

State of New Mexico  
Energy, Minerals and Natural Resources Department

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**Michelle Lujan Grisham**  
Governor

**Sarah Cottrell Propst**  
Cabinet Secretary

**Todd E. Leahy, JD, PhD**  
Deputy Cabinet Secretary

**Albert Chang, Director**  
Mining and Minerals Division



July 14, 2023

Mr. Joe Kizis  
c/o Southern Silver Exploration Corp.  
4970 Caughlin Pkwy #207  
Reno, NV 89519-0907

**RE: Agency Review Comments and Request for Additional Information, Hermanas Exploration, Luna County, New Mexico, Permit Tracking No. LU048EM**

Dear Ms. Kizis,

The New Mexico Mining and Minerals Division (“MMD”) has reviewed the Permit Application Package (“PAP”) submitted by Southern Silver Exploration Corporation (“Southern Silver”) for the Hermanas exploration project located in Luna County, New Mexico. In accordance with 19.10.3.302.G NMAC, MMD requested comments on the PAP from cooperating state and federal agencies.

Enclosed with this letter are 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 Department of Cultural Affairs - Historic Preservation Division (“NMDCA/HPD”), the New Mexico Energy, Minerals, and Natural Resources Department – Forestry Division (“Forestry”), and the Bureau of Land Management (“BLM”). Additionally, please find general comments from MMD based on review of this application.

**General Comments:**

MMD has reviewed the PAP and has found it to be *technically incomplete*. MMD has conducted a review of the PAP and has the following comments to be addressed in writing within 30 days of receipt of this letter:

1. During the site inspection conducted May 30, 2023, it was noted that Pad E was relocated. Please provide updated pad locations and any other changes made to proposed drill pad locations or access routes.

**Bureau of Land Management Comments**

Please review the comment email received from the BLM and respond to concerns regarding African Rue and possible influences on a nearby spring.

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

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

**NMED Surface Water Quality Bureau Comments:**

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

**NMED Air Quality Bureau Comments:**

Please review the comment letter received from NMED Air Quality Bureau and respond to any concerns.

**NMDG&F Comments:**

Please review the comment letter received from NMDG&F and respond to all concerns and recommendations raised.

**NMOSE Comments:**

Please review the comment letter received from NMOSE and respond to any concerns.

**Forestry Comments:**

Please review the comment letter received from Forestry and respond to any concerns.

**NMDCA/HPD Comments:**

Please review the comment letter received from NMDCA/HPD and respond to any concerns.

**White Mountain Apache Comments:**

Please review the comment letter from the White Mountain Apache Tribe and respond to any concerns.

If you have any questions, please contact me at (505) 470-5354, or via email at [kevin.barnes@emnr.dnm.gov](mailto:kevin.barnes@emnr.dnm.gov).

Sincerely,



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

Enclosures: Agency Letters

Cc with enclosures: Peter O’Byrne, Southern Silver

Cc w/o enclosures: David “DJ” Ennis, Program Manager, MARF/MMD  
File (LU048EM)

**From:** [Navarro, Joseph](#)  
**To:** [Barnes, Kevin, EMNRD](#)  
**Subject:** [EXTERNAL] ID Team concerns for Hermanas Project  
**Date:** Tuesday, May 2, 2023 3:59:13 PM  
**Attachments:** [image001.png](#)

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CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Kevin,

This is what were some of the concerns regarding Hermanas project from our ID Team.

“African rue is present in the Hermanas area. To avoid spreading African rue onto the public lands in the area around the drill pads and along the access routes, standard noxious weed stipulations must be adhered to. If African rue moves into the routes or drill pad locations, the applicant(s) will be responsible for ensuring the elimination of the infestation”.

“The permittee had called back in October expressing concerns of this proposed project when he ran into someone with the company searching for access for the mining exploration project. There is concern from the permittee if they hit the spring that is relatively close to the proposed direction of the mining exploration project it will drain one of their main watering systems for the ranch”.

***Joseph M. Navarro***

Environmental Protection & Reclamation Specialist  
Lands & Minerals Division  
USDI-Bureau of Land Management  
Las Cruces New Mexico District Office  
1800 Marquess St., Las Cruces, NM 88005 O: 575-525-4363 C: 575-420-8237





## Electronic Transmission

### MEMORANDUM

Date: May 5, 2023

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

Through: Anne Maurer, Mining Act Team Leader, Mining Environmental Compliance Section (MECS)

From: David Mercer, MECS  
John Moeny, Surface Water Quality Bureau (SWQB)  
Sufi Mustafa, Air Quality Bureau (aqb)

Subject: **New Mexico Environment Department (NMED) Comments, Hermanas Exploration Project, New Minimal Impact Exploration Permit Application, Southern Silver Exploration Corp., Luna County, New Mexico, New Mexico Mining Act Permit No. LU048EM**

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The New Mexico Environment Department (NMED) received correspondence from the Mining and Minerals Division (MMD) on April 12, 2023 requesting that NMED review and provide comments on the above-referenced MMD permitting action. Pursuant to the Mining Act, the Hermanas Exploration Project is a new minimal impact exploration permit. MMD requested comments on the application within 20 days of receipt of the request for comments. NMED requested an extension to submit comments by May 4, 2023. NMED has the following comments.

#### **Background**

Southern Silver Exploration Corp. (applicant) proposes to disturb up to 4.08 acres of Bureau of Land Management (BLM) land. The applicant proposes to drill up to 14 boreholes on 8 drill pads, with a range of between 869 to 1,312 feet below ground surface (bgs). This site is located approximately 25 miles west of Columbus, NM.

Mr. David Ennis  
Hermanas Exploration Project  
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Personnel from the Mining Environmental Compliance Section (MECS) reviewed databases maintained by the Office of the State Engineer (OSE) related to water rights and distribution. The applicant provided OSE data for a livestock well, M-08495, which is located to the east of the project area. No other wells were identified near the site. Water quality information was not available in the OSE databases for this well. The reported depth of this well is 195 feet below ground surface and the depth to water was reported to be 131 feet below ground surface. Based on the information provided in the application, groundwater will be intercepted during drilling operations. The Total Dissolved Solids (TDS) concentrations in groundwater based on the application is unknown.

### **Air Quality Bureau**

The Air Quality Bureau comments are attached.

### **Surface Water Quality Bureau**

The Surface Water Quality Bureau comments are attached.

### **Mining Environmental Compliance Section (MECS)**

The MECS has the following comments:

1. Regulations associated with minimal impact exploration operations are found at 19.10.3.302 NMAC. Required information associated with application for a minimal impact exploration operation with regard to groundwater are found at 19.10.3.302.D(5) NMAC and state, "an estimate of depth to groundwater and total dissolved solids concentration". The application does not contain the information necessary to determine the *total dissolved solids concentration*. MECS requests the applicant obtain this information from a well that is proximal to the exploration project.
2. Based on the information MECS acquired from the OSE database, it appears the exploration drilling project will encounter groundwater. The applicant indicated on page 17 (Item D) of the application that produced water would be contained on site. However, there were no details provided on whether the produced water would be tested for water quality and the method of disposal. Because the boreholes are proposed to be drilled at depths below the known water table, it appears that the boreholes could contain a significant amount of groundwater. It is not clear that the drilling mud pits are sized appropriately to contain additional groundwater production that may occur during drilling, or that a contingency plan has been developed for such an occurrence. The applicant needs to provide a plan for managing and disposing of water encountered in the boreholes and include the estimated volume of borehole water that will be discharged into the mud pits.
3. The applicant indicated on the application that they completed the NM OSE WD-08 application for plugging and abandoning boreholes/monitoring wells. However, that form is not attached to

Mr. David Ennis  
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May 5, 2023

the application. The applicant must comply with all OSE procedures and applications to be in compliance with their exploration permit.

**NMED Summary Comment**

NMED is requesting additional information prior to determining if the exploratory project as proposed will have a minimal impact to the environment.

If you have any questions, please contact Anne Maurer at (505) 660-8878.

cc: Joseph Fox, Program Manager, NMED-MECS  
Shelly Lemon, Bureau Chief, NMED-SWQB  
Elizabeth Bisbey-Kuehn, Bureau Chief, NMED-AQB



## MEMORANDUM

April 26, 2023

To: Anne Maurer, Mining Act Team Leader  
Mining Environmental Compliance Section  
Groundwater Quality Bureau (GWQB)

From: John Moeny  
Watershed Protection Section  
Surface Water Quality Bureau

Subject: **Request for Review and Comment, Minimal Impact Exploration Permit, Hermanas Exploration, Luna County, New Mexico, Mining Act Permit No. LU048EM**

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On April 12, 2023, NMED received a request for comments regarding a new minimum-impact exploration permit application submitted by Southern Silver Exploration Corp ("Applicant"). The project is in Luna County, approximately 20 miles west of Columbus on public lands managed by the Bureau of Land Management.

### Summary of Proposed Action

The Applicant would like to bore fourteen 4.5-inch diameter holes to varying depths between 869 and 1312 feet from eight drill pad locations targeting gold and silver. Each drill pad will require a cleared area approximately 80' x 80' with a separate unlined mud and fluid pit. A combination of existing and newly created roads will be utilized to access drill locations and total disturbance is estimated at 4.079 acres.

### Relevant State and Federal Water Quality Regulations

Mine activities may affect Surface Waters of the State as defined in 20.6.4.7 NMAC, which includes ephemeral arroyos within the mining operations and are subject to 20.6.4.98 NMAC. Furthermore, operations must ensure protection of surface waters of the state including General Criteria at 20.6.4.13 NMAC, established to sustain and protect existing or attainable uses of surface waters of the State. These general criteria apply to all surface waters of the state at all times. 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.

The Applicant is required to report all spills immediately to the NMED as required by the New Mexico Water Quality Control Commission regulations (20.6.2.1203 NMAC). For non-emergencies during normal business hours, call 505-428-2500. For non-emergencies after hours, call 866-428-6535 or 505-428-6535 (voice mail, twenty-four hours a day). For emergencies only, call 505-827-9329 twenty-four hours a day (NM Dept of Public Safety).

In addition to the above regulatory standards, SWQB requires the following practices to avoid contamination and to protect surface and groundwater quality:

- The application describes unlined mud and fluid pits, however pits should be lined to prevent transport of contaminants to groundwater. Pits must be sized to prevent overtopping during precipitation events.
- Process water must be contained within the closed-loop system or lined pits and may not be discharged unless a discharge permit has been secured from the EPA and/or NMED.
- 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.
- Perform all work, when practicable, in the dry season and postpone work during wet and muddy conditions.
- Appropriate spill clean-up materials such as absorbent pads must be available on-site at all times during road construction, site preparations, drilling and reclamation to address potential spills.
- Provide a minimum 50' setback from existing drainages to drill pads and staging areas. Based on the provided drill pad coordinates, drill pad "C" appears to be placed in the bottom of an ephemeral drainage and should be moved upslope and out of the drainage.

If you have any questions, please phone me at (575) 956-1545.





## MEMORANDUM

DATE: April 28, 2023

TO: Anne Maurer, 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, Minimal Impact Exploration Permit, Hermanas Exploration, Luna County, New Mexico, Mining Act Permit No. LU048EM

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 had requested an exploration permit for areas in Luna County. The applicant will drill 14 holes, create 8 drill pads, 8 drill pits and create some road segments. Land disturbance will be less than 4.0 acres.

### 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."

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:

**Request for Review and Comment, Minimal Impact Exploration Permit, Hermanas Exploration, Luna County, New Mexico, Mining Act Permit No. LU048EM**

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“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:

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.

**Request for Review and Comment, Minimal Impact Exploration Permit, Hermanas Exploration,  
Luna County, New Mexico, Mining Act Permit No. LU048EM**

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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 has no objection to this request.

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

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6 June 2023

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

***RE: Minimal Impact Hermanas Exploration Project, Southern Silver Exploration Corporation, Luna County, New Mexico. Permit No. LU048EM; NMDGF Project No. NMERT-2546.***

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 14 exploratory holes at 8 drill pad sites. Hole depths will range from approximately 870 to 1300 feet. The drilling sites will be located in Sections 21, 28, and 33 in Township 28S and Range 11W. The total area that will be disturbed is approximately 4.08 acres. Staff from the Department, MMD, and the Operator conducted a site inspection on 30 May 2023.

To minimize the likelihood of adverse impacts to migratory birds, nests, eggs, or nestlings during drill pad and road construction activities, the Department recommends that ground disturbance and vegetation removal activities be conducted outside of the primary breeding season for migratory songbirds and raptors (1 March – 1 September; 1 January - 15 July for golden eagle and great horned owl). 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 at least 100 feet from songbird and raven nests; 0.25 miles from most raptor nests; and 0.5 miles for ferruginous hawk, golden eagle, peregrine falcon, and prairie falcon 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.

In addition to observing seasonal and buffer distance guidelines for ground and vegetation clearing activities, 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 are inside.

To eliminate the potential for wildlife to become entrapped in mud pits, 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 pits, reduce the amount of surface disturbance associated with the drill pad site, and consume significantly less water. Southern Silver is proposing to use fenced mud pits, with one side sloped at 3:1 to provide an escape ramp for wildlife. When mud pits have to be used, rather than a closed loop system, the Department recommends netting or covering fenced mud pits to exclude birds and bats. If netting is used, the recommended material is extruded plastic, knit, or woven netting with a mesh size of  $\frac{3}{8}$  inches to exclude smaller animals. The Department discourages use of monofilament netting due to its tendency to ensnare wildlife and cause injury or death. Netting material must be held taught over a rigid and adequately supportive frame to prevent sagging into the mud pits.

Department staff observed numerous banner-tailed kangaroo rat burrow mounds along Southern Silver's proposed overland travel route. Southern Silver agreed with the Department recommendation to avoid disturbing kangaroo rat burrow mounds by establishing, at minimum, a 20-foot buffer zone around the burrow complex. Department staff also observed a large, mature, cane cholla cactus that contained an unoccupied cactus wren nest along the proposed road construction route. The Department recommends that Southern Silver modify the proposed road route in order to avoid removal of this cholla cactus.

For site reclamation activities, the Department recommends that Southern Silver use only native plant species and that the reclamation seed mix is 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 or 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 project. If you have any questions, please contact Ron Kellermueller, Mining and Energy Habitat Specialist, at (505) 270-6612 or [ronald.kellermueller@dgf.nm.gov](mailto:ronald.kellermueller@dgf.nm.gov).

Sincerely,

Matt Wunder, Ph.D.  
Chief, Ecological and Environmental Planning Division

cc: USFWS NMES Field Office

**MEMORANDUM**  
**OFFICE OF THE STATE ENGINEER**  
*Hydrology Bureau*

**DATE:** May 2, 2023

**TO:** Kevin Barnes, Permit Lead, Mining Act Reclamation Program (MARP)  
Lloyd Valentine, District III Manager, Water Rights Division

**THROUGH:** Katie Zemlick, Ph.D., Hydrology Bureau Chief *KZ*  
Laura Petronis, Water Resources Manager I, Hydrology Bureau *LJP*

**FROM:** Max Gersh, Water Resources Professional III, Hydrology Bureau *mg*

**SUBJECT:** Review and Comments, Minimal Impact Exploration Permit Application,  
Hermanas Exploration Project, Luna County, New Mexico.  
Permit No. LU048EM

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**INTRODUCTION**

On April 12, 2023, State of New Mexico Energy, Minerals, and Natural Resources Department (EMNRD) requested the New Mexico Office of the State Engineer (NMOSE) Hydrology Bureau review and comment on the Mining and Mineral Division (MMD) Permit No. LU048EM Part 3 Minimal Impact Exploration Operation Permit Application (application) for the Hermanas Exploration Project (project). The application, submitted by Southern Silver Exploration Corp. (Southern Silver), proposes to engage in exploratory drilling activities to support gold and silver exploration within Luna County, New Mexico. In doing so, Southern Silver proposes to disturb a total of 4.079772 acres of land (including drill pads, cuttings disposal pits, new roads, improved roads, and overland travel routes) within the project area. Southern Silver reports 14 exploration boreholes on 8 drill pads. Groundwater is expected to be encountered in all 14 boreholes, which are reported to be drilled to a depth ranging between 869 - 1312 feet below ground surface (BGS). The applicant has submitted an Application for Permit to Drill a Well with no Water Right (WR-07) for all 14 boreholes to the NMOSE Water Rights Division (WRD) District III Office. Further details are provided in Table 1 and Figure 1.

The project area is generally located west of Columbus, New Mexico, approximately 19 miles on Highway 9. The project area is mapped in Attachment 2 of the application. The project area is in Sections 21, 28, and 33, Township 28 South, Range 11 West, NMPM.

**Table 1.** Proposed exploratory boreholes for the Hermanas Exploration Project.

Drill Pad	I.D. Nbr.	Well Location*		Proposed Well Depth (feet BGS)
		NAD83 UTM Zone 13 Easting (m)	NAD83 UTM Zone 13 Northing (m)	
A	HER-001	218557	3528382	869
	HER-002			869
B	HER-003	218470	3528318	1165
	HER-004			1230
	HER-005			869
C	HER-012	218579	3528135	1230
	HER-011			1066
D	HER-009	219696	3528134	1148
	HER-008			1312
E	HER-007	218591	3526433	984
F	HER-006	218663	3526379	984
	HER-014			984
G	HER-013	218729	3526308	984
H	HER-010	218860	3526191	1066

\*Approximate location based on location of drill pads, as submitted by applicant.

## COMMENTS

The NMOSE Hydrology Bureau has completed a review of the application and provides the following comments:

### **Surface Water**

NMOSE regulation 19.27.4.29.P.(2) New Mexico Administrative Code (NMAC) notes that drilling fluids and cuttings shall not be allowed to migrate or be discharged off property under the control of the well owner, and that no drilling fluid or cuttings be discharged into any waters of the State. In general, it is recommended to avoid drilling in or within 100 feet of any surface water drainage. After further examination, while multiple ephemeral waterways are within the bounds of the project area, the NMOSE Hydrology Bureau agrees that none of the proposed drilling is to occur within the channel, or within 100 feet of the channel, of any of these ephemeral waterways.

Because proposed drilling is not to occur within 100 feet of any perennial, intermittent, or ephemeral streams, mud and fluid pits are permitted at each drill pad location. If the applicant is compliant with NMOSE regulation 19.27.4.29.P.(2) NMAC and maintains best practice in keeping drill fluids and cuttings contained within mud/fluid pits on the property, there should be no issues regarding surface water flow.

## **Groundwater**

The applicant estimates the depth to groundwater as being 131 feet, describing the source of this information as being a nearby well, File No. M-08495 (a permitted 72-12-1 Livestock Watering Well). M-08495 is reported to be drilled into the shallow alluvium/basin fill, to a depth of 195 feet, with depth to water (DTW) being 131 feet. Using the New Mexico Water Right Reporting System (NMWRRS), only 2 additional wells were identified within a 2-mile radius from the proposed project area. However, these 2 additional wells, being declared wells M-05550 and M-05551, do not have any well or groundwater information in NMWRRS. With the limited groundwater information, the NMOSE Hydrology Bureau agrees that the only data available suggests DTW in the project area is approximately 131 feet. Based on this information, it is projected that all 14 exploratory boreholes will encounter groundwater.

The application does not make it clear what geologic unit(s) the boreholes are proposed to be drilled into. The geology within the project area is complex, with further details shown in Figure 1. The applicant shall ensure that a *Well Record and Log (WR-20)* be submitted for each borehole to provide the NMOSE WRD with proper documentation that accurately describes the hydrogeologic units encountered, with approximate color and type of material encountered.

Since it is likely that groundwater will be encountered, the proper NMOSE forms for drilling and plugging wells (*WR-07 Application for Permit to Drill a Well with No Water Right* and *WR-08 Well Plugging Plan of Operations*) shall be submitted and approved by the NMOSE WRD District III Office before drilling operations can commence. The applicant has indicated, and attached, the above-stated paperwork that has been submitted for review by the WRD.

The NMOSE requirements for the drilling and plugging of the proposed boreholes should be met in accordance with NMOSE regulation 19.27.4 NMAC. In accordance with NMOSE regulation 19.27.4.29.A NMAC, on-site supervision of well drilling and plugging by the holder of a New Mexico Well Driller License or a NMOSE-registered Drill Rig Supervisor is required. The New Mexico licensed Well Driller shall ensure that well drilling activities are completed in accordance with NMOSE regulation 19.27.4.29 and 19.27.4.30 NMAC. If artesian conditions are encountered during drilling, drill operations should cease immediately and the NMOSE District III Office should be contacted, in which well drilling activities shall be completed in accordance with NMOSE regulation 19.27.4.31 NMAC.

## **Borehole Abandonment**

If groundwater *is* encountered during exploratory drilling, borehole plugging should be done in accordance with the NMOSE regulations, 19.27.4 NMAC, the pre-approved *Well Plugging Plan of Operations*, and the subject conditions of approval. However, if groundwater *is not* encountered during exploratory drilling, MMD regulations for Minimal Impact Operations, 19.10.3 NMAC, prevail over the NMOSE regulations, and borehole plugging should be done in accordance with MMD plugging regulation 19.10.3.302.L NMAC.

The applicant has successfully addressed wet and dry hole abandonment in Section 6 of the application, indicating high-density bentonite clay, mixed appropriately, will be used, and emplaced with a tremie pipe from total depth to near ground surface. A Well Plugging Record shall be submitted for every and all plugged boreholes, in accordance with NMOSE regulation 19.27.4.30.C.(3) NMAC.



Additional details regarding borehole drilling and plugging requirements under NMOSE regulation 19.27.4 NMAC are included in the attached appendix (“General Concerns Related to NMOSE Regulation of Exploratory Borehole Drilling”).

## **REFERENCES**

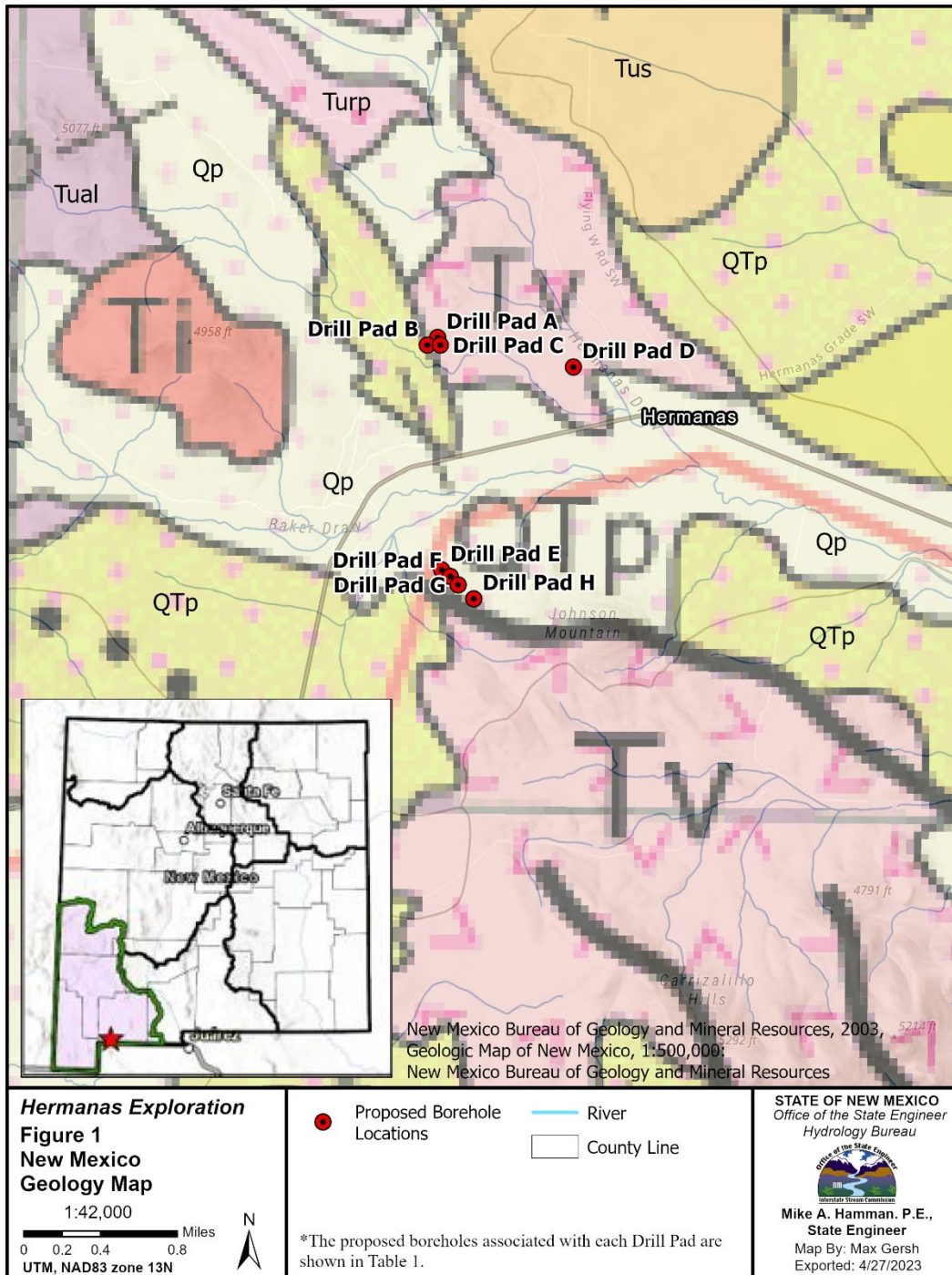
Mining and Minerals Division, 2011, Guidance Document for Part 3 Permitting Under the New Mexico Mining Act Energy, Minerals and Natural Resources Department, Mining Act Reclamation Program October 2011.

Mining and Minerals Division, 2012, Part 3 Minimal Impact Exploration Operation: PERMIT APPLICATION INSTRUCTIONS. Energy, Minerals and Natural Resources Department.

New Mexico Bureau of Geology and Mineral Resources, 2003, Geologic Map of New Mexico, 1:500,000: New Mexico Bureau of Geology and Mineral Resources.

New Mexico Office of the State Engineer and New Mexico State Engineer and Interstate Stream Commission. New Mexico Water Rights Reporting System (NMWRRS).

# FIGURES



**Figure 1. New Mexico Geologic Map of the proposed project area. The geologic units are defined on the following page.**

**FIGURE 1 – GEOLOGIC UNITS**

<b>Label</b>	<b>Geologic Unit</b>	<b>Period</b>
Qp	Piedmont alluvial deposits	<i>Holocene to Pleistocene</i>
QTp	Older piedmont alluvial deposits and shallow basin fill	<i>Middle Pleistocene to uppermost Pliocene</i>
Tus	Upper Tertiary sedimentary	<i>Pliocene to upper Oligocene</i>
Tv	Middle Tertiary volcanic rocks	<i>Lower Miocene to upper Eocene</i>
Turp	Upper middle Tertiary rhyolitic pyroclastic rocks of the Mogollon Group, ash-flow tuffs	<i>Upper Oligocene</i>
Tual	Lower-upper middle Tertiary basaltic andesites and andesites of the Mogollon Group	<i>Upper Oligocene</i>

## 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 boreholes 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 a 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 boreholes 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

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**Michelle Lujan Grisham**  
Governor

**Sarah Cottrell Propst**  
Cabinet Secretary

**Todd E. Leahy, JD, PhD**  
Deputy Cabinet Secretary

**Laura McCarthy**, State Forester  
Forestry Division



April 28, 2023

Kevin Barnes  
Mining and Minerals Division  
Energy, Minerals and Natural Resources Department (EMNRD)  
1220 S. St. Francis Drive  
Santa Fe, NM 87505

**RE: Request for Comments on New Minimal Impact Exploration Permit Application,  
Hermanas Exploration, Luna County, New Mexico, Permit No. LU048EM**

Thank you for providing me with the opportunity to comment on the above referenced project. While the disturbance impact is less than 5 acres with minimal road development, the project is within an area known to have the potential for *Peniocereus greggii* var. *greggii* (Night-blooming cereus), a state endangered plant, and care should be taken to avoid disturbing plants within a 30 m radius otherwise an incidental take permit will be required if plants will be destroyed or harmed, or mitigation measures to avoid disturbance should be developed. Night-blooming cereus plants have been documented nearby, approximately 4 miles away from the project area. Habitat for night-blooming cereus is typically sandy to silty gravelly soils in gently broken to level terrain in desert grassland or Chihuahuan desert scrub. Typically found growing up through and supported by shrubs, especially *Larrea divaricata* (creosote bush) and *Prosopis glandulosa* (honey mesquite). While not mandatory, a botanical survey conducted by a person or private consulting company with expertise in the field botany, plant taxonomy, and biological conservation and qualified to identify any listed plants (usually when plants are in flower and fruit) is recommended prior to disturbance. Please see <https://nmrareplants.unm.edu/node/45> for more information on this plant.

Please let me know if I can be of further help.

Sincerely,

Erika Rowe  
State Botanist/Endangered Plant Program Coordinator  
EMNRD-Forestry Division  
1220 S. St. Francis Dr.  
Santa Fe, NM 87505  
[erika.rowe@emnrn.nm.gov](mailto:erika.rowe@emnrn.nm.gov) / <http://www.emnrn.state.nm.us/SFD/>  
cell: (505)699-6371

###



Michelle Lujan  
Grisham  
Governor

STATE OF NEW MEXICO  
**DEPARTMENT OF CULTURAL AFFAIRS**  
**HISTORIC PRESERVATION DIVISION**

BATAAN MEMORIAL BUILDING  
407 GALISTEO STREET, SUITE 236  
SANTA FE, NEW MEXICO 87501  
PHONE (505) 827-6320

April 18, 2023

Kevin Barnes  
Reclamation Specialist  
Mining and Minerals Division  
kevin.barnes@emnrd.nm.gov

Re: HPD Log# 119508, LU048EM - Hermanas Exploration Project - Request for Comment

Dear Mr. Barnes:

I am writing in response to your request for comment on the above referenced permit application received at this office April 12, 2023

Pursuant to 19.10.3.302 NMAC, Minimal Impact Exploration Operations, the Director shall determine whether a permit modification would have an adverse impact on cultural resources listed on either the National Register of Historic Places (NRHP) or the State Register of Cultural Properties (SRCP) or be located in a known cemetery or other burial ground.

According to our files, the project area has never been surveyed for cultural resources and there are no historic properties listed on the NRHP or the SRCP present. Based on this information, this permit will have no adverse impacts to burial grounds or cultural resources listed either on the National or State Registers.

However, 19.10.3.302 NMAC also states, that *"if the permit area includes state or federally owned lands, no permit will be issued unless the appropriate land management agency has approved or acknowledged the proposed operation..."*

Our records indicate that all the project exploration locations are situated on Bureau of Land Management (BLM) owned lands and as these locations have never been surveyed for cultural resources, they will likely require a survey: the BLM should be contacted regarding this project.

If you have any questions concerning these comments, please do not hesitate to contact me by phone at (505)-827-6162 or e-mail me at [richard.reycraft@state.nm.us](mailto:richard.reycraft@state.nm.us)

Sincerely,

*Richard Reycraft*

Richard Reycraft  
HPD Staff Archaeologist



# White Mountain Apache Tribe

Office of Historic Preservation

PO Box 1032

Fort Apache, AZ 85926

Ph: (928) 338-3033 Fax: (928) 338-6055

**To:** Kevin Barnes – Permit Lead Mining and Minerals Division

**Date:** May 10, 2023

**Re:** *Hermanas Exploration Minimal Impact Permit Application No. LU048EM*

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The White Mountain Apache Tribe Historic Preservation Office appreciates receiving information on the project dated; April 12, 2023. In regards to this, please refer to the following statement(s) below.

Thank you for allowing the White Mountain Apache tribe the opportunity to review and respond to the above proposed minimal impact exploration project located on the BLM property, in Luna County, New Mexico.

Please be advised, we have reviewed the consultation letter and the information provided, we have reviewed the information provided and determined the project will have a ***“No Adverse Effect”*** on the tribe traditional cultural properties and/or historic properties. No further consultation is necessary and/or required for this project.

Thank you for early tribal engagement and consultation, and continued collaborations in protecting and preserving places of cultural and historical importance.

Sincerely,

*Mark Altaha*

White Mountain Apache Tribe – THPO

Historic Preservation Office