

STATE OF NEW MEXICO
BEFORE THE SECRETARY OF ENVIRONMENT



IN THE MATTER OF THE APPLICATION
OF NEW MEXICO COPPER CORPORATION FOR
A GROUND WATER DISCHARGE PERMIT FOR
THE COPPER FLAT MINE, DP-1840

NO. GWB 18-06 (P)

HEARING OFFICER'S REPORT, PROPOSED
FINDINGS OF FACT AND CONCLUSIONS OF LAW

INTRODUCTION

New Mexico Copper Corporation ("Applicant" or "NMCC") seeks a discharge permit for the Copper Flat Mine facility, specifically for the planned discharge of up to 25,264,000 gallons per day (gpd) of tailings slurry, which includes mine tailings, process water, impacted stormwater, and domestic wastewater to a lined tailing impoundment. Additionally, the discharge permit would regulate discharges from other mine units, including waste rock stockpiles, ore stockpiles, mineral processing units, process water impoundments, an open pit, sumps, tanks, pipelines, and other areas within the permit boundary of approximately 2,190 acres. The Copper Flat Mine is located approximately five miles northeast of Hillsboro, in Sierra County, New Mexico.

The New Mexico Environment Department (NMED) Ground Water Bureau (Bureau) supports the issuance of the permit with conditions necessary to protect public health and welfare and the environment.

This matter was heard over five days from September 24-28, 2018, in Truth or Consequences, New Mexico. Four parties were in attendance. The Bureau was represented by Andrew Knight of NMED's Office of General Counsel, and the Bureau's position was presented by Bureau staff Kurt Vollbrecht, Brad Reid, and Dr. Joseph Marcoline. Those present on behalf

of the Applicant included Stuart Butzier, attorney; Jeffrey Smith, NMCC chief operating officer; and environmental consultants Juan Velasquez, Steven Finch, Dr. Ruth Griffiths, Dr. Rob Bowell, David Kidd, and Todd Stein.

Elephant Butte Irrigation District (EBID) was represented by Samantha Barncastle, attorney, who was joined by Professor Dr. James King; EBID groundwater resources manager Erek Fuchs; EBID district engineer Zachary Libbin; and environmental consultant Dr. Kenneth Carroll.

Turner Ranch Properties and Hillsboro Pitchfork Ranch (the Ranches) were represented by Charles de Saillan, who was joined by Stephen Dobrott, ambassador for Ted Turner Expeditions; Robert Cunningham, co-owner of the Hillsboro Pitchfork Ranch; James Kuipers, a consulting engineer; and Dr. Tom Meyers, a hydrologic consultant.

Many members of the public participated in questioning and testimony at the hearing, including Harvey Chatfield, Rhonda Brittan, Bruce Swingle, Ray Irwin, Kenneth Lyon, Mike Bowen, Taylor Streit, Lee Newman, Tom Shelley, George Lee, Virginia Lee, Earl Bridges, Nolan Winkler, Ryan Gott, Charles Hacke, Jan Haley, Dan Lorimier, Veronique De Jaegher, Nichole Trushell, William Lindenau, Steve Morgan, Steve Buckley, Cathy Berger, Martin Mijal, Ron Fenn, J. Khalsa, Denise Barrera, James Berger, Hans Townsend, Mary Cavett, Rebecca Dow, Candace Browne, Robert Byrd, Edna Tager, Don Steinnerd, Jim Lommen, Vern Jones, Larry Brooks, Andrew Maloney, Jack Diamond, Mike Skidmore, Crystal Diamond, Teri Cates, Laura Schneberger, Ted Caluwe, and John Bokich.

The administrative record includes, *inter alia*, the Bureau permitting file in nearly 18,000 pages, notices of hearing in English and in Spanish; the notices of intent to present technical testimony from the Applicant, the Bureau, EBID, and the Ranches, exhibits and PowerPoint presentations; the sign-in sheets; hearing audiotapes; a five-volume transcript made at hearing; post-hearing submittals from the Applicant, the Bureau, EBID, and the Ranches; various motions and responses; an updated Index to the Administrative Record and this Report.

The hearing was conducted in accordance with the New Mexico Water Quality Control Commission Regulations, 20 NMAC 6.2.3110 and the Department's Permitting Procedures, 20.1.4 NMAC. The hearing lasted five fairly long days, approximately 9 a.m. to 7 p.m. each day except Tuesday, when public comment lasted until 8 p.m. The sign-in sheets show 154 names over the course of the week, but not everyone signed in.

Every participant was allowed full opportunity to call witnesses, present testimony and other evidence, and cross-examine witnesses called by any other participant. The hearing was both audio-recorded by the Hearing Clerk and transcribed by a Court Reporter at the hearing, Cheryl Arreguin of Kathy Townsend Court Reporting. A certified court interpreter, Sandra Olivares Caldwell, was present for the entirety of the hearing to provide simultaneous interpretation between English and Spanish. The record was left open for the purpose of submitting proposed findings of fact and conclusions of law, and a few corrected slides. Post-hearing submittals were received from the Bureau, the Applicant, EBID, and the Ranches.

In addition to the oral public comment offered at hearing, written public comment was received during the hearing from Pat Gordon, Texas Rio Grande Compact Commissioner; Robert

Middleton, Los Arcos owner; Gila Resources Information Project (GRIP), Freeport McMoran, Candace Brown, and dozens of other individuals, all of which are part of the record.

Based on the entire record, my recommendation goes so far as to say that the final draft of DP-1840 as presented by the Bureau is fully compliant with the Copper Rule and that the application for discharge permit should be granted, apart from a consideration of whether the permit would pose “an undue risk to property,” particularly the property of EBID and the Ranches. I am forwarding the record to the Secretary for his consideration and decision-making without a recommendation as to final disposition, and will prepare a Final Order, with the necessary additional findings and conclusions, following further instructions.

Proposed findings of fact and conclusions of law are appended, and were drawn from all four parties’ post-hearing submittals. The findings of fact are organized in the following way:

I. THE PARTIES

- A. THE PERMIT APPLICANT
- B. THE ENVIRONMENT DEPARTMENT
- C. THE RANCHES
- D. THE IRRIGATION DISTRICT

II. THE PROPOSED MINING PROJECT, MINE RESERVES, PROCESSING, AND SCHEDULE

III. NMED’S GROUNDWATER DISCHARGE PERMITTING

IV. INTERESTS OF THE RANCHES

- A. The Ladder Ranch
 - 1. Ranch Ecosystem
 - a. Water
 - b. Flora and Fauna
 - c. Habitat Conservation Programs
 - 2. Ranch Business Interests
- B. The Hillsboro Pitchfork Ranch
 - 3. Ranch Ecosystem
 - a. Water
 - b. Flora and Fauna
 - c. Habitat Conservation Programs
 - 4. Ranch Business Interests

V. EBID AND THE RIO GRANDE PROJECT

VI. HISTORY OF THE MINE SITE

- VII. NMCC'S DISCHARGE PERMIT APPLICATION
- VIII. GEOLOGY, HYDROLOGY, AND GEOCHEMISTRY OF THE MINE SITE
 - A. GEOLOGY
 - B. HYDROLOGY
 - C. GEOCHEMISTRY
- IX. MINE FACILITY UNITS
 - A. WASTE ROCK STOCKPILES
 - 1. During Operation
 - 2. WRSP Reclamation
 - B. IMPOUNDMENTS
 - 1. During Operation
 - a. Process Facility Area
 - b. Tailings Storage Facility
 - 2. Impoundments Reclamation
 - C. OPEN PIT
 - 1. During Operation
 - 2. Open Pit Reclamation and Maintenance
- X. THE DISCHARGE PERMIT
 - A. DESCRIPTION
 - B. ADDITIONAL DISCHARGE PERMIT PROVISIONS
 - 1. Monitoring
 - 2. Stormwater
 - 3. Additional Closure Provisions
 - 4. Abatement Provisions
 - C. CHANGES TO DRAFT DISCHARGE PERMIT IN RESPONSE TO COMMENTS
 - D. CONFORMANCE OF DRAFT PERMIT WITH COPPER RULE REQUIREMENTS
- XI. FINANCIAL ASSURANCE
- XII. SURFACE WATER OF THE STATE DETERMINATION
- XIII. THE PUBLIC HEARING ON DP-1840

Below find discussion of the issues raised during the hearing and in the closing arguments, with an explanation as to why some of the parties' proposed findings and conclusions were not included in the recommended findings and conclusions appended.

A 'summary' or streamlined form of the transcript will be filed separately.

DISCUSSION

Evaluation of the Andesite

The Ranches assert that there has been inadequate evaluation of the andesite bedrock, and recommend that “the andesite bedrock be more fully characterized and evaluated to determine its conductivity and the degree to which it may be fractured. If the evaluation shows that the andesite has a higher hydraulic conductivity than NMCC has estimated, the Environment Department should require more stringent permit conditions to protect groundwater quality,” citing Myers Test. Tr. vol. 4, p. 1181, line 19 to p. 1183, line 14; see Ranches Ex. 30.

EBID shares the Ranches’ concern that the aquifer assessment has been inadequate, and asserts that the use of data in the geochemical modeling was selective.

Although, as the Ranches note, the discharge permit application states that the andesite bedrock underlying the proposed waste rock piles will serve as a “natural liner protective of groundwater,” and a “natural liner system” (AR-12433, AR-12434) when the bedrock does not meet the definition of a ‘liner system’ in 20.6.7.7.B(34) NMAC, the question under the Copper Rule is not whether the andesite is equivalent to a liner system.

The Ranches have identified in their argument part of the applicable section of the Copper Rule for new waste rock piles located outside the open pit surface drainage area: 20.6.7.21.B(1)(d)(vii) NMAC, which requires, among other things, that an applicant submit a design report that includes “an aquifer evaluation to determine the potential nature and extent of impacts to ground water from the waste rock stockpile based on the proposed waste rock stockpile design and geochemical characteristics. The aquifer evaluation shall include a

complete description of aquifer characteristics and hydrogeologic controls on the movement of leachate from the waste rock stockpile and ground water impacted by the waste rock stockpile based on actual field data.”

Dr. Myers stated that the estimate of the hydraulic conductivity is based on three data points from two borings, and that although hydraulic conductivity may be very low in some areas of the andesite, in other areas it ‘might’ be much higher, particularly considering fractures in the bedrock and the fact that several wells referred to as ‘supply wells’ are completed in the andesite.

Ultimately, the Ranches’ proposed findings on this issue are not included in the recommended findings and conclusions based on the testimony of NMED staff Mr. Reid and Dr. Marcoline, and Mr. Finch’s testimony, particularly as set out in his rebuttal:

1. The low permeability of the andesite has been known for some time, and is not based merely on two borings. Shomaker reached this conclusion in 1993 based on local geology, mine workings, hand-dug wells and mine shafts, and dewatering efforts within the andesite. In 1996, another consultant, Adrian Brown, did the slug tests Mr. Finch had described in his direct testimony. Other consultants reached the same analysis independently in 1997 (SRK, reviewing Brown’s well data), and 2001 and 2002 (INTERA), among others. Finch, Tr. pp. 1606-1607, Finch Rebuttal slide, marked as NMCC 108.
2. Regional ground water flow from the west goes around the andesite block, which creates springs and seeps. The wells referred to as ‘supply wells’ completed in the

andesite are mostly hand-dug in drainages, with a water chemistry that resembles surface water. Finch, Tr. pp. 1608-1609, Finch Rebuttal slides NMCC 109, 110.

3. The field data in the Stage I Abatement Report reflects that when they sampled the wells completed in the andesite, they rarely got any more than a single well volume. Finch, Tr. p. 1611, Finch Rebuttal slides NMCC 111 and 112.

Mr. Finch had also testified about fractures in the andesite, and why they do not represent 'preferential pathways': The permeability of the andesite that surrounds the ore body has been significantly reduced because there were fractures in the andesite, those fractures were filled in with fluids, and those fluids formed silicate and calcite minerals. That further reduced the permeability of something that could have transmitted water, but doesn't transmit water very well at all. Finch, Tr. p. 99.

Mr. Reid testified that the Copper Mine Rule requires that an applicant conduct an aquifer evaluation for stockpiles located outside the open pit surface drainage area to determine the need for an interceptor system. The aquifer evaluations for Waste Rock Stockpile 2 and 3 concluded that discharges from these waste rock stockpiles are not expected to result in an exceedance of groundwater standards. An interceptor system is not required at this time. Considering the placement of the stockpiles on low permeability andesite bedrock, the demonstrated geochemistry of the waste rock, the integrated solution capture systems and the strong Monitoring Plan, NMED does not anticipate that contaminants generated from Waste Rock Stockpiles 2 and 3 will impact groundwater above the standard set forth in Section 20.6.2.3103 NMAC. In addition, New Mexico Copper Corporation has also proposed a robust Material Handling Plan that places the potentially acid-generating waste rock material between

layers of waste rock that is not acid-generating. In the event that groundwater monitoring indicates that groundwater standards could be exceeded, there are provisions in DP-1840 which could result in NMED requiring installation of an interceptor system for implementation of other source control measures. Reid, Tr. pp. 522-523.

Dr. Marcoline, who reviewed the aquifer evaluation prepared by NMCC, concluded that it was appropriate. The evaluation does not require the andesite to be impermeable in order to be protective of ground water, and the hydraulic conductivity of the andesite is only one factor, not the dominant factor, in his evaluation of water moving to ground water beneath the waste rock piles. Marcoline, Tr. pp. 538, 721, 723.

For all of these reasons, requiring further evaluation of the andesite is not among the recommendations. Nonetheless, as the Ranches note, the Department's Ground Water Quality Bureau staff would not necessarily object to additional evaluation of the andesite bedrock, and agreed that further evaluation would be useful if it makes the public more confident in the permit. Vollbrecht Test. Tr. vol, 2, p. 555, line 17 to p. 556, line 21. If the Secretary chooses to include an additional permit condition requiring additional evaluation of the andesite in the discharge permit, it can be included in the final order.

EBID's proposed findings on the data used in the geochemical modeling are not included in the recommended findings and conclusions based on the testimony of Dr. Griffiths, particularly her rebuttal testimony: "Static testing is commonly used as a screening level test. It's conducted on pulverized material, and it's just looking purely at the potential for ARD. Whereas kinetic testing evaluates rates over time, it takes into account the mineralogy of the sample. It's carried out on a crushed rather than a pulverized material. So it's much more

representative of the weathering rates you would expect in the field. With the Copper Flat project we've also established that the mineralogy is very important. We recognize that there's encapsulation of sulfide minerals and slow-reacting silicate minerals, and for that reason, we feel that the kinetic testing measure is a much more reliable indicator of acid generation."

As for mixed parameters, "there's perhaps no standard method for incorporating humidity cell data into models. In my experience, I've seen all weeks of humidity cell data used. I've seen steady-state weeks used. I've seen first flush weeks used. I've even seen just one single week of humidity cell data used. The reason we used the approach we did for this project is, as Dr. Carroll recognized, for calibration purposes, and we found that when we used that approach we saw a much better calibration with the existing pit lake." By doing so, this increased her confidence in the modeling results. Tr. pp. 1633-1635.

Evaluation of Leakage from the Tailings Storage Facility

The Ranches assert that the seepage estimate provided by NMCC is a best-case, ideal estimate of seepage from the lined tailings impoundment, and recommend that the Department require NMCC to provide a more conservative, robust seepage estimate, consistent with current industry practice, along with a sensitivity analysis, as part of the required aquifer analysis under the Copper Rule, citing Kuipers, Tr. p. 986, Ranches Ex. 9, p. 6, AR 17966.

The tailings storage facility (TSF) would be a synthetically lined storage facility adjacent to the process area. The liner proposed is a high-density polyethylene (HDPE) synthetic liner, 80-mil thick, high quality, standard liner that is used for environmental containment around the world. The TSF includes solution underdrain and collection and process water recycling systems.

The water recovered from the facility would be reused for mineral recovery as part of a Water Conservation Plan. Smith, Tr. p. 51. Mr. Smith acknowledged on cross examination that liners do leak, and noted that assumptions about leakage had been included in the analysis by the hydrology and geochemistry experts. Smith, Tr. pp. 71, 78.

Mr. Finch testified more specifically about the aquifer evaluation and analysis of potential liner leaks, stating that they did use the industry standard for evaluating the potential leakage rate. Finch, Tr. p. 132, lines 22-24, Tr. p. 178, lines 23-25. See Table 3.6 on slide 45, from the Probable Hydrologic Consequences report.

Dr. Ruth Griffiths also testified about seepage and the liner under the TSF: to assess the potential for groundwater impacts, they did assume that there may be minor seepage through manufacturing defects within the liner. For the purpose of the calculations, they assumed that there would be one circular defect per acre in the liner. This was calculated by John Shomaker & Associates and is consistent with Giroud and Bonaparte's guidance. This will result in minor seepage from the facility; the seepage will consist of a mixture of processed water that's entrained within the tailings and also precipitation that may have infiltrated the facility. Griffiths, Tr. pp. 261-262.

The Ranches' proposed findings on this issue are not included in the recommended findings and conclusions. NMCC has already determined the seepage rate from a lined facility consistent with industry standard and accepted guidance. As Mr. Kuipers acknowledged during cross examination, the Copper Rule allows for an unlined storage facility with an interceptor system; this was the major issue Mr. Kuipers' clients had with the rule when it was appealed.

Mr. Kuipers agreed that the liner proposed by NMCC for the TSF meets the requirements of the Copper Rule. Kuipers, Tr. 1148:9-16.

Department staff characterize the liner as exceeding the requirements of the Copper Rule. Reid, Tr. p. 521, lines 5-10. In the event actual seepage or leaks were to exceed NMCC's estimates and present a threat to groundwater, the Department still has the authority to require an interceptor system as necessary. DP-1840 has contingency requirements in place that would be triggered in the event that impacts to groundwater are detected or anticipated. Contingency requirements could include a corrective action plan, additional monitoring, and interceptor systems. Reid, Tr. p. 526, line 22 to p. 527, line 2. See also Reid Tr. p. 728, line 16 to p. 729, line 24.

Adequacy of Groundwater Monitoring

The Ranches assert that NMCC's ground water monitoring proposal is inadequate, and recommend additional monitoring wells below the TSF and waste rock piles spaced no more than 500 feet apart, citing Dr. Myers' testimony based on his interpretive model. The Ranches also recommend that NMCC be required to try to locate fractures in the andesite and install additional monitoring wells in any fracture zone located. Ranches Ex. 23, p. 15 (AR-17956), Ranches Ex. 34; Myers Test. Tr. vol. 4, p. 1223, line 19 to p. 1224, line 16. EBID shares the Ranches' concern that there are an insufficient number of monitoring wells proposed around the mine units.

As the Ranches note, the Environment Department did propose two new groundwater monitoring wells in addition to the monitoring wells that NMCC proposed, which NMCC has

apparently accepted subsequent to hearing; but the Ranches believe the groundwater monitoring plan is still inadequate.

Mr. Finch testified about the ground water monitoring planned for the mine site, and the Groundwater Monitoring Plan in the Discharge Permit application packet. Tr. p. 117, line 15 to p. 119, line 12. On cross-examination he confirmed that a hydrologic analysis was used to determine where to locate the ground water monitoring wells around the waste rock. They used ground water contours as they currently exist and various sequences of model-simulated ground water contours throughout the mining period, out to hundred years after reclamation. Based on their understanding of groundwater flow from that exercise, they chose the best location for monitoring wells. Tr. p. 177, lines 2-15. Some of the monitoring wells exist already, and some will be new. Tr. p. 200, line 1 to p. 202, line 15.

In both his written and hearing testimony, Dr. Marcoline stated that the monitor well network around the tailing storage facility and waste rock stockpiles provide an appropriate initial basis for monitoring of the proposed facilities. His review of the monitoring network around those two areas was based on the underlying geology at the site, surface topography, and both the current and postmining potentiometric surface, or the hydrology. He looked at well locations in relation to buried drainages, to geologic contacts, and to the locations downgradient of projected groundwater flow directions. As the mine develops, under the permit NMED may require additional monitoring wells as appropriate. Marcoline, Tr. p. 530, line 3 to p. 541, line 4. See also Reid, Tr. p. 523, lines 12-16. On cross-examination, Dr. Marcoline clarified that until the initial monitoring wells are in, and everything's being monitored, 'we may not know if we need more or not.' Tr. p. 704, lines 19-21.

As with seepage or leaks from the tailings facility, in the event contaminants are detected, the Copper Rule requires additional monitoring. With the dispersion Dr. Myers noted, the monitoring wells planned will detect contaminants even if they are not in the direct line of a plume. Finch, Tr. p. 1616, lines 7-15.

The Department staff's conclusion that the proposed monitoring well network is appropriate, with the two additional wells, is well-founded in the record. The Ranches' and EBID's proposed findings on this issue are not included in the recommended findings and conclusions.

Nonetheless, as the Ranches note, the Department's Ground Water Quality Bureau staff would not necessarily object to additional monitoring wells, and agreed that additional wells would be useful if it makes the public more confident in the permit. Vollbrecht Test. Tr. p. 555, line 17 to p. 556, line 21, and p. 557, lines 7-9. If the Secretary chooses to include an additional permit condition requiring additional monitoring wells in the discharge permit, it can be included in the final order.

Adequacy of Financial Assurance Proposal

The Ranches assert that the financial assurance proposal by NMCC is substantively inadequate and procedurally defective, relying upon several observations to recommend that the discharge permit be denied or that the Department reopen the hearing record for a more complete financial assurance proposal and public input on that proposal. Ranches' Closing Argument, pp. 22-27.

First, the Ranches note that several companies have tried to operate the Copper Flat Mine profitably, but have not been successful. The recommended findings and conclusions do

include the history of the mine site as set out by the Ranches, to provide background and context for the Secretary's consideration of both the financial assurance testimony and the testimony concerning the abatement of the existing plume at the site. The Ranches also note that NMCC, a wholly-owned subsidiary of a Canadian company, does not own other assets in New Mexico or any other state, besides the mine site. This is not disputed. Mr. Kuipers spoke at length about the vulnerable times in a mine's operating life, particularly as that mine begins to process less profitable lower grade ore, which will occur at Copper Flat at approximately year 6. Tr. pp. 1070-1073. A finding on the question of when the mine will face its greatest economic challenges, particularly when we can only speculate about the price of copper in each year of its operation, is not necessary in the determination of whether the groundwater discharge permit should be issued. Financial assurance is required precisely because a mine might cease operation at any time, even after just 3 months.

Mr. Vollbrecht described the process and the status of the financial assurance estimate for Copper Flat: "Three agencies, the Bureau of Land Management, NMED, and the Mining and Minerals Division, must hold financial assurance for closure of the Copper Flat Mine. The New Mexico Mining Act includes authority for financial assurance regulations, so the Mining and Minerals Division takes the lead role as agency for jointly held financial assurance. This is typical at other sites where all three agencies are involved. NMED review and approval of the proposed cost estimate is necessary to ensure that the requirements of the Water Quality Act are met. In addition to ensuring there is financial assurance to cover costs associated for the prescriptive surface reclamation requirements of the Copper Rule, there must be financial assurance provided for long-term monitoring and maintenance of the site post-closure and any

short-term and long-term water management that may be necessary. This includes consideration of tailing draindown water management, both active and passive, groundwater quality monitoring and monitoring to ensure open pit capture is maintained. There also needs to be adequate financial assurance in place to cover costs associated with the Abatement Plan in the event the facility never does operate. This would include source control through reclamation of the existing surface disturbance and long-term groundwater monitoring.” Tr. pp. 504-505.

“NMED intends to require financial assurance for a period of 100 years to ensure adequate financial assurance is in place for long-term monitoring and maintenance. This is consistent with the financial assurance requirements for the Chino and Tyrone mines where long-term water treatment is required. The financial assurance cost estimate will be subject to review every five years at permit renewal. No disturbance associated with mining will be allowed until the cost estimate is approved by all three agencies and financial assurance is in place.” Tr. p. 506.

“The process for review and approval of the financial assurance is underway. A request for comment on the cost estimate was sent to NMED from the Mining and Minerals Division pursuant to the Mining Act requirements in August of this year. There have been several meetings between MMD, NMED, BLM and NMCC to discuss the cost estimate. The first round of comments is due to the Mining and Minerals Division on October 15th. MMD can't issue the Mining Act permit until the financial assurance issues are resolved and all three agencies approve the cost estimate. We fully expect a hearing on the Mining Act permit that will include

the approved cost estimate and financial assurance, and NMED will participate in that hearing.”
Tr. pp. 506-507.

On cross-examination, Mr. Vollbrecht confirmed the 100-year time period to assure adequate money for long-term care of the facility, confirmed that financial assurance is subject to renewal every five years, pursuant to the Water Quality Control Regulations, and acknowledged that he did not know the discount rate or the escalation rate, but that all three agencies would have to agree on those rates prior to approval. He agreed that it would be important to include in the closure cost estimate costs for removal of large equipment, piping and other infrastructure, mitigation of water contaminated during road reclamation, and comprehensive costs for waste disposal. He stated that the financial assurance instrument has not yet been proposed, but BLM requirements do not allow for a corporate guarantee. Tr. pp. 550-555.

The Ranches’ recommendations as to permit denial or reopening the record on this issue are not included in the recommended findings and conclusions. As to the Ranches’ substantive concerns, Department staff, management, and counsel were present for the entirety of the hearing, including Mr. Kuipers’ extended testimony on the deficiencies he saw in the preliminary cost estimate from NMCC. They offered no objections or contrary testimony to his points, and expressly agreed with many of his points. Nevertheless, if the Secretary believes it necessary, the final order can include an instruction to staff to consider each of the points he raised as part of their review and negotiation with the other two agencies.

As to the procedural concerns, although Mr. Kuipers stated that he believed issuing the discharge permit before the financial assurance is settled would be ‘giving up leverage to

conduct an effective negotiation,' Tr. p. 1115, he does agree that the Mining and Minerals Division cannot issue a permit to Copper Flat without a determination from NMED that all environmental laws and requirements have been met. Tr. pp. 1148-1149. He also agreed that DP-1840 Section C117, Financial Assurance, is consistent with the Copper Rule. Tr. p. 113, lines 14-16.

The Copper Rule and DP-1840 require that financial assurance be held among the three agencies, not that the NMED Secretary make a decision on the final amount as part of the final order at the end of the discharge permit process. NMCC's preliminary proposal was available for comment at the NMED discharge permit hearing; as Mr. Vollbrecht testified, it is the EMNRD Mining Commission hearing where public comment may be offered on the final cost estimate and form of financial assurance.

Regulatory Status of the Pit Lake—Surface Water of the State Determination

As the Ranches note, it is undisputed that discharges from the Copper Flat Mine into the future pit lake will cause State of New Mexico surface water standards to be exceeded. NMCC's modeling shows that, 25 years after closure and rapid fill, the future pit lake will exceed the surface water quality standard for mercury for protection of wildlife, the surface water quality standard for selenium for protection of wildlife, and the surface water quality standard for vanadium for livestock watering. AR-07969 to AR-07970, AR-07976. NMED staff also acknowledged that State surface water standards for aquatic wildlife will be exceeded in the open pit, and that it is likely that water quality in the pit lake will deteriorate over time as the result of evapoconcentration, which will increase the concentration of total dissolved solids. Vollbrecht, Tr. p. 564, lines 14-19, lines 21-25. Apart from those predictions, the future pit lake

water is predicted to be mildly alkaline and of better quality than the existing pit lake, with no acid wall seep events. Griffiths, Tr. pp. 272-273.

Citing the Water Quality Act, Section 74-6-5.E, the Ranches assert that the Secretary must deny the proposed discharge permit because the proposed discharge will “cause or contribute to water contaminant levels in excess of a state or federal standard.” NMCC and NMED maintain that the future pit lake will not be a water of the state, and those standards will not apply. The Ranches step through each part of the definition of “water of the state” set out in Section 20.6.7.S(5) NMAC. See Ranches’ Closing Argument, pp. 38-41.

The primary point of contention is whether, as NMCC and NMED assert, the future pit lake constitutes “private waters that do not combine with other surface or subsurface water.” If so, it is not a surface water of the state. The Ranches challenge the conclusion that the pit lake will be constructed entirely on private property based upon proximity of the future lake edge to the private property boundary with BLM, fluctuations in the water level in the pit lake due to seasonal and longer-term variations in temperature and precipitation, and sloughing of the pit walls.

The pit lake was discussed by NMCC witnesses Mr. Smith, Mr. Finch, and Dr. Griffiths, among others. On cross-examination, Mr. Finch testified as follows: the final pit lake surface elevation will be 4,894 feet above sea level, and that this figure is precise to the foot. The figure does take into consideration seasonal variability. As part of the Probable Hydrologic Consequences and other correspondence with various agencies, NMCC went into that analysis in great detail, looking at the potential variations in water level over time due to various climate

regimes, based on the last hundred years of data from the Hillsboro weather station. Seasonal and longer-term variation is very small, a foot or two. Tr. pp. 169-170.

On rebuttal, Mr. Smith testified to some apparent confusion on the elevation of contours shown on one of the diagrams Dr. Myers was referring to when discussing his concern that the future pit lake would encroach on BLM land based on its ultimate elevation: “standard practice in open pit design uses mid-bench contours to outline the pit benches. The toe and crest lines are not shown. At the Copper Flat open pit, the bench height is 25 feet, so the mid-bench interval will be 12.5 feet up the bench face. The elevations that are shown are the bench elevations. The contour line above the 4,900 is the bench elevation plus one-half of the bench height, or the 4,912.5 elevation contour, which circles the entire bench. The elevation of that contour on the outside of the 4,900 bench is actually 4,900 minus 12.5. The water level is slightly below the 4,900 bench. At reclamation and closure, that bench will stay dry, there will be three foot of cover placed on that bench. The final elevation will be raised three feet, to 4,903 elevation, to avoid having the pit lake extend onto federal public lands.” Tr. pp. 1600-1601.

Based on a review of all of the relevant testimony on the future pit lake, the recommended findings do not include the Ranches’ proposed finding that the future pit lake will encroach on public land.

The Ranches further argue that even if the pit lake were constructed entirely on private land, its waters do “combine with other surface or subsurface water” insofar as it will act as a hydraulic sink, drawing in clean groundwater from the surrounding area, including groundwater from outside the Mine Permit Area. NMED’s understanding is that the phrase “does not

combine with other surface or subsurface waters” refers only to water flowing out of a polluted water body into surrounding water, and not to surrounding water flowing into a polluted water body.

Mr. Vollbrecht testified on this point as follows: “In a letter dated October 16th, 2016, the NMED Surface Water Quality Bureau replied to NMCC, stating that because the open pit water body was an evaporative sink and no other surface waters flowed into the open pit, it therefore did not combine with other surface or subsurface waters. The letter further acknowledged that New Mexico Copper Corporation had received jurisdictional determination from the United States Army Corps of Engineers that the open pit water body was not a water of the US. The October 2016 Surface Water Quality Bureau letter stated that if New Mexico Copper Corporation could demonstrate the future pit lake would be wholly on private land, surface water quality standards would not apply. The phrase "does not combine with other surface and subsurface waters" within the definition of surface water of the state is viewed from a narrow lens in this instance. Because Grayback Arroyo has been diverted around the pit and no other surface water flows into or out of the open pit and evaporation from the pit lake water body results in a hydrologic sink, there is no potential that the open pit water body could contaminate any other groundwater or surface water. This is in alignment with the Copper Rule which effectively grants a variance by rule from groundwater standards within the area of open pit hydrologic containment. The Copper Rule acknowledges that impacts to groundwater are likely to occur from open pit copper mining. The New Mexico Supreme Court acknowledged that the most appropriate mechanism to mitigate these potential impacts is through containment resulting from evaporation of the open pit water body. In summary,

Surface Water Quality Bureau has determined that surface water quality standards at 20.6.4 do not apply to the pit lake. Pursuant to the Mining Act, New Mexico Copper Corporation is required to achieve preexisting conditions following closure. Modeling indicates the future pit lake will have better water quality than the existing pit lake.” Tr. pp. 502-504.

On cross-examination, Mr. Vollbrecht acknowledged that in 2003, the Chief of the NMED Ground Water Quality Bureau testified that the combining of clean and contaminated waters went both ways, and did not refer only to polluted water flowing outward into clean water, but clean water moving into contaminated water, which would mean the exemption would not apply. Mr. Vollbrecht noted, however, that “one thing that certainly has changed since that time is the Copper Rule and the interpretation of how that applies to the area of open pit hydrologic containment.” Tr. pp. 570-571.

Based on the WQCC’s adoption of the Copper Rule in 2013, and the opinions issued by the New Mexico Court of Appeals and New Mexico Supreme Court upholding the Rule with its express codification of an area of hydrologic containment to control the “inevitable” water contamination, the recommended findings do not include the Ranches’ proposed finding that the future pit lake will be a surface water of the state subject to the water quality standards in 20.6.4 NMAC.

The OSE Classification of the Tailings Storage Facility Dam

As EBID notes, the tailings storage facility dam is a jurisdictional dam that will require a permit from the New Mexico Office of the State Engineer (OSE) Dam Safety Bureau to construct and operate. TR 1460, Lines 15-20 and 1462, Lines 10-11. An application to the Dam Safety Bureau must include documentation of water rights, design report that includes hazard

potential documentation by a dam breach and flood routing analysis, hydraulic analysis, spillway design, geological assessment, geotechnical assessment, seepage and interior drainage assessment, stability analysis, seismic design analysis, dam geometry, erosion protection, structural design, construction drawings, construction specifications, survey, dam site security plan, an instrumentation plan, operation and maintenance manual, and emergency action plan which also requires a dam breach and flood routing analysis. TR 1462, line 21 to 1463, Lines 1-12. None of the items from the above punch list of requirements for an application to the Dam Safety Bureau currently exist. TR 1463, Lines 13-17.

EBID further notes that the Dam Safety Bureau could impose dam structure and safety requirements that make the tailings dam look different than what has been proposed to, reviewed by, and approved by NMED in this proceeding. Tr. p. 1465, lines 9-14. EBID asserts that there is insufficient information in the record to determine the specific classification the Dam Safety Bureau will assign to the tailings storage facility. TR 1470, Lines 2-4. The design requirements for the tailings dam will ultimately depend on what classification the dam receives from the Dam Safety Bureau. TR 1467, Lines 15-19. Asserting that the design of the tailings dam could impact the potential discharge to groundwater or surface water, TR 1470, Lines 12-14, EBID recommends that DP-1840 not be issued until the Dam Safety Bureau permit is in place. Currently, the Copper Rule and DP-1840 require only that the applicant document that a permit will be obtained.

EBID's proposal to delay the issuance of DP-1840 until the Dam Safety Bureau permit is in place is not part of the recommended findings and conclusions, based on the fact that no law or rule requires it, and based on the testimony of David Kidd, the dam safety expert who

designed the tailings facility. Mr. Kidd testified that the Copper Rule applies to the environmental controls provided in the tailing storage dam design, while the Dam Safety Bureau is reviewing the structural components of the dam, particularly as relating to seismic event considerations. Tr. pp. 336-338. The document submitted with the discharge permit application was a feasibility design, and provided the basis for a cost estimate, which included a liner. Going forward, they will do a theoretical dam breach analysis and flood routing using accepted practices; that will then determine the hazard rating. He believes the appropriate rating is 'significant hazard;' it would not be rated as 'high hazard' unless a breach would probably cause potential loss of life. Even if the classification were to change, the fact that the liner will be installed and maintained will not change. The dam will still be 'large' with all of the design requirements that apply to that size, cover the same footprint, have the same sides and features, and have the same monitoring. Tr. pp. 343-346, 380-382.

The Bureau's condition is appropriate as stated in the draft discharge permit. For now, the applicant is in process. The actual dam permit will be required to be submitted to NMED before any activities occur at the tailings storage facility. Reid, Tr. p. 730. The suggestion that the hearing officer should make her own review of all the documents required as part of the OSE Dam Safety Bureau application process is not adopted; such a review is unnecessary as part of the draft discharge permit review. Mr. Vollbrecht described extensive coordination and communication between and among the agencies, including NMED and OSE, and no additional permit condition is necessary on that issue. Tr. pp. 731-734.

Potential Undue Risk to Property Through Adverse Effects on Water Resources

Finally, the Ranches assert that the proposed discharges of water contaminants from the Copper Flat Mine seriously threaten the water on and beneath nearby private property and the businesses dependent on that water. The Ranches did present extensive substantial evidence of sensitive ecosystems on property adjacent to the Mine property, including plants, fish, and wildlife that depend on a plentiful supply of clean water, and businesses, including eco-tourism and ranching, that depend on those ecosystems and the water that sustains them. See the testimony and slides of Mr. Dobrott as to the Ladder Ranch and the testimony and slides of Mr. Cunningham as to the Hillsboro Pitchfork Ranch. The recommended findings include all proposed findings by the Ranches as to their interests.

The Ranches note that the Secretary can approve a discharge permit for a copper mine only if the permit does not pose an undue risk to property, among other things. Section 20.6.7.10.J NMAC. Further, that the Secretary has discretion in deciding whether the permit would pose an undue risk, citing *Pickett Ranch, LLC v. Curry*, para. 36. 2006-NMCA-082, 140 N.M. 49, 61, 139 P.3d 209, 220.

The Ranches identify two types of undue risk to their properties: water contamination and water depletion. As to potential water contamination migrating from the mine to the ranches, experts for the Ranches and for NMCC drew very different conclusions. Mr. Kuipers described leaks and spills, some of them catastrophic, at mines around the world. Liners typically leak, waste rock piles release contaminants, which may move through fractures, and unlined stormwater channels are another source of leaks of mine-influenced water. Kuipers, Tr. pp. 999-1023, Myers, Tr. pp. 1185-1186. Dr. Myers' interpretive model showed the potential

for contaminants to move beneath the Ladder Ranch, particularly the Avant Pasture. Although generally groundwater flow is to the east, fractures or groundwater mounding could cause contaminated groundwater to move northward, toward the Ladder Ranch. Myers, Tr. pp. 1208-1228, 1284-1285.

EBID is also concerned about water depletion and about groundwater contaminants migrating from the mine property potentially toward Caballo Reservoir. If the Reservoir were to become contaminated, releases from it would have to cease, which would affect EBID, El Paso No. 1, Mexico and the City of El Paso. Tr. pp. 1383, 1386, 1546-1547. EBID notes that, by law, a water right is a property right in New Mexico, citing *Walker v. United States*, 2007-NMSC-038, para. 27, 142 N.M. 45, 53. As a political subdivision of the State of New Mexico, and on behalf of its members, EBID is seeking to protect its valid property rights under the Copper Rule.

NMCC's witnesses presented a more reassuring picture of the mine and its potential environmental impacts, specifically as to groundwater contamination: Mr. Smith noted that the ore processing would be by flotation only, NMCC would not employ ore leaching or solvent extraction processes. Only a small amount of materials mined will be acid-generating, and they will be segregated and stored. Smith, Tr. p. 49, Griffiths, Tr. p. 255. There is an abundance of site data and detailed evaluations that informed their understanding of the hydrogeologic setting and the necessary groundwater protection measures. Finch, Tr. pp. 134-135. The faults at the site will not serve as a conduit for the migration of contaminants; the red clay there is very low permeability and is smeared all along the fault zone. It acts as a barrier. Finch, Tr. p. 168.

Predicted groundwater chemistry is similar if not almost identical to current groundwater chemistry. Furthermore, all parameters are below New Mexico groundwater standards, with the exception of fluoride, which is naturally elevated in the existing groundwater. Griffiths, Tr. pp. 262-264.

The Ladder Ranch should not be concerned about water moving from the mine through the East Animas Fault to the Ladder Ranch. "For one thing, a small amount of TDS and sulfate contamination that occurred from the existing tailings impoundment did not travel east. It mounded up right underneath the pile, with no eastward movement at all. That's one line of evidence. We have a groundwater model that's been calibrated to all the data that shows that that's not the direction in which water would travel either. It basically mimics what we've already observed from the existing plume. It stays mounded up underneath the facility behind the fault zone. Water moving northward along the East Animas Fault to the Ladder Ranch is physically impossible based on the data we have, the observations we've made and the modeling calculations we have performed."

No one "should be concerned that the sulfate plume that exists from the Quintana days will find its way to the Caballo Reservoir; it hasn't moved anywhere in 30 years, and Caballo is still 12 miles away."

Nor "should there be any concern that any contamination will travel from the future mining operation at Copper Flat to either the Caballo or the Elephant Butte Reservoir or the Rio Grande. With the requirements of the Copper Rules protecting water sources from pollution, all the stormwater controls, the design features, and the monitoring network, it's as bulletproof as you can make it." Finch, Tr. pp. 216-218.

The fears expressed by the Ranches, EBID, and many of the public commenters are understandable. Migration of significant water contaminants over very long distances, or in directions contrary to typical groundwater flow, may be unlikely, but the sensitivity of the Ranches' ecosystems and the critical importance of Caballo Reservoir to the delivery of water within New Mexico and to the State's legal obligations to Texas and Mexico amplify even a small risk of occurrence.

The concerns expressed about water depletion by the Ranches, EBID, public commenters with businesses on Animas Creek and others, were compelling. The open pit will affect groundwater much like a huge well, creating a cone of depression and drawing water into it. Vollbrecht, Tr. p. 566, lines 6-11. After 5 years of mining operations, the groundwater table will have been lowered substantially for a distance around the open pit extending beyond the Mine Permit Area to property of both the Ladder Ranch and the Hillsboro Pitchfork Ranch. AR- 13543; AR-13811.

The Ranches further assert that the pit drawdown could reduce the flows of water in Las Animas Creek, and it could reduce the flow of the springs on the southern portion of the Ladder Ranch. Ranches Ex. 15, p. 22-23 and Exhibit A, p. 3. The pit drawdown could also reduce the flows in the intermittent streams and seeps in Grayback Canyon on the Hillsboro Pitchfork Ranch. It could reduce the production of the wells on the east side of the ranch, the Rodgers Well and the Grayback Well. Cunningham Test. Tr. vol. 3, p. 881, lines 10-17.

Although NMCC questioned the effect of drawdown on certain Ranch wells that are apparently fed primarily by surface water, NMCC did not dispute the general predictions as to the effect the drawdown in the open pit would have on the water table in the surrounding

area. The Department and NMCC were careful to note in opening statements and closing arguments that water quantity issues are handled by the Office of the State Engineer, not by NMED.

The Ranches' assertion is more nuanced than mere concern for water supply and impairment of water rights, however, noting that the Office of the State Engineer will insist that it has no authority to consider environmental or ecological concerns when reviewing an application for a permit to change the place or purpose of use of a water right. See Fuchs Test. Tr. vol. 5, p. 1450, line 18 to p. 1451, line 7; EBID Ex. 1. The Office of the State Engineer considers only whether issuance of the permit would be "contrary to the conservation of water within the [S]tate or detrimental to the public welfare of the [S]tate," as narrowly interpreted, NMSA 1978, § 72-5-7, or whether the permit would "be detrimental to [another user's] water right," NMSA 1978, § 72-5-5.

"If the self-imposed constraints of both these State agencies are obeyed, many concerns will fall through the regulatory cracks, the concerns of the Ranches among them. The Ranches are concerned that the lowering of the water table by the expanded open pit will harm the environment, the ecosystems on their property, not simply that it will impair their water rights." The Ranches suggest that the Department's authority is not so constrained as it suggests, citing the New Mexico Supreme Court in *Colonias Dev. Council v. Rhino Env'tl. Servs.*, 2005-NMSC-024, para. 34, 138 N.M. 133, 142, 117 P.3d 939, 948: "the Environment Department cannot ignore concerns that relate to environmental protection simply because they are not mentioned in a technical regulation." Further, the "Department has a duty to interpret the regulations liberally in order to realize the purposes of the Acts."

EBID notes the consensus that the proposed mining activity will affect the Rio Grande Project water supply both in Caballo Reservoir and in the river downstream. TR 1373, Lines 14-21. See Tables 3.3 and 3.4 in the Shomaker Report, Bates number 17304. Pumping by the mine will intercept water that would otherwise have been tributary to Caballo Reservoir, thereby reducing the amount of releasable water for allocation to EBID, El Paso No. 1, and Mexico. TR 1374, Lines 19-25 and TR 1375 Line 1. In addition to impacts on Caballo Reservoir that affect both irrigation districts and Mexico, there are also significant impacts on the river below Caballo, which impacts will be borne solely by EBID. TR 1375, Lines 21-25 and TR 1376, Lines 1-2. Moreover, the State of Texas shares the concerns raised by EBID in this proceeding. TR 1376, Lines 3-9.

EBID also notes that NMCC has proposed an offset on the basis of an agreement with the Jicarilla, but the Jicarilla Lease is not sufficient to protect the Rio Grande Project from impacts by the proposed mining activity, in terms of detail or implementation. TR 1377, Lines 14-20, TR 1378, Line 5, TR 1379 Lines 22-25 and TR 1380, Lines 1-2. For any offset to be sufficient, it would have to fit within the accounting provided for in the Rio Grande Compact and the allocation process of the Rio Grande Project. TR 1380, Lines 7-10.

The question of what constitutes “undue risk” in connection with the issuance of a groundwater discharge permit has not been set out in a regulation or guidance document, statute or New Mexico case law. NMCC notes only that it is “general language,” and no party offers a suggested definition or factors to be considered in evaluating or weighing it.

Ballentine's Law Dictionary defines undue as "inappropriate, unsuitable, or unjust." In the context of permitting a mine to discharge groundwater contaminants, is undue risk limited to potential injuries caused by those contaminants, or can the broader ecological concerns raised by the Ranches and the far-reaching legal implications raised by EBID be considered? Is the focus properly on the permitted discharge, or on the attendant risks posed by the presence of the facility itself? Does the interconnectedness of groundwater and surface water come into the calculation? Is a dam breach analysis necessary for NMED to make its determination independent of the OSE determination? Is additional coordination necessary between or among the state agencies which regulate a large, multi-faceted facility in order to determine undue risk? Is it enough for NMED to minimize risks to the extent practicable through technical and operational elements in the discharge permit? How do we decide what remaining risks are acceptable in permitting a copper mine?

Apart from this issue of undue risk, the recommended findings and conclusions support the issuance of the Bureau's final draft groundwater discharge permit as based on substantial evidence and as fully compliant with the Copper Rule. Without apparent guidance, however, on the question of undue risk in connection with this mine, in this location, I am forwarding the record to the Secretary for his consideration and decision-making without a recommendation as to final disposition, and will prepare a Final Order following further direction.

RECOMMENDED FINAL ORDER

A Final Order will be prepared at the Secretary's direction.

Respectfully submitted,

Original signed by
FELICIA L. ORTH, Hearing Officer

PROPOSED FINDINGS OF FACT

I. THE PARTIES

A. THE PERMIT APPLICANT

1. Applicant New Mexico Copper Corporation (NMCC) is a corporation organized in 2010 under the laws of the State of New Mexico. It is a wholly-owned subsidiary of THEMAC Resources Group Ltd., a Canadian company. NMCC is the owner of the Copper Flat Mine assets, including a portion of the Mine Area property. Smith Test. Tr. vol. 1, p. 41, line 24 to p. 42, line 10, p. 43, lines 15-21; AR-12376.

B. THE ENVIRONMENT DEPARTMENT

2. The New Mexico Environment Department (NMED) is authorized to implement the New Mexico Water Quality Act and the water quality regulations, including the issuance of groundwater discharge permits. NMED Ex. 2, p. 2.

C. THE RANCHES

3. Turner Ranch Properties, L.P. is a limited partnership organized in the State of Georgia. It is the owner of the Ladder Ranch.
4. Hillsboro Pitchfork Ranch LLC is a limited liability company organized in the State of Texas. It is the owner of the Hillsboro Pitchfork Ranch.

D. THE IRRIGATION DISTRICT

5. Elephant Butte Irrigation District (“EBID” or the “District”) is an irrigation district and quasi-municipal corporation organized in the State of New Mexico. EBID Ex. 6.

II. THE PROPOSED MINING PROJECT, MINE RESERVES, PROCESSING, AND SCHEDULE

6. New Mexico Copper Corporation is the owner of the project assets for the Copper Flat Mine. NMCC is the permittee, the developer and will be the operator of the Copper Flat Mine. AR 15858-591, 18737; NMCC Ex. 2; Tr. 41:24- 42:21.
7. Copper Flat Mine is located at 85 Copper Rock Road and is accessed by State Highway 152, approximately twenty miles southwest of Truth or Consequences and five miles northeast of Hillsboro. AR 15858, 15872, 15889, 18740; NMCC Ex. 2; Tr. 43:8-10.
8. The Copper Flat Mine property is situated within a mine permit area boundary of approximately 2,190 acres and is a mix of private patented and unpatented federal public land. The public land is administered by the Bureau of Land Management. AR 12377, 15849-51, 15889-90, NMCC Ex. 2; Tr. 43:15-21.
9. The mine project will disturb approximately 1,290 acres of which approximately 910 acres were previously disturbed from historic mining operations at the site. AR 13956-15177; 15458-15690, 15889; 18739.
10. There are approximately 675 million pounds of copper, 20 million pounds of molybdenum, 250,000 ounces of gold and 5-6 million ounces of silver reserves at today's market prices at the Copper Flat Mine site. NMCC Ex. 2; Tr. 43:22-25.
11. The Copper Flat Mine will consist of an open pit (Open Pit), waste rock stockpiles (WRSPs), stormwater impoundments and collection systems, a process facility area consisting of a concentrator, associated mineral processing units and administrative buildings and maintenance shop, a lined tailing impoundment (TSF), and associated infrastructure. AR 13956-15177, 15458-15690, 15855-17076, 18739; NMCC Ex. 2; NMED Ex. 3.

12. NMCC will construct and operate the mine and concentrator using conventional copper and molybdenum sulfide floatation circuits and a gravity gold recovery circuit with a maximum throughput of 38,000 dry tons per day of ore (which will work out to an average of 30,000 dry tons per day of ore over the life of the mine) generating up to 25,264,000 gpd of tailings slurry. AR 13956-15177, 15458-15690, 15855-17076, 18739; NMCC Ex. 2; NMED Ex. 3, p. 2.
13. Mining at the Copper Flat Mine will begin with two years of construction, followed by twelve years of production, ten to twenty years of reclamation and closure, and a period of long-term monitoring. AR 15871; NMCC Ex. 2; Tr. 44:5-8.
14. The first five years of mining will produce higher-grade copper ore to produce copper concentrate at a rate of 35,000 tons per year, with production dropping to 25,000 tons per year for years six to twelve of the active mining years as the ore grade decreases. The production of higher-grade copper in the first five years will achieve a payback of the financing soon in the operation, and then allow production to continue without the financing overhead. NMCC Ex. 2; Tr. 45: 12-18.
15. Ore mined from the open pit will be crushed, milled, and concentrated using conventional milling and concentration processes. The copper and molybdenum concentrates produced at the process facility area will be shipped off site for further processing. AR 13956-15177, 15458-15690, 15855-17076, 18739; Tr. 45:9-11.
16. NMCC will be processing the ore by floatation only. AR 13956-15177, 15458-15690, 15855-17076, 18739; Tr. 49:5.
17. There will be no leaching or other process occurring at the mine site. AR 13956-15177, 15458-15690, 15855-17076, 18739; Tr. 46:1; 49:6-7.

III. NMED'S GROUNDWATER DISCHARGE PERMITTING

18. The Department issues groundwater discharge permits pursuant to the Water Quality Act, NMSA 1978, §§ 74-6-1 through 74-6-17, and the New Mexico Ground and Surface Water Protection Regulations, Title 20, Chapter 6, Part 2 of the New Mexico Administrative Code (NMAC), issued by the New Mexico Water Quality Control Commission (WQCC). Vollbrecht testimony, Department's SOI, Exhibit 2, p. 2, ln. 14-17.
19. A discharge permit is required for the proposed Copper Flat Mine because; 1) the Copper Flat Mine will discharge effluent in a manner such that the effluent may move directly or indirectly into groundwater within the meaning of 20.6.2.3104 NMAC; 2) the discharge is such that effluent may move into groundwater of the State of New Mexico which has an existing total dissolved solids (TDS) concentration of less than 10,000 mg/L within the meaning of 20.6.2.3101.A NMAC; and 3) the discharge has the potential to affect a place of withdrawal of groundwater for present or reasonably foreseeable future use within the meaning of the Water Quality Act (WQA). *Id.*, p. 2, ln. 3-9.
20. Because the proposed Copper Flat Mine is defined as a "new copper mine facility" it is required to meet the requirements of the Ground Water Protection – Supplemental Permitting Requirements for Copper Mine Facilities, Title 20, Chapter 6, Part 7 NMAC. *Id.*, p. 2, ln.18-21.
21. Part 20.6.7 NMAC provides for prescriptive engineering design, operational, monitoring, contingency, and closure requirements at copper mine facilities to ensure ground and surface water protection under the Water Quality Act. *Id.*, p. 2, ln. 22-23, p.3, ln. 1.

22. The Department's Ground Water Quality Bureau Mining Environmental Compliance Section (MECS) implements the provisions of these rules as applied to mine-related discharges with the potential to adversely impact groundwater. Id., p.3, ln. 1-3.
23. Groundwater discharge permits are intended to establish the terms and conditions under which a permittee may discharge contaminants in a manner that is protective of groundwater. Id., p. 3, ln. 3-5.
24. In addition to the New Mexico Ground and Surface Water Protection Regulations and Supplemental Permitting Requirements for Copper Mine Facilities, the Copper Flat Mine is subject to a variety of other state and federal regulatory requirements, including but not limited to the requirements of the federal National Environmental Policy Act (NEPA), the New Mexico Mining Act requirements under the authority of the New Mexico Mining and Minerals Division (MMD), and the requirements for dam safety and water rights under the authority of the Office of the State Engineer. Id., p. 3, ln. 6-12.

IV. INTERESTS OF THE RANCHES

A. THE LADDER RANCH

25. The Ladder Ranch is located immediately to the north, to the northeast, and, in part, to the east of the Mine Permit Area. Ranches Ex. 4.
26. The Ladder Ranch consists of 157,000 acres of private land, 100,600 acres of National Forest and wilderness lands, 20,079 acres of State lands, and 11,480 acres of Bureau of Land Management lands, totaling 289,159 acres, or 451.81 square miles. Dobrott Test. Tr. vol. 3, p. 787, lines 4-8.

27. Parts of the Ladder Ranch, particularly the Avant Pasture, are hydraulically downgradient of the Mine Permit Area. Myers Test. Tr. vol. 4, p. 1228, lines 4-11.

1. Ranch Ecosystem

28. The Ladder Ranch has excellent water resources, abundant wildlife, and a thriving ecosystem. Dobrott Test. Tr. vol. 3, p. 786, line 23 to p. 787, line 3.

29. The proximity of the Ladder Ranch to the Black Range watersheds, and elevations from 10,000 feet down to 4,500 feet, provide a suite of biological life zones unmatched on any one property in New Mexico. The biological diversity on the Ladder Ranch is remarkable, and it is highly regarded by biologists and ecologists. Dobrott Test. Tr. vol. 3, p. 788, lines 6-13.

a. Water

30. The Ladder Ranch property is incised by five semi-perennial creek systems that flow generally from west to east and drain into the Rio Grande Basin. They are, from north to south, Cuchillo Creek, Palomas Creek, Seco Creek, Cave Creek, and Las Animas Creek. Cave Creek is a tributary to Las Animas Creek. The five creeks contribute greatly to the biodiversity and biological richness of the ranch, but Las Animas is the most notable for its biodiversity. Dobrott Test. Tr. vol. 3, p. 789, lines 4-13, p. 791, lines 17-19; see Ranches Ex. 4.

31. Las Animas Creek is the stream system that runs through the ranch headquarters. Its surface and ground waters supply pristine dependable water for ranch operations including administration facilities, employee and guest housing, livestock, farm irrigation, and incidental benefits for wildlife and imperiled species. Dobrott Test. Tr. vol. 3, p. 789, lines 14-20.

32. Las Animas Creek has been nominated as one of New Mexico's Scenic Waterways. Its environmental importance has been documented in scientific publications and the book *River*

of Spirits, a natural history of New Mexico's Las Animas Creek. This remarkable riparian corridor has also been designated as an Important Bird Area by the Audubon Society. Among the creeks' most unique features are the ancient Arizona sycamore trees that occur only on this creek within the entire Rio Grande Basin. Tr. vol. 3, p. 789, line 22 to p. 790, line 8; see Ranches Ex. 4.

33. Las Animas Creek flows within 2 to 4 miles from the Copper Flat Mine. Dobrott Test. Tr. vol. 3, p. 789, lines 20-21.

34. Steven Dobrott, former manager of the Ladder Ranch, testified that the quality of water in both Cave Creek and Las Animas Creek is currently excellent and pristine. Dobrott Test. Tr. vol. 3, p. 791, lines 10-15.

35. Cave Creek and Las Animas Creek are used by ranch livestock for drinking. Steven Dobrott, former manager of the Ladder Ranch, has observed ranch livestock – bison – drinking from Cave Creek and Las Animas Creek many times. Dobrott Test. Tr. vol. 3, p. 791, line 21 to p. 792, line 1.

36. Cave Creek and Las Animas Creek are used by numerous types of wildlife for drinking. Steven Dobrott, former manager of the Ladder Ranch, has observed wildlife drinking from Cave Creek and Las Animas Creek. Dobrott Test. Tr. vol. 3, p. 792, lines 5-9.

37. Cave Creek and Las Animas Creek are used by birds for feeding and drinking. The creeks provide riparian habitat and food used by waterfowl and migrating, breeding bird populations unique to New Mexico. These riparian corridors connect migrating birds along the Rio Grande with the upper reaches of the Black Range. Food, cover, and good quality water along these creeks are used by many bird species, including the yellow-billed cuckoo which the Fish and

- Wildlife Service has listed as threatened. Steven Dobrott, former manager of the Ladder Ranch, has observed birds feeding and drinking from Cave Creek and Las Animas Creek. Dobrott Test. Tr. vol. 3, p. 792, lines 10-23.
38. Cave Creek and Las Animas Creek support populations of native Rio Grande chub, native Rio Grande sucker, native Rio Grande cutthroat trout, and non-native longfin dace. These species depend on pristine water for reproduction and production of macroinvertebrate food sources. Dobrott Test. Tr. vol. 3, p. 792, line 25 to p. 793, line 9.
39. Several springs feed into Las Animas Creek. Springs along the southern portion of Ladder Ranch are Warm Spring, Manager House Spring, Garden Tank Spring, and Myers Animas Spring, as well as several unnamed springs and seeps along Las Animas Creek. Dobrott Test. Tr. vol. 3, 793, lines 11-24.
40. Steven Dobrott, former manager of the Ladder Ranch, testified that the quality of water in the springs is currently excellent and pristine. Dobrott Test. Tr. vol. 3, p. 793, line 25 to p. 794, line 2.
41. The springs along Las Animas Creek are used by ranch livestock for drinking. Tr. vol. 3, p. 794, lines 3-8.
42. The springs along Las Animas Creek are used by wildlife for drinking. Dobrott Test. Tr. vol. 3, p. 794, lines 9-11.
43. Several groundwater wells have been installed in the southern portion of the Ladder Ranch, including livestock wells, irrigation wells, and domestic wells. The livestock wells are, from west to east, Myers Well, John Cross Well, Wanda Well, Evans Well, and Feedlot Well. The irrigation wells are, from west to east, Shipping Pens Well, Higgins Well, and Orchard Well.

The domestic wells are three wells at the ranch headquarters. Dobrott Test. Tr. vol. 3, p. 795, lines 11-18; *see* Ranches Ex. 4.

44. The Feedlot Well is located in the Avant Pasture at the Ladder Ranch. Dobrott Test. Tr. Tr. vol. 3, p. 795, line 20 to p. 796, line 6.

45. The Feedlot Well, along with the Evans Well, is used to supply “drinkers” for quail and stock tanks used by bison and large game for drinking. It also provides water to two important conservation facilities, the endangered Bolson tortoise facility, where young tortoises are raised, and the Feedlot steel rim water storage tank that is used for maintaining threatened Chiricahua leopard frog. Dobrott Test. Tr. vol. 3, p. 796, lines 7-15.

46. Steven Dobrott, former Ladder Ranch manager, testified that the quality of water from the Feedlot Well is currently excellent. Dobrott Test. Tr. vol. 3, p. 796, line 25 to p. 797, line 2.

b. Flora and Fauna

47. Fifty-seven species of mammals have been recorded at the Ladder Ranch, including healthy populations of elk, mule deer, Coues’ whitetail deer, pronghorn, javelina, black bear, and mountain lion. Ranches Ex. 4; Dobrott Test. Tr. vol. 3, p. 798, lines 20-24, p. 799, lines 4-5.

48. Over 250 species of birds have been recorded at the Ladder Ranch, including wild turkey, three species of quail – Gimbel’s quail, scaled quail, and Mearn’s quail – and threatened yellow-billed cuckoo. Ranches Ex. 4; Dobrott Test. Tr. vol. 3, p. 798, line 22 to p. 799, line 1, p. 799, lines 4-5.

49. Over 400 species of plants have been recorded at the Ladder Ranch. Ranches Ex. 4; Dobrott Test. Tr. vol. 3, p. 798, lines 2-3.

50. Wildlife, including elk, mule deer, pronghorn, javelina, mountain lion, turkey, and quail inhabit the Avant Pasture. Black bear pass through the Avant pasture. Dobrott Test. Tr. vol. 3, p. 799, lines 13-18.

51. The wildlife and plant life at the Ladder Ranch depend for their existence and survival on pristine water that flows in creeks and springs on the ranch. Dobrott Test. Tr. vol. 3, p. 799, lines 20-23.

c. Habitat Conservation Programs

52. The non-profit Turner Endangered Species Fund works with the United States Fish and Wildlife Service and the New Mexico Game and Fish Department in projects to restore imperiled species. These restoration projects benefit the listed Chiricahua leopard frog, the Mexican grey wolf, the Bolson tortoise, and the yellow billed cuckoo. Dobrott Test. Tr. vol. 3, p. 800, lines 7-12.

53. The Turner Biodiversity Division is working to restore less imperiled species like the Rio Grande cutthroat trout and other native fish to Las Animas Creek. Dobrott Test. Tr. vol. 3, p. 800, lines 15-18.

54. These restoration projects depend on pristine water. Dobrott Test. Tr. vol. 3, p. 800, line 19 to p. 801, line 11.

2. Ranch Business Interests

55. The Ladder Ranch operates a ranching business, raising bison and selling bison meat in markets and restaurants. The Ladder Ranch bison herd averages approximately 1,000 head. Dobrott Test. Tr. vol. 3, p. 802, lines 2-4, p. 803, line 13-14.

56. Turner Ranch Outfitting organizes big game hunts on the Ladder Ranch for elk and mule deer. Dobrott Test. Tr. vol. 3, p. 802, lines 4-6.
57. Ted Turner Expeditions, which is based in Truth or Consequences, conducts ecotourism trips at the Ladder Ranch, including game viewing, bird watching, and mountain biking. Dobrott Test. Tr. vol. 3, p. 802, lines 7-11, p. 803, lines 3-5.
58. The big game hunting and ecotourism trips at the Ladder Ranch pursue game in the Avant Pasture. Dobrott Test. Tr. vol. 3, p. 802, line 22 to p. 803, line 5.
59. The Ladder Ranch employs between 15 and 20 people. The businesses of the Ladder Ranch contribute to the economy of Sierra County, through the payment of taxes and the purchase of goods and services. The businesses have been operated sustainably for 25 years. Dobrott Test. Tr. vol. 3, p. 802, lines 16-20, p. 803, lines 15-18.
60. The business enterprises at the Ladder Ranch depend on pristine water in the creeks, springs, and wells at the ranch. Dobrott Test. Tr. vol. 3, p. 803, lines 7-11.

B. THE HILLSBORO PITCHFORK RANCH

61. The Hillsboro Pitchfork Ranch is located immediately to the west of and bordering the Mine Permit Area. Cunningham Test. Tr. vol. 3, p. 869, line 22 to p. 870, line 6.
62. The Hillsboro Pitchfork Ranch is hydraulically upgradient of the Copper Flat Mine. Cunningham Test. Tr. 881, lines 7-9
63. The Hillsboro Pitchfork Ranch is located within 1,680 feet of the open pit at the Copper Flat Mine. The open pit can be seen from the Hillsboro Pitchfork Ranch. Cunningham Test. Tr. vol. 3, p. 871, lines 2-23.

1. Ranch Ecosystem

64. The Hillsboro Pitchfork Ranch has excellent water resources, a varied natural ecosystem, and exceptional wildlife habitat. Cunningham Test. Tr. vol. 3, p. 878, line 22 to p. 879, line 23.

a. Water

65. Grayback Canyon has its headwaters on the Hillsboro Pitchfork Ranch, flows through the eastern portion of the ranch, and drains a large portion of the ranch property. Tr. vol. 3, p. 875, line 24 to p. 877, line 18; Ranches Ex. 6.

66. There are intermittent streams, springs, and seeps in Grayback Canyon. Cunningham Test. Tr. vol. 3, p. 878, lines 12-15.

67. The intermittent streams, springs, and seeps in Grayback Canyon support a varied natural ecosystem, habitat for wildlife, and a forage area for livestock. Cunningham Test. Tr. vol. 3, p. 878, lines 23-25.

68. The Hillsboro Pitchfork Ranch owns and operates two groundwater wells near the eastern boundary, the Rodgers Well and the Grayback Well. Cunningham Test. Tr. vol. 3, p. 873, lines 6-8.

69. The Rodgers Well, which is operated by an old windmill, is located on the eastern side of the Hillsboro Pitchfork Ranch approximately 3,270 feet from the open pit at the Copper Flat Mine. It is approximately 150 feet deep. Cunningham Test. Tr. vol. 3, p. 873, lines 11-18, p. 875, lines 8-19.

70. The Grayback Well, which is solar operated, is located on the eastern side of the Hillsboro Pitchfork Ranch approximately 8,070 to 8,080 feet from the open pit at the Copper Flat Mine.

It is approximately 200 feet deep. Cunningham Test. Tr. vol. 3, p. 874, lines 2-5, p. 875, lines 8-15.

71. The Rodgers Well and the Grayback Well are used for drinking by livestock and wildlife. Cunningham Test. Tr. vol. 3, p. 873, lines 20-24, p. 874, lines 7-16.

b. Flora and Fauna

72. Grayback Canyon has particularly good grasses, including side oats and black grama, and it has an abundance forbes, including Gambel oak and thick concentrations of mountain mahogany. Wildlife feed on the forbes. Mountain mahogany is a preferred feed for mule deer. Wildlife utilize the area year-round due to good forage, thermal cover, and access to water. Because the deep canyons make the area very secluded, and because the canyon has good feed and good water, the area has become premium mule deer habitat. Cunningham Test. Tr. vol. 3, p. 878, line 23 to p. 879, line 19.

73. Representatives of the New Mexico Department of Game and Fish sometimes refer to Grayback Canyon on the Hillsboro Pitchfork Ranch as a “nursery,” because a substantial number of mule deer doe live and fawn there. Cunningham Test. Tr. vol. 3, p. 879, line 20-23.

c. Habitat Conservation Programs

74. For the last 11 years, the Pitchfork Ranch has collaborated with the New Mexico Department of Game and Fish in a program to improve mule deer habitat. Most of the habitat restoration has been conducted in Grayback Canyon. Cunningham Test. Tr. vol. 3, p. 879, line 23 to p. 880, line 2.

2. Ranch Business Interests

75. Cattle ranching is the primary business of the Hillsboro Pitchfork Ranch. The ranch has about 210 head of cattle – all cows and calves. Cunningham Test. Tr. vol. 3, p. 868, lines 8-19.
76. Hunting is also a primary business of the Hillsboro Pitchfork Ranch. Hunting species include mule deer, elk, dove, and two species of quail, Gimbel’s quail and Mearn’s quail. Cunningham Test. Tr. vol. 3, p. 868, line 25 to p. 869, line 5.
77. Beginning this year, the Hillsboro Pitchfork Ranch will host a Wounded Warrior hunt, donating a big game hunt to a service member who has suffered injury in the line of duty. Cunningham Test. Tr. vol. 3, p. 869, lines 6-9.
78. The ranching and hunting businesses of the Hillsboro Pitchfork Ranch depend on fresh water. Cunningham Test. Tr. vol. 3, p. 869, lines 20-21.

V. EBID AND THE RIO GRANDE PROJECT

79. The Rio Grande Project is a United States Bureau of Reclamation Project. It was authorized by Congress in 1905. TR 1331, Lines 20-22.
80. Water rights were appropriated for the Rio Grande Project in 1906 and 1908, with the 1908 notice appropriating “all tributary flow” in the Lower Rio Grande. TR 1331, Lines 23-24 and TR 1370, Lines 1-6.
81. The Rio Grande Project serves approximately 159,000 irrigated acres in southern New Mexico and West Texas, with 90,640 acres being located within EBID. TR 1332, Lines 4-9.
82. The Rio Grande Project also delivers water to the Country of Mexico under an international agreement signed in 1906. TR 1332, Lines 9-12.

83. The Rio Grande Project is served by two major water storage reservoirs known as Elephant Butte Reservoir, completed in 1916, and Caballo Reservoir. TR 1332, Lines 1-3, and TR 1333, Lines 18-19.
84. Caballo Dam was built around 1938 for the purpose of regulating releases from Elephant Butte Reservoir and providing flood control from the west side of the Rio Grande, particularly flows from the Animas, Grayback and Percha Creeks that provide a significant amount of water to Caballo Reservoir that is then used for irrigation within the Rio Grande Project. TR 1333, Lines 18-24 and TR 1334, Lines 7-13.
85. The farmers of EBID paid off their debt for the construction of the Rio Grande Project and began taking over the operation and management of the irrigation systems from the United States government in the 1990s. TR 1339, Lines 2-3.
86. Under the Rio Grande Compact, since 1948 the Rio Grande Project is located within (legal) Compact Texas, but geographic New Mexico. TR 1338, Lines 11-13.
87. Caballo Reservoir is a key feature of the Rio Grande Project, which is relied upon by EBID, the El Paso County Water Improvement District Number 1 (El Paso No. 1), and Mexico. TR 1349, Lines 7-13.
88. The allocation to Mexico is based on the planned release from Caballo Reservoir. TR 1363, Line 25 and TR 1364 Line 1.
89. The allocation to El Paso No. 1 is based on the relationship between release from Caballo Reservoir and diversion from the river. TR 1364, Lines 4-8.
90. EBID's allocation is also based on releasable water from Caballo Reservoir, and the performance of the river in terms of conveying water efficiently. TR 1364, Lines 9-11.

91. EBID is a political subdivision of the State of New Mexico with the statutory responsibility of operating and maintaining the New Mexico portion of the Rio Grande Project. NMSA § 73-10-1 et seq.
92. The City of El Paso also relies on water from Caballo Reservoir to serve its customers drinking water. TR 1384, Lines 17-24.
93. The water sources within the Rio Grande Project, i.e. the surface water and the groundwater, are interconnected and interact with each other. TR 1348, Lines 4-11.
94. The City of Las Cruces pumps groundwater from the Lower Rio Grande interconnected surface water and groundwater system for its drinking water. TR 1385, Lines 1-5.
95. Allocation of water to Project beneficiaries in the Rio Grande Project is handled pursuant to the 2008 Operating Agreement, which recognizes the groundwater and surface water systems are interconnected and that there is a duty to deliver water to a downstream state and country. TR 1364, Lines 12-19.
96. The Rio Grande Project has a history of lengthy and complex litigation regarding the use of water within the Project area. See Generally TR 1366, Lines 12-17, EBID Ex. 6.
97. The State of Texas is currently suing the State of New Mexico in the United States Supreme Court over concerns related to the interception of surface water by groundwater pumping, and in this proceeding the State of Texas has raised concerns that the quality of water delivered to Elephant Butte may be placed in jeopardy by the proposed mine. TR 1369, Lines 3-19.

VI. HISTORY OF THE MINE SITE

98. Inspiration Development, a mining company based in Arizona, acquired the Copper Flat Mine in 1967 and conducted investigation of the site's mineral reserves. By 1973, Inspiration Development conducted a feasibility study and developed a plan for an open pit mine. AR-17747; Kuipers Test. Tr. vol. 3, p. 925, lines 9-11.
99. Inspiration Development leased the Copper Flat Mine out to other parties to develop because it was not a type of project Inspiration had confidence would make money. Kuipers Test. Tr. vol. 3, p. 925, lines 20-22.
100. On July 15, 1974, Quintana Minerals Corporation leased Copper Flat Mine from Inspiration Development and undertook a program of exploration to estimate ore reserves. Quintana Mineral Corp.'s investigation continued through 1976 at a cost of \$3.32 million. Quintana expanded the Copper Flat Mine project to 12,000 acres of private, state, and federal lands. Quintana Mineral Corp. suspended its work at the Copper Flat Mine in late-1976 due to the low price of copper. AR-17748.
101. Quintana Minerals Corp. could not put the mining project into production due to the low price of copper, an inability to successfully negotiate a smelter contract, and difficulties with obtaining the necessary permits to operate the mine. AR-17748.
102. In September 1979, Quintana Minerals Corp. and Phibro, Inc., a Delaware corporation, signed a letter of intent to form a partnership to develop a mining operation at Copper Flat. AR-17749.

103. Quintana Minerals Corp. and Phibro jointly renewed efforts to develop Copper Flat in June 1980 under the name Copper Flat Partnership with Quintana Minerals Corp. having a separate role as the operator and managing agent of the mine and mill. AR-17749.
104. Copper Flat Partnership leased Copper Flat Mine from Inspiration Development. The lease consisted of twenty-three patented mining claims totaling 430 acres, 294 unpatented mining claims, and 160 unpatented millsites. AR-17749.
105. By July 1980, Quintana Minerals Corp. had invested over \$7 million in the project. AR-17750.
106. Copper Flat Partnership arranged financing for the Copper Flat project in the amount of \$75 million with the Canadian Imperial Bank of Commerce (CIBC), based in Toronto, Canada. On June 11, 1980, Copper Flat Partnership and CIBC executed a deed of trust, with Copper Flat Partnership as the borrower/debtor, CIBC as the creditor/lender, and the First National Bank of Albuquerque as the trustee. Under the deed of trust, CIBC agreed to lend Copper Flat Partnership \$75 million in exchange for a promissory note, a security interest in all current and future property and mining interests, and a conveyance of legal title of the property to First National Bank of Albuquerque as trustee. The deed of trust conveyed title to all current and future real property to the trustee to be held for the benefit of CIBC. The deed of trust was to be delivered to CIBC in the event that Copper Flat Partnership defaulted. AR-17750.
107. NMED issued a discharge permit for the Copper Flat Mine in the 1980s, DP-001.
108. In March 1982, Copper Flat Partnership began producing copper concentrate. AR-17753; Kuipers Test. Tr. vol. 3, p. 926, lines 4-5.

109. The 1982 Copper Flat Mine operation included several waste rock stockpiles, an open pit, a tailings storage facility, mineral processing facilities, impoundments, and associated infrastructure. Ranches Ex. 1 at p. 3.
110. The 1982 Copper Flat Mine operation excavated approximately three million tons of overburden and 1.2 million tons of metal ore. Ranches Ex. 1 at 3.
111. During the months of April, May, and June 1982, Copper Flat Partnership processed an average of 14,908, 15,981, and 14,014 tons per day, respectively, of copper ore. AR-17753.
112. The 1982 Copper Flat Mine operation disturbed approximately 689 acres of land; it created an open pit, which is partially filled by a pit lake having a surface area of 12.8 acres and a depth of 40 feet; it produced waste rock piles around the open pit; and it created a tailings impoundment containing approximately 1.2 million tons of mill tailings and covering 60 acres. AR-00042.
113. In July 1982, after three months of operation, Copper Flat Partnership ceased mining operations at the Copper Flat Mine. AR-17752; Kuipers Test. Tr. vol. 3, p. 926, lines 5-8.
114. Copper Flat Partnership ceased mining due to the combination of a fall in the price of copper and the partnership having a heavy debt load from constructing the mine facilities. AR-17753; Kuipers Test. Tr. vol. 3, p. 926, lines 15-20.
115. Between July 1982 and the end of 1983, Copper Flat Partnership hosted three or four potential investors or purchasers at the Copper Flat Mine. Ultimately, these efforts were not successful. AR-17755.

116. After it ceased mining operations, Copper Flat Partnership decided to remove the surface facilities and equipment. It sold the equipment to pay back some of the debt from the capital loan. Kuipers Test. Tr. vol. 3, p. 926, lines 22-25.
117. As of April 11, 1986, CIBC had sold all removable physical assets of Copper Flat Partnership to OK Tedi Mining Ltd., a company headquartered in Papua New Guinea. By December 31, 1986, all buildings and mining equipment were removed from Copper Flat Mine site. AR-17762.
118. On December 31, 1986, Copper Flat Partnership cancelled its lease interest in the Copper Flat Mine property, and the property reverted to Inspiration Development. AR-17765.
119. In February 1987, Copper Flat Partnership informed the Environmental Improvement Division of the New Mexico Health Department (Predecessor to the New Mexico Environment Department) that "the Copper Flat property is [p]ermanently [c]losed and will not be restarted." AR-17765.
120. By February 5, 1987, Copper Flat Partnership completed reclamation of Copper Flat Mine facilities on land belonging to the U.S. Bureau of Land Management (BLM). AR-17765; Kuipers Test. Tr. vol. 3, p. 927, lines 1-2.
121. In 1987, Copper Flat Partnership abandoned its mining operations at the Copper Flat Mine. AR-17768; Kuipers Test. Tr. vol. 3, p. 927, lines 1-2.
122. For several years after 1987, there were no active operations or activities at the Copper Flat Mine. Several successive companies owned the mine property, but there was no mining, reclamation, maintenance, construction, or other activities at the mine site. Kuipers Test. Tr. vol. 3, p. 927, lines 3-7.

123. On November 16, 1989, Inspiration Development conveyed title to the Copper Flat Mine to Hydro Resources by quitclaim deed. AR-17773.
124. On July 25, 1989, Cobb Resources, Inc., which controlled Hydro Resources, entered into an agreement to sell the Copper Flat Mine property to the Copper Flat Mining Company, based in Denver, Colorado. Copper Flat Mining Co. planned to develop the Copper Flat Mine with prospective partners, but those plans never materialized. AR-17774.
125. On April 11, 1990, Copper Flat Mining Co. sold the Copper Flat Mine property to Gold Express Corporation. AR-17775.
126. On January 31, 1991, Gold Express Corp. submitted to the BLM a proposed plan of operations for the Copper Flat Mine. Gold Express Corp. proposed to “rebuild the entire Copper Flat mining facility as it existed in 1986.” Gold Express Corp. did not implement the plan. AR-17776. Kuipers Test. Tr. vol. 3, p. 927, lines 3-7.
127. On or about September 31, 1993, Gold Express Corp. extended an option to purchase the Copper Flat Mine property to Alta Gold Corporation, a publicly-traded company that engaged in gold, silver, lead, and zinc mining. Alta Gold Corp. exercised the option and purchased the mine property in 1994. AR-17776; Kuipers Test. Tr. vol. 3, p. 927, line 8.
128. In early 1995, Alta Gold Corp. submitted to the Environment Department an application for a modification of the existing groundwater discharge permit (DP-001) for the Copper Flat Mine. The application was suspended pending development of an abatement plan to address existing groundwater contamination. AR-01370.
129. Alta Gold Corp. planned to reopen the Copper Flat Mine for a cost of \$35 million. Alta Gold Corp.’s proposed operations at the Copper Flat Mine were very similar to those of Copper

Flat Partnership, and Alta Gold Corp. planned to recover and reuse the salvageable infrastructure remaining from Copper Flat Partnership's operations. Ultimately, however, Alta Gold Corp. never reopened the mine. AR-17777 to AR-17778.

130. In 1999, Alta Gold Corp. filed for bankruptcy in the United States Bankruptcy Court for the District of Nevada. AR-17778; Kuipers Test. Tr. vol. 3, p. 927, lines 17-18.

131. Alta Gold's assets, including those associated with the Copper Flat Mine, were liquidated in an auction ordered by the bankruptcy court. AR-17778.

132. After the bankruptcy liquidation, the Copper Flat Mine property was again abandoned. Kuipers Test. Tr. vol. 3, p. 927, lines 24-25.

133. Max Yeh, a resident of Hillsboro, New Mexico, made between five and seven personal visits to the Copper Flat Mine site over the course of ten to fifteen years beginning in the early 1990s. He often hiked to the top of the hills overlooking the mine. On none of these occasions did Yeh see any mining operations or personnel at the Copper Flat Mine. He observed that there were no signs of the former buildings other than the imprints; that the open pit was ringed with light-yellow crystals; and that the dam was overgrown with brush, weeds, and small shrubs. AR-17780 to AR-17781.

134. James Kuipers made a personal visit to the Copper Flat Mine site in 2003. He observed that the property had no signs and no security, and that it had every resemblance of an abandoned mine. Kuipers Test. Tr. vol. 3, p. 928, lines 2-6.

135. Kurt Vollbrecht, an employee of the New Mexico Environment Department, Water Quality Bureau, and James Hollen, an employee of the New Mexico Energy, Minerals and Natural Resources Department, Mining and Minerals Division, conducted an inspection of the

Copper Flat Mine site on June 16, 2008. They observed that the site was unsecured, with no gates to restrict access; that some of the waste rock piles had not been reclaimed; and that significant sulfate precipitate had formed along the shoreline of the pit lake. They tested the pH of the pit lake at several locations using pH paper strips and found the pH to range between 4.0 and 4.5. AR-00002.

136. On July 23, 2009, Hydro Resources entered into an agreement with NMCC extending to NMCC an option to purchase the Copper Flat Mine and associated mineral claims. AR-17781.

137. N.M. Copper Corp. acquired the Copper Flat Mine in 2011.

VII. NMCC'S DISCHARGE PERMIT APPLICATION

138. NMCC started working on its application for a discharge permit in 2010 and submitted its application on March 31, 2011, prior to the adoption of the Copper Rule. AR 00307-01709; Tr. 47: 16-17; 47: 20-48:1; 497:16-17; NMED Ex. 2, p. 4.

139. INTERA produced a sampling and analysis plan for the Copper Flat Mine discharge permit application in 2010. AR 00225-00254; Tr. 47:17-19.

140. This application was submitted as an application to modify DP-001, the discharge permit for a previous mine at the same site. NMED Ex. 2, p. 4.

141. NMED determined NMCC's application for Discharge Permit Modification, dated March 31, 2011, to be administratively complete on May 3, 2011 and NMED provided an affidavit of public notice one (PN-1) completion on June 28, 2011. AR 01711-01714, AR 2143-2156; NMED Ex. 2, p. 5; Tr. 499:8-10.

142. On December 1, 2013, the New Mexico Water Quality Control Commission adopted the Copper Mine Rule, 20.6.7 NMAC.

143. In December 2015, NMCC submitted an updated discharge plan application, which was intended to address the requirements of the Copper Mine Rule. AR 10497-10499, AR 11377-11378, AR 12354-13547; Tr. 498:5-10; NMED Ex. 2, p. 4.
144. On January 15, 2016, NMED notified NMCC that the Department had determined that the December 19, 2015 permit application was administratively complete and issued a public notice for the revised application. AR 13560-13561, AR 13567-13569; NMED Ex. 2, p. 4, Tr. 499:13-14.
145. On September 19, 2016, NMED informed NMCC that the revised permit application was considered a new permitting action and assigned the proposed new copper mine facility a new discharge permit number, DP-1840, thereby retiring DP-001. AR 13868-13892; NMED Ex. 2, p. 4.
146. In 2017, NMCC completed and submitted a revision to the application to NMED to better conform the application to the requirements of the Copper Rule. AR 15855-17076; Tr. 47:2-4; 498:14-16.
147. On January 31, 2018, the Environment Department caused to be published in the *Truth or Consequences Herald*, and on February 2, 2018, it caused to be published in the *Albuquerque Journal*, a public notice (PN 2), as required under section 20.6.2.3108.H NMAC, stating that the Department proposed to approve the discharge permit for the Copper Flat Mine. The notice also stated that the Environment Department would receive public comment on the proposed discharge permit, and requests for a public hearing, for thirty days. Tr. 499:15-22; NMED Ex 2, p. 5, AR-17417 to AR-17420.

148. The Environment Department received requests from Turner Ranch Properties and Hillsboro Pitchfork Ranch, the New Mexico Environmental Law Center, Amigos Bravos, Elephant Butte Irrigation District, and Gila Resources Information Project to extend the period for public comment. AR-17432 to AR-17437; AR-17439 to AR-17441; AR-17443 to AR-17444; AR-17474 to AR-17476. On or about March 3, 2018, the Environment Department extended the public comment period until May 5, 2018, extending the initial thirty-day public comment timeframe to 90 days. AR-17486 to AR-17491.
149. On February 2, 2016 the Environment Department notified NMCC that the Department was proposing approval of the discharge permit for the Copper Flat Mine under section 20.6.2.3108.H NMAC. The Environment Department sent NMCC a proposed discharge permit, as required under section 20.6.2.3108.H NMAC. Smith Test. Tr. vol. 1, p. 52, lines 19-21; Tr. 47:14-16; 52:21, AR-17360 to AR-17407.
150. In response to the public notice, the Department received comments and requests for a public hearing from three non-government organizations, two governmental organizations, the applicant, and 46 individuals. Id., p. 5, ln. 18-21.
151. On March 29, 2018, Environment Department staff from the Mining Environmental Compliance Section of the Ground Water Quality Bureau requested that the Secretary determine that there was significant public interest in the proposed discharge permit for the Copper Flat Mine, which would trigger a public hearing under section 20.6.2.3108.K NMAC. On March 30, 2018, the Environment Department Secretary approved the request. AR-17557 to AR-17558.

152. Having determined that a hearing was appropriate for this permit, NMED issued the notice of the public hearing electronically on its website on August 8, 2018, in the Albuquerque Journal on August 8, 2018, in the Truth or Consequences Herald on August 15, 2018, mailed the Hearing Notice to public agencies and tribal entities on August 8, 2018, and on August 8, 2018 provided email notices to 46 individuals who had submitted comment and requests for hearing on the draft discharge permit. Tr. 500:2-13; NMED Ex. 2, p. 6.
153. On June 7, 2018, the Environment Department Secretary docketed the matter for hearing and appointed a Hearing Officer. AR-18661 to AR-18662.
154. The 46 persons who had submitted comment and requests for hearing via email were provided email notification of the hearing on two occasions. Id., p. 6, ln. 4-5.
155. NMED also posted the Hearing Notice at various locations in the affected communities including the Elephant Butte Municipal Building, Truth or Consequence Clerk's Office, Sierra County Clerk's Office, Truth or Consequences Post Office, Williamsburg Municipal Office, and a notice posted in the Hillsboro Post Office indicating the Public Notice and Fact Sheet are located in the Hillsboro Public Library. Id., p. 6, ln. 5-9.
156. The Hearing Notice included all information required at 20.6.2.3108.L NMAC, including the time and place of the hearing and a brief description of the hearing process. Id., p. 6, ln. 10-11.
157. The Hearing Notice included a fact sheet about the proposed Discharge Permit and the Copper Flat Mine. Id., p. 6, ln. 11-12.
158. The Department provided both English and Spanish versions of the Hearing Notice and fact sheet. Id., p. 6, ln. 12-13.

VIII. GEOLOGY, HYDROLOGY, AND GEOCHEMISTRY OF THE MINE SITE

159. Groundwater beneath the mine units regulated pursuant to DP-1840 is at a depth ranging from approximately 7 to 156 feet with a pre-discharge total dissolved solids concentration ranging from approximately 317 to 868 milligrams per liter. Id., p. 3, ln. 14-16.
160. The geology of the site consists of a quartz monzonite stock that hosts the ore body, situated within volcanic crystalline andesite with low permeability surrounding the quartz monzonite and beneath the mineral processing and waste rock storage units. Id., p. 3, ln. 16-19.
161. Santa Fe Group basin fill is present beneath the synthetically-lined tailing storage facility, and consists of interbedded layers of poorly consolidated sand, silt, clay, and conglomerate. Id., p. 3, ln. 19-20.
162. NMCC completed a conceptual model of the geology and hydrogeology at and around the Copper Flat Mine permit area. AR 15978- 1600, 16020-24, 15855-17076, 17282-17358; Tr. 95:14-24; 98:6-10; 102:21-104:7.
163. NMCC has provided a map of the permit area that demonstrates groundwater elevation contours and flow across the mine permit area. AR 15545; 15985; 17282-17358; NMCC Ex. 11; Tr. 108:3-12.
164. NMCC used 40 years of data from exploration drilling programs, monitoring wells, aquifer testing, including groundwater samples from the previous mining operations and surface samples from stormwater events, compiled into a Baseline Data Report (BDR) to characterize the hydrologic setting of the mine site. AR 02498-05295; NMCC Ex. 11; Tr. 103:1-19.

165. NMCC geologists analyzed hundreds of drill cores and rock samples from the site to provide a detailed analysis of the type of rock, the minerals in the rock, the type of fractures, the minerals in those fractures, and the rock characteristics that informed the geological model for the mine permit area. AR 03985-03988; NMCC Ex. 11; Tr. 103:20-104:7.

A. GEOLOGY

166. NMCC has pre-discharge TDS data for the mine permit area in the form of data from the past forty years from wells within a half-mile boundary of the permit area. NMCC Ex. 11; AR 15892-15898; Tr. 113:20-115:10. In the region where the Copper Flat Mine is located there are fault systems, which are part of the Rio Grande Rift. AR 08042-08444, 15977-1600; NMCC Ex. 11; Tr. 96:21-97:2.

167. West of the Rio Grande Rift is bedrock that has been uplifted, which is referred to as the Animas Uplift. AR 08042-08444, 15977-1600; NMCC Ex. 11; Tr. 97:3-6.

168. Within the region is the East Animas Fault. AR 08042-08444, 15889; NMCC Ex. 11; Tr. 109:9-22.

169. The Animas Uplift is formed by volcanic rock called andesite, which has a different type of rock, quartz monzonite, in the middle. AR 08042-08444; NMCC Ex. 11; Tr. 97:7-15; 98:21-99:1; 100:3-5.

170. The thickness of the andesite in the mine permit area boundary, some of which is overlain by alluvial material, is known to be at least 3,000 feet thick. NMCC Ex. 11, p. 38; Tr. 99:15-19.

171. East of the Animas Uplift is the Palomas Basin, which contains Santa Fe Group sediments. AR 08042-08444, 15977-1600; NMCC Ex. 11; Tr. 97:16-21.

172. The Santa Fe Group consists of interbedded layers of sand, silt, gravels, clay and conglomerate, with a wide range of permeabilities. AR 08042-08444; NMCC Ex. 11; NMED, Ex. 3, p. 3; Tr. 97:16-21; 100:6-12.
173. Most of the mine permit area resides in the Animas Uplift. AR 16020-16024; NMCC Ex. 11; Tr. 98:19-20.
174. The East Animas Fault system is on the eastern portion of the permit boundary. AR 15977-1600, NMCC Ex. 11; Tr. 106:3-5.
175. The geology of the mine pit area consists of a quartz monzonite rock, which hosts the ore body. The geology of the broader mine permit area is complex. AR 08042-08444, 15977-1600; NMCC Ex. 11; NMED Ex. 3, p. 3; Tr. 97:7-15; 98:21-99:1; 100:3-5.
176. Santa Fe Group basin fill is present beneath the synthetically lined TSF. AR 15977-1600; NMCC Ex. 11; NMED Ex. 3, p. 3.

B. HYDROLOGY

177. Grayback Arroyo, the ephemeral watercourse that transects the mine permit area, is underlain by alluvium or andesite, and as it travels east it is underlain by alluvium and Santa Fe Group sediments. AR 15977-1600; NMCC Ex. 11; Tr. 111:14-20. There are three regional surface watersheds in the general area of the mine site: Las Animas Watershed, Greenhorn Watershed and Percha Watershed. The Grayback Arroyo is a sub-watershed of the Greenhorn Watershed. The mine permit area is entirely within the Greenhorn Watershed. AR 15962-15964; 08042-08444; NMCC Ex. 11; Tr. 100:17-18.
178. In the general region, there are creek drainages from the Las Animas Creek and Percha Creek, which contain recent alluvium. AR 08042-08444; NMCC Ex. 11; Tr. 97:22-98:5.

179. Regionally, groundwater flows from west to east. AR 08042-08444, 15909; NMCC Ex. 11; Tr. 195:16-17.
180. The only surface water within the permit area is Grayback Arroyo, which flows through the site and conveys stormwater, ephemeral drainage. AR 08042-08444, 15977-1600; NMCC Ex. 11; Tr. 100:21-24; 102:1-2.
181. There are no perennial springs within the permit area. NMCC Ex. 11; Tr. 102:3-7.
182. The general direction of groundwater flow at the mine site is west to east, except in the area of the open pit, which is a hydrologic sink. AR 08042-08444, 15909; NMCC Ex. 11; Tr. 161:13.
183. The East Animas Fault adjacent to the mine permit area could not serve as a conduit for the migration of contaminants through groundwater flow. AR 08042-08444; NMCC Ex. 11; Tr. 168:4-22.
184. The East Animas Fault acts as a barrier to groundwater flow from the mine permit area. AR 08042-08444; NMCC Ex. 11; Tr. 109:9-22.; 113:4-9; 168:5-22; 1612:1-1615:22
185. There is not a possibility of water to travel from the west side of the Animas Fault to Ladder Ranch. AR 08042-08444; NMCC Ex. 11; Tr. 215:25-217:7.
186. Potential contaminants from future mining at the Copper Flat Mine will not travel from the mine to the Caballo Reservoir. AR 08042-08444; NMCC Ex. 11; Tr. 218:9-20.
187. Potential contaminants from future mining at the Copper Flat Mine will not travel from the mine to the Rio Grande. AR 08042-08444; NMCC Ex. 11.

188. Groundwater in the andesite is very immobilized because the hydraulic conductivity of the andesite is 0 to 0.0027 feet per day. NMCC Ex. 11; AR 17282-17358; Tr. 107:16-18; 124:12-125:15; 1606:5-1611:24.
189. The permeability of the andesite that surrounds the ore body is very low and is further significantly reduced because where fractures exist in the andesite those fractures have been filled with silicate and calcite, preventing the flow of water through them. AR 8042-8444, 15855-17076; NMCC Ex. 11; Tr. 99:4-14; 100:5.
190. Volcanic andesite with low permeability surrounds the quartz monzonite and is located beneath the mineral processing and waste rock storage units. AR 08042-08444; NMCC Ex. 11; NMED Ex. 3, p. 3.
191. The waste rock properties used in the modeling, including the particle size distribution and the values used to express the water content and hydraulic conductivity relationship were well within the range observed at other hard rock mines in New Mexico. NMED Ex 4, 3.

C. GEOCHEMISTRY

192. Small amounts of surface water is expected to infiltrate the waste rock stockpiles during operations prior to reclamation cover being placed, and a small portion has the potential to continue to reach to the base of the pile. AR 08042-08444; NMCC Ex. 11; NMED Ex. 4, 3. The geochemical characterization program allowed NMCC to understand the potential reactivity and/or stability of the mine waste that will be extracted from the mine to assess the impacts to receptors, and to identify options for management and closure of the mine facilities. NMCC Ex. 22; Tr. 229:1-5.

193. The NMCC geochemical characterization program started in 2010, and was supplemented with previous geochemical programs that were conducted between 1996-1999. AR 03970-05858; Tr. 226:6-9.
194. The Copper Flat Open Pit walls, the WRSPs, the TSF and other disturbed areas at the mine facility may contain sulfide minerals which, when oxidized, have the potential to generate acidic solutions. AR 18737; NMCC Ex. 22.
195. At the Copper Flat site, it is expected that there will be an overall lack of acid generation. This is attributed to: (1) the fact that sulfide materials are encapsulated in slow-reacting silicate minerals such as quartz and feldspar; (2) the fact that the sulfide materials are generally medium to coarse grained and disseminated and very well crystallized so they are more stable and resistant to weathering conditions; (3) the presence of acid-neutralizing silicate minerals contributes to neutralizing. NMCC Ex. 22; Tr. 252:20-253:10; 277:23-278:1.
196. The geochemistry characterization study evaluated all waste rock that will be stored in the WRSPs of at the Copper Flat Mine for its potential to generate acid and to release water contaminants at levels in excess of standards. AR, 03970-05258, 05529-7439, 8525-9095; NMCC Ex. 22; Tr: 231:25-232:3.
197. The numeric model and climate inputs of the water balance simulations to evaluate transport of water through the waste rock stockpile during the operational period were appropriate. AR, 03970-05258, 05529-7439, 8525-9095; NMCC Ex. 22 NMED Ex 4, 3.
198. In order to assess the potential for acid drainage and waste rock leaching, NMCC tested 132 samples of waste rock and 14 samples of tailings materials for a series of static screening level testing, which included acid base accounting and net acid generation testing and a multi-

- element analysis for the 146 samples. AR, 03970-05258, 05529-7439, 8525-9095; NMCC Ex. 22; Tr. 234:6-10.
199. The screening level tests, including acid base accounting, generally overestimated the potential for acid generation and the reactivity of the samples that were not realized with longer-term weathering tests in the form of humidity cell testing. NMCC Ex. 22; Tr. 278:2-8.
200. The testing included screening level static testing, including acid base accounting and meteoric mobility procedure testing, and long-term kinetic humidity cell testing. AR 03970-05258, 05529-7439, 8525-9095; NMCC Ex. 22; Tr. 235:9-15.
201. The meteoric water mobility procedure testing was performed on 49 samples to assess potential constituent mobility. Mineralogy analysis was performed on 28 samples. NMCC Ex. 22; Tr. 234:10-13; Tr. 240:16-241:16.
202. The results of the screening level static tests were used to identify and select representative samples for longer term kinetic testing. AR 03970-05258, 05529-7439, 8525-9095; NMCC Ex. 22; Tr. 234:17-18.
203. Kinetic testing generally involves weekly oxidation and rinse cycles for a period greater than 20 weeks. AR 03970-05285, 05529-7439, 8525-9095; NMCC Ex. 22; Tr. 241:17-20
204. NMCC conducted long-term kinetic testing, a humidity cell testing program, on samples which ranged from 28 to 122 weeks. AR 8525-9095; NMCC Ex. 22; Tr. 249:3-9.
205. The results of the kinetic test program were used in conjunction with information from the Mine Plan from the hydrologic water balance and surface and groundwater quality data and climatic data to develop water quality predictions for each mine unit. AR 3970-05285, 05529-7439, 8525-9095, 17282-17358; NMCC Ex. 22; Tr. 234:23-235:4.

206. The main material types, based on rock type or lithology, found at the Copper Flat Mine site include quartz monzonites, which will comprise 78% of the waste material; coarse crystalline porphyry, which will comprise 15% of the waste material; breccia, which will comprise 6% of the waste material; and andesite, which will comprise 1% of the waste material. NMCC Ex. 22; Tr. 263:17-23.
207. Waste rock at Copper Flat will consist of both transitional and non-transitional material. The transitional material is material that is undergoing partial or full oxidation. The non-transitional material is material that is not undergoing oxidation. AR 3970-05285, 05558, 05529-7439.
208. At the Mine, transitional waste rock to be excavated will be less than 4% of the total volume of waste produced from the operation. AR 16017; NMCC Ex. 22; Tr. 242:9-11.
209. The majority of samples submitted for testing showed either a low or uncertain potential for acid generation based on acid base accounting, and any potentially acid-generating waste was limited to the transitional material. AR 03970-05258, 05529-7439, 8525-9095; NMCC Ex. 22; Tr. 242:6-11.
210. Long-term kinetic testing revealed that only two samples of the transitional materials showed acid generation potential. AR 8525-9095; NMCC Ex. 22; Tr. 250:1-5.
211. 96% of the waste rock materials to be produced at the Copper Flat Mine site show no evidence of oxidation products. AR 03970-05258, 05529-7439, 8525-9095; NMCC Ex. 22; Tr. 236:25-237:3; 277:18-22.

212. The vast majority of waste rock, i.e. the 96% that is not transitional waste rock, shows very low potential for acid generation and metal release. AR 03970-05258, 05529-7439, 8525-9095; NMCC Ex. 22; Tr. 254:11-13.
213. The only material that shows potential for acid generation and metal release is transitional material. The material will not be exposed in the final pit walls and will be managed during operations by the encapsulation within the waste rock stockpile and presents a low risk to surface water and groundwater. Tr. 255:3-10; NMCC Ex. 22; AR 03970-05258, 05529-7439, 8525-9095.
214. Testing revealed low potential release or generation of metal-rich solutions, with the exceptions of transitional materials, which show a greater potential for acid generation and metal release, but which only accounts for 4% of waste rock. It will be managed by encapsulation within the waste rock stock pile and will be a low risk to impact surface or groundwater. AR 03970-05258, 05529-7439, 8525-9095; NMCC Ex. 22; Tr. 278:9-18.
215. The acid generation potential for the tailings pile are low; the tailings produced during the early years of mine life (years 0-5) are characterized by a higher level of sulfide content- 0.53%, and tailings produced after year 5 of mine life are characterized by a lower sulfide content- less than .2%- are non-acid-generating. AR 03970-05258, 05529-7439, 8525-9095; NMCC Ex. 22; Tr. 247:12-22.

IX. MINE FACILITY UNITS

A. WASTE ROCK STOCKPILES

1. During Operation

216. Engineering design requirements for waste rock systems vary depending on whether the stockpiles are constructed inside or outside of the open pit surface drainage area (OPSDA). Tr. 522:5-8; 20.6.7.21(B)(1) and (2) NMAC.
217. Section C103 of Draft DP-1840 addresses the facility specific requirements of the waste rock stockpiles at the Copper Flat Mine. AR 18751-52.
218. The proposed waste rock stockpiles (WRSP) are located adjacent to the open pit; WRSP-1 in the open pit surface drainage area and WRSP-2 and 3 northeast of the process area outside of the OPSDA. AR 13956-15177, 15458-15690, 15855-17076; NMCC Ex. 91; Tr. 52:1-3.
219. The proposed waste rock stockpiles will contain 45 million tons of waste rock, which will mostly comprise quartz monzonite, and will have a surface area of 221 acres including haul roads. AR 13971, 15090.
220. The Existing waste rock stockpiles (EWRSP) are similarly located. EWRSP1, 2 and 4 are located within the open pit surface drainage area and, while they are not required to be reclaimed will be covered and revegetated during the preproduction phase of the mining operation. AR 15580; NMCC Ex. 91; Tr. 390:6-21.
221. Existing WRSP-3 is within the plant area and will be reclaimed at the end of mining operations. AR 15580-15664; NMCC Ex. 91; Tr. 390:22-24.
222. The majority of EWRSP-2A will be placed into EWRSP-2B as part of the preproduction phase of reclamation; the remaining portion of EWRSP- 2A that will be covered by the

- proposed WRSP-1, to be reclaimed at the end of mining. AR 15580-15664; NMCC Ex. 91; Tr. 391:5-12.
223. The exterior slope of EWRSP-4 will be regraded and covered and revegetated during the preproduction phase. The top surface will be regraded to drain toward the pit during operation and will be used as an equipment laydown yard during operations. AR 15580-15664; NMCC Ex. 91; Tr. 391:13-20.
224. The reclaimed EWRSP's will have interbench slopes regraded to 3 to 1, maximum uninterrupted slope lengths of 200 feet, and the top surface will be graded to drain with slopes between 1 and 5 percent in accordance with the Copper Rule. AR 15580-15664; NMCC Ex. 91; Tr. 391:24-392:20.
225. Reclamation of EWRSP-1 and EWRSP- 2(B) will be completed during the preproduction period of its mining operation. AR 18213.
226. Reclamation of the EWRSPs that are not components of future operations will result in enhanced environmental protection and provide abatement-related source control at the Copper Flat Mine regardless of any timeline for operation at the Copper Flat mine. NMED Ex. 3, p. 18.
227. There will be 36 inches of store and release earthen cover placed on the EWRSPs after they have been graded. Once the cover is placed on the stockpiles, it will be ripped, and any disturbed areas outside of the stockpiles due to reclamation will also be ripped and will provide positive drainage away from the facilities. AR 15580-15664; NMCC Ex. 91; Tr. 391:24-392:20.

228. NMCC will construct three new waste rock stockpiles, WRSP-1, WRSP-2 and WRSP-3, for placement of approximately 45 million tons of waste rock over an estimated eleven-year operational period of the mine. AR 15090, 13956-15177, 15458-15690, 15855-17076; NMCC Ex. 91; NMED Ex. 3, p. 10.
229. WRSP-1 will be constructed inside the OPSDA on low-permeability andesite and quartz monzonite. AR 15855-17076; NMCC Ex. 91; NMED Ex. 3.
230. Waste rock with a higher potential to develop acid rock drainage will be placed within the authorized footprint of the proposed WRSPs in conformance with the approved material handling plan. AR 15918; NMCC Ex. 91; NMED Ex. 3, p. 11.
231. Although not required by the Copper Rule, because it is located within the open pit surface drainage area NMCC will regrade and cover WRSP- 1. AR 15580-15664; NMCC Ex. 91; Tr. 399:1-7.
232. WRSP-2 and WRSP-3 will be constructed outside the OPSDA on low permeability andesite. AR 09608, 15993; NMCC Ex. 91; NMED Ex. 3, p. 12.
233. NMCC provided an aquifer evaluation for WRSP-2 and WRSP-3 to determine if an interceptor system is needed, since these waste rock stockpiles are located outside of the OPSDA. AR 17078-17280; Tr. 522:12-20.
234. The aquifer evaluation concluded that potential discharges from WRSP-2 and WRSP-3 are not expected to result in an exceedance of groundwater standards. AR 15992-93; Tr. 522:16-523:3.
235. NMCC will implement a material handling plan, which includes addressing identification, handling and disposal of potential acid generating (PAG) materials. A minimum of 10 feet of

- non-PAG waste rock material will be placed above, below and around PAG disposed of in the WRSPs. AR 15855-17076; NMED Ex. 3, p. 11; Tr. 399:23-400:6.
236. Adhering to the material handling plan will limit acid generation potential by providing neutralizing potential for any acid rock drainage that might develop. NMED Ex. 3, p. 11.
237. Berms and open-channel conveyance structures will be constructed around waste rock stockpiles to prevent surface water run-on and control run-off and/or flow seeps from the proposed stockpiles. AR 15458-15690; 15855-17076; NMCC Ex. 91, NMED Ex. 3, p. 11; Tr. 524:6-13.
238. Stormwater will be diverted away from the waste rock stockpiles; the low moisture of the material in the pile prevents downward migration of surface infiltration from precipitation. The toe drains allow for capture of impacted stormwater. AR 15458-15690; 15855-17076; NMCC Ex. 91; Tr. 128-22-129:2.
239. Stormwater conveyance channels have been designed to safely convey the 100-year return storm events. AR 15458-15690; 15855-17076; Tr. 392:21-25.
240. Channels will be constructed to maximize positive flow and minimize the potential for ponding and erosion. AR 15458-15690; 15855-17076; Tr. 524:6-13; NMED Ex. 3, p. 11.
241. Collected stormwater and other solutions will be conveyed to Impacted Stormwater Impoundments. AR 15458-15690; 15855-17076; NMED Ex. 3, p. 11.
242. Alluvial materials within the footprint of the proposed WRSPs will be removed and stored in the Growth Media Stockpiles (GMS) and the open-channel conveyance channels will be constructed into the underlying low permeability andesite bedrock to maximize collection of

potential seepage and impacted stormwater generated from the stockpiles. AR 1593, NMED Ex. 3, p. 11.

243. Each lift within the WRSP will be a maximum of approximately 75 feet high and placed at angle of repose with 120-foot setbacks between lifts to maintain a 3 to 1 overall angle for the stockpile outslopes to facilitate the desired slope angle at closure. AR 15458-15690; 15855-17076; NMED Ex. 3, p. 10.

244. No impacts to groundwater will occur should there be any seepage from the WRSP. AR 3940-5258, 15458-15690, 17282-17358; NMCC Ex. 22; Tr. 259:5-7.

245. Should there be any seepage from the WRSPs, all parameters of predicted groundwater chemistry are below New Mexico groundwater standards. AR 03970-05258, 17282-17358; NMCC Ex. 22; Tr. 259:8-13.

246. The numeric model and climate inputs of the water balance simulations to evaluate transport of water through the waste rock stockpile during the operational period were appropriate. NMED Ex 4, 3.

247. There will be no water quality impacts to groundwater or surface water from the WRSPs. AR 03970-05258, 15855-17076, 17282-17358; NMCC Ex. 22; Tr. 278:19-22.

2. WRSP Reclamation

248. All waste rock stockpiles will be reclaimed by placing 36 inches of approved reclamation cover material to control, enhance evapotranspiration and reduce infiltration, which is expected to be 2% of mean annual precipitation. AR 15580-15664; NMCC Ex. 91; Tr. 257:3-10; NMED Ex. 3, p. 11.

249. NMCC will construct reclamation test plots on the existing waste rock stockpiles following reclamation to further evaluate the growth media as a reclamation cover material and to evaluate vegetation sustainability, erosion control characteristics of the cover material and the capability of the cover material to reduce infiltration into the cover systems. AR 15580-15664; NMCC Ex. 91; Tr. 393:9-18.
250. Revegetation has been designed to create a stable, self-sustaining plant community that conforms to the planned grazing and wildlife habitat post-mine land use ("PMLU"). AR 15580-15664; NMCC Ex. 91; Tr. 393:1-4.
251. Closure of WRSP-1, WRSP- 2, and WRSP- 3 include regrading to inter-bench slopes between 2.75 to 3:1, with maximum uninterrupted slope lengths of 200 feet. The top surface of the waste rock stockpiles will be graded between 1-5%. Between the 200-foot slope lengths are built-in benches that will convey clean surface water run-off of the facilities when they are recovered, revegetated and reclaimed. Stormwater channels are designed to safely convey a 100-year storm return interval. AR 15580-15664; NMCC Ex. 91; Tr. 397:14- 398:22.

B. IMPOUNDMENTS

1. During Operation

252. Section C104 of DP-1840 addresses requirements for impoundments at the Copper Flat Mine. AR 18752, Ex 3, p. 12.
253. Impoundment design is dictated by location of the impoundment and the designated purpose the impoundment will serve. AR 16750-17046; NMED Ex 3, p.12.

254. Impoundments that store process water for long-term storage require additional engineering controls compared to impoundments intended to store solutions for less than 30 days. AR 16750-17046 NMED Ex. 3, p. 12.
255. There are HDPE lined impoundments and ponds that are adjacent to the TSF, the waste rock stockpiles and the process area, which are designed to include sufficient capacity for stormwater events. Tr. 51:21-25.
256. Impacted Stormwater Impoundments A, B and C are designed to receive surface drainage from the WRSPs and the Process Area at the Copper Flat Mine. AR 16750-17046; NMED, Ex. 3, p. 12.
257. These stormwater impoundments are designed to store impacted stormwater for less than 30 days and therefore are designed with an engineered, single-lined 60-mil HDPE liner system. AR 16750-17046; NMED, Ex. 3, p. 12.
258. The Process Water Reservoir (PWR) is designed to receive reclaimed process water from a variety of sources including the TSF, impacted stormwater impoundments, and freshwater supply system conveyed by pipeline. AR 16750-17046; NMED Ex 3, 13.
259. The PWR receives direct precipitation to the pond surface and embankment crest area. AR 16750-17046, NMED Ex. 3, p. 13.
260. The PWR is intended to be a long-term storage for process water and is designed with an engineered, double-lined 60 mil HPDE liner system, leak collection system, and subgrade bedding. The design overflow weir, which conveys solutions directly into the HDPE lined tailings trench/pipeline corridor that discharges into the TSF, is an additional protection measure for containment in the event of upset conditions. AR 16750-17046; NMED, Ex. 3, 13.

261. The Tailings Storage Facility (TSF) Underdrain Collection Pond (UCP) is sized to retain 24-hours of underdrain flow from the TSF at the maximum flow rate, and runoff from the downstream face of the TSF during a 100-year return interval storm event. AR 16750-17046; NMED, Ex. 3, 13.
262. The Underdrain Collection Pond is intended to be long-term storage for process water and is designed with an engineered, double-lined 60 mil HPDE liner system, leak collection system and subgrade bedding. AR 16750-17046; NMED, Ex. 3, 13.
263. The Cyclone Plant Surge Pond (SP) will contain discharges from various processing locations under upset conditions, and will be empty during normal operating conditions. Therefore, the SP is designed with an engineered single-lined 60-mil HDPE liner system. AR 16750-17046; NMED, Ex. 3, 13.

a. Process Facility Area

264. Section C105 of DP-1840 specifies the facility-specific requirements for Copper Crushing, Milling, Concentrator and Tailings Storage Facility at the Copper Flat Mine. AR 18752-18753, NMED Ex. 3, 14.
265. The process facility includes contained and lined facilities that will utilize existing foundations. Tr. 51:1-4.
266. The Process Facility Area ("PFA") and associated mineral processing units will be constructed on low permeability andesite rock. AR 15837-15843, NMED Ex 3, 14.
267. Impacted stormwater from the PFA will be directed to open channel conveyances that convey solutions to Stormwater Impoundment-A. AR 16750-17046; NMED Ex 3, 14.

268. Twenty-two sumps and/or containment areas will be constructed to capture and contain process water, impacted stormwater and other solutions in the event there is a release from the primary containment structures in the PFA. AR 16750-17046; NMED Ex. 3, p. 15.
269. Any leakage, spillage or wash water within a containment area at the PFA is designed to be directed by sloped concrete flows to a watertight drainage sump. AR 16784, NMED Ex 3, 15.
270. Forty-eight above-ground tanks are proposed for use, most of which will be in the PFA and will meet the requirements of 20.6.7.23.A NMAC. NMED Ex 3, 15.

b. Tailings Storage Facility

271. The TSF is a lined facility designed to accommodate the volume of tailings generated during the life of the mine. AR 16058-17046; NMCC Ex. 88; NMED Ex 3, 14.
272. The TSF is in the southwest region of the permit area. It will be a synthetically lined storage facility, located adjacent to the PFA. AR 16058-17046; NMCC Ex. 88; Tr. 51:5-9.
273. The TSF will contain one hundred million tons of tailings and have a surface area of 530 acres. AR 16058-17046; NMCC Ex. 88; Tr. 260:6-8.
274. The TSF is designed to provide storage for 112 million tons of tailings, at a rate of 30,000 tons a day. AR 16058-17046; NMCC Ex. 88; Tr. 339:8-12.
275. Tailings will be deposited in the lined TSF that will be constructed on the site of historical tailings to isolate the historic tailings from oxidation reactions. AR 16058-17046; NMCC Ex. 22, NMCC Ex. 88; Tr. 260:9-17.

276. NMCC's TSF feasibility design includes a geomembrane liner underneath the entire facility that complies with the additional controls requirements of the New Mexico Copper Rule. AR 16058-17046; NMCC Ex. 88; Tr. 338:7-10.
277. The liner will be a 80-mil high density polyethylene (HDPE) liner placed on a twelve-inch thick liner bedding fill subbase. AR 16058-17046; NMCC Ex. 88; NMED Ex 3, 14; Tr. 51:9-11.
278. In addition to the HDPE liner and the subbase, the proposed liner system consists of a granular drainage network on top of the HDPE liner, supplemented with perforated pipes to reduce the hydraulic head on the liner system. AR 16058-17046; NMCC Ex. 88; Tr. 339:23-340:4.
279. As the liner is placed, before any material is stacked on it, NMCC will follow the quality control/quality assurance program, which requires NMCC to inspect the liner and vacuum test the liner to ensure that the fabrication and installation of the liner is done properly. AR 16058-17046; NMCC Ex. 88; Tr. 85:17-20.
280. Evaluation of liner leakage is physically based, consistent with literature and case study values and is reasonable. NMED Ex. 4, 4.
281. As the facility operates and material is placed on the liner, monitoring wells will be located at the base of the facility to detect any potential leaks. NMCC Ex. 11; Tr. 85:23:86-1.
282. The placement of the historical tailings below the liner will reduce exposure of the tailings materials to oxidation conditions, containing the material and improving water quality over time as the source of the sulfate in the existing sulfate plume will be cut off. NMCC Ex. 22, Tr. 263:8-12.

283. NMCC evaluated leakage from the lined TSF is estimated to be approximately 720 gpd. AR 16058-16749; NMED Ex. 4, p. 4.
284. Any seepage through the liner at the TSF will be so low, impacts to groundwater will be negligible and the groundwater chemistry would be identical to current groundwater chemistry should there be any seepage. NMCC Ex. 22, Tr. 262-19-25.
285. Should there be any seepage groundwater chemistry would not exceed any New Mexico water quality standards. NMCC Ex. 22, Tr. 263:1-3.
286. Any seepage from the TSF will remain in the immediate area for several hundred years and is not expected to migrate away from the facility. NMCC Ex. 11, Ex. 22, Tr. 263:13-17.
287. The TSF is designed and will be constructed to comply with OSE Dam Safety requirements. AR 16058-16749; Ex. 28; Tr. 51:18-20.
288. The TSF feasibility design includes slope stability calculations, which meet or exceed the OSE's safety values; residual shear strength analysis in stability models; and performed sensitivity values on the liner interface. AR 16058-17046; NMCC Ex. 88; Tr. 341:19-342:10.
289. Prior to tailing deposition, NMCC will build an earthen starter dam to an elevation of 5,250 feet that will have a 2.5 to 1 inboard slope and 2 to 1 outboard slope. AR 16058-17046; NMCC Ex. 88; Tr. 340:5-9.
290. The TSF design includes freeboard for wave run-up for the water that is on top of the facility to supernate the water pool and proves containment for the 72-hour probable maximum precipitation event. AR 16058-17046; NMCC Ex. 88; Tr. 341:3-8.
291. When tailings filling begins, NMCC will use cyclones to segregate the sand fraction from the fine fraction so that the sand fraction underflow is deposited on the top of the dam and

- the outslope to continually raise the dam. The cyclone overflow (fine fraction or slimes) will be deposited into the impoundment. The outslope of the sand embankment will be 3 to 1. AR 16058-17046; NMCC Ex. 88; 340:10-17.
292. An HDPE lined toe berm along the outslope of the TSF that is designed to be constructed during operations to contain surface run-off from the TSF and routing it to the Underdrain Collection Pond. AR 16058-17046; NMCC Ex. 88; Tr. 404:19-25.
293. The Concentrator Whole Tailings Transport pipeline will be installed within a lined tailings trench corridor when located outside the building areas until discharge at the TSF. AR 16009, 16022-16023, NMED, Ex. 3, 15.
294. The TSF includes a solution underdrain and collection and process water recycling system. AR 16058-17046; NMCC Ex. 88; Tr. 51:14-15.
295. TSF drainage will be collected using an underdrain collection system that incorporates two underdrains, the impoundment underdrain and the dam underdrain, that will convey solutions to the TSF UCP. AR 16058-17046; NMCC Ex. 88; NMED Ex 3, 14.
296. Water recovered from the TSF will be reused for mineral recovery as part of a water conservation plan. AR 16058-17046; NMCC Ex. 88; Tr. 51:15-17.
297. Water from the supernatant pool, on top of the TSF, will be pumped and returned to the mill for reuse. AR 16058-17046; NMCC Ex. 88; Tr. 341:9-12.
298. TSF supernatant process water will be returned to the PWR for reuse through the 36-inch diameter HDPE water reclaim water pipeline situated in the lined tailings trench corridor. AR 16022-16023, NMED Ex 3, 15.

299. The TSF includes an underdrain system that will drain water via gravity into a double geomembrane pond located at the toe of the embankment that will be returned to the mill for reuse. AR 16058-17046; NMCC Ex. 88; Tr. 341:13-16.
300. The UCP return process water pipeline will be placed along the upstream side of the toe berm and above the geomembrane liner during all buildout phases of the TSF. AR 16729-16733, NMED Ex. 3, p. 15.
301. Stormwater potential run-on will be diverted around the TSF. AR 16058-17046; NMCC Ex. 88; Tr. 339:13-14.
302. All impacted stormwater from the TSF dam face will be captured and contained on HPDE-lined and bermed channels which are integrated into the TSF liner system. AR 16058-17046; NMCC Ex. 88; NMED Ex 3, 14.
303. There will be no water quality impacts to groundwater or surface water from the TSF. AR 03790-05258, 16058-17046, 17282-17358; NMCC Ex. 22, Ex. 88; Tr. 278:19-22.

2. Impoundments Reclamation

304. All structures, storage facilities, buildings, pipelines and other equipment either on the TSF or the cyclone plant will be removed and disposed of in accordance with federal and state laws. AR 15580-15664; NMCC Ex. 91; Tr. 403:2-7.
305. After closure, there will be grading of embankment slopes, placement of a 36-inch store and release cover, and management of underdrainage. AR 15580-15690; NMCC Ex. 91; Tr. 260:18-23.
306. Disturbed areas outside of the TSF will get graded to drain away from the TSF. AR 15580-15690; NMCC Ex. 91; Tr. 403:8-11.

307. The TSF embankment will be graded to between 3 to 1 and 3.5 to 1, with maximum uninterrupted slope lengths of 200 feet and the 250 feet for 3.5 to 1; the top surface will be graded to between 1-5%. Benches will be built per the design and conveyance channels installed to convey clean surface water off the facility to local drainages. AR 15580-15690; NMCC Ex. 91; Tr. 403:14-4.
308. Following regrading, 3-foot store and release covers will be placed on the TSF. AR 15580-15664; NMCC Ex. 91; Tr. 404:5-7.
309. The stormwater channels built into the TSF cover will safely convey a 100-year return interval precipitation event and will be revegetated to create a self-sustaining, stable plant community. AR 15580-15690; NMCC Ex. 91; Tr. 404:8-18.
310. There are two components to the water management plan for reclamation of the TSF: a shorter-term active evaporation program and a passive evaporation program. AR 15665-15690; NMCC Ex. 91; Tr. 407:1-408:6.
311. The short-term active evaporation program includes mechanical spray units that will be installed on top of the tailing facility, which will evaporate the large volumes of process water expected to be present at closure. AR 15665-15690; NMCC Ex. 91; Tr. 407:2-6.
312. The passive evaporation program includes the construction of an expanded evaporation pond that will be located at the southeast toe of the TSF, which will be a 22-acre, HDPE lined evaporation pond to manage the long-term draindown water that is anticipated to be present from the TSF at the end of the active evaporation phase. AR 15665-15690; NMCC Ex. 91; Tr. 408:7-14.

C. OPEN PIT

1. During Operation

313. Section C102 of Draft DP-1840 addresses the facility specific requirements of the Copper Flat open pit. AR1875.
314. The open pit is located on the west end of the property, primarily on private land owned by NMCC. AR 15849-15853; Tr. 50:23-24.
315. The existing pit is a hydraulic sink. AR 17078-17358; Tr. 108:20-25; 268:19-25.
316. The chemistry of the current pit lake has been variable, but has been broadly circum-neutral, pH 6.5, throughout the 35 years of its existence, with occasional acid wall seep events. AR 17078-17280; NMCC Ex. 22; Tr. 268:3-13.
317. The pit is will remain a hydrologic evaporative sink throughout operations and after post mining rapid-fill operations are completed. AR 11304-11306, 15726-15760, 17078—17280; NMED Ex. 3, p. 10.
318. The area of open pit hydrologic containment is expected to enlarge during operations as the pit is dewatered and deepened to accommodate mining. AR 17590-17600; NMED Ex. 3, p. 10.

2. Open Pit Reclamation and Maintenance

319. During the first 6 months post-mining the pit will be rapid-filled with 2,200 acre-feet of water such that the sulfide minerals below the water surface of the re-established pit lake will have limited exposure to an oxidation process and will reduce the effects of evapoconcentration over time. AR 17078-17280; 15580-15664; NMCC Ex. 22, Ex. 91; Tr. 271:8-17.

320. The future pit lake is expected to be neutral to moderately alkaline. AR 17078-17280; NMCC Ex. 22; Tr. 272:23-273:4; 276:23-25; 278:23-25.
321. The predicted pit lake chemistry of the future pit lake will be similar, i.e., within the same range or better water quality than the existing pit lake. AR 17078-17280; NMCC Ex. 22; Tr. 273:14-17; 277:7-10; 501:4-7.
322. Acid wall seep events are not predicted for the future pit lake. AR 17078-17280; NMCC Ex. 22; Tr. 273:18-23.
323. Rapid refill of the pit will result in improvement of the water quality. AR 17078-17280; NMCC Ex. 22; Tr. 277:16-17.
324. Reclamation of the open pit consists of reclaiming the watershed areas at the rim and the haul road, and partially filling the pit with clean water to establish hydrologic equilibrium while maintaining a hydrologic sink. AR 15580-15664; NMCC Ex. 91; Tr. 1119:21-121:7; 171:4.
325. Following reclamation, the final pit lake will be a hydrologic sink with a water surface elevation of 4,894 feet. There will be no outflow to groundwater or surface water, and the only way in which water will be lost from the pit lake will be through evaporation. AR 15580-15664, 17078-17280, NMCC Ex. 22, Ex. 91; Tr. 169:3-24; 270:15-20.
326. The existing diversion structure in Grayback Arroyo will be maintained during operations to convey non-impacted stormwater flows generated in Grayback Arroyo and its tributaries around the perimeter of the open pit. AR 15580-15664; 18741; NMED Ex. 3, p. 10.
327. There is no potential that the open pit water body could contaminate any other groundwater or surface water of the State. AR 17078-17358; Tr. 503:16-21.

X. THE DISCHARGE PERMIT

A. DESCRIPTION

328. A discharge permit is conditioned through requirements developed pursuant to the New Mexico Water Quality Act, NMSA 1978, Sections 74-5-1 through 74-5-17, the New Mexico Ground and Surface Water Protection Regulations (Part 20.6.2 NMAC), and the supplemental permitting requirements for copper mine facilities, or Copper Rule (Part 20.6.7 NMAC). Id., p. 3, ln. 22-23; p. 4, ln. 1-3.
329. The draft discharge permit is based on the discharge plan submitted by NMCC. Id., p. 4, ln. 4.
330. The discharge plan for DP-1840 includes application materials submitted by NMCC dated December 11, 2015, Revision 1 of the discharge permit application dated August 2017, and materials contained in the DP-1840 administrative record prior to issuance of the draft discharge permit. Id., p. 4, ln. 4-8.
331. DP-1840 was drafted using a standardized permitting template developed for permitting copper mine facilities and other mine facilities in New Mexico. Id., p. 4, ln. 9-10.
332. The permit template is divided into four parts: Part A – General Information, Part B – Facility Specific Information, Part C – Facility Specific Requirements, and Part D – General Conditions. Id., p. 4, ln. 10-12.
333. Part A of the permit provides a statement of purpose, a brief outline of the discharge authorizations, and defines applicable regulations, permit duration, and terms of issuance. Id., p. 4, ln. 12-14.

334. The last section of Part A of the permit (A103.D) lists additional requirements added to the discharge permit as authorized by Subsection I of 20.6.7.10 NMAC for requirements that the Department imposes on a discharge permit in accordance with Section 74-6-5 NMSA that are not included in the Copper Rule. Id., p. 4, ln. 14-17.
335. As required by Subsection I of 20.6.7.10 NMAC, the Department provided written explanations of the reasons for the additional permit requirements in the cover letter accompanying the draft discharge permit dated February 2, 2018. Id., p. 4, ln. 17-19.
336. The first three sections of Part B of the permit (B100-B102) provide the history of the site; a facility description and overview of site operations; a summary of the permitting history; information related to location, and groundwater and process water characteristics. Id., p. 4, ln. 20-22.
337. Sections B103 and B104 of the permit define the mine units authorized for the discharge and management of water contaminants; and authorize discharges and discharge volume limits pursuant to system design and operational requirements set forth in DP-1840, and the discharge plan. Id., p. 4, ln. 22-23; p. 5, ln. 1-2.
338. Part C of the permit contains facility specific design, construction, location, sitewide water management, monitoring, contingency, closure, post-closure, abatement, and financial assurance requirements for Copper Flat Mine set forth in accordance with Subsection C of 20.6.2.3106 NMAC and Section 20.6.2.3107 NMAC to ensure compliance with Part 20.6.2 NMAC, and in accordance with applicable requirements of Part 20.6.7 NMAC. Id., p. 5, ln. 3-7.

339. Part D of the permit contains general requirements pursuant to Part 20.6.2 NMAC and Part 20.6.7 NMAC. These requirements are not specific to Copper Flat Mine and are general permit requirements. Id., p. 5, ln. 8-10.

B. ADDITIONAL DISCHARGE PERMIT PROVISIONS

340. DP-1840 authorizes NMCC to discharge a maximum of 25,264,000 gpd of tailings slurry, process water, impacted stormwater, and domestic waste water to a lined tailing impoundment (the TSF). AR 18749.

341. It authorizes NMCC to discharge a maximum of 25,264,000 gpd of slurry from the Concentrator to the Cyclone Plant; a maximum of 21,236,000 gpd from the TSF Water Reclaim System, which includes combined flows from the UCP and TSF supernatant pool, to the PWR; a maximum of 24,300,000 gpd of process water from the PWR to the Concentrator; a maximum of 10,000 gpd of treated effluent from the domestic wastewater treatment facility to the TSF; to discharge an annual average of approximately 96,000 gpd of process water from the open pit sump and dewatering system for use as dust suppression water within the OPSDA or for reuse in the process water circuit. AR 18749.

342. DP-1840 authorizes NMCC to place waste rock from the Copper Flat Open Pit within permitted footprints of WRSP-1, WRSP-2, WRSP-3, and discharge water contaminants originating from placed materials. AR 18749.

343. DP-1840 authorizes NMCC to dewater the open pit and to manage process water and impacted stormwater from the open pit. AR 18749.

344. DP-1840 authorizes NMCC to store crushed ore at the crushed ore stockpile. AR 18749.

345. DP-1840 authorizes NMCC to operate Stormwater Impoundments A, B, and C to collect impacted stormwater. AR 18749.

346. DP-1840 authorizes NMM to operate all sumps, tanks, pipelines and containment systems. AR 18750.

347. DP-1840 authorizes NMCC to operate the truck and equipment wash units. AR 18750.

1. Monitoring

348. Draft DP-1840 provides for robust monitoring from certain existing monitoring wells at the site in combination with proposed new monitoring wells, as well as surface water and process water sampling points. AR 17051-17067, 18770-18772, 18755-18760.

349. The monitoring system is comprised of an upgradient well for each new waste rock stockpile, the TSF, the process water and impacted stormwater impoundments. AR 18755-18760, 18770-18772, 18774; NMED, Ex. 3, 17; Tr. 130:13-16.

350. Draft DP-1840 provides for wells to be located close to the toe of the waste rock stockpile, and wells downgradient along Grayback Arroyo. AR 18770-18772, 18774; Tr. 130:7-25.

351. The monitoring system also includes surface water monitoring from five surface water-sampling points along Grayback Arroyo, which will collect surface water, when flow is present, at various points on the arroyo from auto-samplers. AR 18758-18759, 18774; NMCC Ex. 11; Tr. 131:6-12.

352. Draft DP-1840 requires NMCC monitor and report water quality information from fifty-six compliance sampling locations at the Copper Flat Mine. AR 18755-18760, 18770-18772, 18774; NMED Ex. 3, p. 16.

353. Nineteen existing monitoring wells are included in the monitoring network, and NMCC will be required to install additional monitoring wells for groundwater compliance sampling. AR 18756-18758, 18770-18772, 18774; NMED Ex. 3, p. 16.
354. Six monitor wells have been approved to be plugged and abandoned as the TSF builds progressively outward. AR 18757; NMED Ex .3, p.17.
355. NMED will evaluate groundwater conditions as these wells are plugged and abandoned and may require replacement monitoring wells pursuant to Subsection B of 20.6.7.30 NMAC. Revised Draft Permit, p. 17, ln. 6-8.
356. Draft DP-1840 requires nine monitoring wells be used to evaluate groundwater conditions around the perimeter of WRSP-2 and WRSP-3. AR 18770-18772, 18774; NMED Ex. 3, p. 17.
357. There is at least one monitoring well located within 75 feet, or as close as practicable, of each process water or impacted stormwater impoundment at the Copper Flat Mine. AR 18770-18772, 18774; NMED Ex. 3, p. 17.
358. Draft DP-1840 requires eleven monitoring wells be used to evaluate groundwater conditions around the open pit. Tr. 117:23-118:3. AR 18770-18772, 18774; NMED Ex .3, p. 17.
359. Groundwater information from the eleven wells around the open pit will be used, in part, to define the hydrologic gradient around the pit and the AOPHC. NMED Ex. 3, p. 17.
360. Draft DP-1840 requires eight process water-sampling points throughout Copper Flat Mine. AR 18755, 18770; NMED Ex. 3, p. 16.
361. The spacing of the monitoring wells is adequate and will detect contaminants even if they are dispersed. Tr. 1616:5-15.

2. Stormwater

362. There are a variety of stormwater conveyance channels at the Copper Flat Mine. These consist of a network of diversions designed to convey peak flows to stormwater impoundments from a 100-year return interval storm event while maintaining at least 6 inches of freeboard. AR 15458-15690, 15855-17076; NMED Ex. 3, p. 15.
363. Section C107 specifies requirements to manage stormwater at Copper Flat. AR 18754.
364. C107.B provides that inspections are to be conducted of stormwater management facilities on a monthly basis and after precipitation events exceeding one inch to ensure compliance of 20.6.7.17.D(2) NMAC. AR 18754.

3. Additional Closure Provisions

365. The Closure Plan includes salvage of growth media ahead of construction and storage of the growth media to be used during reclamation. AR 15580-15664; NMCC Ex. 91; 52:22-24; 53:6-8.
366. The Closure Plan includes three large growth media stockpiles that will be located on the mine property, which will be graded and revegetated and access controlled to prevent erosion. AR 15580-15664; NMCC Ex. 91; Tr. 53:1-5.
367. Following reclamation, the open pit will be rapid-filled with freshwater to the equilibrium level of the hydraulic sink to limit oxidation of the pit walls and partially revegetated. AR 15580-15664; NMCC Ex. 91; Tr. 53:9-12.
368. The TSF will be covered with 36 inches of growth media and revegetated. AR 15580-15664; NMCC Ex. 91; Tr. 53:12-14

369. Water from the TSF will be removed through evaporation, followed by regrading, covering with growth media material and revegetation of the surface. AR 15580-15690; NMCC Ex. 91; Tr. 53:15-17.
370. During closure, all buildings, pipelines and other structures will be removed and the concrete foundations will be removed or buried as appropriate. AR 15580-15664; NMCC Ex. 91; Tr. 53:18-20.
371. During closure, all pond and trench liners will be ripped, folded and buried in place and the excavations will be backfilled and revegetated, except as needed for water management. AR 15580-15664; NMCC Ex. 91; Tr. 53:21-23.
372. Reclamation of Grayback Arroyo includes regrading outslope areas where necessary, removing two land bridges, and reclaiming the slopes. The slopes will be graded to 3: 1 slope, have less than 200-foot slope lengths, covered with 36 inches of growth media and revegetated. The Grayback Arroyo diversion structure will remain in place following closure. AR 15580-15664; NMCC Ex. 91; Tr. 396:17-397:8.

4. Abatement Provisions

373. Section C116 of DP-1840 addresses the Abatement Plan for the Copper Flat Mine. AR 18762-18763; NMED Ex. 3, p. 18.
374. DP-1840 specifies additional abatement activities required for implementation upon issuance of the permit including installation of additional monitoring wells, submittal of a workplan to address any ongoing impacts to Grayback Arroyo and connected aquifers, and collection of additional Stage 1 Abatement Plan ground and surface water quality data. AR 18762, 18764; NMED Ex 3. p. 17.

C. CHANGES TO DRAFT DISCHARGE PERMIT IN RESPONSE TO COMMENTS

375. In response to the public notice, NMED received comments on the initial draft of DP-1840 and requests for a public hearing from three non-government organizations, two governmental organizations, the Applicant, and 46 individuals. Id., p. 5, ln. 15-17.
376. As a result of careful consideration of comments received, the Department has proposed changes to be incorporated into the final version of DP-1840. Id., p. 5, ln. 17-19.
377. The changes to the draft permit made by the Department in response to comments fall into four categories: (1) Typographical corrections and clarifying edits to language; (2) changes made to ensure greater consistency between the permit and the requirements of the Copper Rule; (3) requirements added in response to comments received from the Ranches, EBID, the NMCC, or in one case, a member of the public; and, (4) requirements added to specify that NMCC develop a sitewide water management plan. Id., p. 6, ln. 3-11.
378. The proposed edits to the draft permit strengthen and clarify DP-1840, and impose additional requirements on NMCC. Id., p. 6, ln. 12-13.
379. In response to comments received from the Applicant, NMED added Requirement B104.O to the draft permit specifying that NMCC must comply with recommencement notification should Copper Flat Mine go on standby pursuant to the Mining Act. Id., p. 6, ln. 17-19.
380. The reason for the addition of Requirement B104.O to the draft permit is that the Copper Flat Mine falls under the definition of a “new copper mine facility” as set forth in Section 20.6.7.7 NMAC. Id., p. 6, ln. 20-21.
381. Although Copper Flat Mine will never meet the definition of an “existing copper mine facility”, it should still be subject to the notification requirements set forth in Subsection C of

- 20.6.2.18 NMAC in the event the mine returns from standby to active status or constructs new mine units added during the life of the mine and not already authorized for discharge. Id., p. 6, ln. 21-23; p. 7, ln. 1-2.
382. Section B104.O of the draft permit clarifies notice of mining operations and discharge requirements of Subsection C of 20.6.2.18 NMAC. Id., p. 7, ln. 2-3.
383. In response to a concern raised by a member of the public, NMED has added Requirement C104.C to the draft permit to require that the Applicant submit a construction quality assurance/construction quality control (CQA/CQC) plan a minimum of 90 days prior to construction of any impoundment that requires a liner system at Copper Flat Mine. Id., p. 7, ln. 4-8.
384. A CQA/CQC plan as set forth by Subsection C of 20.6.7.16 NMAC ensures that construction of liner systems meet all design criteria, plans and specifications. Id., p. 7, ln. 8-9.
385. Existing Requirements C100 and D102.A in DP-1840 address the issue of liner system construction, but the addition of C104.C adds clarity to DP-1840. Id., p. 7, ln. 9-11.
386. Upon consideration of comments received on the draft DP-1840, the Department added Requirement C105.C.2 to the draft permit requiring NMCC to submit documentation of compliance with the Dam Safety Bureau of the Office of the State Engineer (OSE) permitting requirements prior to initiation of construction of any portion of the tailing storage facility and associated dam. Id., p. 7, ln. 12-16.
387. The Department has been in communication with the Dam Safety Bureau of the Office of the State Engineer and understands that NMCC is currently in compliance with Office of the State Engineer regulations for the existing tailing storage facility. Id., p. 7, ln. 17-19.

388. The Department added Requirement C108.A, and related Requirements C102.C, C113.F, C113.L, C114.C to the draft permit to require that the NMCC combine three separate water management plans required by the Copper Rule into one comprehensive sitewide plan (Sitewide Water Management Plan) that meets the requirements of Paragraph (4) of 20.6.7.17.C NMAC (Stormwater Management Plan), Subsection C of 20.6.7.24 NMAC (Mine Operation Water Management Plan), and Subsection K of 20.6.7.30 NMAC (Interim Emergency Water Management Plan). Id. p. 7, ln. 20-23; p. 8, ln. 1-3.
389. Upon further examination of the monitoring well network proposed in the application, and in consideration of comments received on draft DP-1840, the Department has added Requirement C113.I to require installation of two more monitoring wells at Copper Flat Mine in addition to those already required to be installed under draft DP-1840. Id., p. 8, ln. 14-17.
390. These two additional monitoring wells will provide additional groundwater information for two mine units and strengthen the DP-1840 groundwater monitoring plan. Id., p. 8, ln. 17-19.
391. One of the additional monitoring wells added partly in response to comments on the draft permit is proposed to be located on the south side and cross gradient from the tailing storage facility, and the second additional monitoring well is required north of and cross gradient to waste rock stock piles 2 and 3. Id., p. 8, ln. 19-21.
392. The Department received comments from NMCC requesting elimination of two additional monitoring wells required to be located around the open pit as specified in Requirement C116.C. Id., p. 8, ln. 22-23; p. 9, ln. 1.

393. The Department declined to eliminate the requirement for the two monitoring wells as suggested by NMCC because these wells are necessary to fulfill the requirements of Subparagraph (4) of 20.6.7.28.B NMAC which states, “a permittee shall install a sufficient number of monitoring wells around the perimeter of an open pit to monitor ground water quality and the hydrologic gradient around the pit.” In addition, both these wells will provide critical groundwater information for abatement purposes. *Id.*, p. 9, ln. 1-5.

394. The Department has made a few minor edits and typographical corrections since providing the draft of DP-1840 in redline strikeout to NMELC, EBID, and NMCC on August 10, 2018. *Id.*, p. 9, ln. 6-8.

395. The edits are as follows: In Section C109, the word “existing” has been removed from C109.A, and the order of C109.A and C109.B have been reversed; in Requirement C113.H, a quotation mark was added in front of the word “shall”; in Requirement B103.D.2, a typographical error listing the TSF liner thickness as “80-millimeter (mil)” was corrected to read “80-mil”; in Requirement B103.F.4, Stormwater Impoundments A - C were all defined in parenthesis as “(SW-A)”, “(SW-B)”, and “(SW-C)”; in Requirement B104.A, a typographical error of the discharge volume was corrected to change the discharge volume from “25,246,000” to “25,264,000”. *Id.*, p. 9, ln. 8-17.

D. CONFORMANCE OF DRAFT PERMIT WITH COPPER RULE REQUIREMENTS

396. Section C102 of DP-1840 addresses the facility specific requirements of the Copper Flat Open Pit. *Id.*, p. 9, ln. 21-22.

397. The Copper Flat Open Pit is expected to remain a hydrologic evaporative sink throughout operations and after post mining rapid-fill operations are completed (Bates 15726-15760; Bates 11304-11306). *Id.*, p. 9, ln. 22-23; p. 10, ln. 1.
398. Pursuant to Subsection D of 20.6.2.7.24 NMAC and Paragraph (2) of 20.6.7.33.D NMAC, the standards of Section 20.6.2.3103 NMAC will not apply inside the AOPHC during operations and after closure of Copper Flat Mine, so long as the open pit remains a hydrologic evaporative sink. *Id.*, p. 10, ln. 3-6.
399. In accordance with Subsection B of 20.6.2.24 NMAC, the draft permit specifies that the existing diversion structure in Grayback Arroyo be maintained during operations to convey non-impacted stormwater flows generated in Grayback Arroyo and its tributaries around the perimeter of the open pit. *Id.*, p. 10, ln. 7-10.
400. Operation of the Copper Flat Open Pit as proposed by the Applicant and authorized in DP-1840 meets applicable requirements of Section 20.6.7.24 NMAC. *Id.*, p. 10, ln. 11-12.
401. Section C103 of DP-1840 addresses the facility specific requirements of the waste rock stockpiles at the Copper Flat Mine. *Id.*, p. 10, ln. 13-14.
402. NMCC is proposing to construct three waste rock stockpiles. DP-1840 dictates that the proposed waste rock stockpiles be designed and constructed to meet the requirements of Subsection A of 20.6.7.18 NMAC (i.e., planning for closure), which will facilitate reclamation and fulfillment of the requirements in Paragraph (3) of Section 20.6.7.33.C NMAC at the end of mine life. *Id.*, p. 10, ln. 17-20.

403. Each lift within the stockpile will be a maximum of approximately 75 feet high and placed at angle of repose with 120-foot setbacks between lifts to maintain a 3 to 1 overall angle for the stockpile outslopes to facilitate closure. *Id.*, p. 10, ln. 20-23.
404. All waste rock stockpiles, including existing waste rock stockpiles, will be reclaimed at the end of mine life with 36 inches of approved reclamation cover material in accordance with the approved Closure/Closeout Plan and applicable Copper Rule requirements. *Id.*, p. 11, ln. 1-3.
405. In accordance with Section 20.6.7.21 NMAC, the draft discharge permit specifies that berms and open-channel conveyance structures must be constructed around waste rock stockpiles to prevent surface water run-on and to control run-off and/or flowing seeps from the proposed waste rock stockpiles. *Id.*, p. 11, ln. 4-6.
406. Any alluvial materials encountered along stockpile toes will be removed and conveyance channels will be constructed into the underlying low permeability bedrock to maximize collection of seepage and impacted stormwater generated from the stockpiles (Bates 15932). *Id.*, p. 11, ln. 9-12.
407. Pursuant to Subparagraph (c) of 20.6.7.21.A(2) NMAC, DP-1840 requires that NMCC implement a material handling plan requiring placement of a minimum of 10 feet of “not potentially acid generating” waste rock material above and below any areas where “acid generating”, or “potentially acid generating” waste rock will be placed. *Id.*, p. 11, ln. 13-16.
408. Adherence to this requirement will limit acid generation potential by providing buffering potential for any acid rock drainage that might develop. *Id.*, p. 11, ln. 16-18.

409. The first new waste rock stockpile (WRSP-1) will be constructed inside the projected Open Pit Surface Drainage Area (OPSDA; as defined in Section 20.6.7.7 NMAC) on low-permeability andesite and quartz monzonite. Id., p. 11, ln. 19-21.
410. Waste rock with a higher potential to develop acid rock drainage (ARD) will be placed within the authorized footprint of this waste rock stockpile (WRSP-1) (Bates 15918). Id., p. 11, ln. 21-22.
411. WRSP-2 and WRSP-3 will be constructed outside the OPSDA on low-permeability andesite (Bates 09608, Bates 15993). Id., p. 12, ln. 1-2.
412. Due to implementation of the material handling plan, placement of the stockpiles on low permeability bedrock, demonstrated geochemistry of the waste rock (Bates 05649-05651), integrated solution capture systems, and implementation of the monitoring plan including well installation, monitoring, and reporting, NMED does not anticipate that contaminants generated from WRSP-2 and WRSP-3 will impact groundwater above the standards set forth in Section 20.6.2.3103 NMAC. Id., p. 12, ln. 2-7.
413. The design criteria, location, and operation of the waste rock stockpiles as proposed by the Applicant and authorized in DP-1840 meet applicable requirements of Section 20.6.7.21 NMAC. Id., p. 12, ln. 8-10.
414. Section C104 of the draft permit specifies requirements for the design criteria, location, purpose, and operation of the impoundments proposed for use at Copper Flat Mine and these requirements are in accordance with the Copper Rule. Id., p. 12, ln. 11-13.

415. The draft permit specifies that impoundments that store process water or leach solutions for long-term storage require additional engineering controls compared to impoundments intended to store solutions for less than 30 days. Id., p. 12, ln. 14-16.
416. Impacted stormwater impoundments A - C ("SW-A", SW-B", SW-C") are designed to receive surface drainage that may come in contact with water contaminants at Copper Flat Mine. ID., p. 12, ln. 17-18.
417. Because these impacted stormwater impoundments are designed to store impacted stormwater for less than 30 days, DP-1840 specifies that they be designed with an engineered single-lined 60-mil high-density polyethylene (HDPE; or equivalent material) liner system to meet the requirements of Paragraphs (1), (2), (4), (6), and (7) of 20.6.7.17.D NMAC. Id., p. 12, ln. 19-22.
418. The Process Water Reservoir is designed to receive reclaimed process water from a variety of sources including the tailing storage facility, impacted stormwater impoundments, and freshwater supply system conveyed by pipelines. Id., p. 13, ln. 1-3.
419. Because the Process Water Reservoir is intended for long-term storage of process water, DP-1840 specifies that this impoundment be designed with an engineered double-lined 60-mil HDPE (or equivalent material) liner system, leak collection system, and subgrade bedding that meets the requirements of Paragraphs (1), (2), (3), (6), and (7) of 20.6.7.17.D NMAC. Id., p. 13, ln. 4-7.
420. A critical component of the design of the Process Water Reservoir, which offers additional protection measures in the event of upset conditions, is an overflow weir that conveys

solutions directly into the HDPE-lined tailings trench/pipeline corridor which discharges to the tailing storage facility. Id., p. 13, ln. 8-10.

421. The Underdrain Collection Pond (UCP) is sized to retain twenty-four hours of underdrain flow at a maximum flow rate, and runoff from the downstream face of the tailing dam during a 100-year return interval storm event. Id., p. 13, ln. 11-13.

422. Because the UCP will contain solutions during normal operating conditions (i.e., long-term storage), DP-1840 specifies that it be designed with an engineered double-lined 60-mil HDPE (or equivalent material) liner system, leak collection system, and subgrade bedding that meets the requirements of Paragraphs (1), (2), (3), (6), and (7) of 20.6.7.17.D NMAC. Id., p. 13, ln. 13-17.

423. The purpose of the Surge Pond is to contain discharges (tailing, process, and reclaim water) from various processing locations under upset conditions, such as a pipe failure, or shutdown of the Cyclone Plant. Id., p. 13, ln. 18-20.

424. Because the Surge Pond will be empty under normal operating conditions, DP-1840 specifies that it be designed with an engineered minimum 60-mil HDPE (or equivalent material) lined impoundment that meets the requirements of Paragraphs (1), (2), (4), (6), and (7) of 20.6.7.17.D NMAC. Id., p. 13, ln. 20-23.

425. The design criteria, location, purpose, and operation of the impoundments as proposed by NMCC (Bates 16750-16777) and authorized in DP-1840 meet applicable requirements of Section 20.6.7.17 NMAC. Id., p. 14, ln. 1-3.

426. Section C105 of DP-1840 specifies the facility specific requirements for Copper Crushing, Milling, Concentrator, and Tailings Storage Facility Units at Copper Flat Mine. Id., p. 14, ln. 4-6.
427. The Process Facility Area and associated mineral processing units will be constructed on low permeability andesite bedrock (Bates 15837-15843) which meets the requirements of Subsection A of 20.6.7.22 NMAC. Id., p. 14, ln. 6-8.
428. Impacted stormwater generated in the Process Facility Area will be directed to open channel conveyances that convey solutions to SW-A which meets the requirements of Subsection A of 20.6.7.22 NMAC. Id., p. 14, ln. 9-11.
429. Section C105.C of the draft permit addresses the tailing storage facility at Copper Flat Mine. It is a lined facility designed to accommodate the volume of tailings generated during the life of the mine. Id., p. 14, ln. 12-13.
430. The liner for the tailing storage facility will consist of a minimum 80-mil HPDE liner (or equivalent material) placed on a twelve-inch thick liner bedding fill sub base. Id., p. 14, ln. 13-15.
431. Drainage from the tailing storage facility will be collected using an underdrain collection system that incorporates two underdrains that will convey solutions to the tailing storage facility underdrain collection pond. Id., p. 14, ln. 15-16.
432. All impacted stormwater generated from the tailing storage facility dam face will be captured and contained on HDPE-lined and bermed channels which are integrated into the tailing storage facility liner system. Id., p. 14, ln. 16-18.

433. The design criteria, location, purpose, and operation of the copper crushing, milling, concentrator, and the tailing storage facility as proposed by NMCC and authorized in DP-1840 meet applicable requirements of Section 20.6.7.22 NMAC. Id., p. 14, ln. 19-21.
434. Section C106 of DP-1840 addresses the facility specific requirements of the sumps, tanks, pipelines and other containment systems at Copper Flat Mine. Id., p. 22-23; p. 15, ln. 1.
435. Twenty-two sumps and/or containment areas will be constructed to capture and contain process water, impacted stormwater, and other solutions in the event there is a release from the primary containment structures in the Process Facility Area. Id., p. 15, ln. 1-3.
436. Any leakage, spillage, or wash water within a containment area at the Process Facility Area is designed to be directed by sloped concrete floors to a watertight drainage sump (Bates 16784). Id., p. 15, ln. 3-5.
437. Forty-eight above ground tanks are proposed for use at the Copper Flat Mine, most of which will be located at the Process Facility Area. Id., p. 15, ln. 5-6.
438. The forty-eight above ground tanks will be designed to meet the requirements of Subsection A of 20.6.7.23.A NMAC (Bates 16784). Id., p. 15, ln. 6-7.
439. Process water will be returned to the Process Water Reservoir for re-use through the 36-inch diameter HDPE water reclaim process water pipeline situated within the lined tailings trench corridor (Bates 16022-16023). ID., p. 15, ln. 8-10.
440. The underdrain collection pond return process water pipeline will be placed along the upstream side of the toe berm and above the geomembrane liner during all buildout phases of the tailing storage facility (Bates 16729-16733). Id., p. 15, ln. 10-12.

441. The Concentrator Whole Tailings Transport pipeline will be placed within the lined tailings trench corridor when located outside building areas until discharge at the tailing storage facility (Bates 16009; Bates 16022-16023). Id., p. 15, ln. 12-14.
442. Design, location, construction, and operation of tanks, pipelines and other containment systems as proposed by the Applicant and authorized in DP-1840 meet applicable requirements of Section 20.6.7.23 NMAC. Id., p.15, ln. 15-17.
443. Section C107 of the draft permit specifies requirements to manage stormwater at Copper Flat Mine. Id., p. 15, ln. 18-19.
444. Storm water conveyance channels at Copper Flat Mine consist of a network of diversions designed to convey peak flows to stormwater impoundments from a 100-year return interval storm event while maintaining at least 6 inches of freeboard in accordance with Subparagraph (f) of 20.6.7.17.D(2) NMAC. Id., p. 15, ln. 20-22.
445. Section C107.B of the draft permit specifies that inspections be conducted of stormwater management facilities on a monthly basis and after precipitation events exceeding one inch to ensure compliance with Subparagraphs (e) and (f) of 20.6.7.17.D(2) NMAC. Id., p. 15, ln. 22-23; p. 16, ln. 1-2.
446. Stormwater management as specified in DP-1840 meets the applicable requirements of Section 20.6.7.17 NMAC. Id., p. 16, ln. 3-4.
447. DP-1840 contains facility specific requirements regarding Truck and Equipment Washing Units (C109), Dust Suppression (C110), the Onsite Domestic Wastewater Treatment Facility (C111), and Flow Measurement (C112). Id., p.16, ln. 5-7.

448. Design, location, construction, and operation of mine units pursuant to these sections as proposed by NMCC and authorized in DP-1840 meet the applicable requirements pursuant to Part 20.6.2 NMAC and Part 20.6.7 NMAC. Id., p. 16, ln. 7-10.
449. The nine monitoring wells around WRSP-2 and WRSP-3 will be adequate to monitor potential groundwater impacts from the waste rock stockpiles and satisfies the requirements of Paragraph (2) of 20.6.7.28.B NMAC. Id., p. 17, ln. 10-12.
450. Paragraph (3) of 20.6.7.28.B NMAC requires a minimum of one monitoring well be located within 75 feet or as close as practicable of each process water or impacted stormwater impoundment at Copper Flat Mine. Id., p. 13-15.
451. The monitoring well requirement of 20.6.7.28.B(3) is met or exceeded for each proposed impoundment at Copper Flat Mine, and consequently, DP-1840 satisfies the requirements of Paragraph (3) of 20.6.7.28.B NMAC. Id., p. 17, ln. 15-17.
452. DP-1840 requires eleven monitoring wells be utilized to evaluate groundwater conditions around the open pit. Id., p. 17, ln. 18-19.
453. Groundwater information from the eleven monitoring wells around the open pit will be utilized, in part, to define the hydrologic gradient around the pit and the AOPHC. Id., p. 17, ln. 19-20.
454. These eleven monitoring wells around the open pit satisfy the requirements of Paragraph (4) of 20.6.7.28.B NMAC. Id., p. 20-21.
455. Paragraph (5) of 20.6.7.28.B NMAC requires a minimum of one monitoring well be located upgradient of Copper Flat Mine and each new waste rock stockpile, tailing storage facility, process water and impacted stormwater impoundment. Id., p. 17, ln. 22-23.

456. This requirement is met or exceeded for Copper Flat Mine and each proposed new mine unit (Bates 17069-17070), and therefore DP-1840 satisfies the requirements of Paragraph (5) of 20.6.7.28.B NMAC. Id., p. 18, ln. 1-3.
457. Section C115 of the draft permit specifies requirements for closure at Copper Flat Mine. Id., p. 18, ln. 4.
458. NMCC prepared a Closure/Closeout Plan, referenced in DP-1840, to address closure requirements pursuant to applicable sections of the Copper Rule including Section 20.6.7.33 NMAC and Section 20.6.7.34 NMAC, and the New Mexico Mining and Minerals Division pursuant to the New Mexico Mining Act. Id., p. 18, ln. 5-8.
459. The closure plan as conditioned through DP-1840 meet applicable requirements of Section 20.6.7.33 NMAC and Section 20.6.7.34 NMAC. Id., p. 18, ln. 8-9.
460. NMCC has committed to reclaiming Existing Waste Rock Stockpile 1, Existing Waste Rock Stockpile 2-B, and the outcrops facing Grayback Arroyo of Existing Waste Rock Stockpile 4 during the preproduction period of its mining operation. Id., p. 18, ln. 10-12.
461. Condition C115.H requires reclamation of Existing Waste Rock Stockpile 1, Existing Waste Rock Stockpile 2-B no later than three years from the effective date of DP-1840. Id., p. 18, ln. 12-14.
462. Reclamation of these existing mine units that are not components of future operations will result in enhanced environmental protection and provide abatement-related source control at the Copper Flat Mine regardless of any timeline for operation of Copper Flat Mine. Id., p. 18, ln. 14-17.

463. Section C116 of DP-1840 addresses the Abatement Plan for Copper Flat Mine. Id., p. 18, In. 18-19.
464. When NMCC acquired the mine site, the water quality in the existing pit lake exceeded the surface water quality standards for cadmium, copper, manganese, and selenium during all baseline water sampling events during 2011 and 2012. The pit lake water also exceeded applicable surface water quality standards for aluminum, lead, and zinc in at least one of the baseline water quality samples collected from 2011 through 2012. Myers Test. Tr. vol. 3, p. 954, lines 10-20.
465. NMCC submitted a Stage 1 abatement plan to the Environment Department in 2011 to address groundwater and surface water contamination at the Copper Flat Mine. The plan has been amended since then, and NMC has conducted investigations, but the Stage 1 abatement process is not yet complete. NMCC has not yet submitted a final site investigation report in accordance with the abatement regulations. Reid Test. Tr. vol. 3, p. 694, line 8 to p. 697, line 13.
466. DP-1840, as proposed, specifies additional abatement activities required for implementation upon issuance of DP-1840 including installation of additional monitoring wells, submittal of a workplan to address any ongoing impacts to Grayback arroyo and connected aquifers, and collection of additional Stage 1 Abatement Plan ground and surface water quality data. Id., p. 18, In. 19-23.
467. Implementation of abatement activities as conditioned through DP-1840 and approved Stage 1 Abatement workplans ensures abatement occurs in a timely fashion, regardless of any timeline for operation of Copper Flat Mine. Id., p. 18, In. 23; p. 19, In. 1-2.

XI. FINANCIAL ASSURANCE

468. On August 9, 2018, NMCC submitted a financial assurance estimate of \$55.8 million to MMD for review, which includes contractor performance of the work, agency management and contract administration, closure water management and monitoring. NMCC Ex. 7; Tr. 54:25-55:8; 65:8-14.
469. In the August 9, 2018 cover letter NMCC acknowledges that financial assurance is required by MMD, BLM, and NMED for the Copper Flat Mine and requests that all three agencies engage with NMCC to determine the final financial assurance cost estimate that is required. Id., p. 8, ln. 9-12.
470. On August 15, 2018 NMED received from MMD a request for review and comment on the financial assurance cost estimate within 60 days. NMED Ex. 2, p. 2-4.
471. The financial assurance cost estimate must meet the requirements of the New Mexico Mining Act Financial Assurance Requirements set forth in 19.10.12 NMAC, as enforced by MMD. Id., p. 8, ln. 4-6.
472. Although NMED does not have specific regulations governing financial assurance, NMED is required to ensure the closure cost estimate meets the requirements of 20.6.2 and 20.6.7 NMAC. NMED, Ex. 2, p.3.
473. NMCC will post financial assurance for reclamation and closure of the Copper Flat Mine, which will be held jointly by NMED, MMD and the BLM. NMCC Ex. 7; NMCC Ex. 8; Tr. 54:1-2; 504:19-505:1.

474. The financial assurance is based on the estimated cost of reclamation and closure as performed by third-party contractors under agency management and includes a Closure Water Management Plan. NMCC Ex. 7; Tr. 54:3-10; 505:10-25.
475. NMED entered into a memorandum of understanding (MOU) with the BLM, signed on March 11, 2016, that establishes procedures for implementing financial assurance requirements. The purpose of this MOU is to set forth a framework that minimizes duplication of financial assurance requirements by allowing for joint financial assurance to be held by NMED and BLM at sites that are subject to the financial assurance requirements of both agencies. MMD has a similar MOU in place with BLM. NMCC Ex. 8; NMED, Ex. 2, p. 3.
476. The Department has in place a Joint Powers Agreement (JPA) with the New Mexico Energy, Minerals and Natural Resources Department (EMNRD) that establishes procedures for implementing financial assurance requirements. *Id.*, p. 4, ln. 1-3.
477. The purpose of the financial assurance JPA with EMNRD is to set forth a framework that minimizes duplication of financial assurance requirements by allowing for joint financial assurance to be held by NMED and EMNRD at sites that are subject to the financial assurance requirements of both agencies. *Id.*, p. 4, ln. 3-6.
478. NMCC requested that the final approved financial assurance be held jointly by MMD, BLM, and NMED. *Id.*, p. 8, ln. 12-13.
479. The existence of MOU's between BLM and the State, and a JPA between NMED and MMD facilitate the three agencies holding joint financial assurance for one site. *Id.*, p. 8, ln. 13-15.

XII. SURFACE WATER OF THE STATE DETERMINATION

480. Pursuant to 20.6.4.7(S)(5) NMAC “*Surface water(s) of the state* means all surface waters situated wholly or partly within or bordering upon the state, including... any “waters of the United States” as defined under the federal Clean Water Act. Id., p. 6, ln. 15-17.
481. Surface waters of the state does not include private waters that do not combine with other surface or subsurface water or any water under tribal regulatory jurisdiction pursuant to Section 518 of the Clean Water Act. Id., p. 6, ln. 17-19.
482. To be exempt from the definition of a “Surface water(s) of the state”, a water body; (1) must not combine with other surface or subsurface waters, (2) must not be a water of the United States, and (3) must be located entirely on private lands. Id., p. 6, ln. 19-22.
483. NMCC has conducted groundwater modeling that demonstrates that the open pit water body will constitute a hydrologic sink at closure (Bates 09097-09511), and therefore will not combine with subsurface water. Id., p. 7, ln. 1-3.
484. Creation of an area of open pit hydrologic containment is a key component of the Copper Rule to ensure containment of any groundwater contamination that may occur as a result of open pit mining. Id., p. 7, ln. 3-5.
485. Grayback Arroyo, which originally flowed through the location of the existing open pit water body was diverted around the open pit area years ago prior to historic mining. Id., p. 7, ln. 6-8.
486. The diversion of Grayback Arroyo will be maintained throughout mining and following closure of the Copper Flat Mine, and therefore, the open pit water body also will not combine with other surface waters. Id., p. 7, ln. 8-10.

487. The United States Army Corp of Engineers issued a determination that the open pit water body was not a water of the United States (Action No. SPA-2014-00364-LCO) (Bates 10438-10448). Id., p. 7, ln. 11-13.
488. The NMED Surface Water Quality Bureau (SWQB) provided a letter dated October 21, 2016 to NMCC indicating that a demonstration that the open pit water body will not combine with other surface or subsurface water at closure had been made (Bates 13891-13892). Id., p. 7, ln. 13-15.
489. In a letter from NMCC to the SWQB dated January 25, 2018 additional information was provided demonstrating that the future pit lake water body would remain wholly on private land (Bates 15848-15853). Id., p. 17-19.
490. Based on the Administrative Record, the Department determined that the open pit water body that will be present at the Copper Flat Mine at closure will not be a Surface Water of the State and is not subject to surface water quality standards found at 20.6.4 NMAC. Id., p. 7, ln. 20-23.

XIII. THE PUBLIC HEARING ON DP-1840

491. A public hearing on DP-1840 was held on September 24, 2018 from 9:06 AM to 6:19 PM, September 25, 2018 from 9:06 AM to 7:50 PM, September 26, 2018 from 9:05 AM to 6:48 PM, September 27, 2018 from 9:03 AM to 7:03 PM, and September 28, 2018 from 9:03 AM to 6:13 PM at the Ralph Edwards Auditorium at 400 West Fourth Street, Truth or Consequences, New Mexico 87902. Tr. 1:17-21; 312:15; 314:21; 680:3; 682:21; 1009:3; 1011:21; 1350:3; 1352:21; 1649:18.

492. NMED, Turner Ranch Properties and the Hillsboro Pitchfork Ranch, Elephant Butte Irrigation District, and New Mexico Copper Corporation entered appearances, each of them having timely pre-filed a notice of intent to present technical testimony. Tr. 32:1 - 34:13.
493. At the hearing, NMED, Turner Ranch Properties and the Hillsboro Pitchfork Ranch, Elephant Butte Irrigation District, and New Mexico Copper Corporation offered technical testimony. Tr. 39:16-88:13; 90:16-135:8; 224:18-283:10; 1599:21-1604:13; 327:6-353:21; 384:22-427:14; 500:17-504:15; 508:3-529:11; 529:16-541:18; 779:17-805:21; 863:22-884:1; 1066:18-1108:5; 1159:16-1261:6; 1328:20-1390:5; 1395:22-1420:24; 1455:22- 1473:24; 1497:18-1577:12; 1605:9-1618:3, 1632:17-1636:25; 1637:4-1638:18; 1639:12-1640:9.
494. NMCC's first witness, Jeffrey Smith, is the chief operating officer for NMCC. Mr. Smith has a degree in mining engineering and a master's degree in business management. Tr. 40:23-41:1. Mr. Smith has over 35 years of experience in mine management and engineering including time at the Quintana Minerals Copper Flat Mine. Tr. 41:2-7. His résumé was admitted as NMCC Exhibit 1.
495. Mr. Smith was recognized as a mine management and mine engineering expert and an expert on the New Mexico Copper Rule. Tr. 41:14-20.
496. Mr. Smith offered testimony regarding New Mexico Copper Corporation. He also provided an overview of the Copper Flat Mine project, a summary of the community benefits that will result from the project, a summary of NMCC's discharge permit application, an overview of the methods NMCC intends to use to protect groundwater during and following operations, an introduction to the major mine units, a summary of the reclamation and closure plan for

- the Copper Flat mine, and a discussion of NMCC's proposed financial assurance, which was supplied to NMED on August 8, 2018. Tr. 39:16-88:13; 1599:21-1604:13.
497. NMCC made available another witness, Juan Velasquez, for questioning as part of the cross-examination relating to Mr. Smith's testimony. Tr. 57:4-8.
498. Mr. Velasquez is principal of Velasquez Environmental Services and has assisted NMCC in developing its permit applications, including the application for DP-1840. Tr. 57:11-16.
499. NMCC's second witness, Steven Finch, is a principal hydrogeologist-geochemist with John Shomaker & Associates with a Bachelor of Science in geology and a Master of Science in geology, with an emphasis on geochemistry. Tr. 91:12-14. He has worked with John Shomaker & Associates for twenty-eight years. Tr. 91:17-18. He also served on the Technical Advisory Committee for the Copper Rule, where he provided presentations to the Committee on open mine pits, monitoring requirements, how to assess the tailing impoundments and discharges associated with tailing impoundments. Tr. 91:19-92:12. His résumé was admitted as NMCC Exhibit 10.
500. Mr. Finch was admitted as an expert in hydrology, geochemistry, the New Mexico Copper Rule, and compliance with the New Mexico Copper Rule. Tr. 92:13-23.
501. Mr. Finch testified about the hydrologic setting for the Copper Mine permit area and the region as well as the hydrogeologic analysis completed in conformance with the Copper Rule, including the monitoring plan. Tr. 90:16-135:8, 1605:9-1618:3. Mr. Finch specifically testified that the Copper Rule requirements were considered for the aquifer evaluation and monitoring for each proposed facility and that draft DP-1840 is compliant with the Copper Rule. Tr. 134:20-135:8.

502. NMCC's third witness, Dr. Ruth Griffiths, is a senior geochemist at SRK Consulting.
503. Dr. Griffiths was admitted as an expert in geochemistry in particular in relation to mining projects. Tr. 226:12-22.
504. Dr. Griffiths offered testimony regarding the geochemical characterization program that was conducted for the Copper Flat project, including the methodology and results of the characterization program. She also offered testimony regarding the water quality predictions for the main mine facilities, including the tailings storage facility, the waste rock stockpiles and the pit lake. Tr. 224:18-283:10, 1632:17-1636:25. Her résumé was admitted as NMCC Exhibit21.
505. At the hearing, NMCC made available another witness, Dr. Rob Bowell, for questioning as part of the cross-examination relating to Ms. Griffiths' testimony. Tr. 281:15-18.
506. Dr. Bowell is a chartered geologist and chemist, a certified European geologist, an accreditation auditor with the Cyanide Code, and an adjunct professor with Queen's University. He has over 30 years of experience in the mining industry and specializes in environmental geochemistry and engineering and mineralogy and process chemistry. Tr. 227:9-17.
507. NMCC's fourth witness, David Kidd, is a registered engineer who has worked on tailing storage facility design, mine waste design and other mine designs for the past thirty years. Tr. 328:24-329:5. He currently works for Golder Associates. Tr. 327:11.
508. Mr. Kidd was admitted as an expert in tailings design, construction and operation as well as cover design and as an expert in dam safety issues. Tr. 329:21-330:7.

509. Mr. Kidd offered testimony regarding the New Mexico Copper Rule and the design of the TSF, provided an overview of the feasibility design, TSF design and work that Copper Flat has done with the OSE's Dam Safety Bureau. Tr. 327:6-353:21; 1637:4-1638:18. His résumé was admitted as NMCC Exhibit 87.
510. NMCC's fifth witness, Todd Stein, is a hydrogeologist with Golder Associates and is a professional geologist. Mr. Stein was recognized as an expert in reclamation design and testing performance as well as closure plan design, testing and performance, and as an expert in the New Mexico Copper Rule, specifically as it relates to reclamation and closure. Tr. 384:20-387:5.
511. Mr. Stein offered testimony regarding the Copper Flat Reclamation and Closure Plan. He discussed the specific closure and reclamation plans for each mine unit and testified regarding how the Closure and Reclamation plan meets or exceeds the requirements of the Copper Rule. Tr. 384:22-427:14; 1639:12-1640:9. Mr. Stein testified that the Plan is designed to create and to re-establish a self-sustaining ecosystem that conforms with the planned grazing and wildlife habitat post-mining land use. Tr. 426:20-25. His résumé was admitted as NMCC Exhibit 90.
512. NMED presented Kurt Vollbrecht, the manager of the Mining Environmental Compliance Section of the NMED to offer testimony regarding the regulatory framework for DP-1840, the history of the discharge permitting process for the Copper Flat Mine, and the status of the financial assurance cost estimate for the Copper Flat Mine. Tr. 495:6-507:17. Mr. Vollbrecht also offered testimony the status of the future open pit water body with respect to the water quality standards of 20.6.4 NMAC. Tr. 500:17-504:15.

513. NMED presented Bradley Reid, a geoscientist for the Mining Environmental Section of NMED and the permit lead for the Copper Flat Mine. 508:7-18. Mr. Reid offered an overview of the Copper Flat Mine, described the draft DP-1840, presented changes to the draft permit in response to comments, and discussed how the draft DP-1840 and its authorized units meet the requirements of the Copper Rule. Tr. 508:3-529:11.
514. NMED presented Dr. Joseph Marcoline, oversight manager for the Chevron Questa Mine Superfund Site for the Mining Environmental Section of NMED. Tr. 530:1-2. Dr. Marcoline offered testimony regarding his review of NMCC's Hydrologic Consequences Model, Geochemical Characterization Report, Stage 1 Abatement Report, and the 2012 and 2014 groundwater monitoring reports. Tr. 529:16-541:18.
515. Turner Ranch Properties and the Hillsboro Pitchfork Ranch presented Stephen Dobrott, the ambassador for Ted Turner Expeditions, a New Mexico ecotourism business. Tr. 779:22-24. Mr. Dobrott offered testimony regarding Ladder Ranch, including the ranch's location, biodiversity, and the concern of contaminants from the Copper Flat Mine migrating to the ranch's water supplies. Tr. 779:17-805:21.
516. Mr. Dobrott was admitted as an expert in biology, ecology and ranching. Tr. 784:12-19.
517. Turner Ranch Properties and the Hillsboro Pitchfork Ranch presented Robert Cunningham, the co-owner of the Hillsboro Pitchfork Ranch. Mr. Cunningham presented testimony regarding the Hillsboro Pitchfork Ranch including its location and the groundwater wells on the ranch. Tr. 863:22-884:1.
518. Mr. Cunningham was admitted as an expert in ranch management, native game and wildlife and ecology. Tr. 867:24-868:6.

519. Turner Ranch Properties and the Hillsboro Pitchfork Ranch presented James Kuipers, a consulting engineer, who offered testimony regarding the Copper Flat Mine history, mine-influenced water, the possibility of a failure of the TSF, financial assurance, and monitoring at the Copper Flat Mine Site. Tr. 898:14-1066:16. Mr. Kuipers offered rebuttal testimony regarding the economic sustainability of the mine, the adequacy of the financial assurance cost estimate, the OSE Dam Safety Bureau's process, the adequacy of the TSF liner, and the adequacy of provisions in the Copper Rule. Tr. 1066:18-1108:5.
520. Mr. Kuipers was recognized as an expert in mine process engineering, effects of mining on environment, remediation, financial assurance and the Copper Rule. Tr. 921:19-23.
521. Turner Ranch Properties and the Hillsboro Pitchfork Ranch presented Dr. Tom Meyers, a hydrologic consultant, who offered testimony regarding seepage from waste rock, leaks through liners and seepage from unlined ditches, monitoring wells, pit lake encroachment on public property and the mixing of public and private waters in the pit lake. Tr. 1159:16-1261:6.
522. Dr. Meyers was recognized as an expert in hydrology, hydrogeology and mine reclamation. Tr. 1163:3-9.
523. EBID presented Dr. James Phillip King, a professor at the New Mexico State University, who offered testimony regarding the Rio Grande Project, the surface and groundwater systems of the Lower Rio Grande, concerns from the Rio Grande Compact Commissioner, the Copper Flat Mine's potential impacts to the Rio Grande Project, and opinions about what would happen if contaminants reached Caballo Reservoir. Tr. 1328:20-1390:5.

524. Dr. King was recognized as an expert in riparian and irrigation system hydrology, water resource management and Rio Grande Project organization, operation and accounting. Tr. 1343:12-1344:6.
525. EBID presented Erik Fuchs, the groundwater resources manager for EBID, who offered testimony regarding water rights, rules, regulations and guidance governing water rights applications in the Lower Rio Grande, and collaboration between governmental entities. Tr. 1395:22-1420:24.
526. Mr. Fuchs was recognized as an expert in water rights administration. Tr. 1398:25-1399:6.
527. EBID presented Zachary Libbin, EBID's district engineer and supervisor of EBID's engineering department, who offered testimony regarding OSE Dam Safety Bureau's regulations and requirements. Tr. 1455:22- 1473:24.
528. Mr. Libbin was recognized as an expert in compliance with Office of the State Engineer Dam Safety Bureau regulations pertaining to dam safety. Tr. 1458:12-19.
529. EBID presented Dr. Kenneth Carroll, who offered testimony regarding proposed additional permit conditions (including underling liners and overlaying covers for any of the mine waste materials or facilities that are outside of the open pit, to include a groundwater interceptor system, to include additional monitoring wells to the closure plan), the adequacy of the aquifer assessment, and the adequacy of financial assurance. Tr. 1497:18-1577:12.
530. Dr. Carroll was recognized as an expert in environmental geochemistry, hydrogeology, mine closure and environmental impacts of mining relating to groundwater. Tr. 1499:15-22.
531. Members of the public offered comment, including Harvey Chatfield, Rhonda Brittan, Bruce Swingle, Ray Irwin, Kenneth Lyon, , Tr: 138:12-156:20; Mike Bowen, Taylor Streit, Lee

Newman, Tom Shelley, George Lee, Virginia Lee, Earl Bridges, Nolan Winkler, Ryan Gott, Charles Hacke, Jan Haley, Dan Lorimier, Veronique De Jaegher, Nichole Trushell, William Lindenau, Steve Morgan, Steve Buckley, Cathy Berger, Martin Mijal, Ron Fenn, J. Khalsa, Denise Barrera, James Berger, Hans Townsend, Mary Cavett, Rebecca Dow, Candace Browne, Tr. 579:17-678:25; Robert Byrd, Tr. 773:10-774-17; Edna Tager, Don Steinnerd, Jim Lommen, Vern Jones, Larry Brooks, Tr. 808:14-820:25; Andrew Maloney, Jack Diamond, Mike Skidmore, Tr. 989:6-997:24; Crystal Diamond, Tr. 1155:20-1158:19; Teri Cates, Laura Schneberger, Tr. 1204:11-1206:13; Ted Caluwe, Tr. 1360:16-1361:8, and John Bokich, Tr. 1480:5-1496:11.

532. Dozens of written public comments were also submitted into the record during the week-long hearing.
533. The hearing was conducted in accordance with the New Mexico Water Quality Control Commission Regulations, 20 NMAC 6.2.3110 and the Department's Permitting Procedures, 20.1.4 NMAC.
534. Every participant was allowed full opportunity to call witnesses, present testimony and other evidence, and cross-examine witnesses called by any other participant.
535. The hearing was both audio-recorded by the Hearing Clerk and transcribed by a Court Reporter at the hearing, Cheryl Arreguin of Kathy Townsend Court Reporting.
536. A certified court interpreter, Sandra Olivares Caldwell, was present for the entirety of the hearing to provide simultaneous interpretation between English and Spanish.
537. The record was left open for the purpose of submitting proposed findings of fact and conclusions of law, and a few corrected slides. Post-hearing submittals were received from the Bureau, the Applicant, EBID, and the Ranches.

CONCLUSIONS OF LAW

The Water Quality Act

1. The purpose of the WQA is “to abate and prevent water pollution.” *Bokum Resources Corp. v. N.M. Water Quality Control Comm’n*, 93 N.M. 546, 555, 603 P.2d 285, 294 (1979).
2. The Environment Department is an agency of the executive branch of the State of New Mexico, created pursuant to NMSA 1978, § 9-7A-6.B(3) (1991).
3. The Environment Department is a “constituent agency” under the WQA, and is authorized to issue groundwater discharge permits pursuant to the Water Quality Act, NMSA 1978, §§ 74-6-1 through 74-6-17, and the New Mexico Ground and Surface Water Protection Regulations, Title 20, Chapter 6, Part 2 of the New Mexico Administrative Code (NMAC).
4. A discharge permit is required for the proposed Copper Flat Mine because discharges from the mine units have the potential to affect groundwater at a place of withdrawal of groundwater for present or reasonably foreseeable future use within the meaning of the Water Quality Act.
5. The WQA authorizes the Water Quality Control Commission to adopt regulations requiring persons to obtain from the Environment Department a permit for the discharge of any water contaminant. NMSA 1978, § 74-6-5(A).
6. The WQA further authorizes the Water Quality Control Commission to adopt regulations “for the operation and maintenance of the permitted facility, including requirements, as may be necessary or desirable, that relate to continuity of operation, personnel training and financial responsibility, including financial responsibility for corrective action.” NMSA 1978, § 74-6-5(H).

7. The WQA authorizes the Water Quality Control Commission to adopt regulations that “impose reasonable conditions on permits” requiring permittees to conduct monitoring and sampling, to keep records, to provide information to the Environment Department, and to notify the Department of changes in the discharge. NMSA 1978, § 74-6-5(J).

8. As amended in 2009, the WQA requires the Water Quality Control Commission to adopt regulations specific to the copper industry. NMSA 1978, § 74-6-4(K).

9. The WQA requires public participation in permitting decisions, requiring the Water Quality Control Commission to adopt regulations notifying the public in detail of permit applications. NMSA 1978, § 74-6-5(F).

10. The WQA provides that no ruling can be made on any application for a permit without opportunity for a public hearing at which all interested persons shall be given a reasonable chance to submit evidence, data, views[,] or arguments orally or in writing and to examine witnesses testifying at the hearing.” NMSA 1978, § 74-6-5(G).

The Water Quality Regulations

11. The express purpose of the Water Quality Regulations is “to protect all ground water of the state of New Mexico which has an existing concentration of 10,000 milligrams per liter or less [total dissolve solids], for present and potential future use as domestic and agricultural water supply.” 20.6.2.3101.A NMAC.

12. The Water Quality Control Commission has adopted regulations for discharge permits. 20.6.2.3101-3114 NMAC.

13. The regulations provide that “no person shall cause or allow effluent or leachate to discharge so that it may move directly or indirectly into ground water unless he is discharging pursuant to a discharge plan approved by the [Department] secretary.” 20.6.2.3104 NMAC.
14. The Water Quality Control Commission has adopted regulations for public participation in discharge permit proceedings. 20.6.2.3108 NMAC.
15. The regulations require public notice of an initial permit application within 30 days after the application is administratively complete. 20.6.2.3108.B NMAC.
16. The regulations require a second public notice of the proposed approval or disapproval of the permit within 60 days after the application is administratively complete and all required technical information is available. 20.6.2.3108.H NMAC.
17. The regulations require a period of at least 30 days during which members of the public can submit comments and request a hearing. 20.6.2.3108.K NMAC.
18. The regulations also specify procedures for a public hearing. 20.6.2.3110 NMAC.

The Copper Rule and the Copper Flat Mine

19. The purpose of the Copper Mine Regulations is to supplement the water quality regulations to control discharges of water contaminants specific to copper mine facilities and their operations to prevent water pollution. 20.6.7.6 NMAC.
20. The Copper Mine Regulations provides that no person may discharge effluent or leachate from a copper mine facility so that it may move directly or indirectly into ground water without a discharging permit approved by the Environment Department. 20.6.2.7.8.A NMAC.
21. The proposed Copper Flat Mine is a “new copper mine facility” within the meaning of 20.6.7 NMAC.

22. The regulations specify the procedures for a copper mine facility to submit an application to the Environment Department for a discharge permit. 20.6.7.10 NMAC.
23. The regulations specify the technical information that must be included in a permit application. 20.6.7.11 NMAC.
24. The regulations require that within 90 days after determining that a permit application is technically complete, the Environment Department is required to publish a public notice proposing either to approve a permit, and making the proposed permit available for public review and comment, or to deny the permit. 20.6.7.10.H NMAC.
25. The 90-day public comment period for the draft permit from February 2 until May 5, 2018 exceeded the required time period by 60 days.
26. The regulations provide that members of the public may comment on the proposed approval or denial, and may request a hearing. 20.6.7.10.H NMAC.
27. A public hearing was appropriate for this permit, based on the demonstrated substantial public interest during the 90-day comment period.
28. The applicant and the Department met or exceeded all applicable public notice requirements during publication of the draft permit and leading up to the public hearing.
29. The Hearing Notice included all information required in 20.6.2.3108.L NMAC including the time and place of the hearing and a brief description of the hearing process.
30. During the hearing, a Spanish language interpreter was present and available at all times, and all persons were afforded the opportunity to present views, opinions, or testimony regarding the proposed permit as appropriate.

31. The 5-day public hearing was conducted in Truth or Consequences, New Mexico, near the site of the proposed mine, and complied with all requirements of 20.1.1 NMAC.
32. The regulations provide that the Environment Department must approve the discharge permit if “it poses neither a hazard to public health nor undue risk to property, “and if it meets the requirements of the Copper Mine Rule. 20.6.7.10.J NMAC.
33. The regulations include technical requirements for all major facilities at copper mines, including waste rock piles, 20.6.7.21 NMAC; copper ore crushing and milling facilities and tailings impoundments, 20.6.7.22 NMAC; pipelines and tanks, 20.6.7.23 NMAC; open pits, 20.6.7.24 NMAC; and truck and equipment washing facilities, 20.6.7.22 NMAC.
34. The liner systems described in the permit for the various impoundments at the mine meet or exceed the requirements of 20.6.7 NMAC.
35. The regulations include detailed requirements for groundwater and surface water monitoring. 20.6.7.28 NMAC.
36. The monitoring well network proposed in the permit meets or exceeds the requirements of 20.6.7 NMAC.
37. The regulations include contingency requirements in the event that groundwater quality standards are exceeded, a spill or other unauthorized discharge of contaminants occurs, a tailings impoundment structure is compromised, or any of a variety of other things goes wrong. 20.6.7.30 NMAC.
38. The regulations include requirements for a closure plan, 20.6.7.33 NMAC; implementation of closure, 20.6.7.34 NMAC; and post closure care, 20.6.7.35 NMAC.
39. The permit complies with the closure requirements of 20.6.7 NMAC.

40. The permit contains all facility specific design, construction, location, sitewide water management, monitoring, contingency, closure, post-closure, abatement, and financial assurance provisions required by 20.6.2 and 20.6.7 NMAC.
41. The regulations authorize the Environment Department to impose conditions on discharge permits according to the applicable substantive requirements of the regulations. 20.6.7.10.H NMAC.
42. The regulations authorize the Environment Department to impose additional conditions on permits that go beyond the substantive requirements of the regulations, provided the Department prepares a written explanation of the reasons for the conditions. 20.6.7.10.I NMAC.
43. The permit complies with all the requirements of the New Mexico Water Quality Act, NMSA 1978, Sections 74-5-1 through 74-5-17, the New Mexico Ground and Surface Water Protection Regulations (Part 20.6.2 NMAC), and the supplemental permitting requirements for copper mine facilities, or Copper Rule (Part 20.6.7 NMAC):
44. The standards of Section 20.6.2.3103 NMAC will not apply inside the AOPHC during operations and after closure of Copper Flat Mine, so long as the open pit remains a hydrologic evaporative sink, pursuant to Subsection D of 20.6.2.7.24 NMAC and Paragraph (2) of 20.6.7.33.D NMAC
45. Operation of the Copper Flat Open Pit as proposed by the Applicant and authorized in DP-1840 meet applicable requirements of Section 20.6.7.24 NMAC.
46. The design criteria, location, and operation of the waste rock stockpiles as proposed by the Applicant and authorized in DP-1840 meet applicable requirements of Section 20.6.7.21 NMAC.

47. The design criteria, location, purpose, and operation of the impoundments as authorized in DP-1840 meet applicable requirements of Section 20.6.7.17 NMAC.
48. The design criteria, location, purpose, and operation of the copper crushing, milling, concentrator, and the tailing storage facility as authorized in DP-1840 meet applicable requirements of Section 20.6.7.22 NMAC.
49. Design, location, construction, and operation of tanks, pipelines and other containment systems as proposed by the Applicant and authorized in DP-1840 meet applicable requirements of Section 20.6.7.23 NMAC.
50. Stormwater management as specified in DP-1840 meets the applicable requirements of Section 20.6.7.17 NMAC.
51. Design, location, construction, and operation of mine units as proposed by NMCC and authorized in DP-1840 meet the applicable requirements pursuant to Part 20.6.2 NMAC and Part 20.6.7 NMAC.
52. The monitoring plan set forth in DP-1840 adequately fulfills the requirements of Subsection R of 20.6.7.11 NMAC and Section 20.6.7.28 NMAC.
53. The monitoring well requirement of 20.6.7.28.B(3) is met or exceeded for each proposed impoundment at Copper Flat Mine, and consequently, DP-1840 satisfies the requirements of Paragraph (3) of 20.6.7.28.B NMAC.
54. The eleven monitoring wells around the open pit satisfy the requirements of Paragraph (4) of 20.6.7.28.B NMAC.
55. DP-1840 satisfies the requirements of Paragraph (5) of 20.6.7.28.B NMAC.

56. The open pit water body that will be present at the Copper Flat Mine at closure will not be a Surface Water of the State and will not be subject to the surface water quality standards found at 20.6.4 NMAC.

Standard of Review

57. The Secretary must approve, approve with conditions, or disapprove the proposed discharge permit based on the administrative record. 20.6.2.3019.A NMAC.

58. The Department Secretary can approve a discharge permit for a copper mine only if the permit poses neither a hazard to public health nor undue risk to property. 20.6.7 .10.J NMAC.

59. The Secretary must deny a discharge permit if the discharge would cause or contribute to water contaminant levels in excess of any state or federal standard. NMSA 1978, § 74-6-5(E).

60. The applicant has the burden of proving that the permit should be approved. 20.1.4.400.A(1) NMAC.

61. The Environment Department has the burden of proving that a permit condition it has proposed, and that has been challenged, should be adopted. 20.1.4.400.A(1) NMAC.

62. The Department has provided the required written explanations for conditions contained in DP-1840 that are in addition to those requirements contained in 20.6.7 NMAC.

63. Any person who contests a permit condition has the burden of proving that the condition is inadequate, improper, or invalid; and any person who proposes a permit condition has the burden of proving that the condition should be adopted. 20.1.4.400.A(1) NMAC.

64. The Environment Department has a duty to interpret the regulations liberally in order to realize the purposes of the Act. *Colonias Dev. Council v. Rhino Env'tl. Servs.*, 2005-NMSC-024, ¶ 34, 138 N.M. 133, 142, 117 P.3d 939, 948.