

State of New Mexico  
Energy, Minerals and Natural Resources Department

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**Michele Lujan Grisham**  
Governor

**Sarah Cottrell Propst**  
Cabinet Secretary

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

**Jerry Schoeppner, Director**  
Mining and Minerals Division



**Electronic Transmission**

June 19, 2020

Joseph McEnaney  
St. Cloud Mining Company, Zeolite Mine & Mill  
P.O. Box 196  
761 St. Cloud Mine Road  
Winston, New Mexico, 89743

**RE: Agency Review Comments and Request for Additional Information, Zeolite Mine and Mill Modification 20-1 Application, Permit No. SI006RE – Sierra County, New Mexico**

Dear Mr. McEnaney,

The New Mexico Mining and Minerals Division (“MMD”) received the submittal from St. Cloud Mining Company titled, “*Permit No. SI006RE, Permit Modification 20-1*”, dated April 28, 2020.

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 Office of the State Engineer (“NMOSE”), the New Mexico Department of Game and Fish (“NMDG&F”), and the New Mexico Department of Cultural Affairs - Historic Preservation Division (“NMDCA/HPD”).

**General Comments:**

MMD has reviewed the Permit Application Package (“PAP”) and deemed it administratively complete, pursuant to §19.10.5 NMAC, in a letter to St. Cloud dated May 13, 2020. However, 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 this document and has the following comments to be addressed in writing:

1. Please provide engineering design calculations for the proposed sediment ponds 1-3. The requirements for a new impoundment can be found in Section 19.10.5.508.B.6 of the NMAC.
2. Please provide the communication with Wagner Equipment Rentals to support the hourly equipment rate for the D9T.
3. Section *Total Ownership and Operating Costs* discusses St. Cloud’s reasoning for not including the rental company profit as well as the insurance cost from the hourly equipment rate for a D9T dozer. However, if MMD were to complete the reclamation they would have

**Agency Review Comments and Request for Additional Information, Zeolite Mine and Mill  
Modification 20-1 Application, Permit No. SI006RE – Sierra County, New Mexico**

June 23, 2020

Page 2 of 3

to pay the entire cost from an equipment rental company therefore the D9T rate should be \$236.00/hr. Please use this equipment rate in the cost estimate.

4. Please provide the fuel cost being used in the cost estimate as well as documentation to support that value.
5. The *Grading Production* section states “the total acreage to be graded was estimated to be approximately 47.0 acres” but page 2 of Attachment 7 has the total acreage for regrading as 37 acres. Please clarify the total acreage that needs to be regraded.
6. At the end of the *Permit Modification 20-1* section it says that all disturbed areas will be fertilized during the first growing season, but the fertilizer cost is not included in the *Revegetation Costs* section. Please include the costs for the material and labor for fertilizing the reclaimed areas in the cost estimate.
7. Please provide a breakdown of the labor and equipment costs that contribute to the \$765 per acre value under the *Revegetation Costs* section.
8. Attachment 7 page 2 has the total acreage for revegetation and monitoring as 43.5 acres but the total area to be regraded is 37 acres. What disturbed areas are included in the 6.5 acre difference?
9. Attachment 7 page 5 does not include the calculations for ripping that are mentioned in the *Production Rate for Ripping* section. Please provide these calculations.
10. Please provide the cost breakdown for the vegetation monitoring unit cost from Attachment 7 page 8.
11. Please provide page 7 for Attachment 7 that is mentioned under *Revegetation Costs* section.
12. MMD will require interim pit slopes to be no greater than 2:1.
13. MMD’s guidance for indirect costs requires a 1.5% of the labor cost for liability insurance. Please add this indirect to the cost estimate.
14. Please provide MMD with the excel file for the updated cost estimate.
15. MMD will require drill seeding where it is safe to do so in order to increase the effectiveness of the lighter grass seeds. Please update the cost estimate to reflect drill seeding where accessible.
16. MMD will require the following seed mix to be used on this new unit based on MMD’s recent review of the ecological site description. The total seeding rate is 10.5 lbs PLS/acre.

Common Name	Scientific Name	Rate (lbs of PLS/acre)
Blue grama	<i>Bouteloua gracilis</i>	0.5
Sideoats grama	<i>Bouteloua curtipendula</i>	0.5
Indian ricegrass	<i>Achnatherum hymenoides</i>	3
Western wheatgrass	<i>Pascopyrum smithii</i>	0.5
Alkali sacaton	<i>Sporobolus airoides</i>	0.5
Big sacaton	<i>Sporobolus wrightii</i>	0.5
Desert globemallow	<i>Sphaeralcea ambigua</i>	1
Red mexican hat	<i>Ratibida columnaris forma pulcherrima</i>	0.6
Wand-bloom penstemon	<i>Penstemon virgatus</i>	1
Apache plume	<i>Fallugia paradoxa</i>	0.4
Fourwing saltbrush	<i>Atriplex canescens</i>	2

**Agency Review Comments and Request for Additional Information, Zeolite Mine and Mill  
Modification 20-1 Application, Permit No. SI006RE – Sierra County, New Mexico**

June 23, 2020

Page 3 of 3

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

Please review the comment letter received by NMED MECS Ground Water Quality.

**NMED Surface Water Quality Bureau Comments:**

Please review the comment letter received by NMED Surface Water Quality Bureau.

**NMED Air Quality Bureau Comments:**

Please review the comment letter received by NMED Air Quality Bureau.

**NMDCA/HPD Comments:**

Please review the comment letter received by NMDCA/HPD.

**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.

Should you have any questions, comments, or require additional information concerning this letter or any enclosures, please contact me at (505) 470-5354, or via email at: [jennifere.johnson@state.nm.us](mailto:jennifere.johnson@state.nm.us).

Sincerely,



Jenn Johnson, Permit Lead  
Mining Act Reclamation Program ("MARF")

**Enclosures:**

June 11, 2020 Letter to MMD from NMDGF  
June 18, 2020, Letter to MMD from NMED  
May 18, 2020 Letter to MMD from NMDCA/HPD  
June 15, 2020 Letter to MMD from NMOSE

**cc:** Audie Padilla, Superintendent, St. Cloud Mining  
John Bokich, GMB16, LLC  
Holland Shepherd, Program Manager, MARF  
Mine File (SI006RE)



**Michelle Lujan Grisham**  
Governor

**Howie C. Morales**  
Lieutenant Governor

**NEW MEXICO  
ENVIRONMENT DEPARTMENT**

Ground Water Quality Bureau

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**James C. Kenney**  
Cabinet Secretary

**Jennifer J. Pruett**  
Deputy Secretary

**MEMORANDUM**

Date: June 18, 2020

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  
Rhett Zyla, Air Quality Bureau

Subject: **NMED Comments, Modification 20-1, Zeolite Mine, St. Cloud Mining Company, Sierra County, New Mexico Mining Act Permit No. SI006RE**

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The New Mexico Environment Department (NMED) received correspondence from the Mining and Minerals Division (MMD) on May 15, 2020 requesting NMED review and provide comments on the above-referenced MMD permitting action. MMD requested comments on the Modification 20-1 application within 30 days of receipt in accordance with Section 19.10.5.503.C NMAC. NMED has the following comments.

**Background**

The application for modification requests to develop a new zeolite pit within the current permit boundary. The area proposed for development is located south of the existing Yellowjacket or East Pit mining operations and is designated as the South Side 1 Project Area. The application for modification also includes the reclamation plan for the area proposed to be mined, the associated reclamation cost estimate, and a discussion of the proposed financial assurance instruments.

**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 staff performed an inspection of the proposed new area to be mined on May 27, 2020. Based upon the inspection, the Zeolite South Side 1 Project Area will unlikely encounter groundwater. According to the permit modification application, the groundwater elevation is below the surface elevation of the South Fork of Cuchillo Creek (approximately 5,900 feet). A search of wells in the New Mexico Office of the State Engineer WATERS database, shows the depth to groundwater below Cuchillo Creek is approximately 27 feet. Further, Mr. Audie Padilla with St. Cloud Mining Company, logged exploratory drill holes in the area and stated that no groundwater was encountered. The holes were drilled using an air-only drilling method and were drilled to a maximum depth of 60 feet. During the Little Hermosa drilling campaign (north of Zeolite South Side 1 Project Area) one exploration hole was drilled to a 200-foot depth and was dry. MECS has previously evaluated the material contained within the Mining Act permit area and determined the material does not pose a potential threat to groundwater quality.

### **NMED Summary Comment**

NMED finds that the development of the Zeolite South Side 1 Project Area and associated reclamation as proposed in the application and will be protective of the environment if done in accordance with the approved permits, pollution controls, and the comments provided, including requirements to obtain NPDES coverage as discussed in SWQB comments.

If you have any questions, please contact Kurt Vollbrecht at (505) 827-1095.

cc: Jennifer Johnson, Lead Staff, EMNRD-MMD  
Kurt Vollbrecht, Program Manager, NMED-MECS  
Shelly Lemon, Bureau Chief, NMED-SWQB  
Elizabeth Kuehn, Bureau Chief, NMED-AQB  
Abe Franklin, NMED-SWQB



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**Michelle Lujan Grisham**  
Governor

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**James C. Kenney**  
Cabinet Secretary

**Howie C. Morales**  
Lt. Governor

**Jennifer J. Pruett**  
Deputy Secretary

**MEMORANDUM**

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DATE: May 27, 2020

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

FROM: Rhett Zyla, Environmental Scientist & Specialist - Air Quality Bureau

RE: Request for Comments, Modification 20-1, St. Cloud Mining Company,  
New Mexico Mining Act Permit No. SI006RE

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 St. Cloud Mining Company was issued a General Construction Permit (GCP2-5510) for the Chabazite Mine and Plant on February 3, 2014.

**Details**

The St. Cloud Mining Company is requesting a modification to MMD permit SI006RE, at its Chabazite Mine and Plant site, 2.5 miles south of Chloride, New Mexico, in Sierra County, Township 12S, Range 08W, Sections 3, 4, 10, and 11. It seeks to develop a new zeolite (chabazite) pit – *South Side 1 Project Area* – within the existing boundaries of the currently-permitted area.

St. Cloud's Zeolite Operation is a Regular Existing Mine that consists of a zeolite processing plant, an impoundment used for storage of zeolite fines, the Old Main zeolite mine pit which is fully reclaimed, and the Yellowjacket pit, Phases I & II, that is currently being mined and concurrently reclaimed. The operation was originally permitted in 1996 (by MMD) and since has been in continuous operation.

Mining operations have remained, and will continue to remain within the established Design Limits Permit Area, and are of the same scope and nature as they have been since operations

began in 1996: basically, a surface mining operation utilizing typical surface mining equipment.

### **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. Current requirements which may be applicable in this mining project include, but are not limited to the following:

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:

Unpaved haul roads and traffic areas: paving of permanent and semi-permanent roads, application of surfactant, watering, and traffic controls, such as speed limits and traffic volume restrictions.

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 a permit modification.

The applicant is expected to comply with all requirements of federal and state laws pertaining to air quality. 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) 476-4304.





**Michelle Lujan Grisham**  
Governor

**Howie C. Morales**  
Lt. Governor

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**James C. Kenney**  
Cabinet Secretary

**Jennifer J. Pruett**  
Deputy Secretary

**MEMORANDUM**

Date: June 15, 2020

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

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

Subject: **Request for Comments on Modification 20-1 to Permit S1006RE, Zeolite Mine, St. Cloud Mining Company, Sierra County**

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On May 15, 2020, NMED received a request for comments regarding a modification to an existing, regular mine permit located in Sierra County near Winston.

*Summary of Proposed Action*

The St. Cloud Mining Company ("Applicant") seeks to modify their mine permit to expand the surface mining operation south of existing operations into what is referred to as the "South Side 1" project area. The South Side 1 expansion would remain within the design limits permit area and open access to an additional zeolite ore body. Both the existing mining operation and the proposed expansion are wholly contained on private lands. The proposed expansion would impact up to four ephemeral drainages as described in the rare plant reconnaissance survey.

*Relevant State and Federal Water Quality Regulations*

Intermittent water quality standards under 20.6.4.98 NMAC apply to all unclassified waters of the state including ephemeral drainages in the project area, until a hydrology protocol (HP) survey is conducted and a Use Attainability Analysis (UAA) is approved by the Water Quality Control Commission (WQCC) in accordance with 20.6.4.15 NMAC.

The U.S. Army Corps of Engineers (USACE) regulates the discharge of dredged or fill material into waters of the United States, including wetlands, under Section 404 of the Federal Clean Water Act (CWA). The USACE issues or authorizes Standard Individual Permits (IPs), Nationwide Permits (NWP), and the Emergency Regional General Permit (RGP) for activities such as earth-moving work within wetlands, lakes, and streams (***including ephemeral streams or arroyos***) that are waters of the United States. If you have questions about activities within watercourses or wetlands that may require coverage under a CWA Section 404 permit, then more information is available on-line from the USACE, Albuquerque District, Regulatory Division at: <http://www.spa.usace.army.mil/Missions/Regulatory-Program-and-Permits/>.

The U.S. Environmental Protection Agency (USEPA) administers the National Pollutant Discharge Elimination System (NPDES) program under Section 402 of the Federal Clean Water Act (CWA) in the State of New Mexico. The applicant lists NPDES Stormwater coverage under permit tracking number “NMR00A058”, however that permit number cannot be found in the EPA’s database of NPDES permitting.

The applicant must obtain coverage under EPA’s MSGP as soon as possible. The permit is currently expired (administratively continued for those who had coverage before it expired) but new facilities cannot submit an NOI for coverage until the 2020 MSGP is finalized and issued. As of the time of this comment, NMED does not have a projected date for the availability of the 2020 MSGP.

Information regarding NPDES Stormwater Coverage is available at <https://www.epa.gov/npdes/npdes-stormwater-program>. If you have questions related to pollutant discharges to surface water or National Pollutant Discharge Elimination (NPDES) permits in the State of New Mexico, then contact Sarah Holcomb, Program Manager, Point Source Regulation Section, NMED SWQB at 505-827-2798.

### *Recommendations to protect Surface Water Quality*

The SWQB does not recommend approval of the applicant’s proposed permit modification until it can be verified that current NPDES permitting has been obtained from the EPA.



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

May 18, 2020

Jenn Johnson  
Permit Lead  
Mining Act Reclamation Program (MARP)  
Mining and Minerals Division  
1220 South Saint Francis Drive  
Santa Fe, NM 87505

Re: HPD Log#113075, Request for Comments on Modification 20-1 to Permit SI006RE, Zeolite Mine, St. Cloud Mining Company, Sierra County

Dear Ms. Johnson:

I am writing in response to your request for comment on the above referenced modification to the Zeolite Mine permit received at this office May 15, 2020.

Pursuant to 19.10.5.505 NMAC, Permit Modifications and Revisions, 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 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, the permit area has never been archeologically surveyed. Cultural resource surveys on land parcels adjacent to the project area have identified significant archaeological resources. Therefore, this office recommends a cultural resources survey be conducted on any undisturbed portions of the permit area where proposed new ground disturbance will occur.

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/assets/files/consultants/List%20of%20Cultural%20Resource%20Consultants.pdf>

Finally, our review of this project indicates that portions of the project area (described in the Permit Modification as Township 12 South, Range 8 West, NE/4 of SE/4 of Section 10, and NW/4 of SW/4 of Section 11) occur on NM State Trust Lands leased from the New Mexico State Land Office. Because of this, the NM State Land Office 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



DIRECTOR AND SECRETARY  
TO THE COMMISSION  
Michael B. Sloane

STATE OF NEW MEXICO  
DEPARTMENT OF GAME & FISH

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Placitas

11 June 2020

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

**RE: Modification 20-1 to Permit SI006RE, Zeolite Mine, St. Cloud Mining Company, Sierra County, New Mexico. NMDGF Project No. NMERT-604.**

Dear Ms. Johnson,

The New Mexico Department of Game and Fish (Department) has reviewed the Modification 20-1 for permit SI006RE referenced above. St. Cloud Mining Company (SCMC) is proposing to develop a new zeolite mining pit within the current mine permit boundary. A site inspection was conducted on 27 May 2020 by staff from the Department, MMD, New Mexico Environment Department and SCMC.

To comply with the Migratory Bird Treaty Act and avoid the potential destruction of occupied migratory bird nests, eggs or nestlings, ground disturbance and vegetation removal activities that are associated with the initial mine development activities should be conducted outside of the breeding season for songbirds and raptors (15 April – 1 September). If ground disturbing and clearing activities must occur during the breeding season, the area should be surveyed for active nest sites prior to any disturbance. For any active nests, an adequate buffer zone should be established in order to minimize disturbance. Buffer distances should be 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 on nest site mitigation, and can facilitate contact with qualified personnel.

Blue flax (*Linum perenne*) is listed in the reclamation seed mix (Table 1.), and is an introduced species from Eurasia. The Department recommends replacing blue flax with the native species Lewis flax (*Linum lewisii*). The Department also recommends that the seed mix and mulch be certified weed-free, and that seed test results are requested from the vendor in order 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.

With the implementation of the above recommendations, the Department does not anticipate any significant impacts to wildlife or sensitive habitats during the development of the new zeolite mining pit.

Thank you for the opportunity to review and comment on the proposed mine permit modification. If you have any questions, please contact Ron Kellermueller Mining and Energy Habitat Specialist, at (505) 476-8159 or [ronald.kellermueller@state.nm.us](mailto:ronald.kellermueller@state.nm.us).

Sincerely,

A handwritten signature in blue ink, appearing to read "Matt Wunder".

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

cc: USFWS NMES Field Office

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

DATE: June 15, 2020

TO: Jenn Johnson, Permit Lead, Mining Act Reclamation Program (MARP)/MMD  
Holland Shepherd, MARP Program Manager

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

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

SUBJECT: Comments on Modification 20-1 to Permit SI006RE, Zeolite Mine, St.  
Cloud Mining Company, Sierra County

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On May 15, 2020, the Hydrology Bureau of the New Mexico Office of the State Engineer (NMOSE) received a request for comments by the Mining and Minerals Division (MMD) of the Energy, Minerals and Natural Resources Department (EMNRD) for the St. Cloud Mining Company's (St. Cloud) proposed modification 20-1 of MMD Zeolite mine permit No. SI006RE (Permit). The application is for the proposed new mining pit within the Permit boundary. The project is in portions of Sections 3, 4, 10, and 11, Township 12S, Range 8W in Sierra County, and is located approximately 4 miles south of Winston, New Mexico.

The St. Cloud mining activities have been in operations since 1996 when the permit (SI006E) was originally issued by MMD. The proposed modification (20-1) is for the development of a new mining pit located south of the existing mining operations. The new mining pit which will be located within the original design limit permit area will exploit Zeolite mineral. The surface area of the proposed mining pit is approximately 25 acres. Additional space will be used for overburden/interburden stockpiles, sediment ponds and drainage ditches. The total disturbed area will be approximately 44 acres. The application does not explicitly state the maximum depth of mining.

**Discussion**

The application stated that the mine pit's lowest point will be 200+ feet above the flood plain level of the Cuchillo Creek, so it was unlikely that groundwater would be encountered. Upon review of the NMOSE database (NMWRRS), a total of 118 wells were identified within 5 mile radius around the St. Cloud Zeolite mine. Out of those 118 wells, total depth and depth to water (DTW) information is available for 98 wells. The well depths range from 44 to 460 feet. The average initial depth to water was found to be 62 feet (minimum DTW 2 feet and maximum 280 feet). The land surface elevation of these wells ranged from 5675 to 7161 feet above mean sea level (AMSL).

Figure 1 in the St. Cloud's permit modification 20-1 application provides a base map of the project's south side modification area. However, the map does not include any major geographic features e.g. roads and water bodies (creeks, rivers etc.). Additionally, the application only provides location coordinates for their main mine site. Therefore, when plotted on a map, the South Fork of Cuchillo Negro Creek plots to the south of the site, NOT to the north as implied in the application [page 1: § 19.10.5.505 (a)(ii)(a)].

I used USGS 30 m DEM to create land surface elevation contours in the mine site and surrounding areas. The minimum surface elevation near the *South Fork of the Cuchillo Creek* (Creek) was found to be approximately 5870 feet AMSL. The application does not specify the maximum depth of mining. This author used the geologic cross section presented in the application (Figure 2 of the application) to estimate the possible maximum depth of the mining pit. The minimum surface elevation near the creek appears to be only about 100 feet below the minimum elevation of the proposed surface mining pits (5970 feet as estimated from the pit geologic cross section presented in Figure 2 of the permit application). As such, we are unable to corroborate the statement in the application that the Creek is located 200+ feet lower than the lowest elevation of the surface mining pits.

A well was identified very close (within approximately 50 feet) to the Creek. This well (RG-34371) completed in 1980 is located at UTM coordinates 254944 m East, 3685385 m North. The surface elevation at the well site is 5849 feet AMSL and the well was drilled to a depth of 125 feet. At the time of construction, the depth to water was reported to be 27 feet. Two other wells, also located close to the creek (within 200 feet) were identified approximately 2.5 miles upstream of well RG-34371. These wells (RG-36763 S-4 and RG-36763 S-6) were both 100 feet deep and reported DTW of approximately 50 feet. As such, we are unable to corroborate the statement in the application that the groundwater table is deeper than 60 feet in the proximity of the Creek.

Provided the proposed pit operation does not encounter groundwater or interferes with surface water flows and surface water bodies in the area there are no issues or concerns identified by the Hydrology Bureau with the project; otherwise applicant should contact the OSE Water Rights Division's District office. If groundwater is encountered or surface flows and surface water bodies are disrupted by the pit operation, the Water Rights Division of the New Mexico Office of the State Engineer should be contacted immediately.

### Comments

After review of the proposed modification of St. Cloud's Permit SI006RE, the NMOSE Hydrology Bureau provides the following comments:

1. As per application, the estimate of groundwater depth is based on the results of regional exploration drilling conducted during the Little Hermosa Exploration Project, Permit SI039EM-R2. However, there is no detail provided.

*Provide additional detail regarding location, depth, and date of drilling.*

2. The mining pits description does not explicitly indicate a depth of mining, which is necessary to evaluate whether groundwater would be encountered. Only rough sketches of geological cross sections are provided in the form of figures 2 to 4.



*Provide an approximate maximum depth below ground surface for the proposed vertical extent of mining for the removal of waste rock and ore.*

3. Precise location information of the proposed **new** mining pit is not provided. The location coordinates provided in the application (33°17'30" N. Latitude, 107°37'35" W Longitude) appear to be of their main site as they plot north of the South Fork of the Cuchillo Creek (NOT south of the Creek as implied on page 1 of the application).

*Provide a map showing the proposed new mine pit along with water bodies in the proximity (especially South Fork of the Negro Cuchillo Creek and existing water wells).*

The application describes the presence of a geologic fault visible in some areas that trends southeast to northwest between higher and lower elevation areas within what will be the surface mine pit area. The geographic extent of this fault is not known to the author. However, the presence of geologic fault may indicate groundwater level discontinuity across the fault. In that situation, the error involved in producing the regional groundwater contours may be greater. Based on this, and the three observations listed above, the probability of encountering groundwater during mining operations cannot be completely ruled out.

*It is, therefore, recommended that if exploratory drilling is considered to reassess the groundwater table depth, Section 19.27.4 of New Mexico Administrative Code (NMAC) must be followed for the exploratory drilling.* Additional NMOSE guidelines for drilling and plugging of exploratory boreholes are also attached in Appendix I.

4. If groundwater is encountered during mine pit excavation or if it is anticipated that groundwater *may* be encountered (based on occasional exploratory drilling described above), the Water Rights Division (WRD) of the NMOSE District Office should immediately be contacted. Similarly, if it is anticipated that the flow in the Cuchillo Creek could be disrupted in any way by the mining operations, the WRD District Office should be contacted. Their address is: 5550 San Antonio Dr. NE Albuquerque, NM 87109 and the phone number is: (505) 383-4000.

## Appendix I

### **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 an appropriate annular seal becomes stuck in-place, the potential for permanent commingling of aquifers or loss surface water drainage downhole may occur via an unsealed annulus. In these cases, remedial casing perforation and squeeze-cementing may be required as part of

the well decommissioning. Steps should be taken to prevent deleterious fall-in or drainage of cuttings/sediments into the annulus outside the temporary casing during drilling 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.