Mine Operation and Reclamation Plan

Copper Flat Mine Project

Sierra County, New Mexico

July 18, 2012

Submitted To: New Mexico Mining and Minerals Division
Energy, Minerals and Natural Resources Department
1220 South Saint Francis Drive
Santa Fe, New Mexico 87505

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1.0 LIST OF ACRONYMS AND ABBREVIATIONS

Alta	Alta Gold Company
AST	above ground storage tank
BATF	Bureau of Alcohol, Tobacco and Firearms
BDR	Baseline Data Report
BLM	U.S. Department of Interior, Bureau of Land Management
BMP	best management practice
CDS	Chihuahuan Desert Scrub
CDG	Chihuahuan Desert Grassland
CEO	Chief Executive Officer
CFR	Code of Federal Regulations
cfs	cubic feet per second
DEIS	Draft Environmental Impact Statement
DP	Discharge Permit
EA	Environmental Assessment
EAR	Environmental Assessment Report
EIS	Environmental Impact Statement
FCC	Federal Communications Commission
ft	feet
ft/day	feet per day
ft/mile	feet per mile
ft amsl	feet above mean sea level
gpm	gallons per minute
LGOS	low grade ore stockpile
LRG	Lower Rio Grande
MAT	most appropriate technology
mg/L	milligrams per liter
MIBC	methyl isobutyl carbinol
MMD	Mining and Minerals Division
moly	molybdenum
MPO	Mine Plan of Operations
MSHA	Mining Safety and Health Administration
NEPA	National Environmental Policy Act
NMAC	New Mexico Administrative Code
NMCC	New Mexico Copper Corporation
NMED	New Mexico Environment Department
NMEMNRD	New Mexico Energy, Minerals and Natural Resources Department
NMMA	New Mexico Mining Act
NMOSE	New Mexico Office of the State Engineer
NRHP	National Register of Historic Places
NPDES	National Pollution Discharge Elimination System
PAP	Permit Application Package
PFEIS	Preliminary Final Environmental Impact Statement
PMLU	Post-Mining Land Use
PMP	probable maximum precipitation
ppm	parts per million
ppt	pounds per ton
Project	Copper Flat Project
ROD	Record of Decision
ROW	rights-of-way
SAP	Sampling and Analysis Plan
SAG	semi-autogenous
SHPO	New Mexico State Historic Preservation Officer
SPCC	Spill Prevention Control and Countermeasures
SRK	Steffen, Robertson & Kirsten
SSE	self-sustaining ecosystem
SWPPP	Stormwater Pollution Prevention Plan

TDS	total dissolved solids
THEMAC	THEMAC Resources Group, Ltd.
TorC	the Town of Truth or Consequences
tpd	tons per day
TSF	tailings storage facility
WQCC	New Mexico Water Quality Control Commission
WRDF	waste rock disposal facility
yd^3	cubic yards

2.0 INTRODUCTION

The Copper Flat Project (Project) is the proposed re-establishment of a poly-metallic mine and processing facility located near Hillsboro, New Mexico. The proposed Project would consist of an open pit mine, flotation mill, tailings storage facility (TSF), waste rock disposal facility (WRDF), a low grade ore stockpile (LGOS) and ancillary facilities. In general, the facilities, disturbance and operations would be similar to former operations conducted by the Copper Flat Partnership, Ltd. in 1982. The Project is owned and operated by the New Mexico Copper Corporation (NMCC), a wholly owned subsidiary of THEMAC Resources Group, Limited (THEMAC).

This Permit Application Package (PAP) was prepared in accordance with the New Mexico Non-Coal Mining Regulations (19.10.6 New Mexico Administrative Code [NMAC]), as promulgated under the statutory authority of the *New Mexico Mining Act* (NMMA) of 1978 (Section 69-36-4 et. seq). Sections 2 through 5 provide information required for the permitting of the operation of a new mine. Sections 2 and 3 contain general permit application requirements and information required by 19.10.6.602 NMAC, including applicant information, land and mineral ownership, baseline data collection, previous mining and the mine operation and reclamation plan. Information related to performance and reclamation standards required by 19.10.6.603 NMAC is presented in Section 4. Section 5 addresses permit approval requirements specifically related to financial assurance in accordance with 19.10.6.605 NMAC

2.1 Background

The Project is in Sierra County, New Mexico, approximately 30 miles via road southwest of Truth or Consequences (TorC) and five miles northeast of Hillsboro (Figure 1). The general area can be reached by traveling south 15 miles from TorC on Interstate Highway 25, then 10 miles west on New Mexico Highway 152. The project area, which is defined as the proposed permit area and surrounding areas that may potentially be affected by the Project, lies two miles west-northwest from Highway 152. The proposed permit area is defined as the area within the proposed permit boundaries.

Development of the Copper Flat began in the 1970's by Quintana Mineral Corporation. An Environmental Assessment Report (EAR) was prepared for the Project in 1977 (Glover, 1977). The U.S. Department of the Interior, Bureau of Land Management, Las Cruces District Office (BLM) prepared an Environmental Assessment Record to analyze potential impacts resulting from granting rights-of-way (ROW) for utilities and access roads, as well as impacts resulting from the mining Project (BLM, 1978). The ROWs were approved by the BLM in the Environmental Assessment Record and air quality, tailings discharge and water discharge permits were issued by the State of New Mexico. The air permit was closed in 2002 due to inactivity. A new groundwater discharge permit application was submitted to the New Mexico Environment Department (NMED) Ground Water Quality Bureau in March of 2011. NMED approved a Stage 1 Abatement Plan to characterize

groundwater impact associated with the existing TSF as well as general concerns regarding the pit lake water quality and the potential for acid rock drainage from existing waste rock piles on February 7, 2012. The New Mexico Energy, Minerals and Natural Resources Department (NMEMNRD), Mining and Mineral Division (MMD) mining permit has also expired.

In 1982, the Copper Flat Partnership, Ltd. developed and operated the Project, which consisted of an open pit copper mine, a 15,000-ton per day (tpd) flotation mill and a 515-acre TSF. The Copper Flat mine officially commenced full commercial production in April 1982. In July 1982 the mine was shut down due to low copper prices and other economic considerations. In 1986, all on-site surface facilities were removed and a BLM approved program of non-destructive reclamation was carried out. Most of the property's infrastructure, including building foundations, power lines and water pipelines, were preserved for reuse in the future in the event copper prices recovered sufficiently to make re-establishing the Project economically viable.

In 1991, a proposed Plan of Operations was filed with the BLM by Gold Express Corporation to re-establish the Copper Flat Project. The BLM initiated an Environmental Assessment (EA) because federal land would be “newly” disturbed. New archaeological, biological, threatened and endangered species, air quality, hydrologic and socioeconomic studies were conducted. However, it was determined in 1993 that an Environmental Impact Statement (EIS) would be required for the Project due to concerns related to several water quality issues and the EA was never completed.

Alta Gold Company (Alta) acquired the Project in early 1994 and proposed to rebuild the Copper Flat mining facility essentially as it existed in 1982. Alta submitted an updated Mine Plan of Operations (MPO) and associated environmental baseline data to the BLM for initiation of the EIS process. The *Draft Environmental Impact Statement – Copper Flat Project* (DEIS) was completed by the BLM in 1996. A *Preliminary Final Environmental Impact Statement – Copper Flat Project* (PFEIS) was prepared by the BLM in 1999 following public comment on the DEIS. However, the EIS and Record of Decision (ROD) were never finalized due to Alta’s declaration of bankruptcy in early 1999.

2.2 Overview of Proposed Mine Operations and Reclamation

The proposed Project is the re-activation and expansion of previous mining activities performed at Copper Flat in 1982. The Project would consist of facilities similar to those of the previous operator, including an open pit, flotation mill, waste rock disposal facility, low grade ore stockpile and TSF. The proposed Project would be implemented through four phases. Estimated durations of each of these phases are, as follows:

- Pre-construction (Permitting) 2 Years
- Construction (Site preparation) 1.5 Years
- Operations (Mineral beneficiation) 11 Years
- Closure/Reclamation 3 Years
- Post-Closure Monitoring, Care and Maintenance 12 Years

The estimated operational life required to recover the proven minerals (copper, molybdenum, gold and silver) is 11 years. The maximum work force would be around 170. Approximately 80 to 100 people would be employed in the office and mine; 40 to 70 people would be employed in the mill. The reclamation workforce would consist of up to 20 employees. NMCC anticipates hiring over 70 percent of the work force from local communities within a 75-mile radius of the mine. The mine would likely operate 24 hours per day, 7 days per week, 365 days per year. The mill would likely operate on that same schedule. Administrative personnel would work a standard day shift, 5 days per week, 50 weeks per year. These schedules are subject to change based on future economics of the Project.

Proposed operations would expand the existing open pit. Ore would be mined by conventional truck and shovel open pit methods, similar to the previous operation. The mine is expected to produce approximately 100 million tons of copper ore, 60 million tons of waste rock and 3 million tons of low grade copper ore (less than 0.20 percent copper). The low grade copper ore would likely be processed during operations as blend material and/or at the end of the mine life, depending on economic conditions at the time. If, for economic reasons the low grade ore is not milled, the stockpile would be reclaimed at the end of the mine life. The new waste rock facility would be located southeast of Animas Peak, at a location beyond the area used for waste rock disposal by the previous operator. The new and former disposal areas would cover approximately 220 acres.

Beneficiation would be achieved through the use of a conventional concentrator, using standard crushing, grinding and flotation technologies. Ore from the open pit would be trucked to the plant area, crushed in a jaw crusher and temporarily stored at a stockpile before being processed through a copper sulfide flotation mill, similar to that of the previous operation. Milling would also include a molybdenum processing circuit. The copper concentrate would be shipped by truck to an off-site refinery or port facility. Molybdenum concentrate would be filtered, dried, packaged in sacks and shipped directly in trucks to purchasers for further refining. The proposed Project would process at a nominal ore throughput rate of 25,000 tpd. While the operation would focus primarily on copper and molybdenum, other resources, including gold, silver and possibly rare-earth elements, may be extracted from the ore, if economical. Currently, an operational life of approximately 11 years is projected.

Tailings from the mill would be conveyed to a lined TSF. NMCC proposes to construct a new, lined storage facility over the tailings storage area used by the previous operator. The existing TSF received 1.2 million tons of material and was reclaimed in 1986. The former storage facility remains in place and is located southeast of the open pit. Tailings would be transported from the mill via slurry pipeline and deposited in the new, lined TSF. Ancillary facilities associated with the TSF would include a tailings slurry delivery system, a tailings solution reclaim and recycling system (barge pump system) and an under-drain seepage return system. Approximately 100 million tons of tailings are

expected to be stored over the life of the Project. During progressive settlement, water would be pumped from the TSF and returned to the process circuit.

The total water demand for the Project would vary over the life of the operation, averaging approximately 11,135 gallons per minute (gpm) during mine and milling operations (NMCC, 2011). The majority of the water would be used in the beneficiation of ore (Table 1).

Table 1: Expected Project Water Demand

Activity	Demand (gpm)
Ore Processing (25,000 tpd)	11,068
Dust Suppression	66
Domestic/Sewerage Use	1
TOTAL	**11,135**

Of the total demand, approximately 9,000 gpm would be obtained by reclaiming process water from the TSF and from pit water pumping (dewatering) (NMCC, 2011). Approximately 2,200 gpm of freshwater would be required as make-up water. Fresh and reclaimed water quantities are expected to vary due to seasonal and yearly variations in rainfall and evaporation. The estimated maximum freshwater demand during summer months would be approximately 3,500 gpm.

The freshwater supply for the mine would come from four existing high capacity production wells located about eight miles east of the plant site on BLM-administered public land (Figure 2). These wells were drilled to depths of between 957 feet (ft) and 1,005 ft. All are 26 inches in diameter and cased with 16-inch casing with the annular space packed with minus 3/8-inch washed gravel. The projected long-term capacities of the four production wells range from 1,000 to 1,800 gpm (Green and Halpenny, 1976). Most of the roads, electrical supply and pump foundations are intact at the pumping field. The area encompassing the mine, mill, tailings impoundment and water supply wells are within the Lower Rio Grande (LRG) Underground Water Basin. Water rights are described in declarations, amended declarations and supporting documents under New Mexico Office of the State Engineer (NMOSE) File Numbers LRG-4652 through LRG-4652-S-17 and LRG-4654. The common names and locations of the proposed production wells (and other points of diversions) are provided shown below in Table 2.

Table 2: Existing Production Wells, Mine Wells and Other Points of Diversion Locations

Well Name	NMOSE LRG File No.	Designation	Township	Range	Section
PW-1	4652	Production Wells	15S	5W	30
PW-2	4652-S-1		15S	5W	31
PW-3	4652-S-2		15S	5W	30
PW-4	4652-S-3		15S	5W	31
GWQ-1	4652-S-10	Mine Wells	15S	6W	31
GWQ-2	4652-S-6		15S	6W	30
GWQ-7	4652-S-8		15S	6W	31
GWQ-8	4652-S-4		15S	6W	31
GWQ-9	4652-S-9		15S	6W	31
Irwin Well	4652-S-7		15S	6W	31
MW-1	4652-S-11		16S	6W	04
MW-2	4652-S-12		16S	6W	09
MW-4	4652-S-13		15S	6W	31
MW-5	4652-S-14		15S	5W	30
MW-6	4652-S-15		15S	6W	25
MW-8	4652-S-16		15S	6W	28
Dolores Well	4654		15S	7W	25
McCravey Grayback	4652-S-5		15S	6W	30
Pit Lake	4652-S-17	Pit Lake	15S	7W	26, 35

An existing 20-inch welded steel pipeline would transport the water from the booster station(s) (Figure3). The pipeline is buried a minimum of two feet deep from the production well field to the point of entry to the proposed permit area. NMCC is preparing to conduct a detailed inspection and assessment of this pipeline to determine its condition and viability for use in the Project. NMCC anticipates conducting ultrasonic testing of the pipeline in selected locations. NMCC will submit the results of the inspections to the BLM upon completion of the work. If testing indicates the need for repair or replacement of the pipeline, NMCC will do what is necessary to bring the facility into proper working order.

Water pumped from the pit and recycled from the process circuit would reduce the amount of water withdrawn from the production wells. This water would generally be reused in processing and in dust suppression. The process water reservoir would be fed by the reclaim water pumped back from the tailings barge pump system and fresh water makeup, as needed. It would be pumped from the reservoir to a steady head tank and flow by gravity back to the grinding circuit. A sump and pumping installation would be advanced with the pit excavation to remove infiltrated and surface runoff water collected within the pit. This water would be used in either pit operations or the concentrator.

Water quality monitoring samples have been collected in the mine area from both surface and groundwater sources since 1976 and would continue to be collected throughout the life of the operation, during closure and for a post closure period defined in the groundwater Discharge Permit.

The Copper Flat Project reclamation would be designed to achieve a self-sustaining ecosystem (SSE) appropriate for the climate, environment and land uses of the area. Careful consideration would be given to cooperation with neighbors in their land use requirements including cattle grazing, alternative energy generation such as wind and solar, as well as reestablishment and enhancement of native plant communities to support wildlife.

A reclamation plan has been developed to meet the site specific characteristics of the mining operation. The objective of this reclamation plan is to return the Project site to conditions similar to those present before re-establishment of the mine. The mining operation and reclamation plan have been designed to use the most appropriate technology (MAT) and best management practices (BMPs) to assure protection of human health and safety, the environment, wildlife and domestic animals. The Project is designed to meet, without perpetual care, all applicable federal and state environmental requirements following closure.

3.0 PERMIT APPLICATION REQUIREMENTS [NMAC19.10.6.602]

3.1 Permit Application Copies [602.A]

NMCC has submitted six copies of this permit application to MMD of the NMEMNRD in accordance with the Mining Act Rules (MMD, 1996).

3.2 Public Availability of Permit Information [602.B]

NMCC understands information in this permit application can be made available for public inspection; therefore, nothing in this application is deemed to be confidential. However, NMCC reserves the right to declare future information submitted to the MMD as "confidential" as permitted by the Mining Act Rules (MMD, 1996). This may be necessary if NMCC believe such information could harm the company's competitive position.

3.3 Applicant Certification [602.C]

This application is signed by NMCC's authorized agent with the following certification:

I certify that I have personally examined and am familiar with the information submitted herein, and based on inquiry of those individuals responsible for obtaining the information, I believe the submitted information is true, accurate, and complete.

July 18, 2012

Andre Douchane
CEO and President
THEMAC Resources Group, Ltd.

Date

3.4 General Permit Information [602.D]

New Mexico Copper Corporation owns and controls the entire interest in the proposed Copper Flat Project. NMCC contact information is:

New Mexico Copper Corporation
2424 Louisiana Blvd, NE, Suite 301
Albuquerque, New Mexico 87110
505.382.5770

THEMAC, a Yukon corporation, owns and controls all of the shares of NMCC. THEMAC's contact information is:

THEMAC Resources Group, Ltd.
1066 West Hastings Street, Suite 2000
Vancouver, British Columbia
Canada, V6E 3X2
604.806.6110

3.4.1 Name of the Applicant [602.D(1)]

Name:	Mr. Andre J. Douchane
Title:	CEO and President
Business Name:	New Mexico Copper Corporation
Business Address:	2424 Louisiana Blvd, NE, Suite 301 Albuquerque, New Mexico 87110
Telephone Number:	505.382.5770
e-mail:	adouchane@themacresourcesgroup.com

3.4.2 Permit Area and Surface/Mineral Ownership [602.D (2)]

As shown in Figure 4, the Copper Flat Project is comprised of contiguous and noncontiguous lands that include patented and unpatented mining claims and private parcels. Figure 2 presents the proposed mine permit boundary, current land status and existing land disturbances. A utility corridor to the east of the mine site shows the location of the existing underground pipeline that would be used for the conveyance of water from the NMCC production wells to the mine site (Figure 3). As shown in Figure 5, NMCC production wells are located on NMCC mill sites. The area inside the proposed permit area boundary is 2,190 acres.

Activity at the Copper Flat Mine in 1982 disturbed approximately 416 acres of BLM-administered public lands and 626 acres of private lands. The re-establishment of the Copper Flat Project would affect nearly 1,270 acres, the majority of which have been previously disturbed (Figure 2).

Listed below are owners of surface and mineral estates within the proposed mine permit boundary:

- New Mexico Copper Cooperation (see address in Section 3.4.1).
- Ryan Fancher, P.O. Box 344, Radium Springs, New Mexico, 88054.

3.4.3 Applicant's Right of Entry [602.D (3)]

Proposed mining and related surface disturbance would be conducted on unpatented lode, placer and mill-site claims owned or controlled by NMCC, on BLM-administered lands, or on private land controlled by NMCC (Figure 4). Claim names and BLM serial numbers are provided in Appendix A of the Copper Flat Mine Plan of Operations (NMCC, 2011).

Approximately 300 acres of land owned by Edgar E. Greer and under contract to Ryan and Wendy Fancher exists inside the mine permit boundary. These lands are shown in green shading on Figure 4. NMCC is currently in formal negotiations with Fancher to purchase these properties; however, these final negotiations are contingent on the mine obtaining its necessary state and federal permits and will be proceeding through the permitting process. Contingency plans are in place should NMCC not secure this land, which would be convenient to NMCC's proposed mining activity, but not a necessity.

There are no state lands or U.S. Department of Agriculture, Forest Service lands within the permit area. A summary of the legal description of the Project, including the water supply wells and pipeline corridor is provided in Table 3.

Table 3: Summary of Legal Description

Township	Range	Sections
15 South	7 West	25,26,27, 35, & 36
15 South	6 West	25, 26, 27, 30, 31, 32, 33 & 34
15 South	5 West	30 & 31
16 South	6 West	6

Note: Project includes production water wells and pipeline corridor in addition to mine property boundary.

3.4.4 Ownership and Controlling Interest [602.D (4)]

New Mexico Copper Corporation owns and controls the entire interest in the proposed Copper Flat Project. THEMAC, a Yukon corporation, owns and controls all of the shares of NMCC.

3.5 Other United States Operations [602.D (5)]

THEMAC has not operated any mines in the United States, nor does the firm currently operate any active mining operations in the United States.

3.6 Applicant's Agent [602.D (6)]

During the permitting process, Andre J. Douchane, Chief Executive Officer (CEO) and President, will serve as NMCC's agent. As the Project moves toward on-the-ground activity, NMCC will hire a general manager for the Project and this individual will assume the role as NMCC's agent. The New Mexico MMD will be notified when an on-site general manager is retained.

The address, phone number and email address for Mr. Douchane follows:

Name:	Mr. Andre J. Douchane
Title:	CEO and President
Business Name:	New Mexico Copper Corporation
Business Address:	2424 Louisiana Blvd, NE, Suite 301 Albuquerque, New Mexico 87110
Telephone Number:	505.382.5770
e-mail:	adouchane@themacresourcesgroup.com

3.7 Other Permit Applications [602.D (7)]

NMCC is working with the BLM and other federal, state and local regulatory agencies regarding permit approvals necessary for the proposed Project. The BLM, aided by a qualified and independent third-party contractor, is preparing an EIS to comply with its responsibilities under *National Environmental Policy Act* (NEPA). NMCC will obtain appropriate approvals and permits prior to any development and operations.

An NEPA review of the proposed Project was initiated in 1994 when Alta Gold notified the BLM (Las Cruces District Office) that the company had purchased the Project from Gold Express and was assuming legal responsibility for the Plan of Operations initially submitted in 1991. The BLM then

began the process of preparing an EIS. The DEIS was completed in 1996 and the PFEIS was completed in 1999. However, neither a Final EIS nor ROD was issued as a result of Alta Gold's bankruptcy in 1999.

If it is determined that the Project will impact an endangered species, there will be consultation with the U.S. Fish and Wildlife Service in accordance Section 7 (c) of the *Endangered Species Act*. This will be completed to ensure that any action authorized, funded, or carried out by a federal agency will not adversely affect a federally listed threatened or endangered species. A number of state permits would also be required for the Project. The NMED would issue most of these permits, including air quality permits and groundwater discharge permits. Alta submitted an application for a modification to the existing groundwater Discharge Permit (DP-001) for the Project in early 1995. However, DP-001 was suspended until a Stage 1 Abatement Plan for a small groundwater impact associated with the existing TSF has been submitted and approved. NMCC received approval of their Stage 1 Abatement Plan on February 7, 2012. In addition, an application for a revised Air Quality Permit (No. 365-M-1) was also submitted by Alta Gold in early 1995. This permit was closed in 2002 due to inactivity.

In addition to approval by the State under the NMMA, NMCC would be required to secure a number of additional state and federal permits and approvals. Table 4 outlines the major permits and approvals required.

Table 4: List of Anticipated Permits and Approvals

FEDERAL GOVERNMENT	
Approval of Plan of Operations	U.S. Bureau of Land Management (BLM)
National Dredge and Fill Permit (Section 404 of Clean Water Act)	U.S. Army Corp of Engineers (USACE)
FCC License	Federal Communications Commission (FCC)
MSHA Registration	Mining Safety and Health Administration (MSHA)
National Pollution Discharge Elimination System (NPDES), Including Stormwater Discharge	U.S. Environmental Protection Agency (EPA)
Explosives Permit	Bureau of Alcohol, Tobacco and Firearms (BATF)
Endangered Species Surveys	U.S. Fish and Wildlife Service

STATE OF NEW MEXICO	
Mining Permit	New Mexico Energy, Minerals and Natural Resources Department (NMEMNRD)-Mining Act Reclamation Program
Mine Registration	NMEMNRD – Mine Registration Reporting and Safeguarding Program – Mine Registration
Permit to Construct (Air Quality)	New Mexico Environment Department (NMED) - Air Quality Bureau
Permit to Operate (Air Quality)	NMED - Air Quality Bureau
Permit to Appropriate Water	New Mexico Office of the State Engineer (NMOSE)
Permits for Dam Construction and Operations	NMOSE
Approval to Operate a Sanitary Landfill	NMED - Solid Waste Bureau
Liquid Waste System Discharge Permit	NMED - Groundwater Bureau
Groundwater Discharge Permit	NMED - Groundwater Bureau (DP-001)
Cultural Resources Clearance Surveys	New Mexico Department of Cultural Affairs - Historic Preservation Division
Endangered Plant Species Surveys	Natural Heritage New Mexico
Endangered Wildlife Species Surveys	New Mexico Department of Game and Fish (NMDGF)

3.8 Notice Forms [602.D (8)]

Prior to submittal of this PAP, NMCC submitted a draft of the public notice language required by 19.10.9.902 and 19.10.9.903 NMAC to MMD for their review and approval. The notice was subsequently prepared and published in both English and Spanish in the Sierra County Sentinel (newspaper of general circulation in Sierra County in the classified section or legal advertisements section) and as a half-page advertisement in the body of the paper (a place in the newspaper calculated to give the general public the most effective notice).

The notice was posted at the U.S. Post Office in Williamsburg, U.S. Post Office in Hillsboro, the Hillsboro Community Center, the TorC public library and U.S. Post Office in TorC.

The notice was sent by certified mail to the following:

- the owners of record of all properties within ½ mile of the Project;
- TorC, Williamsburg, Sierra County (municipalities, county and tribal organizations within 10 miles of the Project);
- all persons on a list maintained by MMD of individuals and organizations who have requested notice of application under the NMMA;

- the NMED;
- the NMOSE;
- the NMDGF;
- the State Forestry Division; and
- the State Historic Preservation Division.

The public is provided a period of 30 days to comment and/or request a public hearing. Documents that provide proof the public was properly notified are included with this PAP. This includes the notarized affidavits of publication from the newspaper, copies of return receipts from the postal service and photographs of the notices posted in conspicuous places.

3.9 Permit Fee [602.D (9)]

The Permit Application fee structure is based on the size and type of operation and is given in 19.10.2.203.B NMAC as follows:

- Permit Application Fee for new mining operation is based on:
  - $5,000 base fee, which was paid with the submittal of the Sampling and Analysis Plan (SAP);
  - $200 per acre for the first 50 acres of land expected to be disturbed over the life of the mine (design limits) for surface disturbance – $10,000; and
  - $40 per acre for the disturbed acreage that exceeds 50 acres, 1,220 acres – $48,800.

Facility-related fees are detailed in Table 5.

Table 5: Permit Fee Summary

Facility	Total Acreage (design limits)	Fee (based on table in 19.10.2.203.B NMAC
Open Pit	140	$7,500
Plant Site	120	$7,500
Tailings Storage	530	$7,500
Waste Rock Stockpiles [a]	200	$7,500

Notes: [a] includes waste rock disposal facility (180 acres) and low grade ore stockpile (20 acres)

The total is $93,800 and payment will be in cash or check made payable to the Mining and Minerals Division and received by the Division by Mr. Chris Eustice.

3.10 Separate But Interrelated Mining Operations [602.D (10)]

This section is not applicable to Copper Flat Project as NMCC or THEMAC do not own or operate any separate or interrelated mining operations in New Mexico.

3.11 Required Federal and State Permits [602.D (11)]

A number of federal, state and county permits and approvals may be required for the Copper Flat Project (see Section 3.7). Table 4 lists the anticipated permits and approvals.

3.12 Sampling and Analysis Plan [602.D (12)]

An SAP was prepared during the early stages of the baseline data collection in consultation with the state agencies (INTERA, 2010). The SAP was prepared in accordance with Section 19.10.6.602.D NMAC and submitted to MMD in September 2010. SAP data collection activities were conducted over a period of 12 months and in some cases longer to allow for the collection of additional data (e.g. water quality and wildlife). Various mining companies have collected data in the proposed mine permit and surrounding areas since the late 1970s. These historic data provide background and context for the data collected in 2010 and 2011 during the implementation of the SAP. The SAP is included as Appendix A.

3.13 Baseline Data [602.D (13)]

This report documents SAP data collection activities and describes existing environmental conditions within the proposed permit area and immediate vicinity based on data collected during the implementation of the SAP and historical information; data have been collected for the project area since the 1970s by various mining companies, consultants and researchers. The Baseline Data Report (BDR) is included as Appendix B and provides the information requested by Section 19.10.6.602.D (13)(a) through (13)(j). The sections below provide brief overviews of information presented in the BDR and references to specific information (e.g. BDR tables and figures).

3.13.1 Climate [602.D (13) (a)]

The climate in the project area is warm and dry, with mean annual precipitation of about 317 millimeters (12.5 inches) and a mean annual temperature near 14°C (58°F) (WRCC, 2012). Precipitation falls mainly as rain, but snow may occur from October to April. About half of the annual precipitation generally occurs in the form of precipitation from thunderstorms during July, August and September when moist air enters the region from the Gulf of Mexico. Average monthly precipitation in January through June is typically 0.50 inch or less. Snowfall is possible from October through April, but most likely (greater than 1 inch) between December and February (BLM, 1996). Evaporative demand is high and annual evaporation far exceeds annual precipitation, particularly during the summer months.

The closest long-term climate record is available from the Hillsboro Cooperative meteorological station (NCDC #294009) located about five miles south of the project area. Based on a 109-year meteorological record, mean annual precipitation is about 12.5 inches, ranging from only 3.35 inches in 1956 to 20.33 inches in 1986. For the period of record at Hillsboro, average maximum monthly temperatures ranged from 54°F in December to 92°F in June. Similarly, the minimum average monthly temperature ranged from 25°F in December and January to 61°F in July.

NMCC installed a 10-meter meteorological tower within the proposed permit area to collect site-specific climate data on August 2, 2010; full data collection began September 1, 2010. Figure 2-11 in the BDR identifies the location of the meteorological tower. Data are being collected for wind direction, wind speed, of wind direction, temperature, relative humidity, solar radiation, precipitation and evaporation. Section 2 of the BDR (Appendix B) provides a summary of these climate parameters as well as information regarding air quality.

3.13.2 Topography [602.D (13) (b)]

The topography of the Project and the surrounding areas are shown in Figures 3-2 and 3-3 in the BDR (Appendix B). Figure 3-2 is based on USGS 7.5 minute quadrangle maps for the Skute Stone Arroyo and Hillsboro quads from the late 1970's and early 1980's.

Figure 3-3 in the BDR shows the existing site topography overlain on an aerial photograph taken in May 2011. Ground surface elevations within the project area range from 5160 ft above mean sea level (ft amsl) east of the tailings starter dam to 6150 ft amsl at Animas Peak. The project area topography ranges from nearly level to gently sloping fan piedmonts on the east side to steeply sloping foothills and canyons in the central and western portions of the project area.

One occupied building is present within a ½ mile of the permit boundary. The mine office located on the south side of the existing TSF, which currently serves as NMCC mine office and core building. This building is owned by Ryan and Wendy Fancher who have leased the space to NMCC.

3.13.3 Vegetation [602.D (13) (c)]

The project area is within the Mexican Highlands section of the Basin and Range Physiographic Province, more specifically defined as Southern Desertic Basins, Plains and Mountains (NRCS 2010). It lies along the transition zone between Chihuahuan Desert Scrub (CDS) and the Chihuahuan Desert Grassland (CDG) ecotones (Dick-Peddie 1999). Low elevation flats and foothills are characterized by CDS which is dominated by creosote bush. The highest elevations are predominantly desert grasslands with some scattering of juniper. The intervening transition area is dominated by warm-season grasses including gramas, threeawns and bluestems with an overstory of mixed shrubs including snakeweed, creosote and mesquite. Piñon-juniper and juniper savanna communities occur at elevations above about 5,500 ft on higher knolls, northern aspects and in steep, rocky terrain within the proposed permit area.

Much of the proposed permit area was disturbed by previous mining activities. Portions of the proposed permit area were reclaimed in 1986, though details regarding the methods and seed mixes are not available and results are considered variable. Other unreclaimed areas have recruited plant species from adjoining native lands. Recruitment of volunteer plant species is evident in the diversion channel, TSF, waste rock piles and the fringe of the pit lake. All plant life-forms (graminoids, forbs, shrubs and trees) are represented in disturbed portions of the proposed permit area. A total of

67 plant species were observed in the waste rock piles/miscellaneous disturbance sampling stratum (Appendix 4-A, Table 3 BDR). Most of these species are not commercially available for seeding or grown in nurseries. Common arroyo/riparian shrubs such as seepwillow (*Baccharis* sp.), California brickelia (*Brickellia californica*), Apache plume (*Fallugia paradoxa*), burrobrush (*Hymenoclea mongyra*), chamisa (*Ericameria nauseosa*) and others are abundant in portions of the diversion channel. Small patches of coyote willow (*Salix exigua*) and an isolated cattail population (*Typha* sp.) has colonized the fringe of the pit lake. Recruitment of native species is also evident on the TSF with total of 23 species captured during vegetation data collection.

A pre-mining vegetation inventory is detailed in the 1977 EAR and the 1978 Environmental Assessment Record (BLM, 1978). Additional plant species inventories were conducted in 1991, 1992 and 1994, and plant species lists are included in the 1993 EA (BLM, 1993). In 1996, Steffen, Robertson & Kirsten (SRK) conducted a vegetation survey in the project area (SRK, 1997). To comply with MMD requirements, NMCC conducted an extensive vegetation survey of the project area to characterize current conditions. Three native and three disturbed vegetation communities were identified within the proposed mine permit boundary. Extensive descriptions of the vegetation communities are provided in Section 4 of the BDR (Appendix B). Figure 4-2 of the BDR illustrates the distribution of existing vegetation types. Cover, productivity, shrub density and diversity data for each plant community are included based on quantitative vegetation sampling conducted in 2010 and 2011. Results of surveys for threatened or endangered plants, noxious weeds and wetlands are also provided, as well as baseline descriptions of nearby riparian areas. There were no rare, threatened, endangered species or plant species of concern encountered in the project area during the vegetation investigation.

Two locations within the proposed permit area appear to meet vegetation, soil and hydrologic criteria for a wetland, though no formal wetland delineations were completed. A small cattail community adjacent to the pit lake is not considered a jurisdictional wetland under the *Clean Water Act* because it has no significant connection to a jurisdictional, navigable waterway. Additionally, a small stand of Gooding's willow trees, approximately 1.5 acres in size, was mapped near the main mine entrance. It is likely that the willows extend beyond a much smaller area that would actually meet wetland hydric soils and hydrologic criteria.

3.13.4 Wildlife [602.D (13) (d)]

The undisturbed lands in and around the project area provide a variety of wildlife habitats. General habitat types include riparian corridors, rock outcroppings and cliffs, foothills, canyons, shrublands and grasslands. Section 5 of the BDR (Appendix B) provides the results of wildlife surveys to characterize wildlife densities and use of the property, as well as identify federal and state threatened, endangered and special status wildlife species.

3.13.4.1 Wildlife Habitat [602.D (13) (d) (i)]

The project area supports a limited number of mammals primarily due to low annual vegetation productivity and cover, limited landscape (beta) diversity in plant communities and the lack of water. In addition to the man-made pit lake, surface water collects in some areas immediately east of the TSF, in a stock pond in the southern portion of the proposed permit area and in intermittent pools created by storms in the bottom of Grayback Arroyo. Grayback Arroyo does support some riparian vegetation such as willows and salt cedar, providing wildlife habitat.

The most frequent signs of large to medium sized mammals encountered during 2011 baseline surveys include mule deer, desert cottontail and black-tailed jackrabbit. Mule deer were frequently observed in the Grayback Arroyo and signs mostly occurred in the western half of the project area, though signs were found in all parts of the mine. Desert cottontail and black-tailed jackrabbit signs were found on 97 and 77 percent of transects, respectively. Predators or other signs were found on only 13 percent of transects. In addition, one pronghorn (*Antilocapra americana*) was encountered during the 2011 field surveys in the southeastern portion of the permit area. Signs of collared peccary (*Pecari tajacu*) mountain lion (*Puma concolor*), bobcat (*Lynx rufus*), coyote (*Canis latrans*) and fox, likely gray fox (*Urocyon cinereoargenteus*), were also noted during field work. Eight species of small mammals were identified during the 2011 wildlife surveys and most of these were trapped in the Arroyo habitat. Diversity, however, was greatest in the CDS habitat, followed by the CDG and Arroyo habitats. Twelve species of bats were detected within the Copper Flat Mine permit area. In addition to feeding habitat at the pit lake, roosting habitat is provided by crevices in the rocky hills and the many abandoned mine shafts in the vicinity of the permit area.

The number and species of birds observed vary widely from season to season. Waterfowl sporadically use the existing pit lake, particularly during migration, though shorebird use is limited due to the lack of shallow foraging areas and appropriate habitat (BLM, 1996). A variety of raptors utilize the area. The most common are red-tailed hawk (*Bueto jamaicensis*), kestrel (*Falco sparverius*) and marsh hawk (or northern harrier) (*Circus cyaneus*). Golden eagles (*Aquila chrysaetos*) have been observed in the Copper Flat area and the Bald eagle (*Haliaeetus leucocephalus*) occasionally visits the Las Animas Creek area (8 km north of the project area) during the winter and spring seasons. Neither active raptor nests nor regular eagle roosting sites are known to occur in the project area.

Reptiles are expected to represent the most abundant species within the project area (Glover, 1977; BLM 1978). However, only nine species of reptiles were observed at the mine site during the 2011 field effort. Up to 43 species of reptiles and amphibians that are known to occur in Sierra County have suitable habitat present the mine site. By far, the most numerous reptiles observed were lizards, including coachwhip (*Masticophis flagellum*), whiptail lizards (*Cnemidophorus sp.),* Texas horned lizard (*Phrynosoma cornutum*), roundtail horned lizard (*Phrynosoma modestum*), desert spiny lizard (*Sceloporus magister*) and lesser earless lizard (Holbrookia maculata). Snakes encountered include

bullsnake (*Pituophis melanoleucus*), black-tailed rattlesnake (*Crotalus molossus*) and rock rattlesnake (*Crotalus lepidus*).

A variety and abundance of invertebrates occur in the project area. The most numerous are beetles (*Coleoptera*). Other common orders are the bugs (*Hemiptera* and *Homoptera*), bees and wasps (*Hymenoptera*) and centipedes (*Chilopoda*). Butterflies and moths (*Lepidoptera*) are seen infrequently (BLM 1978).

The only perennial aquatic environment in the project area is the pit lake, though no aquatic mammals, amphibians, nor fish have been observed.

3.13.4.2 Wildlife Species [602.D (13) (d) (ii)]

The BDR provides a list of wildlife species encountered during the collection of site-specific data. Table 5-3 identifies bird species recorded or which may potentially occur in the permit area, the Las Animas and Percha creek areas. Similarly, mammals and reptiles that were encountered or which could possibly occur in and around the permit area are listed in Table 5-4 and 5-7 respectively.

3.13.4.3 Wildlife Survey Data [602.D (13) (d) (iii)]

There are no federally listed threatened or endangered species in the project area (see Table 5-1 of the BDR [Appendix B]). Five special status species were identified that occur in the project area: Texas horned lizard (*Phrynosoma cornutum*), loggerhead shrike (*Lanius ludovicianus*), Townsend's pale big-eared bat (*Corynorhinus townsendii pallescens*), fringed myotis (*Myotis thysanodes thysanodes*) and Yuma myotis (*Myotis yumanensis*).

Additional information regarding presence/absence, distribution by season and habitat type, relative abundance and key habitat areas are provided in the BDR.

3.13.4.4 Wildlife Impacts and Wildlife Report [602.D (13) (d) (iv)]

Additional information regarding wildlife species and faunal characteristics of wildlife habitats in the permit and affected areas is provided in Chapter 5 of the BDR.

3.13.5 Soils [602.D (13) (e)]

An Order 1 soil survey at a 1:6000 scale was conducted of the proposed permit area in 2011. A short summary of the soil survey is provided in Section 6 of the BDR and the technical report including maps is an appendix to the BDR. The soils in the permit area formed in mixed gravelly alluvium (east) or clayey alluvium and colluvium derived from igneous rock (west). The soils in the eastern portion of the project area occur on gently sloping terraces of fan piedmonts or nearly level to gently sloping floodplains and stream terraces. The soils in the western portion of the project area occur on steeper slopes (up to 30 percent) with lithic contact. Soils are classified into 12 soil taxonomic units distributed among the Entisol, Aridisol and Mollisol soil orders. The Entisols are generally considered calcareous

and the most of the developed soils have a calcic horizon at some depth, but there may or may not be an argillic horizon present.

3.13.6 Geology [602.D (13) (f)]

The geology of the project area and surrounding areas is described in Section 7 of the BDR (Appendix B) as well as in the Mine Plan of Operations (NMCC, 2011). Section 7 of the BDR also provides descriptions of the ore body and an evaluation of the potential for weathering of overburden materials. Geologic maps and cross sections, showing the nature, thicknesses and occurrences of the various geologic rock units, are included and discussed in Section 7 of the BDR. A brief discussion of the geology and ore body is provided below.

The project area is within the Hillsboro Mining District in Las Animas Hills, within the Mexican Highlands portion of the Basin and Range Physiographic Province. Rocks in the area range in age from Precambrian to Quaternary, including Precambrian granite, Paleozoic and Mesozoic sedimentary rocks, Cretaceous and Tertiary igneous rocks, Tertiary and Quaternary alluvial sediments of the Santa Fe Group and Holocene valley fill (see Table 7-1 of the BDR [Appendix B]).

Block and rift faulting are the primary geologic structures of the region. A Tertiary caldera associated with earlier block faulting formed between 35 and 45 million years ago (Ma). Rift faulting and associated north-south block faulting began approximately 25 to 30 million years (Ma) with the formation of the Rio Grande rift. The Las Animas Hills area is bounded by faults associated with rifting. The dominant geologic feature of Las Animas Hills is the erosional remnants of the Copper Flat stratovolcano, a Laramide-age volcanic feature (see Figures 7-1, 7-2 and 7-4 of the BDR [Appendix B]). This stratovolcano has been deeply eroded to form a topographic low in the central core area. The andesitic rocks that form the volcanic structure are in fault contact with Santa Fe Group sediments that are at least 2,000 ft thick on the eastern side of the project area. The core of the volcanic complex is a Cretaceous-age quartz monzonite stock that intruded into the central portion of the andesitic volcanic pile. Tertiary Sugarlump and the Kneeling Nun tuffs, which are younger Tertiary-age volcanic units erupted from the Emory Caldera in the Black Range to the west, unconformably overlay the andesitic flows in some areas. The tuffs and older units are cut by later Tertiary dikes.

The Copper Flat deposit is associated with an alkalic copper-gold mineralized breccia pipe that is genetically-linked to an alkalic porphyry system. The Copper Flat deposit is situated along the eastern edge of the Cretaceous Arizona-Sonora-New Mexico porphyry copper belt, and, along with the Tyrone and Santa Rita copper deposits in the Silver City area, forms a linear mineralized feature known as the Santa Rita lineament. Elevated copper mineralization is concentrated in the breccia pipe. Mineralization consists of poly-metallic quartz veins, commonly associated with the dikes that radiate outward from the central stock and disseminated sulfides, especially chalcopyrite. The quartz veins have been the principal target of historical mining activities in the Hillsboro Mining District. The

breccia pipe zone has been cut by numerous irregular veins that are thicker and coarser grained than the narrow fracture-controlled veinlets in the surrounding stock. The total sulfide content generally ranges from 1 percent (by volume) in the eastern part of the breccia pipe and the surrounding igneous stock to 5 percent to the south and west.

3.13.7 Hydrology [602.D (13) (g)]

Surface water and groundwater conditions within the project and adjoining areas are described in Section 8 of the BDR (Appendix B). The proposed permit area is located in the LRG watershed. This watershed covers approximately 5,000 square miles in four counties: Catron, Socorro, Sierra and Doña Ana. The watershed is dominated by the Rio Grande and its tributaries and includes the two large reservoirs of Elephant Butte and Caballo. Numerous tributaries drain into the Rio Grande from the west, but none contribute perennial flow to the Rio Grande.

The region encompassing the mine, mill, TSF and water supply wells, is within the NMOSE-declared LRG Underground Water Basin.

3.13.7.1 Surface Hydrology Map [602.D (13) (g) (i)]

Figure 8-1 of the BDR is a map showing local watersheds and surface water features (Appendix B). The project area is within the Greenhorn Arroyo drainage basin. Drainages within this watershed are ephemeral, flowing in response to heavy or sustained precipitation events, and include Hunkidori Gulch and the Grayback and Greenhorn arroyos.

Percha Creek and Las Animas Creek watersheds are located to the south and north, respectively, of the Greenhorn Arroyo drainage basin. Both Las Animas and Percha creeks have ephemeral, intermittent and perennial reaches. These reaches are shown in Figure 8-4 of the BDR (Appendix B).

3.13.7.2 Surface Water Quantity and Quality [602.D (13) (g) (ii)]

In addition to the baseline data collected in 2010 and 2011, a considerable amount of surface water quantity and quality data has been collected in the Project and surrounding areas since 1977, when initial environmental assessments were conducted in anticipation of mining activities. New Mexico Water Quality Control Commission (WQCC) standards for metals were not exceeded at any location during the 1977 sample events. Section 8.1 of the BDR presents a discussion of surface water quantity and quality data, including the historical data collected before 2010. Separate discussions are provided for the Las Animas Creek, Percha Creek and Greenhorn Arroyo drainage basins. The locations and water quality of seeps and springs are also included in the discussion presented in the BDR. A summary of surface water quantity and quality is provided below.

Stream flows in Las Animas Creek vary from perennial to ephemeral. Flows measured during the 2010 and 2011 baseline study ranged from 0.04 to 7.09 cubic feet per second (cfs). Las Animas Creek water quality is either a calcium- or sodium-bicarbonate type (BLM, 1999). Water quality samples collected in 2010 and 2011 exhibited pH levels in the range of 7.74 to 8.47; concentrations

of sulfate and total dissolved solids (TDS) ranged from 7.5 to 29 milligrams per liter (mg/L) and 173 to 357 mg/L, respectively.

Percha Creek has ephemeral, intermittent and perennial reaches. Flow rates measured in 2010 and 2011 ranged from 0.002 to 7.45 cfs. Percha Creek water quality is a calcium-bicarbonate type (BLM, 1999). Water quality samples collected during the baseline study in 2010 to 2011 showed pH levels between 8.23 to 8.51; sulfate and TDS concentrations ranged from 49 to 74 mg/L and 298 to 378 mg/L, respectively.

The project area is drained by ephemeral arroyos within the Greenhorn Arroyo drainage basin. The Grayback Arroyo is the primary drainage and has been diverted around the Copper Flat open pit. Stream flow rates were minimal during the 2010 and 2011 baseline study, precluding accurate measurement. A flow rate of 0.028 cfs was measured in 1993 (Newcomer and Finch, 1993). Water quality within the drainage basin varied during the baseline study. The open pit was developed during the early 1980s (the pit itself is considered 102 acres in size) and now contains an approximately 5.2-acre (surface area) pit lake that is approximately 30 ft deep. Pit lake water quality has historically exceeded the WQCC standards for chloride, manganese, sulfate, TDS and uranium and has occasionally dropped below the acceptable WQCC standard for pH (standard unit of 6). Sulfate and TDS concentrations of water samples collected during the 2010 and 2011 baseline assessment ranged from 5,500 to 6,400 mg/L and 7,780 to 9,680 mg/L, respectively; pH values were between 6.67 and 7.86.

3.13.7.3 Hydrogeology [602.D (13) (g) (iii)]

A discussion of the hydrogeology is presented in Section 8.2 of the BDR (Appendix B). This section describes the water-bearing potential of the various geologic units and provides cross sections (Figure 8-13 of the BDR) and maps (Figure 8-14 of the BDR) showing the locations of wells and indicating groundwater flow directions. Table 8-8 of the BDR summarizes descriptions, thicknesses and estimated ranges of hydraulic conductivity values of the geologic units in the project area.

Groundwater is present within three geologic units in the project area. These units are bedrock, Santa Fe Group sediments and alluvium. The bedrock consists of Cretaceous andesite and monzonite and Paleozoic sedimentary rocks in the Animas Uplift area, Tertiary volcanic rocks to the west of the pit lake in the graben structure associated with the Animas uplift and Paleozoic sedimentary rocks to the east of the pit lake area in the Palomas Basin. The Santa Fe Group sediments include unconsolidated to moderately consolidated interbedded sandstones, volcaniclastics, silts and clays. These sediments overlie the Paleozoic bedrock units to the east of the pit lake area. Perennial and ephemeral saturated alluvium is present along the Las Animas and Percha creek drainages located to north and south and in Grayback Arroyo of the project area.

In general, the regional groundwater flow direction is from highland areas to the west of the project area toward Caballo Lake and the Rio Grande Valley to the east (Figure 8-14 of the BDR). In the

vicinity of the project area, the hydraulic gradient is approximately 250 ft per mile (ft/mile) and decreases to less than 50 ft/mile near the production well field (identified as PW wells on BDR Figure 8-20). This suggests a progressive increase in transmissivity toward the area of the production well field. A graben structure in the area of the production well field locally increases the thickness of the Upper Santa Fe Group Palomas Formation (Figure 8-13 of the BDR). The Palomas Formation is a "sand and gravel" (Davie and Spiegel, 1967). Numerous discontinuous clay layers exist within the sequence, causing the vertical hydraulic conductivity to be much lower than the horizontal hydraulic conductivity. Near Caballo Lake sands and gravels in the Palomas Formation are interbedded with clays of the ancient Rio Grande. Consequently, the transmissivity likely decreases and the hydraulic gradient slightly increases. Near Caballo Lake, groundwater in the Santa Fe Group is confined, leading to artesian flow in wells along the lower reaches of both Las Animas and Percha Creeks.

3.13.7.4 Aquifer Characteristics [602.D (13) (g) (iv)]

Section 8.2 of the BDR provides descriptions of the aquifer systems in the project area, including water quality, hydraulic properties, recharge and discharge and groundwater flow directions and gradients (Appendix B). Much of the hydrogeologic information presented in the BDR was obtained from existing reports and publications; Section 8.2.8 of the BDR provides references for this information.

The water level elevation at the existing open pit was approximately 5,440 ft amsl from June through October 2011 (JSAI, 2012). The permeability of the bedrock aquifer is variable. The permeability of the andesite is extremely low (<0.01 feet per day [ft/day]); whereas, the permeability of the monzonite rocks is greater (0.01 - 0.1 ft/day) due to formation of secondary porosity from fracturing. The Animas Fault juxtaposes groundwater within the bedrock aquifer with groundwater within the Santa Fe Group Aquifer (Figure 8-13 of the BDR). Groundwater flows from the Cretaceous andesitic rocks into Santa Fe Group sediments east of the open pit.

The water quality of the bedrock aquifer has been described in the BDR (INTERA, 2012). Figure 8-22 and Figure 8-24 of the BDR show temporal trends of sulfate and TDS concentrations at monitor wells located upgradient (GWQ96-22A) and downgradient (GWQ96-23A) of the existing open pit. In 2010, upgradient sulfate and TDS concentrations ranged from 34 to 52 mg/L and 557 to 573 mg/L, respectively, while downgradient concentrations of these constituents ranged from 5.6 to 140 mg/L and 689 to 804 mg/L.

The Santa Fe Group Aquifer will supply freshwater to the Project. The production well field is shown in Figure 3-4 of the BDR. The estimated average water demand from this well field is 2,200 gpm. Santa Fe Group sediments are up to 2,000 ft thick and overlie Paleozoic bedrock units to the east of the proposed permit area. This aquifer receives recharge from precipitation, losing reaches of streams and discharge from the bedrock aquifer. The transmissivity of the Santa Fe Group Aquifer in the production well field area is approximately 20,000 square-ft per day (INTERA, 2012).

Groundwater in deeper portions can be semi-confined. The low vertical hydraulic conductivity has two important effects on the groundwater flow system: (1) near Caballo Lake the confinement of groundwater is sufficient to create artesian conditions, and (2) reduced leakage from the alluvial aquifer below Las Animas Creek to the underlying Upper Santa Fe Group. Water quality at the production well field is good, with a TDS concentration of 294 and 303 mg/L in PW-1 and PW-3 respectively in May of 2012.

Water quality of the Santa Fe Group Aquifer in the area below the existing TSF has been impacted from the previous tailings disposal in 1982. These impacts are currently being addressed in accordance with the WQCC abatement plan regulations (20.6.2.4106 NMAC) (INTERA, 2011; Shomaker, 2011). In 2010 and 2011, sulfate and/or TDS concentrations exceeded WQCC standards at three (GWQ94-13, GWQ94-16, NP-3) of ten monitor wells downgradient of the tailing impoundment. These wells were sampled as part of the baseline study and are located immediately downgradient of the dam associated with the existing TSF. At these monitor wells sulfate and TDS concentrations were between 830 and 1,740 mg/L, respectively.

The near-surface alluvial aquifers along drainages in both Las Animas and Percha Creek watersheds are limited in aerial extent and generally in direct hydraulic communication with surface waters (Figure 8-14 of the BDR). Alluvial sediments are generally 30 to 50 ft thick near the mouths of Las Animas and Percha Creeks (Davie and Spiegel, 1967). Cores from the installation of monitor wells drilled along Las Animas Creek indicate that upper alluvial gravels extend from the surface to a depth of approximately 20 to 60 ft (BLM, 1999). The Percha Creek alluvial aquifer is less studied than the Las Animas Creek alluvial aquifer; consequently, less historical data are available. The Las Animas Creek alluvial aquifer is an important local water supply within the Palomas Basin. Valley alluvium is generally recharged by precipitation along mountain fronts where the alluvial fans are exposed and by streams that flow out of the highlands and lose water to the alluvium as they flow toward the Rio Grande. Many intermittent streams in the area are “losing streams” over at least part of their courses and provide recharge to the alluvial groundwater system. Discharge from the alluvial aquifer occurs through evaporation and evapotranspiration from riparian vegetation, existing well pumping and seepage to the underlying Santa Fe Group Aquifer. Alluvial groundwater flows east to the Rio Grande (Figure 8-14 of the BDR).

Upstream of artesian wells near Caballo Lake, the Las Animas alluvial aquifer can be “perched” above the water table of the Santa Fe Group Aquifer by 20 to 60 ft of unsaturated to partially saturated alluvial sediments (SRK, 1995; ABC, 1997). The alluvial aquifer along Las Animas Creek in the lower reaches loses water to the Santa Fe Group Aquifer by slow downward seepage.

During the baseline study, alluvial groundwater quality was monitored along Las Animas Creek. Water quality at well MW-11, shown in Figure 8-14 of the BDR, meets WQCC water quality standards and exhibits a TDS concentration of approximately 300 mg/L. Monitoring of alluvial groundwater

quality along Percha Creek was proposed as part of the baseline study; however, agreements with well owners to modify well heads could not be reached, preventing water quality sampling.

3.13.7.5 Probable Hydrologic Consequences [602.D (13) (g) (v)]

Sections 8.2.5 and 8.2.6 of the BDR discuss hydrologic consequences from the previous and proposed operations, respectively. Existing groundwater and surface water quality impacts are being addressed though an ongoing Stage 1 Abatement Plan (INTERA, 2011), as amended (JSAI, 2011), regulated by the NMED. The preparation and implementation of this plan was carried out in accordance with 20.6.2.4106 NMAC. Monitoring under the plan is scheduled to be conducted for four quarters from the time all BLM access agreements are granted.

Existing facilities from Quintana Minerals Corporation mining activities in the early 1980s include an open pit, waste rock storage piles and TSF. These facilities are located within the proposed mine permit area. A 5.2-acre pit lake has formed from groundwater inflow and surface water run-on within the 102 acre open pit run-on. Groundwater levels at monitor wells near the open pit indicate that the pit lake is a hydraulic sink with evaporation from the lake surface exceeding groundwater inflow and surface water run-on. Pit lake water quality has been impacted by pit wall seepage and the concentration of dissolved constituents due to evaporation. A small groundwater mound occurs beneath the TSF and is associated with elevated groundwater sulfate and TDS concentrations. This sulfate plume appears to be small and stable, and downgradient migration is limited by a barrier boundary fault (Figure 8-17 of the BDR). The approved Stage 1 Abatement Plan includes additional monitoring at and around the Pit Lake as well as downgradient from historic waste rock piles and further delineation of the plume to the east of the existing TSF tailing dam by drilling one or two new monitoring wells east of monitoring well GWQ94-21 (JSAI, 2011).

Figure 6 shows a conceptual layout of the proposed mine, while shown in Figure 7 is the proposed topography. Surface water runoff will be managed as described in the Mine Plan of Operations submitted to the BLM in June 2011 (NMCC, 2011). In addition, NMCC is in the process of preparing a stormwater management plan. The mine and mineral processing facilities will use new and existing diversion structures to divert clean stormwater run-on away from disturbed areas. Runoff from mine and mineral processing facilities will be directed to process water impoundments. Sediment removed from impoundments will be placed in the TSF and other approved locations. All sediment and stormwater control structures will be monitored and maintained on a regular basis. At closure, process impoundment ponds will be closed and regraded, and the areas revegetated.

A conceptual hydrologic model of the Animas Uplift and Palomas Basin has been developed and a numerical groundwater flow model is being constructed (Shoemaker, 2012). The modeling is being performed to evaluate possible effects to local aquifers from both water-supply well pumping and pit-area dewatering. Fresh water will be pumped from a supply well field (Figure 3). The numerical model will be used to predict end-of-mine drawdown, develop contours of projected subsidence and

determine water balance changes to the Animas, Percha and Rio Grande systems from supply well field pumping. In addition, the proposed mine will expand the area and depth of the existing open pit, requiring it to be dewatered. This will be accomplished by advancing the installation of pumps and a sump as the pit is developed. The numerical model will also be used to predict pit dewatering rates, pit area groundwater level contours and a pit water balance. The dewatering pumping rate is expected to be between 50 and 75 gpm based on historical pit inflows. The water will be used as process water.

The estimated total water demand for the proposed Project is approximately 11,135 gpm (NMCC, 2011). This includes water for ore processing, dust suppression and domestic use (Table 1). Pumping from the production well field is expected to contribute approximately 2,200 gpm and up to 3,500 gpm during the summer months. The remainder of the total water demand will be obtained through pit dewatering and the reclaiming of process water at the TSF. NMCC is conducting studies to evaluate the potential effects of pumping the production well field on the Santa Fe Group Aquifer. The proposed TSF will be designed using modern technology and a liner system, limiting the potential for seepage and increasing the recycling of water.

3.13.8 Prior Mining Operations [602.D (13) (h)]

Section 9 of the BDR summarizes prior mining operations in the project area and includes descriptions of existing disturbances. Mining activities in the Hillsboro Mining District began in the 1800s. Gold was mined from shafts and adits at Copper Flat and from placer workings developed along drainages to the east and southwest of Black and Animas Peaks. Gold mining was further developed during the early 1900s and continued until World War II. Today, small scale placer mining continues.

Copper exploration began in the 1950s and continued to the early 1980s, when Quintana Minerals Corporation defined reserves sufficient to operate for three months in 1982. Operations included the development of the open pit, waste rock piles, TSF and other mine disturbances observed today. No commercial mining activities have occurred at Copper Flat since 1982. The mine was on maintenance status until 1986, when mine facilities were dismantled and some areas were partially reclaimed. During the 1990s several companies submitted plans to reopen the mine but none of the plans were realized.

Existing surface disturbances (Figure 2) and facilities in the project area include the following:

- A pit lake;
- Waste rock piles;
- Former mine and mill areas (buildings have been removed);
- Unpaved but maintained roads;
- A 115-kilovolt power line;

- A 20-inch welded steel water line from the production well field to the base of the TSF;
- A diversion channel re-routing Grayback Arroyo around the mine site; and
- A TSF.

3.13.9 Cultural Resources [602.D (13) (i)]

A summary of the Class III archeological survey is provided in Section 10 of the BDR. It reviews major points relative to the interpretation and eligibility for listing in the National Register of Historic Places (NRHP) of sites both on individual merits as well as their potential to contribute to the district's mining history. Management recommendations for cultural resources documented at the Project site are also provided in Section 10 of the BDR.

The permit area generally lacks evidence of prehistoric resources. A few small prehistoric sites were identified associated with low-intensity use by Archaic foragers (1500 B.C. to A.D. 300). One additional prehistoric site had evidence of a later Mogollon presence with rock art panels.

A wide variety of historic mining resources and property types ranging from individual prospect pits and rock houses to large mine shafts and adits and engineering features were also documented. These resources reflect the historic developments of the mining district, conveying a variety of time periods and aspects of the mining community.

Fifty-three archaeological sites were discovered or re-discovered and fully documented during the investigation. Eligibility to the NRHP was recommended for 24 individual sites and 7 sites have undetermined eligibility. Four historic buildings were considered contributing elements to the historic mining district.

Detailed management recommendations will be presented in a future cultural resources report to be submitted to the New Mexico State Historic Preservation Officer (SHPO). Avoidance is recommended for all archaeological sites that are recommended as eligible, undetermined, or that may be contributing elements of the historic district. Avoidance may not be feasible for all of these resources, thus it is recommended that they be included in a testing and data recovery plan in accordance with NMAC 4.10.16.11 and 4.10.16.13, as well as BLM guidelines.

3.13.10 Land Use [602.D (13) (j)]

Details regarding present and historic land uses in the vicinity of the Project are provided in Chapter 11 of the BDR and are summarized here. Historically, most of Sierra County has been used for mining, ranching, agriculture and tourism. The public lands on which the Project's unpatented mining claims and mill sites are located are administered by BLM's Las Cruces Field Office. BLM lands are managed for multiple uses including recreation, range, forestry, mineral extraction and processing, watershed, fish and wildlife habitat, wilderness and natural, scenic, scientific and historical values. The current operational land use plan for all BLM-administered lands in Sierra and

Otero counties is the White Sands Resource Management Plan (BLM 1986). A new plan, the TriCounty Resource Management Plan, is being developed. The White Sands Resource Management Plan identifies the Copper Flat Mine as a mineral resource and recognizes that the area could again become a producing mine.

Livestock grazing is the primary ongoing land use in the project area. BLM grazing allotments 16040 and 10679 cover the proposed permit area and livestock grazing is permitted in areas adjacent to the proposed permit area. Only one residence lies within 5 miles of the Copper Flat Mine: the Coalson and Clark ranch located about 4 miles southeast of the proposed permit area. The Gold Dust Ranch is about 0.1 mile south of the existing TSF is no longer a residence. It was formerly used as Quintana Mineral's headquarters and is currently leased to NMCC as a mine office and core storage building/warehouse.

3.14 Qualified Third-Party Review [602.D (14)]

The MMD can employ the use of a qualified third-party to review all or portions of this permit application. NMCC understands the BLM's EIS third-party contractor can fill the role as an outside qualified party to meet the intent of this regulation. The BLM will be preparing and releasing Draft and Final EIS documents for the Copper Flat Project in late 2012 and in 2013 respectively.

3.15 Mining Operation and Reclamation Plans [602.D (15)]

The Copper Flat Project mine design is mainly focused on reactivating the mine plans and processes of Quintana Minerals of the early 1980s. The designs and operation plans have many of the same mining elements outlined by Gold Express and Alta Gold. These mine plans have been previously discussed in the DEIS (BLM, 1996) and PFEIS (BLM, 1999) that was being prepared for Alta Gold's mine proposal. NMCC has modified and updated the mine operations proposed by Gold Express Corporation in 1991 and adopted by Alta Gold in 1994. Relevant aspects of the planned operations are summarized in this section. The proposed Project layout is presented in Figure 6.

Proposed operations at NMCC's Copper Flat Project include the phases and activities summarized below. In general these phases are sequential, but there will be some overlap as the activities of an earlier phase continue during the implementation of subsequent phases.

- Pre-construction (Permitting) 2 Years
- Construction (Site preparation) 1.5 Years
- Operations (Mineral beneficiation) 11 Years
- Closure/Reclamation 3 Years
- Post-Closure Monitoring, Care and Maintenance 12 Years

3.15.1 Mining Type and Method [602.D (15)(a)]

The mining of new ore would entail expansion of the existing open pit. A portion of the ore body at the Copper Flat Project is exposed at and near the surface and would be mined by conventional truck

and shovel open pit methods in a manner similar to the previous operation. The open pit mine is currently proposed to operate 24 hours per day, seven days per week, 365 days per year. However, this production schedule is subject to change based on future economics of the Project. Over the life of the Project, the mine would produce approximately 100 million tons of copper ore, 60 million tons of waste rock and 3 million tons of low grade copper ore (less than 0.20 percent copper). The low grade copper ore would be processed during operations as blend material and/or at the end of the mine life, depending on economic conditions at the time. As such, it would require stockpiling until such time when it is suitable for milling and processing. The operation would process at a nominal throughput of 25,000 short tpd of ore through the copper sulfide and molybdenum flotation mill using standard technology. While the operation would focus primarily on copper and molybdenum, other resources, including gold, silver and possibly rare earth elements, may be economically extractable from the ore. These resources are currently being evaluated.

Pre-production stripping of overburden was completed in 1982 during the previous operation. Approximately 3 million tons of overburden material was stripped and over 1.2 million tons of ore were mined from the existing pit during the early 1980s. The Copper Flat Project ore body would be mined by a multiple bench, open pit method. The existing pit would eventually be enlarged to approximately 2,800 ft by 2,800 ft with an ultimate depth of approximately 900 feet at an elevation of 4,720 ft. The area of the pit would be expanded from approximately 100 acres to 140 acres. The existing diversion of Grayback Arroyo south of the pit would not be altered with the proposed pit expansion. The working, inter-bench slope of the pit walls would range from 38 to 45 degrees. Safety benches would remain as required by regulation. Because the deposit cannot be mined sequentially, there is no plan to backfill the pit, although some benign waste rock would be used for pad preparation, plant site development and in connection with the reclamation of disturbed area.

Ore material from the pit would be drilled and blasted, loaded and hauled to the primary crusher and then conveyed to the process mill, where the mineral values would be removed by conventional flotation processes. Future work will determine the viability of belt conveyance (either surface or underground) of crushed material if in-pit crushing is chosen over out-of-pit crushing. Waste rock would be placed on the ground surface in the WRDF.

Blasting would be limited to daylight hours and performed by licensed blasters. Rotary diesel driven drills, electric powered and/or down-hole hammer drills would be used for blast hole drilling. Wet drills, in conformance with Mining Safety and Health Administration (MSHA) requirements, would be used for secondary breakage when necessary. Safe seismic disturbance and air blast limits would be established to prevent damage to buildings.

Blasting agents would be stored in a secured area in compliance with applicable state and federal regulations. Ammonium nitrate and diesel fuel would be stored on site in bins and tanks. Detonators, detonating cord, boosters, caps and fuses would be stored apart from the batch plant area in secured

separate magazines. The storage location for each of these facilities would be in previously disturbed areas between the plant site and the pit; safety and security would be the main factors considered in their final location.

Cuttings samples would be taken from blast holes. Based upon the assay values of these samples, the broken rock in the pit would be classified as “ore” or “waste.” The broken rock would be loaded onto end dump haul trucks for transport to the primary crusher, LGOS, or WRDF depending on the assay classification.

Loading of both ore and waste rock would be accomplished by using hydraulic shovels and/or front-end loaders. During the first years of operation, ore and waste rock haulage would be handled by a fleet of end-dump, diesel-powered haulage trucks of minimum 85-ton capacity. Additional units may be added to the fleet as the pit is deepened.

3.15.2 Project Schedule and Disturbance [602.D (15)(b)]

Annually, the mining operation would process an estimated 9.1 million tons of copper ore. Waste rock production is estimated to average 5.9 million tons per year (ranging from 800,000 to 8.4 million tons annually), with tailings production estimated at 9.1 million tons annually, less the extracted metal. An operational life of approximately 11 years is currently projected. Maps demonstrating the progression of mining are provided in Appendix C. The proposed operation includes the following activities:

- Expand the project boundary to include additional land controlled by NMCC;
- Provide for exploration over entire proposed plan area;
- Expand the existing open pit;
- Construct haul and secondary mine roads;
- Construct, operate and reclaim the WRDF;
- Construct, operate and reclaim LGOS;
- Construct, operate and reclaim the mill and associated processing facilities;
- Construct, operate and reclaim the TSF;
- Construct ancillary buildings (administration offices, laboratory, truck shop, reagent building, substation and gatehouse, etc.);
- Secure and construct a suitable water supply network;
- Construct growth media stockpiles; and
- Construct and maintain surface water diversions.

The durations of each phase of the Copper Flat Project are provided in Section 3.15 and details regarding the reclamation schedule are provided in Section 3.15.8. A summary of proposed disturbances within the permit boundary are summarized in Table 6.

Table 6: Mining Activities and Land Disturbances

Disturbance Type	Total (acres)
Ancillary [a]	166
Diversions	46
Growth Media Stockpile	14
Haul Roads	54
Low Grade Ore Stockpile	20
Open Pit	140
Plant Site	120
Tailings Storage Facility	530
Waste Rock Disposal Facility	180
Total Disturbance	**1,270**

Notes: Includes access roads and other miscellaneous disturbance areas, including inter-facility disturbance generally associated with construction activities.

3.15.3 Mine Facilities [602.D (15)(c)]

The various mine facilities and mining and mineral processing elements are described in the following subsections. Mine related facilities are shown in Figure 6

3.15.3.1 Ore Stockpiles [602.D (15) (c) (i)]

The small ore stockpile would consist of a few truckloads of ore placed next to mill facilities to reduce chances of interruptions in mill feed. No leaching facilities planned.

The LGOS would cover an area of approximately 20 acres and include about 3 million tons of rock assaying less than 0.20 percent copper. If, for economic reasons this LGOS is not milled, it will be reclaimed at the end of the mine life.

3.15.3.2 Surface Water and Stormwater Management [602.D (15) (c) (ii)]

The mining and concentrating process would not involve any discharges to surface water courses. Surface runoff (stormwater) from the mine and plant site area would be collected in containment (settling) ponds or impoundments and recycled into the process water system. These ponds and impoundments would be lined. Shown in Figure 6 are proposed surface water management features, including diversion structures and ponds. Additional stormwater and sediment controls would include the use of seeding and mulching, silt fences, straw bale dams, diversion ditches with energy dissipaters and/or rock check dams at appropriate locations. All sediment control structures would be monitored and maintained on a routine basis.

The TSF is intended to be constructed in a phased manner. During initial construction phases, diversion ditches would be constructed to divert stormwater from upstream catchment areas within the area contributory to the storage facility. The contributory area is approximately equivalent to the ultimate TSF footprint, as only minor peripheral areas drain into the TSF. At final build out, minimal

potential exists for surface water run-on from external areas. Throughout most of the life of the facility, stormwater management requirements would be limited to direct precipitation.

Existing diversion ditches and berms would be maintained to prevent stormwater from outside of the plant and mine areas from coming into contact with areas disturbed by the proposed mining operations. The existing diversion of Grayback Arroyo re-routes stormwater from the mountainous terrain west of the mine areas around disturbances and back to the natural surface water course at a location just west of the TSF (Figure 6). This channel was constructed by the previous operator and will be maintained to prevent stormwater from Grayback Arroyo from entering the open pit and plant area.

NMCC would prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) in accordance with Environmental Protection Agency NPDES Multi-Sector General Permit requirements. The plan would identify potential contaminant sources, describe measures and controls (i.e. BMPs) to protect surface water quality and meet monitoring requirements.

3.15.3.3 Disposal Systems [602.D (15) (c) (v)]

3.15.3.3.1 Sewage Disposal

Sewage waste will be disposed through a septic tank and leach field system permitted by NMED. The waste system will be connected to Project buildings. Sierra County will require a septic system permit designed by a qualified New Mexico licensed professional engineer. The exact location of the septic system has not been identified. Appropriate percolation tests will be conducted to prepare the necessary septic system designs for the Project.

Sanitary waste during the construction phase of the Project will be collected in a system of portable chemical toilets. These will be periodically cleaned and emptied by a licensed contractor and the waste transported off-site for disposal.

3.15.3.3.2 Solid Waste Disposal

Nonhazardous solid wastes that would be generated include waste paper, wood, scrap metal and other domestic trash. These materials would be disposed of in a permitted on-site Class III sanitary landfill on private land, which would be permitted by the State of New Mexico or by other methods approved by the State and Sierra County. Scrap metal would be sold to a dealer and transported offsite.

3.15.3.4 Hazardous and Chemical Materials Management [602.D (15) (c) (v)]

Waste oil and lubricants would be collected and transported offsite by a licensed buyer/contractor for recycling and/or disposal. Reagent drums would be recycled by the reagent supplier.

Reagents used as part of the metal concentrating process would include frothers, floatation promoters, flotation collectors, flocculants, flotation reagents, pH regulators and filter and dewatering

aids. Residual reagent concentrations in the tailings and reclaim water streams, as well as the concentrate, are expected to be present at low concentrations. The details of reagent management used as part of the copper/molybdenum concentrating process are included in Section 3.15.3.7.

Hazardous materials and substances that may be transported, stored and used at the Copper Flat mine in quantities less than the Threshold Planning Quantity designated by *Superfund Amendments and Reauthorization Act* Title III for emergency planning are described in the Plan of Operations (NMCC 2011). Management of these and other hazardous materials would be in compliance with all applicable federal, state and local requirements, including the inventorying and reporting requirements of Title III of the *Comprehensive Environmental Response, Compensation and Liability Act*.

All petroleum products and reagents used would be stored in above-ground tanks within secondary containment as required by federal, state and local requirements and regulations. A preliminary Spill Prevention Control and Countermeasures (SPCC) plan has been developed and is included in NMCC (2012). The SPCC Plan will be maintained for the mine and mill site and provide contingencies to mitigate potential impacts from emergency or accidental releases of petroleum substances. Hydraulic oils, lubricants, antifreeze and other such liquids will all be stored in relatively small quantities, insufficient to cause any impact should they somehow be accidentally released. With the exception of the storage and use of diesel fuel and/or gasoline, all other materials and supplies used onsite will be in small quantities. All other potentially toxic materials will be stored in secured facilities and would be disposed in compliance with state and federal requirements. NMCC does not intend to dispose of any hazardous materials on-site.

3.15.3.5 Pit [602.D (15) (c) (vi)]

The development of pit and mining is described in Section 3.15.1 above. Maps demonstrating the progression of pit development are provided in Appendix C.

3.15.3.6 Tailings Storage Facility [602.D (15) (c) (vii)]

An existing TSF at Copper Flat was constructed by Quintana Minerals to serve their 1982 mining operation. The storage facility received 1.2 million tons of material and was essentially reclaimed in 1986. The TSF remains in place and is located southeast of the former plant site. NMCC proposes to construct a new lined TSF over the area used by previous operations for tailings storage. Tailings would be transported from the mill via slurry pipeline and deposited in the new TSF. Ancillary facilities associated with the TSF would include a tailings slurry delivery system, a tailings solution reclaim and recycling system (barge pump system) and an underdrain seepage return system.

Approximately 100 million tons of tailings are expected to be stored over the life of the Project. Tailings deposition would be approximately 25,000 tpd. During progressive settlement, water would be pumped from the TSF and returned to the process circuit. The total expected water recovery by

reclaim systems would be a nominal 70 percent. Water reporting to the TSF would be recovered from the pool of water that would form in the storage facility and be returned to the mill process water system for reuse. Precipitation would also contribute to the volume of water in the storage facility. The height of the embankment is designed to contain the normal operating volume of water completely within the storage facility, plus the amount of stormwater runoff from 75 percent of the probable maximum precipitation (PMP).

The size and location of the storage facility pool would vary during the life of the Project. The size of the pool would be affected by pre-deposition grading in the storage facility, the amount of tailings deposited, precipitation, evaporation rates, seepage rates into the designed embankment seepage collection system, infiltration into underlying soils and water recycling rates. The location of the pool would migrate within the storage facility as tailings beaches form. Tailings deposition would be managed to force the pool away from the embankment toward the upstream reaches of the storage facility. The TSF would be fenced to restrict access.

3.15.3.7 Mill and Concentrator Facilities [602.D (15) (c) (viii)]

For the most part, the plant facilities including the mill and concentrator would be constructed at the site of the original Quintana Minerals plant site. The crushing and concentrating plant complex would include buildings such as administrative offices, a truck shop, an electrical substation and a gatehouse. Some of the buildings will be prefabricated structures. Appropriate sanitary facilities would be provided for men and women. Table 7 provides the primary plant site structures and facilities and their approximate dimension and construction type.

Table 7: Expected Dimensions and Construction of Mine Facilities

Facility	Length (ft)	Width (ft)	Height (ft)	Diameter (ft)	Slab (ft)	Construction Type
Primary Crusher	90	30	103	--	0.83	Metal roof, metal siding
Electric Substation	94	68		--	1.00	slab only
Concentrator Building – Grinding Area	192	145	32	--	1.00	Metal roof, metal siding
Concentrator Building – Flotation Area	22	26	44	--	0.66	Metal roof, metal siding
Concentrator Building – Maintenance Office	13	12	14	--	0.50	Metal roof, metal siding
Concentrator Building - Reagent Area	100	52	24	--	0.83	Metal roof, block walls
Concentrate Thickeners (2)	--	--	--	50	--	Tank walls - metal
Assay & Metallurgical Laboratory	180	40	16	--	0.50	Metal roof, metal siding
Gate/Change House	120	60	14	--	0.50	Metal roof, metal siding
Truck Repair Warehouse	340	90		--	1.00	Metal roof, metal siding

Facility	Length (ft)	Width (ft)	Height (ft)	Diameter (ft)	Slab (ft)	Construction Type
Administration Building	120	60	14	--	0.50	Modular
Freshwater/Fire Tank (1)	--	--	24	34	--	Metal
Process water tank (1)	--	--	26	20	--	Metal
Fresh water pump station tanks (6)	--	--	18	17	v	Metal

Ore from the pit would be hauled to the ore stockpile and plant area east of the pit. The ore would be crushed and ground by the primary crusher that currently proposed to be located about 2,500 ft east of the pit. Ore hauled from the pit would be dumped into the primary crusher that would crush the mine run rock to a nominal size of less than 8 inches in diameter. Crusher discharge would be fed by apron feeder onto a belt conveyor for transport to the coarse ore stockpile located near the mill. Delivery of ore by truck would be on a schedule similar to the mining operations, while the crusher would likely operate on the mill schedule, with extra delivery from a nearby surge stockpile with a front end loader. Storage capacity of the coarse ore stockpile would be about 75,000 tons. The crusher would be located below ground level to limit noise and contain dust. Dust emissions would be controlled with suppressants, water and dust collection equipment (i.e., bag houses) to meet air quality operating permit stipulations and health standards.

Three draw chutes beneath the coarse ore stockpile would direct ore onto apron feeders and feed ore onto a belt conveyor for transport into a large diameter semi-autogenous (SAG) mill and/or roller crushers for the first stage of grinding. Reduction in the SAG mill would be a result of impact between the ore chunks themselves and the 5-inch diameter steel grinding balls used in the mill. Reduction would be a combination of crushing and attrition. Water and various reagents would be added to the SAG mill feed to start the conditioning of the ore pulp for subsequent stages of treatment. Tonnage of the primary feed to the SAG mill would be a nominal 25,000 tpd.

The SAG mill would discharge onto a vibrating screen. Undersize crushed ore from the screen would report to a cyclone feed sump. The oversize ore would be taken by belt conveyor to a cone crusher, where it would be crushed to less than 0.75 inch in diameter and returned by belt conveyor to the SAG mill. Intermediate size product would be returned directly to the SAG mill by conveyors. Ore from the cyclone feed sump would be pumped to a cluster of hydro-cyclones for material sizing. The fines would report to the concentrator plant for the first stage of flotation, and the oversize ore would report to two large ball mills for further grinding.

A sulfide-flotation concentrator plant similar to that originally constructed at the site by Quintana Minerals is proposed. This type of plant is often used at mines with similar copper deposits. The concentrator would also include a molybdenum processing circuit similar to that designed by Quintana Minerals. The sulfide-flotation plant would be designed to process approximately 9.1 million

tons of ore per year at a nominal throughput of 25,000 tons per day. The equipment in the concentrator building is expected to consist of the following:

- 42 × 65 in. gyratory crusher,
- 32 ft. dia. × 14 ft. long, 10,000 hp SAG mill,
- 2-8 × 20 ft. double deck vibrating screens,
- 4.5 ft omnicone crusher,
- 10-26 inch cyclones,
- 24 ft. dia. × 35 ft. long, 12,700 hp ball mill,
- 10-1,500 ft^3 bulk rougher cells,
- 13-300 ft^3 cleaner cells,
- 50 ft. dia. bulk concentrate thickener with auto-lift rakes,
- 50 ft. dia. copper concentrate thickener with rakes,
- 20 × 18 in., 800 hp cyclone feed pump,
- 12 ft. dia. × 14 ft. drum belt filter (copper),
- 4.5 ft. dia. × 5 ft. drum belt filter (moly),
- 8-100 ft. molybdenum rougher cells,
- KW-100 tower mill-moly regrind,
- 7-24 ft^3 cleaners,
- 5-18 ft^3 cleaners,
- 5-15 ft^3 cleaners,
- 150 tons per hour recycle crusher and
- UTM-600 tower mill.

Cyclone overflow from the feed sump would report to the first stage (rougher) flotation cells connected in series at the concentrator. Each cell would be equipped with a mechanism that would agitate or stir and induce air into the ore pulp as it passed through the tank. Reagents would be added to the pulp to cause the copper bearing sulfide mineral particles to adhere to bubbles created by the induced air and frothing agents. Flotation reagents that would be used in the concentrator are described in following paragraphs. Small amounts of other reagents may be used in the process from time to time as part of an ongoing effort to improve metal recoveries and to manage changing ore characteristics. The copper bearing sulfide-laden bubbles would rise to the top of the cell to be skimmed off. The copper/molybdenum concentrate floated off of the primary rougher would be routed to the molybdenum plant where the copper would be depressed and the molybdenum would be floated up, graded-filtered and dried. The copper concentrate, which would average about 28 percent copper, would be dewatered in a settling facility (thickener) to decant water, then disk filtered and stored for shipment. Filtrate from both the copper flotation circuit and the molybdenum flotation circuit would be returned to concentrate thickeners. Thickener overflow would be returned to the plant

reclaim water system. No smelting or refining would be conducted at the Copper Flat Project. The molybdenum concentrate would also be dried prior to packing into sacks for shipment.

The reagents used as part of the copper/molybdenum concentrating process would include frothers, flotation promoters, flotation collectors, flocculants, flotation reagents, pH regulators and filter and dewatering aids. A preliminary list of the proposed reagents to be use during operations is provided in Table 8.

Table 8: Expected Chemical Use

Reagent	Chemical Abstract Service (CAS #)	Description	Use	Annual Quantity (lbs)
Lime	1305-62-0	Caustic powder; Non-Combustible solid; incompatible with acids	pH Control	15,700,000
Xanthate Z-11/Z-200	140-93-2	Fugitive dust potential	Flotation Reagent	58,000
AEROFLOAT 238 (Sodium Hydroxide)	001310-73-2	Caustic alkali liquid; corrosive; incompatible with strong oxidizing agents and mineral acids	Flotation Promoter	116,000
MIBC (Methyl isobutyl carbinol)	108-11-2	Class II combustible liquid	Moly. Frother	116,000
Ammonium Sulfide[1]	12135-76-1	Poison, corrosive, flammable liquid; incompatible with numerous chemicals[2]	Flotation Reagent	1,400,000
Unnamed Flocculent (similar to SUPERFLOC polyacrylamide or acrylamide-acrylic)	-	Organic Polymer	Flocculent Thickener	17,400
Sodium Hydrosulfide[2]	16721-80-5	Highly corrosive; incompatible with chemicals listed for ammonium sulfide	Flotation Reagent Depressant, Cation Exchange	1,400,000
Fuel Oil (Diesel #1) Dryer Fuel (Diesel #1)	8008-20-6	Flammable liquid	Moly. Collection, Truck Operation	150,000
Sulfuric Acid	7664-93-9	Strong Acid	Lab Use	<100
Water Treatment Chemicals & Antiscalant Reagents		NALCO9731 NALCO9735 (or equivalent)		

Notes:
[1]Either ammonium sulfide or sodium hydrosulfide would be used as a flotation reagent.
[2]Chemicals include acids, alcohols, carbonates, esters, halogenated organics, ketones, organic sulfides, aldehydes, amides, combustibles, flammables, hydrazine isocyanates, organic peroxides, phenols, nitrites, organic nitro compounds, organophosphates, explosives, polymerizable compounds, epoxides and oxidizing agents.

These reagents would be delivered by truck from commercial sources to the mine site where facilities would be provided for off-loading, storing, mixing, handling and feeding. Reagents that are received dry would be mixed in agitation tanks and pumped to either outdoor storage tanks or liquid storage tanks inside the mill building from which they would be metered into the concentrating process.

Residual reagent concentrations in the tailing and reclaim water streams are expected to be present at very low levels since they would be added to water in amounts resulting in concentrations of approximately 3 parts per million (ppm). Also, normally 95 percent of the reagents would be adsorbed onto the copper or molybdenum mineral surface and floated off in the mineral froth. The reagent would then be subsequently consumed in the offsite smelting process. Assuming 95 percent of the reagents are adsorbed, the residual reagent reporting to the tailing stream drops to less than 0.15 ppm.

The frother reagents to be used at the mine include methyl isobutyl carbinol (MIBC). MIBC is biodegradable in low concentrations. The dosage rate would be 0.02 pound per ton (ppt) of mill feed. The bulk of this reagent would report to the concentrate fraction and end up at the smelter. The reagent would be received in 20-ton capacity trucks and stored in a 16,000-gallon tank.

Lime used in alkalinity control in the flotation circuit would be received in pebble form in bulk by 20-ton capacity trucks and stored in a 200-ton capacity storage silo. The lime would then be slaked with water in a small mill and the resulting “milk of lime” would be pumped to the addition points in the grinding and flotation circuits for use as a pH regulator. It is anticipated that lime would be used at a rate of 2.7 ppt of mill feed to control pH of the flotation circuit. During the milling process, most of the lime would react with sulfide minerals to form gypsum.

Either sodium hydrosulfide (NaSH) or ammonium sulfide [$(NH_4)_2S$] would be added to the circuit process as a flotation collector and depressant to affect the copper molybdenum separation. These reagents are rapidly oxidized through contact with copper minerals and air bubbles entrained in flotation pulp. These reagents would be transferred from a delivery truck to an appropriate on-site holding tank. Number 1 diesel fuel would be used as a molybdenum collector. Diesel fuel would be stored onsite on a self-contained fuel and lube skid, including two 40,000-gallon, double-walled tanks with multiple lube and coolant capacity. This skid-mounted assembly would be staged near the truck ready line. As required, secondary containment shall be constructed with a capacity of at least 110 percent of the size of the largest AST in the containment area plus the volume displaced by the other AST(s). The geo-synthetic membrane for secondary containment shall have a minimum thickness of 60 mils.

Fuel oil would be kept in a 7,106 gallon capacity tank also surrounded by secondary containment according to 20.5.4 NMAC. The geo-synthetic membrane for secondary containment shall have a minimum thickness of 60 mils.

NMCC plans to store less than 2,000 gallons of antiscalants in appropriate ASTs that meet industry standards. The antiscalants proposed would likely be NALCO9731 or NALCO9735 (or equivalent).

Reagents would be maintained in the concentrator building as described in Table 7. On-site reagent storage is expected to be similar to the storage and processing employed by Quintana Minerals, as follows.

- Lime storage: A 200-ton capacity silo, 24-ft tall and 20-ft in diameter would funnel lime into a lime feed pump tank and from there into two holding tanks;
- Xantate (K.Amyl) (or equivalent): Flotation reagent Xanthate would be kept in drums and transferred to a mixing tank, then to a holding tank and finally to the head tank;
- AEROFLOAT 238 (or equivalent): used in flotation promoting, would be received in 50-gallon drums and have a plant storage capacity of 2,800 gallons. Aerofloat would be kept in drums and transferred to a mixing tank, then to a holding tank and finally to a head tank; and
- MIBC (or equivalent): MIBC would be transferred from trucks to a holding tank and, as needed, to a head tank.

Potential reagent spills would be contained by curbs in the reagent mixing and storage areas. A floor sump pump would be used to return the spilled material either to the storage tank or into the milling process as necessary. Material Safety Data Sheets for the reagents to be used would be readily available, in accordance with MSHA's *Hazard Communication for the Mining Industry* (30 [Code of Federal Regulations] CFR Part 47).

Following cycloning, the underflow and overflow will be routed to a pumping station with separate piping/pump streams for the underflow and the overflow or whole tailings. Tailings underflow will be routed to the tailings dam header pipe. Discharge of the underflow will be via tees and pinch valves placed at 200-foot intervals along the dam crest. The underflow sand will be discharged on the dam crest and downstream dam slope, and used for dam construction in a centerline construction scheme. Appendix C provides a flow diagram of the tailings process (Drawing 10) and a plan view of the tailing delivery and distribution system (Drawing 11).

A valve located downstream of the tailings pump station will enable cyclone underflow and overflow delivery to either the north or south header pipelines. The use of two headers will enable discharge through an active header while the idled header is relocated or serviced. This practice is anticipated to increase the availability of the tailings distribution system and facilitate continuous tailings deposition.

Tailings overflow will be routed to the interior of the TSF impoundment via a polyethylene header pipe and discharged through 8-inch tees and pinch valves placed at 500-foot intervals along the dam crest. Knife-gate isolation valves will be placed on the overflow distribution line at 1,500-foot intervals. Initially the tailings underflow will be transported to the TSF by gravity flow. Pumping will be required in the later years of operation as the TSF surface rises.

During upset conditions, or when underflow sand production is not required, whole tailings will be discharged through the overflow distribution system.

Primary considerations for effective dam construction include adequate drainage and compaction of the underflow sand. Drainage requirements are typically met when the hydraulic conductivity of the placed sand exceeds that of the tailings slimes by two orders of magnitude, resulting in a well drained structure. This is usually achieved when the minus 75-micron fraction of the underflow does not exceed 20 percent. The fixed cyclone station maintains optimum and consistent conditions at all cyclones and facilitates meeting this objective. A blanket drain will be placed beneath the embankment to facilitate drainage.

Industry experience at operating mines utilizing cycloned sand for dam construction indicates that compaction to a relative density of 60 percent (equivalent to approximately 90 percent of American Society for Testing and Materials [ASTM] D698 maximum dry density) will result in low potential for liquefaction under static and seismic loading conditions. Meeting compaction requirements will require that the underflow sand be placed or spread in thin lifts and exposed to evaporation and drainage prior to compaction. A bulldozer and compactor would be dedicated to the tailings dam construction to spread and compact the underflow sand.

All mechanical, civil, structural and architectural designs would be in accordance with applicable standards and codes. The criteria used for design, equipment selection, layouts and construction were initially derived from the prior operation of Quintana Minerals and information from vendor and consultant recommendations. Equipment and fabricated items would be furnished with manufacturers' standard finish and retouched after erection. Safety painting would be in accordance with MSHA standards and New Mexico mining codes. Buildings and facilities would be painted in neutral colors to blend with the surrounding landscape.

Scheduled operating time for the mill is currently proposed at 24 hours per day, 7 days per week, 365 days per year. Saleable products would be copper concentrate and molybdenum concentrate. The copper concentrate would be shipped by truck to an off-site refinery or port facility. Gold and silver would be recovered as by-products of the hydrometallurgical refining process at the refinery. Molybdenum concentrate would be filtered, dried, packaged in sacks and shipped directly in trucks to purchasers for further refining.

3.15.3.8 Water Treatment Facilities [602.D (15) (c) (ix)]

The facilities are designed to prevent discharge to the environment; therefore, no water treatment facilities are proposed.

3.15.3.9 Storage Areas and Ancillary Facilities [602.D (15) (c) (x)]

The plant complex would also include ancillary buildings such as offices, a truck shop, a substation and a gatehouse. Buildings would be prefabricated, standard, rigid framed structures or block walls

with metal roofing (Table 7). The administration building would accommodate the plant administration, engineering, accounting, secretarial and clerical personnel. Appropriate sanitary facilities would be provided for men and women. The assay and laboratory offices would be located northeast of the concentrator. The gate and change house building and parking area for employee vehicles would be located adjacent to the main plant entry gate. The truck shop building would be an equipment servicing facility.

For the most part, existing haul roads would be utilized to haul material to the crusher, LGOS and WRDF. Some minor realignment of these roads may be necessary and road widths would vary.

The on-site roads would be designed for easy access and traffic movement within the operations area. Waste rock and ore would be hauled to the WRDF and mill using conventional mining haul trucks, depending on mine optimization and scheduling.

During operation of the Copper Flat Project, water trucks would be used, as needed, to control emissions of fugitive dust from the haul roads, as well as other roads within the project area. Wetting agents and binding agents, such as magnesium chloride, may also be used to control dust if conditions warrant.

Power for the Project would be furnished by the Sierra Electric Cooperative by means of an existing 115 kV transmission line that runs from the Caballo switching station near the junction of Interstate 25 (I-25) and Highway 152 and terminates within 300 ft of the mill facility at the site of the proposed mine substation. The 115-kV line was installed for the 1982 mine due to the limited capacity of the existing lines in the area, which supplied the community of Hillsboro and the surrounding rural areas. The existing 115-kV line is a wooden pole, H frame construction and will be in full accordance with state and federal electric codes. Tri-State Generation and Transmission owns the line and is responsible for maintenance. The substation would be reconstructed in the same location it was in 1982, fenced and constructed in accordance with BLM stipulations. NMCC would own the substation equipment and would be responsible for construction and maintenance. From the substation, the voltage would be stepped down by primary transformers and distributed throughout the mine.

Once retrofitted, an existing 25-kV distribution line would provide power to the production wells located east of the mine, booster stations on the fresh water pipeline and the reclaim water pump stations in the TSF. Sierra Electric owns this line and is responsible for maintenance. A new substation would be constructed at the site.

NMCC would construct BLM-approved barbed wire fencing to prevent livestock from entering the pit, WRDF and TSF, including the seepage collection pond. In areas where a higher level of security is needed, chain-link fences would be erected. Wildlife fences would be constructed around the lined ponds. Gates and/or cattle guards would be installed along roadways within the proposed project area as appropriate.

NMCC would monitor the fences on a regular basis and repairs would be made by as needed. BLM would be contacted immediately in the event that livestock manage to enter the proposed project area via a gate or opening in a fence. NMCC would assist as requested in moving these animals out of the proposed project area. At the time of closure, if livestock grazing is the approved post-mining land use, a plan would be developed between NMCC and the BLM for responsibility of long-term maintenance of range fences that would be left in place within the Plan boundary.

3.15.3.10 Growth Media Stockpile [602.D (15) (c) (xi)]

Growth media would consist of soils as well as underlying suitable unconsolidated alluvial and colluvial materials stripped prior to surface disturbance activities (see Section 4.5). Construction-related borrow areas would also be located within facility footprints (Golder 2011; Section 6, BDR). Borrow sources would be required for prepared sub-grade materials, drainage materials, pipe bedding materials, road surfacing materials, retarding layer materials, reclamation materials, growth materials and riprap. Precise locations and anticipated quantities of borrow materials have not yet been exactly determined and borrow areas may be revisited over the mine life. Salvaged soil materials will be stored in the growth media stockpile shown in Figure 6. Additional details regarding the growth media stockpile is provided in Section 4.5.3.

3.15.3.11 Waste Rock Disposal Facility [602.D (15) (c) (xii)]

The WRDF would be located northeast of the mill area. The disposal area would be expanded to cover approximately 180 acres. Prior to the expansion of the existing disposal area into previously undisturbed areas, reclamation cover materials (suitable growth media and topdressing) would be removed and stockpiled for future use. Stormwater controls, such as berms and diversion ditches, would be installed to divert runoff away from the WRDF and prevent infiltration.

Runoff from the WRDF and the LGOS would be controlled by diverting the runoff water into collection ditches and then recycling it into the process water system. The final grading plan for the WRDF would be designed to eliminate surface water run on, enhance runoff, reduce infiltration, minimize visual impacts and facilitate revegetation. Catch benches would be left in place to interrupt surface sheet flow and regrading would approximate the adjacent and nearby land shapes to the extent practicable. The WRDF is designed to facilitate regrading during reclamation. Concurrent reclamation of the lower slopes of the WRDF would be completed periodically during mining operations to cover potentially reactive materials. This would progress upwards over the mine's operating life. Additionally, upgradient impacted water would be segregated from clean water runoff from the reclaimed lower slopes. This would limit the time of exposure of potentially reactive materials to water and atmospheric oxygen and prevent the development of acidic conditions in the waste rock.

The WRDF would be regraded and surface runoff velocity dissipaters would be constructed to reduce velocities and minimize undue erosion and soil loss. Exact design parameters which are specific to the site climatology and soil conditions would be ascertained during revegetation testing and

concurrent reclamation activities. Total material contained in the waste rock facility at the end of the expected life of the Project would be approximately 60 million tons.

3.15.3.12 Other Facilities or Structures [602.D (15) (c) (xiii)]

Some of the water supply for the mine would come from four existing high capacity production wells located about eight miles east of the plant site on BLM-administered public land. Two booster stations, also located on BLM land, would be used to pump the water to the mine site. An existing 20-inch welded steel pipeline would be used transport the water from the well field to the mine. This pipeline is buried a minimum of two ft deep to the point of entry at the mine.

3.15.4 Wildlife Mitigation and Contingency Plan [602.D (15) (d)]

In the unlikely event of an emergency or accidental discharge of toxic substances, potential impacts to wildlife will be mitigated as soon as practical. NMCC will be required to have an SPCC Plan as part of its operating protocols. The SPCC Plan will provide contingencies to mitigate potential impacts from emergency or accidental releases of petroleum substances, including safeguards and quick clean-up measures to prevent detrimental impacts to humans and wildlife. All other potentially toxic materials will be stored in secured facilities that will exclude wildlife entry. Additional information regarding wildlife protection measures is discussed in Section 4.3.2.

3.15.5 Erosion and Sediment Control [602.D (15) (e)]

BMPs would be used to limit erosion and reduce sediment in runoff from the Project facilities and disturbed areas during construction, operations and initial stages of reclamation. Sections 4.1 and 4.6 discuss structural and operational BMPs that would be used to minimize erosion and control sediment. Disturbance will be limited to preserve existing vegetation to the maximum extent possible. Following construction activities, areas such as cut and fill embankments and growth media/cover stockpiles would be seeded as soon as practicable and safe. Revegetation of disturbed areas would reduce the potential for wind and water erosion. Concurrent reclamation would be maximized to the extent practicable to accelerate revegetation of disturbed areas. All sediment and erosion control measures would be inspected periodically and repairs performed as needed. Additional details regarding BMPs will be included the SWPPP permit required for mine operation.

3.15.6 Post-Mining Land Use [602.D (15) (f)]

The NMMA Rules (MMD 1996) defines Post-Mining Land Use (PMLU) as:

> "a beneficial use or multiple uses which will be established on a permit area after completion of a mining project. The PMLU may involve active management of the land. The use shall be selected by the owner of the land and approved by the Director [of MMD]. The uses, which may be approved as PMLUs, may include agriculture, commercial or ecological uses that would ensure compliance with Federal, State or local laws, regulations and standards and which are feasible." 19.10.1.7. P (5) NMAC

Currently, the major land uses in the vicinity of the project area are mining, grazing, wildlife, watershed and recreation, particularly on federal lands. This multiple land management strategy concurs with the BLM administrative directives and resource management plans. Following closure, the project area would continue to support these uses with probable restrictions to recreation activities. Post-closure land uses will conform to the previously defined BLM Caballo Planning Unit, the 1986 White Sands Resource Management Plan (BLM 1986) and the Sierra County Comprehensive Land Use Plan.

The NMMA rules contemplate developing reclamation success performance standards relative to a single PMLU for a given mine facility, though within a permit area certain facilities may have different PMLU designations. The single PMLU designation recognizes that different land use categories are not uniformly applicable across all land types. For example, revegetation to achieve a grazing PMLU typically focuses on grass productivity and to a lesser extent plant diversity. In contrast, shrub density and plant diversity standards are central to a wildlife habitat PMLU and production standards are not required.

Of the MMD-approved PMLUs, grazing land and wildlife habitat are the designations most consistent with the surrounding land uses and ecological potential of the Copper Flat site. NMCC has selected both grazing and wildlife habitat PMLU to which a feasible reclamation plan and revegetation performance standards have been developed (see Section 3.15.7). The selection of the grazing PMLU does not restrict wildlife on reclaimed areas, recognizing that wildlife cannot practically be excluded from reclaimed areas and that they would use the area following closure of the site. PMLU designations for the specific mine units are:

- Mine Pit – Wildlife;
- WRDF and TSF – Grazing; and
- Plant Site and Ancillary Disturbance – Grazing.

At completion of mining activities, the site would be reclaimed to a native plant community similar to surrounding undisturbed areas. Reclamation will result in the development of an early-stage grass/shrub community that will provide a locally-important increase in landscape-level (plant community) diversity. Establishment of native vegetation on reclaimed areas at Copper Flat would result in increased erosion protection, direct habitat improvement and reduced percolation of water into the underlying materials relative to current conditions.

3.15.7 Reclamation Plan [602.D (15) (g)]

This section summarizes the general reclamation activities planned and conceptual reclamation designs for closure/closeout of the principal mine facilities in the proposed permit area following completion of mining activities. The focus of this plan is to present general concepts and designs for closure of these facilities as a basis to estimate costs. Section 3.15.7.1 provides descriptions of the

primary and ancillary mine facilities as well as the performance objectives and contemporaneous reclamation designs for their decommissioning and closure. Concurrent reclamation activities are presented in Section 3.15.7.2. Final reclamation activities including a general overview of recontouring and regrading, growth media placement, seedbed preparation and seeding operations is discussed in Section 3.15.7.3.

3.15.7.1 Facility-Specific Reclamation

3.15.7.1.1 Mine Pit

Mining of the Copper Flat ore body would continue by a 30-foot high, multiple bench, open pit method. The resulting final pit would eventually be 2,800 ft × 2,800 ft across and would reach an ultimate depth of 900 ft at an elevation of 4,720 ft. The working slope of the pit walls would average approximately 1H:1V. Safety benches (width) would remain at 80-foot intervals and the overall final pit slope would be about 1.1H:1.0V.

NMCC does not propose to backfill the pit. Backfilling would not allow sequential mining of the deposit, may cover future mineral resources and would be economically unfeasible following closure of the operation. The primary reason that post-closure backfilling is uneconomic is the time required to backfill the pit following plant closure. In the case of Copper Flat, this would require up to seven years during which no income would be realized. Furthermore, backfilling the pit could potentially make development of remaining mineral resources uneconomic if an increase in metal prices or the development of new processing technologies allowed these materials to be mined and metals extracted profitably in the future.

Upon cessation of mining, pumping would cease in and around the pit, allowing the pit to refill over a number of years (SRK, 1995). Final post-closure pit water elevation is estimated to be at an elevation of approximately 5,250 ft. The resulting lake would cover an area of about 75 acres with a depth of over 500 ft. The water level of the lake would fluctuate a few feet seasonally depending on precipitation and evaporation rates, rising during periods of lower evaporation (winter months) and decreasing during summer months.

The pit is expected to form a hydrologic sink capturing groundwater flowing from all directions (INTERA, 2011; JSAI, 2011). Surface water from within the footprint of the pit will also be captured. Even with surface water inflows the pit lake area is expected to be a hydraulic sink with evaporation rates greatly exceeding precipitation and groundwater inflows over most of the year. The pit water quality of the current lake and modeling of post-closure pit water quality suggest the post-closure water quality should meet New Mexico surface water standards for agricultural and livestock uses (SRK, 1995). New studies are underway to build on this past work and incorporate information regarding the long-term reactivity of the anticipated wall rocks and limnological hydrologic/geochemical modeling to evaluate potential longer term water quality under various water use and/or closure scenarios.

Reclamation of the pit during operations would be limited primarily to erosion and water segregation controls. At closure, pit walls are expected to ravel to some degree to a stable condition and stable pit walls would be left in place. Unstable pit walls that pose a threat would be stabilized by blasting or other safe methods. If feasible, cover materials would be placed on the benches above the projected water level and the benches seeded in areas that are stable, accessible and reclamation operations can be performed safely. Roads and safety benches would be ripped and water barred to control surface water runoff. Where practicable, disturbed areas around and adjacent to the projected shoreline of the pit would be covered with topdressing material and revegetated. A vegetated shoreline would be expected to improve pit water quality by buffering oxygenation from water level fluctuations and wave actions and creating an organic-rich soil interface limiting the flux of atmospheric oxygen through these materials to any reactive rocks in the shoreline area. The vegetated shoreline would also be expected to buffer the influx of eroded sediment from areas within the pit between the shoreline and perimeter surface-water control berms outside the pit.

Access to the pit lake would be controlled and a ramp would be graded or ramps placed at different locations to allow escape routes for wildlife. The pit area and highwalls would be appropriately barricaded with physical barriers or fences and posted according to MSHA and New Mexico regulations. Access to the pit area would be limited by fencing and locked gates and the access road blocked with a physical barricade.

The pit crest perimeter will be bermed to control surface water run-on and fenced to limit public access. A water diversion and vehicle exclusion berm will be constructed around the circumference of the pit to achieve these goals. The berm will be constructed from local rock and soils, will be a minimum of 10-ft wide and 5- to 10-ft high with sideslopes angled at 1.5H:1V. Site access will be controlled at the private property lines to prevent public access to the pit area.

3.15.7.1.2 Waste Rock Disposal Facility and Low Grade Ore Stockpile

The WRDF would be regraded and reclaimed to blend into the surrounding topography to the extent practicable. Waste rock and low grade ore would be managed to a materials management plan based on NMCC's ongoing material characterization program and predictive geochemical modeling. Concurrent reclamation, materials management and surface water control measures would be used to promote runoff, reduce infiltration and reduce contact with atmospheric oxygen.

Top surfaces will be built with a 1 to 5 percent slope to minimize final regrading, reduce infiltration of water and provide positive drainage to surface water collection points. Care would be taken to contour these areas to reduce the potential for ponding on the final surface.

During operations, as a contemporaneous reclamation effort, the WRDF would be constructed to facilitate regrading during reclamation such that interbench slope faces would be 3H:1V or flatter and shaped to enhance run-off and prevent infiltration and ponding. Interbench slopes lengths would be

no longer than 200 ft. The composite overall slope, which includes the interbench slopes and benches, would be flatter than 3H:1V.

As each lift is completed, any portion not needed for access to other lifts would be regraded, covered and revegetated contemporaneously as soon as practicable and impacted and non-impacted water would be segregated. The WRDF surface may be compacted with earth moving equipment, then covered with a layer of cover material and revegetated. Three feet of topdressing materials would be distributed on regraded areas, then roughened to reduce surface flow velocities and minimize erosion and sediment loss.

Run-on and run-off from the WRDF will be controlled. Top surfaces will be graded to direct non-affected water to designated discharge areas. The top surfaces will be graded to promote positive drainage to trapezoidal-shaped stormwater conveyance channels with slopes between 1 and 5 percent. Surface water runoff will be directed on the graded top surfaces to rock-protected stormwater conveyance structures. Rock-lined channels, perimeter berms and hydraulic structures will be designed to control erosion on the top surfaces and outslopes and safely convey unimpacted stormwater for release. Berms on the top perimeters will be maintained to prevent the concentration of flows to the outslope areas. Cross bench drainages would be trapezoidal and constructed to safely convey stormwater off reclaimed slopes for a 100-year precipitation event that results in the peak discharge. Longitudinal slopes for these drainages would be 1 to 5 percent. Benches would be established close to the existing lift elevations when possible. Sediment detention ponds will be used to capture eroded soils and impacted water. Non-impacted top surface water will flow to a discharge area via the existing access roads with enhanced ditches.

Energy-dissipation structures will be constructed at channel outlets to reduce erosive velocities where necessary. Where possible channels will be constructed to incorporate existing topography, grade controls and exposed inert bedrock, which will promote long-term integrity of the structures. The final designs will be adjusted for local conditions.

Temporary erosion control measures will be provided during the construction and early vegetation establishment periods. These measures include mulch, straw bales, silt fences and minor corrective regrading, as necessary. All conveyances will be in compliance with state regulations and BMPs for temporary stormwater controls.

The LGOS is located immediately north-northwest of the process plant area and would include about 3 million tons of rock assaying lower than 0.20 percent copper. Reclamation of this area would depend on the fate of this stockpile. If the LGOS is milled by the end of mine life, the pad area would be ripped, contoured for drainage control, covered with growth media and revegetated. If the LGOS remains following closure, the stockpile would be reclaimed in the same manner as the WRDF.

3.15.7.1.3 Plant Site

At closure, all surface facilities, equipment and buildings would be removed from the area. For buildings located on public land administered by the BLM, the concrete foundations would be broken, excavated and disposed of is a suitable location on adjacent private land. The concrete building slabs, footings and foundations for facilities located on private land controlled by NMCC would be broken, covered with waste rock material and available growth media, regraded and revegetated. All fuel tanks, reagent storage facilities would be removed from the site according to applicable federal and state laws. The general surface area would be shaped and contoured for surface drainage control, then covered with a minimum of 6 inches of stockpiled growth media to conform to the surrounding topography to the extent practicable. Revegetation would occur as discussed in Section 3.15.7.3.

The tailings water pond and stormwater collection ponds would be backfilled and regraded to minimize ponding prior to placement of topdressing and revegetation. The land bridge which conveys the tailings pipeline would also be left in place because this feature may be a contributing factor to the development of the riparian zone. The slopes of the land bridge would be stabilized and the top revegetated during reclamation.

3.15.7.1.4 Tailings Storage Facility

A TSF located southeast of the plant site was designed to hold a total of 100 million tons of tailings (including tailings from 3 million tons of low grade ore). Closure of the TSF would include:

- Final grading of embankment outslopes to establish erosion controls and controlled surface water drainage (BMPs);
- Placement of 36-in of topdressing and revegetation of the embankment outslope;
- Placement of riprap and erosion controls in embankment surface water drainage facilities;
- Regrading or depositional modification of the storage facility surface to promote drainage to a permanent engineered spillway;
- Placement and vegetation of a 36-in soil cover over the tailings surface;
- Armoring of surface drainage channels and implementation of BMPs for erosion control; and
- Management of underdrainage.

Final grading of the storage facility surface can be accomplished with earthmoving equipment, or through modification of tailings discharge patterns during the final years of operation. Tailings discharge from selected locations can be used to relocate the supernatant pool to a location adjacent to the post-closure spillway, thereby reducing grading requirements and limiting earthmoving operations in areas where working conditions are expected to be difficult due to the presence of soft and saturated tailing. A bedrock foundation is anticipated at the location of the spillway (Golder, 2010). If the spillway channel is erodible, grouted riprap or other erosion controls would be applied.

The reclaimed outslope interbench slopes would be 3.0H:1V and the outslope angle for the composite, including benches would be about 3.22H:1V. The maximum bench width would be 23 ft and the maximum interbench slope length would be 100 ft. The top surface slope would be not less than 0.5 percent and the bench cross and bench longitudinal slopes would be 2 percent and 2 percent, respectively. Cross bench drainages would be trapezoidal and constructed to safely convey stormwater off reclaimed slopes for a 100-year precipitation event that results in the peak discharge.

Consolidation seepage into the underdrain system can be anticipated to continue at declining rates for an indefinite period following the cessation of tailings discharge operations. Underdrainage would be pumped from the underdrain collection pond to the surface of the TSF where it can be evaporated. When underdrainage is reduced to an acceptably low flow rate, the underdrain pipes beneath the embankment can be sealed with grout and the underdrain collection pond can be decommissioned.

3.15.7.1.5 Storage Areas and Ancillary Facilities

In general, all surface pipelines, poles and commercial signage would be removed. Buried pipelines and electrical conduits would be left in place.

Roads: Sierra County has a prescribed ROW to County Road Bo27 also known as Gold Dust Road. This road is maintained by Sierra County all the way to the existing access gate to the Copper Flat mine where it enters BLM land. This road would remain after mine closure. One culvert, located where the road crosses Grayback Arroyo would be left in place.

Prior to final closure, the State and BLM would determine which haul roads would be left intact to conduct post closure monitoring and adjacent landowner access. At this time, at a minimum, the road to the water tanks, haul roads, waste disposal access roads are expected to undergo reclamation.

Roads to be reclaimed would be recontoured to approximate original topography if constructed on sidehills or contoured and ripped if constructed in flat areas. Water bars would be constructed to reduce erosion. Recontoured areas would be covered with 6 inches of topdressing (growth media) if replaced fill material would not support vegetation and revegetated as describe in Section 3.15.7.2.

Electrical Power: Power for the Project would be furnished by means of existing overhead power lines. The overhead lines would be removed from the mill site and disconnected from the 115kV line, owned by Tri-State Generation and Transmission, by removing the wires of the last span of the line. Pumping stations and electrical substations on the site would be removed, if no other post-closure land use is identified and approved. The disturbance associated with removal would be reclaimed by regrading and seeding. If renewable energy facilities are deployed at specific buildings, these would be removed and associated disturbances regarded and reseeded.

The existing 25 kV line that provides power to the production wells, booster stations on the fresh water pipeline and the reclaim water pump stations at the TSF would remain in place. Sierra Electric owns this power line and is responsible for maintenance.

Water Supply and Tanks: The buried pipeline from four production wells located about eight miles east of the plant site on BLM land and would remain in place. The production wells would remain in a condition suitable for other uses. All roads, power lines and foundations for the production wells are in place. No additional disturbance would occur during the Project and the well area would be left as it currently exists after closure of the mine.

The fresh water and process water tanks would be removed, their foundations buried in place and the sidehill cuts recontoured to approximate original topography. Following recontouring, the areas would be evaluated as to whether additional cover was required. If so, an additional 6 inches of topdressing would be placed and the areas would then be revegetated as described in Section 3.15.7.2.

Sanitary Solid Waste Disposal: At closure, septic tanks and leach fields would be decommissioned. All solid wastes remaining on the site would be removed off-site for proper disposal. If a private landfill is permitted for on-site disposal of solid waste, the landfill would be closed according to NMED requirements.

Fences: The TSF and mine areas would be fenced to discourage access by people and cattle. Existing fences may be left in place depending on the location and purpose. Fences used to restrict access to potentially hazardous areas would remain in place. Other fences may remain to protect revegetation efforts until they have been established. The BLM would determine the fate of fences on public lands. The remaining fences would be removed.

To prevent damage to newly seeded and revegetation areas, fencing or other appropriate measures will be installed until revegetation is deemed successful. It may also be necessary to control small mammals as well as deer and domestic livestock. All fencing on public lands would be constructed to meet BLM requirements.

3.15.7.2 Concurrent Reclamation

Concurrent reclamation refers to reclamation efforts on disturbed lands during the course of site development and mine operations. NMCC is committed to maximizing concurrent reclamation activities at the Copper Flat Project that will reduce erosion, provide early impact mitigation, limit costs and reduce final reclamation work. For example, individual lifts of the WRDF could be reclaimed prior to final mine closure. Reclamation efforts would be implemented at the earliest feasible time in areas where activities are discontinued. This includes recontouring, scarifying, placement of topdressing or other approved growth media, followed by revegetation. Where feasible, some roads that are no longer required for operations would be decommissioned and reclaimed concurrently

during the active mining operation. NMCC would also seed growth media stockpiles and other disturbances to stabilize soil surfaces and reduce erosion.

3.15.7.3 Final Reclamation

At completion of mining activities, unreclaimed facilities would be reclaimed according to the reclamation plan discussed below and the site would be restored to conditions to meet approved post-mining land uses of wildlife habitat and grazing land (Section 3.15.6). Both public and private land would be reclaimed. Contemporaneous reclamation of disturbed surface areas would be an integral part of the mining operation (see Section 3.17). Decommissioning and removal of structures for specific mine facilities is discussed in Section 3.15.7.1. The focus of this section is to detail regrading operations, growth media placement and the revegetation plan including planting techniques and proposed seed mixes.

3.15.7.3.1 Regrading and Growth Media Placement

The major guiding elements in developing the grading plan are to achieve positive drainage, optimize constructability and the efficient conveyance of water and limit slope length and gradient, soil erosion and long-term maintenance requirements. Grading will also be required where waste rock piles have been removed to blend these areas with the natural topography. Prior to cover placement, top surfaces will require minor grading to fill rills, enable the construction of surface water control features and ensure that the final grade is between 1 and 5 percent. More extensive grading will be required on the slopes to achieve the desired slope configuration, smooth the bed materials and accommodate surface water control features.

Once facilities are regraded to an acceptable configuration, cover materials will be hauled from growth media stockpiles and placed on the topsurface and slopes using a variety of equipment including scrapers or haul trucks. Bulldozers and motor graders will be used to smooth the surfaces and facilitate access for cover placement and revegetation activities.

The cover system will be designed to provide erosion control, sustain vegetation and reduce infiltration of stormwater through the underlying materials. The soil cover system will be a store and release/evapotranspiration cover designed to provide erosion control, sustain vegetation and reduce infiltration of meteoric water through the underlying materials. Where mine wastes are present, soil covers will be 36 inches thick unless NMCC can demonstrate a thinner cover will resist erosion, sustain vegetation and be equally protective of groundwater considering site-specific reclamation plans for the facility. The cover material would be spread and graded with care taken to prevent an increase in bulk density by limiting the number of passes. If subsurface and surface cover materials are placed in separate operations, the subsurface will be evaluated to determine if ripping or disking is required to ensure good contact between surface materials and subsoils. Growth media would be placed at a depth of at least 6 inches in all other disturbance areas. Table 9 provides an estimate of cover materials required for reclamation.

Table 9: Estimated Reclamation Cover Requirements

Disturbance Type	Surface Area (acres)	Cover thickness (ft)	Reclamation Cover Requirement (yd3)
Ancillary [a]	166	0.5	195,213
Growth Media Stockpile	14	0.5	11,293
Haul Roads	54	0.5	43,560
Low Grade Ore Stockpile [b]	20	0.5	16,133
Open Pit [c]	12[c]	3.0	60,258
Plant Site	120	0.5	96,800
Tailing Storage Facility	530	3.0	2,565,200
Waste Rock Disposal Facility	180	3.0	871,200
Total	**1,096**		**3,798,351**

Notes:
[a]-Includes access roads and other miscellaneous disturbance areas;
[b]-LGOS would be removed at the end of mining and only require topdressing the disturbed areas to facilitate revegetation;
[c]-topdressing around the projected perimeter of the pit lake and ramp

3.15.7.3.2 Revegetation Plan

The revegetation plan is designed to create a stable, self-sustaining plant community and would conform to the planned PMLUs of wildlife and grazing. Revegetation of the site would consist mainly of the establishment of grass, forb and shrub species characteristic of the desert grassland community. Plant species were chosen based on their ability to provide satisfactory cover, on their nutritional value and ability to support livestock production or enhance wildlife habitat. General planting techniques and proposed seed mixtures are provided below.

3.15.7.3.3 Planting Techniques

In general, revegetation operations would follow immediately after cover material placement and would be timed to take advantage of summer moisture to encourage the establishment of warm season grasses. Thus, to the extent practicable, soil placement and reclamation seeding are planned to occur prior to the monsoon season of July, August and September. In some cases, seeding may be delayed to the following year when cover placement extends beyond summer months.

Revegetation will be performed in a manner consistent with industry standards to promote erosional stability and support the post-mining land use. The general order agronomic practices for revegetation seeding are ripping or scarification, disking, seeding (drill, broadcast or hydroseed), mulching and crimping or tackifying. These practices are discussed in more detail below.

The final lift of the cover will be scarified (ripped 8 to 12 inches) to break up compaction and roughen the surface. The ripping operation should be implemented on the contour for sloping areas to reduce the potential for early-stage soil erosion during vegetation establishment. The roughened surface is a transient condition that is expected to provide micro-sites for seedling establishment and to reduce

concentrated overland flow and erosion. Prior to seeding, the seed bed will be prepared by disking or harrowing to a depth of approximately 6 inches. If soil amendments are required, disking to prepare the seedbed will take place after applying the amendments. Ripping and other seedbed preparation procedures will be conducted when surface and subsurface soil moisture conditions are dry to avoid compaction.

Specific seeding methods to be utilized at the site would depend on many factors including the topography, surface conditions, seed mixture and equipment availability. Specialized rangeland drills are available for seeding native seed mixes. They are equipped with an agitator and depth bands to mix seed and ensure proper seeding depths. Alternatively, seed may be broadcast and covered using a drag or hydro-seeding may be used on steep, small areas where larger equipment cannot easily operate. In general, seed will be planted using a rangeland drill or similar equipment. Wherever possible, seeding will be done along the contour. When drill seeding is not practical due to steep slopes or wet soil conditions, broadcast seeding will be employed. For broadcast seeding, the drill seeding rate will be doubled and areas will be raked with a chain- or tire-harrow to lightly cover the seed and achieve good soil-seed contact.

Following seeding, certified weed-free mulch will be uniformly spread at a rate of about 2 tons/acre. Mulch will contain a minimum of viable seeds associated with the source (i.e. barley or wheat). Long-stem mulch will be given preference over shorter materials. The mulch will be then be crimped with a straight-disc harrow or similar equipment to fix it in place. On steep slopes, a tackifier emulsion may be used to secure the mulch rather than crimping.

Weed control would be implemented only if necessary. Methods of weed control would be determined upon recommendation from the BLM and/or MMD.

3.15.7.3.4 Seed Mixtures

Table 10 provides the proposed interim seed mix for temporary seeding and final seed mixes for the Copper Flat Project for both the grazing and wildlife PMLUs. The seed mixtures include native warm and cool season grasses, perennial shrubs and forbs. Table 11 provides the primary functions and attributes of each proposed plant species. The species selected for the reclamation seed mixtures have been successfully used in mine reclamation and range improvement projects in many parts of New Mexico and are readily available from seed suppliers. The seed mix was selected to provide early establishment of ground cover, erosion control and productivity while providing diversity in growth forms.

The seed mixes are designed for application prior to the summer rains and the seeding should be completed in early- to mid-June. The ratio of cool season to warm season grasses may be adjusted if the seeding is conducted after the summer rains. The overall target seed rate for final seeding is expected to vary, but will range from about 40 to 60 seeds per square foot. Interim seedings for growth media stockpiles and other temporary stabilization seedings target a seed density of 30 seeds

per square foot. If a change in the seed mix is requested, NMCC shall provide information on the functions and attributes of the plant species similar to the presentation in Table 11. All seed mixes shall be certified as weed free.

NMCC may propose to adjust the seeding rates or species listed in Table 10 based on seed availability or to accommodate variations in seeding methods (e.g., broadcast, drill, hydraulic) and field conditions. A list of alternate or substitute species that might be used is included in Table 12. NMCC may also perform experimental seeding(s) to test rates and species performance on small areas (2 to 5 acres) or in temporary reclamation areas at its discretion. Based on the performance on the interim seed mix, the final seed mix may be modified with approval of the MMD.

NMCC does not expect to impact riparian or wetland areas during mine operations or reclamation. Riparian and water-loving plant species (willows, cottonwood, cattails, sedges, etc.) may be introduced in drainage channels and in shallow water near the shoreline of the pit lake.

Table 10: Proposed Interim and Final Reclamation Seed Mixes

Scientific Name	Common Name	PLS/ac[1]		
		Interim	Final	
			Grazing	Wildlife
Grasses – Warm Season				
Bothriochloa barbinodis	Cane bluestem	0.15	0.35	0.10
Bouteloua curtipendula	Sideoats grama	1.00	1.30	0.25
Bouteloua gracilis	Blue grama	0.20	0.30	1.00
Pleuraphis **jamesii**	Galleta	0.75	1.20	1.00
Leptochloa dubia	Green sprangletop	0.15	0.25	0.10
Seteria vulpiseta	Plains bristlegrass	0.20	0.40	0.30
Sporobolus cryptandrus	Sand dropseed	0.03	0.05	0.03
Grasses – Cool, Intermediate Season				
Achnatherum hymenoides	Indian ricegrass	0.60	1.20	1.40
Eragrostis intermedia	Plains lovegrass	0.05	0.05	0.03
Hesperostipa newmexicana	NM feathergrass	0.70	1.00	--
Shrubs				
Atriplex canescens	Four-wing saltbush	0.30	1.50	2.00
Ericamerica nauseosus	Rubber rabbitbrush	0.10	0.25	0.35
Fallugia paradoxa	Apache plume	--	--	0.25
Krascheninnikovia lanata	Winterfat	0.15	0.40	1.00
Forbs				
Dalea candida	White prairie clover	0.10	0.30	0.50
Linum lewisii	Blue flax	0.15	0.30	0.40
Ratibida colomnifera	Prairie coneflower	--	--	0.15
Sphaeralcea ambigua	Desert globemallow	0.10	0.25	0.50
	Total	**4.73**	**9.10**	**9.36**

Notes:
[1] – Rate is in pounds of pure live seed (PLS) per acre; Substitutions may change seeding rates.

Table 11: Functions and Attributes of the Primary Plant Species Proposed for the Copper Flat Reclamation

Species	Character[1]	Attributes and Function
Cane beardgrass (*Bothriochloa barbinodis)*	N,P,W,G	Bunch grass providing ground cover and forage
Blue grama (*Bouteloua gracilis*)	N,P,W,G	Drought resistant sod grass providing ground cover and forage
Side-oats grama (*Bouteloua curtipendula*)	N,P,W,G	Drought tolerant bunchgrass providing ground cover and forage
Galleta (*Pleuraphis jamesii*)	N,P,W,G	Bunchgrass providing erosion control and early spring/late fall forage
Green sprangletop (*Leptochloa dubia*)	N,P,W,G	Erect bunchgrass; aggressive short-lived nurse plant with forage value
Plains lovegrass (*Eragrostis intermedia*)	N,P,I,G	Bunchgrass providing ground cover and early spring forage
Plains bristlegrass (*Setaria vulpiseta)*	N,P,W,G	Palatable bunchgrass with valuable seed for upland birds and small mammals
NM needlegrass (*Hesperostipa neomexicana*)	N,P,C,G	Persistent bunch grass providing ground cover and forage
Sand dropseed (*Sporobolus cryptandrus*)	N,P,W,G	Drought tolerant bunchgrass adapted to sandy sites
Indian ricegrass (*Achnatherum hymenoides*)	N,P,C,G	Tufted grass providing forage/seed to birds and small mammals
Apache plume (*Fallugia pardoxa*)	N,P,S	Mid-height shrub providing browse, cover and erosion control
Four-wing saltbush (*Atriplex canescens*)	N,P,S	Slightly evergreen shrub providing cover/forage for wildlife and livestock
Winterfat (*Krascheninnikovia lanata*)	N,P,HS	Low shrub providing nutritious winter browse
Rubber rabbitbush (*Ericamerica nauseosus*)	N,P,S	Mid-height shrub providing cover and erosion control
Desert globemallow (*Sphaeralcea ambigua*)	N,P,F	Persistent mid-height forb providing browse for deer and antelope
Prairie coneflower (*Ratibida colomnifera*)	N,P,F	Red and yellow flowered forb attracting butterflies
White prairie clover (*Dalea candida*)	N,P,F	Nitrogen-fixing forb with low water requirements providing forage and ground cover
Blue flax (*Linum lewisii*)	N,P,F	Persistent blue-flowered forb, nutritious seed for ground birds

Notes:
[1] N = Native; P = Perennial; W = Warm season; C = Cool season; I = Intermediate season; G = Grass; S = Shrub; HS = Half shrub; F = Forb

Table 12: Alternative or Substitute Plant Species for Copper Flat Seed Mixtures

Scientific Name	Common Name
Grasses	
Andropogon saccharoides	Silver bluestem
Aristida purpurea	Purple three-awn
Bouteloua eriopoda	Black grama
Eragrositis curvula	Weeping lovegrass
Digitaria californica	Arizona cottontop
Hesperostipa comata	Needle and thread
Heterotheca contortus	Tanglehead
Panicum obtusum	Vine mesquite
Pleuraphis mutica	Tabosa
Sporobolus contractus	Spike dropseed
Shrubs	
Calliandra eriophylla	Fairyduster
Isocoma tenuisecta	Burroweed
Lycium pallidum	Wolfberry
Nolina microcarpa	Beargrass
Forbs	
Baileya multiradiata	Desert marigold
Coreopsis lanceolata	Lanceleaf tickseed
Machaeranthera tanacetifolia	Prairie aster
Penstemon parryii	Parry's penstemon

3.15.8 Reclamation Schedule and Sequence [602.D (15) (h)]

Reclamation will begin after mining ceases and continue for approximately 3 years. During the 12-year post-closure monitoring period NMCC would abandon monitoring wells and reclaim access roads. The schedule is relative to when activities start and end, as exact year and month that reclamation will be initiated cannot be accurately predicted at this time. The proposed schedule for the reclamation activities is presented in Table 13.

Table 13: Proposed Final Reclamation Schedule and Sequence

Facility	Reclamation Schedule (Year and Quarter)	
	Start	End
Tailings Storage Facility		
Outslope Reclamation	Year 1, Q1	Year 2, Q2
Tailings Water Removal	Year 1, Q3	Year 2, Q4
Topsurface Reclamation	Year 3, Q1	Year 3, Q4
Waste Rock Disposal Facility		
Outslope Reclamation	Year 1, Q1	Year 2, Q3
Topsurface Reclamation	Year 1, Q3	Year 3, Q1
Pit		
Highwall Stabilization	Year 1, Q3	Year 2, Q1
Reclamation and Safeguarding	Year 2, Q2	Year 2, Q4
Plant Area		
Structure/Foundation Removal	Year 3, Q1	Year 3, Q2
Mill Decommissioning	Year 3, Q1	Year 3, Q3
Site Reclamation	Year 3, Q2	Year 3, Q4

Note: (adapted from NMCC, 2011; Figure 5-1)

3.15.9 Post-Mining Topography [602.D (15) (i)]

NMCC believes that development a final topographic map of the anticipated surface configuration of the permit area upon completion of reclamation operations is not required given the permit would need to be renewed in 5 years. Reclamation designs for the 5-year permit term is provided in Appendix D. Final surface topography of mine facilities prior to reclamation is illustrated in Figure 7.

3.16 Post-Mining Acid or Other Toxic Drainage [602.D (15) (j)]

The mine and mill site will be a zero discharge facility during operation and offsite discharge of drainage will be prevented or controlled with engineered systems, materials management and fluid collection systems. At closure, the site will only discharge unimpacted water. Acid generation is predicted to be limited for most mined materials and the tailings impoundment tailings (SRK, 2012). Ongoing kinetic testing and geochemical modeling will be used to assess the need to manage those materials with the potential to react and form acid or other toxic drainage.

3.17 Contemporaneous Reclamation [602.D (15) (k)]

Contemporaneous reclamation, or mining-for-closure, is expected to reduce erosion, provide early impact mitigation, limit costs and reduce final reclamation work. NMCC is committed to maximizing this type of reclamation at the Copper Flat Project and has designed mine facilities to employ contemporaneous reclamation to the extent appropriate and practicable. Recontouring, placement of cover materials and revegetation would be implemented at the earliest feasible time in areas where mine operation activities are discontinued.

Contemporaneous reclamation would be integral to the design and construction of the WRDF. The disposal facility will be constructed in its final configuration with the first lift built to occupy the projected footprint of the entire stockpile. All sequential lifts would be set back to facilitate final outslope grading and accommodate interbench slopes and cross bench drainages. As each lift is completed, any portion not needed for access to other lifts would be regraded, covered and revegetated as soon as practicable. The surface of each lift of the WRDF would also be constructed at 1 to 5 percent grades to minimize the final grading operations and achieve positive drainage.

The outslope of the tailings dam will be constructed at a 3H:1V grade or shallower and will require minimal grading to achieve final configuration. Otherwise, opportunities for contemporaneous reclamation of the TSF are limited as they could interfere with operations and could jeopardize dam safety. However, during the later operational period of tailings deposition, discharge of tailings from selected locations would be used to relocate the supernatant pool to a location adjacent to the post-closure spillway. This would reduce grading requirements and limit earthmoving operations in areas where working conditions are expected to be difficult due to the presence of soft and saturated tailings. Tailings discharge may also be used to create nominal surface topography on the final top surface that would assist with developing a final drainage pattern.

NMCC would possibly decommission some access roads and other ancillary facilities prior to final mine closure if they are no longer needed for mine operations.

3.18 Additional Information [602.D (16)]

Access from the site is by three miles of all-weather gravel road and 10 miles of paved highway (State Highway 152) east to I-25, near Caballo Reservoir. The 10 miles on State Highway 152 to I-25 is mainly a straight and relatively flat road (and does not include any sharp turns or significantly adverse grades). I-25 is the primary north-south highway. Traffic associated with reestablishment of the Copper Flat Project is discussed below

Concentrate shipment an off-site refinery would generally be via hydraulic dump trucks with 25-ton capacity. Copper concentrate would be trucked approximately 41 miles to a railhead at Rincon, near Hatch, New Mexico on I-25 and then transported by rail to a smelter, most likely in Arizona, and/or to port facilities. Alternatively, a possible rail loading point at the intersection of State Highways 26 and 27 south of the Project could be used. Molybdenum concentrate would be filtered, dried and bagged on site and then transported by truck.

Vendors, equipment and service suppliers are anticipated to take, in total, an average of 10 to 15 trips per day by truck to the mine. Most deliveries, including equipment parts, reagents, oil and miscellaneous office supplies would be made during the day shift. Title 49 CFR regulates the transportation of hazardous materials in commerce. Anyone who transports, packages, loads, unloads, or in any way assumes responsibility for marking, labeling, or handling of any regulated

hazardous materials must comply with 49 CFR. In addition, carriers must comply with the Federal Motor Carrier Safety Regulations of the Department of Transportation (parts 383, 390, 397 and 399). Hazardous materials required for operation of the Copper Flat Project include gasoline, diesel fuel, propane as well as other petroleum products, explosives and solvents for degreasing of machinery and equipment and laboratory chemicals. These materials would be purchased from various vendors and brought to the site by truck. NMCC would ensure that the Hillsboro volunteer fire department and the Sierra County fire district are aware of the nature of the materials routinely being transported to the site and that they have appropriate response training in the event of a spill or other accident involving hazardous materials.

The majority of employees are expected to commute from TorC or Hillsboro. An additional 15 to 20 trips could be expected by visitors and sales representatives. There are no present plans for a company operated employee transportation system, though NMCC would encourage car and van pools. No railroad access or facilities, airstrips, or helicopter pads are planned in connection with the mine development or operations.

NMCC is currently conducting exploration activities to identify new reserves or expand existing reserves within the project area under previous authorizations by federal and state agencies. Current exploration and mineral evaluations have been focused within and on previously disturbed federally administered land and privately-owned, patented lands. Future exploration would likely include activities outside of the main disturbed lands on BLM-administered lands within the currently proposed permit area, as defined in Figures 2 and 5. Exploration disturbance would generally include construction of access roads, drill pads, sumps, trenches, surface sampling, bulk sampling and staging areas. Exploration methods include both reverse circulation and core drilling, with minor trenching also planned. Exploration activities may also include water exploration and monitor well installation.

4.0 PERFORMANCE AND RECLAMATION STANDARDS AND REQUIREMENTS [19.10.6.603]

4.1 Most Appropriate Technology and Best Management Practices [603.A]

The mining operation and reclamation plan have been designed to protect human health and safety, the environment, wildlife and domestic animals using Most Appropriate Technology (MAT) and BMPs. MAT in mine operations is understood as the selection and application of the most suitable mining technology to achieve the intended purpose while reducing impacts to the environment. The selection of a MAT is typically accomplished in mine feasibility studies that evaluate mining technologies, processes and operating methods. The Copper Flat Project will be designed and operated using both MAT and BMPs based on site-specific technical and economic feasibility. Mining technologies, processes and operating methods proposed by NMCC are provided in Section 3.15.

BMPs are defined as any program, technology, process, siting criteria, operating method, measure or device, which controls, prevents, removes or reduces impacts to the environment. BMPs are currently accepted, effective and practical methods including structural or engineered control devices, systems and materials as well as operational or procedural practices used to prevent or reduce environmental impacts of ground disturbing activities.

It the intention of NMCC to meet or exceed applicable state and federal reclamation requirements through application of MAT and BMPs. NMCC has designed its mine operation and reclamation plan to use the most appropriate technology for an open pit mine operation. Structural BMPs would be used to limit erosion and reduce sediment in precipitation runoff from proposed Project facilities and disturbed areas during construction, operations and initial stages of reclamation. These structural BMPs would include:

- Surface stabilization measures – dust control, regrading, mulching, riprap, temporary and permanent revegetation/reclamation and placing growth media;
- Run-on and runoff control and conveyance measures – hardened channels, runoff diversions and berms; and
- Sediment traps and barriers – check dams, grade stabilization structures, sediment detention, sediment/silt fence and straw bale barriers and sediment traps.

BMPs would be employed in appropriate sites during mine construction, operation and reclamation phases of the Project and structures would be inspected periodically, with repairs performed as needed. NMCC will limit disturbance and preserve existing vegetation to the maximum extent possible. Additional details regarding structural and operational BMPs will be included in the SPCC plan and the SWPPP permit required for mine operation.

4.2 Contemporaneous Reclamation [603.B]

Contemporaneous reclamation, or mining-for-closure, is expected to reduce erosion, provide early impact mitigation, limit costs and reduce final reclamation work. NMCC is committed to maximize this

type of reclamation at the Copper Flat Mine Project and has designed mine facilities to employ contemporaneous reclamation, to the extent appropriate and practicable. Specific details regarding contemporaneous reclamation of disturbed surface areas are provided in Section 3.15.17.

4.3 Protection Assurance [603.C]

NMCC has designed a reclamation plan to assure protection of human health and safety, the environment, wildlife and domestic animals. Mine development and operation activities will also be implemented to assure protection of human health and safety, the environment, wildlife and domestic animals.

4.3.1 Signs, Markers and Safeguarding [603.C (1)]

NMCC will implement and maintain safeguarding measures such as signs, markers, fences and barricades to protect the public, wildlife and domestic animals from potentially dangerous areas associated with the Project. Access to the permit area will be controlled at all times during mining operations to protect the public from possible injury due to operating conditions such as heavy equipment and truck traffic. All personnel entering the site will be checked in, receive site-specific safety training and will be escorted by trained personnel.

4.3.1.1 Shaft and Adit Closure [603.C (1) (a)]

This section does not apply to the Copper Flat Project as no underground working is proposed. Some historic underground mine workings exist within the permit area and will remain at closure.

4.3.1.2 Warning Signs [603.C (1) (b)]

NMCC intends to comply with the specific standards and regulations with respect to warning signage for mine operations as required by MSHA. Appropriate warning signs will be posted at strategic locations at the Copper Flat Project site around the perimeter and across the mine permit area beginning with the initial construction period, through mine operations until the completion of reclamation, as appropriate. Other markers or signs may be posted based on the facilities or activities at specific times.

4.3.1.3 Access Restriction to Hazardous Areas [603.C (1) (c)]

All hazardous areas within the perimeter of the proposed permit area, such as ponds, electrical installations, power lines, reclaimed areas, explosives storage areas, etc., will be posted with appropriate warning signs.

4.3.1.4 Permit Area Boundaries [603.C (1) (d)]

The mine permit boundary will be posted with signs attached to the fence or to posts warning of unauthorized entry and stating the appropriate hazard warning. A single public access point will be established at the main entrance to the mine site. Fences and locked gates will be placed at all secondary road entrances to the proposed permit area.

4.3.1.5 Main Entrance Signage [603.C (1) (e)]

The main entrance to the permit area will have a security guard in a gatehouse to stop and check in personnel and visitors. Signs will be posted at the main entrance identifying the Project, the operator and a telephone number and other contact information in the event of emergencies related to the mining operation.

4.3.2 Wildlife Protection [603.C (2)]

NMCC would install barbed wire fencing to restrict livestock and wildlife from entering the pit, WRDF and TSF, including seepage collection ponds and stormwater catchments. Gates and/or cattle guards would be installed along roadways within the proposed permit area as appropriate.

Preliminary construction and mine operations phases of the Project will not impact critical habitat for wildlife based on wildlife studies conducted on site. Physical disturbances will be limited to only those areas needed for mine facilities and access, minimizing impacts to surrounding habitat that may be used by wildlife. Land clearing and surface disturbance would be timed to prevent destruction of active bird nests or birds' young during the avian breeding season (March 1 to August 31) to comply with the *Migratory Bird Treaty Act*. If surface disturbing activities are unavoidable during the avian breeding and nesting season, NMCC would have a qualified biologist survey areas proposed for disturbance for the presence of active nests immediately prior to the disturbance. If active nests are located, or if other evidence of nesting is observed (mating pairs, territorial defense, carrying nesting material, transporting of food), the area would be avoided to prevent destruction or disturbance of nests until the birds are no longer present.

Operators would be trained to monitor the mining and process areas for the presence of larger wildlife such as deer and antelope. Mortality information would be collected. NMCC would establish wildlife protection policies that would prohibit feeding or harassment of wildlife.

Wildlife exclusionary fences would be constructed around stormwater ponds. Ramps to facilitate wildlife egress would also be provided in constructed ponds. Electric transmission or physical power poles will be constructed in a manner to protect raptors from potential electrocution hazards.

4.3.3 Cultural Resources [603.C (3)]

Cultural resources requiring protection, including any cemeteries or burial grounds, shall be protected and/or avoided during mining and reclamation activities whenever possible. Avoidance is the preferred management response for preventing impacts to historic properties a historic property is any prehistoric or historic site eligible to the NRHP or unevaluated cultural resources. Roads and Project facilities would be sited as much as possible to avoid cultural resource impacts. If avoidance is not possible or is not adequate to prevent adverse effects, NMCC would undertake data recovery from such sites. Development of a treatment plan, data recovery, archeological documentation and report preparation would be based on the Secretary of the Interior's “Standards and Guidelines for

Archeology and Historic Preservation," 48 CFR § 44716 (September 29, 1983), as amended or replaced. If an unevaluated site could not be avoided, additional information would be gathered and the site would be evaluated. If the site does not meet eligibility criteria as defined by the New Mexico SHPO, no further cultural work would be performed. If a site meets eligibility criteria, a data recovery plan or appropriate mitigation would be completed.

Prior to commencement of construction an archaeologist will be onsite to issue clearances for construction activities and to provide guidance and expertise to ensure the protection of cultural properties. The appropriate agency will be notified immediately if additional cultural sites are discovered during these activities. Mitigation strategies will be developed in consultation with the agency.

4.3.4 Hydrologic Balance [603.C (4)]

Operations would be performed and facilities designed to minimize changes to the hydrologic balance in both the permit and potentially affected areas. Reclamation would result in a hydrologic balance similar to existing conditions.

The NMCC would prepare and implement a SWPPP. This plan would describe measures and controls to protect surface water quality. The NMCC would manage stormwater in accordance with the SWPPP.

In support of the EIS and other environmental assessment efforts, NMCC is continuing ongoing materials characterization in support of predictive modeling of pit lake water quality and seepage water quality from the WRDF. Hydrologic balance information is a key component of these studies and predictive modeling. Results of modeling efforts would be used to tailor operations and reclamation to protect the hydrologic balance.

4.3.4.1 Drainage Control [603.C (4) (a)]

Existing and proposed drainage controls would be used to keep any non-point source surface releases of acid or other toxic substances within the permit area. Runoff from the WRDF and LGOS would be diverted into collection ditches and then to the process water system.

Stormwater within the TSF would be contained. During initial TSF construction, diversion ditches would be constructed to manage stormwater within the TSF area. Once the facility is established, stormwater management would be limited to direct precipitation. Based on the rules and regulations of the NMOSE, the TSF would be classified as a large dam having significant hazard potential. As such, the storage facility has been designed to contain the equivalent of 75 percent of the PMP event during operations. A spillway capable of passing 75 percent of the PMP event would be required upon closure.

The existing diversion of Grayback Arroyo would be maintained and unaltered by the proposed pit expansion. Grayback Arroyo is an ephemeral wash. The diversion was constructed by the previous mine operator to redirect stormwater flows around the open pit and other mine operations. This minimizes the amount of stormwater that comes into contact with disturbed areas. Re-routed stormwater is returned to the natural surface water course of the Grayback Arroyo at a location east of the plant site.

4.3.4.2 Control of Suspended Solids [603.C (4) (b)]

The NMCC would develop and implement structural and operational BMPs to control sediment and prevent impacts to surface water courses as discussed in Sections 3.15.5, 4.1 and 4.6. Measures to control suspended solids would include surface stabilization (grading, revegetation and concurrent reclamation), stormwater control and conveyance (hardened channels, runoff diversions and berms) and sediment traps (check dams, grade stabilization structures and sediment detention). All sediment and erosion control measures would be inspected periodically and repairs performed as needed.

4.3.4.3 Background Surface Water Monitoring [603.C (4) (c)]

As part of the baseline study, NMCC installed a surface water sampler where Grayback Arroyo enters the proposed mine permit boundary. The sampler is designated as SWQ-1 in Figure 8-7 of the BDR. This sampler was dry on each quarterly sampling event during the baseline study, but will continue to be monitored to provide background surface water quality data in the event of an adequate rainfall to allow for collection of a water sample.

4.3.4.4 Diversions of Overland Flow [603.C (4) (d)]

Stormwater diversions have been designed to minimize impacts to the hydrologic balance, assure the safety of the public and meet the following requirements:

- No diversion shall be located so as to increase the potential for landslides.
- Unless site-specific characteristics require a different standard which is included in the approved permit, diversions which have watersheds larger than 10 acres shall be designed, constructed and maintained to safely pass the peak runoff from a 10-year, 24-hour precipitation event.
- All diversion designs which have watersheds larger than 10 acres shall be certified by a professional engineer registered in New Mexico as having been designed in accordance with 19.10 NMAC.

4.3.5 Stream Diversions [603.C (5)]

The proposed mine plan does not include any new stream diversions. The existing diversion of Grayback Arroyo, an ephemeral wash, will be used and maintained as stated in Section 4.3.4.1.

4.3.6 Impoundments [603.C (6)]

Impoundments would be designed, constructed and maintained to minimize adverse impacts to the hydrological balance and adjoining properties and to assure the safety of the public. All sediment collection and stormwater ponds would be decommissioned and reclaimed during mine closure.

4.3.6.1 Tailings Storage Facility Design Criteria [603.C (6) (a)]

The TSF would be designed and would be constructed and maintained to minimize adverse impacts to the hydrologic balance and adjoining property and to assure the safety of the public. Water reporting to the TSF would be recovered from the pool of water that would form in the storage facility and be returned to the mill process water system for reuse. Precipitation would also contribute to the volume of water in the storage facility. The height of the embankment is designed so that the storage facility completely contains both the normal operating volume of water and the amount of stormwater runoff from 75 percent of the PMP. The U.S. Department of Commerce (1988) estimates the 72-hour PMP depth is approximately 26 in in the vicinity of the project area. The TSF was designed in accordance with the design and dam-safety guidelines and regulations of the NMOSE Dam Safety Bureau (NMOSE, 2010).

4.3.6.2 Reclamation of Tailings Storage Facility [603.C (6) (b)]

At closure, the TSF will be reclaimed and graded to achieve positive drainage. Details regarding the reclamation of the TSF are provided in Section 3.15.7.1.4.

4.3.7 Mass Movement Minimization [603.C (7)]

All slopes, embankments and the stockpiles would be designed, constructed and maintained to prevent the potential for mass movement both during operations and following closure. Details of the WRDF and TSF designs are presented in Appendix D.

4.3.8 Riparian and Wetland Areas [603.C (8)]

The Copper Flat mine area is primarily a terrestrial habitat with limited riparian and wetland habitats (see Section 3.13.3). The primary riparian areas are associated with the Grayback Arroyo and the established diversion. There are no plans alter Grayback Arroyo or the diversion during mining or reclamation activities. NMCC does not anticipate any significant changes to the existing surface water flow conditions with operations and would endeavor to maintain the existing hydrologic conditions that appear to support the riparian areas. All riparian areas will be managed appropriately according to state and federal requirements.

4.3.9 Roads [603.C (9)]

For the most part, existing haul roads would be utilized to haul material to the crusher, stockpiles and WRDF. Some minor realignment of these roads may be necessary and road widths would vary. Roads would be constructed and maintained to control erosion.

Haul roads are not expected to create new disturbances, as they would be constructed on previously disturbed land. Waste rock and ore would be hauled to the disposal area, stockpile and mill using conventional mining haul trucks, depending on mine optimization and scheduling. The on-site service roads would be designed for easy access and traffic movement within the operations area.

4.3.9.1 Drainage Control Structures and Designs [603.C (9)(a)]

Drainage facilities would be installed as required during road construction and would be capable of safely passing a 10-year, 24-hour precipitation event. Culverts and drainage pipes would be constructed and maintained to avoid plugging, collapsing or erosion.

4.3.9.2 Crossings of Intermittent or Perennial Streams [603.C (9)(b)]

There are no roads to be constructed in or across intermittent or perennial streams within or near the permit area.

4.3.9.3 Permanent Roads [603.C (9)(c)]

Access to the project area is via an existing county road (Gold Dust Rd./Co. Rd. Bo27) which would remain following closure. Prior to final closure, the State of New Mexico and the BLM would determine which other roads would be left intact in the project area to conduct post-closure monitoring or provide adjacent landowner access. A number of pre-1981, primitive roads currently exist within the proposed project boundary. Some of these roads would not be utilized during the currently proposed operation. As such, they are not subject to reclamation.

4.3.10 Subsidence Control [603.C (10)]

No surface subsidence is expected at the Copper Flat Project as no underground or in-situ solution mining activities are proposed.

4.3.10.1 Aquifer Disruption [603.C (10)(a)]

This section is not applicable to the Project. There will be no underground or in-situ solution mining to cause subsidence issues.

4.3.10.2 Mining Beneath Perennial Streams [603.C (10)(b)]

This section is not applicable to the Project. There will be no underground or in-situ solution mining adjacent or beneath perennial streams to cause subsidence.

4.3.11 Explosives [603.C (11)]

Blasting components, including ammonium nitrate and diesel fuel, would be stored onsite in bins and tanks respectively. NMCC currently anticipates utilizing two explosives magazines (one for boosters and one for blasting caps), each no larger than 8 ft × 8 ft, with 1,000-pound capacities. In addition, NMCC would utilize one, 75-ton capacity, 3,000 ft^3 silo for storage of ammonium nitrate. All explosive materials would be stored away from the plant site in compliance with MSHA, New Mexico State Mine Inspector's regulations, BATF and U.S. Department of Homeland Security requirements. The location

of these facilities is indicated on Figure 6. The magazines will be situated away from occupied buildings in compliance with the BATF and each magazine will be secured with two locks.

Appropriate warning signs will be placed in such a way that a bullet passing through the sign will not strike the magazines. NMCC employees who use and handle explosives will do so in accordance with MSHA regulations and will meet all BATF, MSHA and state qualification and certification requirements. All transportation of explosives will meet all MSHA and state requirements. An inventory will be kept of all explosives received into and distributed out of the magazines. Blasting will be conducted to minimize fly rock and ensure that it is confined to the permit area

4.4 Site Stabilization and Configuration (603.D)

The project area would be stabilized, to the extent practicable, to minimize future impact to the environment and protect air and water resources. The final surface configurations for the Project (Figure 6) would be suitable to achieve the approved grazing and wildlife PMLUs. All facilities, slopes, embankments and roads would be designed, constructed, maintained and reclaimed to achieve stable configurations.

4.4.1 Final Slopes and Drainage Configuration [603.D (1)]

The topography, slopes and aspects of the disturbed areas would be developed to blend in with the surrounding topography as much as practicable. Final slopes would be 3H:1V or shallower and would be restructured to resemble existing topography to the extent practicable. A few areas may have steeper slopes and would be stabilized by physically with coarser materials to add to general diversity and stability. Flatter disturbed areas (slopes of 4H:1V or less) would be minimally regraded to restore an appropriate drainage system and would be revegetated. Regrading would be completed to direct water away from outslopes particularly on the WRDF and TSF.

Where possible, the size and shape of new channels would approximate former drainages. All drainage channels, ditches and earthen water control structures would be revegetated and/or protected from erosion by riprap, sediment traps or other BMPs.

4.4.2 Backfilling [603.D (2)]

Because the deposit cannot be mined sequentially, NMCC does not plan to backfill the pit (see Section 3.15.7.1.1).

4.4.3 Slope Stability [603.D (3)]

All slopes, embankments of the WRDF and TSF would be designed, constructed and maintained to prevent the potential for mass movement both during operations and following closure. Details of the WRDF and the TSF designs are presented in Appendix D.

4.4.4 Acid or Other Toxic Drainage Information [603.D (4)]

Although no major impacts have been identified associated with waste rock disposal from the previous operations, the potential for acid generation from some of the rocks has been identified. Studies were completed previously to evaluate the potential for acid generation and metal leaching from the various types of mine overburden, waste rock and tailing materials in the project area (SRK, 1995 and 2012) and continuing studies and evaluations are underway to augment and update the information currently available.

According to SRK (2012), acid generation is not predicted to occur for most unweathered materials in the short term; however, there could be problems for materials that are exposed for 30- to 40-year time frames. NMCC has ongoing geochemical characterization and predictive geochemical modeling activities underway to further quantify the long term potential for ARD at the site. During operations, specific controls will be used to collect stormwater runoff and concurrent reclamation practices will be used to reduce the level that reactive materials come in contact with water and oxygen. Predictive modeling and waste management plans may be used to develop concurrent reclamation and other plans to limit their exposure to water and oxygen and prevent acidic conditions and poor quality seepage from developing. Proper waste management has been proven effective in alleviating the potential for acid rock drainage. The disposal area would be contoured to enhance run-off and covered to reduce infiltration.

The WRDF would be reclaimed by regrading, dozer compacting the surface and covering this surface with up to 36 inches of suitable material. These measures would inhibit infiltration and reduce the quantity of water required to produce drainage.

The quality of the current pit lake water appears to be impacted by oxidation of minerals exposed in the pit wall and evapoconcentration processes. Results of pit water sampling indicate that, although the water in the pit meets most state surface water quality standards for livestock and wildlife use, it contains elevated concentrations of sulfate, fluoride and a few metals. Information from ongoing studies will be used to estimate the post-closure pit water quality and to develop mitigation strategies and engineering designs to meet water quality standards.

4.4.5 Non-Point Source Releases [603.D (5)]

Non-point source surface releases of acid or other toxic substances would be contained within the permit area. Mine wastes (e.g. tailings, waste rock) and ore would be stored in designed facilities that will be protected from run-on utilizing diversion ditches or berms to redirect stormwater to existing drainages. Any stormwater runoff from these facilities will be collected and stored in catchments or sediment collection ponds where the water will be allowed to evaporate or collected for use in mine operations.

Stormwater will be managed in accordance with the SWPPP required for mine construction and operation. In addition, a SPCC plan will be prepared to address the proper handling, use and storage of oil and other petroleum products.

4.5 Topdressing and Cover Materials (603.E)

Topdressing, for the purposes of reclamation, refers to soil and/or geological material used as growth media or soil cover that will sustain vegetation on sites disturbed by mining activities. The majority of the topdressing or cover materials required to support revegetation and reclamation efforts will be obtained from within the footprint of the new TSF. Growth media removal quantities have been estimated on the basis of the soil survey included in the BDR and are discussed below. The soil cover system will be a store and release/evapotranspiration cover designed to provide erosion control, sustain vegetation and reduce infiltration of meteoric water through the underlying materials. Where mine wastes are present, soil covers will be 36 inches thick unless NMCC can demonstrate a thinner cover will resist erosion, sustain vegetation and be equally protective of groundwater considering site-specific reclamation plans for the facility. Other reclamation units including the plant site, roads and other ancillary facilities will require a minimum of 6 inches of cover. Additional information regarding cover material requirements for reclamation are provided in Section 3.15.7.3.1.

4.5.1 Suitability [603.E (1)]

Preliminary evaluation of cover material sources within the limits of the TSF and selected locations in western portions of the permit area are provided in the BDR. Soil suitability was evaluated based on provisional suitability specifications developed for the soil survey effort (Section 6, BDR). These specifications were adapted from NRCS criteria and MMD guidelines relative to soil and landscape properties to rate the suitability of individual soils as good, fair or poor. In general, soils and underlying colluvial and alluvial materials in the permit area are considered suitable and have relatively few limitations for growth of reclamation and adaptive reclamation species. Additional sources of alternative sources and types of materials for use as reclamation cover may be identified as part of a growth media management plan to be developed prior to construction activities and in consideration of performance objectives for the soil cover system.

4.5.2 Salvage [603.E (2)]

Where salvageable soil exists, either on undisturbed or reclaimed areas, NMCC would salvage as much material as can be safely and practicably recovered. All suitable soils and other suitable cover materials including unconsolidated subgrade materials, colluvium and overburden would be salvaged to meet the volumetric requirements necessary for final cover construction for closure. Suitable soil materials available for reclamation from the previously mined and disturbed areas are very limited. Efforts would be made to carefully recover and stockpile these materials during the construction phase of the Project.

As part of the proposed operations, NMCC plans to salvage most of the near-surface alluvial materials from within the limits of the TSF to mitigate the soil deficit. These materials are part of the Santa Fe formation gravels and alluvial basin fill and were used in the construction of the original starter embankment. Most soils have poorly developed and thin topsoil (A horizon) that are generally similar both physically and chemically compared to underlying soil horizons and parent materials. For this reason, all suitable soils and cover materials would be mixed during salvage operations.

Large diameter trees and shrubs will be grubbed prior to soil salvage. To the extent that it doesn't interfere with soil salvage operations, small diameter woody plants and herbaceous vegetation would be salvaged and stored with the growth media to maintain organic matter content of the cover materials. However, vegetation residues from creosote-dominated vegetation would not salvaged and incorporated in the growth media stockpiles due to creosote's allelopathic properties that may prevent seedling germination during revegetation.

The estimated volumes of salvageable cover material available in areas to be newly disturbed or redisturbed by the Project are shown in Table 14. In and around the TSF, soil salvage of 391 acres would yield approximately 3,060,441 cubic yards (yd^3) suitable cover materials. In the western portion of the mine area near the pit, approximately 316,070 yd^3 could be salvaged from 32 acres. See Table 7 of Appendix 6-A of the BDR for additional information regarding available soil resources. Suitable cover materials were determined as the product of the area of each map unit and the median depth of the suitable material (after mixing) in that unit. The median salvage depth for individual map units ranged from 1 to 14 ft. Additional cover material salvage volumes are based on projections provided in the MPO (NMCC, 2011). Salvage depths ranged from 0.5 to 1.5 ft in the Plant Site, LGOS and WRDF projected disturbances. Additional sources of alternative sources and types of topdressing materials for use as reclamation cover may be identified prior to construction activities and in consideration of performance objectives for the soil cover system.

Table 14: Estimated Available Cover Materials from Newly Disturbed and Redisturbed Areas

Facility	Surface Area (acres)	Estimated Available Cover Materials (yd^3)
Ancillary Disturbance [a]	50	21,780
Low Grade Ore Stockpile [a]	20	10,756
Open Pit [b]	32	316,070
Plant Site [a]	78	182,800
Tailings Storage Facility [b]	391	3,060,441
Waste Rock Disposal Facility [a]	160	129,067
Total		**3,720,958**

Note: [a]- based on NMCC, 2011; [b]-based on Appendix A, BDR

4.5.3 Stockpiling [603.E (3)]

Salvaged topdressing materials will be stored in the growth media stockpile shown in Figure 6. Growth media would be located so as not to be disturbed by mining operations. The surfaces of the

stockpile would be shaped after construction with overall slopes of 2.7 to 3H:1V or shallower to minimize soil loss. To further minimize erosion and the establishment of undesirable weeds, growth media stockpiles would be seeded with the interim seed mix listed in Table 10. Interim seeding would be conducted prior to growing season. Diversion ditches would be constructed upgradient of the stockpiles, where necessary, to minimize run-on erosion. Additionally, berms would be constructed around the crest of stockpiles, as needed, to prevent outslope erosion from overland flow. BMPs such as silt fences or staked straw bales would be used as necessary to capture sediment and reduce soil loss. Topdressing materials would also be wind-rowed along small service roads or around the perimeter of isolated disturbance areas.

4.5.4 Re-Distribution [603.E (4)]

Details regarding growth media's redistribution and application on regraded areas ready for reclamation are discussed in the Reclamation Plan (Section 3.15.7).

4.5.5 Stabilization [603.E (5)]

Cover materials will be stabilized after redistribution with seedbed preparation including scarification and disking along the contour and by seeding and mulching operations as described in the Reclamation Plan (Section 3.15.7).

4.5.6 Amendments [603.E (6)]

Native soils in the project area, like most semi-arid soils in the region, have inherently low fertility in the upper horizons. In particular, site soils have relatively thin A horizons with low nitrogen and phosphorus levels and low to moderate organic matter content (Section 6, BDR). Further, most semi-arid native plants have adapted to low to moderate soil fertility conditions and are relatively unresponsive to increased soil fertility compared to crop plants (Chapin 1980). Fertilizer additions have been shown to also have negative impacts in reclamation including increases in weedy annuals, shifts in species composition and decreases in drought, disease and pest resistance.

If required, NMCC will evaluate potential soil amendments requirements for redistributed soil materials will be based on the performance of interim seeding and concurrent reclamation efforts as well as testing of soil samples and plant nutrient requirements.

4.6 Erosion Control (603.F)

Reclamation activities described in Section 3.15.7 will stabilize disturbed areas to a condition that limits erosion. All disturbed areas will be regraded and shaped to a final contour that achieves positive drainage, reconstructs slopes with lengths and gradients that will provide long-term stability and seeded and mulched to establish a vegetative cover. Stormwater would be diverted away from facilities. Drainage channels would be designed to regulate the velocity of water and minimize the potential for in channel erosion. BMPs for stormwater diversions, drainage and other water

conveyance channels may include lining the channel with rock, riprap, vegetation or other geotechnical materials.

NMCC will routinely inspect and maintain all reclaimed areas, drainage channels, diversion structures, retention impoundments and auxiliary erosion control features in accordance with professionally recognized standards such as Natural Resources Conservation Service. Post-construction/reclamation inspection schedules will be developed to include provisions for periodic (annual or semi-annual) and extreme event monitoring as appropriate for individual facilities. Evidence of excessive erosion and/or structural failures will be reported to the appropriate agencies (MMD, NMED or NMOSE) in a timely manner. A written report detailing the nature and extent of the problem and a corrective action plan will be developed to prevent future degradation within 75 days after the problem is identified.

4.7 Revegetation Success (603.G)

As required by the MMD rules, all disturbances within the permit boundary must be reclaimed to a condition that allows the establishment of a SSE that is appropriate for the life zone of the surrounding area and meets the approved PMLU objectives. Demonstration of successful revegetation and the establishment of a SSE is made by comparison of the vegetation on reclaimed areas to vegetation attributes on an approved reference area and/or approved technical standard.

To summarize the requirements specified in Section 603.G, to obtain the release of financial assurance, revegetated lands must meet the following standards:

- Total herbaceous cover and productivity shall equal to 90 percent of the reference area with a 90-percent statistical confidence level.
- The density of woody (shrub) species shall be established to the approved density with an 80 percent confidence level.
- The diversity of plant life forms (woody plants, grasses and forbs) shall determine what is reasonable given the physical environment of the reclamation relative to the approved PMLU.

All reclaimed areas within the PMLU of grazing would be evaluated based on ground cover, productivity and plant species diversity. Alternatively, success of vegetation in areas approved with the wildlife PMLU will be based on ground cover, woody plant density and plant diversity.

NMCC intends to use a reference area as well as develop technical standards from the analysis of vegetation data collected in the reclaimed and native plant communities, interpretation of the ecological site potential and the anticipated differences in community structure among the reference areas and reclaimed lands. At the time of monitoring for financial assurance release, vegetation in reclaimed areas is expected to represent an early-seral stage, grass-shrub community whereas the reference area will be representative of a mature plant community. The selection of the reference area and establishment of any technical revegetation standards would be developed in coordination

with the MMD and/or the BLM. NMCC also anticipates ongoing vegetation data collection, stratified among the various plant communities in the permit boundary. Additional evaluation of these data could function as the basis of ecologically suitable and technically achievable revegetation success standards.

Vegetation sampling techniques and statistical protocols for data analysis and hypothesis testing will also be developed in consultation with the agencies. The limitations associated with sampling and statistical analyses of vegetation data from heterogeneous semi-arid plant communities (i.e. minor components are often not represented in monitoring data) will be considered in selecting these appropriate sampling and analysis protocols. Standard plant ecology field methods and agency technical guidance will be used to create a robust and defensible vegetation monitoring program.

Revegetation success would be determined by monitoring the vegetation parameters in the final two years of the financial assurance period (years 11 and 12). Data collection will be performed using the same methods and techniques on both reference and reclaimed areas. It is anticipated that vegetation success monitoring would be conducted once per year in the early fall after the tenth growing season. Two years of achieving the revegetation criteria would be considered a demonstration of success of the revegetation program.

4.8 Self-Sustaining Site (603.H)

Closure and final reclamation of the Copper Flat Project will be designed to support a SSE and to meet, without perpetual care, all applicable environmental requirements for post-mining, reclaimed sites.

5.0 PERMIT APPROVAL REQUIREMENTS [605]

5.1 Financial Assurance [605.F]

After receipt of written notice from the Director that the application is approvable, NMCC would submit a proposal for financial assurance as determined under 19.10.12 NMAC. NMCC would submit the financial assurance based on the reclamation designs provided in Appendix D along with engineered designs having the additional detail needed to develop the financial assurance cost estimate. Appendix E has been reserved for the financial assurance information.

6.0 REFERENCES

Adrian Brown Consultants (ABC). 1997. Copper Flat hydrology impact evaluation post-hearing submittal exhibits, including revised appendices O, F and L: Report 1356A.970326.

Bureau of Land Management (BLM), 1978, Environmental assessment record on Quintana Minerals Corporation's proposed open pit copper mine at Copper Flat, Sierra County, New Mexico: Las Cruces, N. Mex., 170 p.

BLM. 1986. White Sands Resource Area, Resource Management Plan. Las Cruces, New Mexico. October 1986.

BLM. 1993. Environmental Assessment for Re-establishing the Copper Mine, Copper Flat. Las Cruces, New Mexico.

BLM. 1996. Copper Flat Project Draft Environmental Impact Statement. Las Cruces. New Mexico.

BLM. 1999. Preliminary final environmental impact statement, Copper Flat Project, Barrick Goldstrike Mine, Inc., Las Cruces, New Mexico. Prepared by ENSR, Fort Collins, Colorado.

Chapin, F.S. 1980. The mineral nutrition of wild plants. Ann. Rev. Ecol. Syst. 11:233-260.

Davie, W., and Spiegel, Z., 1967, Geology and water resources of Las Animas Creek and vicinity, Sierra County, New Mexico: New Mexico State Engineer, Hydrographic Survey Report, 44 pp.

Dick-Peddie, W.A., 1999, New Mexico vegetation: past, present and future: Albuquerque, N. Mex., University of New Mexico Press, 280 p.

Glover, F.A., 1977, Environmental assessment report, Copper Flat mine development, Copper Flat, New Mexico.

Golder Associates Inc. (Golder). 2010. Copper Flat Project Conceptual Design Report. Report prepared for New Mexico Copper Corporation, November, 2010.

Golder. 2011. Technical Memorandum: Copper Flat Project – Borrow Source and Stockpile Evaluation. Submitted to New Mexico Copper Corporation. June 16, 2011.

Green, D.K., and Halpenny, L.C., 1976, Report on development of ground-water supply for Quintana Minerals Corporation Copper Flat Project, Hillsboro, New Mexico: Tucson, Water Development Corporation, 32 p.

INTERA Incorporated (INTERA). 2010. Sampling and analysis plan for Copper Flat Mine. Prepared for New Mexico Copper Corporation, Albuquerque, New Mexico. September 2010.

INTERA. 2011. Stage I abatement plan for the Copper Flat Mine. Prepared for New Mexico Copper Corporation, Albuquerque, New Mexico. March 2011.

INTERA. 2012. Baseline data characterization report for Copper Flat Mine, Sierra County, New Mexico. Prepared for New Mexico Copper Corporation, Albuquerque, New Mexico. February 2012.

John Shomaker & Associates, Inc. (JSAI). 2011. Amendment to the stage 1 abatement plan proposal for the Copper Flat Mine. Prepared for New Mexico Copper Corporation, Albuquerque, New Mexico. October 2011.

JSAI. 2012. Conceptual model of groundwater flow in the Animas Uplift and Palomas Basin, Copper Flat Project, Sierra County, New Mexico. Prepared for New Mexico Copper Corporation, Albuquerque, New Mexico. May 2012.

Mining and Minerals Division. 1996. Draft closeout plan guidelines, Mining Act Reclamation Bureau, Santa Fe, NM. April 30.

New Mexico Copper Corporation (NMCC). 2011. Copper Flat Mine Plan of Operations (revised). Submitted to United States Department of the Interior, Bureau of Land Management, Las Cruces, New Mexico. June 2011.

New Mexico of the State Engineer (NMOSE), 2010. Rules and Regulations Governing Dam Design, Construction and Dam Safety. Dam Safety Bureau. December 2010.

Natural Resources Conservation Service (NRCS), 2010, Ecological site descriptions, available online at: http://esis.sc.egov.usda.gov/ESIS/About.aspx.

Newcomer, R. W., and Finch, S. T., 1993, Water quality and impacts of proposed mine and mill at Copper flat Mine site, Sierra County, New Mexico: Consultant's report to Gold Express Corporation, Englewood, Colorado, 31p., and appendices.

Steffen, Robertson and Kirsten (U.S.), Inc. (SRK), 1995, Copper Flat Mine hydrogeological studies. Copper Flat, New Mexico: Steffen, Robertson and Kirsten, Inc.

SRK. 1997, Copper Flat Mine Project Monitoring Plans, Consultant's Report prepared for Alta Gold Co., May 1997, Project Number 68607, 84 p.

SRK. 2012. Geochemical characterization report for the Copper Flat Project, New Mexico. Prepared for THEMAC Resources Group, Ltd. 52 p.

U.S, Department of Commerce, 1998. Hydrometeorolgical Report 55a, Probable Maximum Precipitation Estimates-United States between the Continental Divide and the 103rd Meridian.

Western Regional Climate Center (WRCC). 2012. Climate Summary for Hillsboro, New Mexico (NCDC #294009). http://www.wrcc.dri.edu/ accessed May, 2012.

FIGURES

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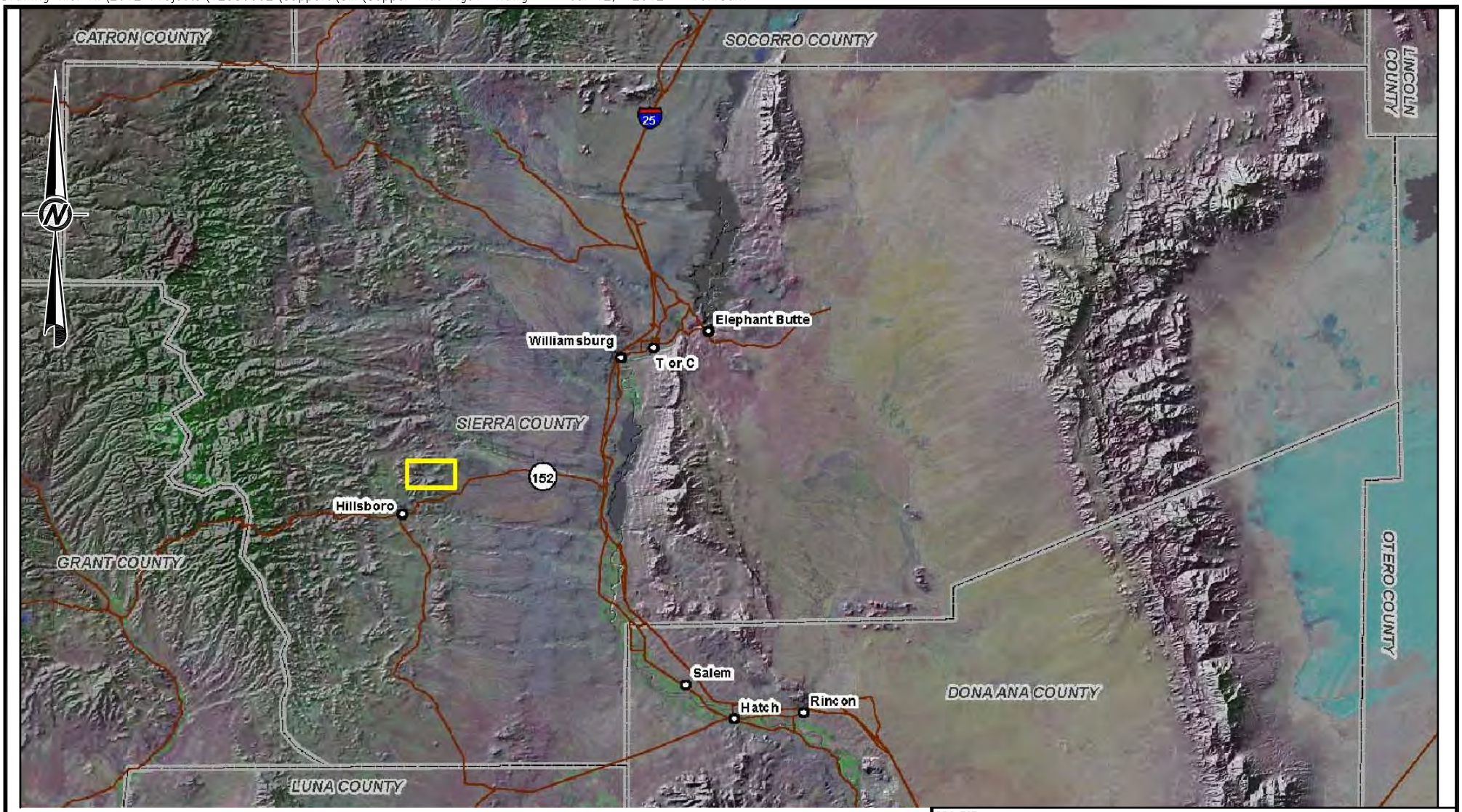

LEGEND

- CITY/TOWN
- SITE LOCATION
- ROAD

12 0 12
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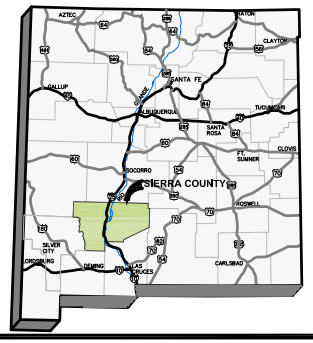

SOURCE: FIGURE 1-1 (INTERA, 2012). IMAGEERY FROM UNIVERSITY OF MARYLAND NLCD.

PROJECT
THEMAC RESOURCES
COPPER FLAT PROJECT
SIERRA COUNTY, NEW MEXICO

TITLE
SITE LOCATION

Golder Associates

PROJECT No.		123-80002	FILE No.	Copper Flats Figs
DESIGN	JA	04/02/12	SCALE AS SHOWN	REV. 0
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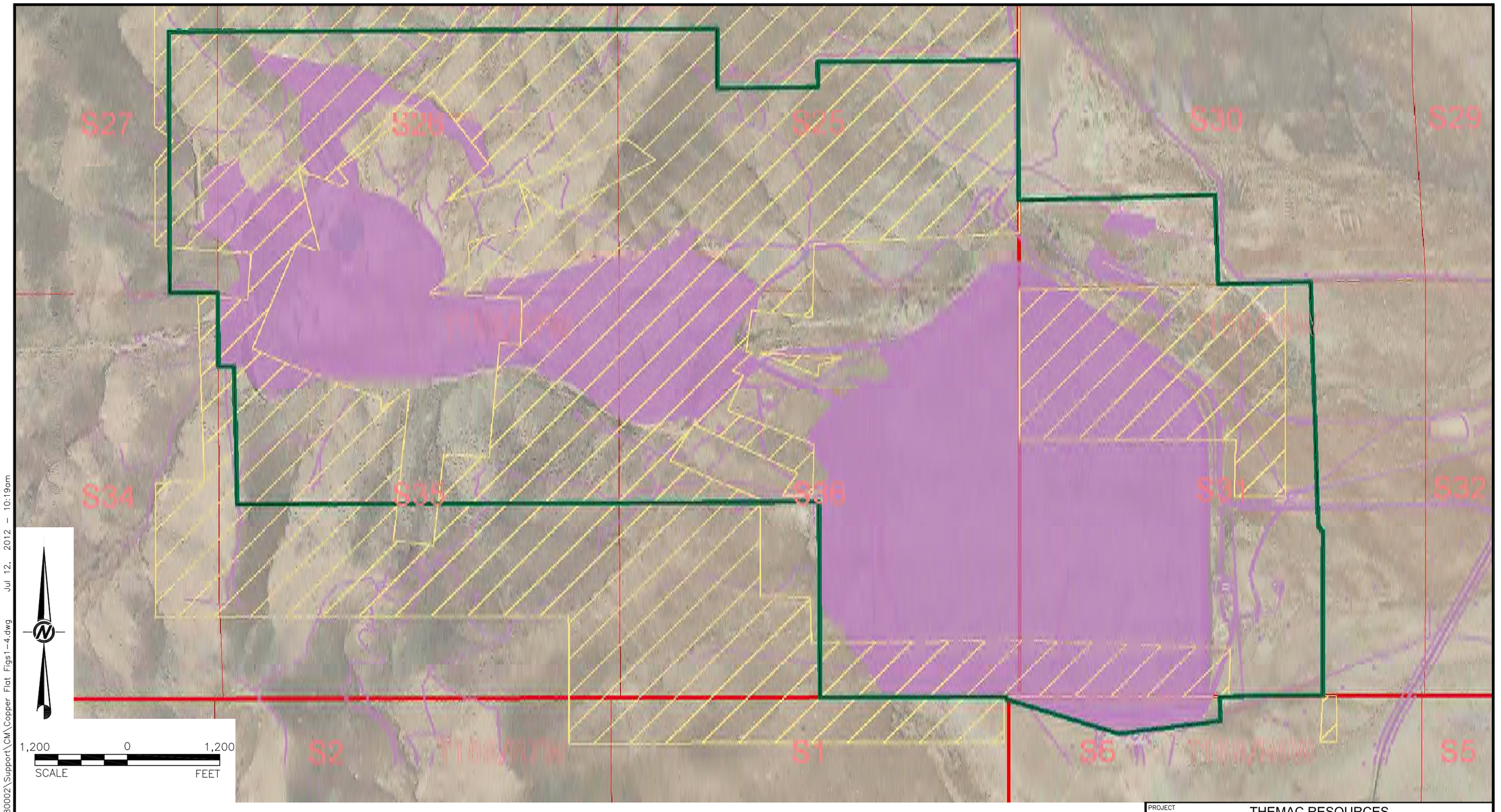
CHECK	JA	04/03/12		
REVIEW	BN	04/03/12		

FIGURE 1



LEGEND

- PUBLIC LAND
- MINE BOUNDARY
- DISTURBANCE BY PREVIOUS OPERATORS

SOURCE: FIGURE 2.1 (THEMAC, 2011a).

PROJECT
THEMAC RESOURCES
COPPER FLAT PROJECT
SIERRA COUNTY, NEW MEXICO

TITLE
PROPOSED PERMIT BOUNDARY, LAND STATUS AND EXISTING LAND DISTURBANCE

Golder Associates

PROJECT No.		123-80002	FILE No.	Copper Flats Figs
DESIGN	JA	04/02/12	SCALE AS SHOWN	REV. 0
CADD	CM	04/02/12		
CHECK	JA	04/03/12		
REVIEW	BN	04/03/12		

FIGURE 2

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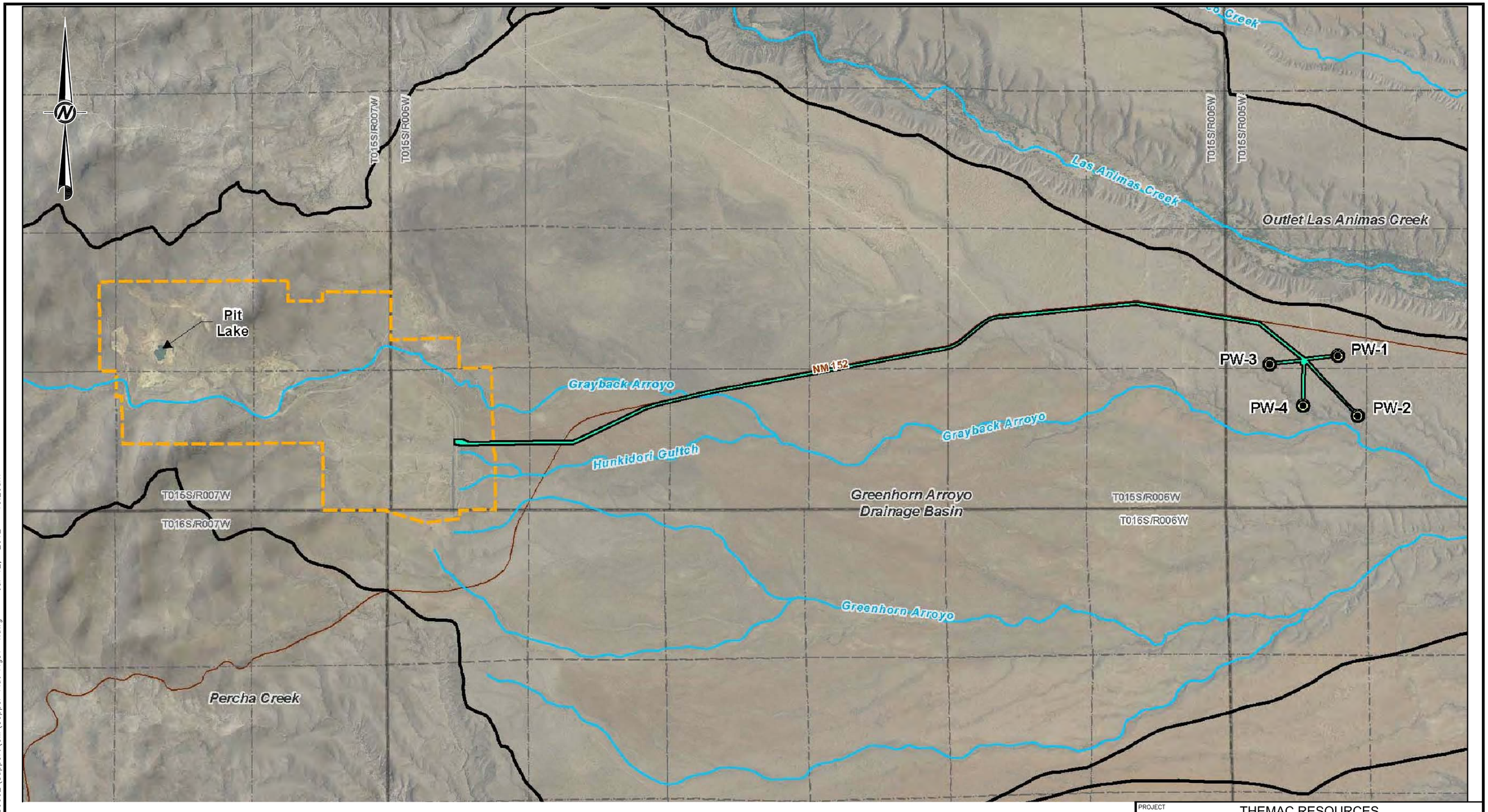

LEGEND

- PRODUCTION WELL
- UTILITY CORRIDOR
- PROPOSED MINE PERMIT BOUNDARY
- SUB-WATERSHED

3,500 0 3,500
SCALE FEET

SOURCE: FIGURE 3-4 (INTERA, 2012).
WATERSHEDS: USGS HYDROLOGIC UNIT MAP
MINE BOUNDARY/UTILITY CORRIDOR: NMCC
IMAGEERY: USGS 7.5 - MINUTES COUNTY DOQQ MOSAIC SIERRA COUNTY, 2011.

PROJECT
THEMAC RESOURCES
COPPER FLAT PROJECT
SIERRA COUNTY, NEW MEXICO

TITLE
UTILITY RIGHT-OF-WAY

Golder Associates

PROJECT No.		123-80002	FILE No.	Copper Flats Figs	
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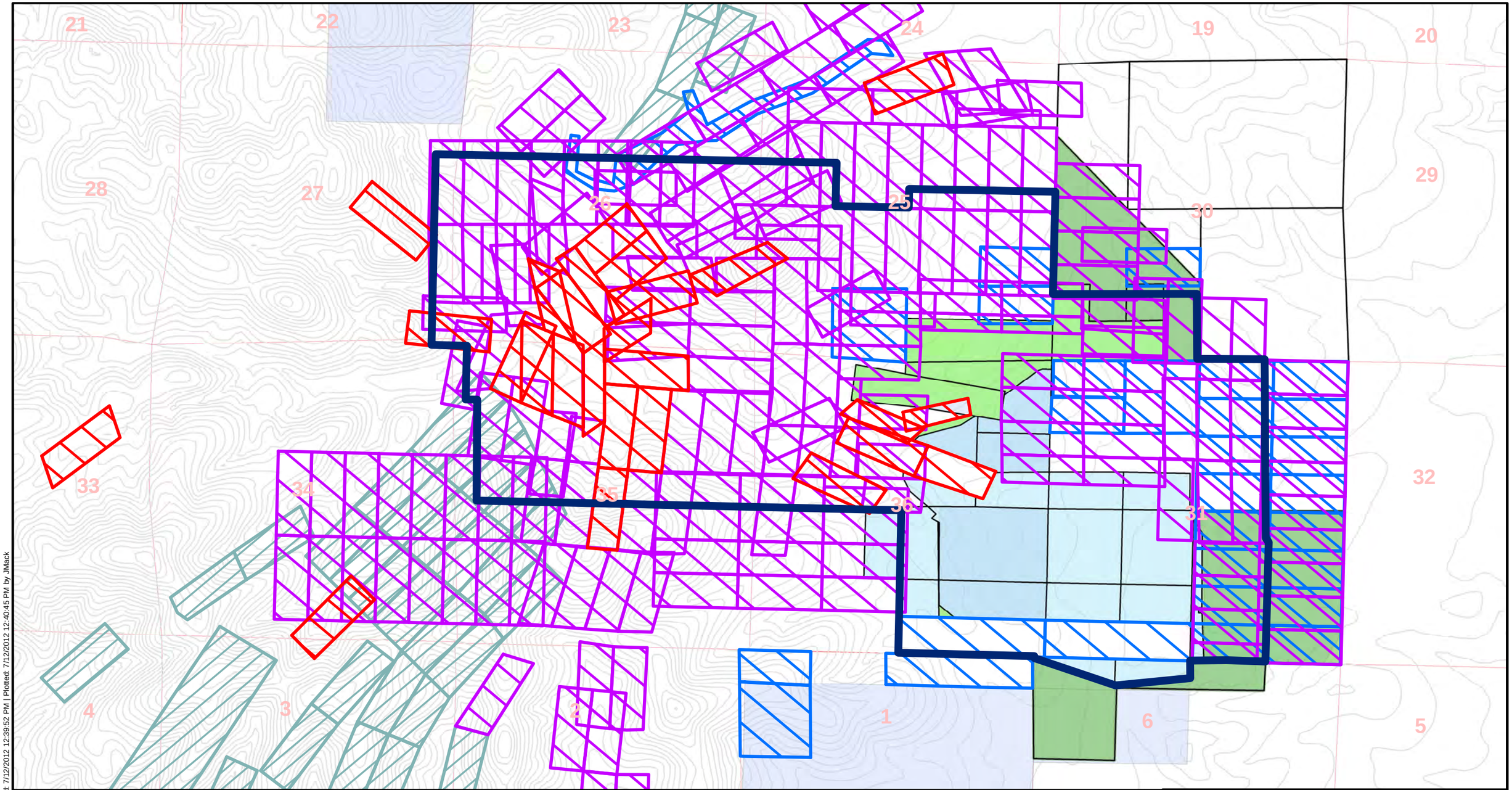

LEGEND

- Permit Boundary
- Section & Township (New Surveys)
- NMCC Patented Claims
- NMCC Unpatented Lode Claims
- NMCC Unpatented Placer Claims
- Competitor Patented and Unpatented Claims
- NMCC Fee Lands (Surface and Minerals)
- Greer/Fancher Lands (Surface and Minerals)
- Greer/Fancher Lands (Surface with Federal Minerals)
- Other Lands not Controlled by NMCC
- Fancher Lands

REFERENCES

Projection: NAD 1983 UTM Zone 13N

NOTES

1,500 0 1,500 FEET

SCALE 1:20,000

N

PROJECT

THEMAC RESOURCES
COPPER FLAT PROJECT
SIERRA COUNTY, NEW MEXICO

TITLE

LAND STATUS

Golder Associates

PROJECT No.		123-80002	FILE No.		Figure4
DESIGN	JRM	7/12/2012	SCALE	AS SHOWN	REV 0
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CHECK	DZF	7/12/2012			
REVIEW	JPA	7/12/2012			

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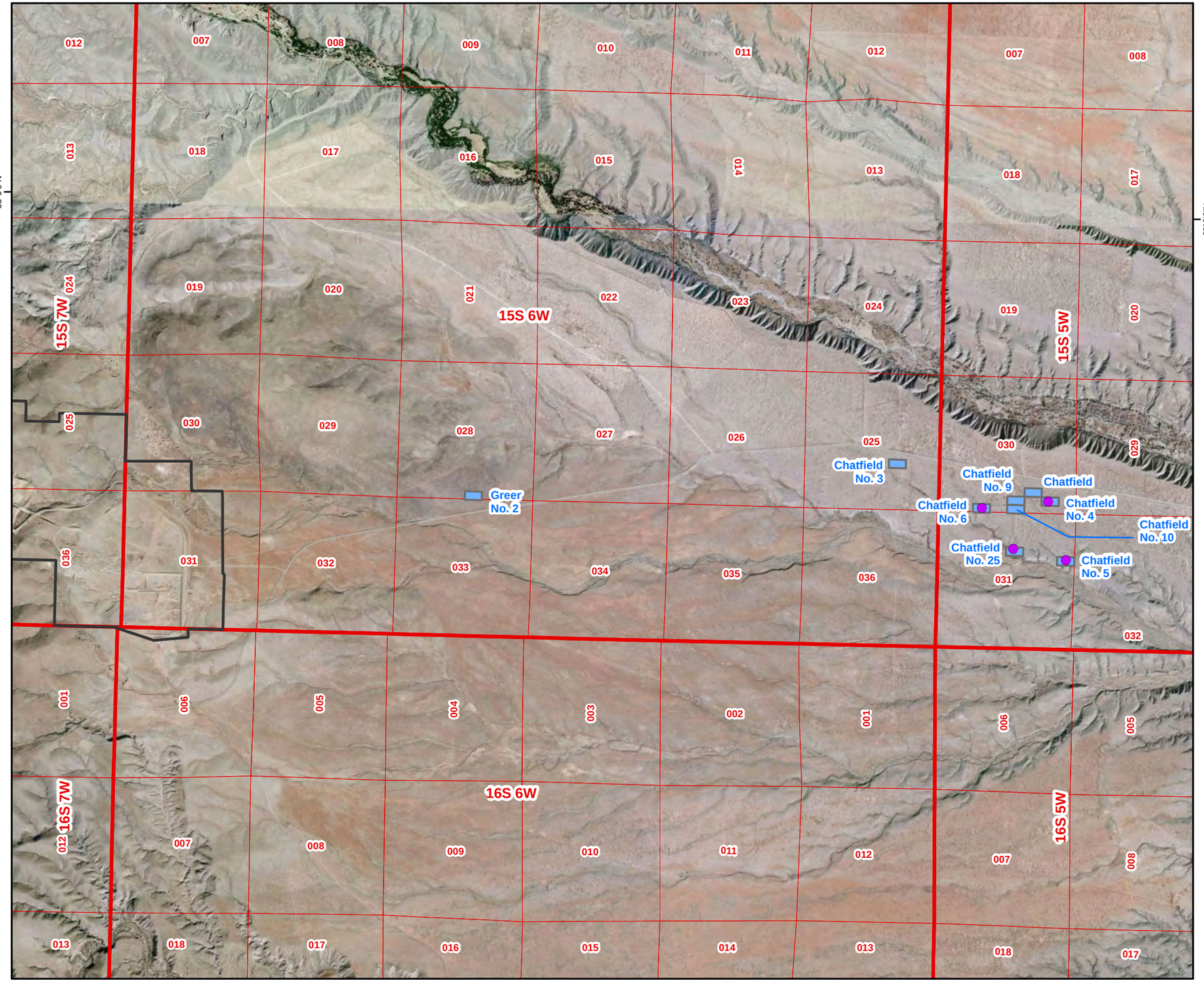


LEGEND

- Supply Well
- Mill Site Claim
- Proposed Mine Permit Boundary
- Section
- Township and Range

REFERENCES

Coordinate System: NAD 1983 UTM Zone 13N.

4,000 2,000 0 4,000 FEET

SCALE 1:48,000

N

PROJECT

THEMAC RESOURCES
COPPER FLAT PROJECT
SIERRA COUNTY, NEW MEXICO

TITLE

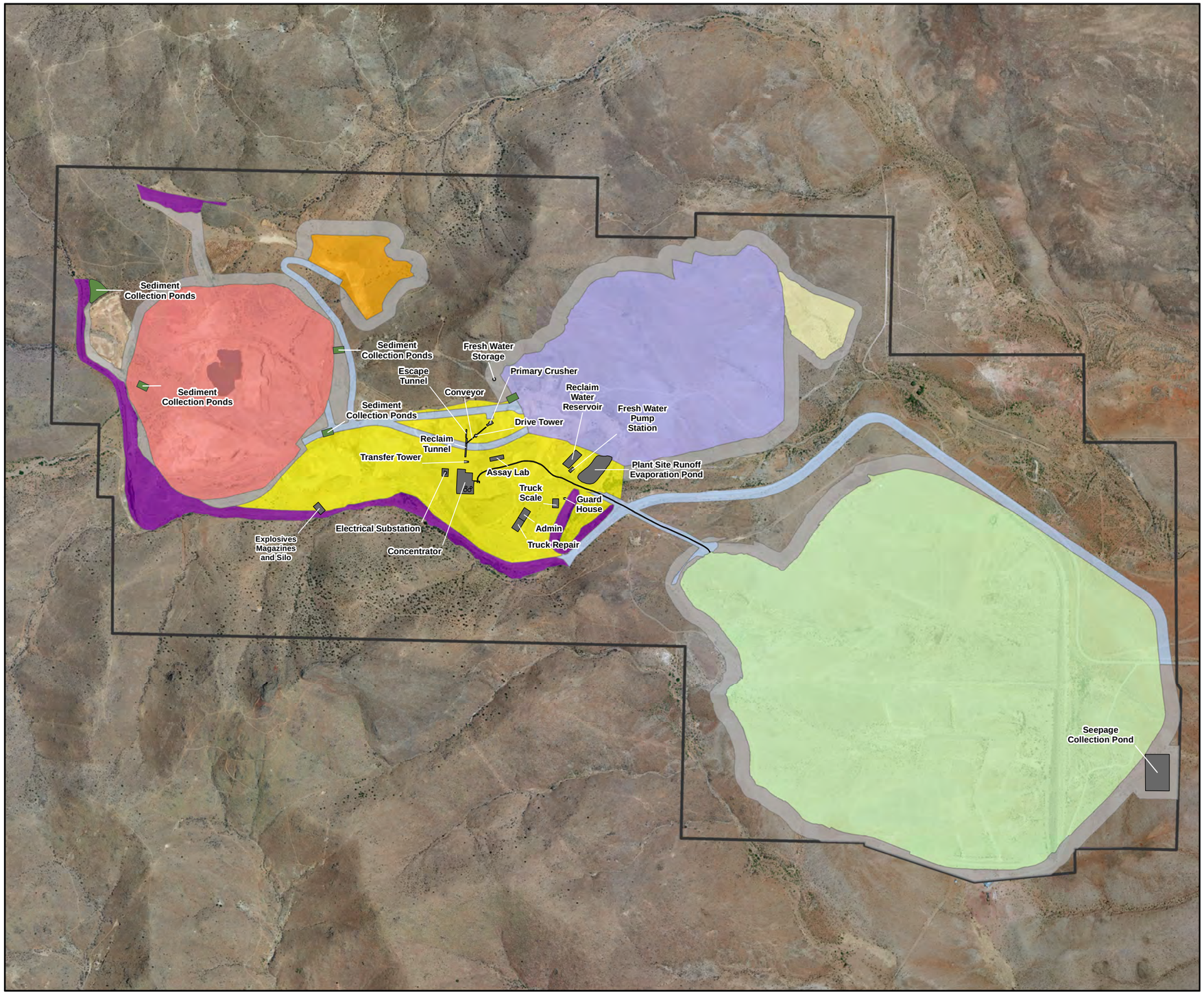
MILL SITE CLAIM AND SUPPLY WELL LOCATIONS

Golder Associates

PROJECT No.		123-80002	FILE No.		Fig05_MillSites
DESIGN	DZF	7/11/2012	SCALE	AS SHOWN	REV 0
GIS	DZF	7/11/2012			
CHECK	JRM	7/11/2012			
REVIEW	JPA	7/11/2012			

FIGURE 5

W:\Copper_Flat\MXDs\Fig05_MillSites.mxd | 7/11/2012 4:00:18 PM | JAyarbe



LEGEND

- Ancillary
- Diversion
- Haul Road
- Low Grade Ore Stockpile
- Pit
- Plant
- Tailings Storage Facility
- Growth Media Stockpile
- Waste Rock Disposal Facility
- Plant Facility
- Sediment Collection Pond
- Proposed Mine Permit Boundary

REFERENCES

Coordinate System: NAD 1983 UTM Zone 13N.

1,400 700 0 1,400 FEET

SCALE 1:16,500

N

PROJECT

THEMAC RESOURCES
COPPER FLAT PROJECT
SIERRA COUNTY, NEW MEXICO

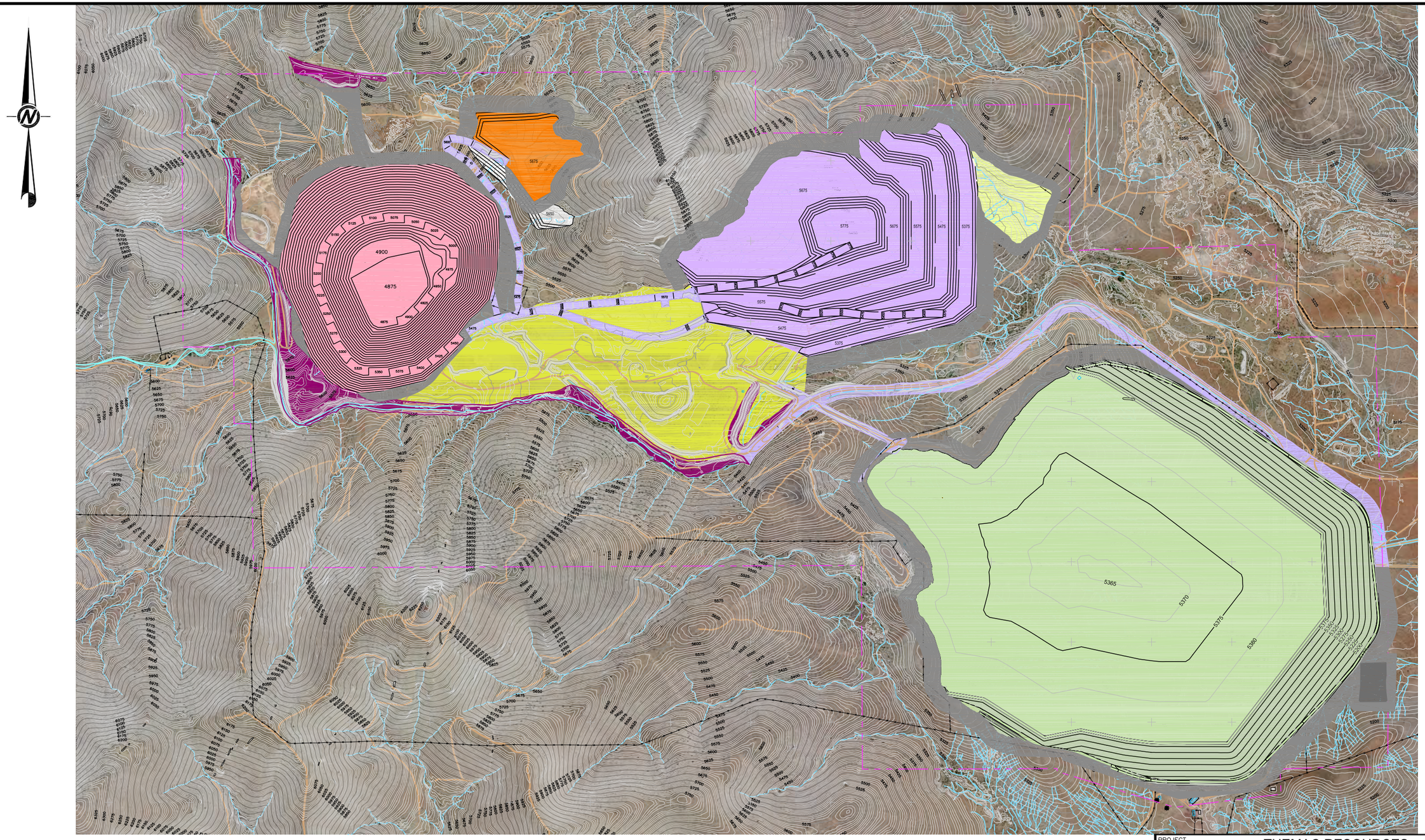
TITLE

PROPOSED FACILITY LAYOUT

Golder Associates

PROJECT No.		123-80002	FILE No.		
DESIGN	DZF	7/12/2012	SCALE	AS SHOWN	REV 0
GIS	DZF	7/12/2012	FIGURE 6		
CHECK	JRM	7/12/2012			
REVIEW	JPA	7/12/2012			

L:\Site\CopperFlat\MXDs\Figure5_Revisions_09July2012.mxd | 7/12/2012 12:41:34 PM | JMack



LEGEND

- ANCILLARY
- DIVERSION
- HAUL ROAD
- LOW GRADE ORE STOCKPILE
- PIT
- PLANT
- TAILINGS STORAGE FACILITY
- GROWTH MEDIA STOCKPILE
- WASTE ROCK DISPOSAL FACILITY
- PROPOSED MINE PERMIT BOUNDARY

1,200 0 1,200
SCALE FEET

PROJECT
THEMAC RESOURCES
COPPER FLAT PROJECT
SIERRA COUNTY, NEW MEXICO

TITLE
PROPOSED FACILITY TOPOGRAPHY

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PROJECT No.		123-80002	FILE No.	Copper Flats Fig06
DESIGN	JA	07/09/12	SCALE AS SHOWN	REV. 0
CADD	CM	07/09/12		
CHECK	JA	07/09/12		
REVIEW	BN	07/11/12		

FIGURE 7

Drawing file: K:\2012 Projects\12380002\Support\CM\Copper Flat Fig 07.dwg Jul 12, 2012 - 1:30pm