



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 FAX (505) 827-6338

February 24, 2021

Clint Chisler,  
Permit Lead  
Mining Act Reclamation Program ("MARF")  
Mining and Minerals Division  
1220 South Saint Francis Drive  
Santa Fe, NM 87505

Re: HPD Log# 114633, Request for Review and Comment, Minimal Impact Exploration Operation Permit Application, Malone District Exploration Project/Bronco Creek Exploration, Grant Co., NM, Permit Tracking No. GR086EM

Dear Mr. Chisler:

I am writing in response to your request for comment on the above referenced permit application received at this office February 17, 2021

Pursuant to 19.10.4.403 NMAC, Exploration permit applications, the Director shall determine whether an exploration permit would have an adverse impact on cultural resources listed on either the National Register of Historic Places or the State Register of Cultural Properties or be located in a known cemetery or other burial ground.

According to our files, there are no cultural resources listed on either the National Register of Historic Places or the State Register of Cultural Properties in the permit area. There are also no known cemeteries or other burial grounds. Based on this information, this permit will have no adverse impacts to cultural resources listed on the National or State Registers.

Although there are no cultural resources listed on either the National Register of Historic Places or the State Register of Cultural Properties, portions of the permit area have never been archeologically surveyed. Therefore, this office recommends that a cultural resources survey be conducted on any undisturbed portions of mine exploration area that have not been previously surveyed and where proposed new ground disturbance will occur for this permit.

This survey should be performed by a qualified professional to determine if any historic or archaeological properties are present and if so, to provide documentation of those resources to our office. This information can then be used to evaluate the National Register of Historic Places eligibility of any resources identified during the survey and determine project effects on those resources. A list of state permitted archaeologists and archaeological firms are available from this office upon request or can be downloaded from our web site at:

<http://www.nmhistoricpreservation.org/documents/consultants.html>

Finally, the permit application indicates that land ownership in the proposed permit area includes the United States Forest Service (USFS) Gila National Forest, the USFS should be contacted regarding requirements for identification of cultural resources in areas that will be affected by proposed mining activities.

If you have any questions concerning these comments, please do not hesitate to contact me by phone at (505)-452-6115 or e-mail me at [richard.reycraft@state.nm.us](mailto:richard.reycraft@state.nm.us)

Sincerely,

*Richard Reycraft*

Richard. Reycraft  
Staff Archaeologist

**From:** [Roth, Daniela, EMNRD](#)  
**To:** [Chisler, Clinton, EMNRD](#)  
**Subject:** RE: MMD Malone District Exploration Project/Bronco Creek Exploration Application Request for Comment  
**Date:** Tuesday, February 23, 2021 1:42:45 PM

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Dear Clinton Chisler:

Thank you for providing me with the opportunity to review and comment on the Minimal Impact Exploration Permit Application, Malone District Exploration Project/Bronco Creek Exploration, in Grant Co., NM (Permit Tracking No. GR086EM). Based on the information provided I do not expect any adverse impacts to state listed endangered plants from this project.

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

Sincerely,

Daniela Roth

Botany Program Coordinator  
EMNRD – Forestry Division  
1220 S. Saint Francis Drive  
Santa Fe, NM 87505  
505-476-3347 (office)  
505-372-8494 (cell)  
<http://www.emnrd.state.nm.us/SFD/>

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**From:** Chisler, Clinton, EMNRD <Clinton.Chisler@state.nm.us>  
**Sent:** Wednesday, February 17, 2021 12:02 PM  
**To:** Roth, Daniela, EMNRD <Daniela.Roth@state.nm.us>  
**Subject:** MMD Malone District Exploration Project/Bronco Creek Exploration Application Request for Comment

Ms. Roth

Attached is the request for comment letter regarding the Malone District Exploration Project Application submitted by Bronco Creek Exploration for Grant Co. NM. Please see attached letter for more detailed information. Thank you for your time and consideration. Electronic response is preferred since I am still teleworking from my home office. The application should be posted on the MMD website by the end of the day tomorrow.

Clint

CLINTON M. CHISLER  
RECLAMATION SOIL SCIENTIST  
MINING AND MINERALS DIVISION  
MINING ACT RECLAMATION PROGRAM  
WENDELL CHINO BUILDING 3<sup>RD</sup> FLOOR ROOM 363  
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DIRECTOR AND SECRETARY  
TO THE COMMISSION  
Michael B. Sloane

## STATE OF NEW MEXICO DEPARTMENT OF GAME & FISH

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### STATE GAME COMMISSION

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Las Cruces  
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Las Cruces

19 March 2021

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

***RE: Minimal Impact Exploration, Malone District Exploration Project/Bronco Creek,  
Permit No. GR086EM; NMDGF Project No. NMERT-1032.***

Dear Mr. Chisler,

The New Mexico Department of Game and Fish (Department) has reviewed the above referenced project submitted by Bronco Creek Exploration (Bronco Creek). Bronco Creek is proposing to drill up to 14 exploratory holes, to depths no greater than 5,000 feet. The drilling sites will be located in Grant County in Sections 18, 19, 20, 21 and 30, Township 20S, Range 16W and Section 7, Township 21S, Range 16W. The total area that will be disturbed is approximately 4.2 acres. A site inspection was conducted on 9 March 2021 by staff from the Department, MMD, New Mexico Environment Department, US Forest Service and the Operator.

To minimize the likelihood of adverse impacts to migratory bird nests, eggs or nestlings during drill pad and access development, 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). If ground disturbing and clearing activities during the breeding season cannot be avoided, the area should be surveyed for active nest sites (with birds or eggs present in the nesting territory), and when occupied, nest disturbance should be avoided until young have fledged. For active nests, adequate buffer zones should be established to minimize disturbance to nesting birds. Buffer distances should be  $\geq 100$  feet from songbird and raven nests, and 0.25 mile from raptor 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 for consultation regarding nest site mitigation, and can facilitate contact with qualified personnel. In addition to observing time and distance guidelines, for ground clearing, it is important to prevent wildlife from entering and becoming trapped in stockpiled pipes used in the drilling process. Capping piping is the most effective way to prevent wildlife entry but at a minimum, each section of pipe used should be visually checked before use to insure that wild animals are not inside.

In order to eliminate the potential for wildlife to become entrapped in mud pits, the Department recommends the use of closed loop drilling systems. Closed loop systems eliminate the need to

build fences or install netting to exclude wildlife, reduce the amount of surface disturbance associated with the well pad site, and consume significantly less water. Bronco Creek is proposing to use mud pits that will be fenced, with one side sloped at 3:1 to provide an escape ramp for wildlife. The Department also recommends that fenced mud pits are also netted to exclude birds and bats. Extruded plastic, knit, or woven netting material is preferred. Monofilament netting should not be used due to its tendency to ensnare wildlife and cause injury or death. The Department recommends a mesh size of  $\frac{3}{8}$  inch to exclude smaller animal species. Netting material must be held taught over a rigid and adequately supportive frame to prevent sagging into the drilling fluids.

Bronco Creek will be conduct site reclamation using guidelines and an approved seed mix specified by the Gila National Forest. The Department recommends that the seed mix and mulch be certified weed-free, and that seed test results are requested from the vendor to avoid inadvertently introducing non-native species to the reclamation site. Any alternate seeds 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.

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@state.nm.us](mailto:ronald.kellermueller@state.nm.us).

Sincerely,

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

cc: USFWS NMES Field Office



**Michelle Lujan Grisham**  
Governor

**Howie C. Morales**  
Lieutenant Governor

**NEW MEXICO  
ENVIRONMENT DEPARTMENT**

**Ground Water Quality Bureau**

1190 Saint Francis Drive / PO Box 5469  
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**James C. Kenney**  
Cabinet Secretary

**Jennifer J. Pruett**  
Deputy Secretary

**MEMORANDUM**

Date: March 19, 2021

To: Holland Shepherd, Program Manager, Mining Act Reclamation Program

Through: Anne Maurer, Mining Environmental Compliance Section

From: George Llewellyn, Mining Environmental Compliance Section  
John Moeny, Surface Water Quality Bureau  
Sufi Mustafa, Air Quality Bureau

Subject: **NMED Comments, Malone District Exploration Project, Minimal Impact Exploration Permit Application, Bronco Creek Exploration, Grant County, New Mexico Mining Act Permit No. GR086EM**

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The New Mexico Environment Department (NMED) received correspondence from the Mining and Minerals Division (MMD) on February 17, 2021 requesting that NMED review and provide comments on the above-referenced MMD permitting action. Pursuant to the Mining Act this proposed operation is permitted as a minimal impact exploration permit. MMD requested comments on the application within 30 days of receipt of the request for comments. NMED requested an extension to submit comments by March 19, 2021. NMED has the following comments.

**Background**

Bronco Creek Exploration (applicant) is applying for a new minimal impact exploration permit in Grant County. The applicant proposes to disturb a total of up to 3.938 acres of U.S. Forest Service (USFS) property. This will include drilling 28 exploration holes and construction of 14 drill pads. The area of disturbance is within the boundaries of claim numbers identified in the minimal impact exploration permit application and located 15.6 miles northeast of Lordsburg, NM off State Highway 90 in Grant County.

### **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)**

MECS performed a site inspection of the proposed exploration area with the SWQB, MMD, and N.M Game and Fish on March 9, 2021. MECS has the following comments based on discussions held during the site inspection:

1. The USFS reclaimed portions of the site that were historically mined. Stormwater has eroded much of the reclamation. The USFS requested the applicant repair eroded areas during reclamation of the drill pads. The applicant indicated during the site inspection that they want to use existing on-site waste rock to reclaim eroded areas. Saturated paste pH's of the waste rock need to be taken prior to any use in reclamation areas. Waste rock material that has a low saturated paste pH (<5) cannot be used as reclamation material.
2. One proposed drill hole location is within an ephemeral drainage. The applicant needs to relocate this drill hole a minimum of 100 feet from the ephemeral drainage and install stormwater Best Management Practices (BMPs) to protect the drainage from the drilling operation.

### **NMED Summary Comment**

NMED finds that exploration as proposed in the application will be protective of the environment if done in accordance with the approved permits, pollution controls, and the comments above

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

cc: Clinton Chisler, Permit Lead, EMNRD-MMD  
Kurt Vollbrecht, Program Manager, MECS  
Shelly Lemon, Bureau Chief, NMED-SWQB  
Elizabeth Bisbey-Kuehn, Bureau Chief, NMED-AQB





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**Michelle Lujan Grisham**  
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**Howie C. Morales**  
Lt. Governor

**James C. Kenney**  
Cabinet Secretary

**Jennifer J. Pruett**  
Deputy Secretary

**MEMORANDUM**

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DATE: March 10, 2021

TO: Kurt Vollbrecht, Program Manager, Mining Environmental Compliance Section

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

RE: Request for Review and Comment, Malone District Exploration Project/Bronco Creek Exploration, New Minimal Impact Exploration Permit Application, Grant County, New Mexico Mining Act Permit No. GR086EM

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.

**Air Quality Permitting History**

The aqb has no previous record of this operation.

**Details**

For this exploration applicant will drill 28 holes, create 14 drill pads and may create 14 mud pits. Total acreage disturbed will be less than 4.2 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:

“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.

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 AQB has no objection to the current request for exploration.

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

If you have any questions, please contact me at 505.476.4318.



**Michelle Lujan Grisham**  
Governor

**Howie C. Morales**  
Lt. Governor

## NEW MEXICO ENVIRONMENT DEPARTMENT

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**James C. Kenney**  
Cabinet Secretary

**Jennifer J. Pruett**  
Deputy Secretary

### MEMORANDUM

Date: March 12, 2021

To: Anne Mauer, Mining Act Team Leader  
Mining Environmental Compliance Section  
Ground Water Quality Bureau (GWQB)

From: John Moeny  
Watershed Protection Section  
Surface Water Quality Bureau (SWQB)

Subject: **Request for Review and Comment, Minimal Impact Exploration Operation Permit Application, Malone District Exploration Project/Bronco Creek Exploration, Grant Co., NM, Permit Tracking No. GR086EM**

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On February 17, 2021, NMED received a request for comments regarding a new minimal impact exploration permit submitted by Bronco Creek Exploration ("Applicant"). The project is in Grant County, approximately 18 air miles northeast of Lordsburg on public lands managed by the Gila National Forest.

#### *Summary of Proposed Action*

The Applicant seeks to explore for base (copper, lead, zinc) and precious (gold, silver) metals at up to 28 locations within the Malone project area. Two and one-half inch diameter bore holes will be drilled to a maximum depth of 5,000 feet using drilling mud with an adjacent sump to collect mud and cuttings. Fourteen drill pads (1,000 sq feet each) and sump pits (8,000 cubic feet each) will be constructed adjacent to the drilling locations. Total disturbance is estimated at 4.164 acres. Each site will be reclaimed by filling sump pits, regrading to match preexisting contour and topography, replacing topsoil and reseeding using a species mix specified by the Gila National Forest.

#### *Relevant State and Federal Water Quality Regulations*

This Project will disturb one or more acres and storm water discharges may be covered under either the U.S. Environmental Protection Agency (USEPA) National Pollutant Discharge

Elimination System (NPDES) Construction General Permit (CGP) or under the Multi-Sector General Permit (MSGP) under Sector G Metal Mining.

Operators of certain small construction activity (disturbance of one to five acres) may be waived from permit requirements under limited circumstances. To be eligible for this waiver, operators must certify to EPA that they are eligible (see Section 9 Appendix C of the CGP). Waivers are only available to stormwater discharges associated with small construction activities (i.e., 1-5 acres). If this Project transitions into mining activities, MSGP coverage would be required at that time.

The CGP was re-issued January 11, 2017 and is effective February 16, 2017. The CGP and the eReporting tool (NeT-CGP) to apply for coverage or waivers is available at:

<https://www.epa.gov/npdes/2017-construction-general-permit-cgp>.

The MSGP is effective March 2021 and permit information is available at:

at <https://www.epa.gov/npdes/stormwater-discharges-industrial-activities>

In addition to the regulations above, the following practices are recommended to protect surface water quality.

- Drill site KM-P-11 lies along an ephemeral drainage which may be subject to flash flooding at any time of the year, but particularly during the summer monsoon season July- September. It is recommended that this drill location be moved out of the floodplain, or drilled outside the summer monsoon season. At no time should construction materials including fuel, oil, grease or other contaminants be staged or stored in flood prone areas.
- Any water produced during drilling must be contained on-site and not discharged to adjacent drainages unless a discharge permit has been secured from the EPA.
- Mineralized native rock and cuttings should be hauled off-site or buried at the bottom of each sump prior to reclamation.
- Sump pits may not be used as disposal sites for oil, gas, grease or other potential contaminants to surface and ground water.
- Fuel, oil, hydraulic fluid, lubricants, and other petrochemicals must have a secondary containment system to prevent spills.
- 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.
- 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).

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

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

DATE: March 16, 2021

TO: Clint Chisler, Permit Lead, Mining Act Reclamation Program ("MARP")/MMD  
Holland Shepherd, Program Manager, MARP/MMD

THROUGH: Ghassan Musharrafieh, Ph.D., P.E., Hydrology Bureau Chief *gpm*

FROM: Kamran H. Syed, Ph.D., P.E., Hydrology Bureau *KHS*

SUBJECT: Review and Comment, Minimal Impact Exploration Operation Permit Application,  
Malone District Exploration Project/Bronco Creek Exploration, Grant Co., NM,  
Permit No. GR086EM

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**I. Introduction and Conclusions**

On February 17, 2021, the State of New Mexico Energy, Minerals and Natural Resources Department (EMNRD) requested the New Mexico Office of the State Engineer (NMOSE) Hydrology Bureau to review and comment on the MMD GR086EM Part 3 Minimal Impact Exploration Operation Permit Application for the Malone District Exploration Project/Bronco Creek Exploration Drilling Project ("Project"). The project consists of the drilling and evaluation of 28 boreholes, 5,000 feet deep (2.5-inch diameter), exploring for base metals (copper, lead, zinc) and precious metals (gold and silver). The boreholes will be drilled at 14 drill sites (in clusters of two-wells at each site).

The locations of the proposed boreholes are within Sections 18, 19, 20, 21 and 30 of Township 20 South, Range 16 West, and within Section 7 of Township 21 South, Range 16 West. The project location is approximately 20 miles southwest of Silver City, New Mexico in Grant County. The surface elevations at the locations of the proposed boreholes range from approximately 5475 to 5920 feet above mean sea level (amsl).

**Comment Summary**

1. Groundwater
  - a. Based on the proposed borehole depth, it is most likely that groundwater will be encountered, either in borings through the alluvium of Gold Gulch or tributary washes to Thompson Canyon, or potentially in fractured crystalline rock units specified for exploration. Groundwater encountered through proposed exploration depth of 5,000 feet in the crystalline rock may be under artesian conditions and/or require competent segregation from shallow groundwater sources when the borings are decommissioned,

which would require additional administrative filings with the NMOSE through our District 3 Office.

- b. In the unlikely event that no water is encountered MMD regulations (19.10.3 NMAC) will prevail, and NMOSE regulations (19.27.4 NMAC) would not apply.
- c. The application states that completed forms WR-07 (Application for permit to drill a well with no consumptive use of water) and WD-08 (Well plugging plan of operations) have been filed with the District Office of the State Engineer. It has been confirmed that these forms have been filed with the NMOSE District 3 Office.

## 2. Borehole Abandonment

- a. In the unlikely event that the groundwater is not encountered MMD regulations for plugging (Subsection L of 19.10.302 NMAC) will prevail over NMOSE regulations for plugging (Subsection C of 19.27.4.30 NMAC)
- b. If water is encountered NMOSE well plugging regulations (Subsection C of 19.27.4.30 NMAC for non-artesian conditions; Subsection K of 19.27.4.31 NMAC for artesian conditions) should be followed.

## **II. Surface water**

NMBGMR 7.5-minute Topo maps (Eagle Eye Peak and Burro Peak Quadrangles) and GIS data from NMOSE Geographic Information System database were used to locate surface water bodies in the vicinity of the proposed project drill sites. The project site is approximately 7 miles southwest of the tail of Mangas Creek. Several area springs and ephemeral drainages are located in the vicinity of the proposed drill sites (Thompson Canyon, Gold Gulch and Mill Canyon), with drill sites KM-P-13 and KM-P-14 located close to the axis of Gold Gulch. Additionally, drill site KM-P-09 appears to be particularly close to a wash.

It is recommended to avoid drilling in or within 100 feet of any drainages. Subsection F of Section 6-*Groundwater/Surface Water Information* (page 16) of the MMD's "Part 3 Minimal Impact Exploration Operation PERMIT APPLICATION INSTRUCTIONS" (2012), suggests that drilling in or near water courses even if it is dry for most of the year is not preferred and will likely result in some drilling restrictions by the MMD. NMOSE regulation 19.27.4.29.P.(2)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.

## **III. Groundwater**

Using the New Mexico Water Right Reporting System (NMWRRS), 10 wells were identified within approximately 3 miles of the proposed project area. Out of those 10 wells, three wells have well depth information and two wells have both well depth and depth to water (DTW) information. The well depths range from a minimum of 175 feet to a maximum of 500 feet. The reported DTW for the two wells are 26 feet and 95 feet. Details are provided in the following table.



NMOSE POD Number	UTM Easting, m	UTM Northing, m	Approximate distance from the centroid of proposed wells, feet	Depth of Well, feet	Depth To Water, feet
PL 00062	167548	3609266	6500	250	
LV 00769 POD2	170618	3607213	7800	175	95
LV 00787 POD2	170003	3609457	8800	500	26

Recent (2020) water level measurements from several area wells (approximately 15 miles from the project area) are available in the USGS database (<https://groundwaterwatch.usgs.gov/>). The reported depth to water is generally less than 100 feet. A water level contour map (along with associated well data) of Grant County is provided in Hydrology Report 2 (Trauger, 1972). According to that map, the depth to water in nearby Township 21 South Range 16 West is less than 100 feet, although topographic relief and local lithology likely results in varied groundwater occurrence over relatively short lateral distances. The project boreholes are proposed to be drilled to a depth of 5,000 feet. Given water level information from multiple sources, presented above, it seems very likely that the proposed boreholes will encounter groundwater.

Since it is likely that groundwater will be encountered, the NMOSE requirements for the drilling and plugging of the proposed boreholes should be observed and met. A *Permit to Drill a Well with No Water Right* for the proposed boreholes (that encounter water) would be required (this permit application has already been filed by the Applicant, but the NMOSE District 3 Office may require additional filings such as an *Artesian Well Plan of Operations* if artesian conditions are encountered). The NMOSE regulation 19.27.4 also requires among other things, that the borehole be drilled by a New Mexico-licensed well driller.

#### **IV. Exploratory borehole abandonment**

MMD regulations (19.10.3 NMAC) prevail over those of NMOSE (19.27.4 NMAC) if groundwater is **not** encountered during exploratory drilling (this scenario is un-likely for the proposed borehole depth of 5,000 feet as stated earlier). For exploratory borings that do not encounter a water-bearing stratum, MMD plugging regulation Subsection L of NMAC 19.10.3.302 addresses MMD-preferred plugging alternatives. In the event that drilling does encounter groundwater (a highly likely scenario for the proposed boreholes under this application), pluggings should be according to either a pre-approved “*plugging conditions*” attached to the NMOSE drilling permits, or can be separately conditioned by a *Well Plugging Plan of Operations*, as dictated by NMOSE Water Rights District 3 (Deming Office). Additional details regarding well plugging requirements under 19.27.4 NMAC are included in the attached document (“General Concerns Related to NMOSE Regulation of Exploratory Borehole Drilling Encountering Groundwater and Associated Plugging of these Borings”).

Plugging Plan provided to the NMOSE District 3 (Deming) Office notes that the dry and non-artesian boreholes will be decommissioned with a high solids bentonite grout (with a limited upper interval

of cement). NMOSE regulations (19.27.4 NMAC) addresses requirements for well's decommissioning, and should be met if applicable. If the borehole is not flowing, a high-solids bentonite grout is an acceptable sealant **IF** water chemistry does not preclude its use – Chloride concentration in excess of 1,500 mg/l or total hardness in excess of 500 mg/l are derogatory to bentonite sealant use, and bentonite sealant should not be used in this case. Refer to the NMOSE guidelines for well construction and plugging:

<https://www.ose.state.nm.us/Statewide/Guidelines/SealantTableSigned.pdf>, as well.

## **V. 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.

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## 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 (New Mexico Administrative Code). 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:

<http://164.64.110.134/parts/title19/19.027.0004.html> . The Mining and Mineral Division (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 19.27.4 NMAC Regulations. 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 downhole, the potential for permanent commingling of aquifers or downhole 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.