

Copper Flat Project
MMD Public Hearing
Statement of James R. Kuipers P.E.
on behalf of
Turner Ranch Properties and
Hillsboro Pitchfork Ranch

Truth or Consequences, NM
October 2018



Summary of Issues

- Protection of human health and safety, the environment, wildlife and domestic animals including wildlife protection, lights, noise, blasting and fugitive dust.
- Stream and stormwater diversions specific to Grayback Arroyo Diversion and waste rock, tailing storage facility, and other stormwater channels and features and their ability to meet both storm events exceeding current predictions and the need for long-term maintenance to protect the source controls used to prevent metals and other contaminants leaching into groundwater.
- Perpetual care and the inherent nature of mines such as Copper Flat that utilize source controls to require long-term monitoring and maintenance in order to continue to perform as specified, such as not allowing greater than one percent infiltration of meteoric water as per the Groundwater Copper Mine Rule.
- The acceptance by MMD of an Environmental Evaluation consisting of the Draft EIS that is subject to revision and appeal.
- The inadequacy of the financial assurance proposal, including key aspects of the proposal that could greatly increase the amount of funds necessary for the agencies to perform closure and reclamation of the mine, such as assumptions concerning long-term monitoring and maintenance.

Professional Qualifications and Experience

Summary of Experience

- Over 35 years of professional experience in hardrock mine development, permitting, operations, reclamation and closure. Industry experience includes experience as chief metallurgist, mill superintendent, mine manager, project manager and consulting engineer.
- Since 1996 have provided technical assistance to over 80 public interest organizations, Tribes or First Nations, local, state, and federal governments as well as financial institutions and been the author of numerous workshops, presentations, papers and reports.
- Areas of specific technical expertise include metallurgy, financial analysis, site characterization, mine facility design, reclamation and closure design and planning, monitoring and adaptive management planning, mine water treatment, and financial assurance cost estimation.
- Continued involvement as technical adviser on behalf of New Mexico public interest organizations in implementation of Mining Act and Water Quality Act since 1998 including prior involvement in Questa, Chino, Tyrone, Continental/Cobre, and Mount Taylor Mines.

Protection of human health and safety, the environment, wildlife and domestic animals.

The New Mexico Mining Act (NMMA) (NMSA Section 69-36-1 through 69-36-20) requires in NMSA 69-36-7(H) that the Mining Commission shall “establish by regulation permit and reclamation requirements for new mining operations that incorporate site-specific characteristics. These requirements shall, at a minimum:

- (1) require that new mining operations be designed and operated using the most appropriate technology and the best management practices;
- (2) assure protection of human health and safety, the environment, wildlife and domestic animals.

Protection of human health and safety, the environment, wildlife and domestic animals.

Section 19.10.6.603.C NMAC, which is similarly consistent with the NMMA, contains a list of specific requirements as follows:

- (1) Signs, Markers and Safeguarding
- (2) Wildlife Protection
- (3) Cultural Resources
- (4) Hydrologic Balance
- (5) Stream Diversions
- (6) Impoundments
- (7) Minimization of Mass Movement
- (8) Riparian and Wetland Areas
- (9) Roads
- (10) Subsidence Control
- (11) Explosives

Protection of human health and safety, the environment, wildlife and domestic animals.

NMCC's Updated Mining Operation and Reclamation Plan (MORP) (2016) Section 4.3 is intended to address the requirements of section 19.10.6.603 NMAC.

The following comments pertain to specific sections in the MORP and to additional impacts to human health and safety and the environment that may occur from the proposed Copper Flat Mine. In particular, impacts from fugitive dust, noise, lights and traffic can affect human health, safety, the environment, wildlife and domestic animals. The impacts are likely to be most noticeable to adjacent properties including both private landowners and public lands.

Wildlife Protection

According to the Updated MORP (2016) Section 4.3.2 Wildlife Protection which references section 19.10.6.603.C.(2) NMAC), “Construction, operations and reclamation phases of the Project will not impact critical habitat for wildlife based on wildlife studies conducted on site.” The MORP goes on to address “physical disturbances... limited to only those areas needed for mine facilities and access, minimizing impacts to surrounding habitat that may be used by wildlife.” Off-site impacts to wildlife from lights, noise, blasting, and traffic cannot be precluded as suggested by the MORP. This is important both with respect to wildlife on adjacent properties, but also with respect to wildlife programs specifically tailored to the present background of limited lights, noise and traffic, as well as no blasting.

Wildlife Protection

Section 19.10.6.603(2) NMAC (Wildlife Protection) requires that “Measures shall be taken to minimize adverse impacts on wildlife and important habitat. Based on site-specific characteristics, the following measures will be required: (a) restricting access of wildlife and domestic animals to toxic chemicals or otherwise harmful materials; (b) minimizing harm to wildlife habitat during mining; and (c) reclaiming areas of wildlife habitat if not in conflict with the approved post-mining land use.” Additional measures as described further in these comments with respect to lights, noise, blasting, and traffic must also be taken to minimize adverse impacts on wildlife, as well as their habitat, should be recognized and addressed in the MORP.

Wildlife Protection

Recommendation:

- The Director should require the applicant to further demonstrate that the proposed mining operations will not impact wildlife outside of the proposed mine permit area, including with respect to lights, noise, blasting, and traffic.
- In addition, if a permit is issued, the Director should require as a permit condition that the applicant submit a more detailed wildlife protection plan that would be performed in consultation with the New Mexico Game and Fish Department and adjacent landowners. The plan would include using current best management practices to address potential impacts to wildlife, as well as existing and future wildlife conservation programs.

Lights

The MORP does not address potential impacts from lights to assure protection of human health and safety, the environment, wildlife and domestic animals. According to Longcore and Rich (2004) “In the past century, the extent and intensity of artificial night lighting has increased such that it has substantial effects on the biology and ecology of species in the wild.” They distinguish “astronomical light pollution,” which obscures the view of the night sky, from “ecological light pollution,” which alters natural light regimes in terrestrial and aquatic ecosystems. While they note that “some of the catastrophic consequences of light for certain taxonomic groups are well known, such as the deaths of migratory birds around tall lighted structures ... while more subtle influences of artificial night lighting on the behavior and community ecology of species are less well recognized, and constitute a new focus for research in ecology and a pressing conservation challenge.”

Lights

The proposed Rosemont Copper Project in Arizona provides an example of light pollution mitigation for a mine site. The Light Pollution Mitigation Report includes best management practices for light pollution that include use of the following as mitigation:

- To assess the baseline night sky condition and to allow future measurements, advanced aerial methods will be employed. Aerial surveys have already identified current sources and intensities of light pollution throughout the region as well as characterizing the baseline night sky.
- Full cut off, solid state light emitting diode (LED) lighting systems.
- High fitted target efficacy (FTE) lighting systems and optics.
- Specific purpose lighting systems with optics that match task requirements.
- Adaptive lighting controls to dim or extinguish lighting when not needed, and to provide immediate “instant on” emergency or operational lighting.
- Additional measures such as color rendering.

Lights

Recommendation: The Director should require the proponent to demonstrate that the proposed mining operations will not result in environmental light impacts to residents and landowners or to wildlife and domestic animals outside of the proposed mine permit area. In addition, if a permit is issued, the Director should require the permittee, consistent with current best management practices, to submit a lighting monitoring and mitigation plan that would include addressing potential impacts to adjacent landowners and residents, wildlife, and existing and/or future wildlife conservation programs.

Noise

The MORP does not address potential impacts from noise to assure protection of human health and safety, the environment, wildlife and domestic animals. It is generally accepted that noise is defined as any loud, discordant or disagreeable sound or sounds. More commonly, in an environmental context, noise is defined simply as unwanted sound. Certain activities such as mining inherently produce sound levels or sound characteristics that constitute noise, including from heavy equipment, ore crushing and processing, vehicular traffic, fans, and other sources. The sound generated by proposed or existing facilities may become noise due to land use surrounding the facility which depends on low levels of ambient noise. When lands adjoining an existing or proposed facility contain residential, commercial, institutional, or recreational uses that are proximal to the facility, noise is likely to be a matter of concern to residents or users of adjacent lands.

Noise

As noted by Blickley and Patricelli (2010), human development, such as mining activities, introduces anthropogenic noise sources into the environment. They note that the impacts of new sources on wildlife are not well studied and “A growing and substantial body of literature suggests, however, that noise impacts may be more important and widespread than previously imagined.” They go on to note that the impacts range in effects from mild to severe, and can impact wildlife species at both the individual and population levels. They identify impacts that “run the gamut from damage to the auditory system, the masking of sounds important to survival and reproduction, the imposition of chronic stress and associated physiological responses, startling, interference with mating, and population declines.”

Noise

The generally accepted current best management practice to address noise is to develop a site-specific Noise Management Plan (NMP). The application of NMPs to address mine environmental noise is common in Australia. In one example the objectives of a Noise Management Plan were as follow:

- ensure that environmental noise from operations is minimized and appropriately controlled;
- ensure that impacts on surrounding residents are minimized.
- keep the local community and regulators informed of activities where required and respond quickly and effectively to issues or complaints;
- carryout regular monitoring to ensure compliance against noise limits;
- adequately manage and mitigate potential noise impacts from the construction and operational activities.

Noise

Noise control measures identified included the following:

- environmental education and training to ensure workforce awareness;
- purchase of equipment that meets relevant noise emission standards;
- maintaining plant and machinery in good working order;
- maintaining haul roads in good condition;
- operating equipment in a manner that will minimize noise emissions;
- avoiding the unnecessary clustering of earth moving equipment;
- regular contact with local residents and landowners;

Noise

Noise control measures (continued):

- scheduling of work with attention paid to adverse weather conditions, particularly at night, and modifications made to the work program where necessary;
- implementation of best management practice to minimize the construction, operational and road noise of the operations;
- a noise management system that uses a combination of predictive meteorological forecasting and real-time noise monitoring data to guide the day to day planning of mining operations, and the implementation of both proactive and reactive noise mitigation measures to ensure compliance with the relevant conditions any approvals;
- a program of regular noise monitoring of site operations to determine whether the operations are complying with the criteria set out in project approvals. This monitoring will be undertaken as attended and real-time noise monitoring at surrounding receivers over the life of the mine;
- development of a Construction Noise Management Plan in consultation with relevant agencies and potentially affected receivers that will outline the impact mitigation measures to be implemented should targeted noise monitoring identify exceedances of relevant noise impact assessment criteria.

Noise

Recommendation: The Director should require the applicant to demonstrate that the proposed mining operations will not result in environmental noise impacts to residents and landowners or to wildlife and domestic animals outside of the proposed mine permit area. In addition, if a permit is issued, the Director should require the permittee, consistent with current best management practices, to submit a Noise Management Plan that would inclu

Blasting

The MORP Section 4.3.11 (Explosives Blasting), which references section 19.10.6.603.C.(11) NMAC, addresses explosives blasting. According to the MORP “Blasting will be conducted in a manner to prevent injury to persons or damage to property not owned by the operation. The generation of fly rock will be minimized to ensure that it is confined to the permit area. Blasting will be limited to the daylight hours and performed by trained and certified blasters. Safe seismic disturbance and air blast limits will be established to prevent damage to buildings.”

McKown (Undated) addresses the subject in great detail and discusses the principals of blasting and the impacts of blasting. He notes that blasting has multiple side effects other than flyrock including vibrations, blast pressure, and permanent ground deformations, such as cracks or slides. He addresses the adequacy of the U.S. Bureau of Mines safe limits, and addresses a number of protective measures and mitigations to reduce impacts from blasting. This includes the need to provide for a public relations plan that includes meetings with residents to review blast impacts, mitigation measures, likely things they will notice when blasting takes place, and to answer any questions or address concerns they might have. In addition, he recommends that pre-blast condition surveys take place and that there be periodic progress meetings with residents.

Blasting

Recommendation: According to NMAC 19.10.6.603.C(11) (Explosives), “The Director may require a detailed blasting plan, pre-blast surveys or specify blast design limits to control possible adverse effects to structures.” The Director should require the applicant to submit a blasting plan that includes identification and application of protective measures and mitigation consistent with current best management practice intended to reduce potential impacts to both property and the environment including humans, wildlife, and domestic animals.

Fugitive Dust

The MORP addresses dust control throughout the document including use of water sprays to control dust within the primary crusher pocket and at the stockpile feed stacker (p. 2-21, 23), stockpile feed conveyor (p. 2-42), dust control within the open pit (p. 2-56) dust control as a surface stabilization measure, and dust control on unpaved haul roads and other disturbance areas (p. 4-2).

The applicant has not submitted an actual dust mitigation and monitoring plan consistent with current industry practice. Fugitive dust emissions can be reduced through application of best management practices. Control measures to reduce fugitive dust emissions must take into account: a) identification and classification of fugitive dust emission sources; b) identification of the sources of fugitive dust emissions; c) fugitive dust characterization; d) development and implementation of the best management practices plan; plus employee training and inspection and maintenance.

Fugitive Dust

- Recommendation: The Director should require the applicant to develop and submit a formal dust mitigation and monitoring plan utilizing best practices as suggested by Reed and Organiscak and as identified by the Centre for Excellence in Mining Innovation's *Fugitive Dust Best Practices Manual*.
- W.R. REED AND J.A. ORGANISCAK, Haul Road Dust Control: Fugitive dust characteristics from surface mine haul roads and methods of control.
https://stacks.cdc.gov/view/cdc/8897/cdc_8897_DS1.pdf
<http://www.cemi.ca/SustainMine/fugitive-dust-best-practices-manual/>

Stream and Stormwater Diversions

Section 19.10.6.603.C(5) NMAC (Stream Diversions) requires that “When streams are to be diverted, the stream channel diversion shall be designed, constructed, and removed in accordance with the following: (a) unless site-specific characteristics require different measures to meet the performance standard and are included in the approved permit, the combination of channel, bank and flood plain configurations shall be adequate to safely pass the peak run-off of a 10-year, 24-hour precipitation event for temporary diversions, a 100-year, 24-hour precipitation event for permanent diversions.”

Stream diversions including the Grayback Arroyo diversion and general reclaimed feature stormwater diversions are necessary to protect surface and groundwater quality. The Grayback Arroyo diversion is apparently intended as a permanent diversion to control the pit water inflow. The general stormwater diversion features are intended to prevent erosion from compromising the source control covers – which will be installed on the waste rock piles and tailings storage facility – to protect water quality and promote revegetation.

Stream and Stormwater Diversions

Anthropogenic climate change has resulted in previous storm event estimates used in operation and closure designs to be highly inadequate. In New Mexico, storms exceeding the predicted 100-year storm event criteria have recently occurred on a common basis, and even 500-year to 1000-year events have occurred in some cases. While New Mexico has not specifically addressed the need to update current NOAA storm event predictions, other states such as Montana have done so, recognizing the importance of addressing climate change. The DOWL (2016) Montana Dam Safety Program, Montana Department of Natural Resources and Conservation, Extreme Storm Working Group Summary Report is one example.

Stream and Stormwater Diversions

The MORP Section 4.3.5 (Stream Diversions), which references section 19.10.6.603.C.(5) NMAC, identifies the Grayback Arroyo diversion as a permanent existing diversion “...that will be maintained to continue to divert water safely around and through the site.” NMCC evaluated the existing diversion as able to pass a 550-year return period storm event, while also noting “minor repair and maintenance” Would be necessary. The Grayback Arroyo diversion must be properly maintained to ensure that it will continue to bypass stormwater around the open pit and through the site indefinitely into the future.

Other than the tailings storage facility diversion ditches designed for a 100-year storm event, the MORP does not specifically address stormwater channel design. The MORP does not specify the design for the stormwater diversions and channels for the waste rock piles or other features. However, for both the waste rock piles and TSF, design of the diversion and stormwater runoff control structures is critical. These structures will need to function for as long as the 3-foot source control covers will need to function, which is indefinite but almost certainly beyond 500 years.

Stream and Stormwater Diversions

Recommendation: Consistent with our recommendations to NMED concerning stormwater features, we recommend the Director include permit conditions to require, at a minimum, that all permanent diversion and stormwater control structures be designed to meet a 500-year storm event, and that all other diversions and stormwater control structures be designed to meet the 200-year storm event. In addition, the Director should require that the permittee submit a long-term monitoring and maintenance plan for a period of at least 100-years and preferably 500-years for all stormwater related structures. as the objectives of the plan should be to protect the source control measures used on the open pit, waste rock piles, and tailings storage facility, to protect both groundwater and surface water quality, and to assure long-term sustainability of revegetation at the site.

Perpetual Care

Section 19.10.6.603.H NMAC requires that “The operation will be designed to meet without perpetual care all applicable environmental requirements of the Act, 19.10 NMAC and other laws following closure.” The MORP attempts to satisfy that requirement in Section 4.8 (Perpetual Care) stating that “After the lands disturbed by NMCC’s mining activities are reclaimed, the land will return to being self-sustaining requiring no perpetual care following closure.” Accordingly, as will be discussed in our comments on financial assurance, NMCC has provided a maintenance and monitoring plan suggesting, following reclamation, seven years of maintenance and twenty-five years of post-closure water management and monitoring. Applying current reclamation and closure best industry practice, a mine such as the Copper Flat Mine that relies on source controls or other measures to protect water quality cannot feasibly implement reclamation that allows the company simply to “walk-away” after a limited period of time such as 25-years

Perpetual Care

Among other reclamation components the BLM's 3809 Handbook, Section 5.3.3 Performance of Reclamation identifies "Isolation, control, or removal of acid-forming, toxic, or deleterious n, substances" and "Providing for post-mining monitoring, maintenance, or treatment." The various measures proposed for Copper Flat including the Grayback Arroyo diversion, source control covers on the waste rock piles and tailings storage facility, as well as other features such as stormwater diversions are intended to isolate or control potential groundwater contaminants. As such, they require post-reclamation monitoring and maintenance to perform indefinitely to protect the reclamation and closure features. In addition, they require a long-term trust to be established for those features. BLM has addressed long-term closure costs in guidance (See Exhibit B) that recommends using a 500-year period.

Perpetual Care

In recognition of the necessity of long-term monitoring and maintenance for an indefinite period of time, the New Mexico Environment Department, at the administrative hearing for the Copper Flat Mine groundwater discharge permit (DP-1840), explicitly stated that the Department will require a 100-yr monitoring and maintenance program, renewed every 5-years for as long as necessary, as a condition of the permit. (See Ranches Exhibit 22: Testimony of Kurt Vollbrecht).

Perpetual Care

Recommendation: Although the MORP proposes to rely on source control and other measures to protect groundwater quality in the long term, it does not describe or provide for monitoring and maintenance, which will certainly be necessary for the continued performance of those source control measures into the foreseeable future. For example, monitoring and maintenance will be necessary to ensure that the soil covers to be placed over the waste rock piles and the tailings storage facility will permanently achieve less than one percent infiltration consistent with the requirements of the Groundwater Copper Rule, and to ensure that the Grayback Arroyo diversion is not compromised. Mines such as the Copper Flat Mine that depend on source control measures as part of the mine reclamation plan, must also include long-term monitoring and maintenance as integral components of the mine reclamation plan. While the Director could require the permittee to include a long-term monitoring and maintenance plan in the MORP, that would be in apparent violation of the Mining Act's prohibition on perpetual care. Therefore, the Director must deny the permit application because the proposed reclamation plan requires perpetual care.

Environmental Evaluation

Section 19.10.6.605.D NMAC provides that the Director shall prepare a draft environmental evaluation which shall include an analyses of the reasonably foreseeable impacts of proposed activities on the pre-mining and post-mining environment and the local community, including other past, present and reasonably foreseeable future actions, regardless of the agency or persons that undertake the other action or whether the actions are on private, state or federal land. The Director may contract with, and the applicant should pay for, a third party to prepare the analysis and assessment.

Although MMD ostensibly prepared an environmental analysis for the Copper Flat Mine, it is taken in its entirety from the 2015 draft Environmental Impact Statement prepared by BLM to comply with NEPA. MMD neither prepared the analysis nor hired a third-party to prepare the analysis. The “analysis,” moreover, is lifted from a draft document which itself is flawed.

Environmental Evaluation

Recommendation: Before MMD can issue a permit for the Copper Flat Mine, it must prepare its own environmental analysis in accordance with section 19.10.6.605.D NMAC or it must hire a third-party to do so.

Financial Assurance

NMCC CCP Financial Assurance Cost Estimate - Summary of Costs

Facility/Activity Type	Total Cost	% of Direct Costs
Direct Costs		
Waste Rock Dumps	\$12,911,961	
Tailings Storage Facility	\$17,728,017	
Draindown Management	\$4,490,755	
Buildings	\$1,911,273	
Pits	\$1,937,882	
Pit Rapid Fill	\$446,769	
Roads	\$30,511	
Ponds	\$298,257	
Yards	\$1,486,311	
Wells	\$134,488	
Waste Disposal	\$82,463	
Misc. Facilities	\$254,714	
Monitoring	\$1,883,745	
Reclamation Maintenance	\$686,791	
Direct Costs Sub-total	\$44,283,937	
Indirect Costs		
Mob/Demob	\$7,592	0.02%
Engineering, Design, Construction Plan	\$1,771,661	4.00%
Contingency	\$2,657,492	6.00%
Contractor OH and Profit	\$4,429,153	10.00%
Contract Administration	\$2,657,492	6.00%
Indirect Costs Sub-Total	\$11,523,390	26.02%
Total Costs	\$55,807,327	

Closure/Closeout Plan and Financial Assurance

NMCC CCP Financial Assurance Cost Estimate - Summary of Costs

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Closure/Closeout Plan and Financial Assurance

Draindown Management

- NMCC estimate assumes that draindown will continue for a total of 25 years, 5 years of active water management and 20 years of passive water management.
- During active water management water captured in the TSF underdrain collection pond will be pumped back to the impoundment surface of the TSF where it would be force-evaporated through evaporators
- Upon completion of placement of the cover on the impoundment, active evaporation through the TSF evaporation pond will no longer be necessary and the passive evaporation water management will begin.
- The impoundment will continue to drain at an ever-decreasing rate, requiring that it continue to be collected for passive evaporation and not pumped to the tailings surface cover.
- The estimated cost of 5 years of active water management and a new HDPE-lined evaporation pond for passive evaporation estimated to last 20 years is \$4,490,755.

Closure/Closeout Plan and Financial Assurance

Draindown Management – Comments/Recommendations

- The estimation of the draindown rates is inherently uncertain and the actual period during which active water treatment might need to be conducted may exceed five years and continue for decades.
- The TSF will always have some level of seepage which is likely to continue beyond 20 years and quite probably will continue long-term. This has been reflected in prior FA estimates at NM sites such as Chino, Tyrone and Questa which have assumed 100-years of TSF seepage in estimating long-term FA, and at other sites administered by BLM in Nevada and Montana which have assumed as much as 500-yrs for long-term TSF seepage.
- TSF seepage having the potential to impact groundwater should be recognized as a long-term liability and mitigation and corresponding costs should be included in the financial assurance cost estimate for an assumed period of at least 100 years and preferably 500 years.

Closure/Closeout Plan and Financial Assurance

Pit Rapid Fill

- According to NMCC, The open pit will remain a hydrologic sink capturing groundwater flowing from all directions during post-closure. NMCC will conduct rapid filling of the mine pit with fresh water provided from the off-site well field as the initial step in commencing reclamation/closure until it reaches an average steady-state condition.
- The inputs for rapid filling consist of monthly rapid fill rates for six months. Pipeline length and the static head required to pump the water were estimated based on the topography of the site.
- The estimated cost of pit rapid fill is \$446,769 based on the cost of pumping using existing equipment.

Closure/Closeout Plan and Financial Assurance

Pit Rapid Fill – Comments/Recommendations

- The proposal by NMCC identifies the off-site well field for pit rapid fill water but does not address its ownership to those rights in the quantity that might be required (3,000 gpm = 4,842 ac ft/yr).
- The existing equipment may not be available for use due to maintenance issues or due to ownership by the bankruptcy trustee.
- Given that NMCC cannot demonstrate ownership of the required water, or assure its transfer to NMED/MMD in the event of bankruptcy, the pit rapid fill should either be denied as an approach, or the cost estimate should include the cost of purchasing the water at current market rates and installing the necessary conveyances such as pumps and pipelines to reach the property.
- This would be likely to add significantly to the estimated cost and could increase it by up to an order of magnitude.

Closure/Closeout Plan and Financial Assurance

Monitoring

- Reclamation and Monitoring efforts would occur from Mine Year 15-40.

Summary of Reclamation Work and Sampling Schedule Post Mine Operation

Year	15	16	17	18	19	20	22	23-30	31-40
Reclamation Work	Bulk Reclamation		Contouring at TSF			Passive/Minimal			
Number of GW wells	25		24			22			
GW Sampling List	Full List of Constituents		Reclamation List of Constituents			Reclamation List of Constituents			
GW Sampling Frequency	Quarterly		Quarterly			Bi-Annually			
Number of SW samplers	5		5			0			
Number of Springs (Assumed)	1		1			0			
Number of Impoundments	8	5	2			1			

The estimated cost of groundwater and surface water sampling for a 25-year period is \$1,883,745.

Closure/Closeout Plan and Financial Assurance

Monitoring – Comments/Recommendations

- There is no basis provided by NMCC for only requiring monitoring for a 25-year period. At other mines in NM (Chino, Tyrone, Questa) the policy has been to assume monitoring for a 100-year period for long-term estimation purposes. At other mines where BLM has jurisdiction estimates for monitoring have ranged from 100-years to 500-years.
- No costs are included for vegetation, erosion, wildlife, pit lake, tailings storage facility or other monitoring.

Closure/Closeout Plan and Financial Assurance

Maintenance

- No description of reclamation maintenance was provided for the plan or the cost estimate. The cost estimate is based on a one-time cost for reclamation maintenance in Year 20 (post-mining year 7) consisting of 10% of the area requiring reseeding and 6% of area requiring growth media.
- The estimated cost of reclamation maintenance is \$686,791.
- There is no basis provided by NMCC for only requiring maintenance for a 7-year period. At other mines in NM (Chino, Tyrone, Questa) the policy has been to assume maintenance for a 100-year period for long-term estimation purposes. At other mines where BLM has jurisdiction estimates for maintenance have ranged from 100-years to 500-years.

Closure/Closeout Plan and Financial Assurance

Maintenance – Comments/Recommendations

- There is no basis provided by NMCC for only requiring reclamation maintenance as a one-off in year seven following mine closure. At other mines in NM (Chino, Tyrone, Questa) the policy has been to assume ongoing maintenance for a 100-year period for long-term estimation purposes. At other mines where BLM has jurisdiction estimates for maintenance have ranged from 100-years to 500-years.
- No costs are included for road maintenance, stormwater maintenance, tailings storage facility or other maintenance.
- No costs are included for long-term pit lake mitigation or long-term TSF capture and passive treatment.

Closure/Closeout Plan and Financial Assurance

Direct Costs – Conclusions

- The direct costs estimated by NMCC for reclamation and closure of the Copper Flat Mine are \$44M.
- Based on our prior comments the estimate is based on an ideal outcome that is not founded on a realistic likelihood that assumes ongoing monitoring, maintenance, and some level of pit lake management will be required for the long-term.
- A more thorough evaluation of the costs for the project and an assumption of long-term monitoring, maintenance and water treatment operations would likely reveal a direct cost of closer to \$100M for the project.

Closure/Closeout Plan and Financial Assurance

Indirect Costs

Financial Assurance Reclamation (Construction) Indirect Cost Comparison
 NMCC Copper Flat FA Proposal, MMD Draft Guidance, BLM Guidance

Indirect Cost Category	Indirect Cost % ¹		
	NMCC CF In Direct Cost	NIMMMD	USBLM In Direct Cost
Mobilization/Demobilization		4%	3%
Engineering, Design and Construction Plan	4%	3%	10%
Contingency	6%	15%	10%
Contractor Profit and Overhead	10%	15%	1.5% of labor
Liability Insurance			1.5% of labor
Performance and Payment Bonds		3%	3%
Agency Management/Contract Admin	6%	6%	6%
Agency Overhead			17% of AM/CA
Total ²	26%	46%	32%

Footnotes:

Indirect Cost %¹ Based on \$44,283,937 Total Direct Cost
 Total² Based on labor = 30% of Total Direct Cost

Closure/Closeout Plan and Financial Assurance

Maximum Reclamation Requirements

In the MORP and corresponding financial assurance, NMCC assume near ideal outcomes for the proposed mining operation. NMCC assumes that the ore deposit will be mined to its maximum currently known extent; that reclamation and closure will take place after that mining and processing has occurred; that the waste rock piles and waste management area will be built to their final projected extent; and that the tailings storage facility will be filled to its design capacity; that pit lake will form at an elevation that will be entirely on private land owned by NMCC. Each of these assumptions leads to lower reclamation costs, yet each of these assumptions is highly questionable.

Closure/Closeout Plan and Financial Assurance

Maximum Reclamation Requirements

Standard practice in mine financial assurance estimation is not to assume an ideal outcome but instead to determine the maximum reclamation requirements. As noted by MMD's Closeout Plan Guidelines for Existing Mine, Attachment 4, "This is the most important step in the estimating procedure. Generally, the greatest estimated reclamation costs will occur at that point in the mining plan where one or more of the following conditions exist:

- The greatest area of disturbance or the greatest area requiring final grading, topsoil placement, and revegetation;
- The largest volume of material to be graded to establish suitable post-mining contours;
- The longest haul distance between material handling areas and the location of final placement;
- The greatest number of structures on site;
- The greatest amount of material that must be handled to cover refuse disposal sites; and/or
- The need for special reclamation activities, such as handling of acid rock drainage, acidic or toxic materials, developing final cut lakes, handling of topsoil, sealing underground mine entries, and addressing difficult topographic situations.

Closure/Closeout Plan and Financial Assurance

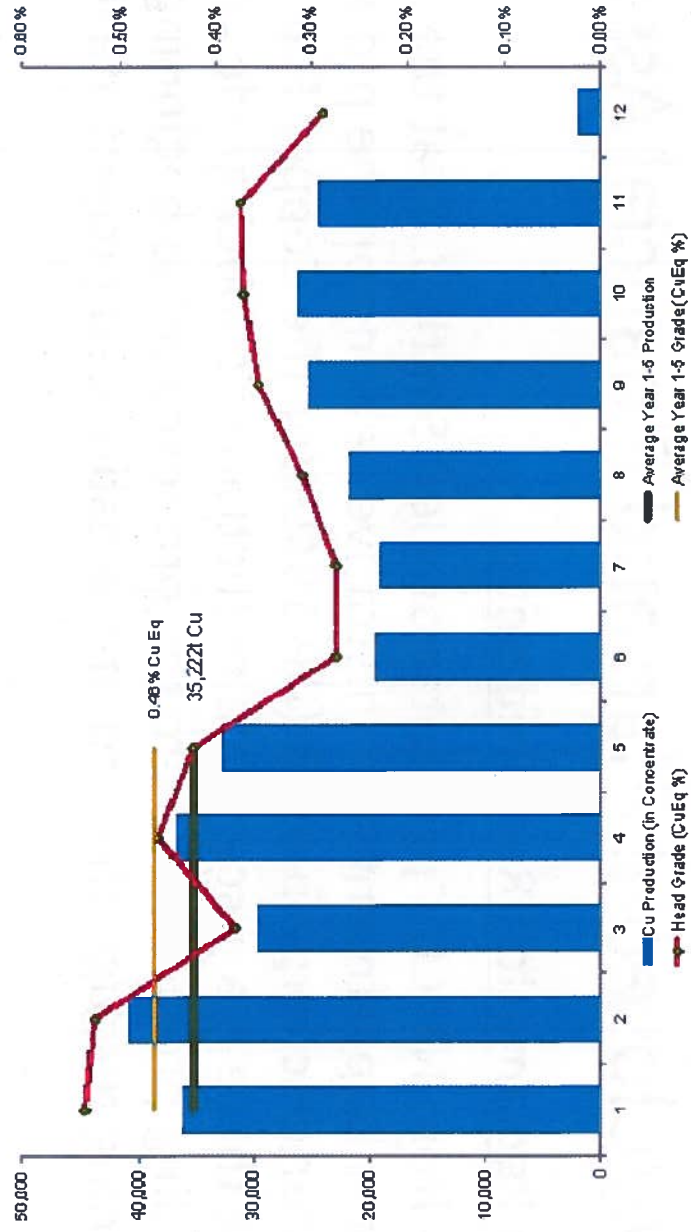
Maximum Reclamation Requirements

The figure from NMCC's presentation (Jeff Smith p. 7) at the Environment Department administrative hearing on the proposed groundwater discharge permit (DP-1849) for the Copper Flat Mine shows that there is a discernible reduction in copper grade and corresponding production from the proposed mine beginning in year 6 and extending through the end of the estimated project life in year 12.

**HEARING ON NMED DP 1840
NEW MEXICO COPPER CORPORATION**



Annual Copper Production (t) and Copper Equivalent Grade (%)



Closure/Closeout Plan and Financial Assurance

Maximum Reclamation Requirements

- If economic conditions are not favorable in year 6, the mine operator might be forced to cease mine production and place the mine on standby.
- The mine might also then be abandoned. If this were to happen the waste rock piles would be incomplete and the waste repository for materials with higher metals leaching potential would not be completed.
- The materials with high metals leaching, which would predominately be mined during the first five years of the project, would potentially require additional reclamation.
- The waste rock piles would also require additional reclamation, such as additional cover material and grading.
- The tailings storage facility would not be filled and more grading would be needed to achieve positive drainage.
- The pit would not be completed, and the ensuing pit lake would be more likely to encroach on public land; surface water standards would apply and additional pit lake mitigation measures would be necessary, including pumping to prevent formation of a pit lake and treatment of the pit water.
- Therefore, early closure of the mine – which is quite likely in year 6 – would necessitate more extensive reclamation requirements and therefore much higher costs.

Closure/Closeout Plan and Financial Assurance

Recommendation: The Director should require the applicant to develop a financial assurance estimate for year 6 of the mine life based on the conditions previously described. Year 6 is likely to be a point in the mining plan when the maximum reclamation requirements would be necessary, and the maximum reclamation costs would be incurred. Assuming this to be the case, the Director should require the applicant to provide that amount of financial assurance prior to any permit.