

CJK Milling Company, LLC

P.O Box 620490
Littleton, Colorado 80162-0490
GKnippa@msn.com

LEADVILLE MILL PERMIT

M1990-057

(VERSION 3)

Prepared for:



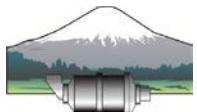
Colorado Division of Reclamation Mining & Safety

1313 Sherman St, #215
Denver, CO 80203
Phone 303.886.3567

Prepared by:

Union Milling Contractors, LLC
P.O Box 620490
Littleton, Colorado 80162-0490
sccraig@unionmilling.com

JANUARY 2021



Leadville Mill Permit

M1990-057
REVISION HISTORY

REVISION HISTORY



TABLE OF CONTENTS

TABLE OF CONTENTS	I
LIST OF TABLES	V
LIST OF FIGURES	VI
1.0 INTRODUCTION & BACKGROUND	1-1
1.1 SITE BACKGROUND	1-2
1.2 REFERENCES	1-4
2.0 EXHIBIT A – LEGAL DESCRIPTION & LOCATION MAP (SEC 6.3.1).....	2-1
3.0 EXHIBIT B – SITE DESCRIPTION (SEC 6.3.2).....	3-1
3.1 CLIMATE	3-1
3.2 REGIONAL GEOLOGIC SETTING	3-3
3.3 ORE DEPOSITS	3-4
3.4 SOILS (SEC 6.3.2(A)).....	3-4
3.5 VEGETATION (SEC 6.3.2(B)).....	3-5
3.6 WILDLIFE (SEC 6.3.2(D)).....	3-5
3.7 WATER RESOURCES & HYDROLOGY (SEC 6.3.2(C))	3-5
3.8 REFERENCES	3-7
4.0 EXHIBIT C – MILL PLAN (SEC 6.3.3)	4-1
4.1 BACKGROUND	4-1
4.2 MILL MANAGEMENT ACTIVITIES (SEC 6.3.3(2)(A)).....	4-3
4.2.1 PROCESS FLOWSHEET	4-3
4.2.2 PROCESS MATERIAL BALANCE.....	4-7
4.2.3 LABORATORY	4-9
4.2.4 CHEMICAL REAGENT INVENTORY	4-9
4.2.5 SOLUTION MANAGEMENT	4-12
4.2.6 DUST CONTROL	4-14
4.3 TAILINGS STORAGE FACILITY (TSF) (6.3.3(2)(B))	4-19
4.3.1 TSF CONSTRUCTION PREPARATION (6.3.3(2)(B)).....	4-21
4.3.2 SUBGRADE PREPARATION (6.3.3(2)(B))	4-21
4.3.3 TSF STABILITY & TSF DESIGN (6.3.3(2)(B)).....	4-23
4.3.4 GEOCOMPOSITE DRAINAGE LAYER (6.3.3(2)(B))	4-23
4.3.5 GEOSYNTHETIC CLAY LINER (6.3.3(2)(B))	4-24
4.3.6 LEAK DETECTION SYSTEM (6.3.3(2)(B))	4-24
4.3.7 POLYPROPYLENE LINER (6.3.3(2)(B))	4-25
4.3.8 INITIAL TSF LINER STABILIZATION (6.3.3(2)(B))	4-26
4.3.9 QA/QC (6.3.3(2)(B)).....	4-26



4.3.10	CONSTRUCTION SCHEDULE (6.3.3(2)(B)).....	4-30
4.3.11	GEOCHEMICAL CONSTITUENTS (6.3.3(2)(B)).....	4-31
4.3.12	PLANT FACILITIES (6.3.3(2)(A)).....	4-31
4.3.13	DRAINAGE CONTROL (6.3.3(2)(C)).....	4-31
4.4	EXISTING HISTORIC ORE STOCKPILES.....	4-35
4.5	MILL UTILITIES & SERVICES	4-36
4.5.1	ELECTRICAL POWER	4-36
4.5.2	COMMUNICATION	4-36
4.5.3	SEWAGE DISPOSAL.....	4-37
4.5.4	SOLID WASTE	4-37
4.5.5	WATER.....	4-37
4.6	ORE BUYING ACCEPTANCE CRITERIA.....	4-37
4.6.1	CONTRACT WITH SUPPLIER.....	4-37
4.6.2	ACCEPTANCE CRITERIA	4-38
5.0	EXHIBIT D – RECLAMATION PLAN (SEC 6.3.4)	5-1
5.1	MILL SITE SOILS.....	5-1
5.2	RECLAMATION SEED MIX.....	5-1
5.3	POST MILL LAND USE.....	5-2
5.4	RECLAMATION PLAN.....	5-2
5.5	OPERATING SAMPLING AND ANALYSIS PROGRAM GEOCHEMICAL RECLAMATION PROCESS	5-5
5.5.1	INITIAL TESTING.....	5-5
5.5.2	TAILINGS CHARACTERIZATION TESTS.....	5-6
5.6	RECLAMATION & CLOSURE COSTS (SEC 4.3.4(2)).....	5-7
5.6.1	TASK 1 – RECLAIM TAILINGS STORAGE FACILITY	5-9
5.6.2	TASK 2 – MONITORING WELLS ABANDONMENT CAP MONITORING WELLS	5-10
5.6.3	TASK 3 – REMOVE ON-SITE REAGENTS	5-10
5.6.4	TASK 4 - RECLAIM LOW-GRADE STOCKPILES.....	5-10
5.6.5	TASK 5 – REMOVE MILL EQUIPMENT	5-11
5.6.6	INDIRECT COSTS.....	5-11
6.0	EXHIBIT E – MAPS (SEC 6.3.5)	6-1
7.0	EXHIBIT F - OTHER PERMITS & LICENSES (SEC 6.3.6)	7-1
8.0	EXHIBIT G – SOURCE OF LEGAL RIGHT TO ENTER (SEC 6.3.7)	8-1
9.0	EXHIBIT H – MUNICIPALITIES WITHIN TWO MILES (SEC 6.3.8)	9-1
10.0	EXHIBIT I – PROOF OF FILING WITH COUNTY CLERK & RECORDER (SEC 6.3.9)	10-1
11.0	EXHIBIT J – PROOF OF MAILING OF NOTICES TO COUNTY COMMISSIONERS & SOIL CONSERVATION DISTRICTS (SEC 6.3.10)	11-1
12.0	EXHIBIT K – CLIMATE-RESERVED(SEC 6.3.11)	12-1
12.1	LEADVILLE CLIMATE	12-1
13.0	EXHIBIT L – PERMANENT MAN-MADE STRUCTURES (SEC 6.3.12)	13-1

**14.0 EXHIBIT U – DESIGNATED MINING OPERATION ENVIRONMENTAL PROTECTION PLAN
(SEC 6.4.21).....14-1**

14.1	DESCRIPTION OF COMPLIANCE (SEC 6.4.21(1)).....	14-1
14.2	MAPS (SEC 6.4.21(2)).....	14-3
14.3	OTHER AGENCIES' ENVIRON. PROTECT MEASURE & MONITOR (SEC 6.4.21(3)).....	14-3
14.4	OTHER PERMITS & LICENSES (SEC 6.4.21(4)).....	14-4
14.4.1	(A) LIST OF PERMITS, LICENSES OR OTHER FORMAL AUTHORIZATIONS.....	14-4
14.4.2	(B) LOCATION OF PERMITS, LICENSES OR OTHER FORMAL AUTHORIZATIONS.....	14-5
14.4.3	(C) ADDITIONAL PERMITS.....	14-5
14.4.4	(D) COMPLIANCE	14-6
14.5	PROCESS CHEMICAL EVALUATION DESIGNATED (SEC 6.4.21(5))	14-6
14.5.1	(A) POTENTIAL TO AFFECT HUMAN HEALTH, PROPERTY OR ENVIRONMENT.....	14-6
14.5.2	(B) EXPECTED CONCENTRATIONS, PROCESS SOLUTION VOLUMES & FATE.....	14-7
14.5.3	(C) MATERIAL SAFETY DATA SHEETS (MSDS)	14-8
14.6	DESIGNATED CHEMICALS AND MATERIAL HANDLING (SEC 6.4.21(6))	14-8
14.6.1	(A) PROC. FOR DISPOSAL, DECOM., DETOX., STABILIZATION.....	14-8
14.6.2	(B) NARRATIVE DESCRIPTION.....	14-9
14.7	FACILITIES EVALUATION (SEC 6.4.21(7)).....	14-12
14.7.1	(A) SITE-SPECIFIC CONDITIONS	14-12
14.7.2	(B) DESIGNATED AND OTHER CHEMICALS.....	14-12
14.7.3	(C) ALTERATION TO NATURALLY OCCURRING GEOL. & GEOCHEM. COND.	14-13
14.7.4	(D) MONITORING SYSTEMS	14-13
14.7.5	(E) CHEMICALS MANAGEMENT	14-14
14.7.6	(F) SIZE OF CONTAINMENT FACILITY.....	14-15
14.8	GROUNDWATER INFORMATION (SEC 6.4.21(8)).....	14-15
14.8.1	(A) MAP	14-15
14.8.2	(B) GEOLOGIC MEDIA BENEATH FACILITIES	14-16
14.8.3	(C) FRACTURE SYSTEM WITH RESPECT TO FACILITIES	14-16
14.8.4	(D) POTENTIAL IMPACTS TO SURFACE AND GROUNDWATER	14-16
14.9	GROUNDWATER QUALITY DATA (SEC 6.4.21(9)).....	14-16
14.9.1	(A) DOWN-GRADIENT GROUNDWATER USES POTENTIAL	14-16
14.9.2	(B) GROUNDWATER QUALITY DATA	14-18
14.10	SURFACE WTR CONTROL & CONT. FACILITIES INFO. (SEC 6.4.21(10)).....	14-20
14.11	SURFACE WATER QUALITY DATA (SEC 6.4.21(11))	14-21
14.11.1	(A) EXISTING SURFACE WATER RECEIVING WATER STREAM STANDARDS.....	14-21
14.12	MILL WATER QUALITY MONITORING PLAN (SEC 6.4.21(12))	14-23
14.13	CLIMATE (SEC 6.4.21(13))	14-24
14.14	GEOCHEMICAL DATA & ANALYSIS (SEC 6.4.21(14)).....	14-25
14.14.1	(A) SITE SPECIFIC	14-25
14.14.2	(B) REPRESENTATIVE MATERIALS	14-25
14.14.3	(C) INTENDED USE	14-25
14.14.4	(D) FATE OF MATERIAL	14-25
14.15	CONSTRUCTION SCHEDULE INFORMATION (SEC 6.4.21(15)).....	14-25



14.16	QUALITY ASSURANCE AND QUALITY CONTROL PROGRAM (SEC 6.4.21(16))	14-26
14.17	PLANT GROWTH MEDIUM (SEC 6.4.21(17)).....	14-26
14.17.1	(A) SOIL SURVEY MAP	14-26
14.17.2	(B) SITE SPECIFIC SOILS INVESTIGATION.....	14-26
14.17.3	(C) ANALYSIS	14-27
14.18	WILDLIFE PROTECTION (SEC 6.4.21(18))	14-27
14.18.1	(A) MITIGATION MEASURES.....	14-27
14.18.2	(B) MEAS. TO PREVENT WILDLIFE CONTACTING DESIGNATED CHEMICALS	14-27
14.19	DISPOSAL OF TAILINGS IN MINE WORKINGS (SEC 6.4.21(19)).....	14-28
15.0	GEOTECHNICAL STABILITY (SEC 6.5)	15-1
16.0	EMERGENCY RESPONSE & MANAGEMENT PLAN (RULE 8)	16-1
16.1	INFORMATION CONTACTS & VERIFICATION OF PLAN.....	16-1
16.1.1	IMMEDIATE ALTERNATIVE CONTACT	16-2
16.2	GENERAL DESCRIPTION.....	16-2
16.3	EMERGENCY CONTACT INDEX.....	16-4
16.4	EMERGENCY MANAGEMENT PROCEDURES.....	16-4
16.5	ON-SITE EMERGENCY RESPONSE EQUIPMENT	16-10
16.6	MILL EMERGENCY NOTIFICATION PLAN	16-10
16.6.1	COMMAND CENTER	16-10
16.6.2	UMC EMERGENCY INFORMATION CONTACTS	16-11
16.6.3	NOTIFICATION PROCEDURE	16-11
16.7	FIRE PREVENTION & PROTECTION PLAN	16-12
16.7.1	PURPOSE	16-12
16.7.2	SCOPE.....	16-12
16.7.3	TRAINING	16-13
16.7.4	INSPECTION & MAINTENANCE	16-13
16.7.5	FIRE PREVENTION.....	16-14
16.7.6	CHEMICALS OF CONCERN.....	16-15
16.8	ANNUAL TRAINING PROCEDURES.....	16-16



LIST OF TABLES

Table 4-1:	Leadville Mill, Design Criteria	4-4
Table 4-2:	Trommel & Crusher Performance Criteria	4-5
Table 4-3:	Grinding Performance Criteria	4-6
Table 4-4:	Leach & Merrill Crowe Performance Criteria	4-7
Table 4-5:	Process Material Balance	4-8
Table 4-6:	Reagent Consumption, Grinding & Agitated Leach Circuit.....	4-9
Table 4-7:	Reagent Consumption, Refinery.....	4-10
Table 4-8:	Reagent Consumption, Refinery.....	4-10
Table 4-9:	On-Site Reagent Inventory	4-11
Table 4-10:	Operation Solution Volumes	4-13
Table 4-11:	TSF Impoundment Volumes	4-21
Table 4-12:	TSF Capacity.....	4-21
Table 4-13:	Construction Schedule.....	4-31
Table 5-1:	Reclamation Seed Mix	5-1
Table 5-2:	Analyte Report.....	5-7
Table 5-3:	Reclamation Cost Summary.....	5-8
Table 13-1:	Properties within 200ft of Mill Site	13-1
Table 14-1:	Permits, Licenses and Other Formal Authorizations	14-4
Table 14-2:	Location of Permits, Licenses and Other Formal Authorizations	14-5
Table 14-3:	Wells Located Approximately 0.5 Mile of Mill.....	14-17
Table 14-4:	Groundwater Quality, California Gulch	14-18
Table 14-5:	Groundwater Quality, Leadville Mill (2014 to Present).....	14-19
Table 16-1:	Contact Information	16-1
Table 16-2:	Emergency Contact Index.....	16-4
Table 16-3:	On-Site Emergency Response Equipment	16-10
Table 16-4:	Emergency Information Contacts.....	16-11



The Leadville Mill

M1990-057
TABLE OF CONTENTS

L I S T O F F I G U R E S

Figure 4-1:	Leadville Mill – Flowsheet & Material Balance.....	4-41
Figure 6-1:	General Site Location.....	6-2
Figure 6-2:	Leadville Mill Site Location	6-3
Figure 6-3:	TSF Post Mill Reclamation Plan	6-4
Figure 6-4:	TSF Post Mill Reclamation Cross Sections	6-5
Figure 13-1:	Land Parcels Adjacent to Permit Boundary	13-3



LIST OF APPENDICES

Appendix 4-1	Tailings Storage Facility Technical Specifications & Data Sheets	4-53
Appendix 5-1	Reclamation Plan NRCS Soil Survey	5-12
Appendix 5-2	Reclamation Plan Reclamation Cost Estimate	5-14
Appendix 7-1	Lake County - Conditional Use Permit	7-2
Appendix 7-2	Parkville Water District - Commitment to Provide Water	7-7
Appendix 7-3	Lake County - Noxious Weed Management Plan	7-9
Appendix 7-4	Lake County - Building Permit	7-12
Appendix 7-5	Lake County - Certificate of Occupancy	7-27
Appendix 7-6	CO Dept. of Public Health & Environment - Air Pollution Emission Notice (APEN)	7-30
Appendix 7-7	CO Dept. of Public Health & Environment - Stormwater Permit Application	7-40
Appendix 8-1	Legal Right to Enter Warranty Deed	8-2
Appendix 8-2	Legal Right to Enter Mineral Ownership Adjudication File	8-6
Appendix 8-3	Legal Right to Enter Authorized Legal Right to Enter	8-13
Appendix 10-1	Lake County Proof of Filing	10-2
Appendix 11-1	Proof of Notice	11-2
Appendix 13-1	Permanent Man-Made Structures - Leadville Sanitation District	13-5
Appendix 13-2	Permanent Man-Made Structures - Benson Property	13-8
Appendix 13-3	Permanent Man-Made Structures - Phillips Property	13-13
Appendix 13-4	Permanent Man-Made Structures Wood Property	13-18
Appendix 14-1	Stormwater Management Plan	14-29
Appendix 14-2	Material Safety Data Sheets (MSDS)	14-144
Appendix 14-3	Domestic Well Information Within 2 Miles	14-274
Appendix 14-4	Maps	14-282
Appendix 14-5	Surface Water Control Plan	14-286
Appendix 15-1	Geotechnical Stability Observation Hole Characterization	15-2
Appendix 15-2	Geotechnical Stability Permeability Study	15-6
Appendix 15-3	Geotechnical Stability Percent Compaction Measurements	15-18
Appendix 15-4	Geotechnical Stability Leadville Custom Mill Compaction Test Data	15-23
Appendix 15-5	Geotechnical Stability Slope Stability Evaluation	15-25
Appendix 15-6	Geotechnical Stability Response to CDRMS Slope Stability Evaluation	15-75