

STATE OF NEW MEXICO  
BEFORE THE SECRETARY OF ENVIRONMENT



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

No. GWB 18-06(P)

**NEW MEXICO COPPER CORPORATION'S CLOSING STATEMENT  
AND PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW**

**Introduction**

Applicant New Mexico Copper Corporation ("NMCC"), in accordance with 20.6.2.3110(I) and 20.1.4.500(B)(4) NMAC, hereby respectfully submits this post-hearing submission in this matter to present its closing position statement and proposed findings of fact and conclusions of law. This post-hearing submission is made pursuant to the Hearing Officer's direction in the September 24 through September 28, 2018 public hearing in Truth or Consequences, New Mexico, on NMCC's application for a discharge permit ("DP-1840"). See Transcript of Hearing ("Tr.") 1646:13-1647:1, 1647:10-1648:15. Part I of this submission contains a brief Closing Position Statement of NMCC. Part II contains NMCC's proposed Findings of Fact ("FOF"), together with citations to the evidentiary support for each proposed finding. Part III contains NMCC's proposed Conclusions of Law ("COL"), together with cross-references to the relevant FOFs and/or citations to any evidentiary underpinnings for each conclusion, as well as citations to pertinent legal sources which either make the conclusion material or otherwise support the conclusion. NMCC's closing position statement and proposed findings of fact and conclusions of law presented herein are offered in support of issuance of DP-

1840 as it was offered in draft form by the New Mexico Environment Department (“NMED”), including most of the last refinements suggested by NMED.

## I. CLOSING POSITION STATEMENT

The extensive Administrative Record (“AR”)<sup>1</sup> and ample additional evidence adduced in the five-day hearing herein provide an unassailable basis upon which to recommend that the Secretary of NMED promptly issue DP-1840 under authority of the Water Quality Act and regulations adopted by the Water Quality Control Commission (“WQCC”) thereunder. Those regulations consist of the general groundwater protection regulations comprising NMED’s long-standing discharge permitting program, as recently supplemented by the WQCC’s copper mine-specific requirements of the so-called “Copper Rule” that was unanimously affirmed by the New Mexico Supreme Court earlier this year in *Gila Resources Information Project, et al. v. New Mexico Water Quality Control Commission*, 2018-NMSC-025, ¶ 73, 417 P.3d 369, 383. The Copper Rule, described and explained in NMED counsel’s opening statement as a “permit by rule<sup>2</sup>,” and acknowledged as such by opposition witness Jim Kuipers,<sup>3</sup> contains a detailed set of comprehensive, prescriptive permit application, operational and closure requirements that were made possible by 2009 amendments to the Water Quality Act. Before 2009, the Water Quality Act prohibited WQCC regulations from specifying a permit applicant’s choice of methods to protect groundwater. The 2009 amendments cleared the way for the WQCC to specify methods of protecting groundwater through the detailed and prescriptive requirements of what became the Copper Rule. Mr. Kuipers, who testified that he himself participated extensively in the development of the Copper Rule, described the rule as “a set of best practices” based on a review

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<sup>1</sup> The AR reflects approximately 19,000 pages of documents, consisting of that application and supporting materials dating back to 2010.

<sup>2</sup> See Transcript (“Tr.”), page 36, lines 21-25. Hereafter, the form of such references will be Tr. 36:21-25.

<sup>3</sup> Tr. 951:7.

of best copper mining practices both in New Mexico and throughout other jurisdictions where copper and other mining occurs.<sup>4</sup>

NMCC's and NMED's witnesses were aligned in providing evidence and opinions that NMCC's permit materials supporting its application contained in the AR—which includes extensive and detailed scientific reports and design materials for how NMCC will construct, operate and close the Copper Flat Mine—fulfilled the requirements of the Copper Rule. All five of NMCC's experts, in addition to being accepted as experts in each of their scientific or engineering disciplines, were accepted as experts on the Copper Rule itself and/or as experts on compliance with the Copper Rule. All five provided eminently credible and well-supported, detailed factual testimony and expert opinions that NMCC's permit application fully complied with, and in several instances not only met but exceeded, the requirements of the various groundwater protection and other aspects of the Copper Rule. All five of NMCC's witnesses also provided expert opinions that issuance of DP-1840 would not pose a hazard to public health or an undue risk to property. NMED's three expert witnesses agreed that NMCC's application submissions, as revised and supplemented since adoption of the Copper Rule, had satisfied the showings necessary to meet the requirements of the Copper Rule. NMED witnesses further supported and explained the numerous protective conditions and requirements of the draft DP-1840 that triggered the five-day public hearing.<sup>5</sup>

Of the outpouring of public officials from the local communities, area business owners and other members of the public who supported issuance of DP-1840, several made comments to the effect that they were impressed and persuaded by the sheer extent of NMCC's permitting diligence and the level of competency and technical/scientific showings of its numerous experts

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<sup>4</sup> Tr. 1064:16-22.

<sup>5</sup> NMED proposed certain modest refinements to the draft DP-1840 at the hearing itself. NMCC accepted all of the changes proposed by NMED at the hearing.

supporting the Copper Flat Mine project. Even Mr. Kuipers extensively complimented NMCC, its expert witnesses and technical consulting firms. *See* Tr. 1088:1-4 (“I want to express that I think it’s a really good thing that the company [NMCC] got Golder on board. Golder knows what they’re doing. Golder is an international consulting firm.”); Tr. 1078:1-2 (“I respect the testimony of Mr. Finch. I’ve known him and worked with him in the past.”); Tr. 929:4-10 (“I’m going to spend a little less time than I had originally intended to because Ms. Griffiths did an excellent job of describing some of these aspects. And in fact, I feel that she really provided us with some good basic background information that I certainly don’t need to repeat.”); Tr. 1030:14-25 (crediting SRK with having developed the industry standard reclamation cost estimator model, and “complimenting the company [NMCC] for having SRK” use and submit model results that employed “basic fundamental principles”).

For the most part, party opponents expressed concerns about the potential impacts to water quality and water supply. In essence, it was the fear of “hazards to public health,” and the fear of “undue risks to property”—very general language employed by the Copper Rule—that the opposing parties and their witnesses sought to advance and capitalize on in this proceeding. In doing so, however, they neglected to offer sound science or technical engineering of their own to counter NMCC’s witnesses in substance, and otherwise essentially ignored the Copper Rule altogether. Being thus ungrounded, the witnesses offered by the parties opposing issuance of DP-1840 were unsuccessful in refuting or casting any doubt whatsoever on NMCC’s central showing, based upon sound science and technical engineering and design, that permit issuance under the Copper Rule’s permit-by-rule regime is appropriate given NMCC’s compliance with the requirements of the Copper Rule and associated discharge program regulations. Nothing in the testimony of the opposing parties’ witnesses, which all five of NMCC’s experts stayed to the

end to hear, gave NMCC's witnesses any less confidence in their testimony and opinions. NMCC's witnesses so testified on rebuttal, wherein each of NMCC's five experts also went on to offer their well-grounded opinion testimony that issuance of DP-1840 would not pose a hazard to public health or an undue risk to property.

Turner Ranch Properties, LP, and Hillsboro Pitchford Ranch, LLC (collectively "Turner Parties") offered four witnesses. Two of the witnesses, Messrs. Steve Dobrott and Robert Cunningham, expressed highly speculative concerns about how their ranching operations and wildlife being nurtured on or utilizing their ranches conceivably might be damaged if groundwater or surface water resources become contaminated from the mine or are depleted by the mine's use of water. On the issue of contamination, however, neither witness offered hydrological or geochemical testimony to substantiate those speculative fears, nor were they qualified as hydrologists or geochemical experts. Moreover, on cross-examination Mr. Dobrott acknowledged that Las Animas Creek is part of an entirely distinct watershed from the watershed in which the Copper Flat Mine is proposed, and that much of the water resources associated with the Ladder Ranch are higher in elevation than the mine would be and are systems that are recharged by water originating in the Black Range well to the northwest of the mine area. Similarly, on cross-examination Mr. Cunningham acknowledged that the upper reaches of the Grayback watershed where a portion of his ranch is situated, is at a higher elevation, and that intermittent springs and flows that sometimes develop on the part of his ranch above the mine are the result of storm events. Moreover, on the issue of potential impacts to water supply, as NMED's counsel discussed in his opening statement, and as the Hearing Officer knows well, those issues are outside the scope of NMED's jurisdiction under the Water Quality Act and

WQCC regulations, and instead are exclusively within the purview of Office of the State Engineer programs and proceedings.

Turner's other two witnesses likewise were ineffective in refuting or casting doubt on NMCC's compliance with the Copper Rule as established by NMCC's five witnesses and the three complimentary witnesses presented by NMED. Mr. Kuipers was not qualified as a hydrologist or geochemist, nor did he directly or convincingly challenge the scientific bases and conclusions of the witnesses who were so qualified. Instead, he provided general testimony and ruminations, entitled to little weight and of only tangential relevance, about what could happen at the Copper Flat Mine as a matter of speculation, or what has happened at other mines that he failed to establish were sufficiently similar to be instructive, or, as a policy matter, what precautions and uncertainties ought to be accounted for in agency permitting processes and processes to establish appropriate levels of financial assurance. Dr. Tom Myers, meanwhile, who was offered as a witness supposedly qualified in hydrology, hydrogeology and mine remediation, attempted to argue various points, based in part on wildly disparate and inconsistent hydraulic conductivity values for andesite (including one value that fell within the range he himself ascribed to the Santa Fe Group) that he acknowledged were chosen assumptions based on what point he was arguing. Moreover, his graphics attempting to show that his unspecified, vague and unsubstantiated "interpretive calculations" demonstrate a plume of contamination would reach the Rio Grande, plainly neglected to adequately account for observed data establishing the existence of the East Animas Fault barrier covered in detail by Mr. Finch. Finally, his discussion of contamination dispersion and how contaminants might escape detection by the numerous proposed monitoring wells was hypothetical speculation at odds with the site-specific, scientific rationale for monitoring well locations established by Mr. Finch. Dr. Myer's

blatant pandering to public fears, to the extent even comprehensible, simply was not credible, and should be given little to no weight whatsoever.

The four witnesses offered by the Elephant Butte Irrigation District (“EBID”), while in some respects interesting from academic and historic perspectives, for the most part were completely off-point in this proceeding on NMED’s draft groundwater discharge permit for the Copper Flat Mine. Two of EBID’s witnesses, Dr. James Phillip King and Erek Fuchs, offered water supply- and water rights-related testimony that might someday be relevant in proceedings before the Office of the State Engineer, but that are irrelevant to the question of whether NMED’s draft DP-1840 should be issued, or whether NMCC has fulfilled the requirements of the Copper Rule and other groundwater quality protection regulations. Zachary Libbin similarly offered testimony that might be relevant to Office of the State Engineer bureau of dam safety permitting proceedings, but is only indirectly relevant to DP-1840, and NMED clearly satisfied the one requirement of the Copper Rule going to the issue, which is the requirement that NMCC provide evidence it will obtain a permit from NMED that will meet the requirements of OSE’s Dam Safety Bureau, which NMCC has done. Finally, Dr. Kenneth Carroll, an academic who provided an academic tutorial on the potential for acid rock drainage, ultimately demonstrated his lack of grounding in the site-specific conditions at Copper Flat, in the Copper Rule, or in the mining “best practices” that Mr. Kuipers indicated formed the basis of the Copper Rule.

Finally, Turner and EBID apparently will advance two legal issues and attempt to preserve those for an appeal in the event NMED issues DP-1840. Neither of the issues have merit, however. First, Turner will argue that NMCC’s pit is not eligible for the so-called “private water exemption” from the application of NMED’s surface water quality standards.<sup>6</sup> The basis

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<sup>6</sup> It is important to recognize that the eligibility of NMCC’s pit for the private water exemption under the Water Quality Act does not mean that no standards will apply to the pit or to the post-closure pit water

of this argument will be that water in the pit will combine with other surface waters or groundwater of the state because water will flow to the pit and at that point will “combine” with water in the pit. However, the plain purpose and rationale of the private water exemption is that where, as in the case of NMCC’s pit water body, there is no potential for outward migration from the pit such that the water will contaminate other surface or groundwater, there is no need to apply surface water standards to the water body given that it is confined to private land. Moreover, as pointed out adeptly by NMED’s witness Kurt Vollbrecht, NMED’s determination that the surface water standards administered by NMED will not apply to NMCC’s post-closure pit is entirely consistent with the Copper Rule’s permitting regime, under which water captured within an open pit that is a hydrologic sink need not comply with NMED’s surface water standards during operations so long as post-closure monitoring around the perimeter of the unit will assure no outward migration of any contamination. 20.6.7.33(D) NMAC (“If an open pit is determined to be a hydrologic evaporative sink, the standards of 20.6.2.3103 NMAC do not apply within the area of open pit hydrologic containment.”); 20.6.7.24.D NMAC; *also cf. Phelps Dodge Tyrone, Inc. v. New Mexico Water Quality Control Comm’n*, 2006-NMCA-115, ¶ 29, 140 N.M. 464, 471, 143 P.3d 502, 509.

Second, EBID will argue that DP-1840 cannot legally be issued until NMCC has obtained a permit from the Office of the State Engineer Dam Safety Bureau. The argument, which is contrary to the plain language of the Copper Rule’s requirement to merely document that such a permit will be obtained, is premised on the notion that NMED cannot assess the permit until it conducts a dam breach analysis and knows the actual hazard ranking that will be

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body. Separate and apart from NMED’s program, because the Copper Flat Mine qualifies as a new mine under the New Mexico Mining Act, NMCC will have to establish that it can meet the performance standards and protection for wildlife, habitat and water under Part 6 of the Mining Act Reclamation Program regulations adopted by the New Mexico Mining Commission under that Act. Those are not in issue here.



applied to the TSF by the Dam Safety Bureau. This legal theory, which no doubt provided EBID with a convenient mechanism to stoke the fears of the public by talking at length and prejudicially at the hearing about a hypothetical dam breach, holds no water. NMCC's TSF facility witness, Mr. Dave Kidd of Golder, testified that if the hazard classification Golder assumed would apply for purposes of its feasibility study turned out to be incorrect, and the dam was given a higher classification, all that would mean is that additional engineering would need to be performed; it would not result in a material change to the footprint of the TSF for purposes relevant to the analysis of the TSF under the Copper Rule. Moreover, EBID can cite to no specific rule or requirement that mandates the completion of dam safety permitting before a permit can be issued to a copper mine under the Copper Rule; if that was the intent of the WQCC, it surely could have expressly so stated. The fact that it did not suggests that the WQCC understood well the very practical challenges copper mines face in addressing the multi-faceted permitting requirements of multiple agencies involved in the regulation of various aspects of mining copper. NMED clearly understood this as well when it issued DP-1840 and thereby triggered the public hearing and set in motion the final stages of permitting under the groundwater discharge program it administers.

In conclusion, NMCC respectfully submits that DP-1840 is ready for prompt issuance. The five-day hearing demonstrated NMCC's compliance with all groundwater protection program requirements, established NMED's diligence and readiness to issue the permit, and produced no technical or legal issues warranting a side-tracking of the years-long process any further. Moreover, although the project is not without opponents who have bought into the anti-mining narrative and fears promoted about potential impacts to water resources, the significant outpouring of support expressed by public officials from the local communities, area business

owners and other members of the public suggests that the weight of the community recognizes the legitimacy of the process, the diligence and sincerity of NMCC and NMED, and a readiness for the jobs and economic development potential the project will bring. NMCC respectfully requests that DP-1840 be promptly issued so that NMCC can redouble its efforts on the remaining regulatory hurdles.

## **II. PROPOSED FINDINGS OF FACT**

### **A. Mine, Mine Reserves, Processing, and Projected Schedule**

1. 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.

2. 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.

3. 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 15849-51, 15889-90, NMCC Ex. 2; Tr. 43:15-21.

4. 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.

5. 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.

6. 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 tailings impoundment (“TSF”), and associated infrastructure. AR 13956-15177, 15458-15690, 15855-17076, 18739; NMCC Ex. 2; NMED Ex. 3.

7. 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.

8. 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.

9. 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.

10. 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.

11. NMCC will be processing the ore by floatation only. AR 13956-15177, 15458-15690, 15855-17076, 18739; Tr. 49:5.

12. 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.

#### **B. Geology, Hydrogeology and Geochemistry of the Mine Site**

13. 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.

14. 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.

15. NMCC used forty 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.

16. 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.

17. 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.

**(i) Geology**

18. 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.

19. 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.

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

21. 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.

22. 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.

23. 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.

24. 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.

25. Most of the mine permit area resides in the Animas Uplift. AR 16020-16024; NMCC Ex. 11; Tr. 98:19-20.

26. The East Animas Fault system is on the eastern portion of the permit boundary. AR 15977-1600, NMCC Ex. 11; Tr. 106:3-5.

27. 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.

28. Santa Fe Group basin fill is present beneath the synthetically lined TSF. AR 15977-1600; NMCC Ex. 11; NMED Ex. 3, p. 3.

29. 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.

**(ii) Hydrology**

30. 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.

31. 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.

32. Regionally, groundwater flows from west to east. AR 08042-08444, 15909; NMCC Ex. 11; Tr. 195:16-17.

33. 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.

34. There are no perennial springs within the permit area. NMCC Ex. 11; Tr. 102:3-7.

35. 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.

36. 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.

37. 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

38. 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.

39. 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.

40. 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.

41. Groundwater in the andesite is very immobilize 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.

42. 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.

43. 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.

44. 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.

45. 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.

**(iii) Geochemistry**

46. 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.

47. 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.

48. 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.

49. 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 crystalized 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.

50. 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.

51. 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.

52. 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.

53. 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.

54. 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.

55. 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.

56. 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.

57. 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

58. 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.

59. 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.

60. 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.

61. 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.

62. At the Copper Flat 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.

63. 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.

64. 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.

65. 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.

66. 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.

67. 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.

68. 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.

69. 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.

### **C. Waste Rock Stockpiles**

70. 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.

71. Section C103 of Draft DP-1840 addresses the facility specific requirements of the waste rock stockpiles at the Copper Flat Mine. AR 18751-52.

72. 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.

73. 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.

74. 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.

75. 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.

76. 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.

77. 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.

78. 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.

79. Reclamation of EWRSP-1 and EWRSP- 2(B) will be completed during the preproduction period of its mining operation. AR 18213.

80. 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.

81. 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.

82. 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.

83. WRSP-1 will be constructed inside the OPSDA on low-permeability andesite and quartz monzonite. AR 15855-17076; NMCC Ex. 91; NMED Ex. 3.

84. 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.

85. 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.

86. 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.

87. 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.

88. 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.

89. 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.

90. 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.

91. 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.

92. 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.

93. Stormwater conveyance channels have been designed to safely convey the 100-year return storm events. AR 15458-15690; 15855-17076; Tr. 392:21-25.

94. 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.

95. Collected stormwater and other solutions will be conveyed to Impacted Stormwater Impoundments. AR 15458-15690; 15855-17076; NMED Ex. 3, p. 11.

96. 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.

97. 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.

98. 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.

99. 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.

100. 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.

101. 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.



**(i) WRSP Reclamation**

102. 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.

103. 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.

104. 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.

105. 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.

**D. Impoundments**

106. Section C104 of DP-1840 addresses requirements for impoundments at the Copper Flat Mine. AR 18752, Ex 3, p. 12.

107. 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.

108. 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.

109. 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.

110. 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.

111. 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.

112. 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.

113. The PWR receives direct precipitation to the pond surface and embankment crest area. AR 16750-17046, NMED Ex. 3, p. 13.

114. 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.

115. 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.

116. 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.

117. 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.

**(i) Process Facility Area**

118. 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.

119. The process facility includes contained and lined facilities that will utilize existing foundations. Tr. 51:1-4.

120. 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.

121. 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.

122. 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.

123. 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.

124. 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.

**(ii) Tailings Storage Facility**

125. 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.

126. 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.

127. 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.

128. 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.

129. 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.

130. 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.

131. 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.

132. 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.

133. 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.

134. Evaluation of liner leakage is physically based, consistent with literature and case study values and is reasonable. NMED Ex. 4, 4.

135. 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.

136. 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.

137. NMCC evaluated leakage from the lined TSF is estimated to be approximately 720 gpd. AR 16058-16749; NMED Ex. 4, p. 4.

138. 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.

139. Should there be any seepage groundwater chemistry would not exceed any New Mexico water quality standards. NMCC Ex. 22, Tr. 263:1-3.

140. 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.

141. The TSF is designed and will be constructed to comply with OSE Dam Safety requirements. AR 16058-16749; Ex. 28; Tr. 51:18-20.

142. 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.

143. 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.

144. 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.

145. 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.

146. 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.

147. 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.

148. The TSF includes a solution underdrain and collection and process water recycling system. AR 16058-17046; NMCC Ex. 88; Tr. 51:14-15.

149. 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.

150. 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.

151. 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.

152. 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.

153. 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.

154. 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.

155. Stormwater potential run-on will be diverted around the TSF. AR 16058-17046; NMCC Ex. 88; Tr. 339:13-14.

156. 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.

157. 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.

**(iii) Reclamation of Impoundments**

158. 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.

159. 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.

160. 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.

161. 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.

162. Following regrading, 3 foot store and release covers will be placed on the TSF. AR 15580-15664; NMCC Ex. 91; Tr. 404:5-7.

163. 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.

164. 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.

165. 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.

166. 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.

#### **E. Open Pit**

167. Section C102 of Draft DP-1840 addresses the facility specific requirements of the Copper Flat open pit. AR1875.

168. 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.

169. The existing pit is a hydraulic sink. AR 17078-17358; Tr. 108:20-25; 268:19-25.
170. 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.
171. 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.
172. 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.
173. 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.
174. 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.
175. 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.
176. Acid wall seep events are not predicted for the future pit lake. AR 17078-17280; NMCC Ex. 22; Tr. 273:18-23.

177. Rapid refill of the pit will result in improvement of the water quality. AR 17078-17280; NMCC Ex. 22; Tr. 277:16-17.

178. 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.

179. 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.

180. 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.

181. 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.

#### **F. Discharge Permit History**

182. NMCC's 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.

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

184. This application was submitted as an application to modify Discharge Permit 1, the discharge permit for a previous mine at the same site. NMED Ex. 2, p. 4.

185. 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 2143-2156; NMED Ex. 2, p. 5; Tr. 499:8-10.

186. In December 2015, NMCC submitted an updated discharge plan application, which was intended to address the requirements of the Copper Mine Rule. AR 11377-11378, 12354-13547; Tr. 498:5-10; NMED Ex. 2, p. 4.

187. On January 15, 2016, NMED issued a public notice for the revised application. AR 13567-13569; NMED Ex. 2, p. 4, Tr. 499:13-14.

188. 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-1. AR 13868-13892; NMED, Ex. 3, p. 4.

189. 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.

190. NMED determined the application, including the Closure Plan, technically approval on February 1, 2018. Tr. 47:14; 52:21.

191. NMED issued draft DP-1840 on February 2, 2018. Tr. 47:15-16.

192. Following technical review of the application, NMED created a draft discharge permit, DP-1840. NMED published the second public notice ("PN-2") of draft DP-1840 for a 90-day comment period from February 2, 2018 until May 5, 2018- extending the thirty-day

public comment timeframe to May 5, 2018 after requests for extension from the public. Tr. 499:15-22; NMED Ex 2, p. 5.

193. 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.

194. On August 9, 2018, NMCC submitted a financial assurance estimate of \$55.8 million to NMED, MMD and BLM 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.

195. NMED does not have specific regulations governing financial assurance, but 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.

196. 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.

197. 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.

198. NMED has 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.

#### **G. Additional Discharge Permit Provisions**

199. 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.

200. 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.

201. 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.

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

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

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

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

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

**(i) Monitoring**

207. 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.

208. 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.

209. 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.

210. 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.

211. 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.

212. 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.

213. Six monitor wells have been approved to be plugged and abandoned as the TSF builds progressively outward. AR 18757; NMED Ex .3, p.17.

214. 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.

215. 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.

216. 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.

217. 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.

218. Draft DP-1840 requires eight process water-sampling points throughout Copper Flat Mine. AR 18755, 18770; NMED Ex. 3, p. 16.

219. The spacing of the monitoring wells is adequate and will detect contaminants even if they are dispersed. Tr. 1616:5-15.

**(ii) Stormwater**

220. 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.

221. Section C107 specifies requirements to manage stormwater at Copper Flat. AR 18754.

222. 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.

**(iii) Additional Closure Provisions**

223. 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.

224. 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.

225. 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.

226. The TSF will be covered with 36 inches of growth media and revegetated. AR 15580-15664; NMCC Ex. 91; Tr. 53:12-14

227. 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.

228. 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.

229. 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.

230. 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.

**(iv) Abatement Provisions**

231. Section C116 of DP-1840 addresses the Abatement Plan for the Copper Flat Mine. AR 18762-18763; NMED Ex. 3, p. 18.

232. 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.

**H. Summary of Public Hearing**

233. 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.

234. At the hearing NMED, Turner Ranch Properties and the Hillsboro Pitchfork Ranch, Elephant Butte Irrigation District, and New Mexico Copper Corporation entered appearances. Tr. 32:1 - 34:13.

235. 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.

236. NMCC's first of five witnesses, 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.

237. At the hearing, 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. Mr. Smith testified that granting DP-1840 would not pose a hazard to public health or an undue risk to property. Tr. 1604:12-16.

238. At the hearing, 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.

239. At the hearing, 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.

240. 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.

241. At the hearing, Turner Ranch and Pitchfork Ranch, EBID, and members of the public cross-examined NMCC's witness Mr. Smith. Tr.58:14-76:10; 80:25-88:10; 1603:6-1604:3.

242. 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.

243. At the hearing, 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. Mr. Finch testified that granting DP-1840 would not pose a hazard to public health or an undue risk to property. Tr.1617:22-1618:3.

244. At the hearing, 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.

245. At the hearing, the Hearing Officer, Turner Ranch and Pitchfork Ranch, EBID, and members of the public cross-examined NMCC's witness Mr. Finch. Tr. 164:3-212:17; 220:3- 222:8; 1618:8-1631:16.

246. NMCC's third witness, Dr. Ruth Griffiths, is a senior geochemist at SRK Consulting. At the hearing, Ms. 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 Exhibit 21. Ms. Griffiths testified that granting DP-1840 would not pose a hazard to public health or an undue risk to property. Tr.1636:6-10.

247. At the hearing, Dr. Griffiths was admitted as an expert in geochemistry in particular in relation to mining projects. Tr. 226:12-22.

248. 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.

249. 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.

250. At the hearing, Turner Ranch and Pitchfork Ranch and EBID cross-examined NMCC's witnesses Dr. Griffiths and Dr. Bowell. Tr. 283:13-309:19.

251. 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. At the hearing, 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. Mr. Kidd testified that granting DP-1840 would not pose a hazard to public health or an undue risk to property. Tr. 1638:12-16.

252. At the hearing, 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.

253. At the hearing, Turner Ranch and Pitchfork Ranch, EBID, and members of the public cross-examined NMCC's witness Mr. Kidd Tr. 354:9-380:11.

254. NMCC's fifth witness, Todd Stein, is a hydrogeologist with Golder Associates and is a professional geologist. He 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 Copper Flat Closure and Reclamation Plan meets or exceeds the requirements of the Copper Rule, 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. Mr. Stein testified that granting DP-1840 would not pose a hazard to public health or an undue risk to property. Tr. 1640:4-9. His résumé was admitted as NMCC Exhibit 90.

255. At the hearing, 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.

256. At the hearing, Turner Ranch and Pitchfork Ranch, EBID, and members of the public cross-examined NMCC's witness Mr. Stein Tr. 430:7-488:23.

257. At the hearing, 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 that because the future open pit water body is expected to be on private property, will be an evaporative sink, no other surface waters will flow from the open it, and will not combine with other surface or subsurface waters, the New Mexico Surface Water Quality Bureau determined that the water quality standards of 20.6.4 NMAC do not apply. Tr. 500:17-504:15.

258. At the hearing, 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.

259. At the hearing, NMED presented 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.

260. At the hearing, Turner Ranch and Pitchfork Ranch, EBID, and members of the public cross-examined NMED's witnesses Mr. Vollbrecht, Mr. Reid, and Dr. Marcoline. Tr. 543:3-572:13; 690:11-771:19.

261. At the hearing, Turner Ranch Properties and the Ladder 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.

262. At the hearing Mr. Dobrott was admitted as an expert in biology, ecology and ranching. Tr. 784:12-19.

263. At the hearing, NMCC cross-examined Mr. Dobrott. Tr. 822:6-862:20.

264. At the hearing, Turner Ranch Properties and the Ladder 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.



265. At the hearing, Mr. Cunningham was admitted as an expert in ranch management, native game and wildlife and ecology. Tr. 867:24-868:6.

266. At the hearing, NMCC cross-examined Mr. Cunningham. Tr. 884:20-894:24.

267. At the hearing Turner Ranch Properties and the Ladder 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.

268. At the hearing, 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.

269. At the hearing, NMCC, NMED and EBID cross-examined Mr. Kuipers. Tr. 1108:20-1152:23. On cross-examination, Mr. Kuipers testified that the Copper Flat pit lake is not expected to become an acidic lake, Tr. 1111:14-15; that DP-1840's financial assurance requirement is consistent with the Copper Rule, Tr. 1112:21-113:16; that there are no financial assurance specific requirements set forth in the Copper Rule, Tr. 117:5-12; and that the liner that is proposed for the TSF exceeds the requirements of the Copper Rule, Tr. 1148:9-16.

270. At the hearing, Turner Ranch Properties and the Ladder 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.

271. At the hearing, Dr. Meyers was recognized as an expert in hydrology, hydrogeology and mine reclamation. Tr. 1163:3-9.

272. At the hearing, NMCC, NMED and EBID cross-examined Dr. Meyers. Tr. 1262:20-1305:1. On cross-examination, Dr. Meyers testified that he assigned varying hydraulic conductivities for andesite based on the arguments he needed to advance, Tr. 1276:4-1278:1,, that his opinions regarding migration of water along the fault line to the Ladder Ranch were calculated based on the findings he wished to advance, Tr. 1284:12-1286:3; that he did not consider geochemistry when he recommended a liner beneath the waste rock stockpile, Tr. 1290-17-1291:15; and that his opinion that contaminants could conceivably reach Ladder Ranch did not mean the groundwater wells at the ranch, and was not based on modelling of a particular constituent, Tr. 1298:12-1299:1.

273. At the hearing, 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.

274. At the hearing, 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.

275. At the hearing, NMCC and NMED cross-examined Dr. King. Tr. 1390:14-1394:11.

276. At the hearing, EBID presented Erek Fuchs, the groundwater resources manager for EBID, who offered testimony regarding water rights but no testimony regarding water quality concerns or specific concerns with DP-1840; rather he testified regarding rules, regulations and guidance governing water rights applications in the Lower Rio Grande, and collaboration between governmental entities. Tr. 1395:22-1420:24.

277. At the hearing, Mr. Fuchs was recognized as an expert in water rights administration. Tr. 1398:25-1399:6.

278. At the hearing, NMCC, NMED and Turner Ranch Properties and the Ladder Ranch cross-examined Mr. Fuchs. Tr. 1421:5-1451:9.

279. At the hearing, 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.

280. At the hearing, 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.

281. At the hearing, NMCC and NMED cross-examined Mr. Libbin. Tr. 1474:6-1478:10.

282. At the hearing 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.

283. At the hearing, 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.

284. At the hearing, NMCC, NMED and Turner Ranch Properties and the Ladder Ranch cross-examined Dr. Carroll. 1577:17-1594:14. During cross-examination, Dr. Carroll testified that he was unaware of any mine sites putting geomembrane liners on top of waste rock stock piles, Tr. 1585:2-10; that his opinion did not include Mr. Stien's supplemental soils report, Tr. 1587:3-6; and that he was not aware that the Copper Rule's requirements for cover are based on experience gained from implementation and performance monitoring of cover systems. Tr. 150:8-16.

285. At the public hearing, 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.

### III. PROPOSED CONCLUSIONS OF LAW

1. Pursuant to the WQA, the WQCC “may require persons to obtain from a constituent agency designated by the commission a permit for the discharge of any water contaminant.” NMSA 1978, §74-5-5(A).

2. The implementing regulations of the Act are the New Mexico Ground and Surface Water Protection Regulations (“Regulations”), 20.6 NMAC.

3. The WQCC has adopted regulations stating “no person shall discharge effluent or leachate from a copper mine facility so that it may move directly or indirectly into ground water without a discharge permit approved by the department.” 20.6.7.8.A NMAC.

4. In addition to the requirements of the WQA and those contained in 20.6.2 NMAC, because the proposed Copper Flat Mine meets the definition of a “new copper mine facility,” the mine therefore is required to meet the requirements of the Ground Water Protection-Supplemental Permitting Requirements for Copper Mine Facilities set forth in 20.6.7 NMAC. 20.6.7.2 NMAC.

5. 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 WQA. 20.6.7 NMAC.

6. 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. NMSA 1978, §74-5-5.

7. “The Secretary shall approve a discharge permit provided that it poses neither a hazard to public health or undue risk to property, and (1) the requirements of the copper mine rule are met; (2) the provisions of 20.6.2.3109 NMAC are met, with the exception of Subsection

C of 20.6.2.3109 NMAC; and (3) the denial of an application for discharge permit is not required pursuant to Subsection E of Section 76-6-5 NMAC.” 20.6.7.10.J NMAC.

8. The Copper Flat Mine will discharge water such that a discharge permit is required under the Regulations. E.g. FOF Nos. 7, 45, 48, 91, 94, 96, 98, 99, 101, 102, 106-117, 121-123, 125-157, 166, and 199-206.

9. The NMED is charged by the Regulations with evaluating applications for discharge permits, and recommending approval or disapproval by the Secretary. 20.6.2.3018 NMAC.

10. The activities described as occurring or planned by NMCC require a discharge permit, to be evaluated by the NMED. 20.6.7 NMAC.

11. The draft DP-1840 for the Copper Flat Mine and the evidence in this case have demonstrated that neither a hazard to public health nor any undue risk to property will result from issuance of DP-1840 for the activities and discharges that are occurring or planned by NMCC. 20.6.2.3109.A NMAC; 20.6.7.10.J NMAC; and FOFs.

12. Groundwater with TDS of 10,000 mg/l or less will not be adversely affected by the issuance of DP-1840 as requested by NMCC and proposed by NMED. 20.6.2.3109.B NMAC; e.g. FOF Nos. 98, 99, 101 138, 139, 157, 169, 171, and 181.

13. Approval and issuance of DP-1840 will not result in either concentrations that are in excess of Section 3103 standards or the presence of any toxic pollutant at any place of withdrawal of water for present or reasonably foreseeable future use. 20.6.2.3109.B NMAC; FOF No. e.g. FOF Nos. 98, 99, 101 138, 139, 157, 169, 171, and 181.

14. The draft DP-1840 includes provisions for adequate sampling of water as well as adequate flow monitoring so that the amount being discharged to below the surface of the ground

can be determined in accordance with 20.6.2.3109.D NMAC. AR 18755-56, 16026-16030, 17050-17076; *e.g.* FOF Nos. 207-219.

15. The standards of Section 20.6.2.3103 will not apply inside the area of open pit hydrologic containment during operations and after closure of the Copper Flat Mine, because the open pit will remain a hydrologic evaporative sink. 20.6.7.24.D NMAC, 20.6.7.33.D NMAC; FOF Nos. 169, 171, and 179.

16. NMCC provided the contact information required by 20.6.7.11.B NMAC. AR 15873-74.

17. NMCC provided all required ownership and real property information and agreements as required by 20.6.7.11.C NMAC. AR 15875-15885.

18. NMCC provided a scaled map of the proposed Copper Flat Mine demonstrating the copper mine facility meets the setback requirements of 20.6.7.11.D NMAC. AR 15886-15887.

19. NMCC provided all facility and location information required by 20.6.7.11.E NMAC. AR 1889.

20. NMED published notice as required by 20.6.7.11.F NMAC. AR 18891; FOF Nos. 185, 187, and 193.

21. NMCC provided the pre-discharge total dissolved solids concentration in ground water from the aquifers that may be affected by discharges from the copper mine facility in accordance with 20.6.7.11.G NMAC. AR 15892-15898, 18740; FOF Nos. 17.

22. NMCC's application includes the maximum daily discharge volumes required by 20.6.7.11.H NMAC. AR 15899-15902, 18749; FOF Nos. 199 and 200.

23. As required by 20.6.7.11.I NMAC, NMCC's application includes estimated concentrations of process water and tailings slurry for the constituents listed in 20.6.2.3103 NMAC and the basis for these estimates. AR 15903- 04.

24. NMAC's application includes all the information required for identifying and providing a physical description of the mine as required by 20.6.7.11.J NMAC. AR 15905-15985; FOF Nos. 70-181.

25. NMCC has provided the data required in 20.6.7.11.K NMAC, for surface soil, geology and hydrology data. AR 15986-16000; FOF Nos. 13-45.

26. NMCC has provided a location map and a flood zone as required by 20.6.7.11.L and 20.7.7.11.M NMAC, respectively. AR 16001-16004.

27. NMCC has submitted all plans and specifications as required by 20.6.7.11.N NMAC. AR 13956-16011.

28. NMCC's application includes a material characterization and handling plan that meets the requirements set forth in 20.6.7.O NMAC. AR 16012-16019; FOF Nos. 46-69.

29. NMCC has completed a hydrologic conceptual model in accordance with 20.6.7.11.P NMAC. AR 09097-09511, 16020-16024; FOF Nos. 13-45.

30. NMCC has included a waste minimization plan as part of its discharge permit application in accordance with 20.6.7.11.Q NMAC. AR 16025-16026.

31. NMCC submitted the location of all existing and proposed ground water monitoring wells in accordance with 20.6.7.11.R NMAC. AR 16027; 17049-78; FOF Nos. 207-219.



32. NMCC has described the flow metering system in accordance with 20.6.7.17(C)(5), 20.6.7.18(E), and 20.6.7.29(C) and (E), in accordance with 20.6.7.11.S NMAC. AR 16028-16030.

33. NMCC has provided a closure plan for all portions of the copper mine facility in accordance with 20.6.7.18(A), 20.6.7.33, 20.6.7.34 and 20.6.7.35, in accordance with 20.6.7.11.T. AR 16031, 15580-15664.

34. NMCC has provided a proposal for financial assurance for the portions of the copper mine to be reclaimed in accordance with its closure plan as required by 20.6.7.11.U NMAC. AR 16042-16043; FOF Nos. 194-198.

35. NMCC has complied with the variance requirement set forth in 20.6.7.11.V NMAC. AR 16044.

36. NMCC has provided a plan to measure meteorological data at sites throughout the copper mine facility as required by 20.6.7.11.W NMAC. AR 16045-16047.

37. NMCC has complied with all general engineering and survey requirements set forth in 20.6.7.17 NMAC. AR 13956-15177, 16058-16749.

38. NMCC has complied with all general operating requirements set forth in 20.6.7.18 NMAC. AR 13956-15177, 16031-16041.

39. WRSP 1, WRSP 2, and WRSP 3 will be designed and constructed to meet the requirements of 20.6.7.18.A NMAC AR 13956-15177.

40. NMCC has complied with all set back requirements set forth in 20.6.7.19 NMAC. AR 15886-88.

41. NMCC has complied with all requirements for mine waste rock stockpiles set forth in 20.6.7.21 NMAC. AR 03970-05258, 8525-9095, 13956-15177.

42. NMCC has complied with all requirements for copper crushing, milling, concentrator, smelting and tailings impoundment units set forth in 20.6.7.22 NMAC. AR 16058-16749, 16750-16048.

43. NMCC has complied with all requirements for new pipelines and tanks set forth in 20.6.7.23 NMAC. AR 13956-15177, 16040.

44. NMCC has complied with all requirements for open pits provided by 20.6.7.24 NMAC. *E.g.* FOF Nos. 168-181.

45. NMCC has complied with all requirements for truck and equipment washing units as set forth in 20.6.7.26 NMAC. AR 13956-15177, 15957-15959.

46. NMCC's application meets the requirement for water quality monitoring requirements set forth in 20.6.7.28 NMAC. AR 17282-17358; FOF Nos. 207-219.

47. NMCC's application fulfills all the general monitoring requirements for copper mine facilities set forth in 20.6.7.29 NMAC. AR 18755-56, 16026-16030, 17050-17076; *e.g.* FOF Nos. 207-219.

48. NMCC's application includes contingency requirements as required by 20.6.7.30 NMAC. AR 13956-15664, 15855-17076.

49. NMCC's closure plan meets the requirements of 20.6.7.33 NMAC, 20.6.7.34 NMAC and 20.6.7.35 NMAC. AR 13956-15664, 15855-17076, FOF Nos. 254-256.

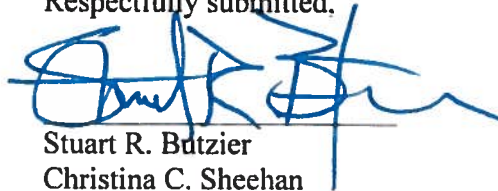
50. All mine units will be reclaimed in accordance with 20.6.7.33 NMAC, 20.6.7.34 NMAC and 20.6.7.35 NMAC. AR 13956-15664, 15855-17076; FOF Nos. 254-256.

51. NMCC's discharge permit application for DP-1840 complied with all requirements for 74-6-5, 20.6.2.3109 and 20.6.2.7 NMAC. AR 15855-17076; FOFs 1-260, 269, and 273.

## CONCLUSION

For all the foregoing reasons, and for reasons amply illuminated in the Hearing and Administrative Record, NMCC respectfully requests that its proposed Findings of Fact and Conclusions of Law be adopted, and that DP-1840 be issued as drafted.

Respectfully submitted,

A handwritten signature in blue ink, appearing to be "Stuart R. Butzier", written over a horizontal line.

Stuart R. Butzier

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**CERTIFICATE OF SERVICE**

I hereby certify that on November 19, 2018, a copy of the New Mexico Copper Corporation's Closing Statement and Proposed Findings of Fact and Conclusion of Law was e-mailed to the following:

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