CASTLE MOUNTAIN MINE

MINE PLAN OF OPERATION & RECLAMATION PLAN AMENDMENT

BLM File: *CACA-031137*
California Mining Conditional Use Permit: *90M-013*
California Mine ID #: *91-36-0015*

Prepared for Submittal to:

Bureau of Land Management
Needles Field Office
Needles, California

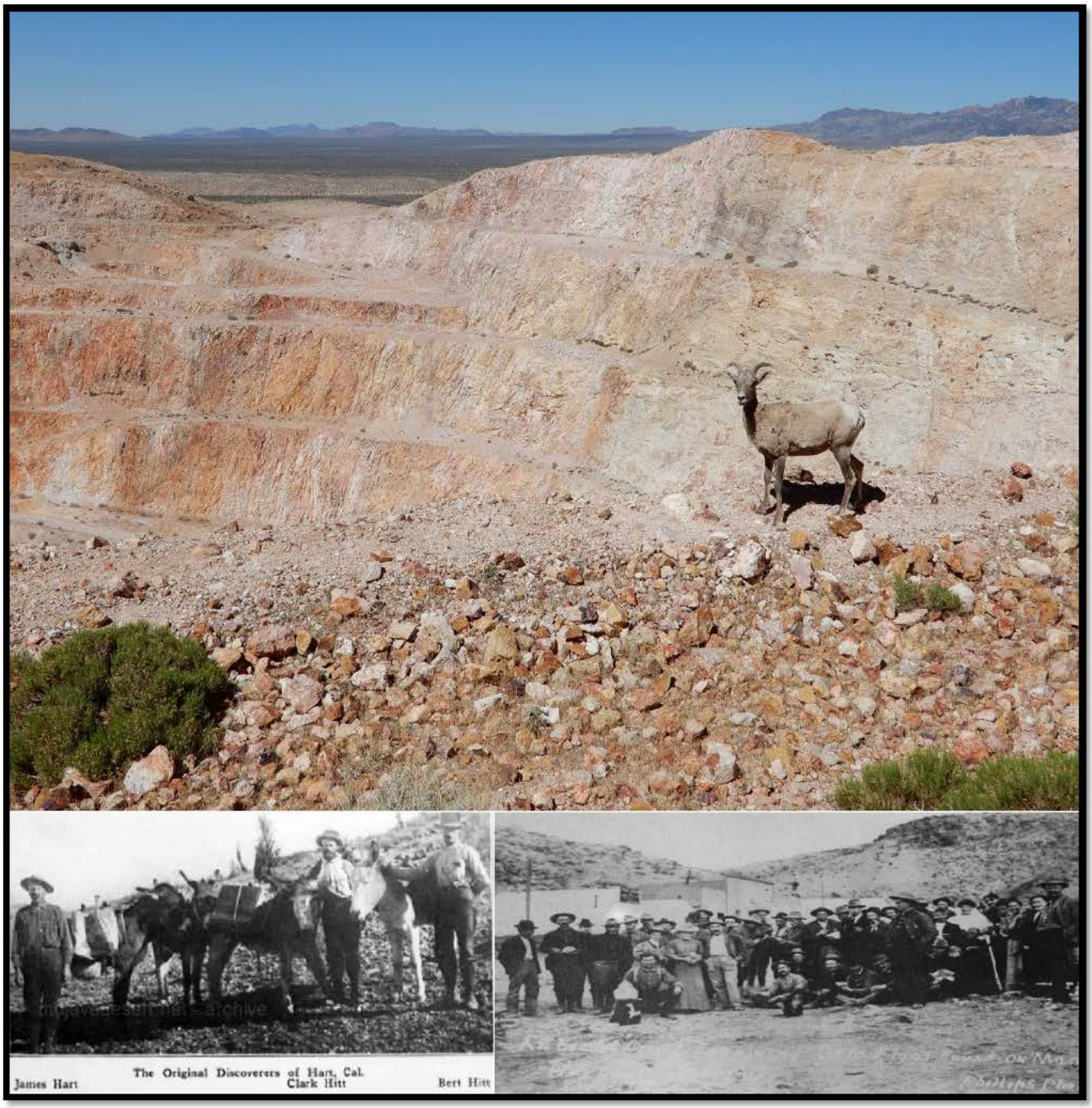
San Bernardino County
Land Use Services Department
San Bernardino, California

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California Mine ID NO. 91-36-0015

March 2022

Revised September 2025

EQUINOX GOLD
CASTLE MOUNTAIN MINE



The Hart Mining District

PREFACE

This Mine Plan of Operation and Reclamation Plan ("2022 Plan") for the Castle Mountain Mine (CMM) is an amendment proposing changes to the authorized CMM plan. The authorized plan is the 1998 Mine and Reclamation Plan ("1998 Plan") # 90M-013 ver.2.0. The 1998 Plan is the most recent major mine plan of operation and reclamation plan modification authorized by the project lead agencies[1] following a National Environmental Policy Act (NEPA) Environmental Impact Statement (EIS) and California Environmental Quality Act (CEQA) Environmental Impact Report (EIR) review of environmental impacts ("1997 EIS/EIR"). The 1998 Plan was recently revised through an approved application for minor modification, which both lead agencies authorized by February 2020. That revision was considered a modification to the 1998 Plan and designated as Mine and Reclamation Plan ver.2.1 ("2020 Plan update") of the 1998 Plan.

The 2020 Plan update included modifications required to reflect the changes at the CMM since interim reclamation was completed in 2012 and idle mine operations between 2013 and 2020. The 2020 Plan update was a minor plan modification because it did not propose new facilities not previously authorized. The 2020 Plan update did account for a change in land use after patented lands were transferred to Castle Mountain Venture in 2007. It also recorded reclamation plan revisions approved by the lead agencies in July 2002 but hadn't been documented in an approved mine plan amendment.

A chronology is provided in **Table A** below to document the succession of mine plan amendments (both significant and minor) authorized for the CMM. Throughout the remainder of this document, the mine plan succession described in **Table A** will serve as a point of reference to identify each mine plan (or revised plan) by the year the lead agencies approved each substantive amendment. For example, the original mine plan was approved in late 1990; it is identified as the "***1990 Plan.***" Likewise, the next significant plan revision was approved in 1998, identified as the "***1998 Plan.***" Mining activity proposed in this current plan amendment will be recognized as the "***2022 Plan.***"

The 2022 Plan is also referenced internally as the *Phase 2 Project*, which proposes the continuation of mining at the 1998 Plan mine pits, though with expansions as provided in this plan amendment. Mining expansion is possible because favorable metal prices and engineering advancements allow the reclassification of inferred resources (low-grade or protore material) to proven and probable resources. The increase in mineral reserves requires a corresponding increase in mineral processing throughput that maintains a high operating efficiency. Accordingly, the mining rate would increase from the approved rate, and the more efficient operation would be completed in the shortest time possible. We estimate Phase 2 Project mining and processing activity to last approximately 20 years[2], followed by reclamation and monitoring. By comparison, if the mining rate remained unchanged from the current rate, more than 60 years of mining would be needed to recover the known mineral resource. While the increased mining rate will require a greater input of utilities like water and electricity than authorized in the 1998 Plan (and 2020 Plan Update), we believe it is a smart alternative that will ultimately result in less total resource consumption and less cumulative environmental effects owing to a more efficient use of resources over a much shorter time span (Lilburn Corp, 1997, pp. 2-74).

[1] San Bernardino County, Land Use Services Department; and U.S. Bureau of Land Management, Needles Field Office
[2] 20-years from the date of plan approval. Note that 20-years is <u>not</u> the years of proposed, additional mining, that would be subject to agency review.

Table A. Castle Mountain Mine Plan of Operations and Reclamation Plan Chronology

SIGNIFICANT PLAN AMENDMENT	MINOR PLAN MODIFICATION	PLAN DESCRIPTION	#90M-013 VERSION
1990 Plan	1987	B&B Mining received approval for mineral exploration in 1983. Based on positive drilling results, B & B Mining submitted a mining Plan of Operation to BLM in June 1987. Conditional plan approval was granted in November 1987; thereafter, two appeals were filed. B & B Mining changed its name to Viceroy Gold Corporation and refiled a revised mining Plan of Operation application.	n/a
	(1990)	Viceroy Gold Corporation[3] submitted a modified Plan Application requesting authorization from the BLM and the County of San Bernardino Planning Department to approve a gold heap leach mining operation extending over 2,620 acres within the Hart Mining District in the Castle Mountains.	Ver. 1.0
	1991	Installation of a 69kV Overhead Power Transmission Line and attendant Right-Of-Way lease agreement	
	1993	Installation of a Comminution Plant to process high-grade ore.	
1998 Plan	(1998)	Castle Mountain Venture submitted a Plan amendment application for the CMM Expansion Project. The total project lands increased from 2,620 to 3,910 acres, and land disturbance increased by 571 to 1,460 acres. The mining schedule was extended ten years to December 31, 2020. The mine plan identified a distinction between Phase I and Phase II mining stages (though the operator never started the latter).	Ver. 2.0
	2013	Extension of the County Conditional Use Permit (CUP) to expire on December 31, 2025.	
	2020 (2020 Plan Update)	Castle Mountain Venture submitted minor modifications to the project lead agencies to modify the 1998 Plan to account for site changes since the operation was idled. Mining resumed in 2020.	Ver. 2.1
2022 Plan		Plan modifications will extend CMM operations into the Phase II portion of the mine plan. While certain elements of Phase II mining were approved through the 1998 Plan ver.2.0, current economics allow a further extension of mine pits to include ore zones that were previously identified but uneconomic to mine until now. The mining rate increases, and the schedule extended to allow additional time to complete mining and reclamation activity.	Ver. 3.0

[3] The original mine plan was initiated by Viceroy Gold Corp ("Viceroy") which formed Castle Mountain Venture ("CMV") by 1991. Most ensuing permits reference either Viceroy or CMV interchangeably as the mine owner. While both are still legal entities, we use Castle Mountain Venture in this document.

The 2022 Plan does not propose increasing the current approved project boundary of 3,910 acres; it is also known as the Approved Project Area (APA). Land disturbance would increase within the approved project boundary by about 1,393 acres.

This 2022 Plan encompasses and incorporates numerous documents; therefore, we provided the following Table B to assist BLM staff in locating the required elements within the 2022 Plan. **Table B** is adapted from and consistent with Figure 4.2-2 of BLM's Surface Management Handbook (H-3809-1), and incorporates the current, applicable provisions of 43 CFR § 3809.401(b), (c), and (d).

Table B. Proposed Castle Mountain Mine Plan Of Operations Amendment Completeness Review Matrix

Required Element from § 3809	Location
Operator Information (§ 3809.401(b)(1))	
Name, address, phone number, TID no.	§ 1.3; Table 1-1
BLM serial nos. of unpatented claims	Appendix C
Point of contact for corporation	§ 1.3; Table 1-1
Description of Operations (§ 3809.401(b)(2))	
Maps showing all activity and facility locations	Sheets 1-1, 1-2, 1-3 and 1-4; Appendix B & D
Preliminary designs and operating plans	§ 4.0; Figs. 4-1–4-9
Water management plans	§§ 4.6, 4.7, 8.3–8.6; Appendix F & I
Rock characterization and handling plans	§§ 4.4.3, 4.4.4, 8.4; Appendix F & H; *see also* 1998 PoO
Quality assurance plans	§8.1-8.7
Spill contingency plan	§ 8.5; Appendix R
Schedule of operations from start through closure	§ 4.3; Tables 4-5 to 4-8
Plans for access, power, water, or support services	§ 4.7; Appendix N
Reclamation Plan Requirements (§ 3809.401(b)(3))	
Drill-hole plugging plans	n/a: Mine Plan is not an exploratory drilling plan; any drilling will be incidental to mining.
Regrading and reshaping plans	§ 5.12.1
Mine reclamation, with pit backfilling information	§ 5.0; Appendix F

Required Element from § 3809	Location
Riparian mitigation plans	n/a: Table 7.1
Plans for wildlife habitat restoration	§§ 5.3–5.9
Topsoil handling plans	§§ 5.8; 1998 Rec. Plan, § 1.5
Revegetation plans	§§ 5.4.2, 5.5–5.8
Plans to isolate and control toxic or deleterious material	§§ 4.8, 8.2, 8.5
Plans to remove/stabilize buildings, structures, and facilities	§§ 5.9, 5.9.6
Provisions for post-closure management	§§ 5.12–5.14
Monitoring Plan Requirements (§ 3809.401(b)(4))	
Description of resources subject to monitoring plans	§§ 5.12.2, 8.0, 8.2, 8.3; Appendix K
Type and location of monitoring devices	§§ 7.3.2, 7.3.3; 8.2, 8.3; Appendix K, F, I
Sampling parameters and frequency	§§ 5.12.2, 7.3.2, 7.3.3; 8.2, 8.3; Appendix K, F, I
Analytical methods	§§ 5.12.2, 7.3.2, 7.3.3; 8.2, 8.3; Appendix K, F, I
Analytic methods	§§ 5.12.2, 7.3.2, 7.3.3; 8.2, 8.3; Appendix K, F, I
Reporting procedures	§§ 5.12.2, 7.3.2, 7.3.3; 8.2, 8.3; Appendix K, F, I
Procedures for responding to adverse monitoring results	§§ 8.1 to 8.5
Reliance on other Federal or State monitoring plans	§§ 7.2, 7.3, 8.2
Interim Management Plan (§ 3809.401(b)(5))	**§ 5.11.2 and Appx. Q**
Measures to stabilize excavations and working	Appendix Q §§ III.b
Measures to isolate or control toxic or deleterious materials	Appendix Q §§ III.c
Plan for storage or removal of equipment, supplies, structures	Appendix Q §§ III.d
Measures to maintain the area in a safe and clean condition	Appendix Q §§ III.e
Plans for monitoring site conditions during non-operation	Appendix Q §§ III.f
Schedule of anticipated non-operation	Appendix Q §§ III.g

Required Element from § 3809	Location
Provisions to notify BLM of changes in non-operation period	Appendix Q §§ III.g
Additional Information—at BLM discretion (§ 3809.401(c))	
Operational and baseline information for environmental review	§§ 3.4, 5.2.1, 5.3–5.4; Appendix E2
Reclamation Cost Estimate (§ 3809.401(d))	**§ 6.0**

ARCHITECTURE
ENGINEERING
CONSTRUCTION MANAGEMENT

Certification

M3 has reviewed and participated in the development of the "Castle Mountain Mine 2022 Mining and Reclamation Plan" and certifies that the plan and content within which has been developed specifically by M3, has been prepared in accordance with generally accepted, sound engineering principles and practices. The information presented is accurate to the best of our knowledge commensurate with the information provided to us.

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February 25, 2022

CERTIFICATION

I, Michael S. Smith, a registered California Professional Land Surveyor, certify that this LAND MAP for Castle Mountain Mine was prepared under my supervision, and that is it intended to illustrate the overall land status and relationships of the various boundaries associated with the Castle Mountain Mine Project;

I further certify that the boundaries shown are the result of a records compilation, surveys conducted under my supervision, and/or the supervision of a prior professional land surveyor, that the monuments shown are of the character indicated and are of durable construction, that the boundaries shown are boundaries of record, and that this map is not a Record of Survey, is not in conflict with the California Subdivision Map Act, and does not create any new parcels.



Expires 9/30/23

Professional Certification

Call & Nicholas, Inc. (CNI) is pleased to present this geotechnical study to Equinox Gold Corp (EQX). This study was conducted in accordance with a proposal submitted by CNI to EQX on 01 November 2019 and reviewed by Mr. Scott Cylwik, a California registered Professional Engineer. This study builds upon the 2017 *Pre-feasibility Slope Stability Report for the Castle Mountain Reserve Pits* report by CNI and presents slope angle recommendations based on the known and provided data at the time of this report. As more information becomes available and pit designs change, the recommended and achievable slope angles may need to be updated to reflect the conditions.

Thank you for the opportunity and we look forward to assisting you in the future.

Sincerely,
Call & Nicholas, Inc.



Signed: 2/25/22

Scott Cylwik, California P.E. 85060
Senior Engineer

CALL & NICHOLAS, INC.

CERTIFICATION

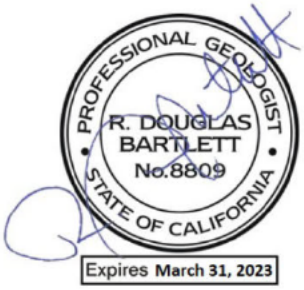
This Report was prepared in accordance with generally accepted professional hydrogeologic principles and practices. This Report makes no other warranties, either expressed or implied as to the professional advice or data included in it. This Report has not been prepared for use by parties or projects other than those named or described herein. It may not contain sufficient information for other parties or purposes.

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Date signed: January 31, 2022



Professional Certification

As a California Professional Geologist and California Certified Hydrogeologist, I have stamped this report regarding geochemical characterization of mine materials for the Equinox Gold Corporation, Castle Mountain Mine project. I certify that the findings and recommendations included in these reports are valid in my professional judgement.

This report is based in part on previous materials characterization studies that were performed by other parties for Castle Mountain Mine. Our quality assurance review and analysis of the past studies and recent mine materials geochemical characterization test results were completed using recognized standards to support waste classification criteria in accordance with California Code of Regulations (CCR) Title 23 Chapter 15 Article 7.

This report was prepared in accordance with generally accepted professional hydrogeologic and engineering principles and practices. This report makes no other warranties, either expressed or implied as to the professional advice or data included in it. This report has not been prepared for use by parties or projects other than those named or described herein. It may not contain sufficient information for other parties or purposes.

We appreciate the opportunity to be of service to Equinox Gold Corporation on this project. If you have any questions concerning these reports or if we may be of further service, please contact the undersigned.

Geologic Associates, Inc.

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November 2021
NewFields Project No. 475.0468.000

Castle Mountain Venture
980 American Pacific Dr. Suite 203
Henderson, NV 89014

Attention: **James Newman, P.E.**
Senior Mining Engineer

RE: **Engineering Design Report**
Phase 1B Heap Leach Facility Expansion
WDID 7A362179002 Order R7-2020-0004
Castle Mountain Mine

This report is written in support of construction and details design of the proposed Phase 1B Heap Leach Pad Expansion. This document presents the NewFields Drawings and Technical Specifications for the proposed expansion. The design follows the intent of the previous design by GeoLogic (GLA, 2019) and any changes are documented in this design report. Design drawings and Technical Specifications for the proposed Phase 1B expansion are included as Appendices to this report.

Should you have any questions, we welcome the opportunity to discuss them with you.

Sincerely,

NewFields Mining Design & Technical Services

Reviewed by:

REGISTERED PROFESSIONAL ENGINEER
ASHLEY THIBEDEAU
C 79510
EXP. 09/31/22
CIVIL
STATE OF CALIFORNIA
11/3/21

Ian Griswold-Shute, P.E.
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Project Engineer

IG/AT/PK/ng

Addressee: (3) + electronic
S:\Projects\0468.000 CastleMtnPh1B-C Expansion\01-Doc\DesignReport\Rev0\01-Ltr\0468000-EM-0003.docx

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Appendix C Mine Claims and Maps
Appendix D Figures 1-3a to 1-3h
Appendix E Water Supply Assessment
Appendix F Waste Rock Management Plan
Appendix G Geotechnical Feasibility Report
Appendix H Geochemical Characterization Report
Appendix I Storm Water BMP Plan
Appendix J SPCC Plan
Appendix K Groundwater Monitoring Plan
[There is no Appendix L]
[There is no Appendix M]
Appendix N CMM Access Road Maintenance Plan
[There is no Appendix O]
Appendix P Emergency Response Plan
Appendix Q Interim Management Plan
Appendix R Spill Prevention & Response Plan

LIST OF ABBREVIATIONS

ACEC	-	Area of Environmental Concern
AFY	-	Acre Feet per Year
AMSL	-	Above Mean Sea Level
APA	-	Approved Project Area
bgs	-	Below ground surface
BA	-	Biological Assessment
BO	-	Biological Opinion
BLM	-	Bureau of Land Management
CFWS	-	California Fish and Wildlife Service
CMM	-	Castle Mountain Mine
CAMO	-	Castle Mountain National Monument
CMV		Castle Mountain Venture
CEQA	-	California Environmental Quality Act
CIC (Plant)	-	Carbon In Column (tanks)
CRBRWQCB	-	Colorado River Basin Regional Water Quality Control Board
DRECP	-	Desert Renewable Energy Conservation Plan (BLM)
DMR	-	Division of Mine Reclamation (state of California)
DNA	-	Determination of NEPA Adequacy
EIS	-	Environmental Impact Statement
EIR	-	Environmental Impact Report
EQX	-	Equinox Gold Corporation
EWF	-	East Well Field
FS	-	Feasibility Study
FLPMA	-	Federal Land Policy Management Act
FONSI	-	Finding of No Significant Impact
FWS		U. S. Fish and Wildlife Service
GHG	-	Green House Gas
IBLA	-	Interior Board of Land Appeals
IMP	-	Interim Management Plan
JSLA		Jumbo South Leslie Anne Pit
LUP	-	Land Use Plan (BLM)
MOJA	-	Mojave National Preserve
NPS	-	National Park Service
NEPA	-	National Environmental Policy Act
NONA	-	Notice of Non-Applicability
PPM	-	Parts Per Million
ROM		Run of Mine
ROD	-	Record of Decision
ROW		Right of Way
SBC or County	-	San Bernardino County
SMARA	-	Surface Mining and Reclamation Act of 1975 (state of California)
SMGB	-	State Mining and Geology Board
SPCC	-	Spill Prevention Control and Countermeasures (plan)
SWPPP	-	Storm water pollution prevention plan
VMT	-	Vehicle Miles Traveled
WWF	-	West Well Field

MAP POCKETS

Sheet 1 of 4 – Mine Plan (approved facilities)
Sheet 2 of 4 – Mining Plan (proposed facilities)
Sheet 3 of 4 – Reclamation Plan and Cross Sections
Sheet 4 of 4 – Additional Details

1.0 INTRODUCTION

1.1 PURPOSE AND NEED

1. The San Bernardino County Planning Commission authorized a Mining Conditional Use Permit (CUP) on October 7, 1990, approving Viceroy Gold Corporation's March 1988 application for its Mining Plan of Operation and Reclamation Plan (No. 90M-013) for the Castle Mountain gold Mine (CMM). This combination of the mining and reclamation plan is generally referred to as the Mining and Reclamation Plan or a mining plan of operation; either term may be used throughout this document and the supporting appendix files.

2. The U.S. Department of the Interior, Bureau of Land Management (BLM), California State Office, issued a Record of Decision on October 30, 1990, approving Viceroy's Plan of Operations submitted to the BLM in March 1988. The Record of Decision assigned BLM serial # CACA-031137 and incorporated Mining and Reclamation Plan 90M-013 by reference.

3. Castle Mountain Venture (CMV) submits this application ("2022 Plan Amendment Application" or the 2022 Plan) seeking approval from the BLM and the San Bernardino County Land Use Services Department ("County") to modify and expand authorized activities at the CMM. This application is designed to responsibly and efficiently mine and process remaining gold (and silver) ores. This pplication follows state and federal instructions related to mineral development.

4. The Legislature of the State of California[4], acknowledges the importance of responsible and efficient development of the state's mineral resources as essential to the economic well-being of the state and society; such valuable minerals are important, finite resources whose development is also vital to a sustainable California economy. This 2022 Plan amendment application accomplishes these important state goals.

5. The BLM branch of the Department of the Interior is tasked with maintaining a multiple-use mandate for its management of our vast public lands. Public lands are managed based on balanced goals of conservation and protection of biodiversity and natural resources, while also providing a mechanism for responsible development of the nation's minerals and all the benefits provided directly by minerals, including the economies of scale created by large mining projects[5]. One of BLM's most important tools for maintaining and managing this balance is known as a Resource Management Plan (RMP) or Land Use Plan (LUP). The current LUP covering the CMM region and most of the southern California deserts is known as the Desert Resource Energy Conservation Plan (DRECP), approved by the BLM in September 2016. The DRECP specifically identified 5,000 acres at the CMM as a High Potential Mineral Area, an Existing Mineral Operation, and an Existing *High Priority Mineral Operations Exclusion Area*. This federal recognition clarifies that responsible mining at the CMM conforms with the BLM's regional LUP.

[4] California Public Resources Code SS 2711(a)(d)(f)

[5] Benefits of the project are provided in the report, Castle Mountain Mine Phase 2 Project: Analysis of Economic, Fiscal and Social Effects.*;* included as **Appendix A.**

6. **The purpose of the 2022 Plan is to describe modifications to the authorized plan, which currently defines authorized mining at the CMM. Notably, the authorized 3,910-acre APA will remain unchanged in size. However, land disturbance within the APA will almost double from the approved amount as favorable mine economics require the natural extension of mining from ore zones previously identified at the CMM. The ore mining rate will increase by about 3 times the approved rate. This increased mining land disturbance within the APA and the increased mining rate are the primary reasons for modifying the approved mine plan.**

7. The 2022 Plan's ore mining will continue (as authorized), at the existing JSLA[6] pit, Jumbo pit, and Oro Belle pit[7]; all will expand outward and at depth. The 1998 Plan also identified an ore extension south of the JSLA pit (the "South Extension pit"). The 1998 Plan scheduled mining at the South Extension pit during Phase II, Stage 6, the last active mining stage included in that mine plan. Authorized mining at the approved South Extension pit has not occurred to date, but will per this 2022 Plan. Furthermore, favorable mine economics today allow for expanding the South Extension Pit to include mineralized zones east, west, and south of the pit identified in the 1998 Plan. The proposed pit will expand west and east from the approved South Extension pit location, eventually merging with the enlarged JSLA pit. It will also follow an ore zone south and expand into two intra-pit excavations with an east and west component. Generally, this 2022 Plan proposes mining activity that will radiate outward from all approved pits.

8. The 1998 Plan presumed that the Oro Belle and, to a lesser extent, South Extension would be the last pits mined. Therefore, that plan presumed that the JSLA (i.e., Lesley Ann) and Jumbo pits would be mostly backfilled, while the final excavations at the Oro Belle and South Extension would not be (or only partly) backfilled. The 1997 Final EIS documented this backfilling strategy on page 4-1 (Lilburn, 1997). That section further explained that the benefits from backfilling are maximized when it occurs sequentially with mining, thereby avoiding material double-handling. The 2022 Plan maintains this accepted[8] approach to backfilling at the CMM. The 2022 Plan does adjust the mining sequencing, and the South Extension pit will be the last pit mined; therefore, it will not be significantly backfilled. Aside from the mining sequence, this approach to pit backfilling remains the same as before. The northern pits (JSLA, Jumbo, and Oro Belle), which can be sequentially backfilled, are planned to be backfilled.

9. A mine plan of operation identifies not only areas of mining but also those ancillary facilities that support the primary mining effort. These activities are often known as incidental to mining. At CMM, these facilities include overburden (or waste rock) sites, the heap leach pad, a crushing plant, a comminution plant (or a gravity circuit), and process facilities. These facilities are all currently authorized at the CMM and identified in the approved plan. However, the proposed expansion of mining and an increased mining rate require expansion of other existing or approved facilities. The expansion of facilities ancillary to mining primarily affects the:
    - **Heap Leach Pad**
    - **Overburden Sites**

[6] The original pit was known as Lesley Ann but at some time during the 1990s, the common name transitioned to JSLA for, Jumbo South Lesley Ann. This document uses JSLA.

[7] The 2022 Plan may reference the Oro Belle Pit as the Oro Belle Pit Complex, which is synonymous with the former. The latter provides context that as the pit expands, it forms several inter-pit excavations.

[8] See the 1997 Final EIS/EIR, pages: 2-19, 2-29 and 4-1.

10. The approved mining and reclamation boundary (including existing approved facility areas and related land disturbance currently authorized at CMM) is shown in **Figure 1-1**.

11. An increased mining rate also requires modification to some authorized activities, including:

    - Larger crushing plant
    - Increased water use
    - Relocation of support facilities
    - Tertiary crushing

12. **Figure 1-2** shows the relationship between the existing approved and the 2022 Plan proposed mining and reclamation disturbance areas. **Appendix B** includes new **Figures 1-2a** to **Figure 1-2h**, which have been added to this Plan to provide a higher resolution of detail for major mine features like mine pits or overburden sites. Each figure highlights a singular feature; for example, **Figure 1-2c** is titled Oro Belle Pit complex and provides Oro Belle pit information related to:

    - Approved disturbance boundary
    - Proposed (total) disturbance boundary
    - BLM land (acres) within both boundaries
    - Historic patent land (acres) within both boundaries
    - Post-FLPMA patent land (acres) within both boundaries

    Note that the acres in these figures are accurate, but boundary lines have been exaggerated in some cases to produce a coherent presentation of a complex land package.

13. Equinox Gold published a Feasibility Study (FS) (Equinox Gold Corp, 2021) that identified some of the proposed changes included in this plan amendment. However, since then, CMV has completed additional evaluation of the proposed modifications for CMM. CMV performed a thorough analysis that evaluated a range of mine alternatives, some of which were presented in the FS while others were not.

1.2 OWNER/OPERATOR INFORMATION

1. Castle Mountain Mine is owned and operated by Castle Mountain Venture (CMV or "the Company"). CMV is a California General Partnership between Viceroy Gold Corporation ("Viceroy") and Telegraph Gold Inc. CMV retains 100 percent ownership of the CMM and submits this amendment to propose changes to the existing mine plan of operations and reclamation plan for the CMM (**see Table 1-1**).

2. CMV is a subsidiary of and 100 percent owned by parent company Equinox Gold Corp ("Equinox"). Most historic ownership and permitting documents reference either Viceroy or CMV as the legal entity of record; both are accurate.

1.3 PROPERTY

1. Total land holdings at the Castle Mountain Mine by CMV and Viceroy amount to about 12,000 acres. This is an estimate because significant mine claim overlap makes it difficult to calculate precise acreage.

2. Private property (e.g., real, fee, or patent) is distinguished from possessory-in-interest property, including unpatented mine claims or mill sites. Private lands owned by the company amount to about 1,298 acres. Private and possessory land claims are shown in **Figures 1-3** and **1-4**, respectively.

3. Private lands are further distinguished as either vested or non-vested. Vested private lands are those lands that have been historically mined before the enactment of either (i) local ordinances requiring a use permit to conduct surface mining or (ii) the California Surface Mining and Reclamation Act of 1976 (SMARA), which requires a use permit and reclamation plan for surface mining. The CMM is situated in the historic Hart Mining District, which has been subject to continuous mining operations since the early 20th century. At the CMM, the County has historically recognized vested rights. Specifically, the County issued and approved a Certificate of Land Use Compliance (CLUC) in February 2022 for 718 acres of land within the 1998 Plan APA. Most of the vested land is within the anticipated disturbance area identified in this 2022 Plan.

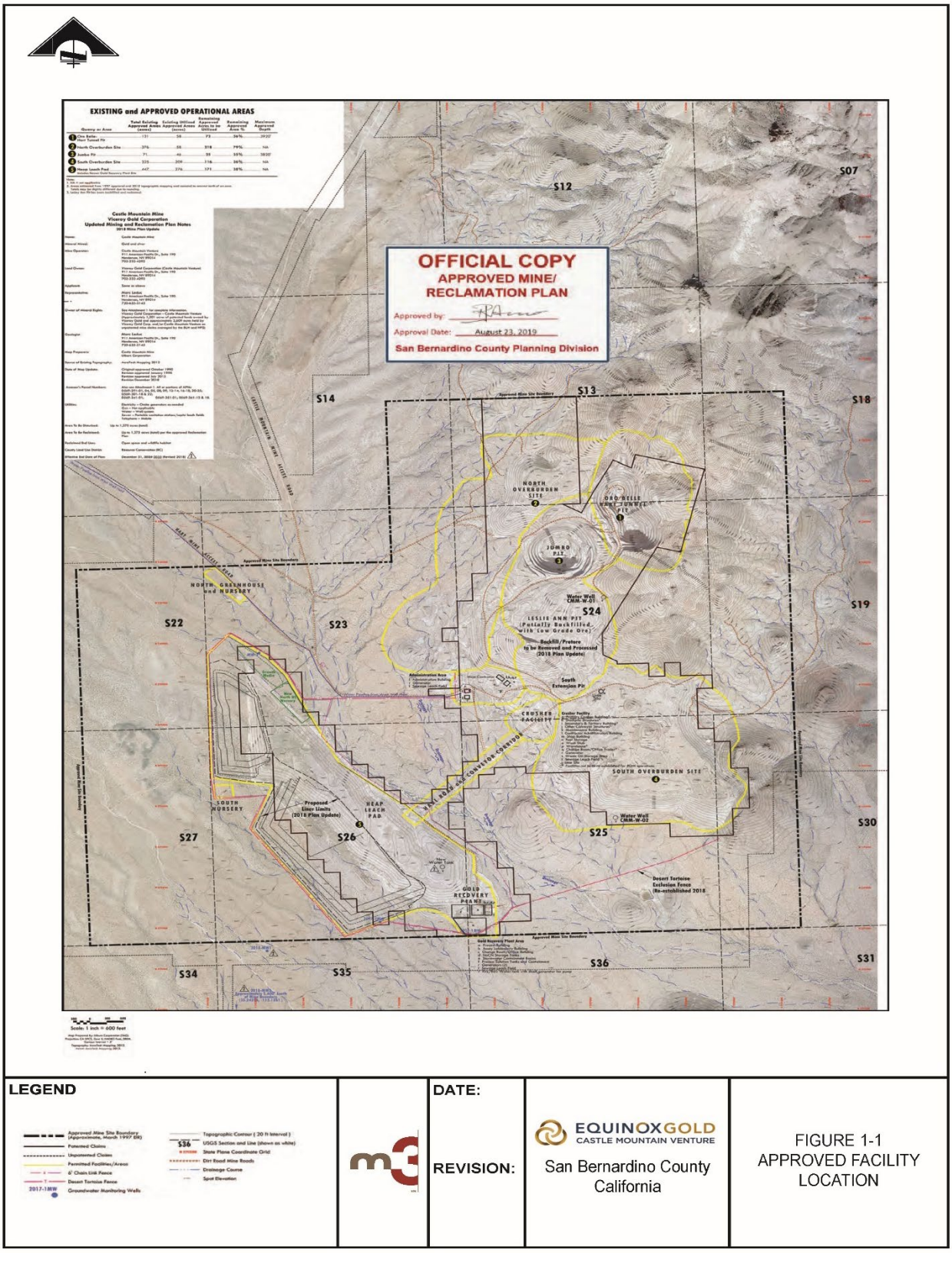


Figure 1-1. Approved Facility location.

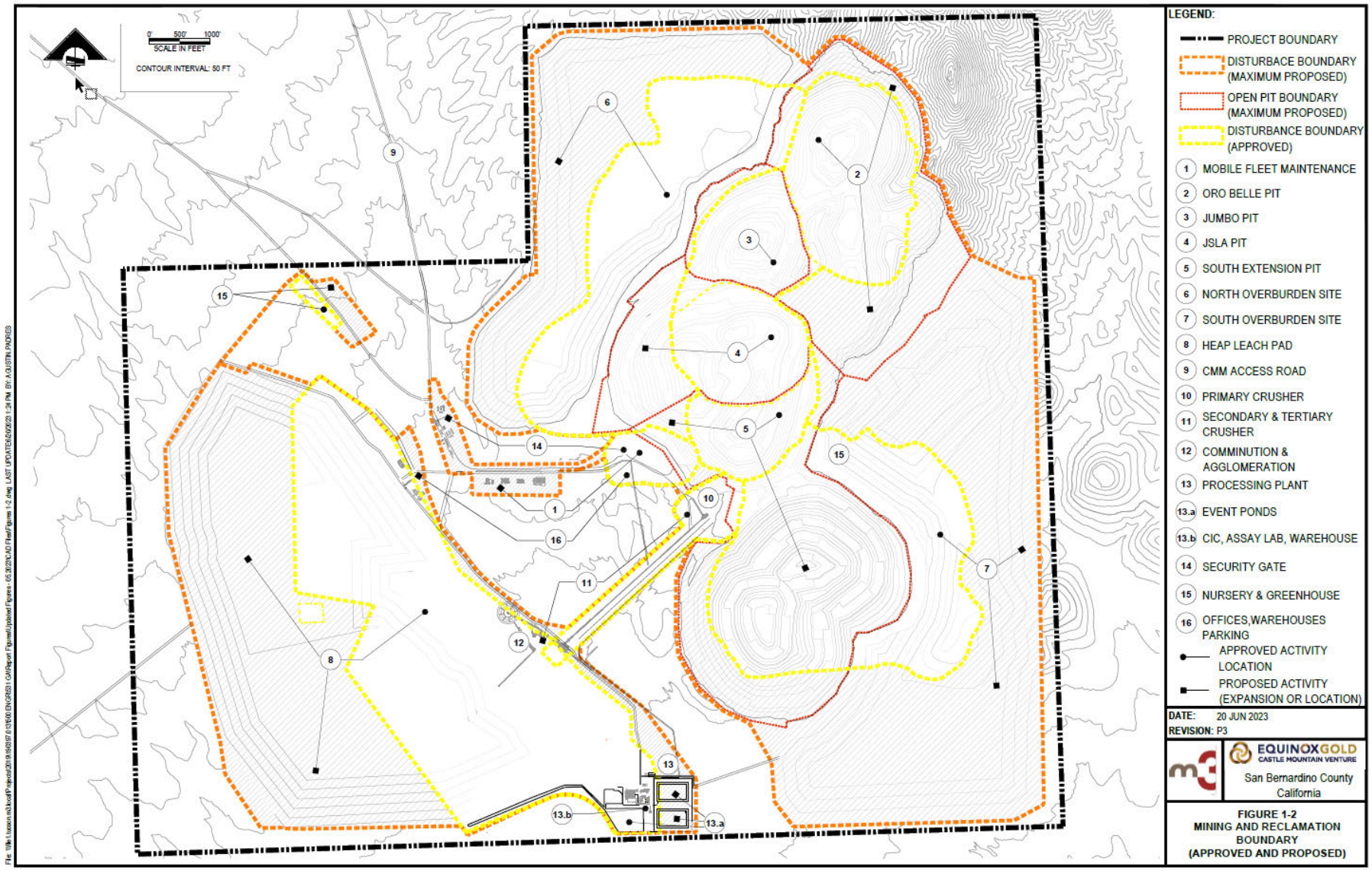


Figure 1-2. Mining and Reclamation Boundary (approved and proposed)

Table 1-1. Owner Information

BUSINESS NAME	BUSINESS TYPE	REPORTS TO
Equinox Gold Corp ("Equinox")	Corporation headquartered in Vancouver, Canada	Publicly traded company
Castle Mountain Venture ("CMV")	California General Partnership	Subsidiary to Equinox
Viceroy Gold Corp	Corporation registered in Delaware	Partner to CMV
Telegraph Gold Inc.	Corporation registered in British Columbia	Partner to CMV
Castle Mountain Venture Contact and Operator Information		
Address (CMM site)	115575 Hart Mine Road, Ivanpah, CA 92364	
Address (mailing)	980 American Pacific Drive, Henderson, NV 89014; Suite 102	
Primary Phone No.		
Primary Point of Contact		
Federal Tax ID		
DUNN & Bradstreet # (Equinox)		
DUNN & Bradstreet # (CMV)		
California Mine ID #	91-36-0015	
Main Assessor Parcel Number		

1.3.1 Unpatented Claims

1. The Company retains mineral rights to approximately 1,226 unpatented lode mine claims, placer mine claims, and mill sites. The full list of unpatented mine claims and associated maps are included in **Appendix C**. These claims represent possessory-in-interest land holding of about 12,000 acres. Unpatented mine claims are renewed each year before September 1st by filing the annual claim maintenance fee with the BLM and then recording a Notice of Intent to Hold affidavit with the county.

2. **Appendix D** of the 2022 Plan includes **Figures 1-3a** to **Figure 1-3h**. These figures provide a detailed account of the approved and proposed disturbance areas (acres) relative to public land managed by the BLM and defined by their legal land descriptions.

1.3.2 Patented Land

1. The Company owns 1,298 acres of patented land. Various land patents were issued historically and as recently as 2009. **Table 1-2** includes additional information regarding the land patents at CMM.

2. **Figure 1-3** includes a land survey map showing the extent of the project area with the Section and Township PLSS grid.

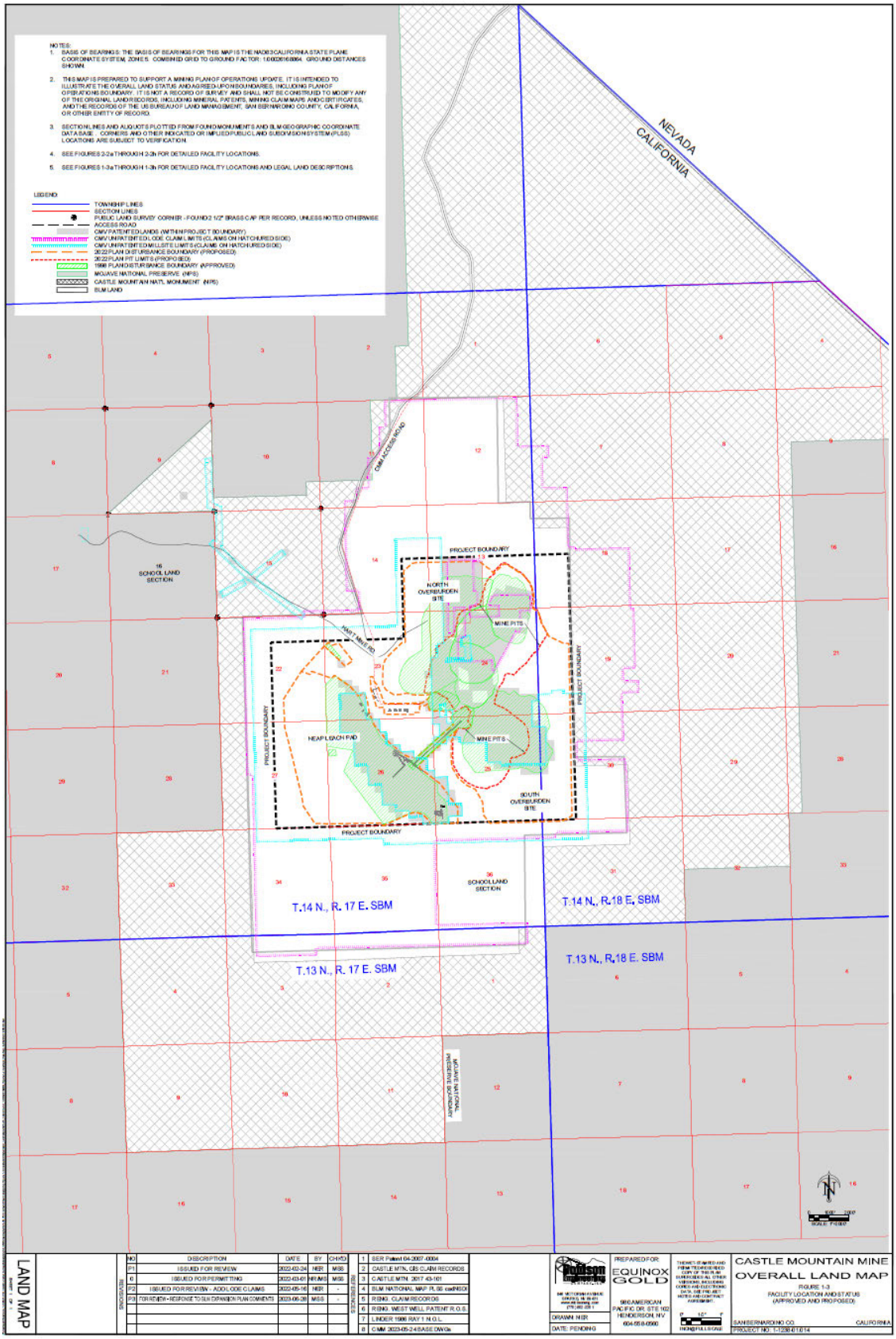


Figure 1-3. Facility Location and Status (approved and proposed)

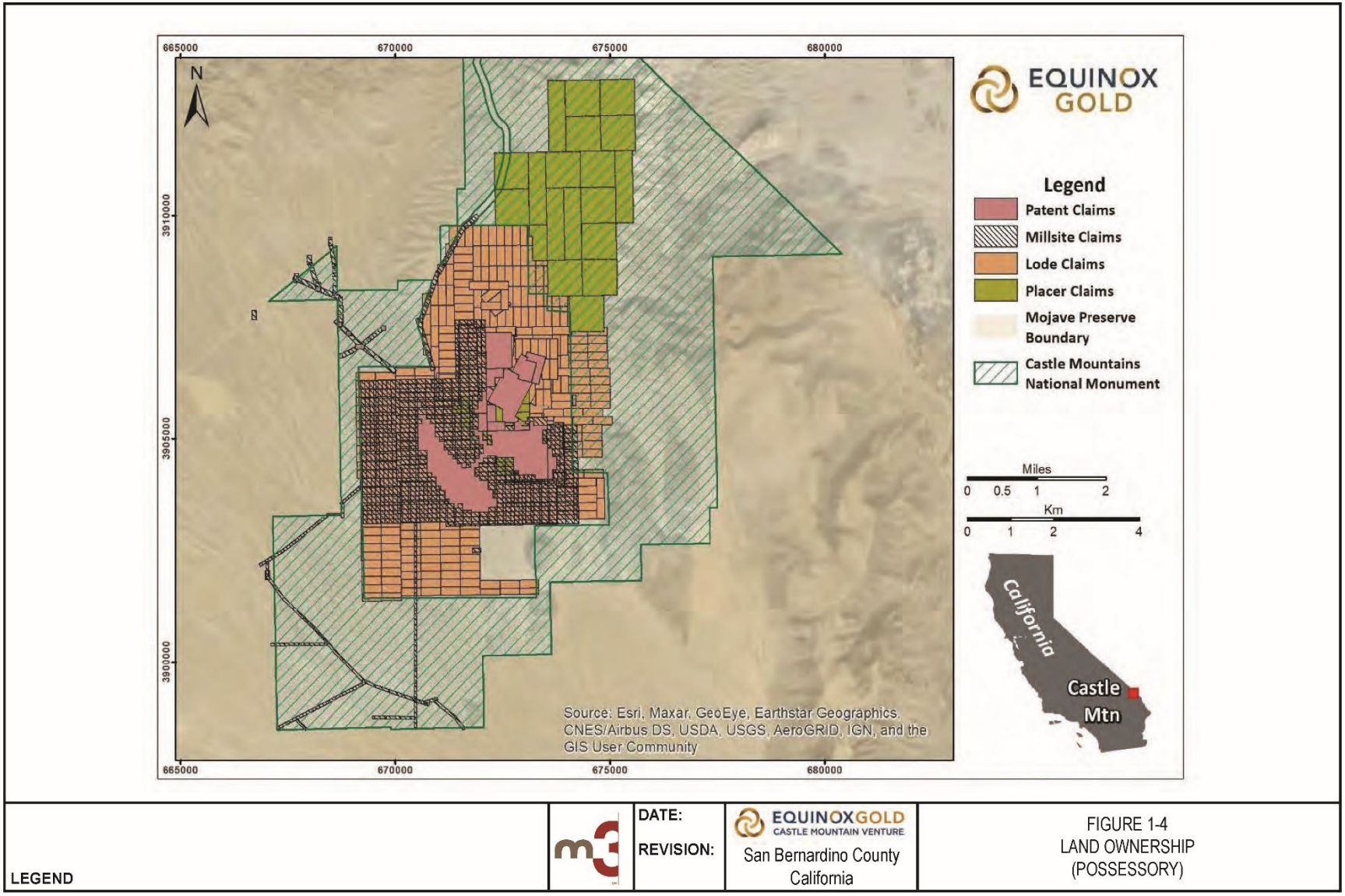


Figure 1-4. Land Ownership (possessory)

Table 1-2. Land Patents

Patent	Type	Acres	Year Patented	Patent Number	Original Issuee
Oro Belle & Ore Belle Fraction lodes	Historic Patent	34.86	1914	424670	Oro Belle Mines Company
Oro Belle Lode 1	Historic Patent	20.236	1918	649101	Oro Belle Mines Company
Pacific Clays	Historic Patent	59.592	1939	1101406	Standard Sanitary Manufacturing Company
Milma Patent	Historic Patent	150.7	1942	1113695	Herman F. Coors
2007 Mill Sites[13]	Post-FLPMA Patent	767.5	2007 (FHFC-1991)	04-2007-0004 (CACA-29997)	Viceroy Gold Corporation
2007 Lodes[9]	Post-FLPMA Patent	206.746	2007 (FHFC-1991)	04-2007-0003 (CACA-24570)	Viceroy Gold Corporation
2007 Water[13] Wells	Post-FLPMA Patent	53.74	2007(FHFC-1991)	04-2007-0005 (CACA-30912)	Viceroy Gold Corporation
2009 Appeal[13] Decision	Post-FLPMA Patent	5.0	2009 (FHFC-1991)	04-2009-0009 (CACA-29997)	Viceroy Gold Corporation
TOTAL		**1,298.37**			

1.4 Location & Access

1. The Castle Mountain Mine is located in eastern San Bernardino County, California. It is about 100 miles east of Barstow, California, and about 70 miles south of Las Vegas, Nevada. Land elevations range from 4,100 to 5,100 feet above mean sea level ("amsl"). Precipitation averages eight inches per year. Temperatures range from below freezing during occasional cold periods in winter to as high as 110°F in summer. The regional location and access to the CMM are shown in **Figure 1-6. Figure 1-7** shows regional land use designations.

2. Road access to the CMM is via an 18-mile gravel road connecting to Nevada State Highway 164 (Nipton Road) seven miles west of Searchlight, Nevada. Site access through this route was chosen as the environmentally preferred alternative site access route developed during the public scoping process for the 1990 Final EIS/EIR. While most of the Nevada portion of the road existed during the 1990 EIS/EIR, there were only road segments throughout this area in California. CMV connected these segments to construct the full 18-mile access road initially identified as the Castle Mountain Mitigated Access Route ("CMMAR"). However, it is now more generally known as the CMM Access Road or Walking Box Ranch Road.

   CMV maintains the road, though it is a public road under the jurisdiction of the BLM and the local county. Road use and maintenance are described in a management plan that is included in **Appendix N.**

[9] The use of the lands described in this patent, and any mining activities therein are subject to such reasonable regulations as may be prescribed by the Secretary of the Interior to protect the scenic, scientific, and environmental values of the public lands of the California Desert Conservation Area against undue impairment, and to assure against pollution of the streams and waters within said area.

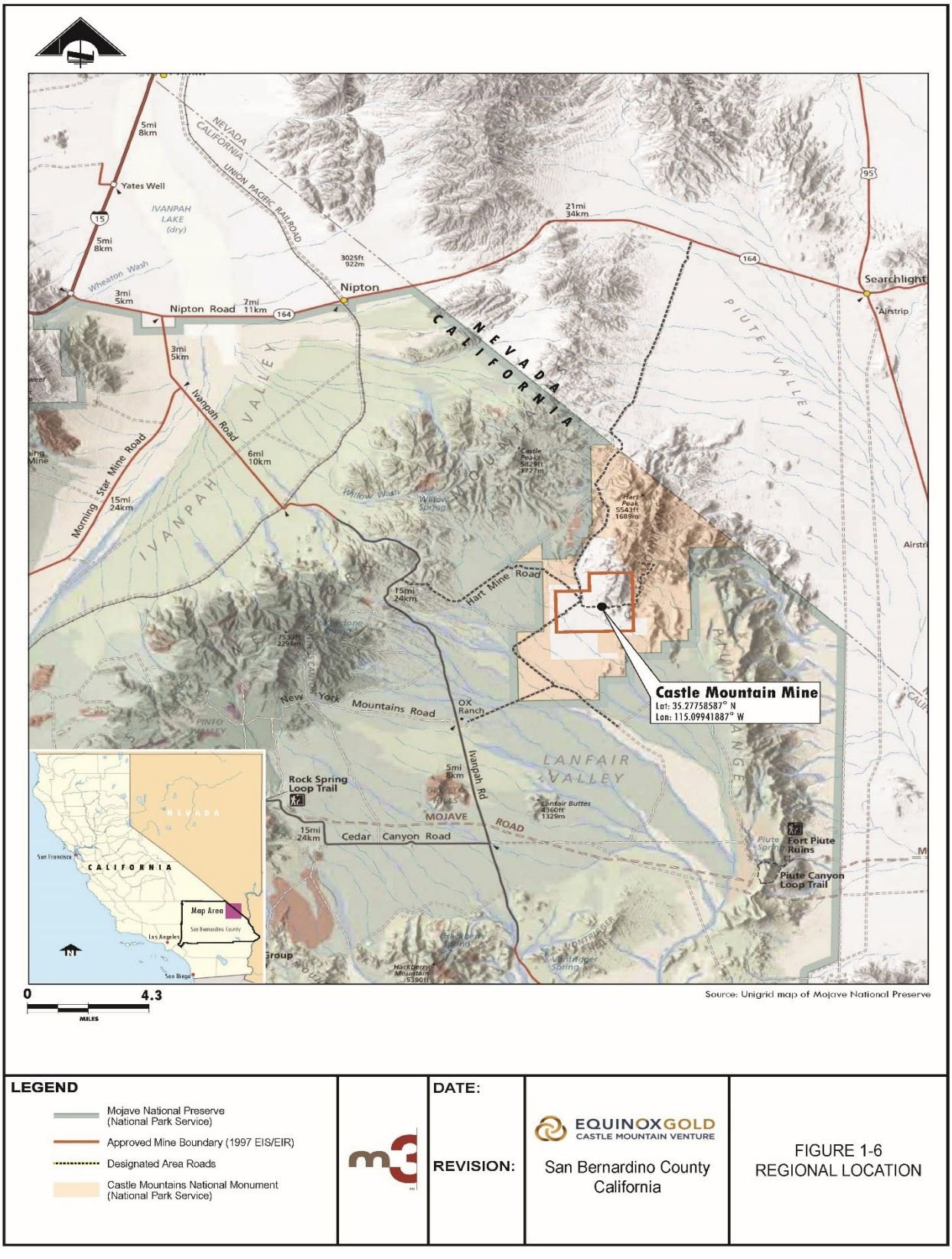


Figure 1-6. Site location and Access

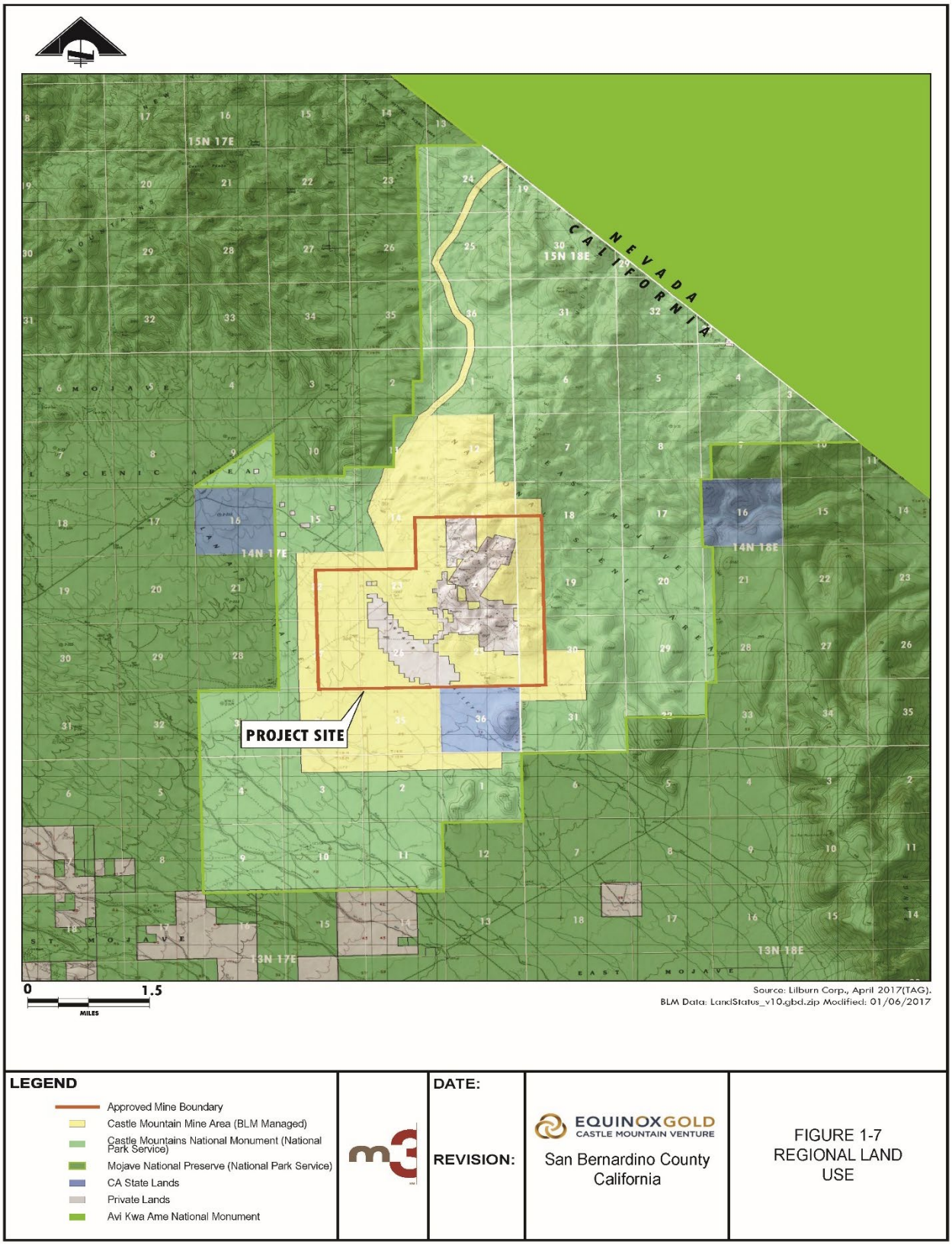


Figure 1-7. Land Ownership and Project Site Boundary

3. The only exception is a less-than 1,000-foot section of road at mile-marker 15, where a section corner of the Mojave National Preserve ("MOJA") was located (over the existing authorized road) in 1994. The road was in use before the creation of MOJA; the MOJA management plan did not recognize this road, and the National Park Service (NPS) did not require a Use Permit or Right-of-Way for operations conducted from the 1980s through 2012. NPS has recently assumed jurisdiction of short section of the road, and it is managed separately through a plan of operation approved by NPS in May 2024. Reference to the separate NPS use permit is provided in ***Table 7-1*****.**

4. CMV has recently decided to avoid this section of road altogether, and the 2022 Plan includes a provision to move this section of the CMM Access Road off of NPS managed land and onto BLM managed land east of the current road. Section 2.0 of this plan provides additional details.

1.5 ORGANIZATION OF THIS PLAN

1. This 2022 Plan amendment is a continuation of the original approved 1990 Plan and the 1998 Plan and includes other minor plan modifications approved since the original 1990 Plan, including the 2020 Plan update (ver.2.1). This 2022 Plan amendment is designated as version 3.0, and # 90M-013 and CACA-031137, for California agencies, and the BLM, respectively.

2. Section 1.0 provides an introduction that includes information regarding the purpose of this amendment, owner information, property information, location, and access.

3. Section 2.0 provides a detailed description of the modifications proposed in the 2022 Plan.

4. Section 3.0 describes existing conditions at the CMM site. This includes a chronological summary of site activity from historical to modern-day commercial gold mining.

5. Section 4.0 is the mining plan. It gives a detailed description of the mining activity and other ancillary activities, current and proposed. This section details the mining rate, mining stages, and an estimated mining schedule.

6. Section 5.0 is the reclamation plan. This section describes the existing requirements for successful reclamation of the project site. Information is provided regarding the reclamation methods and how the requirements will be met, based on past successful reclamation. The minor updates made to the 1998 Plan in the 2020 Plan update included significant updates to the reclamation plan to account for changes previously approved by the lead agencies in 2002. These changes were important because they formed the basis for the successful interim reclamation and revegetation completed at the CMM. While some additional changes will be proposed in this plan amendment, significant changes in reclamation methodology are not needed due to past reclamation success. This section also includes supplemental information regarding natural resource studies conducted at the CMM.

7. Section 6.0 provides reclamation assurance. It describes the process and requirements for financial assurance and surety bonds.

8. Section 7.0 summarizes the regulatory agencies and permits that are currently required (and approved) for the CMM project, and how they may need to be amended.

9. Section 8.0 provides management and monitoring plans such as spill prevention control and countermeasures ("SPCC Plans"), stormwater pollution prevention plans ("SWPPPs"), groundwater monitoring, cyanide management plans, and others.

10. Section 9.0 provides statements of certification. These relate to CMV's vested rights, unnecessary or undue degradation, occupancy, conformance to local land use plans and ordinances, and other statements.

2.0 PROPOSED PLAN MODIFICATIONS

1. The 2022 Plan proposes several changes to the existing CMM mining authorizations approved by the BLM and the County. These plan modifications expand the 1998 Plan mine pits, increase the mining rate, and extend the life of the mine to process all ore reserves. The relationship between this proposed plan modification and the approved plan is shown in **Table 2-1** and **Figure 2-1**.

    - The key modifications of the 2022 Plan target six aspects of the approved plan. These changes include:
    - Land Disturbance
      1,393 acres of new land disturbance will occur inside the existing 3,910-acre APA. This includes 1,277 acres of BLM managed federal land. The 2022 Plan total land disturbance will be 2,853 acres.
    - Ore Mining
      332 million tons of ore will be mined during the 2022 Plan. This is a 324 million ton increase from the 8 million tons of approved ore mining that remains authorized.
    - Overburden Stockpiling
      738 million tons of overburden (waste rock) will be mined during the 2022 Plan. This is a 603 million ton increase from the 135 million tons of approved overburden mining that remains authorized. Of the 738 million tons, **400 million tons of overburden will be backfilled** into mine pits, resulting in 203 million tons of new overburden being placed at the expanded North and South Overburden Sites.
    - Annual Mining Rate
      80 million tons per year (maximum) of ore and overburden will be mined. This includes a maximum of 19 million tons per year of ore mining and 61 million tons per year of overburden mining. This represents increases above the approved mining rates of 13 million tons of ore per year and 45 million tons of overburden per year.
    - Groundwater Use & Mine Pit Dewatering
      2,250 acre-feet per year (AFY) of groundwater will be required to sustain the proposed mining rate and, in part, keep the mine pits dewatered during mining. This represents a 1,625 AFY increase from the authorized rate of 625 AFY. This plan proposes to augment groundwater from the current Lanfair Valley supply with groundwater from the nearby Ivanpah Valley, where CMV holds land and water rights. A separate right-of-way application (and Plan of Development) has been filed with the BLM to construct and operate a water pipeline from the Ivanpah Valley. We understand the related environmental analysis will be included with the same type of analysis required for the 2022 Plan.
    - Project Schedule
      20 years of additional mining are required to recover the known gold ores. Mining and processing will occur throughout the 20-year schedule, followed by ten years of reclamation and monitoring. The exact schedule is dependent on when the 2022 Plan is authorized.

2. Additional land disturbance related to the 2022 Plan, both total acres and the proposed increase over authorized limits, is included in **Table 2-2**. **Table 2-2a** has been added to distinguish the acreage of all project land subject to BLM oversight, including private land with post-FLPMA 3809 deed restrictions. **Table 2-3** shows how much land has been authorized or proposed for disturbance at each mine facility area and distinguishes between public, private, and vested lands.

2.1 MINE PITS, OVERBURDEN SITES, AND HEAP LEACH PAD EXPANSION

1. 2022 Plan mine pits are adjacent to and surround the ore deposits already approved for mining per the 1990 and 1998 Plans. The proposed pit expansion is an outgrowth of previous mining and defined ore deposits. Gold ore-bearing deposit extents are defined as much by market economics (*i.e.*, the market price for gold) as they are by the mineral content. For example, overburden mined throughout the 1990s contained gold, but it could not be mined and processed for profit, given the low gold prices at the time.[10] Given the almost 6-times increase[11] in the gold price over the past 20 years, it's natural that more material previously defined as waste rock would now be economically processed as a minable mineral resource, necessitating the 2022 Plan modifications. **Figure 4-2** shows a rendering of the estimated maximum extents of the mine pits, overburden sites, and the heap leach pad.
2. The sequence and extent of mining at the existing JSLA, Jumbo, Oro Belle, and South Extension deposits provide optimal operating efficiency while being mindful of environmental impacts and successful reclamation when mining ends. The 2022 Plan facilitates these goals by increasing mine pit backfilling, resulting in more land reclamation (and less new land disturbance) than possible before.

3. **Table 2-4** shows the total ore and overburden material that will be stockpiled, either by stacking on the leach pad or dumped on overburden sites. The 1998 Plan authorized mine pits, overburden (waste rock) sites, and the heap leach pad to accommodate 71 million tons of ore and 223 million tons of overburden. The 2022 Plan expanded heap leach pad and overburden sites will be designed to accommodate up to 332 million tons of ore and 338 million tons of overburden, respectively. This represents an increase of 324 million tons of ore and 203 million tons of overburden, above the approved limits. The total 2022 Plan overburden production is estimated at 738 million tons, of which about 400 million tons will be backfilled into the northern pits, resulting in 338 million tons to the overburden sites. This includes the production of about 135 million tons of remaining authorized overburden.

4. The 2022 Plan includes a total mine pit surface area of about 839 acres, or a 532-acre increase from the 307 acres approved. It includes a maximum mine pit depth of approximately 1,200 feet bgs at the floor of the South Extension pit. It represents a 600-foot depth increase from the approved maximum pit depth of about 600 feet bgs.

5. The heap leach pad will expand west within the APA to total 881 acres, including the process plant and stormwater (event) ponds. The height of the leach pad increases from the currently authorized 150 feet to 300 feet above the ground surface. The height increase also means less new land disturbance is needed. We note that the current regional water board WDRs permit (#R7 2020-0004) for the active heap leach pad already provides for a leach pad stacked to a maximum of 300 feet above grade.

[10] The average (inflation-adjusted) price of gold from 1991 to 2001 was about $600 per ounce.
[11] The current (inflation-adjusted) price of gold is over $3,5000 per ounce.

Table 2-1. Comparison Between the 1990 Plan, 1998 Plan and 2022 Plan

1990 PLAN			1998 PLAN[12]			2022 PLAN		
Project Land Use (acres)								
Project Area	Public land	2,735	Project Area	Public land	3,910	Project Area	Public land	3,910
	Private land	115		Private land	265		Private land	1,289
Approved Disturbance Area	Public Land	815	Approved Disturbance Area	Public Land	1,249	Approved Disturbance Area	Public Land	1,683
	Patented Land	75 (estimate)		Patented Land[16]	211		Historic Patent	252
							Post-FLPMA Patent	918
	Total	890		Total	1,460[13]		Total	2,853
Mine Production (tons)								
Ore		30 million	Ore		41 million	Ore		324 million[14]
Overburden		60 million	Overburden		163 million	Overburden		603 million[15]
						Overburden (less backfilled)		203 million[16]
Mine Life (years)								
Mining		10 (to 2001)	Mining		10 (to 2010)	Mining & Processing		20[17] (to 2048)
Reclamation		10 (to 2010)	Reclamation		10 (to 2021)	Reclamation		10 (to 2058)
Mine Phasing								
Phase		Not applicable	**Phase I (mining)**	Stage	5A to 5F	**Phase I (mining)**	Stage	5D to 5F, 6
Stage (mining)		1 to 7	Phase II (mining)	Stage	6,7	Phase II (mining)	Stage	6,6A to 6G,7
Stage (reclamation)		8 to 10	(reclamation)	Stage	7 to 9	(reclamation)	Stage	7,8, 9

[12] Includes plan revisions such as the 2020 Plan Update

[13] Less 85-acres of reclamation credit equals the 1,375-acres referenced in the EIS/EIR and on applicable permits.

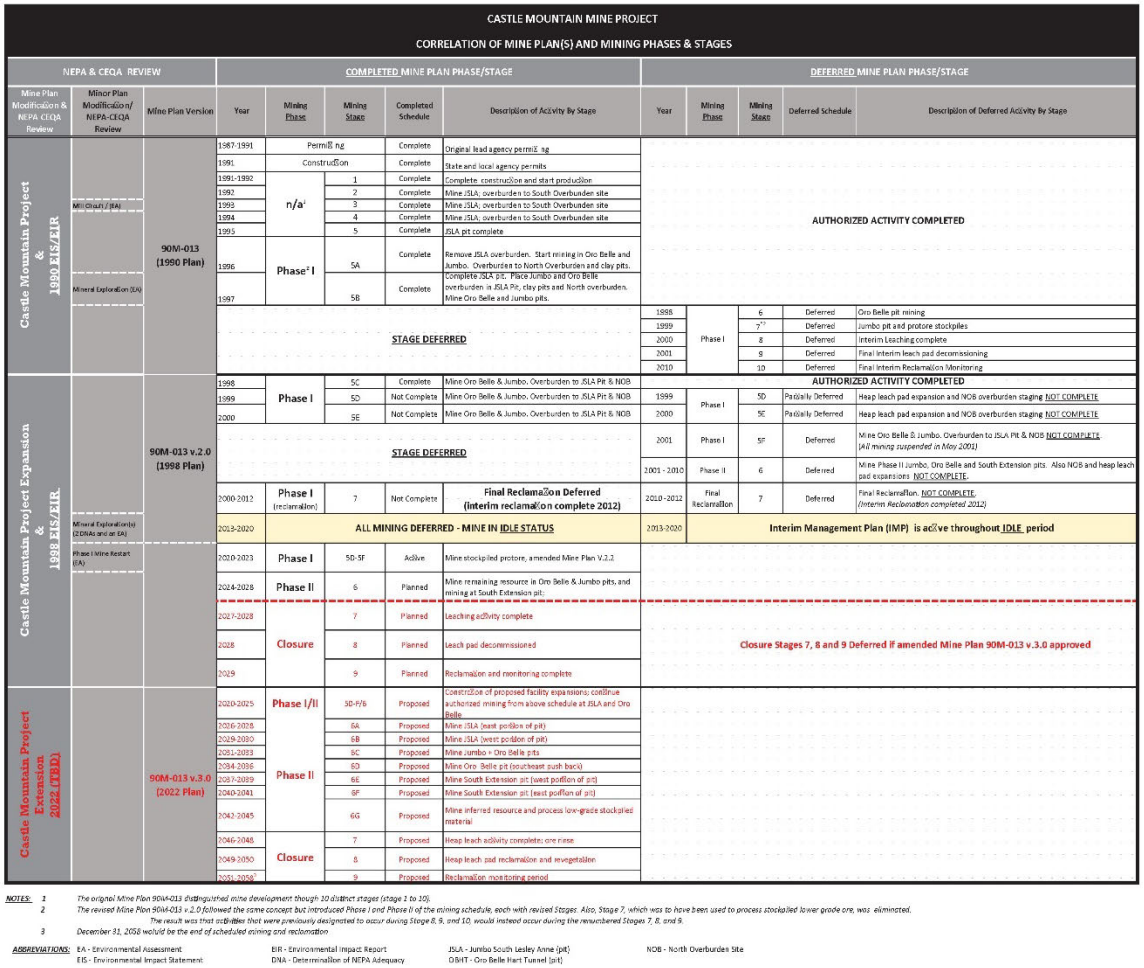
[14] Total Phase II ore production is estimated at 332 million tons; from this total, the remaining authorized balance of ore, 8 million tons, is deducted, resulting in an increased 324 million tons.

[15] Total Phase II overburden production is estimated at 738 million tons; from this total, the remaining authorized balance of overburden, 135 million tons, is deducted, resulting in 603 million tons.

[16] An estimated 400 million tons of Phase II overburden will be backfilled into mine pits, the remaining balance of overburden sent to overburden sites would be an estimated 203 million tons.

[17] Proposed mining and ore processing would run from 2024 to 2048 (25 years), 5 years of approved mining remains on the current schedule, so an additional 20-year extension is required to complete the proposed Phase II schedule.

1990 PLAN		1998 PLAN[12]		2022 PLAN	
Mine Processes					
Blasting and mine pit excavation		No Change		No Change	
Crushing to 3/8-inch size fraction		No Change		Crushing from 3/8 to 1-inch size fraction	
Overland Ore Conveyors		No Change		No Change	
Comminution (gravity circuit) and Agglomeration		No Change		No Change	
Heap Leaching		No Change		No Change	
Gold refining (process plant)		No Change		No Change	
Operating Schedule					
24-hours per day, 365 days per year		No Change		No Change	
Mine Equipment					
Standard diesel-powered fleet		Standard diesel-powered fleet		Tier 4 Final (low-emission) renewable diesel-powered fleet	
Haul truck size	120 tons	Haul truck size	120 tons	Haul Truck size	250 tons
Mine Utilities					
Electrical Demand (annual)	6-10MW	Electrical Demand (annual)	6-10MW	Electrical Demand (annual)	15-25MW
Electrical Supply	Generated & Grid via transmission	Electrical Supply	Generated & Grid via transmission	Electrical Supply	Generated & Grid via transmission
Water Demand (annual)	725 acre-feet	Water Demand (annual)	625 acre-feet	Water Demand (annual)	2,250 acre-feet
Water Supply	West Well Field	Water Supply	West Well Field	Water Supply	West Well Field (WWF)
Water Supply Backup	East Well Field		East Well Field		East Well Field (EWF)
					Northwest Water System (NWS)
Construction					
• Crusher • Comminution & Agglomeration • Conveyors	• Offices • Heap leach pad • Gold plant (CIC) • Support facilities	No Change		No Change	
Reclamation Methods					
• Native plant salvage • Greenhouse propagation	• Seed collection • Research • Growth media	• Native plant salvage • Greenhouse propagation • Micro contouring	• Seed collection • Research • Growth media blending	No Change	
Reclamation & Monitoring	10 years	Reclamation & Monitoring	7 to 10 years	Reclamation & Monitoring	7 to 10 years



CASTLE MOUNTAIN MINE PROJECT

CORRELATION OF MINE PLAN(S) AND MINING PHASES & STAGES

NEPA & CEQA REVIEW			COMPLETED MINE PLAN PHASE/STAGE					DEFERRED MINE PLAN PHASE/STAGE				
Mine Plan Modification & NEPA-CEQA Review	Minor Plan Modification/ NEPA-CEQA Review	Mine Plan Version	Year	Mining Phase	Mining Stage	Completed Schedule	Description of Activity By Stage	Year	Mining Phase	Mining Stage	Deferred Schedule	Description of Deferred Activity By Stage
Castle Mountain Project & 1990 EIS/EIR	Mill Circuit / (EA)	90M-013 (1990 Plan)	1987-1991	Permitting		Complete	Original lead agency permitting					
			1991	Construction		Complete	State and local agency permits					
			1991-1992	n/a[1]	1	Complete	Complete construction and start production					
			1992		2	Complete	Mine JSLA; overburden to South Overburden site					
			1993		3	Complete	Mine JSLA; overburden to South Overburden site					
			1994		4	Complete	Mine JSLA; overburden to South Overburden site					
			1995		5	Complete	JSLA pit complete					
			1996	Phase[2] I	5A	Complete	Remove JSLA overburden. Start mining in Oro Belle and Jumbo. Overburden to North Overburden and clay pits.					
	Mineral Exploration (EA)		1997		5B	Complete	Complete JSLA pit. Place Jumbo and Oro Belle overburden in JSLA Pit, clay pits and North overburden. Mine Oro Belle and Jumbo pits.					
			STAGE DEFERRED					1998	Phase I	6	Deferred	Oro Belle pit mining
								1999		7[3]	Deferred	Jumbo pit and protore stockpiles
								2000		8	Deferred	Interim Leaching complete
								2001		9	Deferred	Final interim leach pad decommissioning
								2010		10	Deferred	Final Interim Reclamation Monitoring
Castle Mountain Project Expansion & 1998 EIS/EIR		90M-013 v.2.0 (1998 Plan)	1998	Phase I	5C	Complete	Mine Oro Belle & Jumbo. Overburden to JSLA Pit & NOB	AUTHORIZED ACTIVITY COMPLETED				
			1999		5D	Not Complete	Mine Oro Belle & Jumbo. Overburden to JSLA Pit & NOB	1999	Phase I	5D	Partially Deferred	Heap leach pad expansion and NOB overburden staging NOT COMPLETE
			2000		5E	Not Complete	Mine Oro Belle & Jumbo. Overburden to JSLA Pit & NOB	2000		5E	Partially Deferred	Heap leach pad expansion and NOB overburden staging NOT COMPLETE
			STAGE DEFERRED					2001	Phase I	5F	Deferred	Mine Oro Belle & Jumbo. Overburden to JSLA Pit & NOB NOT COMPLETE. *(All mining suspended in May 2001)*
								2001 - 2010	Phase II	6	Deferred	Mine Phase II Jumbo, Oro Belle and South Extension pits. Also NOB and heap leach pad expansions NOT COMPLETE.
			2000-2012	Phase I (reclamation)	7	Not Complete	Final Reclamation Deferred (interim reclamation complete 2012)	2010-2012	Final Reclamation	7	Deferred	Final Reclamation NOT COMPLETE. *(Interim Reclamation completed 2012)*
	Mineral Exploration(s) (EDMs and or EA)		2013-2020	ALL MINING DEFERRED - MINE IN IDLE STATUS				2013-2020	Interim Management Plan (IMP) is active throughout IDLE period			
	Phase I Mine Restart (EA)		2020-2023	Phase I	5D-5F	Active	Mine stockpiled protore, amended Mine Plan V.2.0					
			2024-2028	Phase II	6	Planned	Mine remaining resource in Oro Belle & Jumbo pits, and mining at South Extension pit;					
			2027-2028	Closure	7	Planned	Leaching activity complete	Closure Stages 7, 8 and 9 Deferred if amended Mine Plan 90M-013 v.3.0 approved				
			2028		8	Planned	Leach pad decommissioned					
			2029		9	Planned	Reclamation and monitoring complete					
Castle Mountain Project Extension 2022 (TBD)		90M-013 v.3.0 (2022 Plan)	2020-2025	Phase I/II	5D-F/6	Proposed	Construction of proposed facility expansions; continue authorized mining from above schedule at JSLA and Oro Belle					
			2026-2028	Phase II	6A	Proposed	Mine JSLA (east portion of pit)					
			2029-2030		6B	Proposed	Mine JSLA (west portion of pit)					
			2031-2033		6C	Proposed	Mine Jumbo + Oro Belle pits					
			2034-2036		6D	Proposed	Mine Oro Belle pit (southeast push back)					
			2037-2039		6E	Proposed	Mine South Extension pit (west portion of pit)					
			2040-2041		6F	Proposed	Mine South Extension pit (east portion of pit)					
			2042-2045		6G	Proposed	Mine inferred resource and process low-grade stockpiled material					
			2046-2048	Closure	7	Proposed	Heap leach activity complete; ore rinse					
			2049-2050		8	Proposed	Heap leach pad reclamation and revegetation					
			2051-2058[3]		9	Proposed	Reclamation monitoring period					

NOTES: 1 The original Mine Plan 90M-013 distinguished mine development though 10 distinct stages (stage 1 to 10).

2 The revised Mine Plan 90M-013 v.2.0 followed the same concept but introduced Phase I and Phase II of the mining schedule, each with revised Stages. Also, Stage 7, which was to have been used to process stockpiled lower grade ore, was eliminated. The result was that activities that were previously designated to occur during Stage 8, 9, and 10, would instead occur during the renumbered Stages 7, 8, and 9.

3 December 31, 2058 would be the end of scheduled mining and reclamation

ABBREVIATIONS: EA - Environmental Assessment; EIS - Environmental Impact Statement; EIR - Environmental Impact Report; DNA - Determination of NEPA Adequacy; JSLA - Jumbo South Lesley Anne (pit); OBHT - Oro Belle Hart Tunnel (pit); NOB - North Overburden Site

LEGEND

DATE:

REVISION:

EQUINOXGOLD CASTLE MOUNTAIN VENTURE

San Bernardino County California

FIGURE 2-1
CORRELATION OF MINE PLANS AND MINING PHASE

Figure 2-1. Correlation of Mine Plans and Mining Phases

Table 2-2. Land Disturbance by Facility, Ownership, and Status

Facility Area	1990 Plan (acres)	1998 Plan (acres)	2022 Plan (acres)	2022 Plan Acres By Land Ownership			2022 Plan Acres By Activity & Approval Status		
				BLM	*Private Land (Post-FLPMA Patent)*	Private Land (Historic Patent[18])	Approved	Approved (changed use)	Proposed
Mine pits	135	307	816.6	293	404.2	119.4	331.09	291.43	194.77
Overburden Sites	300	601[19]	1,048.5	791	132.23	125.3	340.34	0	708.15
Leach Pad Area[20]	330	421	881.4	542.2	339.2	0	439.67	2.7	438.99
Growth Media Stockpiles & Plant Nurseries/ Greenhouse	70	50	15.4[21]	15.4	0	0	4.56	0	10.84
Roads	30	48	46.27[22]	3.43	35.6	7.24	43.1	0	3.18
Support Facilities[23]	15	15	44.5	38	6.5	0	0.42	6.64	37.47
Process Plant and Pond(s) Area	10	18	0[24]	0	0	0	0	0	0
Total Acres	**890**	**1,460**	**2,853**	**1,683**	**918**	**252**	**1,159**	**301**	**1,393**

[18] Historic Patent is generally synonymous with a California vested mining right.

[19] Includes 85-acres of reclamation credit conducted over the historic clay pit areas, otherwise the total acres would have been 1,375.

[20] Leach Pad disturbance area includes support facilities: Comminution (gravity) Circuit, Secondary and Tertiary Crushing, Process Plant and ponds, and portions of the Administration Office area.

[21] Includes only the North Nursery, other nursery or growth media piles are included with acres for the major facilities (e.g., leach pad, overburden, etc.)

[22] Includes the conveyor corridor.

[23] Support Facilities include: Primary Crusher, Mine Shop, Security, Administration & Parking and Warehouse

[24] Included with Leach Pad area.

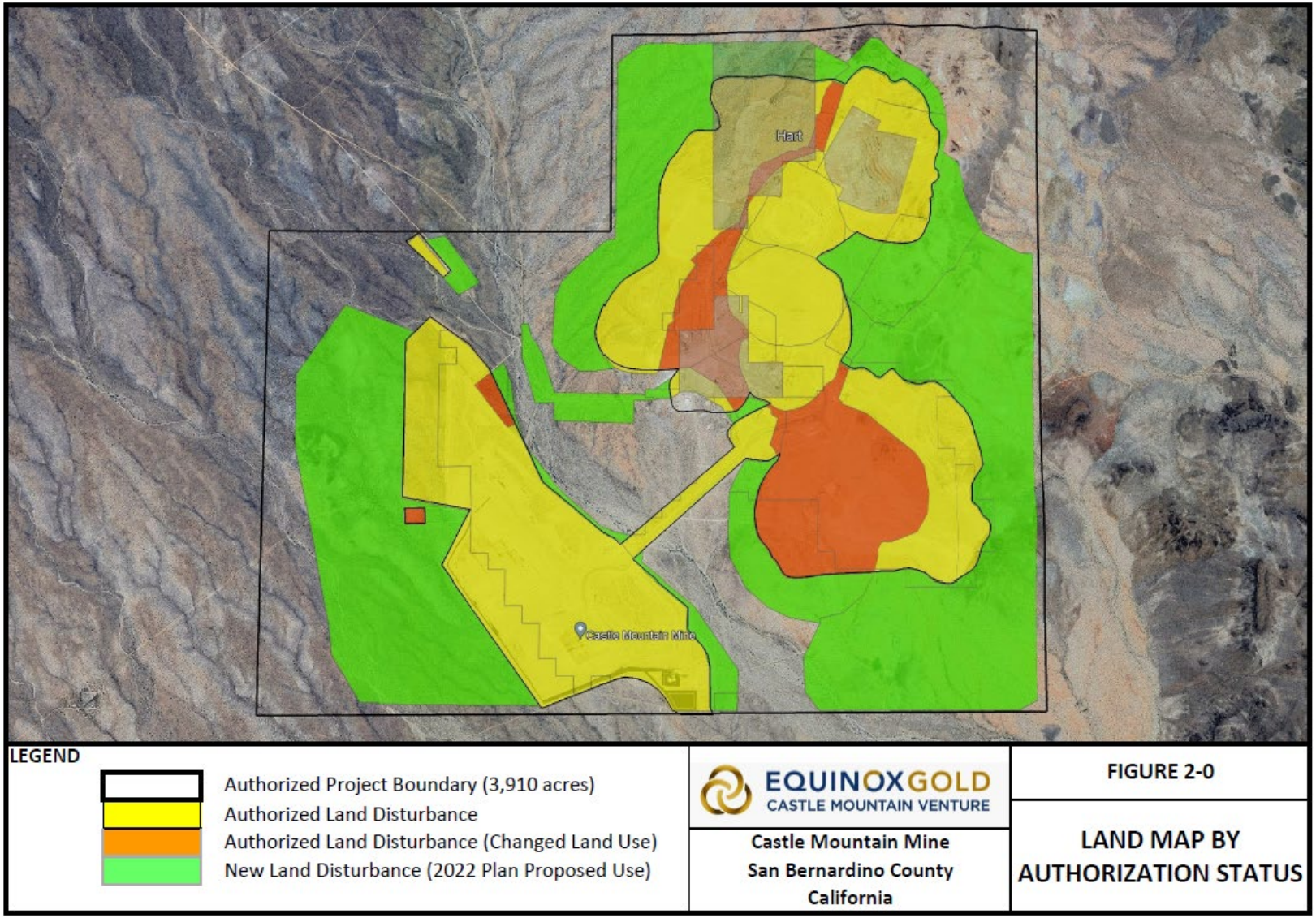


Figure 2.0. Land Map by Authorization Status

Table 2-2a. 2022 Plan New Disturbance by Land Ownership

Facility Type	BLM		Private Land (Historic Patent)
	Public Land	Private Land (Post-FLPMA Patent)	
Mine pits	160.34	34.36	0.07
Overburden sites	655.41	18.25	34.49
Leach pad area	412.06	26.92	0
Growth Media Stockpiles & Plant Nurseries/ Greenhouse	10.84	0	0
Comminution (Gravity) Circuit[25]			
Support Facilities[26]	37.47	0	0
Roads	0.73	2.45	0
Process Plants and Pond(s) Area[27]			
Subtotal – Disturbance Acres	**1,276.85**	**81.98**	**34.56**
Total – Disturbance Acres			**1,393**

5. New overburden sites are not proposed, but expansion of existing sites is required. A substantial area currently approved for overburden sites will transition to (2022 Plan) mine pits. The south and north overburden sites currently have an elevation gain of about 200 feet; this will be increased by approximately 100 feet to a total estimated pile height of 300 feet. The 1998 Plan included 601 acres of surface disturbance for overburden sites. The 2022 Plan requires 1,049 acres for overburden placement, a 448-acre increase. Notably, a large area of approximately 250 acres attributed to the overburden sites is not expected to be developed; rather, these lands represent transition areas between overburden piles and mine pits.

[25] Acres are already included with the Leach Pad area; also includes area for the Secondary and Tertiary crushing
[26] Facilities include: Primary Crusher, Mine Shop, Security, Administration & Parking and Warehouse
[27] Acres are already included with the Leach Pad area.

Table 2-3. Relationship Between Land Disturbance and Ownership

FACILITY TYPE	Approved Disturbance 1998 Plan (acres)		Proposed Disturbance 2022 Plan (increased acres)		Proposed Disturbance 2022 Plan (total acres)	
	Private Land (Historic Patent[28])	Public Land[37]	Private Land (Historic Patent[36])	Public Land[37]	Private Land (Historic Patent[36])	Public Land[29]
Mine pits	66	241	0.07	194.7	119.36	697.93
Overburden sites	137[30]	464	34.49	673.66	125.26	923.23
Leach pad area	0	421	0	438.99	0	881.36
Growth Media Stockpiles & Plant Nurseries/ Greenhouse	4	94	0	10.84	0	15.4
Comminution (Gravity) Circuit[31]	0[32]	0	0	0	0	0
Support Facilities[33]	4	11	0	37.47	0	44.53
Roads	0	0[34]	0	3.18	7.24	39.04
Process Plants and Pond(s) Area	0	18	0	0	0[35]	0
Subtotal – Disturbance Acres	211	1,249	34.56	1,358.8	251.9	2,601.5
	1,460		**1,393**		**2,853**	
Total – Disturbance Acres						**2,853**

[28] Or Vested Right
[29] Or land otherwise subject to 3809 regulations.
[30] Includes 85-acres of reclamation credit conducted over the historic clay pits.
[31] Acres are already included with the Leach Pad area; also includes area for the Secondary and Tertiary crushing
[32] Comminution related disturbance is included with Leach Pad area
[33] Facilities include: Primary Crusher, Mine Shop, Security, Administration & Parking and Warehouse
[34] The 1998 Plan includes Roads with the Facility Type for: Growth Media Stockpiles & Plant Nurseries/Greenhouse
[35] Disturbance included with the category: *Leach Pad Area*

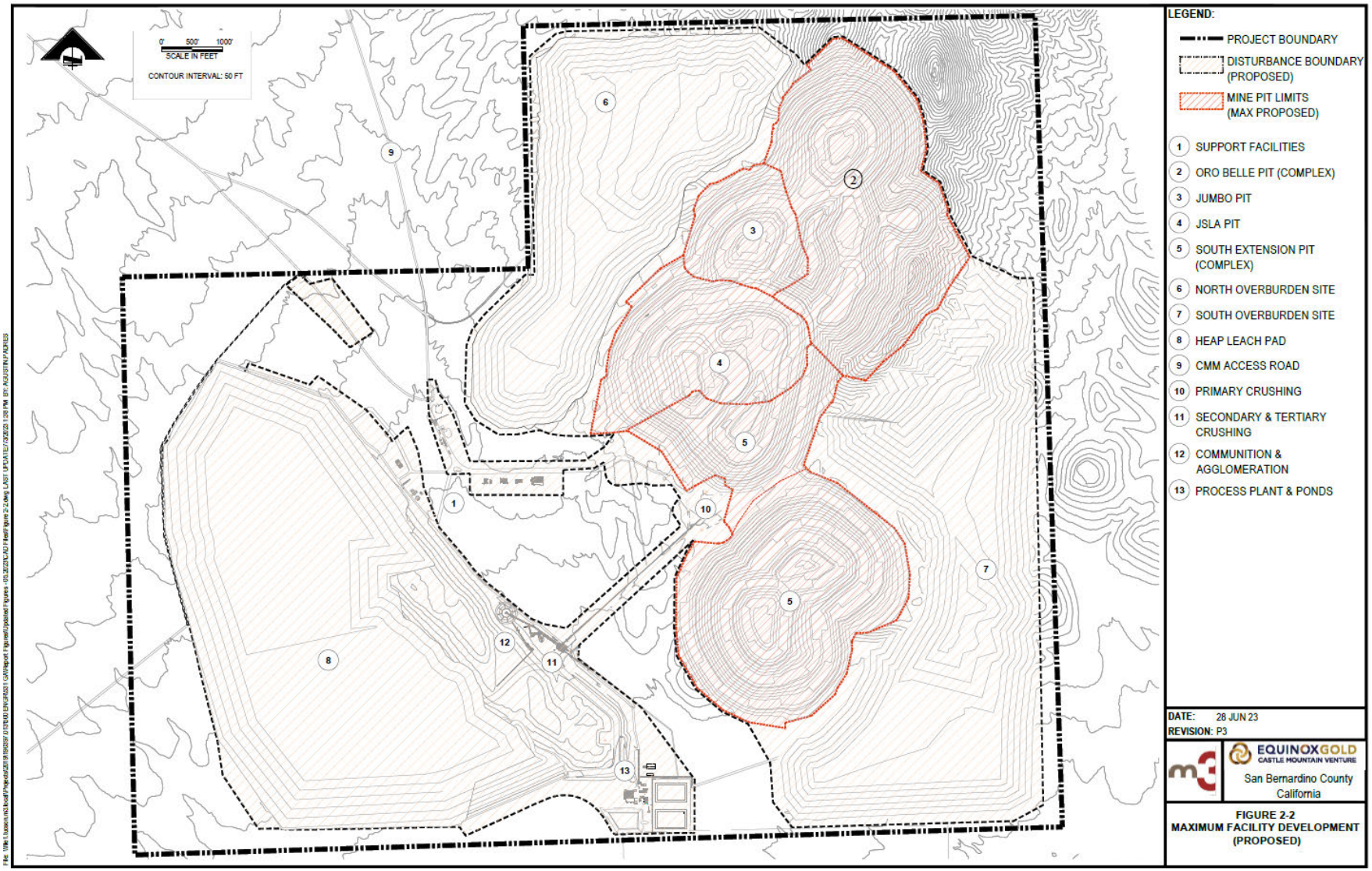


Figure 2-2. Maximum Facility Development (Approved & Proposed).

Table 2-4. 2022 Plan Ore & Overburden Stockpiles(million tons)

Mine Plan Pits		Ore	Overburden	Total	Strip Ratio
2022 Plan	JSLA	107	243	350	2.27
	Jumbo	32	83	115	2.59
	Oro Belle	70	138	208	1.97
	South Extension	75	274	349	3.65
	Low-grade Stockpile	48	n/a	48	n/a
	Stockpile Subtotal (2022)	332	738	1,070	n/a
	Less remaining approved tons	(8[36])	(135[37])	(143)	n/a
	Less backfilled tons	n/a	(400)	(400)	n/a
2022 Plan Total Tons		**324**	**203**	**527**	**2.8 (avg)**

2.2 Mining Rate Increase

1. The 2022 Plan noticeably increases the mining rate while maintaining the same ore processing systems. Ore processing systems approved at the CMM include:

    - Blasting and open-pit mining
    - Ore crushing
    - Overland ore conveyors
    - Comminution and agglomeration circuit
    - Heap leaching
    - Gold processing and refining
    - Groundwater extraction

2. Mine pits will be developed according to standard mine planning, blasting and mechanical excavation will initially reduce the size of the ore. Ore would be delivered from the mine pits to the primary crusher using a 250-ton haul truck fleet.

3. **Figure 2-3** shows the relationship between approved and proposed mining rates.

4. The 2022 Plan increases the total annual average mining rate over the proposed mining schedule from 22 million tons annually to 58 million tons, or a total rate of 80 million tons. This represents an average mining rate increase of 36 million tons per year. Mining is a dynamic process, and the mining rate will fluctuate depending on several factors, including average ore grade, gold recovery, and geotechnical factors, to name a few. The 2022 Plan estimated mining rate will peak at 80 million tons per year for a peak mine rate increase of 58 million tons annually.

2.2.1 Crushing Rate Increase

1. Primary crushing will occur at a re-established crushing plant located as authorized in the 1998 Plan, see **Figure 1-1**. Primary crushing will occur through either a gyratory or jaw-crushing unit. Secondary and tertiary crushing will follow to reduce the size of the ore to at least one inch minus in diameter. Ore previously crushed at CMM was 3/8" minus, but testing has shown that we can achieve the same

[36] The approved 1998 Plan included 71 million tons of ore; 8 million tons have not been mined.
[37] The approved 1998 Plan included 223 million tons of waste rock; 135 million tons have not been mined.

or similar gold recovery by crushing it to 1" size. Metallurgical testing is ongoing, but the final crush size will be within the 3/8" to 1" size range. The crushing rate approved at the CMM is 6.25 million tons per year. This modification increases the crushing rate to a peak of 19 million tons per year or 52,000 tons per day.

1. Mine Utilities Water used at the CMM project is supplied from historic and more recent groundwater well systems identified in the 1998 Plan as the West Well Field ("WWF") and the East Well Field ("EWF"). Water system components are identified in **Figure 2-4a**. The WWF predominantly serves as the mine's potable water supply, while the EWF provides most of the make-up water for the mine processes, including the heap leach pad (CMM's single largest use of water).

2. The 2022 Plan increases water use to a maximum of 2,250 acre-feet per year (AFY), which is an increase of 1,625 AFY from the approved 625 AFY. The 2022 Plan balances groundwater use by supplying water from the Lanfair Valley and by developing a new supply from the southeastern portion of the Ivanpah Valley, located nearby in San Bernardino County, California. Recent groundwater modeling suggests that an almost even split of the CMM water supply (from each basin) should provide the required amount of water while minimizing regional impacts. Early developments have already begun to advance the Ivanpah water system (known as the Northwest Water System ("NWS"), develop it as a backup water supply option for current CMM operations, and meet the expanded water supply requirements of mine expansion. Early engineering and pre-permitting for the NWS water pipeline began in 2022 when CMV filed an application[38] for a Right-Of-Way lease agreement to locate the buried water transmission pipeline on BLM land adjacent to Nipton Road and the CMM access road. CMV submitted a revised ROW POD and SF-299 application package in 2023 and 2025 to account for a large short-term disturbance footprint and to include an overhead 69kV powerline from the Walking Box Ranch area to the CMM.

3. The 2022 Plan increases groundwater use from existing wells at the mine site in the Lanfair Basin to a total range of 830 to 1,340 AFY, or a 205 to 715 AFY increase over the approved water use from the Lanfair Basin. In addition, between 830 and 1,340 AFY will be supplied from Northwest Water System (NWS). The NWS will pump water approximately 33 miles to the CMM site for beneficial use. This proposed system is shown in **Figure 2-4b**, and preliminary engineering plans are on file with the BLM.

4. The report, Castle Mountain Mine—Water Supply Assessment (WSA), describes the water sources and potential effects from groundwater use at the CMM. The WSA is included in **Appendix E.**

5. Electrical power has historically been supplied to the mine by both on-site internal combustion power generators and by connection to the NV Energy grid in Nevada via a former 69kV overhead transmission powerline that extended from a point of connection near the Walking Box Ranch, then south to the CMM. That 69kV line was dismantled in 2011, and the 2022 Plan includes its reinstallation along the same route parallel to the CMM Access Road. The BLM is processing reinstallation of the 69kV powerline as a related action to this mine plan, but it will be authorized separately as a Right-Of-Way (ROW) realty action, similar to the water transmission pipeline from Ivanpah.

[38] The full application package includes SF-299 forms and a POD. These documents are on file with both the BLM Las Vegas Field Office in Nevada, and the BLM Needles Field Office in California.

6. 2022 Plan activities require an average of 20 MW of electrical power, with a peak demand of 25 MW. Consultations with both California (Southern California Edison-SCE) and Nevada (NV Energy-NVE) electric utilities have been ongoing for several years. If SCE provides the maximum 25 MW of project power, they've proposed installing an over 50-mile overhead transmission line from the Ivanpah solar project that could take over five years to permit and construct. The SCE power option is not feasible due to the length, cost and time required for transmission line construction. If NVE provides 25 MW of project power, NVE would have to upgrade their transmission line between their Laughlin and Searchlight, Nevada, substations. This upgrade would be less costly and take less time to complete than the SCE power option; that said, NVE advised that it could require 5-years to permit and construct. Both power supply options could take five or more years to construct and there are concerns about the long-term reliability[39] of the public utility electric grid and its ability to consistently meet the mine's power demand. Given this power supply concern, a portion of the project's power will continue to be generated on-site. However, the 2022 Plan transitions to more efficient thermal generation by liquid natural gas (LNG) micro-turbines, and most of the existing diesel IC generators will be retired or used as emergency backup. Thirteen micro-turbine units will be able to generate about 10 MW of power. The balance of the average CMM project power demand (10 MW) would then be able to be supplied from the NVE utility without any significant upgrades to their existing equipment. Additional information is available in section 4.7 of this plan and on **Figure 4-15**.

2.3 RELOCATION OF EXISTING SUPPORT FACILITIES AND ROADS

1. Many existing facility locations remain unchanged in the 2022 Plan. However, some facilities require relocation due to the staged expansion of mine pits, overburden sites, and the heap leach pad. See **Figure 1-2** and **Figure 1-12h** for existing and relocated major facilities. Specifically, the facilities identified in this section will be relocated at least 1,500 feet from the furthest extent of the proposed mine pit limits to comply with a safety requirement related to fly-rock during blasting.

2. The main security gate, truck scale, and parking will be moved about one-half mile west along the primary (existing) CMM access road. This area was chosen due to its location adjacent to the current access road and existing service utilities. Administration offices would similarly move west and abut the northeast side of the reclaimed heap leach pad. Additional parking and a receiving warehouse will be relocated as well. The security gate will be positioned so Hart Mine Road (to the west) remains open for public use. Relocated facility areas have been specifically chosen to limit new disturbance as much as possible, keep facilities adjacent to utilities, and shield their view from the surrounding Lanfair Valley and Mojave National Preserve.

3. Mine fleet maintenance will be relocated about one-half mile west along the south side of the primary CMM access road. Specific facilities include a mobile fleet maintenance shop, office space, a wash bay, AST fuel storage and refueling, and a hazardous waste storage area. The primary CMM access road will also be widened at this location to expand the haul road from the pit(s) area to the mobile maintenance facilities.

4. New growth media stockpile locations are added, as shown in **Figure 2-7**.

[39]https://apnews.com/article/california-solar-energy-ivanpah-birds-tortoises-mojave-6d91c36a1ff608861d5620e715e1141c

5. Perimeter security and desert tortoise fencing will be expanded, as shown in **Figure 2-8**.

6. The CMM Access Road is an approximate 18-mile dirt road maintained by CMV. It begins at an intersection with NV SR-164 (Nipton Road) near the Walking Box Ranch, in Nevada, and ends at the mine entrance gate, in California. Following the CMM Access Road south and approximately 4.95 miles from the California/Nevada state line, the road intersects a corner section of the Mojave National Preserve (see **Figure 2-5a**) and crosses less than 1,000 feet through the Preserve. The road will be modified around the eastern corner section, avoiding the Preserve entirely, see **Figure 2-5b.**

7. New York Mountain Road will be re-aligned to follow the western perimeter of the expanded heap leach pad and will intersect Hart Mine Road just northwest of the CMM north nursery. This road alignment will ensure regional public roads remain open and outside restricted areas of CMM. The proposed relocation of New York Mountain Road is identified in **Figure 2-9**.

2.4 MINE LIFE EXTENSION

1. The current mine schedule, including reclamation, ends by 2035. The 2022 Plan extends mining and processing to about 2048 and reclamation and monitoring to 2058. This represents an approximate 20-year increase to the mining and processing schedule and a cumulative 30-year increase, including reclamation and monitoring. Five years of mining (through 2028) are currently approved (1998 Plan, as revised) at CMM as of 2024. The 20-year increase for mining and processing does not include the five remaining years.

CASTLE MOUNTAIN MINE
ESTIMATED MINE PRODUCTION & SCHEDULE

Mine Plan				Ore Production (thousand tons; unless indicted)			Overburden Production (thousand tons; unless indicated)			Schedule (years)			
Mine Plan Amendment	Year Approved	Version	Status	Total Ton	Year	Day	Total Ton	Year	Day	Mining Range	# Mining Plan Years	Reclamation Range	Reclamation Complete
1990 Plan	1990	Ver.1.0	Approved	30,000	3,000	8	60,000	15,000	43	1991-2000	10	2001-2010	deferred
			Completed	24,800			60,000				10		
1998 Plan	1998	Ver.2.0	Approved	41,000	4,500	12	163,000	16,000	44	1991-2010	20	2011-2020	2012
			Completed	10,600			21,200				11		
	2020	Ver.2.1	Completed	27,700	6,000	16	7,000			2020-2028	9 (1)	2029-2035	pending
APPROVED PHASE I MINING	**(through the 1998 Plan and 20220 update)**			**71,000**	**6,000**	**16**	**223,000**	**16,000**	**44**	**1991-2028**	**20**	**2029-2035**	**Pending**
COMPLETED PHASE I MINING	**(through 2024)**			**63,100**			**88,200**			**1991-2028**	**15**		
REMAINING PHASE I MINING	**(through 2028)**			**8 Mtons**	**6 Mtons**		**135 Mtons**	**16 Mtons**		**1991-2028**	**5**		
2022 Plan - Production Increase		Ver.3.0	Pending	(3) 324 Mtons	(4) 13 Mtons		(5) 603 Mtons	45 Mtons		2029-2048	20 (6)	2048-2058	Pending
2022 Plan - Total Production				332 Mtons	19 Mtons		738 MTons	(2) 61 Mtons		2024-2048	25		

NOTES:

(1) The 2020 Plan update (Ver.2.1) did not add new mining years to the schedule, but incorporated the 9 years of mining never completed per mine Plan Ver.2.0. when mining was suspended in 2001; only one year, 2001, was completed per the 1998 Plan, Ver.2.0.

(2) 61Mtons is a peak annual mining rate; peak rates are required for maximum air quality analysis, but does not represent the annual average rate, which is less.

(3) 324 Million tons (Mtons) is the difference of the 2022 Plan ore of 332 Mtons, less the approved ore mining of 8 Mtons.

(4) 13 Mtons is the difference of the 2022 Plan ore rate of 19 Mtons per year, less the approved mining rate 6 Mtons per year.

(5) 603 Mtons is the differce of the 2022 Plan overburden,738 Mtons; less 135 Mtons of remaining approved overburden.

(6) Mining and Processing occur over approximately 25 years, ending at 2048. 5 years of aproved mining remains, so 20 additional years are included in the 2022 Plan

DATE:	San Bernardino County California	EQUINOXGOLD CASTLE MOUNTAIN MINE	FIGURE 2-3 MINE PRODUCTION
REVISED: Sep-24			

Figure 2-3. Mine production

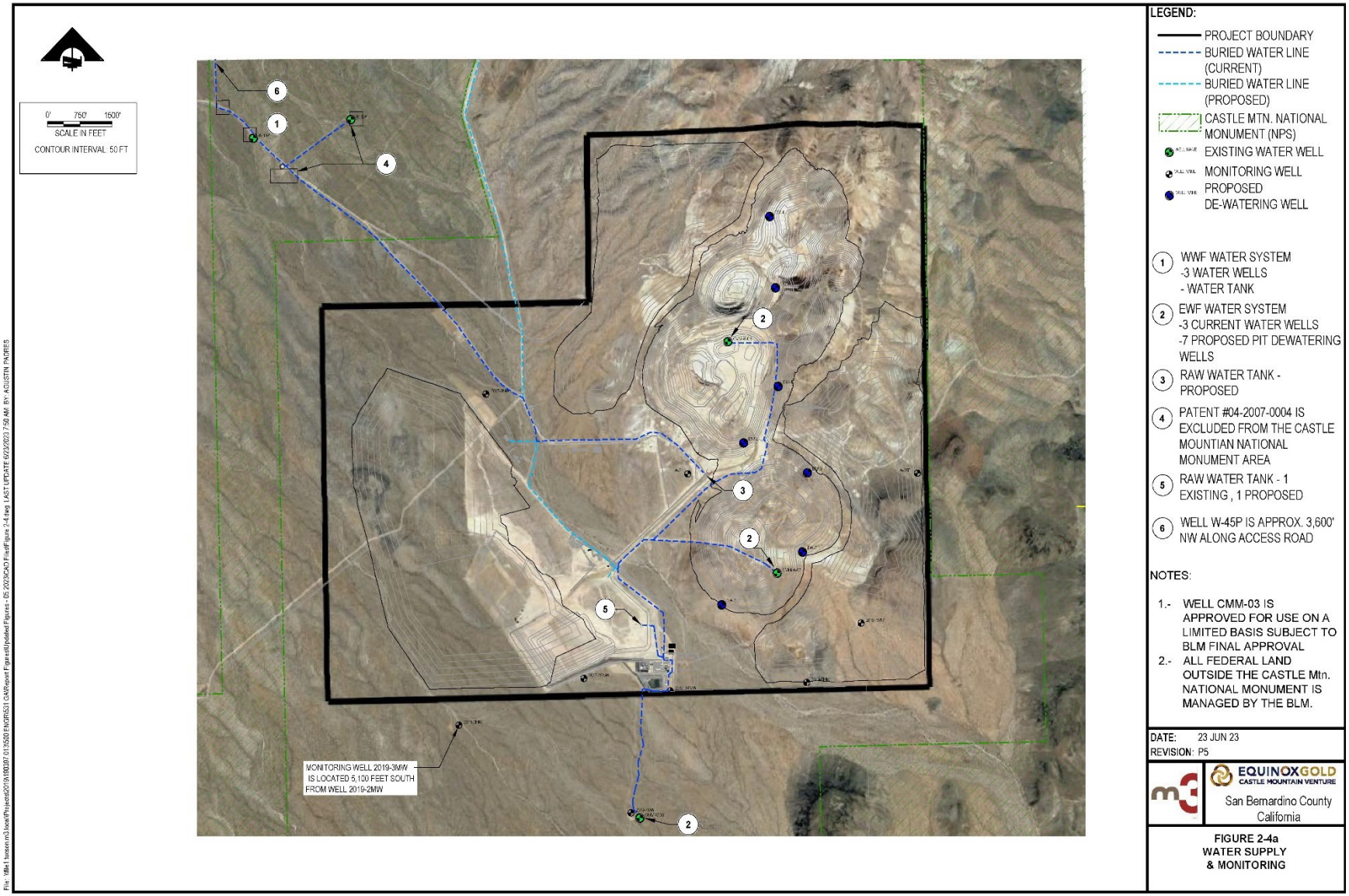


Figure 2-4a. Water Supply and Monitoring

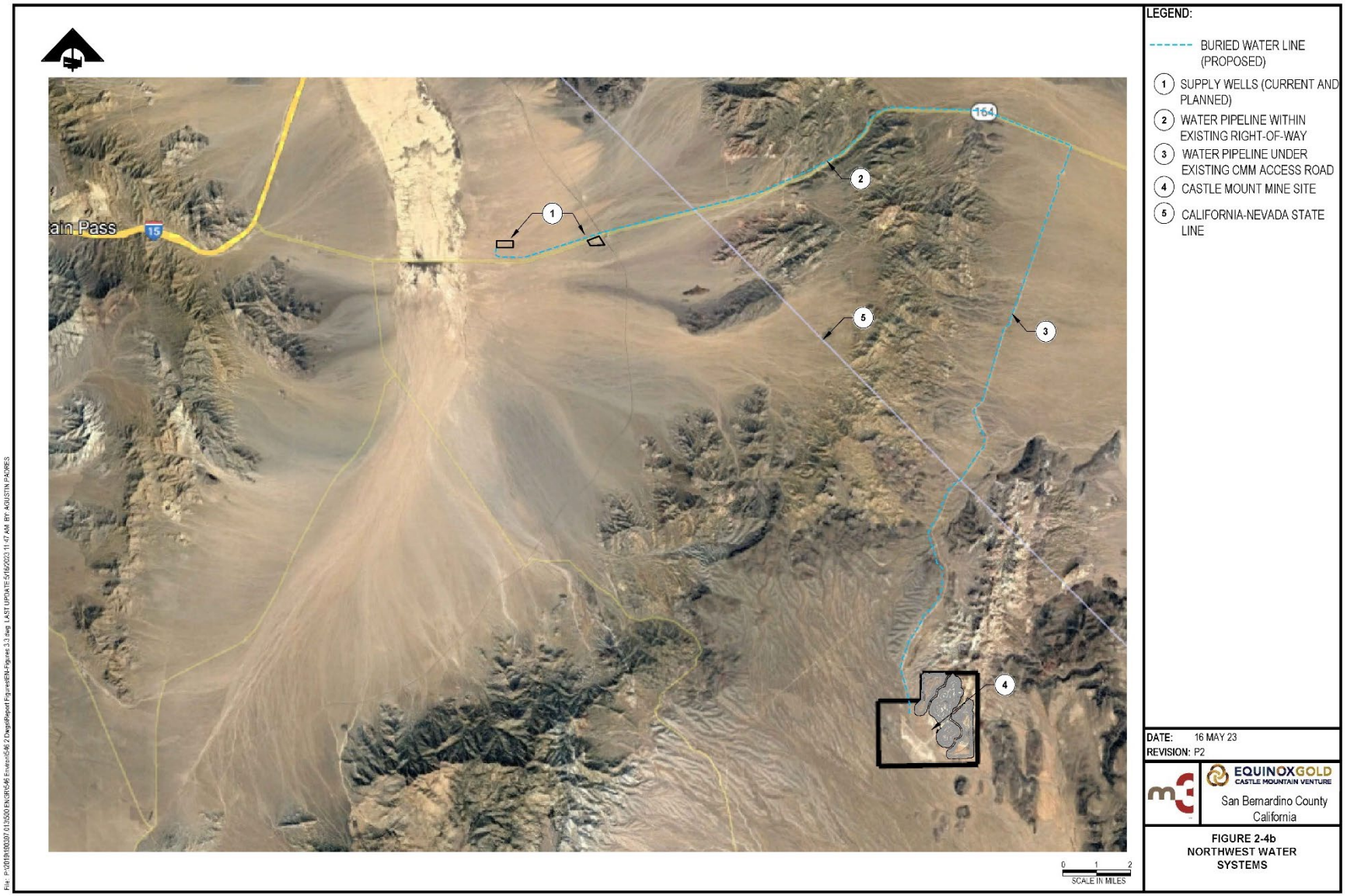


Figure 2-4b. Northwest Water Systems

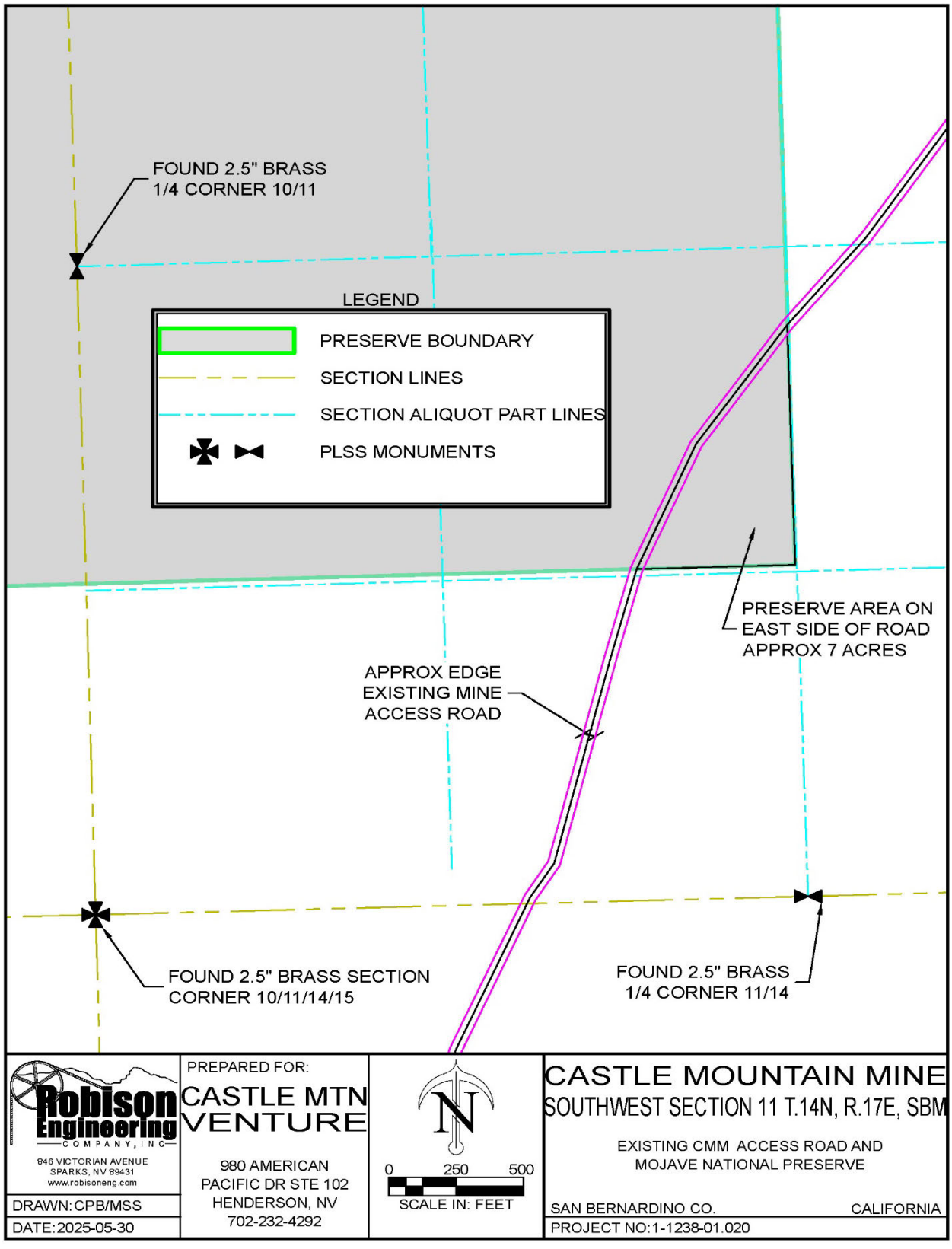


Figure 2-5a. Existing CMM Access Road and Mojave National Preserve.

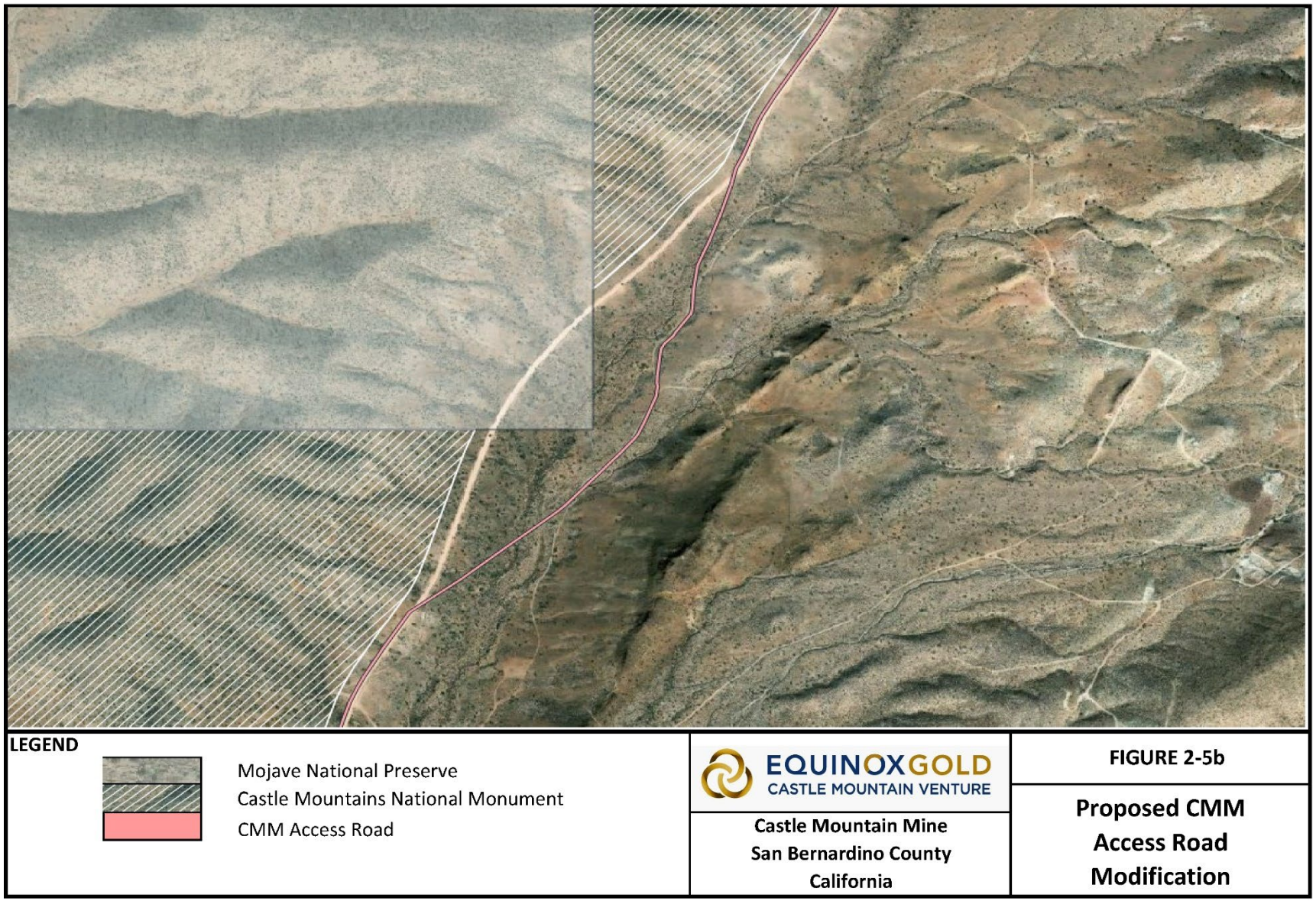


Figure 2-5b. Proposed CMM Access Road Modification

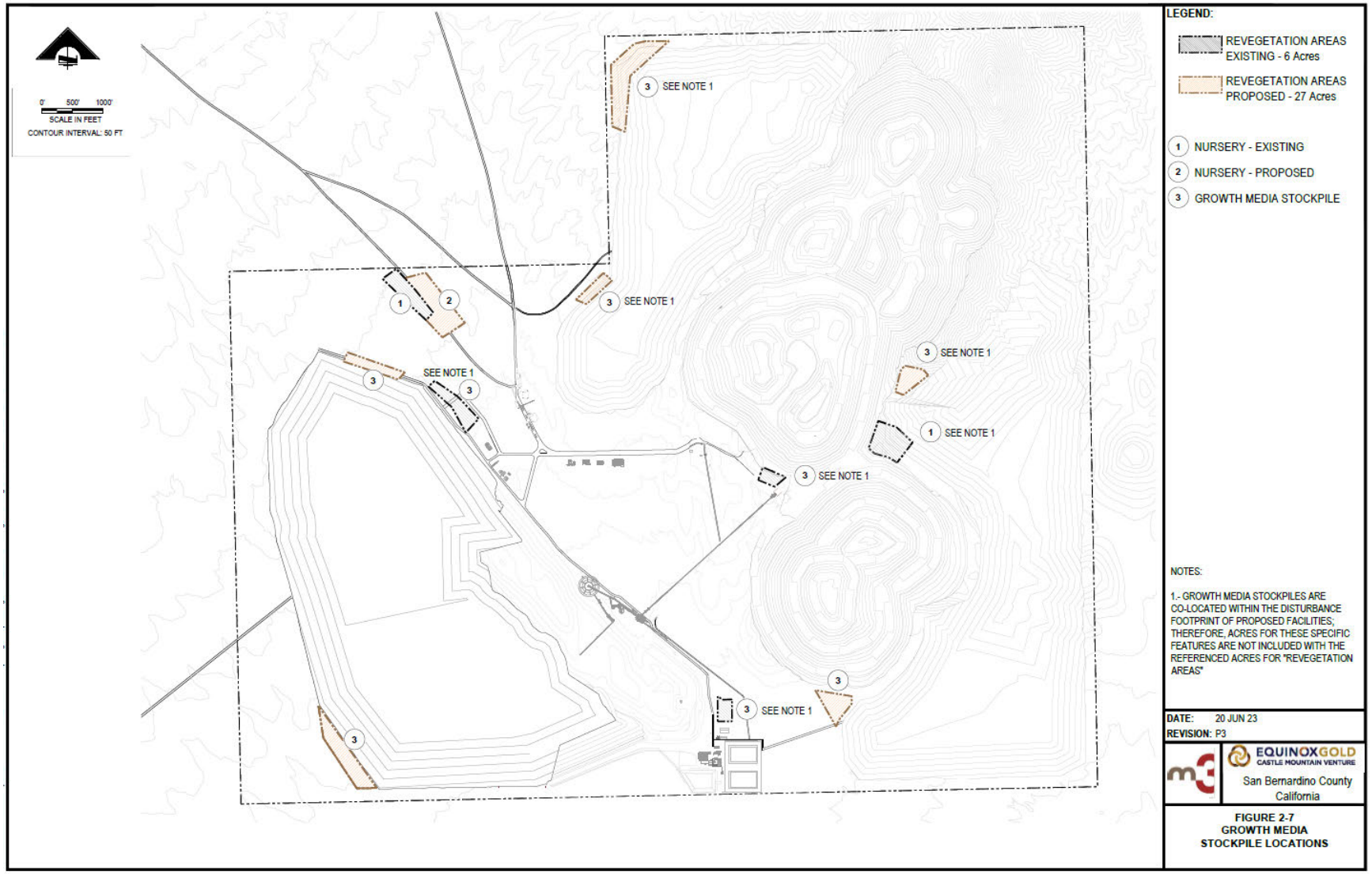


Figure 2-7. Growth Media Stockpile Locations

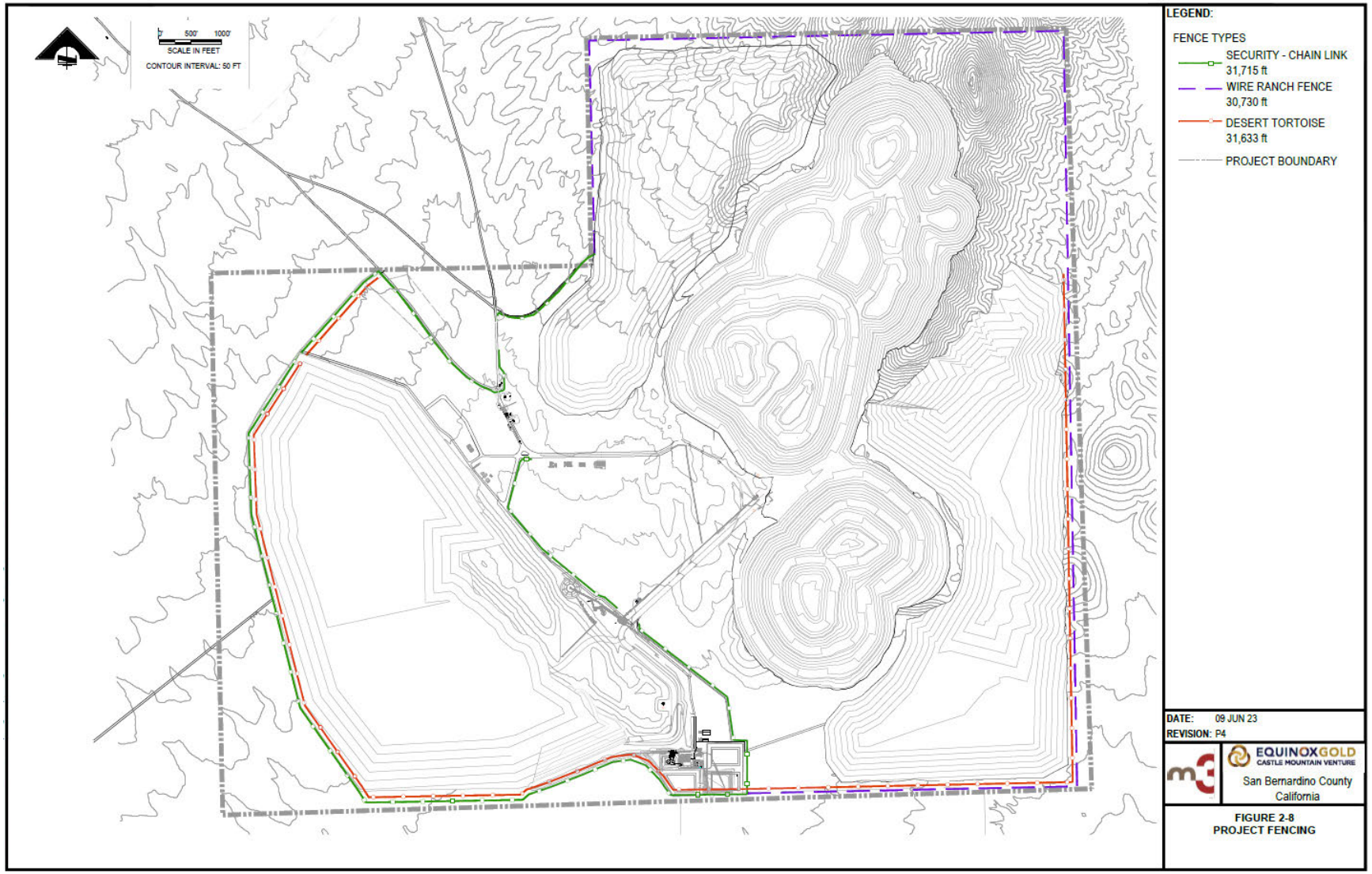


Figure 2-8. Project Fencing



Figure 2-9. Roads

3.0 DESCRIPTION OF EXISTING CONDITIONS

3.1 EARLY HISTORY OF HART MINING DISTRICT

1. This section has been removed from the 2022 Plan for consolidation purposes. The 1998 Plan includes the early history of the Hart Mining District and is available for review from the BLM, the county, or CMV.

3.2 HISTORY OF MODERN COMMERCIAL GOLD MINING AT CASTLE MOUNTAIN MINE

3.2.1 1985 to 1987 (B & B Mining)

1. This section has been removed from the 2022 Plan for consolidation purposes. The 1998 Plan includes the early history of the Hart Mining District and is available for review from the BLM, the county, or CMV.

3.2.2 1988 to 1997 (Viceroy & Castle Mountain Venture)

1. The BLM and County approved the 1990 Mine and Reclamation Plan (1990) to build and operate the CMM in far east San Bernardino County, California. The 1990 Plan included a ten-year mine schedule followed by ten years of reclamation and monitoring.
2. The 1990 Plan outlined a project that would mine the JSLA[40], Jumbo, and the Oro Belle pits, construct heap leach pads, ore crushing facilities, a gold recovery plant, access roads, and buildings for maintenance and administrative activities. The plan called for mining approximately 90 million tons of material, including 30 million tons of ore and 60 million tons of overburden. The project identified an APA of 2,735 acres with an estimated surface disturbance of 890 acres.
3. Preproduction mining in the first open pit, JSLA, commenced in June 1991, and the first gold production in February 1992. This plan was novel for the time because it resulted from intensive cooperation among CMV and an array of environmental organizations. The result of the cooperative effort produced greater environmental mitigations than otherwise would have been required by state or federal regulation. Many of these mitigations remain implemented at CMM and are refined in this 2022 Plan.
4. Throughout this time, the CMM was one of California's largest producers of gold, providing year-round employment for a workforce of over 200 people. The operation was completely self-sufficient, providing its own water, sewerage, and sanitation services, trash disposal, and access road construction and maintenance.

3.2.3 1998 to Present (Castle Mountain Venture)

1. The BLM and County approved an amendment to the 1990 Plan (the "1998 Plan") in 1998 to expand the size of the CMM to encompass a total APA of 3,910 acres, including an additional 490 acres of land disturbance.

[40] Then known as the Lesley Ann pit.

2. **Figures 3-1**, **3-2, 3-3,** and **3-4** show a comparison of conditions at CMM:
    - 1980's – Original CMM layout Aerial
    - 1990's – CMM 1993 to 2020
    - 2010's – Heap Leach Pad Reclamation
    - 2020's – Lanfair Viewshed 1980s to 2019
3. Approximately 760 acres of land had been disturbed by 2001 out of 1,460 acres of total permitted. **Tables 2-2** and **2-3** include additional detail on total land disturbance.
4. Mining under the expanded operation continued until May 2001, when mining was suspended due to the low market price for gold. The leach pad ore was rinsed, detoxified, and drained over the next four years, resulting in the Lahontan Regional Water Quality Control Board (the "Regional Board") reclassifying the leach pad rinsed ore as a Group C (inert overburden) mine pile by 2010. Due to the potential for a prolonged stoppage of active mining, interim reclamation operations, which had already begun (by about 2000), became the primary focus at CMM by 2004. Land reclamation commenced and was mainly completed by 2007, with minor re-seeding on the leach pad and monitoring extending to 2012. The total active mining period extended over ten years from 1991 to 2001.
5. During this time, the U.S. Department of the Interior also decided on the company's pending mineral patent application. It approved the transfer of 1,033 acres of previously designated public land to patented land in the name of Viceroy Gold Corporation.

3.2.3.1 2013 to 2019 (Castle Mountain Venture)

1. Nearly all interim reclamation and revegetation were completed by 2012. CMV submitted an Interim Management Plan ("IMP") to the county and BLM to manage site operations, which mainly consisted of additional mineral exploration at CMM. The County approved an extension of the 2013 IMP for an additional five years on April 13, 2018. In anticipation of renewed mining at the site, the Company applied for and received BLM approval for two mine plan of operation modifications for continued mineral exploration at the mine site in 2013. A third mineral exploration program, the Phase III Exploration Drilling Program, was approved on September 11th, 2018.
2. The county approved a revision to the 1998 Plan in July 2013 to extend mine activities by five years until December 31, 2025.

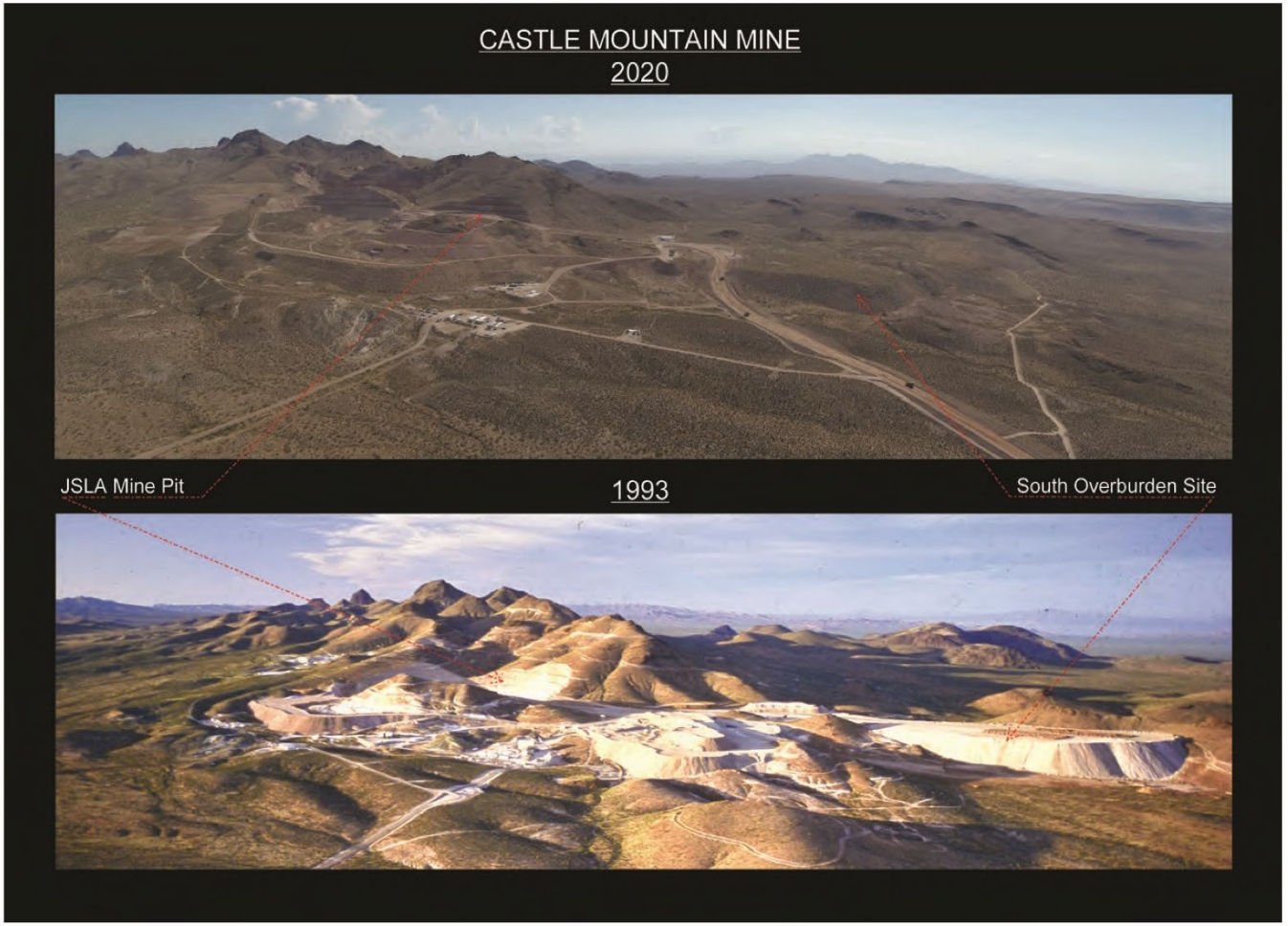
3.2.3.2 2020 to Present (Castle Mountain Venture)

1. Active mining at the CMM resumed in 2020. The strategy for resumed mining included a phased restart of certain activities while others were postponed. For example, while untouched in-situ ore-bearing material was still available and permitted to mine, initial mining focused on removing backfilled protore from the JSLA mine pit and other site stockpiles. Initially, this material did not go through all the approved processing mechanics like crushing, comminution, or agglomeration; it was processed as a *run-of-mine* ore transported directly to the leach pad.
2. Additional components of approved ore processing resumed in 2022, with the JSLA and other stockpiled protore directed to an ore sorting process that includes limited crushing and, importantly, an agglomeration process. The ore is overland conveyed and stacked on the heap leach pad from the agglomeration point.



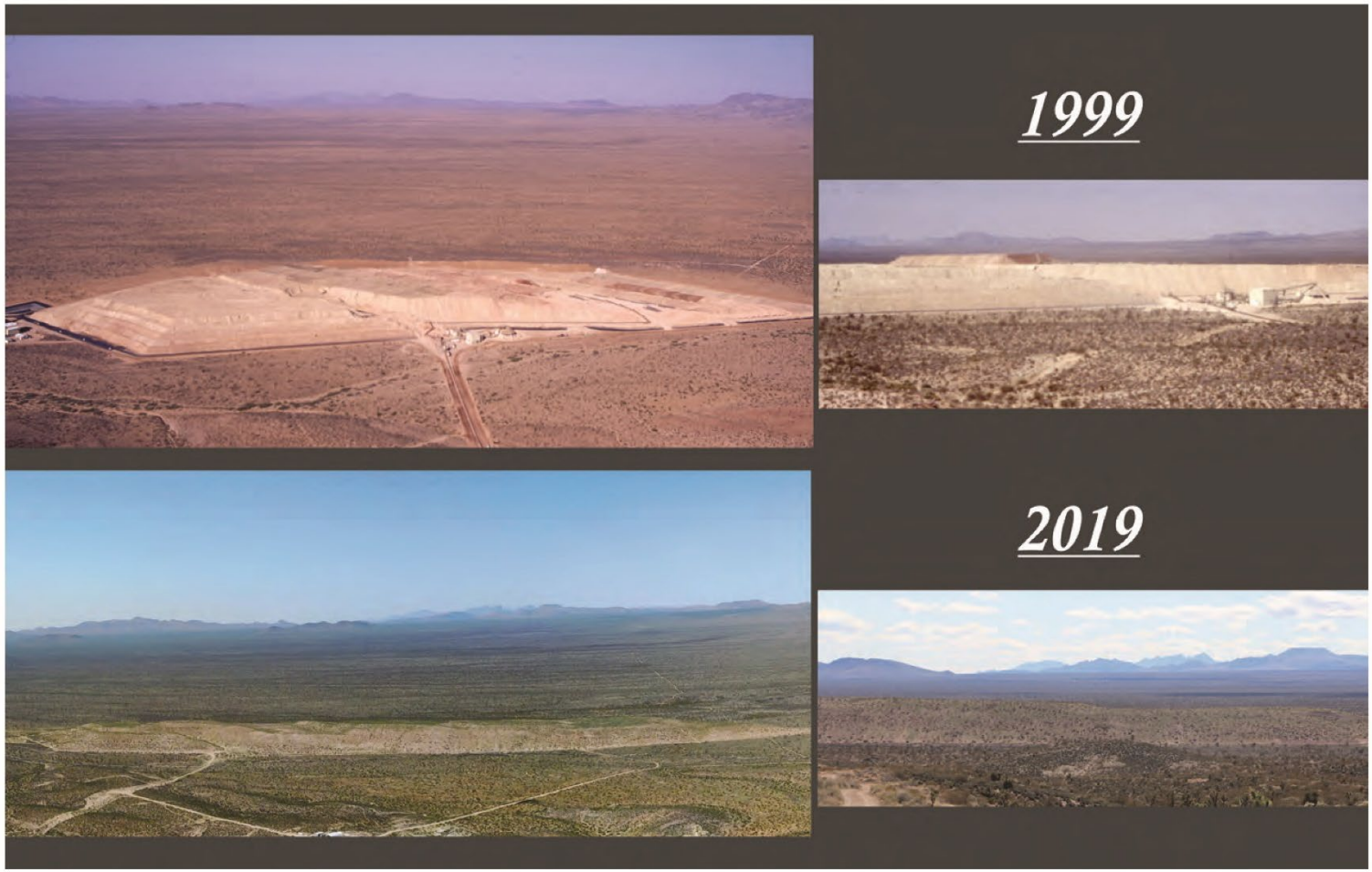
Notes: Looking north at Castle Mountains LEGEND	m3	DATE: REVISION:	EQUINOXGOLD CASTLE MOUNTAIN VENTURE San Bernardino County California	FIGURE 3-1 1980's SITE PHOTOGRAPHY

Figure 3-1. 1980's Site Photograph



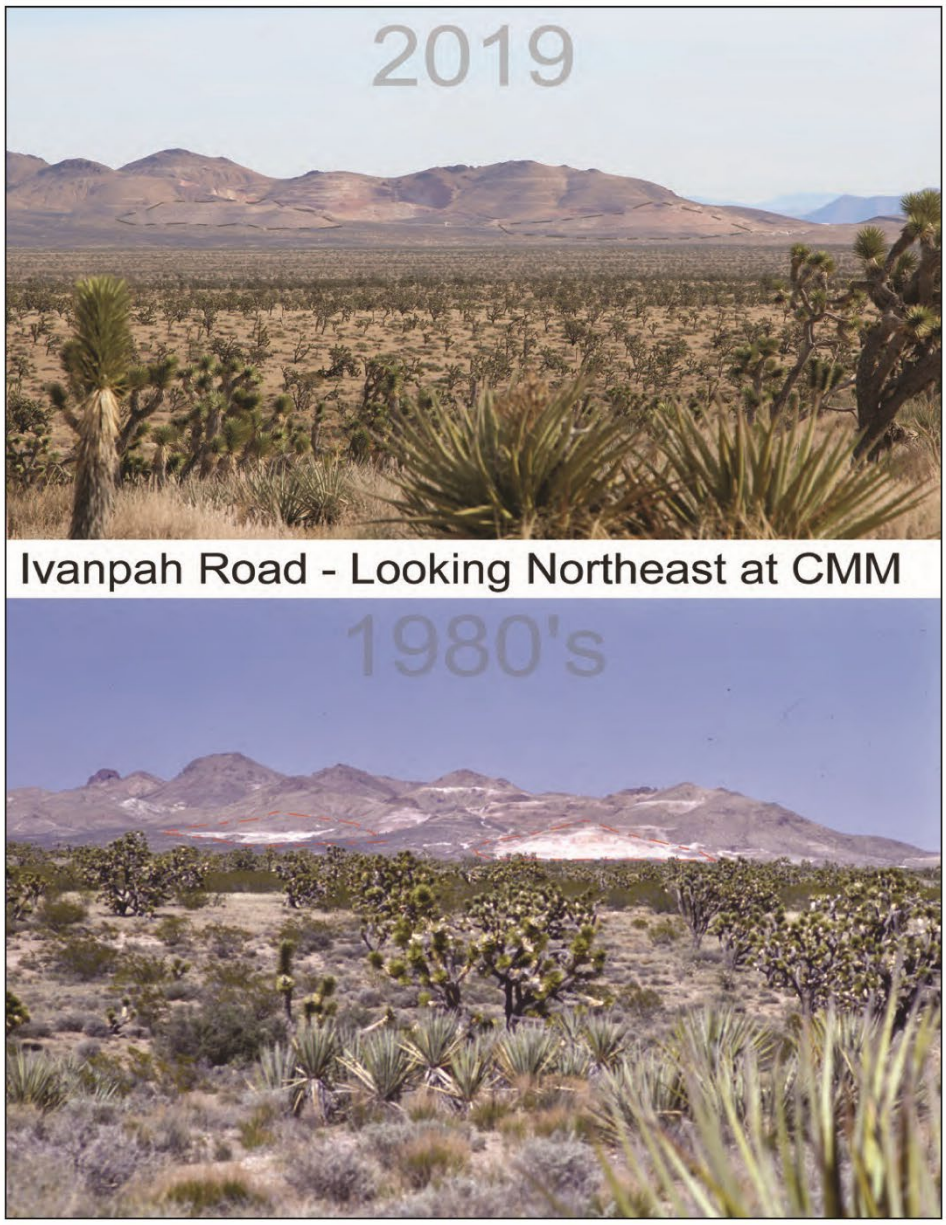
Notes: Looking East-Northeast at Castle Mountains LEGEND	m3	DATE: REVISION:	EQUINOXGOLD CASTLE MOUNTAIN VENTURE San Bernardino County California	FIGURE 3-2 1993 to 2020 PHOTOGRAPHS

Figure 3-2. 1993 to 2020 Photograph



Notes: Looking Southwest into Lanfair Valley. Table Top Mountain is seen in the foreground. LEGEND	m3	DATE: REVISION:	EQUINOXGOLD CASTLE MOUNTAIN VENTURE San Bernardino County California	FIGURE 3-3 HEAP LEACH PAD RECLAMATION

Figure 3-3. Heap Leach Pad Reclamation



LEGEND **Notes: Looking East toward Castle Mountains**		**DATE:** **REVISION:**	EQUINOXGOLD CASTLE MOUNTAIN VENTURE San Bernardino County California	FIGURE 3-4 LANFAIR VIEWSHED PHOTOGRAPH

Figure 3-4. Lanfair Viewshed Photograph

4.0 MINE PLAN

4.1 INTRODUCTION

1. Current mining is authorized for up to 22 million tons of material (ore + waste rock) per year. This includes approximately 6 million tons of ore and 16 million tons of overburden (waste rock). The 2022 Plan annual average mining rate will increase by approximately 58 million tons, including 13 million tons of ore, and 45 million tons of overburden. The maximum material that would mined in a single year is 80 million tons. The relationship between the mine stage and production quantity is shown in Table 4-**1.**

2. The process used to recover gold is illustrated in **Figure 4-1**; there is no meaningful change from the 1998 Plan. While the procedures employed are common to the mining industry, the CMM has been recognized for implementing innovative measures that offer economic and environmental benefits. These measures include using large steel solution storage tanks to contain leach solution and installing a Comminution or Gravity circuit to extract more of the gold contained in the high-grade ores. The Comminution Plant with pulp agglomeration achieves higher gold recoveries without needing a tailings impoundment. This is possible because mill fines are pulp agglomerated and reintroduced with the crushed ore stream conveyed to the heap leach pad.

3. The first step to recovering gold at Castle Mountain involves excavating the ore. The ore is covered with rock or alluvium that does not contain precious metal, known as overburden, and in this plan, it is generally synonymous with waste rock. Stockpiling of the unmineralized materials occurs at the designated overburden sites (or backfilled into mine pits). After the orebody is exposed, ore-grade rock is blasted, excavated, and delivered to the crusher, where it is reduced to a 1-inch (or less) size fraction. Occasionally, ore can also be transported directly to the heap leach pad using haul trucks. Note that the 1-inch size fraction is an estimate and the final size will be between 1-inch and the 3/8-inch size fraction that was previously crushed at CMM.

4. Historically, from the crusher, ore was conveyed by overland and movable conveyers to the Comminution Plant for reduction and aggregation, then to the heap leach pad. A *run-of-mine* (or "ROM") ore processing alternative was introduced as a minor mine plan modification (the 2020 Plan update) that allowed uncrushed ore material transport directly to the leach pad. Future mining is not expected to use a *run-of-mine* ore processing method. This is explained further in section 4.4.3.4.6, paragraph #5. The 2022 Plan does not change the location of the primary crusher but relocates the secondary and tertiary crushing units near the comminution (or gravity) and agglomeration circuits. These crushing activities remain located within the currently approved disturbance boundary.

Table 4-1. Estimated Mine Production By Stage

PHASE / STAGE	DATE	STATUS	MINE PIT or STOCKPILE	OVERBURDEN (million tons)	ORE (million tons)	TOTAL (million tons)
1990 PLAN (complete)						
Stage 1 - 5	1991 to 1995	COMPLETE	JSLA	60	23	83
1998 PLAN (approved)						
Phase I Stage 5A	1995 to 1996	COMPLETE	JSLA/Jumbo/Oro Belle	Tons include in the preceding Stage		
Phase I Stage 5B	1996 to 1997	COMPLETE	Jumbo / Oro Belle	16	3	19
Phase I Stage 5C	1997 to 1998	COMPLETE	Jumbo / Oro Belle	12	4	16
Phase I Stage 5D	1998 to 1999	COMPLETE[41]	Jumbo / Oro Belle	14	4	18
Phase I Stage 5E	1999 to 2000	COMPLETE[42]	Jumbo / Oro Belle	13	4	17
Phase I Stage 5F	2000-2001	INCOMPLETE	Oro Belle	13	4	17
Phase I Stage 6	2001 to 2010	INCOMPLETE	Oro Belle / South Extension	95	29	124
2022 PLAN (Phase II proposed modifications)						
Phase I Stage 5F	2020 to 2024	CURRENT	JSLA protore, Overburden protore	**(7)**	(20)	(27)
Phase II[43] Stage 6	2024 to 2025	PENDING	JSLA protore, Overburden protore, JSLA pit	60	5	65
Phase II Stage 6A	2026 to 2028	PROPOSED	JSLA (east side of pit); South Extension (approved area)	123	56	179
Phase II Stage 6B	2029 to 2030	PROPOSED	JSLA (west side of pit); South Extension (approved area)	78	38	116
Phase II Stage 6C	2031 to 2033	PROPOSED	Jumbo pit; Oro Belle pit	142	57	199
Phase II Stage 6D	2034 to 2036	PROPOSED	Oro Belle pit	178	57	235
Phase II Stage 6E	2037 to 2039	PROPOSED	South Extension (expanded pit complex-west side)	147	57	204
Phase II Stage 6F	2040 to 2041	PROPOSED	South Extension (expanded pit complex-east side)	10	22	32
Phase II Stage 6G	2042 to 2045	PROPOSED	Inferred Resources and Stockpiles	0	40	40
Subtotal 2022 Plan (total million tons)				738	332	1,070
Subtotal 1998 Plan (remaining approved million tons)				135	8	143
Subtotal 2022 Plan (backfilled overburden million tons)				400		
2022 Plan Proposed Increase (million tons)				**203**	**324**	**527**

[41] Stage 5D *mining* was completed but other Stage activities were not completed.
[42] Stage 5E *mining* was completed but other Stage activities were not completed.
[43] Phase II mining activity is expanded in the 2022 Plan, Stage 6A to 6G.

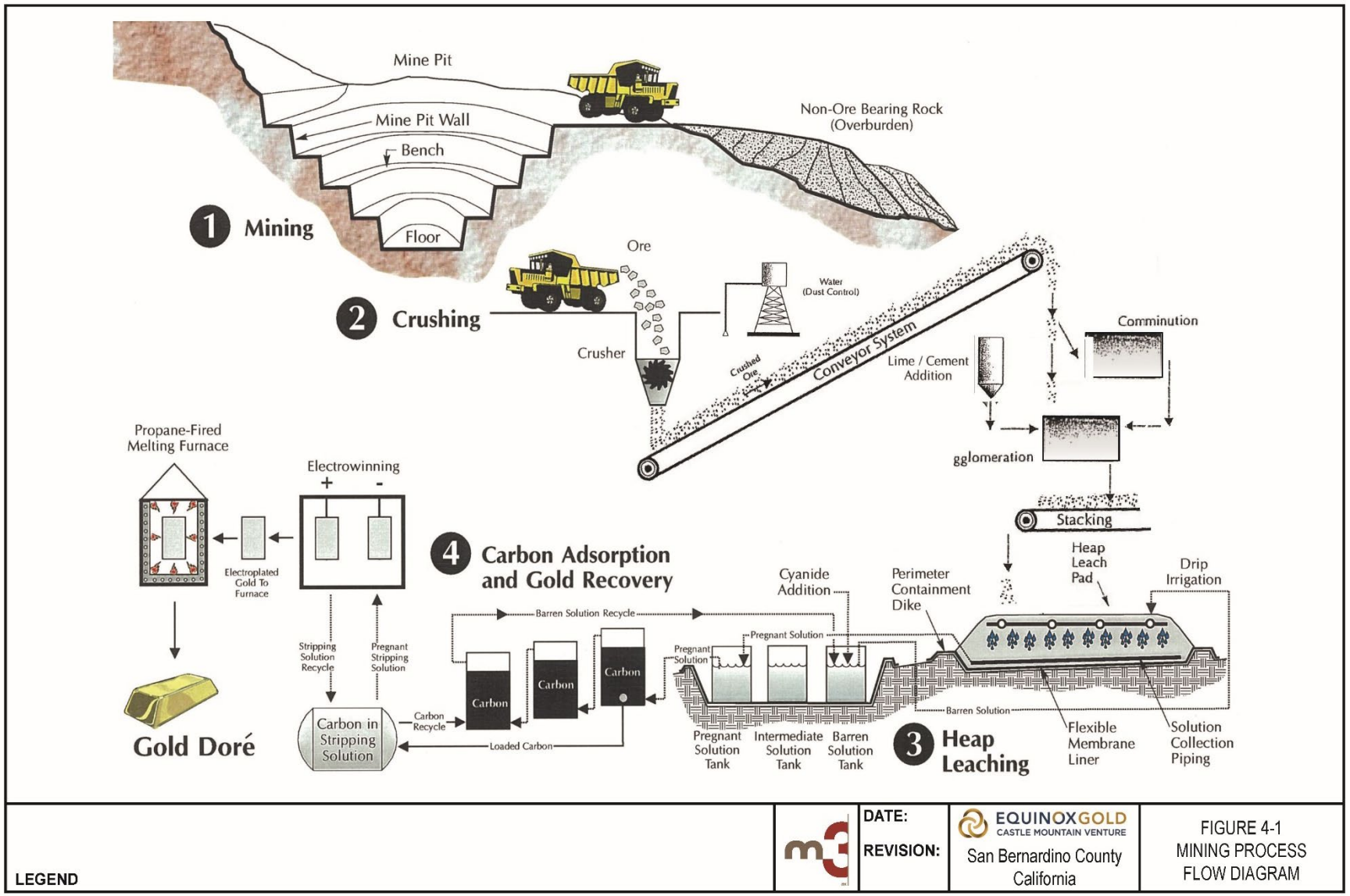


Figure 4-1. Mining Process Flow Diagram

5. The high-grade portions of the ore may be diverted to the approved Comminution and Gravity Circuit area, where material size is further reduced and partially leached in barren cyanide solution. After leaching, the slurry is thickened and filtered. The filtrate, containing dissolved gold, flows by gravity in pipes to the gold Process plant. The leached residue, which still contains recoverable gold, is agglomerated with leach grade (crushed) ore, lime, and binder (cement) and conveyed to the heap leach pad for additional leaching.

6. Absent Comminution, agglomeration of crushed leach-grade ore is still required. Lime, binder (cement), and moisture are added to the crushed ore in an agglomeration step that binds fine ore particles together to form larger particles. The agglomeration step helps improve leach solution mobility through the stacked ore pile on the leach pad.

7. Low-grade ore (protore[44]) excavated from the pits are stored in stockpiles for potential processing later when price and/or technology improvements allow for profitable gold recovery. CMV intends to process these stockpiles during Stage 6G after the higher-grade materials have been processed. However, if, at that time, conditions are such that the protore stockpiles would not be profitable to process, their upper surface would be prepared for revegetation, similar to other overburden.

8. Leach-grade ore is stacked onto the leach pad underlain by a double-liner system to contain the leached ore. A dilute sodium cyanide solution (125 to 150 ppm (parts sodium cyanide per million parts water)), also known as *barren solution (gold-free)*, is distributed across the top of the heaped ore by drip irrigation. Drip emitters are buried during deployment to freshly stacked ore; burial helps to limit evaporative water loss and further limits solution ponding and the potential for wildlife from contacting cyanide leach solution. The leach solution percolates through the crushed ore material, dissolving the gold in the ore as it flows vertically through the ore pile. The pregnant (gold-bearing) solution drains from the saturated ore pile into perforated pipes placed immediately above the synthetic primary liner. The solution flows by gravity into solid (non-perforated) pipes to the process plant and into the pregnant solution storage tank.

9. Pregnant solution is pumped from the storage tank through closed pipes to the gold recovery Process plant, where vessels containing activated carbon adsorb the gold from the solution. After the gold has been adsorbed onto granular carbon, the now barren solution flows by gravity to the barren solution storage tank, where cyanide is added before the barren solution is recycled back to the leach pad to continue the leaching process. All solutions are continuously recycled, and the process operates without environmental discharge. The gold-bearing carbon is chemically treated to release, or "strip," the gold from the carbon, which is then reactivated for reuse, using heat, followed by an acid wash to remove lime from the reactivated carbon. The gold-bearing strip solution, more concentrated than the original pregnant solution, is treated by electrolysis in an electrowinning cell. In the cell, gold is electrically plated onto steel wool. Any silver dissolved and carried into the pregnant solution follows the gold through the process and is plated onto the steel wool. After electrowinning, the impure gold/silver residue is washed from the steel wool, dried, and melted in a furnace. The resulting product is a bar of alloy gold and silver, known as a "dore" bar. The dore is then sold or shipped to a refinery for further purification.

[44] Material contains a lower concentration of gold below the current cut-off grade for ore material sent to the leach pad.

4.2 MAJOR MINE COMPONENTS

1. The major features of the CMM are illustrated in **Figure 1-2**. **Figures 1-2a** through **Figure 1-2h** present each mining feature in greater detail. **Figure 2-2** shows the proposed maximum mine development (but does not distinguish between approved/proposed facilities). This arrangement of the major features shown in the figures was selected based upon numerous considerations, including:

    - Mine Pits –Pit locations and configurations are dictated by the geology of the orebodies as defined by exploratory drilling.

    - Overburden (waste rock) Sites – These waste rock sites are generally located near the mine pits to minimize haul distances and reduce fuel use and air emissions.

    - Crushing Plants – The primary crusher is located close to the mine pits to minimize haul distances and reduce air emissions.

    - Overburden site final surface elevations will vary significantly, forming both peaks and high mesa tops, which are emblematic of the terrain found in the Castle Mountain and nearby Piute Mountain ranges; these features will simplify final reclamation by incorporating these characteristics early in the mine plan.

    - Extensive use of overland conveyor systems eliminates significant miles traveled by diesel-fueled mine equipment, reducing air emissions, including GHGs.

    - Heap Leach Pads and the Comminution Plant are located on gentle slopes at lower elevations, with the leach pad visually shielding the latter from Lanfair Valley views. The proposed facility location also minimizes the grading needed to achieve the gravity flow of solutions from the base of the pad. These facilities are also located to reduce disruptions to natural drainages and are outside the flood plain for the 100-year 24-hour flood event.

    - Solution storage tanks and the Processing Plant are located downslope from the heap leach pad to maintain gravity flow.

2. The expanded mine pits, leach pad, and overburden (waste rock) sites described in this plan will accommodate up to approximately 322 million tons of ore and 338 million tons of overburden. More than half of the total overburden produced[45], about 400 million tons, will be sequentially backfilled into the northern pits (JSLA, Jumbo, Oro Belle, and the 1998 Plan portion of the South Extension).

3. 2022 Plan mine pits, overburden sites, and the leach pad all expand in size to fully develop the mineral resource. Land disturbance will also increase by about 1,393 acres to a project total of 2,853 acres.

4.3 PRODUCTION SCHEDULE

1. Exploration and associated geological investigation since the fall of 1990 identified additional mineral reserves in the JSLA, Jumbo, and Oro Belle pits. Mid-1990s exploration extended previous reserves to the Oro Belle and South Extension pits. More recent mineral exploration and a significant increase

[45] 752 million tons

in the price of gold require further expansion to all mine pits and further updates of the gold reserve to over 4.2 million ounces.

2. The 1998 Plan divided the mining program into two phases, Phase I and Phase II. Phase I mining included mining the reserves in the Oro Belle[46] and Jumbo pits. Phase II included additional waste rock stripping to recover reserves in the east walls and floors at both pits and mining the South Extension pit. The Phase II reserves included mineralized structures that were suspected but not included for mining in the 1990 Plan. These areas included the peripheries of the Oro Belle, Jumbo, and JSLA (i.e., South Extension) pits; these were categorized as proven reserves in the 1998 Plan. Specifically, approved mining included ore found between the Oro Belle and JSLA pits and below the floor of the Oro Belle pit; mining these reserves of the Oro Belle pit would result in higher stripping ratios by extending the north and east pit walls a considerable distance from pre-1998 Plan limits. Accordingly, the plan always maintained that Phase II mining would only proceed under a favorable combination of metal prices, metallurgical recoveries, and operating costs (i.e., mine economics).

3. The 1998 Plan, in addition to adding to the ore reserves in the Oro Belle and Jumbo areas, also identified two other deposits, the South Extension and the Lucky John. These are adjacent to the south and west walls of the JSLA pit, respectively. These deposits have not been mined to date but are included in the 2022 Plan. The 1997 EIS/EIR and the resulting approved 1998 Plan explained the importance of favorable mine economics and the higher overburden stripping ratios. While mining these features was approved in the 1998 Plan, work never started, and it remains authorized. The 2022 Plan also extends mining past these features and at depth.

4. As of May 2001, mining Phase I, Stage 5C, was the last fully implemented stage for Phase I of the mining schedule estimated in the 1998 Plan. Some 1998 Plan mining associated with Stages 5D, 5E, 5F, and 6 were not fully implemented by May 2001, while other activities, such as mining in the Oro Belle pit, were completed (vertical extent) up to Stage 5F. Minor modifications to the 1998 Plan were submitted and approved in 2020 (2020 Plan update). This assisted in the restart of idled mine operations and revised the mine plan schedule to account for incomplete Phase I and Phase II mining. This revised mine schedule will continue until the pending authorizations are decided for the activities included in this 2022 Plan. The chronological relationship of the mining *phases* and *stages* is shown in **Table 4-5**.

5. The ore grade and stripping ratio determine the quantity of material mined annually and will vary. On average, up to 19 million tons of ore per year will be delivered to the Primary Crusher. This represents a 13 million ton increase from the approved ore production rate. Annual overburden production will range from 36 to 61 million tons per year, a maximum 45 million ton increase from the approved rate of overburden production.

6. Generally, mining and processing activity will occur continuously, 24 hours a day, 365 days a year.

7. If the 2022 Plan is approved, pre-production mining would start shortly thereafter, signaling the end of Phase I mining and the start of Phase II mining, as described further in Section 4.4.3. Phase II mining begins during Stage 6 when remaining protore stockpiles will be removed from the JSLA pit and overburden sites. The expanded South Overburden site will receive significant JSLA overburden

[46] Recognized as "Oro Belle-Hart Tunnel" pit or OBHT in earlier mine plans.

material during this stage. Stage 6 will also be defined by significant construction as existing approved facilities are extended to the limits proposed in the 2022 Plan. From Stages 6A to 6D, mining occurs throughout the northern pits. JSLA pit will be developed with an east and west component, with the approved portion of the South Extension pit to the south. Jumbo and Oro Belle pits will be somewhat merged to the west to form a single larger pit; the Oro Belle pit will create a complex of inter-pit excavations and will also extend southeast into a pocket of mineralization trending north-south along the current eastern high wall of the pits. **Figure 4-2** shows a rendering of the maximum proposed extent of mine pit development (note that pit backfilling is purposefully not shown in this figure for effect).

8. Phase II Stage 6E to F will shift primary mining activity to the South Extension pit expansion areas, with Stage 6E focusing on the west portion of the pit while Stage 6F extends the pit to the east.

9. Stockpiled low-grade (protore) materials would be withdrawn from stockpiles during Stage 6G and used to augment ore production from the various pits. Leaching of materials on the pads continues through Stage 7, and the leach pads will be rinsed and decommissioned during Stage 8. Reclamation and monitoring continue through Stage 9, which should end before 2058.

10. The approved 1998 Plan defined pit backfilling as a major component of mine reclamation; the 2022 Plan is no different. Backfilling of most of the north pits, JSLA, Jumbo, and Oro Belle is included in the 2022 Plan. Backfill is discussed in more detail in section 5.10.1 of this plan and in **Appendix F**, the Waste Rock Management Plan.

4.4 MINE OPERATIONS

4.4.1 Growth Media Removal

1. The first step before mining can occur is the removal and stockpiling of growth media or, top soil. This material is stockpiled for later use during reclamation.

2. Through the current mining Stage 5F, approximately 283,000 cubic yards of growth media have been salvaged from the following areas:
    - North Overburden
    - South Overburden Site
    - Heap Leach Pad area
    - Processing Plant area

3. The locations of the growth media stockpiles were discussed in Section 2.0 and shown in **Figure 2-7**.

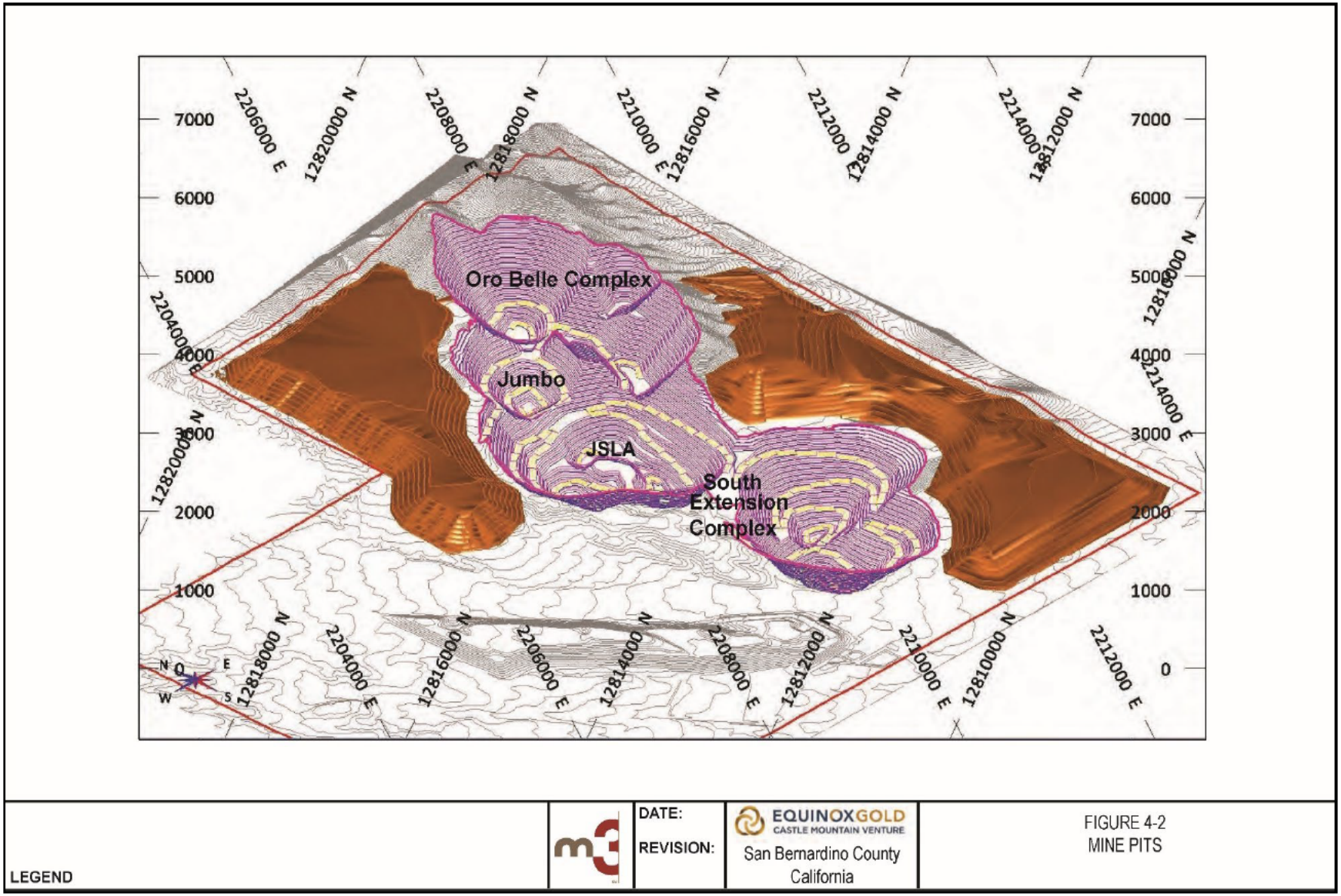


Figure 4-2. Mine Pits

Table 4-2. Estimated Recoverable Growth Media

FACILITY SOIL OR DISTURBANCE AREA	DOMINANT SOIL TYPE	VOLUME AVAILABLE (cubic yards)	SOIL STOCKPILE SITE
Phase I Mining			
Heap Leach Pad	#1 – Gravel Loam	194,200	*Site A1* – Northeast old leach pad
Process Plant	#1 – Gravel Loam	34,400	*Site B1* – North of Process Plant
Pits (JSLA)	#4 – Rocky #5 – Disturbed	4,400	*Site D1* – North of Crushing Plant
North Overburden	#3 – Gravel	20,000	*Site D1* – North of Crushing Plant
South Overburden	#3 – Gravel	30,000	*Site C1* – Southeast of JSLA
SUBTOTAL	**283,000 (stockpiled)**		
Phase II Mining			
Heap Leach Pad	#1 – Gravel Loam	1,185,000	*Site A2* – HLP Northwest *Site A3* – HLP South
North Overburden Site	#3 – Gravel	387,000	*Site E1* – North Overburden North
South Overburden Site	#3 – Gravel	241,000	*Site C2* – South Overburden North *Site C3* – South Overburden South
Pits	#4 – Rocky #5 – Disturbed	221,000	*Site C2* – South Overburden North;
Admin Offices, Mobile Maintenance, Parking	#1 – Gravel Loam	116,000	*Site A1* – Northeast old leach pad
Process Plant	#1- Loam	128,000	*Site B1* – North of Process Plant
SUBTOTAL	**2,278,000 (proposed)**		
TOTAL	**2.6 Million Cubic Yards**		

4.4.2 \Mining

4.4.2.1 Pit Design

1. Pit designs at the CMM are at different stages. Designs are based on the density of exploratory drill holes in the respective pit areas, estimated value and distribution of the mineralization, and related economic and geotechnical factors. Most of these factors are subject to change during the life of the mine. It is industry standard practice that pit design will be reevaluated several times during mining as the mine plan adapts to changing factors.

2. The CMM orebody occurs in oxidized fractures, faults, discontinuous veins, and breccia matrix. Some faults and fracture zones are not gold-bearing since the CMM area's structural regimes were active pre- and post-mineralization. Gold seems to have precipitated during a single phase within a larger, longer-lived structural and hydrothermal event and manifested outward from the source to produce the deposit mined since 1907. As mine pits have been refined, the projected high walls surrounding these deposits overlap somewhat. Where this happens, individual pits will merge into a single large excavation sharing a common upper pit wall, dividing at depth into discrete pit bottoms separated by low internal saddles. Based on current estimates, the lowest pit floors are anticipated to have elevations shown in **Table 4-3**.

Table 4-3. Mine Pit Elevations

PIT AREA	PRE-MINING ELEVATION (feet amsl)	FLOOR ELEVATION (feet amsl)	PIT DEPTH (avg feet amsl)	BACKFILL ELEVATION (feet amsl)
2022 Plan Pits				
JSLA	4,300 to 4,600	3,200	1,250	4,300
Jumbo	4,400 to 5,000	3,600	1,100	4,420
Oro Belle	4,400 to 4,900	3,500	1,150	4,420
South Extension	4,200 to 4,400	3,000	1,300	n/a

3. The pit boundary configurations and lowest elevations are determined primarily by complex interrelationships involving geologic and economic factors, including ore grade, the overburden-to-ore stripping ratio, metallurgical recoveries, mining and production costs, capital expenditures, and projected sales revenues. Because these factors are somewhat interdependent, and metal prices and mining costs are variable, the above pit elevations are estimates. Final elevations could vary by perhaps 100 or 200 feet from the above estimates.

4. Metallurgical recovery has an essential influence on pit design. Estimated metallurgical recovery is derived from laboratory tests of representative ore samples and is the best estimate before having actual operating data to evaluate. These estimates are continually compared to recoveries realized during the life of the operation. An increase in projected recoveries could result in the need for expanded pit boundaries, as mineralization in the pit wall or floor becomes profitable to mine. Reduced costs or a higher gold price would have an effect similar to higher metallurgical recoveries. These complex relationships informed the 1998 Plan and formed the basis of the updates included in this 2022 Plan. For example, higher gold prices profoundly influence current pit design, and when

stockpiled, low-grade material is processed. The 1998 Plan identified that low-grade ore (protore) stockpiles might not be processed during Phase I or even Phase II mining as market conditions dictate when stockpiles of varying gold concentrations will be processed. The necessary economic factors are present to mine the ore zones identified in the 1998 Plan, extending these zones accordingly.

5. Current pit designs will be refined as data from further "definition" drilling is integrated into existing mine models to refine the extent of mineralization in the pits and to predict accurate ore reserves. Any changes to the pit design will be reported to the lead agencies.

6. Geotechnical characteristics and grade control considerations influence pit slopes and bench heights. Bench heights of approximately 30 feet were used throughout all pits.

7. Pit wall slopes will continue to depend on the rock walls' geotechnical properties. The 1998 Plan changed how pit walls were adjusted based on the rock's competency encountered during mining. Rock in the JSLA pit is very competent. As a result, during previous mining, the walls were progressively steepened as mining proceeded on lower benches. Walls in the upper portion of the JSLA pit were sloped at 45 degrees, but slope angles on most walls in the lower portion are 54 degrees or more. The Oro Belle and Jumbo pits had been designed with initial 52-degree inter-ramp wall slopes. These slopes were later refined to vary from 46-52 degrees depending on the geotechnical properties of the wall rock, absence of faulting, et cetera. Current slope stability reporting provides for a 52-degree wall slope in most cases. The rock exposed after excavating the benches will allow a more detailed assessment of pit wall stability. The safety benches are expected to be 30 to 40 feet wide, depending on slope angle, spaced vertically every 60 to 80 feet. Safety benches in poorly consolidated or clay alteration zones will be wider and placed at more frequent intervals, reducing the overall slope angle accordingly to ensure slope stability. **Figure 4-3** shows an example of the in-pit bench and high wall design that will be used at CMM. A current geotechnical (slope stability) report is included in **Appendix G.**

8. Water has been encountered in the mine pit areas, generally at depths exceeding 500 feet below the ground surface. As the 2022 Plan pits advance below this elevation, pit dewatering will be required, and we estimate up to seven wells will be needed. Pit dewatering is discussed in more detail in Plan section 4.7.1.2. and **Appendix E**.

4.4.2.2 Operations

4.4.2.2.1 Pit Characteristics

1. The approved 1998 Plan included an estimated 307 acres of open pit areas for Phase I and Phase II mining. These same pits will be extended to an estimated 830 acres to include previously identified deposits at the CMM.

2. The proposed mining and reclamation sequence is based on economic considerations, known engineering information, and environmentally sound procedures. As is typical of most mining operations, more precise data will be generated as operations proceed, leading to engineering refinements and other modifications to operational plans in future years. Any changes from the procedures described herein will be submitted to the appropriate agencies for review before implementation.

3. The 1998 Plan schedule identified mining in the Oro Belle and South Extension pits as the last[47] mining under Phase II, Stage 6 mining. The 2022 Plan extends mining past the current authorized limits. It expands the South Extension pit complex further to the east, west, and significantly to the south to include economically mineable. The South Extension pit expansion would form a complex of intra-pit excavations. From the approved location, the pit expands west and east, eventually merging with the south end of the enlarged JSLA pit. It would also follow an ore zone south and grow into two intra-pit excavations with east and west components remaining as the last pit mined at CMM. The 2022 Plan shows a ridge between the north and south complexes of the proposed South Extension pit; this ridge will likely recede further as the mine plan is refined and updated to the current gold price. For example, the CMM feasibility study on which the 2022 Plan pits are derived, based the pit shells on a $1,700 per ounce gold price. Considering that gold in 2025 is over $3,500 per ounce, it's reasonable to believe the pit boundaries could expand further. Compatible with the 1998 Plan, the South Extension pit (and lesser volumes from Jumbo and Oro Belle) would be used to backfill all the northern pits (JSLA, Jumbo, Ore Bell). The South Extension pit plan and profile elevations are shown in **Figure 4-7**.

4. 2022 Plan mine pit design and cross-sections at the JSLA, Jumbo, Oro Belle, and South Extension pits are shown in **Figures 4-4**, **Figure 4-5**, **Figure 4-6,** and **Figure 4-7**, respectively. The cross sections show the approved pit limits, the original (pre-mining) surface topography, the 2001 location of the pit high-walls, surface topography after partial backfilling, and the proposed pit expansions. **Figure 4-4** shows the JSLA pit design once the backfilled protore stockpile has been removed and Phase II mining is completed. Importantly, **Figure 4-4** presents a perspective of the JSLA pit in relation to the approved extent of the South Extension pit. **Figures 4-5** and **4-6** show the Jumbo and Oro Belle pits at the maximum extent of mining. **Figure 4-7** shows the South Extension pit expansion.

5. Haul roads from the mine pits to the overburden sites and the Crusher will be about 100 feet wide to permit two-way travel for haul trucks, plus an additional 15 feet for safety berms and drainage ditches. Grades of in-pit haul roads are held to a maximum of ten percent.

6. Overburden material will continue to be placed at the designated South and North Overburden Sites. **Figures 4-8** and **4-9** show these sites' estimated plan and cross-section designs, respectively.

[47] Mining at the Oro Belle pit was the very last mine pit scheduled.

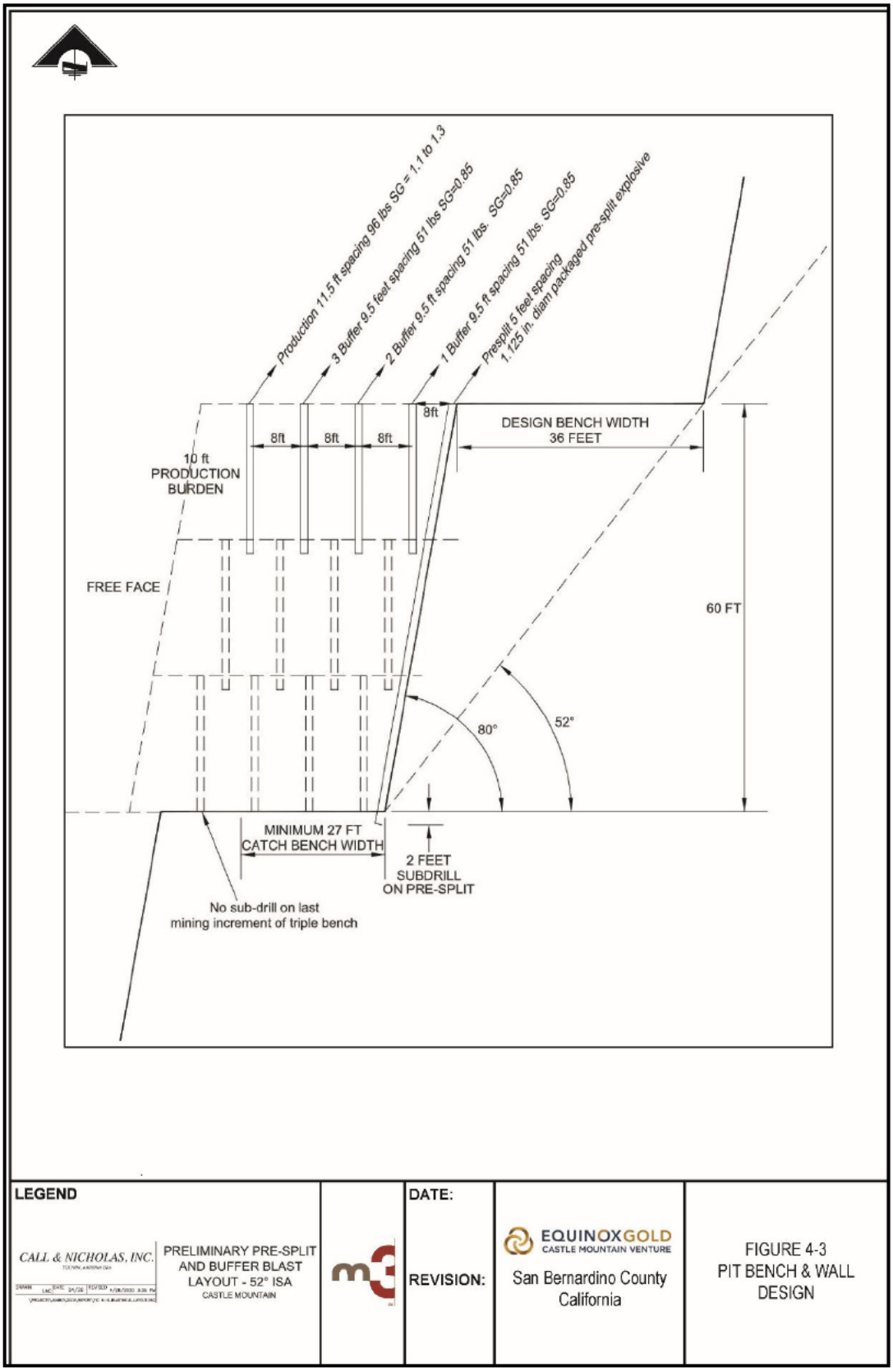


Figure 4-3. Pit Bench & Wall Design

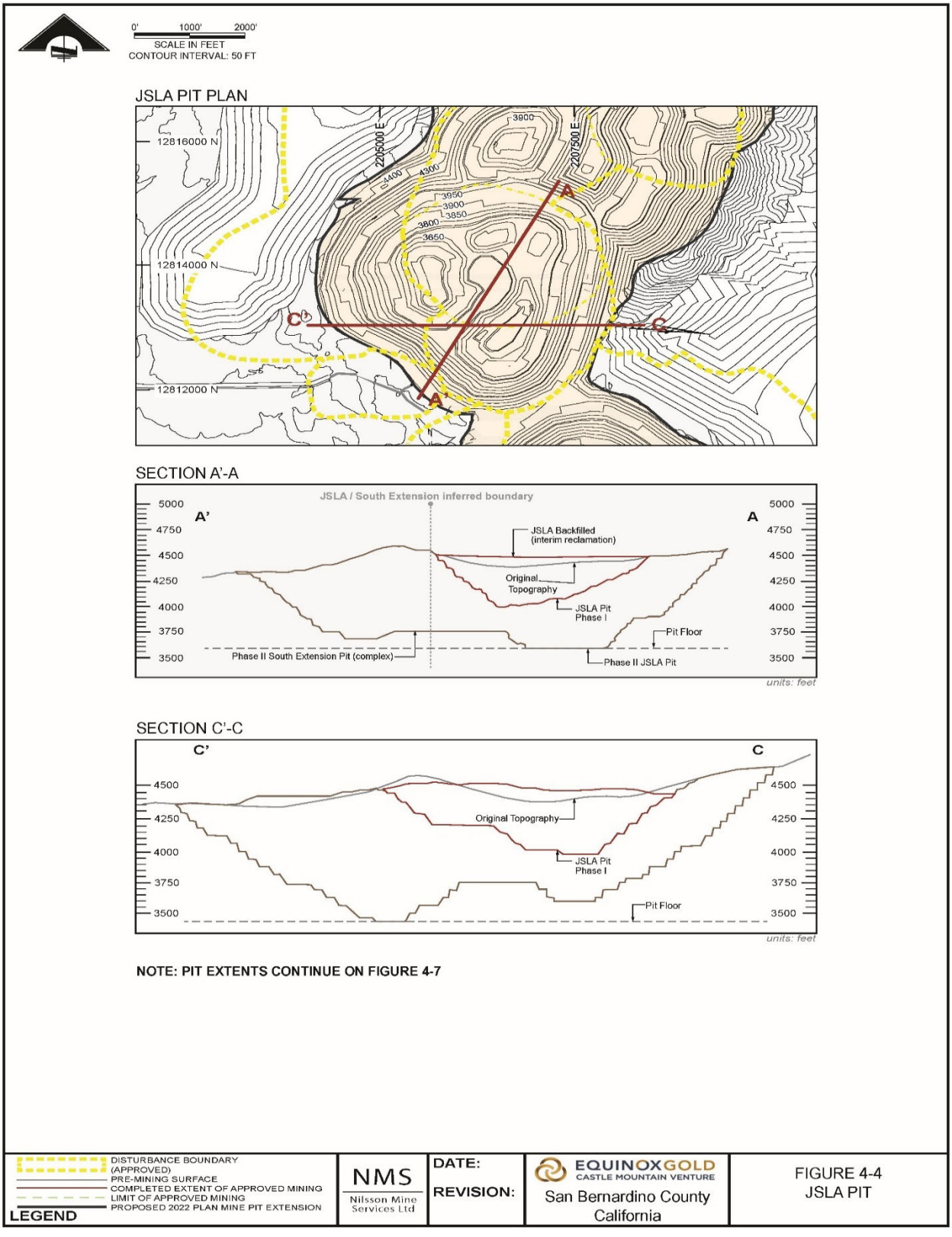


Figure 4-4 JSLA Pit

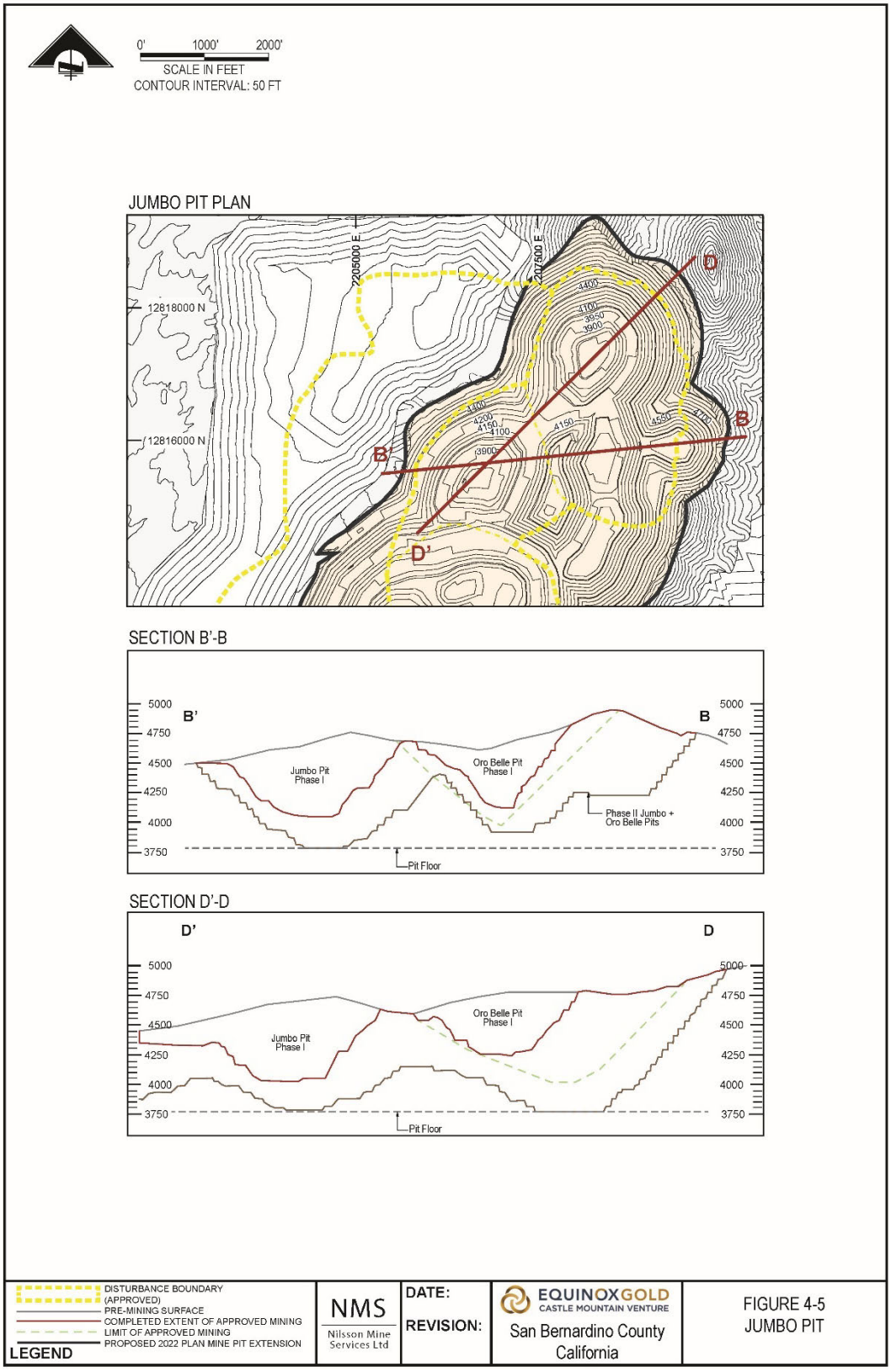


Figure 4-5. Jumbo Pit

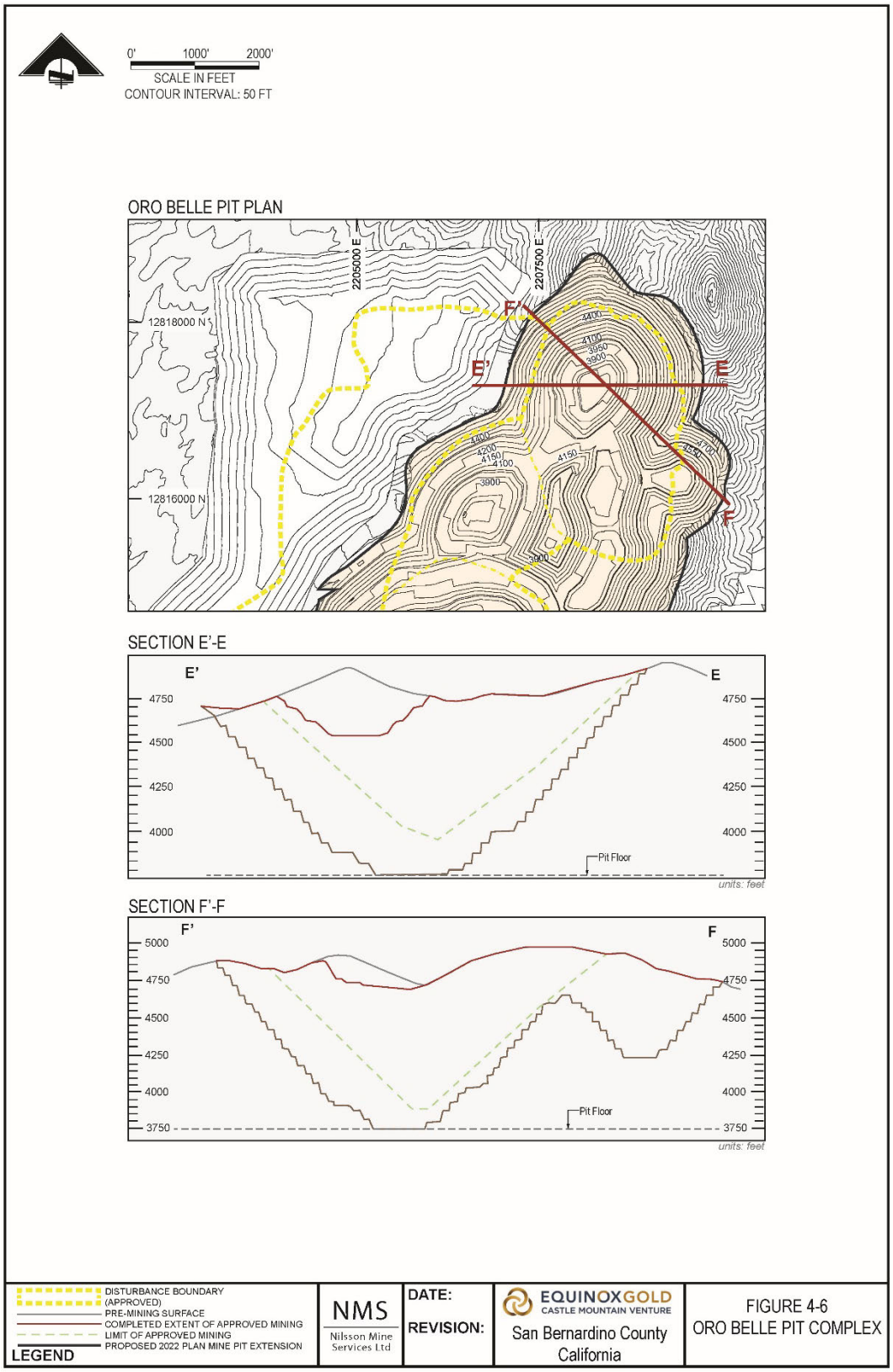


Figure 4-6. Oro Belle Pit Complex

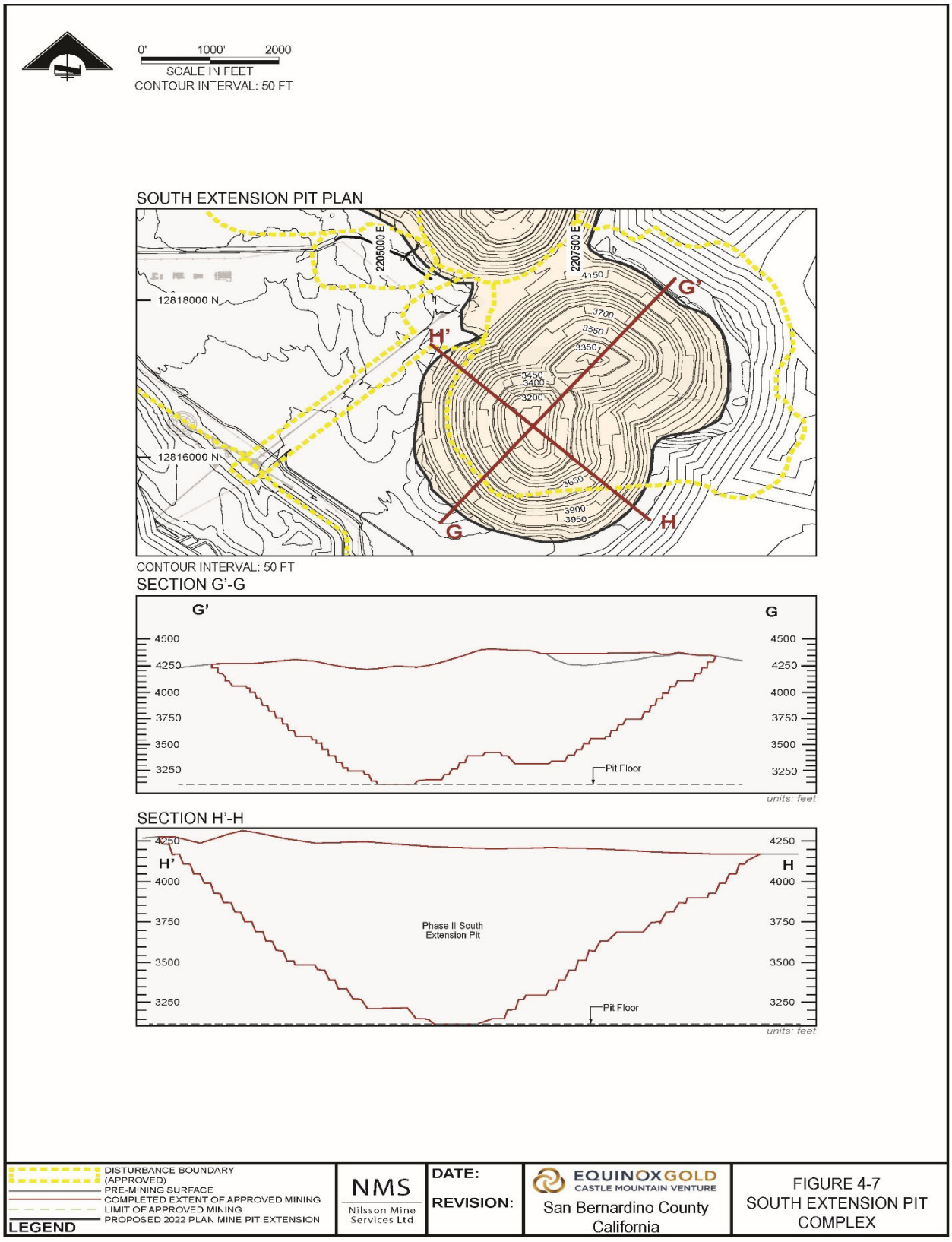


Figure 4-7. South Extension Pit Complex

Table 4-4. Mining Equipment and Units

UNIT TYPE	AVERAGE # OF UNITS	NOMINAL SIZE
Blast hole drill rig	5	4.5 – 9.0 inch
Hydraulic Shovel	3	44.5 cubic yards
Wheeled Loader	2	28 cubic yards
Wheeled Loader	1	10 cubic yards
Haul Truck	24	250 tons
Haul Truck	2	61 tons
Articulated Truck	1	40 tons
Track Dozer	4	600 hp
Wheeled Dozer	2	620 hp
Water Truck	2	32,000 gallons
Grader	3	290 hp
Excavator	1	524 hp
Tire Manipulator	1	Large Tires
Vibratory Compactor	1	130 hp
Backhoe	1	105 hp
Fuel & Lube Truck	1	8,000 gallons
Tractor and Low-bed	1	160 tons
Flatbed Truck	1	10 tons
Rough Terrain Forklift	1	30 tons
Shop Forklift	1	16 tons
Mechanics truck	1	Single axle
Welding truck	1	Single axle
Pickup Truck	22	Single axle
Ambulance	1	Single axle
Lighting Tower	6	8 kw

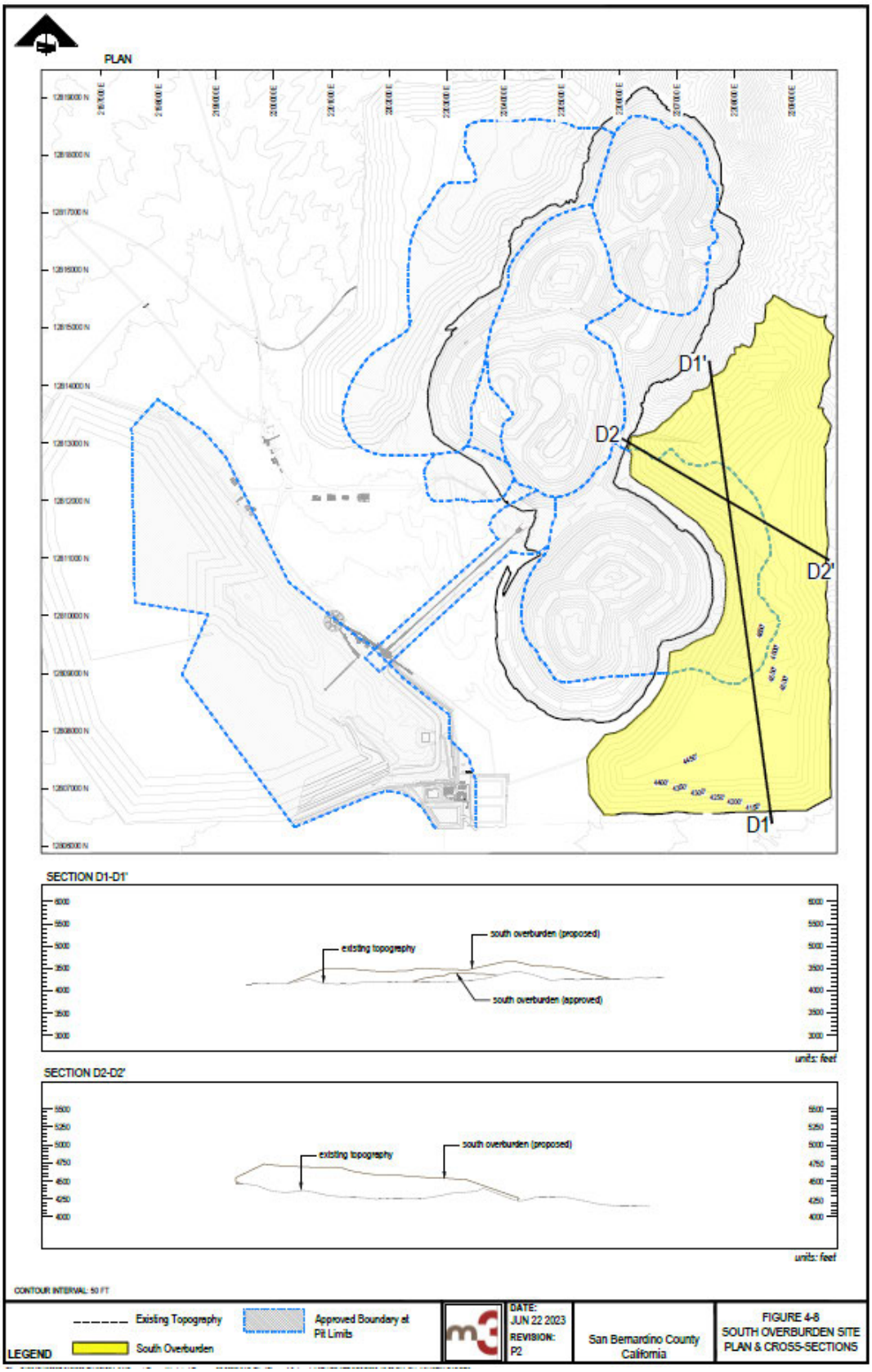


Figure 4-8. South Overburden Site Plan & Cross-Sections

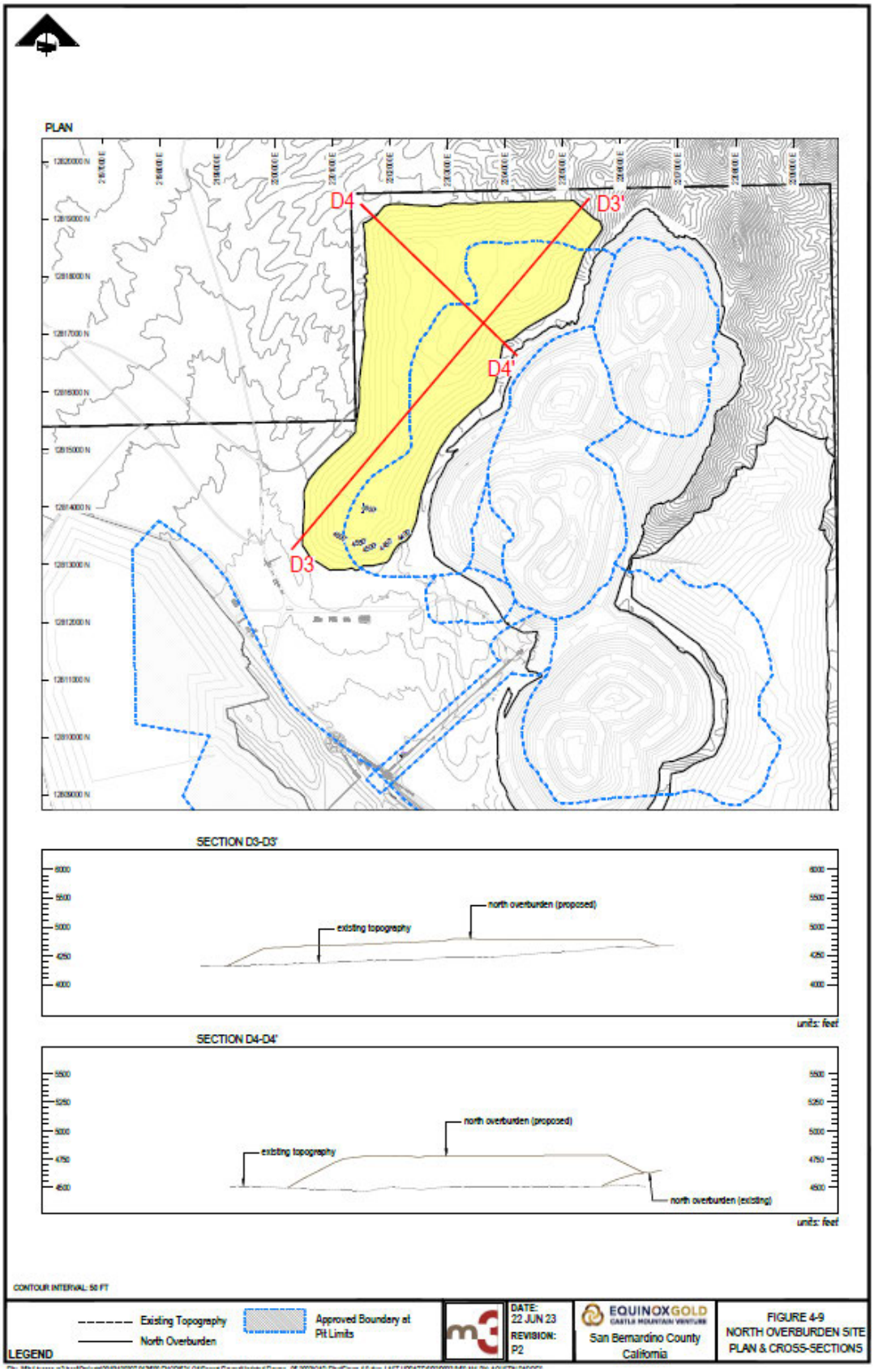


Figure 4-9. North Overburden Site Plan & Cross-Sections

4.4.2.2.2 Mining Equipment

1. **Table 4-4** includes a list of heavy equipment used for mining operations at the CMM.
2. The actual number of units in use from time to time may be less than that shown above, considering the changing overburden removal ratios and haulage distances from the various pits to the overburden storage sites, ore/protore stockpiles and the Heap Leach Pad.
3. The main security gate, parking, administrative offices, mine maintenance shop, fuel station, and parts warehouse facilities would be relocated from their locations in the 1998 Plan. This is required because the 2022 Plan pit expansion would encroach too closely to some of these current facility locations to maintain safety. These relocated facilities are shown in **Figures 1-2** and **1-2h**.

4.4.2.2.3 Mine Pit Preparation & Blasting

1. Most ore and consolidated overburden require drilling and blasting before excavation. These materials are drilled on a set pattern, and drill-cutting samples are taken as each hole is drilled. Samples are assayed and categorized as ore, protore (i.e., protore), or overburden.
2. Blast hole drilling uses rotary or percussion blast hole drills. Approximately five blast hole drills will be in active operation at any given time throughout the life of the mine. An average of about 65,000 blast holes will be drilled per year, or about 137 to 240 drill holes per day of peak drilling activity during Stage 6D when maximum blasting should occur. A detailed breakdown of average blast holes drilled per day relative to the mine stage is presented below in **Table 4-4a.**

Table 4-4a. Daily Estimate of Blastholes Drilled per Mine Stage

Daily # of Blastholes Drilled (average)	Mine Schedule by Stage							
	6	6A	6B	6C	6D	6E	6F	6G
	110	151	170	192	219	178	41	0

3. Blasting shall only be conducted by a licensed blaster under the Office of Surface Mining (OSM) Blasting Performance standards (30 CFR Section 816.61-68). Explosive materials include AN/FO (ammonium nitrate fuel oil) blasting agents, water-resistant slurries, and cap-sensitive primers. Time-delay blasting procedures are used for controlled production blasting of overburden and ore. Blasting will most likely be carried out by a third-party contractor licensed through the Bureau of Alcohol, Tobacco, Firearms, and Explosives (BATF&E) specifically explicitly hired for this purpose; outside blasting contractors have generally become the industry norm. All blasting contractors shall possess a current blasting license issued by CAL-OSHA, be experienced in mine blasting, and hold applicable insurance. The blasting contractor's employees must be trained following CAL-OSHA and MSHA requirements and possess certification for such training. Blasting would occur as often as six days per week, averaging 210 blast holes per blast; note that the actual number of blasts per week and holes per blast is highly variable and dependent on many external factors, including the weather. All blasts take place during daylight hours. A minimum of one production day of material is intended to be blasted in advance for loading purposes. Ideally, blasting would occur three days per week to

minimize work stoppages; however, due to changes in weather conditions, the blasting schedule is often adjusted to reduce operational conflicts and promote safety.

4. Blasting agents include:
    - Ammonium nitrate (AN) prills: Approximately 50 to 80 tons stored in a mobile vertical silo(s)
    - Fuel oil (typically diesel fuel): Conventional fuel stored in existing fuel tanks
    - Blasting caps
    - Packaged explosives for pre-shearing
    - Boosters
    - Detonator
    - Lead in line

    All blasting agents are stored separately; fuel oil is stored at the main fuel tanks located at the mine shop, AN is typically stored in a bulk (mobile) silo located outside the blast radius but usually within the mine pits or overburden areas (**see Figure 4-15**) that are not being actively worked (i.e., away from people). Magazines (mobile) will be located outside the blast radius but usually within the mine pits or overburden areas that are not actively worked.

5. No offsite problems have been encountered due to blasting, as the closest residences are approximately five miles from the pit areas. Contractors hired to conduct blasting will conform to their internal safety and SOP procedures but will, at a minimum, follow all safety requirements prescribed by MSHA and ATF.

6. After blasting, the broken rock is classified into one of the above categories and flagged appropriately so that the loader operator knows its destination; materials are loaded into haul trucks using front-end loaders or hydraulic shovels.

4.4.3 Stage Development

1. Development of the CMM was separated into ten stages for the original 1990 Plan and 1998 Plan. The same structure has been followed in developing the production schedule in this chapter of the 2022 Plan.

2. Stages 1 to 4 were completed under the 1990 Plan. The 1998 Plan distinguished between Phase I and Phase II mining activity. Phase I would occur between mining Stages 5A to 5F, after which Phase II would start at Stage 6. Ore will be produced throughout these stages from JSLA, Jumbo, Oro Belle, and the South Extension pits. The 1998 Plan recognized that Phase II mining would only occur with higher metal prices due to the higher stripping costs. Mining under Stages 5A to 5E was completed before the suspension of mining in 2001. While pit mining was completed through Stage 5E, not all other activities identified for Stages 5D or 5E were completed before mining was suspended in May 2001.

3. The 1998 Plan also eliminated original Stage 7, which was to have been used to process stockpiled lower-grade materials. The stockpiled materials would be used to augment mine production during Stage 6. As a result, activities that were initially (the 1990 Plan) designated to occur in Stages 8, 9, and 10 would occur in the (1998 Plan) renumbered Stages 7, 8, and 9.

4. 2022 Plan mining expands the pit mining identified in the 1998 Plan as Phase II, Stage 6. Therefore, continuing with the 1998 Plan approach to mine staging, this 2022 Plan also identifies Phase II, Stage 6 mining, but further segments Stage 6 into seven substages, 6A to 6G. All 2022 Plan mining will be conducted during these substages; processing will continue through Stage 7, and then closure and reclamation activity will begin at Stage 8[48] , the same as the 1998 Plan.

5. **Table 4-5** details the mining stages and the schedule, which started with the commencement of preproduction mining in June 1991. The stages are separated based on the interrelationships between pre-production development, plant construction, mining, ore placement, low-grade ore, protore, overburden, and reclamation efforts.

6. The 2022 Plan acres disturbed by each mine stage are shown in **Table 4-6**. Of note, the acres shown in this table are estimates only and are used to provide an approximate land disturbance schedule. Also, acres are not identified for stages 6 through 6G, which have already been accounted for in the first column identifying acres approved in the 1998 Plan. Section 5.0 of this 2022 Plan describes how reclamation activities would be integrated with mining operations (i.e., concurrent reclamation).

7. Below is a detailed description of mining activities by stage based on the current mine plan. Mining is a dynamic process that must respond to change, whether economic or geotechnical. As with most major projects, changes will occur throughout the life of the operation.

8. Completed Stages are not fully detailed in this 2022 Plan, but they can still be found in the earlier 1990 and 1998 Plans on file with the lead agencies.

4.4.3.1 Stage 1 through 4 (June 1991 to March 31, 1995)

4.4.3.1.1 General Description

1. Stage 1 commenced in June 1991, and construction ended with the commissioning of the Primary Crusher in February 1992. During Stage 1, the Crushing Plant, Overland Conveyor, Shop, Process Plant, Administration, and Heap Leach Pad areas were cleared and graded, and the facilities in those areas were constructed. In addition, the primary access road (Walking Box Ranch Road) connecting the mine site to the regional highway grid was completed. Stages 2, 3, and 4 each had a 12-month duration.

2. All activity for Stages 1 through 4 was completed by 1995; the full stage descriptions can be found on the approved 1998 Plan.

4.4.3.2 Phase I – Stage 5A through 5C (April 1995 to March 31, 1998)

4.4.3.2.1 General Description

1. Stage 5 mining operations fall under Phase I of the 1998 Plan. Stage 5 consisted of six substages; each was scheduled for 12 months, the only exception being Stage 5F. Stage 5A to 5C activity was completed, and a general description of these activities is included below for background. For a full description of these stages, refer to the approved 1998 Plan.

[48] Section 5.0 of this plan explains concurrent reclamation in more detail, reclamation would likely begin before Stage 8.

4.4.3.3 Phase I – Stage 5D through 5F (April 1998 to May 2001)

4.4.3.3.1 General Description

1. Phase I, Stage 5D operations were not completed when mining activity was suspended in May 2001. The completed portions are described in this section, while activities completed during resumed mining that began in 2020 are described in the following section.

2. Activities authorized but not completed before the suspension of mining include westward expansion of the Heap Leach Pad, expansion of the North Overburden Stockpile, and realignment of a new haul road from the Oro Belle pit.

4.4.3.3.2 Growth Media

1. Original growth media stockpiles were used during the interim reclamation that occurred during the early 2000's. However, research advancements showed optimal seed germination occurred using a more coarse growth medium (growth media plus overburden/rinsed ore), so not all growth media supplies were used. The remaining unused stockpiles remained at the site for future use.

4.4.3.3.3 Mine Pits

1. Mining at the Oro Belle and Jumbo pits continued through the end of this period.

4.4.3.3.4 Overburden Sites

1. During this stage, overburden was sequentially backfilled into the JSLA pit. Expansion of the North Overburden Site was planned for about 70 acres during Stage 5D, 93 acres in Stage 5E, and 15 acres during Stage 5F, completing the permitted development of the North Overburden Site. None of these planned North Overburden Site expansions started before mining was suspended in May 2001.

4.4.3.3.5 Heap Leach Pad

1. The heap leach pad was planned to expand by 52 acres in Stage 5D and 31 acres during Stage 5F, thereby completing its planned extent; however, neither of these pad expansions was completed before mining was suspended.

4.4.3.3.6 Mine Facilities

1. An additional stormwater basin was constructed at the processing plant, disturbing about 2 acres of land. However, a second planned stormwater basin was not built before mining ended.

4.4.3.3.7 Roads

1. No significant road improvements were planned during this stage.

Table 4-5. Chronological Relationship of Mine Schedule Phases and Stages

STAGE	ESTIMATED START	ESTIMATED END	ACTIVITY	STATUS
1990 PLAN (complete)				
Stage 1 - 4	1991	1995	Mining at Lesley Ann[49](JSLA) pit; Overburden to SOB	Complete
1998 PLAN (approved)				
Phase I Stage 5A	1995	1996	Mining at JSLA, Jumbo, Oro Belle pits; Overburden to SOB	Complete
Phase I Stage 5B	1996	1997	Mining at Jumbo, Oro Belle pits; Overburden to NOB and JSLA backfill	Complete
Phase I Stage 5C	1997	1998	Mining at Jumbo, Oro Belle pits; Overburden to NOB and JSLA backfill	Complete
Phase I Stage 5D	1998	1999	Mining at Jumbo, Oro Belle pits; Overburden to NOB and JSLA backfill	Incomplete
Phase I Stage 5E	1999	2000	Mining at Jumbo, Oro Belle pits; Overburden to NOB and JSLA backfill	Incomplete
Phase I Stage 5F	2000	2001	Mining at Oro Belle pit; Overburden to NOB and JSLA backfill	Incomplete[50]
Phase I Stage 5D-5F[51]	2020	2023	Mining JSLA protore and Overburden protore; Overburden to NOB	Active
2022 PLAN (Phase II proposed modifications)				
Phase II[52] Stage 6	2024	2025	Mining protore stockpiles; JSLA & South Extension (approved) pits; Phase II construction	Pending
Phase II Stage 6A	2026	2028	Mining at JSLA & (approved) South Extension pits; Overburden to South Overburden and North Overburden sites	Proposed
Phase II Stage 6B	2029	2030	Mining at JSLA pit, Jumbo + Oro Belle pits; Overburden to South Overburden and North Overburden sites	Proposed
Phase II Stage 6C	2031	2033	Mining ends at the JSLA pit and continues at Jumbo + Oro Belle pits; Overburden to North Overburden site and pit backfill.	Proposed
Phase II Stage 6D	2034	2036	Mining ends at Jumbo, continues at Oro Belle pit, and begins at (expanded) South Extension pit; Overburden to pit backfill.	Proposed
Phase II Stage 6E	2037	2039	Mining ends at Oro Belle pit continues at (expanded) South Extension pit; Overburden to backfill.	Proposed
Phase II Stage 6F	2040	2041	Mining at (expanded) South Extension pit; Overburden to backfill	Proposed
Phase II Stage 6G	2042	2045	Mining inferred resources and stockpiles	Proposed
Stage 7	2046	2048	Heap leach pad ore leaching and rinsing complete	Pending
Stage 8	2049	2050	Heap leach pad decommissioned	Pending
Stage 9	2051	2058	Reclamation is Complete and monitoring begins	Pending

[49] Lesley Ann pit identification eventually changes to JSLA or Jumbo South Lesley Ann pit
[50] Mining activity was suspended in May 2001.
[51] Incomplete aspects of mine plan Stage 5D to 5F were modified in 2020 during mine restart activity
[52] Phase II, Stage 6 is approved per 1998 Plan, but mining activity would expand in the 2022 Plan

Table 4-6. Incremental (New) Disturbance Acres by Mine Stage

Area Disturbed	1998 Plan	2022 Plan								
	Cumulative through Phase II, Stage 6[53]	Stage 6	Stage 6A	Stage 6B	Stage 6C	Stage 6D	Stage 6E	Stage 6F	Stage 6G	Cumulative through Stage 6G
JSLA	143	20								163
Oro Belle + Jumbo	213		10	15	60	10				308
South Extension	267					26				293
North Overburden Site[54]	210		20	96	66					392
South Overburden Site	131	220	230							581
Crushing Plant	1	15								16
Process Plant & Ponds	0[55]	24		7		7				38
Administration & Support	0[56]	49								49
Heap Leach Pad[57]	442	150	70	80	80	80	15			917
Site Roads[58]	48	1	1	1	8	1				60
Revegetation Nursery and Growth Media	5	16	5	4	3	3				36
Subtotal	**1,460**	**495**	**336**	**203**	**217**	**127**	**15**	**0**	**0**	**2,853**
Total Disturbance	**1,460**	**1,393**								**2,853**

[53] This column references the 1998 Plan disturbance relative to the 2022 Plan mine site layout changes. For example, the 1998 Plan recognized 52 acres of disturbance for the South Extension pit; this table also includes the 215 acres of the 2022 Plan pit that was previously the South Overburden Site.

[54] North Overburden Site includes 49 acres of the North Clay Pit Reclamation area and 36 acres of the South Clay Pit Reclamation area. Less than this 85-acre reclamation credit, the balance of the approved 1998 Plan disturbance was 1,375 acres.

[55] See footnote 76.

[56] Acres are included with other categories.

[57] Heap leach pad disturbance includes 2 acres occupied by Comminution Circuit; it also includes the process plant and ponds.

[58] Site roads include overland conveyor corridor.

Table 4-7. Incremental Growth Media Salvage by Stage (cubic yards)

Area Disturbed	1998 Plan	2022 Plan								
	Cumulative through Phase II, Stage 6	Stage 6	Stage 6A	Stage 6B	Stage 6C	Stage 6D	Stage 6E	Stage 6F	Stage 6G	Cumulative Stage 6 to 6G
JSLA	95,000	0	65,000	0	0	0	0	0	0	65,000
Jumbo	0[59]	0	0	0	0	0	0	0	0	0
Oro Belle	0	0	0	55,000	51,000	0	0	0	0	106,000
South Extension	11,000	0	0	0	0	50,000	0	0	0	50,000
North Overburden Site	226,000	0	150,000	237,000	0	0	0	0	0	387,000
South Overburden Site	257,000	241,000	0	0	0	0	0	0	0	241,000
Crushing Plant	12,000	0	0	0	0	0	0	0	0	0
Process Plant & Ponds	24,000	100,000	0	28,000	0	0	0	0	0	128,000
Administration Site	1,000	116,000	0	0	0	0	0	0	0	116,000
Heap Leach Pad	813,000	347,000	162,000	185,000	185,000	255,000	51,000	0	0	1,185,000
Site Roads	0	0	0	0	0	0	0	0	0	0
Revegetation Nursery and Growth Media	0	0	0	0	0	0	0	0	0	0
TOTALS	**1,469,000[60]**	**804,000**	**377,000**	**505,000**	**236,000**	**305,000**	**51,000**	**0**	**0**	**2,278,000**

[59] Jumbo growth media salvaged is included with the JSLA volume.

[60] This volume represents the total estimated salvage quantity from the 1998 Plan; in reality, some of these acres shown were not disturbed.

Table 4-8. Mine Production by Stage (thousand tons)

Area Disturbed	Material Moved	1998 Plan	2022 Plan								
		Cumulative through Phase II, Stage 6	Stage 6	Stage 6A	Stage 6B	Stage 6C	Stage 6D	Stage 6E	Stage 6F	Stage 6G	Cumulative through Stage 6G
JSLA	Ore	20,000	12,000	56,000	33,000	13,000					134,000
	Overburden	7,000	67,000	122,000	42,000	19,000					257,000
Jumbo + Oro Belle	Ore				5,000	32,000	25,000				62,000
	Overburden			1,000	36,000	83,000	18,000				138,000
Oro Belle	Ore					12,000	26,000	2,000			40,000
	Overburden					36,000	44,000	3,000			83,000
South Extension	Ore						6,000	55,000	14,000	TBD	75,000
	Overburden					4,000	116,000	144,000	10,000	TBD	274,000
Low-grade Stockpile									8,000	40,000	48,000
Less tons previously authorized[61]		(27,000)	(14,000)								
TOTAL		**0**	**65,000**	**179,000**	**116,000**	**199,000**	**235,000**	**204,000**	**32,000**	**40,000**	**1,070,000**

[61] These tons represent current mining of backfilled JSLA protore, this material was previously mined and the material tons accounted for at that time

4.4.3.4 Phase I – Stage 5D through 5F (2020 to 2023)

4.4.3.4.1 General Description

1. Mining resumed in June 2020 following lead agency approval of minor mine plan modifications that approved the processing of *backfilled* protore. The 1998 Plan recognized that operations occurring then could not afford the costs of processing the low-grade protore mineralization, leading the operator to categorize it as waste (overburden) and place it at either overburden sites or sequentially backfilled into the JSLA pit. While the material was then treated as overburden, today it is protore.

2. The 2020 Plan update recommended that protore should be processed before any significant pit mining resumed, though the latter remained authorized. The 2022 Plan similarly focuses mining during Stages 5D to 5F to continue the removal of all remaining stockpiled protore at CMM.

3. Other ancillary facilities and expansions, such as heap leach pad expansions and overburden site expansions not previously completed per the approved schedule, will be completed during the remaining Stage 5D to 5F activity.

4. Revegetation activity resumed in 2020 with the re-establishment of approved facilities. Plant species identified in the approved reclamation plan have been salvaged from all disturbance areas and transplanted to the existing North Nursery. The plant inventory at the North Nursery reached capacity in 2021, and by late 2021, a second nursery (East Nursery) was opened within the footprint of the South Overburden Site. The inventory of both plant nurseries was recorded in late 2021 and is discussed in more detail in Section 5.0.

5. A greenhouse facility was re-established at the North Nursery in 2021.

4.4.3.4.2 Growth Media

1. Approximately 283,000 cubic yards of growth media from previous stockpiles and new disturbance have been relocated to one of four current growth media stockpiles. The locations are shown in **Figure 2-7**.

4.4.3.4.3 Mine Pits

1. Protore mining resumed in June 2020 at the JSLA pit; using the current mining rate as a metric, protore removal from the JSLA pit could last until 2026, at which point the original mined contours of the JSLA pit would be fully excavated.

2. Protore removal from the South Overburden site also began in 2021.

4.4.3.4.4 Overburden Sites

1. Drilling the backfilled protore at the JSLA pit has identified pockets of material with low or no mineralization. This material will be placed at the North Overburden Site, like the original Stages 5D to 5F plan.

4.4.3.4.5 Heap Leach Pad

1. The historic heap leach pad was closed in 2010 during interim reclamation, and rather than try and reopen the closed pad, an expanded heap leach pad liner system was approved[62] and installed in 2020. Land already approved for a heap leach pad (1998 Plan), adjacent and west of the historic pad, was used for the 76-acre pad expansion, identified as the Phase 1A heap leach pad expansion.

2. A second pad expansion was constructed in 2022. It included an additional 50 acres of permitted disturbance adjacent to the north end of the Phase 1A pad. The second pad expansion is identified as pad expansion Phase 1B/C.

3. We do not anticipate needing another heap leach pad expansion until activities proposed in the 2022 Plan are authorized. If they are not approved or permitting is delayed, the final approximate 65 acres of land permitted for leach pad activity will be developed at the northwest end of the historic pad.

4.4.3.4.6 Mine Facilities

1. Mine support facilities were primarily removed in the early 2000s owing to the site's interim reclamation. These facilities have since been re-established at their authorized (1998 Plan) locations as mining resumed in 2020.

2. The process plant, tanks, and stormwater ponds were re-installed in 2020 and will continue to be used for operations proposed in the 2022 Plan, though the CIC plant and ponds will be expanded.

3. Administrative offices and the mine contractor support facility were re-established at their approved locations.

4. Resumed mining activity ramped up slowly since 2020; this initially included processing the stockpiled protore as a *run-of-mine* ("ROM") operation where the ore was loaded on 100-ton haul trucks, delivered to the heap leach pad and end-dumped onto the pad. This method is efficient and does not involve blasting, crushing, milling, agglomeration, or overland conveying activity that historically occurred and is authorized at CMM.

5. Beginning in 2022, the run-of-mine process was phased out as traditional ore processing resumed; this included ore sorting, reduction, and agglomeration, all approved activities at CMM. Agglomeration was identified as a critical step of ore processing that binds the fine clay materials into larger particle sizes. This clay material is prevalent at CMM, an homage to the historic clay mining since the early 1900s. If not addressed through agglomeration, it would bind material pore space on the leach pad and inhibit gold recovery. Poor gold recovery promotes longer leaching cycles at the pad and higher water use. Ultimately, ore material agglomeration provides the most efficient metal recovery and water use at the leach pad. It also reduces the likelihood of solution ponding on the surface of the ore material, thereby reducing the potential for wildlife impacts.

4.4.3.4.7 Roads

1. Primary, Secondary, and Tertiary crushing may not resume in full effect until activities proposed in the 2022 Plan are authorized. Until that time, ore hauling will continue from the mine pits along the

[62] Permitted through the Colorado River Basin Regional Water Quality Control Board as WDRs Board Order No. # R7-2020-0004.

conveyor corridor/haul road to the permitted ore agglomeration point located where the Comminution Plant was authorized.

4.4.3.5 Phase II – Stage 6 (2024 to 2025)

4.4.3.5.1 General Description

1. The 1998 Plan explained that if economic conditions warrant, mining would expand to the South Extension pit and extend at existing Jumbo and Oro Belle pit boundaries to recover additional mineralization adjacent to the Phase I mining boundaries. Accordingly, Phase II of the mining plan would be implemented at Stage 6 of the 1998 Plan. The schedule and breadth of these activities have been amended in the proposed 2022 Plan to account for the growth of recoverable mineral resources. The proposed extension to permitted mining requires reorganization of the Stage 6 schedule; accordingly, we've suggested this stage be divided into seven substages, 6A to 6G.

2. Stage 6 will remain a precursor to the proposed substages. If a permit is delayed or otherwise not authorized, Phase II Stage 6 mining activity will occur as originally planned and approved. At this time, and for simplicity, this plan assumes that some version of the proposed activities will be approved, and there isn't a need to detail the originally planned Stage 6 activities already included in the 1998 Plan.

3. Mining stockpiled protore would continue in Stage 6. Fresh hard-rock mining (both authorized and proposed) at the JSLA and the (approved) South Extension pits may occur during this stage as preproduction mining related to Stage 6A. The configuration of the pits, overburden sites, and leach pad after Stage 6 is shown in **Figure 4-10**.

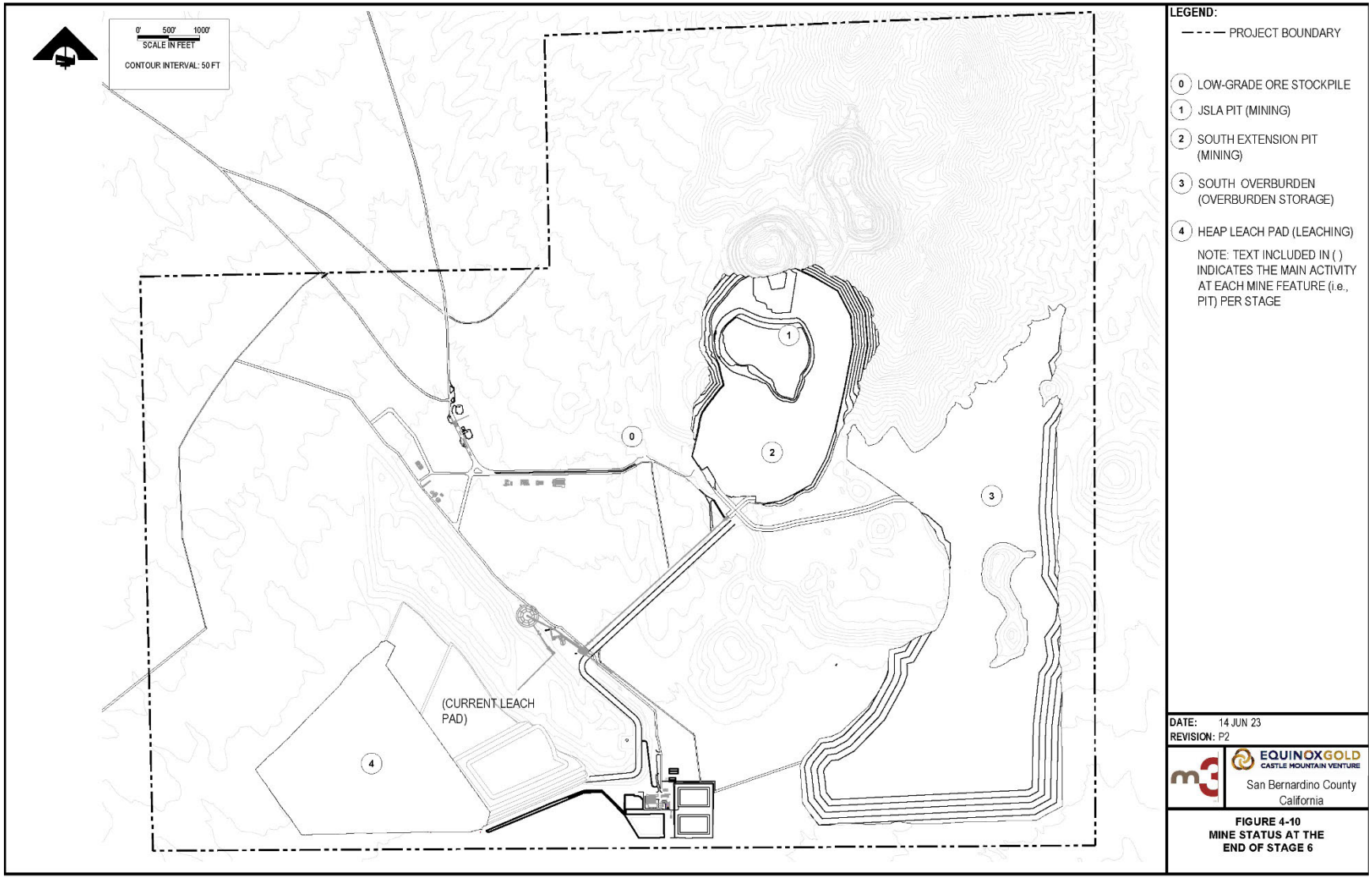


Figure 4-10. Mine Status at the End of Stage 6.

4. Stage 6 would also be a construction stage for proposed 2022 Plan activities if the permitting schedule proceeds as planned and construction-related activities are approved to start by 2024 to 2025. If permitting is delayed, Stage 6 would also be extended as required up to the current approved mining and leaching schedule, presently scheduled to end December 2026.

5. An estimated 495 acres of 2022 Plan facility expansion would occur during this stage. The estimated land disturbance by the mine stage is shown in **Table 4-6**.

4.4.3.5.2 Growth Media

1. More growth media would be salvaged during this stage than at any other due to the ramp-up of site construction activity. Growth media stockpile locations and volumes collected through Stage 6 are presented **in Table 4-7**. Salvaged growth media would be stockpiled at locations identified as A1, A3, B1, C1, and C3 in **Table 4-2**. Approximately 804,000 cubic yards of growth media would be collected from the following areas:
    - South Overburden Site
    - Support Facilities
    - Process Plant and Ponds
    - Heap leach pad expansion

4.4.3.5.3 Mine Pits

1. Mining existing protore stockpiles would continue at the JSLA pit and the South Overburden Site. Hard-rock blasting and mining at the JSLA and (approved) South Extension pits may begin within approved limits as pre-production mining preparation for Stage 6A.

2. An estimated 12 million tons of ore and 67 million tons of overburden would be moved by the end of Stage 6.

3. JSLA pit floor elevation would be approximately 4,260 feet by the end of this stage.

4.4.3.5.4 Overburden Sites

1. The overburden sorted from the backfill protore stockpile at the JSLA pit and the South Overburden Site would be transported to the North Overburden site and South Overburden site.

4.4.3.5.5 Mine Facilities

1. Construction of the 2022 Plan facilities would be scheduled during this stage. Facility construction would include:

    - Crushing plants
    - Support facilities
    - Process plant expansion
    - South overburden expansion
    - Heap leach pad expansion
    - LNG turbines

4.4.3.5.6 Heap Leach Pad

1. Approximately 12.4 million tons of ore-bearing material would be placed on the pad during this substage. This material will be placed in lifts of 20 to 30 feet.

2. There would be an estimated 150 acres of land disturbance to account for the westward expansion of the pad.

4.4.3.5.7 Roads

1. Support facilities would be relocated during this stage to move further away from planned pit mining. Facilities include the administrative offices, parking, security, receiving warehouse, and mining maintenance shop. Access to most of these facilities will overlay existing access roads, but some require repair or upgrade.

2. Approximately 3,000 feet of the existing main access road would be upgraded to a haul road to accommodate haul truck traffic from the existing mine maintenance shop to the relocated maintenance shop. The new location will be along the south side of the final 2,000-foot section of the main access road before the current mine entrance gate, see **Figure 1-2h.**

3. New York Mountain Road will be realigned north to intersect Hart Mine Road just northwest of the North Nursery. This modification would keep the road open to the public while preserving public safety by keeping the unauthorized public away from mining hazards. This road alignment is included in **Figure 2-9** in Section 2.0 of this plan.

4. A new (short) section of the CMM Access Road would be constructed to route the current road around a corner section of the Mojave National Preserve.

4.4.3.6 Stage 6A

4.4.3.6.1 General Description

1. Mining Stages and their chronological relationships are shown in **Table 4-5**. While each substage has an estimated start and end year, the start and end points will include some considerable overlap between the prior substage and the next scheduled substage. Nonetheless, the substage identified for select years is the dominant activity for those years, meaning it represents the most tons of material moved for the period identified.

2. Stage 6A represents the first complete proposed substage identified in the 2022 Plan, and it is scheduled to begin by 2026 and end by 2028. The status of the mine at the end of this substage is shown in **Figure 4-10a**. **Table 4-8** shows the estimated amount of mined material that would be excavated by the end of the substage.

3. An estimated 336 acres of new facility expansion would occur during this stage. The estimated land disturbance by the mine stage is shown in **Table 4-6**.

4. Land disturbance will include northeast extension of the JSLA pit, southeast expansion of the South Overburden Site, expansion of the heap leach pad, two new growth media stockpiles, and relocation of existing support facilities:
   - Crushing Plant
   - Mine property entrance and security
   - Administrative office and parking
   - Receiving warehouse
   - Mine maintenance area
5. Perimeter chain link and desert tortoise exclusion fencing would be installed, as shown in **Figure 2-8.**

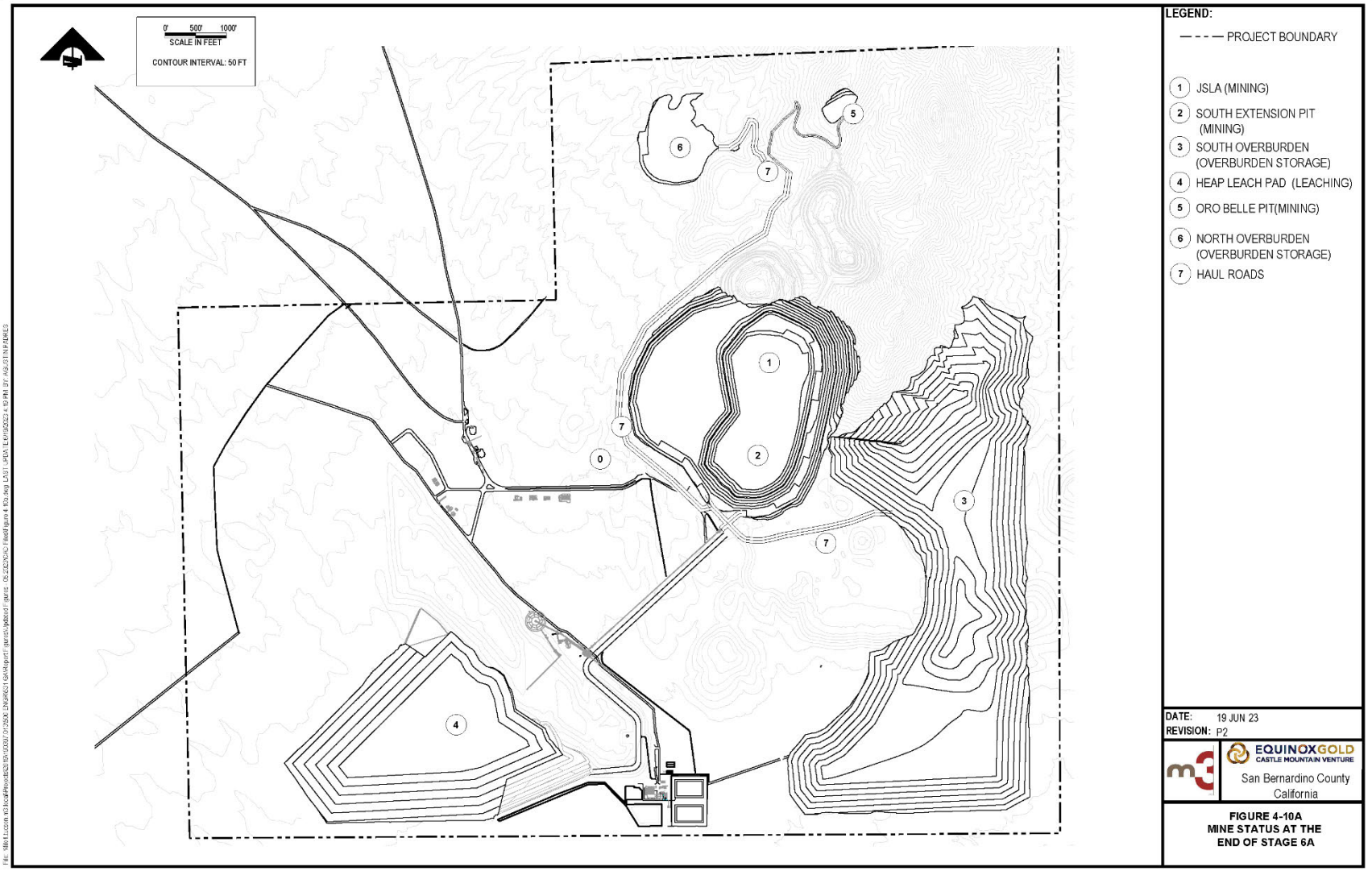


Figure 4-10a. Mine Status at the End of Stage 6A

4.4.3.6.2 Growth Media

1. Growth media stockpile locations and volumes collected through Stage 6A are presented in **Table 4-7.** Salvaged growth media would be stockpiled at locations C1, C3, and B1 in Table 4-2. Approximately 377,000 cubic yards of growth media will be collected from the following areas:
    - North Overburden Site
    - Mine pits
    - Heap leach pad expansion

4.4.3.6.3 Mining Pits

1. Mining would continue in the JSLA pit, specifically the central and eastern zones, extending the current high wall further east. Minor amounts of previously mined backfill will still be removed during the early development of this stage. No additional acres of new land disturbance are required for JSLA mining during this substage. Mine would also extend into the approved (1998 Plan) portion of the South Extension Pit.
2. By the end of this substage, the JSLA and Ore Belle pit floor elevations will be approximately 3,800 and 5,000 feet, respectively.
3. By the end of Stage 6A, approximately 56 million tons of ore and 122 million tons of overburden will be removed from the JSLA pit.
4. Ore will be delivered to the Primary Crusher via the haul road through the current JSLA pit area. Any low-grade ore from the JSLA pit would be stockpiled on the low-grade stockpile.

4.4.3.6.4 Overburden Sites

1. Approximately 123 million tons of overburden from the pits will be placed in the South Overburden Site during this substage, disturbing an additional 230 acres of land at the southeast corner of the project boundary. The southern two-thirds of the expanded South Overburden Site will be developed during this substage.
2. Expansion of the North Overburden site will also begin with about 20 acres disturbed.

4.4.3.6.5 Heap Leach Pad

1. This substage will place approximately 56 million tons of ore on the pad. This material will be placed in lifts of 20 to 30 feet.

There will be approximately 70 acres of land disturbance to account for the westward expansion of the pad.

4.4.3.6.6 Mine Facilities

1. There would be no changes to mine facilities during this substage.

4.4.3.7 Stage 6B

4.4.3.7.1 General Description

1. The status of the mine at the end of Stage 6B is shown in **Figure 4-10b.** This substage is scheduled to begin by year 2029 and end by 2030.

An estimated 203 acres of new facility expansion will occur during this stage. The estimated land disturbance by the mine stage is shown in **Table 4-6**.

4.4.3.7.2 Growth Media

1. Growth media stockpile locations and volumes collected through Stage 6B are presented in **Table 4-7**. Salvaged growth media will be stockpiled at locations A2, C2, E1, E2, and B1 in **Table 4-2**. Approximately 505,000 cubic yards of growth media will be collected from the following areas:

    - North Overburden Site
    - Mine pits
    - Heap leach pad expansion
    - Process plant and ponds

4.4.3.7.3 Mine Pits

1. Mining will continue in the JSLA pit, but the focus will shift to the west side and continue in the approved (1998 Plan) portion of the South Extension Pit. Mining will also begin at the Oro Belle pit to the northeast. An estimated 15 acres of proposed land disturbance occurred by mine pit development during this substage, represented in **Figure 4-10b.**

2. By the end of this substage, the JSLA and Oro Belle pit floor elevations will be approximately 3,600 and 4,600 feet, respectively.

3. Approximately 38 million tons of ore will be mined during this substage, 33 million tons from the JSLA and South Extension pits, and 5 million tons from the Oro Belle pit.

4. Ore will be delivered to the Primary Crusher via the haul road through the current JSLA pit area. A haul road will also be developed from the Oro Belle pit area to connect to the existing haul road at JSLA. Low-grade ore from the JSLA pit will be stockpiled on the low-grade stockpile.

4.4.3.7.4 Overburden Sites

1. Approximately 78 million tons of overburden will be excavated during this substage. Approximately 8 million tons of overburden from the JSLA and South Extension pits will be moved to develop the northern extent of the South Extension pit. Approximately 34 million tons will be mined from the JSLA pit and the combined 42 million tons will be placed at the North Overburden Site. Approximately 36 million tons of overburden will be mined from the Oro Belle pit and placed adjacent to the west side of the pit at the North Overburden Site.

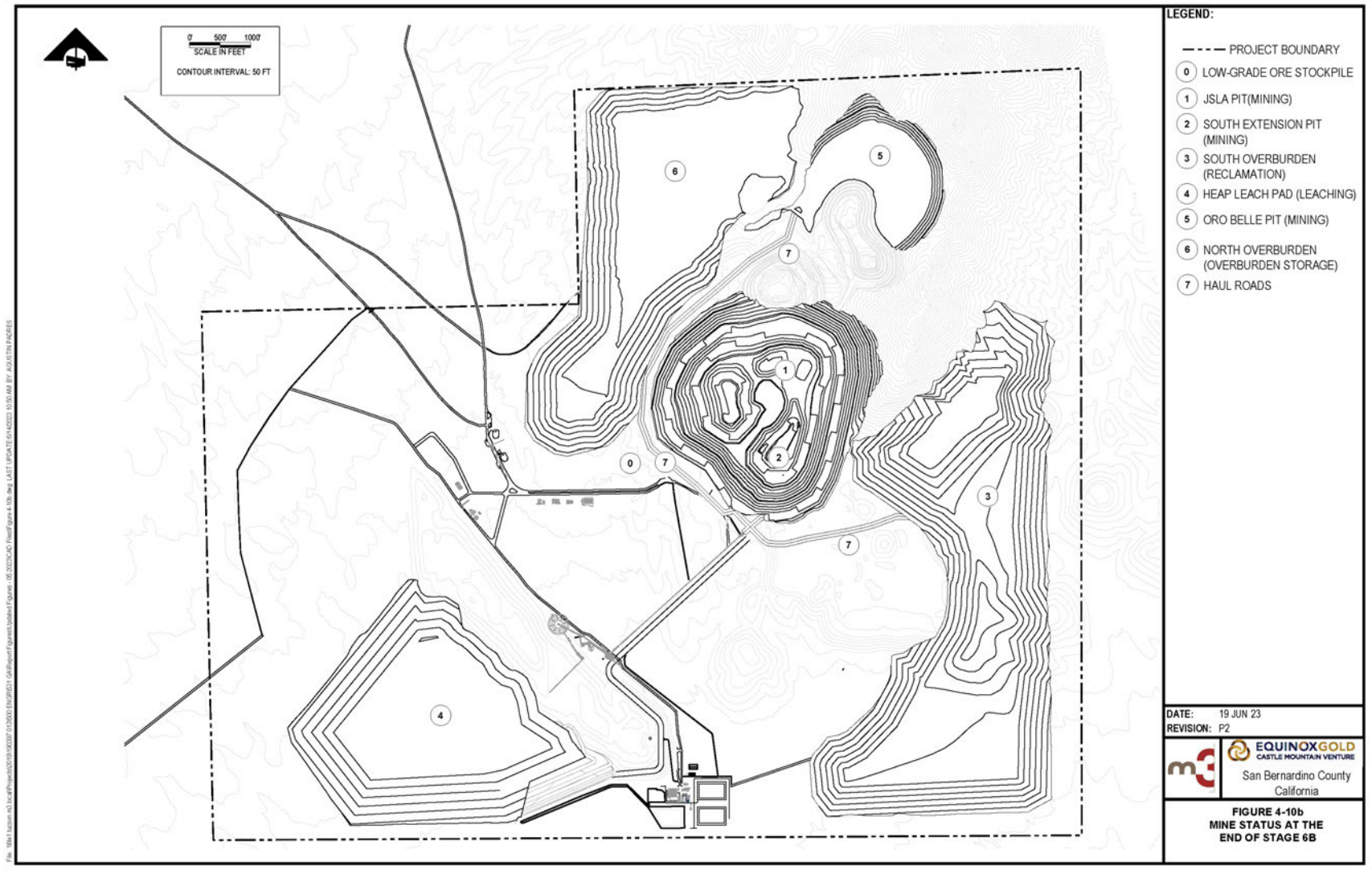


Figure 4-10b Mine Status at the End of Stage 6B

2. During this substage, the South Overburden Site will not see additional land disturbance, while the North Overburden Site will expand by about 96 acres of new disturbance.

4.4.3.7.5 Heap Leach Pad

1. During this substage, approximately 38 million tons of ore will be mined and stacked on the leach pad. This material will be placed in lifts of 20 to 30 feet.

There will be 80 acres of land disturbance to account for the northern expansion of the pad.

4.4.3.7.6 Mine Facilities

1. Growth media stockpiles C2, E1, and E2 will be developed. Otherwise, there will be no additional changes to mine facilities during this substage.

4.4.3.8 Stage 6C

4.4.3.8.1 General Description

1. The status of the mine at the end of Stage 6C is shown **in Figure 4-10c**. This substage is scheduled to begin by year 2031 and end by 2033.

2. An estimated 217 acres of Phase II facility expansion will occur during this stage. The estimated land disturbance by the mine stage is shown in **Table 4-6**.

4.4.3.8.2 Growth Media

1. Growth media stockpile locations and volumes collected through Stage 6C are presented in **Table 4-7**. Salvaged growth media will be stockpiled at locations A2, A3, E1, and E2, identified in **Table 4-2**. Approximately 236,000 cubic yards of growth media will be collected from the following areas:

    - Mine pits
    - Heap leach pad expansion

4.4.3.8.3 Mine Pits

1. Mining will continue in the JSLA pit, but the primary focus will shift to the Jumbo and Oro Belle pits. Late into the substage, mining will also begin to push the Oro Belle high walls southeast. An estimated 60 acres of proposed land disturbance will occur by mine pit development during this substage; this is represented in **Figure 4-10c.**

2. By the end of this substage, the JSLA, Jumbo, and Oro Belle pit floor elevations will be approximately 3,900, 4,150, and 4,600 feet, respectively.

3. Approximately 57 million tons of ore will be mined during this substage, with 13 million tons from the JSLA pit, 32 million tons from the combined Jumbo + Oro Belle pit, and an additional 12 million tons from the southeast pushback of the east Oro Belle pit walls.

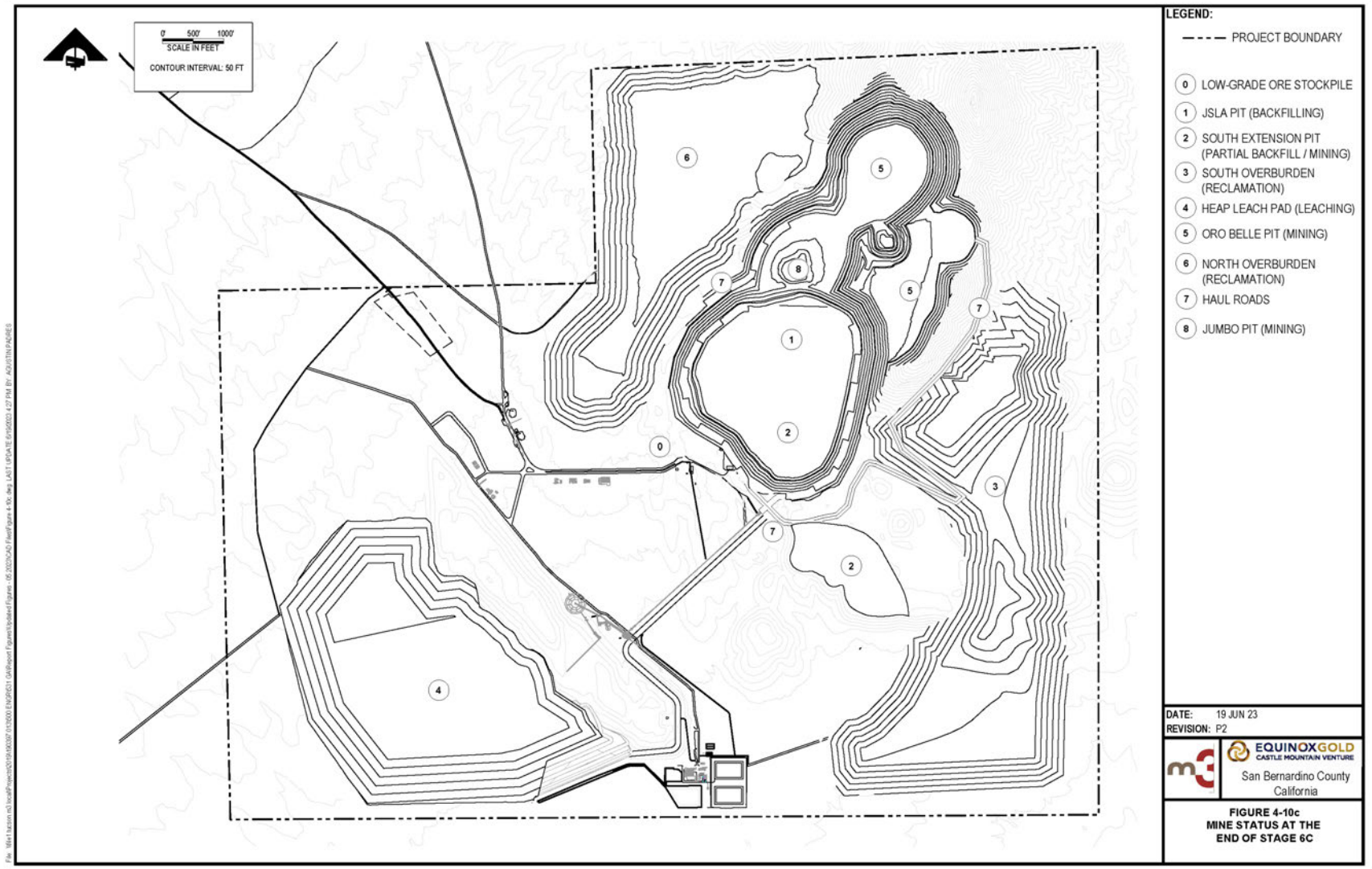


Figure 4-10c Mine Status at the End of Stage 6C

4. Ore will be delivered to the Primary Crusher via the haul road around the current JSLA pit area. A haul road will also be developed to link the Oro Belle pit to the existing haul road at the combined Jumbo and Oro Belle pit. Low-grade ore from the JSLA pit will be stockpiled on the low-grade stockpile.

4.4.3.8.4 Overburden Sites

1. Approximately 142 million tons of overburden material will be moved during this substage. This includes 19 million tons mined from the JSLA pit that will be placed at the North Overburden Site; 83 million tons mined from the combined Jumbo and Oro Belle pits will be placed at the North Overburden Site; 36 million tons mined from the Oro Belle pit will be placed in JSLA as backfill along with 4 million tons from the South Extension pit.

2. The North Overburden Site will be further developed, resulting in the proposed disturbance of an additional 66 acres. By the end of this substage, overburden placement at both overburden sites will be completed, and all additional overburden will be used as backfill for the northern pit complex of JSLA, Jumbo, and Oro Belle pits.

3. Stage 6C will begin significant backfilling, using overburden material mined from the remaining mine pit development to sequentially backfill the identified open pits. During this substage, 65 million tons of overburden will be used to backfill the JSLA pit.

4.4.3.8.5 Heap Leach Pad

1. During this substage, approximately 57 million tons of ore will be placed on the pad in lifts of 20 to 30 feet.

There will be 80 acres of new land disturbance to account for the westward expansion of the pad.

4.4.3.8.6 Mine Facilities

1. There will be no change to mine facilities during this substage.

4.4.3.9 Stage 6D

4.4.3.9.1 General Description

1. The status of the mine at the end of Stage 6D is shown in **Figure 4-10d**. This substage is scheduled to begin by year 2034 and end by 2036.

An estimated 127 acres of new facility expansion will occur during this stage. The estimated land disturbance by the mine stage is shown in **Table 4-6.**

4.4.3.9.2 Growth Media

1. Growth media stockpile locations and volumes collected through Stage 6D are presented in **Table 4-7**. Salvaged growth media will be stockpiled at locations A2 and A3, identified in **Table 4-2**. Approximately 305,000 cubic yards of growth media will be collected from the following areas:

    - Mine pits
    - Heap leach pad expansion

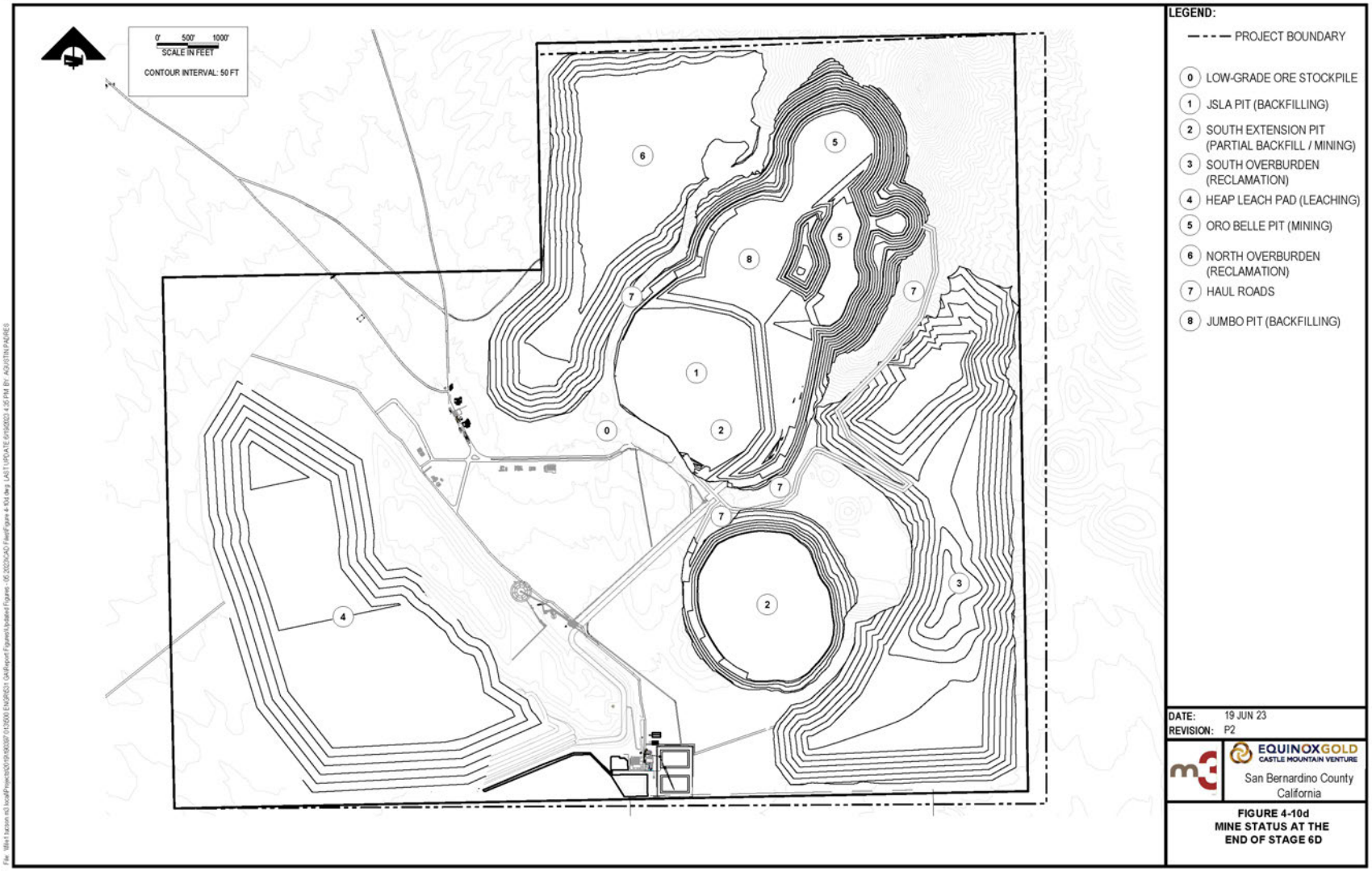


Figure 4-10d Mine Status at the End of Stage 6D

4.4.3.9.3 Mine Pits

1. Mining during Stage 6D will focus on the combined Jumbo and Oro Belle pits. Mining will also begin to expand JSLA south into the (expanded) South Extension pit complex. An estimated 26 acres of proposed land disturbance will occur by mine pit development during this substage, as represented in **Figure 4-10d**.

2. By the end of this substage, the Jumbo, Oro Belle, and South Extension pit floor elevations will be approximately 4,200, 4,000, and 4,000 feet, respectively.

3. Approximately 57 million tons of ore will be mined during this substage, with 25 million tons from the Jumbo and Oro Belle pits, 26 million tons from the Oro Belle pit, and 6 million tons from the South Extension pit.

   Ore will be delivered to the Primary Crusher via existing in-pit haul roads. Low-grade ore will be stockpiled in the low-grade stockpile.

4.4.3.9.4 Overburden Sites

1. All overburden excavated, beginning with this substage, will be used to backfill the northern pit complex. Approximately 178 million tons of overburden material will be moved during this substage. This includes 18 million tons mined from the Jumbo and Oro Belle pits and placed back into the JSLA pit; 44 million tons mined from Oro Belle pit and placed back into both the JSLA, Jumbo, and Oro Belle pits; and 116 million tons mined from the South Extension pit and placed back into the JSLA pit.

4.4.3.9.5 Heap Leach Pad

1. This substage will place approximately 57 million tons of ore on the pad. This material will be placed in lifts of 20 to 30 feet.

2. There will be 80 acres of land disturbance to account for the westward expansion of the pad.

4.4.3.9.6 Mine Facilities

1. There will be no change to mine facilities during this substage.

4.4.3.10 Stage 6E

4.4.3.10.1 General Description

1. **Figure 4-10e** shows the mine's status at the end of Stage 6E. This substage is scheduled to begin in 2037 and end in 2039.

2. An estimated 15 acres of ne facility expansion will occur during this stage. The estimated land disturbance by the mine stage is shown in **Table 4-6.**

4.4.3.10.2 Growth Media

1. Growth media stockpile locations and volumes collected through Stage 6E are presented in **Table 4-7**. Salvaged growth media will be stockpiled at locations A1 and A2, identified in **Table 4-2.** Approximately 51,000 cubic yards of growth media will be collected from the expansion of the leach pad.

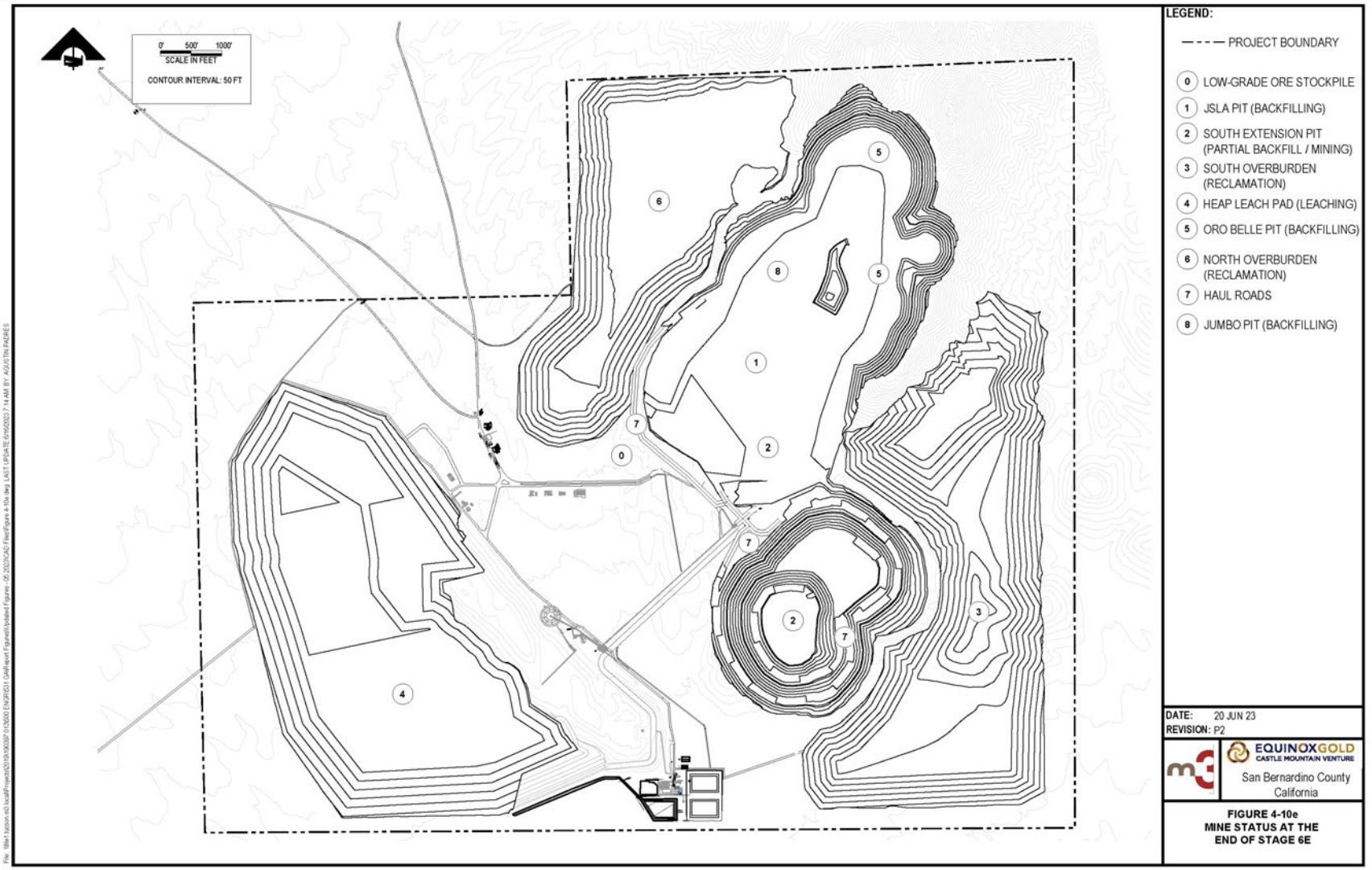


Figure 4-10e. Mine Status at the End of Stage 6E

4.4.3.10.3 Mine Pits

1. Mining will end in the Oro Belle pit early in this substage, and most mining will occur in the (expanded) South Extension pit complex. The South Extension pits have a considerably higher initial stripping ratio due to the high-grade ore at depth. No new land disturbance will occur by mine pit development during this substage; this is represented in **Figure 4-10e**.
2. The South Extension pit floor elevation will be approximately 3,400 feet by the end of this substage.
3. Approximately 57 million tons of ore will be mined during this substage, 2 million tons from the Oro Belle pit and 55 million tons from the South Extension pit.
4. Ore will be delivered to the Primary Crusher via an in-pit haul road. Low-grade ore will be stockpiled on the low-grade stockpile.

4.4.3.10.4 Overburden Sites

1. Approximately 147 million tons of overburden material will be moved during this substage. This includes 3 million tons mined from the Oro Belle pit and 144 million tons from the South Extension pit. All overburden will be placed as backfill in the JSLA, Jumbo, and Oro Belle pits.

4.4.3.10.5 Heap Leach Pad

1. During this substage, approximately 57 million tons of ore will be placed on the pad in lifts of 20 to 30 feet.
2. There will be 15 acres of new land disturbance for pad expansion.

4.4.3.10.6 Mine Facilities

1. There will be no change to mine facilities during this substage.

4.4.3.11 Stage 6F

4.4.3.11.1 General Description

1. **Figure 4-10f** shows the mine's status at the end of Stage 6F. This substage is scheduled to begin in 2040 and end in 2041.
2. No new land disturbance is proposed during this stage of the 2022 Plan.

4.4.3.11.2 Growth Media

1. Growth media will not be salvaged during this substage because no new land disturbance will occur.

4.4.3.11.3 Mining Pits

1. Mining will end in the (expanded) South Extension (west) pit in 2040 and continue in the east pit through the end of 2041. No new land disturbance will occur by mine pit development during this substage; this is represented in **Figure 4-10f**.
2. The South Extension pit floor elevation will be approximately 3,000 feet by the end of this substage.
3. Approximately 14 million tons of ore will be mined from the South Extension pit during this substage.

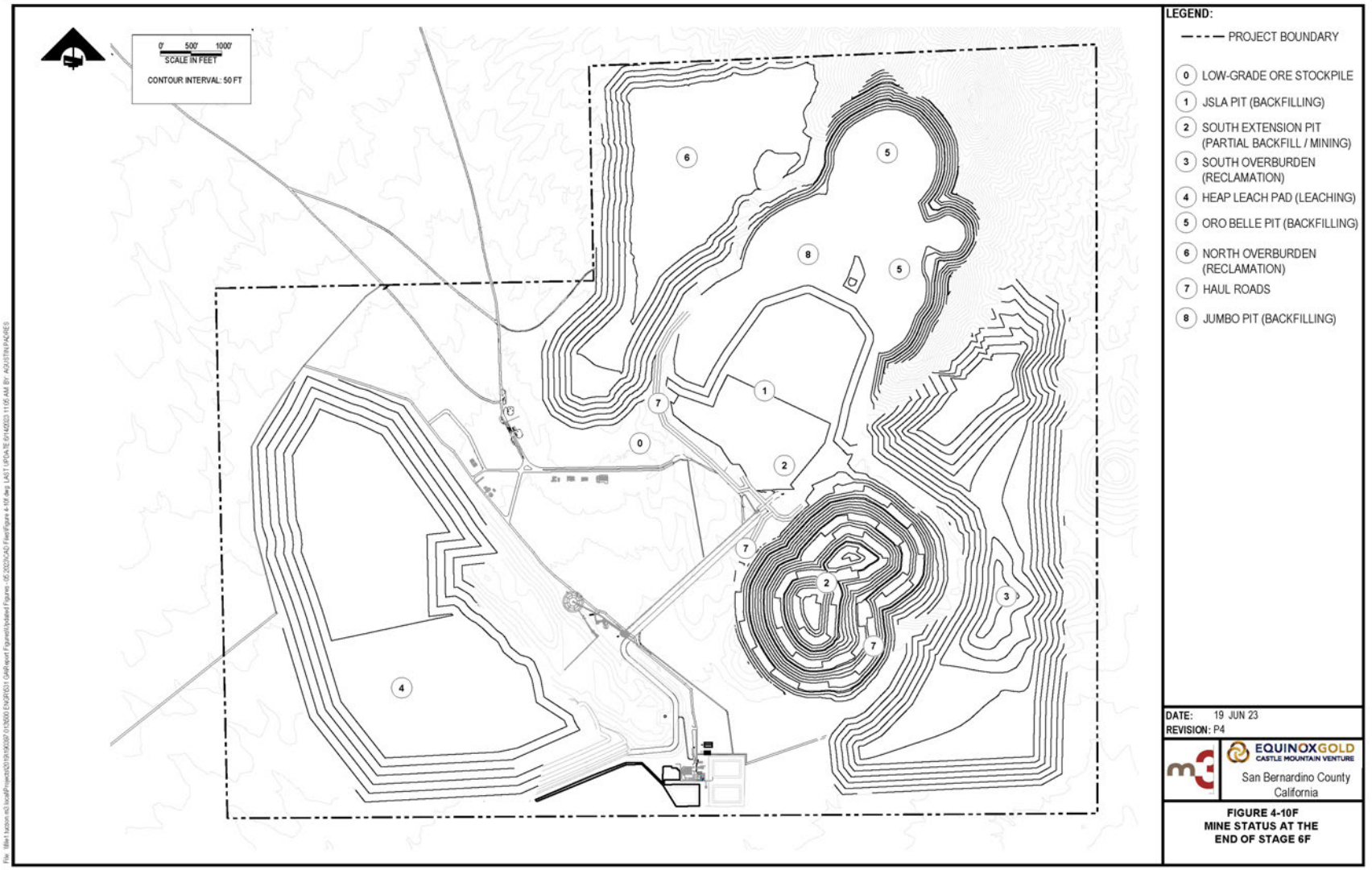


Figure 4-10f Mine Status at the End of Stage 6F

4. Ore will be delivered to the Primary Crusher via the existing in-pit haul roads. Low-grade ore will be stockpiled on the low-grade stockpile.

4.4.3.11.4 Overburden Sites

1. Approximately 10 million tons of overburden material will be moved during this substage. Overburden will be mined from the South Extension pit and placed into the northern pits as backfill.

4.4.3.11.5 Heap Leach Pad

1. During this substage, approximately 14 million tons of ore will be placed on the pad in lifts of 20 to 30 feet.

2. There will be no new land disturbance of the pad.

4.4.3.11.6 Mine Facilities

1. There will be no change to mine facilities during this substage.

4.4.3.12 Stage 6G

4.4.3.12.1 General Description

1. The status of the mine at the end of Stage 6G is shown in **Figure 4-10g**. This substage is scheduled to begin by 2042 and end by 2045.

2. 2022 Plan mining Stages and their chronological relationships are shown in **Table 4-5**. While each substage has an estimated start and end year, the start and end points will include some considerable overlap between the prior substage and the next scheduled substage. For this reason, we've added the last substage, Stage 6G, as a placeholder for any delay in the schedule. Also, additional material will likely be added to the ore reserve category as the mine schedule progresses. Processing of these current resource-grade materials and any low-grade ore stockpiles will occur during this substage.

3. No new land disturbance will occur during this substage.

4.4.3.12.2 Growth Media

1. No new growth media salvage is required for this substage.

4.4.3.12.3 Mining Pits

1. Mining the resource-grade materials along the north high walls of the South Extension pits may occur during Stage 6G. No new land disturbance is expected.

2. Ore will be delivered to the Primary Crusher via existing in-pit haul roads.

4.4.3.12.4 Overburden Sites

1. All overburden material mined during this substage will be placed as backfill throughout the northern pits.

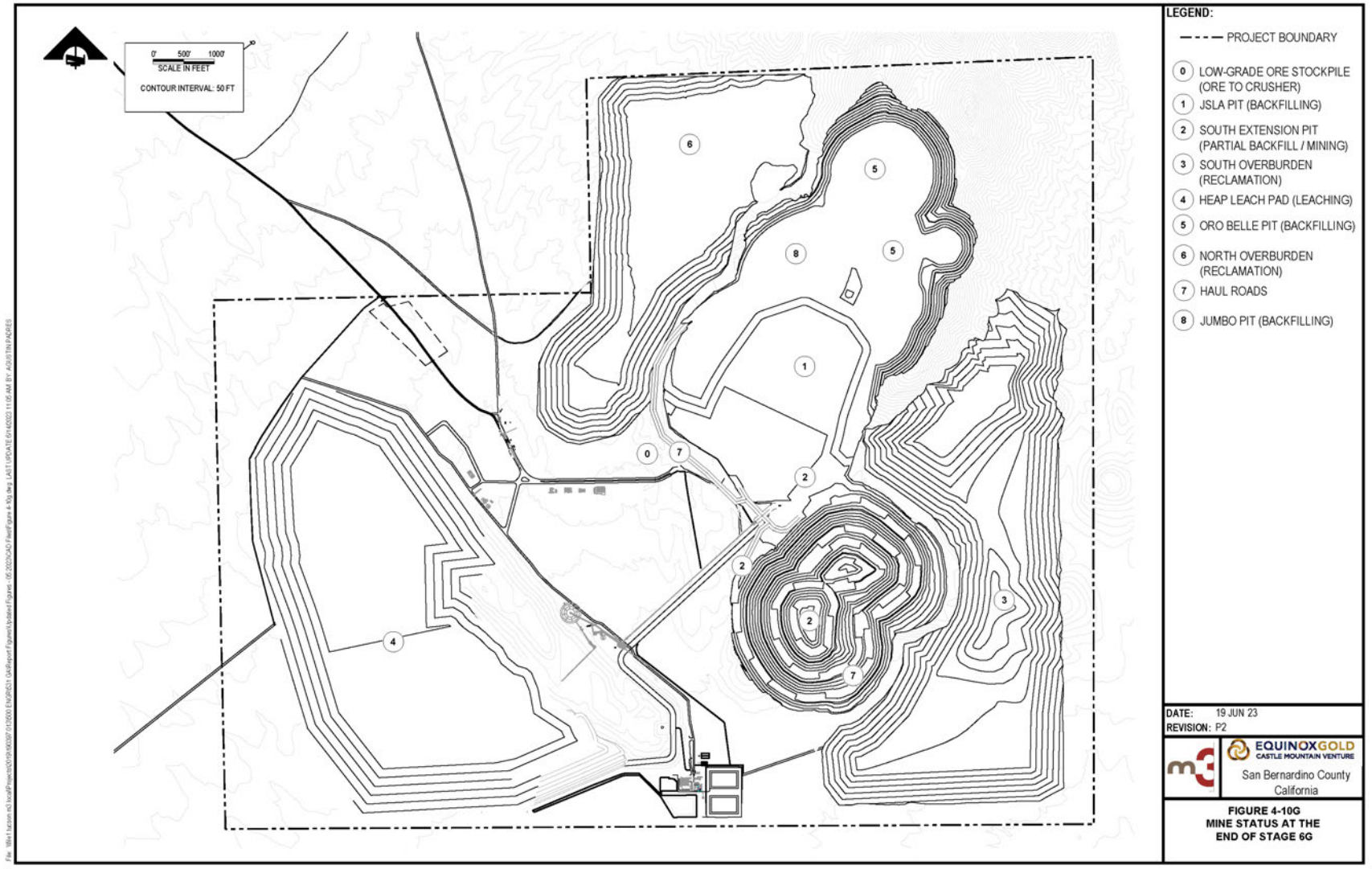


Figure 4-10g. Mine Status at the End of Stage 6G

4.4.3.12.5 Heap Leach Pad

1. Low-grade ore stockpiles will be crushed and stacked on the leach pad during this stage.

2. No new land disturbance is required during this substage.

4.4.3.12.6 Mine Facilities

1. There is no change to mine facilities during this substage.

4.4.3.13 Stage 7

1. Stage 7 is scheduled for 2046 to 2048 after Stage 6G ends, and no further ore will be added to the Heap Leach Pad. Circulation of barren solution through the heaped ore will continue to extract additional gold during Stage 7.
2. Many factors contribute to the required time to re-leach and rinse the previously leached ore on the leach pad. Experience at other mines suggests economic quantities of gold could continue to leach from the pad for as much as 24 to 48 months after the last ore is placed on the pad.

3. It is anticipated that two to three years will be required to complete the re-leaching and rinsing of side slopes after they are graded as part of the initial reclamation procedures for the Heap Leach Pad.

4. During Stage 7, the process plant, the solution storage tanks, and stormwater basins will continue in service, but other facilities, such as pit haul roads, will be removed. Once the equipment occupying these sites has been removed, reclamation efforts will commence, and reclamation activities previously started in earlier years on the overburden sites will be intensified.

4.4.3.14 Stage 8

1. Stage 8 is scheduled for 2049 and 2050 and will commence when the circulation of the barren solution is complete. Rinse water will circulate through the heaps until residual cyanide levels meet RWQCB specifications. This process is estimated to take a minimum of two years. Oxidizing chemicals may be added to the rinse water to accelerate detoxification. During this stage, the solution storage tanks and stormwater basins will continue to be in service.

2. Once the RWQCB closure criteria are attained, a closure permit application will be submitted to the RWQCB, and the clean closure process will begin. The circulation of the remaining rinse water will continue until all water is evaporated.

4.4.3.15 Stage 9

1. Stage 9 will commence after decommissioning the leach pad, solution storage tanks, and stormwater basins. The Reclamation Plan (Section 5.0 of this document) discusses activities during this stage. Stage 9 ends when reclamation activities are completed, and the resulting revegetated surfaces meet the success criteria identified in Section 5.0. Based on present information, Stage 9 would end before 2058.

2. Topographic and hydrologic conditions expected at the end of Stage 9 are described in Section 5.0.

4.4.4 Mined Material Geochemical Characterization

1. Gold-bearing ore material mined at CMM is often found in one of two geologic rock types: an altered rhyolite or andesite. Overburden material (waste rock) is most frequently composed of unaltered

rhyolite and, to a lesser extent, the lahar and unaltered andesite geologic formations found at the CMM.

2. Geochemical testing conducted over the past 30+ years has shown the relative scarcity of heavy metals (less gold and silver) and sulfide metals throughout the geology representative of the CMM project. Renewed analytical testing of drill core samples from 2021 to 2025 confirmed this still holds. Testing of ore, overburden, and spent ore material concluded a low potential occurrence of material considered potentially acid-generating or PAG and a similarly low occurrence of materials susceptible to metals leaching. A Waste Rock Management Plan is included in **Appendix F**, and a geochemistry material characterization report is included in **Appendix H.**

4.5 ORE PROCESSING

1. The mechanical and chemical processes used at CMM are substantially unchanged from those activities already approved and included in the 1998 Plan. However, the 2022 Plan amends and increases the rate of ore processing at CMM; also, the secondary and tertiary crushing units will relocate from the primary crushing area to near the comminution (gravity) and agglomeration circuits (and no new land disturbance is required to complete this change).

2. Heap leach gold recovery at the CMM ranges from 55 to 75 percent, depending on which pit the ore is obtained.

3. In June 1992, the Company applied to the agencies seeking permission to construct a Comminution Circuit to conduct milling and gravity separation on a 2-acre site on the heap leach pad. The facility was built in 1993, and the higher-grade portions of the ores were processed at Castle Mountain. A similar facility may be re-established and process ore at about 3,500 tons per day.

4. Ore would continue to be crushed at the primary crushing plant and conveyed along the existing corridor to the eastern edge of the approved leach pad, where secondary and tertiary crushing will occur. From there, the ore may be further reduced (or gravity separated) at the Comminution Plant area, followed by agglomeration with lime and cement and delivered to the leach pad either on the overland conveyor (or, alternately, via haul truck) and stacked on the heap leach pad to continue the leaching process. **Figure 4-11** and **Figure 4-12** provide an estimated design of the leach pad plan and cross-sections, respectively.

5. Crushed ore is stacked on the heap leach pad underlain by two liners, including a synthetic (LLDPE) geomembrane as the primary liner. The liners are separated by a leak detection layer where any leakage is monitored and collected. A Vadose zone leak detection monitoring network is also deployed. Beneath the liners is a compacted subgrade consisting of either native or fill material that is compacted to provide stability and further inhibit solution mobility in the rare case of a liner leak. **Figure 4-13a** and **Figure 4-13b** provide examples of standard liner construction at CMM.

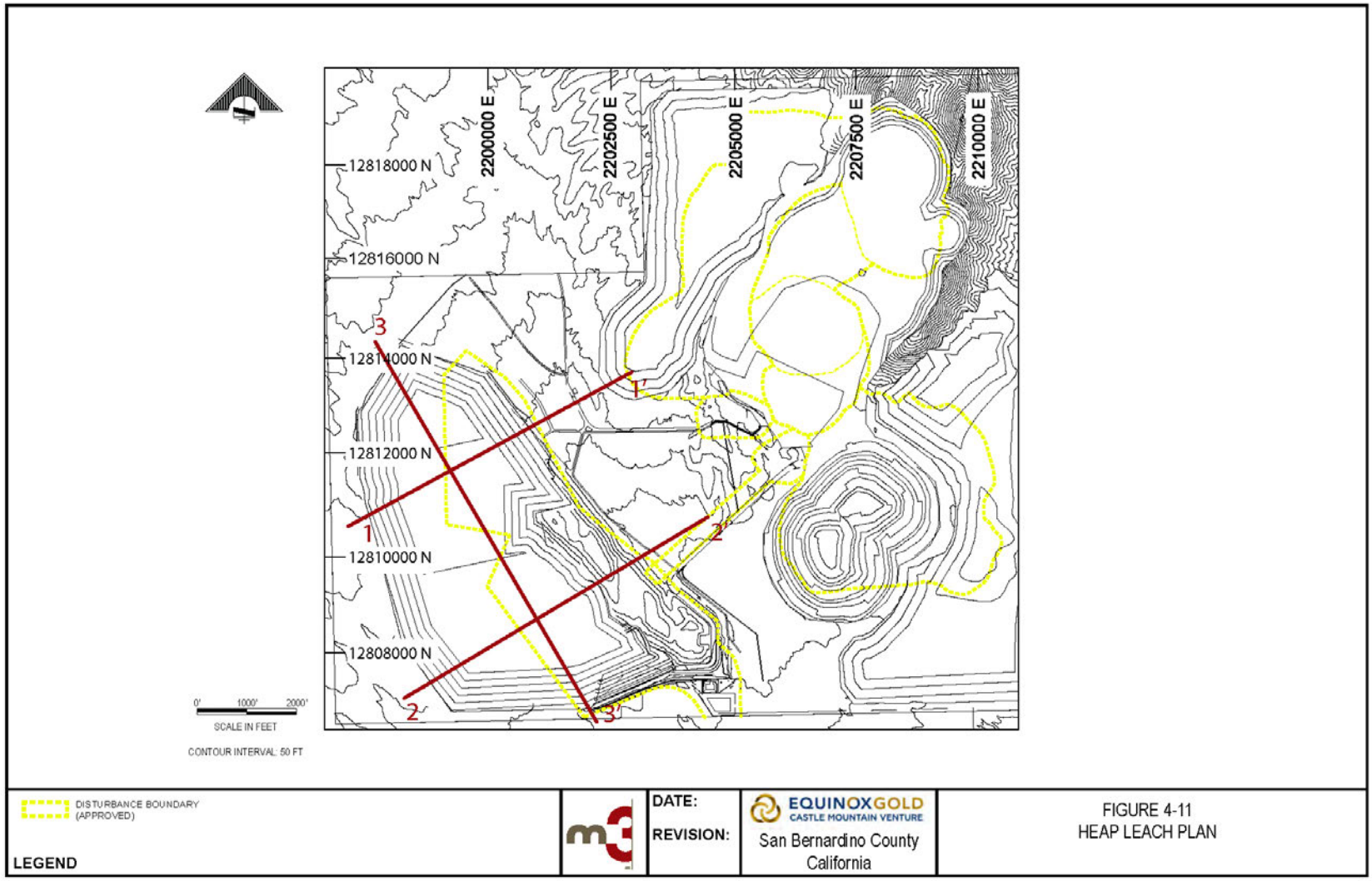


Figure 4-11 Heap Leach Pad Plan

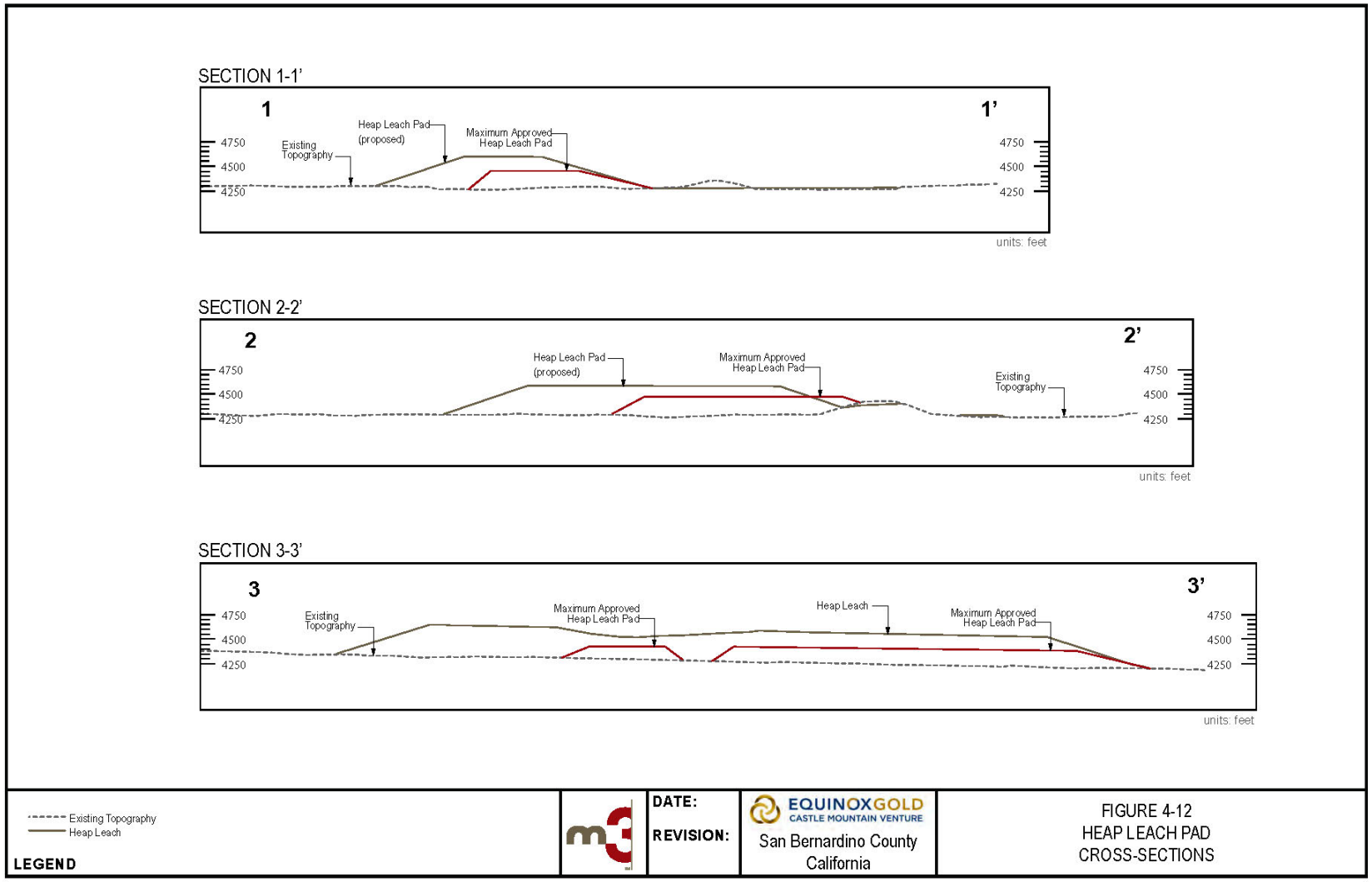


Figure 4-12 Heap Leach Pad Cross-Section

4.6 WATER IMPOUNDMENTS AND DIVERSIONS

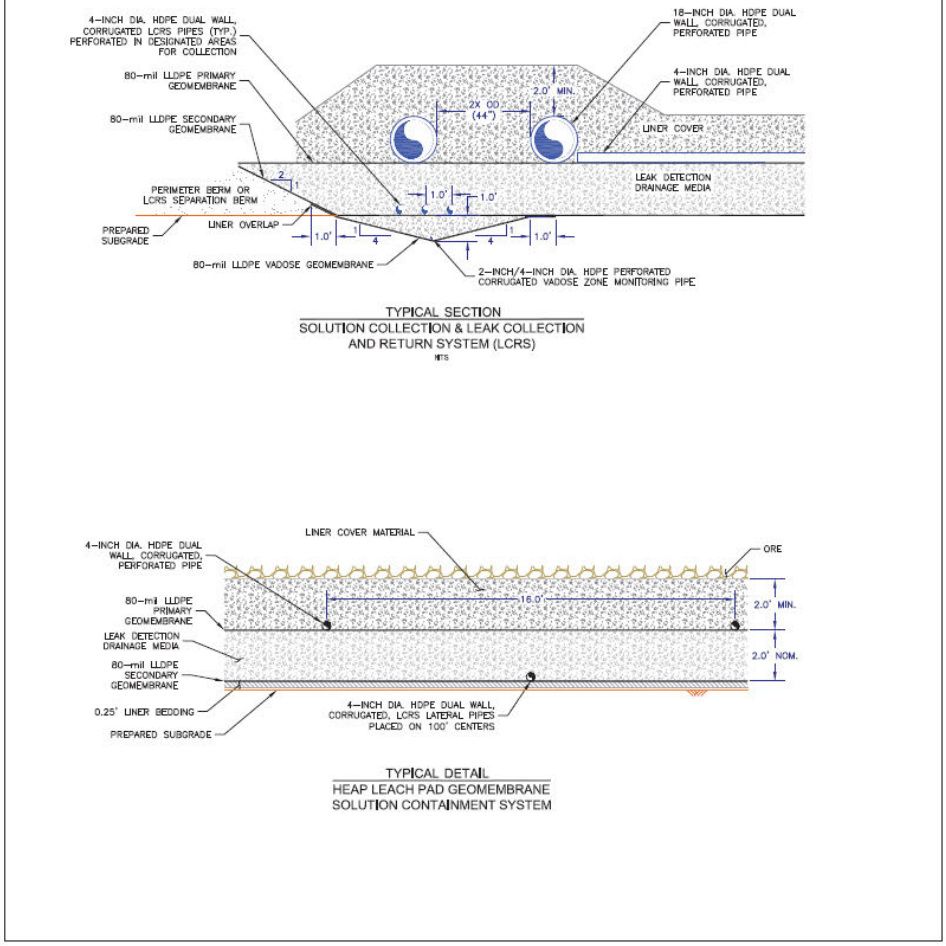
1. Except for three areas, precipitation falling on the mine site drains from the area in existing ephemeral drainages. The exceptions are the open pits and areas underlain by the impermeable liners associated with heap leaching activities. The third exception is the expanded west perimeter of the leach pad, which, as it extends west, intercepts ephemeral features from the northwest and diverts ephemeral flow around the west perimeter of the leach pad. A leach pad perimeter channel will contain any ephemeral flow and link back into existing natural ephemeral features south of the proposed leach pad, thereby partially rerouting any temporary ephemeral flow around the southwest corner of the heap leach pad. **Figure 4-14** shows approximately how this ephemeral flow would be managed.

2. The open pits are located at or near the crest of their respective watersheds and are not expected to impact any substantial ephemeral features. The watersheds cover approximately 407 acres, as **Figure 4-14** shows.

3. Based on the overall small surface area and pit backfilling, surface water entering the pits would have little effect on the volume of downstream watershed surface flows. Surface water flowing from the mine site could reach Sacramento Wash during the rare extreme precipitation events. Sacramento Wash drains the northeastern portion of Lanfair Valley and covers approximately 240 square miles (153,000 acres). The leach pad accounts for most of the CMM project land within the watershed, representing less than 0.8 percent of the Sacramento Wash watershed.

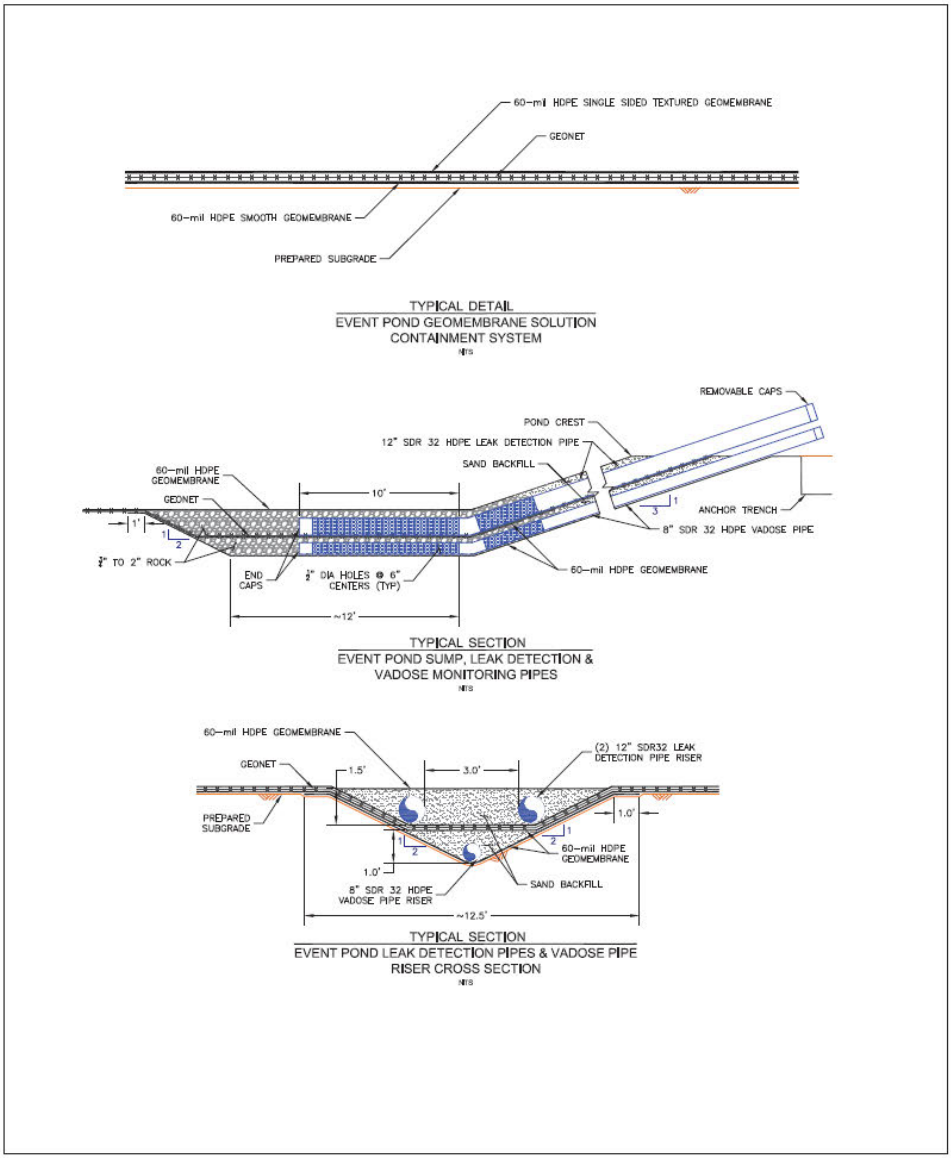
4. The main processing facilities are located on the alluvial fan portions of the mine site. Facilities have been sited to conform to the existing topography, to minimize earthwork, and to avoid interfering with the major ephemeral water courses that cut across the alluvial fan. Accordingly, the construction of the mine processing facilities will not significantly affect ephemeral flow in the main drainage through the project. Some V-ditches and rip-rap armoring will be installed to divert surface flow around the immediate vicinity of the heap leach pad and other structures.

5. No impoundment structures will be constructed to intercept ephemeral stormwater flow. Stormwater falling on areas underlain by synthetic liners at the heap leach pad and Process Plant is directed to the emergency solution storage and stormwater basins (i.e., the Event Ponds). These basins are between 20 and 25 feet deep.



LEGEND		DATE:		
		REVISION:	EQUINOXGOLD CASTLE MOUNTAIN VENTURE San Bernardino County California	FIGURE 4-13a STANDARD LINER CONSTRUCTION

Figure 4-13a. Standard Liner Construction



LEGEND		DATE:		
	m3	REVISION:	EQUINOXGOLD CASTLE MOUNTAIN VENTURE San Bernardino County California	FIGURE 4-13b STANDARD LEAK DETECTION

Figure 4-13b Standard Leak Detection

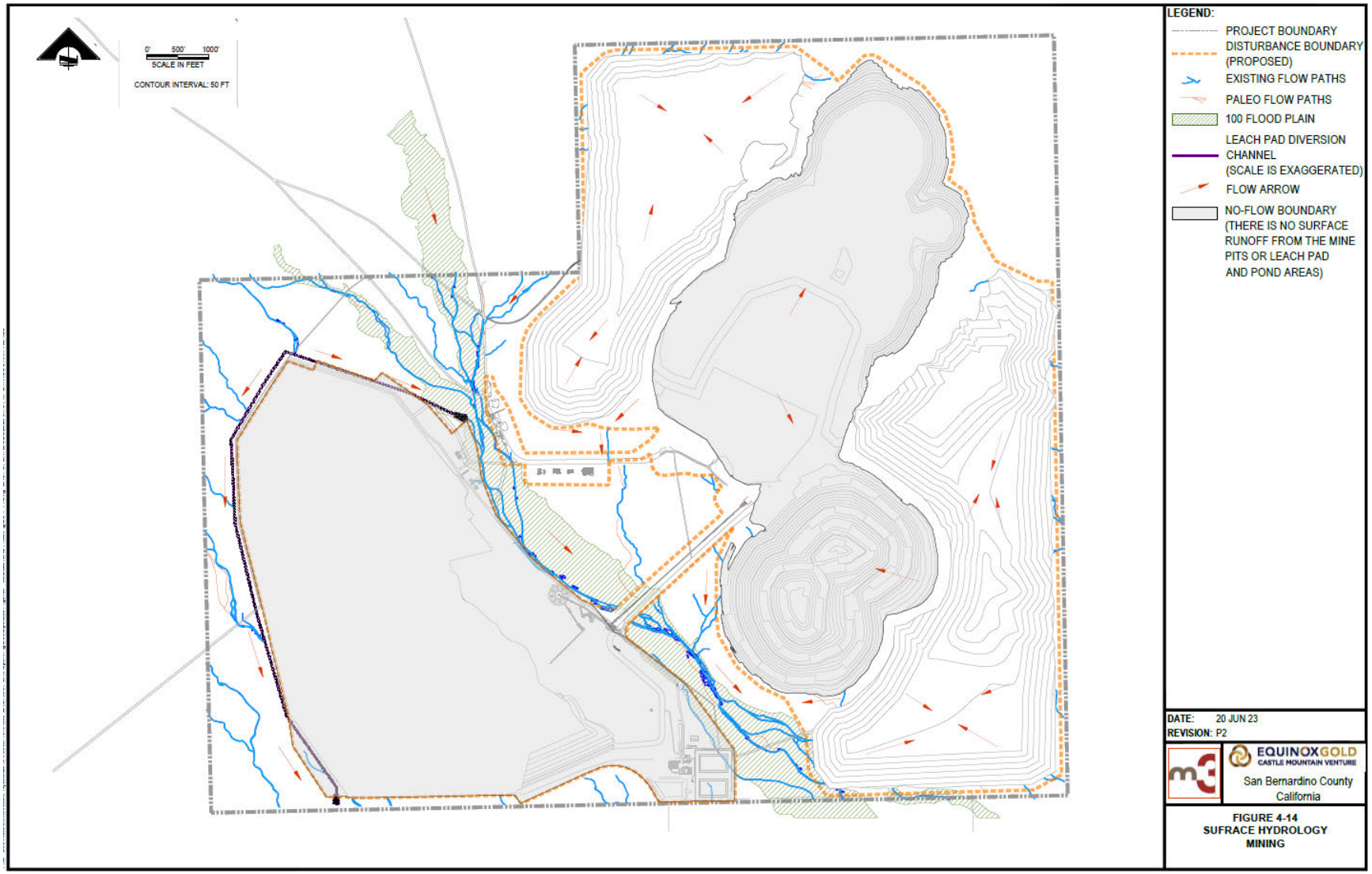


Figure 4-14. Surface Hydrology Mining

4.7 UTILITIES AND SUPPLIES

4.7.1 Water Requirement and Supply

1. CMM water demand primarily supplies the heap leach process and dust control. Daily water requirements vary throughout the year and are sensitive to changes in temperature and evaporation.

2. The WWF water system is the historic water supply for CMM and is located about 2 miles northwest of the Mine site. While the WWF once contained over a dozen production wells, groundwater is now pumped from one of three existing wells to the 250,000-gallon storage tank via a buried pipe in the WWF service road (i.e., Hart Mine Road). A main 10-inch HDPE pipeline is buried under the shoulder of the Hart Mine access road and extends from the WWF storage tank to the CMM site. The WWF serves multiple essential functions for mine operations, as it supplies water to our revegetation plant nursery and greenhouse operations, and, critically, serves as the only permitted potable water source required to support the CMM operation. Beginning in 2016, the Castle Mountains National Monument ("CAMO") came to overlay part of the WWF system. CMV submitted a Plan of Operation to the NPS in 2018 to authorize those WWF activities (such as water conveyance) previously authorized by the BLM, pursuant to the approved 1998 Plan. The NPS formally authorized the WWF Plan of Operation in May 2024.

3. Mine dewatering wells have historically provided additional water throughout and adjacent to the mine area. These wells comprise the EWF and primarily supply water from a deep fractured bedrock aquifer. Two EWF water supply wells balance make-up water for the heap leach pad process and use it as dust control. A third EWF water well, CMM-03, was approved and is active.

4. The 2022 Plan proposes a new Ivanpah Valley water system, the Northwest Water System (NWS), to supply CMM with between 840 and 1,340 AFY of water. Project NEPA analysis of this project assessed an Ivanpah water system and water pipeline as a project alternative.

5. The higher mining rates included in the 2022 Plan require an increased water supply. The 2022 Plan will increase use at the existing EWF and proposed NWS (while rates at the WWF are assumed to be less than the historical average). This Plan proposes a range and combined maximum water use from each basin; the range is proposed at 830 to 1,340 AFY (from each basin) and a combined maximum (permit limit) of 2,250 AFY.

6. The EWF will expand from three current wells with the addition of an estimated seven new pit dewatering wells, which will be required over the course of the mine schedule (to keep the mine pits dry). Approved and proposed EWF water well locations are estimated in Figures **2-4**.

7. Well-specific water usage rates are estimated in **Table 4-8a**, **Table 4-8b** and **Table 4-8c**. Note that these are provided as estimates only.

4.7.1.1 Lanfair – West Well Field (WWF)

1. The WWF has been thoroughly described in prior mine plans so the 2022 Plan description only provides an update on the current status and planned future use.

2. The WWF comprises three groundwater supply wells, W-18P, W-14P, and W-45P, all of which are sourced from the alluvial aquifer. Each well transfers water via a buried HDPE pipeline that runs under the existing well access roads and ends at the WWF 250,000-gallon steel storage tank. Water

from the tank is fed via gravity to the CMM site through another HDPE water pipeline buried along the shoulder of Hart Mine Road, following the CMM Mitigate Access Road to the project facilities.

3. W-18P, W-14P, and a small fraction of the water storage tank are located on private parcels, while the remaining WWF features exist across unpatented mill sites that convey possessory rights.

4. The WWF is managed in part through the approved BLM mine plan and in part through the recent Plan approved by the NPS in 2024, as described above.

5. **Table 4-8a** includes WWF water well information and anticipated annual pumping rates.

Table 4-8a. West Well Field (WWF) Well Information

WELL ID	WATER SYSTEM	LAND STATUS	DATE INSTALLED	WELL LOCATION	WELL DEPTH (feet below ground surface (bgs)	PROPOSED PUMPING RATE (gpm)
W-14P	WWF	Private Land	1987	NW ¼, Sec 15, T14N, R17E SBBM	566	50
W-18P	WWF	Private Land	1988	NE ¼, Sec 15, T14N, R17E SBBM	720	50
W-45P	WWF	NPS Land	1996	SE ¼, Sec 9, T14N, R17E SBBM	800	30

4.7.1.2 Lanfair - East Well Field (EWF)

1. The EWF or mine pit dewatering system initially consisted of a series of largely unsuccessful exploration wells on the east side of the project area, and it wasn't until the Lesley Ann pit was excavated to a depth of approximately 3,920 feet amsl that water was encountered in the pit area. The lack of water in exploration wells to the east is now thought to be due to a significant geologic structure (a dacite dike) that bounds the more permeable and higher conductivity rhyolite formations west of the dike. Historically, Lesley Ann pit dewatering accounted for up to 100 GPM of water captured and used to augment the existing supply from the WWF.

2. EWF pit dewatering wells were reinstalled in 2017, and the well IDs W-01 and W-02 were assigned. These wells currently provide most of the raw water used on the leach pad and for dust control.

3. A third well, CMM-03 ("W-03"), was drilled in 2021 and located south of well W-02. This was initially used as a test to provide data regarding the Lanfair groundwater system. It also successfully identified a previously unknown deep "old" alluvium water-producing zone overlaid by basalt flows.

4. The 2022 Plan expands pit mining and deepens existing pits. Groundwater modeling estimates that up to 7 additional pit dewatering wells will be required to keep the proposed expanded pit depths dry during mining. The Lanfair Valley Groundwater Model Report ("Lanfair Model") is included in **Appendix E**. It presents our best available estimate of the number and location of proposed pit dewatering wells, as well as the corresponding pumping rates (also shown in **Table 4-8b**). We estimate that up to 600 gallons per minute (gpm) of pit dewatering will be required to keep the expanded pits dry during mining.

5. The Lanfair Model report estimated well-pumping rates and other relevant well data are provided in **Table 4-8b** below. The 2022 Plan includes a total cumulative annual groundwater production rate for Lanfair Valley of 830 GPM.

Table 4-8b. East Well Field (EWF) Well Information

WELL ID	WATER SYSTEM	LAND STATUS	DATE INSTALLED	WELL LOCATION	WELL DEPTH (feet bgs)	PROPOSED PUMPING RATE[63] (gpm)
W-01	EWF	Private Land	2017	Sec 24 T14N, R17E, SBBM	1,587	100-150
W-02	EWF	Private Land	2017	Sec 25, T14N, R17E, SBBM	1,972	100-150
CMM-03	EWF	BLM Land	2021	Sec 35,T14N, R17E, SBBM	1,460	100-200
DW-1	EWF	Private Land	To Be Determined	Sec 24 T14N, R17E, SBBM	To Be Determined	75-100
DW-2	EWF	Private Land		Sec 24 T14N, R17E, SBBM		75-100
DW-3	EWF	Private Land		Sec 24 T14N, R17E, SBBM		75
DW-4	EWF	Private Land		Sec 13 T14N, R17E, SBBM		75
DW-5	EWF	BLM Land		Sec 25, T14N, R17E, SBBM		100
DW-6	EWF	Private Land		Sec 24 T14N, R17E, SBBM		100
DW-7	EWF	Private Land		Sec 25, T14N, R17E, SBBM		75-100

4.7.1.3 Ivanpah – Northwest Water System (NWS)

1. The NWS currently consists of a single well, IV-1TW, located on private land just west of Nipton, California. A pump test was conducted in 2021 at a production rate of almost 1,000 GPM, and the resulting data indicated impressive and sustainable production. Details are included in **Appendix E**; the reporting estimates only about 5 feet of aquifer drawdown near the production well after 22 years of simulated use of approximately 1,425 AFY.
2. While modeled data indicate that only the current well is needed to provide the CMM sustainably required water supply from the NWS, it is possible that an additional well could be located on other nearby private lands to balance water production and limit localized impacts. Other planned NWS facilities include a pump house with booster pumps and a single water storage tank. This equipment will be located on private land adjacent to the well and will serve as the sole required pumping station for transferring water to the CMM. An approximate 33-mile buried water pipeline will transfer water from IV-1TW to the CMM. The pipeline has been proposed with minimal surface disturbance. It would be co-located within the NDOT easement along Nipton Road (SR-164) to Walking Box Ranch, following the CMM Access Road to the CMM.
3. CMV has submitted[64] an application for assignment of a (water pipeline) Right-Of-Way (ROW) lease agreement to transfer water from the NWS to the CMM. That application is pending with the BLM.
4. **Table 4-8c** includes NWS water well information and anticipated annual pumping rates.

Table 4-8c. Northwest Water System (NWS) Well Information

WELL ID	WATER SYSTEM	LAND STATUS	DATE INSTALLED	WELL LOCATION	WELL DEPTH (feet bgs)	PROPOSED PUMPING RATE (gpm)
IV-1TW	NWS	Private Land	2021	Sec 32, T16N, R16E, SBBM	1,485	415
TBD	NWS	Private Land	TBD	TBD	TBD	415

[63] Rates vary depending on mine stage; based on Table 6 from the Lanfair Valley Groundwater Model Report.
[64] Original application and Plan of Development submitted October 2022 and revised POD submitted in 2024.

4.7.2 Other Utilities and Structures

1. The original 1990 Plan approved on-site power generators to supply site power. Propane was the interim fuel source for onsite generators until a natural gas pipeline could be routed to the site. Shortly after the agencies issued final approvals for the operation in 1990, the Company reached an agreement with Nevada Power to install a 69-kV overland power transmission line to the site along the main access road. It was authorized as a modification to the approved mine Plan and impacts assessed through a separate NEPA Environmental Assessment. The mine purchased electricity from Nevada Power Company (now NV Energy or NVE) until the power line was removed during interim land reclamation in 2011. CMV has applied to the BLM to re-establish the prior right-of-way and to reinstall the 69kV powerline. On-site power generation was also initially assessed for the project through the 1990 EIS/EIR (Castle Mountain Project, Final EIS/EIR, August 1990) and as recognized through both minor 1998 Plan revisions, approved in 2013 and 2020.

2. The anticipated grid power demand ranges from 15 to 25 MW (megawatts). The expected average demand is approximately 20 MW, but a higher power draw is required during equipment startup.

3. As referenced in Section 2.0 of this plan, a portion (10 MW) of the project's electrical power will be generated on site by an LNG microturbine thermal generating system. Thirteen generating units will be located adjacent to the power substation, see **Figure 4-15**. A generating unit is sized 8ft x 8ft x 30 ft, or about the size of a shipping container.

4. Air emissions at the CMM have consistently been recognized as *significant and unavoidable*. An emissions inventory of approved operations is included in **Table 4-9a**. A comprehensive emissions inventory based on the proposed operations under this 2022 Plan update is shown in **Table 4-9b** below and includes potential activity and emissions under currently approved operations. The possible increase in emissions associated with the proposed 2022 Plan is shown in **Table 4-9c**. A comparison between the 1998 Plan approved and the 2022 Plan proposed emissions estimate is shown in **Table 4-9d**. Annual emissions presented in these tables reflect a potential maximum operating year based on current mining and engineering designs, and thus are conservative. These inventories account for the following commitments to clean technology and control options: mobile on-site off-road units will use (R-99) renewable diesel fuel. These units, including emergency generators, are assumed to meet Tier 4 Final emission standards, consistent with equipment currently operating at the site; haul roads are controlled with chemical suppressant application; watering is used for fugitive dust control from disturbed areas; and watering, bin vent, or baghouse controls are used for several stationary sources of particulate matter. The emissions presented here are subject to further refinement based on additional engineering design and analysis.

5. Telecommunications are provided by a private microwave facility installed at the mine and an uplink to existing equipment located at Searchlight, Nevada. Once the utility is reinstalled, a fiber optic line will be included with the overhead power line.

6. Ancillary structures are located throughout CMM; most are approved and identified in the 1998 Plan. However, many have been relocated due to the expanded pits and overburden piles proposed in the 2022 Plan. An administration building is located at the southern terminus of the Walking Box Ranch access road. These buildings have been equipped with water, heat, and sewerage systems to meet the requirements of the County Building and Safety Department and the Department of Environmental Health Services (DEHS). A parking lot is located in the administration area and is for

use by employee vanpool vehicles, company vehicles, and visitors. Provisions have been made for access and parking for handicapped persons. Ancillary structures include:

- Laboratory
- Receiving parts warehouse
- Crushing plant warehouse
- Process plant warehouse
- Comminution warehouse
- Geology and core storage
- Office buildings and training facility
- Security gate and truck scale
- Parking
- Hazardous waste storage yard

7. The mine maintenance area would be relocated just southeast of the main gate. This area is used for vehicle maintenance, with office space for administration and warehousing space for equipment parts. A truck ready-line and other vehicle parking is located nearby.

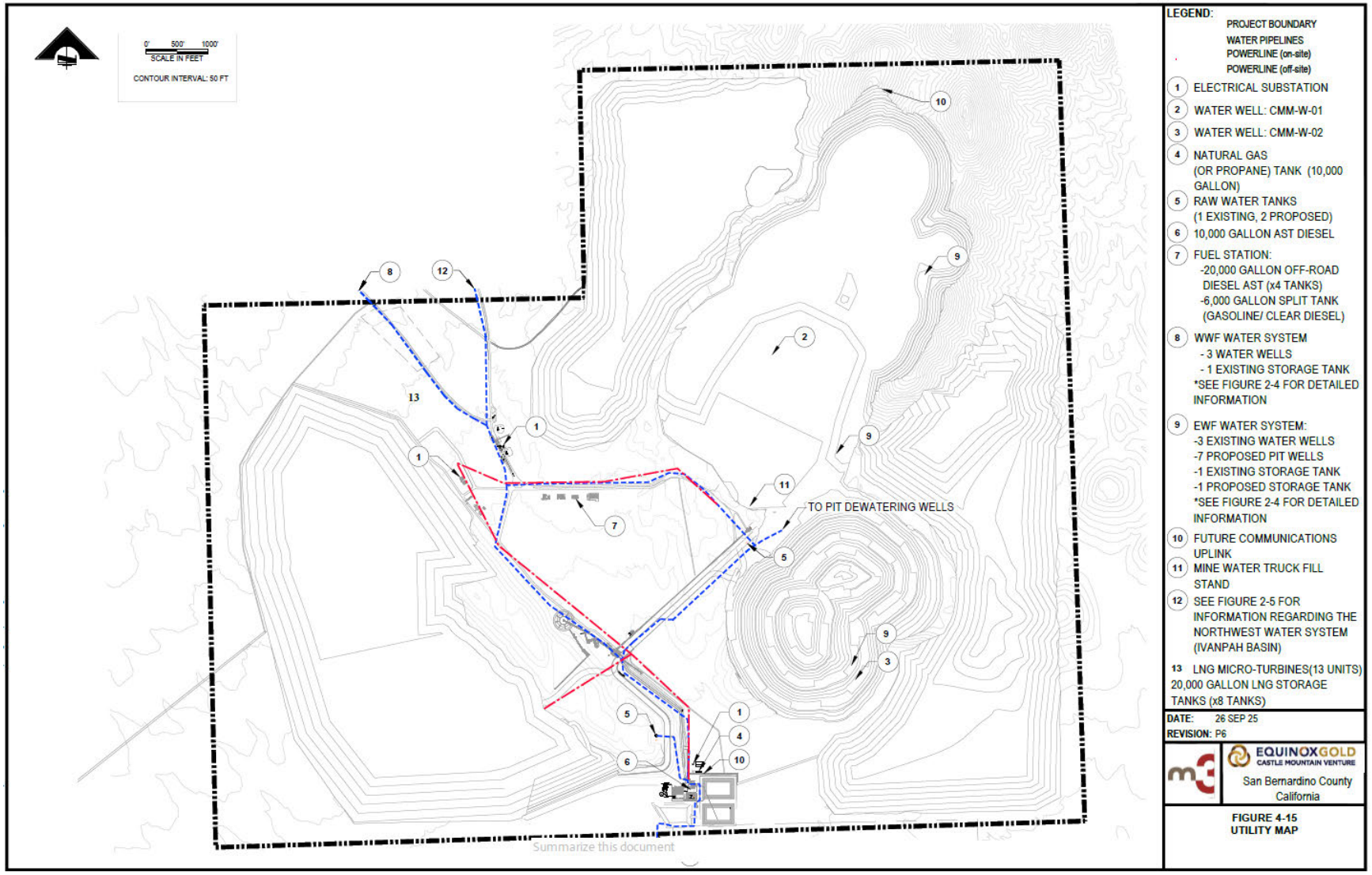


Figure 4-15 Utility Map

Table 4-9a: 1998 Plan - Approved Air Contaminant Emissions [65]

Emission Source	Maximum Daily Emissions (lbs/day)						Annual Emissions (tons/yr)						(MT/yr)	
	ROG/ VOC	NO_x	SO_x	CO	PM_{10}	$PM_{2.5}$	ROG/ VOC	NO_x	SO_x	CO	PM_{10}	$PM_{2.5}$	Biogenic CO_2e	Non-Biogenic CO_2e
Onsite Stationary Exhaust and Fugitive Sources														
Blasting		160	0.028	651				24	0.0043	99				2,520
Ore Processing Equipment					17	3.3					2.1	0.40		
Emergency Generators	0.99	16	0.058	0.56	0.15	0.15	0.17	2.9	0.0068	0.034	0.020	0.020		663
Power Generation	3.9	18	1.0	18	1.8	1.8	0.72	3.4	0.18	3.4	0.34	0.34		17,979
Fuel Storage and Dispensing	0.38						0.069							
Onsite Mobile Exhaust Sources														
Diesel-Powered Equipment Exhaust	78	1,035	2.6	1,358	14	14	8.4	131	0.28	145	1.6	1.6	24,211	692
Onsite Fugitive Dust Sources														
Mining Operations (Drilling, Blasting, Loading)					71	11					6.2	0.83		
Haul Roads					594	59					48	4.8		
Ore and Overburden Dumping					53	8.0					8.6	1.3		
Wind Erosion (Disturbed Areas, Stockpiles)					18	6.4					2.8	1.1		
Offsite Mobile Exhaust Sources														
Employee and Vendor Travel	0.44	24	0.25	5.7	2.5	1.2	0.043	1.1	0.012	0.70	0.12	0.054		1,206
Offsite Fugitive Dust Sources														
Employee and Vendor Travel					77	8.0					7.2	0.74		
Indirect GHG Sources														
Electricity Usage														9,433
Solid Waste													17	140
Wastewater														19
Total	**83**	**1,254**	**3.9**	**2,033**	**848**	**113**	**9.4**	**163**	**0.48**	**249**	**77**	**11**	**24,428**	**32,652**

[65] The emissions inventory developed for approved operations reflects potential activity and emissions associated with mining and processing of materials as authorized in the 1998 Plan and recent revisions (1998 Plan Ver 2.0 and Ver 2.1). Ore processing is currently authorized and permitted for up to 6.25 million tons annually and overburden mining is currently authorized for up to 16.3 million tons annually. Emission estimates for approved operations account for commitments to clean technology and control options consistent with the proposed 2022 Plan, reflect updated emission factors and methodologies, and incorporate additional pollutant and source category review, as compared to Appendix F of the 1997 Castle Mountain Mine Expansion Project Draft EIS/EIR, March 1997.

Table 4-9b: 2022 Plan - Proposed Air Contaminant Total Emissions[66]-Including 1998 Plan Approved Emissions

Emission Source	Maximum Daily Emissions (lbs/day)						Annual Emissions (tons/yr)						(MT/yr)	
	ROG/ VOC	NO_x	SO_x	CO	PM_{10}	$PM_{2.5}$	ROG/ VOC	NO_x	SO_x	CO	PM_{10}	$PM_{2.5}$	Biogenic CO_2e	Non-Biogenic CO_2e
Onsite Stationary Exhaust and Fugitive Sources														
Blasting		569	0.10	2,309				87	0.015	351				8,921
Ore Processing Equipment					52	10					6.5	1.2		
Emergency Generators	0.99	16	0.058	0.56	0.15	0.15	0.17	2.9	0.0068	0.034	0.020	0.020		663
Power Generation	23	85	1.5	231	17	17	4.2	16	0.28	42	3.1	3.1		49,816
Fuel Storage and Dispensing	3.0						0.55							111
Onsite Mobile Exhaust Sources														
Diesel-Powered Equipment Exhaust	202	3,046	6.6	3,510	38	38	30	464	0.98	514	5.6	5.6	86,411	2,429
Onsite Fugitive Dust Sources														
Mining Operations (Drilling, Blasting, Loading)					282	29					29	3.3		
Haul Roads					1,291	129					171	17		
Ore and Overburden Dumping					185	28					31	4.6		
Wind Erosion (Disturbed Areas, Stockpiles)					18	6.4					2.8	1.1		
Offsite Mobile Exhaust Sources														
Employee and Vendor Travel	1.1	38	0.41	29	4.3	1.9	0.14	2.3	0.027	4.4	0.31	0.13	437	2,681
Offsite Fugitive Dust Sources														
Employee and Vendor Travel					168	17					19	1.9		
Indirect GHG Sources														
Electricity Usage														28,977
Solid Waste													60	494
Wastewater														68
Total	**230**	**3,754**	**8.7**	**6,079**	**2,055**	**277**	**35**	**571**	**1.3**	**912**	**267**	**38**	**86,908**	**94160**

[66] Maximum annual operations evaluated account for up to 19 million tons of ore processed and up to 60.6 million tons of overburden material mined, which include the portions of ore and overburden processing that are currently approved (6.25 million tons annually and 16.3 million tons annually, respectively). Power demands assume up to a 20 MW load for on-site operations, with 10 MW provided by NV Energy via the grid and 10 MW supplied by on-site NG turbines, plus 1,314 kW for off-site power for water supply (provided by SCE). The inventory developed accounts for the following commitments to clean technology and control options: on-site diesel off-road units, including emergency generators, are assumed to meet Tier 4 Final emission standards, consistent with equipment currently operating at the site; haul roads are controlled with chemical suppressant application; watering is used for fugitive dust control from disturbed areas; and watering, bin vent, or baghouse controls are used for several stationary sources of particulate matter.

Table 4-9c: 2022 Plan - Proposed Air Contaminant Emissions-Excluding 1998 Plan Approved Emissions[67]

Emission Source	Maximum Daily Emissions (lbs/day)						Annual Emissions (tons/yr)						(MT/yr)	
	ROG/ VOC	NO_x	SO_x	CO	PM_{10}	$PM_{2.5}$	ROG/ VOC	NO_x	SO_x	CO	PM_{10}	$PM_{2.5}$	Biogenic CO_2e	Non-Biogenic CO_2e
Onsite Stationary Exhaust and Fugitive Sources														
Blasting		409	0.072	1,658				62	0.011	252				6,401
Ore Processing Equipment					35	6.8					4.4	0.83		
Emergency Generators	0	0	0	0	0	0	0	0	0	0	0	0		0
Power Generation	19	67	0.50	212	15	15	3.5	12	0.092	39	2.8	2.8		31,837
Fuel Storage and Dispensing	2.6						0.48							111
Onsite Mobile Exhaust Sources														
Diesel-Powered Equipment Exhaust	124	2,011	4.1	2,151	24	24	21	333	0.70	369	4.0	4.0	62,000	1,737
Onsite Fugitive Dust Sources														
Mining Operations (Drilling, Blasting, Loading)					211	18					23	2.5		
Haul Roads					697	70					123	12		
Ore and Overburden Dumping					133	20					22	3.3		
Wind Erosion (Disturbed Areas, Stockpiles)					0	0					0	0		
Offsite Mobile Exhaust Sources														
Employee and Vendor Travel	0.65	14	0.16	23	1.7	0.75	0.093	1.2	0.015	3.7	0.19	0.076	437	1,475
Offsite Fugitive Dust Sources														
Employee and Vendor Travel					91	9.4					12	1.2		
Indirect GHG Sources														
Electricity Usage														19,545
Solid Waste													43	354
Wastewater														49
Total	**146**	**2,501**	**4.8**	**4,045**	**1,208**	**164**	**25**	**408**	**0.82**	**663**	**190**	**27**	**62,480**	**61,508**

[67] Emissions presented in this table reflect the increase in emissions for the Proposed 2022 Plan (Table 4-9b) from the emissions for the Approved 1998 Plan (Table 4-9a). As emission factors and methodologies are consistent between Table 4-9b and Table 4-9a, this table reflects a more direct comparison of potential emission differences as a result of proposed changes to mining activity under the 2022 Plan.

Table 4-9d. Comparison of 1998 Plan (1997 EIS/EIR) Approved Emissions and 2022 Plan Total Emissions

Emission Scenario	Maximum Daily Emissions (lbs/day)						Annual Emissions (tons/yr)						(MT/yr)	
	ROG/ VOC	NO_x	SO_x	CO	PM_{10}	$PM_{2.5}$	ROG/ VOC	NO_x	SO_x	CO	PM_{10}	$PM_{2.5}$	Biogenic CO_2e	Non-Biogenic CO_2e
Proposed 2022 Mine Plan of Operations (Including Approved Operations)	230	3,754	8.7	6,079	2,055	277	35	571	1.3	912	267	38	86,908	94,160
Approved 1997 EIR/EIS[68]	83	2,622	181	1,487	592	--[69]	13	391	26	151	83	--[5]	--[5]	--[5]
Change in Emissions	**147**	**1,133**	**-172**	**4,592**	**1,463**	--[5]	**21**	**180**	**-25**	**761**	**184**	--[5]	--[5]	--[5]

[68] Note that off-site emissions were not included in the Approved 1997 EIR/EIS emissions but are included in the emissions for the Proposed 2022 Plan and Approved Operations. Emission factors and methodologies utilized at the time of the 1997 EIR/EIS may reflect older guidance, less advanced technologies, fewer control technology commitments, and other differences. Refer to Table 4-9C for a more direct comparison of potential emission differences as a result of proposed changes to mining activity under the 2022 Plan.

[69] Emissions for these pollutants were not included in the 1997 EIR/EIS.

4.8 SUPPLIES & HAZARDOUS MATERIALS

1. Activities at the CMM require the receipt, storage, and handling of chemicals and explosives and the treatment and disposal of wastes generated at the site. Some of the waste materials are classified as hazardous waste. Hazardous waste is managed on-site and transported off-site by a 3rd party licensed waste disposal company. All waste is shipped and disposed of only at authorized, regulated disposal sites.

2. Many wastes generated at the CMM site are recycled. Most diesel fuel used in mobile equipment will be R-99 Renewable diesel fuel. Nearly all engine oil is shipped to an authorized recycling facility, lead-acid batteries are similarly recycled, and tires are taken from the mobile mining fleet. Paper and cardboard products are also recycled.

3. Apart from fuel storage, the storage of concentrated sodium cyanide ("CN") at the Process (CIC) Plant represents the largest bulk hazardous material storage at the CMM site. CN is shipped to the CMM as a solid CN briquette (or occasionally in liquid form) and transferred from the transport container into two storage tanks at the Process Plant through a fully sealed and automated process. Vertical steel storage tanks at the Process Plant area are the only locations where concentrated bulk CN is stored at the CMM. The process area (including the CN storage tanks) is located within a concrete secondary containment area to contain spills and leaks. A second series of CIC tanks will be constructed south of the existing tanks to support the 2022 Plan for increased mining and processing.

4. Lime and cement are stored in several vertical silos as bulk dry reagents used for ore agglomeration.

5. Small quantities of antiscalant, caustic soda, and hydrochloric acid are reused and stored within the CIC tank secondary containment area.

6. 2022 Plan fuels and oils are stored onsite and located in the mobile maintenance area. Up to four 20,000-gallon ASTs will be located there. Tanks for these fuels and lubricants are double-walled and installed within spill containment areas to contain the contents of the tanks in the event of a leak or rupture. All AST fuel tanks are permitted through the County Fire Department (office of the fire marshal) and included on the Hazardous Materials Business Plan ("HMBP") that is on file with the CUPA. The CMM CUPA is the San Bernardino County Fire Department, Hazardous Materials Division. Fuel storage at the CMM also conforms to California's regulations regarding the Aboveground Petroleum Storage ACT ("APSA").

7. 2022 Plan LNG fuel for the microturbines is stored in eight 20,000-gallon ASTs. Tanks are double-walled and installed within secondary containment. The LNG tanks will be located nearby the LNG microturbine units.

8. Explosives and other blasting agents are stored in facilities constructed and maintained in accordance with Federal and local permit requirements.

9. Chemical reagents are brought to the site by various suppliers.

10. Hazardous material and reagent storage locations are identified in **Figure 4-16**.

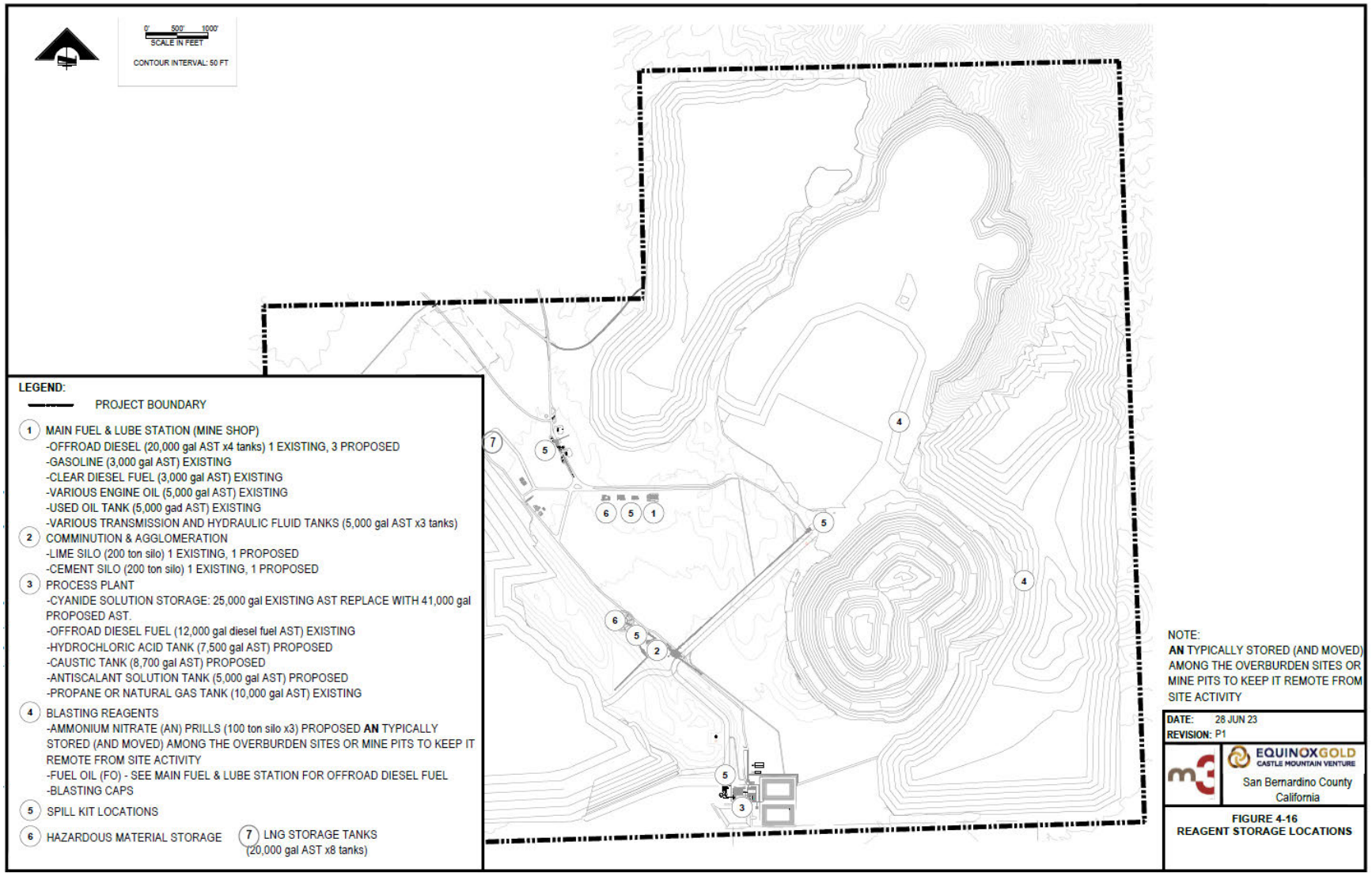


Figure 4-16. Reagent Storage Locations

4.8.1 Waste Containment, Treatment and/or Disposal

1. The mine generates solid and liquid waste from construction, equipment operation, and gold processing facilities. Wastes are stored, recycled, or disposed of per rules and regulations set forth by the DEHS and the California Department of Toxic Substances Control (DTSC) and in a manner acceptable to the BLM and the County. Wastes generated on site are listed in **Table 4-10**.

Table 4-10. Anticipated Wastes to be Generated at the Castle Mountain Mine

WASTE GENERATED	WASTE TYPE	DISPOSAL PROCEDURE
Refuse—food, garbage, glass, plastic, paper, wood, metal	Domestic waste	Recycled and/or remaining waste disposed at Class I or II (Nevada or Arizona) landfill
Tires	Industrial Waste (non-hazardous)	Recycled or stockpiled for disposal (after shredding)
Hydrocarbon (contaminated waste)	Industrial Waste (non-hazardous)	Disposed at a licensed TSDF[70]
Waste Oil	Industrial Waste (CA hazardous waste)	Recycled (licensed recycler)
Lead-contaminated laboratory wastes, solvents, waste paints	Industrial Waste (RCRA Hazardous Waste)	Recycled (licensed recycler) or disposed of at a licensed TSDF[71]
Batteries, light bulbs, electronics, etc.	Universal Waste	Recycled and/or remaining wastes are disposed at a licensed TSDF
Contaminated PPE, oily rags, etc.	Industrial Waste (RCRA Hazardous Waste)	Disposed at a licensed TSDF[72]

2. Wastes considered hazardous are solids and liquids, such as waste oils and fuels from vehicles, solvents, certain processing chemicals and their containers, lead-contaminated cupels, and small volumes of reagents used in laboratory testing. Used oils and other water hydrocarbon products are stored in tanks located in a containment area. Other wastes are recycled or packaged and disposed of offsite by a licensed waste disposal contractor at an approved recycler or disposal site. Processing chemicals and laboratory reagents are recycled back into the barren solution stream where possible. Chemical containers are rinsed, returned to the supplier for reuse, or sent to an approved disposal site.

3. Haulage of hazardous wastes is by licensed carriers only. The hazardous waste is incinerated, treated, recycled, or placed in an approved hazardous waste landfill facility following haulage. The final disposition of the Mine's hazardous wastes depends on the type of waste and is in accordance with the rules and regulations for waste disposal set forth by the DEHS, DTSC, and EPA.

[70] Treatment, Storage, and Disposal Facility
[71] Treatment, Storage, and Disposal Facility
[72] Treatment, Storage, and Disposal Facility

4. Where feasible, non-hazardous wastes are recycled. A written policy dictating disposal locations for the various waste types has been established to ensure that all recyclable products are deposited in the correct location.

5. Non-hazardous wastes are temporarily stored onsite in closed-top refuse bins and disposed of in a Class I or II (Nevada) landfill. Haulage to an approved landfill facility is in approved waste containers.

6. Domestic wastewater from the Process Area, Crusher, Shop Area, Administration Area, and greenhouse/nursery complex is disposed of in septic tanks and leach fields adjacent to each area. These disposal facilities are designed and constructed in accordance with the requirements of the DEHS. Portable toilets are used in areas not served by the main sanitary facilities, such as the mine pit. Maintenance of portable toilet facilities and septic tanks is contracted to a licensed septic pumper.

7. The gold processing and extraction circuit operates as a closed system. Rain that falls on the pads enters the processing circuit or evaporates. The heap leach solution storage system is sized to RWQCB specifications to accommodate precipitation run-off from a 100-year, 24-hour design storm event.

8. Spent analytical reagents from the assay laboratory area are recycled back into the barren solution stream.

5.0 RECLAMATION PLAN

5.1 INTRODUCTION

5.1.1 Preface

1. The U.S. Department of the Interior, Bureau of Land Management, and San Bernardino County are the federal and state lead agencies with the regulatory authority to authorize mining at the Castle Mountain gold mine. Both agencies require that a mine reclamation plan is approved prior to beginning mining activity. In California, this requirement is codified by the Surface Mining And Reclamation Act (SMARA).

2. This reclamation plan draws on the past reclamation success at the CMM, via methods that have been uniquely cultivated and successfully implemented since the 1990's. CMM reclamation practices will not substantially change, other than an increase in the amount of reclaimed land surface due to increased mining disturbance. Successful interim reclamation and revegetation were completed at the CMM, and this plan draws on that knowledge and experience.

3. This 2022 Plan follows the format of Reclamation Plan 90M-013 (and CACA-031137). It discusses the procedures and schedules outlined in the earlier reclamation plans, and adapts them to accommodate the mining changes proposed in this 2022 Plan.

5.1.2 Purpose and Use of the Reclamation Plan

1. A purpose of the reclamation plan is to establish the procedures that CMV will take to meet state and federal laws regarding mine reclamation. This plan is based on the 1990 and 1998 Plans which produced successful reclamation at the CMM. Many of the same methods remain in this 2022 Plan but may not provided in as much detail as before, though the prior plans and methods are incorporated by reference.

2. The scale of reclamation is based on the planned pit and stockpile boundaries, which determine the size of the heap leach pad and overburden sites. It is also based on the amount of mining completed before reclamation begins. If mining conditions change significantly, the reclamation schedule would similarly change, and pits might not be entirely mined or backfilled as assumed in this plan.

3. As with any large, multi-year project, reclamation procedures will change over the mine's life. Changes could also be due to an evolution of the best available science or changed state or federal regulations. Recognizing this, the county incorporated annual reporting and mine planning requirements into its CUP permit conditions.

4. A *Mitigation Compliance Plan* (MCP) has been implemented for the mine, pursuant to CEQA Guidelines, California Public Resources Code 21081 (AB 3180). It incorporates the Conditions of Approval from the County's determination on the application for a Mining Conditional Use Permit and Reclamation Plan #90M-013. Additionally, the MCP includes the Project Stipulations from the BLM Record of Decision regarding the 1998 Plan of Operations. In most instances, the Conditions of Approval and the BLM Stipulations are identical, other than the fact that the two documents use slightly different ordering and numbering systems. CMV annually provides a detailed Mitigation Monitoring and Compliance Report (MMCR) that accounts for every compliance condition/stipulation and related mitigation. The BLM and county maintain copies of each annual

report submitted by CMV. The MCP will be updated following the agencies decision regarding the 2022 Plan.

5. This Reclamation Plan has been prepared as part of the environmental process and, once approved, will become a legally enforceable document. Performance of the activities described herein will be guaranteed by bonding, with the bond managed according to the discretion of the BLM and the county.

5.1.3 Statutory and Regulatory Requirements

1. Reclamation is required to comply with reclamation requirements set out in the Federal Land Policy and Management Act of 1976 ("FLPMA"), SMARA, and county mining ordinances.

2. Reclamation or closure bonds must be posted with state and federal agencies until those agencies determine that the approved reclamation and closure standards have been achieved at the CMM. Several state and federal agencies currently hold bonds, and Section 6.0 of this plan provides more details on current bonds.

3. Mine pit backfilling as a state regulatory and statutory requirement is not required at CMM because (1) a mining and reclamation plan of operation was approved for the Castle Mountain Mine, and (2) the related financial assurances for approved mining and reclamation were approved and held by the agencies before December 2001; therefore, because both of these conditions have been met, the mine is exempt from California's backfill statute and regulation.

5.1.4 Goals and Objectives of the Reclamation Plan

1. The goals and objectives of this plan include:

    - To promote revegetation of disturbed areas as an integral and concurrent function of the mining and reclamation program.
    - To ensure that materials excavated during mining operations are placed in a manner that does not pose a hazard to public health and safety, creates naturally appearing topography, and minimizes subsequent shaping and recontouring needed to avoid erosion to the extent possible (deserts are naturally erosive, exhibiting sparse vegetation and thin dispersive soil).
    - To implement a revegetation program that will, over time, establish plant communities with species composition and plant densities similar to those now existing on undisturbed areas at the mine site, with a proactive program to exclude non-native species.
    - To outline programs that will create the physical and biological conditions required for plants to grow without continued cultural inputs such as irrigation, tillage, or fertilization after the completion of mining operations.
    - To enhance the visual appearance of the area by reducing, where warranted, visual contrasts caused by excavations, overburden stockpiles, heap leach pads, and road cuts.
    - To establish microhabitats providing cover and nesting opportunities for desert vertebrates.

2. The interim reclamation completed at the project site through 2012 exceeded these goals. That status was reported in a February 17, 2012, letter from OMR staff, which specifically noted the

impressive growth of shrubs, the increase in accumulated organic matter, and the consistent decrease in weed cover, particularly the absence of Russian thistle (Salsola tragus) seedlings.

5.1.5 Successful Interim Reclamation Procedures

1. Previous interim reclamation began at CMM around 2000; most activity was completed by 2006. This section presents the procedures and programs used for successful interim reclamation. These are listed as follows:
    - During mining, materials are concurrently placed for stability and to mimic natural topography.
    - Rough and final grading controls slopes for water management and erosion control.
    - Final grading includes small catchment basins (micro-contouring) for water collection and seedbed preparation.
    - Final grading material includes a mixture of growth media and course overburden. The use of only growth media as a final surface material resulted in the least successful seed germination outcomes. Rinsed heap leach material may also be used as growth media.
    - Transplanting of salvaged and grown species, including cacti (barrel cactus) and succulents such as small Yucca species.
    - Seed collection for bulk seeds of locally adapted plant species.
    - Sowing seeds by hand and aerial seeding on freshly prepared soil surfaces.
    - Monitoring for success standards.

5.2 LAND USE

5.2.1 Existing Land Use

1. Since the passage of Public Law 103-433 (the California Desert Protection Act) on October 31, 1994, public lands within most of the Lanfair Valley have been managed by the NPS as part of the MOJA. In passing Public Law 103-433, the Congress specifically provided:
    - that all private lands (other than lands owned by Catellus Corporation) in a twelve township area in Lanfair Valley, bounded on the southwest by Township 11N, Range 15E and on the northeast by Township 13N, Range 18E, San Bernardino Base and Meridian, are excluded from the MOJA;
    - that CMM-associated mine claims are excluded from the Preserve, and
    - that grazing of domestic livestock on lands within the Preserve shall continue to be exercised at no more than the current level, subject to applicable laws and National Park Service regulations.
2. NPS-managed lands were increased in 2016 with President Obama's signature on the Proclamation to create the CAMO. Following prior federal statute, the Proclamation specifically recognized mining at the Castle Mountains by designating the "Castle Mountain Mine Area" (**Figure 5-1**).

3. BLM is the federal agency responsible for administering the lands covered by most of the Company's mine claims, although several claims are in the CAMO and MOJA. Operations on some of these claims could fall under 36 CFR 9A, otherwise known as the "Mining in the Parks Act." Nearly the entire area identified as the Castle Mountain Mine Area (see **Figure 5-1**) is zoned by the BLM's DRECP as a High Potential Mineral Area, see **Figure 5-2**.

4. The grazing allotments that once bordered the CMM project have since been retired, often through actions by former CMM operator Viceroy. The company purchased and donated the allotments to the BLM, which then retired those rights.

5. Recreational use at the mine site often involves unorganized, informal activities such as sightseeing. The evidence of past mining activities at Hart attracted sightseers, rock-hounds, and other recreationalists. The current mining operation also attracts a considerable number of visitors.

6. The historic Hart Mining District at the south end of the Castle Mountains has continuously been the scene of mining activities for over 100 years. Gold, silver, and clay are the principal minerals mined. Much of the townsite built during the 1907-1910 gold rush was subsequently obliterated by fire and clay quarrying activities, the latter of which commenced in the 1920s.

7. The nearest occupied residences are few and consist of inholding lands (to MOJA) in Lanfair Valley; the closest is five miles south of CMM operations.

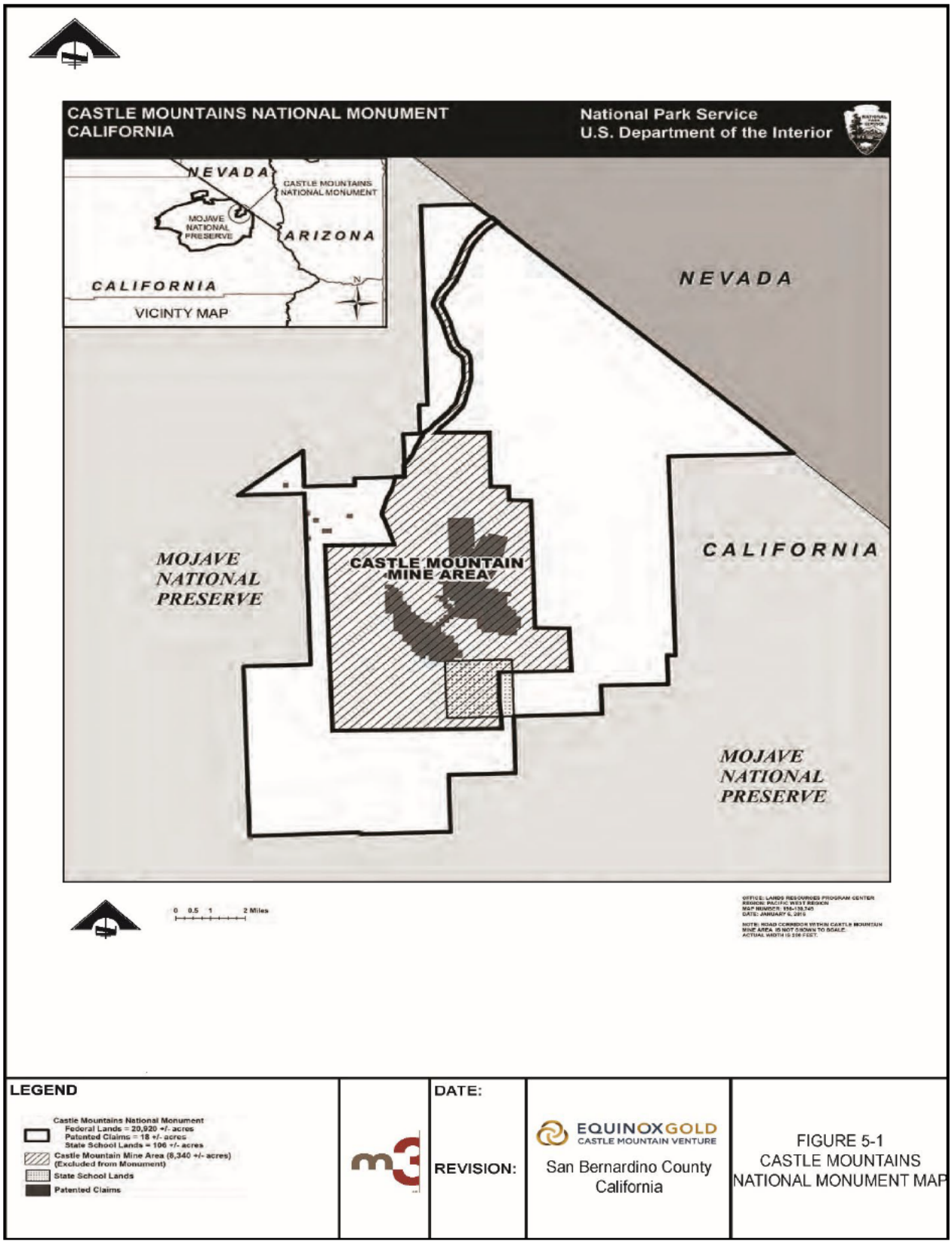


Figure 5-1. Castle Mountains National Monument Map

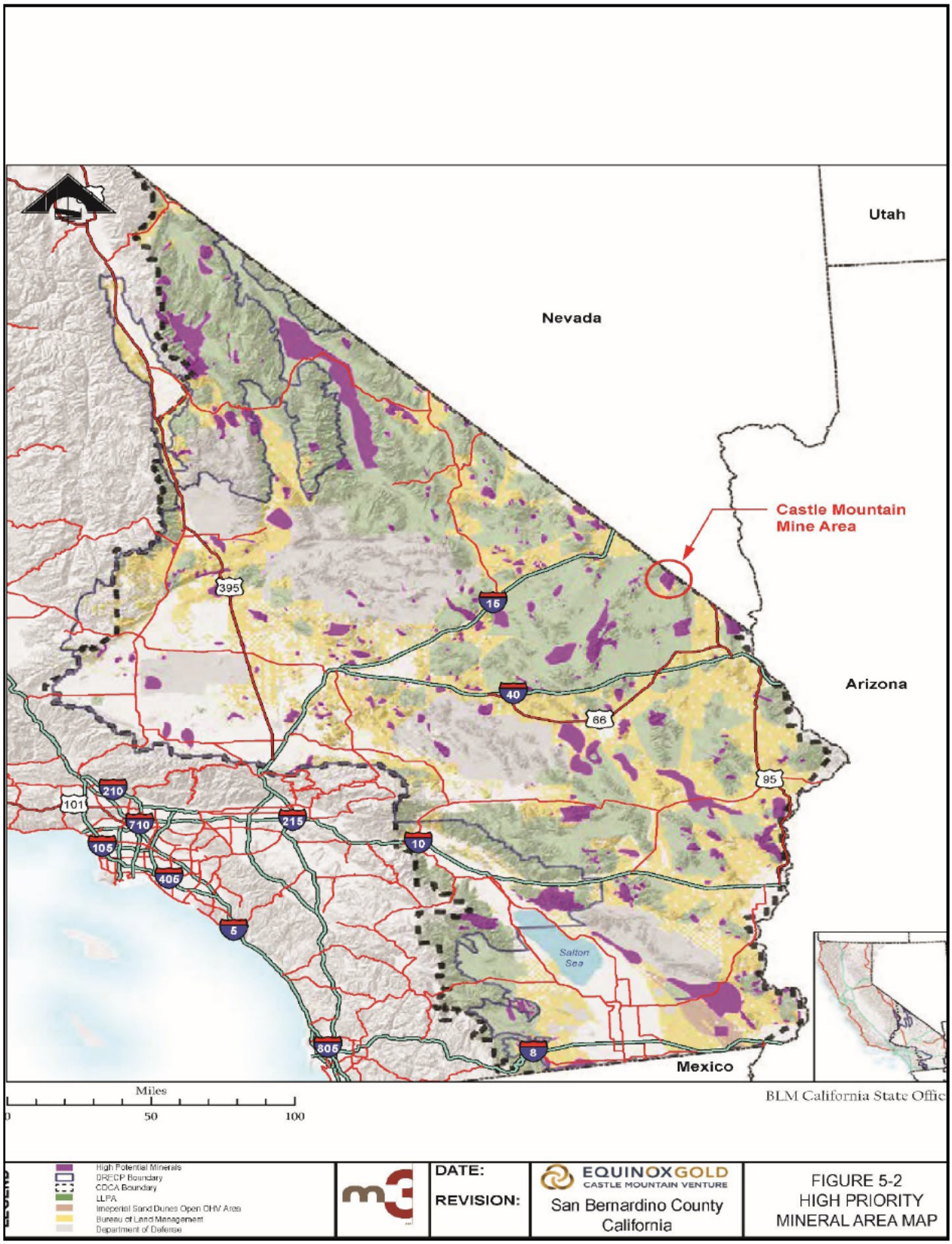


Figure 5-2. High Priority Mineral Area Map

5.2.2 Post-Mining Land Use

1. The site's uses include mining, recreation, and wildlife habitat. The latter two uses have been altered or temporarily interrupted on approximately 2,905 acres because of the site's approved/proposed mining activities. Fencing and gates restrict public access. This exclusion policy will remain in effect for several years after the completion of mining operations, allowing newly revegetated areas to recover without disturbance.
    - Recreation—Most visitors to Hart travel there for rock-hounding, touring the East Mojave Heritage Trail, and viewing the ongoing activities at the CMM. The area's historic features are discussed in East Mojave Heritage Trail, Ivanpah to Rocky Ridge (Casebier 1988).

    - Wildlife – Species in the area are typical of the eastern Mojave Desert, particularly those associated with the dominant creosote bush scrub and Joshua tree woodland series habitats. Existing and proposed future disturbances at the site are a fraction of one percent of this habitat in Lanfair Valley alone. Interim reclamation at CMM has also proven the ability to return substantial portions of disturbed land to near pre-mining conditions after mining ends. Except for the Mojave Desert tortoise (*Gopherus agassizii*), no threatened or endangered plant or animal species are on site.

    - Mining – Mining will be an appropriate second use of the site, and the mine's reclamation program is structured flexibly to allow various future uses. Gold mineralization is disseminated within this district, and there is no sharp physical demarcation between ore and overburden. The material is mined to an economic "cut-off" grade in such circumstances. The walls and floor of the pit contain gold mineralization in concentrations that are economical for mining under current conditions. However, some zones are uneconomic to mine even at current gold prices. However, future improvement in technology (or lower unit costs that might be achieved with improved technology) or a higher gold price might allow the operator to mine more of these areas and increase the ultimate recovery of the resource.

2. The following factors control post-mining land uses of the site:

    - Compatibility With Adjacent Land Uses – Congress encourages mineral development consistent with the principles developed in the Mining and Mineral Policy Act 1970 (30 U.S.C. 21a). When Congress passed the California Desert Protection Act in October 1994, it recognized the socioeconomic benefits of the CMM and excluded Viceroy's mining claims from the Mojave National Preserve.

    - Castle Mountains National Monument – The same (as above) precedent was affirmed again in 2016 with the CAMO Proclamation, whereby the BLM, though in a few instances NPS, retained management authority for public land with the Castle Mountain Mine Area. Presidential Proclamation created the CAMO on February 12, 2016; the NPS administers CAMO lands. The monument surrounds the CMM project area, but a buffer of BLM land remains between the CAMO and the mine area to the North, West, and South. While the CAMO proclamation does close those lands from mineral entry, it is subject to valid existing rights. Additionally, the CAMO proclamation identifies and recognizes the validity of mining for those CMM areas operating under valid Plans of Operation (i.e., Mine/Reclamation Plan).

- Zoning Restrictions and County General Plans – BLM-administered lands in Lanfair Valley are designated Multiple Use Class-L (limited). Mining, livestock grazing, recreation, and wildlife habitat are authorized on Class-L lands. The County has designated the Castle Mountains as a Mineral Resource Zone 2 area, ensuring that other forms of development are compatible with the locatable minerals.

- Desert Renewable Energy Conservation Plan ("DRECP") was a central (southern California) land use plan alignment the California BLM state office signed as a "LUPA" in September 2016. The DRECP is an amendment to the existing land use plans: (1) California Desert Conservation Area (CDCA), (2) Bishop Resource Management Plan, and (3) Bakersfield Resource Management Plan. The CMM was located within the CDCA plan and is now in the amended DRECP area. The DRECP establishes Conservation Management Actions ("CMAs") as mitigation for impact to select resources or habitat. Mineral resources are also represented as a CMA category (Minerals), and the DRECP recognizes select mining areas as Existing High Priority Mineral Operations Exclusion Areas. The CMM is one of eight recognized exclusion areas that afford the CMM exemption from all but what are known as the LUPA-WIDE CMAs.

- San Bernardino Countywide Plan – The County adopted a new General Plan called the Countywide Policy Plan or Countywide Plan in October 2020. The Countywide Plan has designated the CMM in the Land Use Category of Resource/Land Management (RLM). One of this LUC's primary purposes is to "Manage, preserve, and protect natural resources such as agricultural/grazing lands, watersheds, minerals, and wildlife habitat areas, as well as open space areas not otherwise protected or preserved." One of this LUC's typical uses is "Mineral extraction, timbering, or similar activities as permitted by federal or state regulations." The CMM site is zoned Resource Conservation (RC). The RC land use zoning district provides sites for open space and recreational activities, single-family homes on very large parcels, and similar and compatible uses (County Development Code Chapter 82.03). Natural resource development (mining) is permitted with the approval of a Conditional Use Permit (CUP). The County's Development Code's Surface Mining and Reclamation Plan Development Code Chapter 88.03) combines the CUP and a required Reclamation Plan. This zoning also allows home sites of not less than 40 acres. Privately owned land within a five to eight-mile radius of the mine site (other than for patented mining claims owned or controlled by CMV) is minimal. The Federal government owns most of the surrounding land and all but 1,301 acres of the mine site. Given ownership and zoning restrictions, real estate development does not appear realistic post-mining land use.

- Post-Mining Topography—Site topography after cessation of mining and completion of decommissioning is discussed in Section 3.13. Materials will be placed to ensure the long-term stability of overburden and spent ore piles. The final topography will minimize erosion and sedimentation and enhance water retention and revegetation.

5.3 BASELINE ENVIRONMENTAL CONDITIONS

1. Analysis of baseline environmental conditions has occurred at CMM since the 1980s. This plan does not present those findings in detail since they are already in the administrative record from several rounds of NEPA and CEQA (Environmental Solutions, 1989) and (Lilburn Corp, 1997) . This plan incorporates by reference, a completed summary report of prior resources analyzed at the CMM

project from the 1980s to today. This report[73] is on file with both the county and BLM. The report is separated into sections based on receptor species, then provides a reference to all available reports for that species, and provides a concluding summary.

2. Additional baseline resource studies have been prepared for the 2022 Plan modifications. These reports have been provided to the BLM and county and revised based on agency comments; some have completed several rounds of comment and revision. These reports are generally not provided directly with this amended mine plan application but will become part of the administrative record.

3. **Table 4-9a** and **Tables 4-9b** and **4-9c**, respectively, in section 4.7 of this plan include a summary of baseline and 2022 Plan anticipated air quality emissions.

4. Cultural resources have been documented through several Class III Cultural inventories conducted from 2020 to 2025.

5. The CMM project has intensely analyzed water resources for over 40 years. These baseline conditions were reported during prior NEPA and CEQA. A revised Lanfair Valley groundwater model was constructed to analyze new effects and support 2022 Plan activities; it is included in **Appendix E1**.

6. The 2022 Plan will modify the terrain within the APA, and we have modeled the anticipated viewshed from several vantage points surrounding the CMM. Truescape Inc. was contracted to simulate visual effects. The simulations can be accessed using the link below:

   https://equinox-castle-mountain.truescape.com/

   Other aesthetic effects have also been documented. Topics include light and noise effects. These studies have similarly been provided to the lead agencies and will form part of the administrative record.

5.3.1 Existing Wildlife

1. The CMM is located within the Eastern Mojave Desert, where creosote bush scrub and Joshua tree woodland habitats are widespread and, therefore, support a similarly wide distribution of species through this range. Access into the project site from the north through Piute Valley traverses creosote bush scrub and Joshua tree woodland. Other plant communities making up a lesser amount of area in this region of the Mojave Desert include black bush scrub, pinyon-juniper woodland, and riparian and desert wash assemblages (Lilburn Corp, 1997). The CMM site includes various habitat types, from high-elevation rocky slopes to lower desert washes. These habitats are suitable for many animals common to the Mojave Desert.

2. The CMM area typically has a bimodal climatic pattern, receiving most precipitation during the winter and a smaller flush in late summer/early fall. Precipitation is the primary factor controlling the health and success of both floral and faunal species, given the dry conditions found at the CMM. Regarding vegetation, precipitation determines soil moisture and subsequent plant germination, growth, and survival; for wildlife, the same is true, and absent precipitation events or access to another perennial water source, wildlife must travel great distances to survive (Bamberg, 2005, p. 5). As it is, CMM provides a somewhat unique case because the mine maintains two artificial wildlife drinkers; a

[73] Westland Engineering & Environmental Services, Inc. (2022, February). *Castle Mountain Mine Biology Compilation Report*

historic drinker is located near the current administrative office area and consists of a tank that is plumbed into the mine's potable water supply. A second drinker was installed in 2020 in the higher terrain north of the Oro Belle pit. The latter uses a rain mat design where captured rainwater is funneled into one of 3 buried holding tanks. This system was installed to provide wildlife with a second watering option, which was further removed from mining activity. During drought, CMM personnel fill the holding tanks with clean groundwater from the mine's water supply systems.

3. Many reptile species can occur throughout the region, mostly more common varietals of lizards and snakes. Gopher snake (*Pituophis melanoleucus)*, Striped whipsnake (*Masticophis taeniatus)*, Mojave rattlesnake (*Crotalus scutulatus)*, Speckled rattlesnake (*Crotalus mitchellii)*, and the Western Diamondback (*Crotalus atrox*) are the most prevalent species found at the CMM. The desert tortoise (*Gopherus agassizii*), a federal-listed threatened species and a state-listed endangered species, also occurs throughout the Lanfair Valley. That said, multiple U.S. FWS Biological Opinions (**Table 7-1**) have found that desert tortoise densities are generally low at and near the CMM site; and that after mitigations are applied, the CMM project is not likely to jeopardize the continued existence of the desert tortoise.

4. Bird species are widely distributed throughout the Lanfair Valley. Still, due to the general lack of permanent water, they are not considered permanent residents, though they may fly over, forage, or feed in the area for a short time. (Lilburn Corp, 1997). Several widely distributed raptors are expected to occur at or near the CMM, including falcons, eagles, vultures, hawks, and owls. Golden Eagles (GE) are protected under the Bald and Golden Eagle Protection Act, and a nesting survey is typically required for projects within their range and habitat. Egg-laying usually occurs from January to March, with viable eggs hatching from March to April.

5. Many mammal species common throughout the Mojave Desert region are expected to occur at or near the CMM. Common species of the high desert include the coyote (*Canis latrans*), blacktail jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus auduboni*), whitetail antelope ground squirrel (*Ammospermophilus leucurus*), Desert woodrat (*Neotoma lepida*) and several species of mice (Lilburn Corp, 1997). Bats are common in the Mojave Desert, particularly where historic mining activity has created artificial habitats in open mine shafts and adits. Many species of bats are expected to occur at or near the CMM, and some have been documented in numerous studies conducted at the CMM. However, most of the earlier and more thorough underground mine workings have been excavated by mining already completed at CMM. Desert bighorn sheep (Ovis canadensis) are a California Fully Protected Species. They are common throughout the Castle Mountains and seemed to have thrived in the natural and artificial terrain afforded by the mine pit walls. It appears the population at CMM has more than tripled in size since modern gold mining began in the early 1990's.

6. Wildlife habitats represented at the CMM are typical of the Mojave Desert, which has been documented through the findings of two previous EIS/EIRs conducted for the CMM project. Those findings demonstrated that the CMM project was unlikely to jeopardize critical habitat or habitat essential to a threatened or endangered species (Lilburn Corp, 1997).

5.3.2 Existing Vegetation

1. The original 1990 Plan and the more recent OMR CMM vegetation report (California Dept. of Conservation - Office of Mine Reclamation, 2000) provide extensive discussion of the existing vegetation within the Lanfair Valley and the CMM site. That narrative will not be duplicated in this plan, but the reclamation section from the 1990 Plan will be provided upon request or available on file with the county and BLM. The 2000 OMR report is included here by reference only, but can be made available through a similar request. Dozens of biological studies, including those focused on vegetation, have been published over the past 40 years regarding the natural conditions at CMM. For ease of review, we've compiled a summary and reference catalog of all available biological and botanical reports. That report (Castle Mountain Mine Biology Compilation Report) is incorporated by reference. This and other reports are publicly available or on file with the BLM or the county.

2. Several botanical studies have documented the setting at the project and include the potential for rare, threatened, or endangered plant species. The catalog includes multiple reports conducted throughout 2021, documenting the potential for Spring and Fall (blooming) rare plants and Special Vegetative Assemblages. The reports are included in **Table 5-8**, which references all resource studies supporting the 2022 Plan.

5.3.2.1 Original Baseline Vegetation Methodology (1990-2000)

1. The 1990 Plan defined reclamation success based on plant density and species diversity, as measured against baseline control plots.

2. Vegetation surveys were completed in 1990 and 1991, and hundreds of control plots were cataloged; resampling occurred in 1996 on the existing flora within and adjacent to the Site Boundary. The sites surveyed included:
    - The Hart townsite, former roads, and building sites.
    - Overburden piles accumulated from the South Clay Pit.
    - On-site grazed grassland.
    - On-site grazed Joshua tree woodland.
    - On-site slopes with blackbush.
    - Future sites of heap leach pads.
    - Future locations of overburden.
    - Future locations of onsite buildings and roads.
3. The original approved revegetation methodology included a grid survey with 200-meter intervals to sample the site. At each intersection of grid lines, a circular plot (10-meter diameter) was established to determine the baseline diversity and density. Two hundred ninety such grid intersection plots were established initially, and additional plots were established in 1991 and 1996.

5.3.2.2 Revised Baseline Vegetation Methodology (Post-2000)

1. CMV's ecologist, Dr. Michael Eichelberger proposed the CMM revegetation methodology should be modified in 1999 after discussions with stakeholders and agencies. The modified revegetation strategy would focus on colonizer species and grasses found throughout the site, with lesser importance on transplanted succulents and cacti. Because of this proposed change to the revegetation strategy, the County asked the California Office of Mine Reclamation (OMR) to assist CMV experts and perform additional studies. OMR completed baseline vegetation analysis in June 2000 and issued their final report (California Dept. of Conservation - Office of Mine Reclamation,

2000), in November 2000. The OMR report essentially confirmed Eichelberger's findings, and it concluded the following:

"At the request of San Bernardino County, OMR analyzed existing vegetation data for Castle Mountain Mine in 2000. We found errors and inconsistencies similar to those identified by Eichelberger. These errors included:

- *the grid sampling method used previously was not stratified for the various vegetation units at the mine;*
- *perennial grasses were not recorded in 1996 vegetation plots;*
- *stem succulents (cacti and yuccas) were not recorded; and*
- *1996 plots could not be relocated with a global positioning device.*

Based on our analysis, we determined that a field survey of vegetation was needed."

2. The OMR report concluded that changes to the revegetation standards and strategy were required. Revegetation standards were recommended to include:
    - Standards should be prescribed to specific revegetation areas designated overburden, leach pads, access roads, and pits.
    - Each revegetation area will be assessed independently of the other revegetation areas.
    - Revegetation sample plots will be randomly distributed throughout each revegetation area.
    - Plots will be non-contiguous.
    - Sample plots will be 100m^2 to be consistent with previous sampling data.
    - A minimum of 14 plots will be established per revegetation area for an 80% confidence and precision level.
    - When compared to one or more native vegetation types, the index of similarity will be at least 15%, and the density will be at least 21% for each revegetation area.
    - Within each revegetation area, any area of 1000m^2 or more outstanding that does not meet these standards will be evaluated for the need for remedial measures.

3. To meet the standards listed above, the OMR report recommended an altered revegetation strategy that proposed adopting two main strategy concepts based on using *Colonizer* plant species and then specific species characterized by one of four additional vegetation types identified at CMM. This concept is explained in more detail in Section 5.5 below.

5.4 EVALUATION AND STANDARDS FOR RECLAMATION SUCCESS

1. The standard for evaluating the revegetation success of reclaimed land at CMM changed in 2002 when the County formally approved the revised revegetation methodology to include the following parameters that were recommended by the OMR report**:**

    - Implement a strategy using species found throughout the mine in more than one vegetation type and those that exhibit a broad ecological amplitude; these will be known as COLONIZER SPECIES. Early Colonizers were chosen due to their abundance and preference for disturbed sites. They will provide a haven for established plants, trap windblown seed, and contribute to soil formation.
    - To augment the Colonizer Species, lists have been developed specific to each of the four principal vegetation types found at the mine:
        - *GENERAL*
        - *BLACKBUSH SCRUB*

- *WASH*
- *ROCKY UPLAND*

Species specific to each will be installed as containers or planted as seeds.

- Seed mix shall be derived from the seed mixtures described for revegetation species included in the OMR Vegetation Analysis report, Table 17. Table 17 from the OMR report and county revised vegetation standards is included in the 2022 Plan, **Table 5-1**;
- Species diversity shall be 15% of the perennial native species known or identified at the mine site;
- Revegetation monitoring shall occur annually for ten years or until the standard is met, whichever happens first.

2. **Table 5-1** identifies each distinct mining area as characteristic of one or more of the vegetation types, and Table 5-1a further defines the approved reclamation seed mixture for each vegetation type.
3. Each of these four vegetation types has a distinct kind of plant species within its breadth. The plants germinating and succeeding on mine reclamation sites combine perennial and annual species adapted to continual disturbance, such as desert washes. At the CMM and other reclaimed desert gold mines, it has been observed that these are often wash species adapted to fresh soil substrates with water requirements of periodic flooding. This habitat type is being simulated by current surface preparation and water enhancement grading for moisture control during reclamation. The strategy in the OMR report did not identify unique floral assemblages but determined a high degree of overlap among vegetation types, which "makes purely unique revegetation prescriptions by vegetation type almost useless" (California Dept. of Conservation - Office of Mine Reclamation, 2000).
4. Accordingly, it was determined that the revegetation areas are compared to the General vegetation type and that the density and species diversity (richness) standards should be based on cluster (vegetation) type. Revegetation success will be based on vegetation density and diversity standards in **Table 5-1c**. Note that a success standard for vegetation cover (the downward vertical projection of the vegetative crown to the ground surface), a parameter usually included for revegetation success, was not incorporated (by the County and OMR) into the CMM success standards.
5. The OMR report concluded that density and diversity were readily quantifiable, ecologically meaningful factors compared to undisturbed sites. Density is defined as the number of live perennial individuals per unit area, and diversity is the number of different perennial species (with live individuals) per unit area. The density and diversity of species in revegetated areas are now based on the "general vegetation" type specified in the OMR 2000 vegetation analysis and discussed in detail in the next section.

5.4.1 Revegetation (Vegetation) Types

1. Additional description is provided below for the five vegetation types explained above and identified in the OMR report (California Dept. of Conservation - Office of Mine Reclamation, 2000). These characteristics are also included in **Table 5-1b**.

Table 5-1. Mine Areas by Vegetation Types

Mine Area	Vegetation Type
Overburden Areas and Rocky Sites (pits)	Colonizers Plus General and/or High Rocky
Heap Leach Pad	Colonizers Plus Washes and/or General
Roads and Linear Disturbance in Natural Areas	Colonizers (Plus additional species from adjoining areas)
Facility Areas (e.g. process plant, crusher)	Colonizers (Plus additional species from adjoining areas)

Table 5-1a. Approved Revegetation Seed Mixture[74]

SPECIES[75]	FAMILY
Colonizer Species – ALL SITES	
Achnatherum speciosum	Poaceae
Adenophyllum cooperi	Asteraceae
Ambrosia dumosa	Asteraceae
Amsinckia intermedia	Brassicaceae
Aristida purpurea	Poaceae
Atriplex canescens	Chenopodiaceae
Baileya multiradiata	Asteraceae
Bouteloua eriopoda	Poaceae
Brickellia incana	Asteraceae
Chrysothamnus paniculatus	Asteraceae
Elymus elymoides	Poaceae
Encalia frutescens (hybrid at mine)	Asteraceae
Ephedra navadansis	Ephedraceae
Eriogonum fasciculatum var. polifolium	Polygonaceae
Eriogonum inflatum	Polygonaceae
Eriomeuron pulchellum	Poaceae
Gutierrezia microcephala	Asteraceae
Hymenoclea salsola	Asteraceae
Krameria erecta	Krameriaceae
Krascheninnikovia lanata	Chenopodiaceae
Lepidium fremontii	Brassicaceae
Muhlenbergia porteri	Poaceae
Penstemon palmari	Scrophulariaceae
Phacalia crenulata	Hydrophyllaceae
Pleuraphis rigida	Poaceae
Psilostrophe cooperi	Asteraceae
Rumex hymenosepalus	Polygonaceae
Salvia columbariae	Lamiaceae

[74] This list does not include ubiquitous species such as Larrea tridentata or Yucca brevifolia. These species shall be installed throughout the project area with suitable soil characteristics and adequate drainage.
[75] Based on seed availability. Will include a minimum of 13 of the 26 species.

SPECIES[75]	FAMILY
Sphaeralcea ambigua	Malvaceae
Verbena gooddingii	Verbenaceae
Xylorhiza tortifolia	Asteraceae
Additional Species – BLACK BUSH SCRUB SITES	
Coleogyne ramosissima	Rosaceae
Echinocereus engelmannii	Cactaceae
Ferocactus cylindraceus	Cactaceae
Opuntia acanthocarpa var. coloradensis	Cactaceae
Opuntia erinacaa	Cactaceae
Opuntia basilaris	Cactaceae
Tetradymia stenolepis	Asteraceae
Yucca baccata	Liliaceae
Yucca schidigera	Liliaceae
Additional Species – WASH SITES	
Ambrosia eriocentra	Asteraceae
Ericameria linearifolia	Asteraceae
Opuntia erinacea	Cactaceae
Salvia dorril	Lamiaceae
Tetradymia stenolepis	Asteraceae
Additional Species – GENERAL SITES	
Ericameria cooperi	Asteraceae
Lycium andersonii	Solanaceae
Prunus fasciculatus	Rosaceae
Salvia dorrii	*Lamiaceae*
Additional Species – HIGH ROCKY SITES	
Artemisia ludoviciana	Asteraceae
Echinocereus englemannii	Cactaceae
Ericameria laricifolia	Asteraceae
Ericameria linearifolia	Asteraceae
Salvia mohavensis	Lamiaceae

Table 5-1b. Vegetation Type and Characteristics

Vegetation Type	Topography/Elevation			Species Density and Diversity (Non-Grasses)						Grasses	Aspect	Misc.
	High Steep	Moderate	Low Flat	Strong Density	Moderate Density	Low Density	Strong Diversity	Moderate Diversity	Low Diversity			
Blackbush Scrub		X			X			X		Moderate	SW facing	Blackbush dominant
General			X		X				X	Low	South facing	
Washes			X	X				X		Strong	NONE	
Rocky Upland	X				X		X			Low	West to SW facing	Second in species density only to Washes.

Table 5-1c. Five-Year and Ten-Year Density and Diversity Goals (Revegetation Success Standards for the Castle Mountain Mine)

Standard	5-Year	10-Year
Density (# perennial plants/acre)	255 (6%)	895 (21%)
Richness (total # species on site)	5 (4%)	18 (15%)

Colonizer vegetation types are described as species exhibiting the following traits:

- vegetation types that exhibit a broad ecological amplitude
- known to occur throughout natural areas of disturbance and land regeneration

General vegetation types are described as species exhibiting the following traits:

- Occurs predominantly in lower elevation and flat topographic relief
- Lower in grass species
- Lower in species richness
- Not uniquely high in any species

Blackbush Scrub vegetation types are described as species exhibiting the following traits:

- Identified as fine grey vegetation from aerial photography
- Exhibits significantly steeper topography than any other type except *High Rocky*.
- Lower in grass species
- Significantly higher than *General* type in species richness but lower than *High Rocky*

Wash vegetation types are described as species exhibiting the following traits:

- Higher in non-grass density than most other vegetation types
- Species richness was not significantly different from the other types

High Rocky vegetation types are described as species exhibiting the following traits:

- Exhibits uniquely significant elevation and slope steepness
- Significantly higher in soil organic content and zinc than all other clusters
- Higher in non-grass density than General and Wash types, though it is high for select grasses

5.4.2 Interim Reclamation Success at CMM

1. The vegetation methodology provided in Section 5.4 identified the four baseline vegetation types: *BLACKBUSH SCRUB, GENERAL, WASHES, and ROCKY UPLAND*. The vegetation types are further characterized in **Table 5-1b*.***

2. Two primary findings guide the revegetation procedures used at the CMM. The first recognizes the importance of the colonizer species, which are those plants found throughout the site, regardless of vegetation type. The second procedure recognizes the past success of bulk native seed collection methods.

3. A minor factor of the primary revegetation strategy is the continued salvage of cacti and yuccas at the site before new land disturbance. While it's been documented that plant salvage and transplanting are susceptible to high rates of failure and, therefore, should not represent a significant component of the revegetation strategy, the benefit of these surviving transplants as sources for seed has been documented. The prior salvage and transplant practices will continue, but will be applied on a scale appropriate to their ancillary role in the larger revegetation strategy for meeting site reclamation standards.

4. Revegetation of semi-arid areas usually proceeds very slowly, especially during drought, but can be shorter if favorable seasonal rains occur. Revegetation can improve with time, owing to continued

germination, growth, and the "nurse-plant" effect of established vegetation. Confirmation that viable populations of shrubs, grasses, and forbs have been established will vary and may take several growing seasons. Owing to the variable nature of revegetation rates and the years required to attain success standards, the County imposed a 10-year post-mining reclamation monitoring period to measure revegetation success. However, it has been shown that the standards can be met sooner under some conditions.

5. Monitoring methods to measure revegetation success included procedures used during interim reclamation from 2002 to 2012. Reclaimed sites were quantitatively monitored using belt transects, typically ten quadrats (each 6x100 feet) surveyed end-to-end. In each quadrat, the plant species and numbers of perennial plants were recorded, and plant cover was estimated. A total of 18 transects were run during each period: 16 on the leach heap and process/pond area and one on the overburden sites. The monitoring sites were photographed. The results of these surveys were documented in monitoring reports.

6. The authorized and proposed mining and processing activities may extend to approximately 2048, followed by a ten-year post-mining reclamation monitoring period. Accordingly, some site areas could have over five decades of revegetation data available to assess final reclamation success.

7. Revegetation reports concerning reclamation activities at Castle Mountain are prepared annually—the data presented in these reports and onsite reviews by the agency.

5.5 REVEGETATION RESEARCH PROGRAM

1. Significant research has been completed at the CMM, and while some played a role in the successful reclamation conducted at the site, much did not, as the subject matter was deemed not applicable or the results did not prove beneficial to the ultimate goal of revegetation. Nonetheless, research continues at the CMM and a current partnership is ongoing that is studying the germination of the eastern Joshua tree.

2. Areas of completed research were extensive, so they have not been included in this 2022 Plan. However, they are incorporated by reference to the past reclamation research summary report[76] that is on file with the county and BLM and is publicly available.

5.6 GENERAL CRITERIA FOR RECLAMATION

1. Revegetation is an integral part of the reclamation process at the Castle Mountain gold mine. Whenever practicable, reclamation at the mine is conducted concurrently with mining activity; this reduces liability, reduces the susceptibility to erosion, and ultimately promotes a more efficient mine closure process. This reclamation plan includes concurrent reclamation; an efficient mine plan uses concurrent reclamation as an advantage to produce the most efficient mine and reclamation plan that is conscious of capital costs and the overall success and health of revegetated lands.

2. Accordingly, overburden sites at CMM are smartly planned such that large-scale earthworks will occur throughout the mining schedule and not reserved for the last few years during closure,

[76] Bamberg Ecological (2005 December). *Castle Mountain Mine Research and Reclamation, 1990-2005 Summary Report*

otherwise known as concurrent reclamation. The South Overburden site, for example, has been designed to mimic the surrounding steep ridgelines of the Castle Mountains at the north end of the overburden site while flattening out at the south end, resembling the flat mesa-like tops of the Piute Mountains near their confluence with the southern terminus of the Castle Mountains.

3. Once an overburden site, or portion of the site, has reached capacity and rough grading (if any) is complete, the upper crests would be pushed down to a 2.0H:1.0V slope. As the slope is worked, micro-catchment basins would be simultaneously worked into the slope face. These basins were used to great effect on the reclaimed heap leach pad.. Once this final grading is complete, the surface will be prepared to receive nursery plants (salvaged) and greenhouse-propagated plants. Lastly, the area would be seeded using a bulk seed mixture collected locally.

4. Salvaged plants from new land disturbance would be transplanted directly into prepared reclamation areas whenever possible. This won't be possible through the first few mine stages because reclamation areas aren't expected to be ready to receive vegetation until about Stage 6C.

5. Physical and biological conditioning of soil surface is vital for successful reclamation. Species selection, seed collection, planting techniques, fertilization, irrigation, and herbivory control strategies are essential components of a successful revegetation effort. The original Plan discusses these components in more detail than will be provided again in this plan. Accordingly, the interested reader is referred to Section 1.5 of the original reclamation plan for information on the following items:

    - Educational program for heavy equipment operators
    - Experimental garden and nursery
    - Salvage and transplanting
    - Seed bank establishment, soil salvage and handling
    - Land shaping, overburden handling and placement
    - Soil islands
    - Seedbed preparation
    - Seeding and planting sources
    - Characteristics of recommended species
    - Seeding and planting methods
    - Seeding and planting timeframe
    - Control of weed and exotic species
    - Early irrigation
    - Mulching

6. Native seed collection is integral to the 2022 Reclamation Plan, as it was for interim reclamation at CMM. While individual seed species are selectively targeted, most of the seed is collected by a *bulk native seed collection* technique; details include:
    - Determine that seeds are ripe (not green); timing will vary by species
    - Seeds collected directly from the plant/bush or underneath from the ground
    - Gathered seeds placed in 5-gallon buckets and larger bags for later processing
    - Collection should be spread out to not deplete the natural soil seed bank
    - Process seed on the same day as the collection
    - Sort seed over an expanded metal table to sift out debris
    - Allow the seed to completely dry, then seal inside a large plastic trash bag
    - Bags should be zip-tie sealed, labeled with a collection date and location
    - Sealed bags placed into 55-gallon drums and stored in a cool, dry environment

7. The most important (colonizer) species that will be collected via species-specific or bulk seed collection at CMM include:
    - **Creosote bush** – Exhibits yellow flowers; seeds are ripe when the white fuzz-balls turn tan and fall off the plant, best collected underneath the bush when seeds fall, and should be ready by late June into July.
    - **Four-wing saltbush** – Exhibits green flowers that turn tan and hang onto the bush that can be collected from the bush or underneath from the ground. This plant is the most abundant one on the interim reclaimed mine site. The current year's seeds can be collected by October or November if the plants flower again.
    - **California buckwheat** – A low-growing shrub with balls of white flowers that turn reddish-brown when ripe. This plant is abundant in the washes on the mine site and along the access road, and seed can be collected off the bushes by late summer or early fall (the bright color makes it very obvious when ripe).
    - **Rabbitbrush**—A tall shrub with yellow flowers that produce white fuzzy seeds. It blooms in late summer and is ripe by early fall. Seeds can be collected from the plants or underneath from the ground. It grows along the edges of roads and on the mine site.
    - **Joshua trees and other yuccas** – These plants have abundant, large green pods when they bloom and produce seed, which does not happen every year (usually about once every five-years) for most plants. Seeds can be collected everywhere when the pods turn tan, split open, and the seeds turn black or brown. The seeds should be removed from the pods and stored to protect from insects; some seeds will have holes from the yucca moth larvae that eat them, but most seeds should be okay to harvest and store.

8. Sowing seed should be done during fall and winter and can be hand sown or aerial seeding. Interim reclamation at the heap leach pad area of the CMM was seeded aerially. All sources of seed should be blended before seeding. Seeding rates can be adjusted for specific areas, but interim reclamation used 15 pounds per acre for aerial seeding and 20 pounds per acre by hand seeding. These same parameters are included in this 2022 Plan.

9. Condition 48C of the County *Conditions of Approval* requires that salvaged plants be replanted into reclaimed areas with the objective "to provide a continuous seed source" as an integral part of the revegetation plan. However, experience has shown that many salvaged plants die before being permanently transplanted into the revegetation areas and, therefore, might not be available to provide the continuous seed source as envisioned. Nonetheless, about 10,000 salvaged and propagated plant species were transplanted onto portions of the reclaimed mine in 2001 and provided some seed. However, revegetation will remain largely dependent upon successful germination and growth from seeds of the species contained within the revegetation seed mix.

10. Plant salvage (as described in condition No. 48C) of areas scheduled for mine disturbance included the following species:

    - **Joshua tree** – Plants that are ten feet in height (and small seedlings under mature trees), unbranched or with few branches, will be planted once they are salvaged.
    - **Mojave Yucca** – Well-developed, single-stemmed plants without a vertical trunk.
    - **Blue Yucca** – Well-developed, single-stemmed plants without a vertical trunk.

- **Barrel Cactus** – Plants of most sizes were successfully transplanted and survived well in nursery gardens until planted.

11. Twenty-five percent of each species in the salvageable size class will be salvaged and placed either in a nursery or, if one is available, directly into a final reclamation site.

12. Two primary plant salvage Nurseries operate at CMM, the North and East Nursery. The North Nursery was developed in 1991 and was the primary nursery throughout 1990 operations at CMM; it included the greenhouse facilities where seedlings were grown on-site. The North Nursery has about 2,500 plants in inventory, ranging from one to three years since relocation to the nursery. The East Nursery is more recent and developed in 2021 due to the need for additional nursery capacity. The inventory of salvaged plants at the East Nursery is about 1,000.

13. Condition 48C requires the salvage of four specific species at CMM. However, we voluntarily salvage a wide range of plant species. These are included in **Table 5-2,** along with an estimated inventory for each type.

14. A greenhouse measuring approximately 50 x 70 feet has recently been re-established at the North Nursery location. We expect the greenhouse to be fully operational during 2022, and it will serve as a core element of the revegetation strategy of the 2022 Plan to produce nursery stock grown from seed collected at or adjacent to the CMM project.

15. The Revegetation Annual Reports summarize propagation techniques, seed and plant inventories, seed collections, and other horticultural aspects required for successful revegetation each year; the most current report for 2023 is on file with the BLM and the county.

Table 5-2. Estimated Salvage Plant Nursery Inventory

SALVAGED PLANT SPECIES (common name)	SALVAGED PLANT SPECIES *(botanical name)*	ESTIMATED INVENTORY (number of plants)
Eastern Joshua tree	*Yucca brevifolia jaegeriana*	1,250
Mojave Yucca	*Yucca schidigera*	870
Banana yucca	*Yucca baccata*	350
Barrel cactus	*Ferocactus cylindraceus*	440
Grizzley bear cactus	*Opuntia polyacantha var. erinacea*	30
Prickly Pear cactus	*Opuntia sp.*	40
Hedgehog cactus	*Echinocereus engelmannii*	40
Beavertail cactus	*Opuntia basilaris*	120
Buckthorn cholla	*Clindropuntia acanthocarpa*	300
Matted Cholla	*Grunsonia parishii*	20
Cotton-top cactus	*Echinocactus polycephalus*	50
Penstemon	*Penstemon sp.*	35
Creosote Bush	*Larrea tridentata*	15

5.7 MONITORING FOR SUCCESS STANDARDS

5.7.1 Method

1. The method previously used coupled linear transects. These are linear plots (typically 2 x 10 meters in size) laid end to end along straight compass lines and oriented parallel to the slopes and gradients. Vegetative parameters of density and diversity will be recorded in each plot. Transects will be analyzed for these parameters to determine vegetative success. The vegetation data collected will provide information for the following activities or requirements:

    - support the Plan and reclamation planning and tie in with previous baseline reports on vegetation typing, mapping, and characterization,
    - support and supply information for establishing reclamation standards on areas to be revegetated as required by the lead agencies
    - identify species and estimated densities for permitting, clearing, and salvaging protected native plants.

2. The objectives of these surveys are:

    - Providing quantitative data on revegetation plot plant growth and cover.
    - Develop quantitative means for establishing vegetation standards for reclamation, should this become an issue.

3. The methods proposed for conducting these surveys and providing the needed information are efficient and cost-effective. The methodology uses linear plots to quantify all the required variables for vegetation analysis. These quantitative plots allow a large and statistically valid sample to be taken in a short time. The plots cover more of the area to be sampled and will represent the reclaimed areas.

    Linear transects can be run in a specific compass direction from points chosen randomly within a reclaimed area. Transects can be run from these points in a direction (specific azimuth) along gradients at about the same elevation as the starting point. Each transect will be run until the edge of the type is encountered or approximately 15 plots have been recorded. A 30-meter steel tape will be stretched along the transect line. About the same number of samples will be measured in each vegetation type for comparative purposes.

    These methods will be followed and repeated in each reclaimed area during the sampling periods. All measurements are to be recorded on the field sheets. Specific field forms have been developed and used during the field measurements. These forms will be transferred to computer spreadsheets for general analysis and statistical tests.

    The number of samples will depend on the heterogeneity of the surveyed linear plots. Sample adequacy for the number of factors being measured is not of concern, but a large number of samples is required for statistical and correlation analysis. Currently, the number of samples planned is a minimum of 30 (up to 45) plots on six transect lines in each area.

    Sample adequacy is determined in the field using a sample adequacy formula adapted to heterogeneous vegetation with low perennial densities and plant cover.

The typical formula used is:

$$n_{min} = \frac{t^2 s^2}{(dx)^2}$$

where,

n_{min} = minimum number of samples necessary, based on total cover or density estimates

x = sample mean
s = standard deviation of the sample
t = the t value for a 1-tailed t-test at 80% confidence
d = desired change in the mean (an accuracy of 0.3)

This formula, or some variation, is a standard statistical formula that is generally accepted for determining sample adequacy. However, the formula assumes that the samples taken are from a normally distributed plant population that is relatively uniform and homogeneous. There is also the assumption that plants are randomly distributed in space, and the sample values consist of large numbers.

4. The topography and soils on the reclaimed site will be complex and disturbed at the time of reclamation. The vegetation eventually established will be in a successional status for an indefinite period, not uniform, and composed partly of pioneer species that may differ from natural, mature vegetation species and patterns. The rainfall pattern in this desert portion of California may require several years for good germination and subsequent vegetative growth. No surface water source is available, and well water is inadequate for plant irrigation. An adequate seed source can be assured, but water for revegetation, either from precipitation or irrigation, cannot be controlled or provided. Methods for ensuring a proper native plant seed bank have been developed. Locally collected seed and growth media materials from areas to be developed during mining activities will be available for revegetation activities.

5. The results of the interim monitoring program were documented in annual reports; this will continue. The reports included all methods and any modifications necessitated by field sampling or statistical analysis. The statistical parameters and correlation coefficients provided a quantitative basis for future reclamation standards for vegetation values. These reports are available upon request and are on file with the county and BLM.

6. Quantitative monitoring of revegetated areas will be conducted on an annual basis until stated success criteria are met or exceeded for two (2) consecutive years or ten years of monitoring is completed, whichever occurs first. After success is demonstrated, bonds can be released. Qualitative estimation techniques (visual estimation on variable-sized plots) will be used in the years immediately following revegetation to document plant germination and growth and determine when the revegetated area will likely meet standards. Quantitative methods (linear transects) are necessary. Monitoring will continue until reclamation success criteria are achieved.

5.8 DECOMMISSIONING OF FACILITIES

5.8.1 Mine Pit Backfilling and Overburden Sites

1. The 1998 Plan presumed that the Oro Belle and, to a lesser extent, South Extension would be the last pits mined. Therefore, the approved 1998 Plan contemplated that the JSLA (i.e., Lesley Ann) and Jumbo pits would be mostly backfilled, while the final excavations at the Oro Belle and South Extension would not be backfilled. The 1997 Final EIS thoroughly explains this backfilling strategy on page 4-1. That section further explained that the benefits from backfilling are maximized when it occurs sequentially with mining to avoid material double-handling. The 2022 Plan maintains this accepted approach to backfilling at the CMM. The 2022 Plan adjusts the sequencing of mining, with the South Extension pit being the last pit mined. Therefore, it will not be significantly backfilled. Aside from the mining sequence, this approach to pit backfilling remains the same as before. The northern pits (JSLA, Jumbo, and Oro Belle), which can be sequentially backfilled, are planned to be backfilled according to this reclamation plan.

2. The South Extension pit will only have a minor portion backfilled. Specifically, the existing approved South Extension pit will be backfilled. The remaining South Extension pit will be the only one left open post-mining. Reclamation of the open portion of the South Extension pit includes ripping the pit floors and haul roads, applying growth media, and seeding and/or replanting nursery stock. The focus will include seeding pit floors and benches with native vegetation preferred by local fauna, including desert bighorn sheep.

3. The open portion of the South Extension pit may develop a pit lake. The results of groundwater and pit lake modeling and geochemical testing of ore and overburden material sampling suggest that any metal leaching should be low and non-acid-generating. Ore and overburden material testing was conducted on material proposed for handling in the 2022 Plan. The results indicate that the ore and overburden material at the CMM are not expected to be acid-generating and are relatively low in total and leachable heavy metals. The full geochemical materials characterization report is included in **Appendix H**. A Waste Rock Management Plan is included in **Appendix F**. Discussion of modeling results that forecast pit lake water quality is presented in **Appendix E**. Rock staining will not be applied since prior rock staining investigations carried out at the site during past reclamation proved unsuccessful, and the lead agencies previously waived this requirement.

4. Stabilization of post-closure landforms will be achieved through regrading and slope reduction, as discussed in Section 5.8. This Plan provides flexibility in slope configuration, as shown in **Figure 5-3.** Slope micro-catchment basin contouring was used extensively at the heap leach pad recontoured during interim reclamation and will be included as a standard reclamation technique, particularly for sloped features. This process forms a continuous surface of small (approximately 10'x10') basins simultaneously during slope grading. The resulting slopes yield greater resistance to erosion and higher seed germination rates than other slopes contoured traditionally.

5. The slopes of the overburden sites will be recontoured to an overall slope of 2.0H to 1.0V. Recontoured overburden sites are shown in plan and elevation profiles in **Figures 5-4** and **Figure 5-5.**

6. During the final contouring of the overburdened surfaces, the surface water flow will be directed toward the center of the sites, where small infiltration basins will be formed to allow meteoric water infiltration through the overburdened material; this will keep significant flushes of surface water off

the slope faces, thereby limiting erosion. Surface water flow pathways through reclaimed overburden sites are shown on the reclamation hydrology plan for **Figure 5-6.**

7. Growth media will be distributed to form soil hammocks across the tops of overburden sites. Outside these islands, growth media will be blended with the course overburden to present the optimal growing medium that produced the best results from the interim reclamation completed at CMM. As part of the final recontouring of these areas before revegetation, the micro-catchment basins would be formed to channel rainfall into specific areas, trap seeds, and reduce erosion.

5.8.2 Crushing Plant, Comminution Plant, and Overland Conveyors

1. When mining has been completed and ore stockpiles processed, structures and equipment will be disassembled for salvage and removal. Since the Processing Plant and solution handling facilities will have to remain in service until the Heap Leach Pad has been rinsed and decommissioned, the unneeded facilities will be the first to be dismantled.

2. Structural steel and sheet metal siding, decking, and grates will be sold as scrap metal. Demolition debris with no salvage value will be disposed of at an approved landfill.

3. The foundations for primary facilities have large reinforced concrete structures. These foundations will be buried in place during decommissioning using growth media or rinsed heap leach material. Foundations for the other minor structures will be buried in place whenever practical or broken up and buried in the basins at the heap leach site before they are filled in and topped with growth media.

5.8.3 Solution Tanks, Basins and Piping

1. Rinse water or a neutralizing solution will be circulated through the solution storage tanks, piping, and heap leach piles until residual cyanide concentrations are reduced to levels acceptable to the RWQCB. The remaining solutions will be allowed to evaporate. Sludge accumulated in the bottom of the solution storage tanks and basins will be assayed, and, if found hazardous, it will be sent to an approved hazardous waste facility for disposal. If it is deemed non-hazardous, the material will be applied to the heap leach pile.

2. Solution storage tanks will be disassembled and sold for salvage or scrap value. When the basins are backfilled, concrete ring foundations beneath the tanks will be buried in place.

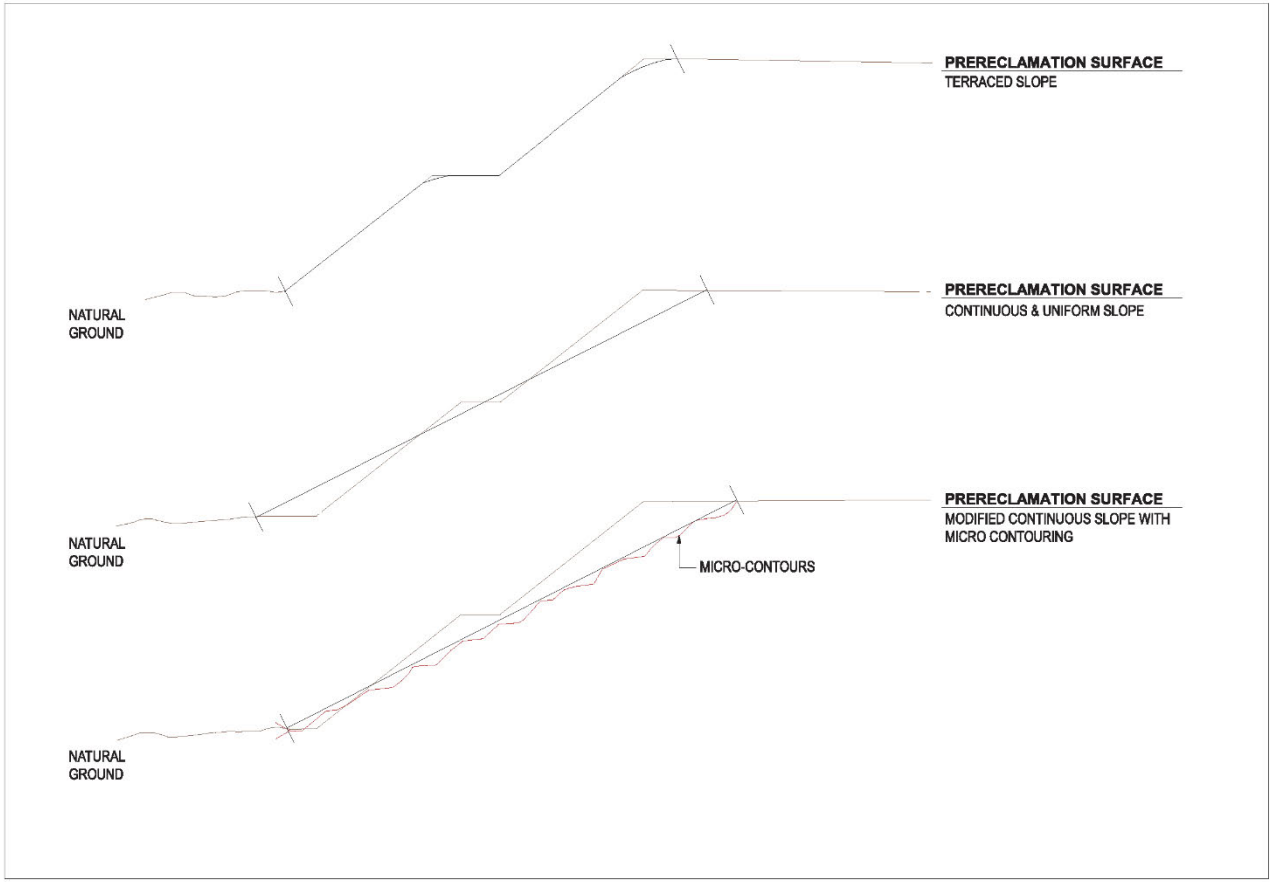


Figure 5-3 Reclamation Slopes

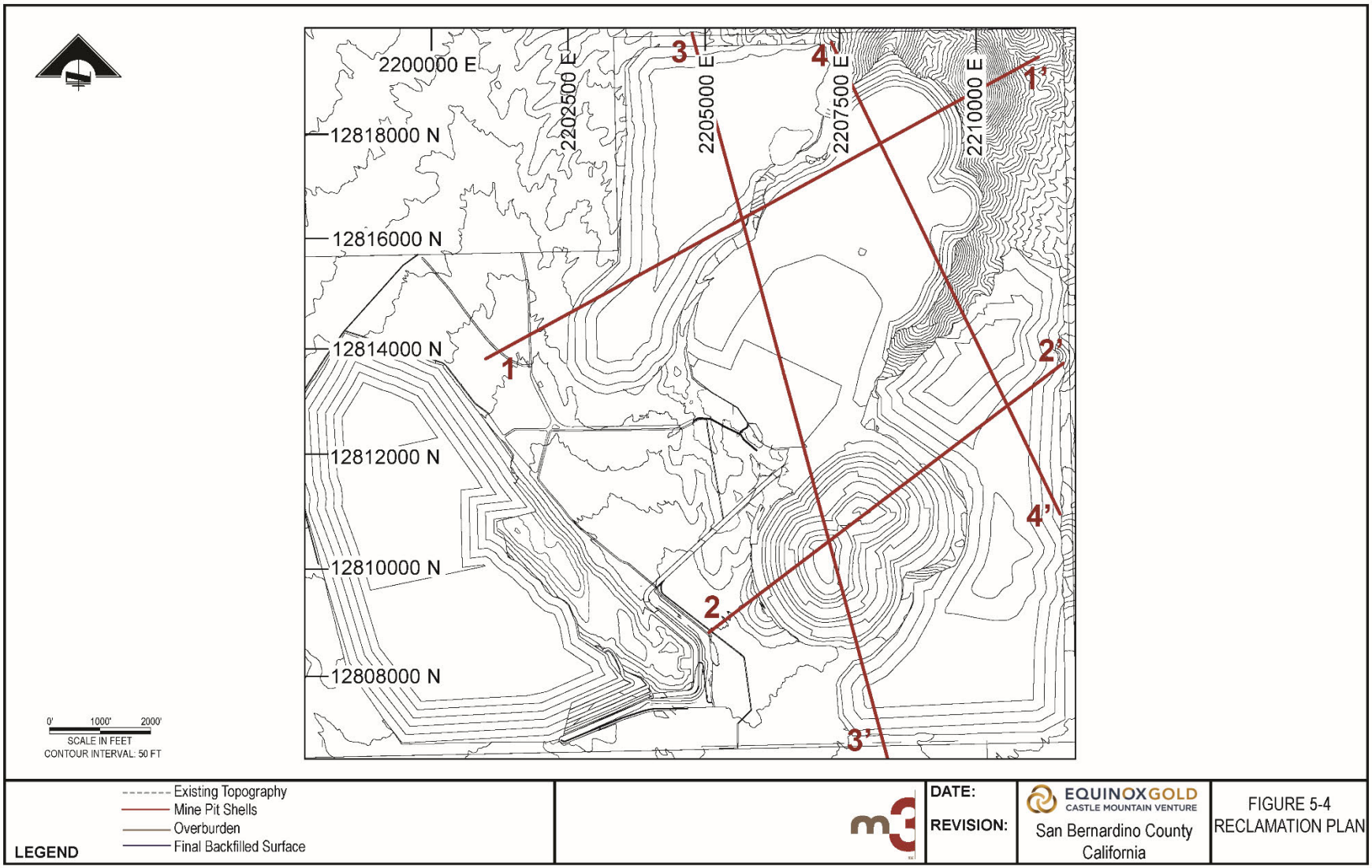


Figure 5-4. Reclamation Plan View

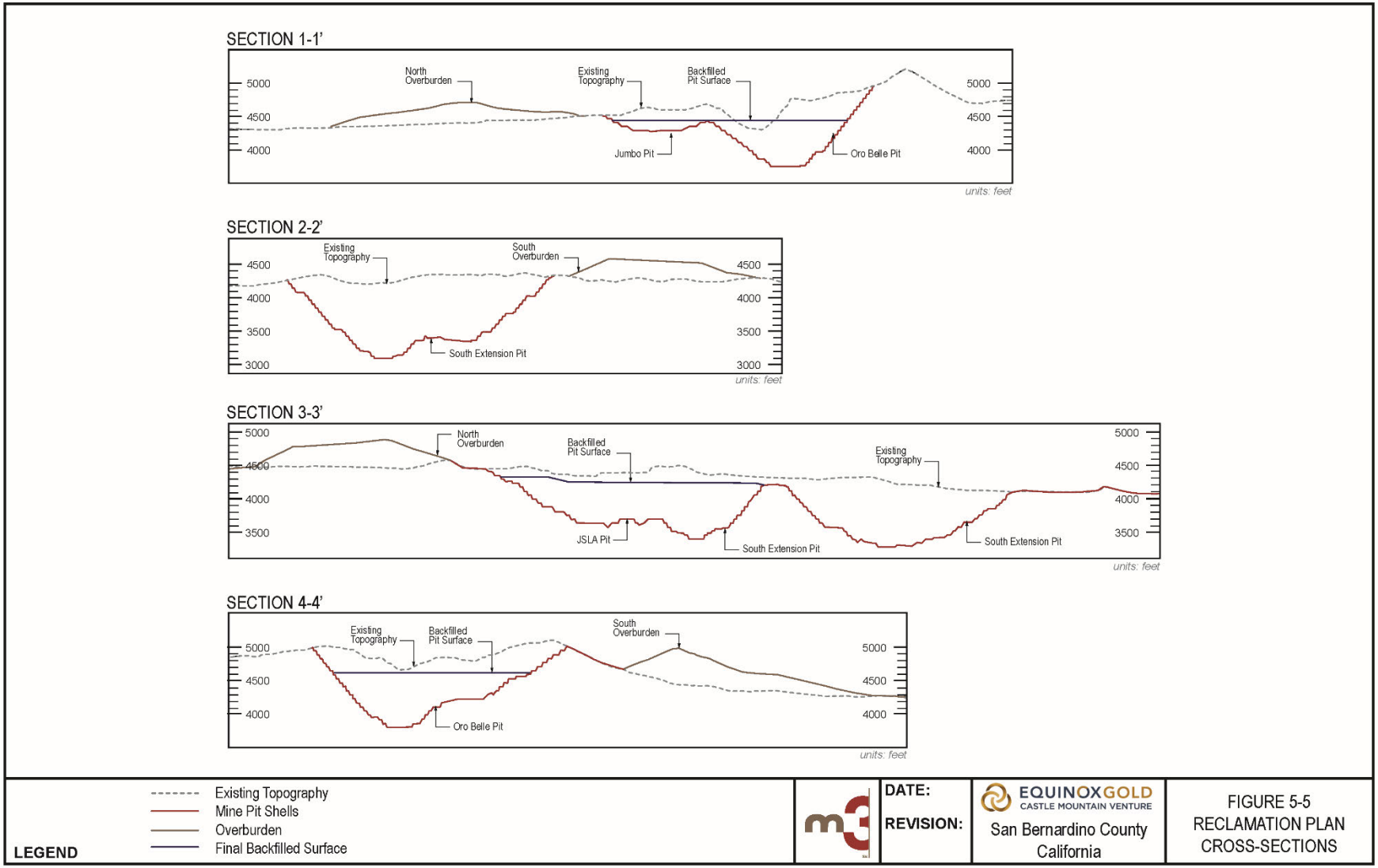


Figure 5-5. Reclamation Plan Cross-Sections

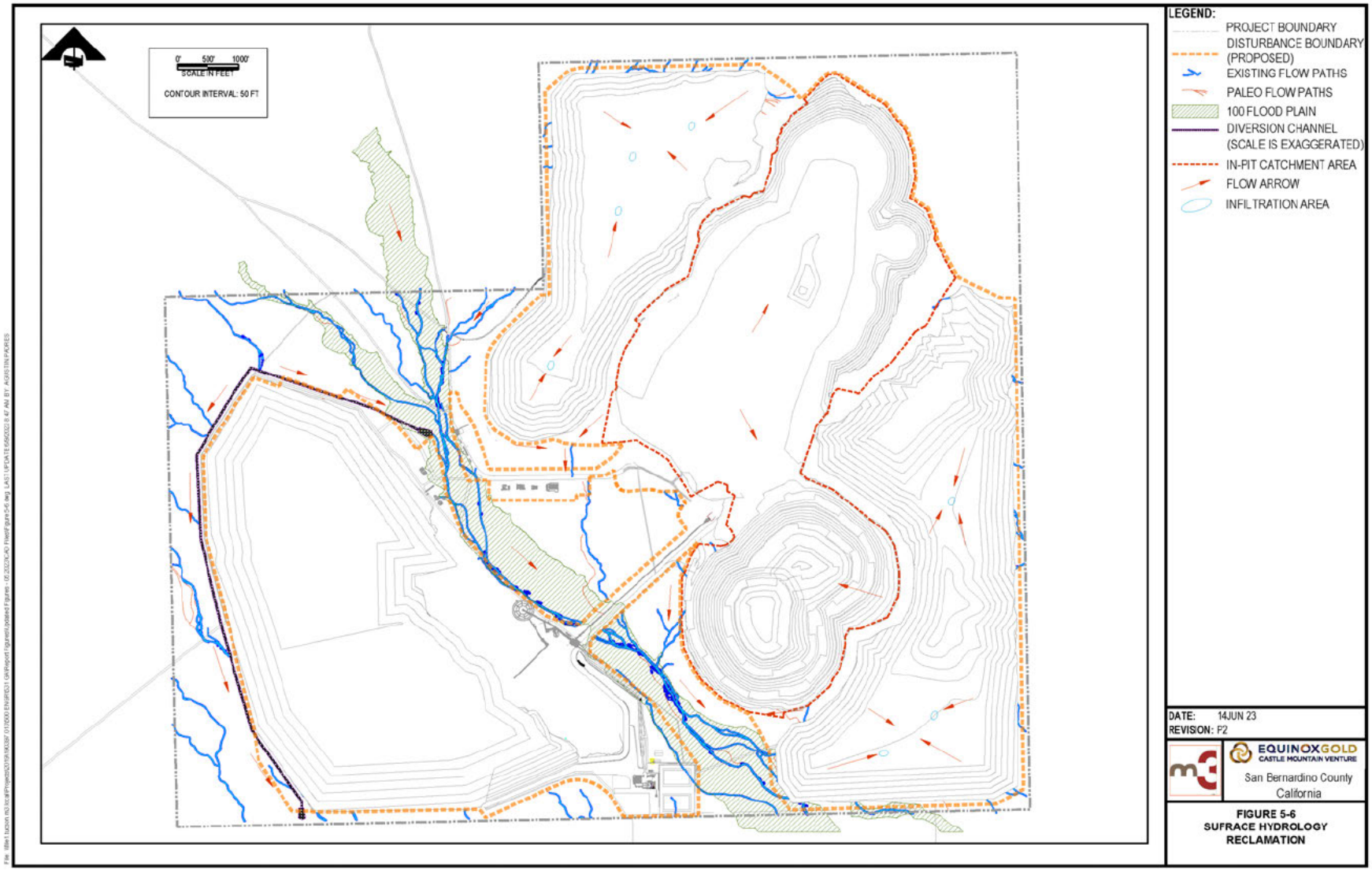


Figure 5-6. Surface Hydrology - Reclamation

After the tanks have been removed, the liners in the basins will be freed from anchor trenches, folded in on themselves, and covered with broken concrete from building foundations, slabs, and water-well pads. These materials will then be covered with fill materials, primarily overburden. Final grading of the surface, including the application of "soil islands" of growth media, will reestablish approximate pre-mining contours, thus restoring pre-mining drainage patterns in this area. **Figure 5-7** shows a plan and cross-section view extending from the Process Plant (and ponds) to the Crushing Plant.

5.8.4 Heap Leach Piles

1. Spent ore material on the heap leach piles will be detoxified by circulating rinse water or a neutralizing solution through the heaps until the residual cyanide concentrations are reduced to levels stipulated in the RWQCB waste discharge permit. Extensive sampling (per a RWQCB approved closure plan) will confirm cyanide destruction and spent ore piles will be graded to 2.5H:1.0V slope to assure long-term stability. During grading, micro-catchment basin depressions will define the slopes of the heap leach pile. The effect of these micro-basins is included in **Figure 5-8,** showing the initial formation of the contouring and resulting vegetation success. These have been used extensively and to great effect at the project site; they benefit seed germination and vegetation survival by locking seeds in place, promoting rain retention on the pile (versus run-off), and preventing the otherwise resulting erosion.

2. Regrading and slope reduction will stabilize post-closure heap landforms, as discussed in Sections 5.8 and 5.9.1. This Plan provides flexibility in slope configuration, as shown in **Figure 5-3.**

3. Some mounding of the heap tops will be done during regrading. This will serve two purposes: (1) small-scale reduction of visual contrast with surrounding landforms and (2) micro-catchment hollows and depressions to direct surface flows to selected sites for revegetation purposes.

4. Process solutions will be evaporated concurrently with heap rinsing and detoxification. Any excess solutions from the gold recovery circuit will be pumped into the tanks and treated like heap leach solution.

5. Surplus reagents will be shipped back to the manufacturer via approved transport. Unsealed or partially used reagent containers will be dealt with individually. Nonhazardous or nontoxic reagents will be shipped to a Class III landfill. Toxic and hazardous chemicals will be shipped via a licensed carrier to an approved hazardous waste facility for disposal.

5.8.5 Processing and Ancillary Structures

1. Unneeded buildings and structures will be dismantled and removed to continue reclamation and monitoring. Concrete footings, slabs, and foundations will be buried in place or in the basins near the Process Area.

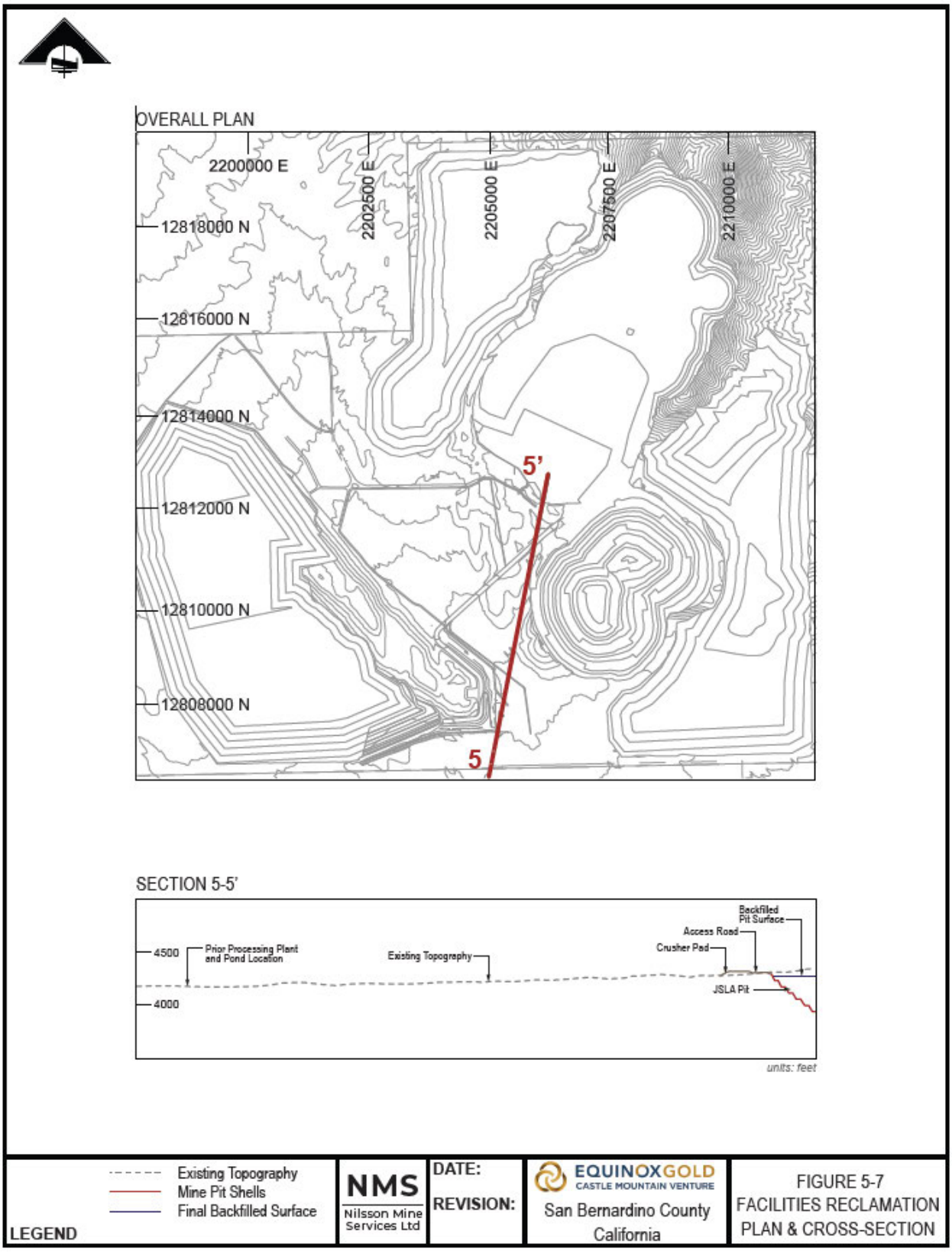


Figure 5-7. Facilities Reclamation Plan and Cross-Sections



LEGEND

DATE:

REVISION:

EQUINOXGOLD
CASTLE MOUNTAIN VENTURE
San Bernardino County
California

FIGURE 5-8
HEAP LEACH PAD
RECLAMATION PHOTO

Figure 5-8. Heap Leach Pad Reclamation Photo

5.8.6 Other Facilities

1. Before project termination, the BLM will be asked to designate a well for recreational needs, stock water purposes, and wildlife guzzler supply. This would allow water supplies in the Northern Lanfair Valley to be improved without drilling new wells and disturbing additional land. Water wells not needed for irrigation requirements for reclamation at Castle Mountain will be decommissioned at the end of the mine life. Decommissioning will be in a manner that complies with the specifications of the County Department of Environmental Health Services. The wells will be left in a condition allowing them to be reopened as needed.

2. CMV will hire a licensed California driller/contractor to perform well abandonment following the laws of California[77]The concrete platforms surrounding each wellhead will be demolished, and the broken concrete will be placed in the basins at the leach pad area or in other areas acceptable to BLM. The driller/contractor will perform well casing removal and plugging. After completing these tasks, the well site areas and related service roads will be ripped to eliminate soil compaction and revegetated.

3. Aboveground utilities will be removed. Underground utilities will be drained, sealed, and covered, and all other equipment and materials will be removed from the site.

4. If any known portals, shafts, tunnels, or openings remain on the mine site after termination of mining, they will be either closed (destroyed) or gated for protection from public entry but preserved for bats and other wildlife if appropriate with BLM and County consultation.

5.8.7 Roads

1. Site roads, parking lots, and portions of access roads designated by the BLM for closure will be reworked, ripped, and revegetated. As directed by the BLM and the County, other roads will remain open to the public following the mine closure. Roads assumed to stay open for post-mining use are identified in **Figure 2-9**.

5.9 STAGE RECLAMATION SCHEDULE

1. This section of the Reclamation Plan describes how reclamation activities would be integrated with mining operations.

2. 2022 Plan mining and reclamation are separated into nine distinct stages. **Table 5-3** identifies the mining and reclamation activities estimated to occur parallel with each stage identified in the plan. These stages are separated based on the interrelationships between preproduction mining development and plant construction; mining; placement of ore, low-grade ore, and overburden; and reclamation efforts. The estimated acreage to be reclaimed is shown in **Table 5-4**, showing the incremental acreage prepared for revegetation by stage.

3. Before any initial land disturbance, CMV conducts several activities to satisfy reclamation requirements found in this section of the 2022 Plan. These activities include:

    - Native vegetation sample plots are identified, and plant salvage targets are defined in compliance with section 5.7 of this Plan.
    - Complete any required pre-construction clearance surveys for migratory (nesting) birds, desert tortoises, etc.

[77] California Department of Water Resources, Bulletin 118, November 2021

- Native plants are salvaged and transplanted at on-site nurseries or directly to reclaimed mine areas prepared for revegetation.
- Removal and stockpile of growth media and organic matter consistent with Section 4.4.1 of this plan.

3. Once a disturbed area won't require further disturbance or mine development, physical reclamation procedures (i.e., regrading, surface preparation, et cetera) will begin, and revegetation activities will commence for that area. **Table 5-4** summarizes when ground preparation activities (grading, contouring, growth media placement, scarifying, etc.) are estimated for completion at each area.

4. Mining is a dynamic process that must be responsive to changing economic conditions and other factors. The reclamation plan is no different, and it may not be possible to anticipate what reclamation modifications might result from adjustments to the mining schedule or other factors. Therefore, the following reclamation activity schedule by stage should be understood as an estimated schedule, subject to change.

5.9.1 Staged Reclamation Schedule

1. This section of the Reclamation Plan describes how reclamation activities would be integrated with mining operations. The separation of the stages is based on the interrelationships between the following factors: preproduction mining development and plant construction, mining, placement of ore, low-grade ore, protore, overburden, and reclamation. Estimated reclaimed acres are shown in **Table 5-4**.

2. Because significant interim reclamation has been conducted, this section will identify earlier completed Stages where reclamation has been satisfied, but will not provide details for completed reclamation. The focus of stage reclamation will be on future reclamation that has yet to occur.

5.9.1.1 Historic Staged Reclamation

5.9.1.1.1 Stages 1 through 4 (October 1990 to March 31, 1995)

1. Interim reclamation completed in 2012.

5.9.1.1.2 Phase I Mining – Stages 5A through 5D (April 1995 to May 2001)

1. Interim reclamation completed in 2012.

Table 5-3. Chronological Relationship of Mine and Reclamation Schedules by Phases and Stages

STAGE	START *(estimated)*	END *(estimated)*	ACTIVITY	STATUS
1990 PLAN (complete)				
Stage 1 - 4	1991	1995	Mining at Lesley Ann[78](JSLA) pit; Overburden to SOB	Complete
1998 PLAN (Phase I and Phase II approved)				
Phase I Stage 5A	1995	1996	Mining at JSLA, Jumbo, Oro Belle pits; Overburden to SOB	Complete
Phase I Stage 5B	1996	1997	Mining at Jumbo, Oro Belle pits; Overburden to NOB and JSLA backfill	Complete
Phase I Stage 5C	1997	1998	Mining at Jumbo, Oro Belle pits; Overburden to NOB and JSLA backfill	Complete
Phase I Stage 5D	1998	1999	Mining at Jumbo, Oro Belle pits; Overburden to NOB and JSLA backfill	Incomplete
Phase I Stage 5E	1999	2000	Mining at Jumbo, Oro Belle pits; Overburden to NOB and JSLA backfill	Incomplete
Phase I Stage 5F	2000	2001	Mining at Oro Belle pit; Overburden to NOB and JSLA backfill	Incomplete[79]
Phase I Stage 5D-5F[80]	2020	2023	Mining JSLA protore and Overburden protore; Overburden to NOB	Active
2022 PLAN (Phase II proposed)				
Phase II[81] Stage 6	2024	2025	Mining protore stockpiles; JSLA pit; facility construction	Pending
Phase II Stage 6A	2026	2028	Mining at JSLA pit and (approved) South Extension pit; Overburden to South Overburden and North Overburden sites	Proposed
Phase II Stage 6B	2029	2030	Mining at JSLA, Jumbo, Oro Belle pits; Overburden to South Overburden/North Overburden sites. Reclamation begins at the south end of South Overburden site	Proposed
Phase II Stage 6C	2031	2033	Mining ends at JSLA and continues at Jumbo, Oro Belle pits, Overburden to North Overburden site. Reclamation activity: JSLA pit backfill begins, South Overburden continues, and begins at North Overburden	Proposed
Phase II Stage 6D	2034	2036	Mining ends at Jumbo, continues at Oro Belle, and begins at (expanded) South Extension pit. Reclamation activity: all overburden to backfill JSLA, Jumbo, and Oro Belle pits. Revegetation begins at overburden sites	Proposed
Phase II Stage 6E	2037	2039	Mining ends at the Oro Belle pit and continues at (expanded) South Extension pit; Reclamation activity: all overburden to backfill JSLA, Jumbo, and Oro Belle pits.	Proposed
Phase II Stage 6F	2040	2041	Mining at (expanded) South Extension pit; Reclamation activity: all overburden to JSLA, Jumbo, Oro Belle pits, begin contouring of the leach pad surface and of minor support facilities	Proposed

[78] Lesley Ann pit identification eventually changes to JSLA or Jumbo South Lesley Ann pit
[79] Mining activity was suspended in May 2001.
[80] Incomplete aspects of mine plan Stage 5D to 5F were modified in 2020 during mine restart activity
[81] Phase II, Stage 6 is approved per 1998 Plan, but mining activity would expand in the 2022 Plan

STAGE	START *(estimated)*	END *(estimated)*	ACTIVITY	STATUS
Phase II Stage 6G	2042	2045	Mining inferred resources and stockpiles; backfill of northern pits is complete, and revegetation begins; contouring at leach pad continues	Proposed
Stage 7	2046	2048	Heap leach pad ore leaching and rinsing complete, final slope contouring begins; crush and comminution facilities removed	Pending
Stage 8	2049	2050	The heap leach pad is decommissioned, and plant seeding begins; process plant facilities are removed and graded.	Pending
Stage 9	2051	2058	Reclamation is Complete and monitoring begins	Pending

Table 5-4. Concurrent Reclamation Schedule, by Stage[82]

AREA DISTURBED	CUMULATIVE to STAGE 5D-F	STAGE 6	STAGE 6A	STAGE 6B	STAGE 6C	STAGE 6D	STAGE 6E	STAGE 6F	STAGE 6G	STAGE 7	STAGE 8	STAGE 9[83]	End-Use Land (*unreclaimed*)	TOTAL
JSLA Pit					200[84]	70	170		90				280	810
Jumbo+ Oro Belle Pits														
South Extension Pit														
North Overburden Site					100	100	100	103						403
South Overburden Site				200	200	150	37	50						637
Crushing Area									3					3
Process Plant and Ponds												54		54
Administration & Mine Shop								20[85]				50		70
Heap Leach Pad[86]								100	250	200	218	55		823
Roads	2								15				20	37
Growth Media Stockpile Areas and Plant Nurseries	*Most growth media stockpiles are reclaimed during reclamation of adjacent facilities such as overburden sites or the leach pad											16		16
STAGE SUBTOTALS	2	0	0	200	500	320	307	273	358	200	218	175	300	2,853
CUMULATIVE ACRES	**2**	**2**	**2**	**202**	**702**	**1,022**	**1,329**	**1,602**	**1,960**	**2,160**	**2,378**	**2,553**	**2,853**	**2,853**

[82] Preparations for reclamation will begin by the end of each stage. Acres presented here may not reflect disturbance estimates presented elsewhere in the 2022 Plan; however, total acres are consistent.
[83] Stage 9 involves revegetation in areas where buildings have been dismantled and removed following project decommissioning (See Section 3.8, Decommissioning of Facilities). Stage 9 will end after the tenth growing season following initial plantings on the locations involved in project decommissioning, or sooner if standards are achieved.
[84] JSLA and (approved) South Extension pits backfill begins
[85] Geology and core storage area
[86] Includes 5 acres of Comminution Circuit disturbance reclaimed during Stage 9.

5.9.1.2 Scheduled Staged Reclamation

5.9.1.2.1 Phase I Mining – Stages 5D through 5F (2020 to 2023)

1. Reclamation activities early in the mine plan will include growth media stockpiling, native plant salvage, native bulk seed collection, and seedling propagation at the greenhouse. Research would be conducted as opportunities arise.

5.9.1.2.2 Phase II Mining– Stage 6 (2024 to 2025)

1. Reclamation activities early in the mine plan will include growth media stockpiling, native plant salvage, native bulk seed collection, and seedling propagation at the greenhouse. Research will be conducted as opportunities arise.

5.9.1.2.3 Phase II Mining – Stage 6A (2026 to 2028)

1. Reclamation activities early in the mine plan will include growth media stockpiling, native plant salvage, native bulk seed collection, and seedling propagation at the greenhouse. Research will be conducted as opportunities arise.

5.9.1.2.4 Phase II Mining – Stage 6B (2029 to 2030)

1. The southern end of the South Overburden site will reach capacity during Stage 6A, so rough contouring will begin over an estimated 200 acres during Stage 6B.

5.9.1.2.5 Phase II Mining – Stage 6C (2031 to 2033)

1. Rough contouring will continue at the South Overburden site, with 200 acres ready for reclamation. During this stage, the southern end of the North Overburden site will also reach capacity, and rough contouring would begin over about 100 acres.

2. JSLA pit backfilling begins with about 200 acres of pit floor and high walls reclaimed as the backfill increases in elevation.

5.9.1.2.6 Phase II Mining – Stage 6D (2034 to 2036)

1. Most of the South Overburden site will reach capacity by stage 6D, and an additional 150 acres will be rough-contoured during this stage. A further 100 acres of the North Overburden site will also be ready for rough contouring.

2. Pit backfilling extends to the Oro Belle pit, with about 70 acres of pit floor and high wall reclaimed as the backfill elevation rises.

5.9.1.2.7 Phase II Mining – Stage 6E (2037 to 2039)

1. Most of the North Overburden site reaches capacity during stage 6E, and an additional 100 acres will be prepared for rough grading. Land-forming continues at the South Overburden site, but the focus shifts to the North Overburden site.

2. The JSLA, Jumbo, and Oro Belle pits continue to receive backfill material, and as the backfill elevation increases, an additional 170 acres will be reclaimed.

5.9.1.2.8 Phase II Mining – Stage 6F (2040 to 2041)

1. The rough and final contouring at the South Overburden site will finish during stage 6F, and the remaining 103 acres of rough contouring will be completed at the North Overburden site. JSLA, Jumbo and Oro Belle pits will receive final backfill material during this stage, and then

approximately 440 acres could be prepared for revegetation by transplanting salvaged and propagated plants and by sown seed.

2. The upper lifts of the southern end of the heap leach pad, about 100 acres, will be prepared by rough grading of micro-basins.

5.9.1.2.9 Phase II Mining – Stage 6G (2042 to 2045)

1. Stage 6G will focus on mining inferred resources and processing low-grade ore. Because the process of low-grade ore is highly dependent on the current metals price, it could be that this stage will be expanded or reduced in time, dependent on the economics. The following schedule assumes all activity will be completed during the time (four years) estimated for this stage; however, if this does not occur, subsequent stages could be delayed accordingly.

2. Mining ends at the South Extension Pit during Stage 6F; during Stage 6G, the pit floors and haul roads will be ripped and prepared for revegetation.

3. An additional 250 acres of the upper lift surface of the leach pad will be graded for mico-basins during this stage.

5.9.1.2.10 Stage 7 – Heap Leach Pad Rinse (2046 to 2048)

1. The remaining mine schedule will influence the start of Stage 7. During Stage 7, no additional ore will be stacked on the leach pad, and pad rinsing will begin. Also, an additional 200 acres of the upper lifts of the heap leach pad will be contoured with micro-basins.

2. In general, most areas of disturbance will be in an advanced stage of reclamation during Stage 7 (almost 2,200 acres) except for the Process Plant, Administration sites, Mine Shop, and the slopes of the leach pad. Many of the roads and growth media stockpiles will also still be active. Further leaching of residual gold from ore on the Heap Leach Pad will continue throughout Stage 7.

5.9.1.2.11 Stage 8 – Heap Leach Pad Detox and Final Contour (2049 to 2050)

1. During Stage 8, rinse solutions will be circulated through the heap leach pile to evaporate off any remaining water and reduce cyanide levels to the closure limits specified by the Colorado River Basin Regional Water Quality Control Board ("RWQCB"). Once achieved, the side slopes of the leach pad will be graded to 2.5H:1V, and all liners will be covered in place. Earthmoving equipment will push leached material downslope away from the crest of the pad to cover the exposed pad liner, berms, pipe transport trench, and road presently encircling the pad. This activity cannot commence earlier since the berms, pipe trench, and road must remain in service until the heap leach pad is fully decommissioned and the regional water board reclassifies the spent ore material as Class C mine waste.

2. The Process Plant will be dismantled, the pond floors ripped, and the pond basins filled with clean concrete demolition debris, then topped with growth media and revegetated.

3. The Mine Shop and Administrative area will be dismantled, the grounds contoured and then revegetated.

4. Any water supply wells and roads not considered end-use will be abandoned following state and county regulations, and roads ripped and revegetated.

5.9.1.2.12 Stage 9 – Final Reclamation and Monitoring (2049 to 2058)

1. All surface grading and contouring will be completed during Stage 8 and most revegetation. There could be minor amounts of additional seeding that might be required or reseeding areas that require additional repairs.

2. Stage 9 will conclude either when the operator has demonstrated successful revegetation by meeting the quantitative goals on **Table 5-1c** or at the end of the tenth growing season following the planting of the last locations to be revegetated after the Heap Leach Pad, solution storage tanks, and stormwater basins have been decommissioned, whichever is sooner.

3. Monitoring the post-mining revegetation program will continue throughout this period unless the success standards are achieved sooner.

5.9.2 Temporary Suspension of Operations/Interim Management Plan

1. Certain measures will be implemented during any idle mining period. SMARA defines "idle" as "curtailed production with the intent to resume at a future date, for one year or more by more than 90 percent of its maximum production within any of the last 5 years". The objective of these measures would be to protect the environment and the public. Proper arrangements for handling process chemicals, management of process solutions, heap leach piles, and surface drainage would be of particular concern.

2. As defined in SMARA Section 2727.1, "Within 90 days of the surface mining operation becoming idle, the operator shall submit an interim management plan (IMP) to the lead agency for review. The CMM operated through an active IMP until 2019; it has been updated to conform with the 2022 Plan and included in **Appendix Q.** The approved interim management plan shall be considered an amendment to the surface mining operation's approved reclamation plan for purposes of this chapter. The interim management plan shall only provide for necessary measures the operator will implement during its idle status to maintain the site in compliance with this chapter, including, but not limited to, all permit conditions.

3. A decline in project economics is the most probable cause of a decision to temporarily suspend operations. Still, other factors, such as a shortage of process reagents or other force majeure conditions, could also be responsible for this decision.

4. Security personnel would be continuously present during the suspension to safeguard the substantial investment in plant and equipment and restrict public access to the mine site.

5. The solution in the leach pile will be recirculated to rinse it and flush out residual cyanide. This procedure would be repeated several times to lower the cyanide content in the pile to a level stipulated by the RWQCB.

6. Chemicals used in the gold recovery circuit would be suspended, and surplus chemicals would be sealed and stored in secured areas.

7. Interceptor ditches around the leach pad and process area will remain functional. Since the overburden site surfaces will be sloped to the interior at a grade ranging from 0.5 to 1.0 percent, surface water will flow away from, rather than over, the crest. Run-off from the catchment area surrounding the pits would collect in the pits.

5.10 MAINTENANCE AND MANAGEMENT OF RECLAIMED AREAS

5.10.1 Fencing, Protection from Herbivory and Invasive Species

1. Perimeter fencing around the mine site will remain following reclamation to restrict access and protect revegetated areas.

2. Cages may be used for some transplanted species for protection against herbivores.

3. Invasive (vegetative) species are not expected to be an issue regarding reclamation and revegetation at CMM owing to the reclamation methods in place. These methods have proven successful through interim reclamation conducted at the CMM site. Before the interim reclamation, the concept was that some invasives, primarily Russian thistle (*Salsola paulsenii*), would initially take root in the prepared reclamation surfaces; however, that would be short-lived as the method of specifically promoting germination of the more adapted, native, colonizer species (from the approved seed mix) would eventually crowd out the non-native species as more applied seed germinated and then produced seed of their own, repeating the cycle. As appropriately managed during CMM interim reclamation, the initial influx of Russian thistle appeared to aid native seed germination. The invasive quickly propagated, helped limit erosion, and retained other applied seed mixes on the prepared surfaces. This transition at the Heap Leach is shown in **Figure 5-9**. This photo chronology shows the 2006 prepared heap leach slope and then the initial dominance of the Russian thistle within one year (2007). However, at approximately ten years post reclamation, the condition was completely reversed, with the native-based colonizer seed mix species representing the dominant vegetation.

5.10.2 Monitoring and Maintenance

1. CMV and regulatory agencies, including the BLM, State, and County, annually review the reclamation plan to evaluate progress and establish bonding requirements for the ensuing year. The county must also conduct an annual inspection of the site to review reclamation activities.

2. An annual report on the revegetation program is prepared to document both the successes and failures arising from the Revegetation Research Program and the nature and extent of reclamation activities at the mine during the preceding year. The report becomes part of the public record on file with the BLM and County.

3. Vegetation inventories will be performed on reclaimed areas. These inventories will measure perennial species' density, diversity, and other biometric information using ten linear quadrats (each 6 x 100 feet). Photo point transects will be established to measure visual aspects. Revegetation success on each reclaimed area will be monitored annually for the first two years after planting and at three-year intervals after that or until success.

5.11 POST-MINING TOPOGRAPHY AND PUBLIC SAFETY

5.11.1 Topography

1. A plan map of the post-mining topography of the site at the end of Phase II mining is shown in **Figure 4-10g**. The primary permanent topographic changes at the site will be those areas where materials have been excavated or deposited during mining operations.

2. As constructed, the sides of the Heap Leach Pad have slopes of 1.5H: 1.0V. Material will be placed on the pad in successive lifts to an ultimate height of 300 feet. Once the pad has been rinsed, the sides

will be recontoured to an average slope of 2.5H: 1.0V with earthmoving equipment. As a result of the reduction in slope, the toe of the heap will move outward to cover the synthetic liner, berms, and pipe trench.

3. Along the south face of the South Overburden Site and the North Overburden Site, the final slopes will achieve an overall 2.0H:1.0V slope. Studies conducted by geotechnical engineers on overburden materials have determined they will be stable at this slope angle. These slopes would be rough graded for large water catchment areas and then into micro-catchment basins for water retention and erosion control. These small basins promoted seed germination and plant growth due to better moisture retention.

4. This Plan and the Conditions of Approval provide for alternative slopes as described in Section 5.9.1. Having the option to place overburden at the angle of repose, with intermediate benches, provides an alternative that offers long-term stability, disturbs less land, maximizes the amount of growth media available for use in other areas, and resembles other existing topographic features in the area.

5. Roads to be reclaimed in flat topography will be ripped to eliminate compaction. Bermed material will be replaced and then seeded. In sloping topography, the material graded to the downslope side of the road will be retrieved with a backhoe and distributed across the width of the road. Road cuts will be returned to their original contours to the extent practicable.

5.11.2 Public Safety

1. Public safety during the operational period is assured by restricting access to operation areas with fences and gates. All visitors must register at the security desk and adhere to procedures mandated by the Federal Mine Safety and Health Administration (MSHA). The public is not allowed unaccompanied access to any working areas of the facility.

2. Public safety will be addressed after decommissioning and complete reclamation. Reclamation will incorporate slope stabilization where required, removal of buildings, structures, and equipment, and use of barriers such as berms and warning signs in areas that would otherwise provide vehicle access into the mine pits.

3. When revegetation standards have been achieved, the BLM will determine when fencing should be removed to provide access for authorized uses.

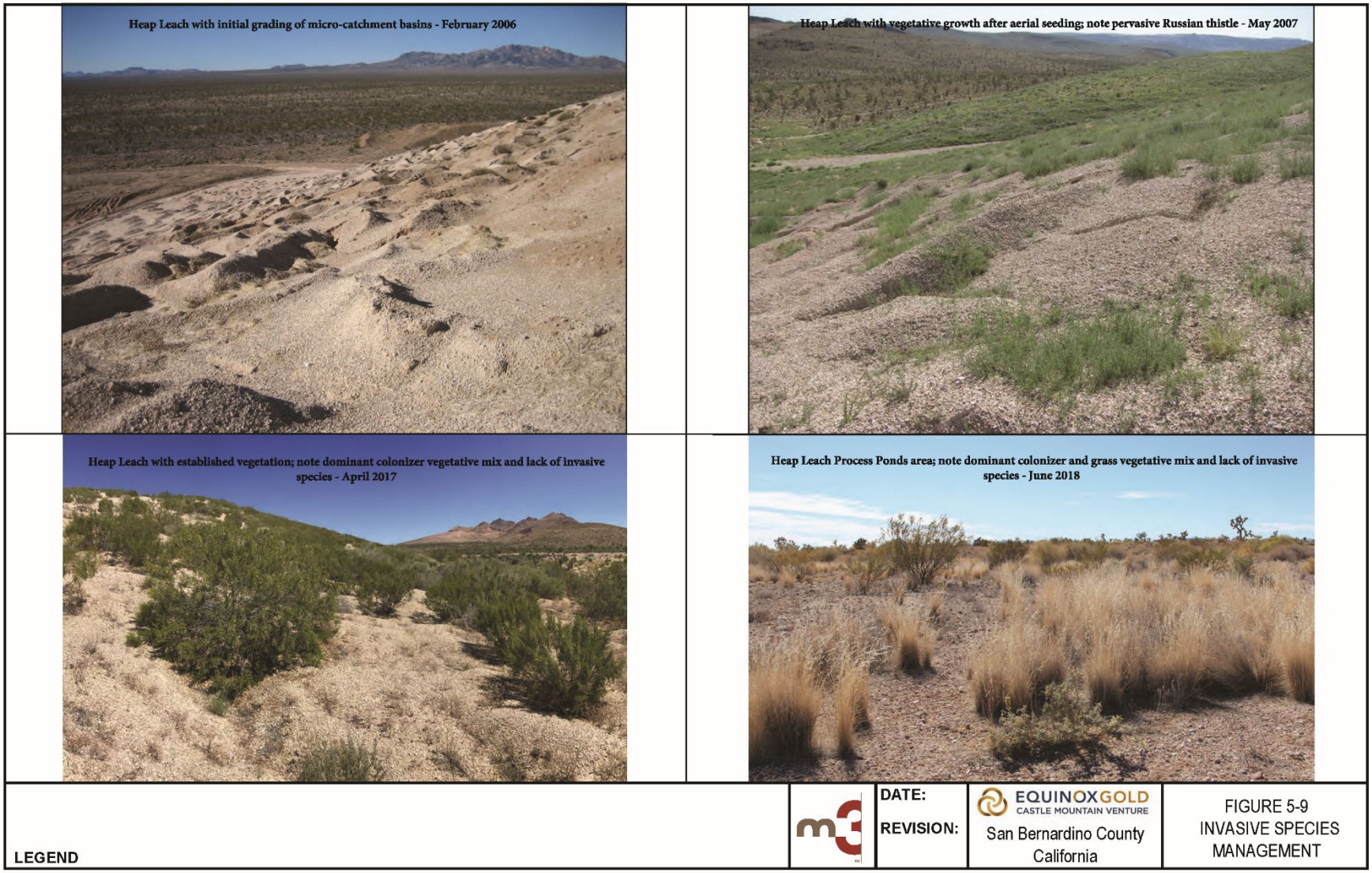


Figure 5-9. Invasive Species Management

5.12 POST-MINING HYDROLOGY

5.12.1 Surface Water

5.12.1.1 Mine Pits and Overburden Sites

1. Ephemeral surface waters flowing through the mine site have the rare potential to reach Sacramento Wash, which drains the northeastern portion of Lanfair Valley. The drainage area feeding Sacramento Wash covers approximately 240 square miles (153,000 acres).

2. The approximately 300 acres of open pits are located at the watershed's headwaters. Surface runoff from this catchment area will flow into the pits. The affected watershed constitutes less than 0.3 percent of the area of the Sacramento Wash watershed. Consequently, the amount of water entering the pits will have little effect on post-mining flow volumes at Sacramento Wash.

3. The overburden sites, including side slopes, will cover approximately 800 acres. As haul trucks discharge material over the edge of the overburden pile, larger rocks tend to advance to the bottom, while smaller rocks remain closer to the top. This natural size segregation creates underdrains beneath the overburden.

4. The top surface of the Overburden Sites will be graded (ranging from 0.5 to 1.0 percent slope) away from the crests into interior depressions (**Figure 5-6**). These depressions, or infiltration basins, have been designed at specific locations to accommodate the surface runoff generated during a probable maximum precipitation event.

5. If needed, coarse rock can be dumped on the infiltration basin slopes to inhibit sediment migration. Surface water will flow into the basins, percolate down to the under-drain at the bottom of the pile, and exit into existing dry washes at the toe of the overburden.

5.12.1.2 Crushing and Processing Facilities, Heap Leach Pad and Solution Tanks/Basins

1. The Administration and Shop areas are located on the alluvial fan portions of the mine site. Locations of facilities were selected to conform to existing topography, thereby minimizing "cut and fill" earthwork and avoiding encroachment into major dry washes. Up gradient of these facilities, sheet flow

2. Small V-ditches intercept and divert water runoff from major precipitation events. Except for the perimeter of the Heap Leach Pad area, these ditches will be filled in at decommissioning.

3. V-ditches installed upgradient from the Heap Leach Pad during construction to divert sheet flow around the pad will be left in place to continue diverting run-off around the decommissioned pad.

4. Solution storage areas adjacent to the Heap Leach Pad will be reclaimed by backfilling to approximately their original contour and, therefore, will not collect water.

5.12.1.3 Leachate from Rinsed Ore, Protore and Overburden

1. Precipitation infiltration through spent leached ore and overburden (including protore) materials is rare at the CMM, given the mine's arid climate. Also, accounting for the low likelihood of acid generation, the 1997 Final EIS/EIR (on page 7-13) concluded that there was a low potential for impact on surface or groundwater quality (Lilburn, 1997).

2. Water monitoring conducted since then has corroborated the 1997 findings, and we have not produced any sampling results that suggest heavy metal leaching or acid mine drainage from the CMM project.
3. The 2022 Plan will expand and deepen all mine pits. Material sampling was conducted from drill holes intersecting ore and overburden material from mine areas proposed in the 2022 Plan. Samples were subjected to standard acid-base accounting (ABA) analyses and leachability testing for heavy metals. Geochemical test methods, results, and conclusions are reported in the CMM Geochemical Characterization Report (Geo-Logic, 2024) and attached to this plan as **Appendix H.**

4. The report concludes that current test results are consistent with the findings from earlier investigations. Samples consistently produced low pyrite content, and the ABA accounting indicated the mined material should be considered non-PAG (potentially acid-generating). The heavy metal leach tests did not produce any leachate that would exceed state standards, even when using the more aggressive WET (Waste Extraction Test) method.

5. Leachate of any form is not anticipated; nonetheless, a Waste Rock Management Plan (WRMP) has been developed to manage these wastes and mitigate impacts, should conditions change. The WRMP is included in **Appendix F**.

5.12.2 Groundwater

1. **Table 5-6** shows the average annual groundwater levels adjacent to the mine wellfield and further south of the mine site as measured at wells W-19, W-37, and W-38, respectively, from 1990 through 2004. These wells were abandoned during the interim reclamation conducted from 2001 to 2005; they have been replaced by wells 2017-2MW, 2017-3MW, 2019-1MW, and 2019-2MW. Table 5-5 includes water level data from these more recently installed monitoring wells.

2. Water outflow at the outlet of Piute Spring was measured from 1987 to 2003. Monitoring was reduced to a Quarterly frequency after the BLM approved the reduction. This was due to the low risk posed by the mine operation on Piute Springs (see **Table 5-7a**).

3. Results of Piute Spring water quality sampling and laboratory analyses are included in Table 5-7b. These results span a broad range of time from the late 1980s (before commercial gold mining at CMM) up to 2021; as the results seem to indicate, there does not appear to be any mining-related water quality impacts at Piute Springs.

Table 5-5. Groundwater Monitoring Results Annual Groundwater Levels in feet (bgs)

Monitoring Well Annual Average	2017	2018	2019	2020	2021
2017-1RMW	502.3	504.3	502.9	481.0[87]	481.1
2017-2RMW	542.5	542.9	542.1	538.0[88]	537.6
2017-3MW	191.0	164.8	164.7	161.9	161.7
2019-1MW	n/a	n/a	n/a	457.3	457.6
2019-2MW	n/a	n/a	n/a	553.8	553.6

[87] Original monitoring well 2017-1MW was relocated ~ 200 feet east due to conflict with construction of the Event Pond. The new well was constructed in fall 2020 and identified as 2017-1RMW.

[88] Original monitoring well 2017-2MW was relocated ~ 100 feet south due to conflict with construction of the Heap Leach Pad liner system. The new well was constructed in fall 2020 and identified as 2017-2RMW.

Table 5-6. Groundwater Monitoring Results – Abandoned Wells (Depth from Surface to Groundwater in feet)

Monitoring Well Annual Average	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
W-19	365.1	365.6	367.7	371.2	375.8	380.0	383.3	386.1	388.1	391.7	392.0	393.3	394.6	396.0	397.1
W-37	614.9	610.3	606.1	599.8		591.6	587.6	584.8	581.9	579.8	575.0	573.0	567.4	572.4	------
W-38	757.0	756.9	756.3	756.7	757.1	757.3	757.7	758.0	758.0	757.7	757.0	756.9	757.0	756.9	------

Table 5-7a. Piute Spring Outlet Flow (Spring Flow in Gallons Per Minute)

Annual Average Spring Flow	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Piute Springs (Outflow)	42.3	41.0	40.8	42.0	35.3	38.2	49.3	47.1	42.7	41.8	48.8	36.0	48.5	77.8	66.3	42.5	38.7
Piute Springs (Flow at Dam)	67.3	82.3	70.5	103	------	------	------	-----	------	186	216	208	186	226	251	195	149

Table 5-7b. Piute Spring Water Quality[89] Over Time

Sample Event	Alkalinity, Total	Bicarbonate	Carbonate	Arsenic	Calcium	Chloride	Conductivity	Copper	Fluoride	Hardness	Magnesium	Manganese	Nitrate as N	pH	Potassium	Silica	Sodium	Sulfate	TDS	Zinc	Iron
1980's[90]	160.7	146	<5	0.0077	33.1	18.3	437	NA	0.40	160	14.9	NA	NA	7.67	7.17	67.0	34.1	20.8	321	NA	<10
1998[91]	148.8	148	3.4	0.0074	27.8	16.4	399	0.012	0.725	129	13.6	0.0619	1.89	8.12	6.32	65.3	30.1	16.4	258	<0.050	0.412
2021	176	--------	----	0.0070	32.0	17.3	------	<0.001	0.566	--------	14.9	0.020	2.18	8.39	7.46	31.7	35.1	15.8	284	<0.050	<0.10

[89] Constituent concentration units of mg/L
[90] Average of three discrete sample events throughout the late 1980s
[91] Average of eight discrete samples from 1998

Table 5-8. Resource & Technical Support Studies

Resource Type	Report Title	Author	Year	Document ID	2022 Plan Reference
BIOLOGY – Desert Tortoise	CMM Presence/Absence Survey & Density Estimate	Bio Logical, LLC	2020	2020-TS-3	Bio Logical 2020
BIOLOGY – Golden Eagle	Golden Eagle Nesting Surveys (and progress reports)	BioResource Consultants	2023	2023-TS-3	BRC 2023
BIOLOGY - Bats	Bat Habitat Assessment	BioResource Consultants	2018	2018-TS-1	BRC 2018
BIOLOGY - Bats	Mine Survey for Bats & Other Wildlife	Brown-Berry Biological Consulting	2018	2018-TS-2	Brown-Berry 2018
BIOLOGY - Bats	Winter Mine Survey for Bats & Other Wildlife	Brown-Berry Biological Consulting	2019	2019-TS-1	Brown-Berry 2018
BIOLOGY – Bighorn Sheep & Rare Plants	Focused Fall Rare Plant & Desert Bighorn Sheep Survey and Habitat Assessment Report	ECORP Consulting, Inc	2021	2021-TS-3	ECORP 2021
BIOLOGY – Bighorn Sheep	Bighorn Sheep Use of Mine Sites	Westland[92]	2022	2022-TS-4	Westland 2022
BIOLOGY – Rare Plants	Addendum Report for Focused Rare Plant Survey (Spring 2021)	ECORP Consulting, Inc	2021	2021-TS-4	ECORP 2021
BIOLOGY – Rare Plants	Results of a Creosote Bush Ring Survey	ECORP Consulting, Inc	2021	2021-TS-5	ECORP 2021
BIOLOGY – Revegetation	Summary of Revegetation & Reclamation Research 1990-2001	Bamberg Ecological Consulting	2005	2005-TS-1	Bamberg 2005
BIOLOGY	Biological Compilation Report	Westland	2022	2022-TS-5	Westland 2022
WATER - Ground	Lanfair Valley Groundwater Model Report[93]	Geo-Logical Associates	2024	2023-TS-1	Geo-Logical 2024
WATER - Surface	Jurisdictional Delineation of the CMM Phase 2 Expansion Project	Glen Lukos Associates	2022	2022-TS-12	GLA 2022
WATER - Surface	Request of Approved Jurisdictional Determination	Glen Lukos Associates	2024	2024-TS-5	GLA 2024
CULTURAL	CMM Class III Survey Summary Report	SWCA[94]	2021	2021-TS-6	SWCA 2021
GEOTECHNICAL	Geotechnical Feasibility Report	Call & Nicholas, Inc	2022	2020-TS-2	CNI 2022
GEOTECHNICAL	MEMO-South Extension Pit Slope Stability Update	Call & Nicholas, Inc	2023	2023-TS-5	CNI 2023
GEOTECHNICAL	MEMO-Pit Design Geotechnical Verification	Call & Nicholas, Inc	2024	2024-TS-4	CNI 2024
SOIL	Soil Survey For the Castle Mountain Project	Greystone Consultants Inc	1989	1989-TS-1	Greystone 1989

[92] Westland Engineering & Environmental Services
[93] This report is included with the comprehensive groundwater use report: *Updated Water Supply Assessment*
[94] SWCA Environmental Consultants

Resource Type	Report Title	Author	Year	Document ID	2022 Plan Reference
AIR QUALITY	Technical Support Document for Air Quality, Climate & Energy Analysis	Ramboll[95]	2024	2024-TS-3	Ramboll 2024
NOISE	Baseline/Phase 2 Noise Analysis-CMM	Sespe Consulting, Inc	2024	2022-TS-10	Sespe 2024
LIGHT	CMM Potential Effects of Lighting (Revised)	Westland	2024	2022-TS-9	Westland 2024
VISUAL	CMM Visual Assessment	Westland	2024	2024-TS-2	Westland 2024
UTILITIES	Ivanpah Underground Water & 69kV Overhead Power line ROW; Plan of Development	Westland	2024	2023-MP-2	Westland 2024
UTILITIES	Ivanpah Water Pipeline Drawings	M3 Engineering	2022	2022-TS-11	M3 Engineering 2022
UTILITIES	69Kv Overhead Power Line Drawings	Burns & McDonnell	2023	2023-TS-4	Burns & McDonnell 2023
TRAFFIC	CMM Trip Generation Report	Urban Crossroads	2024	2024-TS-1	Urban Crossroads 2024

[95] Ramboll Americas Engineering Solutions, Inc

4. There has been no discernible change in spring flow from mid-1991, when pumping at Castle Mountain began, until 2003, the last time that Piute Spring flow was measured. Equally, no detectable change in water quality was observed over that period. More recent Lanfair Valley groundwater modeling (discussed in more detail below) suggests that historical CMM water production has not materially affected water discharge at Piute Spring to the present, and the same is expected through the end of the mine life proposed in this 2022 Plan.

5. A groundwater flow model was recently constructed for the Lanfair basin to account for the increased groundwater pumping scenarios provided by this 2022 Plan. A similar groundwater model had already been established for the Ivanpah basin, so only specific adjustments were made based on the new information provided by the Ivanpah test well and the recently completed pump test. The Lanfair model suggests that dewatering at the mine pits would inherently result in a steep decline in water elevation within the pit areas (as intended). However, the decline decreases immediately surrounding the project area. East Well Field water well CMM-03 also induces a pumping water elevation drawdown at the well and propagates outward for up to a few miles. Long-term modeling suggests that the near-term water table declines will recover, and within 100 years of mining, most areas will return to within 10 feet of pre-pumping water elevations. The Lanfair Valley groundwater modeling report is included in **Appendix E.**

6. Groundwater testing and modeling completed at the Ivanpah Basin, near Nipton, CA, suggest a deep alluvial aquifer capable of supplying the water volumes presented in this 2022 Plan. The model also indicates that the potential for both near-term and long-term significant effects is unlikely. Modeled pumping scenarios suggest a 5-foot drawdown to the pre-pumping water table when mining ends and water supply from the Ivanpah well field is no longer required. **Appendix E contains additional related information**.

7. Based on groundwater modeling and water elevation contours, a pit lake may form in the South Extension Pit. Geochemical testing of ore and overburden material is summarized in the above section, 5.14.1.3. The full geochemical materials characterization report is included in **Appendix H.** Pit lake water quality is referenced in **Appendix E**.

8. Sites occupied by Process Facilities, as well as reclaimed roads, the Heap Leach Pad, and overburden sites, are not expected to affect post-mining hydrologic conditions since these sites are not a material part of the recharge zone for the local aquifer. Condemnation drilling completed in the leach pad and overburden areas demonstrated that the groundwater table in these areas is, on average, at least 550 feet below surface topography.

9. Heap leach facilities are monitored using leak detection systems beneath the pad liners, the emergency solution storage basin, and the stormwater basins. The design and installation of these leak detection systems comply with CCR, Title 27, Subchapter 15 regulations and have been approved by the RWQCB.

10. The monitoring systems beneath the Heap Leach Pad and the solution storage basins provide the CMV operators and regulatory agencies with the earliest possible warning should a leak develop and release occur. Three separate leak detection systems have been installed: under the emergency solution storage basin, each stormwater catchment basin, and the leach pad itself.

11. Each basin provides primary and secondary containment; any leakage through primary containment is collected and removed from a leak detection and collection sump. The sumps are monitored by a riser pipe connected to the system's low point. A pump can be inserted into the riser pipe to dewater the sump if necessary.

12. The Heap Leach Pad leak detection system is a series of perforated pipes immediately underlying the primary liner. Multiple pipe sections are installed in each leach pad cell to identify the source of leakage better. At the leach pad's southern (downgradient) end, the leak detection pipes transition to solid wall pipe and through the lined berm into the solution collection conveyance. Here, flow meters monitor for flow within the multiple leak detection pipes.

13. Should significant leakage indicate a major liner failure, that basin will be drained for repair. Equally, if a significant liner failure is suspected from any pad cell, that cell can be removed from service, temporarily or permanently. A third-party licensed engineer inspects Liners and welded seams for holes, tears, and defects before crushed ore is loaded onto the liners. Areas of the liners requiring repair are repaired or replaced, depending upon the extent of the problem.

14. The collection ditches, exposed liner, pipelines, and diversion systems are thoroughly examined weekly to ensure their integrity and performance.

15. Water wells for the WWF included up to 15 water wells, which were drilled from approximately 1986 to 1997. Many of these wells were abandoned during interim reclamation, and only three remain. Water wells for EWF include current water wells, and we anticipate additional pit dewatering wells will be required. San Bernardino County authorized all individual boreholes and well installations through water well permit applications. Where well installation occurred on public land, Plan of Operations modification and/or Right of Way temporary use permits were authorized by the BLM. Boreholes that were developed into active water production wells for the mine were perfected for use through the authorizations described above, the established California water rights doctrine of beneficial use. Water use documentation starts when *First Notice Ground Water Extraction* reports are filed with the State Water Control Board. Subsequent annual reports of water use are made to the state each year for each water well from the date of the original first notice.

5.12.3 Drainage, Erosion, and Sedimentation Control

1. The mine pits will be located at or near the crest of their respective watersheds, as described in Section 5.13.1. Any surface water and associated sediment within the perimeter of the in-pit catchment area will collect at the bottom of the pits.

2. Drainage for the post-mining overburden sites is discussed in Section 5.12.1. During the development of these areas, a gradient ranging between 0.5 and 1.0 percent will be maintained to ensure surface waters flow away from rather than over the crests. To reduce wind erosion, re reclamation activities will be initiated as soon as practicable after each site is discontinued.

3. Major mine operating facilities have been constructed outside the 100-year floodplain of on-site drainages. Artificial ditches or berms for flow control will be designed to safely accommodate the flow of a 24-hour, 100-year storm event, with a minimum freeboard of one foot. The slope and alignment of the ditches will be designed to minimize flow velocities and subsequent erosion.

4. Most mine facilities are sited on generally flat terrain, so significant erosion and sedimentation problems are not anticipated.
5. Solution Storage areas and the Heap Leach Pad have been designed to operate as closed systems. As a result, any sediment will be contained within these areas. The post-mining description of these areas is given in Section 5.13.1.
6. Erosion will be assessed annually at a minimum. Sites showing excessive erosion will be mitigated per the project BMP Plan. These areas may also be graded and seeded before the next growing season.

6.0 RECLAMATION ASSURANCE

6.1 INTRODUCTION

1. State and federal agencies require Financial Assurance Mechanisms (FAM) to guarantee the responsible closure and reclamation of mining facilities after mining ends. FAMs can take several forms, but CMV typically provides a surety bond, which is a type of insurance policy. A bond rider documents the amount of coverage required by an agency for a specific bond. Then the approved rider is transferred to the agency until the bonded commitments are fulfilled.

Table 6-1. Reclamation and Closure Bonds

REASON	BONDED	ISSUER	BOND #	LAST UPDATE	AMOUNT
Reclamation Bond	San Bernardino County	Commercial Insurance Associates	LPM808201616	2023	$50,527
Reclamation Bond	San Bernardino County/BLM	Liberty Mutual Insurance Co.	BDTO-300100-021	2023	$6,846,431
Heap Leach Pad and Line Pond Closure[96]	CRBRWQCB	Atlantic Specialty Insurance Co.	800013365	2023	$6,261,091
Reclamation Bond	National Park Service	Liberty Mutual Insurance Co	BDTO-300107-024	2024	$97,500
TOTAL AMOUNT					**$13,255,549**

6.2 CLOSURE AND RECLAMATION BONDS

1. The Castle Mountain Mine project has four bonds outstanding, for a total reclamation assurance of $13,255,549; see Table 6-1. Most bonds are updated yearly to account for current and forecasted (through the next calendar year) site liabilities. For the primary reclamation bond, CMV submits a Financial Assurance Cost Estimate (FACE) report to the county (and BLM) once per year, within 30 days from the county/BLM annual mine inspection. The most recent FACE report was submitted to the County on January 27th, 2025.

2. The Colorado River Basin Regional Water Quality Control Board ("water board") holds a bond for $6,261,091. This bond includes all costs related to the closure of all water board-regulated facilities, namely the heap leach pad, lined ponds, and the overburden sites. The FACE for this bond is updated annually by May each year.

3. The National Park Service holds a bond for $97,500 for the closure and reclamation of mine facilities on NPS land, namely the West Wellfield water system.

4. Closure and reclamation bonds will also be adjusted if the lead agencies authorize the 2022 Plan.

[96] And other facilities regulated by the Colorado River Basin Regional Water Quality Control Board

7.0 CASTLE MOUNTAIN MINE PERMITS

7.1 HISTORY OF PERMITTING AT THE CASTLE MOUNTAIN MINE

1. Mining and related activity is authorized by a "lead agency"; the status of project land ownership determines the relevant state or federal agency. A Record of Decision ("ROD") authorizes mining on BLM-managed federal land. The BLM authorizes mining on public land pursuant to its multiple-use mandate, the Mining Law of 1872, the Federal Land Management and Policy Act of 1976, as amended ("FLPMA"), and other federal statutes and regulations. Before the BLM may issue a mining ROD, like most federal agency actions, they must demonstrate compliance with the National Environmental Policy Act ("NEPA"). NEPA requires a level of environmental analysis corresponding to the anticipated scale of potential environmental impact.

2. Surface mining in the state of California is enforced through regulations and statutes by state and local agencies, including the Department of Conservation ("DOC") Division of Mine Reclamation ("DMR") and the State Mining and Geology Board ("SMGB"). These agencies often delegate to local agencies responsible for implementing CEQA and SMARA codes. San Bernardino County Land Use Services Department regulates mining within unincorporated San Bernardino County and serves as the local lead agency for CEQA and SMARA. A mining project with vested mining rights is not required to obtain a mining CUP, but it must have a Reclamation Plan that is subject to CEQA.

7.1.1 1985 to 1987 Environmental Assessment (B & B Mining)

1. B & B Mining submitted a mine plan of operation and reclamation plan to the BLM to conduct gold mining and heap leaching over 871 acres of public lands. The BLM served as the lead agency for NEPA and completed an Environmental Assessment to define and mitigate environmental impacts to less than significant. The BLM approved the mine plan of operation on November 16th, 1987, and designated it as CA-069-P07-70711. Including mitigation, mining impacts were determined to be reduced to less than significant.

2. The Colorado River Basin Regional Water Quality Control Board issued their Waste Discharge Requirements Order No. 87-96, which approved the location and operation of the heap leach pad and related processing facilities.

7.1.2 1988 to 1997 Environmental Impact Statement/Report (Castle Mountain Venture)

1. Castle Mountain Venture (then Viceroy) filed a revised Mine Plan of Operations and Reclamation Plan (1990 Plan) with the BLM and County in March 1988. The project lead agencies determined that significant environmental impacts were possible; therefore, the agencies prepared a joint Environmental Impact Statement ("EIS") and Environmental Impact Report ("EIR") (the "1990 EIS/EIR") as prescribed by NEPA and the CEQA. A Draft EIS/EIR was made available to the public in February 1989. The Desert Tortoise was designated an endangered species in June 1989. A supplemental Draft EIS/EIR was also issued to summarize further potential impacts and mitigation measures for the desert tortoise and other project alternatives, providing additional environmental mitigations. The FWS issued a Biological Opinion ("BO") (6840 CA-CA-932.1) (1 6-90-F-24) with a "no jeopardy" ruling in August 1990. This decision was based on mitigation measures required by CMV.

The Final EIS/EIR was published in the Federal Register and the State Clearinghouse (SCH #88062708) in September 1990.

2. The BLM issued a Decision Record approving the 1990 Plan in October 1990. The County certified its EIR during a Planning Commission public hearing on September 27, 1990. The latter noted the significant environmental analysis and ensuing mitigations included in the EIR and the more than 60 meetings to discuss project-related environmental issues involving the applicant, various agencies, and environmental organizations. The County and State of California designated the approved 1990 Plan as #90M-013 with a California Mine ID NO. 91-36-0015.

7.1.2.1 1991 Environmental Assessment (69 kV power transmission line)

1. The 1990 Plan included using on-site propane power generators to supply electricity. The unique site location near the state line required additional time for the state utilities to negotiate power supply and transmission across the Nevada-California state line.

2. An agreement was eventually reached, and CMV applied for a BLM Right-of-Way lease to construct the overhead transmission line from the substation at the Walking Box Ranch to the CMM following the existing CMM access road. The BLM completed NEPA via Environmental Assessment CA—69-EA1-24, including consultation with the U.S. FWS regarding the desert tortoise. It ultimately issued their Decision Record approving the activity and ROW[97](s) in October 1991.

3. The county prepared a CEQA Initial Study that determined that project mitigations reduced potential impacts to less than significant, and a Mitigated Negative Declaration was prepared.

7.1.2.2 1993 Environmental Assessment (comminution circuit)

1. The 1990 Plan did not include a mill or Comminution Plant. Soon after the initial CMM startup, the operator realized that a comminution plant would provide greater gold recovery. A plan modification was submitted to the lead agencies (BLM and County) in June 1992.

2. The BLM completed a NEPA Environmental Assessment, # CA-069-EA2-28, which determined that the modification would not produce significant impacts. The BLM issued its Decision Record approving the installation and operation of the Comminution Plant in 1992.

3. The County Planning Department initiated a Land Use Compliance Review ("LUCR") and conditionally approved the minor plan modification by February 1993.

7.1.3 1998 to Present Environmental Impact Statement/Report (Castle Mountain Venture)

1. CMV applied for another mine plan modification in May 1995. A revised application was submitted to the agencies by August 14th, 1997, as Plan Amendment Application (Mine Plan and Reclamation Plan) ver. 1.1a (later revised to 2.0) for additional mining activity on 490 acres and an extension of the estimated project schedule to December 2020.

[97] BLM Nevada issued ROW grant N-54089; BLM California issued ROW grant CA-28869.

2. The plan modification included additional mining in the Jumbo Pit, the Oro Belle Pit, a pit contiguous to the Oro Belle called the Hart Tunnel[98] pit, and the South Extension pit, located south of JSLA. The North Overburden Site was identified as a new waste rock storage area, and the heap leach pads were consolidated into one leach pad. The mining plan would maintain the mining rate at about 11,500 tons of ore per day; therefore, there was no need to change existing infrastructure. The plan also included a continuance of all the existing environmental programs.

3. The BLM and county prepared the environmental analysis and issued a Final EIS/EIR in October 1997. The County approved the application in November 1997, and the BLM followed with an approval in March 1998 (and a second approval in July 1998 that authorized the use of the North Overburden Site). The FWS also updated their original Biological Opinion with a second BO (#1-8-97-F-37) and determined a "not likely to jeopardize" ruling and that no critical habitat would be affected.

4. Mining under the expanded operation continued until May 2001, when mining was suspended due to the low market price for gold. With the suspension of mining, reclamation of the CMM became the primary focus.

5. The California Department of Conservation, Office of Mine Reclamation (OMR), determined in 2012 that the CMM project achieved the prescribed land reclamation and revegetation standards for plant density and diversity. Concurrently, the company submitted an Interim Management Plan to the County to manage the project during idled mine activity.

7.1.3.1 2013 – Present Mineral Exploration

1. The Company received several BLM approvals for separate mineral exploration projects, two in 2013 and a larger project in 2018. These are referenced in **Table 7-0**.

7.1.3.2 2018 - 2020 Environmental Assessment (mine restart)

1. Minor 1998 Plan modifications were submitted to the lead agencies in early 2019 to restart idled mine operations at the CMM. Many of the changes served to update the mine and reclamation plan since active mining was idled almost 20 years prior. For example, nearly 1,000 acres of land patents were issued in the ensuing years while the mine was idle. Critical aspects of the reclamation plan also changed in 2002 when the County issued its July 2002 approval for the revised reclamation strategy for CMM. Also, required groundwater monitoring wells were abandoned during interim reclamation, and replacement wells needed to be reinstalled.

2. The BLM prepared an Environmental Assessment to analyze these changes and allow public comment. They approved the minor modifications through a *Finding of No Significant Impact* (FONSI) determination and Decision Record.

3. The County reviewed the application for minor modification and determined the changes did not require a CEQA Addendum.

[98] Oro Belle and Hart Tunnel pit or OBHT is referenced extensively in older mine plans, but for clarity in this plan only the name Oro Belle is used.

Table 7-0. Chronology of Environmental Review Conducted at Castle Mountain Mine

DATE	BLM SERIAL #	ACTION AUTHORIZED	DESCRIPTION	NEPA CONDUCTED
1990 (Oct)	CACA 31137	Mine plan of operations	Castle Mountain Mine	EIS (EIR): *#88062708*
1991 (Oct)	CA-28869 (N-54089)	Right-of-Way grant	69 kV Power Line	EA: *CA-069-EA1-24*
1992 (June)	CACA 31137	Mine plan modification	Installation of a sodium cyanide mixing facility	EA: *CA-069-EA2-23*
1992 (Nov)	CACA 31137	Mine plan modification	Installation of the Comminution Plant	EA: *CA-069-EA2-28*
1993 (May)	CACA 31173	Mineral exploration	55 drill holes, roads	EA: *CA-69-EA2-29*
1993 (Nov)	CACA 31173A	Mineral exploration	10 drill holes, roads	EA: *CA-69-EA3-37*
1995 (Aug)	CA-35479	Water exploration	3 water wells, roads	EA: *CA-069-EA5-16*
1995 (Nov)	CACA 31173/31173A	Mineral exploration	50 drill holes, roads	EA: *CA-069-EA6-15*
1997 (July)	CA-27438	Water wells	Drill/install 4 water wells	EA: *CA-069-EA7-29*
1998 (June)	CACA 31137	Mine plan amendment	Castle Mountain Mine Expansion	EIS (EIR): *#95081031*
2018 (Sept)	CACA 31137	Mineral exploration	89 drill holes, roads on 20 acres	EA: *CA-D090-2018-0037*
2020 (Feb)	CACA-031137	Mine plan modification	Restart idle mine operations and drill 5 groundwater monitoring wells	EA: *CA-D090-2020-0002*

7.2 NEPA AND CEQA(/SMARA) LEAD AGENCY PERMITS

1. The BLM is the lead agency for federal mining regulations under 43 CFR 3809 et seq. and NEPA; the County is the lead agency for CEQA and SMARA in California. The lead agencies authorize mining on public and non-vested land parcels. Where mining occurs on land vested for mining in California, only a Reclamation Plan is required and subject to CEQA and SMARA.

2. Based on the most recent major mine plan of operation submitted to the BLM in 1996 (1998 Plan), the BLM issued a Record of Decision approving the Castle Mountain Mine Project Expansion in 1998. A minor plan modification, the 2020 Plan update, was submitted to the BLM in 2019. That modification was analyzed through a NEPA Environmental Assessment and approved in 2020 by the BLM Decision Record and FONSI. The 1998 and 2020 BLM RODs and DR are referenced in **Table 7-1**.

3. Based on the most recent major mine and reclamation plan submitted to the County in 1996, the County Land Use Services Department issued a Mining CUP in 1998. A minor plan modification was submitted in 2019, known as the 2020 Plan update. County staff analyzed the proposed changes and ultimately determined they did not warrant a CEQA Addendum, and the minor modifications were administratively approved. The 1998 and 2020 Mining CUPs are referenced in **Table 7-1.**

7.3 FEDERAL NON-LEAD AGENCY PERMITS

7.3.1 National Park Service

1. The NPS manages the CAMO lands identified in the Presidential Proclamation signed in February 2016. These lands overlaid the existing WWF water system that historically supplied groundwater to the CMM project. While a portion of the WWF system is on patent inholdings to the CAMO, other system infrastructure (e.g., buried water pipeline, storage tank, etc.) and access roads are located across the CAMO.

2. CMV submitted a Plan of Operation ("CMV-NPS PoO") in March 2018 to remedy the location of existing, operating mine facilities across the recently designated monument. Following a lengthy validity examination and a NEPA Categorical Exclusion, the NPS authorized the CMV plan in May 2024.

7.3.2 U.S. Fish and Wildlife Service

1. The U.S. Fish and Wildlife Service (USFWS) implements and enforces the provisions of Section 107, Title 17, of the United States Code. If a federal project has the potential to impact a protected species (or its habitat), project lead agency consultation may be required with the USFWS. Formal consultation usually results in the USFWS issuing a Biological Opinion regarding the species and the project.

2. The Mojave desert tortoise, a federally threatened species, is the only species known to occur at the CMM project site federally listed as either threatened or endangered.

3. Two USFWS Biological Opinions (BOs) are active at the CMM project. BO #1-6-90-F-24 and BO #1-8-97-F-37 are referenced in **Table 7-1.** BLM conducted an informal consultation during their review of the 2020 Plan minor modifications, but USFWS determined no changes were required to the existing BOs for the CMM project. We expect renewed consultation and a new BO to support the 2022 Plan activities.

7.3.3 U.S. Environmental Protection Agency

1. The National Pollutant Discharge Elimination System (NPDES) was created in 1972 by the Clean Water Act. The program addresses water pollution by regulating point sources that could discharge pollutants into the waters of the United States (WOUS). The U.S. EPA defers to authorized state governments, such as California, to perform the program's permitting, administrative, and enforcement aspects. The CMM NPDES program is implemented at the California state level by the SWRCB and regionally by the RWQCB. The SWRCB requires a discharger to file a Notice of Intent (NOI) for enrollment in the Industrial General Permit program (IGP) if the discharge is related to specific categories of industrial activity. Similarly, an NOI for the Construction General Permit program (CGP) is required if the discharge activity is related to construction activity that disturbs an acre or more of land. The RWQCB then oversees permit compliance and approves changes and termination of the permit.

2. CMV had previously demonstrated that the CMM does not discharge to WOUS and, therefore, is not required to be enrolled in the CGP or IGP. CMV had already enrolled in the IGP and the CGP to construct the heap leach pad liner system, so the RWQCB terminated enrollment in both permits based on the Notice of Non-Applicability (NONA) exemption. The IGP NONA is referenced in **Table**

7-1. The U.S. Army Corps of Engineers approved CMV's 2022 Plan application for an Approved Jurisdictional Determination (AJD). It reinforced their prior decision regarding the lack of WOUS at the CMM project.

3. The EPA's Toxics Release Inventory (TRI) Program requires applicable facilities within the U.S. to report chemical releases and management, including releases to air, water, and land disposal, for regulated chemicals that exceed specified manufacturing, processing, or otherwise used thresholds in a given calendar year. The TRI Program currently covers 770 individually listed chemicals and 33 chemical categories that may have potential acute or chronic health effects or adverse environmental effects. CMV submits a TRI report annually, it is publicly available through the EPA.

7.3.4 U.S. Army Corps of Engineers

1. Protection of WOUS is regulated under Section 404 of the CWA, which establishes a program to regulate the discharge of dredged or fill material into WOUS. Section 404 requires a permit before dredged or fill material may be discharged into WOUS unless the activity is exempt from Section 404 regulation. Proposed activities are regulated through a permit review process. An individual permit is required for potentially significant impacts. Individual permits are reviewed by the U.S. Army Corps of Engineers ("USACOE"). For most discharges that will have only minimal adverse effects, a general permit may be suitable. General permits are issued nationwide, regionally, or in the state for particular categories of activities.

2. The U.S. Army Corps of Engineers recently approved CMV's application for an AJD to support 2022 Plan activities. It reinforced their prior decision regarding the lack of WOUS at the CMM project.

7.4 STATE NON-LEAD AGENCY PERMITS

7.4.1 California Air Resources Board

1. The California Air Resources Board (CARB) enforces a suite of regulations related to mobile vehicles, including the In-Use Off-Road Diesel-Fueled Fleets Regulation, which applies to all self-propelled off-road diesel vehicles 25 horsepower or greater. This regulation requires equipment fleets to register, report, and comply with regulation standards. Reporting is completed through CARB's reporting platform, the Diesel Off-Road Online Reporting System (DOORS). All applicable equipment operated at the CMM, whether owned, leased, or rented, complies with the In-Use Off-Road Diesel-Fueled Fleets Regulation. All applicable 2022 Plan equipment will be registered.

7.4.2 Regional Water Quality Control Board

1. The CMM is located within the jurisdiction of the Colorado River Basin Regional Water Quality Control Board (RWQCB). Title 27 of the California Code of Regulations requires that waste discharges to land must be permitted through a Waste Discharge Requirements (WDRs) Board Order. While the CMM is technically a zero-discharge facility, the placement of ore and cyanide leach solution over a liner system qualifies as a regulated mining activity under Title 27 until it is demonstrated that the leached ore material would no longer pose a threat to land or water quality.

2. The active leach pad is regulated under WDRs Board Order #R7-2020-0004 that was approved by the RWQCB in July 2020; the permit is referenced in **Table 7-1.**

3. A new ROWD for 2022 Plan activities was submitted to the RWQCB in early 2025.

7.4.3 Mojave Desert Air Quality Management District

1. The Mojave Desert Air Quality Management District (MDAQMD) regulates sources of air emissions throughout the Mojave Desert region of southern California. An air permit or an Authority To Construct (ATC) permit is required for the installation of any equipment where there is a *potential to emit* air pollutants (including toxic air contaminants and hazardous air pollutants).
2. MDAQMD District Rule 403 also requires that certain facilities maintain a Fugitive Dust Control Plan.
3. CMV currently holds 35 individual ATC permits through MDAQMD; these ATCs, including the Dust Control Plan, are referenced in **Table 7-1.**
4. New ATC applications covering 2022 Plan activities will be submitted in 2025.

7.4.4 California Department of Fish and Wildlife

1. The California Department of Fish and Wildlife (CDFW) regulates activities that may impact species designated as state-threatened or endangered. An incidental take (or 2081) permit is required whenever a project could result in the incidental take of such a state-protected species during an otherwise lawful activity.
2. Early mine permitting in the 1990s included an application to CDFW for a 2081 permit. CDFW later decided that a separate 2081 permit would not be required, and they would adopt the conditions of the federal Biological Opinions, also known as a *concurring decision* or CD. CDFW formalized its position in a July 1993 letter, see **Table 7-1.**
3. CDFW also requires an authorization known as a Section 1602 Lake and Streambed Alteration Agreement (1602 LSAA) for any activity resulting in the potential to:
    - Substantially divert or obstruct the natural flow of any river, stream, or lake;
    - Substantially change the bed, channel, or bank of any river, stream, or lake;
    - Use material from any river, stream, or lake; or
    - Deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement that may pass into any river, stream, or lake.
4. The CMM project applied for and received a 1602 LSAA permit via Operation of Law letter #1600-2018-0218-R6. It is referenced in **Table 7-1.**
5. 2022 Plan activities will require another 1602 LSAA application and confirmation whether CDFW will again adopt the conditions of the resulting federal BO.

7.4.5 Certified Unified Program Agency (CUPA)

1. CalEPA oversees California's Unified Program. The program protects the public from hazardous waste and materials by ensuring local regulatory agencies consistently apply statewide standards when issuing permits, conducting inspections, and engaging in enforcement activities. The Unified Program is a consolidation of multiple environmental and emergency management programs. The local Certified Unified Program Agency (CUPA) for the CMM is the San Bernardino County Fire Department – Hazardous Materials Division.

2. The CUPA issues permits and performs site inspections annually, at a minimum. CMV must update a Hazardous Materials Business Plan (HMBP) inventory at least once per year, and the CUPA will issue specific permits based on materials and quantities provided in the HMBP.

3. CMV maintains permits for above-ground petroleum storage (per the California Above-ground Petroleum Storage Act), hazardous material and waste handling and generation, and a Risk Management Plan (Program 1) for storing sodium cyanide. These permits and plans are referenced in **Table 7-1.** Existing CUPA permits will be amended to reflect changes in 2022 Plan activity.

7.5 LOCAL (COUNTY/CITY) PERMITS

7.5.1 Land Use Services Department – Building and Safety

1. The County Land Use Services Department, Building and Safety, reviews and issues building permits to determine compliance with the California Building Code (CBC). A building permit is required before constructing any regulated structure within the County. The Building and Safety Department has issued several building permits related to the CMM project, referenced in **Table 7-1.**

7.5.2 Land Use Services Department – Office of the Fire Marshal

1. Like the County Building and Safety Department, the Fire Marshal reviews building plans related to the California Fire Code (CFC). This includes any structure with occupancy, a fuel source, or an engineered fire suppression system. The office of the Fire Marshal has issued several final permits related to the CMM project; these are referenced in **Table 7-1.**

7.5.3 Department of Environmental Health Services

1. The San Bernardino County Department of Environmental Health Services (DEHS) is the local agency that permits and inspects public water systems and issues permits for drilling and abandoning water wells.

2. The Castle Mountain Mine operates the WWF water system as a state-regulated potable water system (System #3601082), which is officially recognized as a non-transient non-community public water system. The water supply permit and most recent renewal are referenced in **Table 7-1.**

3. Groundwater monitoring and water supply wells require a DEHS well permit before drilling a new well and abandoning an existing one. CMV has maintained several water well permits over the years; some of these are referenced in **Table 7-1**.

Table 7-1. Castle Mountain Mine Permits Reference

PERMIT NAME	ID #	AGENCY	DATE ISSUED	DATE RENEWED	DATE OF TERMINATION
Record of Decision	CACA-31137	U.S. Bureau of Land Management	Mar 1998	Not Applicable	Not Applicable
Record of Decision	CACA-31137	U.S. Bureau of Land Management	July 1998	Not Applicable	Not Applicable
Decision Record	CACA-31137	U.S. Bureau of Land Management	Feb 2020	Not Applicable	Not Applicable
Conditional Use Permit	90M-013	San Bernardino County	Aug 2019	Not Applicable	December 2035
Approved Plan of Operation	Not Applicable	U.S. National Park Service	MAY 2024	Not Applicable	Not Applicable
Waste Discharge Requirements	R7-2020-0004	Colorado River Basin Regional Water Quality Control Board	June 2020	2023	Renewed Annually
NPDES General Permit NONA	7 36NNA000736	State Water Resources Control Board	July 2020	Not Applicable	Not Applicable
Biological Opinion	1-6-90-F-24	U.S. Fish & Wildlife Service	Aug 1990	Not Applicable	Not Applicable
Biological Opinion	1-8-97-F-37	U.S. Fish & Wildlife Service	Feb 1998	Not Applicable	Not Applicable
Approved Jurisdictional Determination	SPL-2029-00042-BLR	U.S. Army Corps of Engineers	May 2025	Not Applicable	Valid for 5 Years
Authority to Construct Permits	Various	Mojave Desert Air Quality Management District	June 2019	June 2024	Renewed Annually
1602 Lake and Streambed Alteration Agreement	LSAA#11600-2018-021180	California Department of Fish & Wildlife	2019	Not Applicable	Not Applicable
2081 Incidental Take Permit	See 1993 MOU	California Department of Fish & Wildlife	1993	Not Applicable	Not Applicable
Risk Management Plan (RMP)	PT0005497	San Bernardino County CUPA (Fire Department Hazardous Materials Division)	June 2019	June 2024	Renewed Annually
Aboveground Petroleum Storage Act	PT0005498	San Bernardino County CUPA (Fire Department Hazardous Materials Division)	June 2019	June 2024	Renewed Annually
Hazardous Materials Storage	PT0005494	San Bernardino County CUPA (Fire Department Hazardous Materials Division)	June 2019	June 2024	Renewed Annually
RCRA Large Quantity Generator	PT0005495	San Bernardino County CUPA (Fire Department Hazardous Materials Division)	June 2019	June 2024	Renewed Annually
Waste Tire Disposal Permit	TPID 1951503	CalRecycle	2022	June 2024	Renewed Annually
Non-transient Non-community Sys	PT0007926	San Bernardino County – Environmental Health Services	Sep 2020	Oct 2023	Renewed Annually
Domestic Water Supply	3601082	San Bernardino County – Environmental Health Services	Sep 2020	Not Applicable	Not Applicable

8.0 MONITORING & MANAGEMENT PLANS

8.1 ENVIRONMENTAL MANAGEMENT SYSTEM

1. CMM utilizes an Environmental Management System (EMS) to ensure that environmental policies are in place and followed by all employees. Standard Operating Procedures (SOPs) outline the detailed actions required to achieve the broader environmental and regulatory policy objectives of CMV. Regular training ensures that all employees are familiar with the CMM SOPs and understand how to implement them effectively. Policies and procedures are implemented and managed by reporting or monitoring plans. Some plans may be internal, while others are required by law or regulation. These plans are explained in this section of the 2022 Plan, and a summary of the plans implemented at the CMM is included in **Table 8-1**.

Table 8-1. Castle Mountain Mine Monitoring & Reporting Plans

PLAN NAME	PLAN DESCRIPTION	APPENDIX FILE	DATE REVISED
Mitigation Compliance Plan	Project mitigation monitoring plan and annual report requirements	Annual report is on file with BLM & County	February 2024
Semi-Annual Groundwater Monitoring (quality)	CMM area groundwater quality and release detection monitoring	Reports are available online[99].	July 2024
Groundwater Monitoring Plan (quantity)	Regional groundwater elevation monitoring and contingency	Appendix K	July 2024
BMP Plan	Stormwater Best Management Practices plan	Appendix I	2023
Wate Rock Management Plan	Defines waste rock (overburden) management to prevent UUD	Appendix F	2024
Spill Control & Countermeasures Plan	Spill Prevention Control & Countermeasure Plan	Appendix J	2024
Spill Prevention & Response Plan	Internal SOPs that prevent spills and proper spill response and reporting	Appendix R	2024
CalARP Risk Management Plan	RMP defines the CMM management of cyanide; include spill response	Plan is available online[108].	2020
Hazardous Material Business Plan (HMBP)	Identifies location and quantity of hazardous materials	Plans are available online[100].	February 2024
CMM Road Maintenance Plan	Procedures for use & maintenance of the CMM access road	Appendix N	2024
Emergency Response Plan	SOPs for a health & safety emergency; reporting and contacts	Appendix P	August 2024

[99] https://geotracker.waterboards.ca.gov/
[100] https://cers.calepa.ca.gov/

2. The CMM monitoring plans are generally updated yearly. All plans will be updated to conform to the 2022 Plan after the project lead agencies have issued their 2022 Plan decision.

3. Central to the EMS is the deadlines calendar, a software platform CMM Environmental Department staff uses to ensure that all regulatory conditions and permit deadlines are compliant. The deadline calendar tracks over 1,000 individual permit conditions. These are monitored weekly, where compliance performance is monitored in real-time, and weekly emails are automatically generated to remind staff of upcoming deadlines and their completion status. Internal and external environmental audits occur at CMM to ensure that the EMS adequately prevents environmental incidents and permits non-compliance.

8.2 MITIGATION COMPLIANCE PLAN (MCP)

1. California requires compliance with Assembly Bill (AB) 3180, which requires adopting a monitoring plan for all projects where mitigations have been included in the project EIR. A monitoring plan is in effect for the CMM, and it will be revised based on the 2022 Plan, resulting EIS/EIR, and pending mitigation measures.

2. The CMM annually reports on MCP monitoring in a Mitigation Monitoring Compliance Report (MMCR) published every February 1st and submitted to the County and BLM for review. The annual report identifies each BLM and County project condition (i.e., mitigation measures) and provides a narrative and evidentiary support to show how every condition is met.

3. The 2023 CMM MMCR is on file with both the BLM and the county.

4. Once the pending EIS/EIR is certified and the applicable mitigations are known, the MMCR format will be updated to conform to the 2022 Plan mitigations prescribed by the lead agencies.

8.3 WATER RESOURCES MONITORING

8.3.1 Regional Groundwater Resource (quantity)

1. A revision is required to the groundwater monitoring plan previously in use at the CMM because many of the prior groundwater monitoring wells have been abandoned, and land conservation measures make it unlikely that access will be given to drill replacement monitoring wells. For this reason, a revised monitoring plan is provided in **Appendix K** that is based on three core functions: (1) monitor, (2) model, and (3) mitigate. A final monitoring plan will be published in parallel with the Final EIS/EIR for the 2022 Plan.

2. This type of monitoring plan has been used successfully at other mine sites that posed similar difficulties regarding surrounding land access and the presence of sensitive natural resources.

8.3.2 Groundwater Quality Monitoring

1. Groundwater quality is monitored semi-annually from a network of five groundwater monitoring wells throughout the CMM project site. We note that a network of ten groundwater monitoring wells is available, so we do not believe new groundwater monitoring wells will be required to support 2022 Plan groundwater monitoring. The regional water board (in consultation with the BLM and County) will determine if any existing but not routinely monitored groundwater monitoring wells are required to support 2022 Plan monitoring.

2. Groundwater wells currently monitored include:

   - 2017-1RMW
   - 2017-2RMW
   - 2017-1MW
   - 2019-2MW
   - 2019-4MW

3. Groundwater monitoring is accomplished through Semi-annual and Annual groundwater quality sampling and monitoring reports. Both are required by the Colorado River Basin Regional Water Quality Control Board ("regional water board") and issuance of their WDRs Board Order (permit) No. R7-2020-0004 for the Castle Mountain Mine. The permit states that pre-operating groundwater monitoring results are analyzed to develop the site-specific Water Quality Protection Standards (WQPS), calculated for each monitoring parameter. The WQPS are developed after completing a minimum of eight consecutive rounds of sampling and analysis. The monitoring parameters are included with each report. The U.S. EPA's ProUCL95 software package is then used to statistically calculate the WQPS for each parameter at the 95% confidence level. Once a WQPS has been developed for a water quality parameter, that forms the basis for comparison against future water quality sample results, a result exceeding the parameter WQPS might indicate a release or other impairment that must be investigated and documented in an Evaluation Monitoring Program (EMP).

4. Groundwater monitoring may be expanded due to the 2022 Plan. As noted above, additional (unused) monitoring wells are available, and new wells may be required to monitor the activities described in the 2022 Plan. The monitoring and detection methods will remain the same as those currently in place and described in this section; only the quantity of monitoring points may change. This will depend on mitigations adopted in the forthcoming EIS/EIR and local agency permits.

8.3.3 Surface Water (Stormwater) Quality Monitoring

8.3.3.1 Introduction

1. Surface water is a rare occurrence at the CMM. It may only happen a few times annually or not at all and only after significant rain that produces runoff in the ordinarily dry ephemeral washes found throughout the project site. Stormwater monitoring is part of our internal stormwater Best Management Practices (BMP) Plan (**Appendix I**). Monitoring is also described in section 5.3 of the Waste Rock Management Plan (**Appendix F**). That section describes both visual monitoring and water quality monitoring. The CMM BMP Plan will be updated for 2022 Plan activities.

2. Visual monitoring identifies potential problems before they amplify, such as deteriorating storage containers or erosion to project facilities. For example, the leach pad stormwater conveyance protects the leach pad from run-on stormwater during rain events. Monitoring is conducted weekly, and results are recorded on the Form: Visual Inspections/Sampling, included in **Appendix I**. This form is updated as needed and will be further updated before commencing 2022 Plan activities.

3. Water quality sampling uses field testing and discrete sample collection (for laboratory analysis) to confirm that mine facilities do not negatively impact the environment. Discrete water quality samples are collected after storm events from three passive samplers. One sampler is located upgradient from the CMM; this is the baseline (or background) data point. Two other samplers are deployed in washes downgradient from the leach pad, mine pits, and waste rock (overburden) sites. This allows data comparison from the upgradient and downgradient samplers and evaluates mining effects, if

any. Following approval of the 2022 Plan activities, we will review if additional passive samplers are needed to monitor expanded activities.

8.3.3.2 Storm Water Pollution Prevention Plans (SWPPs)

1. The CMM is exempt from the regulations that would otherwise require an IGP/CGP SWPPP, as described in section 7.2.3. Notwithstanding the exemption, a stormwater Best Management Practices (BMP) plan is in place at CMM to ensure that ongoing industrial activity does not cause a condition of pollution to stormwater and surface hydrology at the CMM. The plan outlines the BMPs implemented at the CMM. While it explicitly identifies the Heap Leach (expansion) Pad as the focus area, these same BMPs are extended to cover all mining activity at the CMM. An updated BMP plan will be published in parallel with the Final EIS/EIR for the 2022 Plan.

2. Objectives of the stormwater plan in place at the CMM include:
    - Reducing spills and eliminating any potential pathway for spills to contact stormwater
    - Establish, construct, implement, and maintain BMPs to eliminate or reduce pollutants in runoff
    - Develop a BMP maintenance schedule
    - Train employees and contractors pertinent to the stormwater plan and the importance of stormwater BMPs.

8.4 WASTE ROCK MANAGEMENT PLAN

1. Mining waste rock, also known as overburden in this plan, is described in the Waste Rock Management Plan and attached as **Appendix F** to the 2022 Plan.

8.5 SPILL PREVENTION & MANAGEMENT PLANS

8.5.1 Spill Prevention Control and Countermeasures Plan ("SPCC")

1. A SPCC plan has been prepared for CMM operations per Title 40, Code of Federal Regulations, Part 112 (40 CFR 112), Oil Pollution Prevention, and the California Health and Safety Code (CHSC), Division 20, Chapter 6.67, Aboveground Petroleum Storage Act (APSA). The CMM is subject to the regulatory requirements of 40 CRF 112 and California's APSA because it stores in the aggregate more than 1,320 gallons of oil in aboveground storage tanks (ASTs) and containers having a capacity of 55 gallons or more.

2. The purpose of the SPCC Plan is to detail the measures and procedures that have been implemented at the CMM to:
    - Preclude an accidental or unauthorized release of oil into the navigable waters of the United States and the waters of the state of California
    - In the event a release of oil does occur, to affect the necessary countermeasures to minimize to the extent possible any adverse effects to human health and the environment.
3. Aboveground petroleum storage tanks at the CMM are configured, operated, and maintained following the APSA per California Health and Safety Code, Division 20, Chapter 6.67. A copy of the SPCC Plan is included in **Appendix J.**

4. An updated SPCC plan will be published in parallel with the Final EIS/EIR for the 2022 Plan.

8.5.2 Spill Prevention & Response Plan

1. The CMM manages an internal Spill Prevention and Response Plan. This plan is revised yearly; it was most recently revised in September 2024 and identified as revision 2.1. A copy of the plan is included in **Appendix R**. An updated plan will be published in parallel with the Final EIS/EIR for the 2022 Plan.

8.5.3 Risk Management Plan

1. The CMM stores and handles concentrated sodium cyanide, which is regulated as an extremely hazardous substance. When stored in volumes above the regulated threshold quantity, such substances must complete and submit a Risk Management Plan (RMP).

2. The CalARP (California Accidental Release Prevention) program oversees California's plans, which CalEPA implements at the state level. CalEPA defers implementation locally, and at the CMM, the CUPA (Certified Unified Program Agency) permits and oversees the CMM RMP.

3. The CMM RMP is on file and available from the CUPA.

4. The CMM RMP will be updated in parallel with the Final EIS/EIR for the 2022 Plan.

8.6 THE INTERNATIONAL CYANIDE MANAGEMENT CODE

8.6.1 Introduction

1. Castle Mountain Venture is a signatory to the International Cyanide Management Code (ICMC) through its parent company, Equinox Gold. The ICMC is a voluntary certification program for companies that manufacture, transport, and use cyanide in the production of gold and silver to help mine operators improve their safe management of cyanide to limit the risks to human health and the environment (International Cyanide Management Institute, 2022).

2. The objective of the Cyanide Code is to improve the management of cyanide used in gold and silver mining, enhance the protection of human health, and reduce environmental impacts from accidental releases or exposures to the chemical. Based on Principles and Standards of Practice, the Cyanide Code provides a management system for the safe management of cyanide throughout its use cycle, including production, transport, handling use, recycling, and disposal of the chemical at the mine site (International Cyanide Management Institute, 2022).

3. The Cyanide Code comprises two fundamental components for each of the three industries within its scope. Principles state broad commitments that signatory gold and silver mines, cyanide producers, and cyanide transporters make to manage cyanide responsibly. Standards of Practice follow within each Principle, identifying the performance goals and objectives that must be met to comply with the Principle. Guidance on the measures that must be implemented to meet these goals is provided in separate Guidance Documents for Mining, Production, and Transport Operations. These documents and other documents related to participation in the Cyanide Code Program may be found in the Cyanide Code's Document Library (International Cyanide Management Institute, 2022).

4. Implementation of the Cyanide Code is verified through triennial audits conducted by independent third-party auditors. Companies that adopt the Cyanide Code must audit their operations that use, transport, or produce cyanide to determine the status of Cyanide Code implementation. Those operations that meet the Cyanide Code requirements are certified. This framework provides a

mechanism of assurance for enhancing the protection of human health and reducing the potential for environmental impacts (International Cyanide Management Institute, 2022).

5. The CMM achieved its inaugural Cyanide Code compliance certification in early 2024.

8.7 TOWARDS SUSTAINABLE MINING INITIATIVE (TSM)

8.7.1 Introduction

1. CMV is a signatory to TSM through its parent company, Equinox Gold. TSM[101] is a globally recognized performance system that helps mining companies evaluate and manage their environmental and social responsibilities. It is a set of tools and indicators to drive performance and ensure that key mining risks are managed responsibly at participating mining and metallurgical facilities. (The Mining Association of Canada, 2022).

2. TSM has protocols that include Tailings Management (not applicable at CMM), Crisis Management, Safety and Health, Biodiversity Conservation Management, Water Stewardship, Climate Change and Indigenous and Community Relationships. Companies are scored on a scale from C (lowest ranking) to AAA, where level A, for any given protocol, is considered good practice by the Mining Association of Canada ("MAC"), who administer the program. The MAC requires all companies to achieve a minimum of level A across all protocols within three years of becoming a member as a condition of membership.

3. Participation in TSM involves subscribing to the *TSM Guiding Principles*, which are backed by specific performance indicators on which member companies publicly report annually. By adhering to the TSM Guiding Principles, mining companies exhibit leadership by:

    - Engaging with communities
    - Driving world-leading environmental practices
    - Committing to the safety and health of employees and surrounding communities

    (The Mining Association of Canada, 2022)

8.8 EMERGENCY RESPONSE PLAN (ERP)

1. Federal, state, and local authorities require that the CMM has an emergency response plan (ERP) in place to respond to and manage emergencies. The ERP is administered by the CMM Safety and Environmental Departments. It was developed and implemented to plan for potential emergencies and reduce the resulting impact from any significant adverse event.

2. The objectives of the ERP are to:

    - Provide an effective response to emergencies
    - Minimize the effect on CMM personnel, the environment, and surrounding communities
    - Minimize property and equipment losses

[101] TSM was established in 2004 by the Mining Association of Canada ("MAC")

- Coordinate interdepartmental responses
- Assure the cooperation with outside agencies
- Provide for the release of accurate information to the public

3. The ERP provides emergency contact lists, contact information, and mine coordinates. Directions include how an incident should be reported internally to CMV and externally to first responders and other local, state, and federal agencies. An evacuation plan and response measures (first aid and cleanup) for the specific hazards presented at the CMM site are included. The complete CMM ERP is included in **Appendix P**.
4. The CMM ERP will be updated in parallel with the Final EIS/EIR for the 2022 Plan.

9.0 STATEMENTS OF COMPLIANCE/CERTIFICATION

9.1 CONSISTENCY WITH ESTABLISHED LAND USE PLANS (LUPS)

9.1.1 Desert Renewable Energy Conservation Plan (BLM Lands)

1. The Desert Renewable Energy Conservation Plan (DRECP) is a Land Use Plan Amendment (LUPA) to the prior existing Land Use Plan (LUP), the California Desert Conservation Area (CDCA) plan.

2. The BLM approved the DRECP LUPA in September 2016, and it covers almost 23 million acres of BLM-managed public lands in southern California from the Sierra Nevada Mountain region south to the border with Mexico.

3. Section II.4 of the DRECP LUPA establishes the plan's Goals, Objectives, and Conservation and Management Actions. Section II.4.1.5 is dedicated to minerals management within the DRECP area. The plan explains that within the DRECP area, there exists a vast array of minerals that are vital to the local and national economy, and specifically that precious metals such as gold and silver abound in many areas, and finally considers the importance of continued access to known mineral resources (U.S. Bureau of Land Management, 2016).

4. Under that stated minerals policy, Section II.4.1.5 established the following related goals and objectives (U.S. Bureau of Land Management, 2016):

    - Support the national need for a reliable and sustainable domestic mineral and energy supply.
    - Support responsible mining and energy development operations necessary for California's infrastructure, commerce, and economic well-being.

5. The DRECP also recognized 5,000 acres at the CMM as a High-Potential Mineral Area, an Existing Mineral Operation, and an Existing High-Priority Mineral Operations Exclusion Area. Therefore, responsible mining at the CMM conforms fully to the regional BLM LUP.

9.1.2 San Bernardino Countywide Plan (Private Lands)

1. The County adopted a new General Plan called the Countywide Policy Plan (or Countywide Plan) in October 2020. The Countywide Plan designated the CMM in the Land Use Category (LUC) of Resource/Land Management (RLM). One of this LUC's primary purposes is to "Manage, preserve, and protect natural resources such as agricultural/grazing lands, watersheds, minerals, and wildlife habitat areas, as well as open space areas not otherwise protected or preserved." One of this LUC's typical uses is "Mineral extraction, timbering, or similar activities as permitted by federal or state regulations." The CMM site is zoned Resource Conservation (RC). The RC land use zoning district provides sites for open space and recreational activities, single-family homes on very large parcels, and similar and compatible uses (County Development Code Chapter 82.03). Natural resource development (mining) is permitted with the approval of a mining Conditional Use Permit (CUP). The County's Development Code's Surface Mining and Reclamation Plan Development Code Chapter 88.03) combines the CUP and a required Reclamation Plan.

9.1.3 National Park Service Lands

1. The Castle Mountains National Monument ("CAMO") surrounds the CMM and nearby BLM lands. The 20,920-acre CAMO was established in February 2016 by Presidential Proclamation via the

Antiquities Act. The Proclamation explicitly identified the Castle Mountain Mine Area on the proclamation map and acknowledged that the CMM area should continue to be appropriately managed by the BLM. The Proclamation thereby fully acknowledged the presence of nearby mining activity, including authorized effects, within the Castle Mountain Mine Area. In addition, it is worth noting that the Proclamation did not adhere to the long-standing precedent of establishing a BLM land buffer between the Mine Plan of Operation APA and the new CAMO unit.

2. The Mojave National Preserve ("MOJA") surrounds most of the CAMO area and the CMM. MOJA was established through the 1994 California Desert Protection Act. The MOJA General Management Plan (April 2002) recognizes mining claims at the CMM. The *Management of Park Resources* section of the General Management Plan also establishes that a water well field associated with the CMM is adjacent to and within the Preserve and is permitted to pump 725 AFY (U.S. National Park Service, 2002).

9.2 USE AND OCCUPANCY – *43 CFR SUBPART 3715*

1. This subpart establishes that the activity proposed in this mine plan must be reasonably incident to the statutory standard of "prospecting, mining, or processing operations and uses reasonably incident thereto" (30 U.S.C. 612). To meet this condition, certain information must be provided to the BLM regarding the activities proposed in this plan and which occur on public land; this information includes the following:
    - How the proposed occupancy is reasonably incident:
        - The definition of reasonably incident includes prospecting, mining, or processing operations and uses reasonably incident thereto. The purpose of the 1998 Plan (and this 2022 Plan) was, and still is, to authorize a gold mining operation and all activities supporting said operation, which is to say, reasonably incident to approved gold mining at the Castle Mountain Mine. These activities that are reasonably incident and which can occur on public land include but are not limited to:
            - Open pit mining
            - Operation of a gold heap leach pad, including operation of a gold process plant
            - Location and use of overburden (waste rock) sites
            - Location and use of growth media stockpiles
            - Location of plant nurseries and greenhouses to support mine land revegetation
            - Location and use of water production and groundwater monitoring wells
            - Location and use of area dirt access roads
    - How the proposed occupancy meets the conditions specified in § 3715.2 and § 3715.2-1, which includes the provision that the reason for occupancy must:
        - Be reasonably incident:
            - See the response above
        - Constitute substantially regular work:

- The mine plan described in section 4.0 details mining operations that occur seven days per week, year-round, until (if approved) at least December 2048 (with reclamation and monitoring to 2058), unless extended before that date.

- Be reasonably calculated to lead to the extraction and beneficiation of minerals:
  - The activities proposed in the 2022 Plan will directly result in the processing of an estimated 302 tons of metal ore and estimated processing of over 4 million ounces of gold.
- Involve observable on-the-ground activity that BLM may verify under § 3715.7:
  - Verifiable activity reasonably incident to mining is observed during each inspection of the subject site conducted by BLM staff.
- Use appropriate equipment that is presently operable, subject to the need for reasonable assembly, maintenance, repair, or fabrication of replacement parts:
  - Appropriate equipment reasonably incident to the current level of mining activity is present at the CMM site. The quantity of equipment will increase, as exhibited in **Table 4-4** in Section 4.
- Where you will place temporary or permanent structures for occupancy:
  - Most temporary and permanent structures included in this plan are already authorized pursuant to the 1998 BLM Record of Decision and County CUP to expand mining operations at CMM. Expansion of some existing facilities is included in this 2022 Plan; locations are shown in **Figures 1-2** to **1-2h** and **Figure 2-2**. Legal land descriptions are provided in **Figures 1-3a** to **1-3h**.
- The location of and reasons you need enclosures, fences, gates, and signs intended to exclude the general public:
  - Fences, gates, and signs related to activities described in this mine plan are required in some instances to protect both the public and wildlife from harm due to the potentially hazardous nature of the authorized operations that are conducted within the approved 3,910-acre APA of the Castle Mountain Mine project, as described in the 1998 BLM Record of Decision. The location of the proposed perimeter fencing is shown in **Figure 2-8**.
- The location of reasonable public passage or access routes through or around the area to adjacent public lands:
  - There are three main public roads in the vicinity of the CMM: (1) New York Mountain Road, (2) Hart Mine Road, and (3) the Castle Mountain Mitigated Access Route (or Walking Box Ranch Road). **Figure 2-9** identifies these roads and shows how they will be re-aligned (primarily New York Mountain Road) so public access remains open across all three roads.
- The estimated period of use of the structures, enclosures, fences, gates, and signs, as well as the schedule for removal and reclamation when operations end:

- Mining activity proposed in the 2022 Plan will extend active mining to December 2048 and reclamation to December 2058 unless again amended before those dates.

9.3 UNNECESSARY OR UNDUE DEGRADATION

1. All operations at the CMM will comply with 3809 Regulations and shall not result in the unnecessary or undue degradation of public lands. Mining at the CMM will be conducted in accordance with all applicable federal regulations, all terms and conditions of the approved Mine Plan of Operations and Reclamation Plan, and other federal and state laws related to environmental protection and the protection of cultural resources. All operations at the CMM will be "reasonably incident" to prospecting, mining, or processing operations, as required by 43 CFR 3715.0-5. All operations at CMM will meet the necessary protection and reclamation standards of all applicable laws based on its geographic location.

9.4 VESTED RIGHTS

9.4.1 Introduction

1. The Castle Mountain Mine site ("Site") is subject to a vested right to conduct surface mining activities at the Site. This right was established by extensive pre-SMARA surface mining operations, primarily for gold and clay, that have continued over the past century at the Site. Vested rights to conduct surface mining operations attach to and run with the land and thus have benefited the successors-in-interest to the Site since the enactment of SMARA, including Viceroy and CMV.

2. Vested rights are defined by and established pursuant to Section 2776(a) of SMARA, which provides as follows:

"(a) No person who has obtained a vested right to conduct surface mining operations prior to January 1, 1976, shall be required to secure a permit pursuant to the chapter as long as the vested right continues and as long as no substantial changes are made to the operation except in accordance with this chapter. A person shall be deemed to have a vested right if, prior to January 1, 1976, the person has, in good faith and in reliance upon a permit or other authorization, if the permit or authorization was required, diligently commenced surface mining operations and incurred substantial liabilities for work and materials necessary for the surface mining operation. Expenses incurred in obtaining the enactment of an ordinance in relation to a particular operation or the issuance of a permit shall not be deemed liabilities for work or materials."

9.4.2 Castle Mountain Mine CLUC

1. Section 3.1 of this Plan describes the extent of mining from 1907 within the Hart Mining District, including areas of the CMM. A significant portion of the CMM was subject to surface mining activities prior to SMARA's enactment in 1976. This historic mining generally focused on gold, silver, and high-quality clay (kaolin).
2. CMM's vested right to conduct surface mining was established pursuant to multiple historical pre-SMARA surface mining operations located within and subject to property transactions affecting the Site,[102] including the following:

[102] Many of the historical details from this section are contained in the publication prepared for the Desert District of the BLM (1980): *Desert Fever: An Overview of Mining History of the California Desert Conservation Area*, as well as in multiple editions of the California State Mineralogist's *Journal of Mines and Geology*.

- Gold mining within the Hart Mining District traces back to the Hart gold boom of 1907. As gold booms go, the initial boom was a relatively short-lived cycle (1907 to 1918). During this period, at least three successful gold mines operated through 1918. Among these early and profitable mines were the Oro Belle No. 1 and No. 2 mines operated by James Hart and Bert and Clark Hitt brothers. They sold the mines in 1908, and Worth B. Andrews reorganized the operation under the Oro Bell Mines Company. The Oro Belle Mines Company obtained federal patents for these mine claims in 1918; the lode mine claim *Oro Belle No. 1* was recorded under Patent Number 649101.[103] The *Oro Belle* and *Oro Belle Fraction* lode claims were recorded under Patent Number 422670.[104] These patents, on which gold was produced and capital expended, are now owned by CMV, and the lands they comprise are located in the middle of the existing Oro Belle pit of the Mine. This area was also subsumed into the clay mining operations described in greater detail below and continued to be a potential source of gold recovery for CMV's predecessors-in-interest. For example, during the 1960s and 1970s, Pfizer, Inc. conducted multiple assays on material from the Oro Belle area to determine the viability of restarting gold extraction. Furthermore, the Oro Belle area contained a clay deposit known as the "C. and M. Deposit," originally owned by W.W. Hartman, S.E. Chiapella, and L.M. Moon, and is located within the Oro Belle Patented Land. Following the original gold rush between 1907 and 1910, described above, additional excavations began in December of 1951 on a 150- by 300-foot area of clay-bearing rock, with a quarry approximately 50 feet in diameter and 15 feet deep.

- Clay (kaolin) mining also occurred intermittently but continuously in the Hart District from approximately 1920 to the early 1990's. The first clay quarry was later known colloquially as the South Clay Pit and officially as the P.S. Hart Mine. The P.S. Hart Mine was situated about a mile south of Hart and adjacent to the west side of the old Big Chief gold mine and mill. The Standard Sanitary Manufacturing Company operated this clay quarry. The company's mine claims: *Pacific Clay Deposit No. 1*, *Pacific Clay Deposit No. 2*, and *Pacific Clay Deposit No. 3*, were patented in 1939 under Patent Number 1101406.[105] Operations on these sites continued after the enactment of SMARA on January 1, 1976. In December 1977, the County approved a reclamation plan for the P.S. Hart Mine, absent any requirement for a use permit, mine permit, or other land use authorization. After the enactment of SMARA, this approval was a recognition by the County of the vested right to conduct surface mining activities within the patented lands encompassed by the approved reclamation plan. This patent, on which high-quality clay was produced and capital expended, and on which the County confirmed vested rights, is now owned by CMV, and the lands which it comprises are located on the project site and where gold mining and activities ancillary to gold mining (by CMV) have occurred since 1986. Accordingly, Clay (kaolin) was mined from a deposit directly adjacent to what was left of the abandoned town of Hart beginning in 1947. This quarry was owned by Herman F. Coors and was situated on what was known as the Milma placer mining claim, officially known as the C-1 Quarry or C-1 Clay Mine. This mining claim was patented in 1942 under Patent Number 1113695.[106] In 1981, the County approved a reclamation plan for the

[103] Patent details are also in **Table 1-4** of this Plan.
[104] Patent details are also in **Table 1-4** of this Plan.
[105] Patent details are also in **Table 1-4** of this Plan.
[106] Patent details are also shown on Table 1-4 of this Plan.

C-1 Clay Mine operation on the Milma patent, absent any requirement for a use permit, mine permit, or other land use authorization. After the enactment of SMARA, this approval was a recognition by the County of the vested right to conduct surface mining activities within the patented lands encompassed by the approved reclamation plan. This patent, on which high-quality clay was produced and capital expended and on which vested rights were confirmed by the County, is now owned by CMV. The lands that it comprises are on the Mine Site where gold mining pits are now located, and activities ancillary to gold mining (by CMV) have occurred since 1986.

- Clay (kaolin) was also mined from the P-1 Open Pit Mine, which was originally owned and operated by Huntington Tile, Inc., of Lake Elsinore, California.[107] Huntington Tile, Inc., located the originally unpatented mining claims (the land would be patented in 2007 by CMV)– Pomona Clay and Marie –1936 intermittently worked the site from 1936 until 1978. IN 1978, Huntington Tile, Inc. planned to increase production from the P-1 Open Pit Mine significantly and submitted a Reclamation plan to the County. The County approved this reclamation plan absent any requirement for use absent any requirement for a use permit, mine permit, or other land use authorization. After the enactment of SMARA, this approval was a recognition by the County of the vested right to conduct surface mining activities within the lands encompassed by the approved reclamation plan.

- In conjunction with the specific mine operations described above, which the County has recognized as occurring subject to vested rights, numerous other documented mining operations date back to the 1920s and continued through the 1930s,1940s, 1950s, 1960s, 1970s, and 1980s throughout various areas of the overall Mine Site. These multiple operations essentially appropriated the entire Mine Site as a mining area and established a vested right to conduct surface mining operations across the Mine Site. The County has previously recognized the establishment of vested mining rights in this area through the approval of reclamation plans to continue the mining operations post-SMARA, absent the requirement for obtaining mining or use permits or other land use authorizations. The County confirmed the existence of these vested rights, encompassing the land previously recognized by the County in prior determinations (primarily reclamation plan approvals) in a Certificate of Land Use Compliance issued in February 2022. However, the extent of historic surface mining activities at the Mine Site and within the Hart Mining District is significant, and the scope of vested rights is likely significantly larger than the land currently confirmed as vested.

[107] Lake Elsinore is famous for being a center of fire clay production in Southern California. *See* Waldemar Fenn Dietrich, *The Clay Resources and the Ceramic Industry of California*, Bulletin No. 99, California State Mining Bureau (1928).

10.0 REFERENCES

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11.0. SMARA CROSS REFERENCE MATRIX FOR CMM

CROSS REFERENCE MATRIX

CASTLE MOUNTAIN MINE (#90M-013)
CA Mine ID# 91-36-0015
Surface Mining and Reclamation Act

Including reference to:
ARTICLE 1. GENERAL PROVISIONS. SECTION 2710 et seq.
ARTICLE 2. DEFINITIONS. SECTION 2725 et seq.
ARTICLE 3. DISTRICT COMMITTEES. SECTION 2740 – 2741
ARTICLE 4. STATE POLICY FOR THE RECLAMATION OF MINED LANDS. SECTION 2755 et seq.
ARTICLE 5. RECLAMATION PLANS AND THE CONDUCT OF SURFACE MINING OPERATIONS. SECTION 2770 et seq., as amended
CCR TITLE 14 (REGISTER 85, No. 18-5-4-83)
CHAPTER 8. MINING AND GEOLOGY
SUBCHAPTER 1. STATE MINING AND GEOLOGY BOARD
ARTICLE 1. SURFACE MINING AND RECLAMATION PRACTIVE. SECTION 3500 et seq.
ARTICLE 9. RECLAMATION STANDARDS. SECTION 3700 et seq.

SMARA/CCR SECTION	DESCRIPTION	N/A	PAGE(S)	SECTION(S)
MINING OPERATIONS AND CLOSURE				
SMARA 2770.5	100-year flood, Caltrans contact	X	---	---
SMARA 2772 (c) (1)	Name and Address of operator/agent.		1-4	1.2
SMARA 2772 (c) (2)	Quantity & type of minerals to be mined.		2-1 to 2-12	2.0; Tables 2-1 & 2-4
SMARA 2772 (c) (3)	Initiation and termination date.		2-1 to 2-4; 2-12 to 2-13	2.1: Figure 2-1; 2.4
SMARA 2772 (c) (4)	Maximum anticipated depth of mining.		4-10 to 4-12	4.4.2.1; Table 4-3
SMARA 2772 (c) (5)	Description, including a map with boundaries, topographic details, geology, streams, roads, and utilities.		2-1 to 2-19	2.0; Figure 2-1 to 2-9; See Plan Sheets 1-4
SMARA 2772 (c) (6)	Mining plan and time, schedule for reclamation (concurrent or phased reclamation).		2-1 to 2-9; 4-1 to 4-65	2.1; Figure 2-1; 4.0
SMARA 2772 (c) (7)	Proposed subsequent use.		5-7 to 5-9	5.2.2

SMARA/CCR SECTION	DESCRIPTION	N/A	PAGE(S)	SECTION(S)
MINING OPERATIONS AND CLOSURE				
SMARA 2772 (c) (8)	Description of reclamation measures adequate for proposed end use.		5-1 to 5-3; 5-20 to 5-23; 5-26 to 5-35	5.1; 5.8; 5.10
SMARA 2772 (c) (8) (a)	Description of containment control and mine waste disposal.		4-63 to 4-65	4.8.1; Table 4-10; Appx. F, J
SMARA 2772 (c) (8) (b)	Rehabilitation of stream banks/beds to minimize erosion		4-53 to 56; 5-45 to 5-51	4.6; Figure 4-14; 5.14; Figure 5-6
SMARA 2772 (c) (9)	Impact of reclamation on future mining.		5-7 to 5-9	5.2.2
SMARA 2772 (c) (10)	Applicant statement accepting responsibility for reclamation per the reclamation plan.		6-1	6.0
SMARA 2773 (a)	Water quality monitoring plan specific to the property.		5-45 to 5-51; 8-1 to 8-4	5.14; 8.3 Appx. I, K
SMARA 2773 (a)	Sediment and erosion control monitoring plan specific to the property.		8-2 to 8-3	8.3 Appx. I
SMARA 2773 (a)	Revegetation plan specific to property. Monitoring Plan.		5-11 to 5-25	5.4 to 5.9; Appx. N, P
SMARA 2773.1	Performance (financial) assurances.		6-1	6.0
SMARA 2777	Amended reclamation plans required prior to substantial deviations to approved plans.		Informational only.	This 2022 Plan is an amendment to Plan #90M-013.
CCR 3502 (b) (1)	Environmental setting and impact of reclamation on surrounding land uses. (Identify sensitive species, wildlife habitat, sensitive natural communities, e.g., wetlands, riparian zones, etc.).		3-12; 5-3 to 5-6; 5-9 to 5-12; 7-1 to 7-5	3.4; 5.2.1; 5.3; 5.4; 7.0
CCR 3502 (b) (2)	Public health and safety (exposure).		4-33 to 4-34; 5-43 to 5-45 8-7	4.4.3.5.7; 5.13.2 8.8
CCR 3502 (b) (3)	Slopes: critical gradient, consider physical properties and landscaping.		4-10 to 4-20; 5-26 to 5-30	4.4.2.1; Figures 4-3 to 4-9; 5.10.1; Figures 5-3 to 5-5 Appx. G

SMARA/CCR SECTION	DESCRIPTION	N/A	PAGE(S)	SECTION(S)
MINING OPERATIONS AND CLOSURE				
CCR 3502 (b) (4)	Fill materials in conformance with current engineering practice.		4-10 to 4-20; 5-26 to 5-30	4.4.2.1; Figures 4-3 to 4-9; 5.10.1; Figures 5-3 to 5-5;
CCR 3502 (b) (5)	Disposition of old equipment		5-27 to 5-35	5.10.2; 5.10.3; 5.10.5; 5.10.6
CCR 3502 (b) (6)	Temporary stream and water diversions shown.		4-53 to 4-56	4.6; Figure 4-14
CCR 3503 (a) (1)	Removal of vegetation and overburden preceding mining kept to a minimum.		4-7 to 4-10	4.4.1
CCR 3503 (a) (2)	Overburden stockpiles managed to minimize water and wind erosion.		4-53 to 4-56; 5-26 to 5-31; 5-45; 5-51	4.6; Figure 4-14; 5.10.1; Figure 5-6; 5.14.1.1; 5.14.3
CCR 3503 (a) (3)	Erosion control facilities (dikes, ditches, etc.) as necessary.		4-53 to 4-56; 5-45 to 5-51; 8-2 to 8-3	4.6; Figure 4-14; 5.14; Figure 5-6; 8.3 Appx. I
CCR 3503 (b) (1)	Settling ponds (sedimentation and water quality).	X	Lined holding ponds; 6-1	6.3
CCR 3503 (b) (2)	Prevent siltation of groundwater recharge areas.		4-53; 5-45 to 5-51	4.6; 5.14
CCR 3503 (c)	Protection of fish and wildlife habitat (all reasonable measures).		3-13; 5-9 to 5-11; 8-1	3.5; 5.3; 5.4; 8.1; 7.0
CCR 3503 (d)	Disposal of mine waste and overburden (stable-no natural drainage restrictions without suitable provisions for diversion).		4-22 to 4-51 8-4	4.4.3 (including figures) 8.4 Appx. F
CCR 3503 (e)	Erosion and drainage (grading to drain to natural courses or interior basins).		4-53 to 4-56; 5-45 to 5-51; 8-2 to 8-3	4.6; Figure 4-14; 5.14; Figure 5-6; 8.3
CCR 3503 (f)	Resoiling (fine material on top plus mulches).		5-35 to 5-41	5.11
CCR 3503 (g)	Revegetation and plant survival (use available research).		5-1 to 5-3; 5-11 to 5-25	5.1; 5.4 to 5.9; Table 5-1a-c; Appx. N, P
CCR 3703 (a)	Sensitive species conserved or mitigated		3-13; 5-9 to 5-11; 8-1 3-11 to 3-13	3.4; 5.3; 5.4; 8.1; 7.0

SMARA/CCR SECTION	DESCRIPTION	N/A	PAGE(S)	SECTION(S)
MINING OPERATIONS AND CLOSURE				
CCR 3703 (b)	Wildlife habitat at least as good as pre-project if approved end use is habitat.		5-12 to 5-18; 5-23 to 5-25	5.5; Table 5-1a-c; 5.9;
CCR 3703 (c)	Wetlands avoided or mitigated at 1:1 minimum	X	---	---
CCR 3704 (a)	For urban use, fill compacted in accordance with UBC or local grading ordinance.	X	---	---
CCR 3704 (b)	For resource conservation, compare to standard for that end use		5-1 to 5-3; 5-11 to 5-25	5.1; 5.4 to 5.9; Table 5-1a-c;
CCR 3704 (c)	Mine waste stockpiled to facilitate phased reclamation and separate from growth media.		4-22 to 4-51	4.4.3 Appx. F
CCR 3704 (d)	Final reclamation fill slopes not exceed 2:1, except when engineering and revegetation analysis allow.		4-10 to 4-20; 5-26 to 5-30	4.4.2.1; Figures 4-3 to 4-9; 5.10.1; Figures 5-3 to 5-5
CCR 3704 (e)	Final landforms or fills conform with surrounding topography or end use.		5-43	5.13.1
CCR 3704 (f)	Cut slopes have minimum factor of safety for end use and conform with surrounding topography.		4-10 to 4-20; 5-26 to 5-30; 5-43	4.4.2.1; Figures 4-3 to 4-9; 5.10.1; Figures 5-3 to 5-5; 5.13.1
CCR 3704 (g)	Piles or dumps not placed in wetlands without mitigation.	X	---	---
CCR 3705 (a)	Vegetative cover, suitable to end use, self-sustaining. Baseline studies documenting cover, density and species richness.		5-11 to 5-18; 5-23 to 5-25	5.4; 5.5; Table 5-1a-c; 5.9
CCR 3705 (b)	Test plots if success has not been proven previously		5-12 to 5-18; 5-23 to 5-25	5.5; Table 5-1a-c; 5.9
CCR 3705 (c)	Decompaction of site.		5-35 to 5-41	5.11
CCR 3705 (d)	Roads stripped of road base materials, resoiled and revegetated, unless exempted.		5-35	5.10.7
CCR 3705 (e)	Soil altered or other than native topsoil, required soil analysis. Amend if necessary.		4-7 to 4-10	4.4.1
CCR 3705 (f)	Temporary access not bladed. Barriers installed.	X	---	---

SMARA/CCR SECTION	DESCRIPTION	N/A	PAGE(S)	SECTION(S)
MINING OPERATIONS AND CLOSURE				
CCR 3705 (g)	Use native plant species unless exotic species meet end use.		5-11 to 5-18; 5-23 to 5-25	5.4; 5.5; Tables 5-1a-c; 5.9
CCR 3705 (h)	Plant during correct season.		5-12 to 5-18; 5-23 to 5-25	5.5; Tables 5-1a-c; 5.9
CCR 3705 (i)	Erosion control and irrigation, when necessary.		5-12 to 5-18; 5-23 to 5-25	5.5; Table 5-1a-c; 5.9
CCR 3705 (j)	If irrigated, demonstrate self-sustaining without for two-year minimum.		5-20 to 5-23	5.8
CCR 3705 (k)	Weeds managed.		5-20 to 5-23; 5-42	5.8; 5.12.1
CCR 3705 (l)	Plant protection measures, fencing, caging.		5-42	5.12.1
CCR 3705 (m)	Success quantified by cover, density and species-richness. Standards proposed in plan. Sample method set forth in plan and sample size provides 80 percent confidence level, as minimum.		5-11 to 5-18; 5-23 to 5-25	5.4; 5.5; Tables 5-1a-c; 5.9
CCR 3706 (a)	Mining and reclamation to protect downstream beneficial uses.		4-53 to 4-56; 5-45 to 5-51; 8-2 to 8-3	4.6; Figure 4-14; 5.14; Figure 5-6; 8.3
CCR 3706 (b)	Water quality, recharge, and groundwater storage shall not be diminished, except as allowed by plan.		4-53 to 4-56; 5-45 to 5-51; 8-2 to 8-3	4.6; Figure 4-14; 5.14; Figure 5-6; 8.3
CCR 3706 (c)	Erosion and sedimentation controlled during all phases as per RWQCB/SWRCB.		4-53 to 4-56; 5-45 to 5-51; 8-2 to 8-3	4.6; Figure 4-14; 5.14; Figure 5-6; 8.3 Appendix I
CCR 3706 (d)	Surface runoff and drainage controlled and methods designed for not less than 20 year/1 hour intensity storm event.		4-53 to 4-56; 5-45 to 5-51; 8-2 to 8-3	4.6; Figure 4-14; 5.14; Figure 5-6; 8.3 Appendix I
CCR 3706 (e)	Altered drainages shall not cause increased erosion or sedimentation.		4-53 to 4-56; 5-45 to 5-51; 8-2 to 8-3	4.6; Figure 4-14; 5.14; Figure 5-6; 8.3 Appendix I

SMARA/CCR SECTION	DESCRIPTION	N/A	PAGE(S)	SECTION(S)
MINING OPERATIONS AND CLOSURE				
CCR 3706 (f)	Stream diversions constructed in accordance with DFG 1603, EPA 404, Sec. 10 Rivers and Harbors.		4-53 to 4-56; 5-45 to 5-51; 8-2 to 8-3	4.6; Figure 4-14; 5.14; Figure 5-6; 8.3 Appendix I
CCR 3706 (g)	All temporary diversions eventually removed.		5-45 to 5-51; 8-2 to 8-3	5.14; Figure 5-6; 8.3
CCR 3707 (a)	Return prime ag to prime ag, unless exempted.	X	---	---
CCR 3707 (b)	Segregate and replace topsoil by horizon.	X	---	---
CCR 3707 (c)	Productivity rates equal pre-project or similar site for two consecutive years. Rates set forth in plan.	X	---	---
CCR 3707 (d)	Fertilizers and amendments do not contaminate water.	X	---	---
CCR 3708	Other ag capable of sustaining crops of area.	X	---	---
CCR 3709 (a)	Equipment stored in designated area and waste disposed of according to ordinance.		4-58; 4-63 to 4-65	4.7.2; 4.8
CCR 3709 (b)	Structures and equipment dismantled and removed.		5-17 to 5-35	5.10.2; 5.10.3; 5.10.5; 5.10.6
CCR 3710 (a)	Surface and groundwater protected.		4-53 to 4-56; 5-45 to 5-51; 8-1 to 8-4	4.6; Figure 4-14; 5.14; Figure 5-6; 8.3
CCR 3710 (a)	Surface and groundwater projected in accordance with Porter Cologne and Clean Water Acts (RWQCB/SWRCB).		4-53 to 4-56; 5-45 to 5-51; 8-1 to 8-4	4.6; Figure 4-14; 5.14; Figure 5-6; 8.3
CCR 3710 (b)	In-stream in accordance with CFG 1600, EPA 404, and Sec. 10 Rivers and Harbors.	X	No in-stream mining.	---
CCR 3710 (c)	In-stream channel elevations and bank erosion evaluated annually using extraction quantities, cross-sections, and aerial photos.	X	No in-stream mining.	---

SMARA/CCR SECTION	DESCRIPTION	N/A	PAGE(S)	SECTION(S)
MINING OPERATIONS AND CLOSURE				
CCR 3710 (d)	In-stream mining activities shall not cause fish to become entrapped in pools or in off-channel pits. California Fish and Game Code section 1600.	X	No in-stream mining.	---
CCR 3711(a)	All salvageable topsoil removed. Topsoil and vegetation removal not proceed mining by more than one year.		4-7 to 4-10	4.4.1
CCR 3711 (b)	Topsoil resources mapped prior to stripping, location of stockpiles on map. Topsoil and growth media in separate stockpiles.		4-7 to 4-10	4.4.1; Appx. H
CCR 3711 (c)	Soil salvage and phases set forth in plan, minimize disturbance, designed to achieve revegetation success.		4-7 to 4-10; 4-22 to 4-51	4.4.1; Table 4-2; 4.4.3; Table 4-7
CCR 3711 (d)	Topsoiling phased ASAP. Stockpiles not to be disturbed until needed. Stockpiles clearly identified and planted with vegetation or otherwise protected.		2-17; 4-7 to 4-10; 4-22 to 4-51	2.3; Figure 2-7; 4.4.1; Table 4-2; 4.4.3; Table 4-7
CCR 3711 (e)	Topsoil redistributed in stable site and consistent thickness.		4-7 to 4-10; 5-3; 5-20-5-23	4.4.1; 5.1.5; 5.8
CCR 3712	Waste and tailings, and waste disposal governed by SWRCB (Article 7, Chapter 15, Title 23, CCR).		4-22 to 4-51 7-3 to 7-4	4.4.3 7.0
CCR 3713 (a)	Drill holes, water wells, monitoring wells abandoned in accordance with laws.		5-35	5.10.6
CCR 3713 (b)	All portals, shafts, tunnels or openings, gated or protected from public entry, but preserve access for wildlife.		5-35	5.10.6