Exhibit 96.1

SEC Technical Report Summary
2024 S-K 1300 TRS Update
Mountain Pass Mine
San Bernardino County, California

Effective Date: October 1, 2024
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Report Prepared for

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SRK Project Number: USPR002030

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List of Abbreviations

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

The following abbreviations may be used in this report.

Abbreviation	Unit or Term
A	ampere
AA	atomic absorption
A/m^2	amperes per square meter
amsl	meters above mean sea level
ANFO	ammonium nitrate fuel oil
AP	Action Plan
°C	degrees Centigrade
CCD	counter-current decantation
CIL	carbon-in-leach
cm	centimeter
cm^2	square centimeter
cm^3	cubic centimeter
cfm	cubic feet per minute
CHP	combined heat and power plant
COG	cut-off grade
ConfC	confidence code
CRec	core recovery
CSS	closed-side setting
CTW	calculated true width
CUP	Conditional Use Permit
°	degree (degrees)
dia.	diameter
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
FA	fire assay
Factor of Safety	FoS
ft	foot (feet)
ft^2	square foot (feet)
ft^3	cubic foot (feet)
g	gram
gal	gallon
g/L	gram per liter
g-mol	gram-mole
gpm	gallons per minute
g/t	grams per metric tonne
ha	hectares
HDPE	Height Density Polyethylene
hp	horsepower
HREE	heavy rare earth elements
HRSG	heat recovery steam generators
HTW	horizontal true width
ICP	inductively coupled plasma
ID2	inverse-distance squared
ID3	inverse-distance cubed
IFC	International Finance Corporation
ILS	Intermediate Leach Solution
kA	kiloamperes
kg	kilograms

Abbreviation	Unit or Term
km	kilometer
km^2	square kilometer
koz	thousand troy ounce
kt	thousand tonnes
kt/d	thousand tonnes per day
kt/y	thousand tonnes per year
kV	kilovolt
kW	kilowatt
kWh	kilowatt-hour
kWh/t	kilowatt-hour per metric tonne
L	liter
L/sec	liters per second
L/sec/m	liters per second per meter
lb	pound
LLDDP	Linear Low Density Polyethylene Plastic
LOI	Loss on Ignition
LoM	life-of-mine
LREE	light rare earth elements
LUS	Land Use Services
m	meter
m^2	square meter
m^3	cubic meter
mg/L	milligrams/liter
mL	milliliter
mm	millimeter
mm^2	square millimeter
mm^3	cubic millimeter
MME	Mine & Mill Engineering
Moz	million troy ounces
Million short tons	million short tons
mtw	measured true width
MW	million watts
m.y.	million years
NGO	non-governmental organization
NTU	nephelometric turbidity unit
oz	troy ounce
%	percent
PLC	Programmable Logic Controller
PLS	Pregnant Leach Solution
PMF	probable maximum flood
ppb	parts per billion
ppm	parts per million
QA/QC	Quality Assurance/Quality Control
RC	rotary circulation drilling
RCRA	Resource Conservation and Recovery Act
REE	rare earth elements
REO	rare earth oxide
RF	Revenue Factor
RO	reverse osmosis
RoM	Run-of-Mine
RQD	Rock Quality Designation
SEC	U.S. Securities & Exchange Commission
sec	second
SG	specific gravity
SLS	spent leach solution
SPT	standard penetration testing
st	short ton (2,000 pounds)
SX	solvent extraction
SXD	solvent extraction didymium

Abbreviation	Unit or Term
SXH	solvent extraction heavies
SXI	solvent extraction impurities
t	tonne (metric tonne) (2,204.6 pounds)
t/h	tonnes per hour
t/d	tonnes per day
t/y	tonnes per year
TEM	technical economic model
TREO	total rare earth oxide
TSF	tailings storage facility
TSP	total suspended particulates
TVR	thermal vapor recompression
µm	micron or microns
V	volts
VFD	variable frequency drive
W	watt
XRD	x-ray diffraction
y	year
yd^3	cubic yard

1 Executive Summary

This report was prepared as a pre-feasibility level Technical Report Summary in accordance with the Securities and Exchange Commission ("SEC") S-K regulations (Title 17, Part 229, Items 601 and 1300 until 1305) for MP Materials Corp. ("MP Materials") by SRK Consulting (U.S.), Inc. ("SRK") on the Mountain Pass Mine ("Mountain Pass").

Sections of this report pertaining to the rare earth element (REE) separations facility at Mountain Pass were authored by SGS North America Inc ("SGS"). Portions of this report pertaining to products and markets, including long term price forecast for REE products, were authored by Adamas Intelligence Inc. ("Adamas").

1.1 Property Description and Ownership

Mountain Pass is located in San Bernardino County, California, north of and adjacent to Interstate-15 (I-15), approximately 15 miles (mi) southwest of the California-Nevada state line and 30 mi northeast of Baker, California, at geographic coordinates 35°28'56"N latitude and 115°31'54"W longitude. This area is part of the historic Clark Mining District established in 1865. Mountain Pass is the only rare earth deposit identified within this district. The Project lies within portions of Sections 11, 12, 13, and 14 of Township 16 North, Range 14 East, San Bernardino Base and Meridian.

Mining claims and surface rights associated with the Project include:

- Patented claims with surface rights owned by MP Mine Operations ("MPMO") and mineral rights held by Secure Natural Resource ("SNR")
- Unpatented lode and mineral claims held by SNR
- Surface ownership by MPMO and mineral rights controlled by the State of California
- Surface ownership by MPMO and mineral rights controlled by the U.S.

MP Mine Operations ("MPMO") and Secure Natural Resource ("SNR") are wholly owned subsidiaries of MP Materials.

The rare earth mineralization at the Project is located within land either owned or leased by MP Materials.

1.2 Geology and Mineralization

The Mountain Pass deposit is a rare-earth-element-enriched carbonatite deposit, historically referred to as the Sulfide Queen orebody. The carbonatite and numerous other alkaline intrusives in the vicinity are hosted in Proterozoic gneissic rocks which have been altered through alkali metasomatism (fenitized) by the intrusive carbonatite dikes. Smaller dikes and breccia bodies surround the Sulfide Queen orebody which comprises several different types of carbonatite (sovite, beforsite, dolosolvite, and white sovite) that are interlayered within a relatively large carbonatite package. This deposit is unique in terms of size of the concession, and globally significant in terms of its enrichment in rare-earth minerals.

The southern part of the Sulfide Queen orebody strikes to the south-southeast and dips at 40° to the west-southwest; the northern part of the orebody strikes to the north-northeast and dips at some 40° to the west-north-west. Several post-mineralization faults result in slight offsets to the otherwise simple tabular/lensoid geometry. The total orebody strike length is approximately 2,750 feet (ft) and dip extent is 3,000 ft; true thickness of the more than 2.0% total rare earth oxide (TREO) grade zone ranges between 15 ft and 250 ft.

The main rare-earth-bearing mineral, bastnaesite, is present in all carbonatite subtypes, but in relatively lower concentrations in the breccias and the monazitic carbonatites, which typically occur outside and proximal to the main orebody. Monazite and crocidolite ("blue ore" found on the hanging-wall contact in the northern part of the orebody) are both considered deleterious in the processing plant. In some areas, post-mineral fault zones provide a conduit for water which results in localized hydration and oxidation of the fresh carbonatite. This weathering dissolves the calcite and dolomite gangue minerals, leaving behind elevated concentrations of bastnaesite with limonite, resulting in what is referred to as brown and black ore types, the most altered of which results in a loosely consolidated high grade bastnaesite sand. The altered ore types are mined, stockpiled separately, and blended to maintain target ore grades in the mill feed blend.

1.3 Status of Exploration, Development and Operations

The Mountain Pass mine is an active operating mine. The primary mineral of economic interest is bastnaesite. MP Materials mines ore from the open pit, transports the ore to a primary crushing/stockpile facility and transports the ore to the mill. At the mill, the crushed material is ground further with a ball mill to create a slurry for downstream processing in the flotation plant to separate the bastnaesite from the gangue minerals. The primary product of the flotation process is a bastnaesite concentrate, which is filtered and then transported to customers for sale or consumed into a collocated REE separations facility. MP Materials recommissioned the REE separations facility at Mountain Pass to produce four saleable REE products: praseodymium and neodymium (PrNd) oxide, samarium, europium, and gadolinium (SEG+) precipitate, lanthanum (La) carbonate, and cerium (Ce) chloride. As the REE separations facility continues to ramp up, it is expected that increasing quantities of bastnaesite concentrate will be processed on-site to produce the saleable REE products.

1.4 Mineral Processing and Metallurgical Testing

1.4.1 Existing Crushing and Concentrating Operations

MP Materials mines ore from the open pit, transports the ore to a primary crushing/stockpile facility and then transports the crushed ore to the flotation concentrator. At the concentrator, the crushed ore is ground in a ball mill operated in closed circuit with cyclones and then advanced to the flotation circuit to separate bastnaesite from the gangue minerals. The primary product of the flotation process is a bastnaesite concentrate, which is thickened and filtered and then transported to customers for sale or fed to the on-site separations facility. MP Materials has undertaken extensive metallurgical studies to evaluate TREO recovery versus ore grade and in addition has evaluated ore sorting as a method for upgrading lower grade ore prior to milling as a method for increasing mineral reserves and improving overall metallurgical performance.

1.4.2 Rare Earths Separations

MP Materials is currently ramping up separation facility operations to increase production of four marketable rare earth products (PrNd oxide, SEG+ precipitate, La carbonate, and Ce chloride). The specifications for the four products are shown in Table 1-1, with further discussion on the product specification provided in Section 14.5.

Table 1-1: Product Specifications

Product	Compound	w/w % TREO	Purity
PrNd Oxide	75% Nd_2O_3 + 25% Pr_6O_{11} (+/-2%)	99	99.5%+ PrNd/TREO
SEG+ Precipitate	-	25 to 45	99% SEG+/TREO
Lanthanum Carbonate	$La_2(CO_3)_3$	99	99% La/TREO
Cerium Chloride	$CeCl_3$	45	85% Ce/TREO

Source: MP Materials, 2024
w/w % is the weight concentration of the material.

The work effort to develop the design criteria for the separation facility is briefly described below and is detailed in Section 10.5. Unit operations for the separation facility are described below.

Concentrate Drying and Roasting

Concentrate drying and roasting was practiced at Mountain Pass commencing in the mid 1960's. Tonnage quantity roasting test work to confirm optimum operating parameters was conducted at Hazen Research. Studies involving the definition of specific leaching conditions were conducted at SGS Lakefield and at Mountain Pass facilities. These studies served to elucidate optimum operational conditions. Of major importance was the adjustment of roasting parameters such that leaching dissolved trivalent rare earths and left the majority of the cerium undissolved.

Leaching

Optimization studies to specify the most appropriate leaching parameters were conducted at several external laboratories and at MP Materials Cerium 96 leaching facility. MP Materials upgraded a small-scale onsite leaching pilot facility which provided superior temperature control so as to define the optimum leach facility operating conditions. The leaching operations produced an undissolved cerium concentrate and solubilized trivalent rare earths plus dissolved impurities.

Impurity Removal

Soluble impurities in the leach solution include iron, aluminum, uranium, calcium, magnesium, and other minor quantities of dissolved elements. The MP Materials solvent extraction system used for this duty has been successfully operated for a number of years.

SXH and SXD

The solvent extraction heavies (SXH) circuit makes a bulk separation of heavy rare earths and the solvent extraction didymium (SXD) circuit separates a PrNd stream. These circuits have been piloted and have been demonstrated to function as designed.

Brine Recovery, Treatment, Crystallizing

MP Materials has conducted several rounds of pilot studies taking appropriate mixtures of brine from previously operated facilities and solvent extraction (SX) pilot plant investigations to produce a representative brine. Past experience coupled with recent modeling work indicate that the system has sufficient capacity to handle anticipated feed volumetric changes.

Conclusions

As with any extensive process modification effort, all possible contingencies may not be anticipated. However, based upon the project documentation provided, 2023 and 2024 site visits to the MP Materials installations at Mountain Pass, and conversations with MP Materials engineers who are directly involved with the ongoing ramp up operations, it is the opinion of SGS North America Inc. (SGS) that the Mountain Pass modification and modernization project has been performed in a professional manner.

1.5 Mineral Resource Estimate

Mineral Resources are reported in accordance with the S-K regulations (Title 17, Part 229, Items 601 and 1300 until 1305). Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no certainty that all or any part of the Mineral Resource will be converted into Mineral Reserves. The Mineral Resource modeling and reporting was completed by SRK Consulting (U.S.) Inc.

The mineral resource estimate has been constrained within the 2024 geological model considering relevant rock types, structure, and mineralization envelopes as defined by TREO content within relevant geological features. This geological model is informed principally by diamond core drilling and multiple phases of geological mapping. Three-dimensional (3D) and sectional interpretation is based on the combination of these data and utilized in the Mountain Pass geological model which forms the basis for the mineral resource domaining.

The mineral resources at the Mountain Pass deposit have been classified in accordance with the S-K 1300 regulations and definitions. SRK has addressed uncertainty and risk at Mountain Pass through the application of classification categories. The classification parameters are defined by a combination of geological understanding, quality of drilling and analytical data, the average distance to composited drilling data, the number of drillholes used to inform block grades, and a geostatistical indicator of relative estimation quality (kriging efficiency). Bulk density is based on average density measurements collected from the various rock types, and carbonatite density in particular is supported by extensive mining and processing reconciliation data. The in situ mineral resources at Mountain Pass are classified into Indicated and Inferred mineral resources.

The mineral resources at Mountain Pass demonstrate reasonable prospects for economic extraction through the application of a cut-off grade (COG) and volumetric constraint within the economic pit shell. SRK has calculated a resources COG of 2.35% TREO based on engineering and economic assumptions as outlined in this TRS. For mineral resources, a revenue factor of 1.0 is selected which corresponds to a break-even economic pit shell. SRK notes that the pit selected for mineral resources has been influenced by setbacks relative to critical infrastructure such as the tailing storage and the rare earth oxide (REO) concentrator.

The September 30, 2024, mineral resource statement is shown in Table 1-2.

Table 1-2: Mineral Resource Statement Exclusive of Mineral Reserves for the Mountain Pass Rare Earth Project, September 30, 2024

Category	Resource Type	Cut-Off TREO%	Mass (million sh. ton)	Average Value (%)					
				TREO(1)	La_2O_3(2)	CeO_2	Pr_6O_{11}	Nd_2O_3	Sm_2O_3
Indicated	Within the Reserve Pit	2.35	0.73	2.43	0.79	1.21	0.10	0.29	0.022
	Within the Resource Pit	2.35	3.62	3.97	1.29	1.98	0.17	0.48	0.036
Total Indicated		**2.35**	**4.35**	**3.71**	**1.21**	**1.85**	**0.16**	**0.45**	**0.033**
Inferred	Within the Reserve Pit	2.35	6.89	5.78	1.89	2.89	0.25	0.70	0.050
	Within the Resource Pit	2.35	6.50	3.76	1.23	1.88	0.16	0.46	0.034
Total Inferred		**2.35**	**13.39**	**4.79**	**1.56**	**2.39**	**0.21**	**0.58**	**0.043**

Source: SRK 2024
(1): TREO% represents the total of individually assayed light rare earth oxides on a 99.7% basis of total contained TREO, based on the historical site analyses.
(2): Percentage of individual light rare earth oxides are based on the average ratios; La_2O_3 is calculated at a ratio of 32.6% grade of TREO% equivalent estimated grade, CeO_2 is calculated at a ratio of 49.9% of TREO% equivalent estimated grade, Pr_6O_{11} is calculated at a ratio of 4.3% of TREO% equivalent estimated grade, Nd_2O_3 is calculated at a ratio of 12.1% of TREO% equivalent estimated grade, and Sm_2O_3 is calculated at a ratio of 0.90% of TREO% equivalent estimated grade. The sum of light rare earths averages 99.7%; the additional 0.3% cannot be accounted for based on the analyses available to date and has been discounted from this resource statement.
General Notes:

- Mineral Resources are reported exclusive of Mineral Reserves at a COG of 2.35% TREO.
- Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no certainty that all or any part of the Mineral Resources estimated will be converted into Mineral Reserves.
- Mineral Resource tonnage and contained metal have been rounded to reflect the accuracy of the estimate, any apparent errors are insignificant.
- The Mineral Resource model has been depleted for historical and forecast mining based on the September 30, 2024, pit topography.
- Overall pit slope angles of 39° to 45° including ramps, were used in pit optimization.
- Pit optimization is based on the following prices: Rare Earth Mineral Concentrate US$11.73 per kilogram (kg), PrNd Oxide US$143.55/kg, SEG+ Precipitate US$55.45/kg, La Carbonate US$1.66/kg and Ce Chloride US$2.96/kg.
- Pit optimization is based on concentrator recovery that varies based on the grade of the ore fed to the concentrator. The average REO distribution in the concentrate is PrNd (15.7%), SEG+ (1.8%), Lanthanum (32.3%) and Cerium (50.2%). Overall recoveries at the onsite separations plant as applied to concentrate containing on average 60% TREO) are: PrNd Oxide (89.7%), SEG+ Precipitate (97.9%), La Carbonate (75.0%) and Ce Chloride (11.5%).
- Pit optimization is based on the following costs: mining cost at the pit exit of US$1.50 per dst mined plus US$0.050 per dst mined for each 15 ft bench above or below the pit exit, sorted ore rehandling (US$2.55 per dst of sorted ore mined); non-sorted ore rehandling (US$2.17 per dst of non-sorted ore mined), crushing (US$3.66 per dst of ore crushed); ore sorting (US1.80 per dst ore fed to ore sorters), concentrating (US$50.05 per dst of ore fed to concentrator), general and administrative (US$28.82 per dst of ore fed to the concentrator), separations (includes a fixed annual cost and a variable cost of US$1080.59 per ST of concentrate processed on site), finished product shipping (US$146.92 per dst shipped) and sustaining capital (US$33.23 per dst of ore fed to the concentrator).
- The mineral resource statement reported herein only includes the rare earth elements cerium, lanthanum, neodymium, praseodymium, and samarium (often referred to as light rare earths). While other rare earth elements, often referred to as heavy rare earths, are present in the deposit, they are not accounted for in this estimate due to historical data limitations (see Section 9.1.5 for details).

1.6 Mineral Reserve Estimate

SRK developed a life-of-mine (LoM) plan for the Mountain Pass operation in support of mineral reserves. MP Materials is ramping up the on-site separations facility at Mountain Pass that allows the Company to separate bastnaesite concentrate into four individual REO products for sale (PrNd oxide, SEG+ precipitate, La carbonate, and Ce chloride). For economic modeling purposes, a combination of concentrate sales and separated product sales was assumed while the separations facility continues to ramp up to full capacity. From approximately mid-2026 onward, it was assumed the separations facility will operate at full capacity producing separated products, with relatively small amounts of excess concentrate being packaged and sold to customers (refer to Section 10.5 of this report for the ramp up schedule). Forecast economic parameters are based on current cost performance for process, transportation, and administrative costs, as well as a first principles estimation of future mining costs. Forecast revenue from concentrate sales and individual separated product sales is based on a preliminary market study commissioned by MP Materials, as discussed in Section 16 of this report.

From this evaluation, pit optimization was performed based on prices that were established by the preliminary market study. The results of pit optimization guided the design and scheduling of the ultimate pit. SRK generated a cash flow model which indicated positive economics for the 30-year LoM plan, which provides the basis for the reserves. Reserves within the new ultimate pit are sequenced for approximately 25 years (Q4 2024 through 2048). Processing of stockpile material will occur for approximately 5 more years (2049 through early 2053).

The costs used for pit optimization include estimated mining, processing, sustaining capital, transportation, and administrative costs, including an allocation of corporate costs.

Processing recovery for concentrate is variable based on a mathematical relationship to estimate overall TREO recovery versus ore grade. The calculated COG for the reserves is 2.50% TREO, which was applied to indicated blocks contained within an ultimate pit, the design of which was guided by economic pit optimization.

The optimized pit shell selected to guide final pit design was based on a combination of the revenue factor (RF) 0.45 pit (used on the north half of the deposit) and the RF 1.00 pit shell (used on the south half of the deposit). The inter-ramp angles (IRA) used for the mine design are based on operational-level geotechnical studies and range from 44° to 47°.

Measured resources in stockpiles were converted to proven reserves. Indicated pit resources were converted to probable reserves by applying the appropriate modifying factors, as described herein, to potential mining pit shapes created during the mine design process. Inferred resources present within the LoM reserves pit are treated as waste.

The mine design process results in in situ open pit probable mineral reserves of 29.1 million st with an average grade of 6.03% TREO. Additionally, there are 0.8 million st of proven mineral reserves in stockpiles with an average grade of 4.03% TREO. Table 1-3 presents the mineral reserve statement, as of September 30, 2024, for Mountain Pass (MP Materials’ mining engineers provided a September 30, 2024 topography as a reserve starting point). The reference point for the mineral reserves is ore delivered to the integrated crushing and ore sorting facility.

Table 1-3: Mineral Reserves at Mountain Pass as of September 30, 2024 - SRK Consulting (U.S.), Inc.

Category	Description	Run-of-Mine (RoM) Million Short Tons (dry)	TREO%	MY%	Concentrate Million Short Tons (dry)
Proven	Current Stockpiles	0.79	4.03%	4.1%	0.03
	In situ	-	-	-	-
	Proven Totals	**0.79**	**4.03%**	**4.1%**	**0.03**
Probable	Current Stockpiles	-	-	-	-
	In situ	29.10	6.03%	7.0%	2.03
	Probable Totals	**29.10**	**6.03%**	**7.0%**	**2.03**
Proven + Probable	Current Stockpiles	0.79	4.03%	4.1%	0.03
	In situ	29.10	6.03%	7.0%	2.03
	Proven + Probable Totals	**29.89**	**5.98%**	**6.9%**	**2.06**

Source: SRK, 2024

- Reserves stated as contained within an economically minable open pit design stated above a 2.50% TREO COG grade.
- Mineral reserves tonnage and contained metal have been rounded to reflect the accuracy of the estimate, and numbers may not add due to rounding.
- MY% calculation is based on 60% concentrate grade of the product and the ore grade dependent metallurgical recovery. MY% = (TREO% * Met recovery)/60% concentrate TREO grade.
- Indicated mineral resources have been converted to Probable reserves. Measured mineral resources have been converted to Proven reserves.
- Reserves are diluted at the contact of the 2% TREO geological model triangulation (further to dilution inherent to the resource model and assume selective mining unit of 15 ft x 15 ft x 30 ft).Mineral reserves tonnage and grade are reported as diluted.
- Overall pit slope angles of 39° to 45° including ramps, were used in pit optimization.
- Pit optimization is based on the following prices: Rare Earth Mineral Concentrate US$10.20 per kilogram (kg), PrNd Oxide US$124.83/kg, SEG+ Precipitate US$48.22/kg, La Carbonate US$1.44/kg and Ce Chloride US$2.57/kg.
- Pit optimization is based on concentrator recovery that varies based on the grade of the ore fed to the concentrator. The average REO distribution in the concentrate is PrNd (15.7%), SEG+ (1.8%), Lanthanum (32.3%) and Cerium (50.2%). Overall recoveries at the onsite separations plant as applied to concentrate containing on average 60% TREO) are: PrNd Oxide (89.7%), SEG+ Precipitate (97.9%), La Carbonate (75.0%) and Ce Chloride (11.5%).
- Pit optimization is based on the following costs: mining cost at the pit exit of US$1.50 per dst mined plus US$0.050 per dst mined for each 15 ft bench above or below the pit exit, sorted ore rehandling (US$2.55 per dst of sorted ore mined); non-sorted ore rehandling (US$2.17 per dst of non-sorted ore mined), crushing (US$3.66 per dst of ore crushed); ore sorting (US1.80 per dst ore fed to ore sorters), concentrating (US$50.05 per dst of ore fed to concentrator), general and administrative (US$28.82 per dst of ore fed to the concentrator), separations (includes a fixed annual cost and a variable cost of US$1080.59 per ST of concentrate processed on site),), finished product shipping (US$146.92 per dst shipped) and sustaining capital (US$33.23 per dst of ore fed to the concentrator).
- The topography used was from September 30, 2024.
- Reserves contain material inside and outside permitted mining but within mineral lease.
- Reserves assume 100% mining recovery.
- The strip ratio was 5.8 to 1 (waste to ore ratio).
- The mineral reserves were estimated by SRK Consulting (U.S.) Inc.

In the opinion of SRK as the QP, the conversion of mineral resources to mineral reserves has been completed in accordance with CFR 17, Part 229 (S-K 1300).

The reserve estimate herein is subject to potential change based on changes to the forward-looking cost and revenue assumptions utilized in this study. It is assumed that MP Materials will ramp up its on-site separations facilities to full capacity by approximately mid-2026. It is further assumed that MP Materials will install an integrated crushing and ore sorting facility that will begin ramping up in Q1 2026.

Full extraction of this reserve is dependent upon modification of current permitted boundaries for the open pit. Failure to achieve modification of these boundaries would result in MP Materials not being able to extract the full reserve estimated in this study. It is MP Materials' expectation that it will be successful in modifying this permit condition. In SRK's opinion, MP Materials' expectation in this regard is reasonable.

A portion of the resource pit encroaches on an adjoining mineral right holder's concession. This portion of the pit would only include waste stripping (i.e., no rare earth mineralization is assumed to be extracted from this concession). The prior owner of Mountain Pass had an agreement with this concession holder to allow this waste stripping (with the requirement that aggregate mined be stockpiled for the owner's use). MP Materials does not currently have this agreement in place, but SRK believes it is reasonable to assume MP Materials will be able to negotiate a similar agreement.

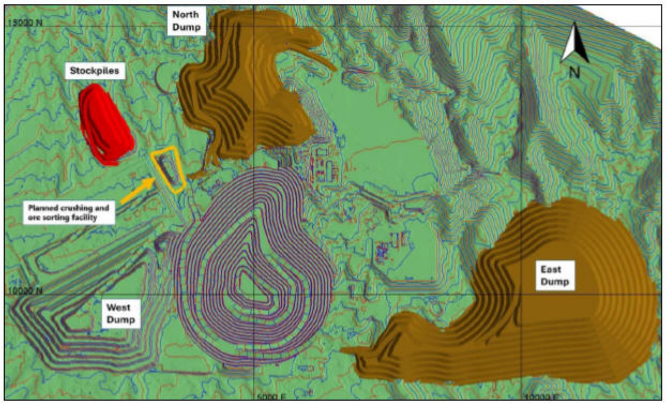
1.7 Mining Methods

Mountain Pass is currently being mined using conventional open-pit methods. The open pit is in gently undulating topography intersecting natural drainages that require diversion to withstand some rainfall events during the summer and winter months. Waste dumps are managed according to the Action Plan (AP), are located on high ground, and are designed for control of drainage (contact water) if required.

The open pit that forms the basis of the mineral reserves and the LoM production schedule is approximately 3,100 ft from east to west and 3,800 ft from north to south with a maximum depth of 1,400 ft. Total LoM pit mining is estimated at 198.9 million st comprised of 29.1 million st of ore and 169.8 million st of waste, resulting in a strip ratio of 5.8 (waste to ore). Additional mill feed is sourced from existing stockpiles (0.8 million st). LoM mill feed grade averages 7.13% TREO yielding over 2.06 million dry st of recoverable 60% TREO concentrate.

SRK designed four pit pushbacks that adhere to proper minimum mining widths. Bench sinking rates average approximately four benches per year per push back, with a maximum sinking rate of nine benches in one phase in one year of the mine plan.

Figure 1-1 illustrates the site layout and final pit design.



Source SRK, 2024

Figure 1-1: Final Pit Design and Site Layout

Mine activities include drilling, blasting, loading, hauling, and mining support activities. Drill and blast operations are performed by a contractor, and this will continue for the foreseeable future. All other mine operations are performed by MP Materials. The primary loading equipment is front-end loaders (17 cubic yards (yd^3)), which were selected for operational flexibility. Rigid frame haul trucks with 102 wet short tons (wst) capacity were selected to match with the loading units.

Material within the pit will be blasted on 30 ft high benches. Material classified as reserves will be sent to the RoM stockpiles for near-term blending to an integrated crushing and ore sorting facility or, alternatively, to long-term stockpiles for processing later in the mine life. Waste dumps will be used for material below the COG.

The mine operations schedule includes one 12-hour day shift, seven days per week for 365 days per year.

1.8 Recovery Methods

1.8.1 Existing Crushing and Concentrating Operations

MP Materials operates a 2,000 t/d flotation concentrator that produces concentrates that are further processed to produce separated rare earth oxides. The concentrator flowsheet includes crushing, grinding, rougher/scavenger flotation, cleaner flotation, concentrate thickening and filtration and tailings thickening and filtration followed by dry stack tailings disposal. Significant improvements in concentrator performance have occurred since inception of operations, which are attributed primarily to new reagent and ore blending schemes as well as the introduction of steam to heat the flotation slurry.

During 2023, the concentrator processed 776,293 metric tonnes (mt) of ore at an average grade of 8.55% TREO and produced 41,556 mt of bastnaesite concentrate at an average grade of 61.5% TREO. Overall TREO recovery averaged 64.0%. During 2023, 4,340 mt TREO was roasted and advanced to the separations plant. The remainder of the TREO was sold to customers as unroasted Product Code 4000 (27,170 mt TREO) and roasted Product Code 4050 (10,046 mt TREO).

During 2024 (January to September), the concentrator processed 576,376 mt of ore at an average grade of 8.55% TREO and produced 33,977 mt of bastnaesite concentrate at an average grade of 61.0% TREO. Overall TREO recovery during 2024 (January to September) has averaged 69.1%. During 2024 (January – September) 9,229 mt TREO was roasted and advanced to the separations plant. The remainder of the TREO was sold to customers as unroasted Product Code 4000 (23,123 mt TREO) and roasted Product Code 4050 (1,624 mt TREO).

1.8.2 Modified and Recommissioned Separations Facility

MP Materials is in the process of ramping up its modified and recommissioned on-site separations facility to produce individual rare earth products. The incentive for this substantial process change is the enhancement of revenue that will be realized for producing individual rare earth products as compared to the previous practice of producing a single rare earth containing flotation concentrate which was sold to various entities that separate and market individual rare earth products. Over the past several years, MP Materials has made substantial technical and financial commitments to modify and recommission an on-site separation facility that allows for the sale of individual rare earth products.

A Qualified Person site visit to the MP Materials operation at Mountain Pass was undertaken in December 2024 by SGS. This visit involved a brief reintroduction to the mining operation and the flotation plant along with a more detailed discussion and inspection of ongoing separations facility ramp up efforts. Conversations were held with MP Materials engineers who are directly involved with the ongoing ramp up operations. Information provided revealed that the concentrate roasting section of the facility, particularly the product cooler following the roaster, has had commissioning, operational continuity, and throughput challenges. MP Materials engineering personnel have been addressing these challenges. As a result of these efforts, a revised ramp up schedule has been developed by MP Materials personnel and is in the process of being implemented. This new schedule stipulates that the full separations facility output will be achieved by approximately mid-2026 and, in the opinion of the SGS Qualified Person, is likely to be achieved. When the full design output is achieved, nearly all of the bastnäsite concentrate produced will be consumed. If the bastnäsite concentrate production increases above a certain level, it may exceed the separations facility limit for REO throughput, and the excess concentrate will continue to be sold to the market.

1.8.3 Planned Crushing and Ore Sorter Circuits

MP Materials is planning to install an ore sorting circuit to upgrade low grade ore containing 2.5% to 5.0% TREO. As part of the new ore sorter installation, MP Materials will decommission the existing crushing plant and construct two new crushing facilities. MP Materials expects the integrated crushing and ore sorting facility to begin ramping up operations during Q1 2026.

In the future, MP Materials plans to conduct further test work to determine whether even lower grade material (<2.5% TREO) is potentially amenable to ore sorting.

1.9 Project Infrastructure

The Project is in San Bernardino County, California, north of and adjacent to Interstate 15 (I-15), approximately 15 mi southwest of the California-Nevada state line and 30 mi northeast of Baker, California.

The nearest major city is Las Vegas, Nevada, located 50 mi to the east on I-15. The Project lies immediately north of I-15 at Mountain Pass and is accessed by the Bailey Road Exit (Exit 281 of I-15), which leads directly to the main gate. The mine is approximately 15 mi southwest of the California-Nevada state line in an otherwise undeveloped area, enclosed by surrounding natural topographic features.

Outside services include industrial maintenance contractors, equipment suppliers and general service contractors. Access to qualified contractors and suppliers is excellent due to the proximity of population centers such as Las Vegas, Nevada as well as Elko, Nevada (an established large mining district) and Phoenix, Arizona (servicing the copper mining industry).

Access to the site, as well as site haul roads and other minor roads are fully developed and controlled by MP Materials. There is no public access through the Project area. All public access roads that lead to the Project are gated at the property boundary.

MP Materials has fully developed an operating infrastructure for the Project in support of mining, concentrating and separations activities. A manned security gate is located on Bailey Road for providing required site-specific safety briefings and monitoring personnel entry and exit to the Project.

Substantially all the power to the Mountain Pass facility is currently supplied by a Combined Heat and Power (CHP) or co-generation (cogen) power facility with two natural gas-fired turbines capable of producing up to 26 MW of power combined. In addition, the site is served by a 12 kV line from a Southern California Edison substation two miles away.

Water is supplied through active water wells located eight miles west of the project. Fire systems are supplied by separate fire water tanks and pumps.

The site has all facilities required for operation, including the open pit, concentrator, separations facility, access and haul roads, explosives storage, fuel tanks and fueling systems, warehouse, security guard house and perimeter fencing, tailings filter plant, tailings storage area, waste rock storage area, administrative and office buildings, surface water control systems, evaporation ponds, miscellaneous shops, truck shop, laboratory, multiple laydown areas, power supply, water supply, waste handling bins and temporary storage locations, and a fully developed communications system.

The LoM plan includes the planned relocation of key infrastructure to support ongoing operations. The existing crusher will be replaced with an integrated crushing and ore sorting facility that will begin ramping up in Q1 2026. The construction of this new facility will allow the existing crusher to be removed, thereby accommodating the northern expansion of the pit. Additionally, in 2034, the paste tailings plant and water tanks—currently situated northeast of the pit highwall near the concentration plant—will be relocated. Capital cost provisions are included in the technical economic model (TEM) for these relocations.

The project has utilized approximately 4.4 million st of the total capacity of the tailings storage facility. The existing facility has a remaining capacity of approximately 17.2 million st which will provide approximately 19 more years of storage. MP Materials will expand the existing tailings facility to the northwest in approximately 2043 to provide additional storage capacity. A capital cost provision has been included in the TEM for this expansion.

Site logistics are straightforward with the concentrate product shipped in supersacks within a shipping container by truck to the port of Los Angeles. At the port, the containers are loaded onto a container ship and shipped to the final customers. Refined products for domestic customers are shipped in supersacks and intermediate bulk containers (IBC tote).

1.10 Market Studies and Contracts

Section 16 of this report provides an overview of key trends within the rare earths market. Analysis outlined in this report reveals a high degree of variability in the demand profiles of individual rare earth elements and their associated end-uses.

Consequently, a strong demand outlook for PrNd oxide – the main rare earth input for neodymium iron boron (NdFeB) permanent magnets - drives a weak supply outlook for Ce and La products, which are sacrificially overproduced as a function of keeping up with magnet demand.

While centered in China, the rare earths market is increasingly global with suppliers and potential suppliers emerging around the world. Section 16 of this report highlights the favorable demand conditions that non-China producers may face as they enter the market but also highlights the unfavorable supply side conditions end users can expect without prompt new investment into new production.

Products outlined in this report (PrNd oxide, SEG+ precipitate, La carbonate, Ce chloride and rare earth mineral concentrate) are desirable from a market perspective, provided market standards and requirements are met. As shown in Table 1-4, and based on outlined product specifications, Adamas forecasts a long-term price of US$124.83/kg REO for PrNd oxide, US$48.22/kg REO for SEG+ precipitate, US$1.44/kg REO for Lanthanum carbonate, and US$2.57/kg REO for Cerium chloride. The mixed rare earth concentrate price of US$10.20/kg of contained REO will be principally driven by trends in PrNd and dysprosium (Dy), price swings of which will be mirrored by concentrates.

Table 1-4: Summary of Long-Term Price Forecasts

Product	Long-Term Price Forecast, Real 2024 US$/KG
Rare Earth Mineral Concentrate	US$10.20
PrNd Oxide	US$124.83
SEG+ Precipitate	US$48.22
La Carbonate	US$1.44
Ce Chloride	US$2.57

Source: Adamas, 2024

Many of the near-term risks facing players in the rare earths market are political, with past disputes responsible for exacerbating volatility of REE prices. Specific risks to products are highlighted where perceived, though the indicated specifications and communicated sales terms enforce the conclusion that products are both desirable and marketable.

1.11 Environmental, Closure and Permitting

As of September 30, 2024, MP Materials holds the necessary operating permits, including conditional use and minor use permits from the County of San Bernardino (SBC), which currently allows continued operations of the Mountain Pass facility through 2042. The proposed mine plan extends the mine life to 2053. The future mine plan requires expansion of the current permitted boundary of the open pit, expansion of the North Overburden Stockpile and construction of a new East Overburden Stockpile.

MP Materials will need to engage with the SBC-LUS and other regulatory authorities and allow sufficient time to prepare the permit applications and gain the necessary approvals to implement the mine plan described herein. There is a risk that the timing for regulatory approvals may be longer than anticipated. In this case, MP Materials may not be able to implement or follow the mine plan as currently proposed. SRK is of the opinion that MP Materials will continue to successfully engage regulatory authorities and gain approval for future amendments related to site operations within the private property boundary.

MP Materials maintains financial assurance cost estimates for closure, PCM, and AKRFR for current and planned operations at the Mountain Pass property. The LRWQCB administers groundwater and surface water related financial assurance obligations. San Bernardino County administers financial assurance requirements for surface reclamation of the property. The California Department of Health, Radiological Health Branch administers financial assurance requirements for decontamination and decommissioning activities. MP Materials maintains miscellaneous financial assurance instruments for other closure-related obligations. As of September 2024, the total financial assurance obligation is approximately US$45.6 million.

1.12 Capital and Operating Costs

Capital and operating costs are incurred and reported in 2024 US dollars and are estimated at a pre-feasibility level with an accuracy of approximately +/-25%.

1.12.1 Capital Costs

The mine is currently operating and, as such, there is no initial capital expenditure required. All capital expenditure as contemplated by this report is expected to be sustaining capital. Sustaining capital expenditures include the sustaining capital cost associated with the mining fleet. Also included are sustaining capital cost provisions for the separations facility, integrated crushing and ore sorting facility, planned paste tailings plant replacement, crusher and water tank relocations, tailings storage facility expansion, and the “other” category, which captures all other sustaining capital costs.

Capital costs for the separations facility have been reviewed and approved by SGS. All other capital costs have been reviewed and approved by SRK.

Table 1-5 summarizes the LoM capital costs for Mountain Pass.

Table 1-5: LoM Capital Expenditures

Category	Years Incurred	LoM Total (US$ million)
Mining Equipment Replacements and Rebuilds	2024-2051	88.5
Integrated Crushing and Ore Sorting Facility	2025-2026	28.9
Infrastructure Relocations	2034	76.7
TSF Expansion	2043	11.5
Closure	2054	45.6
Separations Facility Sustaining	2024-2052	440.1
Other Sustaining	2024-2051	125.0
Total		**816.4**

Source: SRK, SGS and MP Materials

1.12.2 Operating Costs

For economic modeling, the operating costs are allocated among three main areas: mining, processing and site general and administrative (G&A). SRK developed a first principles operating cost forecast for mining. SGS and MP Materials developed a first principles operating cost forecast for the separations facility. Otherwise, costs are forecast based on current operating results, with appropriate adjustments for anticipated future changes in the configuration of the operation.

The estimated operating costs are presented in Table 1-6.

Table 1-6: Operating Costs

Category	LoM Total (US$ million)	Average Unit Cost (US$/st fed to concentrator)
Mining	629.8	25.6
Processing (including ore sorting and separations)	4,203.4	171.1
Site G&A	756.2	30.8
Total	**5,589.4**	**227.5**

Source: SRK, SGS and MP Materials

1.13 Economic Analysis

SRK generated an economic model for the life of the reserve stated in this report. The economic model utilized the capital and operating costs described in Section 18. Product sales price assumptions are described in Section 16 and are based on a preliminary market study. Based on this economic analysis, the reserve stated herein generates positive free cash flow and meets the economic test for the declaration of a reserve under SEC regulations.

Economic analysis, including estimation of capital and operating costs is inherently a forward-looking exercise. These estimates rely upon a range of assumptions and forecasts that are subject to change depending upon macroeconomic conditions, operating strategy and new data collected through future operations and therefore actual economic outcomes often deviate significantly from forecasts.

The Mountain Pass operation consists of an open pit mine and processing facilities fed by the open pit mine. The operation is expected to have a 30 year life with the first modeled year of operation a partial year to align with the effective date of the reserves. The final years (2049 through 2053) are limited to the processing of remaining stockpiles.

The economic analysis metrics are prepared on an annual after-tax basis in US$. The results of the analysis are presented in Table 1-7. The results indicate that, at prices outlined in the market study section of this report, the operation returns an after-tax net present value (NPV) at 6% of US$5.3 billion.

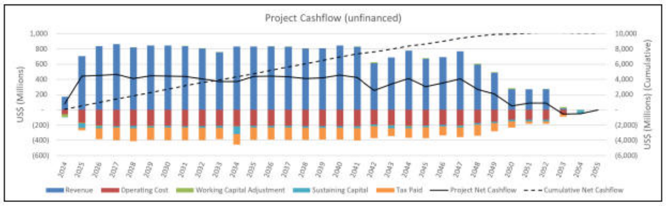
Note that because the mine is in operation and is valued on a total project basis with prior costs treated as sunk, internal rate of return (IRR) and payback period analysis are not relevant metrics.

Table 1-7: Cash Flow Summary

LoM Cash Flow (Unfinanced)	Units	Value
Total Revenue	**US$ (million)**	**20,196**
Total Opex	**US$ (million)**	**(5,589)**
Operating Margin (excluding depreciation)	US$ (million)	14,607
Operating Margin Ratio	%	72%
Taxes Paid	US$ (million)	(3,750)
Before Tax		
Free Cash Flow	US$ (million)	13,791
NPV at 6%	US$ (million)	7,114
After Tax		
Free Cash Flow	US$ (million)	10,041
NPV at 6%	US$ (million)	5,274

Source: SRK

A summary of the cashflow on an annual basis is presented in Figure 1-2.



Source: SRK

Figure 1-2: Project Cashflow

1.14 Conclusions and Recommendations

Based on the data available and the analysis described in this report, in SRK's opinion, the Mountain Pass operation has a valid mineral resource and mineral reserve, as stated herein. The resource estimation has been validated using conventional means and reconciled against production records.

The resources and reserves are subject to potential change based on changes to the forward-looking cost and revenue assumptions utilized in this study. Pre-concentration of lower grade ores (2.5% to 5.0% TREO) is expected to commence in Q1 2026. The separations facility is continuing to ramp up, and is expected to reach full design capacity by approximately mid-2026. Rare earth concentrate sales to China will continue in periods when concentrate production exceeds the capacity of the separations facility. Such sales are currently subject to value added tax (VAT).

Full extraction of this reserve is dependent upon modification of current permitted boundaries. Failure to achieve modification of these boundaries would result in MP Materials not being able to extract the full reserve estimated in this study. It is MP Materials' expectation that it will be successful in modifying this permit condition. In SRK's opinion, MP Materials' expectation in this regard is reasonable.

A portion of the pit encroaches on an adjoining mineral right holder's concession. This portion of the pit only includes waste stripping (i.e., no rare earth mineralization is assumed to be extracted from this concession). The prior owner of Mountain Pass had an agreement with this concession holder to allow this waste stripping (with the requirement that aggregate mined be stockpiled for the owner's use). MP Materials does not currently have this agreement in place, but SRK believes it is reasonable to assume that MP Materials will be able to negotiate a similar agreement.

Additional opportunity exists for the potential to convert current inferred resources both within the LoM pit and on the fringes of the pit. The conversion of inferred resources to either measured or indicated resources, if successful, would increase the mine life and reduce waste stripping. Therefore, SRK recommends that MP Materials target infill drilling for the purpose of this conversion.

Other, more minor recommendations are detailed in Section 23.

2 Introduction

2.1 Registrant for Whom the Technical Report Summary was Prepared

This report was prepared as a pre-feasibility level Technical Report Summary in accordance with the Securities and Exchange Commission (SEC) S-K regulations (Title 17, Part 229, Items 601 and 1300 until 1305) for MP Materials Corp. (MP Materials) by SRK Consulting (U.S.), Inc. (SRK) on the Mountain Pass Mine (Mountain Pass).

2.2 Terms of Reference and Purpose of the Report

The quality of information, conclusions, and estimates contained herein are consistent with the level of effort involved in SRK's services, based on: i) information available at the time of preparation and ii) the assumptions, conditions, and qualifications set forth in this report. This Technical Report Summary is based on pre-feasibility level engineering and cost estimation.

This report is intended for use by MP Materials subject to the terms and conditions of its contract with SRK and relevant securities legislation. The contract permits MP Materials to file this report as a Technical Report Summary with U.S. securities regulatory authorities pursuant to the SEC S-K regulations, more specifically Title 17, Subpart 229.600, Item 601(b)(96) - Technical Report Summary and Title 17, Subpart 229.1300 - Disclosure by Registrants Engaged in Mining Operations. Except for the purposes legislated under U.S. securities law, any other uses of this report by any third party are at that party's sole risk. The responsibility for this disclosure remains with MP Materials.

The purpose of this Technical Report Summary is to report mineral resources and mineral reserves.

2.3 Sources of Information

This report is based in part on internal Company technical reports, previous engineering studies, maps, published government reports, Company letters and memoranda, and public information as cited throughout this report and listed in Section 24 of this report.

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

2.4 Details of Inspection

Table 2-1 summarizes the details of the personal inspections on the property by each qualified person or, if applicable, the reason why a personal inspection has not been completed.

Table 2-1: Site Visits

Expertise	Company	Date(s) of Visit	Details of Inspection
Infrastructure	SRK Consulting (U.S.), Inc.	September 11 and September 25, 2023	Infrastructure, tailings area, general site inspection
Slope Stability/ Engineering Geology	SRK Consulting (U.S.), Inc.	September 25, 2019	Open pit slopes and stockpiles
Mining/Reserves	SRK Consulting (U.S.), Inc.	September 11, 2023	Review of the current practices and inspection
Geology/Mineral Resources	SRK Consulting (U.S.), Inc.	September 11, 2023	Review of the current practices and inspection of laboratory and core facility, tour of pit geology, meetings and technical sessions on geological modeling.
Metallurgy/ Process	SRK Consulting (U.S.), Inc.	September 25, 2023	Review of the current practices and inspection
Separations Facility	SGS North America Inc.	December 3, 2024	Review of ramp up progress
Environmental/ Permitting/Closure	SRK Consulting (U.S.), Inc.	No recent site visit	Visited site on several occasions under previous ownership

Source: SRK, 2024

2.5 Report Version Update

The user of this document should ensure that this is the most recent Technical Report Summary for the property.

This Technical Report Summary is an update of a previously filed technical report summary filed pursuant to 17 CFR §§ 229.1300 through 229.1305 (subpart 229.1300 of Regulation S-K). The previously filed technical report summary is titled “SEC Technical Report Summary Pre-Feasibility Study Mountain Pass Mine San Bernardino County, California” with an effective date of October 1, 2023 and a report date of February 22, 2024.

2.6 Units of Measure

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

2.7 Mineral Resource and Mineral Reserve Definitions

The terms “mineral resource” and “mineral reserves” as used in this Technical Report Summary have the following definitions as per the SEC, Regulation S-K, Item 1301.

2.7.1 Mineral Resources

17 CFR § 229.1300 defines a “mineral resource” as a concentration or occurrence of material of economic interest in or on the Earth’s crust in such form, grade or quality, and quantity that there are reasonable prospects for economic extraction. A mineral resource is a reasonable estimate of mineralization, taking into account relevant factors such as COG, likely mining dimensions, location or continuity, that, with the assumed and justifiable technical and economic conditions, is likely to, in whole or in part, become economically extractable. It is not merely an inventory of all mineralization drilled or sampled.

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

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

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

2.7.2 Mineral Reserves

17 CFR § 229.1300 defines a “mineral reserve” as an estimate of tonnage and grade or quality of indicated and measured mineral resources that, in the opinion of the qualified person, can be the basis of an economically viable project. More specifically, it is the economically mineable part of a measured or indicated mineral resource, which includes diluting materials and allowances for losses that may occur when the material is mined or extracted. A “proven mineral reserve” is the economically mineable part of a measured mineral resource and can only result from conversion of a measured mineral resource. A “probable mineral reserve” is the economically mineable part of an indicated and, in some cases, a measured mineral resource.

2.8 Qualified Person

This report was compiled by SRK Consulting (U.S.), Inc., with contributions from SGS North America Inc. (SGS) and Adamas Intelligence Inc. (Adamas). All three firms are third-party firms comprising mining experts in accordance with 17 CFR § 229.1302(b)(1). MP Materials has determined that all three firms meet the qualifications specified under the definition of qualified person in 17 CFR § 229.1300.

SGS North America Inc. prepared the following sections of the report.

- Sections 1.4.2 and 1.8.2 (Separations Facility)
- Section 1.12 (Separations Facility Capital and Operating Cost)
- Section 10.5 (Separation of Rare Earth Elements)
- Section 14.5 (Individual Rare Earths Separations)
- Sections 18.1.2 and 18.1.5 (Separations Facility Capital Cost)
- Section 18.2.2 (Separations Facility Operating Cost)
- Section 22.3.2 (Separations Facility)
- Related contributions to Section 1 (Executive Summary), Section 23 (Recommendations), Section 24 (References), Section 25 (Reliance on Information Provided by the Registrant)

In sections of this report prepared by SGS, references to the Qualified Person or QP are references to SGS North America Inc. and not to any individual employed at SGS.

Adamas Intelligence Inc. prepared the following sections of the report.

- Section 16 (Market Studies and Contracts)
- Related contributions to Section 1 (Executive Summary), Section 22 (Interpretations and Conclusions), Section 23 (Recommendations) and Section 24 (References) and Section 25 (Reliance on Information Provided by the Registrant)

In sections of this report prepared by Adamas, references to the Qualified Person or QP are references to Adamas Intelligence Inc. and not to any individual employed at Adamas.

SRK Consulting (U.S.) Inc. prepared all sections of the report that are not identified in this Section 2.8 as being prepared by SGS and Adamas. In sections of this report prepared by SRK, references to the Qualified Person or QP are references to SRK Consulting (U.S.), Inc. and not to any individual employed at SRK.

3 Property Description and Location

MP Materials' surface ownership includes approximately 2,222 acres (900 hectares (ha)). The County of San Bernardino General Plan previously designated the Official Land Use District for the majority of the site as Resource Conservation. In 2021, a rezoning was completed with the majority of the site designated for Regional Industrial (IR). The site is located within Improvement Overlay District 5, which applies to very rural areas with little or no development potential. The County Development Code permits mining in any land use district within the County subject to a conditional use permit.

The lands surrounding the Mountain Pass Mine site are mostly public lands managed by the Bureau of Land Management (BLM). The Mojave National Preserve, managed by the National Park Service, lies two to three miles to the north, west, and south of the site. The Clark Mountain Wilderness Area is located four miles northwest of the project site.

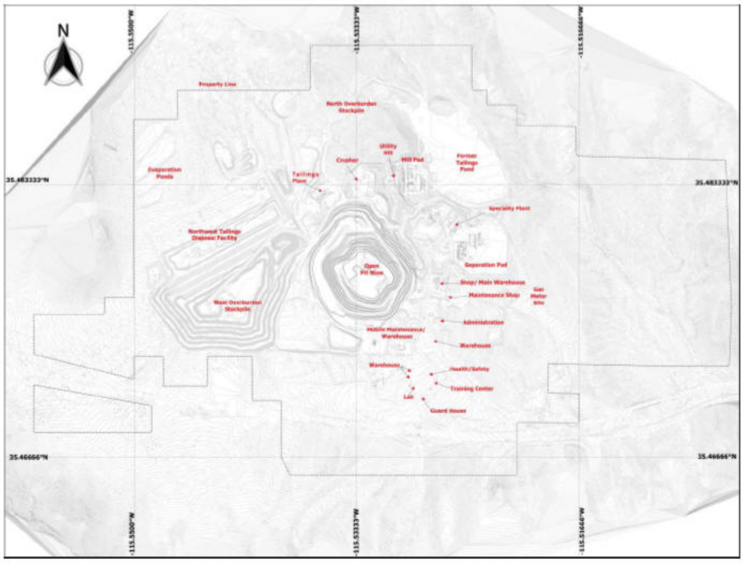
Current mining and mineral recovery operations include the following major activities and facilities at the mine site (Figure 3-1):

- A single open pit mine for extraction of the rare earth mineralization
- West and north overburden stockpiles (overburden consists of un-mineralized rock extracted from the pit)
- Crusher and mill/flotation plant
- Paste tailings disposal facility
- Mineral recovery plants (concentrator and separations facility)
- Offices, warehouses, and support buildings
- Onsite evaporation pond facility
- Product storage
- Stormwater ponds

The primary mineral of economic interest mined historically at the Project is bastnaesite, a light brown carbonate mineral that is significantly enriched with 14 of the lanthanide elements plus yttrium.

As the Mountain Pass operation is currently configured, the material is crushed and blended at the crushing plant and then transported to the concentrator. At the concentrator, the crushed ore is combined with recycled water and ground further in a ball mill. The slurry is then pumped to the downstream conditioning and flotation equipment to separate the rare-earth bearing minerals away from the gangue minerals. The primary product of the flotation process is a bastnaesite concentrate that prior to the commissioning of the rare earth separations facility discussed below, has been MP Materials' primary product. This concentrate has been press filtered and packaged for export. Engineered containment facilities are used for storage and packaging of product.

MP Materials has recommissioned a REE separations facility at Mountain Pass that allows MP Materials to produce four saleable REE products: praseodymium and neodymium (PrNd) oxide, samarium, europium, and gadolinium (SEG+) precipitate, lanthanum (La) carbonate, and cerium (Ce) chloride. As the REE separations facility continues to ramp up, it is expected that increasing quantities of bastnaesite concentrate will be processed on-site to produce the saleable REE products.

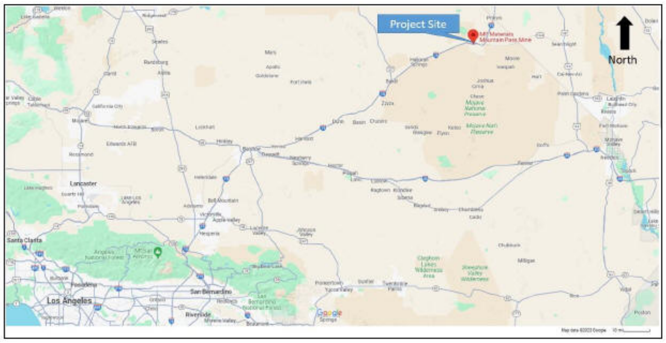


Source: MP Materials, 2024

Figure 3-1: General Facility Arrangement (WGS84 Coordinate System)

3.1 Property Location

Mountain Pass is located in San Bernardino County, California, north of and adjacent to Interstate-15 (I-15), approximately 15 miles southwest of the California-Nevada state line and 30 miles northeast of Baker, California, at geographic coordinates 35°28'56"N latitude and 115°31'54"W longitude (Figure 3-2). This area is part of the historic Clark Mining District established in 1865. The Project lies within portions of Sections 11, 12, 13, and 14 of Township 16 North, Range 14 East, San Bernardino Base and Meridian.



Source: Google, 2023

Figure 3-2: Location Map

3.2 Mineral Title

Figure 3-3 illustrates the boundaries of the current mineral claims and surface rights associated with the Project, as provided by MP Materials. Mining claims and surface rights associated with the Project include:

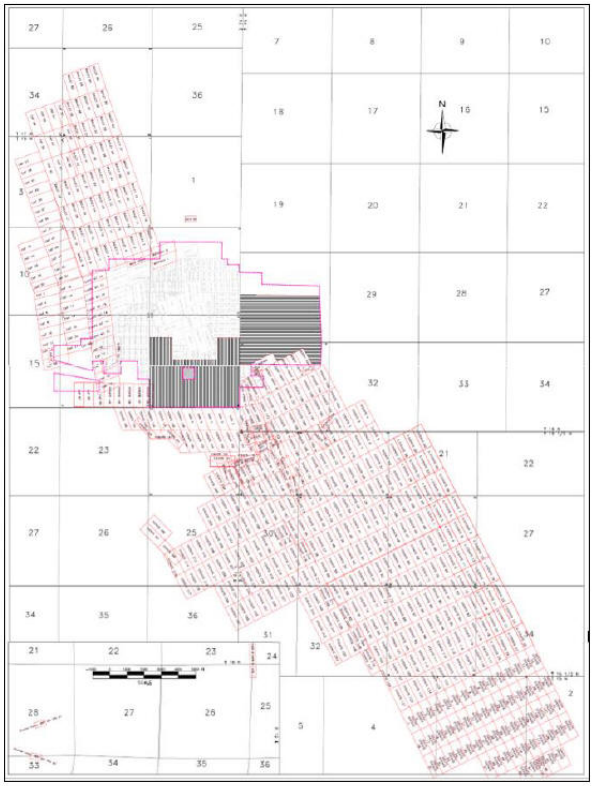
- Patented claims with surface rights owned by MP Mine Operations LLC (MPMO) and mineral rights held by Secure Natural Resources LLC ("SNR")
- Unpatented lode and mineral claims held by SNR
- Surface ownership by MPMO and mineral rights controlled by the State of California
- Surface ownership by MPMO and mineral rights controlled by the U.S.

The rare earth mineralization at the Project is located within land owned by MP Materials.

MPMO, the operator, owns the real property (e.g., equipment, surface rights, water rights, surface use rights, access rights, easements, etc.) and SNR, the subsurface mineral rights owner, leases the mineral rights and certain intellectual property to MPMO. MPMO entered into a lease agreement with SNR on April 3, 2017, allowing MP Materials to extract rare earth products and byproducts from the

Project mineral rights (note that this agreement excludes rights to all other minerals and hydrocarbons that could be present at the Project) and to utilize the intellectual property, held by SNR. At the time of entering into the lease agreement, MPMO and SNR had shareholders common to both entities; however, they were not partners in business nor did they hold any other joint interest. On November 17, 2020, MPMO and SNR were combined with Fortress Value Acquisition Corp. (FVAC) and became wholly-owned subsidiaries of FVAC, which was in turn renamed MP Materials Corp. Consequently, the intercompany transactions between MPMO and SNR are eliminated in the consolidated financials of MP Materials Corp.

Discussion of each category of land ownership is provided in the following sections. Figure 3-3 provides a land tenure map. Listings of claims for MPMO and SNR as reflected on the Bureau of Land Management (BLM) website are located in Appendix A to this Technical Report Summary.



Source: MP Materials, 2023

Figure 3-3: Land Tenure Map

3.2.1 Nature and Extent of Registrant's Interest

Surface Ownership by MP Materials and Mineral Rights by the State of California

The California State Lands Commission (CSLC) retains a mineral right in T16N, R14E, Section 13 (Figure 3-3). In a June 19, 2003, letter from the CSLC letter to the previous Project owner, "...the CSLC has advised San Bernardino County that the State acquired and patented certain lands within the proposed project boundary, reserving a 100% mineral interest in approximately 400 acres in the S1/2, SE1/4 of NE1/4, and the SW1/4 of the NW1/4 of Section 13, T16N, R13E, SBM. This interest is under the jurisdiction of the CSLC." (CSLC, 2003).

Surface Ownership by MP Materials and Mineral Rights by the U.S. Government

The U.S. government holds the mineral rights to an approximate 2.25 square mile parcel of land located east of the planned area of operations.

Surface Ownership by MP Materials and Mineral Rights by the State of California

MP Materials owns a 40-acre parcel of land adjacent to the Bailey Road highway exit. The State of California retains the mineral rights to this parcel. This mineral right is located to the south of the existing deposit and does not encroach on the ultimate boundaries of the open pit or overburden stockpiles.

3.3 Royalties, Agreements, and Encumbrances

Several public service and utility easements and rights-of-way are located within the mine boundaries, including a Southern California Edison (SCE) electric utility easement and an AT&T right-of-way.

3.4 Environmental Liabilities and Permitting

MP Materials maintains financial assurance cost estimates for closure, PCM, and AKRFR for current and planned operations at the Mountain Pass property. The LRWQCB administers groundwater and surface water related financial assurance obligations. San Bernardino County administers financial assurance requirements for surface reclamation of the property. The California Department of Health, Radiological Health Branch administers financial assurance requirements for decontamination and decommissioning activities. MP Materials maintains miscellaneous financial assurance instruments for other closure-related obligations. Table 3-1 presents the current financial assurance obligations for the Mountain Pass property. The total financial assurance obligation is approximately US$45.6 million.

Table 3-1: Current Financial Assurance Obligations

Regulatory Authority	Regulatory Obligation/FA Provider	FA Instrument	FA Instrument (US$)
Lahontan Regional Water Quality Control Board	Site Closure - Sompo International	EACX4029377	14,777,095
	Site Post Closure - Sompo International	EACX4029378	4,697,948
	AK&RFR - Sompo International	EACX4029379	9,757,091
California Dept. of Conservation Division of Mine Reclamation and County of San Bernardino (Lead Agency)	Mine Reclamation - SMARA Sompo International	EACX4029382	10,233,989
	Evap. Pond Closure - Sompo International	EACX4029382	723,100
California Department of Resource, Recycling and Recovery	Post Closure Maintenance - Sompo International	EACX4029381	377,677
	Non-Water Release Corrective Action Plan - Endurance Assurance Corporation	EACX0429375	142,101
U.S. Customs and Border Protection	Kuehne & Nagel, Inc	20C0006O3	200,000
	International Bond & Marine Brokerage, Ltd.		
State of California - State Lands Commission	Lease Agreement - Sompo International	EACX4029383	20,000
California Department of Public Health - Radiologic Health Branch	Decontamination & Decommissioning - Sompo International	EACX4029380	4,442,667
Bureau of Land Management	Shadow Valley Water System - Sompo International	EACX4029374	191,200
	ROW for New Wheaton Wash Wells off of Nipton Road	EACX4029376	64,077
Total			**$ 45,626,945**

Source: MP Materials, 2024

Existing closure obligations include:

- Reclamation and closure of the existing overburden stockpiles and dry stack tailings facility
- Completing active Corrective Action Programs (CAP) for groundwater remediation
- Operation and ultimate closure of the on-site evaporation ponds
- Indirect costs associated with direct costs listed above

Existing post-closure obligations include annual inspection and maintenance for the following closed facilities:

- Pond P-1
- Pond P-16
- Community and Company landfills

3.4.1 Remediation Liabilities

The AKRFR costs include approximately 30 years of ongoing groundwater extraction and treatment of a plume of impacted groundwater generated during historic operations. Pursuant to a 1998 clean up and abatement order issued by the LRWQCB, previous ownership conducted, and MP Materials continues to conduct, various investigatory, monitoring, and groundwater abatement activities related to contamination at and around the Mountain Pass facility. These activities include soil remediation and the operation of groundwater monitoring and recovery wells, water treatment systems, and evaporation ponds.

3.4.2 Required Permits and Status

MP Materials holds conditional use and minor use permits from SBC, which currently allow continued operations of the Mountain Pass facility through 2042. MP Materials also holds permits to operate from the LRWQCB and the Mojave Desert Air Quality Management District. The Company restarted the rare earth separations facility with some modifications to the process. The Company maintains the current permit authorization to operate the NWTDF and to co-dispose of other waste streams in the NWTDF. MP Materials anticipates these waste streams will meet the approved waste characterization profiles.

The updated mine plan extends open pit mining through 2048 and stockpile processing through 2053. MP Materials will be required to amend the Reclamation Plan from SBC to accommodate the updated mine plan. Section 17.2 provides further information.

3.5 Other Significant Factors and Risks

Full extraction of this reserve is dependent upon modification of current permitted boundaries. Failure to achieve modification of these boundaries would result in MP Materials not being able to extract the full reserve estimated in this study. It is MP Materials' expectation that it will be successful in modifying this permit condition. In SRK's opinion, MP Materials' expectation in this regard is reasonable.

A portion of the pit encroaches on an adjoining mineral right holder's concession. This portion of the pit only includes waste stripping (i.e., no rare earth mineralization is assumed to be extracted from this concession). The prior owner of Mountain Pass had an agreement with this concession holder to allow this waste stripping (with the requirement that aggregate mined be stockpiled for the owner's use). MP Materials does not currently have this agreement in place, but SRK believes it is reasonable to assume MP Materials will be able to negotiate a similar agreement.

SRK is not aware of any other risk items that can reasonably be assumed to impact access, title, right, or ability to perform work on the property.

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

The Project is located in San Bernardino County, California, north of and adjacent to Interstate 15 (I-15), approximately 15 miles southwest of the California-Nevada state line and 30 miles northeast of Baker, California (Figure 3-2).

4.1 Topography, Elevation, and Vegetation

The area is in the southwestern part of the Great Basin section of the Basin and Range physiographic province, which is characterized by a series of generally north to south-trending mountain ranges separated by broad, low-relief alluvial basins, which often have internal drainage (Peterson, 1981).

The Project occupies the highest elevation along I-15 between Barstow, California, and Las Vegas, Nevada. Elevations range from 4,500 to 5,125 ft above mean sea level (amsl), with most of the site located between 4,600 to 4,900 ft amsl. Clark Mountain (located northwest of the Project) is the highest local peak at 7,903 ft amsl.

The major habitat in the Project area is Mojave Desert scrub. Local surface drainages support a mixture of scrub and riparian species. Vegetation is characterized by various yuccas with a predominance of Eastern Joshua trees, larger shrubs, thorn bushes, and a host of smaller shrubs. Areas of ongoing disturbance in the Project area are barren of vegetation.

4.2 Accessibility and Transportation to the Property

The nearest major city is Las Vegas, Nevada, located 50 miles to the northeast on I-15. The Project lies immediately north of I-15 at Mountain Pass and is accessed by the Bailey Road Exit (Exit 281 of I-15), which leads directly to the main gate. The mine is approximately 15 miles southwest of the California-Nevada state line in an otherwise undeveloped area, enclosed by surrounding natural topographic features. I-15 follows the natural drainages, east-west between the Clark Mountain and Mescal mountains ranges, cresting at Mountain Pass Summit at an elevation of 4,730 ft amsl.

All access to the Project is controlled by MP Materials, and there is no public access through the Project area. All public access roads that lead to the Project are gated at the property boundary.

MP Materials maintains the existing infrastructure for the Project in support of mining and processing activities. A manned security gate is located on Bailey Road for providing required site-specific safety briefings and monitoring personnel entry and exit to the Project.

4.3 Climate and Length of Operating Season

The climate at Mountain Pass is described as arid desert, generally hot and dry in the summer and mild in the winter, with limited precipitation and cloud cover. Based on Western Regional Climate Center Statistics, the coldest month of the year is January with an average minimum temperature of 29.5°F (-1.4°C). The warmest month is July with an average high temperature of 92.8°F (33.8°C).

Precipitation in the area of the mine averages 8.4 inches per year. The maximum precipitation from a single storm in the past 45 years was 5.9 inches (Geomega, 2000). Most storms yield a precipitation of 0.5 inch or less. Precipitation most frequently occurs during November through February, accounting for over 40% of the annual total rainfall. However, the most significant portion of the annual rainfall can occur as summer thunderstorms during July and August with average monthly precipitation above 1.0 inch per month during these two months. These storms may result in heavy rainfall and flash floods. The snowfall in the winter months can accumulate rapidly but has minimal effect on operations. Operations at the Project are year-round.

4.4 Infrastructure Availability and Sources

MP Materials has fully developed operating infrastructure for the Project in support of mining and processing activities. A manned security gate is located on Bailey Road for providing required site-specific safety briefings and monitoring personnel entry and exit to the Project.

Given the relative proximity of the Project to the city of Las Vegas, Nevada, most personnel at the Project commute from the greater Las Vegas area. This regional city provides an adequate source of skilled and unskilled labor for the operation.

Outside services include industrial maintenance contractors, equipment suppliers, and general service contractors. Access to qualified contractors and suppliers is excellent due to the proximity of population centers, such as Las Vegas, Elko, Nevada (an established large mining district), and Phoenix, Arizona (servicing the copper mining industry).

Substantially all of the power to the Mountain Pass facility is currently supplied by a Combined Heat and Power (CHP) or co-generation (cogen) power facility with two natural gas-fired turbines capable of producing up to 26 MW of power combined. In addition, the site is served by a 12-kV line from a Southern California Edison substation two miles away.

Water is supplied through active water wells located eight miles west of the Project. Fire systems are supplied by separate fire water tanks and pumps.

Site logistics are straightforward with the concentrate product shipped in supersacks within a shipping container by truck approximately 4.5 hours to the port of Los Angeles. At the port, the containers are loaded onto a container ship and shipped to the final customers. Refined products for domestic customers are shipped in supersacks and intermediate bulk containers (IBC tote).

5 History

5.1 Prior Ownership and Ownership Changes

The Molybdenum Corporation of America (MCA) purchased the Birthday claims and the Sulfide Queen properties in 1950 and 1951, respectively. In 1974, MCA changed its name to Molycorp, Inc. (“Old Molycorp”). In 1977, Union Oil of California (Unocal) purchased Old Molycorp and operated the company as a wholly-owned subsidiary. In 2005, Chevron Corporation purchased Unocal. On September 30, 2008, Chevron sold the Mountain Pass facility and Rare Earth business, including the rights to the name Molycorp, to a private investor group who formed Molycorp, LLC. Molycorp, Inc. (“Molycorp”) was formed on March 4, 2010, for the purpose of continuing the business of Molycorp, LLC in corporate form. Molycorp filed for Chapter 11 bankruptcy protection in June 2015. As part of the corporate restructuring in the bankruptcy proceedings, the former assets of Molycorp associated with the Project were split between multiple parties. This included MPMO, which purchased the real property (e.g., equipment, surface rights, water rights, surface use rights, access rights, easements, etc.) and SNR, which purchased the subsurface mineral rights and certain intellectual property.

MPMO entered into a lease agreement with SNR on April 3, 2017, allowing MP Materials to extract rare earth products and byproducts from the Project mineral rights (note that this agreement excludes rights to all other minerals and hydrocarbons that could be present at the Project) and utilize the intellectual property, held by SNR. At the time of entering into the lease agreement, MPMO and SNR had shareholders common to both entities; however, they were not partners in business nor did they hold any other joint interest. On November 17, 2020, MPMO and SNR were combined with FVAC and became wholly-owned subsidiaries of FVAC, which was in turn renamed MP Materials Corp. Consequently, the intercompany transactions between MPMO and SNR did not continue after the business combination.

5.2 Exploration and Development Results of Previous Owners

The mining history of the area began with the organization of the Clark Mining District in 1865. This district produced about US$5,000,000 in silver between 1865 and about 1895 (Olson et al., 1954). Between 1900 and 1920, many small lead, zinc, copper, gold, and tungsten mines were operated in the area.

Mining at Mountain Pass began in 1924 when prospectors identified galena (lead sulfide) on Sulfide Queen Hill, which is near the location of the existing open pit. Several small shafts and trenches were excavated by various operators; however, no ore was shipped. The Sulfide Queen mine was developed and worked for gold between 1939 and 1942, producing about 350 ounces of gold from an inclined shaft about 320 ft deep and about 2,200 ft of workings developed on four levels.

The discovery of rare earth mineralization at Mountain Pass was made in April of 1949 by prospectors searching for uranium. Having noted that samples from the Sulfide Queen gold mine were radioactive, prospectors returned to the area and discovered a radioactive vein containing a large proportion of a light brown mineral (bastnaesite) that the prospectors were unable to identify. This original discovery is known as the Birthday vein. The prospectors sent a sample of the unknown mineral to the United States Bureau of Mines (USBM) for identification.

The USBM confirmed the bastnaesite discovery and made a public announcement in November 1949 (Olson et al., 1953). This attracted the attention of several mining companies, including MCA, which purchased the Birthday group of claims in February 1950. MCA sank a 100 ft-deep shaft on the Birthday claims, but no mineable ore was delineated, and development was stopped.

During this time, prospectors identified carbonatite dikes throughout a wider, adjacent area. The USGS proceeded to conduct detailed mapping of the entire Mountain Pass area. During this work, the USGS staff identified a massive body of carbonatite to the south of the Birthday claims, largely made up of barite, calcite, dolomite, and bastnaesite. Much of this carbonatite body was located on the original Sulfide Queen claims. MCA bought the Sulfide Queen claim group and the surrounding properties in January 1951. The existing gold mine and its associated equipment and buildings were also purchased, and a new crushing plant was installed. MCA drilled several hundred shallow churn holes in the following months and analyzed the cuttings for their rare-earth element contents (Olson et al., 1954).

Production of rare earth concentrate at the Project began in 1952, using the old gold plant, a new ball mill, and flotation cells from MCA's Urad, Colorado, molybdenum property. Mining started on a portion of the deposit where the ore averaged more than 15% TREO. The production rate varied from 80 to 120 st per day.

MCA signed a contract with the U.S. General Services Administration to produce rare earth concentrates for the government stockpile. By 1954, MCA shipped one hundred and twenty 60 t carloads of bastnaesite concentrate to the government stockpile, thereby fulfilling the terms of the contract. Other markets for TREOs had not yet developed, and the mine and mill operated part-time with a small crew.

Due to the increasing demand for europium for use in color televisions, MCA constructed a europium oxide plant in 1965 and increased production six-fold from the previous year to approximately 6.1 million pounds (Mlb) of TREO concentrate. The following year, a new concentrator was completed with a capacity of 600 metric tonnes per day. At the start of 1965, MCA produced 6,000 pounds per year (lb/yr) of europium oxide. By year-end, production of europium oxide reached 20,000 lb/yr. By the end of 1966, total production at the Project had quadrupled to 24 Mlb/yr of TREO concentrates.

Old Molycorp (formerly MCA) undertook a major geologic evaluation program at Mountain Pass between 1976 and 1980. MCA and Old Molycorp drilled dozens of diamond drillholes between 1953 and 1992 for exploration, mine development, and condemnation. More than 300 new mining claims were added over ground which could potentially contain rare earth mineralization. Regional aeromagnetic and radiometric surveys were conducted within and beyond the known rare earth mineralization, and Landsat imagery for the region was evaluated. The geological program included characterization of the alkaline rocks and rare earth mineralization of the district and involved detailed geologic mapping and petrographic studies of the Sulfide Queen deposit and the surrounding rocks. Ground-based geophysical surveys were completed over the known bastnaesite-bearing carbonatite and associated intrusive rocks.

Due to the continued expansion of the rare earths market, a new separation plant was completed in 1982, which could produce samarium and gadolinium oxides up to 99.999% in purity by solvent extraction (SX). Subsequently, the plant was modified to produce high-purity terbium oxide for fluorescent lighting.

In 1989, Old Molycorp began production of dysprosium oxide and increased its output of neodymium to satisfy the demand created by the growing neodymium-iron-boron permanent magnet industry. By 1990, lanthanide processing facilities at Mountain Pass expanded to produce various TREO concentrates. Between 1995 and 1997, Molycorp produced and sold in excess of 40 Mlb of rare earth oxide products per year. Limited mining of overburden and mineralized rock took place through 2002. The historical mill entered care and maintenance in 2002. Between 2007 and 2012, there was limited production of rare earth oxides from various types of stockpiled rare earth concentrates (primarily lanthanum concentrates and bastnaesite concentrate) through the historical separation facility.

In December 2010, under the new Molycorp, mining operations were restarted, and in January 2011, a major redevelopment project was initiated targeting modernization of milling and separation facilities. These new mining and separation facilities were intended to be developed in two phases, with the first phase targeting 19,050 metric tonnes (42 Mlb) of rare earth production per year and the second phase targeting 40,000 metric tonnes (88 Mlb) of rare earth production per year. This modernization included construction of a new mill, cracking facilities, separation facilities, and associated infrastructure, including power generation and reagent recycling facilities. The new separation facilities included production of cerium, lanthanum, neodymium, and praseodymium, with the remaining rare earths sold as a samarium, europium, and gadolinium (SEG) concentrate. During initial construction activities, Molycorp changed its development strategy and decided to build out capacity for both phases at the same time. Construction activities were largely completed by the end of 2013, with all first phase equipment constructed and most of the second phase constructed. Ramp up of the concentrator, separation facility and associated infrastructure (e.g., chlor-alkali/reagent recycling) encountered several issues that limited production and prevented operations from achieving targeted goals. 2013 production from Mountain Pass was approximately 7.7 Mlb of rare earth oxides, and 2014 production was approximately 10.5 Mlb. January through June 2015 production was approximately 8.1 Mlb of rare earth oxides. Molycorp declared bankruptcy in June 2015, and mining and processing operations were halted at that time.

The current owner, MP Materials, restarted milling and flotation operations in December 2017. MP Materials began production of separated REEs in 2023.

5.3 Historical Production

The reported historic production for the Mountain Pass deposit for the period 1953 through 1970, including the tonnage of mineralized and overburden materials mined, the plant feed grades and recovery, and pounds of rare-earth oxides produced, is shown in Table 5-1. The historic production from 1968 to 2002, including short tons mined, crushed, and milled, is presented in Table 5-2. Historic rare earth oxide production from 2009 to 2015, which includes reprocessing of existing stockpiles (2009 to 2012) and processing of freshly mined ore (2012 to 2015), is presented in Table 5-3. MP Materials' historic rare earth oxide production from 2018 through September 2024 is presented in Table 5-4.

Table 5-1: Production History, 1952 to 1970

Item	1952 to 1964	1965	1966	1967	1968	1969	1970[1]	Total
Waste stripped, st	0	0	0	15,000	20,000	85,000	14,000	134,000
Ore mined and fed to plant, st	255,375	37,476	179,721	201,233	193,100	259,097	182,290	1,308,292
Flotation Plant Feed, % TREO	9.1	10.2	9.1	8.3	8.1	7.5	7.2	8.3
Concentrate No. 400, klb TREO	31,934	6,094	12,873	16,483	2,361	2,188	7,519	154,444
Concentrate No. 401, klb TREO	0	0	11,139	8,001	20,408	25,155	10,289	0
Flotation Plant Recovery, %	68.6	80.1	73.0	73.2	72.7	70.5	68.1	0
Chemical Plant Feed, klb TREO	0	6,899	18,380	13,198	14,087	19,604	11,178	83,346
RE Oxide Nos. 410/411, klb TREO	0	275	282	307	1,731	409	0	3,004
Cerium Nos. 530/ 532, klb CeO_2	0	0	1,925	1,668	1,680	1,901	1,672	8,846
Lanthanum, 521, klb TREO	0	0	0	3,250	6,669	7,568	5,522	23,009
Lanthanum, 523, klb TREO	0	0	306	501	249	28	64	1,148
Neo-Praseo No. 545, lb Pr_6O_{11}	0	0	0	0	0	74,702	3,677	78,379
Gadolinium No. 573, lb Gd_2O3	0	0	0	0	17,084	17,881	13,990	48,955
Gad-Sam No. 575, lb TREO	0	0	0	9,961	12,095	0	0	22,056
Samarium No. 583, lb Sm_2O_3	0	0	0	0	29,600	0	0	29,600
Europium Nos. 500/ 501/ 510/510B/ 511, lb	0	1,845	11,384	9,058	3,234	7,847	8,226	41,594

Source: Mountain Pass monthly operational reports
[1]: Through October 31, 2007

Table 5-2: Mine Production History, 1971 to 2002

Year	Mined (st)	Crushed (st)	Milled (st)	Overburden (st)
1971	214,000	181,175	181,175	No data
1972	163,000	228,488	228,488	No data
1973	303,000	305,072	305,073	No data
1974	479,000	499,597	499,596	9,100
1975	296,693	296,693	296,693	70,100
1976	355,253	308,938	308,938	73,980
1977	314,946	321,508	321,508	66,255
1978	292,760	266,757	266,757	132,200
1979	326,010	358,399	358,399	327,760
1980	386,927	360,068	360,068	219,345
1981	371,553	370,207	370,207	225,691
1982	400,428	400,427	391,417	221,625
1983	485,315	322,771	371,252	226,000
1984	621,714	439,000	543,354	728,000
1985	365,000	204,000	253,000	1,233,000
1986	343,000	214,000	225,000	1,225,000
1987	402,000	320,000	358,000	1,072,000
1988	143,000	214,000	221,764	1,049,000
1989	445,000	419,000	418,446	1,610,000
1990	706,000	508,000	480,161	1,749,000
1991	404,000	446,000	336,344	2,477,000
1992	275,000	247,000	409,000	1,771,000
1993	540,000	447,000	433,000	1,232,000
1994	567,000	494,000	508,000	1,217,000
1995	714,000	546,000	537,000	2,388,000
1996	604,000	551,000	544,000	2,312,000
1997	632,000	452,000	424,000	3,355,000
1998	234,000	269,000	321,000	688,000
1999	94,000	0	0	43,000
2000	78,000	0	0	239,000
2001	175,010	260,000	175,010	634,000
2002	201,520	217,204	183,487	255,520

Source: Mountain Pass monthly operational reports
Mill quantities do not include tailings that were reprocessed.
Between 1975 and 1982, crushing tonnages were not recorded (assumed to be the same as milling tonnages).

Table 5-3: Mountain Pass Production History, 2009 to 2015, as Separated RE Products

Year	TREO Production (Metric Tonnes)
2009	2,103
2010	1,296
2011	3,062
2012	2,236
2013	3,473
2014	4,769
2015[1]	3,678

Source: Molycorp 10-K and 10-Q filings
[1]: January to June production

Table 5-4: Mountain Pass Production History, 2018 to 2024, as Bastnaesite Concentrate

Year	TREO Production (Metric Tonnes)
2018	13,913
2019	28,442
2020	38,561
2021	42,413
2022	42,500
2023	41,556
2024[(1)]	33,977

Source: MP Materials
[(1)]: January to September production

6 Geological Setting, Mineralization and Deposit

6.1 Regional Geology

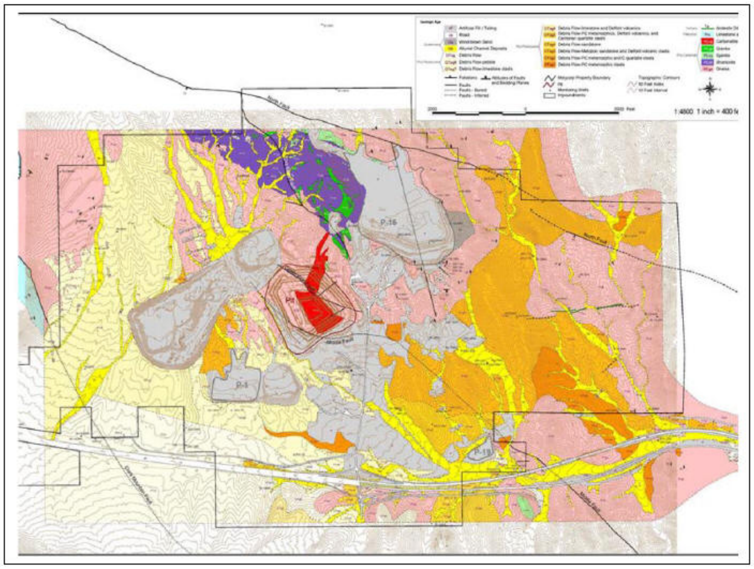
Mountain Pass is located in the southern part of the Clark Range in the northern Mojave Desert. The Mojave is situated in the southwestern part of the Basin and Range physiographic province which extends from central Utah to eastern California and is characterized by Tertiary extensional deformation and associated volcanics. This deformational event resulted in north-south trending mountain ranges separated by elongated valleys, characteristic of Basin and Range topography. The Mountain Pass rare earth deposit is located within an uplifted block of Proterozoic metamorphic and igneous rocks that is bounded to the south and east by basin-fill deposits in the Ivanpah Valley. This block is separated from Paleozoic and Mesozoic rocks on the west and southwest by the Clark Mountain thrust complex, which strikes north-northwest and dips from 35° to 70º west but averages 55 Wº. The North Fault forms the northern boundary of the block, striking west-northwest and dips from 65° to 70° south (Olson, et al., 1954; Castor, 2008). Geology of the Mountain Pass property is shown in Figure 6-1.

There are two main groups of rocks in the Mountain Pass area divided by age and rock type. These are Early Proterozoic high-grade metamorphic rocks, which are intruded by unmetamorphosed Middle Proterozoic ultrapotassic and carbonatite rocks. The Early Proterozoic high-grade metamorphic complex represents a wide variety of compositions and textures, as follows:

- Garnetiferous micaceous gneiss and schist
- Biotite-garnet-sillimanite gneiss
- Hornblende gneiss, schist, and amphibolite
- Biotite gneiss and schist
- Granitic gneiss and migmatite with associated granitic pegmatite
- Minor occurrences of foliated mafic rocks

The Middle Proterozoic ultrapotassic rocks are intrusive bodies of granite, syenite, and composite shonkinite-syenite, which contain augite and orthoclase. These have been intruded by carbonatites which formed swarms of thin dikes, stocks, and the tabular Sulfide Queen carbonatite currently the focus of mining activities (Olson et al, 1954; Castor 2008). The Middle Proterozoic ultrapotassic rocks have been age dated using U-Th-Pb and ^{40}Ar-^{39}Ar methods at 1,410 ± 5 Ma and 1,403 ± 5 Ma for shonkinite and syenite respectively. The rare earth-bearing carbonatite units, including the Sulfide Queen deposit, are younger with age dates, using Th-Pb ratios, of 1,375 ± 5 Ma (DeWitt et al, 1987). Both the Early Proterozoic metamorphic rocks and the Middle Proterozoic intrusive rocks have been crosscut by volumetrically minor, Mesozoic to Tertiary age dikes of andesitic to rhyolitic composition. Large portions of the Mountain Pass district are covered by younger (Tertiary to Quaternary) basin-fill sedimentary deposits (Olson et al, 1954; Castor 2008) (Figure 6-1).

Significant rare earth mineralization is only associated with carbonatite intrusions. Strongly potassic igneous rocks of approximately the same age are known from other localities in and around the Mojave Desert, but no significant carbonatite bodies or rare earth mineralization have been identified (Haxel, 2004).



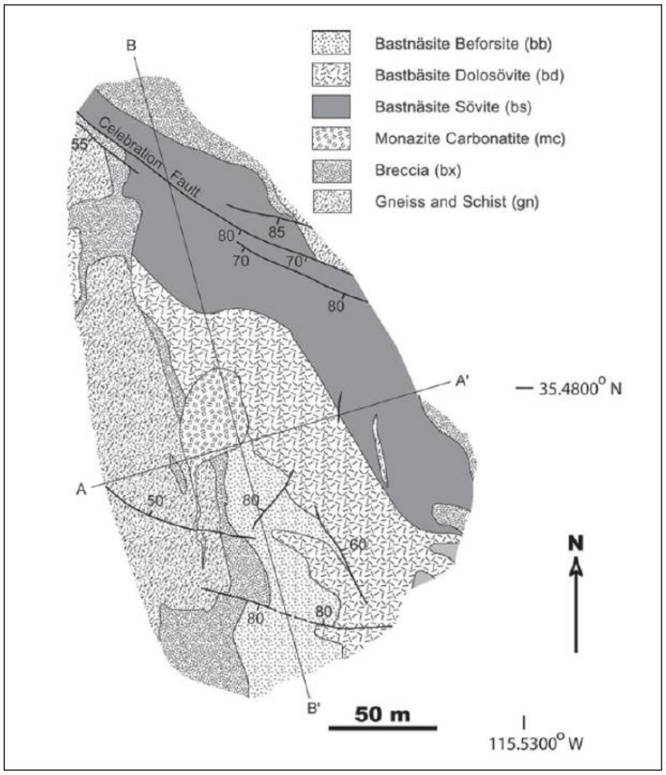
Source: Geomega, 2012

Figure 6-1: Regional Geological Map

6.2 Local and Property Geology

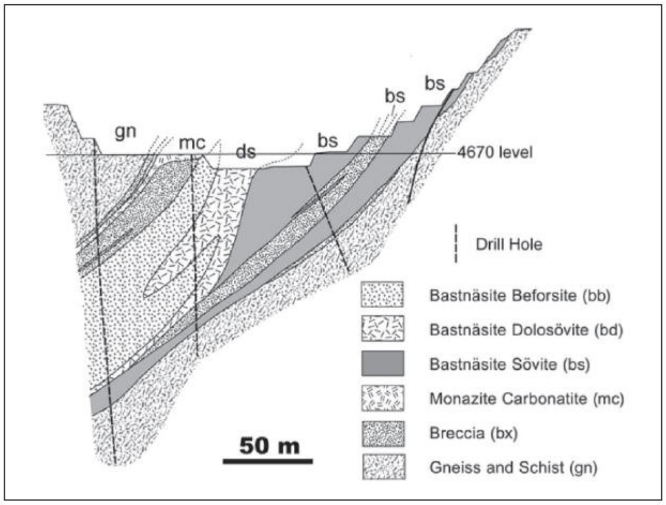
At Mountain Pass, the ultrapotassic rocks occur in seven larger stocks and as hundreds of smaller dikes. The largest single body is a composite shonkinite-syenite-granite stock approximately 6,400 ft in length and 2,100 ft wide (Olson, et al., 1954). These rocks span a variety of compositions, from phlogopite shonkinite (melanosyenite) to amphibole-biotite (mesosyenite and leucosyenite) to alkali-rich granite (Haxel, 2005). These complex and varied lithologies are believed to be sourced from the same parent magma formed from partial melting of the upper mantle (asthenosphere) beneath the North American continent during the Middle Proterozoic. The different compositions reflect different phases of magma differentiation (Castor, 2008). A generalized geological map of the area is shown in Figure 6-2.

The Sulfide Queen carbonatite, which hosts the mineralization at the property is referred to as a stock but is a roughly tabular, sill-like body that strikes approximately north and dips to the west at about 40° as shown in Figure 6-3. The carbonatite-bearing magma is believed to have formed by liquid immiscibility, separating from the same parent magma which formed the ultrapotassic rocks occurring nearby (Castor, 2008).



Source: Castor, 2008

Figure 6-2: Generalized Geologic Map – Sulfide Queen Carbonatite



Source: Castor, 2008
Section looking N-NE

Figure 6-3: Schematic Cross Section (A-A') of Sulfide Queen Carbonatite

6.2.1 Local Lithology

In the open pit and to the south, east and west, lithology is dominated by gneiss and the Sulfide Queen carbonatite. Immediately north of the pit, carbonatite is found at surface and a small outcrop of syenite is found adjacent to and on the east flank of the Sulfide Queen. The Sulfide Queen extends to the contact with shonkinite and ultrapotassic granite approximately 650 ft northwest of the open pit boundary.

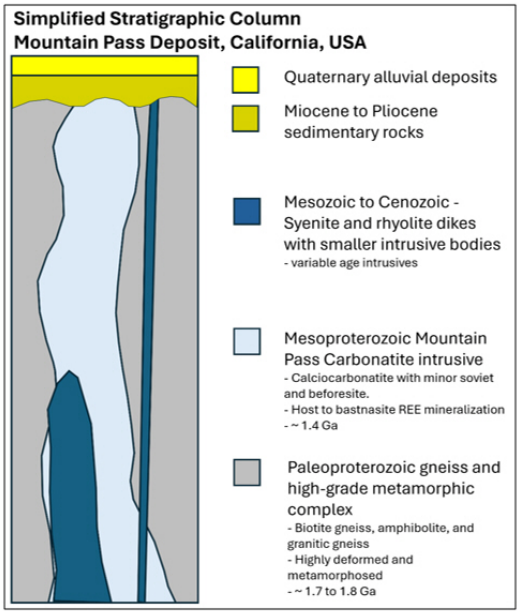
The carbonatite rocks at the Project have been divided by geologists at Mountain Pass into six types:

- Bastnaesite sövite (Bastnaesite-barite sövite)
- Bastnaesite beforsite (Bastnaesite-barite sövite)
- Bastnaesite dolosövite (Bastnaesite-barite dolomitic sövite)
- White sövite (White bastnaesite-barite sövite)
- Parisite sövite (Parisite sövite)
- Monazitic sövite (Monazite-bearing carbonatite)

These divisions are based on the carbonate mineral composition of the carbonatite, either calcite or dolomite, the dominant rare earth mineral, texture, and other criteria detailed in the following sections (based largely on Castor, 2008). The different carbonatite types and their specific mineralization are discussed in detail in Section 6.3.

Breccia is found within and adjacent to the Sulfide Queen and includes altered clasts of country rock as well as carbonatite. It is most abundant in the northern part of the open pit and to the south under the former mill. Breccia textures range from matrix to clast supported breccia with rounded to angular clasts. In the hanging-wall of the Sulfide Queen, breccia occurs as a stockwork while in other areas it appears to have formed by intrusive stoping. In the footwall of the carbonatite, the breccia is composed of rounded and crushed gneiss, syenite and shonkinite, which is interpreted by Castor (1988, 2008) as indicating a pre-carbonate intrusive formation. Breccia has previously been thought to be unmineralized but contains monazite in places.

A simplified stratigraphic column is presented in Figure 6-4 showing the primary lithology types on the property.



Source: SRK, 2023

Figure 6-4: Simplified Stratigraphic Column for the Mountain Pass Site

6.2.2 Alteration

Alteration at the Property is primarily contact metamorphism associated with the emplacement of the Sulfide Queen carbonatite. It is primarily fenitic alteration and found in the country rock adjacent to the carbonatite. Fenitic alteration or fenitization is associated with carbonate-rich fluids and is characterized by secondary potassium feldspar, phlogopite, and magnesio-riebeckite with chlorite and hematite in places. Due to the resulting distinctive color and textures of these minerals, the fenitic alteration type is relatively easy to recognize in outcrop and drill core by its light-colored minerals. Fenitization is typically less intense and widespread proximal to the ultrapotassic rocks relative to the intense alteration observed in the more reactive Middle Proterozoic rocks in the open pit area (Castor, 1988, 2008).

Other alteration identified locally includes hydrothermal alteration and silicification around the Celebration Fault. This is considered late stage and has little effect on mineralization (Castor, 1988; 2008). Additionally, weathering from meteoric water resulting in oxidation and hydration of minerals is commonly observed in the pit resulting in depleted carbonate minerals and thus, enrichments in TREO.

The presence of sillimanite in the biotite-garnet-sillimanite gneiss indicates that rocks of the Middle Proterozoic age reached high temperatures and pressures during metamorphism and were metamorphosed to the granulite facies. The carbonatite sills are not metamorphosed, and the Late Proterozoic age ultrapotassic rocks show limited contact metamorphism where these rocks host carbonatite.

6.2.3 Structure

Structural controls include local brecciation and faulting. Regional structural controls include the Clark Mountain Thrust and North Faults, which bound the block separating the Proterozoic rocks at the Property from the surrounding Paleozoic and Mesozoic age rocks. The Clark Mountain Thrust fault strikes north-northwest and dips from 35° to 70º W but averages 55º W. The North Fault strikes west-northwest and dips from 65° to 70º S and has offset the Clark Mountain Thrust by an estimated 1,200 ft near the Property. In general, all major faults in the Property area strike north-westerly and dip to the southwest. This includes the Middle and South Faults near the open pit (Olsen et al., 1954; Castor, 2008).

Within the open pit area, the important faults are the Ore Body, Middle, and the Celebration faults. The Ore Body Fault is a splay of the North Fault and the carbonatite and ultrapotassic rocks are found primarily between the Middle and Ore Body Faults. Both are normal faults that strike northwest and dip moderately to steeply southwest. Both faults display evidence of left-lateral and dip-slip displacements and were active until the Pliocene-Pleistocene. Both faults contain substantial gouge zones and are barriers to groundwater flow. Many smaller faults with similar orientations and displacement have been mapped between these two faults.

The Celebration Fault transects the open pit along the highwall and dips into the pit. It also functions as a groundwater conduit and is a target for two dewatering wells. This structure is sub-parallel to the Middle Fault and strikes at an average of N60º W with a dip of approximately 60° SW. Although appreciable dip-slip offset is not noted north of 800 NW on the mine grid, shallowly plunging slickensides indicate a component of right lateral strike-slip motion. The Celebration Fault is marked by a 10 to 20 ft wide zone of shearing and brecciation with only local cementation. The Friendship Fault is visible in the pit, dips approximately 78º NE, and is considered to be a splay of the Celebration Fault. Information from drilling indicates that the Sulfide Queen carbonatite is offset downdip by a series of faults with limited displacement. These structures are sub-parallel to the Friendship Fault, do not offset the Celebration Fault, and displacement of the Sulfide Queen carbonatite is less than 100 ft in most places (Castor, 1988; Molycorp, 2003; Nason, 2009).

6.3 Significant Mineralized Zones

Mineralization occurs entirely within the Sulfide Queen carbonatite within the Project area. This has been defined through drilling and mapping. Grade distribution internal to this mineralized zone is variable. Higher grade zones (>10% TREO) tend to occur in lenses parallel to the hangingwall - footwall contacts, both downdip, and along strike. High grade also occurs along faults which have variable orientations due to meteoric water in faults dissolving carbonate minerals resulting in elevated concentration of bastnaesite in a weathered host rock. Continuity of mineralization internal to the carbonatite zone is well defined both along strike and downdip.

The currently defined zone of rare earth mineralization exhibits a strike length of approximately 2,750 ft in a north-northwest direction and extends for approximately 3,000 ft downdip from surface. The true thickness of the >2.0% TREO zone ranges between 15 to 250 ft.

The principal economic mineral at the Project is bastnaesite, a rare earth fluorocarbonate with the generalized chemical formula $LnCO_3F$, where *Ln* is a variable representing a lanthanide elemental component (usually lanthanum or cerium). This naming convention is applied throughout this resource report. The bastnaesite composition at the Project is dominated by cerium, lanthanum, and neodymium, with smaller concentrations of praseodymium, europium, samarium, gadolinium, dysprosium, terbium, and heavier rare-earth elements.

Bastnaesite mineralization at the Project were subdivided by Castor (1988, 2008) as described below. Non-mineralized rock types within the open pit area are also described.

6.3.1 Bastnaesite Sövite

Bastnaesite-sövite is a calcite-rich mineralized rock type containing relatively coarse, early-formed bastnaesite, along with recrystallized barite phenocrysts, in an anhedral matrix of fine calcite and barite. Where unaltered, this material is a pink to mottled white and red-brown rock carrying about 65% calcite, 25% strontian barite, and 10% bastnaesite. However, chemical and mineralogic changes subsequent to crystallization have produced more complex mineralogy. The sövite is characterized by relatively high calcium, strontium and lead, moderate barium, and low phosphorous.

The bastnaesite sövite forms the basal portions of the resource area, and all of the resource at the north end of the pit. At the south end of the pit, sövite makes up less than half the mineralized zone thickness.

Celestite occurs in the bastnaesite sövite as bladed replacements and outgrowths from barite phenocrysts. Celestite is particularly abundant, along with variable amounts of very coarse bastnaesite, in a basal sheet of otherwise unaltered sövite about 50 ft thick. This celestite sövite zone is separated from the main mineralized body by a zone of gneiss and/or breccia. Late celestite veins have been observed cutting talc-altered sövite.

Dark brown or ochre limonite is locally pervasive in sövite, particularly in silicified ore. Such rocks rarely have higher iron contents than unaltered sövite. Coarse bastnaesite typifies sovitic mineralized rock. On the 4640 level the average bastnaesite grain diameter is about 300 µm. For the most part, monazite

[$LNPO_4$)] occurs sparingly in the sövite, almost always as small primary euhedral and patches of radial secondary needles.

6.3.2 Bastnaesite Beforsite

The bastnaesite beforsite unit generally lies above the sovitic material and is separated from it by dolosovite. Bastnaesite beforsite is a carbonate-rich mineralized rock type, containing ferroan dolomite (ankerite) as the major carbonate phase, instead of calcite, and is largely unaltered. Locally this rock contains minor quartz. Beforsite is tan or grey to pinkish tan and contains abundant grey or purple to pink and white single-crystal barite phenocrysts. The matrix consists mainly of fine dolomite rhombs set in very fine interstitial material consisting mainly of bastnaesite with calcite and barite. The mineralogical composition of an average beforsite is about 55% dolomite, 25% barite, 15% bastnaesite, and 5% calcite. Zones of barite-rich beforsite, associated with barite-poor zones have been logged in core holes and noted during pit mapping. Compared with the sövite, beforsite in pit samples has higher Ln and Ba, along with lower Sr and Pb. Phosphate content is variable but can be high in areas of irregular late veinlets of felty monazite. This is known as “bone” monazite and can be as much as 5% of the rock.

Dark brown limonitic alteration occurs in places in the beforsite, particularly along faults and in structural zones. In many instances, the limonite forms rhomb-shaped pseudomorphs indicating it formed by replacing the ferroan dolomite. In addition, secondary lanthanide minerals occur in portions of the beforsite such as sahamalite ($(Mg,Fe^{2+})Ln_2(CO_3)_4$), synchisite [synchysite, $CaLn(CO_3)_2F$] and ancylite ($SrLn(CO_3)_2(OH)\cdot H_2O$) which was also identified using XRD. Large amounts of these secondary LN carbonates occurring within beforsite are associated with secondary calcite. Along the south wall of the pit, the beforsite contains crude, nearly vertical banding. On close examination, this is seen to consist of braided discontinuous veins of late bastnaesite/calcite. This texture probably formed by upward streaming of lanthanum and calcium-rich residual fluids remaining in the beforsite after dolomite crystallization.

6.3.3 Bastnaesite Dolosovite

Bastnaesite dolosovite occurs in a 100 to 200 ft wide zone between the beforsite and sövite. It contains both dolomite and calcite and is generally limonitic. Similar to the beforsite, dark brown limonite commonly forms pseudomorphs after dolomite rhombs. The dolosovite generally contains white to pink recrystallized barite phenocrysts. Some dolosovite samples contain coarse bastnaesite as in the sövite, but often samples have fine, late beforsite-style bastnaesite. A line drawn along the interface between the zone of coarse-grained (greater than 150 μm) bastnaesite average crystal sizes and the zone characterized by fine (less than 150 μm) average crystal size roughly bisects the bastnaesite dolosovite zone.

Chemically, the dolosovite shows both sovitic and beforsitic attributes. It is highly variable in terms of gangue mineralogy, particularly with regard to the carbonate minerals which show much evidence of secondary redistribution. In some samples, dolomitization is obvious, along with later limonitic replacement of the dolomite. In other locations, late white to brown calcite veining is abundant.

Some consider the dolosovite to be a hybrid rock and not a separate intrusive type. In this case, it is plausible it was formed by carbonate redistribution during and after intrusion of the beforsite. Based on bastnaesite grain size, it is mainly dolomitized sövite; but contains some finely divided bastnaesite and is in part calcitized beforsite. Strongly limonitized dolosovite, referred to as “black ore”, creates extreme milling problems. “Black ore” is mainly restricted to the dolosovite but in places extends into the beforsite. This material is generally dark brown soft material with white calcite veining. It typically exhibits high lanthanum content, carrying large amounts of coarse- or fine-grained bastnaesite. In part, the elevated lanthanide (Ln) values may be due to removal of carbonate, resulting in an abundance of void space allowing the formation of larger grain sizes. This material generally has relatively low densities and is poorly indurated. Analysis of this rock type shows that bastnaesite dolosovite has above average iron, manganese, and phosphorous contents as compared with the bastnaesite sövite.

The bastnaesite dolosovite has high strontianite contents derived from sovitic rock. It is locally high in fine, anhedral, late-stage silica. Although the dolosovite appears to be dominated by alteration minerals, it rarely contains talc.

Ln-bearing minerals other than bastnaesite commonly occur in the dolosovite, though mainly as minor phases. Bright yellow synchisite replacing bastnaesite was observed in many thin sections. Secondary sahamalite and ancylite have also been identified in many dolosovite samples. Bastnaesite in dolosovite is generally yellow-brown or dark-brown, rather than in normal light tan to grey colors. Bone monazite is more abundant than primary monazite.

6.3.4 White Sövite

White sövite occurs above the beforsite in the southwest corner of the pit (current pit bottom 4,300 ft). It carries very fine, late bastnaesite as in the beforsite, but contains little or no dolomite. White sövite appears to be the product of late stage calcitization of beforsite by rising residual fluids responsible for late bastnaesite/calcite deposition in the underlying beforsite.

In addition to fine bastnaesite, the white sövite contains abundant single-crystal barite phenocrysts as in the beforsite. Chemically, white sövite has high Ln and low Pb relative to beforsite. Its Sr content ranges from low to moderate. Phosphate contents are variable, with most present as veins of bone monazite.

On the 4,640 level, the white sövite is exposed as a thick dike within hangingwall stockwork breccia 10 to 20 ft above the beforsite. Drillhole 85-1 intercepted 80 ft of white sövite before encountering dolomitic carbonatite.

6.3.5 Parisite Sövite

Parisite sövite is found in the pit above the 4,700 level in the footwall. A dike carrying about 20% of flow-oriented parisite [$CaLn_2(CO_3)_3F_2$] was mapped on the 4,760 level at the south end of the pit. This dike was intercepted in core hole 85-2.

6.3.6 Monazitic Carbonatite

Bodies of carbonatite which contain primary monazite in amounts that approach or exceed bastnaesite contents occur within, and adjacent to, the mineralized zone. In addition, monazitic sövite comprises most of the small carbonatite dikes in the vicinity of the mineralized zone.

The monazitic carbonatite has low total TREO content, generally in the 2% to 4% range. It is also characterized by high Ca and P, and low Ba. In hand specimen, the monazitic carbonatite is nearly equigranular because barite phenocrysts are sparse or lacking.

Although sovitic and beforsitic carbonate rock types have both been documented, nearly all of the monazitic-bearing carbonatite rocks observed on the 4,700 to 4,640 levels are dolosovite. Monazite sövite is abundant in core holes drilled on the north part of the pit. Significant amounts of monazite dolosovite occur at the south end of the mineralized zone and extend beneath the mill.

Monazitic carbonatite is generally associated with brecciated rocks. Small, phlogopitized clasts are commonly present in the monazite carbonatite as well as phlogopite xenocrysts. At the north and south ends of the pit monazitic carbonatite appears to form envelopes around breccia masses. A large monazite dolosovite mass along the hangingwall of the deposit contains areas rich in clasts.

The monazite in the monazitic carbonatite occurs predominantly as primary euhedra or subhedra. Bone monazite replaces primary crystals in some samples. Where present, bastnaesite occurs as sparse corroded grains, generally observed in coarser sizes similar to those documented in the basal sövite.

The location of monazitic carbonatite masses, and the lack of barite phenocrysts suggest the monazitic magma was filter pressed out of the adjacent breccias. Formation of the monazitic carbonatite units probably post-dated sövite emplacement and predated beforsite emplacement.

Alteration in the monazitic carbonatite is similar to that observed in the dolosovite. However, “black ore” formed from monazitic carbonatite has not been recognized to date.

6.3.7 Breccia

Breccia with a carbonatite matrix comprises a significant proportion of the Mountain Pass carbonatite body. Like the related monazitic carbonatite, the breccia nearly always has low lanthanum oxide (LnO) and high P and has historically not been added to mill feed in significant quantities. Breccia has been observed in abundance at the north end of the current pit, and essentially limits mining in that direction due to metallurgical concerns. Breccia is also present at the south end of the pit, where considerable tonnages extend under the current mill location.

Breccia occurrences associated with the main carbonatite body at the Project are variable. The breccia bodies were previously noted to be semi-continuous envelopes on the hangingwall and footwall contact with the carbonatite intrusion and interlayered within the mineralized rock types. In the hangingwall, they range from stockworks of randomly oriented or sheeted carbonatite dikes cutting altered gneiss, clast-supported breccia with more than 70% altered angular clasts, to matrix-supported breccia with angular to rounded clasts which locally grades into monazitic carbonatite with sparse clasts.

In the footwall, abundant rounded clasts of gneiss, shonkinite, and syenite occur in a crushed rock matrix with little or no carbonatite. This breccia grades to matrix supported breccia with rounded clasts. Some footwall breccia has protomylonitic textures, along with occurrences of talc and crocidolite. Breccia at the north end of the pit is strongly altered to talc, which renders clast identification difficult. Brecciated zones have also been observed internal to the main carbonatite body. Surrounding Rock Types The carbonatite stock at the Project is intruded into the metamorphic rocks and the ultrapotassic suite. Both of these rock types are typically strongly fenitized near their contacts with carbonatite, and fenitized clasts are commonly included in igneous breccias at the edges of the intrusion (Castor, 1988).

6.4 Relevant Geological Controls

The primary geologic control on mineralization is lithology; and only the carbonatitic rock types appear to be favorable for economically significant rare earth mineralization. Although a number of high-angle normal faults bisect the mineralized zone, offset appears to be post mineral in all cases.

6.5 Deposit Type, Character, and Distribution of Mineralization

Mountain Pass is a carbonatite hosted rare earth deposit (USGS Deposit Model 10; Singer, 1986). The mineralization is hosted principally in carbonatite igneous rock. Mountain Pass is the only known example of a rare earth deposit in which bastnaesite is mined as the primary magmatic economic mineral in the world (Haxel, 2004).

Mineralization occurs entirely within the carbonatitic portion of the currently drilled geologic sections, although grade distribution internal to this mineralized zone is variable. Higher grade zones (>10% TREO) tend to occur in lenses parallel to the hangingwall/footwall contacts, both downdip and along strike. Continuity of mineralization internal to the carbonatite zone is well defined both along strike and downdip.

The currently defined zone of rare earth mineralization exhibits a strike length of approximately 2,750 ft (850 m) in a north-northwest direction and extends for approximately 3,000 ft (930 m) downdip from surface. The true thickness of the >2.0% TREO zone ranges between 15 to 250 ft (5 to 75 m).

Globally, carbonatites are subdivided into two main groups: apatite-magnetite bearing, mined for iron and/or phosphorus ± various by-products, and rare-earth bearing carbonatites. Many other commodities may be present in economically significant concentrations, such as uranium, thorium, titanium, copper, vermiculite, zirconium, niobium, and phosphorus. The majority of carbonatite complexes display a series of variable carbonatitic magma compositions, the majority of which are not significantly enriched in rare earths. Mountain Pass is unique in that the carbonatite does not exhibit such variation and has significant intervals of elevated rare earths throughout its entirety.

7 Exploration and Drilling

7.1 Exploration

In 1949, the rare earth-bearing carbonatite was discovered by a United States Geological Survey (USGS) field team (Olson, et al., 1954). The discovery and exploration details of Mountain Pass were published in USGS Professional Paper 261, which included regional and local scale geological and structural maps as well as maps of the underground workings at the Sulfide Queen Mine. USGS Professional Paper 261 details petrography, mineralogy, and chemical analyses in addition to structural and geologic data collected by the USGS. This document served as the basis for further exploration and eventual exploitation of the Mountain Pass Mine.

There is no other relevant exploration work on the property, other than drilling, conducted by or on behalf of current and previous owners at the Mountain Pass Mine. Drilling is discussed in Section 7.2. The USGS has conducted regional exploration work which is largely focused outside the Mountain Pass property.

7.2 Drilling

Extensive drilling at the Mountain Pass mine has been undertaken since the 1950's, some of which is utilized to define the orebody and relevant geological features. The prior owner, Molycorp, completed drilling campaigns in 2009, 2010 and 2011. Data prior to those exploration campaigns are considered historical in nature. While this historical data provides geological and grade information, the historical drilling has no quality control (QC) data associated with it. In 2021, MP Materials performed a limited geotechnical and exploratory drilling campaign and handled core logging/sampling in a similar manner to the 2009-2011 drilling.

The 2009 drilling campaign consisted of an infill drilling program to upgrade the resource classification within and adjacent to the existing Sulfide Queen area. The program consisted of twelve, 5.5-inch reverse circulation (RC) holes around the south, west, and north sides of the pit. The 12 holes ranged in depth from 230 to 1,245 ft (70.1 to 379.5 m) and were drilled between December 2009 and February 2010. Sampling was done on 5 ft (1.524 m) intervals, and the bagged samples were delivered by SRK to the on-site sample prep facility. Among the 12 holes, MP-09-01 is missing all data.

The 2010 program was designed as a diamond drillhole (DDH) in-fill, exploration, and condemnation program. The program consisted of two DDH infill holes on the south side of the pit, two DDH exploration holes north of the pit, and two condemnation holes. One condemnation hole was completed as a DDH drilled northwest of the existing waste rock dump to test a possible future tailings site; the other was a RC hole drilled northeast of the pit, at the site of the separation plant expansion. Core sampling was conducted on 5 ft intervals and bagged samples were stored at the on-site sample preparation facility. RC samples were submitted as approximate 10-kilogram (kg) splits of the original recovered sample.

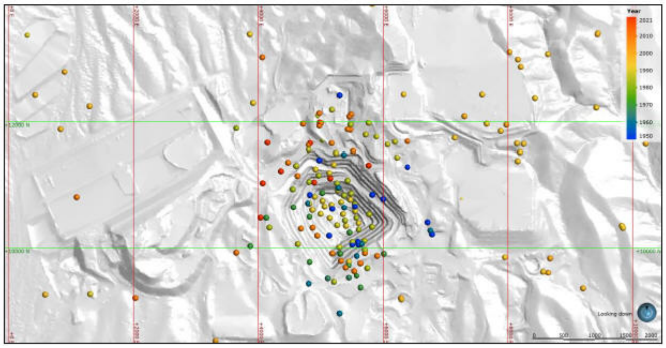
In 2011, Molycorp completed a DDH infill drilling campaign. In addition to routine total rare earth assaying, Molycorp randomly selected 683 core samples for laboratory analysis of the individual light rare earth components.

Core recoveries from the 2009 and 2010 drill campaigns exceeded 95%. MP Materials has noted similar results for the 2011 and 2021 drilling as well. Sample protocols described in Sections 8.1

through 8.3 of this report provide reproducible results. SRK is of the opinion that drilling and sampling in these campaigns provides generally accurate and reliable results.

MP Materials conducted a geotechnical / exploration DDH drilling campaign in 2021 with 16 holes drilled at a total depth of 10,136 ft for geotechnical and resource evaluation purposes. All cores have been sampled at an interval of 10 ft on host rocks, and 5 ft on mineralized samples.

Figure 7-1 illustrates the locations of the drillholes, color coded by drill campaign. Several drillholes are located outside of the field of view but these do not impact the mineral resource model.



Source: SRK, 2023
Colored points are drill collars shaded by relative approximate date of drilling.

Figure 7-1: Drilling in MP Materials Pit Area

Geotechnical data for the project was acquired by detailed rock fabric mapping of surface exposures and subsurface sampling using drill core. SRK has reviewed the industry-accepted procedures and methods used by Call and Nicholas, Inc. (“CNI”), which are documented in Nicholas & Sims (2001) to characterize the rock mass. In SRK’s opinion, the geotechnical conditions are well characterized, and a sufficient number of holes have been drilled into the final pit wall to interpret the ground conditions.

CNI conducted laboratory testing to determine the intact and fracture strengths of the rock mass at their laboratory in Tucson, Arizona. Laboratory testing at this laboratory is done in general accordance with procedures outlined in ASTM standards for rock and soil testing. Using the intact and fracture strengths, rock mass strength estimates were developed using a procedure outlined in the Guidelines for Open Pit Slope Design (Read & Stacey, 2009). SRK has reviewed the rock mass strength calculations and inputs into the stability analysis. SRK concurs with the methods, approach, and results of the documented geotechnical study and interpretation of the results. Further discussion of the geotechnical parameters used for open pit mine design is presented in Section 13.1.

8 Sample Preparation, Analysis and Security

The majority of data in the mineral resource database is from historical drilling conducted prior to 2009. SRK has relied on prior discussions, from the time of Molycorp ownership, with former site geologists (e.g., Geoff Nason and John Landreth) for description of sample collection, preparation, analysis, and security (Nason and Landreth; personal communication; 2009). SRK conducted a verification program at the Project between 2009 and 2010 that included reanalysis of archived core from historic drilling programs and a limited infill program. This is discussed in Section 9.2.

No additional drilling was completed until 2021, during which MP Materials drilled a series of 16 holes for geotechnical purposes (GT series), some of which were in carbonatite zones and featured mineralization. Similar to previous programs, samples were processed and analyzed at the on-site laboratory with duplicate samples analyzed by an outside lab for validation. SRK is of the opinion that the sample preparation, security, and analytical procedures are adequate for reliance in the mineral resource estimation. Any uncertainty related to the historical or variable nature of the analyses are addressed in mineral resource classification as described in Section 11 of this report.

8.1 Sampling

8.1.1 Historical Sampling Procedures

The sample and drilling procedures prior to 2009 described by Nason and Landreth (2009) indicate that during drilling, the core or drill cuttings were in the custody of the drillers or geologists or secured in an onsite storage location at all times. Field geologists delivered samples to the sample preparation area. The sample preparation and laboratory facilities were within the secured Mountain Pass property boundary. This was industry standard practice at the time for ongoing exploration at an operating mine. Access to the Mountain Pass Mine is controlled by security at the gate 24 hours per day. Drilling since 2009 has been conducted in and around the open pit, which is a restricted area. All drill cores and RC samples were transported from the drill sites by a Molycorp employee and stored in a secure storage area until the core or RC chips were logged. Sample security was controlled and supervised by Molycorp personnel. Molycorp observed accepted industry practice chain of custody.

Nason and Landreth (2009) described the sampling methods prior to 2009. After the core was logged, a geologist selected sample intervals for analysis. Sample intervals were based on lithology and were generally 5 ft in mineralized zones. Zones identified by the logging geologist as being waste zones were not sampled. Sample intervals could be shorter or slightly longer at lithological contacts and through fault zones. Lithological contacts are generally sharp and recognizable.

The core was split longitudinally using a hydraulic core splitter. Half of the core was placed in a bag for analysis and the remaining half retained for geological reference. Following sample collection, the samples were delivered to the sample processing facility located in the mill facility. Preparation of the split core samples included overnight drying and subsequent crushing and pulverizing. The entire crushed and dried sample was then passed through a cone crusher, homogenized and split using a Jones splitter to a 100 gram (g) sample. Reject material was placed in envelopes and labeled for storage. From the 100 g sample, 10 g was delivered to the on-site lab for X-ray fluorescence (XRF) analysis. The grain size of the 90 g of remaining sample was further reduced using a shatterbox swing mill. A split of the pulverized material was placed in sample envelopes and delivered to the Mountain

Pass Lab. All pulp and coarse rejects were packaged and labeled. After analysis, the pulp and coarse rejects were returned to the geology department for onsite storage.

SRK was not able to independently verify or observe the sampling methods employed during the historical drilling campaigns and has relied on verbal and written descriptions of the processes by former employees of Molycorp and its predecessors. SRK reviewed drill logs, sample summary sheets, a limited number of coarse and pulp rejects and remaining drill core. The remaining drill core is stored on site and is organized by drillhole and interval. Coarse and pulp rejects are no longer available on site.

SRK conducted a random inspection of the historical sample preparation area and core in the storage areas from the various major drilling programs and is of the opinion that sample handling, sample preparation and storage of core and rejects meets current industry accepted practices.

8.1.2 Sampling 2009-2011

The 2009 to 2011 drilling programs include photographs of core, a system of marking sample intervals on the core boxes, a sample numbering system and record-keeping for all sample intervals in the drill log.

Sampling procedures include:

- A written record of the sample collected
- Marking the sample interval on the core box
- Identifying the sample interval and box interval on the inside top of the box
- Photographing the core as both dry and wet core and core box top
- Splitting of the core lengthwise using a hydraulic press
- Placing the split core into a pre-labeled sample bag
- Inserting core blocks at the beginning and end of the removed core
- Inserting a lath cut to the sample interval as a space keeper in the core box

Sample numbers were generated using a combination of the drillhole identification and from-to sample interval. Control samples were placed in the sample stream with similar numbers using a drillhole and interval to be unrecognizable to the laboratory. The sample interval used for control samples was beyond the total depth of the drillhole to eliminate confusion with an actual sample. This was noted on the sample log to avoid future confusion on total depth of drillholes.

8.1.3 Sampling 2021

Procedures of sampling 2021 drilling cores are identical to the procedures used in 2009-2011. Core samples were collected by MP Materials' geologists, logged, photographed, split, and provided to the on-site lab for preparation and analysis.

8.2 Laboratory Analysis

There were various analytical procedures used by MP Material's predecessors for sample preparation and analytical methods. Historically, quality assurance and quality control (QA/QC) samples were not inserted into the sample stream as part of the drilling programs.

There were two types of analytical techniques used for measuring TREO at the Project:

- Gravimetric methods
- X-ray fluorescence (XRF)

Results for rare earths were typically reported as percent TREO.

The analysis for the drilling data in the existing assay database was obtained primarily by XRF analysis.

8.2.1 Note on Assay Terminology

For many rare earth projects, laboratory results typically include assays for all the individual rare earth oxides as well as for Y_2O_3 which is not considered a rare earth oxide but is geochemically similar and is often associated with heavy rare earth oxides. The exact grouping of individual oxides into light and heavy categories is not consistent from one project to another.

Mountain Pass is considerably enriched in light rare earth oxides (“LREO”) compared with heavy rare earth oxides and Yttrium (“HREO+Y”), due to the predominance of bastnaesite whose mineral structure favors inclusion of lighter rare earth elements. The Mountain Pass assay suite was limited to the lighter rare earth oxides, specifically La_2O_3, CeO_2, Pr_6O_{11}, Nd_2O_3, and Sm_2O_3 and these were routinely summed together and reported as a single value representing the sum of the five individual oxide assays. Therefore, for the Mountain Pass project, the grades entered into the drillhole database as “LnO” or “REO” and presented in this report as “TREO” represent the sum of La_2O_3, CeO_2, Pr_6O_{11}, Nd_2O_3, and Sm_2O_3.

Many rare earth projects discuss LREO or HREO+Y ratios by expressing one group as a percentage of the sum (LREO+HREO+Y) and may refer to this summed assay value as TREO or TREO+Y; however, this is not the case for Mountain Pass.

Specifically, the definition of the term TREO in this report is different from the same term typically used when discussing other projects. In this report, TREO is the sum of La_2O_3, CeO_2, Pr_6O_{11}, Nd_2O_3, and Sm_2O_3 and it excludes the heavier rare earth oxides and yttrium oxide.

8.2.2 Historical Analyses

Prior to 1970, Molycorp used a gravimetric method for samples from the drilling and sampling programs. The gravimetric method determined Re_2O_3% and was reported as TREO%. In this method, approximately 0.5 to 1.0 g of sample was dissolved through heating in a mixture of perchloric acid ($HClO_4$) and hydrogen peroxide (H_2O_2). The rare earths were then isolated in two precipitation and dissolution steps using organic solvents and inorganic rinses. The first step involved using phenolphthalein and NH_4OH and the second used oxalic acid. This procedure separated the TREO and thorium from iron, aluminum, uranium, titanium, phosphate, manganese, alkaline and alkali earth metals and other divalent cations. The final filtered precipitate of RE-oxalate was then ignited at 900 to 1,000°C and when cooled weighed as total Re_2O_3 (Jennings, 1966). SRK does not know the detection limit for this technique.

8.2.3 Current Analytical Practices

Currently, the on-site lab uses XRF and Inductively Coupled Plasma (ICP) techniques for determination of individual rare earth species and reports the analysis as individual and TREO.

Laboratory equipment at the on-site laboratory includes:

- One Philips PW2404 x-ray spectrometer XRF with a PW2450 VRC sample changer capable of running up to 150 samples per day (the lab is currently capable of prepping 50 fusion disks per day)
- One X'Pert PRO X-ray Diffraction (XRD) PANalytical
- One Perkin and Elmer Atomic Absorption Spectrometer (AAS)
- Two Ultima2 Inductively Coupled Plasma Atomic Emission spectrometers (ICP-AES) each capable of 100 samples per day
- One Agilant Inductively Coupled Plasma-Mass Spectrometer (ICP-MS) with an Agilant 7500cc Octopole Reaction System capable of speciation that can analyze 600 samples per day

Table 8-1 presents the detection limits for the oxides and TREO parameters.

Table 8-1: Oxides and TREO Detection Limits, Mountain Pass Laboratory

Oxide	**P_2O_5**	**ThO_2**	**SiO_2**	**Fe_2O_3**	**MgO**	**CaO**	**SrO**	**BaO**
Limit (%)	0.05	0.01	0.05	0.05	0.05	0.05	0.05	0.05
TREO	TREO	CeO_2	La_2O_3	Pr_6O_{11}	Nd_2O_3	Sm_2O_3	n/a	n/a
Limit (%)	0.1	0.03	0.03	0.02	0.02	0.02		

Source: SRK, 2012

8.2.4 2009 and 2010 Samples

Drill samples for the 2009 and 2010 campaigns were analyzed at both the Mountain Pass Laboratory and at SGS Minerals in Lakefield, Ontario, Canada. SGS Minerals has ISO/IEC 17025 accreditation.

Quality control samples included:

- Field blanks (roadside marble and scoria grab samples)
- Pulp blanks prepared from purchased silica sand
- Field duplicates (i.e., two splits of RC cuttings collected at the drill rig)
- Coarse reject duplicates
- Pulp duplicates
- A pit standard (pulp prepared by Mountain Pass)

8.2.5 2011 Samples

The analysis for the 2011 drilling program completed by Molycorp were analyzed at Actlabs in Ancastor, Ontario, Canada using the Code 8 Rare Earth Element Assay Package. In this package, the analysis is conducted using a lithium metaborate/tetraborate fusion followed by dissolution in acid and analysis by ICP-MS. Detection limits for this technique are shown in Table 8-2. Actlabs has ISO/IEC 17025 accreditation.

Table 8-2: Oxides and Element Detection Limits, Actlabs Laboratory

Oxide or Element	Detection Limit	Element	Detection Limit	Element	Detection Limit	Element	Detection Limit
Al_2O_3	0.01%	Be	1 ppm	Rb	2 ppm	La	0.1 ppm
CaO	0.01%	Bi	0.4 ppm	Sb	0.5 ppm	Ce	0.1 ppm
Fe_2O_3	0.01%	Co	1 ppm	Sc	1 ppm	Pr	0.05 ppm
K_2O	0.01%	Cr	20 ppm	Sn	1 ppm	Nd	0.1 ppm
MgO	0.01%	Cs	0.5 ppm	Sr	2 ppm	Sm	0.1 ppm
MnO	0.001%	Cu	10 ppm	Ta	0.1 ppm	Eu	0.05 ppm
Na_2O	0.01%	Ga	1 ppm	Th	0.1 ppm	Gd	0.1 ppm
P_2O_5	0.01%	Ge	1 ppm	Tl	0.1 ppm	Tb	0.1 ppm
SiO_2	0.01%	Hf	0.2 ppm	U	0.1 ppm	Cy	0.1 ppm
TiO_2	0.001%	In	0.2 ppm	V	5 ppm	Ho	0.1 ppm
LOI	0.01%	Mo	2 ppm	W	1 ppm	Er	0.1 ppm
Ag	0.5 ppm	Nb	1 ppm	Y	2 ppm	Tm	0.05 ppm
As	5 ppm	Ni	20 ppm	Zn	30 ppm	Yb	0.1 ppm
Ba	3 ppm	Pb	5 ppm	Zr	4 ppm	Lu	0.04 ppm

Source: Modified from Actlabs fee schedule (http://www.actlabs.com/files/Canada_2012.pdf, 2012

8.2.6 2021 Samples

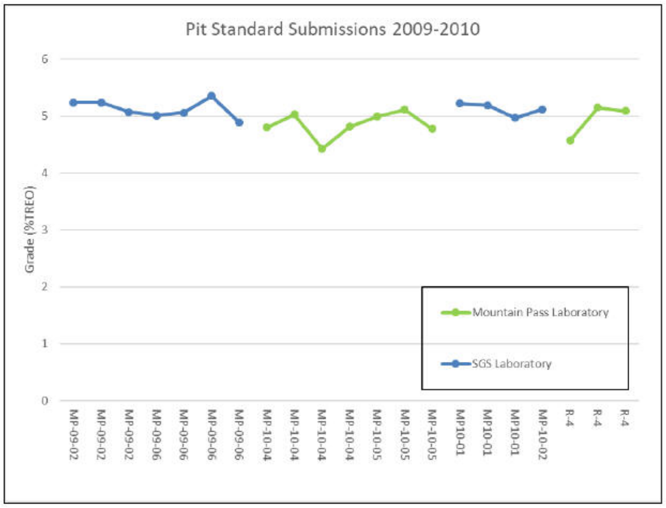
A relatively small subset of the database is comprised of samples taken during 2021 geotechnical drilling. These samples function for two purposes, primarily as additional information to characterize select interceptions of mineralization, and secondly as verification of the sample prep and analysis methodology employed by the Mountain Pass laboratory.

8.3 Quality Control and Quality Assurance

8.3.1 Historical QA/QC

During the drilling programs at the Project, which were conducted prior to 1992, there was no QA/QC in place that included the regular insertion of standards, blanks, and duplicates into the sample stream. SRK located a limited number of laboratory printouts but no analytical certificates. Within the printouts, SRK found a limited number of re-analyses, but these were not systematic, appeared to be confirmation of higher grades and did not represent the entire spectrum of analytical results. Current laboratory personnel report that instrument QA/QC was in place at the on-site laboratory during these drilling programs, but no records are available.

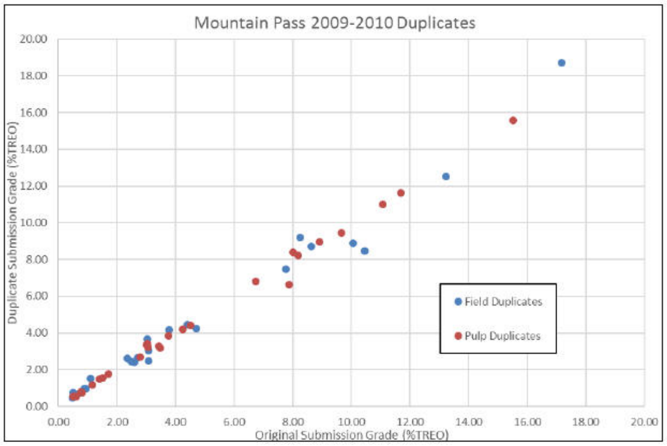
The pre-1992 drilling comprises more than half of the drilling used in the resource model. The uncertainty that results from the lack of QA/QC is counteracted by the production reconciliation presented in this report. The infill drilling program conducted in 2009 through 2010 used both the Mountain Pass laboratory and SGS Lakefield for sample assay. Figure 8-1 illustrates the assay results returned for the pit standard. The pit standard was prepared and homogenized by Molycorp and was not subjected to a round robin assay study which would normally be completed to ‘certify’ the standard material; nevertheless, the results were quite precise, and both laboratories were broadly in agreement with each other with Mountain Pass laboratory returning slightly lower grades on average than SGS laboratory.



Source: SRK, 2019

Figure 8-1: 2009 Through 2010 Pit Standard Assays

A number of duplicate samples were submitted during the course of the program to assess the repeatability of sample assays both for field duplicates and for pulp duplicates. Figure 8-2 illustrates the results, generally both field and pulp duplicates compare closely, the half average relative difference for each dataset is up to +/-17% and up to +/-6% respectively. This shows that the mineralization is reasonably homogeneous within the drill core and that there is only limited potential for sampling error.



Source: SRK, 2019

Figure 8-2: 2009 Through 2010 Duplicates

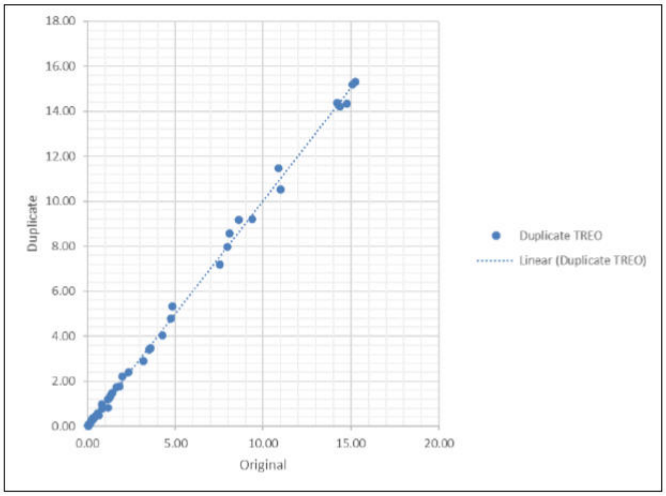
8.3.2 2011 Campaign QA/QC Program

The 2011 drilling program included the insertion of blanks and duplicates but no standards. The prior standard samples were depleted during the 2010 drilling campaign. Blanks, standards, and duplicates are part of an industry best practice drilling program and are used to independently check precision and accuracy during analysis.

SRK was not provided with the QA/QC data from the 2011 drilling program. As a result, SRK has not reviewed this QA/QC data and cannot comment.

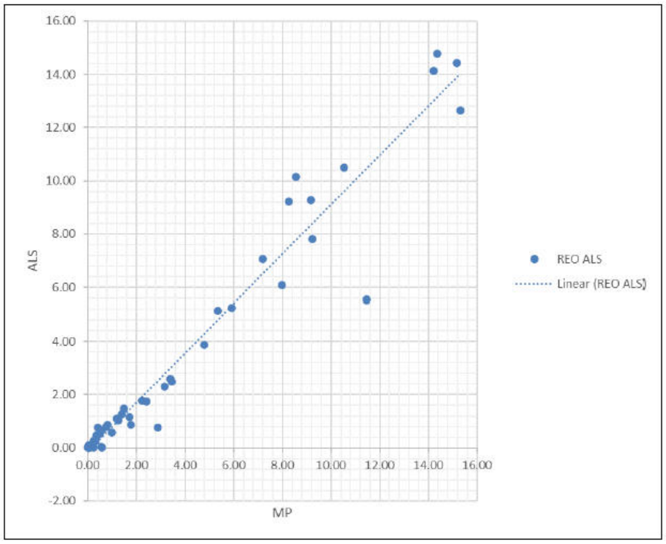
8.3.3 2021 Campaign QA/QC Program

The 2021 drilling included a series of field duplicate analyses and four blank insertions into the sample stream. No standards (certified reference materials) were inserted to test laboratory precision. Duplicates were collected as quarter core from the remaining half not sent for analysis as the primary sample. One quarter was provided to the Mountain Pass lab to test against the primary half core sample. The second quarter was sent to ALS Minerals in Tucson, AZ for processing and ALS Minerals Vancouver for analysis. While the comparison for the duplicates within the MP lab (Figure 8-3) show excellent agreement, the comparison for the duplicates submitted to ALS (Figure 8-4) appear relatively poor, with significant deviations in grade from the original Mountain Pass sample. In SRK's opinion, this demonstrates differences between laboratories in terms of preparation/analytical methodology.



Source: SRK, 2021

Figure 8-3: 2021 Field Duplicate Analyses – MP Materials Lab



Source: SRK, 2021

Figure 8-4: External Duplicate Analyses – MP vs. ALS

9 Data Verification

This section summarizes data verification performed by SRK in relation to information supporting the mineral resources.

9.1 Re-Assaying Program

In 2009, SRK conducted a review of historical sample preparation and analytical procedures. The result of this review was to perform a check assay program. Sample pulp and reject material was largely discarded by previous owners, so SRK utilized archived split core stored onsite.

For this check assay program, samples were shipped to and then prepared at the SGS Minerals preparation laboratory located in Elko, Nevada, USA. (SGS Elko). The primary analytical laboratory used for this program was SGS Minerals (SGS Minerals) located in Lakefield, Ontario, Canada and approximately 10% of these check samples were also analyzed on site at the internal Mountain Pass Laboratory.

9.1.1 Procedures

The 2009 sample check program included re-analysis of approximately 1% of the historical assay database results. The program included the following sample types and numbers:

- 108 half-core samples with original assay results between 0.18% to 16.30% TREO
- 10 site-specific standard samples based on two samples of known TREO content
- 10 blind duplicates
- 5 blank samples

SRK selected random duplicate samples from sample intervals within the database that covered a range of analytical results from 0.18% TREO to 16.30% TREO. Since these duplicate samples are retained half split core, they are effectively field duplicates. Of the 108 core samples, 66 core samples had historical assay results between 3.00% and 11.00% TREO. The remaining 42 core samples had historical assay results between 0.18% and 2.99% or 11.01% and 16.30% TREO.

Standards and blanks were site specific. The site-specific standards are non-certified and were created by the on-site laboratory from a pit sample and a high-grade sample from the Birthday claim. The blank material was a non-mineralized sample collected at the Mountain Pass site by SRK.

SRK directed SGS Elko to prepare ten duplicates from the pulverized samples and to give them unique sample numbers. The duplicates were prepared and inserted into the sample stream prior to shipping to the SGS Minerals laboratory for analysis. Ten pulverized splits of the core samples were also sent back to the on-site laboratory for comparative analysis. The pulverized splits are considered pulp duplicates, with an allowed a ±10% error.

In addition to the external SRK quality control (QC) samples, SGS Minerals included their internal laboratory QC sampling including one blank, one sequential duplicate (i.e., a duplicate placed immediately after the primary sample) and three additional duplicates per batch at the analytical lab in Lakefield. The analysis was run in two batches, totaling two blanks, two in-line duplicates and six duplicates in addition to the external QC samples from SRK. Calibration standards were provided by the Mountain Pass Laboratory to insure similar analytical sensitivity for both labs.

For the onsite Mountain Pass laboratory, site technicians inserted two duplicates and one standard in the ten samples analyzed onsite.

For specific gravity (SG) QC, ten samples were selected from the core samples and sent to ALS in Reno, Nevada U.S.A for SG measurements. SG is further discussed further in Section 11.5.

9.1.2 SGS Check Assay Sample Preparation

Sample preparation for the check analysis was completed at SGS Elko. The preparation technique used was SGS Minerals code PRP90, which used the following procedures:

- The sample was dried at 100°C for 24 hours.
- The sample was crushed to 90% passing a 2 millimeter (mm) (10 mesh) screen.
- The sample was split using a riffle splitter to 250 g.
- The 250 g split was placed in a vibratory mill and pulverized until 85% passed a 75-micron (200 Mesh) screen.
- The coarse reject was retained and returned to the client for any future analysis.

The sample was then shipped to the SGS Minerals laboratory for X-Ray Fusion (XRF) analysis (SGS Minerals, 2009).

9.1.3 SGS Check Assay XRF Procedures

SGS Minerals worked closely with the Mountain Pass Laboratory to identify the appropriate method for preparing fusion discs for the XRF to ensure that both labs used similar procedures for TREO analysis. A 0.2 g to 0.5 g pulp sample is fused with 7 g of a 50/50 mixture of lithium tetraborate and lithium metaborate into a homogenous glass disk. This is then analyzed using a wave dispersive XRF (WDXRF). Loss on ignition at 1000°C is determined separately using gravimetric techniques and is part of the matrix correction calculation. These calculations are performed by WDXRF software (SGS, 2009). This method is accredited with the Standards Council of Canada (SCC) and conforms with the requirements of ISO/IEC 17025 (SGS, 2009).The analyses performed for the SRK study included SGS Minerals control quality measures, which are used to monitor and control metallurgical or manufacturing processes. They are analyzed individually for better quality output. The oxides analyzed and their detection limits are listed in Table 9-1. The analytical work included Loss on Ignition (LOI) as a separate analysis.

Table 9-1: Oxides Analyzed with Detection Limits

Oxide	Limit (%)	Oxide	Limit (%)	Oxide	Limit (%)
Whole Rock Analysis					
SiO_2	0.01	Na_2O	0.01	CaO	0.01
Al_2O_3	0.01	TiO_2	0.01	MgO	0.01
Fe_2O_3	0.01	Cr_2O_3	0.01	K_2O	0.01
P_2O_5	0.01	V_2O_5	0.01	MnO	0.01
Rare Earth Oxide Analysis					
La_2O_3	0.01	CeO_2	0.02	Nd_2O_3	0.02
Pr_6O_{11}	0.02	Sm_2O_3	0.03	BaO	0.02
SrO	0.02	ThO_2	0.01		

Source: SRK, 2012

9.1.4 Analysis of Light Rare Earth Oxide Distribution

Starting in 2009, Molycorp expanded the assay method to include the individual rare earths present in each sample. During the 2009 in-fill and 2010 condemnation drilling campaigns, SRK selected 403 samples for the assay of light rare earth elements (i.e., lanthanum, cerium, praseodymium, neodymium and samarium). Table 9-2 presents a statistical summary of the light rare earth element results.

Table 9-2: Light Rare Earth Oxide Distribution Statistics: 2009 and 2010 Analyses

Statistic	La_2O_3	CeO_2	Pr_6O_{11}	Nd_2O_3	Sm_2O_3
Number of Samples	403	403	403	403	403
Mean Fraction of TREO	0.325	0.497	0.043	0.121	0.009
Standard Deviation	0.026	0.021	0.003	0.012	0.002
Coefficient of Variance	0.079	0.042	0.075	0.095	0.238
Minimum	0.26	0.44	0.02	0.09	0.01
Maximum	0.41	0.61	0.05	0.17	0.02
Abs Diff (Min – Max)	0.151	0.167	0.028	0.080	0.015

Source: SRK, 2012

Standard deviation and associated coefficient of variance indicate a relatively narrow range of variability suggesting that the light rare earth distribution is consistent. SRK has verified the QA/QC aspects of the 2009/2010 data set and is of the opinion that the protocols in place during this period meet or exceed industry best practices.

In 2011, Molycorp completed an expanded assay program using a combination of existing core samples and additional drilling in the resource area. Molycorp conducted an additional 395 assays for individual light rare earths. Table 9-3 presents the summary statistics for this assay program.

Table 9-3: Light Rare Earth Oxide Distribution Statistics: 2011 Analyses

Statistic	La_2O_3	CeO_2	Pr_6O_{11}	Nd_2O_3	Sm_2O_3
Number of Samples	395	395	395	395	395
Mean Fraction of TREO	0.327	0.500	0.043	0.121	0.009
Standard Deviation	0.019	0.010	0.003	0.012	0.002
Coefficient of Variance	0.060	0.019	0.077	0.101	0.242
Minimum	0.27	0.46	0.02	0.09	0.01
Maximum	0.37	0.54	0.05	0.16	0.02
Range (Min – Max)	0.102	0.075	0.028	0.070	0.016

Source: SRK, 2012

Similar to the 2009 and 2010 statistical summary, the 2011 analyses corroborate the relative light rare earth oxide distribution as a function of TREO. The standard deviation and associated coefficient of variation represent a wider range of variability but still suggest a narrow overall range for light rare earth distribution and that the data are consistent.

SRK combined the 2009 through 2011 light rare earth assays and calculated summary statistics for each light rare earth. Table 9-4 presents the results of this combined analysis of light rare earths.

Table 9-4: Light Rare Earth Oxide Distribution Statistics: 2009, 2010 and 2011 Analyses

Statistic	La_2O_3	CeO_2	Pr_6O_{11}	Nd_2O_3	Sm_2O_3
Number of Samples	798	798	798	798	798
Mean Fraction of TREO	0.326	0.499	0.043	0.121	0.009
Standard Deviation	0.023	0.015	0.003	0.012	0.002
Coefficient of Variance	0.069	0.031	0.076	0.098	0.240
Minimum	0.258	0.444	0.022	0.092	0.005
Maximum	0.410	0.611	0.051	0.171	0.021
Range (Min – Max)	0.151	0.167	0.028	0.079	0.016

Source: SRK, 2012

The combined dataset of 798 individual assays provides a robust basis to define the distribution of light rare earths in the target carbonatite mineral, bastnaesite.

SRK examined the individual assay parameters for the 2009 and 2010 drilling campaigns. Table 9-5 presents the results of this examination. The mean TREO% of this dataset is 7.96%, indicating that the majority of assayed samples are likely above the 5% TREO COG. Standard deviations are greater than 50% of the mean estimates. SRK notes that as mean TREO grades are reduced in future mining, it is recommended that the applied LREO applied concentrations are revised and evaluated to determine whether adjustments are warranted.

Table 9-5: Light Rare Earth Oxide Assay Statistics: 2009 and 2010 Analyses

Statistic	La_2O_3	CeO_2	Pr_6O_{11}	Nd_2O_3	Sm_2O_3
Length (ft)	1,972	1,972	1,972	1,972	1,972
Number	395	395	395	395	395
Mean Grade (%)	2.652	3.970	0.336	0.932	0.067
Standard Deviation	1.69	2.35	0.19	0.51	0.03
Coefficient of Variance	0.637	0.593	0.579	0.546	0.511
Minimum Grade (%)	0.80	1.35	0.11	0.35	0.03
Maximum Grade (%)	7.81	10.84	0.95	2.68	0.21
Abs Diff Grade (%)	7.01	9.49	0.85	2.33	0.18

Source: SRK, 2012

9.1.5 Analysis of Heavy Rare Earth Oxide Assays

Based on a limited re-assaying program of 210 five ft composite samples from eight of the 2009 Mountain Pass drillholes, the HREO+Y subtotal expressed as a proportion of LREO+HREO+Y is on average 0.8% in the high-grade samples (TREO>5%), 1.8% in low to medium grade samples (TREO 2% to 5%) and 2.2% in the lowest grade samples (TREO<2%). Table 9-6 summarizes the results per element for the three grade categories.

SRK notes that while this data shows the presence of these heavy rare earths in the Mountain Pass deposit, given the majority of historical sampling does not include analysis for these elements, they have been excluded from the mineral resource estimate given the uncertainty around the consistency of distribution across the deposit. Further investigation is recommended to improve the understanding and confidence in average grade distributions prior to inclusion of these elements in the mineral resource statement.

Table 9-6: Heavy Rare Earth Summary

	Assay Grade (%)			Proportion of LREO+HREO+Y		
	Grade Category			Grade Category		
	>5%	2%-5%	<2%	>5%	2%-5%	<2%
Y_2O_3	0.02	0.02	0.01	0.21%	0.66%	0.79%
La_2O_3	2.85	0.75	0.33	33.4%	30.4%	29.1%
CeO_2	4.19	1.20	0.55	49.1%	48.8%	49.0%
Pr_6O_{11}	0.36	0.11	0.05	4.25%	4.52%	4.67%
Nd_2O_3	0.98	0.32	0.15	11.5%	13.2%	13.8%
Sm_2O_3	0.07	0.03	0.01	0.86%	1.21%	1.34%
Eu_2O_3	0.013	0.006	0.003	0.15%	0.24%	0.27%
Gd_2O_3	0.021	0.011	0.006	0.25%	0.46%	0.53%
Tb_4O_7	0.004	0.002	0.001	0.05%	0.06%	0.08%
Dy_2O_3	0.006	0.004	0.002	0.07%	0.17%	0.20%
Ho_2O_3	0.001	0.001	0.001	0.01%	0.03%	0.05%
Er_2O_3	0.005	0.002	0.001	0.06%	0.08%	0.09%
Tm_2O_3	0.001	0.001	0.001	0.01%	0.02%	0.04%
Yb_2O_3	0.001	0.001	0.001	0.01%	0.03%	0.05%
Lu_2O_3	0.001	0.001	0.001	0.01%	0.02%	0.04%
LREO	8.46	2.41	1.10	99.2%	98.2%	97.8%
HREO+Y	0.07	0.04	0.02	0.8%	1.8%	2.2%
LREO+HREO+Y	8.53	2.46	1.12	100%	100%	100%

Source: Molycorp, 2009

9.1.6 Results

Statistical comparison of the analytical results for the 108 core samples with the historical assay database values indicate the datasets are broadly comparable within tolerance limits. Results for the site-specific standards and duplicate samples were also within acceptable confidence limits.

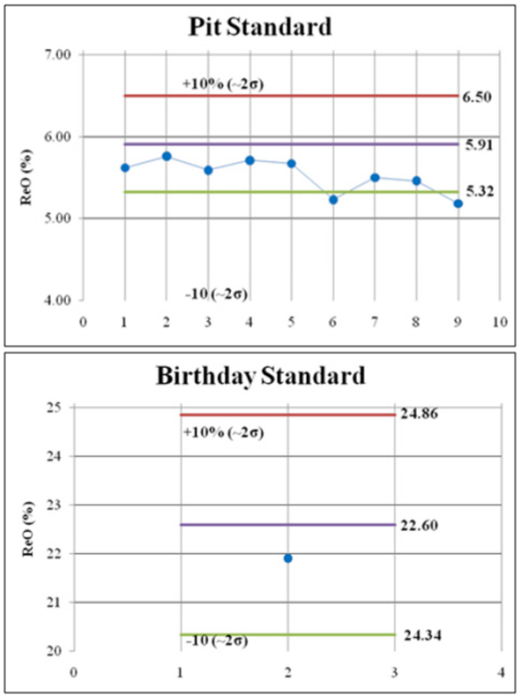
There were no blank failures indicating that there was no cross contamination during sample preparation. However, two failures were observed in the low-grade standard in the 2009 and 2010 QA/QC analysis at the Project. Only one high grade standard was inserted in the sample stream due to delays in creating this sample. Both standards performed lower than the expected value and the nine low grade standard analyses suggest instrument drift, based on a consistent downward slope in the graph over time.

In addition, one of the standards that failed was within a group of samples that showed acceptable correlation with the original sample. The standard failure may be due to failure to adequately determine the accepted mean and standard deviation of the standard samples. Table 9-7 lists the standards with expected analytical values and Figure 9-1 shows the results of the standards.

Table 9-7: Standards with Expected Analytical Performance

	Maximum TREO (%)	Median TREO (%)	Minimum TREO (%)
Pit Standard	6.50	5.91	5.32
Birthday Standard	24.86	22.60	20.34

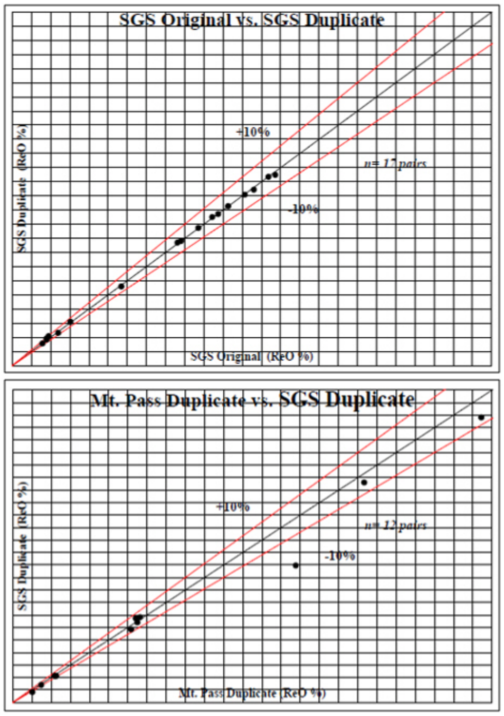
Source: SRK, 2012



Source: SRK, 2012

Figure 9-1: Results of Standard Analysis

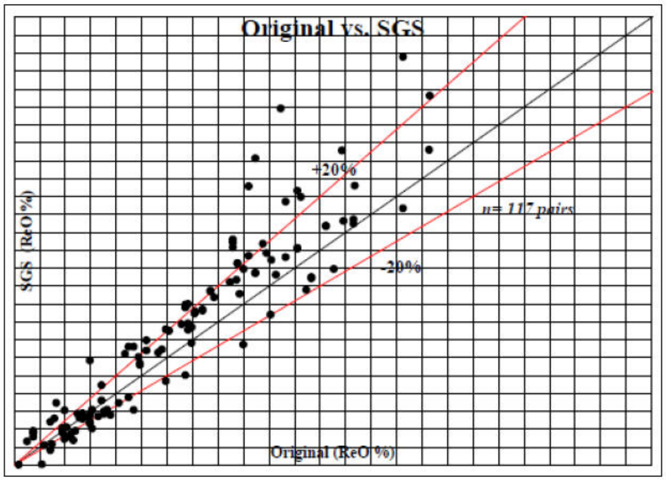
The Mountain Pass pulp duplicates showed satisfactory agreement with the SGS Lakefield original analyses being within ±10% with one failure. The blind pulp duplicate assay value pairs analyzed by SGS were all within ±10% of each other. These results are shown in Figure 9-2.



Source: SRK, 2012

Figure 9-2: Results of Pulp Duplicate Analysis

Overall, the historical Project analyses in the resource database are on average lower than the corresponding SGS Minerals analyses and the present-day Mountain Pass Laboratory analyses. This is shown in the scatterplot provided in Figure 9-3. SRK notes that the observed scatter between labs from this program is similar to the 2021 duplicate core samples submitted to ALS, indicating that there are likely minor differences in processing of samples between labs. It is SRK's opinion that these differences are considered immaterial related to confidence of the mineral resources.



Source: SRK, 2012

Figure 9-3: Results of Field Duplicate Analysis

9.2 Opinion on Data Adequacy

It is SRK's opinion that the database containing geological and analytical data used to determine and classify mineral resources is appropriate to application of confidence categories.

The duplicate pulps assayed at Mountain Pass during this verification exercise show that assays generated by the internal Mountain Pass Laboratory provide a satisfactory comparison with the external laboratory of SGS Lakefield. SRK concludes that assay results from the 108 half core duplicate samples show minor scatter and variations which are partly due to the differences in grade from one half of the core to the other and partly due to laboratory precision. This conclusion is based upon the 2021 duplicate analysis as well. It appears that the historical samples which were prepared on site and assayed at the Mountain Pass Laboratory 20 years ago returned lower assay grades than those returned by SGS Lakefield based on the field duplicate analysis.

Overall, average grades for field duplicates submitted to ALS for the 2021 samples returned a lower grade of 3.4% TREO vs. the MP lab at 3.8%. Given the limited duplicate data set and the nature of there being no consistent bias observed, SRK notes that this remains unresolved at the time of this report. SRK strongly recommends that MP investigates the source of the variance in the duplicates from the 2021 sampling.

The production reconciliation has shown that the resource block model is acceptably performing although demonstrably lower grade than the grade control data. The resource block model grades represent block volumes; therefore, they are smoother than the grade control data. These data are considered satisfactory but suggests the potential to improve the delineation of higher and lower grade populations in the resource model through increased diamond drilling and updating of the geological model in the future.

Overall, SRK is of the opinion that the historical analytical data in the database can support a level of confidence commensurate with long term resource estimation. Uncertainties in the underlying quality of the analytical data were accounted for in mineral resource classification and compensated by the fact that Mountain Pass is an operating mine with ongoing production and reconciliation to support the long-term resource.

10 Mineral Processing and Metallurgical Testing

10.1 Background

MP Materials mines ore from the open pit, transports the ore to a primary crushing/stockpile facility and then transports the crushed ore to the flotation concentrator. At the concentrator, the crushed ore is ground in a ball mill operated in closed circuit with cyclones and then advanced to the flotation circuit to separate bastnaesite from the gangue minerals. The primary product of the flotation process is a bastnaesite concentrate, which is thickened and filtered and then transported to customers for sale or fed to the on-site separations facility. MP Materials has undertaken extensive metallurgical studies to evaluate TREO recovery versus ore grade and in addition has evaluated ore sorting as a method for upgrading lower grade ore prior to milling as a method for increasing mineral reserves and improving overall metallurgical performance. The discussions in Sections 10.2, 10.3 and 10.4 have been prepared by SRK. MP Materials has determined SRK meets the qualifications specified under the definition of qualified person in 17 CFR § 229.1300.

MP Materials has recommissioned a rare earths separations facility that is ramping up, with full capacity expected to be achieved by approximately mid-2026. The separations facility allows the Company to separate the bastnaesite concentrate into four saleable products (PrNd oxide, SEG+ precipitate, La carbonate, and Ce chloride). The discussion of the separations facility in Section 10.5 has been prepared by SGS. MP Materials has determined SGS meets the qualifications specified under the definition of qualified person in 17 CFR § 229.1300.

10.2 Flotation Studies: Recovery vs. Ore Grade

MP Materials implemented several improvements in the concentrator aimed at increasing overall concentrator performance and undertook a plant monitoring campaign during the period from July – August 2024 to evaluate concentrator performance. The overall results of this monitoring program are summarized in Table 10-1. During this period concentrator feed averaged 8.54% TREO with an average of 81.5% TREO recovery into the rougher + scavenger flotation concentrate that averaged 45.0% TREO, and which was upgraded to an average of 61.9% TREO during cleaner flotation. Unit TREO recovery in cleaner flotation circuit averaged 91.6% with an upgrade ratio of 1.375. Overall TREO recovery averaged 74.7%. MP Materials only requires flotation concentrates containing 60% TREO as feed to their separations plant and recognizes that overall TREO recovery could be increased if the concentrator targeted the production of concentrates containing 60% TREO.

Table 10-1: Summary of Overall Results From Concentrator Monitoring: July - August 2024

Parameter	Units	Value
Ore Grade	% TREO	8.54
Rougher + Scavenger Conc. Grade	% TREO	45.0
Cleaner Conc. Grade	% TREO	61.9
Rougher/Scavenger : Cleaner Conc. Upgrade Ratio		1.375
Rougher + Scavenger TREO Recovery	%	81.5
Cleaner Flotation Unit TREO Recovery	%	91.6
Overall TREO Recovery	%	74.7
Target Cleaner Conc. Grade	%	60.0
Target Rougher Conc. Grade	%	43.6

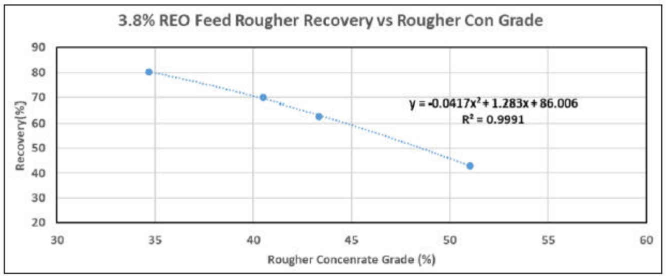
Source: MP Material, 2024

MP Materials conducted a series of rougher flotation studies in the laboratory to evaluate rougher flotation recovery versus concentrate grade for ore grades ranging from 3.8% to 10.5% TREO. The results of these tests are summarized in Table 10-2 and shown graphically in Figure 10-1 to Figure 10-6 where TREO recovery into the rougher flotation concentrate is plotted as a function of rougher flotation concentrate grade for each ore tested.

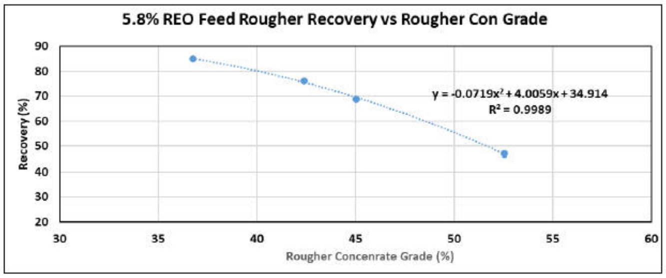
Table 10-2: Cumulative Rougher Flotation Concentrate Grade and Recovery vs. Ore Grade

Ore Grade	Cumulative Ro Conc Grade (TREO%)				Cumulative TREO Recovery (%)			
REO %	Ro Conc-1	Ro Conc-2	Ro Conc-3	Ro Conc-4	Ro Conc-1	Ro Conc-2	Ro Conc-3	Ro Conc-4
3.8	51.0	43.3	40.5	34.7	42.9	62.7	70.1	80.2
5.8	52.6	45.0	42.4	36.7	46.9	68.8	76.2	84.9
6.8	53.7	46.0	42.9	37.6	38.3	68.2	77.0	85.3
8.6	52.9	47.3	45.5	40.2	50.3	71.5	79.4	87.6
9.8	56.0	47.9	44.1	40.9	53.3	77.0	82.6	86.2
10.5	56.2	50.7	48.0	43.4	48.9	74.3	79.8	84.9

Source: MP Materials 2024

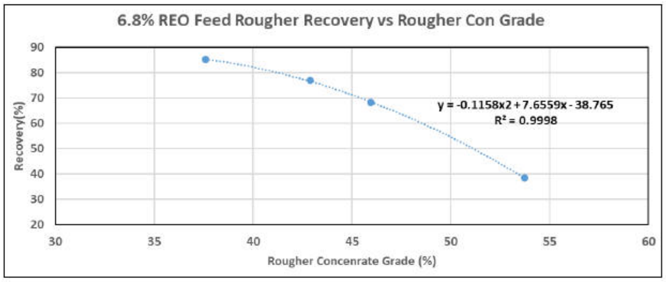


Source: MP Materials, 2024
Figure 10-1: Rougher Flotation vs. Concentrate Grade: 3.8% TREO



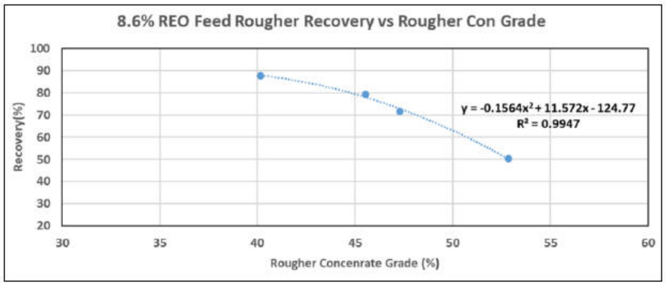
Source: MP Materials, 2024

Figure 10-2: Rougher Flotation vs. Concentrate Grade: 5.8% TREO



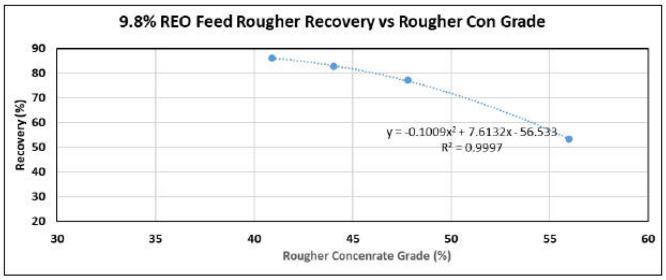
Source: MP Materials, 2024

Figure 10-3: Rougher Flotation vs. Concentrate Grade: 6.8% TREO



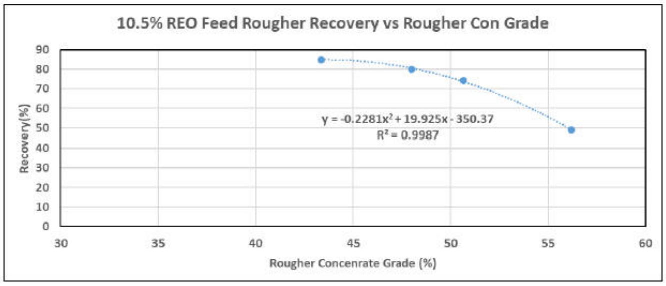
Source: MP Materials, 2024

Figure 10-4: Rougher Flotation Vs. Concentrate Grade: 8.6% TREO



Source: MP Materials, 2024

Figure 10-5: Rougher Flotation vs. Concentrate Grade: 9.8% TREO



Source: MP Materials, 2024

Figure 10-6: Rougher Flotation vs. Concentrate Grade: 10.5% TREO

10.3 Concentrator Recovery Estimate

Figure 10-2 to Figure 10-6 graphically show cumulative concentrate grade vs. cumulative TREO recovery for each ore grade tested along with polynomial equations representing TREO rougher flotation recovery versus concentrate grade for each ore grade tested. These equations were used to calculate TREO rougher flotation recovery at a fixed rougher flotation grade of 43.6% TREO, which MP Materials has shown can be upgraded to the target final concentrate grade of 60% TREO in the concentrator. This recognizes that the concentrator cleaner flotation circuit recovers an average of 91.6% of the TREO contained in the rougher flotation concentrate with an average upgrade ratio of 1.375. Table 10-3 shows rougher and cleaner flotation recoveries for each ore grade at the fixed rougher concentrate grade of 43.6% TREO and a fixed cleaner flotation concentrate grade of 60% TREO. Figure 10-7 shows overall TREO recovery vs. ore grade, when targeting a final concentrate containing 60% TREO. Based on this analysis, overall TREO recovery vs. ore grade is given by the following relationship:

$$Y = -0.2872*x^2 + 7.1509*x + 34.02$$

Where:

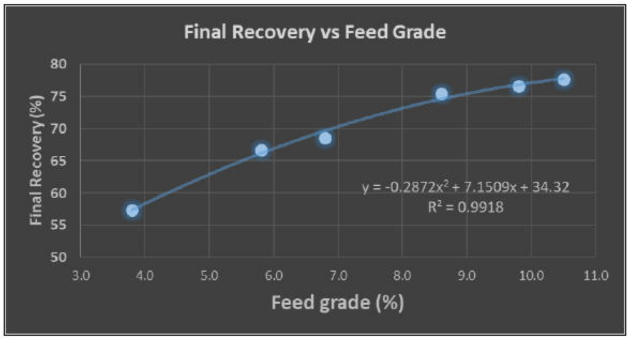
Y = TREO recovery % into the cleaner flotation concentrate at a grade of 60% REO

x = Ore grade: TREO%

Table 10-3: Adjusted TREO Recovery, 43.64% TREO Rougher Concentrate and 60% TREO Cleaner Concentrate

Feed TREO %	TREO Recovery (%)		
	Rougher Flotation [1]	Cleaner Flotation [2]	Overall [3]
3.8	62.6	91.6	57.3
5.8	72.8	91.6	66.7
6.8	74.8	91.6	68.5
8.6	82.4	91.6	75.5
9.8	83.5	91.6	76.5
10.5	84.8	91.6	77.7

Source: MP Materials 2024
[1] TREO recovery at rougher concentrate grade of 43.64% TREO
[2] Cleaner flotation unit TREO recovery based on actual concentrator performance
[3] Overall TREO recovery at final concentrate grade of 60% TREO



Source: MP Materials, 2024
MP Materials is performing test work to determine whether this equation can be modified to include grades below 3.8% TREO.

Figure 10-7: Overall TREO Recovery vs. Ore Feed Grade at Target 60% TREO Concentrate Grade

The metallurgical program conducted during 2024 evaluated ore grades over the range from 3.8 – 10.5% TREO. As such, the recovery equation developed during 2024 is not considered to be valid for ore grades less than 3.8% TREO. Therefore, the TREO recovery versus ore grade relationship developed by MP Materials during 2023 will continue to be used for ore grades less than 3.8% TREO. MP Materials 2023 TREO recovery versus ore grade relationship is shown graphically in Figure 10-8 and is expressed by the following equation:

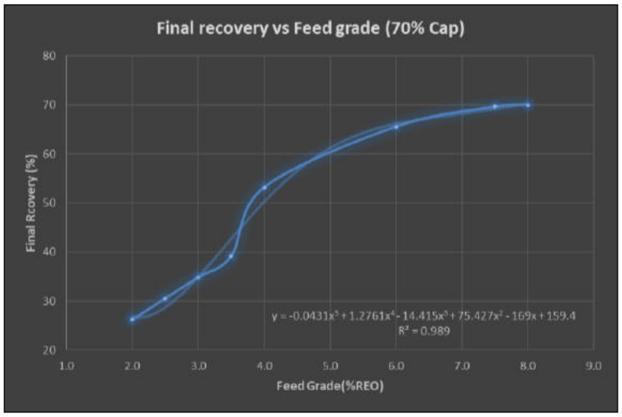
$$Y = -0.0431X^5 + 1.2761X^4 - 14.415x^3 + 75.427x^2 - 169X + 159.4$$

Where:

Y = TREO recovery % into the cleaner flotation concentrate at a grade of 60% REO
x = Ore grade: REO%

At ore grades less than 2% TREO this recovery relationship begins to estimate incrementally higher TREO recoveries. To address this issue, SRK has interpolated TREO recovery at 22% for the ore grade increment of 1.5% to 2.0% TREO and zero % recovery for ore grades less than 1.5% TREO.

SRK is of the opinion that the metallurgical data relied upon is adequate for the purposes of estimating concentrator recoveries across the anticipated range of mill feed grades.



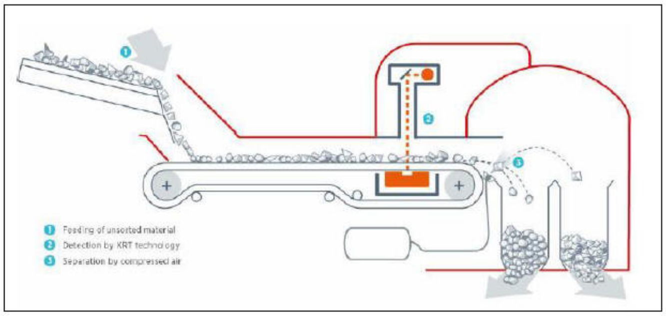
Source: MP Materials, 2023

Figure 10-8: TREO Recovery to Cleaner Flotation Concentrate vs. Feed Grade (MP Materials 2023 Recovery Relationship)

10.4 Ore Sorter Upgrading Test Program

Tomra, a leading supplier of ore sorters, conducted performance test work on low grade ore samples provided by MP Materials to determine whether ore sorting can be effectively used to sort rare earth bearing material from waste. This test program was conducted using an X-ray transmission (XRT) sensor due to the differences in the atomic densities of the ore (high atomic density) and the host rock (low atomic density). The results of this program are fully documented in Tomra's report, "Performance Test Report – Rare Earth Ore Sorting", January 17, 2023. The ore sorting test program was conducted on two feed samples identified as OS-OB and OS-LO, each of which had been screened into two size fractions (12 to 35.5 mm and 35.5 to 80 mm). Each test sample size fraction was run through the ore sorter at three different sensor settings. The overall results of the of the test work were positive and demonstrated the potential of ore sorting using an XRT sensor. Significant TREO upgrades as well as high recoveries were achieved for both samples.

Figure 10-9 provides a schematic diagram of the ore sorting process. Feed material (1) is evenly fed via a screen feeder or vibration feeder over a transition chute onto a conveyor belt. An electric X-ray tube (2) creates broad-band radiation which penetrates the material and provides spectral absorption information that is measured with an X-ray camera using DUOLINE® sensor technology. The resulting sensor information is then processed to provide a detailed “density image” of the material allowing it to be separated into high and low-density fractions. If the sensor detects material to be sorted out, it commands the control unit to open the appropriate valves of the ejection module at the end of the conveyor belt (3). The detected materials are separated from the material flow by jets of compressed air. The sorted material is divided into two fractions in the separation chamber.



Source: Tomra report, 2023

Figure 10-9: Diagram of the Ore Sorting Process

10.4.1 Ore Sorter Test Results

Ore sorter test results are summarized in Table 10-4 and shown graphically in Figure 10-10 to Figure 10-13. After three stages of ore sorting, REO recovery ranged from 91.0% to 94.7% into ore sorter products that contained 46.4 mass % to 60.0 mass % with upgrade ratios that ranged from 1.58% to 1.99%. Table 10-5 shows interpolated ore sorter results at a target TREO recovery of 90%. At a 90% TREO target recovery, an average of 47 mass % reported to the product at an average upgrade ratio of 1.9%.

In the future, MP Materials plans to conduct further test work to determine whether even lower grade material (<2.5% TREO) is potentially amenable to ore sorting.

Table 10-4: Cumulative Ore Sorter Performance on Low Grade Ore Samples

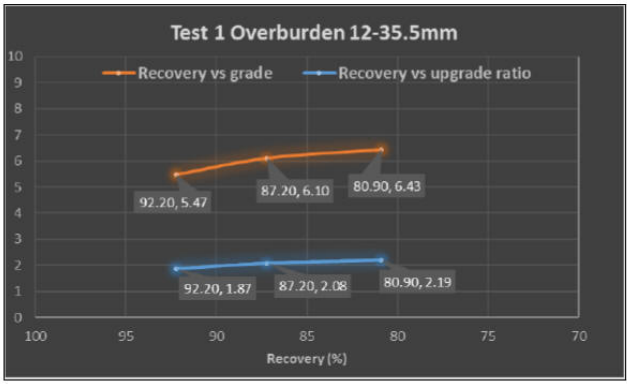
OS-OB 12-35.5 mm				
	Mass%	REO%	REO Dist.%	Upgrade Ratio
Feed	100.0	2.93	100.0	1.00
Stage-1	36.9	6.43	80.9	2.19
Stage-2	41.9	6.10	87.2	2.08
Stage-3	49.4	5.47	92.2	1.87
OS-OB 35.5-80 mm				
	Mass%	REO%	REO Dist.%	Upgrade Ratio
Feed	100.0	2.96	100.0	1.00
Stage-1	33.4	6.94	78.2	2.34
Stage-2	37.8	6.65	84.8	2.25
Stage-3	46.4	5.88	92.0	1.99
OS-LO 12-35.5 mm				
	Mass%	REO%	REO Dist.%	Upgrade Ratio
Feed	100.0	3.71	100.0	1.00
Stage-1	34.8	8.41	78.9	2.27
Stage-2	44.7	7.30	87.9	1.97
Stage-3	60.0	5.85	94.7	1.58
OS-LO 35.8-80 mm				
	Mass%	REO%	REO Dist.%	Upgrade Ratio
Feed	100.0	4.25	100.0	1.00
Stage-1	31.8	9.31	69.8	2.19
Stage-2	36.8	8.90	77.1	2.09
Stage-3	51.7	7.47	91.0	1.76

Source: Tomra Report, 2023

Table 10-5: Ore Sorter Performance at 90% REO Recovery to Product

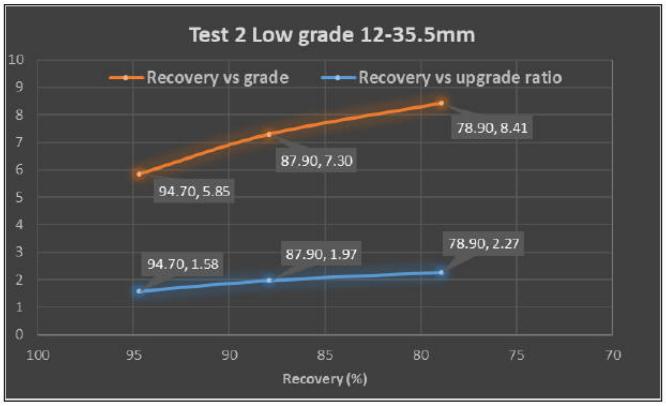
Test Sample	Recovery Target %	Upgrade Ratio	Mass Pull %
OS-OB 12-35.5 mm	90	2.0	46
OS-OB 35.5-80 mm	90	1.8	49
OS-LO 12-35.5 mm	90	2.0	43
OS-LO 35.5-80 mm	90	1.8	51
Average	90	1.9	47

Source: MP Materials, 2024



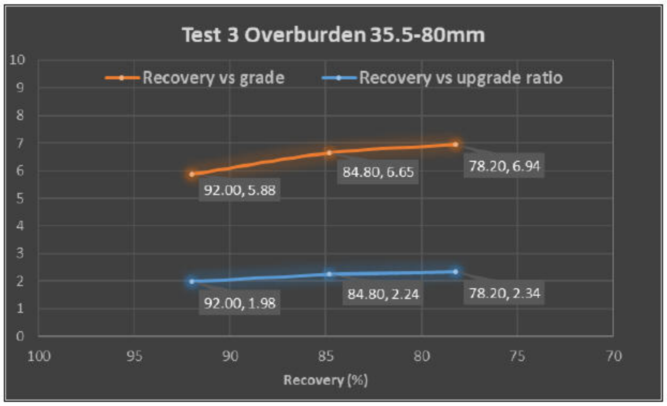
Source: Tomra and MP Materials, 2024

Figure 10-10: Ore Sorter TREO Recovery vs. Product Grade and Upgrade Ratio: OS-OB: 12-35.5 mm Sample



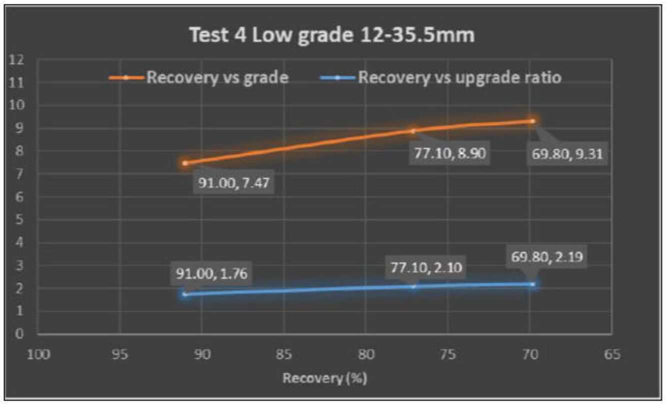
Source: Tomra and MP Materials, 2024

Figure 10-11: Ore Sorter TREO Recovery vs. Product Grade and Upgrade Ratio: OS-LO: 12-35.5 mm Sample



Source: Tomra and MP Materials, 2024

Figure 10-12: Ore Sorter TREO Recovery vs. Product Grade and Upgrade Ratio: OS-OB: 35.5-80 mm Sample



Source: Tomra and MP Materials, 2024

Figure 10-13: Ore Sorter TREO Recovery vs. Product Grade and Upgrade Ratio: OS-LO: 35 – 80 mm Sample

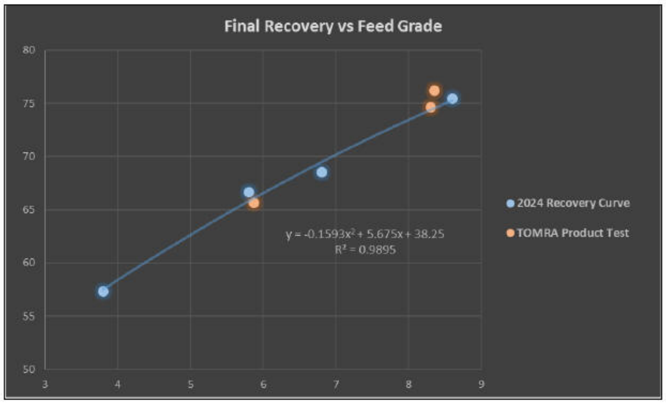
10.4.2 Flotation Test Work on Ore Sorter Products

Rougher flotation tests were conducted on the ore sorter products using standard flotation conditions. The results of these tests are summarized in Table 10-6. Rougher flotation on the overburden (OS-OB) test product, which contained 5.9% TREO resulted in an interpolated TREO recovery of 71.7% into a rougher flotation concentrate containing 43.6% TREO. Based on a unit TREO recovery of 91.6% during cleaner flotation, overall TREO recovery into a final concentrate containing 60% REO is estimated at 65.7%. Similarly, duplicate rougher flotation tests on the low grade (SO-LO) ore sorter test product resulted in 81.5% to 83.2% TREO recovery with overall TREO recovery estimated at 74.7% to 76.2% into final REO concentrates containing 60% TREO. These results are shown graphically in Figure 10-14 where it can be seen that TREO recovery from the ore sorter product aligns well with the 2024 recovery curve.

Table 10-6: Flotation Test Results on Ore Sorter Products

	Feed Grade	REO Recovery %		
Ore Sorter Product	**REO%**	**Rougher 1**	**Cleaner Flotation 2**	**Overall 3**
Overburden	5.9	71.7	91.6	65.7
Low Grade -Test 1	8.3	81.5	91.6	74.7
Low Grade -Test 2	8.3	83.2	91.6	76.2

Source: MP Material, 2024
[1] TREO recovery at fixed rougher concentrate grade of 43.64% TREO
[2] Cleaner flotation unit TREO recovery based on actual concentrator performance
[3] Overall TREO recovery at final concentrate grade of 60% TREO



Source: MP Materials, 2024

Figure 10-14: REO Recovery from Ore Sorter Test Products Superimposed on the 2024 Recovery Curve

10.5 Separation of Individual Rare Earths

The findings put forth by SGS are based on decades of process data, implied results from MP Materials' current customers, plant data from the same assets operating between 2012-2015, bench data, and pilot data.

A Qualified Person site visit to the MP Materials operation at Mountain Pass was undertaken in December 2024 by SGS. This visit involved a brief reintroduction to the mining operation and the flotation plant along with a more detailed discussion and inspection of ongoing separations facility ramp up efforts. Conversations were held with MP Materials engineers who are directly involved with the ongoing ramp up operations. Information provided revealed that the concentrate roasting section of the facility, particularly the product cooler following the roaster, has had commissioning, operational continuity, and throughput challenges. MP Materials engineering personnel have been addressing these challenges. As a result of these efforts, a revised ramp up schedule has been developed by MP Materials personnel and is in the process of being implemented (refer to Table 10-7). This new schedule stipulates that the full separations facility output will be achieved by approximately mid-2026 and, in the opinion of the SGS Qualified Person, is likely to be achieved. When the full design output is achieved, nearly all of the bastnäsite concentrate produced will be consumed. If the bastnäsite concentrate production increases above a certain level, it may exceed the separations facility limit for REO throughput, and the excess concentrate will continue to be sold to the market.

Table 10-7: Separations Facility Ramp Up Schedule

Description	Units	Q4 2024	Q1 2025	Q2 2025	Q3 2025	Q4 2025	Q1 2026	Q2 2026	Q3 2026
Design Capacity	dmt REO	10,670	10,670	10,670	10,670	10,670	10,670	10,670	10,670
Ramp up estimate	%	40%	40.1%	47.2%	68.1%	73.2%	81.7%	89.3%	100%
Adjusted Capacity	dmt REO	4,268	4,275	5,036	7,270	7,810	8,714	9,532	10,670

Source: MP Materials, 2024

The remainder of Section 10.5 of this report discusses metallurgical testwork, recovery estimates and expected product specifications for the separations facility.

10.5.1 Metallurgical Testwork

MP Materials has conducted extensive pilot testing to both generate data to design circuits and to confirm existing legacy data. There are 11 primary processes that make up the separations (“Stage 2”) operation; they are outlined in Figure 10-15.

Process		Data Source	Analytical Results
1	Concentrate Drying & Roasting	Historical Data (1965-1998); customer data; pilot data (small/large scale)	MP & 3rd Party Laboratories
2	Leaching Impurity Removal	Historical Data (1965-2011); 3rd party lab; pilot data (small/large scale)	MP & 3rd Party Laboratories
3	HREE/LREE Separation	Plant data (2012-2015); pilot data (small/large)	MP & 3rd Party Laboratory
4	PrNd Separation	Plant data (2012-2015); pilot data (small scale)	MP Laboratory
5	PrNd Finishing	Plant data (2012-2015); 3rd party lab testing; pilot data (small scale)	MP & 3rd Party Laboratories
6	La Finishing	Plant data (2012-2015); 3rd party lab testing; pilot data (small scale)	MP & 3rd Party Laboratories
7	Ce Finishing	Plant data (2012-2015); pilot testing (small scale)	MP, 3rd Party Laboratory, Customer qualification
8	SEG+ Finishing	Plant data (2012-2015); pilot data (small scale); interference testing	MP Laboratory; 3rd Party Laboratory; Customer Data
9	Brine Recovery, Treatment, Crystallizing	Plant data (2012-2015); pilot data (small scale); vendor testing/engineering	MP & 3rd Party Laboratories

Source: MP Materials, 2021

Figure 10-15: Primary Processes for Stage 2 Operation

Details of the test work performed are as follows.

Concentrate drying and roasting: roasting of bastnaesite concentrate began at Mountain Pass in 1965 or 1966. Roasting of bastnaesite is known to convert the carbonates into oxides with the salutary effect of converting much of the trivalent cerium to the tetravalent state, which is largely insoluble. The roasting conditions are critical to leach recovery. Consequently, roasting is a most important thermal step that will allow for economical downstream rare earth processing. Legacy records from the multi-hearth furnace (that remains onsite) suggested a roasting temperature of approximately 600°C. To confirm these figures, MP Materials conducted initial scoping studies of different roasting temperatures and roasting residence times at Hazen Research. The roasted concentrate was then leached at various temperatures and acid consumption levels to confirm recoveries of trivalent rare earth elements (REEs) and rejection of cerium. This testing was then scaled up by sending at least 5 st of concentrate to multiple outside labs and tolling facilities. These organizations performed larger scale roasting exercises using their pilot equipment. These samples were sent to SGS Lakefield for further confirmatory testing. These tests confirmed the optimal process conditions. Lastly, an approximately 2 st batch of roasted concentrate was leached at MP Materials' Cerium 96 plant in two large reactors to confirm the scalability of the results. Subsequent smaller scale leach tests using the same roasted concentrate have been performed to optimize the timing and temperature of HCl to further enhance PrNd recovery and Ce rejection.

Leaching: given the interconnectedness of roasting with the leach steps, leaching pilot studies were used to confirm both the effectiveness of the roasting conditions and the optimization of leach conditions. As mentioned above, testing was performed at several outside laboratories, and MP Materials' pilot plant. The results were duplicated on a larger scale in MP Materials' Cerium 96 plant. To mirror the temperature control and flexibility provided in MP Materials' multi-stage, temperature-controlled reactors, MP Materials upgraded its small-scale leach pilot facility to incorporate better temperature control than was available in the Cerium 96 plant or at outside laboratories. This generated the best results, superior to those of previous tests. Notwithstanding, MP Materials has used the more conservative recovery estimates to underly its pre-feasibility study for the separations facility.

Impurity Removal: following the leach step and the removal of the cerium concentrate and insoluble impurities, the next stages initiate the removal of remaining impurities. The primary end point is the removal of iron, uranium, aluminum, and any other salts that may be partially solubilized with the potential to produce solids (i.e., CRUD – defined as interphase suspended solids or emulsions) in the solvent extraction circuits. These circuits were operated by MP Materials' predecessor from 2012-2015. Plant data confirms that these circuits operated with few major issues. Improvements include a new thickener, filter press, and a pressure leaf filter to ensure full removal of precipitated solids induced by pH adjustment. Also, the installation of a system to add filter aid to assist in the solid-liquid separation stage of additional impurities is expected to further reduce the risk of CRUD formation in the (solvent extraction) SX circuits and improve consistent throughput. SGS Lakefield pilot tests for impurity removal and MP Materials own pilot tests confirm the ability to successfully remove sufficient iron, uranium, and dramatically reduce aluminum prior to SX. A secondary bulk extraction is then performed to remove rare earths from remaining impurities, in particular the cations Ca and Mg. Historical plant data demonstrates that this system operated largely without major complications. The removal of a significant portion of the cerium during leaching will offset the increased volumetric flow which will result from higher concentrate production. MP Materials has conducted several pilot plant runs using glass mixer-settlers to produce feed for heavy REE separations and (solvent extraction didymium) SXD pilot plant experiments to further minimize CRUD formation. All these studies have confirmed high recovery and purity of the RE-enriched preg solution.

SXH: a bulk separation of the heavy rare earths (SEG+) fraction from light rare earth element (LREE) will be performed in solvent extraction heavies (SXH). Previous plant operating experience between 2012-2015 and MP Materials' modeling confirms that this plant is adequately sized to ensure clean separation of Sm+ from Nd while minimizing losses of Nd into Sm. The separation factor between Sm and Nd is large (aided largely by the absence of Pm in nature), so MP Materials has not performed any additional piloting on this circuit.

SXD: the SXD circuit separates a PrNd stream from the La and residual Ce in the SXH raffinate. SXD operated smoothly under the predecessor entity and sufficient data exists from the later months to conclude that once in equilibrium, the ability to make on-spec PrNd is confirmed. However, MP

Materials is pursuing an additional separation in this facility involving the elimination of the need for a separate cerium removal stage.

PrNd Finishing: precipitation of PrNd from the chloride media has been piloted at SGS Lakefield as well as in MP Materials' pilot plant. Both carbonate and oxalate experiments were conducted and analyzed for rheology, particle size, settling rate, impurities, ability to meet market product specifications, and determination of equipment sizing. The products were analyzed by a 3rd party laboratory and MP Materials' analytical laboratory. The finishing circuit has been designed for maximum flexibility for product precipitation and high-purity finishing based upon testing performed by MP Materials, 3rd party laboratories, and equipment vendors.

La Finishing: lanthanum precipitation by soda ash, solid liquid separation, drying and calcining tests were conducted at 3rd party laboratories, and in MP Materials' pilot plant to confirm rheology, equipment sizing, and the ability to meet market specifications. The implementation of a 2-stage (countercurrent decantation) CCD solid-liquid separation circuit is anticipated to improve spent leach solution (SLS), minimize losses, and improve product quality. This approach was demonstrated in several pilot plant runs.

PhosFIX™ Finishing: a multi-month pilot study conducted by MP Materials demonstrated the ability to produce a clean cerium chloride solution for sale into the water treatment market. This confirmed previous modeling studies. The laboratory data were confirmed by MP Materials' laboratory and by mass balances. The wide range of acceptable La to Ce ratios means that little additional pilot work has been necessary.

SEG+ Finishing: MP Materials uses the same SEG+ finishing assets as previously employed from 2012-2015 with minimal change. Legacy plant data confirms that the equipment is appropriately sized and designed, so no additional testing was performed.

Brine Recovery, Treatment, Crystallizing: MP Materials has conducted several rounds of pilot studies taking appropriate mixtures of brine from previously operated facilities and SX pilot plant investigations to produce a representative brine. Additional flocculant testing and soda ash precipitation has been conducted in several runs to confirm the ability to perform adequate solid/liquid separation. MP Materials plans an upgrade to the brine recovery circuit, including the addition of an additional filter press (like in kind), and a pressure leaf filter as a final polishing step. These will facilitate removal of non-sodium salts, to be disposed on site, prior to sending the sodium chloride solution to the brine evaporator and crystallizer. As no material chemical changes are expected, the major focus has been on confirming adequate equipment sizing. Legacy plant data combined with SysCAD modeling confirm that there should be sufficient redundancy to handle the expected volume. A salt crystallizer is being designed to handle the expected plant flow (including an engineering factor). A conservative brine assay was provided to confirm suitability of the materials of construction as well as throughput. The existing brine evaporator ran smoothly to service the chlor-alkali plant (that is not slated for restart until a later date) and is being repositioned to optimize the crystallizer feed solution. No direct piloting of the crystallizer has been performed, though the vendor has provided a performance guarantee.

10.5.2 Representativeness of Test Samples

The Mountain Pass ore body has been consistent over 70 years of regular mining, beneficiation, and processing. The mineral resource and mineral reserve estimates presented in this Technical Report

Summary forecast a similar mineralogy over the life of mine. For this reason, the pilot results are considered to be representative of the results to be expected for the deposit as a whole.

The most critical steps in the entire hydrometallurgical and separation process are the roasting and leaching steps. These steps are critical for cracking the bastnaesite mineral as well as maximizing trivalent recovery and minimizing cerium recovery that underlie the processing of the Mountain Pass ore. MP Materials has extensively piloted roasting and leaching variations from concentrate produced over different periods (early 2018, 2019, 2020, and 2021) and has always found the optimal results utilize similar conditions. Testing was conducted by 3rd party laboratories, various vendors and cross-checked with legacy data, verified as consistent with Chinese processing conditions, and further piloted at bench, pilot, and commercial scale at MP Materials. These optimized conditions, apparently not coincidentally, were nearly identical to those practiced by its predecessor from 1966 to 1998.

This suggests that within the typical volatility of the ore body, these roasting and leaching conditions have produced the optimal results over time. In recent years, MP Materials has shipped approximately 100,000 metric tonnes of REO to different processors in China. MP Materials understands that the vast majority of its customers pursue a similar hydrometallurgical process as is planned by MP Materials. Despite the concentrate being produced from different mining phases of the open pit (and different ore blends and final concentrate grades), the sales pricing framework has remained largely intact. This suggests that the leaching recovery has been consistent over the four-year period, providing further comfort of the representativeness of the samples tested.

Once the bastnaesite has been leached, it is not expected that variations in mineralogy will materially impact plant performance. Therefore, satisfaction of consistent leachability should provide sufficient support for the assumption of the suitability of the process design for life of mine.

10.5.3 Analytical Laboratories

MP Materials has been supported in its process design effort by a number of institutions and laboratories, as shown in Table 10-8. With the exception of MP Materials' own analytical and engineering laboratories, all are fully independent of MP Materials and were compensated on a fee-per-service basis with no compensation tied to results achieved.

Table 10-8: Analytical Laboratories

Name	Location	Certification
Hazen Research, Inc.	Golden, Colorado, USA	https://www.hazenresearch.com/capabilities/analytical-laboratories
SGS Lakefield	Lakefield, Ontario, Canada	https://www.scc.ca/en/system/files/client-scopes/ASB_SOA_15254- Scope_v2_2021-07-30.pdf
Paterson & Cooke USA Ltd	Golden, Colorado, USA	http:///www.dcmsciencelab.com/certifications/ through DCM Science Laboratories
Golder Associates Inc.	Lakewood, Colorado, USA	https://acz.com/index.php/certifications/ through ACZ Laboratories Inc.

Source: MP Materials, 2021

10.5.4 Separations Facility Recovery Estimates

In order to design, size, and optimize the operation of the circuits in the Stage 2 process, MP Materials has analyzed legacy plant data and conducted (and continues to conduct) a range of bench-scale and larger-scale pilot activities. The primary end points relate to the following, summary data of which will be explained in more detail in the subsequent sections:

- Optimizing roasting and leaching conditions to maximize trivalent (La, Pr, Nd, SEG+) rare earth recoveries while maintaining cerium recovery below 20%
- Ensuring sufficient settling rate of cerium concentrate with clear thickener overflow
- Efficient iron and uranium removal with minimal REE loss
- pH adjustment and further impurity removal with minimal trivalent REE loss
- Clean separation of Nd from Sm, with a focus on minimizing Sm into the raffinate stream (i.e., into Nd)
- Clean separation of PrNd from La and Ce along with pure La and on-spec Ce (with no more than 20% La)
- Sufficient settling of PrNd oxalate with clear overflow and low impurities
- Sufficient settling and purity of lanthanum carbonate
- Ability to remove non sodium (Na) impurities from brine stream to feed the crystallizer, allowing for relatively pure sodium salt (non-Resource Conservation and Recovery Act) discharge that could be either sold or disposed onsite in the Northwest Tailings Disposal Facility (NWTDF)

The data confirms the recovery figures shown in Table 10-9.

Table 10-9: Overall Recovery – Concentrate to Finished Products

Finished Product	Overall Recovery
Lanthanum	75.0%
Cerium	11.5%
Praseodymium/Neodymium	89.7%
SEG+	97.9%

Source: MP Materials, 2024
SEG+ includes the impact of LREE losses into SEG+ stream (considered an impurity)

Summary of Continuous Roasting and Leaching

Experimental Conclusions

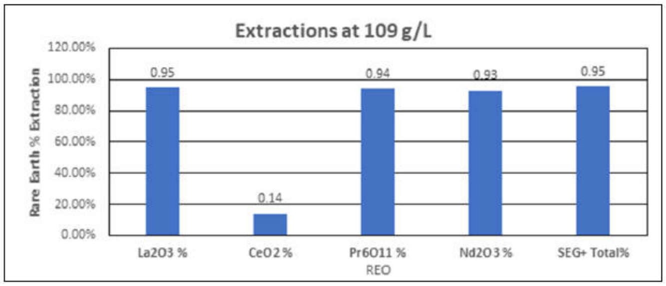
For the leach pilot, an optimal extraction of 94.63% Nd_2O_3 and %Pr_6O_{11} and %SEG+ was achieved at 109 grams per liter (g/L) REO in pregnant leach solution (PLS). Respective Ce extraction was 13.90%. During the stabilized run of the pilot, the highest achievable consistent g/L was 125 to 127 g/L. The respective optimal cerium extraction achieved was 9.57%.

Experiment Background and Objectives

During previous runs of the REE separation circuit at Mountain Pass, further downstream processes were required to separate cerium from the blend of rare earth elements in the concentrate. The purpose of this pilot was to show that parametric optimization of the roasting and leaching conditions in the leach circuit can result in the rejection of 80%+ cerium oxide and the extraction of 90%+ PrNd and SEG+ Oxides.

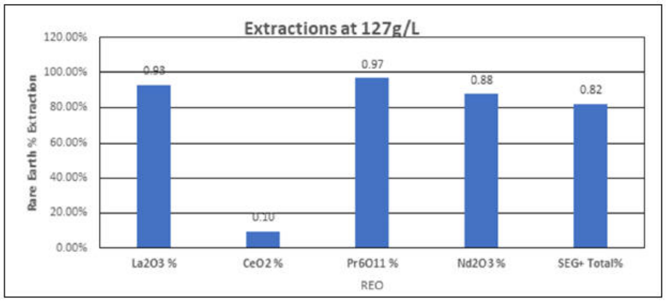
Experiment Metrics

Experiment results are presented in Figure 10-16 and Figure 10-17 and in Table 10-10 through Table 10-12.



Source: MP Materials, 2021

Figure 10-16: Extraction of Rare Earth Oxides at 109 g/L with 93+% PrNd



Source: MP Materials, 2021
Lower extraction of Nd2O3 and SEG+

Figure 10-17: Extraction of Rare Earth Oxides at 127 g/L

Table 10-10: Feed Conditions that Resulted in Optimal Extractions at 109 g/L

Ore Feed Rate (g/min)	RO Water (mL/min)	HCl TK2 (mL/min)	HCL TK3 (mL/min)	HCL TK4 (mL/min)	HCL TK5 (mL/min)	HCL TK6 (mL/min)	Total Volume Pilot Tanks (mL)	Residence Time Distribution (hours)
8.3	18.3	1.8	1.4	1.4	1.4	1	17,500	9.55

Source: MP Materials, 2021
"g/min" is grams per minute; "mL/min" is milliliters per minute.

Table 10-11: Test Material Feed Composition by % Solid REO

La_2O_3%	CeO_2%	Pr_6O_{11}%	Nd_2O_3%	SEG%+
24.4	37.7	3.3	8.5	1.5

Source: MP Materials, 2021

Table 10-12: Outlet Stream Composition by g/L REO at 109 g/L

La_2O_3 g/L	CeO_2 g/L	Pr_6O_{11} g/L	Nd_2O_3 g/L	SEG g/L
62.034	13.739	7.939	22.095	3.3139

Source: MP Materials, 2021

Summary of Leach Slurry Settling Tests

Experimental Conclusions

With the assistance of two vendors, MP Materials evaluated various anionic high molecular weight dry flocculants mixed at 0.20% and dosed into 500 mL samples of well mixed slurry. It was found that two worked best at a minimal dosage of 40 ppm for all 3 CCD thickeners. For CCD 1, this translated to 1,012 grams per metric tonne (g/t) dosages and for CCD 2 and 3 translated to approximately 909.1 g/t. See Table 10-13 for full breakdown.

Experiment Background and Objectives

Tests were performed on the CCD 1 thickener feed slurry with both vendors' products. Two products of similar settling efficacy were found.

Experiment Metrics

Experiment results are presented in Table 10-13. NTU (as a measure of clarity) refers to nephelometric turbidity unit.

Table 10-13: Settling Test Results Including Overflow Clarity with Various Flocculants and Dosages

CCD	Test Product #	Dose (PPM)	Minimum Dosage (grams/metric tonne)	Size	Settle	Clarity (NTU)
1	1	40	1,012.0	Small	Fast	28
1	2	40	1,012.0	Small	Med.	1000+
1	3	40	1,012.0	Small	Fast	428
1	4	40	1,012.0	Small	Med.	1000+
1	1	40	1,012.0	Small	Fast	23
1	5	40	1,012.0	Small	Fast	38
1	6	40	1,012.0	Small	Fast	113
1	1	40	1,012.0	Small	Fast	50
1	7	40	1,012.0	Small	Fast	36
1	2	40	1,012.0	Small	Med.	1000+
1	7	40	1,012.0	Small	Fast	29
1	1	40	1,012.0	Small	Med	29
2	1	40	909.1	Small	Fast	45
3	1	40	909.1	Small	Fast	31
1	8	40	1,012.0	Small	Fast	31
1	8	40	909.1	Small	Fast	31
1	8	40	909.1	Small	Fast	31

Source: MP Materials, 2021

Summary Fe/U Loading and Losses

Experimental Conclusions

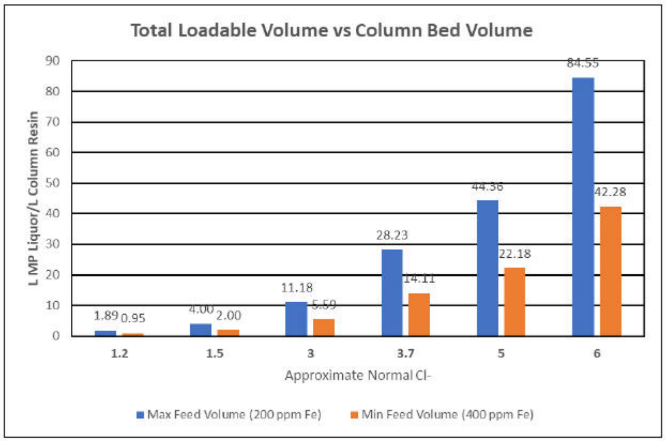
The range of Fe in MP Materials' leach solution exists nominally within a range of 200 to 400 ppm, and, as such, ion exchange loading capacity is reported as a range respective to these two conditions. With the addition of 12N HCl and a 10% dilution of the feed solution, it is possible to reach a loading capacity of 0.95 to 1.89 L mother liquor/L column resin. With the addition of 1.8 N NaCl and a 10% dilution of the feed solution with 12N HCl (total Cl- of 3N), that number can be increased to 5.59 to 11.18 L mother liquor/L column resin. It was determined that 250 g/L of solid NaCl (4.27 Mol Cl-) can be safely added to further boost the loading capacity of the resin and that NaCl should be dissolved first to avoid the formation of sodium hydride salts in the reactor. At a 20% dilution with 12N HCl, this would increase the loading capacity to 22.18 to 44.36 L mother liquor/ L column resin. Mass balances of the rare earths that hover between 98% and 102% indicate analytical statistical error and are not indicative of rare earth losses to the resin. However, loading of iron and uranium can be observed as shown in the mass balance of cell 10 of Table 10-15.

Experimental and Objectives

The objective of these experiments is to alter the Cl- composition of the feed stock leach liquor to improve loading capacity of the Fe/U IX columns. This is achieved with the addition of HCl and NaCl.

Experimental Metrics

Experiment results are presented in Figure 10-18, Table 10-14 and Table 10-15.



Source: MP Materials, 2021

Figure 10-18: Volumes of Leach Liquor per Volume of Resin Required Before a Regeneration Cycle

Table 10-14: Assays of Feed, Cell of Complete Rare Earth Breakthrough, and Cell of Fe/U Bleed

Sample ID	La_2O_3 g/L	CeO_2 g/L	Pr_6O_{11} g/L	Nd_2O_3 g/L	Fe mg/L	Na mg/L	U mg/L
INFLB Cell 10	36	22.14	5.69	21.91	2.7	34840.9	0.1
INFLB Cell 78	36.47	22.4	5.56	22.1	65.3	34257.3	5.3
INFLB Feed	36.89	22.53	5.54	22.55	129.7	34195.9	19.1

Source: MP Materials, 2021

Table 10-15: Mass Balance Calculations for Outlet Streams at Various Fractions

Sample ID	La/La Feed	Ce/Ce Feed	Pr/Pr Feed	Nd/Nd Feed	Fe/Fe Feed	Na/Na Feed	U/U Feed
INFLB Cell 10	97.59%	98.27%	102.71%	97.16%	2.08%	101.89%	0.52%
INFLB Cell 78	98.86%	99.42%	100.36%	98.00%	50.35%	100.18%	27.75%
INFLB Feed	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Source: MP Materials, 2021

Summary of Impurity Removal

The Impurity Removal circuit is designed to achieve a high purity SX feed. First the pH of the liquor is increased by the addition of 32% NaOH solution to the highest practical value with less than 1% of rare earth losses. This process was piloted at Mountain Pass in Summer 2021 to attain process parameters. A secondary goal of the pilot work was to determine whether this could serve as the primary aluminum-removal step for MP Materials' entire plant process.

Figure 10-19 shows a before and after for the steady-state operation of the pilot effort. The assay for “T2 Shift Avg” represents the product stream of this pilot work. The absolute concentrations are listed as well as the adjusted values.

Sample ID	La2O3 g/L	CeO2 g/L	Pr6O11 g/L	Nd2O3 g/L	Sm2O3 g/L	Eu2O3 g/L	Gd2O3 g/L
Fe/U-removed leach liquor	27.065	30.054	4.386	19.510	3.953	0.247	0.163
T2 Shift Avg - Absolute	24.093	26.003	3.986	17.862	3.634	0.219	0.148
T2 Shift Avg - Dilution Adjusted	26.310	28.396	4.353	19.505	3.969	0.239	0.162
T2 % Loss	2.79	5.52	0.76	0.03	-0.39	3.01	0.95

Source: MP Materials, 2021

Figure 10-19: Mass Balance

The pilot effort also showed that an additional aluminum removal step will continue to be required.

<u>Summary of SXI Recovery / Mass Balance</u>

A subsequent impurity removal stage has two main functions in the overall MP Materials flowsheet:

- Remove the divalent impurities from the leach liquors
- Increase the concentration of rare earth elements feeding solvent extraction

One of the relevant modifications in the circuit from the legacy operations is that around 10% of the lanthanum present in the feed stream will be intentionally rejected. The process was tested on a pilot scale for a total of 10 weeks to achieve statistical process control.

<u>Summary of SXH Recovery / Mass Balance</u>

The SXH circuit which follows the solvent extraction impurities (SXI) circuit in the overall MP Materials flowsheet, receives the purified SX solution as the feed, after a stage of pH adjustment. The primary functions of the SXH circuit in the circuit are:

- To separate the heavy fraction (i.e., the SEG+ elements) from the light rare earths (i.e., LaCePrNd fraction). The light REE fraction is subsequently separated in the SXD circuit
- To concentrate the SEG+ fraction from ~20 g/L to ~350 g/L in the preg stream

The process has three input streams as shown below in Figure 10-20; Feed, NaOH, and HCl. There are two output streams: Raffinate containing the light REs, and the heavy RE-enriched preg stream.

Source: MP Materials, 2021

Figure 10-20: Diagram of the SXH Process

The process was run on a pilot scale using a synthetic feed produced by blending SXI preg with heavy rare earth element (HREE) concentrate produced from the legacy circuit. Although the REO distribution in the synthetic feed does not match what would be encountered in the full-scale plant, the outcome of the testing would be the same at plant conditions. Piloting feed concentrations were adjusted to provide a reasonable timeframe for results.

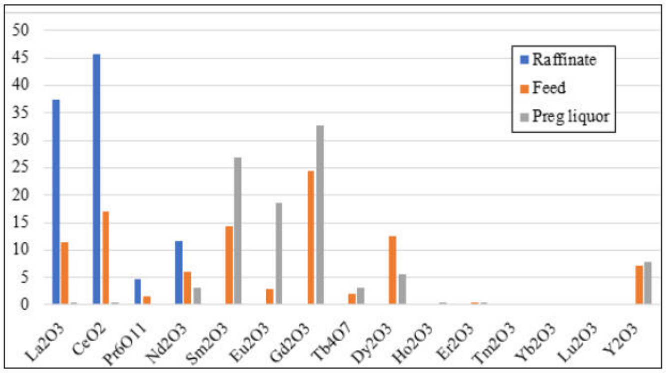
The process control of the circuit was done by complexometric titrations to measure the REO concentrations in different streams of the circuit. Additionally periodic samples were analyzed by ICP-MS to evaluate the efficacy of the process. The concentrations of relevant species, i.e., Pr, Nd and Hv (abbreviation for SEG+ fraction), in the pilot during steady state are given in Table 10-16 with the flowrates.

Table 10-16: Volumetric Flowrates of Different Streams along with Mass Flowrates of Different Components

	Feed	NaOH	Scrub	Strip	Raffinate	Preg liquor
Flowrate (ml/min)	60	6.4	5.2	12.2	71.6	12.2
Pr g/L	0.77	0	0	0	0.828	0.008
Nd g/L	3.1	0	0	0	2.5	2.4
Hv g/L	33.2	0	0	0	0.068	342

Source: MP Materials, 2021

The elemental distribution of the raffinate, preg, and feed streams as shown in Figure 10-21, indicate that >99.5% of the light REE fraction reported to the raffinate and >95% of the heavy REE fraction reported to the preg solution in the pilot run described. This effort also resulted in 7.7% Nd losses in the pregnant solution stream. As the synthetic feed had significantly higher proportion of HREEs (65% by weight) in contrast to the natural distribution of REEs in bastnaesite (~2% by weight), the purity numbers achieved were not optimized. Furthermore, to minimize the heavy fraction in the raffinate, greater than optimal concentration of neodymium was lost in the pregnant liquor stream. The large separation factor between Nd and Sm and the legacy operation indicates that high yield and purity of Hv can be achieved with low loss of Nd into the pregnant solution.



Source: MP Materials, 2021

Figure 10-21: % REO in Feed, Raffinate, and Preg Liquor

Summary of SXD Pilot

Piloting data for SXD indicated that >99% pure (Pr/Nd)Cl_3 can be produced as a product in both the traditional configuration, and in a new configuration. The new configuration increased the purity of the La in raffinate to be >99.5% pure for sustained periods of several days, while maintaining the purity of the $PrNdCl_3$ product. The purity of the Ce-La product achieved was >99% with an average ratio of Ce to La of 2.87 (74% Ce) on an oxide basis. The low residence time of the mixer settlers as well as the low inventory volume led to high volatility compared to what is expected in the full-scale operation. In the full-scale operation, it is believed that even higher purity may be achieved due to increased SX circuit stability. Characterization of Ce and La in the $PrNdCl_3$ product was to the nearest 1 g/L.

PrNd Oxalate/Carbonate Precipitation – PrNd

PrNd Precipitation was conducted with SXD Pregnant Solution (containing 166 g/L TREO at about 30% Pr and 70% Nd) and precipitant being fed into Reactor 1 and cascading down a series of four reactors before overflowing into a collection bucket.

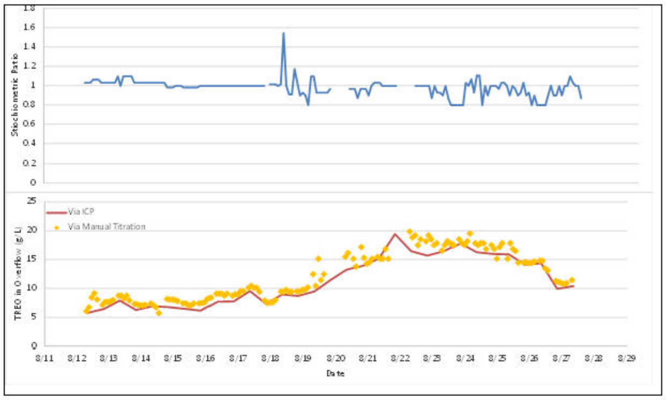
Average recovery for the first five days was 99.9%, suggesting that even at feed ratios close to (or even slightly lower than) 1.0 can achieve nearly complete recovery.

From this study, stoichiometric feed ratio may be a good starting point for determining feed rates, but from a control standpoint, pH appears to be a good indicator for precipitation performance. Based on the data, low pH values should be targeted.

Lanthanum Carbonate Precipitation – Summary of La Recovery

Lanthanum Carbonate Precipitation was conducted with a solution containing 70 g/L of lanthanum on an oxide basis and soda ash solution (at 15% sodium carbonate by weight) being fed into Reactor 1 and cascading down a series of four reactors before overflowing into a collection bucket.

Figure 10-22 shows the stoichiometric feed ratio (actual/theoretical for soda ash) and residual TREO in the overflow liquor (both via ICP and manual titration) over the course of a two-week period. Stoichiometric feed ratio was calculated from recorded feed rates measured every two hours using a stopwatch and graduated cylinder. This crude method may account for some of the noise in this dataset. Average recovery for the first five days was 90.3%.



Source: MP Materials, 2021

Figure 10-22: TREO in Overflow Liquor Over Time vs Stoichiometric Feed Ratio and pH

On day six, soda ash flow became more erratic. In response, a reduction in lanthanum recovery is noted. While there were periods of time where flow was normal, this circumstance did not appear to be sufficient to maintain a consistent level of recovery in the pilot facility, suggesting that a consistent flow is critical to the operation of carbonate precipitation. This situation should be more easily maintained in the full-scale process.

Brine Recovery Summary

The Brine Recovery circuit is designed to remove impurities via carbonate precipitation from the brine crystallizer feed stream and allow for the impurities to be impounded as carbonate solids. This process was piloted at Mountain Pass in Spring 2021 to display proof of concept and to attain process parameters.

The Mountain Pass pilot showed that impurities can be removed from the crystallizer stream to the point at which the wet cake salt (generated from the crystallizer) may be impounded. The Company would like to sell the salt as a product in the future. The pilot work also showed that the solids generated from the process are permissible to be impounded.

Table 10-17 shows the average concentrations of relevant impurities from the Mountain Pass pilot effort. The Impurity Removal Solution is an average of multiple grabs from the starting material, while the crystallizer feed is multiple grabs of the supernatant generated from the thickener.

Table 10-17: Impurities in Brine Before and After Treatment

Brine Recovery Pilot - Average of Grab Sample Assays			
Component	**Unit of Measure**	**Impurity Removal Solution**	**Crystallizer Feed**
Al	mg/L	5.0	<0.1
Ba	mg/L	2,240	0.56
Ca	mg/L	23,845.1	2.4
Co	mg/L	3.0	<0.1
Fe	mg/L	6.0	<0.1
Mg	mg/L	345.4	<0.1
Mn	mg/L	249	<0.1
Na	mg/L	69,864	66,192
Ni	mg/L	1.3	<0.1
P	mg/L	5.3	0.4
Pb	mg/L	200	<0.1
Si	mg/L	18.8	1.2
Sr	mg/L	4,587	0.44
Th	mg/L	<0.1	<0.1
U	mg/L	<0.1	<0.1
Cl	mg/L	77,302	76,837
PO_4	mg/L	13.4	2.1
SO_4	mg/L	7.0	14.2
K	mg/L	78.0	54

Source: MP Materials, 2021

The thickener from the pilot plant did not provide any relevant data regarding settling time, however the solids did settle easily with both flocculants which were deployed.

10.5.5 Expected Product Specifications

Lanthanum Carbonate/Oxide

For lanthanum, MP Materials has designed its circuits to primarily meet the required specifications for the FCC catalyst market in the U.S. and Europe, which are the largest future customers. These specifications are not considered exceedingly tight, and the implementation of the SXD upgrades in MP Materials' Stage 2 will enable the Company to alter the amount of lanthanum directed into the cerium chloride product to ensure on-spec La/TREO for those customers requiring higher purity La carbonate or oxide. MP Materials produced sample material for customer testing during the SXD pilot operation in mid-2020, which confirmed the ability to meet these primary specifications.

Cerium Chloride

The cerium (or cerium-lanthanum) chloride market does not yet have a fixed specification. However, the ratio of cerium to lanthanum, in MP Materials' experience, does not dramatically impact performance. MP Materials' predecessor produced and sold cerium chloride solution into the market for several years, and MP Materials has continued to sell legacy inventory of this product to an existing customer at premiums to observed market prices. The MP Materials flowsheet will produce cerium chloride in a similar process flow to the predecessor, where there should be no difficulty continuing to meet market expectations. Product that does not meet market specifications can be recycled back to the separation plant or neutralized and disposed through brine recovery without significant financial impact.

PrNd Oxide

Market standard PrNd oxide specifications, as confirmed by MP Materials' customer discussions, are demonstrated in Figure 10-23. Mountain Pass's primary production and separation assets were previously operated at commercial scale, and several representative 5 metric tonne lots are compared to market specifications below, highlighting the ability to produce on-spec PrNd Oxide. Further, MP Materials has implemented more robust solid liquid separation, QA/QC, and finishing assets, which are expected to improve upon the ability and economics of producing to market specification.

Element	Specification	5450-15-0826-1B	5450-15-0827-1B	5450-15-0827-2B	5450-15-0828-1B
TREO	99.00%	99.70%	99.80%	99.70%	99.70%
LOI	<1%	0.33%	0.24%	0.32%	0.28%
Pr_6O_{11}		23.60%	22.20%	22.90%	23.00%
Nd_2O_3		76.80%	78.00%	77.50%	77.30%
Pr_6O_{11}+Nd_2O_3/TREO	99.50%	100.40%	100.20%	100.40%	100.30%
Pr_6O_{11}/(Pr_6O_{11}+Nd_2O_3)	25% +/- 3%	23.51%	22.16%	22.81%	22.93%
La_2O_3/TREO	0.05%	0.003%	0.002%	0.001%	0.003%
CeO_2/TREO	0.05%	0.008%	0.007%	0.008%	0.008%
Sm_2O_3/TREO	0.03%	0.007%	0.005%	0.005%	0.005%
Y_2O_3/TREO	0.01%	n/a	n/a	n/a	n/a
Other REO	n/a	0.005%	0.005%	0.005%	0.005%
Fe_2O_3	0.05%	0.002%	0.002%	0.001%	0.002%
CaO	0.05%	0.004%	0.004%	0.001%	0.001%
Al_2O_3	0.05%	0.001%	0.001%	0.003%	0.001%
Na_2O	0.05%	0.004%	0.001%	0.005%	0.001%
SiO_2	0.05%	0.006%	0.006%	0.006%	0.006%
SO_4	0.05%	0.001%	0.001%	0.001%	0.001%
Cl^-	0.05%	0.030%	0.050%	0.030%	0.020%

Source: MP Materials, 2021

Figure 10-23: Market Standard PrNd Oxide Specification and Mountain Pass Historical Results

SEG+ Precipitate

There are varying specifications for SEG+ precipitate products driven by the varying ratios of Tb and Dy and purity requirements. The typical SEG+ contract would include a minimum Tb and Dy assay percentage.

A representative SEG+ transaction specifies a 4% Tb+Dy minimum (REO equivalent). While there is sample volatility due to low concentrations of certain elements, recently produced samples from material extracted from legacy circuits and other testing indicate between 4% and 8% as a conservative range for Tb+Dy.

11 Mineral Resource Estimate

The mineral resource estimate was updated in 2024 and reported by SRK Consulting (U.S.) Inc.

Mountain Pass site geology is modeled using Seequent's Leapfrog Geo™ software, and a 3D block model, grade estimation, and classification are developed in the same software utilizing the EDGE module. Pit optimization was conducted in Maptek Vulcan™ software. The Project limits are based on the near-mine area and are represented in local mine coordinate system.

Rare earth mineralization at Mountain Pass is contained within intrusive carbonatite hosted by Proterozoic gneissic and shonkinitic/syenitic rocks. Rare earth mineralization has a relatively constant dip of 35° to 45° to the west southwest (255°), offset by minor post-mineral west and north-northwest normal faults. Drillholes are predominantly vertical to steeply dipping almost perpendicular to the dip of the mineralized zone. Drill spacing averages 100 to 300 ft throughout the deposit along the strike and downdip. Most of the drilling occurred prior to or during mine production in the early 1950's to late 1990's. The current mineral resource estimate incorporates drilling and mapping information that has been sourced or revised by MP Materials as part of a geological database review process in 2021 and updated structural and pit mapping in 2024.

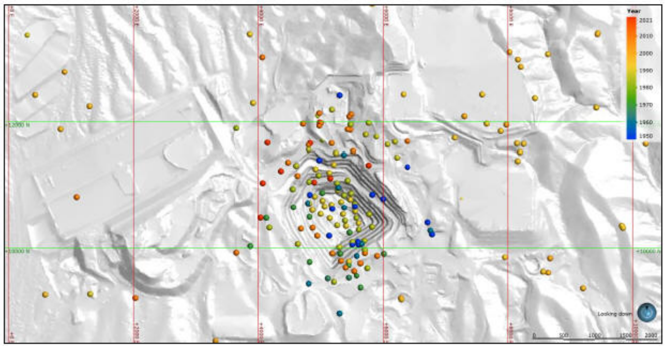
SRK constructed the geological model and resource block model in 2024 based on exploration drilling, blasthole data, pit mapping, and structural mapping. The estimate is constrained by a combination of carbonatite lithology and TREO grade shell domains. Grade interpolation was defined based on geology, drillhole spacing, and geostatistical analysis. The mineral resources are classified based on geological understanding, historical production, proximity to drilling data, number of drillholes used in the estimate, and relative indicator of estimation quality (Kriging Efficiency (KE)). The reported mineral resources are reported above a nominal COG developed from assumptions of internal cost and pricing from MP Materials, and within an economic pit shell to demonstrate reasonable prospects for economic extraction.

11.1 Topography and Coordinate System

The mineral resource estimate has been confined to a topography dated September 30, 2024. The Mountain Pass property utilizes a local mine grid in easting and northing with elevation being true elevation above mean sea level (amsl). The local mine grid is based in feet (ft).

11.2 Drillhole Database

As described in Section 7, the majority of drilling activities at the Project were conducted throughout the 1950's to 1990's, and data was recorded in U.S. standard units with locations in a local mine grid. Drilling locations relevant to the project area are shown in Figure 11-1.



Source: SRK, 2021

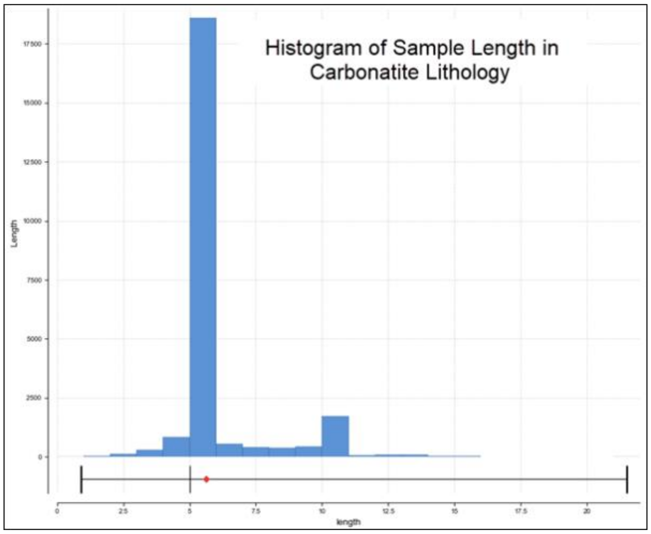
Figure 11-1: Drilling Distribution near Mountain Pass Mine

MP Materials compiled a digital drilling database based on information available from original laboratory analyses during 2021. No new exploration or resource definition within the pit area has been performed since this time. In some cases, the original lab sheets were not located, and SRK relied on typed and hand-written analyses as posted on drilling logs. This database differs from previous drilling information compiled by SRK or other consultants and includes revisions to historical information based on relatively newly discovered records as well as drilling added to the database from 2011 to 2021 drilling. MP Materials compiled drilling data in Microsoft Excel.

The drilling database used for the resource model utilizes a total of 233 drillholes with a cumulative length of 118,621 ft in the vicinity of the mine area. SRK notes that there are additional drillholes in the database excluded from the resource estimate as they were completed for other purposes (hydrogeological, geotechnical, condemnation, etc.), could not be located accurately from historical information, or were outside of the project area. Individual drillholes range in length from 50 to 2,499 ft, and average 510 ft. The drilling is located on a series of generally east-northeast and east to west oriented sections spaced at nominal 150 ft intervals. Drill spacing is not consistent down-dip and less than 100 ft in the higher-grade center of the deposit but widens to over 300 ft in other areas. Drillhole spacing averages approximately 200 ft x 100 ft throughout the deposit area. In some cases, there are drillholes that contain geological logging, but missing assay data. These holes are outside of the main carbonatite zone but are used to inform the geological model.

Within the geological model, there are 17,850 blasthole and 2,710 diamond drill samples analyzed for TREO with grades ranging from 0.01% TREO to a maximum of 26.42% TREO. Historically, core samples were selectively assayed based on visual confirmation of mineralization. Accordingly, many intervals in the hanging-wall and footwall of the mineralized zone were not assayed and thus, assigned a -0.01 TREO grade in the MP database. These intervals were re-assigned a grade of 0.001 % TREO by SRK for the purposes of domain evaluation and estimation. Intervals which are entirely missing in terms of logging and assays are rare within the mine area and were omitted from compositing and estimation.

Individual sampling intervals range from 0.9 ft to a maximum of 21.5 ft, with an average of 5.14 ft. On a percentage basis, more than 83% of the sample internal in the carbonatite are 5 ft with another 7% between 5 and 10 ft (Figure 11-2). A portion of the samples have also been tested for multi-element geochemistry including P_2O_5, CaO, SrO, Fe_2O_3, PbO, SiO_2, ThO, with a limited selection of lanthanide series elements assayed. Only P_2O_5 was evaluated and estimated in the model to potentially aid in determination of where monazite may host the rare earth content, but this is not reported in the mineral resource summary and is not utilized for reporting.



Source: SRK, 2024

Figure 11-2: Sample Length Histogram – Mineralized CBT

There is limited information available regarding drilling recoveries recorded on the original drill logs. Anecdotal information by site personnel indicates acceptable core recovery, and no relationship was historically observed between core recovery and TREO grade. Zones of low or no recovery are noted in drilling logs and generally remain unsampled due to lost core. These intervals neither contribute to, nor are assigned grade on the basis of review of the drill logs and communication with site personnel. If there was an issue with recoveries, SRK would expect this to be evident in the relationship between recovery and grade, as a result of the highest-grade ore being also highly friable. SRK recommends drill recovery to be reviewed in more detail in future campaigns.

11.3 Geological Model

SRK modeled the geology in 2024 as 3D wireframes utilizing Leapfrog Geo™. Downhole geological information has been compiled from physical paper records for most of the historical drilling at Mountain Pass. In addition to the drilling, SRK registered an updated geological map completed in July 2024. Geologic contacts and mapped fault traces were digitized in Leapfrog and used to inform the lithostructural model in areas where historical exploration drilling was relatively sparse in the pit area. This is shown in Figure 11-3.

Source: SRK, 2024

Figure 11-3: Geological Mapping and Fault Expressions – July 2024

11.3.1 Structural Model

SRK constructed a structural model including the five major faults observed in the open pit. SRK utilized structural mapping from July 2024 pit mapping as primary contacts for structures observed in the pit area. These include:

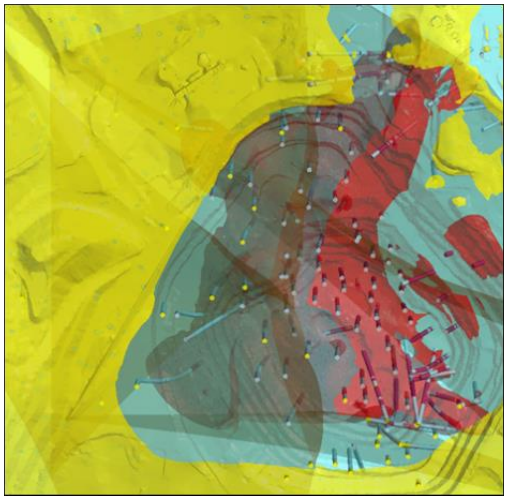
- Central Fault – Structure trending NW along orientation of carbonatite (CBT). Not activated in geological model due to minimal or no perceived offset but retained to inform geotechnical model development.
- Middle Fault Zone – Identified as a relatively wide damage zone dipping to the W from the pit area.
- QAL Fault – Significant down-dropping W-NW fault exposed in south pit wall. Juxtaposes QAL with host rocks and would offset CBT. No drilling has identified CBT south of this fault.
- F4 Fault – Mapped as minor down-dropping fault trending W-NW. Likely sympathetic to Quaternary alluvium (QAL) Fault Offsets and truncates CBT to the southF2 Arc Fault – Appears to be NE trending minor splay of Middle Fault Zone with minimum offset.
- F3 Fault – Mapped as a West – East trending fault that truncates CBT in the southern portion of the pit.
- N Fault –NW trending fault that limits the extents of CBT to the north.

Where possible, SRK projected these structures from pit measurements. Structural logging is inconsistent in the drilling and due to the uncertainty of this data, it is not being utilized. It is likely that observations were not recorded which may correspond to other structures or that some observations should be ignored due to the same inconsistency. Relative interactions of the structures noted above were reviewed with MP geology staff for consistency to the observed mapping and current geological interpretation. The resulting interactions effectively define fault blocks which are discrete from each other and bound the lithological model. The lithology was modeled based on drill logging simplified to key units at a level commensurate with the relative consistency of the drilling and mapping information. Basic lithologies which could be grouped from the variable historical logging were carbonatite (CBT), host rock (HOST - primarily gneiss with minor granite/shonkinite/syenite), and Quaternary alluvium (QAL). Although sub-lithologies are defined, the inconsistency of logging over various drilling campaigns would result in inaccuracies and potential errors in the model. In addition, the relative importance of the definition of sub-lithologies is considered minor according to the current operational mine plan. The primary purpose of the geological model at Mountain Pass is to define volumes of mineralization, differences in bulk density, waste rock geochemistry, slope stability, or other general engineering parameters. Thus, a more detailed lithological model was not deemed necessary by MP to support mineral resources:

- The QAL was defined as an erosional surface superseding all other lithologies as the most recent unit and is informed primarily from drilling. Surface mapping of the distribution of the QAL is incorporated from 2013 geological mapping of the area.
- Carbonatite was modeled primarily from the grouped logging codes which represent carbonatite logging information generated over the various drilling campaigns. SRK notes that TREO grade was not utilized to generate the carbonatite shape, and that this was based purely on the geological logging or mapping conducted by MP or predecessors.

- Host or country rocks are effectively the remaining volume not broken out for CBT or QAL. The host rocks are mixed and generally understood to not vary significantly in terms of bulk density or other parameters relevant for the current operation.
- A fault damage zone was also constructed between the hanging-wall and footwall surfaces of the Middle fault zone and is a separate lithology for the purposes of evaluating specific gravity, rock mechanics, hydrogeology, and other relevant disciplines.

A rotated view of the 3D geological model is shown below in Figure 11-4.



Source: SRK, 2024
Faults shown as shaded linear features.

Figure 11-4: Plan View of 3D Geological Model

11.3.2 Mineralogical / Alteration Model

No mineralogical or alteration model has been developed for the Project. In general, consistency in nomenclature of specific types of carbonatites or alteration in the carbonatites or host rocks has been poor. MP has previously noted carbonatite "types" that may exist internal to the CBT orebody, primarily based on ore type designations including "black" (high grade relatively friable CBT), "blue" (low grade CBT featuring chrysotile), and "breccia" (marginal or contact-altered CBT which is more friable and erratic in terms of REO distribution). The data is inconsistent in its approach to defining these zones in the drilling or mapping, and SRK elected to not model these features. Anecdotal discussions with

MP personnel noted that these types of carbonatite which may be observed are generally dealt with satisfactorily through the current blending strategy, and generally have no impact on overall metallurgical recovery or other economic/operational factors.

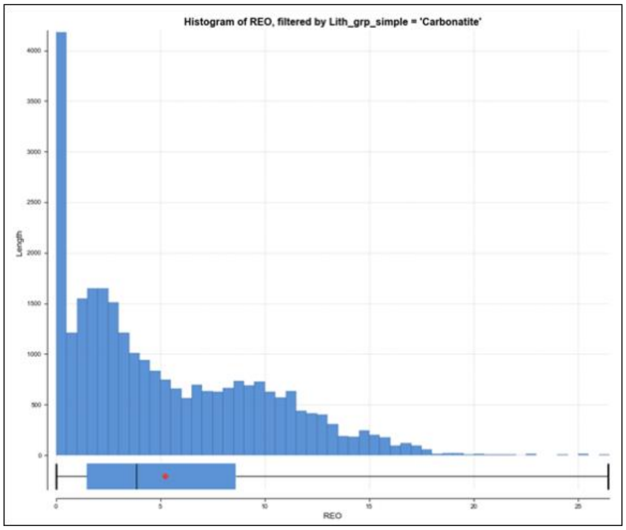
SRK notes that ore typing within the CBT is currently done solely on the basis of TREO grade, and that mineralogy or alteration are not considered in mine scheduling, mill feed, or downstream economics. If this changes over time, significant effort will need to be applied to either re-logging historical drilling on a consistent basis for these details or utilizing other means to obtain and characterize this data.

11.4 Exploratory Data Analysis

11.4.1 Resource Domains

The modeled CBT volume has been domained into high-grade (HG) and undifferentiated lower-grade (UNDIFF) domains. Based on exploratory data analyses (EDA), SRK's opinion is that sub-domaining of the CBT is appropriate based on likely mineralization multiple phases or types of intrusion within the broader CBT volume. Unfortunately, the inconsistency of the geological data does not provide a robust mineralogical or other categorical feature appropriate for producing a model of the phases internal to the CBT. SRK notes there are a number of published papers that have discussed the variable mineralogy and its relationship to REO grades, but reasonable spatial models of these features have not been generated to date.

A histogram of the REO grades internal to the CBT unit is shown in Figure 11-5.



Source: SRK, 2024

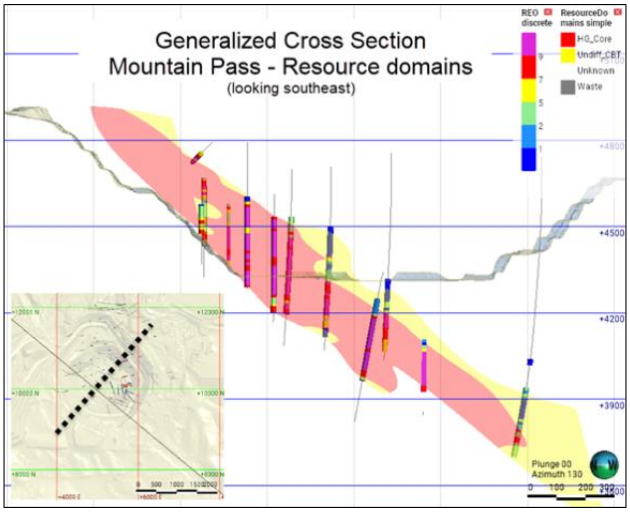
Figure 11-5: Histogram of TREO% within Carbonatite Rock Type

The bimodal nature of the population distribution and a review of the spatial context of data shows a distinctly higher-grade interior portion of the CBT relative to a more erratic and undifferentiated lower grade outer zone of the CBT. This is consistent with in-pit observations, as well as the local sectional interpretation of the CBT. SRK selected a nominal 5.0% REO cut-off for the purpose of generating an indicator model of the higher-grade portion of the CBT. In addition to the threshold of 5.0% REO, a probabilistic factor of 0.4 was used to assess intervals and areas for which the probability of exceeding the 5.0% REO cut-off was greater than 40%.

Other parameters defining this domain are as follows:

- The same structural trends utilized for creation of the CBT unit itself were applied to the indicator.
- The indicator was limited to samples only within the CBT internal structural domains, and each fault block defined from the structural model constrained its own indicator.
- Continuity was applied to the indicator for interpolation in Leapfrog. The range was set to 300 ft, and a nugget of 10%. No drift was applied.
- Discrete volumes less than 100,000 ft^3 were discarded.

The results of the TREO grade-based domaining process provided a robust constraint on grade distribution within the CBT which define a relatively contiguous “core” of TREO mineralization relative to the undifferentiated CBT. Performance statistics for the indicator also show robust dilution metrics of approximately 7.2% of samples within the domain being lower than the defined COG. It is SRK’s opinion that this domain is acceptable for use in mineral resource estimation, and a reasonable approximation of the geological features and related grade distribution of the deposit (Figure 11-6).



Source: SRK, 2024

Looking SE

Figure 11-6: Cross-Section Illustrating CBT Domains and TREO Grades

11.4.2 Outliers

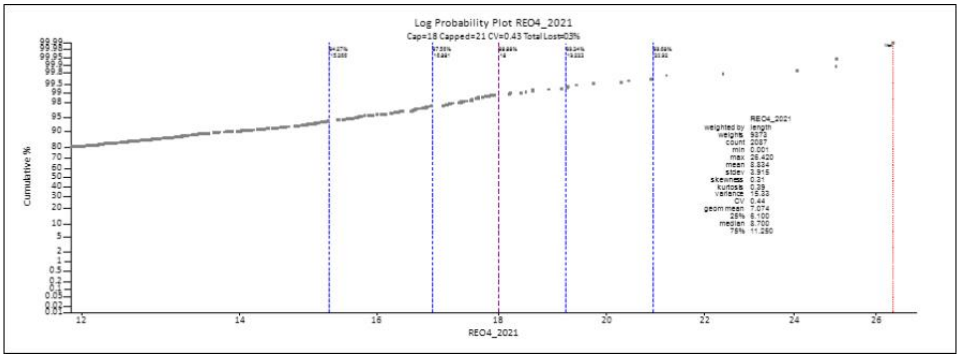
SRK performed an outlier analysis aimed at identifying high-grade outlier values that may adversely impact grade estimation. It was determined that no capping was necessary for TREO but outlier influence restriction was utilized. Upper-end log probability plots for TREO within the two mineralized CBT domains are provided in Figure 11-7 and Figure 11-8, respectively. Other capping scenarios were evaluated for each data population and demonstrated relatively low sensitivity to a capping strategy in terms of impact to average grade or coefficient of variation (CV).

SRK elected to utilize a reduction of influence or a “clamp” for reducing the impact of outliers on the grade estimation. For this, SRK assumed that the composite grade would be utilized for a relative distance of 30 ft (one block) after which the grade would be reduced to a nominal upper limit level as defined below in Table 11-1. This outlier restriction is applied during the estimation and successfully retains the local high grade as have been demonstrated to exist but reduces the impact on larger volumes and distances which are not likely as supported based on the probability plots. SRK generated probability plots for the two mineralized domains and visually reviewed the consistency of populations at varying grade ranges to understand both the spatial context of the outlier populations (i.e., what part of the CBT contains outliers) as well as the consistency of the populations to each other.

Table 11-1: TREO Influence Limitations

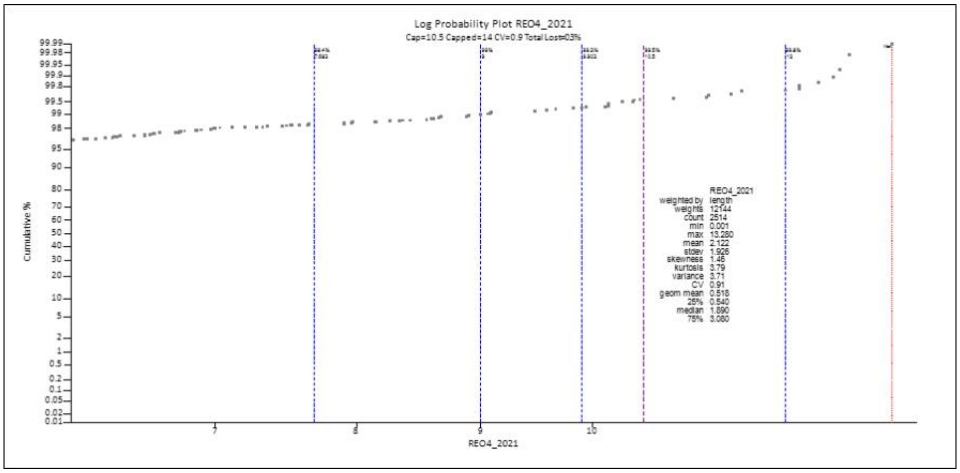
Domain	Outlier Threshold Level (%)	Distance (ft)	Percentile of Distribution
HG Core CBT	18.0	30	98.88
Undifferentiated CBT	10.5	30	99.50

Source: SRK, 2024



Source: SRK, 2021

Figure 11-7: Log Probability Plot for TREO – HG Core



Source: SRK, 2021

Figure 11-8: Log Probability Plot for TREO – Undifferentiated CBT

11.4.3 Compositing

All exploration assay data were composited into 10 ft downhole lengths. Composites were broken by the resource domains for use in grade estimation.

Blastholes were composited to their nominal 30 ft bench height, or 15 ft in selected older holes which were not drilled to the full bench height.

11.5 Bulk Density

For the purposes of determining the bulk density at the Mountain Pass deposit, SRK reviewed historical tonnage factors and collected limited samples for specific gravity testing. For the purposes of calculating tonnages in the resource model, bulk density is considered the same as specific gravity.

For all historical resource and reserve estimates, a tonnage factor of 10.0 ft^3/ton (specific gravity = 3.20) was applied to mineralized carbonatite, and a tonnage factor of 11.5 or 11.0 ft^3/ton (SG = 2.79 to 2.91) was applied to the enclosing country rock (Cole, 1974; Couzens, 1997, Nason, 1991). Original documentation related to specific gravity cannot be located, although it was reported that IMC performed a truck weight study in the field on waste rock during prior operations.

In order to validate the historical specific gravity assumptions, SRK collected a total of 10 samples for specific gravity determination, and the results of this testwork are provided in Table 11-2. Based on these results, SRK assigned a tonnage factor of 10.25 ft^3/ton (specific gravity = 3.13) for mineralized carbonatite, and 11.57 ft^3/ton (specific gravity = 2.77) for the enclosing gneissic rocks, which is in reasonable agreement with historical assumptions.

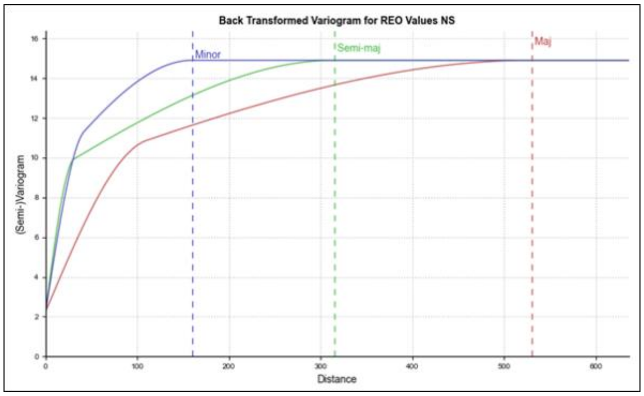
Table 11-2: 2009 Specific Gravity Results - Carbonatite

Sample ID	Hole	Sample Depth (ft)	g/cm^3	ft^3/ton	Rock Type	Notes
SGMP833531	83-3	531	3.22	9.95	Carbonatite	With red and brown flow foliation
SG854224	85-4	224	3.14	10.20	Carbonatite breccia	Pink and white to pink and brown matrix with green amphibole clasts altered to chlorite and sericite
SG859233	85-9	233	2.82	11.36	Gneiss	Fine grained biotite-qtz gneiss sparse red feldspar and crocidolite mostly along veins”
SG8520427	85-20	427	2.62	12.23	Carbonatite	Dark yellow brown strong limonite replacement of carbonatite bastnaesite rare
SG8521437	85-21	437	2.72	11.78	Carbonatite breccia	With abundant syenite/shonkinite clasts
SG882399	88-2	399	3.29	9.74	Carbonatite breccia	Blue to red brown matrix pink to brown barite, abundant crocidolite
SG9013464	90-13	464	3.37	9.51	Carbonatite	Pink barite and white to gray calcite
SG9016244	90-16	244	2.87	11.16	Carbonatite	Pink barite and white calcite, iron pseudomorphs “black ore” up to 60%, some violet barite
SG9111153	91-11	153	2.91	11.01	Carbonatite breccia	Matrix supported breccia, matrix is light gray to maroon with salt and pepper texture, abundant FeOx
SG9111258	91-11	258	3.65	8.78	Carbonatite	Pink to light gray mottled with clear to light pink barite phenocrysts

Source: SRK, 2012

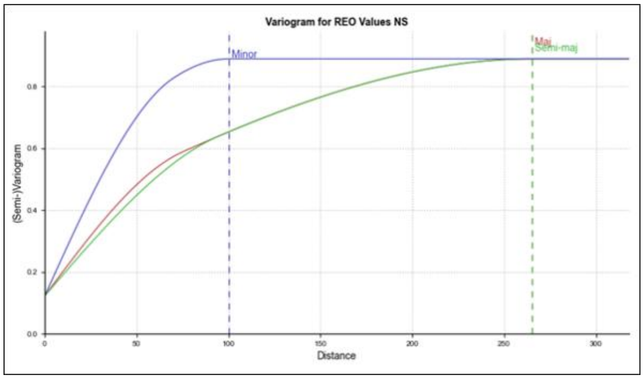
11.6 Spatial Continuity Analysis

Variography was calculated to model the spatial continuity of TREO grades within the relevant domains (and data types) for the Mountain Pass deposit. Orientations of the variograms were selected based on the overall geological continuity and generally follow a dip of 38° to an azimuth of 250°, with a varying pitch depending on the domain. Orientations of the CBT intrusion are known to vary locally, and SRK used broad orientation for directional variogram models given the use of variable search orientations in the estimation process. SRK modeled both semi-variograms and normal score transformed semi-variograms to achieve improved continuity models for ordinary kriging interpolation. Back transforms for the normal score variography were done prior to estimation. Continuity ranges are between 400 to 500 ft, depending on the data set. Blastholes generally demonstrate relatively shorter ranges compared to the exploration composites which is a function of both the closer spacing of the blastholes and the inherent variability of the blastholes relative to the more broadly continuous exploration data. Blastholes demonstrate comparably better short-range continuity due to closer spacing. In general, both sets of variograms (Figure 11-9 and Figure 11-10) show relatively steep rises to the sill, reaching 60% to 70% within 100 to150 ft, with the remaining variability coming over an additional 200 to 300 ft. Nugget effects were modeled independently using downhole variograms for each domain and data set, and generally range from about 5% to 20% of the sill.



Source: SRK, 2024

Figure 11-9: Example of Directional Variogram –Resource Drilling - TREO in the HG Core Carbonatite Domain (Back Transformed modeled variogram from Normal Scores)



Source: SRK, 2024

Figure 11-10: Directional Variogram –Blasthole Data – TREO HG Core Carbonatite Domain (Back Transformed modeled variogram from Normal Scores)

11.7 Block Model Limits

A sub-blocked model was created using Seequent Leapfrog EDGE with the origin and extent presented in Table 11-3. The model features a total of 6,818,200 blocks and duplicates the geological volumes to within 0.2% of the wireframes in the model. Sub-blocking triggers in the block model include, topography, site topography bounding the geological model, the geological wireframes, and the resource domain boundaries. Blocks are coded with geological model codes, domain codes, densities, estimated TREO grades, and relevant supporting parameters derived from the estimation or classification process. All estimates were done at the parent block dimension, which is approximately 1/3 to 1/5 of the exploration drill spacing the majority of the deposit.

Table 11-3: Block Model Specifications

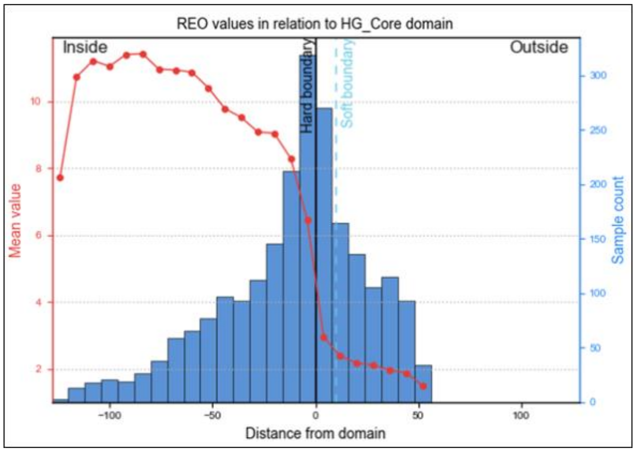
Axis	Minimum (ft)	Maximum (ft)	Number of Parent Blocks	Parent/Child Block Size (ft)
X	2,200	7,840	188	30/7.5
Y	7,800	13,200	180	30/7.5
Z	2,510	5,300	93	30/7.5

Source: SRK, 2024

11.8 Grade Estimation

SRK estimated TREO from the composited assay values from both the exploration and blasthole data provided by MP Materials. Estimates were compiled into a single TREO variable for reporting with priority assigned to estimates using Ordinary Kriging (OK) from exploration data over inverse distance weighting squared (IDW2) estimation. A general description of the estimation process is below.

SRK first conducted boundary analysis of the high-grade core and undifferentiated CBT domains and noted that (particularly for blastholes) the domains appeared to be transitional over a relatively short distance (Figure 11-11). SRK elected to apply a soft boundary to the estimation process, by which each domain could use samples from within a 10ft buffer internal to the other, but not from outside of both.

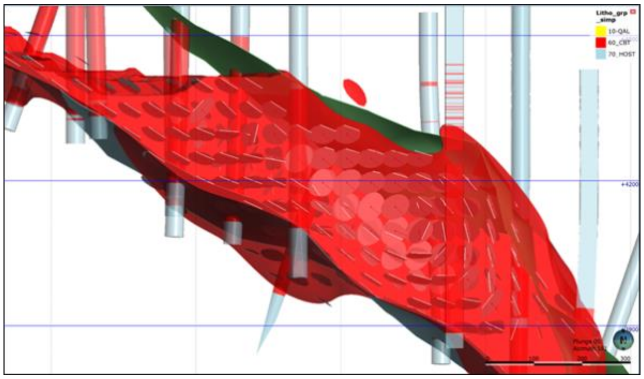


Source: SRK, 2024

Figure 11-11: Domain Boundary Analysis – HG Core Domain within CBT

OK was used as the primary interpolation method. Orientations for search ellipsoids varied as a function of the geometry of the deposit as reflected from digitized surfaces representing the hanging-wall and footwall of the carbonatite (Figure 11-12). This is commonly referred to as variable orientation modeling and adjusts both the search orientation as a function of the relationship to the geological controls on mineralization. This was utilized for both the blasthole and exploration estimations.

The normal scores back-transformed variograms were used to inform the ordinary kriging estimate. Nested search neighborhood passes were used for exploration data estimates and were also utilized to assist in classification of mineral resources. Differences between the estimation relying on blastholes vs. exploration data are noted below.



Source: SRK, 2021

Figure 11-12: Variable Orientation Surfaces for Estimation Orientation

11.8.1 Blasthole Data

In general, SRK utilized a single 60 ft x 60 ft x 30 ft search pass from a minimum of three and maximum of 15 blasthole composites. Quadrant restrictions were applied to ensure that no estimates were unduly extrapolated beyond the tightly clustered blasthole data. This selection is not relevant to the blasthole variograms as the intent was to only allow the blastholes to affect a maximum of two benches from the last data. This decision was made based on review of the inherent variability of the blasthole dataset relative to the exploration data and the naturally clustered data.

No outlier restrictions (limitations on influence) were placed on the blasthole data, as this data has been supported by production and affects a relatively small volume of blocks. Exploration Data SRK estimated grades from composite data using the 10 ft composites, within the relevant geological wireframes. Two nested search neighborhood passes were used, with the first pass designed to estimate blocks within volumes considered well-informed by drilling data. The first pass uses between four and eight samples for estimation and only allows a maximum of two samples per hole to contribute to the estimate.

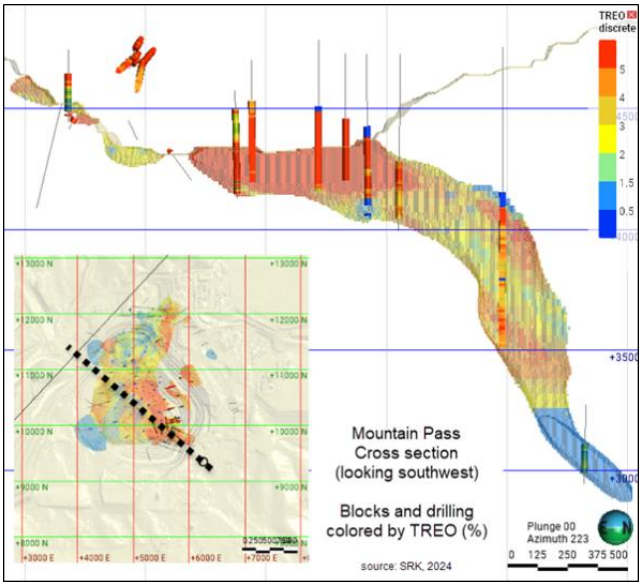
The second pass neighborhood was designed to populate un-estimated blocks from the first pass by selecting relatively fewer data at larger distances. Second pass searches increase the ellipsoid distances, use a minimum of two and maximum of 12 samples, and allow estimation using a single drillhole.

Outlier limitations or clamping were used on interpolation in the exploration data. The first pass uses a nominal restriction of a value of 18% TREO or 10.5% TREO for the HG Core and Undifferentiated domains respectively, both to a distance of 10% of the search (30 ft = 1 bench) after which the original composite grade reverts to either of the values noted above. Similar restrictions were placed on the second pass in terms of grades, but reduces the distance applied to 3.33% of the total search (30 ft = 1 bench).

11.9 Model Validation

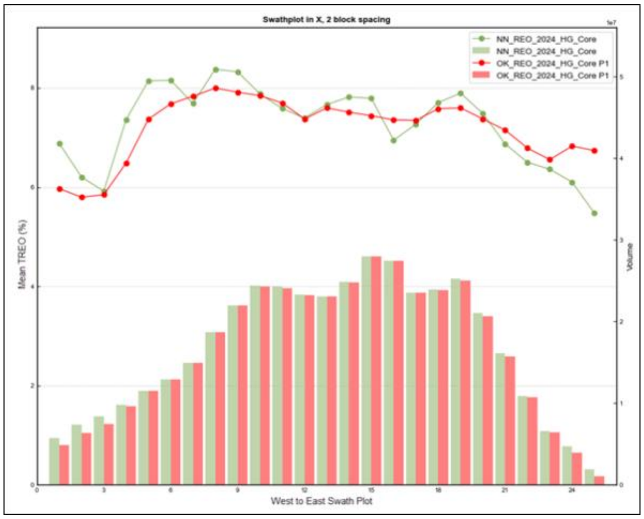
SRK performed model validation using several methods. These include a thorough visual review of the model grades in relation to the underlying drillhole composite grades in section and plan, comparisons with other estimation methods (inverse distance weighting and nearest neighbor), and statistical comparisons between block and composite grades and volumes. SRK has also reconciled the mineral resource model with production records as described in Section 11.10.

Visual comparison between the block grades and the underlying composite grades in plan and section views show close agreement, which would be expected considering the estimation methodology employed. An example cross section showing block grades, composite grades and resource pit outline are provided in Figure 11-13. Swath plots show excellent agreement between mean composites and block estimates over the various orientations, and generally demonstrate that estimates are respecting overall trends in grade with minimal smoothing as expected for a block estimate compared to composite drill data (Figure 11-14).



Source: SRK, 2024

Figure 11-13: **NW-SE Cross-Section Showing Block Grades and Composite Grades for Visual Validation**



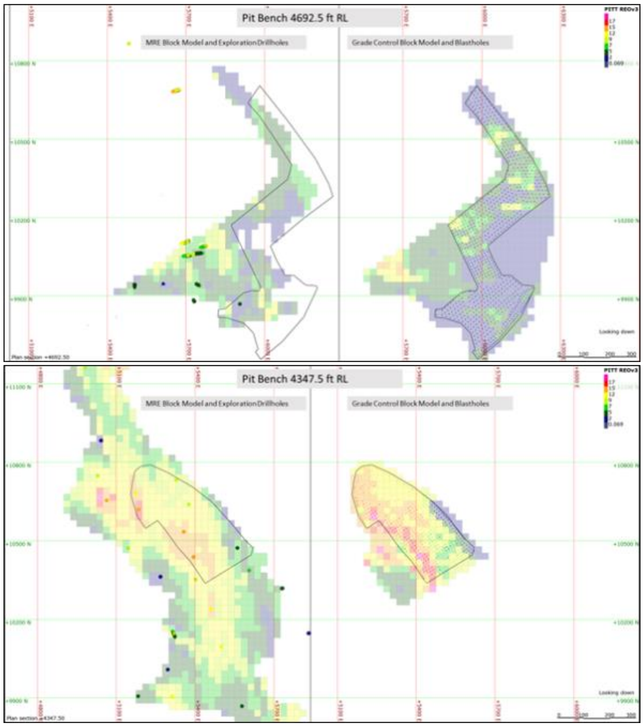
Source: SRK, 2024
Red line represents block estimates TREO using OK with green line representing TREO nearest neighbor block estimates. Bar columns represent blocks estimated by OK (red) and NN (green) by swath.

Figure 11-14: Swath Plot Comparison Between TREO Estimated Grades

11.10 Production Reconciliation

During 2020-2021, SRK performed model reconciliation of the resource block model used for the mineral resource statement, which is based on exploration drilling only, against a grade control model, which is based on blasthole data collected by MP Minerals during routine mining operations. The following section summarizes work completed for this reconciliation exercise as this work continues to support the confidence and classification of mineral resources at Mountain Pass.

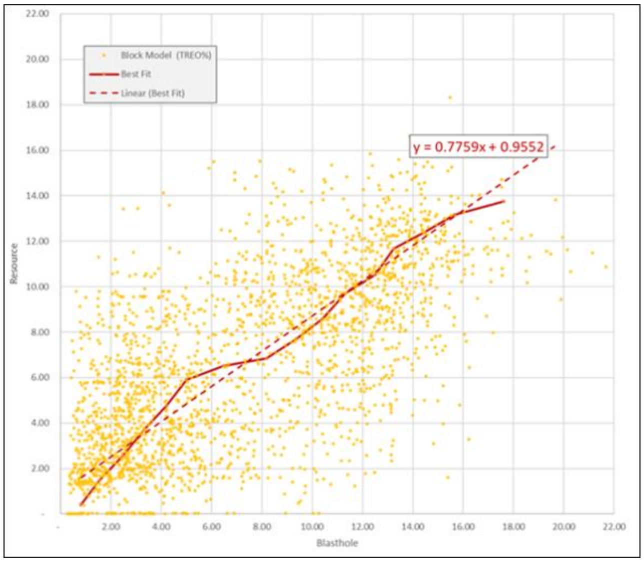
The blasthole samples are 15 ft bench composite grades taken on a regular pattern with a spacing of approximately 12 ft. These grades were estimated into the same block model framework using a simple inverse distance weighting (IDW) method. SRK then analyzed the resultant grade distributions spatially and statistically. Figure 11-15 shows the grade distribution on two example benches.



Source: SRK, 2021

Figure 11-15: Spatial Comparison of MRE Grade Distribution with Blasthole Grade Distribution

A regression plot showing resource model grade and blasthole model grade is shown in Figure 11-16. A best fit line through the cloud of points shows that on average, in higher grade parts of the deposit, blasthole model values are higher grade than resource model values. For example, where blasthole grades are around 14%, resource model grades are around 12%.



Source: SRK, 2020

Figure 11-16: Comparison of Resource and Grade Control Models

In addition to the block model comparison exercise, a reconciliation was undertaken of material movements and tonnage and grade records based on production records from January 2020 to May 2020 (inclusive).

Based on the block model comparison described above, there is understood to be some 20% more TREO contained in the grade control model compared with the resource model when a 5% TREO COG is applied.

The production tonnage (mined ex pit) records are based on truck weightometer readings. Based on dig lines in the pit which subdivided each bench into mining shapes depending on blasthole grades, each truck was known to be carrying material belonging to one of the following grade categories:

- >9% TREO
- 7% to 9% TREO
- 5% to 7% TREO
- 2% to 5%TREO

The tonnages so recorded include planned and unplanned mining dilution.

The grades assigned to each category are those reported in the mine's production records which come from the mine's ore control (OC) model. Grades are based on blasthole data within practical mining dig lines representing each grade band, therefore incorporating planned dilution.

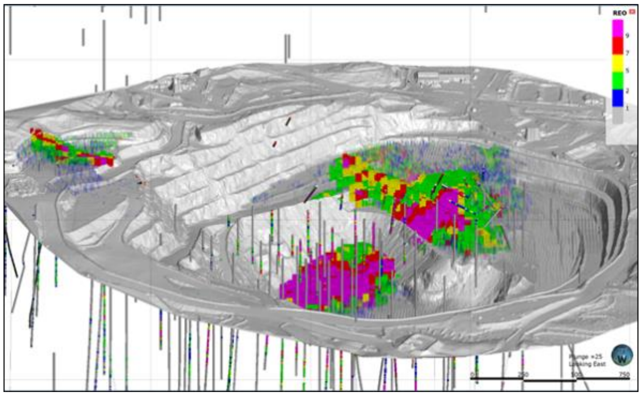
The trucked tonnage is locally 25% greater than that reported by the blasthole block model in the same January to May 2020 mining volume, largely as a result of planned and unplanned dilution. The trucked grade is some 20% lower due to the dilution, and the contained TREO is some 10% higher.

If these two steps are combined, the trucked tonnage is some 25% greater than the SRK model, and the grade is slightly higher (being 9.0% instead of 8.4%), resulting in some 35% more TREO being trucked than predicted by the SRK model. MP has noted that trucked tonnages include moisture content and that this may affect the accuracy of the reconciliation.

The direct crusher feed is blended with supplemental material sourced from stockpiles to achieve a planned mill feed grade. The planned mill feed tonnage and grade typically agrees well with the actuals according to weightometer records and mill samples. Therefore, the trucked tonnage and grade estimate combined with the estimated stockpile loadings and depletions can be considered robust. Despite the absence of routine QA/QC for the majority of resource drilling samples, SRK's reconciliation study demonstrates that the MRE model is sufficiently reliable and demonstrably conservative for long-term mine planning and mineral resource and mineral reserve reporting.

11.11 Blasthole "Bias"

Subsequent to the reconciliation noted above, SRK compared the 2019-2021 production blasthole data against the exploration datasets by estimating both data into the same volume of blocks using similar methods and reviewing the spatial context of the discrepancies in reference to observations in the pit. Figure 11-17 shows the three general areas where this comparison could be made, i.e., where both data types exist at spacings within an approximate 60 ft x 60 ft grid. Table 11-4 shows a global comparison of each estimate within the same volume and supports the assertions from reconciliation to production that the blastholes are seen to predict higher grades than the exploration data. On review of this data spatially, SRK notes that much of this bias is observed in selected areas which are characterized by relatively little exploration drilling. Because operational mining is informed by the blasthole data, benches are taken relative to the blastholes over the exploration data by default. Since mining also tends to favor focus on higher grade material over waste or lower grade, the bias trends positive in conventional reconciliation. A percent difference calculation of the two check estimates supporting this review is noted below in Figure 11-18, and shows these areas where the blastholes appear to have a high bias in red vs. low bias in blue. The blue areas, by comparison, are shown to be comparably lower in the blastholes relative to the exploration data, and the reconciliation process has simply been biased by the effects of mining higher grades over the relevant production period. Overall, SRK believes this indicates that the exploration data may not be able to predict the local variability of grade (implying the necessity of a local grade control/short term drilling program), but this is not adversely affecting mine production. This is a contributing factor in Mountain Pass not being assigned a Measured level of confidence in the in situ mineral resource estimation and is discussed in classification.



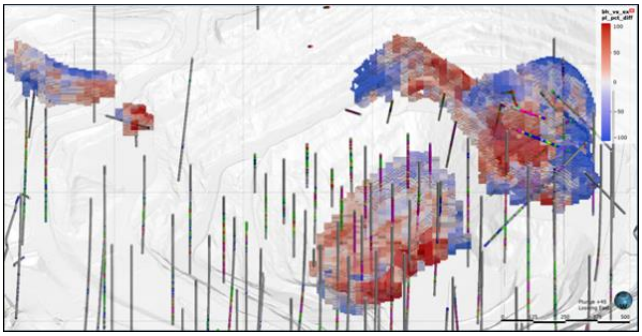
Source: SRK, 2021

Figure 11-17: Previous Production Areas for Reconciliation Validation

Table 11-4: Blasthole vs. Exploration Comparison

Resource Domains	Mass (thousand sh. Ton)	Average Value (%)		Material Content (Mlb)	
		REO Blastholes	REO Exploration	REO BH	REO EXP
CBT - HG CORE	3,513	8.89	7.91	624	556
CBT – LOW GRADE	2,001	4.84	2.88	194	115
Total	**5,514**	**7.42**	**6.08**	**818**	**671**

Source: SRK, 2021
Differences may occur in totals due to rounding.



Source: SRK, 2021
Warmer coloring indicates apparent high bias in blastholes vs. exploration, with cooler colors being the opposite.

Figure 11-18: Percent Difference Blast hole v Exploration Estimate

SRK considers the following explanations for these outcomes:

- The blastholes are processed using industry standard methodology in terms of material preparation or analytical bias. Moreover, MP Materials has noted in personal communication that blastholes generally agree with samples taken from the plant and stockpiles for production blending. Historically, the Mountain Pass Laboratory tended to underestimate higher grade sample assay values; there is no direct evidence of this, and no adjustment has been made to the historical assays.
- Exploration drill core used for the resource model may not recover high-grade friable ore as well as blastholes due to drilling method differences; there is no direct evidence of this, and no adjustments have been made to account for this.
- The wider sample spacing in the exploration drilling is insufficient to characterize the inherent local variability of the deposit. SRK notes that this is likely the case based on observations in mining of the most recent production areas which feature local discrepancies between what is predicted by exploration drilling and what is in the pit.
- SRK notes that there is no guarantee of higher biased reconciliation will continue as a trend, and that the exploration drilling is considered appropriate for long term resource estimation and not for short term production models. Additional tighter-spaced grade control drilling supports short and medium range planning for the operation to optimize local understanding of TREO distribution.

11.12 Uncertainty and Resource Classification

All mineral resource estimates carry an inherent risk and uncertainty depending on a variety of factors, many of which influence or compound the effects of others. Mountain Pass is an operating mine, which implies that a certain amount of inherent risk in mineral resource estimation has been borne in the sunk cost of the operation and ongoing production to date. This being noted, uncertainty in the data collection and geological complexity of the deposit remain relevant to the estimation of mineral resources at Mountain pass. The primary mechanism utilized to minimize uncertainty for Mountain Pass has been improvements and updates in the geological modeling and utilizing a more robust database and geological information repository than what has been used historically on the property. This includes robust geological logging (previously not included in a database for modeling) and geological mapping from the pit. This has resulted in a detailed structural and lithological models which SRK notes show material differences from previous grade-based interpretations. Most importantly, SRK believes the current resource model to be satisfactory to support the resource classification performed and disclosure of mineral resources on the property.

SRK notes the following sources of uncertainty in the Mountain Pass resource model:

- The analytical QA/QC program at Mountain Pass is not considered consistent good industry practices. The limited historical QA/QC information that does exist shows relatively acceptable performance, but ongoing improvements are recommended by SRK.
- The exploration drilling has been sufficient to characterize a mineral resource at the classification applied and described in this report. SRK notes that the exploration drilling is considered at insufficient spacing to report a Measured resource based on the variability observed in the tighter spaced blasthole data.
- SRK notes that production reconciliation tends to show an underestimation of TREO grades. No studies have been conducted in terms of sample representativity or other potential biases between drilling methods. SRK notes that this apparent bias seems to be local and geological in nature and simply is showing that higher grade areas of the deposit were “missed” by exploration drilling which have now been picked up by blastholes.

SRK has dealt with uncertainty and risk at Mountain Pass by classifying the contained resource by varying degrees of confidence in the estimate. The mineral resources at the Mountain Pass deposit have been classified in accordance with the S-K 1300 regulations. The classification parameters are defined by geological understanding of the deposit, confidence in drilling locations, quality of QA/QC, distance to composite data, the number of drillholes used to inform block grades and a geostatistical indicator of relative estimation quality (kriging efficiency). The classification parameters are intended to encompass zones of reasonably continuous mineralization. The distances utilized for resource classification are generally based on interpretation of the ranges based on the directional variography (Section 11.6).

Classification is assigned using an iterative process which utilizes a script to categorize blocks based on the parameters below and modified as necessary by the QP:

- Measured mineral resources: Tonnages of stockpiles at surface for mill feed. Stockpiles resources, as of September 2024, are based on detailed grade control, well-established bulk density and accurate survey data, and have been depleted according to a detailed short term mine plan and blending schedule.
- No Measured resources have been assigned to in situ resources at Mountain Pass. This is based on relatively inconsistent QA/QC practices and the relatively poor reconciliations/observed blasthole vs. exploration comparison.

- Indicated mineral resources: Blocks in the carbonatite geological domain estimated using a minimum of three drillholes which are at maximum average distance of 300 ft, and for which the kriging efficiency of the estimate exceeds 0.
- Kriging efficiency (KE) is used as a relative indicator of estimation quality. Even where the drill spacing may meet a reasonable grid with the requisite number of holes, and the grade variance is relatively high, blocks may be assigned as Inferred resources based on the uncertainty this presents using a relatively poor kriging efficiency (KE). This was determined from review of histograms of the KE and the spatial impact of filtering portions of this population on the grade continuity of the blocks.
- Inferred mineral resources: Blocks in the model which have been estimated but do not meet the criteria for Indicated resources within the mineralized carbonatite model.
- Subsequent to this process, the results are manually contoured and smoothed to eliminate artifacts from the scripting process. The final classification results are coded into the block model for reporting.

11.13 Cut-Off Grade and Pit Optimization

A COG of 2.35% TREO has been calculated to ensure that material reported as a mineral resource can satisfy the definition of reasonable potential for economic extraction (RPEE). COG input assumptions are shown below in Table 11-5.

Pricing is based on a preliminary marketing study as summarized in Section 16 of this report. Additional costs and recovery considerations have been applied to the COG assumption as a result of this change.

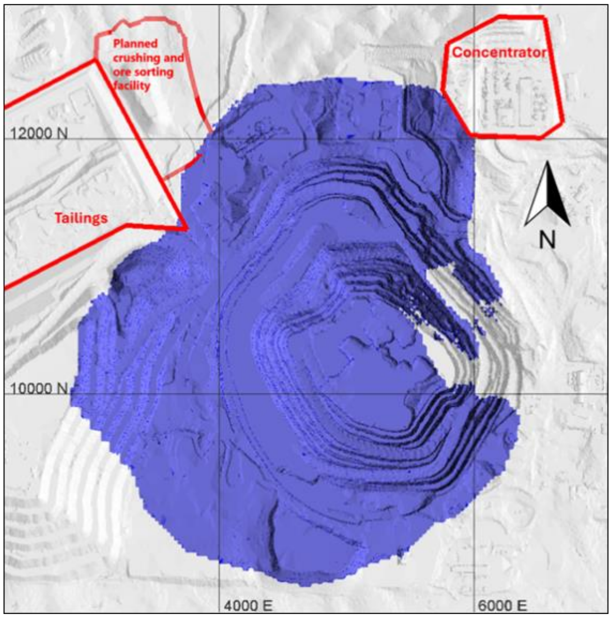
Table 11-5: Cut-Off Grade Input Parameters

Production	Value	Units
Concentrator Recovery	%	Variable based on mined grade
Target Concentrate Grade	% TREO	60.0
Mineral Resources Pricing		
Rare Earth Mineral Concentrate	US$/kg	11.73
PrNd Oxide	US$/kg	143.55
SEG+ Precipitate	US$/kg	55.45
La Carbonate	US$/kg	1.66
Ce Chloride	US$/kg	2.96
Sorted ore re-handling[1]	US$/dst sorted ore mined	2.55
Non-sorted ore rehandling	US$/dst non-sorted ore mined	2.17
Crushing	US$/dst ore crushed	3.66
Ore sorting	US$/dst ore fed to ore sorters	1.80
Concentrator	US$/dst ore fed to concentrator	50.05
General and administration	US$/dst ore fed to concentrator	28.82
Separations	US$/dst conc. processed onsite	Variable[2]
Finished product shipping	US$/dst products sold	146.92

Source: SRK, 2024
[1] Pit mining costs and sustaining capital costs were excluded from the COG calculation because all resource blocks are constrained by an optimized economic pit shell. The pit optimization considered all costs, including mining costs and sustaining capital costs.
[2] The separations cost per dst of concentrate is dependent on the quantity of processed concentrate per year (i.e., there is a fixed cost per year and a variable cost of US$1080.59 per dst of concentrate fed to the separations plant).

Mineral resources have been constrained within an economic pit shell based on reserve input parameters as defined in Table 12-1 of this report. Pit slope angles are variable based on geotechnical study inputs, and mining costs are variable based on haulage and pit depth. Pit optimizations were completed using Maptek Vulcan Lerch-Grossman (LG) optimization algorithms. Various scenarios were evaluated yielding a range of revenue factors. For mineral resources, a revenue factor of 1.0 is selected which corresponds to a break-even pit shell at the nominal pricing shown in Table 11-5. SRK notes that the pit selected for mineral resources has been influenced by setbacks relative to critical infrastructure such as the tailing storage facility and the REO concentrator. These setbacks are approximately 200 ft, and “heavy” blocks or extreme densities were assigned to these areas in pit optimization to avoid the optimization mining these areas. Removal of these constraints would increase the overall volume of the pit and thereby the resource. SRK is of the opinion that these constraints are reasonable and in line with the overall determination of RPEE.

Figure 11-19 shows the extents of the optimized pit shape used for resources.



Source: SRK, 2024

Figure 11-19: Extents of Optimized Pit Shape Relative to Surface Topography

11.14 Mineral Resource Statement

Mineral Resources are reported in accordance with the S-K regulations (Title 17, Part 229, Items 601 and 1300 until 1305). Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no certainty that all or any part of the Mineral Resource will be converted into Mineral Reserves. The Mineral Resource modeling and reporting was completed by SRK and are summarized in Table 11-6. The reference point for the mineral resources is in situ material.

Table 11-6: Mineral Resource Statement Exclusive of Mineral Reserves for the Mountain Pass Rare Earth Project, September 30, 2024

Category	Resource Type	Cut-Off TREO%	Mass (million sh. ton)	Average Value (%)					
				TREO[1]	La_2O_3[2]	CeO_2	Pr_6O_{11}	Nd_2O_3	Sm_2O_3
Indicated	Within the Reserve Pit	2.35	0.73	2.43	0.79	1.21	0.10	0.29	0.022
	Within the Resource Pit	2.35	3.62	3.97	1.29	1.98	0.17	0.48	0.036
Total Indicated		**2.35**	**4.35**	**3.71**	**1.21**	**1.85**	**0.16**	**0.45**	**0.033**
Inferred	Within the Reserve Pit	2.35	6.89	5.78	1.89	2.89	0.25	0.70	0.050
	Within the Resource Pit	2.35	6.50	3.76	1.23	1.88	0.16	0.46	0.034
Total Inferred		**2.35**	**13.39**	**4.79**	**1.56**	**2.39**	**0.21**	**0.58**	**0.043**

Source: SRK 2024

[1]: TREO% represents the total of individually assayed light rare earth oxides on a 99.7% basis of total contained TREO, based on the historical site analyses.

[2]: Percentage of individual light rare earth oxides are based on the average ratios; La_2O_3 is calculated at a ratio of 32.6% grade of TREO% equivalent estimated grade, CeO_2 is calculated at a ratio of 49.9% of TREO% equivalent estimated grade, Pr_6O_{11} is calculated at a ratio of 4.3% of TREO% equivalent estimated grade, Nd_2O_3 is calculated at a ratio of 12.1% of TREO% equivalent estimated grade, and Sm_2O_3 is calculated at a ratio of 0.90% of TREO% equivalent estimated grade. The sum of light rare earths averages 99.7%; the additional 0.3% cannot be accounted for based on the analyses available to date and has been discounted from this resource statement.

General Notes:

- Mineral Resources are reported exclusive of Mineral Reserves at a COG of 2.35% TREO.
- Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no certainty that all or any part of the Mineral Resources estimated will be converted into Mineral Reserves.
- Mineral Resource tonnage and contained metal have been rounded to reflect the accuracy of the estimate, any apparent errors are insignificant.
- The Mineral Resource model has been depleted for historical and forecast mining based on the September 30, 2024, pit topography.
- Overall pit slope angles of 39° to 45° including ramps, were used in pit optimization.
- Pit optimization is based on the following prices: Rare Earth Mineral Concentrate US$11.73 per kilogram (kg), PrNd Oxide US$143.55/kg, SEG+ Precipitate US$55.45/kg, La Carbonate US$1.66/kg and Ce Chloride US$2.96/kg.
- Pit optimization is based on concentrator recovery that varies based on the grade of the ore fed to the concentrator. The average REO distribution in the concentrate is PrNd (15.7%), SEG+ (1.8%), Lanthanum (32.3%) and Cerium (50.2%). Overall recoveries at the onsite separations plant as applied to concentrate containing on average 60% TREO) are: PrNd Oxide (89.7%), SEG+ Precipitate (97.9%), La Carbonate (75.0%) and Ce Chloride (11.5%).
- Pit optimization is based on the following costs: mining cost at the pit exit of US$1.50 per dst mined plus US$0.050 per dst mined for each 15 ft bench above or below the pit exit, sorted ore rehandling (US$2.55 per dst of sorted ore mined); non-sorted ore rehandling (US$2.17 per dst of non-sorted ore mined), crushing (US$3.66 per dst of ore crushed); ore sorting (US1.80 per dst ore fed to ore sorters), concentrating (US$50.05 per dst of ore fed to concentrator), general and administrative (US$28.82 per dst of ore fed to the concentrator), separations (includes a fixed annual cost and a variable cost of US$1080.59 per dst of concentrate processed on site), finished product shipping (US$146.92 per dst shipped) and sustaining capital (US$33.23 per dst of ore fed to the concentrator).
- The mineral resource statement reported herein only includes the rare earth elements cerium, lanthanum, neodymium, praseodymium, and samarium (often referred to as light rare earths). While other rare earth elements, often referred to as heavy rare earths, are present in the deposit, they are not accounted for in this estimate due to historical data limitations (see Section 9.1.5 for details).

Resources inclusive of the reserves are stated in Table 11-7.

Table 11-7: Mineral Resources Inclusive of Mineral Reserves for the **Mountain Pass Rare Earth Project, September 30, 2024**

Material Type	Classification	COG (TREO%)	Mass (million sh. ton)	TREO[1] (%)	La_2O_3[2] (%)	CeO_2 (%)	Pr_6O_{11} (%)	Nd_2O_3 (%)	Sm_2O_3 (%)
Stockpile	Measured	2.35	0.79	4.03	1.31	2.01	0.17	0.49	0.04
In Situ	Indicated	2.35	33.0	5.83	1.90	2.91	0.25	0.71	33.0
	Inferred	2.35	13.4	4.79	1.56	2.39	0.21	0.58	13.4

Source: SRK, 2024
(1) TREO% represents the total of individually assayed light rare earth oxides on a 99.7% basis of total contained TREO, based on the historical site analyses.
(2) Percentage of individual light rare earth oxides are based on the average ratios; La_2O_3 is calculated at a ratio of 32.6% grade of TREO% equivalent estimated grade, CeO_2 is calculated at a ratio of 49.9% of TREO% equivalent estimated grade, Pr_6O_{11} is calculated at a ratio of 4.3% of TREO% equivalent estimated grade, Nd_2O_3 is calculated at a ratio of 12.1% of TREO% equivalent estimated grade, and Sm_2O_3 is calculated at a ratio of 0.90% of TREO% equivalent estimated grade. The sum of light rare earths averages 99.7%; the additional 0.3% cannot be accounted for based on the analyses available to date and has been discounted from this resource statement.
General Notes:

- Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no certainty that all or any part of the Mineral Resources estimated will be converted into Mineral Reserves estimate.
- Resources stated as contained within a potentially economically minable open pit stated above a 2.35% TREO Equivalent cut-off.
- Mineral Resource tonnage and contained metal have been rounded to reflect the accuracy of the estimate, any apparent errors are insignificant.
- The Mineral Resource model has been depleted for historical and forecast mining based on the September 30, 2024, pit topography.
- Overall pit slope angles of 39° to 45° including ramps, were used in pit optimization.
- Pit optimization is based on the following prices: Rare Earth Mineral Concentrate US$11.73 per kilogram (kg), PrNd Oxide US$143.55/kg, SEG+ Precipitate US$55.45/kg, La Carbonate US$1.66/kg and Ce Chloride US$2.96/kg.
- Pit optimization is based on concentrator recovery that varies based on the grade of the ore fed to the concentrator. The average REO distribution in the concentrate is PrNd (15.7%), SEG+ (1.8%), Lanthanum (32.3%) and Cerium (50.2%). Overall recoveries at the onsite separations plant as applied to concentrate containing on average 60% TREO) are: PrNd Oxide (89.7%), SEG+ Precipitate (97.9%), La Carbonate (75.0%) and Ce Chloride (11.5%).
- Pit optimization is based on the following costs: mining cost at the pit exit of US$1.50 per dst mined plus US$0.050 per dst mined for each 15 ft bench above or below the pit exit, sorted ore rehandling (US$2.55 per dst of sorted ore mined); non-sorted ore rehandling (US$2.17 per dst of non-sorted ore mined), crushing (US$3.66 per dst of ore crushed); ore sorting (US1.80 per dst ore fed to ore sorters), concentrating (US$50.05 per dst of ore fed to concentrator), general and administrative (US$28.82 per dst of ore fed to the concentrator), separations (includes a fixed annual cost and a variable cost of US$1080.59 per dst of concentrate processed on site), finished product shipping (US$146.92 per dst shipped) and sustaining capital (US$33.23 per dst of ore fed to the concentrator).
- The mineral resource statement reported herein only includes the rare earth elements cerium, lanthanum, neodymium, praseodymium, and samarium (often referred to as light rare earths). While other rare earth elements, often referred to as heavy rare earths, are present in the deposit, they are not accounted for in this estimate due to historical data limitations (see Section 9.1.5 for details).

11.15 Mineral Resource Sensitivity

In order to assess the impact of COG on contained metal, tonnage, and grade were summarized within the TREO resource pit above a series of TREO cut-offs (Table 11-8 and Table 11-9). As can be observed from these sensitivities, the resource is relatively sensitive to COG in the 3.0% to 5.0% TREO range, which is shown to be above the COG range of economic interest.

Table 11-8: TREO Cut-off Sensitivity Analysis Within Resource Pit –Indicated Category

COG (TREO%)	Short Tons ≥ Cut-off (million short tons)	Average Grade ≥ Cut-off (TREO%)
0.25	39.1	5.18
0.50	38.9	5.19
0.75	38.6	5.23
1.00	38.1	5.29
1.25	37.5	5.35
1.50	36.8	5.43
1.75	35.9	5.53
2.00	34.9	5.64
2.25	33.6	5.77
2.50	32.1	5.93
2.75	30.4	6.11
3.00	28.7	6.31
3.25	27.1	6.50
3.50	25.5	6.69
3.75	24.0	6.88
4.00	22.6	7.07
4.25	21.2	7.26
4.50	19.9	7.44
4.75	18.7	7.63
5.00	17.7	7.79

Source: SRK, 2024

Table 11-9: TREO COG Sensitivity Analysis Within Resource Pit – Inferred Category

COG (TREO%)	Short Tons ≥ Cut-off (million short tons)	Average Grade ≥ Cut-off (TREO%)
0.25	20.0	3.64
0.50	19.2	3.79
0.75	18.9	3.84
1.00	18.3	3.94
1.25	17.8	4.04
1.50	17.2	4.13
1.75	16.4	4.27
2.00	15.7	4.39
2.25	14.8	4.54
2.50	13.8	4.72
2.75	12.8	4.90
3.00	11.6	5.12
3.25	10.6	5.34
3.50	9.6	5.57
3.75	8.6	5.82
4.00	7.7	6.08
4.25	6.5	6.50
4.50	5.6	6.90
4.75	5.0	7.18
5.00	4.6	7.44

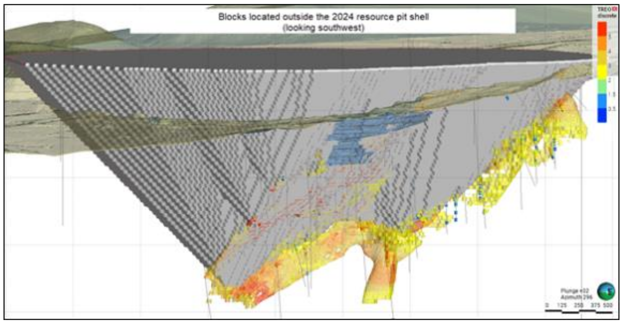
Source: SRK, 2024

In addition to the sensitivity noted above, SRK notes that pit optimization selection does demonstrate sensitivity to those parameters. At the current pricing, recovery assumptions, infrastructure setbacks, and other parameters, the resource pit excludes mineralized blocks above the COG and typically located at depth. This volume does not meet the constraining criteria for a mineral resource but are estimated above the economic COG are termed “mineralized material”. The relationship to the pit shape and non-resource, above COG blocks are shown in Figure 11-20. A summary of mineralized material above COG and external to the constraining resource pit is summarized in Table 11-10.

Table 11-10: Mineralized Material External to Resource Pit

Resource Shell	Relative Confidence	Cut-Off TREO (%)	Mass (million sh. ton)	Average Value TREO (%)
External	Indicated	2.35	3.0	3.70
	Inferred	2.35	4.4	4.14

Source: SRK, 2024
Mineralized material does not meet the SEC definition for mineral resources.
The terms "indicated" and "inferred" are not a measure of relative confidence in block tons and grade and do not suggest the material meets the definition for a mineral resource.



Source: SRK, 2024

Figure 11-20: Mineralized Material >= 2.35% TREO and External to Resource Pit Shell

11.16 Assumptions, Parameters, and Methods

SRK uses a comprehensive set of assay analyses and ratio assumptions for individual light rare earth oxides to manually back-calculate rare earth grades, as described in Section 9.1.4. Based on a statistical review of these analytical data, SRK is of the opinion that the low variances and numerical ranges of these ratios provide a reasonable assessment of individual metals within the TREO estimate, and that these calculations are suitable for resource reporting.

The mineral resource reported herein is subject to potential change based on changes to the forward-looking cost and pricing assumptions as disclosed in this report.

Extraction of this resource is dependent on modification of current permitted boundaries for the open pit. It is MP Materials' expectation that it will be successful in modifying these permit conditions. In SRK's opinion, MP Material's expectation in this regard is reasonable.

A portion of the resource pit encroaches on an adjoining mineral right holder's concession. This portion of the pit would only include waste stripping (i.e., no rare earth mineralization is assumed to be extracted from this concession). The prior owner of Mountain Pass had an agreement with this concession holder to allow this waste stripping (with the requirement that aggregate mined be stockpiled for the owner’s use). MP Materials does not currently have this agreement in place, but SRK believes it is reasonable to assume MP Materials will be able to negotiate a similar agreement.

SRK is of the opinion that the reported mineral resources would not be materially affected by current environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or any other relevant factors. Should any of these factors change in the future, it is SRK’s expectation that the mineral resources may be impacted.

12 Mineral Reserve Estimate

SRK developed a life-of-mine (LoM) plan for the Mountain Pass operation in support of mineral reserves. MP Materials is ramping up the on-site separations facility at Mountain Pass that allows the Company to separate bastnaesite concentrate into four individual REO products for sale (PrNd oxide, SEG+ precipitate, La carbonate, and Ce chloride). For economic modeling purposes, a combination of concentrate sales and separated product sales was assumed while the separations facility continues to ramp up to full capacity. From approximately mid-2026 onward, it was assumed the separations facility will operate at full capacity producing separated products, with relatively small amounts of excess concentrate being packaged and sold to customers (refer to Section 10.5 of this report for the ramp up schedule). Forecast economic parameters are based on current cost performance for process, transportation, and administrative costs, as well as a first principles estimation of future mining costs. Forecast revenue from concentrate sales and individual separated product sales is based on a preliminary market study commissioned by MP Materials, as discussed in Section 16 of this report.

From this evaluation, pit optimization was performed based on prices that were established by the preliminary market study. The results of pit optimization guided the design and scheduling of the ultimate pit. SRK generated a cash flow model which indicated positive economics for the LoM plan, which provides the basis for the reserves. Reserves within the new ultimate pit are sequenced for the full 29-year LoM (Q4 2024 through Q1 2053).

The costs used for pit optimization include estimated mining, processing, sustaining capital, transportation, and administrative costs, including an allocation of corporate costs.

Processing recovery for concentrate is variable based on a mathematical relationship to estimate overall TREO recovery versus ore grade. The calculated COG for the reserves is 2.50% TREO, which was applied to indicated blocks contained within an ultimate pit, the design of which was guided by economic pit optimization.

12.1 Conversion Assumptions, Parameters, and Methods

All conversion assumptions, such as mining dilution, mining recovery, COG calculation, pit optimization, and costs were taken into consideration to calculate the reserve estimate.

The following steps were used to calculate the reserves:

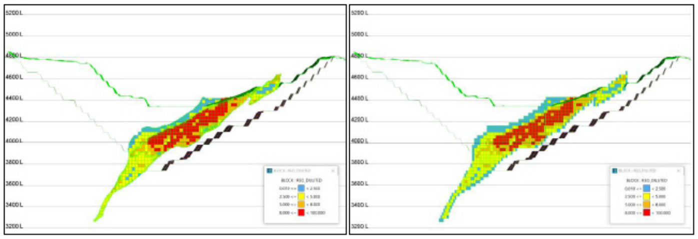
- Apply mining dilution to resource block model (using 3D techniques).
- Compile and confirm costs and process recoveries.
- Input optimization parameters into pit optimizer to calculate nested pits using different rare earth concentrate selling prices (only indicated resources were included in the evaluation).
- Choose a pit optimization shell based on strip ratio, revenue, grade distribution, discounted cash flow, cash costs, equipment sizes, pit footprint, depth of pit, minimum mining widths, COG, processing plant size, and other factors.
- Detailed phase design with ramp access to all benches
- Multiple trade-off mine plans based on different mining rates
- Detailed truck haulage estimates
- Detailed mine cost estimates based on detailed mine plan

- Discounted cash flow based on all capital and operating cost inputs
- Choose final mine plan and cash flow followed by reported reserves.

The following sections provide a description of how mining dilution was applied and how the in-pit COG was calculated.

12.1.1 Model Grade Dilution and Mining Recovery

The SRK resource block model is based on a sublocked 7.5 ft x 7.5 ft x 7.5 ft block size. The sublocked block model has approximately 3.5% estimated dilution. SRK's selected SMU is 15 x 15 x 30 ft. SRK ran a comparison between the original block model and the final reserves and determined that dilution is approximately 7.1% and the mining recovery from the reblocking is approximately 95%. Based on site reconciliation, SRK has noted that the grades have been higher than predicted. In SRK's opinion, there is a potential opportunity to reduce dilution by modeling consistently with the 15 ft x 15 ft x 15 ft SMU however the current mining methodology is based on 30 ft bench height. Figure 12-1 shows side by side comparison of the original sublocked model (pre-diluted) and the final 15x15x30 ft SMU selected diluted block model.



Source: SRK, 2021

Figure 12-1: Side by Side Comparison Non-Diluted (Left) Block Model and Diluted (Right) Block Model

It is SRK's opinion that the reblocking exercise added sufficient dilution to support the Probable category that has been used for the reserves statement. There is a risk that unmodeled internal dykes could increase dilution locally in some areas; however, the current resource drilling information does not have enough resolution to identify these dykes. MP Materials takes care in the mining operations to exclude dyke material from the ore to the extent possible. Dyke material is identifiable in the blasthole cuttings that are used for grade control, and it is visually identifiable by the loader operators.

12.1.2 Cut-Off Grade Calculation

Table 12-1 shows the parameters used for pit optimization. The design of the ultimate reserves pit was guided by economic pit optimization. Indicated blocks mined from within the reserves pit were included in the reserves tabulation if they have sufficient value to pay for ore rehandling, processing (including separations), G&A, and product shipping costs. The COG that meets this value threshold is 2.50% TREO. SRK notes that pit mining costs and sustaining capital were excluded from the COG calculation because all reserve blocks are constrained by a designed ultimate pit. The designed ultimate pit was based on economic pit optimization that considered all costs, including mining costs and sustaining capital costs.

Table 12-1: Pit Optimization Inputs

Parameter	Unit	Value
Mining Parameters		
Mining Dilution(1)	%	0
Mining Dilution Grade	% TREO	0
Mining Recovery	%	100
Grade range of ore scheduled for pre-concentration (ore sorting)	%TREO	2.5 to 5.0
Interramp Slope Angles(2)		
Azimuth 0° to 110°	degrees	46.0
Azimuth 110° to 270°	degrees	47.0
Azimuth 270° to 300°	degrees	45.0
Azimuth 300° to 0°	degrees	44.0
Processing Parameters		
Processing Rate	dst/y	867,314
Target Concentrate Grade	% TREO	60.0
Concentrate Moisture	%	8.0
Avg. % Dist of REOs in Conc.		
PrNd	%	15.7
SEG+	%	1.8
Lanthanum	%	32.3
Cerium	%	50.2
Ore Sorter Pre-Concentration		
Fines % not advanced to ore sorters	%	22.6%
Ore sorter upgrade factor		1.9x
Ore sorter recovery	%	90.0
Concentrator Recovery		
<1.5% TREO	%	0.0
1.5% to 2.1% TREO	%	22.0
2.1% to 10.5% TREO	%	Variable(3) (26.7% to 77.7%)
>10.5% TREO	%	77.7
Separations Plant Overall Recovery		
PrNd Oxide	%	89.7
SEG+ Precipitate	%	97.9
La Carbonate	%	75.0
Ce Chloride	%	11.5
Prices		
Rare Earth Mineral Concentrate	US$/kg	10.20
PrNd Oxide	US$/kg	124.83
SEG+ Precipitate	US$/kg	48.22
La Carbonate	US$/kg	1.44
Ce Chloride	US$/kg	2.57
Costs		
Sorted ore re-handling	US$/dst sorted ore mined	2.55
Non-sorted ore rehandling	US$/dst non-sorted ore mined	2.17
Crushing	US$/dst ore crushed	3.66
Ore sorting	US$/dst ore fed to ore sorters	1.80
Concentrator	US$/dst ore fed to concentrator	50.05
General and administration	US$/dst ore fed to concentrator	28.82
Separations	US$/dst conc. processed onsite	Variable(4)
Finished product shipping	US$/dst products sold	146.92
Sustaining capital	US$/dst ore fed to concentrator	33.23

Source: SRK, 2024
(1): Mining dilution is already built into the resource model and no further dilution was applied.
(2): An azimuth of zero degrees corresponds to north.
(3): For concentrator feed grades ranging from 2.1% to 10.5% TREO, the concentrator recovery ranges from 26.7% to 77.7%.
(4): The separations cost per dst of concentrate is dependent on the quantity of processed concentrate per year (i.e., there is a fixed annual cost and a variable cost of US$1080.59 per dst of concentrate fed to the separations plant).

12.2 Reserve Estimate

The pit optimization considered only the indicated mineral resource category. The revenue factor 1.0 pit shell is the optimized pit shell that corresponds to 100% of the selling prices selected for reserves estimation. The optimized pit shell selected to guide final pit design was based on a combination of the revenue factor (RF) 0.45 pit (used on the north half of the deposit) and the RF 1.00 pit shell (used on the south half of the deposit). The inter-ramp angles (IRA) used for the mine design are based on operational-level geotechnical studies and range from 44° to 47°.

Measured resources in stockpiles were converted to proven reserves. Indicated pit resources were converted to probable reserves by applying the appropriate modifying factors, as described herein, to potential mining pit shapes created during the mine design process. Inferred resources present within the LoM reserves pit are treated as waste.

The mine design process results in in situ open pit probable mining reserves of 29.1 million st with an average grade of 6.03% TREO. Additionally, there are 0.8 million st of proven mineral reserves in stockpiles with an average grade of 4.03% TREO. The mineral reserve statement, as of September 30, 2024, for Mountain Pass is presented in Table 12-2. The reference point for the mineral reserves is ore delivered to the integrated crushing and ore sorting facility.

Table 12-2: Mineral Reserves at Mountain Pass as of September 30, 2024, SRK Consulting

Category	Description	Run-of-Mine (RoM) Million Short Tons (dry)	TREO%	MY%	Concentrate Million Short Tons (dry)
Proven	Current Stockpiles	0.79	4.03%	4.1%	0.03
	In situ	-	-	-	-
	Proven Totals	**0.79**	**4.03%**	**4.1%**	**0.03**
Probable	Current Stockpiles	-	-	-	-
	In situ	29.10	6.03%	7.0%	2.03
	Probable Totals	**29.10**	**6.03%**	**7.0%**	**2.03**
Proven + Probable	Current Stockpiles	0.79	4.03%	4.1%	0.03
	In situ	29.10	6.03%	7.0%	2.03
	Proven + Probable Totals	**29.89**	**5.98%**	**6.9%**	**2.06**

Source: SRK, 2024

- Reserves stated as contained within an economically minable open pit design stated above a 2.50% TREO COG.
- Mineral reserves tonnage and contained metal have been rounded to reflect the accuracy of the estimate, and numbers may not add due to rounding.
- MY% calculation is based on 60% concentrate grade of the product and the ore grade dependent metallurgical recovery. MY% = (TREO% * Met recovery)/60% concentrate TREO grade.
- Indicated mineral resources have been converted to Probable reserves. Measured mineral resources have been converted to Proven reserves.
- Reserves are diluted at the contact of the 2% TREO geological model triangulation (further to dilution inherent to the resource model and assume selective mining unit of 15 ft x 15 ft x 30 ft).Mineral reserves tonnage and grade are reported as diluted.
- Overall pit slope angles of 39° to 45° including ramps, were used in pit optimization.
- Pit optimization is based on the following prices: Rare Earth Mineral Concentrate US$10.20 per kilogram (kg), PrNd Oxide US$124.83/kg, SEG+ Precipitate US$48.22/kg, La Carbonate US$1.44/kg and Ce Chloride US$2.57/kg.
- Pit optimization is based on concentrator recovery that varies based on the grade of the ore fed to the concentrator. The average REO distribution in the concentrate is PrNd (15.7%), SEG+ (1.8%), Lanthanum (32.3%) and Cerium (50.2%). Overall recoveries at the onsite separations plant as applied to concentrate containing on average 60% TREO) are: PrNd Oxide (89.7%), SEG+ Precipitate (97.9%), La Carbonate (75.0%) and Ce Chloride (11.5%).
- Pit optimization is based on the following costs: mining cost at the pit exit of US$1.50 per dst mined plus US$0.050 per dst mined for each 15 ft bench above or below the pit exit, sorted ore rehandling (US$2.55 per dst of sorted ore mined); non-sorted ore rehandling (US$2.17 per dst of non-sorted ore mined), crushing (US$3.66 per dst of ore crushed); ore sorting (US1.80 per dst ore fed to ore sorters), concentrating (US$50.05 per dst of ore fed to concentrator), general and administrative (US$28.82 per dst of ore fed to the concentrator), separations (includes a fixed annual cost and a variable cost of US$1080.59 per dst of concentrate processed on site), finished product shipping (US$146.92 per dst shipped) and sustaining capital (US$33.23 per dst of ore fed to the concentrator).
- The topography used was from September 30, 2024.
- Reserves contain material inside and outside permitted mining but within mineral lease.
- Reserves assume 100% mining recovery.
- The strip ratio was 5.8 to 1 (waste to ore ratio).
- The mineral reserves were estimated by SRK Consulting (U.S.) Inc.

In the opinion of SRK as the QP, the conversion of mineral resources to mineral reserves has been completed in accordance with CFR 17, Part 229 (S-K 1300).

12.3 Relevant Factors

The reserve estimate herein is subject to potential change based on changes to the forward-looking cost and revenue assumptions utilized in this study. It is assumed that MP Materials will ramp up its on-site separations facilities to full capacity by approximately mid-2026. It is further assumed that MP Materials will install an integrated crushing and ore sorting facility that will begin ramping up in Q1 2026.

Full extraction of this reserve is dependent upon modification of current permitted boundaries for the open pit. Failure to achieve modification of these boundaries would result in MP Materials not being able to extract the full reserve estimated in this study. It is MP Materials' expectation that it will be successful in modifying this permit condition. In SRK's opinion, MP Materials' expectation in this regard is reasonable.

A portion of the resource pit encroaches on an adjoining mineral right holder's concession. This portion of the pit would only include waste stripping (i.e., no rare earth mineralization is assumed to be extracted from this concession). The prior owner of Mountain Pass had an agreement with this concession holder to allow this waste stripping (with the requirement that aggregate mined be stockpiled for the owner's use). MP Materials does not currently have this agreement in place, but SRK believes it is reasonable to assume MP Materials will be able to negotiate a similar agreement.

SRK is not aware of other existing environmental, permitting, legal, socio-economic, marketing, political, or other factors that might materially affect the open pit mineral reserve estimate.

13 Mining Methods

The Mountain Pass deposit is mined by open pit mining methods. Surface mining operations include:

- Drilling and blasting to remove overburden material
- Loading and haulage
- General maintenance and services

The mine requires blending of mill ore to ensure that the mill receives a head grade within the operating range of the mill. The MP Materials mining equipment fleet includes wheel loaders, trucks, dozers, and graders. Maintenance shops are available at the mine site to service mine equipment.

The open pit is located in gently undulating topography intersecting natural drainages that require small diversions to withstand some rainfall events during the summer months. Waste dumps are managed according to the Action Plan (AP), are located on high ground, and are designed for control of drainage (contact water) if required. Some small diversions are already in place; however, additional diversions will need to be established.

The open pit that forms the basis of the mineral reserves and the LoM production schedule is approximately 3,100 ft from east to west and 3,800 ft from north to south with a maximum depth of 1,400 ft. Total LoM pit mining is estimated at 198.9 million st comprised of 29.1 million st of ore and 169.8 million st of waste, resulting in a strip ratio of 5.8 (waste to ore). Additional mill feed is sourced from existing stockpiles (0.8 million st). LoM mill feed grade averages 7.13% TREO yielding over 2.06 million dry st of recoverable 60% TREO concentrate.

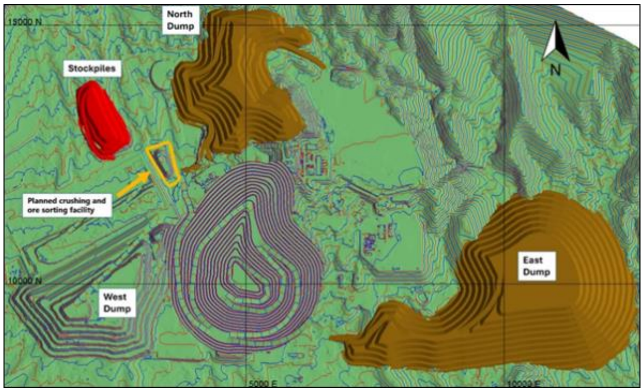
SRK designed four pit pushbacks that adhere to proper minimum mining widths. Bench sinking rates average approximately four benches per year per push back, with a maximum sinking rate of nine benches in one phase in one year of the mine plan.

Figure 13-1 illustrates the site layout and final pit design.

SRK's evaluation included:

- Open pit block model incorporating dilution and other required mining variables
- Pit optimization analysis and sensitivities
- Pit and phase designs
- Bench-based LoM production schedule integrated with the processing schedule
- Low-grade stockpile design
- Waste dump design
- Quarterly progression of pit and waste dumps for developing annual haulage cycle time estimation
- Fleet estimation of open pit equipment based on the mining production schedule

Results developed included estimated equipment fleet requirements, sustaining capital costs, and operating costs.



Source: SRK, 2024

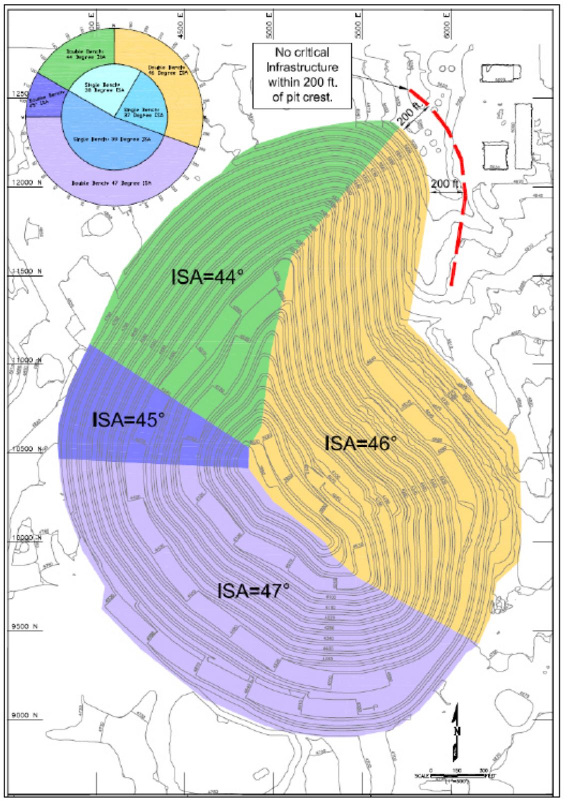
Figure 13-1: Final Pit Design and Site Layout

13.1 Parameters Relevant to Mine or Pit Designs and Plans

13.1.1 Geotechnical

For pit optimization and phase design, SRK used recommendations for pit slope inter-ramp angles (IRA) between 44° and 47° for all phases. These angles are based on results of a geotechnical study that was prepared by Call & Nicholas, Inc. in 2022 (CNI, 2022). Figure 13-2 shows the final IRA recommended by CNI, 2022 for the phase and final pit designs. SRK's mine design work was based on these IRA's, as presented in Table 13-1.

The recommended slope angles are controlled by the bench and inter-ramp stability, for all design sectors with the exception of the northwest (azimuth 300-0). An 80% catch bench reliability for the 60 ft high double bench configuration was used to determine the bench and inter-ramp slope angles. Overall slope wall factor of safety (FoS) exceeds 2.0 for the stability analysis sections analyzed by CNI. CNI has recommended that no critical infrastructure be placed within 200 ft of the final pit crest. SRK has reviewed and concurs with this recommendations. Locally, a minimum FoS was calculated for critical surfaces in the upper 2 to 3 benches of alluvium. All FoS calculated meet or exceed the guidelines for open pit slope stability guidance for wall stability (Read & Stacey, 2009).



Source: CNI, 2022
ISA is equivalent to IRA

Figure 13-2: Recommended Double Bench IRA from CNI

Rock Mass Characterization

The rock mass consists of several different engineering geologic properties, including Carbonatite, Breccia, and Gneiss/Schist. The carbonatites are strong, dense, coarsely crystalline rocks and carbonatites which comprise most of the north, east, and south walls. The rock mass is strongly foliated with a dip to the west-southwest at approximately 50° to 70°. Distinct sets of cross joints are observed orthogonal to the main foliation; however, the orientation of these joints varies over short distances.

Intact strengths have been estimated by both point load testing (Vector, 1995) and by uniaxial compressive strength (UCS) testing of surface samples conducted by CNI in 2011. Intact UCS values range from 10,000 to 20,000 pounds per square inch (psi).

Rock Quality Designation/Rock Mass Rating

The Rock Quality Designation (RQD) ranges from 20 to 80 as observed by both CNI and Golder in the pit slope walls. An average RQD value of 50 is appropriate for characterizing the rock mass. A full Rock Mass Rating (RMR), including analysis of drill core at depth in the final walls, has not been completed but is estimated by SRK to be in the range of RMR 50 to 60. Four geotechnical studies with a defined rock mass for stability analyses have been completed to date on the Project. These studies include studies by Call & Nicholas, in 2011, 2020, and 2022. Prior work was done by Golder Associates in 2002 and Vector Engineering in 1995.

SRK has reviewed CNI slope angle recommendations (CNI, 2022) and consider them valid and appropriate for slope design. Pit slope angles have been determined using the recommendations from the CNI report assuming an 80% catch bench reliability.

SRK conducted a site visit on September 25, 2019, to observe the conditions of the Mountain Pass open pit. Key observations included successful double benching on the west wall with greater than 80% catch reliability in slopes excavated by MP Materials.

Open Pit Mine Design Parameters

The recommended slope angles for the Mountain Pass open pit were developed from the review of the 2022 CNI slope stability report and a review of the slope conditions of the west wall excavated by MP Materials. The recommended slope design parameters are listed in Table 13-1, and the slope design sectors are graphically illustrated on Figure 13-2.

Table 13-1: Recommended Slope Design Parameters

Open Pit Parameters	
Bench increment	15 ft
Bench height	30 or 60 ft
Bench face/batter angle (BFA)	66° to 68°
Design bench/berm width (60 ft high bench)	30 to 36 ft
Minimum bench width (modified Ritchie Criteria, 30 and 60 ft high)	15 to 24 ft
Maximum IRA by design sector	44° to 47°
Maximum overall slope angle (OSA)	45°
Design Criteria	
Minimum factor of safety (FoS)	2.0

Source: SRK, 2023

Slope design constraints assume a 15 ft model block height. Mining production will be conducted primarily on 30 ft bench heights. Most areas of the mine are in competent rock mass, and it is envisioned that in these areas the mining in the final wall will be finished to a 30 ft face or a 60 ft face height. Using a multiple-bench final wall configuration permits a steeper IRA in competent ground. The maximum inter-ramp slope height (bench stack height) is 500 ft. A geotechnical berm, or haul ramp, with a minimum width of 65 ft is required between bench stacks.

The minimum catch bench width is developed using the modified Ritchie Criteria (Ryan and Pryor, 2000). The minimum catch bench width for a 60 ft high bench face is 24 ft using the Ritchie Criteria. For a 30 ft high bench, the minimum width is 15 ft.

Bench face angles vary by sector and are based on average obtained values by mapping. The measured bench face angle using highwall controlled blasting procedures results in average bench face angles ranging from 66° to 68°. For the given slope design parameters and limited subsurface data, dual ramp access is required to ensure access to ore material for each mining phase. With the ramps and the recommended IRAs, the final wall overall slope angle maximum is 45°. Stability of the pit slope, including hydrogeological inputs, is documented in the CNI, 2022 report. SRK has reviewed the results, and stability of the pit slope using these design parameters meets a slope acceptance criterion with a minimum FoS of greater than 2.0. These FoS results are within the guidelines of the current reclamation plan, and also meet the criteria outlined in Guidelines for Open Pit Slope Design (Read & Stacey, 2009).

Table 13-2 lists the CNI recommended slope design parameters by wall sector, as illustrated on Figure 13-2.

Table 13-2: CNI Final Recommended Slope Design Parameters by Design Sector

Mine Planning Azimuth		Wall DDR (Clockwise)		Bench Height (ft)	Design IRA (°)	BFA (°)	Design Layout Bench Width (ft)
Start	End	Start	End				
110	270	290	90	60	47	70	34.1
270	300	90	120	60	45	71	39.3
300	0	120	180	60	44	68	37.9
0	110	180	290	60	46	68	33.7

Source: CNI, 2022

MP Materials has been using controlled wall blasting in order to achieve the recommended bench configurations. Trim shots are used against final walls. In SRK's opinion, the blasting procedures in place are sufficient to achieve the recommended slope design parameters.

CNI recommended a slope offset for mine facilities, including the concentrator, paste tailings plant, process plant, and water storage tanks, of 200 ft. CNI recommends if the pit crest is within 200 ft of critical infrastructure, the recommended IRA is 44° for at least four benches (120 ft). Below these benches, the IRA may be increased to 46°. SRK concurs with this recommendation.

As a part of the CNI Geotechnical study (CNI, 2022), Three multi-level piezometers with a total of nine transducers were reviewed to characterize the current phreatic surface elevation. An Environmental Impact Report written in 1996 (ENSR, 1996) shows that groundwater flows Northwest to Southeast in the pit area. The stability analysis incorporates modeled pore pressures based on the piezometric data.

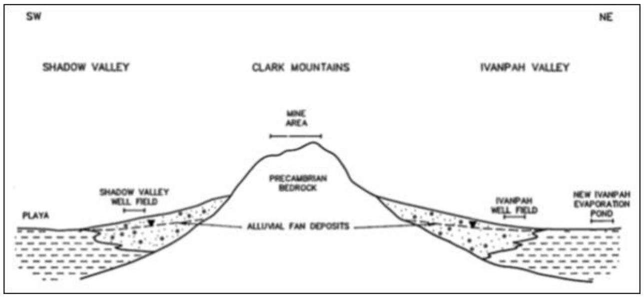
Geotechnical Recommendations and Slope Monitoring

CNI performed a site visit in September 2024 and did not observe any change in conditions that would require a review or change to their previously recommended slope design parameters (CNI, 2024).

CNI is conducting twice-yearly visits to observe ground conditions. Routine geotechnical slope monitoring, data collection, and analysis should continue. MP Materials should review geotechnical parameters and optimize the mine plan prior to starting new phases based on this review.

13.1.2 Hydrogeological

Groundwater in the vicinity of the mine occurs within coarse unconsolidated alluvial sediments and within underlying fractured Precambrian bedrock. In general, most of the groundwater flows eastward through the alluvium toward the Ivanpah Valley and westward toward the Shadow Valley as shown schematically in Figure 13-3.



Source: Draft EIR (1996)

Figure 13-3: Idealized Cross-Section Through Mine Area and Adjacent Valleys

The surface geology of the site is characterized by partially lithified, cemented Tertiary to Quaternary age alluvial deposits and debris flows in the southwest and central areas, Precambrian gneissic bedrock outcropping in the north, east, and southeast, and by Precambrian gneiss, terrace gravels, and recent alluvial deposits in the wash areas in the northwest, east and southeast. Bedrock at the site consists of Precambrian metamorphic and younger intrusive rocks. The older metamorphic rocks consist primarily of granitic and mafic gneiss. The main igneous bodies at the site, which have intruded the older metamorphic complex, consist of shonkinite and syenite stocks and associated carbonatites. The dominant structural fabric as represented by faulting, foliation, jointing, and fracture-controlled dikes, trends northwest and dips steeply to the northeast or southwest.

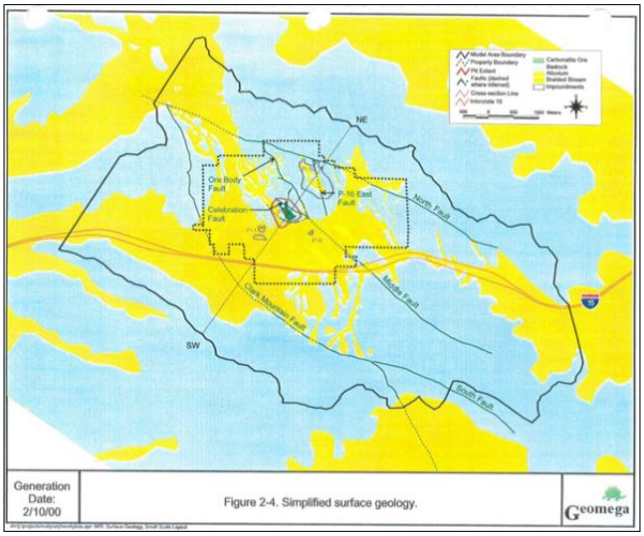
Extensive faulting in the mountain ranges is also hydrologically significant. Several lateral transverse faults have been mapped in the area. This can lead to sharp contrasts in bedrock permeability-fracturing can be extensive along fault zones and affect permeability. Often faults act as barriers normal to flow and as groundwater conduits parallel to flow.

Major faults were identified and incorporated into the numerical groundwater model developed by Geomega in 2000 (Geomega, 2000) for the early stage of open pit excavation. The model simulated several faults as flow barriers, including two in the pit area:

- Clark Mountain fault, a normal/reverse fault
- South fault, a left lateral fault
- North fault, a left lateral fault
- Middle fault, a left lateral fault
- East Ore Body fault, a normal fault
- P-16 Fault, a normal fault

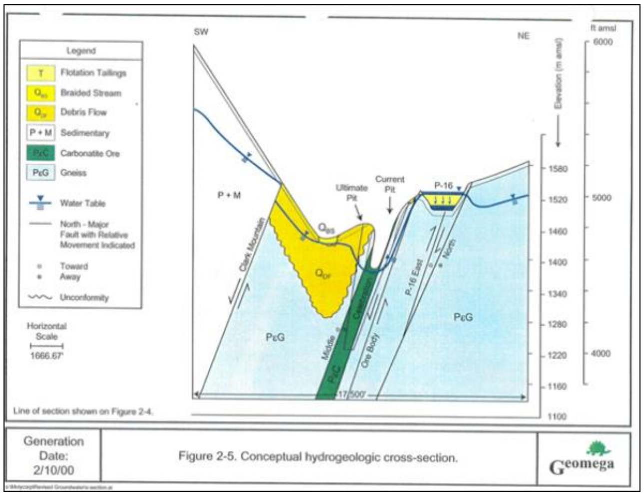
Additionally, the Geomega model simulated the Celebration fault, a left lateral fault with some normal movement, as a conduit to flow.

The location of these faults is shown in a simplified surface geological map and conceptual hydrogeologic cross-section made by Geomega (2000) in Figure 13-4 and Figure 13-5, respectively.



Source: Geomega (2000)

Figure 13-4: Simplified Surface Geology



Source: Geomega (2000)

Figure 13-5: Conceptual Hydrologic Cross-Section

Hydraulic conductivity values of sediments and bedrock units exhibit considerable variability depending both on the lithology and the degree of cementation, fracturing, or other secondary permeability development. Groundwater permeability within the bedrock is fracture-controlled. Hydraulic conductivity values in fractured zones range up to 17 feet per day (ft/d), while those in less fractured zones range up to 0.04 ft/d (GSi/water, 1991). Within the older alluvium, variation may result from differing degrees of cementation and clay content associated with alternating sequences of alluviation and debris flows. The older alluvium deposits have been found to be significantly less permeable than the recent alluvium, exhibiting hydraulic conductivity values on the order of 0.03 to 0.003 ft/d (GSi/water, 1991). The recent wash deposits are the most permeable at the site, exhibiting hydraulic conductivity values in order of tens ft/d (SRK, December 1985).

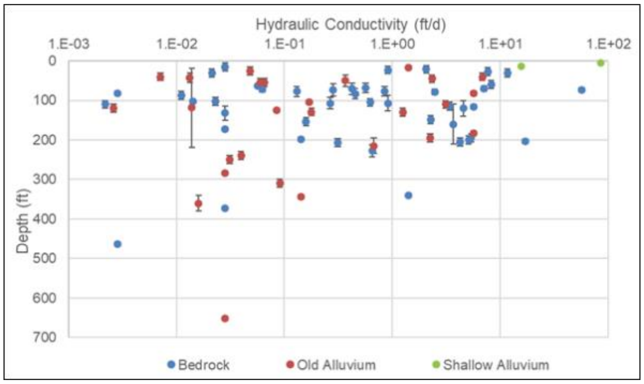
The hydraulic parameters of the hydrogeological units were tested by pumping tests, slug tests, and packer testing. Table 13-3 summarizes statistics of the measured hydraulic conductivity values.

Table 13-3: Summary of Measured Hydraulic Conductivity Values

Hydrogeological Unit	Number of Tests	Hydraulic Conductivity (ft/d)			
		Min	Max	Average	Geomean
Shallow Alluvium	2	15.6	85.0	50.3	36.4
Old Alluvium	27	0.003	6.8	1.1	0.16
Bedrock	45	0.002	56.7	3.5	0.41

Source: Compiled by SRK using data in Geo-Logic (March 2023)

Figure 13-6 shows the distribution of measured hydraulic conductivity values per depth:



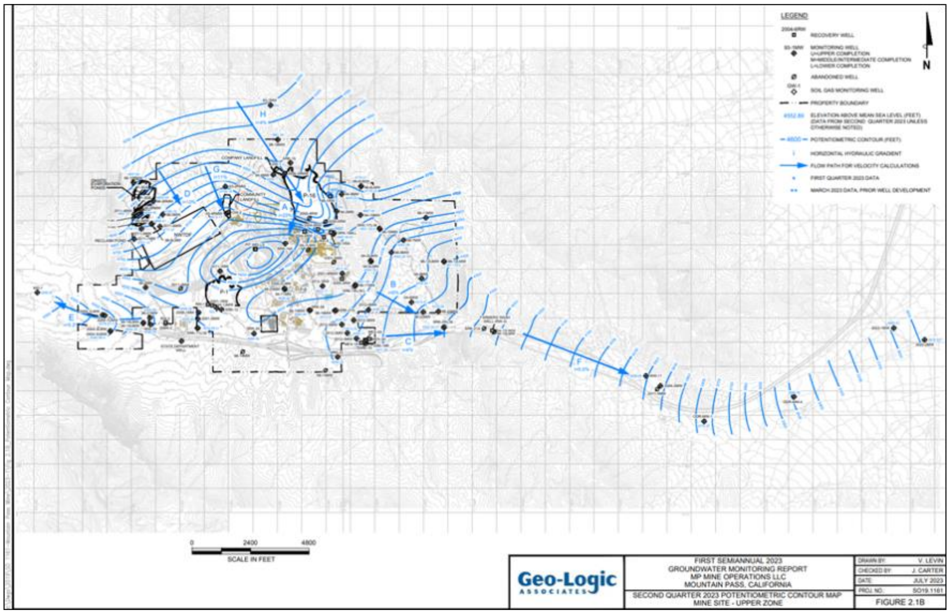
Source: Compiled by SRK using data in Geo-Logic (March 2023)
Error bars show tested intervals.

Figure 13-6: Measured Hydraulic Conductivity Values per Depth

Table 13-3 and Figure 13-6 indicate:

- Large variability in hydraulic parameters (up to 4 orders of magnitude)
- Relatively large hydraulic conductivity for bedrock where the open pit is being excavated (geometric mean is 0.4 ft/d)
- General trend of decreasing bedrock hydraulic conductivity with depth
- Testing of the shallow bedrock with limited tests completed below the depth of 250 ft

The groundwater levels around open pit and other mine facilities have been observed by monitoring wells. Their location, currently measured water table elevation and direction of groundwater flow is shown in Figure 13-7.



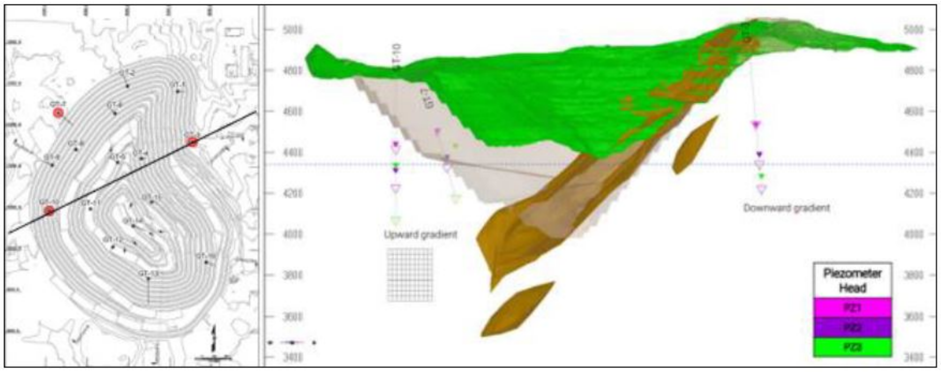
Source: Geo-Logic (July 2023)

Figure 13-7: Location of Monitoring Wells, Measured Water Table Elevation, and Direction of Groundwater Flow (as Q2 2023)

Figure 13-7 and Geo-Logic (July 2023) indicate:

- Groundwater generated by recharge from precipitation at the Clark Mountains north of the mine flows to the southeast and discharges in alluvial fan deposits of the Ivanpah Valley and Shadow Valley to the east and west, respectively.
- The open pit creates a local cone of drawdown due to pumping from two pit dewatering wells. The estimated lowest water table elevation within the pit is about 4,400 ft amsl.
- Measured groundwater levels at the site during the first 2023 monitoring period reflect a continued long-term decreasing trend, and several have become dry. The steady decline in water levels extends back to a particularly wet year in 2005 when there was a marked increase in water levels at the site.

Water level elevations in the walls of the proposed ultimate pit were measured in the piezometers recently installed in geotechnical core holes. Their location and measured water levels are shown in Figure 13-8.



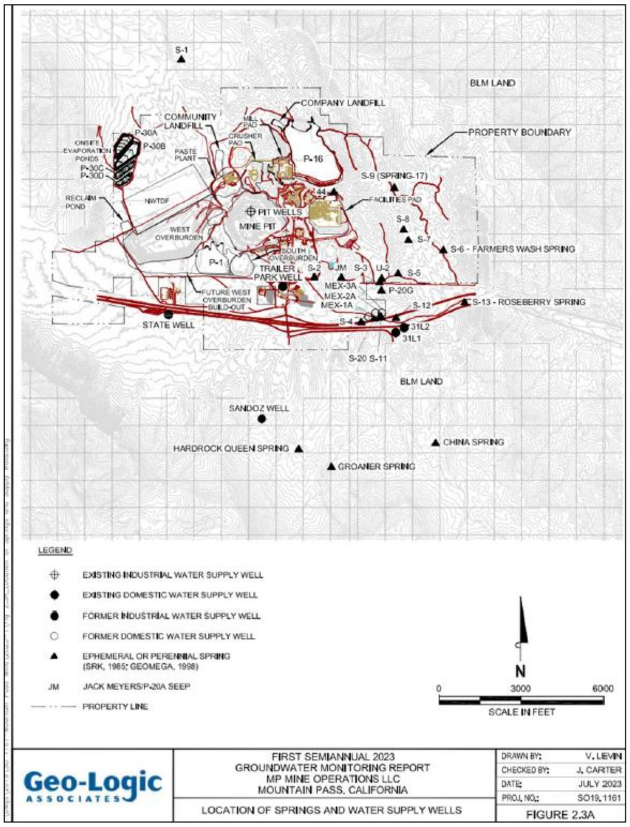
Source: CNI (January 2022)
The existing pit is shown in the right figure in green, with the phase 10 pit evaluated by CNI– in grey. Ultimate pit shells proposed by SRK are not shown – they consider deepening of the pit to 3,740 ft amsl.

Figure 13-8: Location of Piezometers and Measured Water Levels in Pit Walls

Figure 13-8 indicates:

- The lower part of the water table in the pit area is slightly below 4,400 ft amsl
- Presence of a downward hydraulic gradient in the eastern wall (recharge area) and an upward gradient in the western wall (toward the discharge area).

The location of industrial and domestic water supply wells (both historic and existing) with the mine facilities is shown in Figure 13-9.



Source: Geo-Logic (July 2023)

Figure 13-9: Location of Industrial and Domestic Water Supply Wells and Mine Facilities

Mine Dewatering

- Mine pit dewatering is accomplished using one or two dewatering wells at the bottom of the mine pit.
- Historically, dewatering of the open pit was done by one dewatering well. The pumping rate was about 36 gpm during 1987 through 1991. From June to November 1993 the pit well pumped an average 127 gpm to depress the water table below the 4,510 ft mining level.
- Two extraction dewatering wells (PEW-1 and PEW-2) were installed at the bottom of the pit within fractured bedrock in 2018 and drilled to the depths of 705 ft (215 m) and 531 ft (162 m), respectively. The screen depth intervals in PEW-1 are from 377 ft (115 m) to 702 ft (214 m), and in PEW-2 are from 197 ft (60 m) to 525 ft (160 m). The location of these wells is shown in Figure 13-10.
- A summary of pit water production during the first half of 2024 is provided in Table 13-4. Pit dewatering yielded approximately 26.4 million gallons during the last two quarters of 2024 (or 1.4 times higher compared to the same period in 2023). The pumping rate varied from 62 to 148 gpm with an average rate of about 100 gpm. The pit water was used exclusively for dust control on the mine's roads. Pumping from wells PEW-1 and PEW-2 allows the mine to maintain local containment of groundwater (shown in Figure 13-10).

Table 13-4: Summary of Pit Water Production in the First Half of 2024

Month of 2024	The Volume of Pumped Water (gal)	Average Pumping Rate (gpm)
January	2,746,200	61.5
February	3,094,800	74.1
March	4,140,600	92.8
April	3,859,900	89.3
May	5,095,900	114.2
June	6,379,290	147.7
Average	4,219,448	100.4

Source: MP Materials, 2024

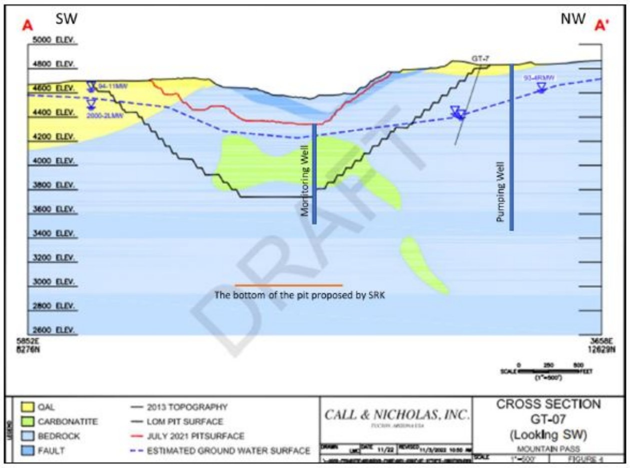
CNI proposed to drill in 2022 a pumping well to the northwest from the current pit to the bottom elevation of 3,440 ft amsl and a monitoring well in the center of the pit with 3 nested grouted-in transducers for conducting long-term pumping test (CNI, November 2022). The locations of the pumping and monitoring wells are shown in Figure 13-10 and Figure 13-11.

In SRK's opinion, this pumping test can be successful if bedrock to the elevation of 3,440 ft amsl is permeable and sufficient drawdown will propagate toward the proposed well. The total transmissivity of bedrock would be measured without the possibility of differentiating it per depth. If MP Minerals proceeds with the suggested CNI plan to drill pumping and monitoring wells, SRK strongly recommends adding spinner logging testing of the pumping well to allow at least preliminary re-distribute measured total transmissivity per depth.

Available data shown in Figure 13-4 suggest that hydraulic conductivity values decrease with depth and only isolated interval testing can verify this trend, considering that ultimate pit bottom elevation evaluated by SRK will reach an elevation of about 3,740 ft amsl.

Source: CNI (November 2022)

Figure 13-10: **Location of Proposed Pumping and Monitoring Wells by CNI Shown in Plan-View**



Source: CNI (November 2022) with modification by SRK

Figure 13-11: Location of Proposed Pumping and Monitoring Wells by CNI Shown on Cross-Section

The proposed deepening of the bottom of the pit to the ultimate elevation of 3,740 ft amsl will increase dewatering rates compared to currently observed. The major sources of groundwater inflow into the proposed pit would be:

- Fractured zones of the bedrock (location of these zones at the depth is currently unknown).
- Old alluvium sediments to the southeast (as shown in Figure 13-11); these sediments need to be dewatered by pumping well(s) to avoid groundwater spillover into the pit.

Most likely, pit dewatering can be handled by a system of bedrock pumping wells (in-pit, similar to existing wells PEW-1 and PEW-2, or perimeter wells drilled to the greater depths) and residual passive inflow captured by in-pit sumps).

It should be noted that:

- Hydrogeological conditions of the bedrock have not been tested at the proposed depth of the future pit. Packer testing was not completed in geotechnical and exploration core holes.
- Future effectiveness of in-pit pumping wells is unclear considering the deepening of the existing pit bottom by an additional 570 ft.

- The numerical groundwater model of the mine area developed by Geomega in 2000 has not been updated to allow the prediction of:
  - Dewatering requirements during future mining conditions
  - Pit lake infilling during post-mining conditions

SRK recommends that MP Materials:

- Conduct additional hydrogeological studies of the deep part of the bedrock to the elevation of the proposed bottom of the pit (3,740 ft amsl) by conducting packer-isolated tests in three or four core holes defining bedrock permeability and dewatering targets (where and to what depth dewatering wells can be installed). The strings of vibrated wire piezometers (similar to those installed by CNI) are also recommended in these core holes to better define vertical hydraulic conductivity and the hydrogeological role of encountered faults.
- If zones of significant permeability are found by packer testing, pumping wells with long screens should be drilled targeting these zones with the drilling of pilot holes prior to their construction. Spinner logging needs to be done within the screen intervals of these pumping wells.
- Update or develop new numerical groundwater flow to predict inflow to the proposed pit and better define:
  - Dewatering requirements
  - Pore pressures in pit walls and the potential necessity to reduce them by installation of horizontal drain holes from pit benches (if required by geotechnical conditions of the slopes)
  - Propagation of the drawdown cone during both mining and post-mining conditions (including pit lake infilling) to evaluate the potential impact on the groundwater system because of the continued deepening of the open pit

Water Supply

MP Minerals maintains and operates two water supply wellfields for portable and process water. The Ivanpah well field, established in 1952, is located on private land eight miles east of the mine site and consists of six freshwater-producing wells, three booster stations, and associated pipelines. The Shadow Valley well field, established in 1980, is located 12 miles west of the mine site and consists of four wells of which three are on public land and one on private land, a single booster station, and associated pipelines. The water supply wells are completed within coarse alluvial sediments.

The amount of freshwater consumed by the facility in 1996 was approximately 850 gpm from both wellfields. The five-year annual average between 1993 and 1997 was 795 gpm. As part of the comprehensive plan for continued operations, MP Materials placed emphasis on on-site management and treatment of process water and maximizing reuse (SRK, 2010). While both wellfields are available, the facility currently relies on the Shadow Valley wellfield for its water supply needs.

Given the established capacity of the water supply systems and MP Materials' ongoing focus on process water management and reuse, water availability is not anticipated to be a concern for continued operations.

13.2 Pit Optimization

SRK completed a pit optimization exercise to provide the basis for the final LoM reserve pit design. This process utilizes initial approximated assumptions for the LoM production such as an average overall slope angle, typical production costs and typical process recoveries, as discussed below. It is important to note that these parameters do not exactly reflect the final reserve assumptions as this process is an interim step that precedes these final reserve calculations. Therefore, there are typically small differences between initial pit optimization assumptions and final reserve assumptions on items such slope design and costs, which are calculated as part of the final mine design process.

For the purposes of this analysis, SRK utilized Whittle™ software which uses a Lerchs-Grossmann algorithm to produce a series of nested pit shells which are derived by incrementally changing revenue assumptions. These incremental changes are referred to as Revenue Factors (RF) with, for example, a RF 1.0 reflecting a pit requiring 100% of the assumed base case revenue to be economic. In comparison, a RF 0.9 pit only requires 90% of the base case revenue to be economic, and this pit is inherently smaller than the RF 1.0 pit and hence is nested within it.

13.2.1 Mineral Resource Models

The current block model block sizes are 15 ft by 15 ft by 30 ft (Table 13-5). SRK applied dilution to the edge blocks based on the percentage of waste material within this block. This was done by performing a reblocking calculation on all the blocks. SRK is of the opinion that the grades will vary considerably at the local scale when mining.

Table 13-5: Block Model Block Sizes

Item	Main Pit Area
X (ft)	15
Y (ft)	15
Z (ft)	30

Source: SRK, 2023

The resource block model was imported into Whittle™ and Maptek Vulcan LG and verified against the original mineral resource block model (block model), created in Vulcan™. The Vulcan™ block model subsequently was coded in preparation for optimization. This included diluting the block model to account for mining practices. The verification process indicated no material changes to the block model tonnages and grade during the process of importing into Whittle™.

13.2.2 Topographic Data

SRK was provided a September 30, 2024, surface to be used in the reserve calculation. The site uses a DJI Phantom 4 RTK Drone, Pix4D, and Maptek's I-Site software to provide detailed surveys.

13.2.3 Pit Optimization Constraints

The Mountain Pass pit design combines current site access, mining width requirements, and generalized geotechnical parameters to evaluate the possibility for full extraction of resources through open pit techniques. Restrictions were placed on the pit optimization to prevent the optimized pit shell from encroaching on the concentrator and tailings storage facility.

The optimization process was restricted to indicated resources. There are no pit resources classified as measured. For the purpose of the optimization, there were no production or processing limits used within Whittle™, and all material not classified as indicated was treated for calculation purposes as waste.

13.2.4 Pit Optimization Parameters

Mining Dilution

The block model is based on 15 ft x 15 ft x 30 ft blocks. Where the interpretation of the mineralized rock intersects a block model block centroid, the block within the mineralized shape is recorded. The flagging of ore type is based on block centroid and accounts for the location and placement of the ore contact. Because the contact of waste and ore is not always clearly visible, dilution is expected and has been accounted for. Average dilution across the deposit results in a 3.5% reduction in ore grades.

The Whittle™ optimization software used settings of 0% mining dilution and 100% ore recovery (as this was pre-coded into the block model). These parameters were supplied by the client but are considered by SRK to be reasonable because the imported block model was already diluted.

Discount Rate

The pit optimization process used a 6% discounting factor. Inflation was not factored into the costs or the selling price used in the analysis.

Geotechnical Parameters

For the pit optimization, SRK used a variable overall slope angle between 39° and 45°, which approximates the inclusion of ramps (the pit optimization process cannot include actual ramp design so this must be approximated). The final pit design, including the location of the ramps will differ slightly from the pit optimization initial assumptions.

Revenue

Revenue is based on the value realized from sales of the four individual REO products produced from the onsite separations facility, along with the sale of packaged concentrate in any period when concentrate production exceeds the capacity of the separations facility. The prices used for pit optimization are consistent with the prices established by the preliminary marketing study as discussed in Section 16 of this report:

- Rare Earth Mineral Concentrate US$10.20 per kilogram (kg)
- PrNd Oxide US$124.83/kg
- SEG+ Precipitate US$48.22/kg
- La Carbonate US$1.44/kg
- Ce Chloride US$2.57/kg

Royalties

No royalties have been applied to the optimization.

Mining Costs

SRK reviewed MP Materials' recent actual costs and modified the pit optimization costs based on prior experience with similar projects. A base mining cost per short ton at the pit exit elevation has been applied for all material. The base mining cost is US$1.50/st. For each 15 ft bench that is mined above or below the pit exit elevation, an incremental cost of US$0.05/st was added. Additionally, costs were included for the rehandling of ore from stockpiles and for the rehandle associated with the crushers, ore sorters, and paste plant. Subsequent to pit optimization, SRK prepared a first principles mining cost model, the results of which were used for economic modeling.

Recoveries

Pit optimization is based on concentrator recovery that varies based on the grade of the ore fed to the concentrator. The average REO distribution in the concentrate for PrNd is 15.7%, for SEG+ is 1.8%, for Lanthanum is 32.3% and for Cerium is 50.2%. Overall recoveries at the onsite separations plant (as applied to concentrate containing on average 60% TREO) are 89.7% for PrNd Oxide, 97.9% for SEG+ Precipitate, 75.0% for La Carbonate and 11.5% for Ce Chloride.

Other Input Parameters

Table 12-1 presents the full list of pit optimization parameters.

13.2.5 Optimization Process

As a result of the pit optimization, the relationship of potential pit shells is based on stripping ratio variability and subject to the selected base case selling prices. By looking at the relationship of ore to waste and the associated best-case and worst-case cash flows generated at each incremental pit, the risk profile and revenue generating potential of the deposit can be estimated.

To estimate the LoM pit utilized as the basis for the final reserve pit design, a series of nested pit shells were calculated over a range of Revenue Factors (RF). Each of the nested pit shells were generated based on the maximum pit value calculated for the applicable RF. The generated nested pit shells increase in size as the RF and maximum pit value also increase.

The final pit design will not exactly match this optimization output and will often include some material outside of this estimated LoM pit.

13.2.6 Optimization Results

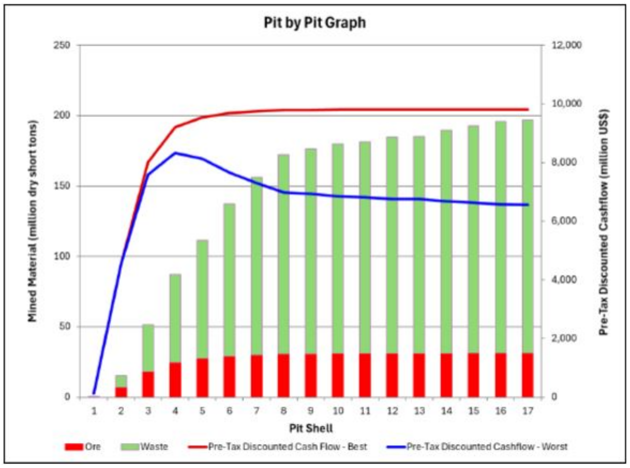
Pit optimization results are presented in Table 13-6. The optimized pit shell selected to guide final pit design was based on a combination of the RF 0.45 pit (pit shell 6, used on the north half of the deposit) and the RF 1.00 pit shell (pit shell 16, used on the south half of the deposit).

Table 13-6: Mountain Pass Pit Optimization Result Using Indicated Classification Only

Pit	Revenue Factor	Strip Ratio (waste:ore)	Total Mined (million st)	Ore (million st)	Waste (million st)	Concentrate Produced (thousand st)	Mined Grade (diluted TREO%)
1	0.20	0.03	0.1	0.1	0.0	20.8	12.58
2	0.25	1.12	15.4	7.3	8.1	749.1	8.06
3	0.30	1.84	51.6	18.2	33.5	1,513.5	6.83
4	0.35	2.53	87.3	24.7	62.6	1,877.4	6.36
5	0.40	3.05	111.5	27.5	84.0	2,005.7	6.15
6	0.45	3.69	137.3	29.3	108.0	2,077.6	6.02
7	0.50	4.18	156.0	30.1	125.9	2,114.1	5.97
8	0.55	4.59	172.4	30.8	141.6	2,143.4	5.93
9	0.60	4.70	176.3	30.9	145.4	2,147.8	5.92
10	0.65	4.80	180.0	31.0	148.9	2,151.7	5.91
11	0.70	4.84	181.4	31.1	150.3	2,152.8	5.91
12	0.75	4.94	184.9	31.2	153.8	2,156.5	5.90
13	0.80	4.94	185.3	31.2	154.1	2,156.8	5.90
14	0.85	5.08	189.7	31.2	158.5	2,159.1	5.90
15	0.95	5.16	192.8	31.3	161.5	2,161.0	5.89
16	1.00	5.25	195.7	31.3	164.4	2,162.8	5.89
17	1.05	5.28	196.9	31.3	165.6	2,163.4	5.89

Source SRK, 2024
The optimized pit shell selected to guide final pit design was based on a combination of the RF 0.45 pit (pit shell 6 (blue row), used on the north half of the deposit) and the RF 1.00 pit shell (pit shell 16 (yellow row), used on the south half of the deposit)

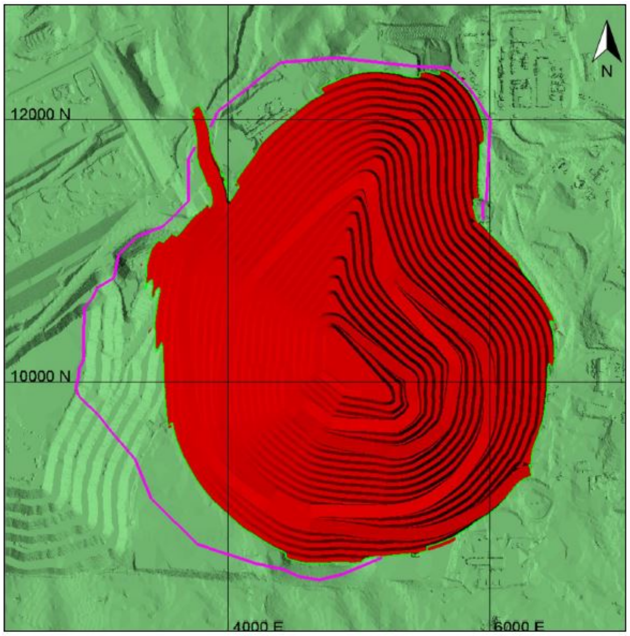
Figure 13-12 shows the results of the pit optimization in a pit-by-pit graph.



Source: SRK, 2024
Pit value is pre-tax and assumes a 6% discount rate.
The optimized pit shell selected to guide final pit design was based on a combination of the RF 0.45 pit (pit shell 6 used on the north half of the deposit) and the RF 1.00 pit shell (pit shell 16 used on the south half of the deposit).

Figure 13-12: Mountain Pass Pit by Pit Optimization Result

Figure 13-13 shows the mineral reserves (red line) versus the mineral resources (magenta line) pit optimization shells.



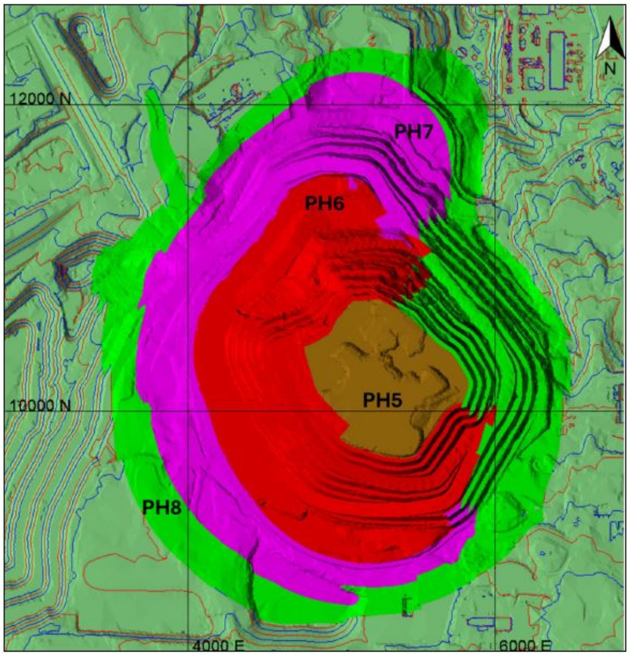
Source: SRK, 2024

Figure 13-13: Mountain Pass Mineral Reserves Pit (Red) and Mineral Resources Shell (Magenta Line) Surface Intersection

13.3 Design Criteria

13.3.1 Pit and Phase Designs

Phase designs for the deposit are largely driven by the effective mining width and its influence on access to the resource. The same design parameters used in the final pit design have been incorporated into the phase designs. A total of four phase designs were created for the Mountain Pass pit, all of which fall within the selected optimized pit shell. Figure 13-14 shows the location of each phase.

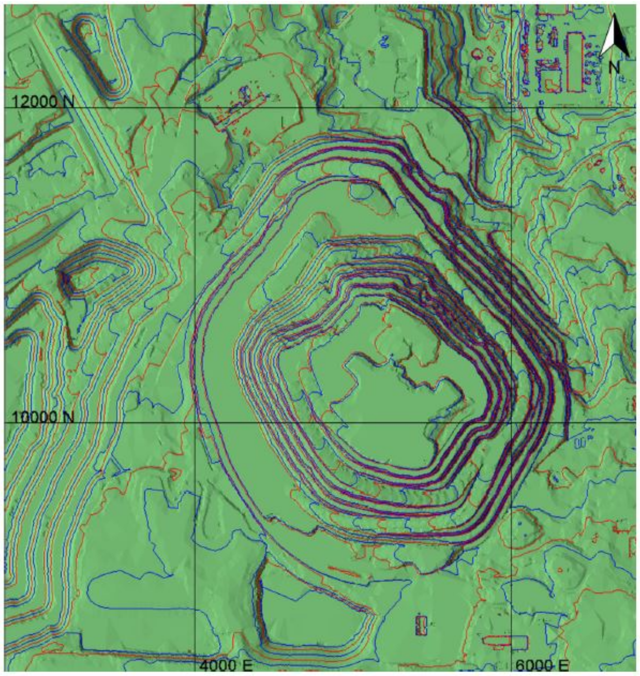


Source SRK, 2024
Phases 1 through 4 were previously mined.

Figure 13-14: Phase Design Locations

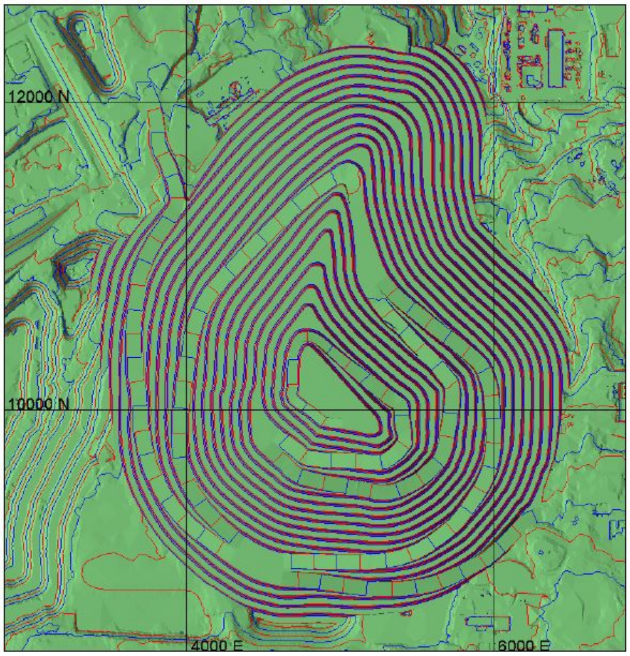
To ensure proper ore exposure and access to different TREO grades, SRK created multiple mining phases. To improve the economics of the Project, phases were divided by following pit optimization shells to ensure that the higher profit pit shells were being mined first.

Figure 13-15 shows the September 30, 2024, starting reserve topography. Figure 13-16 below shows the final pit design.



Source: SRK, 2024

Figure 13-15: Reserve Starting Topography, September 30, 2024



Source: SRK, 2024

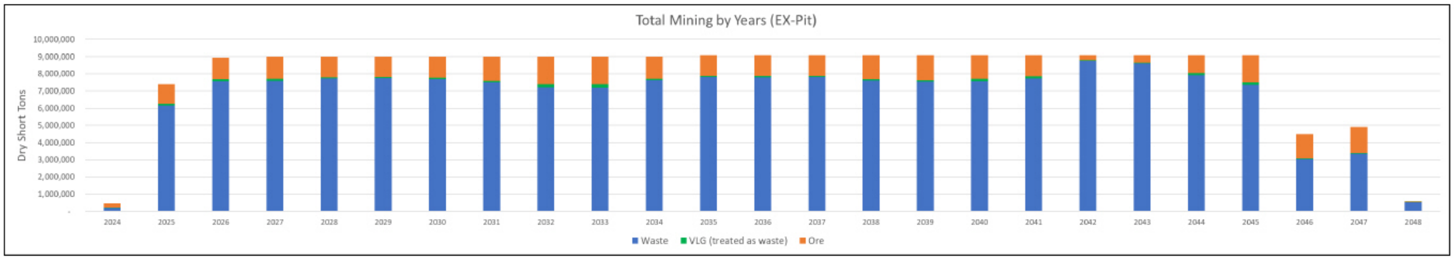
Figure 13-16: Final Pit Design

13.4 Mine Production Schedule

The current LoM plan has pit mining that spans approximately 25 years (Q4 2024 through 2048), followed by approximately 5 years of processing long-term ore stockpiles (2049 through early 2053). The entire reserve is mined by the LoM plan. The average strip ratio is 5.8. A tabulation of annual mining and processing physicals is presented in Section 19 (specifically, Table 19-8).

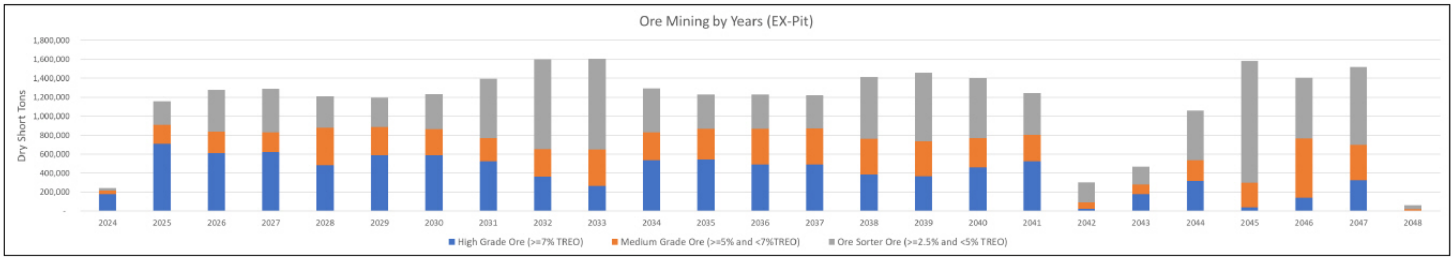
13.4.1 Mine Production

Figure 13-17 to Figure 13- present the LoM production schedule outputs for the Mountain Pass mine. The production schedule is used as the basis of the technical economic model (TEM) and comprises mill feed ore and waste.



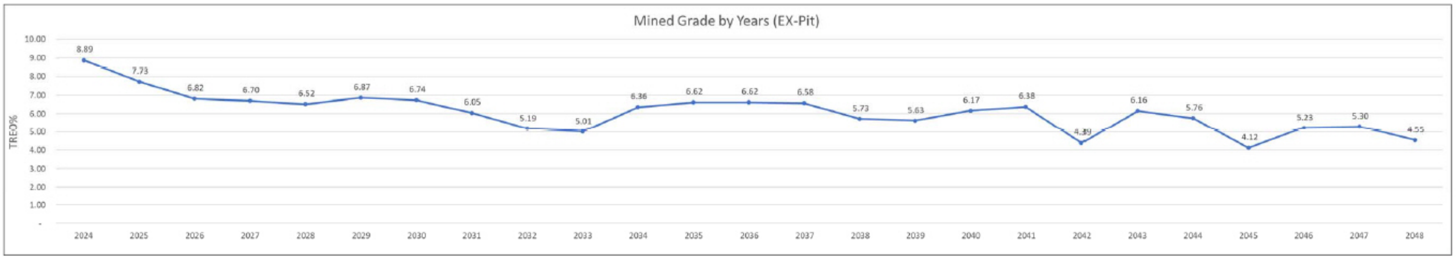
Source: SRK, 2024
2024 includes only October – December
VLG is used to denote "very low grade" material (=>2.0% TREO but < 2.5% TREO) that is tracked separately in the mining schedule but is treated as waste.

Figure 13-17: Total Mined Material from the Open Pit (Ore and Waste)



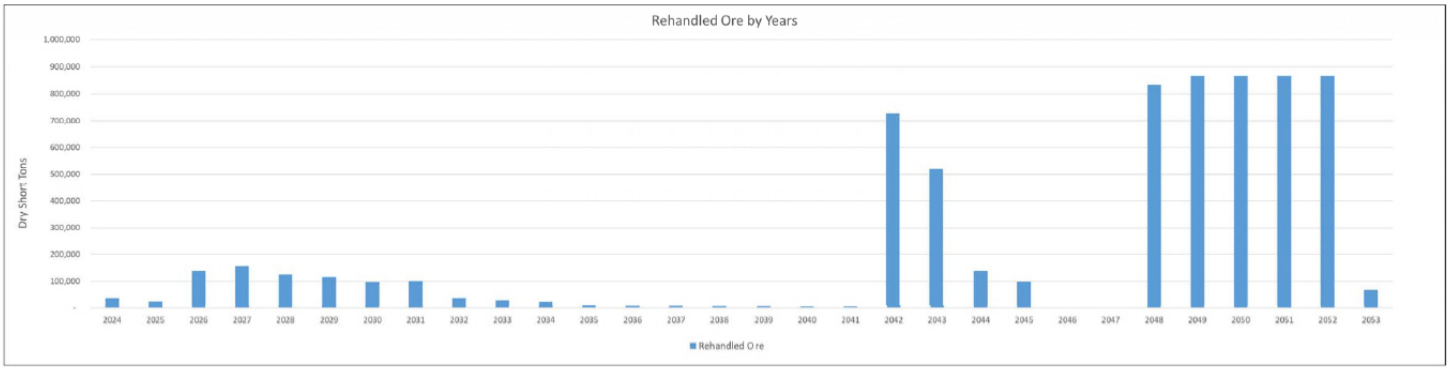
Source: SRK, 2024
2024 includes only October - December

Figure 13-18: Ore Mined from the Open Pit



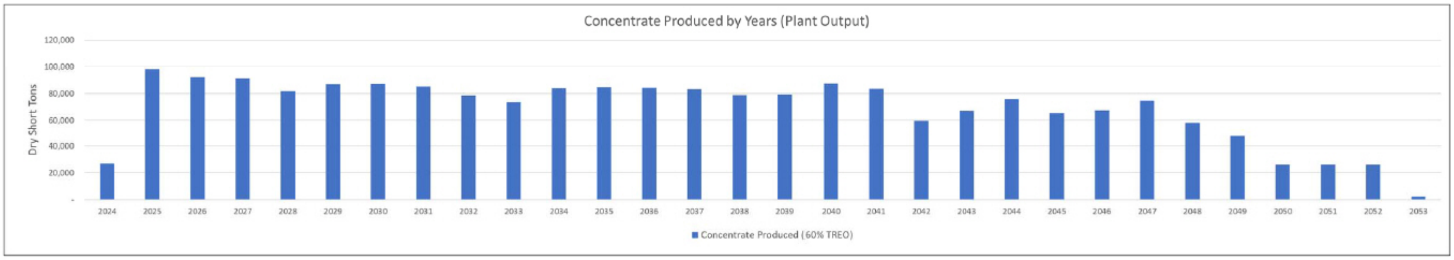
Source: SRK, 2024
2024 includes only October - December

Figure 13-19: Mined Ore Grade



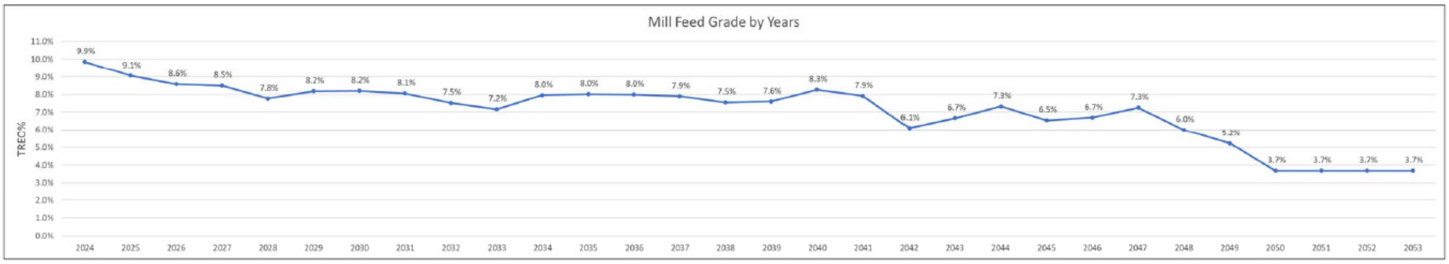
Source: SRK, 2024
2024 includes only October - December

Figure 13-20: Rehandled Ore from Stockpiles



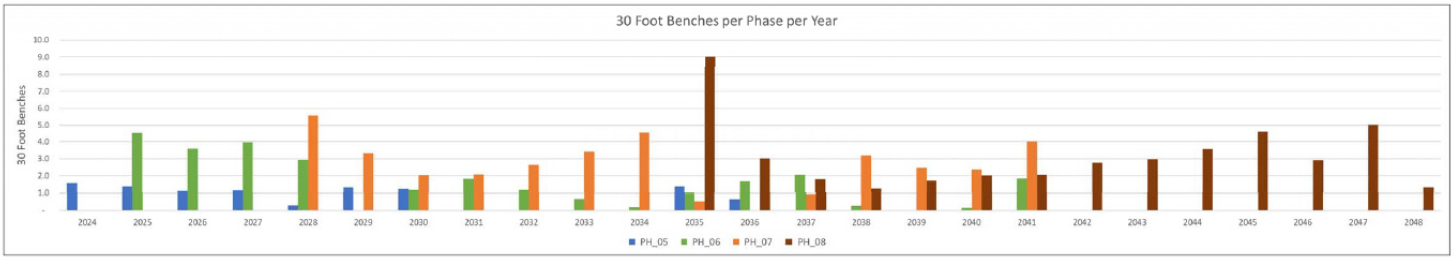
Source: SRK, 2024
2024 includes only October - December

Figure 13-21: Mill Concentrate Production



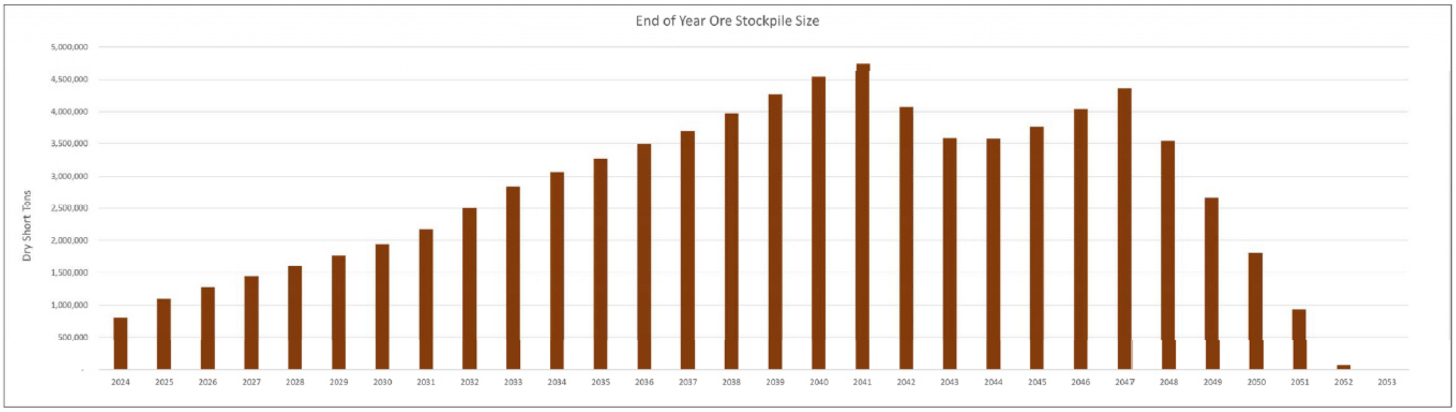
Source: SRK, 2024
2024 includes only October - December

Figure 13-22: Mill Feed Grade



Source: SRK, 2024
2024 includes only October - December

Figure 13-23: Number of Benches Mined



Source: SRK, 2024
2024 includes only October - December

Figure 13-24: Long-Term Ore Stockpile End of Period Balance

Grade Control

Grade control provides critical control to ensure that ore and waste are identified at a high resolution prior to mining and then hauled to the appropriate destination (i.e., primary crusher, stockpile, or waste dump). The grade control process is as follows:

- All blastholes will be sampled near the mineralized zones.
- For the 30 ft mining bench height, the following sampling technique will be utilized.
  - Drillers/samplers will gather cuttings and define them by their drillhole number and pattern number.
  - Samples will be analyzed in a laboratory set up on-site.
- The geologist / mine engineer will build outlines based on the analyzed grade range.
- The geologist and surveyors will place flags in the pattern based on the grade control outlines.

13.5 Waste and Stockpile Design

13.5.1 Waste Rock Storage Facility

The waste rock storage for the Mountain Pass operation has been designed to limit the vertical expansion of the waste dumps and have dump toes located for control of surface run-off. The dumps have also been located in areas that will not be impacted by potential future mining operations.

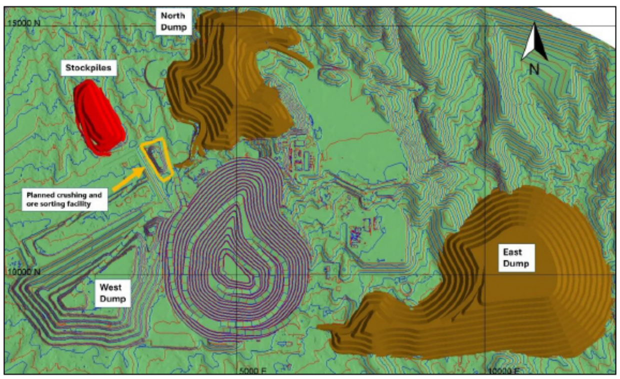
The total estimated waste rock storage requirement associated with the mine plan is 175.1 million st (including reject material from the ore sorter). Mountain Pass will route all waste material from phases 5 and 6 to the North dump and all waste rock from phases 7 and 8 to the East dump. All ore sorter reject material will be sent to the North dump. Total estimated waste rock capacities for each dump are provided in Table 13-7.

Table 13-7: Estimated Remaining Storage Capacity for Waste Rock

Dump	Toe Elevation	Volume (million ft^3)	Million Short Tons	Years Active
North	4,850	0.1	0.0	2024
	4,900	2.9	0.2	2024
	4,950	41.6	3.0	2025
	5,000	96.2	7.0	2026
	5,050	130.1	9.5	2027
	5,100	143.6	10.4	2028
	5,150	119.2	8.7	2028-47
	5,200	77.5	5.6	
	5250	31.7	2.3	
	North Total	**642.9**	**46.7**	
East	4,450	6.0	0.4	2028
	4,500	58.0	3.6	2031
	4,550	139.1	8.5	2033
	4,600	216.6	13.3	2034
	4,650	318.7	19.6	2036
	4,700	405.4	24.9	2038
	4,750	390.8	24.0	2042
	4,800	330.7	20.3	2044
	4,850	262.5	16.1	2047
	4,900	192.7	11.8	2048
	4,950	148.1	9.1	
	5,000	108.5	6.7	
	East Total	**2,577.1**	**158.3**	
All	**Total**	**3,220**	**205.0**	

Source: SRK, 2025

Figure 13- shows the locations of the waste dumps and long-term ore stockpile.



Source SRK, 2024

Figure 13-25: Final Pit Design and Waste Dump Locations

13.5.2 Stockpiles

The long-term ore stockpile will hold a maximum of about 4.7 million st of ore, all of which will eventually be sent to processing. The long-term ore stockpile is located to the northwest of the pit.

The current operation uses four low-capacity RoM blending stockpiles in front of the primary crusher. These stockpiles are small, and the total capacity for all of them is typically less than 50,000 st. The operation plans to continue this practice in the future.

13.6 Mining Fleet and Requirements

13.6.1 General Requirements and Fleet Selection

Mountain Pass is an open pit mine using front-end wheel loaders loading haul trucks for waste and ore haulage. The operations are described further in the following sections.

Mining activities include drilling, blasting, loading, hauling and support activities. Ore will be sent to the RoM stockpiles for near-term blending or to long-term stockpiles for processing later in the mine life. Waste dumps will be used for material below the COG.

The loading, hauling, and support equipment operations are performed with a fleet that is owned and operated by MP Materials. Drill and blast operations are performed by a contractor, and this will continue for the foreseeable future. The primary loading equipment is front-end loaders (17 yd^3), which were selected for operational flexibility. Rigid frame haul trucks (102 wet st) were selected to match with the loading units.

MP Materials is in the process of purchasing a fleet of new 17 yd^3 loaders, 7.6 yd^3 loaders, 102 ton haul trucks and 40 ton haul trucks to replace the majority of the existing fleet. The equipment will be delivered during 2025 and a corresponding capital provision has been included in the TEM.

The mine equipment fleet requirements are based on the annual mine production schedule, the mine work schedule, and shift production estimates. The equipment fleet requirements are further discussed in the individual sections that follow in this report. All mine mobile equipment is diesel-powered to avoid the requirement to provide electrical power into the pit working areas.

The mine operations schedule includes one 12-hour day shift, seven days per week for 365 days per year. Mine productivity and costing included estimating the productive shift operating time. Non-productive time includes shift change (travel time), equipment inspections, fueling, and operator breaks. SRK estimated that the total time per shift for these items will be 2.25 hours. The scheduled production time (scheduled operating hours) was therefore estimated at 9.75 hours per shift, representing a (shift) utilization of 81.3% of the 12-hour shift period (and excludes mechanical availability and work efficiency factors).

In addition, allowances were made for work efficiencies including equipment moves (production delays while moving to other mining areas within the pit), and certain dynamic operational inefficiencies. These work efficiencies are further discussed in the respective sections for loading and hauling.

Equipment fleet mechanical availability was estimated for the various major mine equipment fleets. Replacement equipment units for units that have reached their useful life are assumed to be new.

Table 13-8 shows the mining equipment fleet requirements for the mine plan.

Table 13-8: Mining Equipment Requirements

Equipment Units	Model	Size	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053
Loading																																
Wheel loader	WA600	8.4 yd^3	2	2																												
Wheel loader	WA900	17.0 yd^3	2	2																												
Wheel loader	988	7.6 yd^3		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1
Wheel loader	992	17.0 yd^3		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1				
Hauling																																
Haul truck	775	70 wst	2	2	2	2	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
Haul truck	777	102 wst		7	11	11	10	8	9	10	10	11	11	9	7	9	11	11	10	11	10	11	12	13	8	9	2	1	1	1	1	1
Haul truck	HD785	102 wst	7	7																												
Other Mine Equip																																
Track dozer	D9	405 hp	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Motor grader	GD655	218 hp	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Motor grader	14M3	238 hp	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Excavator	352	306 hp	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Water truck	775G	15,000 gal	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Water truck	HM400	8,000 gal	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Support Equip																																
Track dozer	D6	150 hp	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Wheel loader	WA600	8.4 yd^3	1	1																												
Wheel loader	988	7.6 yd3		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Haul truck	HM400	44 wst	3	3																												
Haul truck	740	40 wst		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Fuel/Lube truck			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
HD mech truck			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Welding truck			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Flatbed truck			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pumps / generators			1	2	2	2	2	2	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4				
Personnel bus			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1
Pickup trucks			7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	4	4	4	4
Light plant			6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	3	3	3	3

Source: SRK, 2024

Note: The number of units required in a given year is a calculated number based on the production schedule and may be equal to or lower (i.e., not higher) than the number of units on hand in the same year.

13.6.2 Drilling and Blasting

MP Materials has contracted for drilling and blasting services. The contractor will provide all equipment, supplies, and labor to complete the services. It is MP Materials' intention to continue with contractor drilling and blasting services for the foreseeable future. Accordingly, SRK has included a provision in the mining cost estimate for drilling and blasting services for the LoM timeframe.

Drilling is based on a 15 ft blasthole spacing and a 15 ft burden. The designed hole depth is 30 ft with a 4 ft subdrill. Dry blastholes will be loaded with ammonium nitrate fuel oil (ANFO). It is assumed that there will be 20% additional holes for pre-splitting, and 10% of blastholes will be loaded with emulsion (wet conditions).

The blasting contractor transports blasting accessories to site and stores these separately in a suitable explosives magazine. The blasting contractor has an explosives truck (ANFO/emulsion), which delivers bulk explosives to the open pit blast sites during daylight hours. Stemming material is ¾ inch rock. The blasting contractor manages and conducts the blasting operations.

13.6.3 Loading

The main loading equipment fleet for the mining operations is front-end loaders (17.0 yd^3 bucket capacity). This equipment loads a fleet of seven rigid frame haul trucks (102 wet st capacity).

The main loading equipment fleet for the mining operations will be assisted by two smaller front-end loaders (7.6 yd^3 bucket capacity), two smaller rigid frame haul trucks (70 wet st capacity), and three articulated haul trucks (40 wet st capacity).

The dry density for waste was estimated to be 0.0831 st/ft^3 (2.66 metric $tonne/m^3$). The dry density for ore was estimated to be 0.0975 st/ft^3 (3.12 metric $tonne/m^3$). Rock moisture content was estimated to be 2% on average and swell in loading blasted rock to be 40%.

Table 13-9 shows selected loading statistics for the loading units when operating in waste.

Table 13-9: Loading Statistics by Unit Type in Waste

Equipment Type	Unit	Large Loader	Small Loader
Bucket Size	yd^3	17.0	7.6
Matched Truck Rated Size	wet st	102	70
Number of Passes(1)	passes	4	5
Total Truck Loading Time	**min**	**2.6**	**3.0**
Moving and Delay Time	min/op hr	10	10
Waste Prod. Per Unit (100% Available)	dry short ton/op hr	1,908	1,130

Source: SRK, 2024
(1) Average 2% moisture assumed.

The total truck loading times included a truck spotting (initial positioning of the trucks for loading) time of 48 seconds.

Table 13-10 shows selected loading productivity information in waste for the planned loading equipment.

Table 13-10: Loading Productivities by Unit Type in Waste

Equipment Type	Unit	Large Loader	Small Loader
Waste Prod. per Unit (100% Available)	dry t/op hr	1,908	1,130
Planned Operating Hours per Shift	scheduled op hrs	9.75	9.75
Planned Operating Hours per Year	scheduled op hrs	3,559	3,559
Estimated Mechanical Availability	op hrs %	85%	85%
Actual Operating Hours per Year	op hrs	3,025	3,025
Annual Waste Production Capacity per Unit	dry million st/yr	6.4	3.8

Source: SRK, 2024

As part of the mining operations, an allowance was made for re-handling crushed ore between the crusher and the mill with 17.0 yd^3 loaders and 102 ton haul trucks. There is also an allowance for 7.6 yd^3 loaders to be used for rehandling material at the integrated crushing and ore sorting facility.

13.6.4 Hauling

Waste is hauled to the waste dumps. Ore is hauled to RoM stockpiles or, alternatively, to long-term stockpiles.

The main hauling equipment fleet for the pit mining operations is composed of seven 102 wet short ton capacity rigid frame haul trucks, two smaller rigid frame haul trucks (70 wet short ton capacity) and three articulated haul trucks (40 wet short ton capacity).

The Maptek Vulcan™ haulage module was used to calculate the cycle times and distances. Routes were drawn from every bench for each pit phase to the destinations, and one-way distances reported.

Various haul profiles were developed for different time periods, and haulage cycle times from the pits were estimated for waste and ore. Base haul cycle times were estimated using the software, and these were factored for practical operational hauling aspects to reflect realistic cycle times.

Truck spot, load, and dump times were then added to the factored haul cycle times to make up total haul cycle times.

Table 13-11 shows selected hauling productivity information for waste haulage.

Table 13-11: Hauling Statistics by Unit Type in Waste

Hauling Equipment Type	Unit	Large Truck	Small Truck
Rated Truck Size	wet st	102	70
Truck Fill Factor by Weight	Wet Tonnage Basis %	100%	100%
Typical Total Truck Loading Time (1)	**min**	**2.60**	**3.05**
Total Truck Dumping Time	**min**	**1.20**	**1.20**
Production per Unit (100% Available)	st/op hr	Variable based on haul profile	Variable based on haul profile

Source: SRK, 2024
(1) Includes truck spotting time; large trucks loading with 17 yd^3 loader and small trucks loading with 7.6 yd^3 loader.

Table 13-12 summarizes the factored truck haulage cycle times from the pit for each year. These cycle times are the total truck cycle times and include truck spotting, loading and dumping times.

Table 13-12: Pit Haulage Cycle Times (minutes)

Year	Waste	Ore
2024	19.7	22.3
2025	19.7	22.3
2026	21.1	20.8
2027	23.6	21.6
2028	20.4	17.2
2029	13.4	20.2
2030	16.7	22.5
2031	18.4	22.1
2032	18.5	22.3
2033	20.2	22.0
2034	22.8	25.1
2035	14.8	22.5
2036	12.0	24.1
2037	14.6	26.1
2038	18.4	27.9
2039	18.6	29.7
2040	16.5	28.4
2041	20.1	32.4
2042	18.2	18.0
2043	20.3	20.2
2044	22.7	22.2
2045	25.7	26.4
2046	28.5	28.8
2047	31.5	31.2
2048	34.1	33.9

Source: SRK, 2024
Total factored haul truck cycle times including loading, spotting and dumping.

Truck hauling productivities were calculated for each year of the mining operations and were used to estimate respective fleet hauling operating hours required, which were then used as the basis for determining the truck fleet requirements.

13.6.5 Auxiliary Equipment

Other major mining operations support equipment was previously shown in Table 13-8. The Caterpillar D9 track dozer is used for drill site preparation, road and ramp development, and maintenance of loading areas and waste dumps. The graders and water trucks maintain ramps, haul roads, and operating surfaces. The excavator performs site development work including pioneering and drainage diversion ditch development. The major mining equipment fleet size for roads and dumps is based on the general production level and allowance for general site conditions (including annual precipitation).

Annual operating hours were estimated for all of the major mining support equipment units, in general, between 1,512 and 3,025 operating hours per unit per year were scheduled for the mining operations.

The Caterpillar D6 track dozer is used for handling paste tailings. Other mining equipment involved in the handling of the paste tailings includes a 7.6 yd^3 loader and 40 ton capacity articulated dump trucks (ADT) which will haul the paste to the tailings area for the dozer to then place.

Mining support equipment includes equipment maintenance units such as a fuel/lube truck, which delivers fuel to equipment in the field from the fuel station, heavy duty mechanics' truck, and welders' truck.

Mine site operations and development utilize a flatbed truck, various moveable generators/pumps, light plants, transport van, and various service pickup trucks.

Dewatering is required for the pit. A combination of precipitation falling within the outer perimeter of the pit (normally only a few inches of rain per year) and groundwater inflows into the pit account for the total volume of water that is handled by the dewatering equipment.

13.6.6 Mining Operations and Maintenance Labor

The mine has salaried staff for mine administration, supervision of mine operations, supervision of mine equipment maintenance, and for technical services (geology and mining departments). These positions are on a permanent day shift. Operations employees fill mining production, mining support functions, and mining equipment maintenance positions.

The mine administration and operations supervision staff totals seven positions, and the technical services staff totals six positions. The total staff includes 13 positions. The operations, mine equipment maintenance, and technical services positions include:

- Mine administration includes a Senior Vice President Mining.
- Mine operations includes two shift supervisors.
- Mobile maintenance includes a maintenance superintendent, two maintenance shift foreman and a maintenance planner.
- Mine geology includes a geologist and a senior geologist.
- Mine engineering includes a senior mine engineer, a mine engineer, a chief surveyor and a survey assistant.

Equipment operator labor positions are based on the number of mining equipment units required, and on the assumption that most of the operators are cross-trained (i.e., when operators are not required to be on one type of heavy equipment, they will be able to operate another type of equipment).

Operator positions are estimated for each year of operation. Required pit loading, hauling, and other support fleet equipment operators are based on the annual operating hours required. The operations assigned to the mining department also include the paste tailings loading and hauling, crusher feed loader, and loading and hauling crushed ore to the mill. Estimated annual labor costs include overtime allowances and burdens (33%).

A maintenance group is staffed with mobile equipment mechanics, electricians, welders, and other maintenance personnel.

The mining operations and maintenance labor requirements are shown in Table 13-13. The peak number of operations and maintenance personnel is 73, which occurs in 2045. The mine department staffing levels are reduced significantly during the later years of the mine life because pit mining concludes in 2048 and only stockpile rehandling occurs from 2049 through 2053.

Table 13-13: Mining Operations and Maintenance Labor Requirements

Category	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053
Loading Operators	6	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	6	6	6	4	2	2	2	2
Truck Drivers	8	18	26	26	22	18	20	22	22	24	26	20	16	20	24	24	22	24	22	24	26	28	18	20	6	2	2	2	2	2
Other Mine Equipment	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	3	1	1	1	1	1
Support Activities	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	6	6	6	6	6
Total Mining Ops	**33**	**47**	**55**	**55**	**51**	**47**	**49**	**51**	**51**	**53**	**55**	**49**	**45**	**49**	**53**	**53**	**51**	**53**	**51**	**53**	**55**	**57**	**45**	**47**	**30**	**13**	**11**	**11**	**11**	**11**
Senior Mech/Elec	1	4	5	5	5	4	4	5	5	5	5	4	4	4	5	5	4	5	5	5	5	6	4	4	2	1				
Mech/Elec	2	6	7	7	7	6	6	7	7	7	7	6	5	6	7	7	6	7	7	7	7	8	5	6	2	1	1	1	1	1
Assistant Mech	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1					
Total Maintenance	**4**	**12**	**14**	**14**	**14**	**12**	**12**	**14**	**14**	**14**	**14**	**12**	**11**	**12**	**14**	**14**	**12**	**14**	**14**	**14**	**14**	**16**	**11**	**12**	**5**	**2**	**1**	**1**	**1**	**1**
Total	**37**	**59**	**69**	**69**	**65**	**59**	**61**	**65**	**65**	**67**	**69**	**61**	**56**	**61**	**67**	**67**	**63**	**67**	**65**	**67**	**69**	**73**	**56**	**59**	**35**	**15**	**12**	**12**	**12**	**12**

Source: SRK, 2024
Support activities include paste tailings loading and hauling, crusher feed loader, and loading and hauling crushed ore to the mill.

14 Processing and Recovery Methods

14.1 Historic Production

Over a 50-year operating history MP Material's predecessor companies successfully produced bastnaesite flotation concentrates on a continuous basis for sale and/or further on-site processing. Table 14-1 presents the historic mill production from 1980 to 2002. During this period REO recovery ranged from about 52% to 69% from ore that ranged from 7.18% to 9.74% TREO.

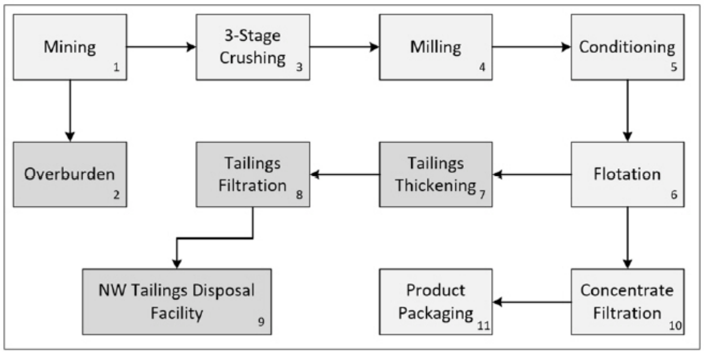
Table 14-1: Historic Mill Production, 1980 to 2002

Year	Milled (st)	Mill Feed Grade (TREO %)	REO Recovery (%)	Flotation Concentrate (lb TREO)
2002	183,487	7.91	67.0	2,616,000
2001	175,010	8.09	62.8	17,845,000
2000	No operation			
1999	No operation			
1998	321,000			
1997	424,000	8.43	57.5	41,117,711
1996	544,000	—	—	42,513,000
1995	537,000	9.01	52.0	49,029,000
1994	508,000	8.68	56.4	49,726,403
1993	433,000	8.31	55.3	39,722,150
1992	409,000	8.80	60.4	42,800,327
1991	336,344	8.74	59.8	35,143,870
1990	480,161	8.81	60.2	50,943,008
1989	418,446	8.96	62.2	46,613,913
1988	221,764	9.74	60.5	26,135,080
1987	358,000	9.31	58.4	38,962,866
1986	225,000	9.47	57.3	24,414,453
1985	253,000	8.15	75.6	31,193,018
1984	543,354	7.82	68.9	58,176,586
1983	371,252	7.85	67.3	39,224,489
1982	391,417	7.30	69.0	38,581,897
1981	370,207	7.43	68.4	37,659,763
1980	360,068	7.18	68.2	35,243,503

Source: Mountain Pass Monthly Operational Reports, 1980 through 2002

14.2 Current Operations

MP Materials initiated the operation of a 2,000 t/d flotation concentrator during December 2017. The concentrator flowsheet includes crushing, grinding, rougher/scavenger flotation, cleaner flotation, concentrate thickening and filtration, and tailings thickening and filtration followed by dry stack tailings disposal. The generalized process flowsheet is shown in Figure 14-1, and each unit operation is briefly discussed in this section. Site infrastructure that supports the processing operations (e.g., power and water supply) is discussed in Section 15.



Source: MP Materials, 2021

Figure 14-1: MP Materials Concentrator Flowsheet

14.2.1 Crushing

RoM ore is truck-hauled and stockpiled at the crusher in three separate stockpiles dependent upon grade. A front-end loader pulls from each stockpile as needed to achieve a target ore blend grade of approximately 8% to 9% TREO. The blended ore is crushed through a three-stage crushing circuit that includes a Svedala jaw crusher and two Terex cone crushers (MVP-380). Ore is crushed at the rate of 180 st per hour to produce a final -$^3/_8$ inch crushed product that is stockpiled in multiple 20,000 st stockpiles.

14.2.2 Grinding

Crushed ore is truck-hauled to stockpiles beside the concentrator and then trammed with a front-end loader to the ore feed hopper from which it is conveyed to the grinding circuit. The grinding circuit consists of a 3.8 m diameter by 7.1 m EGL ball mill (2,500 horsepower (hp)), which is operated in a closed circuit with a cluster of Cavex-Weir cyclones to produce a final grind size of 80% passing (P_{80}) 45 microns (µm).

14.2.3 Reagent Conditioning and Flotation

The cyclone overflow from the grinding circuit is advanced to a four-stage conditioning circuit in which the required flotation reagents are sequentially conditioned at 135°F. The mineral collectors are added in the second and third conditioner. Froth modifiers are stage-added to the fourth conditioner. The conditioned slurry is then advanced to the rougher/ scavenger flotation circuit, which consists of two banks of tank cells. The resulting rougher/scavenger flotation concentrate is then advanced to multiple stages of cleaner/cleaner scavenger flotation. The final cleaner flotation concentrate is thickened to over 70% solids in a 35 ft diameter thickener and then filtered to about 8% moisture in a 1,500 mm x 1,500 mm 20/16 Siemens filter press. The filtered concentrate is hauled to a storage area pending sampling and bagging for shipment. The rougher and cleaner scavenger flotation tailings are combined as the final concentrator tailing, which is pumped to the paste tailings plant where it is filtered to about 15% moisture and then truck-hauled to the northwest tailing disposal facility (NWTDF).

14.2.4 Sampling and Bagging

The bastnaesite flotation concentrate is manually loaded into 1.5 tonne Super Sacks with a small front-end loader. Each loader bucket of concentrate is sampled multiple times with a pole sampler prior to being added to the Super Sack, and a sample representing the contents of each Super Sack is sent to the analytical laboratory for analyses and moisture content determination. Each Super Sack is weighed with a scale as it is being loaded, and the final weight of each Super Sack is recorded. Concentrate is shipped from site in containers, and each container contains 13 Super Sacks.

14.2.5 Paste Tailings Plant

Concentrator tailings are pumped to the paste plant, which is remotely located near the dry stack NWTDF. At the paste tailings plant, the concentrator tailings are thickened to about 65% solids and then filtered in three fully automatic filter presses (Siemens 1,500 mm x 2,000 mm 60/50) to about 15% moisture. In order to achieve a clear thickener overflow, a coagulant is added, followed by the addition of a slightly anionic flocculant at the thickener mix box. Tailings are conveyed to a stockpile outside the paste tailings plant and then hauled to the NWTDF, which is discussed in Section 15.

14.2.6 Metallurgical Control and Accounting

Ore feed tonnage to the concentrator is obtained from a belt scale on the ball mill feed conveyor, and operational performance of the concentrator is monitored by manually sampling the feed, final flotation concentrate, and final tailings every two hours, which are then prepared and analyzed by x-ray fluorescence (XRF) for %TREO. This information is used to monitor the concentrator performance and to make any required adjustments to the process. This information is also used to calculate a metallurgical TREO recovery and metric tonnes of bastnaesite flotation concentrate produced.

Final flotation concentrate production is weighed and sampled as it is being loaded into 1.5 tonne Super Sacks for shipment, and a concentrate sample representing each shipment lot is assayed at the on-site laboratory using a total digestion/titration technique to determine %CeO_2 content. Based on experience, MP Materials has determined that bastnaesite at Mountain Pass contains approximately 50% CeO_2, and from this they are able to calculate the total %TREO content of the concentrate. There is reasonable agreement between the metallurgical TREO recovery reported by the concentrator (which is determined by XRF analyses of concentrator samples) and packaged recovery (which is determined by actual shipments of TREO concentrate).

14.2.7 Concentrator Performance

Concentrator performance for 2023 is summarized in Table 14-2, and concentrator performance for 2024 (January – September) is summarized in Table 14-3.

During 2023, the concentrator processed 776,293 metric tonnes (mt) of ore at an average grade of 8.55% TREO and produced 41,556 mt of bastnaesite concentrate at an average grade of 61.5% TREO. Overall TREO recovery averaged 64.0%. During 2023, 4,340 mt TREO was roasted and advanced to the separations plant. The remainder of the TREO was sold to customers as unroasted Product Code 4000 (27,170 mt TREO) and roasted Product Code 4050 (10,046 mt TREO).

During 2024 (January to September), the concentrator processed 576,376 mt of ore at an average grade of 8.55% TREO and produced 33,977 mt of bastnaesite concentrate at an average grade of 61.0% TREO. Overall TREO recovery during 2024 (January to September) has averaged 69.1%. During 2024 (January – September) 9,229 mt TREO was roasted and advanced to the separations plant. The remainder of the TREO was sold to customers as unroasted Product Code 4000 (23,123 mt TREO) and roasted Product Code 4050 (1,624 mt TREO).

Table 14-2: Concentrator Production Summary – 2023 (Metric Tonnes)

2023	Feed			Concentrate			Concentrate Tonnes REO		
	Tonnes	TREO (%)	TREO Tonnes	Tonnes REO	TREO (%)	Recovery (%)	4000 Unroasted	4050 Roasted	Roasted to Separations
Q1	198,044	8.61	16,663	10,671	62.0	64.0	7,674	2,855	142
Q2	196,515	8.71	16,766	10,862	61.8	64.8	7,342	3,036	484
Q3	206,548	8.41	17,019	10,766	61.9	63.3	6,423	2,403	1,940
Q4	175,186	8.46	14,498	9,257	60.1	63.9	5,731	1,752	1,774
Total	**776,293**	**8.55**	**64,946**	**41,556**	**61.5**	**64.0**	**27,170**	**10,046**	**4,340**

Source: MP Materials, 2025
4000 and 4050 represent product codes for production that was sold to customers (i.e., concentrate that was not advanced to the on-site separations facility)

Table 14-3: Concentrator Production Summary - 2024 (Jan-Sep) (Metric Tonnes)

2024	Feed			Concentrate			Concentrate Tonnes REO		
	Tonnes	TREO (%)	TREO Tonnes	Tonnes REO	TREO (%)	Recovery (%)	4000 Unroasted	4050 Roasted	Roasted to Separations
Q1	209,022	8.50	17,428	11,151	60.5	64.0	7,385	1,177	2,589
Q2	154,965	8.70	13,962	9,084	60.2	65.1	6,397	224	2,463
Q3	212,389	8.49	17,766	13,742	62.0	77.3	9,341	224	4,178
Total	**576,376**	**8.55**	**49,156**	**33,977**	**61.0**	**69.1**	**23,123**	**1,624**	**9,229**

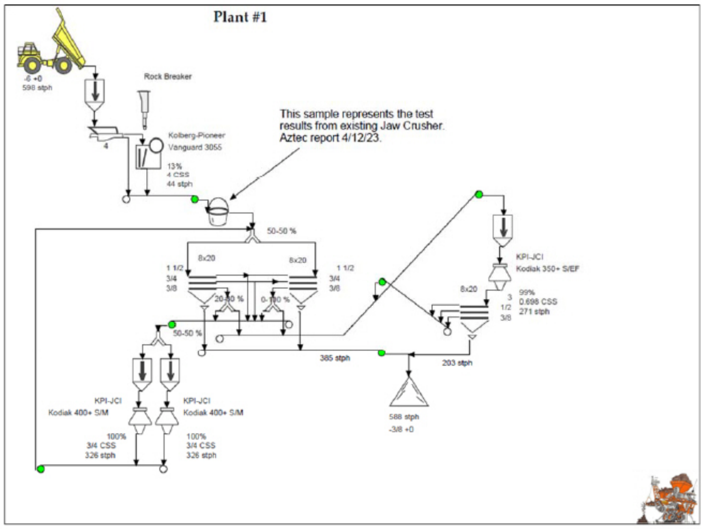
Source: MP Materials, 2025
4000 and 4050 represent product codes for production that was sold to customers (i.e., concentrate that was not advanced to the on-site separations facility)

14.3 Planned Crushing and Ore Sorter Circuits

MP Materials is planning to install an ore sorting circuit to upgrade low grade ore containing 2.5% to 5.0% TREO to about 6% to 8% TREO based on the test work conducted by Tomra in 2023 (Section 10.4), which indicates that low grade ore can be upgraded by a factor of 1.9 with about 90% REO recovery into the ore sorter product. MP Materials expects the ore sorter circuit to begin ramping up during Q1 2026. In the future, MP Materials plans to conduct further test work to determine whether even lower grade material (<2.5% TREO) is potentially amenable to ore sorting.

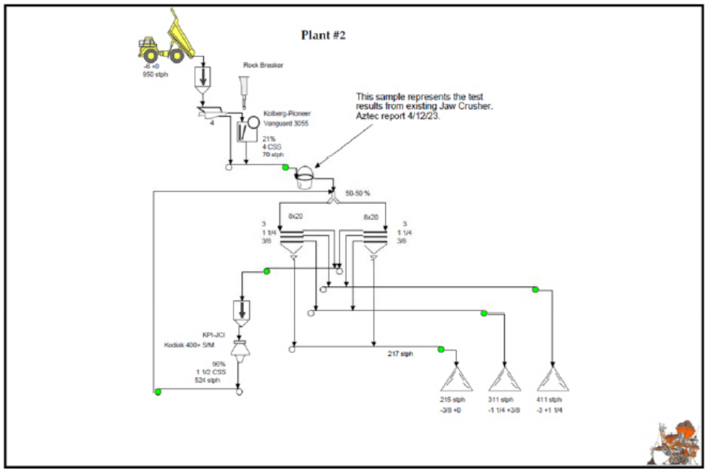
As part of the new ore sorter installation, MP Materials will decommission the existing crushing plant and construct two new crushing facilities. Crushing plant 1, which is shown in Figure 14-2 has been designed to process ROM ore at the maximum rate of 598 short tons per hour (stph) and will serve to crush mill-grade ROM ore to -3/8 inch for delivery to the concentrator. Crushing plant 2, which is shown in Figure 14-3 has been designed to process low grade ore at the maximum rate of 950 stph and will be integrated with the ore sorter circuit. Crushing plant 2 will crush low grade ore into three separate size fractions (-3 inch + 1.25 inch, -1.25 inch + 3/8 inch and -3/8 inch). The -3 inch +1.25 inch size fraction will be processed through the coarse feed ore sorter at the maximum rate of 411 stph and the

-1.25 inch + 3/8 inch size fraction will be processed through the fine feed ore sorter at the maximum rate of 311 stph. The -3/8 inch fraction, which represents about 23% of ROM low grade ore, is too fine for ore sorter processing and will be stockpiled and transported to the low grade stockpile for processing later in the mine life. The upgraded products from both the coarse and fine ore sorters will be hauled to one of three ROM ore stockpiles at crushing plant 1 where they will be crushed to -3/8 inch and stockpiled pending transport to the concentrator. A general arrangement drawing for the new crushing and ore sorting facilities is shown in Figure 14-4 and a list of major equipment is shown in Table 14-4.



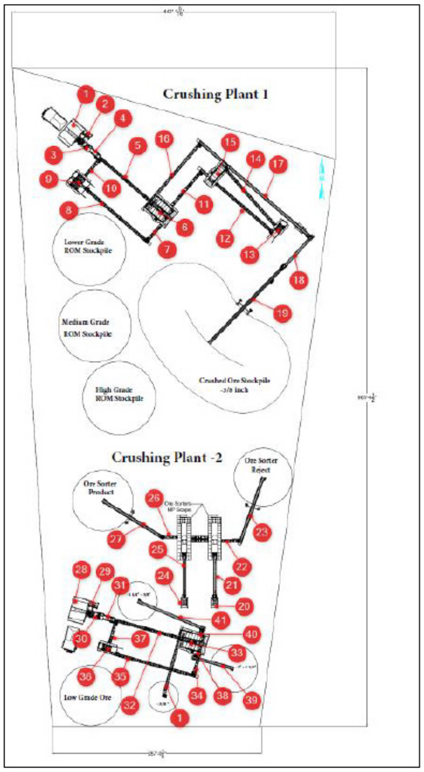
Source: MP Materials, 2024

Figure 14-2: Crushing Plant 1 Flowsheet



Source: MP Materials, 2024

Figure 14-3: Crushing Plant 2 Flowsheet



Source: MP Materials, 2024

Figure 14-4: General Arrangement for Crushing Plant -1 and the Integrated Crushing Plant 2 and Ore Sorting Circuit.

Table 14-4: Crushing Plants and Ore Sorter Circuit Equipment List

Equipment Number	Description
	Crushing Plant 1
1	Rock Box
2	Breaker Stand
3	Jaw Crusher
4	Jaw Under Conveyor
5	42 inch x 100 ft Conveyor
6	Dual 8 ft x 20 ft Screen Structure
7	42 inch x 40 ft Conveyor
8	42" x 125' Conveyor
9	Dual K400 Cone Crusher & Structure
10	42 inch x 40 ft Conveyor
11	36 inch x 80 ft Conveyor
12	36 inch x 125 ft Conveyor
13	K400 Cone Crusher & Structure
14	36 inch x 125 ft Conveyor
15	8 ft x 20 ft Screen Structure
16	36 inch x 100 ft Conveyor
17	36 inch x 180 ft Overland Conveyor
18	36 inch x 60 ft Conveyor
19	RSC 36 inch x 150 ft Radial Stacker
	Crushing Plant 2 and Ore Sorter Circuit
20	SPF1014 - Bin Feeder
21	36 inch x 60 ft Conveyor
22	36 inch x 80 ft' HDS Conveyor
23	RSC 36 inch x 100 ft Radial Stacker
24	SPF1014 - Bin Feeder
25	36 inch x 60 ft Conveyor
26	36 inch x 80 ft HDS Conveyor
27	RSC 36 inch x 100 ft' Radial Stacker
28	Rock Box
29	Breaker Stand
30	Jaw Crusher
31	Jaw Under Conveyor
32	42 inch x 100 ft Conveyor
33	Dual 8 ft x 20 ft Screen Structure
34	36 inch x 60 ft Conveyor
35	42 inch x 125 ft Conveyor
36	K400 Cone Crusher and Structure
37	42 inch x 40 ft Conveyor
38	36 inch x 30 ft Conveyor
39	36 inch x 80 ft Fixed Stacker
40	36 inch x 30 ft Conveyor
41	36 inch x 100 ft Conveyor
42	36 inch x 100 ft' Conveyor
43	Air Compressor
44	Electrical Gear
45	Ore Sorters

Source: MP Materials 2024

14.4 Significant Factors

The following significant factors for the crushing and concentrating operations have been identified:

- MP Materials conducted flotation studies to evaluate TREO recovery versus ore grade and developed a mathematical relationship to estimate overall TREO recovery versus ore grade. This relationship has been used to estimate TREO recovery from lower grade ores later in the mine life.
- MP Materials has operated a flotation concentrator since December 2017 to recover a bastnaesite concentrate. Significant improvements in concentrator performance have occurred since inception of operations, which are attributed primarily to the installation of a boiler that has enabled flotation to be conducted at a constant higher temperature, as well as new reagent testing and blending of historically problematic ores.
- During 2023, the concentrator processed 776,293 metric tonnes (mt) of ore at an average grade of 8.55% TREO and produced 41,556 mt of bastnaesite concentrate at an average grade of 61.5% TREO. Overall TREO recovery averaged 64.0%. During 2023, 4,340 mt TREO was roasted and advanced to the separations plant. The remainder of the TREO was sold to customers as unroasted Product Code 4000 (27,170 mt TREO) and roasted Product Code 4050 (10,046 mt TREO).
- During 2024 (January to September), the concentrator processed 576,376 mt of ore at an average grade of 8.55% TREO and produced 33,977 mt of bastnaesite concentrate at an average grade of 61.0% TREO. Overall TREO recovery during 2024 (January to September) has averaged 69.1%. During 2024 (January – September) 9,229 mt TREO was roasted and advanced to the separations plant. The remainder of the TREO was sold to customers as unroasted Product Code 4000 (23,123 mt TREO) and roasted Product Code 4050 (1,624 mt TREO).

14.5 Individual Rare Earth Separations

The discussion in Section 14.5 has been prepared by SGS. MP Materials has determined that SGS meets the qualifications specified under the definition of qualified person in 17 CFR § 229.1300.

MP Materials produces four main products: PrNd oxide, lanthanum carbonate, cerium chloride, and an SEG+ precipitate. The specifications are as shown in Table 14-5.

Table 14-5: Product Specifications

Product	Compound	w/w % TREO	Purity
PrNd Oxide	75% Nd_2O_3 + 25% Pr_6O_{11} (+/-2%)	99%	99.5%+ PrNd/TREO
SEG+ Precipitate	-	25% to 45%	99% SEG+/TREO
Lanthanum Carbonate	$La_2(CO_3)_3$	99%	99% La/TREO
Cerium Chloride	$CeCl_3$	45%	85% Ce/TREO

Source: MP Materials, 2024
w/w % is the weight concentration of the material.

The current rare earth concentrate production of approximately 43,234 metric tonnes of TREO in the twelve months trailing September 2024 supports this plan.

To achieve the individual production and purity targets, the process flow combines traditional processing methods applied successfully at Mountain Pass for decades with unique circuits designed for efficiency or to reduce environmental impact.

Figure 14-5 serves as the basis for the rare earth distribution in the concentrate being fed into the downstream separations facilities. These values are based on recent concentrate production and historical values. The rare earth distribution in the ore coming out of the mine, and the resulting concentrate produced from milling & flotation, has been very consistent throughout the decades of operations at Mountain Pass. These values fall within recently and historically reported values.

Flotation Concentrate - REO Distribution	
Lanthanum	32.3%
Cerium	50.2%
Praseodymium+Neodymium	15.7%
SEG+	1.8%

Source: MP Materials, 2021

Figure 14-5: Rare Earth Distribution in Flotation Concentrate

Concentrate Thickening & Filtration: The Stage 2 optimization includes a new like-in-kind filter press and ancillary equipment. This modification was added primarily for material handling considerations rather than for technical ones. The previous filter press – from which the new press was designed –was successfully operated. However, the handling of semi-damp filter cake on a batch basis into the dryer was expected to have created a challenge in its existing location. Hence a redundant press was designed to minimize conveyance risks.

Concentrate Drying & Calcining: The direct-fire natural gas dryer was designed to manage the batch flow of concentrate from the filter press. The function of low temperature drying is to reduce the cake moisture from 7% to 10% down to less than 1%. This dried material feeds a storage bin that continuously feeds the electric fired calciner. The multiple, electric heating elements are designed to maximize temperature control and stability throughout the rotary kiln so that the targeted LOI (loss on ignition) is achieved in the concentrate prior to leaching. The discharge of the calciner includes a cooling screw and storage and cooling tanks with up to two days of capacity. There is also the ability to automatically package calcined concentrate.

Leach and Scrubber: The concentrate is pneumatically conveyed into a dissolution tank where it is cooled to ambient temperature in chilled water. Temperature is maintained by application of a glycol chiller system. The concentrate is continuously fed into the Leach 2.0 reactor tanks where HCl is added at different concentrations to maximize trivalent REO recovery and cerium rejection. Temperature is maintained by the chiller and heat exchangers. The additional mass flow as compared to the predecessor system and the insolubility of the cerium results in the production of chlorine gas that is scrubbed using the new, larger scrubber system combined with an existing venturi system.

Leach Thickening & Filtration: A new three stage countercurrent decantation tank system has been installed. This installation mirrors the leaching process from the 1970's. The countercurrent motion of overflow and underflow and multiple flocculent addition points are designed to ensure clean overflow and minimal loss of soluble REEs to the underflow. The final underflow slurry passes through a filter press. The cake is then washed to remove remaining rare earth chloride solution and then either packaged for sale or reslurried and comingled with beneficiation tailings for disposal.

Impurity Removal: Removal of soluble impurities begins in this block that was recommissioned with minimal change. Initially, the solution passes through three existing ion exchange columns containing a standard resin. Substantially all iron and uranium is removed and sent to the brine recovery circuit. The solution then undergoes pH adjustment to remove certain non-REE impurities. The solid precipitates in a new thickener to replace temporary assets previously operated. A filter aid was added from a new bulk handling system. This addition increases the propensity to settle and enhance the ease of filtration. To capture all fine solids as well as minimize the production of hazardous waste, a new pressure leaf filter was installed prior to existing cartridge filters. The new filter press was installed in place of previously operated temporary filter presses. In the next step, REE is separated from the remaining impurities. The waste is sent to brine recovery and the high-concentrate REE feed goes to SXH.

Brine Purification: Brine feeds from impurity removal stages, various finished product solid/liquid separation steps, and water treatment plant converge at the existing brine purification circuit. Two existing thickeners are operated with soda ash, flocculant, and caustic soda to adjust pH and maximize settling of impurities. A second filter press, relocated from another use at Mountain Pass, was installed to help balance the filtration needs. A new pressure leaf filter was installed to assist in removal of any fines from the filtrate feeding the crystallizer, to which the clean brine is sent.

SXH: The purified rare earths are pumped to the existing SXH circuit. SXH is a series of small mixer/settlers utilized to perform a bulk extraction of heavy rare earths (from samarium and heavier) from the light rare earths (La, Ce, Pr, Nd). Minor upgrades were made to the existing assets to increase automation control. The cleaner feed stream supplying SXH ensures a cleaner separation between Nd and Sm.

SEG+ Finishing: The pregnant solution from SXH contains the SEG+ chloride solution. This is sent to the existing finishing circuit in the “Specialty Plant.” An oxalic solution is added to the SEG+ chloride solution to produce SEG+ oxalate. The oxalate is maintained in an agitated tank before passing through a centrifuge. The thick slurry is then washed, dried, and packaged in recommissioned, existing assets. The mother liquor is returned to the leach circuit as low acid solution or sent to brine purification for neutralization.

SXD: The raffinate from SXH travels to the existing SXD circuit. The custom-designed mixer/settlers will ensure clean separation between PrNd and La and the remaining Ce. Certain additions are made to allow for the subsequent production of high-purity (greater than 99.5%) lanthanum product and a greater than 80% Ce (20% La) cerium chloride product to be produced. The cerium product solution is directly packaged from this circuit. No additional changes were made.

PrNd Finishing: The PrNd finishing circuit was constructed to ensure maximum on-specification production of PrNd oxide. No new technology was implemented, but redundancy and enhanced quality control capability were included in the design. The initial step is the precipitation reactors. The new reagent handling system produces the precipitant solution which mixes with the PrNd chloride solution. This mixture then feeds a new 2-tank CCD thickener to ensure maximum PrNd recovery with maximum disentrainment of chloride from rare earths. The rare earth underflow feeds a belt filter equipped with multiple washing steps to remove remaining chlorides. The cake is then repulped in RO water and fed to a new filter press. The filter cake feeds a new gas-fired rotary dryer. The dry product is pneumatically conveyed into a new rotary calciner to produce the oxide. Finally, the cooled oxide is automatically packaged. At each step there will be QA/QC tanks, hold points, and automatic blending capability. Between the dyer and the calciner is a large rotary mixer to allow for blended “batches” to be thoroughly mixed to meet specifications.

La Finishing: The La finishing circuit starts with the lanthanum chloride from the SXD raffinate. This solution is pumped to the existing precipitation tanks in the specialty plant. Here soda ash solution from the central tank farm's new soda ash system is mixed to produce a lanthanum carbonate precipitate. This solution is pumped to the new 2-tank CCD thickener system to remove the lanthanum carbonate in the underflow while minimizing REE loss to the overflow. The carbonate undergoes the same belt filter, repulp, filter press steps as the PrNd, using identical assets. The filter cake is fed to a new rotary dryer. The dry carbonate is packaged directly. A minority of customers may prefer lanthanum oxide over lanthanum carbonate, so a new pneumatic conveyance line was installed to transport the dry carbonate to the existing lanthanum calciner. The previous feed system was modified to account for the improved handling conditions (dry carbonate vs wet cake).

Brine Evaporation: The clean brine from the brine purification process feeds the existing brine evaporation system. This process was upgraded to manage the new service to feed the crystallizer (rather than chlor-alkali installation). The four heat effects concentrate the brine to 300 g/L NaCl from approximately 100 g/L NaCl, thereby maximizing the crystallizer capacity.

Salt Crystallizing: A thermal vapor recompression (TVR) crystallizer was installed to evaporate the high-concentration brine, remove the salt, and condense the high-purity water for re-use. The unit is designed to operate using the excess steam from the combined heat and power plant (CHP), thereby reducing the energy footprint.

Water Softening / RO Water Treatment: The existing Water Treatment Plant (WTP) was in operation from 2012-2015 and was recommissioned in fall 2021. It has the capability to make triple-pass RO water from potable water, with the retentate discharge being sent to brine recovery. RO water from this plant can be used to feed the leach, SX, product finishing, and CHP requirements. Condensate from the crystallizer and CHP provide the vast majority of pure water needs, resulting in minimal use of the WTP.

CHP: The CHP operated safely and reliably from 2012-2015. It has undergone a large recommissioning effort overseen by a specialty power plant recommissioning group. It has been in full operation in island mode over the last several years. In addition, a new load bank, back-up generator, and dump condenser were installed and commissioned. The plant was put into full service at the end of 2021. The two single-cycle generators with heat recovery steam generators (HRSG) are each capable of producing 12-13MW. The two turbines in operation will more than adequately cover the power needs of the site while producing sufficient steam for the crystallizer, flotation plant, and various other heating needs across the facility.

Stage 2 Related Infrastructure: In addition to the captive power and water treatment plant, general site services include a centralized bulk reagent tank farm with storage for HCl and NaOH. Bulk handling for soda ash and other reagents were buttressed as part of the Stage 2 project.

15 Infrastructure

The Project is in San Bernardino County, California, north of and adjacent to Interstate 15 (I-15), approximately 15 mi southwest of the California-Nevada state line and 30 mi northeast of Baker, California (Figure 3-2).

The nearest major city is Las Vegas, Nevada, located 50 mi to the northeast on I-15. The Project lies immediately north of I-15 at Mountain Pass and is accessed by the Bailey Road Exit (Exit 281 of I-15), which leads directly to the main gate. The mine is approximately 15 mi southwest of the California-Nevada state line in an otherwise undeveloped area, enclosed by surrounding natural topographic features.

Outside services include industrial maintenance contractors, equipment suppliers and general service contractors. Access to qualified contractors and suppliers is excellent due to the proximity of population centers such as Las Vegas, Nevada as well as Elko, Nevada (an established large mining district) and Phoenix, Arizona (servicing the copper mining industry).

Access to the site, as well as site haul roads and other minor roads are fully developed and controlled by MP Materials. There is no public access through the Project area. All public access roads that lead to the Project are gated at the property boundary.

MP Materials has fully developed an operating infrastructure for the Project in support of extraction and concentrating activities. A manned security gate is located on Bailey Road for providing required site-specific safety briefings and monitoring personnel entry and exit to the Project.

Substantially all the power to the Mountain Pass facility is currently supplied by a Combined Heat and Power (CHP) or co-generation (cogen) power facility with two natural gas-fired turbines capable of producing up to 26 MW of power combined. In addition, the site is served by a 12-kV line from a Southern California Edison substation two miles away.

Water is supplied through active water wells located eight miles west of the project. Fire systems are supplied by separate fire water tanks and pumps.

The site has all facilities required for operation, including the open pit, concentrator, access and haul roads, explosives storage, fuel tanks and fueling systems, warehouse, security guard house and perimeter fencing, tailings filter plant, tailings storage area, waste rock storage area, administrative and office buildings, surface water control systems, evaporation ponds, miscellaneous shops, truck shop, laboratory, multiple laydown areas, power supply, water supply, waste handling bins and temporary storage locations, and a fully developed communications system.

Site logistics are straightforward with the flotation concentrates shipped in supersacks within a shipping container. The shipping containers are hauled by truck to the port of Los Angeles, which is about 4.5 hours from the mine site. At the port the containers are loaded onto a container ship and shipped to the final customers. Refined products for domestic customers are shipped in supersacks and intermediate bulk containers (IBC tote). Rail transshipment infrastructure is available in Henderson, NV and Barstow, CA less than two hours drive from the site.

15.1 Access and Local Communities

The Project is located in San Bernardino County, California, north of and adjacent to Interstate 15 (I-15), approximately 15 mi southwest of the California-Nevada state line and 30 mi northeast of Baker, California. The site is accessed via I-15 and leaving the highway at exit 281 onto Bailey Road north of the interstate for less than 1 mile.

The majority of the employees live in Las Vegas, Nevada 50 miles northeast of the site via I-15. Las Vegas is a major metropolitan area with approximately 650,000 people in the city and 2.2 million in the metropolitan area. Major services to support the Project including vendors, contractors, and services are available in Las Vegas as well as approximately four hours southwest in the Los Angeles (LA), California metropolitan area. Baker California, population of approximately 700, is the next nearest town 37 mi southwest along highway toward LA on I-15.

Air access to the Project is provided at McCarran International Airport located approximately 47 mi northeast of the project in south Las Vegas. Other airports are available in the Los Angeles area.

Employees drive or carpool to work and park in the company parking lots on site. Full emergency facilities are available in Las Vegas with emergency dispatch in Primm, NV and Baker, CA.

15.2 Site Facilities and Infrastructure

15.2.1 On-Site Facilities

The Project has fully developed operating facilities and facilities necessary to support the current operations. The general layout of the facilities is shown in Figure 15-1.

Source: MP Materials, 2022

Figure 15-1: Facilities General Location

The currently operating facilities include:

- Maintenance shop
- Truck shop
- Warehouse
- Administrative building/offices
- Change house
- Explosives storage
- Mechanical and electrical shops
- Mobile maintenance shop
- Fuel storage tanks and fueling system
- Multiple laydown areas
- Core storage
- Water evaporation ponds
- Mineral processing facilities (concentrator)
- REE separations facility
- Laboratory
- Fuel storage
- Fire system including fire tank and pumps
- Water supply system
- Tailings filter plant
- Lined tailings storage facilities
- Waste rock storage
- Security building and site fencing

The LoM plan includes the planned relocation of key infrastructure to support ongoing operations. The existing crusher will be replaced with an integrated crushing and ore sorting facility that will begin ramping up in Q1 2026. The construction of this new facility will allow the existing crusher to be removed, thereby accommodating the northern expansion of the pit. Additionally, in 2034, the paste tailings plant and water tanks—currently situated northeast of the pit highwall near the concentration plant—will be relocated. Capital cost provisions for these infrastructure projects are accounted for in the economic model.

15.2.2 Explosives Storage and Handling Facilities

The site has two explosives storage locations. Contractors manage the ANFO storage and emulsion storage locations.

15.2.3 Service Roads

The Project has a completely developed system of on-site access roads to all process facilities, tailings storage area, and a system of auxiliary roads for the mining, processing and on-site operations.

15.2.4 Mine Operations and Support Facilities

The open pit mine has a full complement of haul roads, ramps, and auxiliary roads with access to the pit, waste storage area, shops, and crusher area.

15.2.5 Waste and Waste Handling (Non-Tailings/Waste Rock)

The Project has established waste handling procedures and does not store waste on site, except for the permitted rock storage and tailings facilities. Waste other than tailings and mine waste rock is handled as follows.

- Solid Waste (non-toxic) – Waste is stored on-site in roll off containers, and a contractor hauls the containers to permitted third party landfills near Las Vegas.
- Septic – The site has septic systems for the facilities.
- Toxic or hazardous waste – Very little hazardous or toxic waste is generated at the Project. The small volumes of materials have a separate storage area. The materials are removed by a qualified contractor and disposed of in approved disposal areas.

15.2.6 Waste Rock Handling

Mine waste rock is stored in designated mine rock storage areas. Waste rock is discussed in detail in Section 13.

15.2.7 Power Supply and Distribution

Substantially all the power to the Mountain Pass facility is currently supplied by a Combined Heat and Power (CHP) or co-generation (cogen) power facility with two natural gas-fired turbines capable of producing up to 26 MW of power combined. In addition, the site is served by a 12-kV line from a Southern California Edison substation two miles away.

15.2.8 Natural Gas

The Project has access to natural gas through an 8.6 mi, 8-inch-diameter pipeline, extending from the Kern River Gas Transmission Company mainline. It has a capacity of 24,270 dekatherms per day. A new gas meter was installed in 2021 to provide flexibility for high and low gas usage.

15.2.9 Vehicle and Heavy Equipment Fuel

The site has multiple fuel storage tanks and fuel delivery systems for the large mining equipment and smaller vehicles. Fuel for the mining equipment is supplied through the mining contractor who receives the fuel from a vendor located in Las Vegas. MP Materials can contract the fuel directly in the future. There are tanks for diesel near the pit and near the processing facility. Additional tanks are used for unleaded fuel for the vehicles.

The site has several diesel and gasoline storage tanks that are for Project use. The tanks are fueled by contractor fuel trucks from Las Vegas. Tank storage is more than adequate for the Project needs.

15.2.10 Other Energy

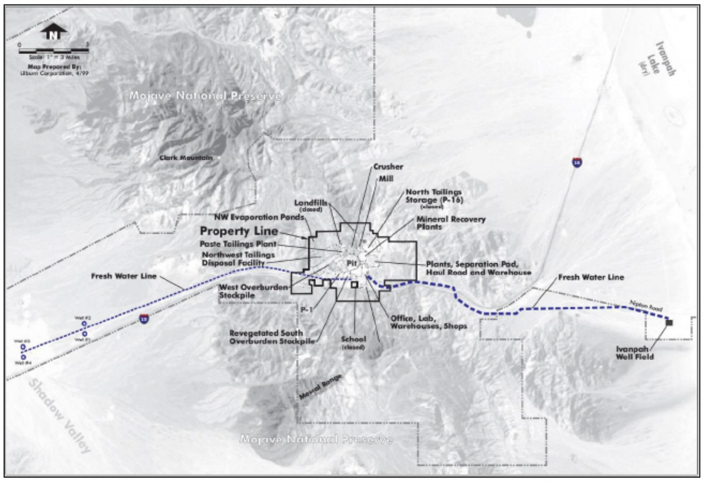
There are several compressed air systems on the site used for process and maintenance. The site also has several small propane tanks used for miscellaneous minor heating needs at the various facilities.

15.2.11 Water Supply

MP Materials maintains and operates two water supply well fields for potable and process water. The Ivanpah well field, established in 1952, is located on private land 8 mi east of the mine site and consists of six freshwater producing wells, three booster pumping stations, and associated pipelines. This well field is available to supply water but is currently used only to provide water to the Mojave National Preserve Ivanpah Desert Tortoise Research Facility. The Shadow Valley well field, established in 1980, is located 8 mi west of the mine site, consists of four wells of which three are on public land and one on private land, a single booster pumping station, and associated pipelines. The water supply wells are completed within coarse alluvial sediments.

The amount of freshwater consumed by the facility in 1996 was approximately 850 gpm from both wellfields. The five-year annual average between 1993 and 1997 was 795 gpm. As part of the comprehensive plan for continued operations, MP Materials placed emphasis on-site management and treatment of process water and maximizing reuse (SRK, 2010). As the water supply systems have consistently produced much larger amounts of fresh water for the facility in the past, water supply is not anticipated to be problematic.

Additional water is supplied from recovery well water from legacy operations, pit water, and natural precipitation. The site also has water storage tanks that store water for use as needed on site. The site has a net-positive site water balance with excess water evaporated as necessary in the evaporation ponds. The water supply system can be seen in Figure 15-2.



Source: Molycorp Mine Reclamation Plan Revised, 2015

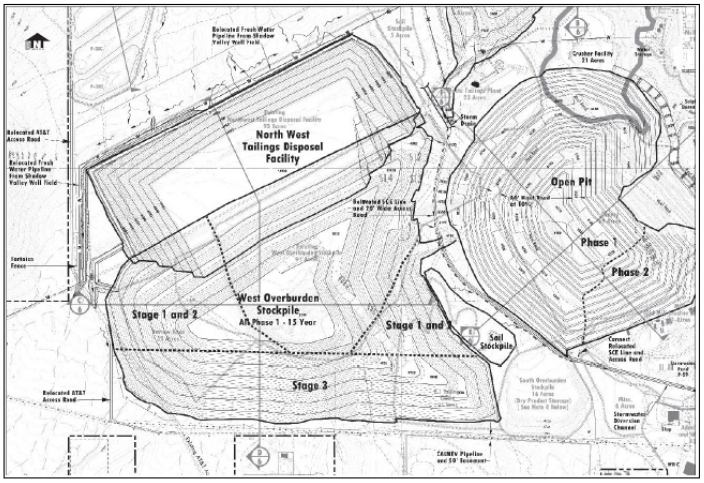
Figure 15-2: Water Supply System

The site has installed surface water control drainage channels and ponds, including lined evaporation ponds and a lined tailings water control pond.

15.3 Tailings Management Area

The Project handles tailings through use of a filtered tailings facility located adjacent to the pit to the north and west of the primary crushing facility and northwest of the existing open pit adjacent to the pit to the northwest and east of the overburden stockpile. The Project manages tailings through use of a filtered tailings facility that produces filtered tailings. The concentrator generates tailings that are piped to the filter plant via pipeline. The filtered tailings plant then filters the tailings to approximately 15% moisture content. The filtered tailings are moved on a conveyor to a temporary storage facility where the tailings are stacked out near the tailings plant and then loaded by front end loader (FEL) into articulated mine trucks that transport the tailings approximately 1 mile to the lined tailings facility known as the Northwest Tailings Disposal Facility (NWTDF). After the material is dumped by the trucks, a small dozer levels the tailings and prepares the material for the next truck lift.

The NWTDF is a lined containment facility designed to receive and store tailings material. At full buildout, it will cover approximately 90 acres (36 hectares) and extend partially onto the north face of the west overburden stockpile. The project has utilized approximately 4.4 million st of NWTDF capacity as of September 30, 2024. The facility will have a remaining capacity of approximately 17.2 million st which will provide approximately 19 years of storage. The current facility covers about half the overall acreage and abuts the waste rock pile. Future expansion can be easily achieved by installing additional liner followed by the placement of additional tailings. The facility design at full buildout is shown in Figure 15-3.



Source: Molycorp Mine Reclamation Plan Revised, 2015

Figure 15-3: Northwest Tailings Disposal Facility

The tailings site was designed by Golder. MP Materials personnel have been doing design and placement reviews with Golder. There is compaction information being taken, but the program at this point is not fully developed.

MP Materials will expand the existing tailings facility to the northwest in approximately 2043 to provide additional storage capacity. A capital cost provision has been included in the economic model for this expansion.

15.4 Security

The site is fully enclosed by fencing and secured through a controlled access point at the main entrance, which includes a security building and guard gate. Security operations are managed by MP Materials employees, who oversee access control and conduct perimeter patrols to ensure site safety.

15.5 Communications

The site communications are fully developed and functioning, including a fiber line to site. Additionally, a strong cell phone signal is available due to placement of a third-party cell phone tower on a peak near the site. The site has telephone, internet, and all necessary infrastructure to support needed communications.

15.6 Logistics Requirements and Off-Site Infrastructure

15.6.1 Rail

Rail is not currently used by the Project. Union Pacific has a rail line located approximately 16 miles away by paved road to the east of the Project near Nipton, California. There are existing double track sections near the Nipton warehouse and loading platforms are still in place but have not been used or maintained.

15.6.2 Port and Logistics

It is approximately 230 miles southwest of the Project to the Port of Los Angeles. The 4.5 hour drive is on improved two and four lane highway with the majority of the trip by Interstate highway. The travel closer to LA is impacted by traffic. Site logistics are straightforward with the concentrate product shipped in supersacks within a shipping container by truck to the port of Los Angeles. At the port, the containers are loaded onto a container ship and shipped to the final customers. Refined products for domestic customers are shipped in supersacks and intermediate bulk containers (IBC tote).

16 Market Studies and Contracts

This section of the Technical Report Summary discusses market studies and contracts and was prepared by Adamas Intelligence Inc. (Adamas Intelligence). It is primarily based on an Adamas authored preliminary market study titled MP Materials SK 1300 Market Study Update dated November 29, 2024 (Adamas, 2024). Adamas prepared the preliminary market study for MP Materials. MP Materials has determined that Adamas meets the qualifications specified under the definition of qualified person in 17 CFR § 229.1300.

16.1 Abbreviations

The following abbreviations (Table 16-1) are relevant to the discussion of market studies and contracts.

Table 16-1: Abbreviations for Market Studies and Contracts

Elements	**Organizations**
Ce - Cerium	MIIT - Ministry of Industry and Information Technology (China)
Dy - Dysprosium	MOFCOM – Ministry of Commerce (China)
Er - Erbium	USEPA - United Stated Environmental Protection Agency
Eu - Europium	WTO - World Trade Organization
Gd - Gadolinium	**Other**
Ho - Holmium	CAGR - compound annual growth rate
La - Lanthanum	NdFeB - neodymium iron boron
Lu - Lutetium	PrNd – praseodymium/neodymium mixed product
Nd - Neodymium	OEM - original equipment manufacturer
Pr - Praseodymium	TC/RC - treatment charge/refining charge
Sc - Scandium	VAT - value added tax
Sm - Samarium	EV - electric vehicle
Tb - Terbium	**Units and Measurements**
Th - Thorium	kg - kilogram
Tm - Thulium	t - metric tonne
Y - Yttrium	kt - thousand tonnes
Yb - Ytterbium	Mgal - million gallons
U - Uranium	Mgal/d - million gallons per day
Rare earth element abbreviations	$ - US dollars (unless stated otherwise)
REE - rare earth element	
LREE - light rare earth element	
HREE - heavy rare earth element	
REO - rare earth oxide	
TREO - total rare earth oxide	
SEG - samarium europium gadolinium	

Source: Adamas, 2024

16.2 Introduction

On the Periodic Table of Elements, rare earth elements (REEs) include the lanthanide series, with atomic numbers 57 to 71, plus yttrium and scandium, which bear similar physical and chemical properties to the lanthanides or are often hosted by many of the same minerals.

Despite the misleading moniker, rare earth elements are not remarkably rare in nature but rather are rarely concentrated into economically significant amounts for extraction and processing owing to certain physical and chemical properties that promotes their broad dissipation throughout most rock types.

REEs occur together in host minerals in different relative proportions, depending on the host mineral, deposit type and other factors. As a result, REEs are mined and processed together, up to the stage of REE precipitate production (e.g., mixed rare earth carbonate). They are then chemically separated into individual elements and compounds for use in a wide array of different industries and applications. For example, the main REEs used in rare earth permanent magnets are praseodymium (Pr) and neodymium (Nd), while the main elements used in catalysts are cerium (Ce) and lanthanum (La).

Owing to these different end use profiles, individual rare earth elements have different demand growth rates, but are supplied in proportions dictated by orebody composition, giving rise to the so-called “balance problem”.

Over the past decade, rare earth producers globally have sacrificially overproduced certain low value rare earth elements, such as cerium, to keep up with rapidly growing demand for other higher value elements, such as neodymium and praseodymium. This balance problem fundamentally shapes rare earth market trends and impacts the economics of producers.

Since the mid-1980s, China has grown to become the largest producer and consumer of rare earth elements globally. In the 1980s and 1990s, China accelerated exports of low priced rare earth materials resulting in the economic displacement of production elsewhere. More recently, China has leveraged its control of upstream REE supply, coupled with aggressive policies and government support, to establish control of downstream REE value chains that convert mine outputs into oxides, metals, magnets, motors and more.

However, rapid global demand growth for rare earth permanent magnets for electric vehicles, wind power generators, robotics and other applications, combined with strong government support for development of alternative rare earth supply chains, indicate that China’s dominance is likely to erode over the coming decade.

Towards that end, the past 24 months have seen more momentum to establish alternative mine-to-magnet supply chains in North America and Europe than the prior 10 years combined. With the ongoing diversification of upstream REE supplies, much of the chicken-and-egg dilemma of yesteryear has been resolved, helping accelerate downstream investments in North American and European metals, alloy and magnet production capacity.

Below, Adamas provides considerations on the rare earth market in terms of the products presently produced by MP Materials’ Mountain Pass Rare Earth Mine and Processing Facility. Based on expected product specifications as discussed by SGS in Sections 10.5.5 and 14.5 of this Technical Report Summary, which appear reasonably achievable, MP Materials will likely be able to market products at forecasted prices. These product specifications are based on the opinion of MP Materials and SGS, which are in turn based on test work and prior operations using the existing infrastructure as well as initial production runs from MP's recently recommissioned facility.

All prices shown and discussed below are in REO terms, unless stated otherwise.

16.3 General Market Outlook

16.3.1 Historical Pricing

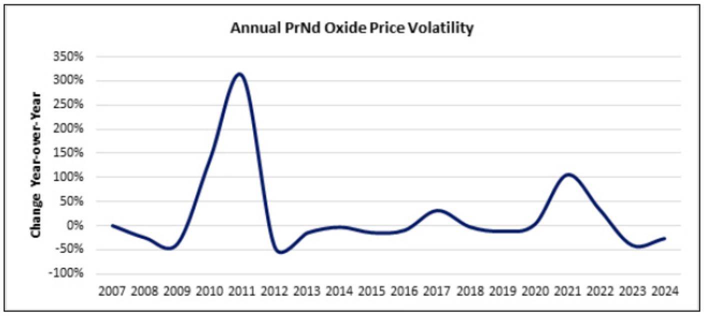
Historically, rare earth prices have occasionally been tied to geopolitical events.

For example, on September 7, 2010, a Chinese fishing trawler operating in disputed waters near the Senkaku/Diayu Islands collided with one or more Japanese Coast Guard patrol boats, resulting in the detention of the trawler's skipper. The detention sparked a major diplomatic dispute between China and Japan, leading China to unofficially restrict and eventually halt rare earth element exports to Japan, its largest customer, for several months. Consequentially, global rare earth prices, controlled by China, soared to record levels in 2011 resulting in unprecedented cost increases for rare earth consumers worldwide.

Starting in the early 2000s, China's Ministry of Industry and Information Technology (MIIT) began imposing export restrictions that over time limited the amount of rare earths available to foreign manufacturers. At the same time, China imposed export duties on refined rare earth products and implemented tax policies to limit the volume of semi-processed rare earths leaving the country with the aim of luring foreign manufacturers (such as NdFeB magnet producers) to move their operations and/or transfer their technology to China.

These practices prompted the U.S., EU and Japan to initiate a WTO dispute in 2012, which ruled in their favor in 2015, leading to the abolishment of China's rare earth export quotas and duties.

Annual PrNd oxide price volatility is shown in Figure 16-1.



Source: Adamas, 2024

Figure 16-1: Annual PrNd Oxide Price Volatility

In the second half of 2010, China's Ministry of Commerce (MOFCOM) slashed the export quota allotted to domestic rare earth suppliers, effectively limiting the amount of material available for consumption outside of the nation. As of August 2010, the constrained availability of rare earth elements for export in China had already begun to propel prices higher. The subsequent Senkaku/Diayu Islands incident the following month exacerbated the market's concerns and fueled a buying frenzy into mid-2011 that pushed rare earth prices to record high levels.

From January 2010 through July 2011, the China export price of cerium oxide increased by 3,528% while that of lanthanum oxide, neodymium oxide, praseodymium oxide and yttrium oxide increased by 2,619%, 1,640%, 1,167% and 1,341%, respectively, over the same period.

The political dispute was resolved soon after prices spiked, leading most rare earth prices to fall back to historical normal levels in the ensuing 24 months. In the aftermath, global supply and demand contracted, the latter the result of demand destruction as rattled manufacturers outside of China looked to reduce the mass of rare earths used in their products.

Since that period, demand for PrNd oxide – the main rare earth input material for high strength NdFeB permanent magnets – has returned to strong year-over-year growth on the back of electric vehicle traction motors, wind power generators, industrial robots and more. In response to this demand growth, global production of PrNd oxide has more than doubled and prices have appreciated overall.

As a consequence of the balance problem and the pervasive overproduction of some rare earth elements (e.g., cerium) to keep up with rapidly growing demand for other rare earth elements (e.g., PrNd oxide), prices have diverged in recent years with the latter increasing and the former falling overall since 2017.

For the sake of comparability and consistency, prices of products sold by MP Materials are presented in terms of oxide or oxide equivalent herein. Concentrate prices are a function of the individual rare earth elements they contain and thereby tend to follow an aggregate value trend.

PrNd Oxide

Five year prices for PrNd oxide can be broken down into four trends:

1. Relatively flat prices from 2018 to July 2020, following a minor spike in 2017.
2. Sudden, rapid increase in prices from October 2020 to February 2022.
3. Steady decrease in prices from February 2022 to March 2024 and a modest increase since.
4. From 2018 to February 2022, PrNd oxide prices more than tripled, from US$50/kg to over US$150/kg.

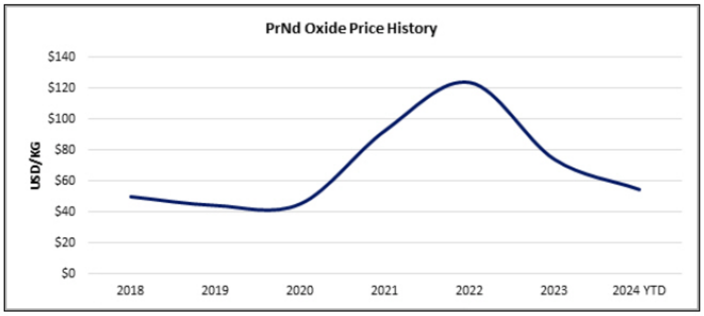
The rapid increase in PrNd oxide prices was underpinned by growing demand for NdFeB magnets and the relatively limited supply of PrNd oxide available to produce these magnets.

In early 2022, following complaints from rare earth users and industry, Chinese authorities encouraged major producers in the nation to reduce prices, resulting in a 35% drop in PrNd oxide price by year end.

In 2023, the price of PrNd oxide fell another 37% on oversupply from Myanmar and weak economic conditions in China.

Through the first 10 months of 2024, the price of PrNd oxide has undulated up and down but increased slightly overall.

Figure 16-2 shows PrNd oxide price history since 2018.



Source: Adamas, 2024
YTD = January through October

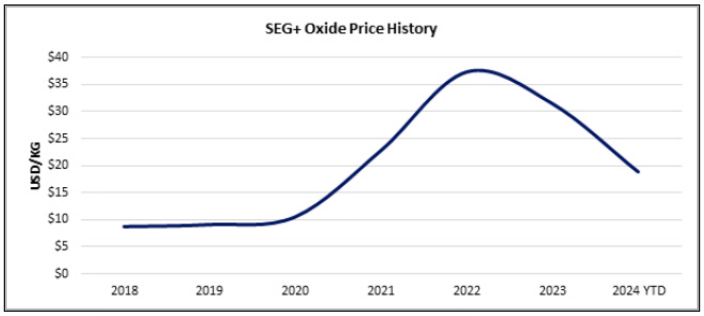
Figure 16-2: PrNd Oxide Price History

SEG+ Oxide

The five year history for SEG+ oxide (which includes Sm, Eu, Gd, through to Y) follows a similar trend to that of PrNd oxide, though average annual prices have increased overall by 116%, from US$8.76/kg to US$18.90/kg, lifted higher by a rise in prices of dysprosium and terbium, which are minor but valuable components of the mixture. SEG+ oxalate with specifications of MP Materials' product mix have a higher sales price, as will be discussed, but follows the same trend as most quoted SEG concentrates.

Driven by dysprosium and terbium's use in high performance permanent magnets for electric vehicles and wind power generators, their prices have performed strongly overall since 2020, translating to a comparable uptick in SEG+ concentrate prices overall.

Figure 16-3 shows SEG oxide price history since 2018.



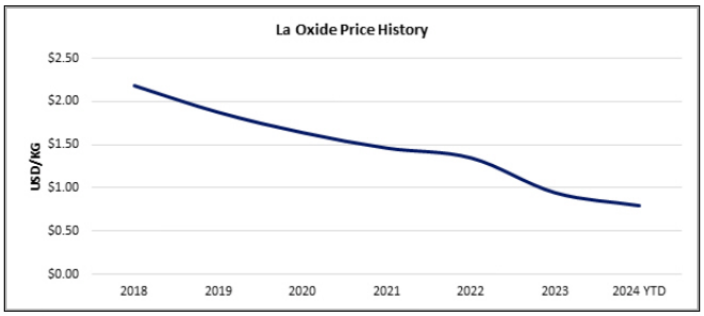
Source: Adamas, 2024
YTD = January through October

Figure 16-3: SEG Oxide Price History

Lanthanum Oxide

As a casualty of the balance problem, La oxide prices have broadly followed the same downward trend as cerium prices since 2018, dragging down the price of La carbonate at the same time. Much like Ce oxide, the decline in the prices of La oxide and La carbonate is due to pervasive overproduction (i.e., the balance problem) as a consequence of the supply side trying to keep up with rapid demand growth for PrNd oxide.

Figure 16-4 shows La oxide price history since 2018.



Source: Adamas, 2024
YTD = January through October

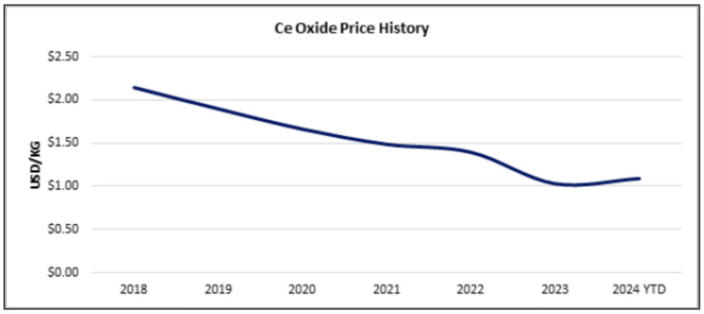
Figure 16-4: La Oxide Price History

Cerium Oxide

Cerium is the most abundantly produced rare earth element globally, accounting for approximately 40% of all production. As the main applications of cerium (predominantly in catalytic converters and abrasives) are growing slower than magnet-related applications, cerium has been chronically overproduced for nearly two decades. Cerium is currently finding new end uses and applications, including in lower performance permanent magnets, but is still in significant oversupply globally.

As such, since 2018, Ce oxide prices have fallen below the cost of production.

Figure 16-5 shows Ce oxide price history since 2018.



Source: Adamas, 2024
YTD = January through October

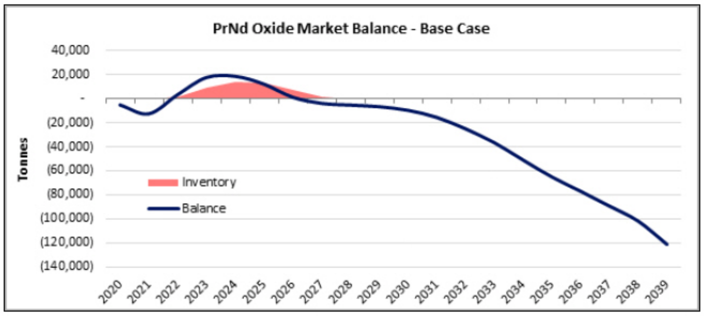
Figure 16-5: Ce Oxide Price History

16.3.2 Market Balance

Chinese rare earth production quotas have more doubled over the past five years, from 120 kt in 2018 to 255 kt in 2023, leading global mine production of PrNd oxide to increase by 95%. Over the same period, global demand for NdFeB magnets increased by a lower 63% overall, resulting in a buildup on PrNd oxide inventories. Adamas expects oversupply in 2024 but from 2025 onwards we expect the market will experience a growing and sustained deficit of PrNd oxide through the end of the forecast period.

Adamas expects the startup of several new projects will slow growth of the market's deficit between 2025 and 2029 but production will increasingly struggle to keep up with demand growth in the years thereafter.

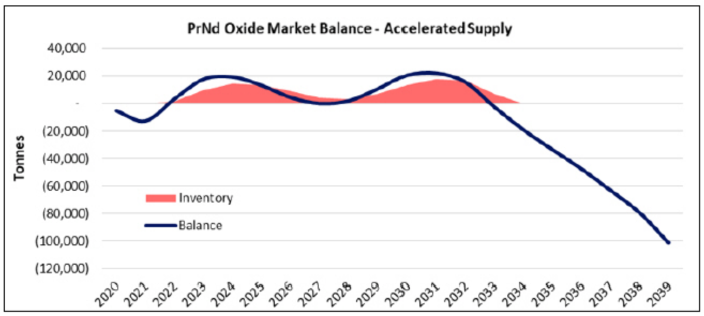
Figure 16-6 shows the base case PrNd market balance.



Source: Adamas, 2024

Figure 16-6: Supply Gap Growth to Accelerate from Late 2020's without Prompt New Investment

In Figure 16-7, Adamas shows the long-term market balance for the accelerated supply growth scenario that sees the addition of 14 new advanced producers outside of China (over and above the base case) coupled with accelerated demand growth for NdFeB magnets for electric vehicle traction motors, wind power generators, robotics, advanced air mobility and other applications.



Source: Adamas, 2024

Figure 16-7: Adamas Accelerated Supply Growth Scenario Envisages Moderately Balanced Market Until Early 2030s Before Deficit Growth Accelerates

The price response to the expected market deficit is uncertain, but historically minerals and commodity markets experience upward price reactions when supply is unable to meet demand. As such, if expected conditions materialize, rare earth inputs for NdFeB magnets, namely PrNd, Dy and Tb, are likely to experience price increases.

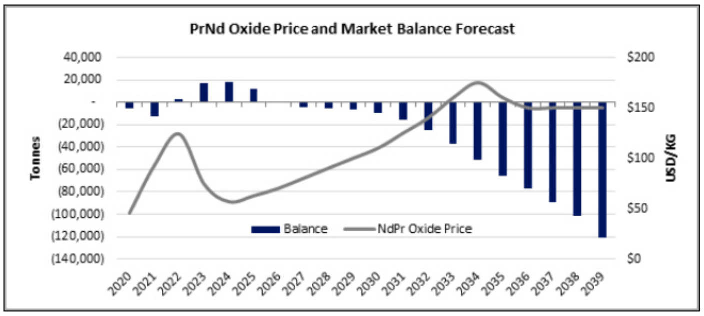
As shown in Figure 16-8, Adamas expects the price of PrNd oxide to increase from US$55-60/kg this year to US$70-110/kg in the late 2020's. While the outlook is uncertain, in a rational market we would expect these price increases to induce investment in new production capacity. However, owing to the long lead times to develop new rare earth supplies and the lack of advanced, financially committed projects in the pipeline today, Adamas sees potential for pervasive deficits to push prices above required inducement levels (estimated at US$100 to 150/kg in the long term).

By 2035, Adamas projects that EVs, wind power generators, robots, advanced air mobility and other energy-efficient motors, pumps and compressors will drive more than 60% of global rare earth permanent magnet demand.

This evolution is noteworthy as it implies that the future of magnet rare earths demand will be less sensitive to price than that of the past because future demand will be increasingly driven by applications in which the use of rare earth permanent magnets imparts an economic benefit at the system level.

Be it through battery cost thrifting in an electric vehicle, maintenance cost savings in a wind farm or robot fleet, or electricity cost savings in an industrial facility, grocery store or hotel, the economic upsides enabled by using technologies based on rare earth permanent magnets allow for a significant rise in magnet rare earth prices going forward before it would be economically justifiable to switch to a REE-free alternative.

As such –Adamas expects that the future of rare earths demand (at least in the case of PrNd, Dy and Tb) will be more robust, more resilient and less sensitive to price than demand of the past and present, which is still largely driven by consumer and legacy automotive applications.



Source: Adamas, 2024

Figure 16-8: Adamas Base Case PrNd Oxide Price and Market Balance Forecast

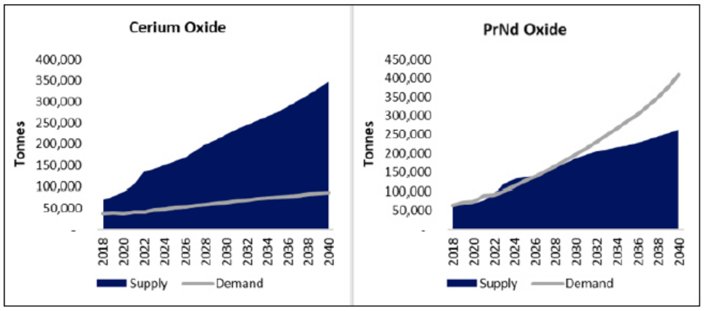
In 2024, Adamas expects that global PrNd oxide production will exceed global demand by 4% but by 2026 the market will underproduce by 4% resulting in the drawdown of historically accumulated inventories, the accelerated consumption of cerium and gadolinium as alternatives, and ultimately, a growing deficit through the end of the forecast period.

Overall, for the global market to effectively balance production and demand from 2027 through 2040 will require the gradual addition of another 400,000 to 600,000 t/y of LREO-rich production by the end of the forecast period, over-and-above the production growth already forecasted, which is highly unlikely to happen in Adamas' view.

Long Term Balance

The long-term market balance for the collective REE suite is expected to be in oversupply due to the balance problem (i.e., the sacrificial overproduction of some rare earth elements, such as cerium, to keep up with rapidly growing demand for other elements and compounds, such as PrNd).

Figure 16-9 shows the market balance forecast for Ce oxide and PrNd oxide.



Source: Adamas, 2024

Figure 16-9: Rare Earth Market Balance Forecast

Looking forward, while markets for magnet rare earths (namely PrNd, Dy and Tb) are expected to experience long-term deficits, markets for cerium, lanthanum and yttrium are expected to be in relative oversupply as a consequence of strong magnet rare earths demand growth. Increasingly, Adamas expects magnet rare earth prices will appreciate to account for the losses producers are chronically incurring by necessarily overproducing other surplus rare earth elements.

16.3.3 Costs

Globally, rare earth production costs are a function of multiple factors, including geology, mineralogy, operational logistics, processing infrastructure, process design and regulatory regime.

The opacity of rare earth production costs and reporting in China, the world's largest production center, make a transparent comparison between producers challenging.

Through the lens of several key production cost drivers, MP Materials presents apparent advantages and disadvantages relative to major producers in China. On balance, the factors point to MP Materials being a global low-cost producer of rare earth concentrate and oxide.

Geology and Mineralogy

At MP Materials' Mountain Pass mine, mined ore contains greater than 6.5% TREO on average versus 4% to 6% TREO at the Bayan Obo mine in China, the nation's largest, highest-grade source of production and host to over 80% of China's known rare earth reserves. The higher grade at Mountain Pass and relatively high recovery rates and higher concentrate grade reduces MP Materials' handling and processing volumes and reduces reagent consumption per ton of ore relative to most major producers.

Logistics

Logistically, the co-location of mining and processing assets at Mountain Pass presents another potential cost advantage for MP Materials versus competitors that ship intermediate products to processing facilities offsite or offshore. This eliminates a precipitation, packaging, shipping, and redissolution step relative to most non-collocated peers.

Conversely, the availability and cost of chemical reagents used to process rare earths is a potential cost disadvantage for MP Materials relative to major producers in China, where reagent costs are lower, and availability is higher. A future restart of chlor-alkali production facilities at Mountain Pass may help reduce this cost disadvantage.

Production Assets

The relatively straightforward ease of beneficiation of Mountain Pass ore, high asset throughput, and high automation help leverage production assets and minimize labor costs.

Conversely, the regularity of preventative maintenance and the costs and logistics of maintaining spare parts and inventory presents a potential cost disadvantage for MP Materials versus major producers in China pursuing a failure-based approach to maintenance.

Regulatory Regime

Relative to major producers in China, Mountain Pass is subject to higher wastewater management and environmental compliance costs owing to a stricter regulatory regime in the U.S., presenting a potential cost disadvantage for MP Materials.

However, at Mountain Pass the dewatering of tailings prior to storage means that over 95% of water used on site comes from recycled sources on site, helping offset the potential cost disadvantage.

16.4 Products and Markets

16.4.1 Mineral Concentrate

Market Overview

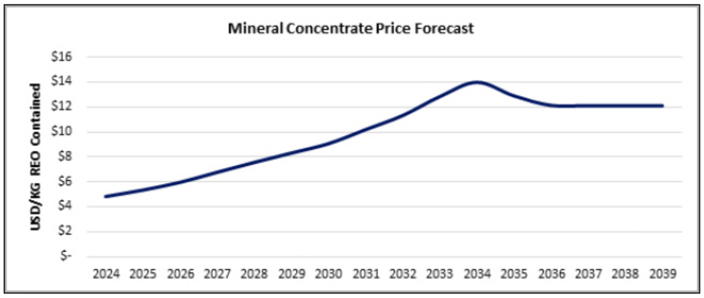
Mineral concentrates are a first-stage beneficiation product yielded along the rare earths value chain. Rare earth mineral concentrates vary from producer to producer according to the nature of the deposit, the minerals being recovered and the relative abundance of each rare earth element in those minerals.

Mineral concentrate is yielded at a stage prior to separation of rare earth elements from each other and as such contains all individual rare earth elements present in the deposit.

As the largest rare earths producer and processor globally, China is home to a fluid and active market for rare earth mineral concentrate and other downstream products. Over the past five years, processors and traders in China have actively imported growing volumes of rare earth mineral concentrates from abroad and invested in development of foreign sources of supply.

Outside of China, third-party imports and processing of mineral concentrates have been relatively limited to-date owing to limited processing capacity. While MP Materials' supply to China has grown substantially over the past five years, it is expected this will wane in the years ahead as MP Materials continues to ramp up in-house processing and production of separated PrNd oxide in the U.S.

Figure 16-10 shows the mineral concentrate price forecast specific to MP Materials' mineral concentrate.



Source: Adamas, 2024
Forecast specific to MP Materials' Mineral Concentrate

Figure 16-10: Mineral Concentrate Price Forecast

Adamas expects a rare earth mineral concentrate with MP Materials' composition and purity will have a long-term average price of US$10.20/kg of contained REO. The mineral concentrate price will be principally driven by trends in PrNd oxide price, with expected PrNd oxide price movements to be mirrored by concentrates.

Buyers

At present, buyers are owners and operators of Chinese processing and separation facilities. According to Adamas data, there are over 30 separate legal entities in China with notable processing and separation capacity. These entities purchase mineral concentrate, crack and leach into a chemical solution, and then separate into individual rare earth products according to market-desired specifications. Producers of separated La, Ce and PrNd products often also yield a mixed Sm-Eu-Gd-HREE chemical precipitate which is sold to HREE-focused separation plants with the required production lines.

Sellers

Sellers are rare earth mining operations producing a mineral concentrate. At present, the only known significant mining operation supplying this market outside of China is MP Materials' Mountain Pass and, with the exception of emerging byproduct monazite producers, this is not expected to change in the near-term. In Adamas' view, the majority of incoming rare earths production capacity in the near-term will aim to produce a mixed rare earth chemical precipitate (e.g., mixed rare earth carbonate), or even separate the product themselves.

Traders

Key traders of rare earth mineral concentrates reside mainly in China due to the presence of abundant capacity and a merchant processing industry there. Shenghe Resources is known to be an active importer and trader of rare earth mineral concentrate, which it distributes to processing and separation facilities in China.

Required Product Specifications

In order to be economical, concentrate grades require a minimum relative abundance of high value elements. Generally, for a LREE-rich mineral concentrate, a relative abundance of PrNd oxide above 10% is acceptable, however, this depends on the entire basket distribution since elevated concentrations of dysprosium and terbium, for example, could reduce this threshold.

The REO grade for commercially traded mineral concentrates varies from around 15% to 73%.

Typical Sales Terms

Sales terms are based on the value of contained rare earths in the concentrate, minus a discount for value added tax (VAT), implied processing costs, profit margin and other relevant penalties, as discussed below.

Treatment Charges / Refining Charges

Due to the opaque nature of concentrate markets, the terms for treating concentrates are relatively uncertain. The number of concentrate transactions globally is relatively small, and the terms for custom concentrate treatment are generally not disclosed by market participants.

In general, Adamas analysis shows that high purity rare earth mineral concentrates in China trade at a price level equal to 30-40% of the rare earth oxide value they contain, whereas some mineral concentrates imported into China sell at a higher 50%+ of contained value because they bear preferential properties (e.g., pre-roasted, high grade, low presence of acid consuming minerals, etc.) or because processors have dialed in their facility for that particular feedstock. This implies a treatment charge of US$4-$10/kg.

Typical Penalty Adjustments

Penalty adjustments can be applied if concentrates contain high levels of non-REE material. Examples include thorium and/or uranium content in monazite mineral concentrates. At above 0.2% thorium and/or uranium content by weight, monazite concentrates may need to be exported under specific restrictions as they will be treated as Class 7 radioactive material. Provincial-level disposal facility charges may apply for radioactive byproduct and there are limited number of processing facilities with the proper licenses to process certain monazite. The cost and operational risk of removing this material and subsequently disposing of it is moderate, and therefore can result in moderate penalty adjustments.

There may be further penalty adjustments for excessive moisture content and elevated presence of acid consuming minerals. Depending upon the REO distribution and nature of impurities, prices may experience step changes in price for lower contained REO grade.

16.4.2 PrNd Oxide

Market Overview and Pricing

Nearly all PrNd oxide consumed globally is used in the production of PrNd alloy and subsequently NdFeB permanent magnets. Small amounts of individual Nd and Pr, as well as mischmetal containing Nd and Pr, are used in other applications, including battery alloys, catalysts, ceramics, laser crystals, metallurgy, pigments and more.

From 2024 through 2040, Adamas forecasts that global demand for PrNd oxide will increase at a CAGR of 8.4%, led by double-digit demand growth for NdFeB magnets in electric vehicle traction motors, robotics and advanced air mobility applications.

Specifically, from 2024 through 2040, Adamas forecasts that global PrNd oxide demand for passenger EV traction motors, commercial EV traction motors and “other e-mobility” applications will collectively increase at a CAGR of 9.0% on the back of rising demand for passenger BEVs, PHEVs, and light, medium and heavy commercial electric vehicles.

Over the same period, Adamas forecasts that PrNd oxide demand for robotics, advanced air mobility and magnetocaloric chillers will collectively increase at a CAGR of 22.7%, from 5,035 tonnes in 2024 to 133,121 tonnes in 2040, collectively the largest segment of demand by 2040.

Moreover, from 2024 through 2040 Adamas forecasts that global PrNd oxide demand for direct drive and hybrid direct drive wind power generators for onshore and offshore applications will increase at a CAGR of 7.9% as the increasingly competitive economics of wind power generation (and low maintenance of permanent magnet hybrid and direct drive generators) spur increased adoption.

Additionally, from 2024 through 2040 Adamas forecasts that PrNd oxide demand for industrial applications will increase at a CAGR of 3.9%, from 8,843 tonnes in 2024 to 16,248 tonnes in 2040, bolstered by strong demand for power-dense energy-efficient motors, pumps, compressors, fans, blowers, elevators, escalators and more.

By 2035, Adamas projects that EVs, wind power generators, robots, advanced air mobility and other energy-efficient motors, pumps and compressors will drive more than 60% of global rare earth permanent magnet demand.

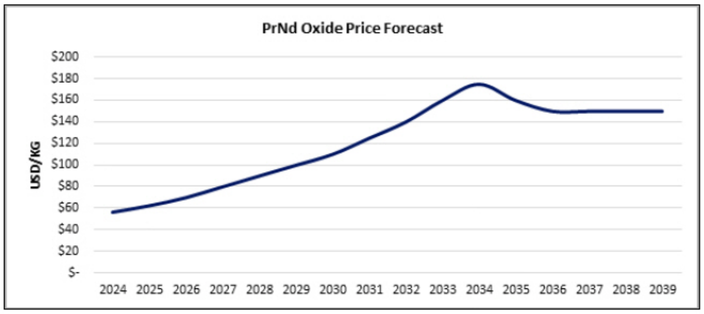
As noted above, this evolution is noteworthy as it implies that the future of magnet rare earths demand will be less sensitive to price than that of the past because future demand will be increasingly driven by applications in which the use of rare earth permanent magnets imparts an economic benefit at the system level.

As such, Adamas expects that the future of rare earths demand (at least in the case of PrNd, Dy and Tb) will be more robust, more resilient and less sensitive to price than demand of the past and present, which is still largely driven by consumer and legacy automotive applications.

Although Adamas anticipates significant supply growth over the forecast period, it appears unlikely that PrNd oxide supply will be able to keep up with demand growth in the near-term, leading to market deficits that Adamas expects may persist for several years. This forecast is sensitive to production expansions in China, which are directed by government, and could exceed expectations in its growth out to 2040.

With PrNd oxide being the key driver of LREE mining economics, Adamas expects the market to strive for balance over the long-term. In the near-term, moderate and steady deficit levels are expected to sustain prices at modest levels (US$60-90/kg), incentivizing the development of new supplies. However, with long lead times to develop new supplies, and demand growth accelerating on the back of electric vehicles, robotics and more, deficits are expected to widen from the early 2030s, pushing prices higher overall.

The PrNd oxide price forecast is shown in Figure 16-11.



Source: Adamas, 2024

Figure 16-11: PrNd Oxide Price Forecast

Adamas forecasts a long-term average price of US$124.83/kg for PrNd oxide. This forecast is based on the premise that PrNd continues to carry the cost of rare earth production. From 2024 through 2030, Adamas forecasts that prices will increase moderately as new supplies enter the market but from 2030 through 2034 prices will rise faster as the deficit grows. With the supply side increasingly and persistently failing to keep up with demand growth, Adamas expects demand destruction to accelerate post-2034 as end-users increasingly adopt alternatives. Consequently, from 2034 through 2036, Adamas forecasts that prices of PrNd oxide will fall moderately then stabilize through 2040.

Buyers

Buyers of PrNd oxide are divided into two main groups, downstream NdFeB magnet and magnetic alloy producers, and oxide-to-metal plants.

To produce NdFeB magnetic alloys (i.e., bulk NdFeB materials from which final magnets are produced), PrNd oxide must first be reduced to PrNd metal. Some magnetic alloy producers have oxide reduction capacity in-house and thereby purchase and consume PrNd oxide directly, whereas others purchase metals from third-party reduction facilities. As there is no significant profit to be realized in upgrading from oxide to metal, and thus little incentive for standalone reduction facilities, the metallization step of the value chain could become a bottleneck for some emerging magnet and magnetic alloy producers.

At present, global NdFeB magnet and magnetic alloy production is dominated by China, with emerging growth underway in the U.S. and Europe. Major Chinese magnet producers (and thus buyers of PrNd) include JL-Mag, Beijing Zhong Ke San Huan Hi-Tech, Tianhe Magnets and Ningbo Yunsheng. Collectively, Chinese magnet production makes up approximately 90% of global supply with Japan host to nearly all the rest. Major magnet producers outside of China include Proterial, Shin-Etsu Chemical, TDK, all in Japan, and Vacuumschmelze, located in Germany. Emerging producers in the U.S. and Europe include MP Materials, Noveon, and Neo Performance Materials.

Strong government support for magnet making in the U.S. and Europe suggest that non-China magnet production will grow.

Due to expected market tightness and the opacity of upstream supplies, automotive and wind OEMs are increasingly amenable to purchasing oxides directly and supplying them to third-party metal and magnet makers in order to increase transparency and security of supplies.

Sellers

In the PrNd oxide market, rare earth processors act directly as sellers. Vertically integrated miners with in-house processing plants directly produce and sell PrNd oxide to metal and/or magnet making facilities. Merchant traders play a relatively limited role at present although some are emerging outside of China (e.g., Tradium in Germany).

Key producers, and therefore sellers, of PrNd oxide are currently located predominantly in China, with China Northern Rare Earth Group accounting for the largest portion of the nation’s oxide sales. In China, PrNd oxide is only sold domestically. Foreign buyers can only import individual Nd or Pr oxides from China, which are priced at a premium to PrNd oxide, advantaging China’s domestic consumers.

In 2023, MP Materials started production of separated PrNd oxide in the U.S. By the late-2020s, Adamas expects that the share of non-China PrNd oxide production will have grown with new output from MP Materials, expansion of Lynas’ production, and the potential of additional volumes from smaller start-up producers and/or minerals sands.

Traders

The role of traders is limited in the PrNd oxide market. With few exceptions, buyers and sellers trade directly with no intermediate participant required. Japanese trading companies (i.e., Sojitz and Sumitomo) are known to participate in the market, mainly to facilitate logistics for domestic users.

Required Product Specifications

PrNd oxide is sold as a mixed oxide, in a concentrated, powdered, form. Compositionally, PrNd oxide commonly contains 75% Nd oxide and 25% Pr oxide, +/- 5%. Minimum purity for PrNd oxide is 99% TREO, of which PrNd/TREO = 99.5%.

Typical Sales Terms

PrNd oxide sales are typically contract based due to the criticality of the raw materials to magnet makers. Typical sales terms (beyond material pricing) in China are opaque. Due to the relatively high value of the product per kilogram, logistics costs are a minor consideration in final sales agreements.

Treatment Charges / Refining Charges

With few reduction facilities outside of China, the terms for refining PrNd oxide are relatively uncertain. Major PrNd oxide producers in China prefer to complete reduction in-house and sell PrNd metal. As such, the terms for custom PrNd oxide refinement are generally not disclosed by market participants.

In general, Adamas analysis shows that the price of PrNd metal in China is consistently 122% to 124% the price of PrNd oxide. Considering the cost structure in China, this implies a treatment charge of US$4-10/kg.

Typical Penalty Adjustments

Inferring from the product specifications, no specific penalty adjustments are applicable for PrNd oxide. The typical 99% minimum grade specifications mean that anything below this purity would be scrutinized and potentially face material reductions in agreed price, if not be rejected entirely.

16.4.3 SEG+ Oxalate, Carbonate, Chloride and Oxide (SEG+ precipitate)

Market Overview and Pricing

SEG+ precipitate is an intermediate product comprised of a mixture of medium and heavy rare earths. It is generally made up primarily of so-called medium rare earths (samarium, europium and gadolinium - SEG), with lesser amounts of heavy rare earth elements, including around 4% dysprosium and terbium. Most producers of separated La, Ce and PrNd products often also yield a mixed SEG+ chemical precipitate, such as a carbonate, oxalate or chloride, which may be converted to oxide and sold to HREE-focused separation plants that have the required production lines.

There is no defined end use market for SEG+ precipitates other than as an intermediate feedstock for further processing and separation into market desired individual rare earth products. SEG+ precipitate prices and treatment terms are therefore relatively uncertain and opaque.

The end uses of rare earth elements contained in SEG+ precipitate range from permanent magnets (Sm, Gd, Tb, Dy, Ho) to phosphors (Eu, Tb, Y) to glass additives (Er, Gd, Y) and more. As a result, the market demand and prices of SEG+ precipitate are driven by a variety of factors and considerations.

End use demand growth is inherently variable, thus a market balance for SEG+ precipitate as a single product is not necessarily indicative of pricing or current market dynamics. Like mineral concentrate, the market for SEG+ precipitate is driven entirely by its composite parts. The elements contained in SEG+ precipitate most likely to drive pricing changes are dysprosium, terbium, gadolinium and holmium – elements used in NdFeB permanent magnets with insufficient supply responses expected in the years ahead. Persistent market tightness will help these elements drive SEG+ precipitate prices to higher levels.

As SEG+ precipitate contains a variety of elements, most of which will likely experience demand growth lower than magnet metals (e.g., Eu, Er, Y), the market for the combined SEG+ products as individual oxides is expected to be in surplus over the long term. In fact, owing to the relatively high concentration of Sm and Y in SEG+ precipitate, supply may exceed demand by double by 2040 at current trends.

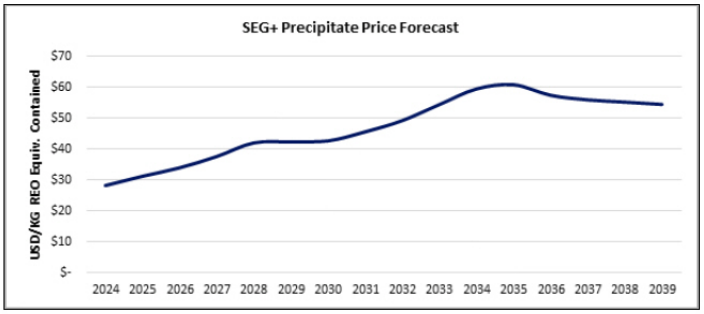
Despite this collective surplus, SEG+ prices may still be favorable as markets for dysprosium and terbium are also expected to experience growing deficits over the coming decade. The capacity for these markets to remain supplied is challenged by HREE resource scarcity in China and political uncertainty in Myanmar.

The principal global sources of supply for dysprosium and terbium as separated products are ion adsorption clay (IAC) mining operations in Myanmar and China, plus minor volumes from SEG+ chemical precipitates yielded by PrNd, La and Ce oxide separation plants.

The only notable IAC operations today are in China and Myanmar although others are being explored elsewhere. China's operations are expected to face significant stress in the near-term due to resource depletion and scarcity. Myanmar's operations, which have experienced extensive shutdowns and social resistance since 2020, face an uncertain future in light of the political and environmental situation there.

Closures of ionic adsorption clay operations in either country may lead to pronounced deficits in the dysprosium and terbium markets.

The SEG+ precipitate price forecast is shown in Figure 16-12.



Source: Adamas, 2024

Figure 16-12: SEG+ Precipitate Price Forecast

Adamas expects an overall increase in the SEG+ precipitate price out to 2035 due mainly to expected increases in dysprosium and terbium prices, then a slight decrease from 2035 through 2040 as dysprosium and terbium deficits decrease. Adamas forecasts a long-term average price of US$48.22/kg for a SEG+ precipitate with MP Materials specifications. This price is built up on internal modeling of Chinese separation facilities' costs of production and required feedstock price (at which they would purchase the material) to meet profitability targets of 10-20%. It is unclear exactly how terms will develop over the coming years.

Buyers

Key buyers of SEG+ precipitate are Chinese separation facilities capable of separating heavy rare earths. As discussed in Section 16.4.1, Adamas notes the existence of at least 30 separate legal entities in China with significant commercial capacity for rare earth separation through solvent extraction.

Over time, buyers are expected to emerge in other regions, such as the U.S., Australia and Europe, where heavy rare earth processing capacity is being developed, including internally at MP Materials.

Sellers

Sellers are typically facilities with light rare earth separation capacity. Typical light rare earth separation facilities have too little Dy and Tb in their feedstock to economically justify the construction and operation of heavy rare earth separation lines thus they precipitate these elements into a mixed SEG+ chemical concentrate for sale to plants with HREE separation capacity.

Traders

Outside of China, it is understood that Lynas Rare Earths conducts a monthly auction for the SEG+ precipitate it produces in Malaysia.

Required Product Specifications

There are no required product specifications for SEG+ oxalate, however, the costs of consuming SEG+ oxalate to produce separated rare earth oxides are high thus it must contain a high enough concentration of valuable elements to be viable.

Typical Sales Terms

The sales terms SEG+ oxalates are generally opaque, given the limited number of sellers of the product (i.e. currently Lynas with MP Materials beginning to participate). As price participants, we understand that in China the product, like other mixed rare earth intermediates, may be purchased on the basis of a percentage of contained rare earth value.

Treatment Charges / Refining Charges

Due to the opaque nature of intermediate markets, the terms for treating SEG+ precipitate are relatively uncertain. The number of SEG+ precipitate transactions globally is small, and the terms for custom concentrate treatment are generally not disclosed by market participants.

In general, Adamas analysis shows that high purity mixed rare earth precipitates in China trade at a price level equal to 65-80% of the rare earth value they contain.

Typical Penalty Adjustments

Potential penalty adjustments may be made if the SEG+ oxalate does not contain enough dysprosium and/or terbium to be considered economic for processing.

16.4.4 La Carbonate

Market Overview and Pricing

The U.S. is the largest consumer of imported La carbonate globally. Currently, it is understood that no La carbonate (outside of the recent launch of MP's production capability) is produced in the U.S., meaning domestic production may replace existing imported supply.

In recent years, U.S. imports of La carbonate have ranged from ~5 kt to 15 kt albeit volumes are declining over time. The main use of La carbonate is in fuel cracking catalysts and catalytic converters for gasoline-powered vehicles, both applications that have been negatively affected by rising global sales of electric vehicles.

In the fuel industry, La-containing catalysts are used to break down crude oil molecules into market-desired distillates, such as gasoline, kerosene, diesel and more. Adding lanthanum to fuel cracking catalysts increases gasoline make, which, next to diesel, has seen demand challenged by rising electric vehicle adoption globally.

Moreover, La carbonate is sometimes also used alongside cerium in catalytic converters of gasoline-powered vehicles in which rare earths and other precious metals help reduce pollutants in the vehicle's exhaust stream into less harmful varieties.

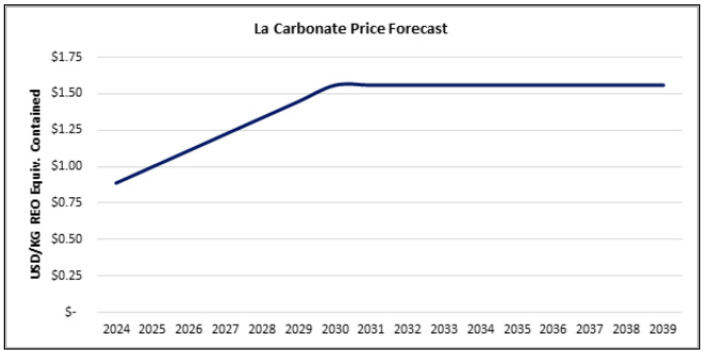
Relatively small amounts of La carbonate are also used in the pharmaceutical sector, consumer electronics sector, certain metals and alloys, and in wastewater treatment for phosphate removal - more detail is provided for the water treatment market in Section 16.4.5.

Like cerium, the market balance of lanthanum is heavily influenced by the balance problem. In a typical bastnaesite or monazite deposit, lanthanum makes up 20% to 35% of the contained TREO whereas lanthanum's share of overall TREO demand is a lower 15% resulting in pervasive overproduction.

With PrNd demand expected to drive TREO production growth over the long term, the amount of sacrificially overproduced lanthanum will increase in tandem.

As a result, in both the near- and long-term, the market for lanthanum will continue to be oversupplied, and the extent of oversupply will continue to grow unless new end-uses and applications for lanthanum emerge. In the near-term, however, with lanthanum oxide prices having fallen below the cost of production, and inventories in the relatively disciplined hands of China's major producers, we expect lanthanum and cerium oxide, carbonate and chloride prices to appreciate moderately and then stay relatively flat across the remainder of the forecast period.

Figure 16-13 shows the lanthanum carbonate price forecast.



Source: Adamas, 2024

Figure 16-13: La Carbonate Price Forecast

Lanthanum carbonate prices closely track oxide prices. Adamas forecasts a long-term average price of US$1.44/kg for La carbonate (on La oxide equivalent basis). This forecast is calculated on the basis of the relationship between historical lanthanum carbonate and oxide prices. As a product in chronic oversupply, the costs of production are mostly covered by PrNd oxide, meaning that there is no current inducement or incentive price for lanthanum.

Buyers

Buyers of La carbonate include fuel cracking catalyst manufacturers, catalytic converter washcoat manufacturers, and others consuming lanthanum for use in medical products, consumer electronics, metals and alloys, and in wastewater treatments.

Sellers

The main sellers of lanthanum carbonate are rare earth separation facilities. With conventional solvent extraction, lanthanum requires separation from the rare earth mixture before more valuable products, such as PrNd, thus the vast majority of LREE separation facilities globally will produce a lanthanum product, be it oxide, carbonate, chloride or other. We believe MP Materials is currently the only commercial scale lanthanum carbonate producer in the U.S.

Current re-sellers or importers of Chinese lanthanum carbonate in the U.S. for sale downstream will struggle to compete against domestic production since transport and logistics costs of low value lanthanum products may account for more than half of their landed costs.

Traders

In the case of La carbonate, vertically integrated miners with in-house processing plants produce La carbonate for sale to downstream consumers, or sale to local and foreign traders that sell to downstream consumers. The majority of La carbonate is currently produced in China, making MP Materials the only known domestic U.S. producer. Current re-sellers in the U.S. and Europe market imports of concentrates from China.

Required Product Specifications

Typical La carbonate is marketed as a powder containing 45% TREO minimum and with La_2O_3/TREO of at least 99.5%.

Typical Sales Terms

The sale of La carbonate is contract based with no official spot price reported globally. It is understood that contracts typically include fixed supply periods between buyers and sellers at a fixed rate, renegotiated periodically as a function of La oxide price. Buyers usually pay transportation costs.

Treatment Charges / Refining Charges

As a light rare earth product in surplus, and a sacrificial byproduct of PrNd, treatment charges for this product do not exist in isolation – the economics of magnets rare earths will factor in.

Typical Penalty Adjustments

Potential trade penalties may exist where the La carbonate sold to a seller is below 45% TREO including free moisture and LOI or contains less than 99.5% La2O3/TREO.

16.4.5 Cerium Chloride

Market Overview and Pricing

The market for Ce chloride is led by vertically integrated miners and companies with in-house processing plants that produce and sell material to downstream consumers as a branded product.

One of the primary uses of Ce chloride is as a coagulant (a substance which causes curdling and clotting of liquids) in the water treatment sector. Ce chloride is an alternative to traditional coagulants in this sector where it is well suited for phosphorous (P) removal.

Based on U.S. Environmental Protection Agency (USEPA) mandates, companies and water treatment facilities in the U.S. are required to maintain P levels between 0.05-0.1 mg/L, levels that some traditional coagulants struggle to achieve.

Buyers of Ce chloride are typically end users of the product, such as water treatment plants. Sellers are those producing the product and often packaging into a branded merchandise for marketing to buyers. Traders are the vertically integrated miners or in-house bulk upstream producers of Ce chloride.

Figure 16-14 presents a summary of U.S. facilities monitoring and limiting P-levels.

Facility type	Total number of facilities	Total discharge (billion gallons per day)	Facilities required to monitor phosphorus			Facilities with phosphorus concentration limits		
			Number of facilities	Percentage of facilities	Sum of design flow (Mgal/d)	Number of facilities	Percentage of facilities	Sum of design flow (Mgal/d)
Municipal	15,939	42	2,437	15	16,447	1,163	7	7,145
Industrial	50,599	2,379	na	5	16,950	877	2	9,336
Federal	1,119	110	na	10	113	50	5	51
Other	5,087	142	na	3	28	26	1	5
Total	**72,744**	**2,380**	**5,068**	**7**	**33,538**	**2,116**	**3**	**16,537**

Source: Adamas after USEPA, 2024

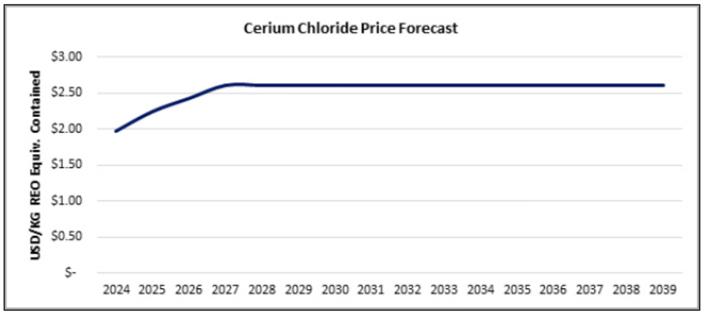
Figure 16-14: Summary of U.S. Facilities Monitoring and Limiting P-levels

Overall, the cerium market outlook is similar to that of lanthanum, with oversupply expected to persist in both the near- and long-term as a consequence of the balance problem. In a typical bastnaesite or monazite deposit, cerium makes up 35-50% of the contained TREO whereas cerium's share of overall TREO demand is a lower 15-20% resulting in pervasive overproduction.

As such, the market for cerium is expected to face similar price pressures as lanthanum over the forecast period, however, as a phosphate removal product, Ce chloride is not priced as a rare earth product.

At present, the U.S. cerium chloride market is supplied mainly by companies that import cerium oxide or carbonate and subsequently convert it into a chloride in-house. A domestic rare earth mine able to produce cerium chloride on-site may have a cost advantage over its competitors.

Figure 16-15 shows the cerium chloride price forecast.



Source: Adamas, 2024

Figure 16-15: Ce Chloride Price Forecast

Buyers

With principle use in the water treatment industry, buyers of Ce chloride reside in that same industry. Municipal water suppliers and industrial facilities (power, chemicals, and mining) are consumers and buyers of Ce chloride for treating P. The growing use of P-based fertilizers in agriculture results in increased levels of P within water supplies making regions with the highest P demand among the largest likely buyers of Ce chloride.

Sellers

Sellers of Ce chloride market the material as a branded, packaged liquid compounds, or as a salt for preparing solutions. Although most products utilize Ce chloride in a similar manner, sellers often target their products to specific applications (e.g., pool treatment) for marketing and differentiation purposes.

Traders

Traders of Ce chloride sit upstream of the end use market, including vertically integrated miners with in-house processing plants that sell bulk cerium chloride to downstream sellers. In this regard, MP Materials has the option to act as a trader or a seller or both in this market.

Required Product Specifications

Ce chloride coagulants are sold in liquid or solid form. Typical product contains a minimum of 45% TREO on a dry basis and CeO2/TREO of at least 80%.

Typical Sales Terms

As a value-added product, market participants (traders) currently buy Ce oxide or chloride salt/flake (mostly from China) and convert it to Ce chloride in the U.S. for sale to downstream re-sellers on a $/weight-solution basis. Re-sellers then brand and package the product and sell on a similar basis as upstream traders. As such, the product is not treated as a rare earth product and thus is not priced on a rare earth content basis. Pricing may be against comparable coagulants or water treatment products, in particular ferric chloride and alum chloride.

Treatment Charges / Refining Charges

As a light rare earth product in surplus, and a sacrificial byproduct of PrNd, treatment charges for this product, like La carbonate, do not exist in isolation – the economics of magnets rare earths will factor in.

Typical Penalty Adjustments

We do not believe the primary Ce chloride penalty would relate to product concentration. Low gram/liter of REO could incur shipping and handling penalties. Conversely, domestic production should favor MP Materials since currently domestic sources of Ce chloride are derived from imported and upgraded Ce oxide.

16.5 Specific Products

Forecasts for relevant rare earth product prices are presented in Section 16.4. A brief summary of price forecasts is presented in Table 16-2.

Table 16-2: Summary of Long-Term Price Forecasts

Product	Long-Term Price Forecast, Real 2024 US$/KG
Rare Earth Mineral Concentrate	10.20
PrNd Oxide	124.83
SEG+ Precipitate	48.22
La Carbonate	1.44
Ce Chloride	2.57

Source: Adamas, 2024

All prices are modeled based on production costs and established market trends where they exist.

16.5.1 Concentrate

Typical Project Specifications

Adamas understands MP Materials' rare earth mineral concentrate is produced to a grade of roughly 62% TREO, with PrNd oxide making up approximately 15.7% of contained TREO.

Market Space

Adamas understands that concentrate grades typically range from 15% to 73% REO and as such, MP Materials' concentrate is considered within industry acceptable specifications.

Shipping

Shipment of rare earth mineral concentrate products into China is the responsibility of the supplier, such as MP Materials.

Contract vs. Spot Sales

MP Materials receives revenue from mineral concentrate sales via a contractual agreement with Shenghe Resources with observed sales terms largely reflecting spot market PrNd oxide price movements.

Marketability

MP Materials' rare earth mineral concentrate product is sold into the Chinese processing market. With ample unused processing capacity available in China, marketability of this product is not considered a risk.

Sales Terms

Rare earth mineral concentrate products are priced based on purity, the distribution of rare earths contained and the prices of contained rare earths, less any applicable penalties. MP Materials' high TREO content and comparably low levels of thorium/uranium translates to favorable prices for its product.

The prices agreed upon with Shange Resources are based on an agreed market benchmark for separated rare earth oxides. The concentrate price agreed contains an implicit treatment and refining charge.

Applied Penalties

Penalties may be applied to concentrates with high radioactive content, as explained in Section 16.4.1., high moisture content, low purity, or a high concentration of acid consuming minerals.

16.5.2 PrNd Oxide

Typical Project Specifications

PrNd oxide will be produced to industry standard specifications, containing at least 99% TREO and at least 99.5% PrNd/TREO.

Typical PrNd oxide contains 75% Nd oxide and 25% Pr oxide, +/- 5%. MP Materials will produce PrNd oxide to typical specifications +/- 3%, thereby within the limits of acceptability.

Market Space

Variation in the ratio of Nd to Pr is acceptable if the Nd percentage does not fall below 70% and does not exceed 80%, although Adamas believes consumers have a high degree of flexibility in this regard since the main reason magnet makers use PrNd is that it is lower priced than individual Nd or Pr, not because it bears a particular ratio of Nd to Pr.

With MP Materials producing an PrNd oxide product at 99.5% to 99.9% purity, we believe it will satisfy current industry standards.

Shipping

The responsibility of shipping under MP Materials' contractual obligations for the sale or distribution of PrNd oxide typically falls to the seller, per market norms.

Contract v Spot Sales

With MP Materials continuing to ramp production of refined PrNd oxide as of late 2024, the eventual mixture of spot and contract sales is presently unknown, although the majority of contracts (or contracts under consideration) as of the report date contain a rolling price adjustment based on prevailing market prices. Both contract and spot sales are likely for PrNd oxide.

Marketability

We understand that MP Materials intends to use a portion of its PrNd oxide to produce metals, magnetic alloys and magnets at its Texas magnetics factory currently under construction and sell the remaining portion to existing and emerging metals and magnet manufacturers. With a growing number of magnet plants under development in the U.S. and Europe, and demand for alternative sources of supply in Japan, we believe the PrNd oxide planned to be produced is a marketable and desirable product.

Sales Terms

PrNd oxide is a globally traded material, and we would expect sales terms to reflect known global prices. Material contract terms are generally not disclosed, but we understand MP Materials' contracts to be in line with industry norms. We understand that MP Materials does not expect to face penalties associated with the quality of PrNd oxide produced.

Applied Penalties

As PrNd oxide is a refined, market desired product in high purity form, MP Materials does not expect to incur any penalties.

16.5.3 SEG+ Precipitate

Typical Project Specifications

As a mixed rare earth product, SEG+ precipitates will be produced to typical industry standards for chemical precipitates (45% TREO minimum), as a solid powder. There is no official standard for SEG+ precipitates specifically.

Market Space

SEG+ precipitate prices are heavily influenced by their Dy and Tb contents, with typical SEG precipitates containing around 4%. MP Materials will produce SEG+ oxalate with at least 5% Dy and Tb contents making it a desirable product.

Shipping

We understand that no definitive shipping terms are in place for SEG+ precipitate sales to-date, however, purchasers will likely incur shipping costs for delivery. MP Materials intends to maintain significant SEG+ precipitate inventory in order to eventually separate the SEG+ into separated HREE products.

Contract v Spot Sales

We understand that no contractual agreements are yet in place for SEG+ precipitate thus the eventual mixture of spot and contract sales is presently unknown. Both contract and spot sales are likely for SEG+ precipitate, although MP Materials has expressed an intention to maintain SEG+ precipitate inventory for eventual separation into separated HREE products.

Marketability

If the tight market balance of Dy and Tb that Adamas forecasts materialize, we believe MP Materials should not face significant risk if seeking to sell SEG+ precipitate to Chinese separators or other emerging HREE separation plants outside China.

Sales Terms

Sales of SEG+ precipitate are priced according to the purity of the material and the value of rare earths contained thus are heavily influenced by Dy and Tb. The elevated Dy and Tb content within MP Materials' SEG+ precipitate suggests that prices should be favorable in reflection of the tight market balance expected for Dy and Tb.

Applied Penalties

SEG+ precipitates with low purity, high levels of LREEs, low Dy and Tb contents (<4%), or requiring additional pre-processing (i.e., roasting to oxide) could incur a penalty. MP Materials is not expected to incur penalties as its SEG+ precipitate is high purity and contains elevated Dy and Tb contents.

16.5.4 La Carbonate

Typical Project Specifications

Typical La carbonate is marketed as a powder containing 45% TREO minimum and with La2O3/TREO of at least 99.5%., though no official standard exists. We understand MP Materials plans to sell La carbonate as a nearly anhydrous solid powder with a high purity (>98%).

Market Space

The U.S. is the largest consumer of imported La carbonate globally. However, due to the balance problem, La carbonate supply is expected to remain abundant. As a low-priced product, logistics and transportation costs are relatively high for U.S. imports of La carbonate giving MP Materials a competitive advantage in the market.

Shipping

Currently contemplated contracts for La carbonate involve MP Materials covering the cost of domestic shipping, however, certain contemplated contract structures include shipping costs as part of a cost-plus pricing framework.

Contract vs. Spot Sales

Both contract and spot sales are likely for La carbonate, as well as the potential for contracts involving elements of a cost-plus framework (including shipping costs).

Marketability

As a low-cost producer of La carbonate located in the U.S., MP Materials will have a competitive position from which to market its product.

Sales Terms

Sales terms for La carbonate are currently under negotiation with domestic buyers. Domestic availability (and thus reduced logistics and transportation costs for buyers, as well as supply chain security) can help ensure marketability for MP Materials' products.

Applied Penalties

As the La carbonate produced by MP Materials is expected to meet specifications for use in catalysts and other applications, it does not expect to incur any penalties.

16.5.5 Cerium Chloride

Typical Project Specifications

Ce chloride coagulants are sold in liquid or solid form. Typical products contain a minimum of 45% TREO on a dry basis and CeO2/TREO of at least 50%. MP Materials will sell Ce chloride in a liquid form, with low levels of La chloride as well (<20%).

Market Space

While demand for Ce chloride is not expected to keep up with growth in Ce oxide supply, promising new markets for Ce chloride are materializing – such as the water treatment market. No known domestic producers of Ce chloride exist within the U.S. at present, offering MP Materials an economical and logistical advantage.

Shipping

No international shipping of Ce chloride is expected, MP materials will distribute Ce chloride domestically. Purchasers will cover shipping costs.

Contract v Spot Sales

MP Materials may utilize both contractual and spot sales, catering to smaller independent consumers and national-scale municipal consumers.

Marketability

Ce chloride use in the water treatment sector is a relatively new approach, with room for growth as a replacement of traditional chemicals used in this space. As a low-cost producer of Ce chloride located in the U.S., MP Materials will have a competitive position from which to market its product. Risks faced would include the immature market for Ce chloride in the water treatment sector.

Sales Terms

Sales of Ce chloride are priced on a dollar-per-weight-solution basis. Since Ce chloride is not marketed as a rare earth product, both spot and contractual sales would expectedly cover the cost of production.

Applied Penalties

Excessive La chloride content (>20%) would likely cause MP Materials to incur a penalty. As MP Materials has flexibility to control lanthanum content based on customer demand, this penalty is not expected to be applied.

16.6 Conclusions

This report provides an overview of key trends within the rare earths market. Analysis outlined in this report reveals a high degree of variability in the demand profiles of individual rare earth elements and their associated end-uses.

Consequently, a strong demand outlook for PrNd oxide – the main rare earth input for NdFeB permanent magnets - drives a weak supply outlook for Ce and La products, which are sacrificially overproduced as a function of keeping up with magnet demand.

While centered in China, the rare earths market is increasingly global with suppliers and potential suppliers emerging around the world. This report highlights the favorable demand conditions that non-

China producers may face as they enter the market but also highlights the unfavorable supply side conditions end users can expect without prompt new investment into new production.

Products outlined in this report (PrNd oxide, SEG+ precipitate, La carbonate, Ce chloride and rare earth mineral concentrate) are desirable from a market perspective, provided market standards and requirements are met.

Many of the near-term risks facing players in the rare earths market are political, with past disputes responsible for exacerbating volatility of REE prices. Specific risks to products are highlighted where perceived, though the indicated specifications and communicated sales terms enforce the conclusion that products are both desirable and marketable.

16.7 Contracts

Information pertaining to contracts associated with MP Materials' current and future operations was obtained from conversations between Adamas and MP Materials. As such, Adamas can only comment on the status of contractual agreements described to it by MP Materials and based on Adamas' understanding of normal commercial practice and prevailing market conditions.

Adamas understands that MP Materials is an existing producer satisfying all contracts required for the functioning of current operations. Current production of rare earth mineral concentrate is sold under contract to an offtake partner (Shenghe).

We understand that the pricing terms and other contractual stipulations of the existing contract are in line with industry and broader global market terms. This, along with other contracts needed to sustain current and future operations, is the extent of MP Materials' currently executed contracts.

With ongoing ramp up of internal separation of oxides since late-2023, we believe MP Materials aims to increasingly consume its own concentrate to produce the following product mix:

- PrNd oxide
- SEG+ precipitate
- Lanthanum carbonate
- Cerium chloride

Adamas understands that MP Materials is in discussion with potential consumers and distributors of these separated products and aims to finalize these contracts as it ramps up production. In February 2023, MP Materials and Sumitomo Corporation announced an agreement whereby the latter will serve as the exclusive distributor of PrNd oxide produced by MP Materials to Japanese customers.

We believe the current state of negotiations with potential consumers and distributors is in line with standard practice for a new minerals producer seeking to qualify a new product with customers. The planned separated products are more abundantly traded than mineral concentrates and we believe ongoing negotiations are likely to lead to industry standard agreements and terms.

Adamas understands that MP Materials' present offtake partner (Shenghe) may reasonably be deemed an affiliated party due to Shenghe's minority equity interest in MP Materials. To our knowledge, Shenghe is the only notable affiliated partner for the purposes of this review of commercial contracts.

Based on information reviewed by Adamas, it appears that offtake terms with Shenghe do not disproportionally benefit either party involved through non-standard commercial terms. Adamas believes that current terms with Shenghe are reasonable and fair for offtake agreements with non-affiliated third parties.

Based on guidance provided by MP Materials, Adamas understands that MP Materials maintains various operational contracts with external parties to support current and future operations. The operational contracts include, but are not limited to, a variety of services including those listed below:

- Chemical reagent procurement
- Industrial gas procurement
- Natural gas procurement
- Drilling services
- Blasting services
- Freight carrier services
- Supplemental contract labor services
- Equipment maintenance services
- Equipment rental services
- Environmental monitoring services
- Analytical services
- Insurance and risk management services
- Information technologies and support services

In addition, Adamas understands (based on guidance provided by MP Materials) that MP Materials fulfils and maintains contracts, services and other requirements for recommissioning, functioning and operating its separation facility. These contracts have been understood to include:

- Engineering, Procurement, and Construction (“EPC”)
- Engineering services
- Owner’s representation
- Procurement services
- Supplemental contract labor services

The existence and maintenance of these contractual arrangements is in line with Adamas’ understanding of normal commercial practice for a company such as MP Materials.

17 Environmental Studies, Permitting, and Closure

The following discussion of environmental studies, permitting, and community impacts presents an overview of environmental impact reports and active environmental permits.

17.1 Environmental Study Results

In 2004, the previous owner completed an environmental assessment process to gain approval for a 30-year mine plan. The legal framework for the environmental assessment process was the California Environmental Quality Act, and the lead regulatory agency was San Bernardino County (SBC). The final Environmental Impact Report (EIR) described the proposed action and assessed baseline environmental conditions for aesthetics, air quality, biological resources, cultural resources, geology/soils, hydrology/water quality, and noise. This environmental assessment process included extensive public consultation as well as inter-agency (state and federal) collaboration. SBC certified the final EIR in 2004.

17.2 Required Permits and Status

In 2004, the Land Use Services (LUS) Department of SBC (SBC-LUS) approved the 30-year open pit mine plan, including an ultimate open pit design. The SBC-LUS issued a Conditional Use Permit (CUP) based on mitigation measures identified in the final EIR. In 2010, the previous operator applied for a modification to the 2004 approved land use to accommodate process improvements and the elimination of 100 acres of evaporation pond area approved in the 2004 CUP. The SBC-LUS approved the Minor Use Permit (MUP) and issued the updated Mine and Reclamation Plan (2004M-02) in November 2010.

The previous owner revised the approved Mine and Reclamation Plan in 2015. The SBC approved the change of ownership to MP Mine Operations LLC (dba MP Materials) in 2017. In April 2021, MP Materials filed an application for Stage 2 Facilities Construction (previously approved under the 2010 MUP and vested under the Mining and Reclamation Plan). This application includes constructing, redesigning, improving and/or re-locating several processing facilities identified in the 2010 MUP. MP Materials received formal approval of the modification of the MUP to proceed with the Stage 2 Facilities Construction plan in April 2021.

The future mine plan expands the current permit boundary. The previous owner and MP Materials demonstrate a proactive and constructive dialogue with the SBC-LUS on previous modifications of the Mine and Reclamation Plan (e.g., 2010, 2015 and 2021). The change in the future open pit boundary is within the existing mine disturbance.

MP Materials plans to expand the North Overburden Stockpile, relocate a stormwater diversion channel, and construct a new integrated crushing and ore sorting facility. While the stockpile expansion and the new ore sorting facility will require a permit amendment, preliminary discussions with regulatory agencies have been conducted. Based on recent permit applications and approvals, MP Materials does not anticipate any permitting delays or obstacles that would prevent the projects from proceeding as scheduled.

The future mine plan also requires preparation work for a new, 158 million short ton East Overburden Stockpile that will begin receiving waste rock in 2028. There is reasonable expectation that MP Materials can permit required waste dump capacities in advance of the mining schedule.

Since 2017, MP Materials demonstrated a pro-active, working relationship with the SBC-LUS and other regulatory authorities. This relationship includes timely and successful permit amendments and approvals for current operations. SRK is of the opinion that MP Materials will continue to successfully engage regulatory authorities and gain approval for future amendments related to site operations within the private property boundary.

Table 17-1 presents a summary of current Mountain Pass environmental permits.

Table 17-1: Current Environmental Permits and Status

Permit	Agency	Expiration Date
Right of Way for the Shadow Valley Fresh Water Pipeline CA12455	Bureau of Land Management	12/31/2041
San Bernardino County Domestic Water Supply Permit #36000172 (Duplicate of PT0006375)	San Bernardino County Department of Public Health	No Expiration
EPA Identification Number CAD009539321	US Environmental Protection Agency	No Expiration
Hazardous Materials Certificate of Registration	US Department of Transportation	6/30/2025(1)
NRC Export License XSOU8707/08	US Nuclear Regulatory Commission	12/31/2031
NRC Export License XSOU8827/03 (2)	US Nuclear Regulatory Commission	12/31/2031
Conditional Use Permit 07533SM2/DN953-681N	San Bernardino County Land Use Services Department	11/23/2042
CUPA Annual Permit FA0004811	San Bernardino County Fire Protection District	9/30/2025
LRWQCB Order 6-01-18 Domestic Wastewater System	Lahontan Regional Water Quality Control Board	No Expiration
LRWQCB Order R6V-2005-0011On Site Evaporation Ponds	Lahontan Regional Water Quality Control Board	No Expiration
LRWQCB Order R6V-2010-0047 - Mine and Mill Site, including paste tailings	Lahontan Regional Water Quality Control Board	No Expiration
Mojave Desert Air Quality Management District - Permits to Operate	Mojave Desert AQMD	2/28/2026(3)
Right-Of-Way Lease 6375.2	California State Lands Commission	1/19/2032
Radioactive Materials License #3229-36 for ongoing operations and Paste Tailings	California Department of Public Health — Radiologic Health Branch	12/21/2032
Right of Way for the Shadow Valley Fresh Water Pipeline CA12455	Bureau of Land Management	Active
Minor Use Permit - Project Phoenix (Amended Reclamation Plan)	San Bernardino County	11/22/2042

Source: MP Materials, 2024
(1): Renewed annually.
(2): New License replaces XSOU8708.
(3): Mojave Desert Air Quality Management District online records indicate the Mountain Pass operation (Facility ID 364) held approximately 272 individual air quality related permits within the last 22 years. This historical total includes discontinued unit operations. The permit record indicates timely renewals and approvals, including extensions.

17.3 Mine Closure

Mine closure obligations consist of the Mine and Reclamation Plan administered by the SBC, groundwater and surface water measures administered by the LRWQCB, and decommissioning requirements by the California Department of Resource, Recycling and Recovery. SBC and LRWQCB permit authorizations also stipulate post-closure inspection, maintenance, and monitoring activities. Table 3-1 summarizes the current closure, reclamation, and post-closure obligations for the Mountain Pass property.

18 Capital and Operating Costs

Capital and operating costs are incurred and reported in 2024 US dollars and are estimated at a pre-feasibility level with an accuracy of approximately +/-25%.

18.1 Capital Cost Estimates

The mine is currently operating and, as such, there is no initial capital expenditure required. All capital expenditure as contemplated by this report is expected to be sustaining capital. Sustaining capital expenditures include the sustaining capital cost associated with the mining fleet, integrated crushing and ore sorting facility, separations facility, paste tailings plant and water tank relocations, tailings storage facility expansion, and the “other” category, which captures all other sustaining capital costs.

18.1.1 Mining Capital Cost

The operation is being run as an owner mining operation. A contractor will perform all drilling and blasting operations.

Table 18-1 shows the annual mining equipment capital costs, as estimated by SRK.

Table 18-1: Mining Equipment Capital Cost Estimate (US$000's)

Capital Costs	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**
Mobile Equip. (Purchases)																
Loading	8,218															
Hauling	15,309	6,561	$2,187													
Other Ops [1]											1,711				1,224	
Support [2]	2,858	1,000	84	1,324				508	848		84			2,451	835	2,518
Subtotal Purchases	**$26,386**	**$7,561**	**$2,271**	**$1,324**				**$508**	**$848**		**$1,795**			**$2,451**	**$2,059**	**$2,518**
Mobile Equip. (Rebuilds)																
Loading						1,233				712			1,753	712		
Hauling									3,309	685						
Other	141	513	281	187		794	281	201	173			201		173	257	
Support	178			125	785				1,108	356			752		356	
Subtotal Rebuilds	**$319**	**$513**	**$281**	**$313**	**$785**	**$2,027**	**$281**	**$201**	**$4,590**	**$1,753**		**$201**	**$2,505**	**$886**	**$613**	
Mining Equip. Total	**$26,704**	**$8,074**	**$2,552**	**$1,636**	**$785**	**$2,027**	**$281**	**$709**	**$5,438**	**$1,753**	**$1,795**	**$201**	**$2,505**	**$3,336**	**$2,672**	**$2,518**

Capital Costs	**2041**	**2042**	**2043**	**2044**	**2045**	**2046**	**2047**	**2048**	**2049**	**2050**	**2051**	**LoM Total**
Mobile Equip. (Purchases)												
Loading			2,375									10,593
Hauling				2,187	2,187							28,431
Other Ops	671			577								4,183
Support			84	508	1,187		848					15,137
Subtotal Purchases	**$671**		**$2,459**	**$3,273**	**$3,374**		**$848**					**$58,344**
Mobile Equip. (Rebuilds)												
Loading		1,753					356					6,520
Hauling	5,905	656										10,555
Other Ops	141		895		$101	281	513					5,133
Support		178	125	251		356	251	501	178	356	251	6,108
Subtotal Rebuilds	**$6,046**	**$2,587**	**$1,020**	**$251**	**$101**	**$637**	**$1,120**	**$501**	**$178**	**$356**	**$251**	**$28,315**
Mining Equip. Total	**$6,716**	**$2,587**	**$3,479**	**$3,523**	**$3,475**	**$637**	**$1,968**	**$501**	**$178**	**$356**	**$251**	**$86,660**

Source: SRK, 2024
Notes:
(1) "Other Ops" includes dozers, water trucks, motor grader and excavator.
(2) "Support" includes mobile equipment used in paste tailings operations, maintenance vehicles, light vehicles and pit dewatering pumps.
(3) The economic model includes initial spare parts and shop tool provisions totaling US$1.85 million that are not included in this table.

18.1.2 Separations Facility Capital Cost

The separations facility is currently in the process of ramping, with an expectation that it will achieve full capacity by approximately mid-2026. As such, future capital costs for the separations facility are treated as sustaining capital costs. The sustaining capital costs, as estimated by MP Materials and SGS, are presented in Table 18-2.

Table 18-2: Estimated Separations Facility Sustaining Capital Costs

Year	Amount (US$000's)
2025	3,316
2026	6,632
2027	9,948
2028(1)	22,326
2029 through 2052(2)	397,904
Total	**$440,125**

Source: MP Materials / SGS
(1): Includes CHP turbines.
(3): From 2029 through 2052, the estimated annual cost is approximately US$16.6 million.

18.1.3 Other Sustaining Capital

For the purposes of estimating total sustaining capital, SRK utilized the current capital depreciation which is approximately US$4.4 million per year. In SRK's opinion, this value is a reasonable estimate for long-term sustaining capital for the current operation other than the individually estimated capital items.

In addition to the long-term sustaining capital allowance of US$4.4 million per year, the following non-recurring items have been included in the estimate of other sustaining capital:

- Integrated crushing and ore sorting facility (2025 and Q1 2026): US$28.9 million including a 15% contingency allowance.
- Water tank relocation (2034): US$5.7 million
- Paste plant relocation (2034): US$70.1 million
- Tailing storage facility expansion (2043): US$11.5 million

18.1.4 Closure Costs

Closure costs are captured as a capital expenditure in the financial model at a value of US$45.6 million in 2054 (one year after the end of processing operations).

18.1.5 Basis for Capital Cost Estimates

Mining Capital Cost

The mining equipment requirements were based on the mine production schedule, and estimates for scheduled production time, mechanical availability, equipment utilization, and operating efficiencies.

Estimates of annual operating hours for each type of equipment were made, and equipment units were utilized in the mining operations until a unit reached its planned equipment life, after which a replacement unit was added to the fleet, if necessary. Major mining equipment rebuild (overhaul) costs were included in the mining equipment capital cost estimates.

The mining equipment capital cost estimate was based on the following:

- All replacement mining units are based on new equipment purchases.
- The cost for equipment that is scheduled for purchase in 2025 is based on current equipment price quotes from the vendor.
- Freight cost for mining equipment was generally estimated to be between 3% and 5%.
- Allowances were made for on-site equipment erection costs for some units.
- Mining equipment rebuilds were included at appropriate intervals in the mining capital costs.

Separations Facility Capital Cost

To calculate estimated sustaining capital for the separations facility, MP Materials and SGS used a first principles approach utilizing a proxy of a percentage of invested capital into the plant and accompanying facilities, including the CHP plant, to calculate a reasonable estimate for average required reinvestment. This yielded an estimate of US$16.6 million per year in long-term sustaining capital for the separations plant and accompanying facilities. Some adjustment of this annual cost was applied to reflect the fact that the facility is new and therefore is likely to experience a reduced rate of sustaining capital expenditures in the first five years of operation.

Other Capital Cost

Costs for the new integrated crushing and ore sorting facility, tailings storage facility expansion and relocation of the paste plant and water tanks were based on engineering cost estimates. Depreciation values were utilized as a proxy for other sustaining capital.

Closure Costs

Closure cost and post closure cost estimates were sourced from the most recent financial assurance estimates provided by MP Materials.

18.2 Operating Cost Estimates

Operating costs have been forecast based on the mine's recent actual costs for concentrator, sales, general and administrative costs. For mining, the operating costs were estimated by SRK from a first principles basis. For crushing, ore sorting, concentrator and site general and administrative, SRK compared forecast operating costs to the historical cost data and adjusted costs where necessary for anticipated future changes in the configuration of the operation. SRK is of the opinion that the forecasts represent a reasonable outlook for the operation. For the separations facility, SGS and MP Materials estimated the operating costs based on a first principles build-up.

As with capital costs, operating costs are captured in 2024 US dollars and are estimated at a pre-feasibility level with an accuracy of approximately +/- 25%.

18.2.1 Mining Operating Cost

SRK estimated the required mining equipment fleet, required production operating hours, and manpower to arrive at an estimate of the mining costs that the mining operations would incur. The mining costs were developed from first principles and compared to recent actual costs. The mining operating costs are presented in the following categories:

- Drilling (contractor)
- Blasting (contractor)

- Loading
- Hauling
- Other Mine Operations (dozing, grading, road maintenance operations, etc.)
- Support Equipment Operations (equipment fueling, pit dewatering, pit lighting, etc.)
- Miscellaneous Operations (various support operations, etc.)
- Mine Engineering (mine technical personnel and technical consulting)
- Mine Administration and Supervision (mine and maintenance supervision, etc.)
- Freight (for equipment supplies and parts, excluding freight for fuel)
- Contingency

A maintenance cost was allocated to each category that required equipment maintenance.

The mine operating cost estimate includes all mine functions to deliver material to the dumps, stockpiles, and primary crusher. The mining cost center also includes operating labor for the crusher feed loader and for loading, hauling, and dozing of paste tailings.

A summary of the LoM unit mine operating costs is presented in Table 18-3. The unit mining costs are presented both with and without rehandle tons included in the divisor. “Per short ton mined” refers to the LoM mining cost divided by the number of short tons of ore and waste excavated from the open pit but excluding all re-handled ore. “Per short ton moved” refers to the LoM mining cost divided by the number of short tons of ore and waste excavated from the open pit, but also including all ore re-handled from long term stockpiles, all ore fed to the crushers by front-end-loader, and all fine ore transferred by trucks from the crusher to the mill.

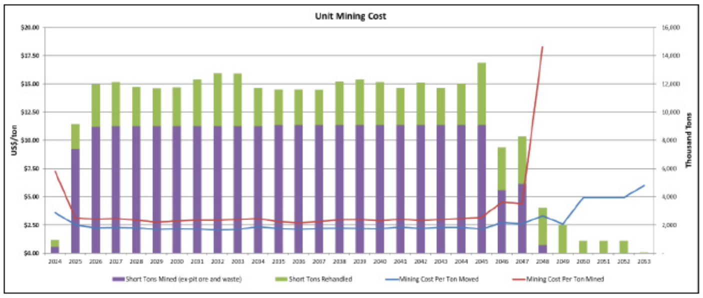
Total LoM mining costs are estimated at US$630 million, with expected unit costs of US$3.17/st-mined and US$2.29/st-moved.

Table 18-3: Mining Operating Costs

LoM Short Tons Mined/Moved (000)		**198,894**	**275,045**
Category	**US$000**	**US$/st-Mined**	**US$/st-Moved**
Drilling/Blasting/Loading/Hauling	365,651	1.838	1.329
Other mining costs	152,427	0.766	0.554
Mine engineering and administration	54,482	0.274	0.198
Contingency (10%)	57,256	0.288	0.208
Total	**$ 629,816**	**$3.167**	**$2.290**

Source: SRK, 2024

Annual mining unit costs and annual material movement are presented in Figure 18-1.



Source: SRK, 2024

Figure 18-1: Mining Unit Cost Profile

The basis for the mining operating cost estimates includes the following parameters:

- Diesel fuel cost of US$3.05/US gallon (delivered to site)
- Average density for waste of 0.0831 st /ft^3 (2.66 t/m^3)
- Average density for ore of 0.0975 st /ft^3 (3.12 t/m^3)
- Average moisture content for rock is 2%
- Average swell factor of mined rock is 40% for loading and hauling estimation
- Typical mining operations support equipment utilization of 1,512 to 3,025 operating hours per year (for track dozer, grader, water trucks, excavator, etc.)
- Rehandling crusher and ore sorter material
- Estimated average tire lives of:
  - Wheel loaders: 4,000 operating hours
  - Haul trucks: 4,000 operating hours
  - Other major mining equipment: 3,500 operating hours
- 3 to 5% freight cost on mining operating and maintenance supplies
- 10% contingency is included in the mining operating cost estimates

Employee wages (including appropriate overtime allowances) and wage burdens (33%) were based on labor cost information provided by MP Materials. The costs for maintenance supplies and materials were based on estimates presented in the current InfoMine mining cost service publications. Other mining related costs were provided by MP Materials.

Included in the mine operating cost estimate are the following:

- Drilling contractor costs
- Blasting contractor costs
- Equipment and labor costs for ore and waste mining from the pit
- Equipment and labor costs for stockpile rehandling
- Equipment and labor costs for the crusher feed loader
- Equipment and labor costs for loading, hauling, and dozing of paste tailings

- Contractor and professional services
- Memberships and subscriptions
- Office and building costs

Excluded from the mine operating cost estimate are the following:

- Mining equipment replacements and rebuilds (overhauls) which are included in the mining sustaining capital costs
- Post-mining reclamation costs
- Processing related costs
- General overheads outside of the mine

18.2.2 Processing Operating Cost

Crushing and Ore Sorting Costs

The forecast average LoM crushing cost is US$3.66 per short ton of ore crushed, including ore crushed prior to ore sorting.

The forecast average LoM ore sorting cost is US$1.80 per short ton of ore fed to the ore sorters.

The costs are based on actual costs incurred by MP Materials during the period January – September 2024, with adjustments for planned changes to the current operating configuration.

Concentrating Cost

The forecast average LoM concentrator cost, inclusive of crushing costs, is US$50.05 per short ton of ore fed to the concentrator. This cost is based on actual costs incurred by MP Materials during the period January – September 2024.

The processing cost includes:

- Milling, Flotation, Tailings and Lab
- Warehouse
- Engineering
- Utilities
- Facilities,
- Maintenance
- Other Related Costs

Separations Facility Operating Cost

The operating cost estimate for the separations facility (currently ramping up) is based on a first principles estimate developed by SGS and MP Materials. The costs are estimated at a pre-feasibility level with an accuracy of +/-25%.

The separations cost includes:

- Filtration and Drying
- Calcining
- Leaching, Thickening and Filtration
- Impurity Removal Steps
- Solvent Extraction

- Product Finishing
- Brine Purification and Salt Crystallization
- Water Treatment Plant and Combined Heat and Power Plant costs
- Incremental facilities and utilities expenses
- Incremental maintenance expenses
- Other Related Costs

Operations and labor were determined by MP Materials' analysis of staffing needs by circuit, including operations, maintenance, and engineering. A significant proportion of supplies and services costs are reagents, which usage was estimated by MP Materials and SGS as derived from historical operations and records, pilot testing, and 3rd party analysis.

Table 18-4 shows the estimated annual separations facility operating cost when treating 84,148 st of concentrate feed per year. In the economic model, adjustments to the annual separations operating costs were applied based on fixed costs ($25.9 million) and variable costs (US$1,080.59 per st of concentrate) for periods when more or less concentrate is being treated.

Table 18-4: Separations Operating Costs

Category	US$000's/year
Fixed Cost	25,940
Variable Cost	90,929
Total	**$116,869**

Source: MP Materials / SGS
Based on 84,148 st of concentrate treated.

18.2.3 Selling, General, and Administrative Operating Costs

SRK evaluated site general and administrative (G&A) expenses for the Mountain Pass operation on the basis that any additional G&A costs associated with the separations facility are captured within the operating cost estimate for that facility provided by SGS (as the QP responsible for those costs). Actual G&A costs over the trailing nine months (January 2024 to September 2024) are shown in Table 18-5.

Table 18-5: Summary of MP Materials Actual Site G&A Operating Costs

G&A Costs	Units	Trailing (9 Month Total)
G&A	US$ (000)	19,388

Source: MP Materials, 2024

The Mountain Pass mining operation is in steady state and no significant changes are forecast with respect to G&A expenses. In SRK's opinion, the steady state operation of the asset and lack of forecast significant changes to G&A spend indicate that material changes in G&A spend are unlikely and SRK is therefore comfortable extending this operating cost without modification. This results in G&A costs of US$25.8 million per year, which is treated as fully fixed for modeling purposes. This cost is factored in the first year of operations to account for a partial operational year.

As part of the net revenue calculation in the economic model, selling (i.e., shipping) costs are calculated separately from G&A costs. The modeled shipping costs are US$149 per metric tonne of product as provided by MP Materials. This is broadly in line with previous realized shipping costs at the operation and the current market environment.

19 Economic Analysis

19.1 General Description

SRK prepared a cash flow model to evaluate Mountain Pass mineral reserves on a real basis. This model was prepared on an annual basis from the reserve effective date to the exhaustion of the reserves. This section presents the main assumptions used in the cash flow model and the resulting indicative economics. The model results are presented in U.S. dollars (US$), unless otherwise stated.

All results are presented in this section on a 100% basis.

As with the capital and operating cost forecasts, the economic analysis is inherently a forward-looking exercise. These estimates rely upon a range of assumptions and forecasts that are subject to change depending upon macroeconomic conditions, operating strategy and new data collected through future operations.

19.2 Basic Model Parameters

Key criteria used in the analysis are presented throughout this section. Basic model parameters are summarized in Table 19-1.

Table 19-1: Basic Model Parameters

Description	Value
TEM Time Zero Start Date	October 1, 2024
Mine Life	30 years (partial first year)
Separations Facility Ramp up (% of capacity)	
Q4 2024	40%
2025	57.15%
2026	92.75%
2027 through 2053	100%
Discount Rate	6%

Source: SRK, MP Materials

All costs incurred prior to the model start date are considered sunk costs. The potential impact of these costs on the economics of the operation is not evaluated. This includes contributions to depreciation and working capital as these items are assumed to have a zero balance at model start.

The selected discount rate is 6% as directed by MP Materials.

19.3 External Factors

19.3.1 Pricing

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

- Concentrate – US$10.20/kg contained REO (equivalent to US$6,120 per metric tonne of 60% TREO concentrate)
- Separated PrNd product – US$124.83/kg
- Separated La product – US$1.44/kg
- Separated Ce product – US$2.57/kg
- Separated SEG+ product – US$48.22/kg

These prices are modeled as a CIF price and shipping costs are applied separately within the model.

All product streams produced by the operation are modeled as being subject to the prices presented above.

Shipping costs are modeled at US$149.09 per metric tonne of material for both concentrate and separated material. A 13% VAT tax and 2.5% commission are applied to concentrate sold to outside parties to account product taxes and selling costs for concentrate per MP Materials. VAT and commission are not applied in the model for material processed through the separations plant.

19.3.2 Taxes and Royalties

As modeled, the operation is subject to a combined 26.84% (federal and state) income tax rate. This rate reflects reductions in tax rates resulting from depletion. This approach was recommended by MP Materials for modeling purposes. All expended capital is subject to depreciation over an 8 year period. Depreciation occurs via straight line method. No existing depreciation pools are accounted for in the model.

SRK notes that the project is being evaluated as a standalone entity for this exercise (without a corporate structure). As such, tax calculations presented here may differ significantly from actuals incurred by MP Materials.

19.3.3 Working Capital

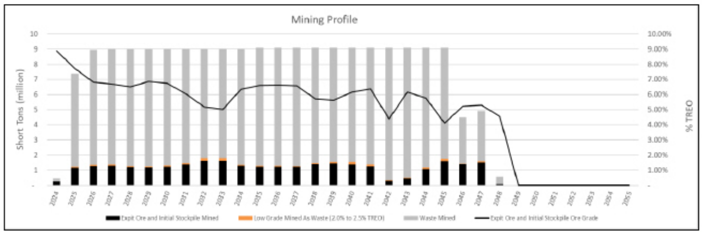
The assumptions used for working capital in this analysis are as follows:

- Accounts Receivable (A/R): 30 day delay
- Accounts Payable (A/P): 30 day delay
- Zero opening balance for A/R and A/P

19.4 Technical Factors

19.4.1 Mining Profile

The modeled mining profile was developed by SRK. The details of the mining profile are presented previously in this report. No modifications were made to the profile for use in the economic model. The modeled profile is presented on a 100% basis in Figure 19-1.



Source: SRK

Figure 19-1: Mining Profile

A summary of the modeled life of mine mining profile is presented in Table 19-2.

Table 19-2: LoM Mining Summary

Description	Units	Value
Total Ore Mined (expit)	**dst (million)**	**29.10**
Total Waste Mined	**dst (million)**	**169.79**
Total Material Mined	**dst (million)**	198.89
Rehandle (including initial stockpiles)	dst (million)	76.15
Total Material Moved	**dst (million)**	275.04
Average Grade (Mill Feed)	%TREO	6.03%
LoM Strip Ratio	Num#	5.8 x

Source: SRK

19.4.2 Processing Profile

The concentrator processing profile (Figure 19-1) was developed by SRK and results from the application of stockpile and binning logic to the mining profile external to the economic model. No modifications were made to the profile for use in the economic model other than for sensitivity analysis.

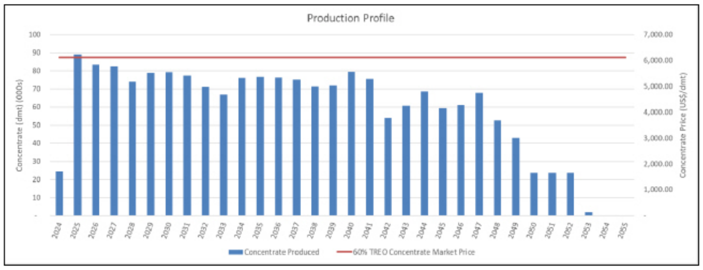
A summary of the modeled life of mine processing profile is presented in Table 19-3.

Table 19-3: LoM Processing Profile

Description	Units	Value
LoM Ore Processed through the Concentrator	dst (million)	24.57
Average Feed Grade	% TREO	5.05%
Concentrate Grade Target	% TREO	60.00%
Concentrate Moisture	%	8.00%
LoM Concentrate Produced	dmt (million)	1.87
Avg Annual Concentrate Produced	wmt	62,359

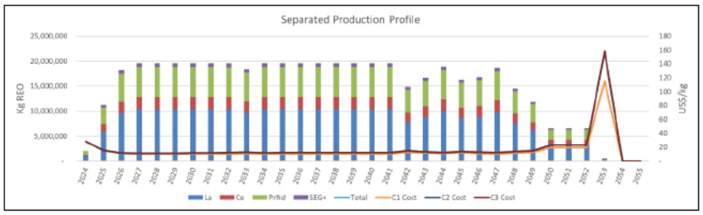
Source: SRK

As the separations facility continues to ramp up, the product from the concentrator will be fed to the separations facility to produce separated materials for sale as per the descriptions contained within this report. It is expected that the separations facility will operate at 40% of its capacity in Q4 2024, 57.15% of its capacity in 2025, 92.75% of its capacity in 2026 and 100% of its capacity from 2027 onward. When the separations facility is operating at 100% capacity, the amount of concentrate that can be fed to the facility is limited by the contained TREO. For modelling purposes, the plant maximum capacity is set to 42,860 dmt of contained TREO per year. Any material beyond this limit in any given year is assumed to be sold as concentrate. The LoM separated product production profile is shown in (Figure 19-1).



Source: SRK

Figure 19-2 : Concentrate Production

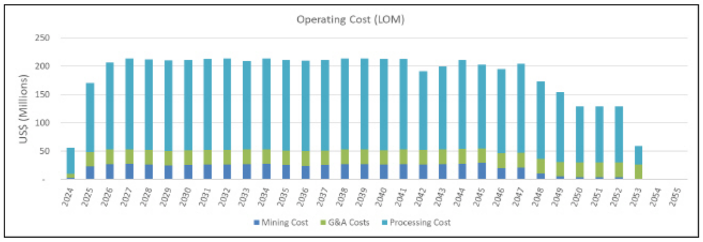


Source: SRK
The costs are higher at the end of the mine life as the facility is only operational for a short time processing limited amounts of material while incurring fixed costs.

Figure 19-3: Separations Production Profile

19.4.3 Operating Costs

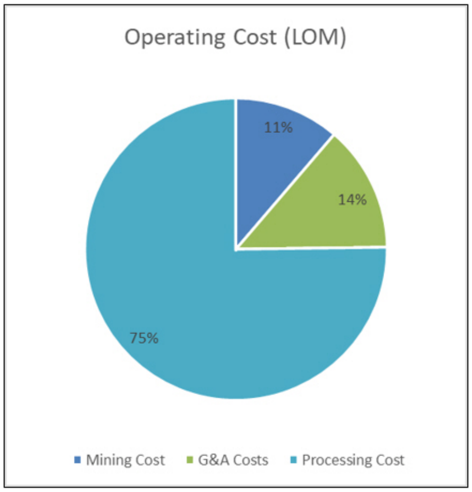
Operating costs are modeled in US dollars and can be categorized as mining, processing and site G&A costs. No contingency amounts have been added to the operating costs within the financial model; however, the mining costs were imported from a first principles cost buildup that included 10% contingency. A summary of the operating costs over the life of the operation is presented in Figure 19-4.



Source: SRK

Figure 19-4: Annual Operating Costs

The contributions of the different operating cost segments over the life of the operation are presented in Figure 19-5.



Source: SRK

Figure 19-5: LoM Operating Costs

19.4.4 Mining

The mining cost profile was developed external to the model and was imported into the model as a fixed cost on an annual basis. The result of this approach is presented in Table 19-4.

Table 19-4: Mining Cost Summary

LoM Mining Costs	Units	Value
Mining Costs	US$ (million)	629.8
Mining Cost	US$/st mined	3.17

Source: SRK

19.4.5 Processing

Processing costs were incorporated into the model as a combination of fixed and variable costs for the crushers, ore sorters, and separations facility. Variable concentrator costs are applied to the tonnage processed through the concentrator. Fixed costs for the separations facility were applied on an annual basis and variable costs are applied on a per ton of feed basis. Table 19-5 presents the cost on a per ton basis for the combined plants.

Table 19-5: Processing Cost Summary

LoM Processing Costs	Units	Value
Processing Costs	US$ (million)	4,203.4
Processing Cost	US$/st concentrator feed (post ore sorter)	171.1

Source: SRK

19.4.6 G&A Costs

Site G&A costs were incorporated into the model as annual fixed costs as presented in Table 19-6.

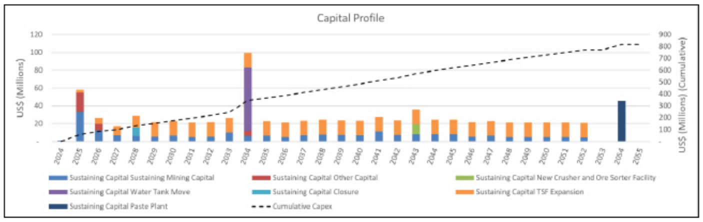
Table 19-6: G&A Cost Summary

LoM G&A Costs	Units	Value
G&A Costs	US$ (million)	756.2
G&A Cost	US$/st concentrator feed (post ore sorter)	30.78

Source: SRK

19.4.7 Capital Costs

As the operation is an existing mine, no initial capital has been modeled. Capital is modeled on an annual basis and is used in the model as developed in previous sections. No contingency amounts have been added to the sustaining capital within the model. Closure costs are modeled as capital and are captured as a one-time payment the year following cessation of operations. The modeled capital profile is presented in Figure 19-6.

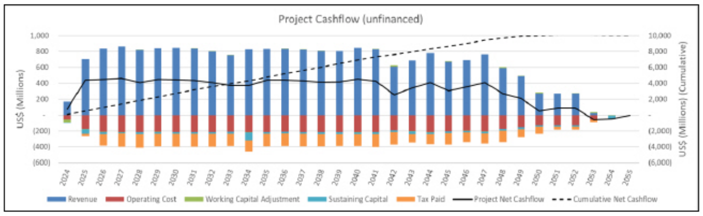


Source: SRK

Figure 19-6: Capital Expenditure Profile

19.4.8 Results

The economic analysis metrics are prepared on annual after-tax basis in 2024 US$. The results of the analysis are presented in Table 19-7. The results indicate that, at modeled prices, the operation returns a pre-tax NPV at 6% of US$7.1 billion and an after-tax NPV at 6% of US$5.3 billion. Note that because the mine is in operation and is valued on a total project basis with prior costs treated as sunk, IRR and payback period analysis are not relevant metrics. Annual project after tax cash flow is presented in Figure 19-7.



Source: SRK

Figure 19-7: Annual Cash Flow

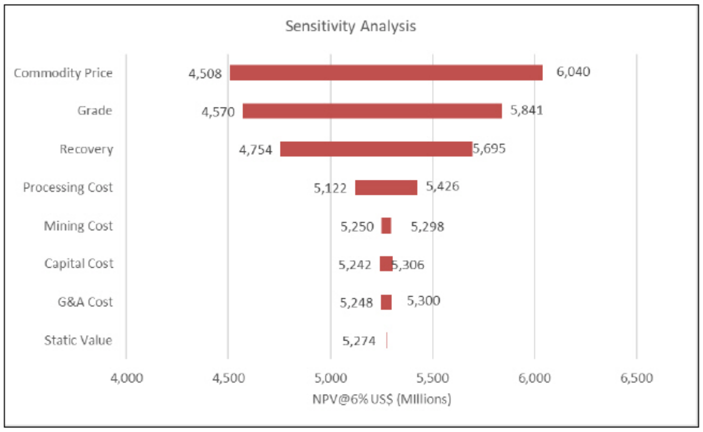
Table 19-7: Economic Result

LoM Cash Flow (unfinanced)	Units	Value
Total Revenue	**US$ (Million)**	**20,196**
Total Opex	**US$ (Million)**	**(5,589)**
Operating Margin (excluding depreciation)	US$ (Million)	14,607
Operating Margin Ratio	%	72%
Taxes Paid	US$ (Million)	(3,750)
Before Tax		
Free Cash Flow	US$ (Million)	13,791
NPV at 6%	US$ (Million)	7,114
After Tax		
Free Cash Flow	US$ (Million)	10,041
NPV at 6%	US$ (Million)	5,274

Source: SRK

19.4.9 Sensitivity Analysis

SRK performed a sensitivity analysis to determine the relative sensitivity of the operation's after-tax NPV to a number of key parameters (Figure 19-8). This is accomplished by flexing each parameter upwards and downwards by 10%. Within the constraints of this analysis, the operation appears to be most sensitive to commodity prices, mined grades and recovery or mass yield assumptions within the processing plant. SRK cautions that this sensitivity analysis is for information only and notes that these parameters were flexed in isolation within the model and are assumed to be uncorrelated with one another which may not be reflective of reality. Additionally, the amount of flex in the selected parameters may violate physical or environmental constraints present at the operation.



Source: SRK
Parameters flexed upwards and downwards by 10%.

Figure 19-8: After-Tax Sensitivity Analysis

19.4.10 Physical and Cash Flow Snapshot

The annual cashflow, expressed in million U.S. dollars, is presented in Table 19-8.

Table 19-8: Mountain Pass Annual Physicals and Cashflow (US$ millions)

Calendar Year	Unit	Total	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
Physicals																																	
Mining																																	
Ore Material Mined	ktons	29,104	242	1,156	1,276	1,290	1,213	1,196	1,235	1,395	1,602	1,606	1,293	1,233	1,230	1,222	1,415	1,459	1,401	1,244	305	466	1,061	1,583	1,407	1,516	58	-	-	-	-	-	-
Ore and Initial Stockpile Grade Mined	% REO	6.03%	8.89%	7.73%	6.82%	6.70%	6.52%	6.87%	6.74%	6.05%	5.19%	5.01%	6.36%	6.62%	6.62%	6.58%	5.73%	5.63%	6.17%	6.38%	4.39%	6.16%	5.76%	4.12%	5.23%	5.30%	4.55%	-	-	-	-	-	-
Waste Mined	ktons	169,789	218	6,244	7,674	7,710	7,787	7,804	7,765	7,605	7,398	7,394	7,707	7,867	7,870	7,878	7,685	7,641	7,699	7,856	8,795	8,634	8,039	7,517	3,079	3,391	532	-	-	-	-	-	-
Processing																																	
Crusher feed (including recrush)	ktons	34,680	217	867	1,441	1,482	1,328	1,291	1,335	1,592	1,856	1,854	1,354	1,245	1,239	1,226	1,529	1,598	1,506	1,311	1,129	1,055	1,391	2,152	1,510	1,682	906	585	-	-	-	-	-
Concentrator Feed Grade	% REO	7.13%	9.86%	9.06%	8.58%	8.49%	7.77%	8.18%	8.20%	8.05%	7.52%	7.18%	7.96%	8.01%	7.99%	7.90%	7.55%	7.61%	8.27%	7.91%	6.11%	6.66%	7.33%	6.54%	6.70%	7.26%	5.99%	5.23%	3.68%	3.68%	3.68%	3.68%	-
Concentrate Produced	ktons	2,062	27	98	92	91	82	87	87	85	78	74	84	85	84	83	79	79	88	83	60	67	76	65	67	75	58	47	26	26	26	2	-
Concentrate to Separations Plant	ktons	1,893	8	45	73	78	78	78	78	78	78	74	78	78	78	78	78	78	78	78	60	67	76	65	67	75	58	47	26	26	26	2	-
Concentrate Grade	% REO	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
Recovered La	tonnes	249,981	1,036	5,918	9,605	10,356	10,356	10,356	10,356	10,356	10,334	9,733	10,356	10,356	10,356	10,356	10,356	10,356	10,356	10,356	7,866	8,832	9,999	8,628	8,903	9,881	7,665	6,273	3,471	3,471	3,471	271	-
Recovered Ce	tonnes	59,526	247	1,409	2,287	2,466	2,466	2,466	2,466	2,466	2,461	2,318	2,466	2,466	2,466	2,466	2,466	2,466	2,466	2,466	1,873	2,103	2,381	2,055	2,120	2,353	1,825	1,494	827	827	827	65	-
Recovered PrNd	tonnes	144,817	600	3,429	5,564	5,999	5,999	5,999	5,999	5,999	5,986	5,639	5,999	5,999	5,999	5,999	5,999	5,999	5,999	5,999	4,557	5,116	5,793	4,998	5,157	5,724	4,440	3,634	2,011	2,011	2,011	157	-
Recovered SEG+	tonnes	18,512	77	438	711	767	767	767	767	767	765	721	767	767	767	767	767	767	767	767	583	654	740	639	659	732	568	464	257	257	257	20	-
Cashflow Waterfall																																	
Income																																	
Net Revenue	US$M	20,196	169.7	707.1	835.8	862.7	818.8	843.3	844.9	835.9	802.5	755.9	830.2	833.1	830.8	825.3	804.9	807.8	846.8	826.9	610.9	685.9	776.5	670.0	691.3	767.3	595.2	487.1	269.6	269.6	269.6	21.1	-
Total	**US$M**	**20,196**	**169.7**	**707.1**	**835.8**	**862.7**	**818.8**	**843.3**	**844.9**	**835.9**	**802.5**	**755.9**	**830.2**	**833.1**	**830.8**	**825.3**	**804.9**	**807.8**	**846.8**	**826.9**	**610.9**	**685.9**	**776.5**	**670.0**	**691.3**	**767.3**	**595.2**	**487.1**	**269.6**	**269.6**	**269.6**	**21.1**	**-**
Operational Expenditure																																	
Fixed	US$M	(2,213)	(36.1)	(76.3)	(80.6)	(81.2)	(80.0)	(78.2)	(79.2)	(79.9)	(80.0)	(80.6)	(81.2)	(79.0)	(77.9)	(79.0)	(80.6)	(80.7)	(79.7)	(80.9)	(80.1)	(80.7)	(81.4)	(82.6)	(73.9)	(75.1)	(64.4)	(58.3)	(57.3)	(57.3)	(57.3)	(53.4)	-
Variable	US$M	(3,376)	(19.9)	(94.2)	(126.2)	(132.5)	(132.0)	(131.9)	(132.0)	(132.9)	(133.5)	(128.6)	(132.1)	(131.7)	(131.7)	(131.7)	(132.7)	(132.9)	(132.6)	(131.9)	(111.0)	(118.7)	(129.3)	(120.5)	(120.7)	(129.3)	(108.6)	(96.3)	(71.8)	(71.8)	(71.8)	(5.6)	-
Royalty	US$M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**US$M**	**(5,589)**	**(56.0)**	**(170.5)**	**(206.8)**	**(213.7)**	**(212.0)**	**(210.1)**	**(211.2)**	**(212.8)**	**(213.5)**	**(209.2)**	**(213.3)**	**(210.7)**	**(209.7)**	**(210.7)**	**(213.3)**	**(213.5)**	**(212.3)**	**(212.9)**	**(191.1)**	**(199.4)**	**(210.7)**	**(203.1)**	**(194.6)**	**(204.3)**	**(173.0)**	**(154.6)**	**(129.1)**	**(129.1)**	**(129.1)**	**(59.1)**	**-**
Working Capital Adjustment	US$M	(0)	(37.1)	(7.0)	(7.6)	(1.6)	3.6	(2.3)	(0.0)	0.9	2.9	3.3	(5.8)	(0.5)	0.2	0.4	1.9	(0.2)	(3.2)	1.5	16.0	(5.5)	(6.4)	8.0	(2.5)	(5.4)	11.7	7.3	15.8	0.0	0.0	14.6	(3.1)
Capital Costs																																	
Sustaining Mining Capital	US$M	(89)	-	(28.6)	(8.1)	(2.6)	(1.6)	(0.8)	(2.0)	(0.3)	(0.7)	(5.4)	(1.8)	(1.8)	(0.2)	(2.5)	(3.3)	(2.7)	(2.5)	(6.7)	(2.6)	(3.5)	(3.5)	(3.5)	(0.6)	(2.0)	(0.5)	(0.2)	(0.4)	(0.3)	-	-	-
Other Capital	US$M	(125)	(1.1)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)	-	-
New Crusher and Ore Sorter Facility	US$M	(29)	-	(21.7)	(7.2)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Tank Move	US$M	(6)	-	-	-	-	-	-	-	-	-	-	(5.7)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Closure	US$M	(46)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(45.6)
TSF Expansion	US$M	(11)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(11.5)	-	-	-	-	-	-	-	-	-	-	-
Paste Plant	US$M	(71)	-	-	-	-	-	-	-	-	-	-	(71.0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHP Turbines	US$M	(9)	-	-	-	-	(9.1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Separations Capital (Sustaining)	US$M	(431)	-	(3.3)	(6.6)	(9.9)	(13.3)	(16.6)	(16.6)	(16.6)	(16.6)	(16.6)	(16.6)	(16.6)	(16.6)	(16.6)	(16.6)	(16.6)	(16.6)	(16.6)	(16.6)	(16.6)	(16.6)	(16.6)	(16.6)	(16.6)	(16.6)	(16.6)	(16.6)	(16.6)	(16.6)	-	-
Total	**US$M**	**(816)**	**(1.1)**	**(58.0)**	**(26.4)**	**(16.9)**	**(28.4)**	**(21.8)**	**(23.0)**	**(21.3)**	**(21.7)**	**(26.4)**	**(99.5)**	**(22.8)**	**(21.2)**	**(23.5)**	**(24.3)**	**(23.7)**	**(23.5)**	**(27.7)**	**(23.6)**	**(36.0)**	**(24.5)**	**(24.5)**	**(21.6)**	**(23.0)**	**(21.5)**	**(21.2)**	**(21.4)**	**(21.3)**	**(21.0)**	**-**	**(45.6)**
Cashflow Before Tax	US$M	13,791	75.5	471.6	595.0	630.4	582.0	609.2	610.6	602.7	570.2	523.6	511.6	599.1	600.2	591.5	569.2	570.4	607.8	587.8	412.1	445.0	534.9	450.4	472.7	534.5	412.4	318.6	134.9	119.2	119.5	(23.4)	(48.8)
Tax Paid	US$M	(3,750)	-	(30.5)	(144.0)	(166.8)	(171.3)	(159.4)	(165.6)	(165.0)	(161.4)	(151.5)	(139.4)	(159.3)	(158.4)	(157.8)	(156.3)	(150.1)	(150.7)	(161.5)	(155.9)	(103.7)	(124.2)	(145.0)	(118.4)	(126.4)	(144.2)	(106.5)	(82.4)	(31.1)	(31.2)	(31.7)	-
Net Cashflow	US$M	10,041	75.5	441.1	451.1	463.6	410.7	449.8	445.0	437.8	408.8	372.1	372.2	439.8	441.8	433.7	412.9	420.3	457.1	426.3	256.2	341.3	410.7	305.4	354.3	408.2	268.2	212.1	52.4	88.1	88.3	(55.1)	(48.8)

Source: SRK, 2025
2024 is a partial year covering October 1st through December 31st.
US$M = US$ million

20 Adjacent Properties

The Mojave National Preserve is located to the north and southwest of the Mountain Pass property. The U.S. Bureau of Land Management and National Park Service administer the National Preserve as well as other public lands surrounding the property. SRK is not aware of any other active mining properties in the vicinity of Mountain Pass.

21 Other Relevant Data and Information

There is no additional relevant data or information that would be material to the mineral resources or reserves at the Mountain Pass Project, beyond what is discussed in the other sections of this report.

22 Interpretation and Conclusions

Based on the data available and the analysis described in this report, in SRK's opinion, the Mountain Pass operation has a valid resource and reserve, as stated herein.

22.1 Mineral Resource Estimate

The mineral resource estimate is constrained by a geological model and grade boundaries internal to the carbonatite shapes which define a higher grade TREO-rich core vs. an undifferentiated outer shell. The project features a simple Excel-based drilling "database", most of which has no quality control. SRK supervised a historical drill core re-sampling and re-assaying program in 2009 through 2010 which demonstrated that, historically, the Mountain Pass laboratory underestimated grade. This is supported further by the fact that grade control and production grades are higher than predicted by the resource block model. The mine currently features positive reconciliations to previous modeling efforts as well as the current prediction of grade if based solely on exploration data. Consequently, SRK is confident that the resource block model is based on drilling data which has been demonstrated to be reliable, albeit conservative, representation of the TREO grade. Other elements such as phosphorus or the discrete LREO or HREO components have been variably analyzed and do not exist at the same density as the TREO information.

SRK has constrained and controlled the mineral resource estimation as a function of a 2024 updated geological model. TREO samples from drilling and blastholes have been composited for the purposes of use in estimation. Estimates of grade from both data sets have been made into a conventional block model, coded by lithology, resource domain, and a variety of other factors relevant to mining and reporting.

The block model has been constrained by a resource pit shell and reported above the reported COG. Mineral resources have been reported in this report both inclusive of reserves, and exclusive of reserves. The latter should be considered final and authoritative for SEC disclosure purposes.

SRK has addressed uncertainty and risk in the estimate by categorizing the mineral resources with respect to confidence in the estimate or underlying data supporting it. The mineral resources at the Mountain Pass deposit have been classified in accordance with SEC S-K 1300 definitions and guidance. The classification parameters are defined by both the distance to composite data, the number of drillholes used to inform block grades and a geostatistical indicator of relative estimation quality (kriging efficiency).

22.2 Mineral Reserve Estimate

SRK developed a life-of-mine (LoM) plan for the Mountain Pass operation in support of mineral reserves. MP Materials is ramping up the on-site separations facility at Mountain Pass that allows the Company to separate bastnaesite concentrate into four individual REO products for sale (PrNd oxide, SEG+ precipitate, La carbonate, and Ce chloride). For economic modeling purposes, a combination of concentrate sales and separated product sales was assumed while the separations facility continues to ramp up to full capacity. From approximately mid-2026 onward, it was assumed the separations facility will operate at full capacity producing separated products, with relatively small amounts of excess concentrate being packaged and sold to customers (refer to Section 10.5 of this report for the ramp up schedule). Forecast economic parameters are based on current cost performance for process, transportation, and administrative costs, as well as a first principles estimation of future mining costs. Forecast revenue from concentrate sales and individual separated product sales is based on a preliminary market study commissioned by MP Materials, as discussed in Section 16 of this report.

From this evaluation, pit optimization was performed based on prices that were established by the preliminary market study. The results of pit optimization guided the design and scheduling of the ultimate pit. SRK generated a cash flow model which indicated positive economics for the 30-year LoM plan, which provides the basis for the reserves. Reserves within the new ultimate pit are sequenced for approximately 25 years (Q4 2024 through 2048). Processing of stockpile material will occur for approximately 5 more years (2049 through early 2053).

The costs used for pit optimization include estimated mining, processing, sustaining capital, transportation, and administrative costs, including an allocation of corporate costs.

Processing recovery for concentrate is variable based on a mathematical relationship to estimate overall TREO recovery versus ore grade. The calculated COG for the reserves is 2.50% TREO, which was applied to indicated blocks contained within an ultimate pit, the design of which was guided by economic pit optimization.

The optimized pit shell selected to guide final pit design was based on a combination of the revenue factor (RF) 0.45 pit (used on the north half of the deposit) and the RF 1.00 pit shell (used on the south half of the deposit). The inter-ramp angles (IRA) used for the mine design are based on operational-level geotechnical studies and range from 44° to 47°.

Measured resources in stockpiles were converted to proven reserves. Indicated pit resources were converted to probable reserves by applying the appropriate modifying factors, as described herein, to potential mining pit shapes created during the mine design process. Inferred resources present within the LoM reserves pit are treated as waste.

The mine design process results in in situ open pit probable mineral reserves of 29.1 million st with an average grade of 6.03% TREO. Additionally, there are 0.8 million st of proven mineral reserves in stockpiles with an average grade of 4.03% TREO. The reference point for the mineral reserves is ore delivered to the integrated crushing and ore sorting facility. MP Materials' mining engineers provided a September 30, 2024 topography as a reserve starting point.

In the opinion of SRK as the QP, the conversion of mineral resources to mineral reserves has been completed in accordance with CFR 17, Part 229 (S-K 1300).

The reserve estimate herein is subject to potential change based on changes to the forward-looking cost and revenue assumptions utilized in this study. It is assumed that MP Materials will ramp up its on-site separations facilities to full capacity by approximately mid-2026. It is further assumed that MP Materials will install an integrated crushing and ore sorting facility that will begin ramping up in Q1 2026.

Full extraction of this reserve is dependent upon modification of current permitted boundaries for the open pit. Failure to achieve modification of these boundaries would result in MP Materials not being able to extract the full reserve estimated in this study. It is MP Materials' expectation that it will be successful in modifying this permit condition. In SRK's opinion, MP Materials' expectation in this regard is reasonable.

A portion of the resource pit encroaches on an adjoining mineral right holder's concession. This portion of the pit would only include waste stripping (i.e., no rare earth mineralization is assumed to be extracted from this concession). The prior owner of Mountain Pass had an agreement with this concession holder to allow this waste stripping (with the requirement that aggregate mined be stockpiled for the owner's use). MP Materials does not currently have this agreement in place, but SRK believes it is reasonable to assume MP Materials will be able to negotiate a similar agreement.

22.3 Metallurgy and Processing

22.3.1 Existing Crushing and Concentration Operations

- MP Materials has operated a flotation concentrator since December 2017 to recover a bastnaesite concentrate that is currently shipped to China for further processing.
- MP Materials has conducted flotation studies to evaluate TREO recovery versus ore grade and has developed a mathematical relationship to estimate overall TREO recovery versus ore grade, which has been used to estimate TREO recovery from lower grade ores later in the mine life.
- Significant improvements in concentrator performance have occurred since May 2019, which are attributed primarily to the installation of a boiler that has enabled flotation to be conducted at a constant higher temperature, as well as new reagent testing and blending of historically problematic ores.
- During 2023, the concentrator processed 776,293 metric tonnes (mt) of ore at an average grade of 8.55% TREO and produced 41,556 mt of bastnaesite concentrate at an average grade of 61.5% TREO. Overall TREO recovery averaged 64.0%. During 2023, 4,340 mt TREO was roasted and advanced to the separations plant. The remainder of the TREO was sold to customers as unroasted Product Code 4000 (27,170 mt TREO) and roasted Product Code 4050 (10,046 mt TREO).
- During 2024 (January to September), the concentrator processed 576,376 mt of ore at an average grade of 8.55% TREO and produced 33,977 mt of bastnaesite concentrate at an average grade of 61.0% TREO. Overall TREO recovery during 2024 (January to September) has averaged 69.1%. During 2024 (January – September) 9,229 mt TREO was roasted and advanced to the separations plant. The remainder of the TREO was sold to customers as unroasted Product Code 4000 (23,123 mt TREO) and roasted Product Code 4050 (1,624 mt TREO).

22.3.2 Modified and Recommissioned Separations Facility

MP Materials is in the process of ramping up its modified and recommissioned on-site separations facility to produce individual rare earth products. The incentive for this substantial process change is the enhancement of revenue that will be realized for producing individual rare earth products as compared to the previous practice of producing a single rare earth containing flotation concentrate which was sold to various entities that separate and market individual rare earth products. Over the past several years, MP Materials has made substantial technical and financial commitments to modify and recommission an on-site separation facility that allows for the sale of individual rare earth products.

A Qualified Person site visit to the MP Materials operation at Mountain Pass was undertaken in December 2024 by SGS. This visit involved a brief reintroduction to the mining operation and the flotation plant along with a more detailed discussion and inspection of ongoing separations facility ramp up efforts. Conversations were held with MP Materials engineers who are directly involved with the ongoing ramp up operations. Information provided revealed that the concentrate roasting section of the facility, particularly the product cooler following the roaster, has had commissioning, operational continuity, and throughput challenges. MP Materials engineering personnel have been addressing these challenges. As a result of these efforts, a revised ramp up schedule has been developed by MP Materials personnel and is in the process of being implemented. This new schedule stipulates that the full separations facility output will be achieved by approximately mid-2026 and, in the opinion of the SGS Qualified Person, is likely to be achieved. When the full design output is achieved, nearly all of the bastnäsite concentrate produced will be consumed. If the bastnäsite concentrate production increases above a certain level, it may exceed the separations facility limit for REO throughput, and the excess concentrate will continue to be sold to the market.

22.3.3 Planned Crushing and Ore Sorter Circuits

MP Materials is planning to install an ore sorting circuit to upgrade low grade ore containing 2.5% to 5.0% TREO. As part of the new ore sorter installation, MP Materials will decommission the existing crushing plant and construct two new crushing facilities. MP Materials expects the integrated crushing and ore sorting facility to begin ramping up operations during Q1 2026.

In the future, MP Materials plans to conduct further test work to determine whether even lower grade material (<2.5% TREO) is potentially amenable to ore sorting.

22.4 Project Infrastructure

The Mountain Pass site has all facilities required for operation, including the open pit, concentrator, separations facility, access and haul roads, explosives storage, fuel tanks and fueling systems, warehouse, security guard house and perimeter fencing, tailings filter plant, tailings storage area, waste rock storage area, administrative and office buildings, surface water control systems, evaporation ponds, miscellaneous shops, truck shop, laboratory, multiple laydown areas, power supply, water supply, waste handling bins and temporary storage locations, and a fully developed communications system.

Access to the site, as well as site haul roads and other minor roads are fully developed and controlled by MP Materials. There is no public access through the Project area. All public access roads that lead to the Project are gated at the property boundary.

Outside services include industrial maintenance contractors, equipment suppliers and general service contractors. Access to qualified contractors and suppliers is excellent due to the proximity of population centers such as Las Vegas, Nevada as well as Elko, Nevada (an established large mining district) and Phoenix, Arizona (servicing the copper mining industry).

Substantially all the power to the Mountain Pass facility is currently supplied by a Combined Heat and Power (CHP) or co-generation (cogen) power facility with two natural gas-fired turbines capable of producing up to 26 MW of power combined. In addition, the site is served by a 12-kV line from a Southern California Edison substation two miles away.

Water is supplied through active water wells located eight miles west of the project. Fire systems are supplied by separate fire water tanks and pumps.

The LoM plan includes the planned relocation of key infrastructure to support ongoing operations. The existing crusher will be replaced with an integrated crushing and ore sorting facility that will begin ramping up in Q1 2026. The construction of this new facility will allow the existing crusher to be removed, thereby accommodating the northern expansion of the pit. Additionally, in 2034, the paste tailings plant and water tanks—currently situated northeast of the pit highwall near the concentration plant—will be relocated. Capital cost provisions are included in the technical economic model (TEM) for these relocations.

The project has utilized approximately 4.4 million st of the total capacity of the tailings storage facility. The existing facility has a remaining capacity of approximately 17.2 million st which will provide approximately 19 more years of storage. MP Materials will expand the existing tailings facility to the northwest in approximately 2043 to provide additional storage capacity. A capital cost provision has been included in the TEM for this expansion.

Site logistics are straightforward with the concentrate product shipped in supersacks within a shipping container by truck to the port of Los Angeles. At the port, the containers are loaded onto a container ship and shipped to the final customers. Refined products for domestic customers are shipped in supersacks and intermediate bulk containers (IBC tote).

22.5 Products and Markets

Separated REE products outlined in this report (PrNd oxide, SEG+ precipitate, La carbonate, and Ce chloride) are considered marketable from an economic perspective, provided market standards and requirements are met. Adamas forecasts a long-term price of US$124.83/kg REO for PrNd oxide, US$48.22/kg REO for SEG+ precipitate, US$1.44/kg REO for Lanthanum carbonate, and US$2.57/kg REO for Cerium chloride. The mixed rare earth concentrate price of US$10.20/kg of contained REO will be principally driven by trends in PrNd and dysprosium, price swings of which will be mirrored by concentrates.

22.6 Environmental, Closure, and Permitting

As of September 30, 2024, MP Materials holds the necessary operating permits, including conditional use and minor use permits from the County of San Bernardino (SBC), which currently allows continued operations of the Mountain Pass facility through 2042. The proposed mine plan extends the mine life to 2053. The future mine plan requires expansion of the current permitted boundary of the open pit, expansion of the North Overburden Stockpile and construction of a new East Overburden Stockpile.

MP Materials will need to engage with the SBC-LUS and other regulatory authorities and allow sufficient time to prepare the permit applications and gain the necessary approvals to implement the mine plan described herein. There is a risk that the timing for regulatory approvals may be longer than anticipated. In this case, MP Materials may not be able to implement or follow the mine plan as currently proposed. SRK is of the opinion that MP Materials will continue to successfully engage regulatory authorities and gain approval for future amendments related to site operations within the private property boundary.

22.7 Projected Economic Outcomes

The Mountain Pass operation consists of an open pit mine and several processing facilities fed by the open pit mine. The operation is expected to have a 30 year life with the first modeled year of operation a partial year to align with the effective date of the reserves. Under the forward-looking assumptions modeled and documented in this report, the operation is forecast to generate positive cashflow. As modeled for this analysis, the operation is forecast to produce 1.87 million dry metric tonnes of concentrate to be either sold or processed into separated materials. This results in a forecast after-tax project NPV at 6% of US$5.3 billion.

The analysis performed for this report indicates that the operation's NPV is most sensitive to variations in the commodity price received, the grade of ore mined and processing plant performance.

23 Recommendations

As an operating mine, there are no further work programs or studies that are required to extract the reserve estimated herein. However, there remain opportunities for MP Materials to perform additional data collection or study to potentially benefit the operation.

23.1 Geology and Resources

SRK notes that ongoing infill and exploration drilling is recommended for further development of the Mountain Pass mine. As shown in recent production reconciliation, modeling of short-range variability in the resource will depend on additional information at relatively close spacings to characterize and improve prediction of tons and grade for short term planning. Such a program would involve continuous drilling of immediate near-term production and should be considered an operational cost of the mine in the future. In addition, the resource locally remains open at depth and may benefit from additional drilling in more widely-spaced areas. SRK estimates a drilling program of 10,000 to 20,000 ft of drilling would improve confidence in the model and potentially convert existing Inferred resources to a higher category appropriate for conversion to reserves.

Additional recommendations include:

- A study of ore density versus ore grade, which can be completed using existing core in storage, could improve the accuracy of the block model grade and tonnage estimation.
- Improved database architecture and validation of exploration and mine data. Currently, this is based almost entirely on digital spreadsheets.
- Separate assaying of the light rare earth oxides and phosphorus through the carbonatite units and 20 ft into the hanging-wall and footwall units should be implemented routinely for future drilling and further re-assaying of existing drill core. This should be extended to individual heavy rare earth oxides should the project strategy consider incorporating these as products in the future.
- Phosphorus assays may help to refine the resource model by identifying monazite-rich zones. SRK also recommends creating a minimum of two (a high and low grade) site specific reference standards for QA/QC to be used in all future assaying programs. These reference standards should be certified through a multi-laboratory round-robin program to achieve industry best practice.
- SRK strongly recommends improving the QA/QC process to demonstrate that the internal laboratory and any external laboratories can be independently checked for precision and accuracy. Currently, the lack of commercial standards and a consistent approach to blank and duplicate insertion and analysis is not consistent with industry standards.

The estimated cost for the additional drilling and other recommendations is approximately US$3 million.

23.2 Mining and Reserves

23.2.1 Geotechnical Recommendations:

- CNI performed a site visit in September 2024 and did not observe any change in conditions that would require a review or change to their previously recommended slope design parameters. CNI is conducting twice-yearly visits to observe ground conditions. Routine geotechnical slope monitoring, data collection, and analysis should continue. MP Materials should review geotechnical parameters and optimize the mine plan prior to starting new phases based on this review.

23.2.2 Hydrogeology:

- Conduct additional hydrogeological studies of the deep part of the bedrock to the elevation of the proposed bottom of the pit (3,740 ft amsl) by conducting packer-isolated tests in three or four core holes defining bedrock permeability and dewatering targets (where and to what depth dewatering wells can be installed). The strings of vibrated wire piezometers (similar to those installed by CNI) are also recommended in these core holes to better define vertical hydraulic conductivity and the hydrogeological role of encountered faults.
- If zones of significant permeability are found by packer testing, pumping wells with long screens should be drilled targeting these zones with the drilling of pilot holes prior to their construction. Spinner logging needs to be done within the screen intervals of these pumping wells.
- Update or develop new numerical groundwater flow to predict inflow to the proposed pit and better define:
  - Dewatering requirements
  - Pore pressures in pit walls and the potential necessity to reduce them by installation of horizontal drain holes from pit benches (if required by geotechnical conditions of the slopes)
  - Propagation of the drawdown cone during both mining and post-mining conditions (including pit lake infilling) to evaluate the potential impact on the groundwater system because of the continued deepening of the open pit
- The estimated cost to conduct the recommended hydrogeological studies and numerical groundwater modeling is approximately US$920,000.

23.2.3 Costs and Economics

- Develop a more-detailed mid- and long-term sustaining capital expenditure estimate. SRK completed a long-term estimate for mining-related capital, and other components of the operation should generate a similar forecast to improve long-term budgeting. There would be no additional cost for this recommendation as the work would be performed by existing MP Materials staff.

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25 Reliance on Information Provided by the Registrant

The Qualified Person's opinions contained herein is based on information provided to the Qualified Persons by MP Materials throughout the course of the investigations. Table 25-1 of this section of the Technical Report Summary will:

(i) Identify the categories of information provided by the registrant;

(ii) Identify the particular portions of the Technical Report Summary that were prepared in reliance on information provided by the registrant pursuant to Subpart 1302 (f)(1), and the extent of that reliance; and

(iii) Disclose why the qualified person considers it reasonable to rely upon the registrant for any of the information specified in Subpart 1302 (f)(1).

Table 25-1: Reliance on Information Provided by the Registrant

Category	Report Item/ Portion	Portion of Technical Report Summary	Disclose Why the Qualified Person Considers it Reasonable to Rely Upon the Registrant
Claims List	3	3.2 Mineral Title	MP Materials provided SRK with a current listing of claims. The information was sourced from the Bureau of Land Management.
Marketing Agreements	16	16.5 Specific Products	MP Materials provided Adamas with information regarding the product specifications intended for production both now and in future
Marketing Agreements	16	16.7 Contracts	MP Materials provided Adamas with current marketing agreements and potential terms of agreements tied to future product sales and operations.
Marketing Plans	19	19 Economic Analysis	MP Materials provided SRK with input into the shipping points of sale and associated shipping costs used in the model.
Environmental Studies	17	17.1 Environmental Studies	SRK was provided with various environmental studies conducted on site. These studies were of a vintage that independent validation could not be completed.
Discount Rates	19	19 Economic Analysis	MP Materials provided SRK with discount rates for project evaluation in line with previous evaluations.
Tax rates and government royalties	19	19 Economic Analysis	SRK was provided with income and applicable VAT tax rates by MP Materials for application within the model. These rates are in line with SRK's understanding of the tax regime at the project location.

Source: SRK and Adamas

Signature Page

This report titled “SEC Technical Report Summary, Pre-Feasibility Study, Mountain Pass Mine, San Bernardino County, California” with an effective date of October 1, 2024, was prepared and signed by:

SRK Consulting (U.S.) Inc.

Dated at Denver, Colorado
February 19, 2025

(Signed) SRK Consulting (U.S.) Inc.

SGS North America Inc.

Dated at Tucson, Arizona
February 19, 2025

(Signed) SGS North America Inc.

Adamas Intelligence Inc.

Dated at Toronto, Canada
February 19, 2025

(Signed) Adamas Intelligence Inc.

Appendices

Appendix A: Claims List

Date and Time Run:
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DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MINING CLAIMS

MINING CLAIM CUSTOMER INFORMATION

Admin State: CA
Geo State: CA
Claimant: MP MINE OPERATIONS LLC **Customer Id:** 2418583.0
Street: HC 1 BOX 224
City: MOUNTAIN PASSS **State:** CA **Postal Code:** 92366

Serial Number	Lead File Number	Legacy Serial Number	Legacy Lead File Number	Claim Name	Case Disposition	Claim Type	Next Payment Due Date
CA101304758	CA101304758	CAMC259387	CAMC259387	JACK 66	ACTIVE	MILL SITE	9/2/2025
CA101334324	CA101334324	CAMC51761	CAMC51692	JACK NO 39	ACTIVE	MILL SITE	9/2/2025
CA101347323	CA101347323	CAMC70768	CAMC70767	ACE #2	ACTIVE	MILL SITE	9/2/2025
CA101348437	CA101348437	CAMC70767	CAMC70767	ACE #1	ACTIVE	MILL SITE	9/2/2025
CA101349790	CA101349790	CAMC70769	CAMC70767	ACE #3	ACTIVE	MILL SITE	9/2/2025
CA101452381	CA101452381	CAMC273770	CAMC273769	ACE NO 6	FILED	MILL SITE	9/2/2025
CA101452742	CA101452742	CAMC263510	CAMC263510	QUEEN 90	FILED	MILL SITE	9/2/2025
CA101547491	CA101547491	CAMC51760	CAMC51692	JACK NO 36	ACTIVE	MILL SITE	9/2/2025
CA101600622	CA101600622	CAMC153273	CAMC153272	SHADOW VLY 1857 #2	ACTIVE	MILL SITE	9/2/2025
CA101759245	CA101759245	CAMC273769	CAMC273769	ACE NO 7	FILED	MILL SITE	9/2/2025
CA101759479	CA101759479	CAMC153272	CAMC153272	SHADOW VLY 1857 #1	ACTIVE	MILL SITE	9/2/2025

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DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MINING CLAIMS

Page 1 of 19

MINING CLAIM CUSTOMER INFORMATION

Admin State: CA
Geo State: CA
Claimant: SECURE NATURAL RESOURCES LLC **Customer Id:** 2397698.0
Street: 900 N MICHIGAN AVE STE 1340
City: CHICAGO **State:** IL **Postal Code:** 60611

Serial Number	Lead File Number	Legacy Serial Number	Legacy Lead File Number	Claim Name	Case Disposition	Claim Type	Next Payment Due Date
CA101300112	CA101300112	CAMC16271	CAMC16264	MINERAL HILL NO 8	ACTIVE	LODE CLAIM	9/2/2025
CA101300164	CA101300164	CAMC233783	CAMC233774	SYENITE 185A	ACTIVE	LODE CLAIM	9/2/2025
CA101300349	CA101300349	CAMC51743	CAMC51692	EARL NO 5	ACTIVE	LODE CLAIM	9/2/2025
CA101300353	CA101300353	CAMC5950	CAMC5840	SYENITE 114	ACTIVE	LODE CLAIM	9/2/2025
CA101300355	CA101300355	CAMC5889	CAMC5840	SYENITE 50	ACTIVE	LODE CLAIM	9/2/2025
CA101300382	CA101300382	CAMC5872	CAMC5840	SYENITE 33	ACTIVE	LODE CLAIM	9/2/2025
CA101300397	CA101300397	CAMC234432	CAMC234416	SYENITE 210	ACTIVE	LODE CLAIM	9/2/2025
CA101300466	CA101300466	CAMC5900	CAMC5840	SYENITE 61	ACTIVE	LODE CLAIM	9/2/2025
CA101300737	CA101300737	CAMC234453	CAMC234416	SYENITE 231	ACTIVE	LODE CLAIM	9/2/2025
CA101300754	CA101300754	CAMC6000	CAMC5840	SYENITE 165	ACTIVE	LODE CLAIM	9/2/2025
CA101300927	CA101300927	CAMC244770	CAMC244736	CMF 35	ACTIVE	LODE CLAIM	9/2/2025
CA101301524	CA101301524	CAMC5994	CAMC5840	SYENITE 159	ACTIVE	LODE CLAIM	9/2/2025
CA101301536	CA101301536	CAMC234454	CAMC234416	SYENITE 232	ACTIVE	LODE CLAIM	9/2/2025
CA101302125	CA101302125	CAMC5895	CAMC5840	SYENITE 56	ACTIVE	LODE CLAIM	9/2/2025
CA101302176	CA101302176	CAMC201788	CAMC201787	SYENITE 90	ACTIVE	LODE CLAIM	9/2/2025
CA101302380	CA101302380	CAMC177649	CAMC177640	SOUTH SYENITE 10	ACTIVE	LODE CLAIM	9/2/2025
CA101302391	CA101302391	CAMC5978	CAMC5840	SYENITE 142	ACTIVE	LODE CLAIM	9/2/2025
CA101302697	CA101302697	CAMC5917	CAMC5840	SYENITE 78	ACTIVE	LODE CLAIM	9/2/2025
CA101302706	CA101302706	CAMC5871	CAMC5840	SYENITE 32	ACTIVE	LODE CLAIM	9/2/2025
CA101302962	CA101302962	CAMC244790	CAMC244736	CMF 55	ACTIVE	LODE CLAIM	9/2/2025
CA101302967	CA101302967	CAMC5892	CAMC5840	SYENITE 53	ACTIVE	LODE CLAIM	9/2/2025
CA101303517	CA101303517	CAMC5842	CAMC5840	SYENITE 3	ACTIVE	LODE CLAIM	9/2/2025
CA101303524	CA101303524	CAMC47650	CAMC47621	BAILEY 30	ACTIVE	LODE CLAIM	9/2/2025
CA101303534	CA101303534	CAMC245119	CAMC245118	SOUTH	ACTIVE	LODE	9/2/2025

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OF THE DATA FOR PURPOSES
NOT INTENDED BY BLM

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DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MINING CLAIMS

Serial Number	Lead File Number	Legacy Serial Number	Legacy Lead File Number	Claim Name	Case Disposition	Claim Type	Next Payment Due Date
				SYENITE 108		CLAIM	
CA101303907	CA101303907	CAMC5947	CAMC5840	SYENITE 111	ACTIVE	LODE CLAIM	9/2/2025
CA101303917	CA101303917	CAMC233775	CAMC233774	SYENITE 146A	ACTIVE	LODE CLAIM	9/2/2025
CA101304196	CA101304196	CAMC51739	CAMC51692	EARL NO 1	ACTIVE	LODE CLAIM	9/2/2025
CA101304375	CA101304375	CAMC5862	CAMC5840	SYENITE 23	ACTIVE	LODE CLAIM	9/2/2025
CA101304648	CA101304648	CAMC5858	CAMC5840	SYENITE 19	ACTIVE	LODE CLAIM	9/2/2025
CA101304759	CA101304759	CAMC5951	CAMC5840	SYENITE 115	ACTIVE	LODE CLAIM	9/2/2025
CA101304800	CA101304800	CAMC5901	CAMC5840	SYENITE 62	ACTIVE	LODE CLAIM	9/2/2025
CA101305328	CA101305328	CAMC244750	CAMC244736	CMF 15	ACTIVE	LODE CLAIM	9/2/2025
CA101305329	CA101305329	CAMC5967	CAMC5840	SYENITE 131	ACTIVE	LODE CLAIM	9/2/2025
CA101305361	CA101305361	CAMC201789	CAMC201787	SYENITE 91	ACTIVE	LODE CLAIM	9/2/2025
CA101305378	CA101305378	CAMC234486	CAMC234416	SYENITE 264	ACTIVE	LODE CLAIM	9/2/2025
CA101330471	CA101330471	CAMC301781	CAMC301781	EAST SYENITE 3	FILED	LODE CLAIM	9/2/2025
CA101330472	CA101330472	CAMC301782	CAMC301781	EAST SYENITE 4	FILED	LODE CLAIM	9/2/2025
CA101330473	CA101330473	CAMC301783	CAMC301781	EAST SYENITE 5	FILED	LODE CLAIM	9/2/2025
CA101330474	CA101330474	CAMC301784	CAMC301781	EAST SYENITE 6	FILED	LODE CLAIM	9/2/2025
CA101330475	CA101330475	CAMC301785	CAMC301781	EAST SYENITE 7	FILED	LODE CLAIM	9/2/2025
CA101330476	CA101330476	CAMC301786	CAMC301781	EAST SYENITE 8	FILED	LODE CLAIM	9/2/2025
CA101330477	CA101330477	CAMC301787	CAMC301781	EAST SYENITE 9	FILED	LODE CLAIM	9/2/2025
CA101330478	CA101330478	CAMC301788	CAMC301781	EAST SYENITE 10	FILED	LODE CLAIM	9/2/2025
CA101330479	CA101330479	CAMC301789	CAMC301781	EAST SYENITE 11	FILED	LODE CLAIM	9/2/2025
CA101330480	CA101330480	CAMC301790	CAMC301781	EAST SYENITE 12	FILED	LODE CLAIM	9/2/2025
CA101330481	CA101330481	CAMC301791	CAMC301781	EAST SYENITE 13	FILED	LODE CLAIM	9/2/2025
CA101330482	CA101330482	CAMC301792	CAMC301781	EAST SYENITE 14	FILED	LODE CLAIM	9/2/2025
CA101330483	CA101330483	CAMC301793	CAMC301781	EAST SYENITE 15	FILED	LODE CLAIM	9/2/2025
CA101330484	CA101330484	CAMC301794	CAMC301781	EAST SYENITE 16	FILED	LODE CLAIM	9/2/2025
CA101330485	CA101330485	CAMC301795	CAMC301781	EAST SYENITE 17	FILED	LODE CLAIM	9/2/2025
CA101330486	CA101330486	CAMC301796	CAMC301781	EAST SYENITE 18	FILED	LODE CLAIM	9/2/2025
CA101331143	CA101331143	CAMC244781	CAMC244736	CMF 46	ACTIVE	LODE CLAIM	9/2/2025

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CA101331170	CA101331170	CAMC5981	CAMC5840	SYENITE 145	ACTIVE	LODE CLAIM	9/2/2025
CA101331171	CA101331171	CAMC17406	CAMC17399	SYENITE 172	ACTIVE	LODE CLAIM	9/2/2025
CA101331221	CA101331221	CAMC5989	CAMC5840	SYENITE 154	ACTIVE	LODE CLAIM	9/2/2025
CA101331243	CA101331243	CAMC233776	CAMC233774	SYENITE 168A	ACTIVE	LODE CLAIM	9/2/2025
CA101331274	CA101331274	CAMC301797	CAMC301781	EAST SYENITE 19	FILED	LODE CLAIM	9/2/2025
CA101331275	CA101331275	CAMC301798	CAMC301781	EAST SYENITE 20	FILED	LODE CLAIM	9/2/2025
CA101331276	CA101331276	CAMC301799	CAMC301781	EAST SYENITE 21	FILED	LODE CLAIM	9/2/2025
CA101331277	CA101331277	CAMC301800	CAMC301781	EAST SYENITE 22	FILED	LODE CLAIM	9/2/2025
CA101331278	CA101331278	CAMC301801	CAMC301781	EAST SYENITE 23	FILED	LODE CLAIM	9/2/2025
CA101331279	CA101331279	CAMC301802	CAMC301781	EAST SYENITE 24	FILED	LODE CLAIM	9/2/2025
CA101331280	CA101331280	CAMC301803	CAMC301781	EAST SYENITE 25	FILED	LODE CLAIM	9/2/2025
CA101331281	CA101331281	CAMC301804	CAMC301781	EAST SYENITE 26	FILED	LODE CLAIM	9/2/2025
CA101331282	CA101331282	CAMC301805	CAMC301781	EAST SYENITE 27	FILED	LODE CLAIM	9/2/2025
CA101331283	CA101331283	CAMC301806	CAMC301781	EAST SYENITE 28	FILED	LODE CLAIM	9/2/2025
CA101331284	CA101331284	CAMC301807	CAMC301781	EAST SYENITE 29	FILED	LODE CLAIM	9/2/2025
CA101331285	CA101331285	CAMC301808	CAMC301781	EAST SYENITE 30	FILED	LODE CLAIM	9/2/2025
CA101331286	CA101331286	CAMC301809	CAMC301781	EAST SYENITE 31	FILED	LODE CLAIM	9/2/2025
CA101331287	CA101331287	CAMC301810	CAMC301781	EAST SYENITE 32	FILED	LODE CLAIM	9/2/2025
CA101331288	CA101331288	CAMC301811	CAMC301781	EAST SYENITE 33	FILED	LODE CLAIM	9/2/2025
CA101331289	CA101331289	CAMC301812	CAMC301781	EAST SYENITE 34	FILED	LODE CLAIM	9/2/2025
CA101331290	CA101331290	CAMC301813	CAMC301781	EAST SYENITE 35	FILED	LODE CLAIM	9/2/2025
CA101331291	CA101331291	CAMC301814	CAMC301781	EAST SYENITE 36	FILED	LODE CLAIM	9/2/2025
CA101331292	CA101331292	CAMC301815	CAMC301781	EAST SYENITE 37	FILED	LODE CLAIM	9/2/2025
CA101331293	CA101331293	CAMC301816	CAMC301781	EAST SYENITE 38	FILED	LODE CLAIM	9/2/2025
CA101331294	CA101331294	CAMC301817	CAMC301781	EAST SYENITE 39	FILED	LODE CLAIM	9/2/2025
CA101331951	CA101331951	CAMC5861	CAMC5840	SYENITE 22	ACTIVE	LODE CLAIM	9/2/2025
CA101331971	CA101331971	CAMC5931	CAMC5840	SYENITE 93	ACTIVE	LODE CLAIM	9/2/2025
CA101332007	CA101332007	CAMC47663	CAMC47621	BAILEY 50	ACTIVE	LODE CLAIM	9/2/2025
CA101332024	CA101332024	CAMC5939	CAMC5840	SYENITE 103	ACTIVE	LODE	9/2/2025

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						CLAIM	
CA101332041	CA101332041	CAMC47637	CAMC47621	BAILEY 17	ACTIVE	LODE CLAIM	9/2/2025
CA101332086	CA101332086	CAMC301818	CAMC301781	EAST SYENITE 40	FILED	LODE CLAIM	9/2/2025
CA101332768	CA101332768	CAMC244124	CAMC244124	SYENITE 297	ACTIVE	LODE CLAIM	9/2/2025
CA101332798	CA101332798	CAMC177641	CAMC177640	SOUTH SYENITE 2	ACTIVE	LODE CLAIM	9/2/2025
CA101332810	CA101332810	CAMC233778	CAMC233774	SYENITE 173A	ACTIVE	LODE CLAIM	9/2/2025
CA101332820	CA101332820	CAMC244801	CAMC244736	CMF 66	ACTIVE	LODE CLAIM	9/2/2025
CA101332821	CA101332821	CAMC234466	CAMC234416	SYENITE 244	ACTIVE	LODE CLAIM	9/2/2025
CA101332828	CA101332828	CAMC5884	CAMC5840	SYENITE 45	ACTIVE	LODE CLAIM	9/2/2025
CA101333498	CA101333498	CAMC245120	CAMC245118	SOUTH SYENITE 109	ACTIVE	LODE CLAIM	9/2/2025
CA101333517	CA101333517	CAMC5999	CAMC5840	SYENITE 164	ACTIVE	LODE CLAIM	9/2/2025
CA101333526	CA101333526	CAMC5876	CAMC5840	SYENITE 37	ACTIVE	LODE CLAIM	9/2/2025
CA101333529	CA101333529	CAMC5949	CAMC5840	SYENITE 113	ACTIVE	LODE CLAIM	9/2/2025
CA101333542	CA101333542	CAMC234429	CAMC234416	SYENITE 207	ACTIVE	LODE CLAIM	9/2/2025
CA101333548	CA101333548	CAMC5851	CAMC5840	SYENITE 12	ACTIVE	LODE CLAIM	9/2/2025
CA101333564	CA101333564	CAMC5995	CAMC5840	SYENITE 160	ACTIVE	LODE CLAIM	9/2/2025
CA101333572	CA101333572	CAMC5945	CAMC5840	SYENITE 109	ACTIVE	LODE CLAIM	9/2/2025
CA101333573	CA101333573	CAMC47669	CAMC47621	BAILEY 56	ACTIVE	LODE CLAIM	9/2/2025
CA101333588	CA101333588	CAMC234487	CAMC234416	SYENITE 265	ACTIVE	LODE CLAIM	9/2/2025
CA101333600	CA101333600	CAMC234424	CAMC234416	SYENITE 202	ACTIVE	LODE CLAIM	9/2/2025
CA101334335	CA101334335	CAMC177680	CAMC177640	SOUTH SYENITE 41	ACTIVE	LODE CLAIM	9/2/2025
CA101334336	CA101334336	CAMC234468	CAMC234416	SYENITE 246	ACTIVE	LODE CLAIM	9/2/2025
CA101335033	CA101335033	CAMC122227	CAMC122227	DESERT POPPY 2	ACTIVE	LODE CLAIM	9/2/2025
CA101335038	CA101335038	CAMC51748	CAMC51692	LUCKY STRIKE NO 4	ACTIVE	LODE CLAIM	9/2/2025
CA101335040	CA101335040	CAMC5955	CAMC5840	SYENITE 119	ACTIVE	LODE CLAIM	9/2/2025
CA101335046	CA101335046	CAMC5926	CAMC5840	SYENITE 87	ACTIVE	LODE CLAIM	9/2/2025
CA101335057	CA101335057	CAMC177737	CAMC177640	SOUTH SYENITE 98	ACTIVE	LODE CLAIM	9/2/2025
CA101335073	CA101335073	CAMC47665	CAMC47621	BAILEY 52	ACTIVE	LODE CLAIM	9/2/2025
CA101335077	CA101335077	CAMC5869	CAMC5840	SYENITE 30	ACTIVE	LODE CLAIM	9/2/2025

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CA101335099	CA101335099	CAMC234489	CAMC234416	SYENITE 267	ACTIVE	LODE CLAIM	9/2/2025
CA101335742	CA101335742	CAMC245121	CAMC245118	SOUTH SYENITE 110	ACTIVE	LODE CLAIM	9/2/2025
CA101335773	CA101335773	CAMC5905	CAMC5840	SYENITE 66	ACTIVE	LODE CLAIM	9/2/2025
CA101335799	CA101335799	CAMC5880	CAMC5840	SYENITE 41	ACTIVE	LODE CLAIM	9/2/2025
CA101335810	CA101335810	CAMC244803	CAMC244736	CMF 68	ACTIVE	LODE CLAIM	9/2/2025
CA101335834	CA101335834	CAMC234426	CAMC234416	SYENITE 204	ACTIVE	LODE CLAIM	9/2/2025
CA101336526	CA101336526	CAMC47661	CAMC47621	BAILEY 41	ACTIVE	LODE CLAIM	9/2/2025
CA101336540	CA101336540	CAMC47633	CAMC47621	BAILEY 13	ACTIVE	LODE CLAIM	9/2/2025
CA101336564	CA101336564	CAMC234447	CAMC234416	SYENITE 225	ACTIVE	LODE CLAIM	9/2/2025
CA101337163	CA101337163	CAMC5974	CAMC5840	SYENITE 138	ACTIVE	LODE CLAIM	9/2/2025
CA101337190	CA101337190	CAMC17408	CAMC17399	SYENITE 174	ACTIVE	LODE CLAIM	9/2/2025
CA101337191	CA101337191	CAMC16272	CAMC16264	MINERAL HILL NO 9	ACTIVE	LODE CLAIM	9/2/2025
CA101337212	CA101337212	CAMC5894	CAMC5840	SYENITE 55	ACTIVE	LODE CLAIM	9/2/2025
CA101337812	CA101337812	CAMC16270	CAMC16264	MINERAL HILL NO 7	ACTIVE	LODE CLAIM	9/2/2025
CA101337825	CA101337825	CAMC5873	CAMC5840	SYENITE 34	ACTIVE	LODE CLAIM	9/2/2025
CA101337837	CA101337837	CAMC6002	CAMC5840	SYENITE 167	FILED	LODE CLAIM	9/2/2025
CA101337862	CA101337862	CAMC177640	CAMC177640	SOUTH SYENITE 1	ACTIVE	LODE CLAIM	9/2/2025
CA101337863	CA101337863	CAMC234428	CAMC234416	SYENITE 206	ACTIVE	LODE CLAIM	9/2/2025
CA101338439	CA101338439	CAMC51744	CAMC51692	EARL NO 6	ACTIVE	LODE CLAIM	9/2/2025
CA101338442	CA101338442	CAMC101870	CAMC101865	SYENITE #182	ACTIVE	LODE CLAIM	9/2/2025
CA101338452	CA101338452	CAMC244780	CAMC244736	CMF 45	ACTIVE	LODE CLAIM	9/2/2025
CA101338462	CA101338462	CAMC51694	CAMC51692	CLARK MOUNTAIN NO 12	ACTIVE	LODE CLAIM	9/2/2025
CA101338481	CA101338481	CAMC5844	CAMC5840	SYENITE 5	ACTIVE	LODE CLAIM	9/2/2025
CA101338510	CA101338510	CAMC234449	CAMC234416	SYENITE 227	ACTIVE	LODE CLAIM	9/2/2025
CA101338523	CA101338523	CAMC5992	CAMC5840	SYENITE 157	ACTIVE	LODE CLAIM	9/2/2025
CA101338528	CA101338528	CAMC233777	CAMC233774	SYENITE 169A	ACTIVE	LODE CLAIM	9/2/2025
CA101338533	CA101338533	CAMC5942	CAMC5840	SYENITE 106	ACTIVE	LODE CLAIM	9/2/2025
CA101338534	CA101338534	CAMC47639	CAMC47621	BAILEY 19	ACTIVE	LODE CLAIM	9/2/2025

NO WARRANTY IS MADE BY BLM FOR USE OF THE DATA FOR PURPOSES NOT INTENDED BY BLM

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CA101338538	CA101338538	CAMC244800	CAMC244736	CMF 65	ACTIVE	LODE CLAIM	9/2/2025
CA101339113	CA101339113	CAMC244125	CAMC244124	SYENITE 296	ACTIVE	LODE CLAIM	9/2/2025
CA101339139	CA101339139	CAMC5952	CAMC5840	SYENITE 116	ACTIVE	LODE CLAIM	9/2/2025
CA101339148	CA101339148	CAMC51698	CAMC51692	CLARK MOUNTAIN NO 16	ACTIVE	LODE CLAIM	9/2/2025
CA101339173	CA101339173	CAMC47635	CAMC47621	BAILEY 15	ACTIVE	LODE CLAIM	9/2/2025
CA101347058	CA101347058	CAMC51700	CAMC51692	CLARK MOUNTAIN NO 18	ACTIVE	LODE CLAIM	9/2/2025
CA101347320	CA101347320	CAMC5980	CAMC5840	SYENITE 144	ACTIVE	LODE CLAIM	9/2/2025
CA101347324	CA101347324	CAMC234475	CAMC234416	SYENITE 253	ACTIVE	LODE CLAIM	9/2/2025
CA101347329	CA101347329	CAMC5930	CAMC5840	SYENITE 92	ACTIVE	LODE CLAIM	9/2/2025
CA101347354	CA101347354	CAMC5875	CAMC5840	SYENITE 36	ACTIVE	LODE CLAIM	9/2/2025
CA101347356	CA101347356	CAMC5944	CAMC5840	SYENITE 108	ACTIVE	LODE CLAIM	9/2/2025
CA101347357	CA101347357	CAMC244791	CAMC244736	CMF 56	ACTIVE	LODE CLAIM	9/2/2025
CA101347592	CA101347592	CAMC234474	CAMC234416	SYENITE 252	ACTIVE	LODE CLAIM	9/2/2025
CA101347643	CA101347643	CAMC234434	CAMC234416	SYENITE 212	ACTIVE	LODE CLAIM	9/2/2025
CA101347680	CA101347680	CAMC234455	CAMC234416	SYENITE 233	ACTIVE	LODE CLAIM	9/2/2025
CA101347895	CA101347895	CAMC5891	CAMC5840	SYENITE 52	ACTIVE	LODE CLAIM	9/2/2025
CA101347898	CA101347898	CAMC234423	CAMC234416	SYENITE 201	ACTIVE	LODE CLAIM	9/2/2025
CA101347915	CA101347915	CAMC5841	CAMC5840	SYENITE 2	ACTIVE	LODE CLAIM	9/2/2025
CA101347924	CA101347924	CAMC234444	CAMC234416	SYENITE 222	ACTIVE	LODE CLAIM	9/2/2025
CA101347958	CA101347958	CAMC234433	CAMC234416	SYENITE 211	ACTIVE	LODE CLAIM	9/2/2025
CA101348272	CA101348272	CAMC5997	CAMC5840	SYENITE 162	ACTIVE	LODE CLAIM	9/2/2025
CA101348380	CA101348380	CAMC5921	CAMC5840	SYENITE 82	ACTIVE	LODE CLAIM	9/2/2025
CA101348430	CA101348430	CAMC233785	CAMC233774	SYENITE 193	ACTIVE	LODE CLAIM	9/2/2025
CA101348441	CA101348441	CAMC234465	CAMC234416	SYENITE 243	ACTIVE	LODE CLAIM	9/2/2025
CA101348457	CA101348457	CAMC215721	CAMC215721	SYENITE 186	ACTIVE	LODE CLAIM	9/2/2025
CA101348599	CA101348599	CAMC234464	CAMC234416	SYENITE 242	ACTIVE	LODE CLAIM	9/2/2025
CA101348600	CA101348600	CAMC5865	CAMC5840	SYENITE 26	ACTIVE	LODE CLAIM	9/2/2025
CA101349355	CA101349355	CAMC244739	CAMC244736	CMF 4	ACTIVE	LODE	9/2/2025

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						CLAIM	
CA101349452	CA101349452	CAMC244792	CAMC244736	CMF 57	ACTIVE	LODE CLAIM	9/2/2025
CA101349456	CA101349456	CAMC5888	CAMC5840	SYENITE 49	ACTIVE	LODE CLAIM	9/2/2025
CA101349727	CA101349727	CAMC5859	CAMC5840	SYENITE 20	ACTIVE	LODE CLAIM	9/2/2025
CA101349738	CA101349738	CAMC233774	CAMC233774	SYENITE 81A	ACTIVE	LODE CLAIM	9/2/2025
CA101349791	CA101349791	CAMC234485	CAMC234416	SYENITE 263	ACTIVE	LODE CLAIM	9/2/2025
CA101350032	CA101350032	CAMC5963	CAMC5840	SYENITE 127	ACTIVE	LODE CLAIM	9/2/2025
CA101350033	CA101350033	CAMC234445	CAMC234416	SYENITE 223	ACTIVE	LODE CLAIM	9/2/2025
CA101350037	CA101350037	CAMC5913	CAMC5840	SYENITE 74	ACTIVE	LODE CLAIM	9/2/2025
CA101350176	CA101350176	CAMC5918	CAMC5840	SYENITE 79	ACTIVE	LODE CLAIM	9/2/2025
CA101350332	CA101350332	CAMC5845	CAMC5840	SYENITE 6	ACTIVE	LODE CLAIM	9/2/2025
CA101350334	CA101350334	CAMC5914	CAMC5840	SYENITE 75	ACTIVE	LODE CLAIM	9/2/2025
CA101350346	CA101350346	CAMC233784	CAMC233774	SYENITE 192	ACTIVE	LODE CLAIM	9/2/2025
CA101350372	CA101350372	CAMC51745	CAMC51692	LUCKY STRIKE NO 1	ACTIVE	LODE CLAIM	9/2/2025
CA101361815	CA101361815	CAMC244749	CAMC244736	CMF 14	ACTIVE	LODE CLAIM	9/2/2025
CA101363414	CA101363414	CAMC51747	CAMC51692	LUCKY STRIKE NO 3	ACTIVE	LODE CLAIM	9/2/2025
CA101376605	CA101376605	CAMC234467	CAMC234416	SYENITE 245	ACTIVE	LODE CLAIM	9/2/2025
CA101377544	CA101377544	CAMC244782	CAMC244736	CMF 47	ACTIVE	LODE CLAIM	9/2/2025
CA101377594	CA101377594	CAMC5998	CAMC5840	SYENITE 163	ACTIVE	LODE CLAIM	9/2/2025
CA101377597	CA101377597	CAMC5902	CAMC5840	SYENITE 63	ACTIVE	LODE CLAIM	9/2/2025
CA101377635	CA101377635	CAMC5923	CAMC5840	SYENITE 84	ACTIVE	LODE CLAIM	9/2/2025
CA101377645	CA101377645	CAMC5988	CAMC5840	SYENITE 153	ACTIVE	LODE CLAIM	9/2/2025
CA101377652	CA101377652	CAMC5938	CAMC5840	SYENITE 102	ACTIVE	LODE CLAIM	9/2/2025
CA101377660	CA101377660	CAMC177660	CAMC177640	SOUTH SYENITE 21	ACTIVE	LODE CLAIM	9/2/2025
CA101377673	CA101377673	CAMC51718	CAMC51692	BEARGRASS	ACTIVE	LODE CLAIM	9/2/2025
CA101377675	CA101377675	CAMC5887	CAMC5840	SYENITE 48	ACTIVE	LODE CLAIM	9/2/2025
CA101377679	CA101377679	CAMC234488	CAMC234416	SYENITE 266	ACTIVE	LODE CLAIM	9/2/2025
CA101378502	CA101378502	CAMC51742	CAMC51692	EARL NO 4	ACTIVE	LODE CLAIM	9/2/2025
CA101378504	CA101378504	CAMC5977	CAMC5840	SYENITE 141	ACTIVE	LODE CLAIM	9/2/2025

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CA101378513	CA101378513	CAMC5948	CAMC5840	SYENITE 112	ACTIVE	LODE CLAIM	9/2/2025
CA101378559	CA101378559	CAMC244802	CAMC244736	CMF 67	ACTIVE	LODE CLAIM	9/2/2025
CA101378567	CA101378567	CAMC233779	CAMC233774	SYENITE 175A	ACTIVE	LODE CLAIM	9/2/2025
CA101378572	CA101378572	CAMC47667	CAMC47621	BAILEY 54	ACTIVE	LODE CLAIM	9/2/2025
CA101378579	CA101378579	CAMC234469	CAMC234416	SYENITE 247	ACTIVE	LODE CLAIM	9/2/2025
CA101378597	CA101378597	CAMC234425	CAMC234416	SYENITE 203	ACTIVE	LODE CLAIM	9/2/2025
CA101378615	CA101378615	CAMC234446	CAMC234416	SYENITE 224	ACTIVE	LODE CLAIM	9/2/2025
CA101379414	CA101379414	CAMC51746	CAMC51692	LUCKY STRIKE NO 2	ACTIVE	LODE CLAIM	9/2/2025
CA101379430	CA101379430	CAMC122228	CAMC122227	BRENDA	ACTIVE	LODE CLAIM	9/2/2025
CA101379437	CA101379437	CAMC51696	CAMC51692	CLARK MOUNTAIN NO 14	ACTIVE	LODE CLAIM	9/2/2025
CA101379440	CA101379440	CAMC5897	CAMC5840	SYENITE 58	ACTIVE	LODE CLAIM	9/2/2025
CA101379470	CA101379470	CAMC5971	CAMC5840	SYENITE 135	ACTIVE	LODE CLAIM	9/2/2025
CA101379484	CA101379484	CAMC234427	CAMC234416	SYENITE 205	ACTIVE	LODE CLAIM	9/2/2025
CA101379500	CA101379500	CAMC5966	CAMC5840	SYENITE 130	ACTIVE	LODE CLAIM	9/2/2025
CA101379507	CA101379507	CAMC5916	CAMC5840	SYENITE 77	ACTIVE	LODE CLAIM	9/2/2025
CA101380331	CA101380331	CAMC244804	CAMC244736	CMF 69	ACTIVE	LODE CLAIM	9/2/2025
CA101380340	CA101380340	CAMC5868	CAMC5840	SYENITE 29	ACTIVE	LODE CLAIM	9/2/2025
CA101380345	CA101380345	CAMC47631	CAMC47621	BAILEY 11	ACTIVE	LODE CLAIM	9/2/2025
CA101380377	CA101380377	CAMC234448	CAMC234416	SYENITE 226	ACTIVE	LODE CLAIM	9/2/2025
CA101380394	CA101380394	CAMC5870	CAMC5840	SYENITE 31	ACTIVE	LODE CLAIM	9/2/2025
CA101451263	CA101451263	CAMC5962	CAMC5840	SYENITE 126	ACTIVE	LODE CLAIM	9/2/2025
CA101451444	CA101451444	CAMC16267	CAMC16264	MINERAL HILL NO 4	ACTIVE	LODE CLAIM	9/2/2025
CA101451505	CA101451505	CAMC47630	CAMC47621	BAILEY 10	ACTIVE	LODE CLAIM	9/2/2025
CA101451561	CA101451561	CAMC244747	CAMC244736	CMF 12	ACTIVE	LODE CLAIM	9/2/2025
CA101451562	CA101451562	CAMC233781	CAMC233774	SYENITE 183A	ACTIVE	LODE CLAIM	9/2/2025
CA101451565	CA101451565	CAMC47653	CAMC47621	BAILEY 33	ACTIVE	LODE CLAIM	9/2/2025
CA101451818	CA101451818	CAMC5986	CAMC5840	SYENITE 151	ACTIVE	LODE CLAIM	9/2/2025
CA101451875	CA101451875	CAMC177688	CAMC177640	SOUTH SYENITE 49	ACTIVE	LODE CLAIM	9/2/2025

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Serial Number	Lead File Number	Legacy Serial Number	Legacy Lead File Number	Claim Name	Case Disposition	Claim Type	Next Payment Due Date
CA101451919	CA101451919	CAMC16268	CAMC16264	MINERAL HILL NO 5	ACTIVE	LODE CLAIM	9/2/2025
CA101451930	CA101451930	CAMC177656	CAMC177640	SOUTH SYENITE 17	ACTIVE	LODE CLAIM	9/2/2025
CA101452024	CA101452024	CAMC5936	CAMC5840	SYENITE 100	ACTIVE	LODE CLAIM	9/2/2025
CA101452113	CA101452113	CAMC234471	CAMC234416	SYENITE 249	ACTIVE	LODE CLAIM	9/2/2025
CA101452187	CA101452187	CAMC234492	CAMC234416	SYENITE 270	ACTIVE	LODE CLAIM	9/2/2025
CA101452286	CA101452286	CAMC247590	CAMC247586	CMF 74	ACTIVE	LODE CLAIM	9/2/2025
CA101452294	CA101452294	CAMC5956	CAMC5840	SYENITE 120	ACTIVE	LODE CLAIM	9/2/2025
CA101452296	CA101452296	CAMC101868	CAMC101865	SYENITE #180	ACTIVE	LODE CLAIM	9/2/2025
CA101452298	CA101452298	CAMC234440	CAMC234416	SYENITE 218	ACTIVE	LODE CLAIM	9/2/2025
CA101452383	CA101452383	CAMC5906	CAMC5840	SYENITE 67	ACTIVE	LODE CLAIM	9/2/2025
CA101452386	CA101452386	CAMC177646	CAMC177640	SOUTH SYENITE 7	ACTIVE	LODE CLAIM	9/2/2025
CA101452482	CA101452482	CAMC5850	CAMC5840	SYENITE 11	ACTIVE	LODE CLAIM	9/2/2025
CA101452487	CA101452487	CAMC177677	CAMC177640	SOUTH SYENITE 38	ACTIVE	LODE CLAIM	9/2/2025
CA101452551	CA101452551	CAMC234419	CAMC234416	SYENITE 197	ACTIVE	LODE CLAIM	9/2/2025
CA101452666	CA101452666	CAMC244778	CAMC244736	CMF 43	ACTIVE	LODE CLAIM	9/2/2025
CA101452669	CA101452669	CAMC120581	CAMC120576	DESERT POPPY 5	ACTIVE	LODE CLAIM	9/2/2025
CA101452805	CA101452805	CAMC5853	CAMC5840	SYENITE 14	ACTIVE	LODE CLAIM	9/2/2025
CA101452888	CA101452888	CAMC47670	CAMC47621	BAILEY 57	ACTIVE	LODE CLAIM	9/2/2025
CA101453075	CA101453075	CAMC177690	CAMC177640	SOUTH SYENITE 51	ACTIVE	LODE CLAIM	9/2/2025
CA101453197	CA101453197	CAMC47622	CAMC47621	BAILEY 2	ACTIVE	LODE CLAIM	9/2/2025
CA101453367	CA101453367	CAMC201790	CAMC201787	SYENITE 94	ACTIVE	LODE CLAIM	9/2/2025
CA101453393	CA101453393	CAMC47655	CAMC47621	BAILEY 35	ACTIVE	LODE CLAIM	9/2/2025
CA101453396	CA101453396	CAMC234450	CAMC234416	SYENITE 228	ACTIVE	LODE CLAIM	9/2/2025
CA101453397	CA101453397	CAMC5864	CAMC5840	SYENITE 25	ACTIVE	LODE CLAIM	9/2/2025
CA101453491	CA101453491	CAMC47646	CAMC47621	BAILEY 26	ACTIVE	LODE CLAIM	9/2/2025
CA101453494	CA101453494	CAMC177651	CAMC177640	SOUTH SYENITE 12	ACTIVE	LODE CLAIM	9/2/2025
CA101453588	CA101453588	CAMC177672	CAMC177640	SOUTH SYENITE 33	ACTIVE	LODE CLAIM	9/2/2025
CA101453770	CA101453770	CAMC234478	CAMC234416	SYENITE 256	ACTIVE	LODE CLAIM	9/2/2025
CA101453886	CA101453886	CAMC177667	CAMC177640	SOUTH	ACTIVE	LODE	9/2/2025

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				SYENITE 26		CLAIM	
CA101454110	CA101454110	CAMC234461	CAMC234416	SYENITE 239	ACTIVE	LODE CLAIM	9/2/2025
CA101454113	CA101454113	CAMC5877	CAMC5840	SYENITE 38	ACTIVE	LODE CLAIM	9/2/2025
CA101454190	CA101454190	CAMC234482	CAMC234416	SYENITE 260	ACTIVE	LODE CLAIM	9/2/2025
CA101454389	CA101454389	CAMC234481	CAMC234416	SYENITE 259	ACTIVE	LODE CLAIM	9/2/2025
CA101454544	CA101454544	CAMC5857	CAMC5840	SYENITE 18	ACTIVE	LODE CLAIM	9/2/2025
CA101454626	CA101454626	CAMC244788	CAMC244736	CMF 53	ACTIVE	LODE CLAIM	9/2/2025
CA101454670	CA101454670	CAMC244783	CAMC244736	CMF 48	ACTIVE	LODE CLAIM	9/2/2025
CA101454798	CA101454798	CAMC234418	CAMC234416	SYENITE 196	ACTIVE	LODE CLAIM	9/2/2025
CA101454900	CA101454900	CAMC177655	CAMC177640	SOUTH SYENITE 16	ACTIVE	LODE CLAIM	9/2/2025
CA101454909	CA101454909	CAMC47662	CAMC47621	BAILEY 42	ACTIVE	LODE CLAIM	9/2/2025
CA101455024	CA101455024	CAMC234460	CAMC234416	SYENITE 238	ACTIVE	LODE CLAIM	9/2/2025
CA101455025	CA101455025	CAMC16269	CAMC16264	MINERAL HILL NO 6	ACTIVE	LODE CLAIM	9/2/2025
CA101455032	CA101455032	CAMC177666	CAMC177640	SOUTH SYENITE 27	ACTIVE	LODE CLAIM	9/2/2025
CA101455092	CA101455092	CAMC177687	CAMC177640	SOUTH SYENITE 48	ACTIVE	LODE CLAIM	9/2/2025
CA101455309	CA101455309	CAMC120577	CAMC120576	DESERT POPPY 1	ACTIVE	LODE CLAIM	9/2/2025
CA101455314	CA101455314	CAMC234457	CAMC234416	SYENITE 235	ACTIVE	LODE CLAIM	9/2/2025
CA101455398	CA101455398	CAMC245122	CAMC245118	SOUTH SYENITE 111	ACTIVE	LODE CLAIM	9/2/2025
CA101455399	CA101455399	CAMC244741	CAMC244736	CMF 6	ACTIVE	LODE CLAIM	9/2/2025
CA101455462	CA101455462	CAMC247586	CAMC247586	CMF 70	ACTIVE	LODE CLAIM	9/2/2025
CA101455615	CA101455615	CAMC5933	CAMC5840	SYENITE 97	ACTIVE	LODE CLAIM	9/2/2025
CA101455694	CA101455694	CAMC51702	CAMC51692	CLARK MOUNTAIN NO 20	ACTIVE	LODE CLAIM	9/2/2025
CA101455700	CA101455700	CAMC234470	CAMC234416	SYENITE 248	ACTIVE	LODE CLAIM	9/2/2025
CA101456043	CA101456043	CAMC47654	CAMC47621	BAILEY 34	ACTIVE	LODE CLAIM	9/2/2025
CA101456046	CA101456046	CAMC5874	CAMC5840	SYENITE 35	ACTIVE	LODE CLAIM	9/2/2025
CA101456249	CA101456249	CAMC17400	CAMC17399	SYENITE 191	ACTIVE	LODE CLAIM	9/2/2025
CA101456456	CA101456456	CAMC234436	CAMC234416	SYENITE 214	ACTIVE	LODE CLAIM	9/2/2025
CA101456846	CA101456846	CAMC177676	CAMC177640	SOUTH SYENITE 37	ACTIVE	LODE CLAIM	9/2/2025
CA101456915	CA101456915	CAMC101867	CAMC101865	SYENITE	ACTIVE	LODE	9/2/2025

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				#179		CLAIM	
CA101456921	CA101456921	CAMC177645	CAMC177640	SOUTH SYENITE 6	ACTIVE	LODE CLAIM	9/2/2025
CA101457204	CA101457204	CAMC5912	CAMC5840	SYENITE 73	ACTIVE	LODE CLAIM	9/2/2025
CA101457207	CA101457207	CAMC51740	CAMC51692	EARL NO 2	ACTIVE	LODE CLAIM	9/2/2025
CA101457536	CA101457536	CAMC245127	CAMC245118	SOUTH SYENITE 116	ACTIVE	LODE CLAIM	9/2/2025
CA101457538	CA101457538	CAMC233780	CAMC233774	SYENITE 176A	ACTIVE	LODE CLAIM	9/2/2025
CA101457664	CA101457664	CAMC244794	CAMC244736	CMF 59	ACTIVE	LODE CLAIM	9/2/2025
CA101457670	CA101457670	CAMC5972	CAMC5840	SYENITE 136	ACTIVE	LODE CLAIM	9/2/2025
CA101457705	CA101457705	CAMC47640	CAMC47621	BAILEY 20	ACTIVE	LODE CLAIM	9/2/2025
CA101457706	CA101457706	CAMC234491	CAMC234416	SYENITE 269	ACTIVE	LODE CLAIM	9/2/2025
CA101457805	CA101457805	CAMC244762	CAMC244736	CMF 27	ACTIVE	LODE CLAIM	9/2/2025
CA101457860	CA101457860	CAMC5878	CAMC5840	SYENITE 39	ACTIVE	LODE CLAIM	9/2/2025
CA101457865	CA101457865	CAMC177700	CAMC177640	SOUTH SYENITE 61	ACTIVE	LODE CLAIM	9/2/2025
CA101457866	CA101457866	CAMC244777	CAMC244736	CMF 42	ACTIVE	LODE CLAIM	9/2/2025
CA101457869	CA101457869	CAMC120580	CAMC120576	DESERT POPPY 4	ACTIVE	LODE CLAIM	9/2/2025
CA101457872	CA101457872	CAMC47656	CAMC47621	BAILEY 36	ACTIVE	LODE CLAIM	9/2/2025
CA101457920	CA101457920	CAMC47625	CAMC47621	BAILEY 5	ACTIVE	LODE CLAIM	9/2/2025
CA101458121	CA101458121	CAMC5983	CAMC5840	SYENITE 147	ACTIVE	LODE CLAIM	9/2/2025
CA101458461	CA101458461	CAMC5953	CAMC5840	SYENITE 117	ACTIVE	LODE CLAIM	9/2/2025
CA101458647	CA101458647	CAMC47623	CAMC47621	BAILEY 3	ACTIVE	LODE CLAIM	9/2/2025
CA101458882	CA101458882	CAMC244752	CAMC244736	CMF 17	ACTIVE	LODE CLAIM	9/2/2025
CA101458961	CA101458961	CAMC5903	CAMC5840	SYENITE 64	ACTIVE	LODE CLAIM	9/2/2025
CA101459245	CA101459245	CAMC120583	CAMC120576	DESERT POPPY 7	ACTIVE	LODE CLAIM	9/2/2025
CA101459247	CA101459247	CAMC234442	CAMC234416	SYENITE 220	ACTIVE	LODE CLAIM	9/2/2025
CA101459250	CA101459250	CAMC5979	CAMC5840	SYENITE 143	ACTIVE	LODE CLAIM	9/2/2025
CA101459515	CA101459515	CAMC47652	CAMC47621	BAILEY 32	ACTIVE	LODE CLAIM	9/2/2025
CA101459952	CA101459952	CAMC47660	CAMC47621	BAILEY 40	ACTIVE	LODE CLAIM	9/2/2025
CA101459977	CA101459977	CAMC177657	CAMC177640	SOUTH SYENITE 18	ACTIVE	LODE CLAIM	9/2/2025
CA101459983	CA101459983	CAMC234472	CAMC234416	SYENITE 250	ACTIVE	LODE CLAIM	9/2/2025

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CA101460015	CA101460015	CAMC101869	CAMC101865	SYENITE #181	ACTIVE	LODE CLAIM	9/2/2025
CA101460035	CA101460035	CAMC234430	CAMC234416	SYENITE 208	ACTIVE	LODE CLAIM	9/2/2025
CA101460133	CA101460133	CAMC5976	CAMC5840	SYENITE 140	ACTIVE	LODE CLAIM	9/2/2025
CA101460369	CA101460369	CAMC51719	CAMC51692	BIRTHDAY NO 1	ACTIVE	LODE CLAIM	9/2/2025
CA101477207	CA101477207	CAMC5907	CAMC5840	SYENITE 68	ACTIVE	LODE CLAIM	9/2/2025
CA101477346	CA101477346	CAMC5990	CAMC5840	SYENITE 155	ACTIVE	LODE CLAIM	9/2/2025
CA101477352	CA101477352	CAMC47664	CAMC47621	BAILEY 51	ACTIVE	LODE CLAIM	9/2/2025
CA101477429	CA101477429	CAMC234438	CAMC234416	SYENITE 216	ACTIVE	LODE CLAIM	9/2/2025
CA101477431	CA101477431	CAMC5882	CAMC5840	SYENITE 43	ACTIVE	LODE CLAIM	9/2/2025
CA101477536	CA101477536	CAMC177675	CAMC177640	SOUTH SYENITE 36	ACTIVE	LODE CLAIM	9/2/2025
CA101477544	CA101477544	CAMC5940	CAMC5840	SYENITE 104	ACTIVE	LODE CLAIM	9/2/2025
CA101477546	CA101477546	CAMC5879	CAMC5840	SYENITE 40	ACTIVE	LODE CLAIM	9/2/2025
CA101477592	CA101477592	CAMC51704	CAMC51692	CLARK MOUNTAIN NO 22	ACTIVE	LODE CLAIM	9/2/2025
CA101477595	CA101477595	CAMC234490	CAMC234416	SYENITE 268	ACTIVE	LODE CLAIM	9/2/2025
CA101477618	CA101477618	CAMC244796	CAMC244736	CMF 61	ACTIVE	LODE CLAIM	9/2/2025
CA101477651	CA101477651	CAMC120579	CAMC120576	DESERT POPPY 3	ACTIVE	LODE CLAIM	9/2/2025
CA101477720	CA101477720	CAMC47674	CAMC47621	BAILEY 63	ACTIVE	LODE CLAIM	9/2/2025
CA101477723	CA101477723	CAMC5941	CAMC5840	SYENITE 105	ACTIVE	LODE CLAIM	9/2/2025
CA101477724	CA101477724	CAMC47629	CAMC47621	BAILEY 9	ACTIVE	LODE CLAIM	9/2/2025
CA101477742	CA101477742	CAMC213565	CAMC213564	EAST SYENITE #1	ACTIVE	LODE CLAIM	9/2/2025
CA101477745	CA101477745	CAMC47671	CAMC47621	BAILEY 58	ACTIVE	LODE CLAIM	9/2/2025
CA101477750	CA101477750	CAMC101866	CAMC101865	SYENITE #178	ACTIVE	LODE CLAIM	9/2/2025
CA101477751	CA101477751	CAMC47626	CAMC47621	BAILEY 6	ACTIVE	LODE CLAIM	9/2/2025
CA101477783	CA101477783	CAMC244754	CAMC244736	CMF 19	ACTIVE	LODE CLAIM	9/2/2025
CA101477991	CA101477991	CAMC51721	CAMC51692	BIRTHDAY NO 6	ACTIVE	LODE CLAIM	9/2/2025
CA101478201	CA101478201	CAMC47628	CAMC47621	BAILEY 8	ACTIVE	LODE CLAIM	9/2/2025
CA101478210	CA101478210	CAMC5928	CAMC5840	SYENITE 89	ACTIVE	LODE CLAIM	9/2/2025
CA101478745	CA101478745	CAMC244785	CAMC244736	CMF 50	ACTIVE	LODE CLAIM	9/2/2025

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CA101478981	CA101478981	CAMC244776	CAMC244736	CMF 41	ACTIVE	LODE CLAIM	9/2/2025
CA101479076	CA101479076	CAMC5991	CAMC5840	SYENITE 156	ACTIVE	LODE CLAIM	9/2/2025
CA101479330	CA101479330	CAMC244764	CAMC244736	CMF 29	ACTIVE	LODE CLAIM	9/2/2025
CA101479333	CA101479333	CAMC233828	CAMC233827	SYENITE 190A	ACTIVE	LODE CLAIM	9/2/2025
CA101479409	CA101479409	CAMC47624	CAMC47621	BAILEY 4	ACTIVE	LODE CLAIM	9/2/2025
CA101479601	CA101479601	CAMC5848	CAMC5840	SYENITE 9	ACTIVE	LODE CLAIM	9/2/2025
CA101479717	CA101479717	CAMC5852	CAMC5840	SYENITE 13	ACTIVE	LODE CLAIM	9/2/2025
CA101479722	CA101479722	CAMC234459	CAMC234416	SYENITE 237	ACTIVE	LODE CLAIM	9/2/2025
CA101479724	CA101479724	CAMC177701	CAMC177640	SOUTH SYENITE 62	ACTIVE	LODE CLAIM	9/2/2025
CA101480382	CA101480382	CAMC177644	CAMC177640	SOUTH SYENITE 5	ACTIVE	LODE CLAIM	9/2/2025
CA101480388	CA101480388	CAMC5960	CAMC5840	SYENITE 124	ACTIVE	LODE CLAIM	9/2/2025
CA101490538	CA101490538	CAMC234441	CAMC234416	SYENITE 219	ACTIVE	LODE CLAIM	9/2/2025
CA101490641	CA101490641	CAMC244766	CAMC244736	CMF 31	ACTIVE	LODE CLAIM	9/2/2025
CA101490698	CA101490698	CAMC5890	CAMC5840	SYENITE 51	ACTIVE	LODE CLAIM	9/2/2025
CA101490847	CA101490847	CAMC234421	CAMC234416	SYENITE 199	ACTIVE	LODE CLAIM	9/2/2025
CA101490931	CA101490931	CAMC245118	CAMC245118	SOUTH SYENITE 107	ACTIVE	LODE CLAIM	9/2/2025
CA101490936	CA101490936	CAMC5985	CAMC5840	SYENITE 150	ACTIVE	LODE CLAIM	9/2/2025
CA101490995	CA101490995	CAMC244772	CAMC244736	CMF 37	ACTIVE	LODE CLAIM	9/2/2025
CA101491028	CA101491028	CAMC234483	CAMC234416	SYENITE 261	ACTIVE	LODE CLAIM	9/2/2025
CA101491174	CA101491174	CAMC215723	CAMC215721	SYENITE 188	ACTIVE	LODE CLAIM	9/2/2025
CA101491177	CA101491177	CAMC47647	CAMC47621	BAILEY 27	ACTIVE	LODE CLAIM	9/2/2025
CA101491192	CA101491192	CAMC5860	CAMC5840	SYENITE 21	ACTIVE	LODE CLAIM	9/2/2025
CA101491203	CA101491203	CAMC177669	CAMC177640	SOUTH SYENITE 30	ACTIVE	LODE CLAIM	9/2/2025
CA101491436	CA101491436	CAMC16264	CAMC16264	MINERAL HILL NO 1	ACTIVE	LODE CLAIM	9/2/2025
CA101491526	CA101491526	CAMC177668	CAMC177640	SOUTH SYENITE 29	ACTIVE	LODE CLAIM	9/2/2025
CA101491667	CA101491667	CAMC5867	CAMC5840	SYENITE 28	ACTIVE	LODE CLAIM	9/2/2025
CA101491670	CA101491670	CAMC47621	CAMC47621	BAILEY 1	ACTIVE	LODE CLAIM	9/2/2025
CA101491677	CA101491677	CAMC177661	CAMC177640	SOUTH SYENITE 22	ACTIVE	LODE CLAIM	9/2/2025
CA101491831	CA101491831	CAMC177679	CAMC177640	SOUTH	ACTIVE	LODE	9/2/2025

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				SYENITE 40		CLAIM	
CA101492424	CA101492424	CAMC5969	CAMC5840	SYENITE 133	ACTIVE	LODE CLAIM	9/2/2025
CA101492565	CA101492565	CAMC234462	CAMC234416	SYENITE 240	ACTIVE	LODE CLAIM	9/2/2025
CA101492678	CA101492678	CAMC5932	CAMC5840	SYENITE 96	ACTIVE	LODE CLAIM	9/2/2025
CA101492687	CA101492687	CAMC234451	CAMC234416	SYENITE 229	ACTIVE	LODE CLAIM	9/2/2025
CA101492722	CA101492722	CAMC5898	CAMC5840	SYENITE 59	ACTIVE	LODE CLAIM	9/2/2025
CA101492902	CA101492902	CAMC5996	CAMC5840	SYENITE 161	ACTIVE	LODE CLAIM	9/2/2025
CA101493072	CA101493072	CAMC234452	CAMC234416	SYENITE 230	ACTIVE	LODE CLAIM	9/2/2025
CA101493120	CA101493120	CAMC5893	CAMC5840	SYENITE 54	ACTIVE	LODE CLAIM	9/2/2025
CA101493145	CA101493145	CAMC16266	CAMC16264	MINERAL HILL NO 3	ACTIVE	LODE CLAIM	9/2/2025
CA101493146	CA101493146	CAMC6001	CAMC5840	SYENITE 166	FILED	LODE CLAIM	9/2/2025
CA101493154	CA101493154	CAMC5843	CAMC5840	SYENITE 4	ACTIVE	LODE CLAIM	9/2/2025
CA101493212	CA101493212	CAMC5922	CAMC5840	SYENITE 83	ACTIVE	LODE CLAIM	9/2/2025
CA101493216	CA101493216	CAMC177699	CAMC177640	SOUTH SYENITE 60	ACTIVE	LODE CLAIM	9/2/2025
CA101493241	CA101493241	CAMC244789	CAMC244736	CMF 54	ACTIVE	LODE CLAIM	9/2/2025
CA101493406	CA101493406	CAMC5896	CAMC5840	SYENITE 57	ACTIVE	LODE CLAIM	9/2/2025
CA101493425	CA101493425	CAMC234473	CAMC234416	SYENITE 251	ACTIVE	LODE CLAIM	9/2/2025
CA101493430	CA101493430	CAMC5846	CAMC5840	SYENITE 7	ACTIVE	LODE CLAIM	9/2/2025
CA101493730	CA101493730	CAMC51749	CAMC51692	LUCKY STRIKE NO 5	ACTIVE	LODE CLAIM	9/2/2025
CA101493733	CA101493733	CAMC5863	CAMC5840	SYENITE 24	ACTIVE	LODE CLAIM	9/2/2025
CA101493736	CA101493736	CAMC177689	CAMC177640	SOUTH SYENITE 50	ACTIVE	LODE CLAIM	9/2/2025
CA101493744	CA101493744	CAMC234420	CAMC234416	SYENITE 198	ACTIVE	LODE CLAIM	9/2/2025
CA101493750	CA101493750	CAMC16265	CAMC16264	MINERAL HILL NO 2	ACTIVE	LODE CLAIM	9/2/2025
CA101493760	CA101493760	CAMC234493	CAMC234416	SYENITE 271	ACTIVE	LODE CLAIM	9/2/2025
CA101493764	CA101493764	CAMC177678	CAMC177640	SOUTH SYENITE 39	ACTIVE	LODE CLAIM	9/2/2025
CA101494022	CA101494022	CAMC177658	CAMC177640	SOUTH SYENITE 19	ACTIVE	LODE CLAIM	9/2/2025
CA101494024	CA101494024	CAMC5919	CAMC5840	SYENITE 80	ACTIVE	LODE CLAIM	9/2/2025
CA101494125	CA101494125	CAMC234477	CAMC234416	SYENITE 255	ACTIVE	LODE CLAIM	9/2/2025
CA101494154	CA101494154	CAMC5946	CAMC5840	SYENITE 110	ACTIVE	LODE CLAIM	9/2/2025

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CA101495479	CA101495479	CAMC244768	CAMC244736	CMF 33	ACTIVE	LODE CLAIM	9/2/2025
CA101496241	CA101496241	CAMC5866	CAMC5840	SYENITE 27	ACTIVE	LODE CLAIM	9/2/2025
CA101496271	CA101496271	CAMC177648	CAMC177640	SOUTH SYENITE 9	ACTIVE	LODE CLAIM	9/2/2025
CA101496338	CA101496338	CAMC47648	CAMC47621	BAILEY 28	ACTIVE	LODE CLAIM	9/2/2025
CA101496343	CA101496343	CAMC177671	CAMC177640	SOUTH SYENITE 32	ACTIVE	LODE CLAIM	9/2/2025
CA101496578	CA101496578	CAMC177647	CAMC177640	SOUTH SYENITE 8	ACTIVE	LODE CLAIM	9/2/2025
CA101496580	CA101496580	CAMC244779	CAMC244736	CMF 44	ACTIVE	LODE CLAIM	9/2/2025
CA101496583	CA101496583	CAMC120582	CAMC120576	DESERT POPPY 6	ACTIVE	LODE CLAIM	9/2/2025
CA101496892	CA101496892	CAMC234431	CAMC234416	SYENITE 209	ACTIVE	LODE CLAIM	9/2/2025
CA101496894	CA101496894	CAMC5925	CAMC5840	SYENITE 86	ACTIVE	LODE CLAIM	9/2/2025
CA101497039	CA101497039	CAMC233782	CAMC233774	SYENITE 184A	ACTIVE	LODE CLAIM	9/2/2025
CA101497041	CA101497041	CAMC47651	CAMC47621	BAILEY 31	ACTIVE	LODE CLAIM	9/2/2025
CA101497524	CA101497524	CAMC5935	CAMC5840	SYENITE 99	ACTIVE	LODE CLAIM	9/2/2025
CA101497746	CA101497746	CAMC244737	CAMC244736	CMF 2	ACTIVE	LODE CLAIM	9/2/2025
CA101498009	CA101498009	CAMC244793	CAMC244736	CMF 58	ACTIVE	LODE CLAIM	9/2/2025
CA101498219	CA101498219	CAMC234435	CAMC234416	SYENITE 213	ACTIVE	LODE CLAIM	9/2/2025
CA101498832	CA101498832	CAMC5854	CAMC5840	SYENITE 15	ACTIVE	LODE CLAIM	9/2/2025
CA101526286	CA101526286	CAMC234456	CAMC234416	SYENITE 234	ACTIVE	LODE CLAIM	9/2/2025
CA101540601	CA101540601	CAMC245124	CAMC245118	SOUTH SYENITE 113	ACTIVE	LODE CLAIM	9/2/2025
CA101540603	CA101540603	CAMC244743	CAMC244736	CMF 8	ACTIVE	LODE CLAIM	9/2/2025
CA101540721	CA101540721	CAMC234479	CAMC234416	SYENITE 257	ACTIVE	LODE CLAIM	9/2/2025
CA101540725	CA101540725	CAMC5856	CAMC5840	SYENITE 17	ACTIVE	LODE CLAIM	9/2/2025
CA101540729	CA101540729	CAMC5929	CAMC5840	SYENITE 189	ACTIVE	LODE CLAIM	9/2/2025
CA101540861	CA101540861	CAMC244784	CAMC244736	CMF 49	ACTIVE	LODE CLAIM	9/2/2025
CA101542063	CA101542063	CAMC47643	CAMC47621	BAILEY 23	ACTIVE	LODE CLAIM	9/2/2025
CA101542115	CA101542115	CAMC245125	CAMC245118	SOUTH SYENITE 114	ACTIVE	LODE CLAIM	9/2/2025
CA101542123	CA101542123	CAMC51706	CAMC51692	CLARK MOUNTAIN NO 24	ACTIVE	LODE CLAIM	9/2/2025
CA101542169	CA101542169	CAMC47644	CAMC47621	BAILEY 24	ACTIVE	LODE CLAIM	9/2/2025

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CA101542206	CA101542206	CAMC234458	CAMC234416	SYENITE 236	ACTIVE	LODE CLAIM	9/2/2025
CA101542264	CA101542264	CAMC177643	CAMC177640	SOUTH SYENITE 4	ACTIVE	LODE CLAIM	9/2/2025
CA101543402	CA101543402	CAMC201791	CAMC201787	SYENITE 95	ACTIVE	LODE CLAIM	9/2/2025
CA101543403	CA101543403	CAMC177673	CAMC177640	SOUTH SYENITE 34	ACTIVE	LODE CLAIM	9/2/2025
CA101543429	CA101543429	CAMC47676	CAMC47621	BAILEY 65	ACTIVE	LODE CLAIM	9/2/2025
CA101543539	CA101543539	CAMC5975	CAMC5840	SYENITE 139	ACTIVE	LODE CLAIM	9/2/2025
CA101543575	CA101543575	CAMC244753	CAMC244736	CMF 18	ACTIVE	LODE CLAIM	9/2/2025
CA101544613	CA101544613	CAMC177663	CAMC177640	SOUTH SYENITE 24	ACTIVE	LODE CLAIM	9/2/2025
CA101544615	CA101544615	CAMC5961	CAMC5840	SYENITE 125	ACTIVE	LODE CLAIM	9/2/2025
CA101544667	CA101544667	CAMC5885	CAMC5840	SYENITE 46	ACTIVE	LODE CLAIM	9/2/2025
CA101544668	CA101544668	CAMC5954	CAMC5840	SYENITE 118	ACTIVE	LODE CLAIM	9/2/2025
CA101544694	CA101544694	CAMC244786	CAMC244736	CMF 51	ACTIVE	LODE CLAIM	9/2/2025
CA101544955	CA101544955	CAMC234416	CAMC234416	SYENITE 194	ACTIVE	LODE CLAIM	9/2/2025
CA101545807	CA101545807	CAMC5911	CAMC5840	SYENITE 72	ACTIVE	LODE CLAIM	9/2/2025
CA101547304	CA101547304	CAMC244755	CAMC244736	CMF 20	ACTIVE	LODE CLAIM	9/2/2025
CA101547435	CA101547435	CAMC177642	CAMC177640	SOUTH SYENITE 3	ACTIVE	LODE CLAIM	9/2/2025
CA101547436	CA101547436	CAMC244774	CAMC244736	CMF 39	ACTIVE	LODE CLAIM	9/2/2025
CA101547625	CA101547625	CAMC245123	CAMC245118	SOUTH SYENITE 112	ACTIVE	LODE CLAIM	9/2/2025
CA101548828	CA101548828	CAMC177653	CAMC177640	SOUTH SYENITE 14	ACTIVE	LODE CLAIM	9/2/2025
CA101548940	CA101548940	CAMC5883	CAMC5840	SYENITE 44	ACTIVE	LODE CLAIM	9/2/2025
CA101550011	CA101550011	CAMC177670	CAMC177640	SOUTH SYENITE 31	ACTIVE	LODE CLAIM	9/2/2025
CA101550031	CA101550031	CAMC5904	CAMC5840	SYENITE 65	ACTIVE	LODE CLAIM	9/2/2025
CA101550111	CA101550111	CAMC5965	CAMC5840	SYENITE 129	ACTIVE	LODE CLAIM	9/2/2025
CA101600612	CA101600612	CAMC244787	CAMC244736	CMF 52	ACTIVE	LODE CLAIM	9/2/2025
CA101600620	CA101600620	CAMC47657	CAMC47621	BAILEY 37	ACTIVE	LODE CLAIM	9/2/2025
CA101600722	CA101600722	CAMC234480	CAMC234416	SYENITE 258	ACTIVE	LODE CLAIM	9/2/2025
CA101600728	CA101600728	CAMC47632	CAMC47621	BAILEY 12	ACTIVE	LODE CLAIM	9/2/2025
CA101600768	CA101600768	CAMC5970	CAMC5840	SYENITE 134	ACTIVE	LODE CLAIM	9/2/2025
CA101600771	CA101600771	CAMC5881	CAMC5840	SYENITE 42	ACTIVE	LODE	9/2/2025

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CA101600946	CA101600946	CAMC47636	CAMC47621	BAILEY 16	ACTIVE	LODE CLAIM	9/2/2025
CA101601067	CA101601067	CAMC5957	CAMC5840	SYENITE 121	ACTIVE	LODE CLAIM	9/2/2025
CA101601216	CA101601216	CAMC47642	CAMC47621	BAILEY 22	ACTIVE	LODE CLAIM	9/2/2025
CA101601219	CA101601219	CAMC247588	CAMC247586	CMF 72	ACTIVE	LODE CLAIM	9/2/2025
CA101601292	CA101601292	CAMC177686	CAMC177640	SOUTH SYENITE 47	ACTIVE	LODE CLAIM	9/2/2025
CA101601378	CA101601378	CAMC234417	CAMC234416	SYENITE 195	ACTIVE	LODE CLAIM	9/2/2025
CA101601601	CA101601601	CAMC245126	CAMC245118	SOUTH SYENITE 115	ACTIVE	LODE CLAIM	9/2/2025
CA101601603	CA101601603	CAMC244745	CAMC244736	CMF 10	ACTIVE	LODE CLAIM	9/2/2025
CA101601835	CA101601835	CAMC5937	CAMC5840	SYENITE 101	ACTIVE	LODE CLAIM	9/2/2025
CA101601873	CA101601873	CAMC244756	CAMC244736	CMF 21	ACTIVE	LODE CLAIM	9/2/2025
CA101601922	CA101601922	CAMC47673	CAMC47621	BAILEY 62	ACTIVE	LODE CLAIM	9/2/2025
CA101602001	CA101602001	CAMC5927	CAMC5840	SYENITE 88	ACTIVE	LODE CLAIM	9/2/2025
CA101602004	CA101602004	CAMC177665	CAMC177640	SOUTH SYENITE 26	ACTIVE	LODE CLAIM	9/2/2025
CA101602121	CA101602121	CAMC177654	CAMC177640	SOUTH SYENITE 15	ACTIVE	LODE CLAIM	9/2/2025
CA101603434	CA101603434	CAMC215722	CAMC215721	SYENITE 187	ACTIVE	LODE CLAIM	9/2/2025
CA101603492	CA101603492	CAMC51741	CAMC51692	EARL NO 3	ACTIVE	LODE CLAIM	9/2/2025
CA101606407	CA101606407	CAMC5943	CAMC5840	SYENITE 107	ACTIVE	LODE CLAIM	9/2/2025
CA101606408	CA101606408	CAMC47649	CAMC47621	BAILEY 29	ACTIVE	LODE CLAIM	9/2/2025
CA101609046	CA101609046	CAMC5973	CAMC5840	SYENITE 137	ACTIVE	LODE CLAIM	9/2/2025
CA101609679	CA101609679	CAMC234476	CAMC234416	SYENITE 254	ACTIVE	LODE CLAIM	9/2/2025
CA101610219	CA101610219	CAMC5993	CAMC5840	SYENITE 158	ACTIVE	LODE CLAIM	9/2/2025
CA101730629	CA101730629	CAMC244751	CAMC244736	CMF 16	ACTIVE	LODE CLAIM	9/2/2025
CA101751224	CA101751224	CAMC5984	CAMC5840	SYENITE 149	ACTIVE	LODE CLAIM	9/2/2025
CA101751226	CA101751226	CAMC5899	CAMC5840	SYENITE 60	ACTIVE	LODE CLAIM	9/2/2025
CA101751235	CA101751235	CAMC5849	CAMC5840	SYENITE 10	ACTIVE	LODE CLAIM	9/2/2025
CA101751261	CA101751261	CAMC47675	CAMC47621	BAILEY 64	ACTIVE	LODE CLAIM	9/2/2025
CA101751510	CA101751510	CAMC47641	CAMC47621	BAILEY 21	ACTIVE	LODE CLAIM	9/2/2025
CA101751521	CA101751521	CAMC47634	CAMC47621	BAILEY 14	ACTIVE	LODE CLAIM	9/2/2025

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CA101751627	CA101751627	CAMC177662	CAMC177640	SOUTH SYENITE 23	ACTIVE	LODE CLAIM	9/2/2025
CA101752643	CA101752643	CAMC47668	CAMC47621	BAILEY 55	ACTIVE	LODE CLAIM	9/2/2025
CA101754007	CA101754007	CAMC5886	CAMC5840	SYENITE 47	ACTIVE	LODE CLAIM	9/2/2025
CA101754010	CA101754010	CAMC5959	CAMC5840	SYENITE 123	ACTIVE	LODE CLAIM	9/2/2025
CA101754125	CA101754125	CAMC47666	CAMC47621	BAILEY 53	ACTIVE	LODE CLAIM	9/2/2025
CA101754177	CA101754177	CAMC234437	CAMC234416	SYENITE 215	ACTIVE	LODE CLAIM	9/2/2025
CA101755423	CA101755423	CAMC5855	CAMC5840	SYENITE 16	ACTIVE	LODE CLAIM	9/2/2025
CA101755425	CA101755425	CAMC5924	CAMC5840	SYENITE 85	ACTIVE	LODE CLAIM	9/2/2025
CA101755430	CA101755430	CAMC177745	CAMC177640	SOUTH SYENITE 106	ACTIVE	LODE CLAIM	9/2/2025
CA101755495	CA101755495	CAMC244795	CAMC244736	CMF 60	ACTIVE	LODE CLAIM	9/2/2025
CA101755519	CA101755519	CAMC247587	CAMC247586	CMF 71	ACTIVE	LODE CLAIM	9/2/2025
CA101756663	CA101756663	CAMC247589	CAMC247586	CMF 73	ACTIVE	LODE CLAIM	9/2/2025
CA101756696	CA101756696	CAMC177652	CAMC177640	SOUTH SYENITE 13	ACTIVE	LODE CLAIM	9/2/2025
CA101756700	CA101756700	CAMC5909	CAMC5840	SYENITE 70	ACTIVE	LODE CLAIM	9/2/2025
CA101756843	CA101756843	CAMC5915	CAMC5840	SYENITE 76	ACTIVE	LODE CLAIM	9/2/2025
CA101756918	CA101756918	CAMC5958	CAMC5840	SYENITE 122	ACTIVE	LODE CLAIM	9/2/2025
CA101758021	CA101758021	CAMC5934	CAMC5840	SYENITE 96	ACTIVE	LODE CLAIM	9/2/2025
CA101758025	CA101758025	CAMC244797	CAMC244736	CMF 62	ACTIVE	LODE CLAIM	9/2/2025
CA101758030	CA101758030	CAMC47658	CAMC47621	BAILEY 38	ACTIVE	LODE CLAIM	9/2/2025
CA101758039	CA101758039	CAMC234439	CAMC234416	SYENITE 217	ACTIVE	LODE CLAIM	9/2/2025
CA101758310	CA101758310	CAMC177674	CAMC177640	SOUTH SYENITE 35	ACTIVE	LODE CLAIM	9/2/2025
CA101758313	CA101758313	CAMC5908	CAMC5840	SYENITE 69	ACTIVE	LODE CLAIM	9/2/2025
CA101759275	CA101759275	CAMC47672	CAMC47621	BAILEY 59	ACTIVE	LODE CLAIM	9/2/2025
CA101759276	CA101759276	CAMC47627	CAMC47621	BAILEY 7	ACTIVE	LODE CLAIM	9/2/2025
CA101759484	CA101759484	CAMC47659	CAMC47621	BAILEY 39	ACTIVE	LODE CLAIM	9/2/2025
CA101759521	CA101759521	CAMC177664	CAMC177640	SOUTH SYENITE 25	ACTIVE	LODE CLAIM	9/2/2025
CA101759615	CA101759615	CAMC101865	CAMC101865	SYENITE #177	ACTIVE	LODE CLAIM	9/2/2025
CA101759617	CA101759617	CAMC213564	CAMC213564	EAST SYENITE #2	ACTIVE	LODE CLAIM	9/2/2025
CA101759661	CA101759661	CAMC47638	CAMC47621	BAILEY 18	ACTIVE	LODE	9/2/2025

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CA101759673	CA101759673	CAMC47645	CAMC47621	BAILEY 25	ACTIVE	LODE CLAIM	9/2/2025
CA101780868	CA101780868	CAMC177650	CAMC177640	SOUTH SYENITE 11	ACTIVE	LODE CLAIM	9/2/2025
CA102520546	CA102520546	CAMC234463	CAMC234416	SYENITE 241	ACTIVE	LODE CLAIM	9/2/2025
CA102521164	CA102521164	CAMC201787	CAMC201787	SYENITE 71	ACTIVE	LODE CLAIM	9/2/2025
CA102521176	CA102521176	CAMC234484	CAMC234416	SYENITE 262	ACTIVE	LODE CLAIM	9/2/2025
CA102521342	CA102521342	CAMC177659	CAMC177640	SOUTH SYENITE 20	ACTIVE	LODE CLAIM	9/2/2025
CA102521349	CA102521349	CAMC5968	CAMC5840	SYENITE 132	ACTIVE	LODE CLAIM	9/2/2025
CA102521367	CA102521367	CAMC234422	CAMC234416	SYENITE 200	ACTIVE	LODE CLAIM	9/2/2025
CA102521371	CA102521371	CAMC234443	CAMC234416	SYENITE 221	ACTIVE	LODE CLAIM	9/2/2025