

**From:** [Keeven, Leighandra K](#)  
**To:** [Myers, Kevin, EMNRD](#)  
**Subject:** Re: [EXTERNAL] MMD request for comments - Modification 23-1 of HI018EM Lordsburg Playa  
**Date:** Wednesday, September 6, 2023 3:43:25 PM

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Hi Kevin,

The BLM has the following concerns:

The application lists that there will be porta potties and a scraper/grader on site. Neither of these were listed in the BLM Plan of Operations.

The BLM plan of operations lists up to 6 drill holes. However, the operator elected to only drill two holes at the time of the decision to reduce the bond amount.

The operator later came back and revised the plan to only drill one hole at a time to further reduce the bond amount. The amount was set at \$17,400. This was accepted by the BLM in 2020. It is my understanding that the BLM holds this bond rather than MMD but it was accepted at the time by both agencies.

Thanks,

Leighandra

**Leighandra Keeven**

Geologist  
Bureau of Land Management  
Las Cruces District Office  
(575) 525-4337

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**From:** Myers, Kevin, EMNRD <kevin.myers@emnrd.nm.gov>  
**Sent:** Wednesday, September 6, 2023 3:10 PM  
**To:** Keeven, Leighandra K <lkeeven@blm.gov>  
**Subject:** [EXTERNAL] MMD request for comments - Modification 23-1 of HI018EM Lordsburg Playa

**This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.**

Good afternoon Leighandra,

See attached MMD request for comment on Modification 23-1 of HI018EM – Lordsburg Playa minimal impact exploration project.

Please contact me with any questions.

Kevin C. Myers

Hydrologist

Mining Act Reclamation Program (MARF)-Mining and Minerals Division (MMD)

Energy, Minerals and Natural Resources Department (EMNRD)

1220 S. St. Francis Drive

Santa Fe, NM 87505

505-490-0726 office and cell phone

[kevin.myers@emnrn.d.nm.gov](mailto:kevin.myers@emnrn.d.nm.gov) (please note new email as of 9/19/2022)

EMNRD website

<https://www.emnrn.d.nm.gov/>



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

September 13, 2023

Kevin Myers  
Hydrologist  
Mining and Minerals Division  
kevin.myers@emnrd.nm.gov

Re: HPD Log# 120533, Modification 23-1 of HI018EM Lordsburg Playa

Dear Mr. Myers:

I am writing in response to your request for comment on the above referenced permit application, of which was received by this office on September 6, 2023.

Pursuant to 19.10.4.03 NMAC, Minimal Impact Exploration Operations, the Director shall determine whether a permit would have an adverse impact on cultural resources listed on, or eligible for, 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.

Our database indicates that drill hole locations 1, 4, 5, and 6 have not been previously surveyed for the presence of cultural resources. We recommend that these drill locations be archaeologically surveyed prior to ground disturbance. Drill hole locations 2 and 3 have been surveyed and do not contain an historic property. The project area does not contain a cultural resource listed on the NRHP or SRCP. It does not contain a known burial ground.

The permit application indicates that the project location is situated on public land, of which the surface and mineral estate is managed by the Bureau of Land Management (BLM). The BLM should be contacted regarding their requirements for archaeological survey of the drill hole project area.

Sincerely,

*Richard Reycraft*

Richard Reycraft  
HPD Staff Archaeologist



September 15, 2023

Mr. Kevin Myers, Permit Lead  
Mining Act Reclamation Program  
1220 South St. Francis Drive  
Santa Fe, NM 87505

Re: NMDOT Comment on Modifications 23-1 of New Minimal Impact Exploration Permit Application # H1018EM

Dear Mr. Myers,

The NMDOT, in coordination with the Federal Highway Administration, has been addressing the I-10 dust storm issue since 2015 with an array of safety upgrades within and outside of the NMDOT right-of-way. Within the playa surface and watershed, the NMDOT has been in coordination with the Bureau of Land Management and the New Mexico State Land Office to revegetate and stabilize bare soils, reduce erosion, and modify grazing practices to reduce the amount of disturbed soil. Thus far, our air quality research and reduced visibility-related crashes indicate that our efforts have yielded success in reducing the severity of dust storm-related visibility on I-10. The proposed mining permit has the potential to reverse that success by undermining the efforts conducted thus far as detailed below:

- The proposed project is within a previously-nominated Bureau of Land Management “Lordsburg Playa and Watershed Area of Critical Environmental Concern (ACEC)” which would require special management for reasons of public health to due over 40 fatalities in nearby I-10 due to dust originating from disturbed soils in this area. The playa and watershed qualify for the ACEC under the Relevance Criteria: Natural Hazard (unstable soils); a natural process that has been exacerbated by human action and Importance Criteria: a) Has qualities which warrant highlighting in order to satisfy public or management concerns about safety and public welfare and b) Poses a significant threat to human life and safety or property. The area has been extensively studied and two sources of soil disturbance have been identified as contributing to the zero-visibility conditions during a dust storm: 1) Historical and modern grazing mis-management in the western watershed leading to severe erosion and 2) Disturbance of the playa surface by cattle and vehicles. Due to four dust-related fatalities in 1997, the BLM closed the entire playa to off-road vehicle use with the exception for administrative use (closure still in effect), which thus far has been rancher pickups. The development of a mining operation on the playa surface would exponentially increase the amount of soil disturbance.
- Lithium is extracted via water evaporation; the installation of evaporation ponds on the playa surface would effectively be making a new source of loose sediment that can be entrained by the wind during dust storms, exacerbating the problem.

**Michelle Lujan Grisham**  
Governor

**Ricky Serna**  
Cabinet Secretary

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**Jennifer Sandoval**  
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**Charles Lundstrom**  
Commissioner, Secretary  
District 6

- The proposed development would draw shallow groundwater levels lower; currently the inundation and saturation of the playa surface by accumulated runoff is what irrigates the fragile soils (NRCS) at the playas edge, a reduction in shallow groundwater would dry out this fragile soil areas, reduce vegetative cover, and any disturbance of those soils would lead to increased dust storm severity.
- The project as proposed does not include sufficient best management practices (BMPS) to ensure adequate protection of soils as required by the National Pollution Discharge Elimination System (NPDES). See attached EPA fact sheet for mining facilities.

The NMDOT encourages the EMNRD to strongly consider the dire conditions currently present on the playa when considering issuance of this permit. Over the past decade we have already witnessed several catastrophic multi-fatality crashes on I-10 due to dust storm visibility issues, and it is the responsibility of the state government to do what is possible to prevent this unnecessary loss.

Sincerely,

Trent Botkin  
Environmental Bureau Manager (acting)  
New Mexico Department of Transportation  
1120 Cerillos Rd. Santa Fe, NM 87504  
505-470-4195  
Trent.Botkin@dot.nm.gov

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



September 25, 2023

Kevin C. Myers  
Hydrologist

Mining Act Reclamation Program (MARF)-Mining and Minerals Division (MMD) Energy, Minerals and Natural Resources Department (EMNRD)  
1220 S. St. Francis Drive  
Santa Fe, NM 87505

**RE: Request for Comments on Modification 23-1 of New Minimal Impact Exploration Permit Application, Lordsburg Playa Exploration Project, Permit No. HI018EM, Hidalgo County**

Thank you for the opportunity to comment on the above referenced project. Although it does not appear that any vegetation survey was conducted for this exploratory project, I disagree that drilling activities will "take place on an essentially barren or sparsely vegetated salty playa lakebed surfaces," as described in the permit request. There is a fair amount of vegetation, including cactus species such as fishhook barrel cactus and native shrubs and grasses along the margin of the play where 2 drill holes are being proposed in Sections 07 and 18. While no vegetation surveys have been done in this area to my knowledge, I do not expect there to be any impacts to New Mexico State Endangered Plants or Federally Listed Endangered or Threatened plants as a result of this new minimal impact exploration request.

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

Sincerely,

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

Erika Rowe  
State Botanist/Endangered Plant Program Coordinator  
EMNRD-Forestry Division  
1220 S. St. Francis Dr.  
Santa Fe, NM 87505  
[erika.rowe@emnrn.nm.gov](mailto:erika.rowe@emnrn.nm.gov) / <http://www.emnrn.state.nm.us/SFD/>  
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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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5 October 2023

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

***RE: Modification 23-1 of New Minimal Impact Exploration Permit Application, Lordsburg Playa Exploration Project, Hidalgo County, New Mexico. Permit No. HI018EM; NMDGF Project No. NMERT-2857.***

Dear Mr. Myers,

The New Mexico Department of Game and Fish (Department) has reviewed the above referenced exploration project submitted by Frank Bain (Operator). The Operator is proposing to drill 6 exploratory holes at 6 drill pad sites. Hole depths will be approximately 500 feet. The exploration project will be located on Bureau of Land Management (BLM) administered land in Sections 7, 8, 9, 17, 18 and 20 in Township 23S, Range 20W. The total area that will be disturbed is approximately 3.2 acres.

The permit application states that drilling will begin with air and probably be completed using foam or mud. For mud/fluid drilling, the Department strongly recommends the use of a closed loop drilling system. Closed loop systems eliminate the need to build fences or install netting to exclude wildlife from mud pits, reduce the amount of surface disturbance associated with the drill pad site, and consume significantly less water. If the Operator does use mud pits, the Department recommends netting or covering fenced mud pits to exclude birds and bats. If netting is used, the Department recommends extruded plastic, knit, or woven netting with a mesh size of three eighths inches to exclude smaller animals. The Department does not support the use of monofilament netting due to its tendency to ensnare wildlife, usually resulting in injury or death. Netting material must be held taught over a rigid and adequately supportive frame to prevent sagging into the mud pits.

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

On page 5 of the permit application, the Operator incorrectly states that a wildlife survey had been conducted by referencing a comment letter the Department submitted to MMD on 20 November 2017 (NMDGF Project No. 18073) for the initial Lordsburg Playa Exploration permit application. In that letter, the Department stated: "The playa lakes within the Lordsburg Playa

contain limited riparian/wetland vegetation primarily along the playa borders. During periods of high runoff, the playa lakes contain water that provides an important stopover and wintering site for migratory shorebirds and waterfowl. While the Department does not anticipate significant impacts to wildlife or sensitive habitats during the exploratory drilling phase of the project, we believe that the uniqueness and value of these large playa lakes to migratory birds could subject them to adverse impacts from large resource extraction operations, and that the Lordsburg Playa should be managed as important wildlife habitat.” While the Department continues to support the above statements, this information does not constitute a wildlife survey and the incorrect reference to the Department’s letter as a wildlife survey needs to be corrected in the permit application.

The Operator proposes to not seed the drill pad sites after reclamation and uses the following justification: “Activities will take place on essentially barren or sparsely vegetated salty playa lakebed surfaces, alluvial gravels and sand dunes.” The Department does not concur with the justification and recommends that the Operator use a BLM-approved native seed mix that is appropriate for the playa’s saline soil and promotes soil stability. The Department also recommends that only certified weed-free seed be used to avoid inadvertently introducing non-native species to the reclamation site. Any alternate plant species, used to substitute for primary plant species that are unavailable at the time of reclamation, should also be native. When possible, the Department recommends using seeds that are sourced from the same region and habitat type as the reclamation site and suggests including seeds from a region that represents potential future climatic conditions at the site.

Thank you for the opportunity to review and comment on the proposed exploration 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:** October 6, 2023  
**TO:** Kevin Myers, Hydrologist, Mining Act Reclamation Program (MARP),  
Mining and Minerals Division (MMD), Energy, Minerals and Natural Resources  
Department (EMNRD)  
**THROUGH:** Katie Zemlick, Chief, Hydrology Bureau, Santa Fe, NM *KZ*  
Laura Petronis, Water Resources Manager 1, Hydrology Bureau, Santa Fe, NM *LJP*  
**FROM:** Brad Wolaver, Senior Hydrologist, Hydrology Bureau, Santa Fe, NM *BDW*  
**SUBJECT:** Review of Modification 23-1 of New Minimal Impact Exploration Permit  
Application, Lordsburg Playa Exploration Project, Permit HI018EM, Hidalgo Co.

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**Summary**

At the request of the MMD, this memo reviews Modification 23-1 of New Minimal Impact Exploration Permit Application, Lordsburg Playa Exploration Project, Permit No. HI018EM. Here also, the Hydrology Bureau of the Office of the State Engineer (OSE) summarizes the relevant history of the permit. The Hydrology Bureau finds that the proposed boreholes will likely encounter groundwater with elevated sulfate concentration. Thus, use of a sulfate -resistant cement is recommended for plugging boreholes (e.g., ASTM Type V cement; BOR, 1986; ASTM, 1999; ASTM, 2007; ASTM, 2018), unless the Applicant provides analyses of groundwater sampled from the proposed boreholes which support use of an alternate cement.

**2017 Application**

The MMD received a Part 3 Minimal Impact Exploration Permit Application in September 2017 from Frank Bain of Lordsburg Resources (Applicant), which proposed drilling of lithium exploration boreholes at the Lordsburg Playa, approximately thirteen miles west-southwest of the Town of Lordsburg in Hidalgo Co. (Figure 1). The Applicant proposed drilling two 6-inch diameter exploratory boreholes (LBP-1 and LBP-2) to depths of 750 ft. The proposed drilling method is not stated. The six exploratory borings would be plugged upon completion of drilling using high-density bentonite clay.

Review comments from OSE hydrologist Doug Rappuhn were provided to MMD permit lead Clinton Chisler on November 20, 2017 (Appendix A). Other agency comments and all documents related to the project are available at EMNRD (2023). The primary concern noted by OSE in the 2017 application was that Section 6 application indicates that the closest well to the proposed boreholes had a sign that said it was a “salt water well not fit for human or livestock use” and had a total dissolved solids (TDS) > 10,000 mg/l (Figure 1, A-675-POD1; TD=150 ft). The

Declaration for the well (Appendix B) states that the “Well has extreme salt content”, which OSE notes is “not unusual for a well that likely taps groundwater connected to that found in the playa...”

The Applicant proposed abandoning the boreholes with a high-density bentonite sealant (Section 6D, Wet hole abandonment (option 2)). However, given the likely elevated chloride concentration of groundwater in the nearest well, OSE states that “[t]he use of bentonite may not be appropriate in environments where the formation water chemistry has a total hardness greater than 500 parts per million and/or a chloride content of greater than 1500 parts per million.” (i.e., Baroid Quick-Grout high-solids bentonite grout; Baroid, 2023). Additionally, “NMOSE will disallow use of either a bentonite grout or chip / pellet bentonite to plug the project boreholes without substantiation of appropriate groundwater chemistry, leaving cement grout as the likely alternative.”

### **2018 Revised Application and 2020 Permit Approval**

MMD received a revised application from the Applicant in September 2018, which added four boreholes to the proposed project, for a total of six proposed boreholes. As with the 2017 application, Section 6D of the revised application still proposed the use of high-density bentonite clay (i.e., QUIK-GROUT) to plug the boreholes. OSE did not provide any additional comments for the revised application.

In July 2020, MMD approved the permit, which authorized drilling one five-inch borehole to a total depth of 500 ft adjacent to A-675-POD1, the closest well of other ownership. The permit states that:

- Dry boreholes would be plugged with “high-density bentonite clay”,
- “[if] groundwater is encountered, the boreholes shall be permitted and sealed pursuant to the NMOSE’s Rules and Regulations Governing Well Driller Licensing, Construction, Repair, and Plugging of Wells, §19.27.4 NMAC...” and “[an] NMOSE-approved Well Plugging Plan of Operations shall be provided to MMD following the approval of this Permit or within 30 days after groundwater was inadvertently or unexpectedly encountered during drilling activities, and
- “The approved sealant shall comply with all applicable specifications of ASTM D5299-99. Because of the anticipated hard water conditions concerning the permit area, the permittee is required to use the proper plugging material appropriate for the hardness of water encountered.”

A review of the New Mexico Water Rights Reporting System (NMWRRS; OSE, 2023) by the Hydrology Bureau for this memo, indicates OSE District 3 approved two permits for four of the six boreholes at locations indicated on the revised MMD permit (i.e., A-835-POD1, 2, 3 in 2018 and A-835-POD 4 in 2020) and approved a Well Plugging Plan of Operation for A-835-POD4 in 2020. OSE District 3 indicates that both the well permits and the Well Plugging Plan of Operation

have expired due to inactivity; and OSE District 3 does not have records on file indicating that the boreholes were drilled (Owens, 2023). The expired permit for A-835-POD1, 2, 3 indicated a maximum borehole depth of 300 ft, diameter <4.5 in, and a requirement to be plugged within thirty days of completion (unless a permit for specific use were approved by OSE). The expired permit for borehole A-835-POD4 indicated a maximum depth of 500 ft and <8-inch diameter borehole. Dry holes were to be sealed with high density bentonite clay (QUIK-GROUT) and wet holes were to be sealed with Portland neat cement (while the permit for A-835-POD4 approved Portland Type I, or Type II, or Type 1/11 neat cement). If artesian conditions were encountered, an Artesian Conditions drilling plan would have been required prior to continued drilling. The expired Well Plugging Plan of Operation indicated total borehole depths of 500 ft and if an open hole were not possible, steel or PVC casing would be used and that Portland neat cement would be the sealant used for plugging.

## **2023 Modification**

On September 6, 2023, MMD requested that the Hydrology Bureau provided comments for Modification 23-1 of the approved permit, which MMD received from the Applicant in July 2023. The modification proposes, as with the application approved by MMD in 2020, six exploratory borings to approximate depths of 500 ft. The borehole diameter changed somewhat to six-inch diameter from the five-inch diameter. The locations did not change.

The Hydrology Bureau conducted a review of publicly available hydrogeologic literature for the Lordsburg Playa, to identify potential water quality constituents which may affect the long-term integrity of sealants used in borehole plugging (Hawley J. , 2023; B. J. Hibbs, 2000; McLemore, 2021; Hawley J. , 2023; NWQMC, 2023; Hawley, et al., 2000). The Hydrology Bureau found that boreholes will likely encounter groundwater with elevated sulfate concentration, as the Lordsburg Playa serves as the terminal groundwater discharge site of the Animas Basin. As groundwater moves from the southern end of the Animas Basin to the Lordsburg Playa, gypsum dissolution occurs and groundwater evolves from calcium- and bicarbonate-rich to sodium-sulfate-chloride-rich (Appendix C) (Hawley et al., 2000). At the Lordsburg Playa, evaporative concentration of groundwater occurs, depositing gypsum and halite (Hawley et al., 2000). On the east side of the Lordsburg Playa, two wells drilled in the basin-fill sediments proximal to the playa, approximately six miles southeast of the proposed boreholes, had sulfate concentrations of 140 and 610 mg/l and TDS values of 505 and 1,450 mg/l, respectively (Figure 1). In the immediate vicinity of the proposed project, a well on the west flank of the Lordsburg Playa had a sulfate concentration of 2,600 mg/l (Appendix D; Figure 7-7 of Hawley et al., 2000).

Considering elevated sulfate concentration in groundwater is likely to be encountered in the proposed boreholes, the Hydrology Bureau recommends a sulfate-resistant cement be used during plugging operations (e.g., Type V cement or similar; refer to Table 2 of the Bureau of Reclamation Concrete Manual shown on Figure 2 of BOR, 1988; also refer to Table 2 of ASTM, 1999, which

has been superseded by ASTM, 2018; sulfate-resistant cement recommendations are unchanged; ASTM, 2007; Figure 3). Alternatively, the Applicant may present results of groundwater quality analyses from the proposed boreholes in support of a different cement design—that also complies with guidelines for water quality constituents outlined in BOR (1986) and ASTM (1999), to be approved by OSE (i.e., 19.27.4.30.C(2) NMAC; 19.27.4.31.K(1) NMAC).

## References

- ASTM (1999). American Society of Testing and Materials, International (ASTM), D 5299-99, Standard guide for decommissioning of ground water wells, vadose zone monitoring devices, boreholes, and other devices for environmental activities.
- ASTM (2007). American Society of Testing and Materials, International (ASTM), C 150-07, Standard specification for Portland Cement.
- ASTM (2018). American Society of Testing and Materials, International (ASTM), D 5299-99/D5299M-18, Standard guide for decommissioning of ground water wells, vadose zone monitoring devices, boreholes, and other devices for environmental activities.
- B. J. Hibbs, M. M. (2000). Some notes on the hydrogeology and ground-water quality of the Animas Basin. In N. J. T. F. Lawton (Ed.), *Southwest Passage: A trip through the Phanerozoic*. NMGS 51st Annual Fall Field Conference Guidebook, (pp. 227-234).
- Baroid. (2023). QUIK-GROUT Data Sheet, available at: <https://www.baroididp.com/en/products/quik-grout>.
- BOR. (1988). U.S. Department of the Interior. Bureau of Reclamation (BOR). Concrete Manual. A Water Resources Technical Publication. Eighth Edition - Revised.
- EMNRD. (2023). HI018EM Lordsburg Playa Lithium in Brine Exploration, available at: [www.emnrd.nm.gov/mmd/mining-act-reclamation-program/pending-and-approved-exploration-applications/minimal-impact/hi018em-lordsburg-playa-lithium-in-brine-exploration/](http://www.emnrd.nm.gov/mmd/mining-act-reclamation-program/pending-and-approved-exploration-applications/minimal-impact/hi018em-lordsburg-playa-lithium-in-brine-exploration/).
- Hawley, J. (2023). Personal communication with John Hawley, Albuquerque, New Mexico, September 27-28, 2023.
- Hawley, J., Hibbs, B. J., Kennedy, J. F., Creel, B. J., Remmenga, M. D., Johnson, M., Dinterman, P. (2000). Chapter 7 - Animas Basin System. In J. Hawley, B. J. Hibbs, J. F. Kennedy, B. J. Creel, M. D. Remmenga, M. Johnson, P. Dinterman, *Trans-international boundary aquifers in Southwestern New Mexico*. Prepared for the U.S. EPA - Region 6 and the IBWC - U.S. Section, available at: [nmwrri.nmsu.edu/publications/pub-external-pages/trans-international-boundary-aquifers-in-southwest-new-mexico.html](http://nmwrri.nmsu.edu/publications/pub-external-pages/trans-international-boundary-aquifers-in-southwest-new-mexico.html).
- McLemore, V. T. (2021). Potential lithium resources in New Mexico. SME Annual Meeting, Denver, CO, p. 5.
- NWQMC. (2023). National Water Quality Monitoring Council (NWQMC). Welcome to the new Water Quality Portal, available at: <https://www.waterqualitydata.us/>.
- OSE. (2023). New Mexico Water Rights Reporting System (NMWRRS), <http://nmwrrs.ose.state.nm.us/nmwrrs/index.html>.
- Owens, C. (2023). Personal communication with Caitlyn Owens, Water Resources Professional III, Office of the State Engineer, Deming, NM, September 29, 2023.

Review of Modification 23-1 of New Minimal Impact Exploration Permit Application,  
 Lordsburg Playa Exploration Project, Permit No. HI018EM, Hidalgo County

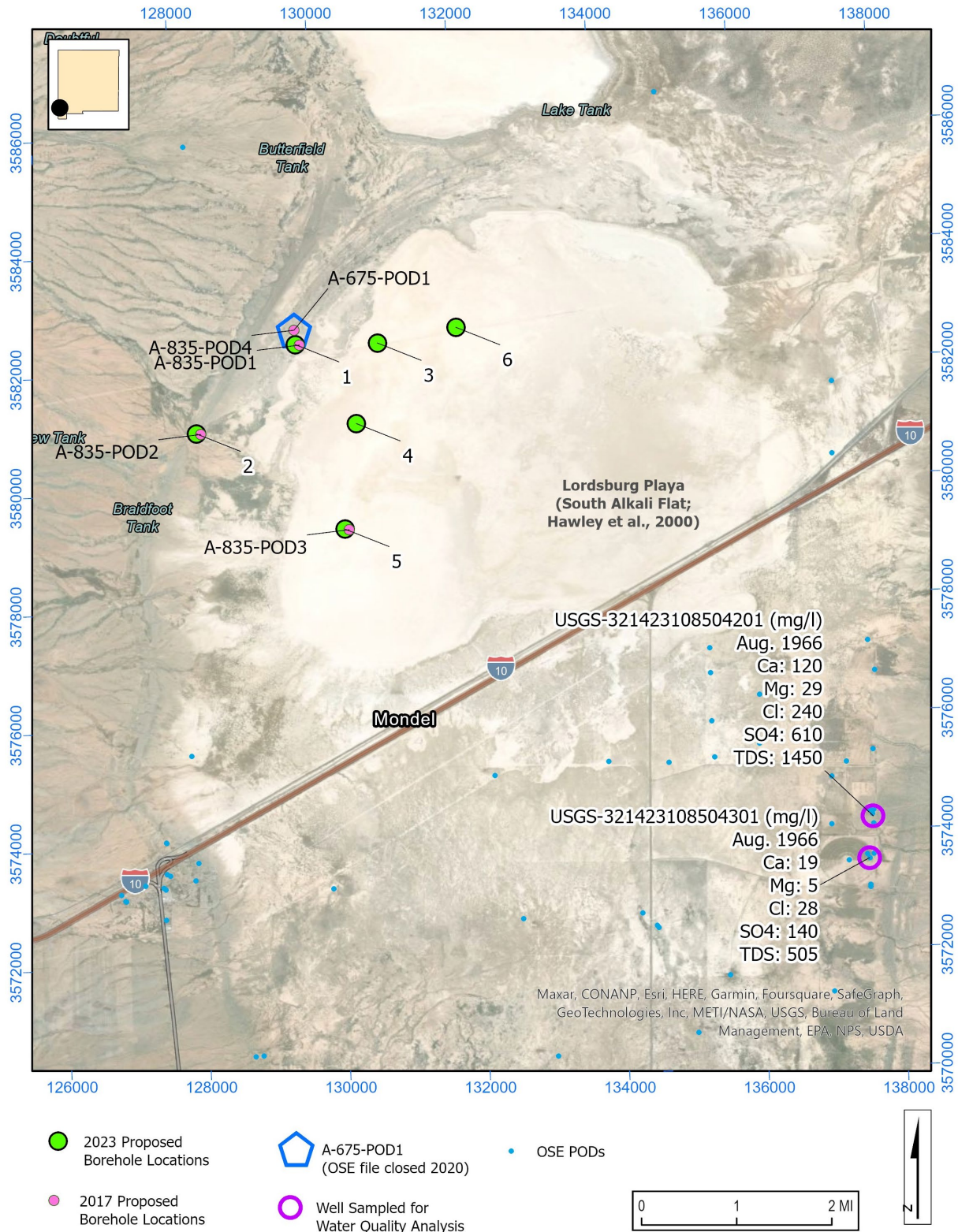


Figure 1. Lordsburg Playa lithium brine exploration project location

All documents for this project, including proposed well locations, are available at EMNRD (2023). Source of water quality analyses from selected wells on the east flank of the Lordsburg Playa: NWQMC (2023).

**Table 2.—Attack on concrete by soils and waters containing various sulfate concentrations**

Relative degree of sulfate attack	Percent water-soluble sulfate (as SO <sub>4</sub> ) in soil samples	mg/l sulfate (as SO <sub>4</sub> ) in water samples
Negligible .....	0.00 to 0.10	0 to 150
Positive <sup>1</sup> .....	0.10 to 0.20	150 to 1,500
Severe <sup>2</sup> .....	0.20 to 2.00	1,500 to 10,000
Very severe <sup>3</sup> .....	2.00 or more	10,000 or more

<sup>1</sup> Use type II cement.

<sup>2</sup> Use type V cement, or approved combination of portland cement and pozzolan which has been shown by test to provide comparable sulfate resistance when used in concrete.

<sup>3</sup> Use type V cement plus approved pozzolan which has been determined by tests to improve sulfate resistance when used in concrete with type V cement.

Figure 2. Attack on concrete by soils and waters containing various sulfate concentrations

Source: Table 2 of BOR (1988).

**TABLE 2 Comparison of ASTM Type V Cement With and Without  
Pozzolan Materials<sup>A</sup>**

Cement Type	Relative Degree of Sulfate Attack	Percentage of Water Soluble Sulfate (as SO <sub>4</sub> ) in Soil, ppm	Sulfate (as SO <sub>4</sub> ) in Water Samples, ppm
V	Severe	0.20 to 2.00	1 500 to 10 000
V (plus pozzolan)	Very severe	2.00 or more	10 000 or more

Figure 3. Comparison of sulfate resistance between ASTM Type V cements

Source: Table 2 of ASTM (1999, 2018).



## Appendix A. Agency comments from OSE for original September 2017 permit application

**From:** [Rappuhn, Doug H., OSE](#)  
**To:** [Chisler, Clinton, EMNRD](#)  
**Cc:** [Musharrafieh, Ghassan R., OSE](#); [Valentine, Lloyd, OSE](#)  
**Subject:** NMOSE Hydrology Bureau review of MMD HI018EM Part 3 Minimal Impact Exploration Operation Permit Application for Lordsburg Resources, Lordsburg Playa Lithium Exploration Project, Hidalgo County  
**Date:** Monday, November 20, 2017 6:43:55 PM  
**Attachments:** [A-675 NMOSE Declaration.pdf](#)  
[OUIK-GROUT.pdf](#)  
[MMD mineral exploration boreholes encountering groundwater NMOSE general comments 2017 11 20.pdf](#)

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Hello Mr. Chisler –

The NMOSE Hydrology Bureau has reviewed the MMD HI018EM Part 3 Minimal Impact Exploration Operation Permit Application for the Lordsburg Resources Lordsburg Playa Lithium Exploration Project. The project is to consist of the drilling and evaluation of two, approximately 750'-deep exploratory borings (initial filings with NMOSE note proposed 750 – 1000'-deep borings); to be plugged upon completion of drilling.

The exploratory drilling for lithium will occur at a location approximately 10 miles southwest of the Town of Lordsburg, in Hidalgo County. I did not attend a joint regulatory site inspection for the proposed project.

Two administrative concerns were noted in the NMOSE review:

- The closest water well to both of the proposed investigatory boreholes is reported to produce highly saline groundwater. Applicant response to MMD Part 3 application page 15 – Section 6D, notes proposal to plug the completed exploratory borings with a high-solids bentonite grout, which appears an inappropriate choice where water chemistry is characterized by high chloride concentration.
- Applicant may not yet have received approval of NMOSE (Form WR-07) Application for Permit to Drill a Well With No Water Right or NMOSE (Form WD-08) Well Plugging Plan of Operations.

### **Surface water**

USGS topographic maps of the project area indicate the existence of a large playa throughout much of the LBP Claim Block, incorporating the two requested drill sites. This suggests surface water and/or very shallow groundwater is present, at least ephemerally, throughout much of the LBP Claim Block. No through-flowing streams or watercourses exist in the project area, although the distal ends of Rustler, Volcano, and Sixtysix Draws are found within two miles of the proposed drill holes. Discharge from these draws is presumed to find its way to the playa as ephemeral surface flow or shallow groundwater.

No springs were mapped within a minimum two-mile radius of the project claims.

### **Groundwater**

In general, water wells may tap locally-perched groundwater, an unconfined local aquifer, or a regional unconfined or confined groundwater system. All represent forms of groundwater subject to the application of NMOSE regulations and required Water Rights Division filings. Most water wells in the Lordsburg area tap water-bearing basin-fill / alluvial deposits, with far fewer other wells tapping fractured bedrock along the flanks of local mountainous areas.

Information regarding current water rights in the project area was retrieved from the NMOSE-NMWRRS database within an approximate two-mile radius of the proposed project well sites. Only one water well was identified within said radius – A-675 (depth: 150', static water level: unreported; located approximately 0.8 miles west of proposed Project Drill Hole 1). Terrain is fairly flat in the area, with elevation of the proposed drill hole locations about 10' less than that at A-675 per USGS 7.5-minute topographic map of the area.

The NMOSE Declaration of Owner of Underground Water Right on file for A-675 (attached) notes an original well capacity of 20 gpm, confirming encountering of groundwater. Page 2 – Item 8 of the NMOSE Declaration notes "Well has extreme salt content", not unusual for a well that likely taps groundwater connected to that found in the playa covering much of the LBP Claim Block. Additionally, in filing the MMD Part 3 Application, the Applicant notes (page 13 – Section 6A.) TDS concentration of local groundwater in excess of 10,000 mg/L.

### **Exploratory Drilling – NMOSE Considerations**



Review of Modification 23-1 of New Minimal Impact Exploration Permit Application,  
Lordsburg Playa Exploration Project, Permit No. HI018EM, Hidalgo County

The Applicant shall file and receive NMOSE approval of NMOSE Application(s) for Permit to Drill a Well With No Water Right ([http://www.ose.state.nm.us/WR/Forms/17/WR-07%20Application%20for%20Permit%20to%20Drill%20a%20Well%20with%20No%20Consumptive%20Use\\_2016-11-17\\_final.pdf](http://www.ose.state.nm.us/WR/Forms/17/WR-07%20Application%20for%20Permit%20to%20Drill%20a%20Well%20with%20No%20Consumptive%20Use_2016-11-17_final.pdf) ) prior to initiating drilling of the proposed borings.

The Applicant shall concurrently file and receive approval of NMOSE Well Plugging Plan(s) of Operations ([http://www.ose.state.nm.us/WR/NewForms/WD-08%20Well%20Plugging%20Plan%20of%20Operations\\_2017-06-30\\_final.pdf](http://www.ose.state.nm.us/WR/NewForms/WD-08%20Well%20Plugging%20Plan%20of%20Operations_2017-06-30_final.pdf) ) in accordance with Subsection C of NMAC 19.27.4.30, as revised 6/30/2017, prior to initiating drilling of the proposed borings.

The proposed use of a high-solids bentonite grout appears inappropriate for plugging and abandonment of the project boreholes, given stated groundwater chemistry in the area. Attached Baroid specification sheet for Quik-Grout high-solids bentonite grout notes, "The use of bentonite may not be appropriate in environments where the formation water chemistry has a total hardness greater than 500 parts per million and/or a chloride content of greater than 1500 parts per million." It is likely the NMOSE will disallow use of either a bentonite grout or chip / pellet bentonite to plug the project boreholes without substantiation of appropriate groundwater chemistry, leaving cement grout as the likely alternative.

A listing of general NMOSE exploratory drilling project comments otherwise potentially pertinent to the project is also attached to this e-mail.

Douglas H. Rappuhn  
Hydrology Bureau / New Mexico Office of the State Engineer  
5550 San Antonio Drive NE  
Albuquerque, NM 87109-4127  
Phone: 505-383-4018 / Fax: 505-383-4030  
e-mail: [doug.rappuhn@state.nm.us](mailto:doug.rappuhn@state.nm.us)

The actual MMD application may be viewed on the MMD website at:  
<http://www.emnrd.state.nm.us/MMD/MARP/LordsburgPlaya.html>

Appendix B. Declaration of Owner of Underground Water Right for A-675-POD1

Ref. #3-Salt Well

File Number: A-675

3-14096 \$1.00

NEW MEXICO OFFICE OF THE STATE ENGINEER  
 DECLARATION OF OWNER OF UNDERGROUND WATER RIGHT  
ANIMAS BASIN

1. DECLARANT

Name: Jim Walter and/or Jeanette Walter Work Phone: 505-644-7224  
 Contact: \_\_\_\_\_ Home Phone: 505-526-8709  
 Address: 637 Keelo  
 City: Las Cruces State: NM Zip: 88007

2. LOCATION OF WELL (A, B, C, or D required, E or F if know)

A. SW1/4 SE 1/4 NE 1/4 Section: 7 Township: 23S Range: 20W N.M.P.M.  
 in Hidalgo County.  
 B. X = \_\_\_\_\_ feet, Y = \_\_\_\_\_ feet, N.M. Coordinate System  
 Zone in the \_\_\_\_\_ Grant.  
 U.S.G.S. Quad Map \_\_\_\_\_  
 C. Latitude: 32 d 19 m 11.74762s Longitude: 108 d 56 m 0.04461s  
 D. East \_\_\_\_\_ (m), North \_\_\_\_\_ (m), UTM Zone 13, NAD \_\_\_\_\_ (27 or 83)  
 E. Tract No. \_\_\_\_\_, Map No. \_\_\_\_\_ of the \_\_\_\_\_ Hydrographic Survey  
 F. Lot No. \_\_\_\_\_, Block No. \_\_\_\_\_ of Unit/Tract \_\_\_\_\_ of the  
 \_\_\_\_\_ Subdivision recorded in \_\_\_\_\_ County.  
 G. Other: \_\_\_\_\_  
 H. On land owned by (required): \_\_\_\_\_

3. DESCRIPTION OF WELL

Date drilled: 1958 Driller: \_\_\_\_\_  
 Depth: 150 feet. Outside diameter of casing 6 inches;  
 Original capacity 20 gal. per min.; Present capacity \_\_\_\_\_ gal. per min.;  
 Pumping lift: \_\_\_\_\_ feet; Static water level: \_\_\_\_\_ feet (above) (below) land  
 surface; Make of pump: none; Type of pump: \_\_\_\_\_  
 Make, type, horsepower, etc., of power plant: \_\_\_\_\_  
 Fractional or percentage interest claimed in well: \_\_\_\_\_

4. QUANTITY

Consumptive Use: \_\_\_\_\_ acre-feet per annum  
 Diversion Amount: 3.0 acre-feet per annum

5. PURPOSE OF USE

Domestic: \_\_\_\_\_ Livestock: X Irrigation: \_\_\_\_\_ Municipal: \_\_\_\_\_ Industrial: \_\_\_\_\_  
 Commercial: \_\_\_\_\_ Other (specify): \_\_\_\_\_  
 Specific use: \_\_\_\_\_

6. PLACE OF USE

\* \_\_\_\_\_ acres of land described as follows:

Subdivision of Section (District or Hydrographic Survey)	Section (Map No.)	Township (Tract No.)	Range	Acres
_____	<u>7</u>	<u>23S</u>	<u>20W</u>	_____
_____	<u>8</u>	<u>23S</u>	<u>20W</u>	_____
_____	<u>17</u>	<u>23S</u>	<u>20W</u>	_____
_____	<u>18</u>	<u>23S</u>	<u>20W</u>	_____

Who is the owner of the land? \_\_\_\_\_

File Number: A-675  
 Form: wr-03

Trn Number: \_\_\_\_\_

2006 MAR 23 AM 9:58  
 OFFICE OF THE  
 STATE ENGINEER  
 DENVER, CO

Review of Modification 23-1 of New Minimal Impact Exploration Permit Application,  
Lordsburg Playa Exploration Project, Permit No. HI018EM, Hidalgo County

Ref. #3-Salt Well

File Number: A-675

NEW MEXICO OFFICE OF THE STATE ENGINEER  
DECLARATION OF OWNER OF UNDERGROUND WATER RIGHT  
ANIMAS BASIN

7. WATER WAS FIRST APPLIED TO BENEFICIAL USE ON: \_\_\_\_\_ (date)  
and since that time has been used fully and continuously for all of the  
above described purposes except as follows: \_\_\_\_\_

8. ADDITIONAL STATEMENTS OR EXPLANATIONS:

Well has extreme salt content

ACKNOWLEDGEMENT FOR NATURAL PERSONS

(I, We) \_\_\_\_\_ affirm that the  
(Please Print)  
foregoing statements are true to the best of my knowledge and belief.

James Walter  
Declarant Signature

Jeanelle Walter  
Declarant Signature

NOTARY

This instrument was acknowledged before me this 23<sup>rd</sup> day of March

A.D., 2006, By James & Jeanelle Walter  
Name of Applicant

My commission expires 9/1/09

Priscilla Sanchez  
Notary Public



OFFICIAL SEAL  
PRISCILLA SANCHEZ  
NOTARY PUBLIC - STATE OF NEW MEXICO  
My commission expires: 9/1/09

ACCEPTANCE OF STATE ENGINEER

This Declaration form is hereby accepted for filing in accordance  
with NMSA-1978 (1985), as amended.  
The acceptance by the State Engineer Office does not constitute validation  
of the right claimed.

Priscilla Sanchez

File Number: A-675  
Form: wr-03

Trn Number: \_\_\_\_\_  
page 2 of 3

Appendix C. Stiff plots of groundwater analyses from selected wells in the Animas Basin System

Source: Hawley et al. (2000). Blue rectangle indicates approximate extent of Figure 1.

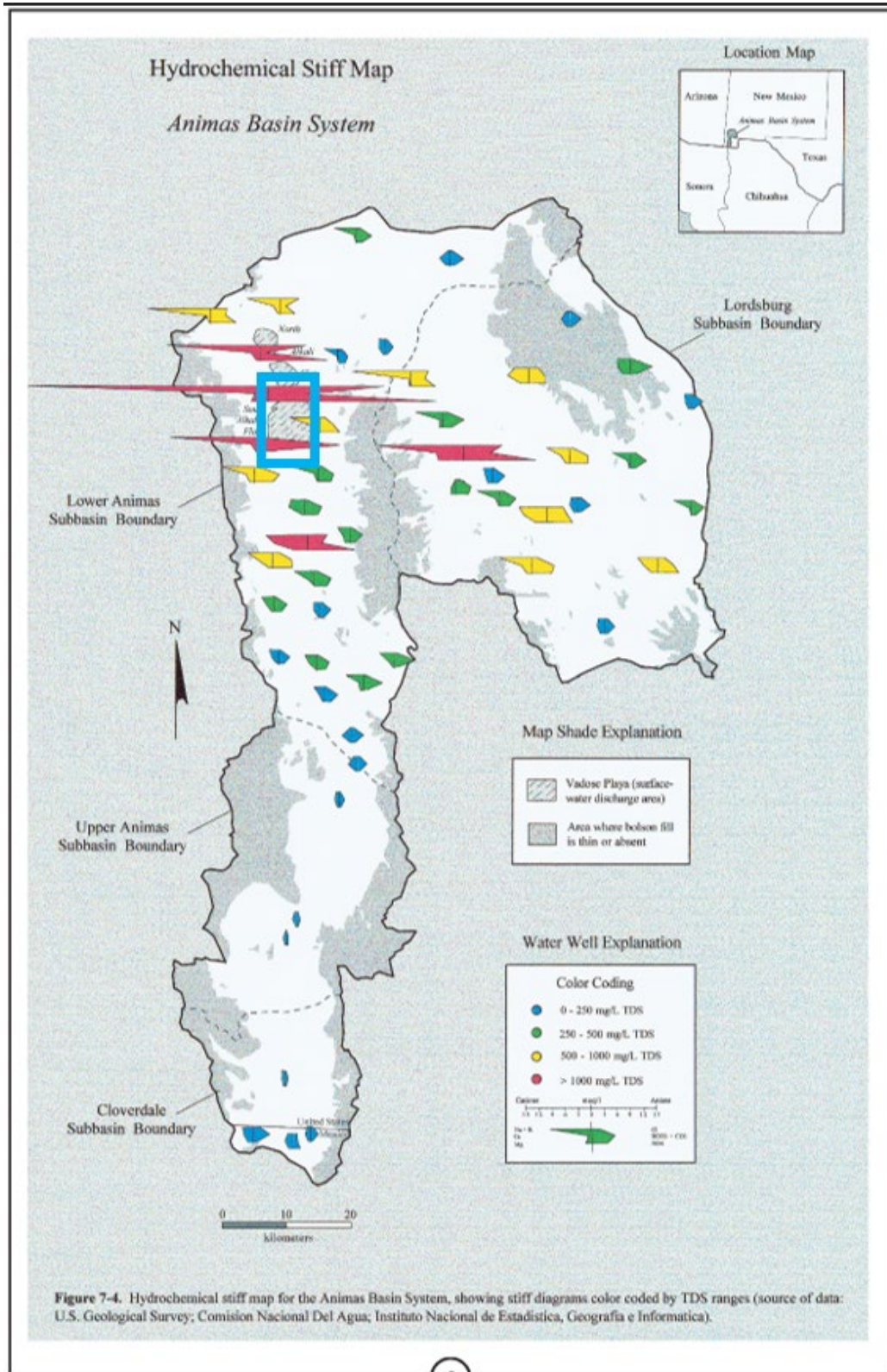
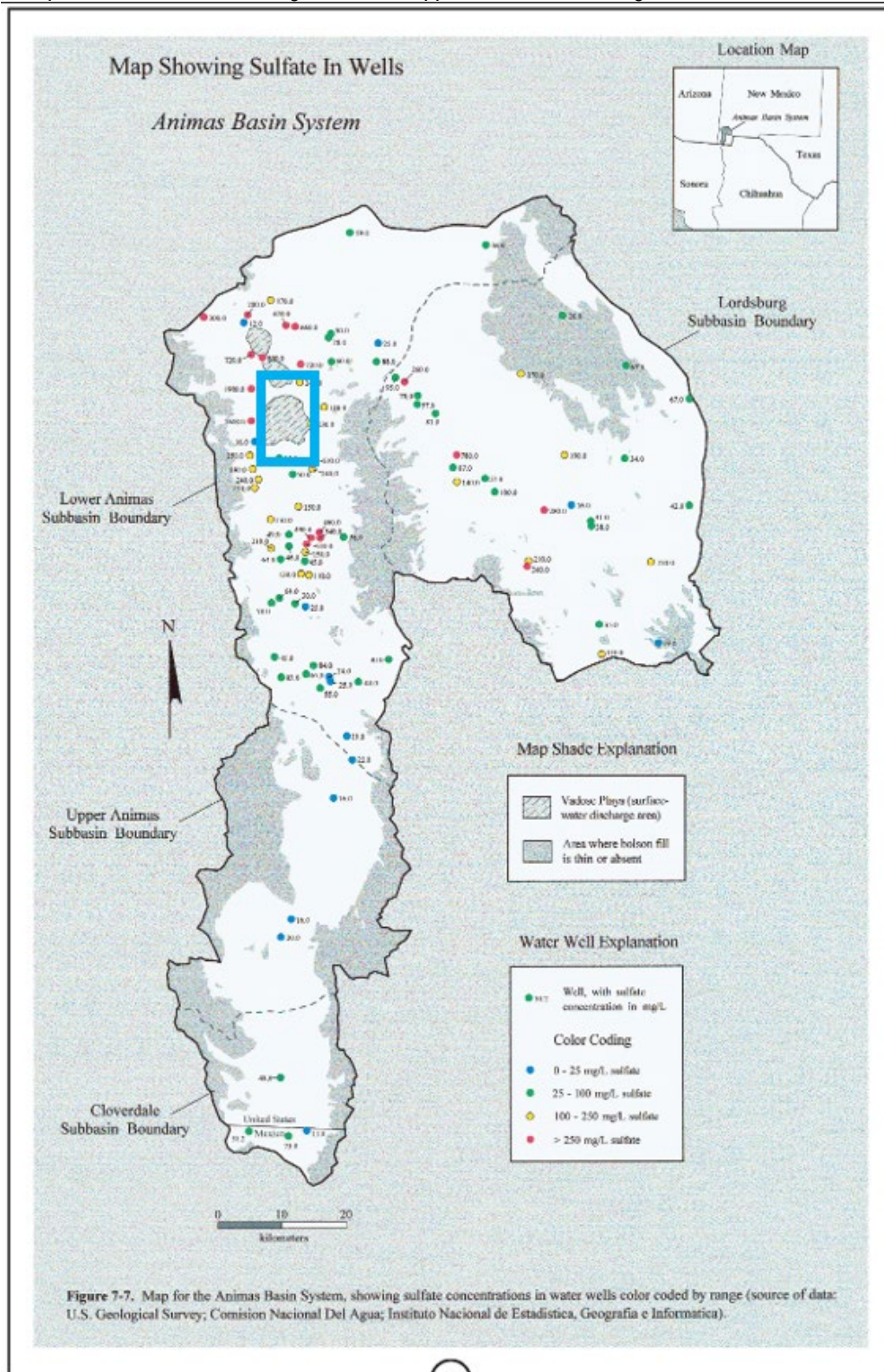


Figure 7-4. Hydrochemical stiff map for the Animas Basin System, showing stiff diagrams color coded by TDS ranges (source of data: U.S. Geological Survey; Comision Nacional Del Agua; Instituto Nacional de Estadística, Geografía e Informática).



Appendix D. Sulfate concentration of groundwater in selected Animas Basin System wells

Source: Hawley et al. (2000). Blue rectangle indicates approximate extent of Figure 1.





**Stephanie Garcia Richard**  
COMMISSIONER

*State of New Mexico*  
*Commissioner of Public Lands*

**COMMISSIONER'S OFFICE**  
Phone (505) 827-5760  
Fax (505) 827-5766  
www.nmstatelands.org

310 OLD SANTA FE TRAIL  
P.O. BOX 1148  
SANTA FE, NEW MEXICO 87504-1148

October 20, 2023

Via e-mail ([kevin.myers@emnr.dnm.gov](mailto:kevin.myers@emnr.dnm.gov)) and first-class mail

Mr. Kevin Myers  
Permit Lead, Mining Act Reclamation Program  
Mining and Minerals Division  
Energy, Minerals and Natural Resources Department  
1220 South St. Francis Drive  
Santa Fe, NM 87505

Re: Request for Comments on Modification 23-1 of New Minimal Impact Exploration  
Permit Application, Lordsburg Playa Exploration Project, Permit No. HI018EM,  
Hidalgo County

Dear Mr. Myers:

The New Mexico State Land Office (NMSLO) appreciates the opportunity to provide comments on the proposed modification of the above-referenced permit application for the Lordsburg Playa Exploration Project, filed by Frank Bain. In reviewing the application, we have concerns we would like to put forward for the Mining and Minerals Division's (MMD) consideration.

First, the permit application is adjacent to T23S R20W Section 16, which is state trust land owned by the State of New Mexico and managed by NMSLO, for which Frank Bain does not have a permit or lease to mine. Assuming that lithium mining at the proposed location is eventually approved, one may conclude that the mineral resources in the adjacent NMSLO parcel could also be made available for extraction. To be clear, there is no mineral lease in place or being contemplated for the adjacent NMSLO section and state trust land should be excluded from any proposed project plan.

Second, the right of entry provided to Robert Consoni to access nearby Bureau of Land Management (BLM) land was issued on June 7, 2023 for a temporary period of 180 days. Legal access via state trust lands after this period is not guaranteed, as our agency is working to address dust mitigation concerns in the area.

Additionally, the permit application states "no erosion is possible at drill locations because of flat topography." NMSLO does not agree that "flat topography" precludes erosion potential at the drilling site; wind erosion is still very possible at the site with the amount dependent on soil texture and wind speeds during mining or related activity. MMD should explicitly address this risk in its review.

Airborne dust from Lordsburg Playa is a contributing factor to serious traffic accidents on the nearby I-10 corridor. In coordination with the BLM and the New Mexico Department of Transportation, NMSLO is working to help reduce dust and improve highway safety in and around the Lordsburg Playa. NMSLO has consistently raised concerns about the risks of mining and other development in the Lordsburg area with MMD and with outside parties.

Although the pending application is for exploratory drilling, MMD should consider whether approval would open the door to more significant – and potentially harmful – future impacts. Mining development of the Lordsburg Playa would be a significant ecological loss for an area already fragmented by a variety of impacts.

Finally, should this development be approved to move forward we urge MMD to require a much more meaningful Surface Reclamation Bond. The amount currently held, \$17,400, would not be sufficient to mitigate even minor damage to this area, much less a significant mining exploration venture.

While NMSLO understands the interest in exploring for this particular resource, we want to ensure that any such development is conducted with appropriate considerations for the protection of other resources, and takes into account the impacts of mining on the long-term health and resiliency of this landscape. We have great confidence in the Mining and Mineral Division's staff and regulatory process and are grateful for the request for our input regarding our adjacent lands.

Sincerely,

DocuSigned by:



C9D6478B3DA141C...

Dana Vackar Strang  
Assistant Commissioner  
Surface Resources Division



## MEMORANDUM

DATE: October 3, 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, Lordsburg Playa Lithium Exploration Project, New Minimal Impact Exploration Permit Application, Modification 23-1, Hidalgo County, New Mexico Mining Act Permit No. HI018EM**

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

The applicant has requested a minimal impact exploration permit near Lordsburg. The exploration will result in 12 drilled holes and 12 drill pads. Total area disturbed will be less than 3.25 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."



**Request for Review and Comment, Lordsburg Playa Lithium Exploration Project, New Minimal Impact Exploration Permit Application, Modification 23-1, Hidalgo County, New Mexico Mining Act Permit No. HI018EM**

Page 2

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

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

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

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

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

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

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

**Fugitive Dust**

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

**Request for Review and Comment, Lordsburg Playa Lithium Exploration Project, New Minimal Impact Exploration Permit Application, Modification 23-1, Hidalgo County, New Mexico Mining Act Permit No. HI018EM**

Page 3

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

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

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

Scraping: wet suppression of scraper travel routes.

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

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

**Recommendation**

The Air Quality Bureau 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



## MEMORANDUM

October 13, 2023

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

From: Susan Styer  
Watershed Protection Section  
Surface Water Quality Bureau

Subject: **Request for Review and Comment, Minimal Impact Exploration Permit, Lordsburg Playa Lithium in Brine Exploration Drilling, Hidalgo County, New Mexico, Mining Act Permit No. Mod 23-1 H1018EM**

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On September 12, 2023, NMED received a request for comments regarding a modified minimum-impact exploration permit application submitted by Frank Bain ("Applicant"). The project is in Hidalgo County, approximately 17 miles west of Lordsburg on public lands managed by the Bureau of Land Management.

### Summary of Proposed Action

The Applicant would like to bore six 6-inch diameter holes to depths of no more than 500 feet from six drill pad locations. Each drill pad will require a cleared area approximately 75' x 40' with six separate unlined mud and fluid pit approximately 10' in length x 6' wide x 8' in depth. Existing roads and rights-of way will be utilized to access drill locations and total disturbance is estimated at 3.225 acres.

### Relevant State and Federal Water Quality Regulations

Mine activities may affect Surface Waters of the State as defined in New Mexico's Standards for Interstate and Intrastate Surface Waters (20.6.4.7 NMAC), which includes precipitation dependent playa lakes 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:

- Provide a minimum 50-foot setback from Surface Waters of the State to drill pads and staging areas. Based on the provided drill hole map, drill site “3, 4, 5 & 6” appear to be placed in the defined playa. Move these sites upslope and out of the playa.
- Re-grade the site to pre-construction elevation and topography during reclamation to preserve run-on hydrology to the playa.
- Line pits to prevent transport of water contaminants to groundwater or surface water. Furthermore, size pits to prevent overtopping during precipitation events and must provide a minimum 50’ setback from the playa. The playa that is located within the project area is a potential pathway to groundwater. Playas can concentrate pollutants because of their basin nature, but also are pathways to groundwater either by direct drainage below the playa or by fracture zones that connect playa underground flow.
- Contain process water within the closed-loop system or lined pits. Process water may not be discharged to the ground or to the playa unless a discharge permit has been secured from the EPA and/or NMED.
- Utilize a secondary containment system for fuel, oil, hydraulic fluid, lubricants, and other petrochemicals to prevent spills. During the summer monsoon seasons, typically July – September, 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.
- Keep appropriate spill clean-up materials such as absorbent pads on-site at all times during road construction, site preparations, drilling and reclamation to address potential spills.

**SWQB recommends that the permittee conduct, the following studies prior to exploration activities:**

- Map all playas in the project area that may be impacted by drilling, drill pads, mud or fluid pits, or overland travel.
- Map all drainageways that drain to the playa within the project area.
- Sample playa soils to determine shrink/swell clay content and depth.
- Sample vegetation as an indicator of playa inundation frequency.
- Install instrumentation to measure infiltration below playa and annulus.

**To protect the playa, SWQB recommends that the permit conditions include:**

- Providing a 50-meter buffer around the playa to maintain habitat requirements.
- Do not build in, drain to, discharge in, or otherwise modify the playa, to maintain its wetland functions.

If you have any questions, please phone Susan Styer (NMED-SWQB) at 505-819-9923.



## Electronic Transmission

### MEMORANDUM

Date: October 17, 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  
Susan Styer, Surface Water Quality Bureau (SWQB)  
Sufi Mustafa, Air Quality Bureau (AQB)

Subject: **New Mexico Environment Department (NMED) Comments, Modification 23-1, Lordsburg Playa Exploration Project, New Minimal Impact Exploration Permit Application, Frank Bain, Hidalgo County, New Mexico, Mining Act Permit No. HI018EM**

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The New Mexico Environment Department (NMED) received correspondence from the Mining and Minerals Division (MMD) on September 6, 2023 requesting that NMED review and provide comments on the above-referenced MMD permitting action. Pursuant to the Mining Act, the Lordsburg Playa 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 October 3, 2023. NMED has the following comments.

#### **Background**

Frank Bain (applicant) proposes to disturb up to 3.255 acres of Bureau of Land Management (BLM) land. The applicant proposes to drill up to 6 boreholes on 6 drill pads, all approximately 500 feet below ground surface (bgs). This site is located approximately 25 miles northwest of Lordsburg, NM.

Mr. David Ennis  
Lordsburg Playa Exploration  
October 17, 2023

**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. The applicant proposes the drill up to 6 boreholes using either mud or air rotary. Groundwater likely will be encountered. The application does not address how produced water from drilling will be managed. Given the high Total Dissolved Solids (TDS) concentrations in groundwater stated in the application, this water should be managed to avoid any discharges to the ground surface and contained within the mud pits as proposed.
2. MECS commented on the original application on December 18, 2017, stating that the mud pits do not appear to be sized appropriately to contain the additional produced water that may occur as a result of drilling. The mud pits in the Modification 23-1 application appear to be smaller in dimension from sizes stated in the 2017 application. The mud pits should be sized to contain all drilling fluids and produced water.

**NMED Summary Comment**

NMED has determined that the activities proposed in the application will be protective of 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  
Kevin Myers, EMNRD-MARP