



Tyrone Operations
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June 9, 2022

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Return Receipt Requested

Mr. David Ohori
Energy, Minerals and Natural Resources Department
Mining and Minerals Division
Mining Act Reclamation Program
1220 South St. Francis Drive
Santa Fe, NM 87505

Dear Mr. Ohori:

**Re: Freeport-McMoRan Tyrone Inc.,
Permit GR010RE Emma CCP Response Letter**

Freeport-McMoRan Tyrone Inc. (Tyrone) submitted an application for an expansion to the Tyrone Mine for the Emma Project on October 22, 2021 and Closure/Closeout Plan (CCP) on November 12, 2021. In a letter dated April 25, 2022, Mining and Minerals Division (MMD) provided comments. Tyrone appreciates the comments and the opportunity to respond.

Below are MMD comments on the Closure/Closeout Plan in italics followed by Tyrone's response.

- 1. Section 2.1 Description of Emma Project Area, page 4 of the CCP, describes the proposed Emma Project features at the end-of-year 2026 (EOY 2026) including the Emma pit, EHW and 6HW waste stockpiles, haul roads, and supporting infrastructure. How will the placement of the ore on the Tyrone leach stockpile(s) affect the closeout plan for those leach stockpiles?*

There is no change to the closeout plan for existing leach and waste stockpiles at Tyrone. The material placement was already projected in the 2013 Tyrone Closure Closeout Plan (CCP). The mining sequence of the pits at Tyrone is the only change and this has no impact on the leach and waste placements.

- 2. Section 2.3.7.3 Borrow Materials, page 12 of the CCP, states that potential reclamation cover material ("RCM") identified include native soils, alluvium, in-situ Gila conglomerate, Precambrian granite, and other non-potentially acid generating*

(“NPAG”) materials from the Emma pit. Figure 2-3, Emma Project Generalized Surface Geology Map, and Figure 2-5, Emma Project Generalized Hydrogeologic Cross-Section B-B’, show the Quaternary-Tertiary Gila Conglomerate offset from the proposed Emma pit so that Gila conglomerate may not be excavated from the proposed Emma pit. Gila Conglomerate is currently the approved RCM and Precambrian granite from the Little Rock Mine may be approved as RCM pending the results of the USNR test plot study. Please note that Precambrian granite has not been approved yet, for use as an RCM. If Gila conglomerate is encountered and excavated from the Emma pit, how will it be handled and stored for later use as RCM?

Salvaged Gila Conglomerate and salvaged soil recovered from the pre-mining footprint of the Emma Pit, EMW Waste stockpile, and other disturbed areas, will be hauled to the Soil Stockpile and EMW Waste stockpile for future use as reclamation cover material (RCM). The Soil Stockpile will be fully consumed in closure as RCM at Emma and Tyrone.

3. *Section 2.3.7.3 Borrow Materials, page 12 of the CCP, states that the RCM requirement for the Emma Project is approximately 320,720 cubic yards (CY) of salvaged soil and other RCM excavated from the Emma pit. If the 320,720 CY represents the amount of salvaged soil materials and other proposed RCM for the cover, what is the relative proportion of salvaged soil to other proposed RCM that will make up the vegetative cover?*

Table 11, from the “Characterization of Suitable Soils and Overburden and Soil Salvage Plan for the Emma Expansion Project” (Appendix D of the Closure Closeout Plan (CCP)), shows the estimated volume of salvageable soils. The volume of salvaged soil is estimated at 547,594 bank cubic yards (CY), which exceeds the 320,720 CY of cover material needed for the final 1-foot lift of the soil cover (for FA purposes only) for the reclamation plan. Any excess RCM will be available for mine reclamation at Tyrone.

In addition to the 547,594 cy of salvaged soil, Tyrone is projected to recover an additional 4 to 7 million cy of NPAG RCM which will be stockpiled on the EMW Waste and 6HW Waste stockpiles (see table below).

Cover Material	Approximate Volume (bank CY)
Native soils ¹	547,594
Precambrian Granite and NPAG	4 to 7 million (page 21 of CCP)

Notes:

bank CY = cubic yards of in-place soil not accounting for swell associated with salvage

¹ – Consists of Gently Sloping Mollisols (GSM), Fluvents (FLUV), and Sloping to Steep Lithic (SSL) soils

4. *Section 3.1, Emma Pit, page 13 of the CCP indicates that a one-foot-thick layer of soil from the Soil Stockpile will be placed over the NPAG waste rock backfill in portions of the Upper East, Upper North, Upper South, and South Main areas of the Emma pit (and over the regraded EMW and 6HW waste stockpiles as indicated in Section 4.1 of the CCP). MMD will require a test plot study using the proposed NPAG excavated from the Emma pit to demonstrate that it will support vegetation that will meet the vegetation success requirements of Appendix C of Revision 09-1 for the Tyrone Mine. MMD requires a plan and financial assurance ("FA") to place a minimum of an additional foot-thick layer of approved RCM from the Tyrone 5A Stockpile or another approved source to supplement the proposed one-foot-thick layer of soil from the Soil Stockpile until MMD approves the NPAG as RCM or as RCM combined with the soil from the Soil Stockpile as a vegetative cover at the Tyrone Mine. The rationale for the test plot study is that the proposed salvaged soil and NPAG overburden are new, site specific, and untested cover material sources. 19.10.5.508 NMAC requires that site-specific characteristics must be considered in applying the standards and requirements. Additionally, if the NPAG overburden material is to be used as part of the cover, then it should be evaluated using soil suitability criteria to identify deficiencies.*

Tyrone respectfully requests that the agency reconsider the requirement for a test plot and for a "plan and FA for an additional foot-thick layer of approved RCM from another Tyrone source". Tyrone requests an opportunity to meet with MMD to present scientific data and rationale related to the following responses to this concept:

- Tyrone has proposed the most logical, common sense approach/sequence for reclamation at the site.
 - Utilize the very same soil and subgrade that exists at the site now and supports a self-sustaining ecosystem
 - Salvage the existing soil and NPAG (following the proposed material handling plan) and store for future reclamation
 - Utilize both as RCM at the site at closure to reconstruct the same basic layered sequence that exists at the site today (i.e., soils overlying NPAG)
 - Nature has already demonstrated that the materials are suitable in addition to the evidence below
- Tyrone has demonstrated that the NPAG RCM is suitable. Table 9 of the "Characterization of Suitable Soils and Overburden and Soil Salvage Plan for the Emma Expansion Project" (Appendix D of the CCP), provides chemical characterization data of the NPAG overburden samples. Based on those results, the overburden materials are considered suitable under MMD's guidelines (MMD 1996) with respect to pH, salinity, nutrient levels, and extracted metal concentrations and having no inherent chemical or physical limitations for the growth of native reclamation plant species.

- Tyrone will submit a modification for MMD approval for the Precambrian Granite as RCM in the next 45 days, but the evidence of its success is already before the agency. There is strong evidence that Little Rock and Emma Precambrian Granite are the same material and geologic formation. There is no scientific reason to test the same material yet again.
- Pursuant to Permit GR010RE Rev 09-1 Condition 9.D.2.b and Modification 14-1 Condition 9.C, Tyrone has proposed one foot of RCM (native soils that are salvaged from Emma Project), for FA purposes only, over the EMW Waste and 6HW Waste stockpiles; Upper East, Upper North, Upper South, and South Main areas of the Emma Pit.
- The idea of soil loss through winnowing has been raised as a concern; however, Tyrone test plots have demonstrated that this is not a realistic concern. The soil loss measurements are small (a tiny fraction of the cover depth)

5. *Section 3.1.1, Water Balance and Geochemical Modeling, page 14 of the CCP indicates the sources of water inflow to the Emma pit includes groundwater inflow, direct precipitation on the pit pond, and runoff generated from within the perimeter of the Emma pit. Is stormwater inflow expected into the Emma pit from surrounding areas outside of the pit during operations or at mine closeout?*

See Tyrone's response to MMD's Comment 7 on the Emma Application.

6. *Section 3.3, 6HW Waste Stockpile, page 17 of the CCP, indicates that approximately 5.9 acres of the 6HW Waste stockpile will be located within the Tyrone Conditional Waiver Area. Condition 9.E of Revision 09-1 for the Tyrone Mine requires that this area be reported in the Tyrone Stockpile Open Pit Waiver Update ("Waiver Update") annually by August 31. Tyrone shall provide a description of how the portion of the 6HW Waste stockpile that is proposed for inclusion in the Conditional Waiver Area has the same qualifying characteristics as the other conditionally waived stockpile areas at the Tyrone Mine.*

Tyrone projects that 5.9 acres of 6HW Waste stockpile will be located within the Tyrone Conditional Waiver Area at the end of 2024. Pursuant to Permit GR010RE Rev 09-1 Condition 9.S.1, Tyrone will update the Conditional Waiver Area annually for the construction of the 6HW Waste and provide an assessment on how the area qualifies for a conditional waiver.

7. *Section 3.4, Soil Stockpile, pages 17-18 of the CCP, states that the soil stockpile will be seeded with in interim seed mix listed in Table 3.3, Interim Seed Mix for Stockpiled Soil Materials at Emma. See MMD Comments on Table 3.3 below.*

No response required.

8. *Section 3.5, Emma Haul Roads, page 18 of the CCP, describes the construction of the Northern Emma Haul Road and the Southern Emma Haul Road. See also MMD comments (Comment 17) on the Northern Emma Haul Road in the April 8, 2022 MMD comment letter on the Application (copy attached).*

See Tyrone's response to MMD's Comment 17 on the Emma Application response letter dated May 23, 2022.

9. *Section 4.1, EMW Waste and 6HW Waste Stockpiles, page 21 of the CCP, states that the materials from the EWH and 6HW Waste stockpiles are valuable resources of RCM that will be available for use in reclamation of the southern mine area of Tyrone in the future. These materials are yet unproven RCMs and have to be further evaluated and tested. See Comment 4 above.*

See Tyrone's response to Comment 4.

10. *Section 4.1, EMW Waste and 6HW Waste Stockpiles, Stockpile Erosion and Drainage Control, page 21 of the CCP, states that stormwater will be controlled using conventional terrace channels integrated to down drains. Since these waste stockpiles have not yet been constructed and the EMW Waste Stockpile is largely in the New Unit area, was consideration given to using geomorphic regrading and drainage designs versus conventional terrace channels and down drains? Please explain why geomorphic designs were not proposed in the CCP for the EMW Waste stockpile.*

The conceptual design presented in the CCP is adequate to estimate the required FA for the project. Geomorphic designs may be considered during final design/Construction Quality Assurance Plan phase, not during the conceptual design as required in the CCP. The final configuration of the stockpiles is not known at this time, only that it will fit within the proposed footprints. If there is a good engineering benefit to be gained at a reasonable cost by utilizing a geomorphic design at the final design stage, Tyrone will consider it.

11. *Section 4.1, EMW Waste and 6HW Waste Stockpiles, Stockpile Cover and Revegetation, pages 21-22 of the CCP states that the NPAG material excavated from the Emma pit and placed in the EMW and 6HW stockpiles have been identified as RCM and that a one-foot-thick layer of locally salvaged RCM (Note: MMD assumes that in this context RCM was meant to indicate locally salvaged soil) would be placed over the regraded waste stockpiles and be revegetated. See Comment 4 above and MMD comments on Appendix D, Characterization of Suitable Soils and Overburden and Soil Salvage Plan for the Emma Expansion Project, of the CCP.*

See Tyrone's response to Comment 4 and comments on Appendix D.

12. *Section 4.1, EMW Waste and 6HW Waste Stockpiles, Emma Pit, pages 22-23 of the CCP describes the reclamation proposed for the Emma pit. See Comment 4 above and MMD comments on Appendix D, Characterization of Suitable Soils and Overburden and Soil Salvage Plan for the Emma Expansion Project, of the CCP.*

See Tyrone's response to Comment 4 and comments on Appendix D.

13. *Section 4.1, EMW Waste and 6HW Waste Stockpiles, Emma Pit, pages 22-23 and Table 4-1, Summary of Key Design Criteria for Facilities to be Closed, Emma Pit, of the CCP describes the reclamation proposed for the Emma pit. What is the proposed reclamation of areas located below potentially acid generating ("PAG") highwalls?*

See Tyrone's response to MMD's Comment 6 on the Emma Application response letter dated May 23, 2022.

14. *Section 5.0, Reclamation Plan, pages 24-30 of the CCP proposes reclamation for the Emma stockpiles, Emma pit, borrow areas, haul roads and other areas of the Emma Project. Appendix A, Reclamation Design Drawings depicts the proposed reclamation area of the Emma Project. Although, in aggregate the reclamation drawings show all of the proposed revegetated areas, MMD requests a single plan-view drawing of the Emma Project area showing the Emma stockpiles, Emma pit, and the other Emma disturbed areas features, with all proposed revegetated areas to be in a single color-shade, similar to Sheet 12 of the Reclamation Design Drawings in Appendix A of Updated Closure/Closeout Plan for the Little Rock Mine, as revised, dated March 31, 2022.*

Tyrone will submit a new single plan-view figure of the Emma Project area showing the Emma stockpiles, Emma pit, and the other Emma disturbed areas features, with all proposed revegetated areas in a single color-shade after additional comments are received.

15. *Section 5.1.2.1, General Stockpile Reclamation Activities, page 25 of the CCP describes the reclamation of the Emma EMW and 6HW stockpiles, specifically, regarding the placement of 12 inches of soils from the Soil Stockpile over areas to be reclaimed (for FA purposes only). See Comment 4 above. Additionally, see MMD comments on Appendix D, Characterization of Suitable Soils and Overburden and Soil Salvage Plan for the Emma Expansion Project, of the CCP.*

See Tyrone's response to Comment 4 and comments on Appendix D.

16. *Section 5.2.2, (Emma Pit) Planned Closure/Closeout Activities, page 26-27 of the CCP; Figure 3-2, Emma Predicted Open Pit Surface Drainage Area; Figure 7-1, Proposed Post-Mining Land Use and Waiver Areas; and Appendix A, Drawing 003,*

General Arrangement Post-Closure, of the CCP, provides details for the reclamation of the Emma pit. Figure 3-2 depicts the area in the Emma pit where PAG may be found in the Emma pit. This area appears to be consistent with an Emma pit area shown in Drawing 003 that will not be revegetated during reclamation of the Emma pit. However, Figure 7-1 shows this area, with the exception of the Mine North Area, as having a wildlife post-mining land use ("PMLU"). Please explain how the area surrounding the Main North Area in the Emma pit shown in Figure 7-1 will meet a proposed wildlife PMLU, when Appendix A Drawing 003 shows this area will not be revegetated and the area is located in an area of PAG rocks shown in Figure 3-2.

See Tyrone's response to Comment 6 in Emma Application response letter dated May 23, 2022.

17. *Section 5.6, Water Management and Treatment Plan, pages 29-30 of the CCP states that Tyrone will pump the Emma pit sump during the post-closure period. 19.10.5.507.A NMAC requires the permit area will achieve a PMLU or a self-sustaining ecosystem. Please explain how the Emma pit sump will meet the requirements of 19.10.5.507.A NMAC. A PMLU may involve active management of the land.*

See Tyrone's response to Comment 6 on the Emma Application response letter dated May 23, 2022.

18. *Section 5.5, Borrow Areas, page 29 of the CCP describes the reclamation of the Soil Stockpile and the EMW Waste stockpile. See Comment 4 above and MMD comments on Appendix D.*

See Tyrone's response to Comment 4.

19. *Section 5.6 Water Management and Treatment Plan, pages 29-30 of the CCP describes the proposed plan for ground water and surface water management and treatment during the post-closure period for the Emma pit including the proposed Emma pit sump. The Emma pit sump is proposed to be nominally approximately 0.62 acres in size except during storm events where the sump may increase to approximately 0.85 acres in size. MMD recommends minimizing the size of the sump further, if practicable, to reduce the surface area of water exposed in the sump that may exceed state water quality standards.*

See Tyrone's response to New Mexico Department of Game and Fish comment in the Emma Application response letter dated May 23, 2022.

20. *Section 6.0, Closure and Post-Closure Monitoring, Reporting, and Contingency Plans, pages 30-31 of the CCP states that Tyrone will submit to MMD and NMED semi-*

annual reports summarizing reclamation and post-closure activities each year. MMD supports Tyrone's commitment to submit these reports in addition to the other reports required by Permit No. GR010RE.

No response required.

21. *Section 6.6, Public Health and Safety, page 34 of the CCP describes Tyrone's efforts to provide for public safety in and around the Emma pit and other Emma Project areas. Please refer to MMD Comments 9 and 16 of the April 8, 2022 MMD Comment letter on the Tyrone Emma Project Revision 21-1 Application (copy attached).*

See Tyrone's responses to Comments 9 and 16 in the Emma Application response letter dated May 23, 2022.

22. *Section 7.0, Post-Mining Land Use Designation pages 34-35 of the CCP and Section 7.1, Wildlife Habitat Post-Mining Land Use, page 35-36 of the CCP states that the Emma pit highwalls and benches would provide cliff habitat and the proposed revegetated areas would support terrestrial wildlife. See Comment 16 above.*

See Tyrone's responses to Comment 16.

23. *Section 8.0, Capital and Operation and Maintenance Cost Estimates, pages 38-41 of the CCP; Appendix B, Earthwork Cost Basis Document; and Excel Cost Estimate Spreadsheets 20210012_Emma_Stockpile_Earthwork_RCE.xlsm.*
a. *Please update all labor and equipment rates to 2022 values.*

Tyrone will provide an updated cost estimate after additional comments are received.

- b. *The Equipment Watch user adjustment for the mechanics wage is the hourly rate for a Group I-Unskilled Laborer. MMD believes that the appropriate hourly rate used should be for a Group III-Skilled Laborer instead. Please justify the use of the Group I-Unskilled Laborer rate over the other laborer Groups' hourly rate using the New Mexico Administrative Code or change the hourly rate for the mechanics wage to the Group III-Skilled Laborer rate.*

Tyrone will provide an updated cost estimate after additional comments are received.

- c. *The Cost Estimate uses the Group VI-Operator hourly rate for the EX3600-5 shovel. According to the New Mexico Administrative Code Section 11.1.2.18.AH, the Group-VIII-Labor rate should be used for shovels. Please*

change the labor rate used in the Cost Estimate for the EX3600-5 to the Group VIII rate.

Tyrone will provide an updated cost estimate after additional comments are received.

Tables

24. *Table 2-2, Summary of Emma Project Related Permits of the CCP. Please refer to MMD Comments 3 and 4 of the April 8, 2022 MMD Comment letter on the Tyrone Emma Project Revision 21-1 Application (copy attached).*

See Tyrone's response to Comments 3 and 4 in the Emma Application response letter dated May 23, 2022.

25. *Table 3-3 of the CCP Interim Seed Mix for Stockpiled Soil Materials at Emma. MMD recommends that if the Stockpile Soil Materials are seeded in the late summer or fall, seeding with an annual cover crop grass species such a winter wheat, triticale, rye, or barley alone as fast establishing cover crops followed by seeding with the Tyrone reclamation seed mix approved in Appendix C of Revision 09-1 (at the approved Tyrone reclamation seeding rate) the following spring. Depending on local conditions and rainfall 8-20 lbs./ac are recommended as a cover crop seeding rate. A seeding rate of 3.10 lbs./ac using the Interim Seed Mix shown in Table 3-3 proposed would be considered insufficient. If seeding of the Stockpiled Soil Material will be done in the spring or early summer MMD recommends seeding with the approved Tyrone reclamation seed mix at the approved Tyrone reclamation seeding rate without the cover crop seed. In all of the aforementioned seeding scenarios, an application of approved mulch is recommended directly after seed mix application.*

Tyrone will broadcast a winter-hardy annual cereal grain on the Soil Stockpile if it is completed in late summer or fall. Tyrone will target a seeding rate of approximately 12 lbs/ac for the annual cover crop. Because the interim seeding of the Soil Stockpile is not a permanent reclamation seeding, Tyrone has increased the seed density of the interim drill seed mix to 40 seeds per square foot (3.87 lbs/ac) and has selected primarily herbaceous plant species that are commonly available to provide more rapid canopy cover. The text will be modified to include the application of 2 tons/ac of straw mulch following the interim seeding operation.

26. *Table 7-1, Proposed Interim Seed Mix and Rates for the Emma Project Reclamation Sites of the CCP. Dalea candida, White Prairie Clover is listed as a shrub species in the Primary seed mix. It should be listed as a forb.*

Tyrone appreciates this correction.

Figures

27. *Figure 1-3, Proposed Expansion of Existing Tyrone Mine Permit and Design Limit Boundary Associated with the Emma Project of the CCP. MMD recommends depicting contour intervals in this drawing.*

Tyrone will update Figure 1-3.

28. *Figure 7-1, Proposed Post-Mining Land Use and Waiver Areas of the CCP. See Comment 16 above.*

Tyrone will update Figure 7-1.

Appendix A. Reclamation Design Drawings

29. *Appendix A, Drawing 006, EMW Waste Stockpile Closure Plan of the CCP. Please clearly depict the pre-mining watercourse of the Oak Grove Wash on this drawing. Also please indicate the projected flow of stormwater from the EMW Waste stockpile east draining energy dissipater.*

Tyrone will update Drawing 006.

30. *Appendix A, Drawing 008, 6HW Waste Stockpile Closure Plan of the CCP. How will the 6HW stormwater down drain interface with the existing reclaimed 7A waste stockpile stormwater drainage system?*

Details on the 6HW stormwater down drain interface with the existing reclaimed 7A waste stockpile stormwater drainage system, will be provided on updated Drawing 011.

31. *Appendix A, Drawing 010, Haul Road Closure Plan of the CCP. Please clearly depict the pre-mining watercourse of the Oak Grove Wash on this drawing.*

Tyrone will update Drawing 010.

Appendix D. Characterization of Suitable Soils and Overburden and Soil Salvage Plan for the Emma Expansion Project

32. *Appendix D, Section 3.1 Soil Survey, page 4 of the CCP states that larger rock fragments (> 75 mm) were removed from the soil samples. Table 6, Physical and Fertility Characteristics of Native Soils at Emma show Coarse Fragments (% by weight) of the soil samples. Please explain how the Coarse Fragments in Table 6 were derived.*

Appendix D, Table 1 in the CCP provides the laboratory testing procedures for the soil samples collected characterization including rock fragment (>2mm) using a dry sieve (No. 10)/gravimetric approach. The dry sieve gravimetric rock content (% by weight) is provided in Table 6.

33. *Appendix D, Section 4.2, NPAG Overburden Materials, page 11 states that drill hole samples, with a few exceptions, were taken from the first 100 feet of core. MMD believes that the samples taken from these depth intervals may not be completely representative of the NPAG overburden, particularly at intervals deeper than 140 feet deep and that additional sampling is needed.*

Per Section 3.2 of Appendix D, core logs from 2018 and 2019 exploratory drill holes were reviewed and samples were selected representing various NPAG overburden materials that were spatially distributed across the proposed Emma Pit. The core logs provide detailed geological descriptions of each 10-foot interval including lithology, copper mineralization and ore code (i.e., leach cap, oxide, or sulfide), presence of pyrite, and copper content. Golder selected overburden samples for soil suitability laboratory testing from available core intervals that had no observable copper mineralization or evidence of pyrite in the upper geological profile to 150 feet below the ground surface.

Precambrian Granite and aplite are the dominant rock types along with other granitic overburden materials to depths of 400 feet that would be segregated and stockpiled as NPAG, per the Material Handling Plan (MHP) for the Emma Project (Life Cycle Geo 2021). The MHP documents characterization of 40 waste rock samples for acid base accounting and short-term leach characteristics. Roughly 50% of these samples (19) were collected at depth intervals between 150 and 400 feet. Furthermore, 11 of these samples were classified as NPAG using the established PAG/NPAG threshold based on total sulfur. These samples will not become acid-generating and indicate negligible metal leachability at neutral pH. Per the MHP, additional testing during mining is proposed to segregate NPAG overburden for stockpiling in the 6HW Waste and EMW Waste stockpiles.

34. *Appendix D, Section 4.3 Chemical and Physical Characterization Data, page 12 states that pulped samples from 2018 core samples of NPAG materials were medium-textured silt loams are not considered representative of the waste that would be generated during mining and further, that rock content of the core samples was not evaluated. Footnote 2 of Table 7, Physical and Fertility Characteristics of NPAG Overburden states that texture may not be representative for pulped 2018 drill core samples. How does the texture of the core samples translate to final texture of the proposed NPAG Overburden to be used at reclamation? MMD is concerned that the textural and rock fragment characterization and chemical characterization of the NPAG material proposed as a component of a vegetative cover system is incomplete. MMD considers*

these physical characteristics as a critical factor for the successful revegetation of the disturbed areas at the Tyrone. Therefore, MMD will require that additional chemical and physical characterization including texture and rock fragment content of the NPAG overburden be performed on run of mine NPAG overburden from the Emma Project area. In addition, MMD will require test plots to demonstrate that the proposed vegetative cover of a one-foot-thick layer of salvage soil over the NPAG waste rock from the Emma Project will be successful in establishing vegetation. See Comment 4 above and Comments 35 and 36.

Pulped samples from 2018 are not representative because they were crushed to pass a #60 sieve for metallurgical analyses.

During mining operations, Tyrone will collect samples of run of mine NPAG overburden from the Emma Project area for additional chemical and physical characterization including texture and rock fragment content. See Tyrone's responses to comments 4, 35 and 36.

35. *Appendix D, Table 6, Physical and Fertility Characteristics of Native Soils at Emma, page 13; and Table 7, Physical and Fertility Characteristics of NPAG Overburden, page 14. The native soils and the NPAG overburden should also be analyzed for Bulk Density and Available Water Holding Capacity.*

Tyrone does not believe soil bulk density is a necessary parameter to understand soil suitability especially for materials that will be subject to significant physical changes with salvage and excavation, stockpiling, and then redistributing as part of the cover placement operations.

Available water holding capacity is typically evaluated under the Copper Rule. Tyrone has completed this testing on Precambrian granite representative of Emma geologic materials in work completed for Little Rock.

36. *Appendix D, Table 8, Chemical Characteristics of Selected Native Soils, page 15 shows that the Soil Pedon ESS-E2 for the Fluvents (FLUV) were not tested for Sulfur Forms and ABA. FLUV soils are proposed to contribute a relatively large volume of salvageable Soils (Table 11, Estimated Volume of Salvageable Soils). Please explain why the ESS_E2 FLUV soil sample was not tested for these chemical characteristics.*

Golder followed standard practices associated with soil survey and suitability analysis that has been used at other mine sites including Tyrone. Soil samples were selected for acid-base accounting (and extractable metals per comment 37) focusing primarily on samples with a saturated paste pH less than 6, but also capturing soils with a more neutral pH. All samples tested have low total sulfur (<0.1%) and positive ABA for soil

pH ranging from 4.7 to 6.8. We anticipate the ESS-E2 would have similar results given its pH of 6.1. Soil sample S1 (also mapped as FLUV) is correlated with ESS-E2 and had low total sulfur (0.10%).

37. *Appendix D, Table 10, Extractable Metals in NPAG Overburden and Selected Native Soil Samples, page 17 shows that Soil Pedon ESS-E2 FLUV was not tested for extractable metals. Please explain why this soil was not tested for these chemical characteristics.*

See Tyrone's response to Comment 36. AB-DTPA extractable metals was conducted primarily on samples with lower pH values that are expected to have higher concentrations of extractable metals.

38. *Appendix D, Table 12, Interim Seed Mix for Stockpiled Soil Materials, page 20. See Comment 25 above.*

See Tyrone's response to Comment 25.

Below are Tyrone's responses to Community Related Comments.

Lighting Study

1. *Section 3.0, Project Impacts, page 5, states that considering that the closest residential receptor will be approximately a mile away from the Emma Project during initial phases of the project while at ground level, lighting will be visible at receptors located to the south of the project for less than one year. Please provide a conceptual arrangement for the lighting systems that will be used during the initial phases (during the first year) of the project on a drawing of the Emma Project area.*

During the first year, Tyrone will primarily be working day shift, approximately 6am to 6pm (haul road construction, soil salvaging, etc.). The use of nighttime lighting will be limited during the first year of mining, (ex. pit and stockpile development).

Attached is a figure showing the conceptual arrangement for the lighting systems that will be used during the initial phases (during the first year of mining) of the project. Please note that the lighting equipment will be mobile, and locations will change as mining and stockpile development progresses.

The EMW Waste stockpile will generally be developed from the bottom/toe up. As a result, most of the light sources from EMW Waste stockpile will not be visible to the residents located south of Emma project during the first year of mining (there is a ridge to the south of the stockpile blocking their initial views).

2. *Section 4.0, Mitigation, page 5, states that no mitigation measures are deemed necessary, assuming that the use of best lighting practices are implemented. Are there best lighting practices in addition to the shielding of light fixtures downward and scheduling controls mentioned in Section 3.0, Project Impacts? In addition, if light trespass occurs for residential receptors, what will be the measures used to mitigate the light trespass?*

The *Lighting Study-Emma Expansion Project* states, “Given that the closest residential receptor will be approximately a mile away from Emma, no light trespass is anticipated at that distance” and “Overall, it is anticipated that new visual light sources will be evident to nearby viewers, but would not increase the overall perceived light levels, maintaining current nighttime viewing conditions anticipated for a rural setting”.

Tyrone already utilizes best practices for night lighting because Tyrone invites and receives open communications with neighbors to acknowledge and address their concerns, solve problems, and mitigate or remedy impacts, including nighttime light matters. Remedies may include, but are not be limited to, automated lighting, minimizing blue light emissions, shielding, and pointing lighting downward to the greatest extent possible while maintaining mine worker safety. Tyrone has a successful track record in responding to neighbor concerns.

Viewshed Analysis

1. *Section 3.0, Project Impacts, page 4 states the desktop viewshed analysis determined that portions of both SR 90 and the proposed re-alignment of the county road will have direct line-of-sight to newly constructed features within the proposed Emma permit boundary. Figure 2-1, Viewshed Analysis Overview – Observer Points, shows Simulated Observer points overlying a topographic map of the proposed Emma Project. Were the Simulated Observer points ground truthed to confirm the modeling results?*

Yes, consultants and employees of Tyrone have spent time in surrounding areas and at the project site and have confirmed that the existing terrain is represented well in the model. However, it is not possible at this point in time to ground truth the viewshed analysis completely since the mine features planned for the Emma Project have not been constructed.

Noise Study

1. *Section 4.0, Noise Modeling Methodology, page 8 states that the model predicted the maximum noise levels produced during Emma operations using expected noise sources from mining operations and haul road traffic in year 4 of operations. Were blasting operations considered in the Noise Model? If not, please explain why.*

Noise was monitored at the site as part of this study and included all mine related activities. Blasting was not included in the noise model, consistent with standard practice for similar studies around mines. Blasting is an instantaneous noise event (short duration, typically less than a second) that would have no impact on noise levels over a time weighted average and would be well below any instantaneous noise thresholds for health concerns.

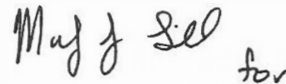
2. *Section 8.0, Mitigation, page 20 states that no significant adverse impacts to the closest NSA's (noise sensitive areas) were identified and no mitigation measures are necessary assuming that the use of best practices for operation and maintenance of noise generating equipment is implemented. Will noise be monitored and/or confirming noise surveys be implemented during Emma Project mining operations?*

The results presented in Table 10 of the Noise Study demonstrate that the modeled noise at Emma will be well below EPA and HUD guidelines for interference with human activities both outside and inside residences and buildings. The study also states, "The Emma Project, therefore, is unlikely to generate nuisance complaints or excessive noise negatively impacting the surrounding area" (See Noise Study-Emma Expansion Project).

Based on the results of the study and many years of prior experience, there is no need for additional noise surveys or monitoring. However, Tyrone invites open communication with neighbors, investigates concerns, and works with community members to acknowledge and address their concerns, solve problems, and mitigate or remedy impacts, including noise concerns.

Please contact Ms. Mandy Lilla at (575) 912-5388 if you have questions.

Sincerely,

Handwritten signature of Thomas L. Shelley in cursive, with the word "for" written below it.

Thomas L. Shelley
Environmental Manager
Environmental Services

TLS:rmr
Attachment
20220609-101

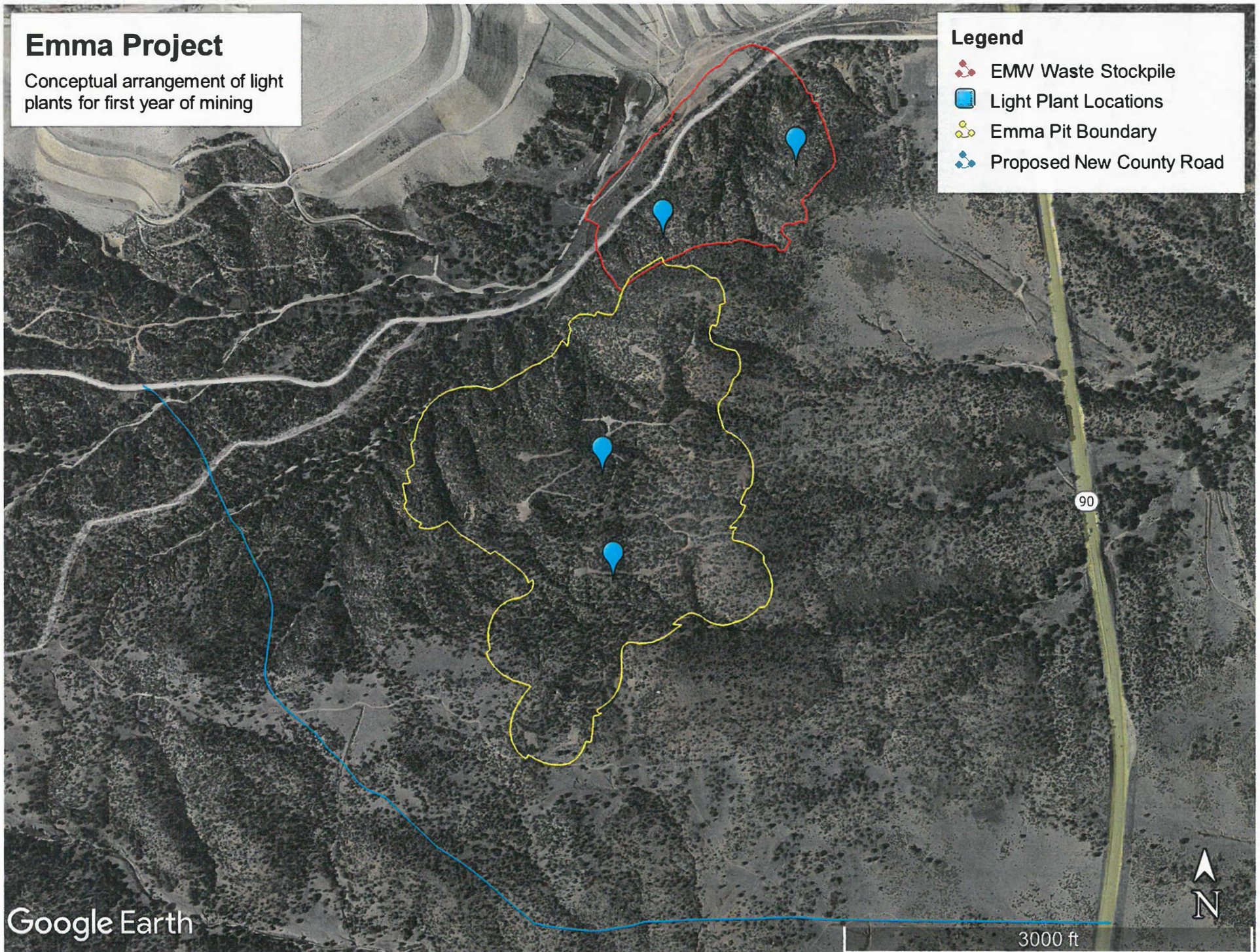
c. Holland Shepherd – MMD

Emma Project

Conceptual arrangement of light plants for first year of mining

Legend

-  EMW Waste Stockpile
-  Light Plant Locations
-  Emma Pit Boundary
-  Proposed New County Road



Note. Lighting equipment will be mobile and locations will change as mining and stockpile development progresses