

State of New Mexico
Energy, Minerals and Natural Resources Department

Michelle Lujan Grisham
Governor

Melanie A. Kenderdine
Cabinet Secretary

Ben Shelton
Acting Deputy Secretary

Albert Chang, Director
Mining and Minerals Division



Electronic Transmission
September 24, 2024

Joe Kizis
Southern Silver Exploration Corp. (U.S.)
4790 Caughlin Pkway, #207
Reno, NV 89519-0907

RE: Agency Review Comments and Request for Additional Information, Turquoise Mountain Project, Regular Exploration Modification Application, Permit No. GR087ER, Modification 24-1 – Grant County, New Mexico

Dear Mr. Kizis,

The New Mexico Mining and Minerals Division (“MMD”) has reviewed the Permit Modification Application Package (“PAP”), for a regular exploration permit modification, submitted by Southern Silver Exploration Corp. (U.S.), (“Southern Silver”), under Subpart 4 of the New Mexico Mining Act Rules (“Rules”).

Enclosed with this letter are general comments from MMD as well as the reviewing agency comment letters submitted by the following state agencies: the New Mexico Environment Department (“NMED”), the New Mexico Department of Game and Fish (“NMDG&F”), the New Mexico Office of the State Engineer (“NMOSE”), the New Mexico Forestry Division (“NMFD”), and the New Mexico Department of Cultural Affairs - Historic Preservation Division (“NMDCA/HPD”).

General Comments:

MMD has reviewed the PAP and has found it to be *technically incomplete* pending receipt of acceptable supplemental information identified in this letter. **Please respond no later than 30 days of receipt of this letter, to the information requested.**

MMD has conducted a review of the PAP and has the following comments to be addressed in writing:

- Pad I is located partially on a hillslope and within a vegetated arroyo. MMD recommends that the pad be relocated outside of the arroyo area, and due to the hillslope, recommends Southern Silver utilize a track-mounted drill rig capable of operation on a slope to keep grading of the site to a minimum.
- MMD notes that previously permitted drill pads A, B, D, E, F & H have all been fully constructed along with mud pits, but only two drill pads have been drilled since the original permit was issued. MMD requests that Southern Silver only construct future drill pads and mud pits considered under this modification during the drilling season in which they are to be utilized.

Agency Review Comments and Request for Additional Information, Turquoise Mountain Project, Regular Exploration Modification Application, Permit No. GR087EM Modification 24-1 – Grant County, New Mexico

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This is to prevent unnecessary disturbances and issues associated with mud pits being left open for long periods of time.

- Several individual night-blooming cereus (*Peniocereus greggii*), a species designated by the State of New Mexico as endangered, were identified in the vicinity of two proposed drill pads (Pads N & Q). Night-blooming cereus (“NBC”) were previously identified near existing drill pads 21-BB & 21-F, and an avoidance plan was approved in January 2022 that included a minimum avoidance distance of 30 meters (~100 feet) and fencing surrounding each individual with a minimum diameter of 5 feet. During the site visit conducted June 21, 2024, it was noted that the identified NBC were approximately 15 meters (~50 feet) from the edge of the proposed drill pads N & Q, and no rationale for the deviation from the avoidance plan approved in 2022 has been given. MMD requests that protocol approved for the original scope of work be followed with a minimum avoidance distance of 30 meters (~100 feet) maintained for all identified NBC and the installation of protective fencing around each individual.

NMED Mining Environmental Compliance Section, Ground Water Quality Bureau Comments (“MECS”)

Please review the comment letter received by NMED MECS Ground Water Quality and respond to the following concerns.

NMED Surface Water Quality Bureau Comments:

Please review the comment letter received by NMED Surface Water Quality Bureau and respond to the following concerns.

NMED Air Quality Bureau Comments:

Please review the comment letter received by NMED Air Quality Bureau and respond to the following concerns.

NMDG&F Comments:

Please review the comment letter received by NMDG&F and respond to the following concerns.

NMOSE Comments:

Please review the comment letter received by NMOSE and respond to the following concerns.

NMFD Comments:

Please review the comment letter received by NMFD and respond to the following concerns.

NMDCA/HPD Comments:

Please review the comment letter received by NMDCA/HPD and respond to the following concerns.

Should you have any questions, comments, would like to schedule a meeting, or require additional information concerning this letter, please contact me at (505) 470-5354, or via email at kevin.barnes@emnrd.nm.gov.

**Agency Review Comments and Request for Additional Information, Turquoise Mountain Project, Regular
Exploration Modification Application, Permit No. GR087EM Modification 24-1 – Grant County, New
Mexico**

September 24, 2024

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Sincerely,

A handwritten signature in blue ink, appearing to read "Kevin Barnes", with a long horizontal flourish extending to the right.

Kevin Barnes, Permit Lead
Mining Act Reclamation Program ("MARF")

Enclosures:

Agency Comment Letters

Cc w/o enclosures:

David "DJ" Ennis, Program Manager, MARF/MMD
Mine File (GR087ER)



Electronic Transmission

MEMORANDUM

Date: July 18, 2024

To: David Ennis, Program Manager, Mining Act Reclamation Program

Through: Amber Rheubottom, Acting Mining Act Coordinator, Mining Environmental Compliance Section (MECS)

From: Davena Crosley, Surface Water Quality Bureau (SWQB)
Sufi Mustafa, Air Quality Bureau (aqb)
Sean Madden, MECS

Subject: **New Mexico Environment Department (NMED) Comments, Turquoise Mountain Project, Regular Exploration Permit Application, Grant County, Mining Act Permit No. GR087ER**

The New Mexico Environment Department (NMED) received correspondence from the Mining and Minerals Division (MMD) on May 6, 2024, requesting that NMED review and provide comments on the above-referenced MMD permitting action. MMD requested comments on the application within 20 days of receipt of the request for comments. An extension was requested and granted until July 18, 2024.

Background

Southern Silver (Applicant) proposes to renew the regular exploration permit to drill 17 holes, on 13 drill pads. This site is located approximately 50 miles southwest of Deming, New Mexico.

Air Quality Bureau

The AQB comments are attached.

Surface Water Quality Bureau

The SWQB comments are attached.

Mr. David Ennis
Turquoise Mountain
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Mining Environmental Compliance Section

The MECS has no comments.

NMED Summary Comment

NMED has determined the proposed Turquoise Mountain minimal impact exploration project will be protective of the environment if done in accordance with the approved permits and pollution controls as presented.

If you have any questions, please contact Amber Rheubottom at (505) 660-2379.

cc: Joseph Fox, Program Manager, NMED-MECS
Shelly Lemon, Bureau Chief, NMED-SWQB
Dana Bahar, Acting Bureau Chief, NMED-AQB
Kevin Barnes, EMNRD-MARP



MEMORANDUM

DATE: May 17, 2024

TO: Anne Maurer, Mining Environmental Compliance Section, Groundwater Quality Bureau

FROM: Davena Crosley, Watershed Protection Section, Surface Water Quality Bureau

SUBJECT: **Request for Review and Comment, Turquoise Mountain Project, Regular Exploration Permit Application, Grant County, New Mexico Mining Act Permit No. GR087ER**

The New Mexico Environment Department (NMED)-Surface Water Quality Bureau (SWQB) received the subject request for comments on May 8, 2024, regarding a permit application submitted by Southern Silver Exploration Corp. (Applicant) for modification of a regular exploration permit. The project is located in Grant County, approximately 5 air miles west of Hachita on a mix of private, State and Federal lands. The project proposes to bore up to 17, 3-3/8-inch diameter holes to a maximum depth of 3300 feet from thirteen, 60' x 100' drill pads to explore for gold, silver, copper, lead, zinc, molybdenum, and other associated minerals disturbing 1.8 acres for drill sites and 0.03 acres of laydown area. Existing roads will be utilized to access drill locations, however overland travel will disturb an additional 1.6 acres. Total project disturbance is estimated at 3.43 acres. No drilling is proposed within 100 feet of any perennial, intermittent, or ephemeral stream. SWQB is providing the following comments pursuant to 19.10.4 New Mexico Administrative Code (NMAC):

This project will disturb one or more acres and storm water discharges may be covered under both/either the U.S. Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) or under the Multi-Sector General Permit (MSGP) under Sector G Metal Mining. The Applicant must contact the EPA to determine whether this project is subject to NPDES permitting. For the MSGP, contact Nasim Jahan (jahan.nasim@epa.gov), (214) 665-7522. For the CGP, contact Suzanna Perea (perea.suzanna@epa.gov), (214) 665-7217. Additional information about the NPDES program for EPA Region 6 is available online: <https://www.epa.gov/npdes-permits/npdes-stormwater-program-region-6>.

This project is located near unnamed arroyos which are subject to New Mexico surface water quality standards at 20.6.4.13 NMAC and 20.6.4.98 NMAC and have designated uses for livestock watering, wildlife habitat, marginal warmwater aquatic life, and primary contact. Surface waters of the state shall be free of any water contaminant in such quantity and of such duration as may with reasonable probability injure human health, animal or plant life or property, or unreasonably interfere with the public welfare or the use of property (20.6.4.13 NMAC). Mine exploration activities that have the potential to contribute pollutants to waters of the state must be implemented with appropriate and reasonable Best Management Practices (BMPs) in order to prevent impacts to water quality. Any discharge of a water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human

health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property, must be reported to the Environment Department within twenty-four hours (20.6.2.1203 NMAC).

Appropriate and reasonable BMPs include, but are not limited to, the following:

- BMPs proposed in the application, including:
 - No drilling within any channels of any perennial, intermittent, or ephemeral streams.
 - Channel crossings will be sloped on the banks to allow the stream to slow down through road crossings during heavy rains minimizing erosional damage.
 - Drill pads will be kept to a minimum size while still allowing workers to operate safely. Any cuts will be gently sloped taking into consideration the elevation, gradient, and the size of the drill pad.
 - Diverting storm water runoff with water bars, drainage channels, rip rap, and other acceptable manmade materials such as waddles, silt fencing, and straw bales might also be used to control storm runoff.
 - Reseeding disturbed areas is planned as part of the reclamation process.
- Spill clean-up materials such as absorbent pads must be available on-site at all times during road construction, site preparations, and drilling activities to address potential spills.
- Fuel, oil, hydraulic fluid, lubricants, and other petrochemicals must have a secondary containment system to prevent spills. Store these materials outside of the flood-prone zone.
- Process water must be contained within a closed-loop system or lined pits. A discharge of process water may require a discharge permit from NMED or the U.S. Environmental Protection Agency.
- Sump pits may not be used as disposal sites for oil, gas, grease or other potential contaminants to surface and ground water.
- Drilling cores must be collected and disposed of properly.
- Pressure wash and/or steam clean all mobile equipment used in the project area before the start of the project and inspect daily for leaks. A written log of inspections and maintenance should be completed.
- The use of overland travel and site selection, design, and construction of drill pads, reserve pits, and roads should comply with the guidelines described in the Bureau of Land Management "Gold Book"¹. Suspend construction, maintenance activities, or off-road travel during periods when the soil is too wet to adequately support heavy equipment without causing surface disturbance. The operator should commit to repair any surface disturbance they caused.
- Implement Best Management Practices to prevent direct impacts to watercourses, including springs, wetlands, and arroyos. For temporary surface disturbances during exploration and

¹ <https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/operations-and-production/the-gold-book>

reclamation activities, the operator should implement erosion control measures that are designed, constructed, and maintained using professionally recognized standards (e.g., Natural Resource Conservation Service standards, the Bureau of Land Management “Gold Book”, or the National Best Management Practices for Water Quality on National Forest System Lands).

- The applicant should ensure that stormwater entering the project area (“run-on”) is diverted from soil storage piles and should place piles uphill of excavations when possible.
- Roads, pads, and other facility structures should be set back a minimum of 100 feet from any watercourses, including springs, wetlands, and arroyos.

If you have any questions, please contact Davena Crosley at davena.crosley@env.nm.gov or by phone at (575) 956-1545.



MEMORANDUM

DATE: July 17, 2024

TO: Amber Rheubottom, Acting Mining Act Team Leader, Mining Environmental Compliance Section, NMED

FROM: Sufi Mustafa, Staff Manager, Air Dispersion Modeling and Emission Inventory Section, Air Quality Bureau.

Request for Review and Comment, Turquoise Mountain Project, Regular Exploration Permit Application, Grant County, New Mexico Mining Act Permit No. GR087ER

The New Mexico Air Quality Bureau (AQB) has completed its review of the above-mentioned mining project. Pursuant to the New Mexico Mining Act Rules, the AQB provides the following comments.

Details

Southern Silver Exploration Corporation will explore for minerals by drilling at various sites. The exploration will entail the creation of 13 drill pads, drilling 17 holes, creating mud pits, and improving road grading. Total disturbed area will be less than 3.5 acres. The applicant did not propose processing of mined material on site.

Air Quality Requirements

The New Mexico Mining Act of 1993 states that "Nothing in the New Mexico Mining Act shall supersede current or future requirements and standards of any other applicable federal or state law." Thus, the applicant is expected to comply with all requirements of federal and state laws pertaining to air quality.

20.2.15 NMAC, *Pumice, Mica and Perlite Processing*. Including 20.2.15.110 NMAC, *Other*

Particulate Control: "The owner or operator of pumice, mica or perlite process equipment shall not permit, cause, suffer or allow any material to be handled, transported, stored or disposed of or a building or road to be used, constructed, altered or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne."

Request for Review and Comment, Turquoise Mountain Project, Regular Exploration Permit Application, Grant County, New Mexico Mining Act Permit No. GR087ER

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Paragraph (1) of Subsection A of 20.2.72.200 NMAC, *Application for Construction, Modification, NSPS, and NESHAP - Permits and Revisions*, states that air quality permits must be obtained by:

“Any person constructing a stationary source which has a potential emission rate greater than 10 pounds per hour or 25 tons per year of any regulated air contaminant for which there is a National or New Mexico Ambient Air Quality Standard. If the specified threshold in this subsection is exceeded for any one regulated air contaminant, all regulated air contaminants with National or New Mexico Ambient Air Quality Standards emitted are subject to permit review.”

Further, Paragraph (3) of this subsection states that air quality permits must be obtained by:

“Any person constructing or modifying any source or installing any equipment which is subject to 20.2.77 NMAC, *New Source Performance Standards*, 20.2.78 NMAC, *Emission Standards for Hazardous Air Pollutants*, or any other New Mexico Air Quality Control Regulation which contains emission limitations for any regulated air contaminant.”

Also, Paragraph (1) of Subsection A of 20.2.73.200 NMAC, *Notice of Intent*, states that:

“Any owner or operator intending to construct a new stationary source which has a potential emission rate greater than 10 tons per year of any regulated air contaminant or 1 ton per year of lead shall file a notice of intent with the department.”

The above is not intended to be an exhaustive list of all requirements that could apply. The applicant should be aware that this evaluation does not supersede the requirements of any current federal or state air quality requirement.

Fugitive Dust

Air emissions from this project should be evaluated to determine if an air quality permit is required pursuant to 20.2.72.200.A NMAC (e.g. 10 lb/hour or 25 TPY). Fugitive dust is a common problem at mining sites and this project will temporarily impact air quality as a result of these emissions. However, with the appropriate dust control measures in place, the increased levels should be minimal. Disturbed surface areas, within and adjacent to the project area, should be reclaimed to avoid long-term problems with erosion and fugitive dust. EPA’s *Compilation of Air Pollutant Emission Factors, AP-42, “Miscellaneous Sources”* lists a variety of control strategies that can be included in a comprehensive facility dust control plan. A few possible control strategies are listed below:

Request for Review and Comment, Turquoise Mountain Project, Regular Exploration Permit Application, Grant County, New Mexico Mining Act Permit No. GR087ER

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Paved roads: covering of loads in trucks to eliminate truck spillage, paving of access areas to sites, vacuum sweeping, water flushing, and broom sweeping and flushing.

Material handling: wind speed reduction and wet suppression, including watering and application of surfactants (wet suppression should not confound track out problems).

Bulldozing: wet suppression of materials to “optimum moisture” for compaction.

Scraping: wet suppression of scraper travel routes.

Storage piles: enclosure or covering of piles, application of surfactants.

Miscellaneous fugitive dust sources: watering, application of surfactants or reduction of surface wind speed with windbreaks or source enclosures.

Recommendation

The Air Quality Bureau does not have any objection to this project.

This written evaluation does not supersede the applicability of any forthcoming state or federal regulations.

If you have any questions, please contact me at 505 629 6186.



DIRECTOR AND SECRETARY
TO THE COMMISSION
Michael B. Sloane

STATE OF NEW MEXICO
DEPARTMENT OF GAME & FISH

One Wildlife Way, Santa Fe, NM 87507

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Silver City

12 July 2024

Kevin Barnes, Permit Lead
Mining Act Reclamation Program (MARP)
Mining and Minerals Division (MMD)
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: Regular Exploration Permit Modification Application, Turquoise Mountain Project, Grant County, New Mexico, Permit No. GR087ER; NMDGF Project No. NMERT-3483.

Dear Mr. Barnes,

The New Mexico Department of Game and Fish (Department) has reviewed the above referenced exploration project submitted by Southern Silver Exploration Corporation (Southern Silver). Southern Silver is proposing to drill 17 exploratory holes across 13 drill pad sites. The depth of the holes is not anticipated to exceed 3,300 feet. The exploration project will be in 1) Sections 26, 27, 28, and 35 in Township 27S, Range 16W; 2) Sections 1, 2, and 3 in Township 28S, Range 16W; and 3) Section 6 in Township 28S, Range 15W. The total area that will be disturbed by proposed activities is approximately 3.43 acres. Staff from the Department were unable to attend the site inspection conducted on 21 June 2024.

To minimize the likelihood of adverse impacts to migratory bird nests, eggs, or nestlings during project construction, the Department recommends that ground disturbance and vegetation removal activities be conducted outside of the primary breeding season. That season is 1 March – 1 September for migratory songbirds and most raptors; for golden eagle (*Aquila chrysaetos canadensis*) and great horned owl (*Bubo virginianus*) it is 1 January – 15 July. If ground disturbing and clearing activities must be conducted during the breeding season, the area should be surveyed for active nest sites (with birds or eggs present in the nesting territory) and avoid disturbing active nests until young have fledged. For active nests, establish adequate buffer zones to minimize disturbance to nesting birds. Buffer distances should be a minimum of 100 feet from songbird and raven nests; 0.25 miles from most raptor nests; and 0.5 miles for ferruginous hawk (*Buteo regalis*), golden eagle, peregrine falcon (*Falco peregrinus*), and prairie falcon (*Falco mexicanus*) nests. Active nest sites in trees or shrubs that must be removed should be mitigated by qualified biologists or wildlife rehabilitators. Department biologists are available to consult on nest site mitigation and can facilitate contact with qualified personnel.

The Department appreciates and supports Southern Silver's commitment to avoid disturbing banner-tailed kangaroo rat (*Dipodomys spectabilis*) burrow complexes and other wildlife habitat areas during construction of drill sites and overland roads.

The Department strongly recommends the use of a closed loop drilling system. Closed loop systems eliminate the need to build fences or install netting to exclude wildlife from mud pits, reduce the amount of surface disturbance associated with drill pad sites, and consume significantly less water. If Southern Silver ultimately uses mud pits, the Department recommends netting or covering fenced mud pits to exclude birds and bats. If netting is used, the Department recommends extruded plastic, knit, or woven netting with a mesh size of three eighths of an inch to exclude smaller animals. The Department does not support the use of monofilament netting due to its tendency to ensnare wildlife, usually resulting in injury or death. Netting material must be held taught over a rigid and adequately supportive frame to prevent sagging into the mud pits.

It is important to prevent wildlife from entering and becoming trapped in stockpiled pipes used in the drilling process. The Department recommends capping drill pipes as the most effective way to prevent wildlife entry. At a minimum, each section of pipe should be visually inspected prior to use to verify that no wildlife, including small mammals or reptiles, are inside.

The Department also recommends that Southern Silver contact the New Mexico Endangered Plant Program (<https://www.emnrd.nm.gov/sfd/rare-plants/>) of the Energy, Minerals, and Natural Resources Department, regarding potential presence of and conservation needs for state-listed plants. The state endangered and BLM sensitive plant night-blooming cereus cactus (*Peniocereus greggii* var. *greggii*) has been documented near the proposed project area and may need to be considered and/or mitigated for while implementing project drilling activities.

For site reclamation, Southern Silver proposes to use a U.S. Bureau of Land Management (BLM)-specified native seed mix. The Department concurs with the BLM seed mix and suggests including some species designed to enhance local pollinator habitat. The Department also recommends that only certified weed-free seed be used to avoid inadvertently introducing non-native species to the reclamation site. Any alternate plant species, used to substitute for primary plant species that are unavailable at the time of reclamation, should also be native. When possible, the Department recommends using seeds that are sourced from the same region and habitat type as the reclamation site and suggests including seeds from a region that represents potential future climatic conditions at the site.

Thank you for the opportunity to review and comment on the proposed exploration permit modification application. If you have any questions, please contact Ron Kellermueller, Mining and Energy Habitat Specialist, at (505) 270-6612 or ronald.kellermueller@dgf.nm.gov.

Sincerely,

Virginia Seamster, Ph.D.
Assistant Chief for Technical Guidance, Ecological and Environmental Planning Section

cc: USFWS NMES Field Office



STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
Hydrology Bureau



MMD REVIEW MEMORANDUM

DATE: 6/12/2024

TO: Kevin Barnes, Permit Lead, Mining Act Reclamation Program (“MARF”)/MMD

THROUGH: Katie Zemlick, Ph.D., Hydrology Bureau Chief *KHS* for Katie Zemlick

FROM: Christopher E. Angel, PG, Senior Hydrologist, OSE Hydrology Bureau *CEA*

SUBJECT: Review and Comment, Regular Exploration Permit Modification Application, Turquoise Mountain Project, Grant County, New Mexico, Permit No. GR087ER

KEYWORD: Turquoise Mountain Project, District No. III, Grant County, Hatchita GW Basin, Nearest City Hatchita.

ID: MMD_2024_003_GR087ER Turquoise Mountain

INTRODUCTION

The New Mexico Office of the State Engineer (OSE) Hydrology Bureau received the New Mexico Energy, Minerals, and Natural Resources Department (EMNRD) Mining and Minerals Division’s (MMD) May 7, 2024, request for comments on the Modification Application of the Regular Exploration Permit for the Turquoise Mountain Project (Turquoise Mountain). The MMD permit number is GR087ER. The application materials were downloaded from <https://www.emnrd.nm.gov/mmd/mining-act-reclamation-program/pending-and-approvedexploration-applications/pending-exploration-applications-regular/gr087er-turquoise-mountainpart-4/>.

The Turquoise Mountain MMD application was previously reviewed by the OSE Hydrology Bureau (Zemlick, 2021). That review indicated that groundwater will be encountered. As groundwater will be encountered, a WR-07 “*Application for permit to drill a well with no consumptive use of water*” and a WD-08 “*Well plugging plan of operations.*” are required in accordance with the New Mexico Administrative Code (NMAC) 19.27.4 (NMAC, 2017).

General Comments

Wet Boreholes

The Turquoise Mountain MMD application proposes to plug the borehole with “high density bentonite clay”. The OSE has documented that bentonite products may fail in the vadose zone and where contaminated and/or poor-quality water exists (Krambis, 2024). Additionally, the shear strength of high solids bentonite, bentonite chips and pellets may not be able to withstand

hydrostatic forces exerted in the wellbore (Ogden and Ruff, 1993). As the water quality and pressures are unknown and multiple aquifers may be present, cement will need to be placed across all formations in a manner that prevents inter-aquifer exchange, loss of hydraulic head, and/or prevent the contamination of potable water (NMAC 19.27.4). If the groundwater is found to contain sulfates more than 1,500 milligrams/Liter (mg/L) then a high sulfate resistant (HSR) plugging material will be required. The American Society of Testing and Materials (ASTM) Type V cement is a HSR cement (ASTM C150-07, 2007). API Class cements can be designated as HSR depending on the chemical composition of the cement. Additives such as pozzolan may be used to obtain a HSR designation. If applicable, the applicant will need to submit an HSR cement design for approval.

Variance requests can be submitted in writing to the OSE for plugging the borehole with high solids bentonite. A plugging material variance request shall contain information on how the material selected will provide a seal that prevents inter-aquifer exchange, loss of hydraulic head, and/or prevent the contamination of potable water (NMAC 19.27.4). Information such as compatibility with “geologic, hydrogeologic, geochemical and climatic conditions and any man-induced conditions” (ASTM D5092/D5092M-16, 2016) shall also be included in the variance request. The OSE will respond in writing to the request. If the request is granted, special conditions of approval may be required.

REFERENCES

ASTM C150-07 (2007) ‘Specification for Portland Cement’. ASTM International. Available at: <https://doi.org/10.1520/C0150-07>.

ASTM D5092/D5092M-16 (2016) ‘Practice for Design and Installation of Groundwater Monitoring Wells’. ASTM International. Available at: https://doi.org/10.1520/D5092_D5092M-16.

Krambis, Christopher. Well Construction to Lorraine Garcia. “Bentonite Well Sealant Failures in Unsaturated and Pressurized Environments.” *Well Construction*, May 21, 2024.

NMAC (2017) ‘New Mexico Annotated Code Title 19 -Natural Resources and Wildlife; Chapter 27 – Underground Water; Part 4: Well Driller Licensing; Construction, Repair and Plugging of Wells’, in *New Mexico Register*. Issue 11. New Mexico.

Ogden, F.L. and Ruff, J.F. (1993) ‘Strength of Bentonite Water-Well Annulus Seals in Confined Aquifers’, *Journal of Irrigation & Drainage Engineering*, 119(2), pp. 242–250.

Zemlick, Katie. Memorandum to Holland Shepard and Jennifer Johnson. “Review and Comment, Minimal Impact Exploration Permit Application, Turquoise Mountain Project/Southern Silver Exploration Corp. (U.S.), Grant County, NM, Permit No. GR087EM.” Memorandum, April 5, 2021.

APPENDICES

Appendix A

GENERAL CONCERNS RELATED TO NMOSE REGULATION OF EXPLORATORY BOREHOLE DRILLING

Encountering Groundwater and Associated Plugging of Those Borings

Well drilling activities (including mineral exploration borehole drilling ("mine drill holes") that penetrate a water-bearing stratum) and well plugging, are regulated in part under 19.27.4 NMAC. Most recently promulgated in 6/30/2017, these regulations require any person engaged in the business of well drilling within New Mexico to obtain a Well Driller License issued by the NMOSE (New Mexico Office of the State Engineer). Therefore, a New Mexico licensed Well Driller shall perform the drilling and plugging of exploratory boreholes that encounter groundwater.

Exploration drilling where any form of groundwater is encountered will be subject to pertinent sections of 19.27.4 NMAC, including but not limited to Sections 19.27.4.30.C NMAC for plugging and abandonment of non-artesian wells/borings; 19.27.4.31 NMAC for artesian wells/borings; and 19.27.4.36 NMAC for mine drill holes that encounter water. A complete version of the NMOSE 19.27.4 NMAC regulations can be found on the NMOSE website at: <https://www.ose.state.nm.us/Statewide/wdRules.php>.

MMD will likely place additional conditions on the drilling and plugging of all mineral exploration borings via the MMD project permit.

All onsite drilling and plugging activities where groundwater is encountered shall be conducted under the supervision of the New Mexico licensed Well Driller or a NMOSE-registered Drill Rig Supervisor under the direction of the licensed Well Driller.

Additional NMOSE filings will be required where it is requested that an exploratory borehole be converted to a water well. The well design and construction shall be subject to the provisions of NMOSE regulations 19.27.4 NMAC. Appropriation of water from such a conversion may require a water right. The MMD may disallow the conversions of exploratory borings to water wells if not permitted specifically in the MMD permit.

Use/Extraction of Temporary Casing

When drilling through overburden or caving, poorly consolidated, or karst geologic units, use of temporary casing may be desired. Any temporary casing should be installed with the full intention of its removal before borehole plugging, therefore temporary casing should be inserted into a borehole of sufficiently large diameter to allow easy extraction upon termination of drilling. NMAC 19.27.4 regulations dictate methodology for the installation of permanent well casing, including the installation of required annular seal, should that option be more prudent.

If temporary casing lacking a rule-compliant annular seal or casing grade becomes stuck in-place down hole, the potential for permanent commingling of aquifers or down hole surface water drainage may occur via an unsealed annulus. In these cases, staged casing cutting and extraction, or remedial casing perforation and squeeze-cementing will be required to the satisfaction of the

State Engineer as part of final well decommissioning. Steps should be taken during drilling to prevent deleterious fall-in or drainage of cuttings/sediments into the annulus outside the temporary casing to best allow for full retrieval and proper borehole plugging.

When setting of temporary casing occurs or is expected, appropriate detail of the proposed casing extraction and borehole clean-out process prior to plugging will be required in the NMOSE Well Plugging Plan of Operations form. If exploratory drilling through stratified or artesian aquifer systems, filing a NMOSE Artesian Well Plan of Operations may be required to preemptively assess and address NMOSE concerns regarding best borehole decommissioning practices.

Exploratory Borehole Plugging

Terms of borehole plugging will be established jointly by the evaluation of the NMOSE Well Plugging Plan of Operations and the review of the relevant MMD application for water-bearing boreholes. Approved high-solids bentonite abandonment-grade sealants and/or approved cement slurries will be required for plugging as deemed hydrogeologically appropriate by the agencies. NMOSE-authorized cement slurries will be required for the decommissioning of flowing artesian boreholes. If the exploratory borings do not encounter groundwater, MMD plugging regulations (19.10.3 NMAC) prevail over those of 19.27.4 NMAC.

NMOSE well plugging regulations require tremie placement of the column of well sealant, which shall extend from the bottom of the borehole to ground surface. By regulation, pumping decommissioning sealants into the top of the borehole is not allowed. The NMOSE defers to the discretion of the MMD for the choice of sealant versus natural fill in the uppermost portion of a borehole plug to facilitate site restoration.

Required plugging of water-bearing exploratory borings shall occur within the timeframe specified by either the NMOSE or MMD to minimize cave-in and the potential for incomplete plugging due to blockages in the borehole.

Drill Rig Fuels, Oils and Fluids

Drill rigs contain and consume fuels, oil, and hydraulic fluids, and are subject to leaks. Drill rigs often remain in-place longer than other pieces of exploration equipment onsite, are frequently running, and are positioned immediately above and adjacent to the open borehole. As a standard practice to prevent contamination and reduce site cleanup activities, it may be beneficial to use bermed, impermeable ground sheeting under the drill rig. Consideration of bermed containment volume sufficient to accommodate a high-intensity precipitation event is also a good practice.

State of New Mexico
Energy, Minerals and Natural Resources Department

Michelle Lujan Grisham
Governor

Melanie A. Kenderdine
Cabinet Secretary

Dylan Fuge
Deputy Cabinet Secretary

Laura McCarthy, State Forester
Forestry Division



June 25, 2024

Kevin Barnes
Reclamation Specialist
Mining and Minerals Division
Mining Act Reclamation Program
1220 S. St. Francis Drive
Santa Fe, NM 87505

**RE: Request for Comments on Regular Exploration Permit Modification Application,
Turquoise Mountain Project, Grant County, New Mexico, Permit No. GR087ER**

Thank you for the opportunity to comment on the above referenced project. I have reviewed the locations of the exploratory drilling sites and noted that there was a biological survey completed for this project. As a result of the biological surveys, three *Peniocereus greggii* were documented (one plant observed in Site N and two plants observed in Site Q), as outlined in the Appendix submitted with the permit application.

However, the surveyor states that for both drilling sites where the *Peniocereus* were found, the "site was moved to the east to meet the minimum distance required for avoidance." It is unclear whether the surveyor is citing a Bureau of Land Management minimum avoidance distance or from another source, as it is not mentioned anywhere in the report. It will be necessary to know what this distance is so we are assured that the new drilling sites are moved a sufficient distance from the documented *Peniocereus* so they will not be harmed, not only from access roads or drill pad disturbance, but also from fugitive dust resulting from activities. Typically, 30 meters (100 feet) is a general rule for "minimum distance."

Please let me know if there are further questions regarding my comments.

Sincerely,

A handwritten signature in blue ink that reads "Erika Rowe".

Erika Rowe; State Botanist/Endangered Plant Program Coordinator
EMNRD-Forestry Division
1220 S. St. Francis Dr.
Santa Fe, NM 87505
erika.rowe@emnrd.nm.gov / (505) 699-6371

Barnes, Kevin, EMNRD

From: Wands, Cortney, DCA
Sent: Wednesday, May 29, 2024 4:25 PM
To: Barnes, Kevin, EMNRD
Subject: HPD Log # 122442 GR087ER - Turquoise Mountain - Modification 24-1 - Request for Comments

HPD Log # 122442

Good Afternoon Kevin,

Thank you for sending the information for the modification application to the Turquoise Mine Project (Permit No. GR087ER). Based on the information provided, the NM SHPO has no comment on the proposed modifications.

Best regards,
Cortney

Cortney A. Wands
Archaeological Review
Historic Preservation Division
cortney.wands@dca.nm.gov
(505) 476-1341

From: Barnes, Kevin, EMNRD <Kevin.Barnes@emnrd.nm.gov>
Sent: Tuesday, May 7, 2024 4:44 PM
To: Wands, Cortney, DCA <Cortney.Wands@dca.nm.gov>
Subject: GR087ER - Turquoise Mountain - Modification 24-1 - Request for Comments

Good afternoon Cortney,

Please see the attached request for comment for a modification application to the Turquoise Mountain Project (Permit No. GR087ER). The Part 4 Regular Exploration Permit Modification application can be viewed at [GR087ER Part 4 Turquoise Mountain Exploration Project - Mining and Minerals \(nm.gov\)](#)

Additionally, a site visit has been scheduled tentatively for June 21, 2024 near Hachita, NM. Please let me know if you or a member of your staff wishes to attend.

Regards,

Kevin

Kevin Barnes
Reclamation Specialist
Mining and Minerals Division
Mining Act Reclamation Program
1220 S. St. Francis Drive
Santa Fe, NM 87505
(505) 470-5354