion – Further Work

The current mineral reserve estimation for the deep-brine aquifer is based on the production history and aquifer grades. Agapito believes that these estimates are conservative and reliable, and no further work is recommended at this time.

12.4 Reserve Summary

Table 12-2 shows the summary of the mineral reserves at Intrepid-Wendover. The mineral reserve statement is presented in accordance with the S-K 1300 New Mining Rules.

Table 12-2. Potash Mineral Reserves effective December 31, 2021 based on 325 $/Product Ton Mine Site

	Sylvinite Brine[1] (Mt)	In-Situ Grade[2] (%K2O)	Product (Mt)	Brine Cutoff Grade[3] (%K2O)	Processing Recovery (%)
Proven Mineral Reserves					
Probable Mineral Reserves	88.5	0.5	1.8	0.3	85
Total Mineral Reserves	88.5	0.5	1.8	0.3	

[1]Sylvinite brine is NaCl and KCl in solution at average concentrations by weight.
[2]In-situ grade is the amount of K_2O contained in the brine.
[3]Solution mining reserve cutoff is the grade at which production covers operating costs.
Mineral Reserves were prepared by Agapito Associates, Inc., a qualified firm for the estimate and independent of Intrepid Potash.
Mineral Reserves are reported exclusive of Mineral Resources, on a 100% basis.
Mineral Reserves are reported based on an overall recovery factor of 60% and a product purity of 95%.
Mt = million tons, % = percent, K_2O = potassium oxide, ft = feet

13 MINING METHODS

Potash at Intrepid-Wendover is produced through solar evaporation of naturally occurring brines collected from the sedimentary basin adjacent to the processing facility via brine collection ditches and extraction wells. The potash content of the collected brine is concentrated by solar evaporation to the point that solids are precipitated and can be collected. Harvested solid salts are hauled to the processing facility, where they are dried, sized, and stored for shipment. Potash, MRS, NaCl, and $MgCl_2$ are shipped by both truck and rail via I-80 and the UPRR.

Brines from the shallow-brine aquifer, drained by gravity, are gathered by a system of collection ditches, which are approximately 20 to 30 ft deep by 9 to 40 ft wide. The total collection ditch system covers a length of 117 miles and annually collects 3.4 billion gallons of brine from the shallow-brine aquifer. Brines pumped from the deep-brine aquifer are used to augment the shallow brine to the collection system.

Collected brines are pumped into a primary pond, and solar energy is utilized to heat the ponded brine so that evaporation may proceed. As the brine is concentrated to a point just short of potash precipitation in the primary pond, the brine is then transferred into a harvest pond for selective precipitation of the potash crude salt.

As water evaporation continues in the harvest pond, sylvinite, a physical mixture of NaCl and KCl, is precipitated to the pond floor until the brine concentrates to a point where carnallite and other salts start to precipitate. The extra brine is then removed from the harvest pond and transferred to carnallite ponds. The layer of sylvinite salts at the harvest pond floor is mechanically removed with scrapers and hauled to the flotation mill for beneficiation.

Grinding and flotation processes are used to concentrate KCl. The concentrate is then leached with freshwater to remove most of the remaining NaCl. The leached product is filtered and dried. A part of the dried product is compacted to produce a coarse grade of potash. $MgCl_2$ brine, MRS, and salt are retrieved as by-products.

13.1 Relevant Hydrogeology

Groundwater occurs in three distinct aquifers in much of the western Great Salt Lake Desert: (1) the deep-brine aquifer, (2) the alluvial-fan aquifer, and (3) the shallow-brine aquifer. Inferred subsurface stratigraphic relationships are shown diagrammatically in Figure 13-1.

The most extensive aquifer, the deep-brine aquifer, yields brine to wells on the BSF from conglomerate in the lower part of the basin fill. The deep-brine aquifer consists of as much as 840 ft of conglomerate confined by an upper few hundred feet of relatively impermeable, lacustrine deposits. Thus, hydraulic connection between the aquifer and playa surfaces is poor (Lines 1979). Aquifer tests indicate that the transmissivity of the deep-brine aquifer in the area of the potash operation averages 13,000 ft^2/day and the storage coefficient is about 4×10^{-4}. Pumping tests indicate the deep-brine aquifer is a quasi-infinite reservoir. The amount of recharge to the deep-brine aquifer cannot be determined from available data. Discharge is mainly from the wells. Concentration of KCl in the deep-brine aquifer ranges from 0.36% to 0.47%, and $MgCl_2$ from 0.43% to 0.69%. Composition of the brine is relatively constant throughout the aquifer.

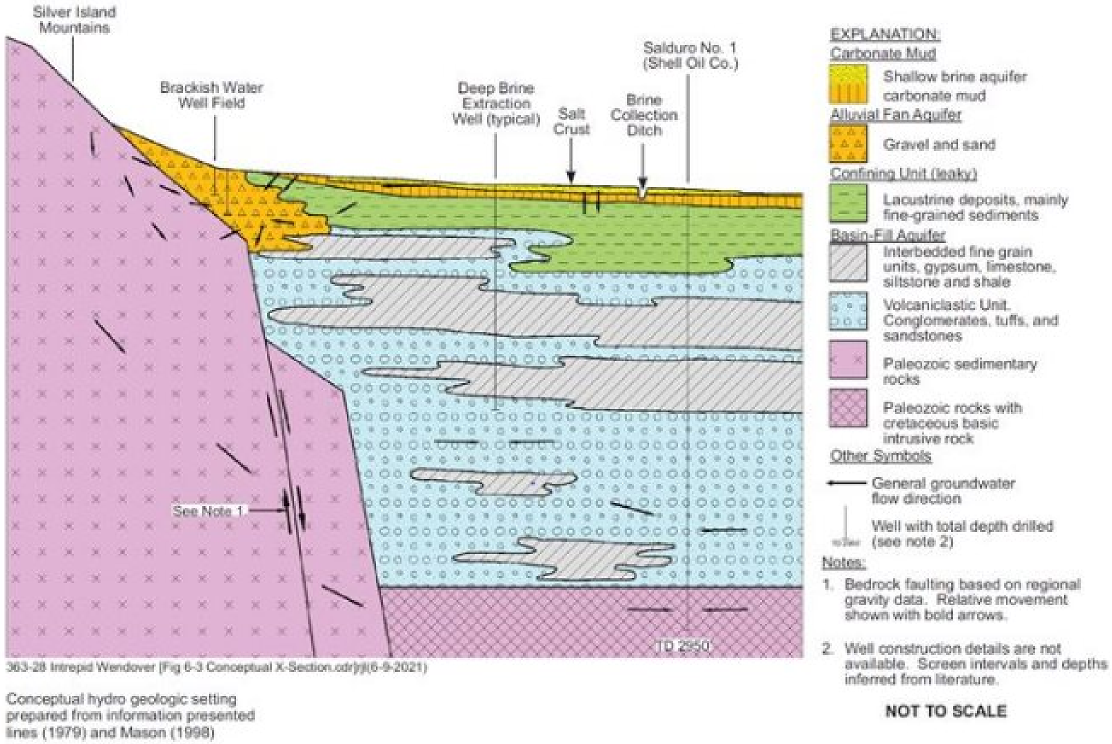


Figure 13-1. Intrepid-Wendover Hydrogeologic Setting (after Lines 1979 and Mason 1998)

The alluvial-fan aquifer is composed of sand and gravel alluvial fans along the flanks of the Silver Island Mountains and the Pilot Range. The alluvial fans are interbedded with fine-grained lacustrine deposits which act as confining layers to the alluvial-fan aquifer. The degree of hydraulic connection between the deep-brine aquifer and the alluvial-fan aquifer is unknown. The degree of connection likely varies, as it is dependent on the continuity between the sand and gravel of the alluvial fans and the conglomerates in the basin fill (Lines 1979). No economic mineable potash is contained in the alluvial-fan aquifer.

The shallow-brine aquifer consists of both the near-surface carbonate muds and the crystalline halite and gypsum deposits on the surface of the playas. The shallow-brine aquifer yields brine to collection ditches and is the main source of KCl for Intrepid's potash operation on the BSF. Sand and gravel of the alluvial fans are interbedded with the near-surface carbonate muds of the playas, and hydraulic connection is good. The average thickness of the shallow-brine aquifer is reported to be about 18 ft (Turk 1969; Shaw Environmental, Inc. 2006).

It is believed that most potash dissolved in the shallow-brine aquifer was from the clay underneath the salt crust (Nolan 1927; Turk 1969). The ultimate source of potash was brought to the Bonneville Basin by slow, lateral subsurface water inflow from adjacent sediments during long-term geologic time. Davis (1967) studied the lateral inflow through the periphery of the salt flats and found that fluid gradients there were less than 0.1 ft per mile. Even if the area had a transmissivity of 10,000 gpd/ft, only 1,000 gpd/mile would have moved through the periphery of the salt flats. Thus, the amount of lateral inflow is insignificant compared with the brine extraction rates.

Recharge to the shallow-brine aquifer is largely from local rainfall. Brine levels change seasonally and are influenced by brine production. Turk (1969) found that during the period of 1965–1968, more than a 3-ft variation in brine levels occurred throughout the salt flats. However, during each winter for which there were records, the brine level recovered to the surface. In drier years, the brine level may not recover completely, but winter precipitation can supply significant additional recharge during wet years. Infiltration capacity tests on the playa surface and hydrographs of observation wells indicate that rainfall in excess of 0.1 inch during the summer and 0.05 inch during the winter recharge the area of thickest salt crust; only high rainfall will recharge very moist clay surfaces. Turk (1969) examined daily rainfall records in the salt flats from 1966 to 1967 and found that the rainfall available for recharge averages about 2.3 inches per year, roughly half of the total precipitation. A simple water budget study from the period 1990–2006 can verify that rainfall recharge is sufficient for the shallow-brine aquifer to remain at a constant brine level. Average annual rainfall during this period was 4.75 inches; therefore, rechargeable rainfall in the mining area is estimated at more than 7.5 billion gallons. Pumping records for that period show that the annual brine extracted from the shallow-brine aquifer was about 3.4 billion gallons, 55% less than rainfall recharge.

13.2 Production Rates, Expected Mine Life, and Mining Dilution and Recovery Factors

Since 1968, approximately 67,000 t of KCl, 31,000 t of NaCl, and 156,000 t of $MgCl_2$ were produced each year. The life expectancy is greater than 25 years. The final mine outline is shown in Figure 13-2.

13.3 Equipment Fleet and Personnel Required

The predominant equipment to move the salt from the evaporation ponds to processing plant are scrapers. Personnel requirements are minimal (56 personnel) when compared to conventional mining.

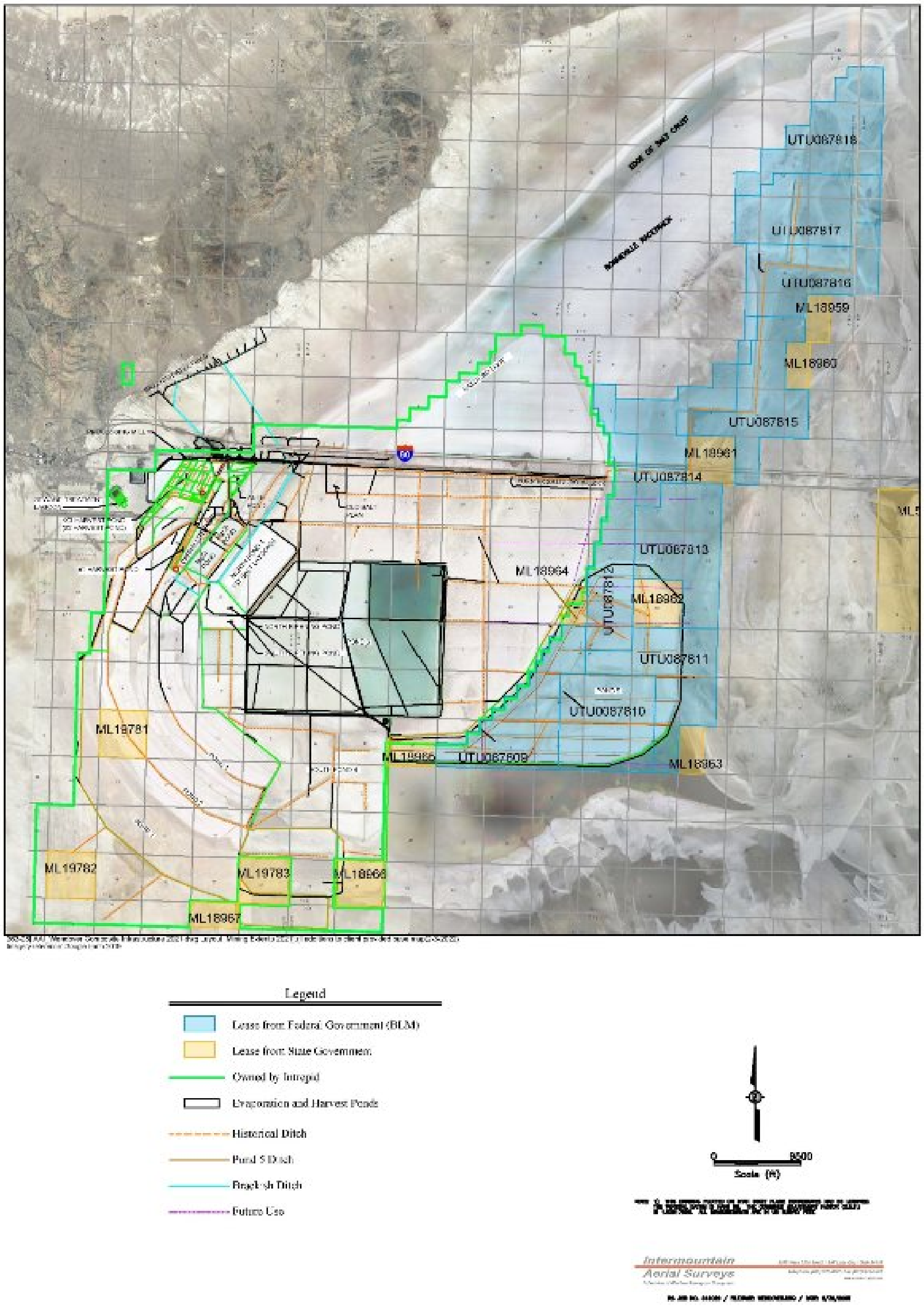


Figure 13-2. Final Mine Outline

14 PROCESSING AND RECOVERY METHODS

The potash content of the collected brine is concentrated by solar evaporation to the point that solids are precipitated and can be collected. Harvested solid salts are hauled to the potash processing facility, where they are dried, sized, and stored for shipment as potash, MRS, and NaCl. $MgCl_2$-rich brines are transferred to the $MgCl_2$ ponds and processed in the Carnallite Plant.

14.1 Process Description

The Intrepid-Wendover potash plant processes a nominal 5 billion gallons per year of deep-well and near-surface brines. The combined brines are estimated to contain 0.8–0.9 wt% KCl, 18 wt% NaCl, 4.2 wt% $MgCl_2$ and all brines are near-saturated with gypsum ($CaSO_4$) at 0.5–0.6 wt%. The simplified process flow chart is shown in Figure 14-1.

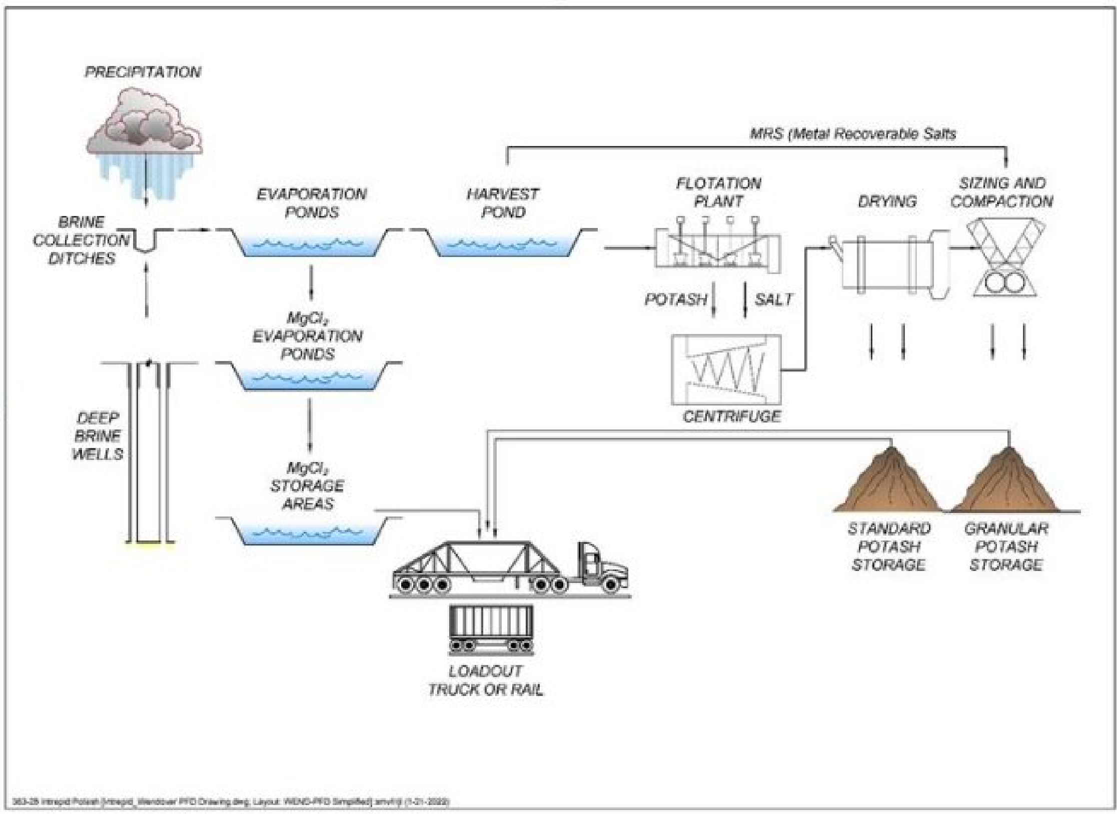


Figure 14-1. Simplified Process Flow Chart

The first step in processing is the solar evaporation in the pond system (Figure 14-2). The Intrepid-Wendover operation production is weather-dependent, most specifically rainfall. Anecdotally a wet winter increases potash production but produces diluted $MgCl_2$, which limits production of Road Saver brine. The annual rainfall ranges from 2.8 inches to 10.4 inches with an average of 5.4 inches. Low rainfall levels result in a drop in the lake brine level and result in low flows of brine

Pond operation is challenging. Pond 6 for example is large, providing 7,800 acres for evaporation. Initially when flooded with weak brine, the large pond area allows rapid concentration of the weak brine. Once concentration is reached, the challenge is to not over-concentrate. The operators manage the concentration of KCl by controlling the path of the brine through Pond 6 and therefore, reducing evaporation time.

The plant data and mass balance vary with the weather, but clearly the pond berms are very permeable, and 65–70% of the KCl pumped into Pond 6 returns to the lake via leakage. With a mill recovery of 80%, it is estimated that only 20% of the KCl entering Pond 6 is recovered as final product. Leakage becomes more costly as the brine concentrates. The downstream ponds have clay berms, and Harvest 2 has a liner.

As brine advances towards the Harvest ponds, KCl and $MgCl_2$ concentrations increase, while NaCl is being salted out primarily by $MgCl_2$. Initially halite and gypsum precipitate. By the time the brine has reached the Harvest ponds, the $MgCl_2$ concentration has increased to 5.5%, KCl has climbed to 4.5%, and NaCl has fallen to 6.4%. During preliminary evaporation, almost 3.5 Mt of halite have been removed from the brine. In the Harvest ponds, KCl falls to 3%, NaCl to 1.5%, and $MgCl_2$ rises to 21%. Approximately 265,000 t of crystal are harvested at 28% KCl. The harvesting is conducted for 10 months of the year and 5 days per week, which matches the mill operating schedule.

The brine leaving the Harvest ponds is delivered to the Carnallite ponds. The brine concentrates to about 26% $MgCl_2$, which results in the co-crystallization of halite and carnallite ($MgCl_2$•KCl•$6H_2O$). The crystal production is near 180,000 tpy, including 38,000 tpy of contained KCl. The KCl is separated from the $MgCl_2$ by leaching with a near KCl-saturated combination of mill brine and brackish water. The KCl/NaCl crystal is separated by screening and is either dissolved and returned to the Harvest pond area or is used to create an excavation bed for the next Harvest season. The brine from the Carnallite dissolution step is recycled to the Carnallite ponds. The $MgCl_2$ brine leaving the Carnallite ponds is either returned to the lake via ditch or is forwarded to the $MgCl_2$ ponds to be further concentrated by evaporation and is shipped by truck or rail car loads.

The harvested crystal is delivered to an agitated slurry pit where it is re-pulped in double-saturated brine and pumped to the processing facility. The crystals are statically screened with the oversize processed through a crusher. The screened crystal is combined with reagents and fed to flotation cells.

The rougher flotation concentrate is sent to the agitated leach tank. The leached solids are at a product grade of 95.5% KCl with 60.5% K_2O. The solids are dried, sampled, and conveyed to storage bins prior to the granulation circuit. Dried product is granulated and sent to the final product storage. The product is shipped to market in trucks or rail cars. Typical KCl production is 50,000 to 80,000 tpy.

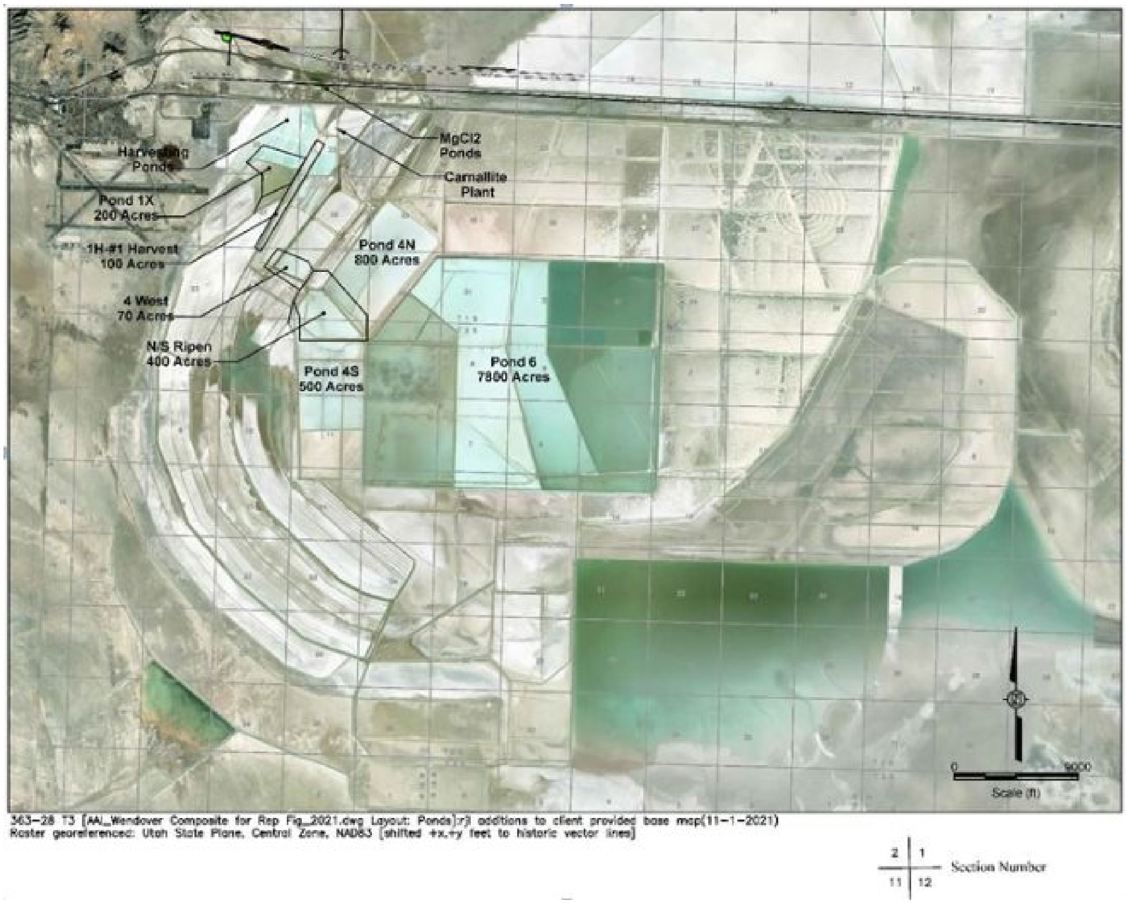


Figure 14-2. Solar Evaporation Pond Layout

14.2 Energy, Water, Process Materials, and Personnel Requirements

Brackish water consumption is estimated at 3.5 billion gallons per year. Solar plants typically have low energy requirement. Process materials are readily available within the greater Salt Lake City area, and personnel are sourced locally and trained as needed.

15 INFRASTRUCTURE

A robust set of infrastructure is in place for Intrepid-Wendover. Natural gas, electricity, and water have historically been readily available and are expected to continue into the future. The layout of the infrastructure is shown in Figure 15-1.

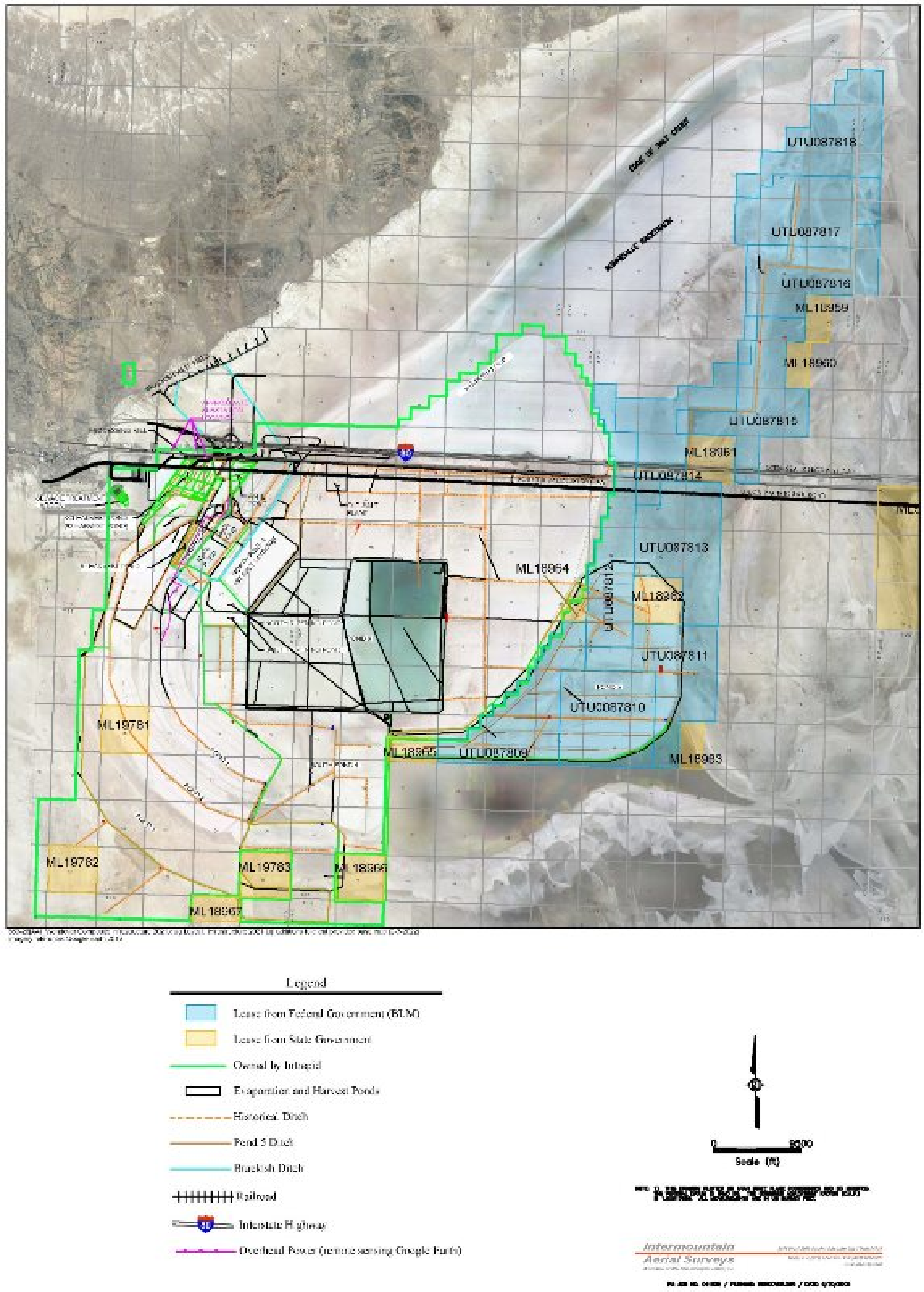


Figure 15-1. Layout of the Infrastructure

16 MARKET STUDIES

Potash (MOP) is primarily used as a fertilizer, but approximately 5% of annual North American production is consumed by the chemical industry; hence, potash is also an “industrial mineral.” Future pricing is difficult to predict and can fluctuate dramatically depending on the world market. Intrepid does not conduct market studies to set the sales price.

16.1 Markets for the Property’s Production

The markets for Intrepid-Wendover property’s production are established as witnessed by the historical sales.

17 ENVIRONMENTAL STUDIES, PERMITTING, AND PLANS

17.1 Environmental Studies

An Environmental Assessment for the Intrepid Potash-Wendover Mine and Reclamation Plan Modification was conducted by the BLM (2012).

17.2 Waste and Tailings Disposal, Site Monitoring, and Water Management during and after Mine Closure

In a voluntary effort to enhance the salt crust on the BSF, Intrepid-Wendover participates in a salt laydown project by pumping brine north of I-80. There is no tailings disposal on site. Surface and groundwater monitoring follows a state approved plan.

17.3 Permitting Status and Reclamation Bonds

The permitting status and reclamation bond are listed in Table 17-1.

17.4 Agreements with Local Individuals

There are no specific agreements in place with local individuals.

17.5 Closure Plans

Closure activities include the requirements of filled ditches, removing berms, facility removal, resurveying public lands, and plugging wells.

17.6 Adequacy of Current Plans and Compliance

Intrepid-Wendover is in operation and in adherence with the local, state, and federal regulations.

Table 17-1. Permits and Bonds

Common Name	Issuer	Permit ID	Effective Date	Expiration Date	Bond Value	Note
Air Permit	Utah Division of Air Quality	Approval Order #: DAQE-AN107420014-19	22-Jul-19	None		
Storm Water Pollution Prevention Plan	Utah Division of Water Quality	General Permit No.: UTR000000	1-Dec-12	31-Dec-17		Permit renews annually with payment of annual fee
Spill Response Plan	Self-Issued	Spill Response Plan	23-Feb-10	Next Review due March 2025		
Fugitive Dust Control Plan	Utah Division of Air Quality	Fugitive Dust Control Plan	29-Jun-15	None		
Solid and Hazardous Waste Management Plan	Self-Issued		Dec-12	None		*[Not a permit, IPW is a Very Small Quantity Generator]*
Mine and Reclamation Plan	Utah Division of Oil Gas and Mining	Notice of Intentions to Revise Mining Operations, File No.: M-0450002	11-Dec-14	Next Review due in 2024	$8,904,000	
XRF license	Utah Division of Waste Management and Radiation Control	X-Ray Registration No. 3084	31-Dec-21	Division to inspect every 5 years		

18 CAPITAL AND OPERATING COSTS

18.1 Capital Cost Estimate

The only major capital project proposed for the future is the subdivision of Pond 6 into three smaller ponds with clay-sealed berms, keyed into the bottom clay layer. The cost of this project is estimated at $2M and will offer two primary benefits of greater control over the evaporative area and reduced seepage of brine which would minimize rehandling. This is not a required capital expense and therefore has not been included in the economic analysis.

18.2 Operating Cost Estimate

The operating cost at Intrepid-Wendover is estimated to be $133/t as shown in Table 18-1. The largest operating cost is labor at 52% of the annual operating cost. Natural gas, electricity, and fuel represents less than 15% of the total operating cost.

Table 18-1. Operating Cost Estimate

	Unit Cost per Ton	Percent of Total
Labor with Benefits	$69	52.0 %
Maintenance	$2	1.5 %
Energy and Fuels	$22	16.5 %
Operating Supplies	$27	20.0 %
Other	$13	10.0 %
Operating Cost	$133	100.0 %

18.3 Accuracy Discussion

Estimates are based on actual statements of cost.

19 ECONOMIC ANALYSIS

To evaluate the viability of mining the Intrepid-Wendover mines reserves, an economic analysis was conducted. Annual revenue and production cost schedules were used to build a projected cash flow to accompany the mine plan. The costs and sales price parameters were assumed to be in constant US dollars.

19.1 Key Assumptions, Parameters, and Methods

The property has a long history of operation at this location. The assumption list for the economic analysis is shown in Table 19-1.

Table 19-1. Economic Analysis Assumptions

Parameter	Assumption
Potash Sale Price (mine site)	$325/t
Shipping Potash	50/t
Potash Production Target	70,000 tpy
Interest Rate	0–12% APR
Income Taxes (State and Federal)	40%
Severance Tax	2.60%

19.2 Economic Analysis

For a property in operation, the economic viability has been established. The pre-tax cash flow was developed using the production plan continuing as currently operating in Table 19-2. The cash flow after tax is shown in Table 19-3. The NPV over the period of the detailed mine plan was calculated for an array of interest rates. This NPV analysis is included in Tables 19-4 and 19-5 for pre- and after-tax, respectively. For a property in operation, the Internal Rate of Return (IRR) and payback period are only necessary for major capital expansions.

19.3 Sensitivity Analysis

NPV sensitivity analyses were run using variants in commodity price and operating costs for the pre-tax cash flow. The results of the sensitivity analysis are shown graphically for pre-tax and after-tax evaluations in Figures 19-1 and 19-2, respectively.

19.4 Discussion

The property has consistently operated at a profit and is expected to continue to operate at a profit.

Table 19-2. Estimated Pre-Tax Cash Flow

		2022–2026	2027–2031	2032–2036	2037–2041	2042–2046
MOP	Production (MOP -000 tons/year)	70.0	70.0	70.0	70.0	70.0
	Sale Price MOP ($/product ton/year)	$325	$325	$325	$325	$325
	Shipping ($/product ton/year)	$50	$50	$50	$50	$50
	Net Sale Price/year	$275	$275	$275	$275	$275
REVENUE ($-million/year)		**$19.3**	**$19.3**	**$19.3**	**$19.3**	**$19.3**
EXPENSES						
	Major Capital					
	Cost of Goods Sold					
	MOP cost per ton of product	$9.31	$9.31	$9.31	$9.31	$9.31
	Income before Taxes	$9.94	$9.94	$9.94	$9.94	$9.94
	Cash Flow (Pre-Tax)	$9.94	$9.94	$9.94	$9.94	$9.94

Table 19-3. Estimated After-Tax Cash Flow

		2022–2026	2027–2031	2032–2036	2037–2041	2042–2046
MOP	Production (MOP -000 Tons/year)	70.0	70.0	70.0	70.0	70.0
	Sale Price MOP ($/product ton/year)	$325	$325	$325	$325	$325
	Shipping ($/product ton/year)	$50	$50	$50	$50	$50
	Net Sale Price/year	$275	$275	$275	$275	$275
REVENUE ($-million/year)		**$ 19.3**	**$ 19.3**	**$ 19.3**	**$ 19.3**	**$ 19.3**
EXPENSES						
	Major Capital					
	Cost of Goods Sold					
	MOP cost per ton of product	$9.31	$9.31	$9.31	$9.31	$9.31
	Income before Taxes	$9.94	$9.94	$9.94	$9.94	$9.94
	Depletion	$2.70	$2.70	$2.70	$2.70	$2.70
	Taxable Income	$7.25	$7.25	$7.25	$7.25	$7.25
	Fed and State	$2.90	$2.90	$2.90	$2.90	$2.90
	Severance Tax	$0.50	$0.50	$0.50	$0.50	$0.50
	Cash Flow (After-Tax)	$6.54	$6.54	$6.54	$6.54	$6.54

Table 19-4. NPV Pre-Tax Estimate

Interest Rate (% APR)	NPV ($M)
0	$249
5	$147
8	$115
10	$99
12	$87

Table 19-5. NPV After-Tax Estimate

Interest Rate (% APR)	NPV ($M)
0	$164
5	$97
8	$75
10	$65
12	$57

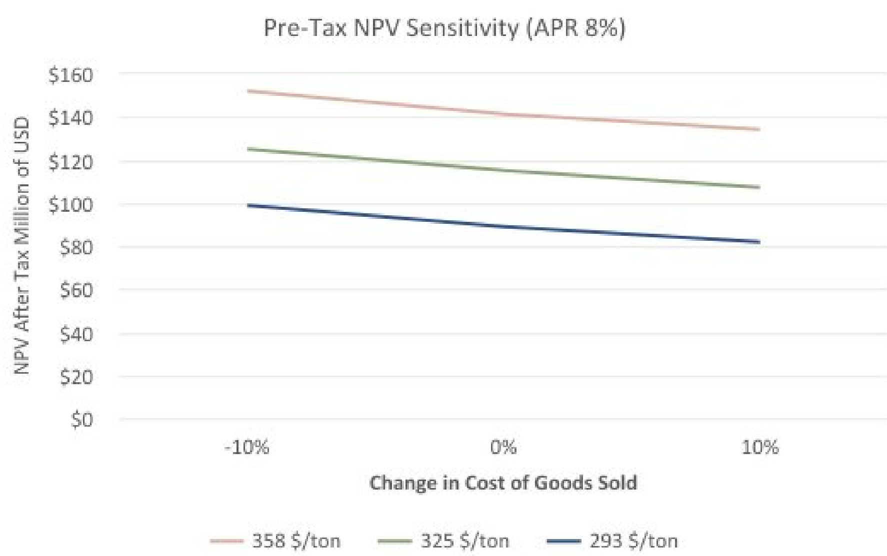


Figure 19-1. Pre-Tax NPV Sensitivity to Price and Costs (APR 8%)

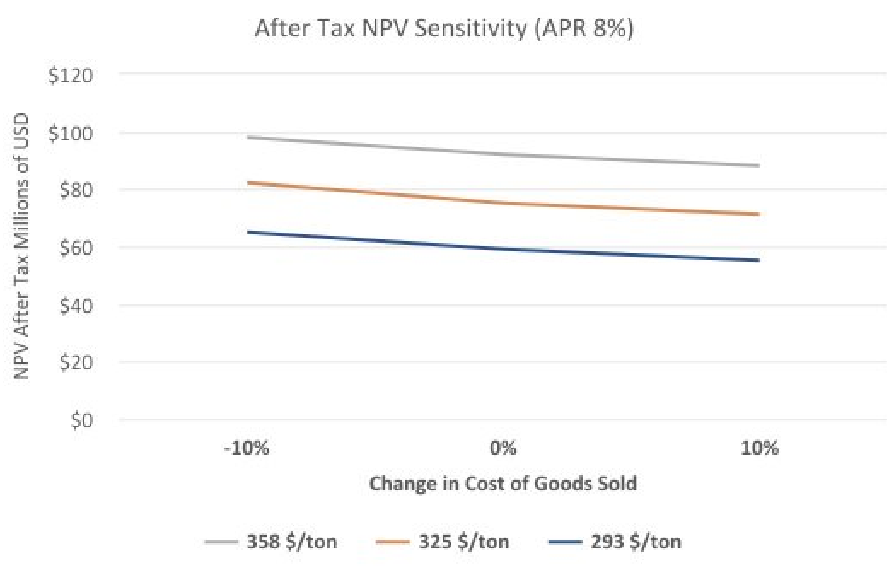


Figure 19-2. After-Tax NPV Sensitivity to Price and Costs (APR 8%)

20 ADJACENT PROPERTIES

Adjacent properties are not applicable at Intrepid-Wendover.

21 Other Relevant Data and Information

No additional information is provided.

22 INTERPRETATION AND CONCLUSIONS

Estimates are dependent on data obtained from the natural environment. Although the mine has been in operation for many years, factors such as extended drought or natural disasters could influence the estimates. The general spacing between collection ditches is about 2,600 ft, which may require a period of at least 100 years for the ditches to capture all the potash brine between the ditches. A future mining plan with optimized ditch spacing could affect the recovery factor and reserve estimation.

23 RECOMMENDATIONS

No further work is recommended.

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25 RELIANCE ON INFORMATION

The QP's have relied on information provided by Intrepid and Intrepid-Wendover.