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May 13, 2026

Administrator
Nevada Division of Minerals
Commission on Mineral Resources
400 West King Street, Suite 106
Carson City, Nevada 89703

Re: Public Comment on Proposed Regulation of the Commission on Mineral Resources and the Division of Minerals — LCB File No. R093-25 (Proposed Amendments to NAC 534A Governing Geothermal Well Stimulation); Public Hearing scheduled for May 14, 2026.

Dear Administrator and Members of the Commission:

AlterG, Inc. (“AlterG”) respectfully submits these comments on the proposed amendments to Nevada Administrative Code Chapter 534A in LCB File No. R093-25 (the “Proposed Rule”), as posted on April 13, 2026. AlterG is an active participant in Nevada’s geothermal sector and has a direct interest in the development of a sound, technically workable regulatory framework for well stimulation activities.

AlterG supports the Division’s effort to establish a clear regulatory pathway for geothermal well stimulation in Nevada. Stimulation is essential to unlocking the State’s enhanced geothermal systems (EGS) potential, and a thoughtful regulatory framework will benefit operators, the Division, and the public. Several provisions of the Proposed Rule are well-designed, and we identify those areas of support below. We also identify a number of provisions where, as drafted, the rule would impose disproportionate costs, create operational ambiguity, or risk significant unintended consequences. For each of those provisions we recommend specific, targeted revisions.

Our comments are organized by topic and cross-reference each provision by section number and change type as in the Proposed Rule.

I. Provisions AlterG Supports

Before turning to areas of concern, AlterG wishes to affirmatively note three provisions that reflect sound regulatory policy and that we encourage the Commission to keep as drafted.

Section 29- Extension of Drill Cuttings Submission Deadline

AlterG supports the proposed change in Section 29, which extends the deadline for submitting drill cuttings to the Nevada Bureau of Mines and Geology from 30 days to 90 days after well completion. This extension reflects the practical realities of post-completion logistics. The added time will improve the quality and completeness of submissions without any cost to the Division’s informational interest.

Section 33- Extension of Completion and Plugging Report Deadline

AlterG supports the proposed change in Section 33 which extends the completion and plugging report filing deadline from 30 days to 60 days and modernizes well log submission by accepting digital LAS-format files in lieu of paper copies. These changes reduce administrative burden on operators and contractors, cut unnecessary printing and mailing costs, and align Nevada’s practice with industry-standard digital data exchange. We encourage the Commission to adopt these provisions without modification.

Section 32- Revised Sundry Fee Schedule (Conditional)

AlterG does not object to the fee increases set forth in Section 32 provided that the additional revenue generated by these increases is in fact applied to expanded staffing and resources for permit processing and approvals. The stimulation framework contemplated by the Proposed Rule will substantially increase the technical workload required of Division staff. If the new sundry and stimulation fees are tied to corresponding investments in permitting capacity, operators will benefit from faster cycle times and the Division will be better positioned to deliver on its review obligations. We respectfully request that the Commission state on the record its intent to allocate the new fee revenue to these functions.

II. Definitions to Clarify

The Proposed Rule’s definition of “Stimulation” in Section 2 (New Definition) — “the process of pumping fluid into the earth at pressures exceeding mechanical rock strength to induce fractures” — is, as drafted, overly broad and creates significant uncertainty about which operations fall within the new regulatory program.

AlterG requests that the Commission clarify that “stimulation” refers only to the initial fracturing job conducted during the completion phase of a well, or any subsequent refrac. This clarification is necessary because routine long-term injection in geothermal operations is, by design, often conducted at pressures above the fracture gradient of the formation in order to maintain reservoir connectivity and productivity. Without an express completion-phase limitation, the literal text of the definition would sweep ordinary long-term injection into the stimulation regime, triggering the entire cascade of obligations in Sections 4 through 17 — including the Area of Review mapping, baseline water sampling, ISMP, and chemical disclosure requirements — every time an operator continues normal injection operations.

We recommend revising Section 2 to read substantially as follows: “‘Stimulation’ means the process of pumping fluid into the earth at pressures exceeding the mechanical rock strength to induce fractures, conducted as a discrete operation during the completion phase of a geothermal well. Stimulation does not include long-term injection conducted as part of routine reservoir operations.”

III. Opportunities to Improve

Section 10 New Permit Application Requirements

This section introduces a substantially expanded permit application package, including the Area of Review map, GPS-located water sources, a water source and volume plan, water rights holders, well log data for all

wells in the AoR, geologic maps with fault locations, a fluid management plan, and the Induced Seismicity Monitoring Plan. As the Division's own compliance materials acknowledge, this represents a multi-disciplinary pre-application work package that will require an additional lead time of preparation for any complete application.

As drafted, the Proposed Rule does not address how the Division will handle applications that have been submitted, or projects that have been approved, prior to the effective date of the regulation. Imposing the new requirements retroactively on in-flight projects could delay development by six to eight months or longer simply to backfill documentation for previously approved work. That outcome would penalize the operators who have been working in good faith under the existing regulatory framework.

AlterG urges the Commission to adopt a phased-in implementation approach that:

- Grandfathers applications submitted to the Division prior to the effective date and processes them under the prior regulatory framework;
- Provides a defined transition period (we suggest a minimum of twelve months) before the new application package becomes mandatory for new applications; and
- Establishes a written process by which the Division will communicate to operators with pending or recently approved projects how, and on what timeline, any new requirements will apply.

Additionally, the requirement in Section 10 for "a plan for the management and placement of all fluids to be used in the proposed stimulation" would benefit from greater specificity. AlterG requests that the Division publish guidance, or include an appendix to the regulation, identifying the specific documentation it expects to see in the fluid management plan.

Section 11- Baseline Water Sampling: Provide for Batching and Data Reuse

Section 11 requires collection of baseline water samples from up to six water sources within the Area of Review during the twelve months immediately preceding stimulation, followed by two subsequent sampling events post-stimulation.

AlterG requests two clarifications. First, the Division should expressly permit batched sampling across multiple stimulation events within a project area or on adjacent pads. Where the same water source lies within the Area of Review for multiple wells, a single baseline sampling event — collected within the 12-month window preceding the earliest stimulation — should be deemed to satisfy the baseline obligation for all such stimulations, subject to reasonable update intervals.

Second, the Division should clarify that post-stimulation sampling results from one stimulation may serve as the pre-stimulation baseline for a subsequent stimulation of a different well on the same or a nearby pad, provided the sample falls within the 12-month look-back window. Requiring duplicative baseline sampling for the same water source within a single operational program adds cost and delay without producing meaningful additional information. These clarifications can be made by revising the introductory paragraph of Section 11 without altering the substantive sampling protocol.

Section 12- New Induced Seismicity Monitoring Plan (ISMP)

Section 12 requires each operator to submit an ISMP using a traffic-light monitoring system with Division-approved amber and red magnitude thresholds for events within three miles of the well. As drafted, however, the threshold-setting process is too vague and subjective to give operators reasonable notice of their compliance obligations or to support consistent application across permittees.

Three specific concerns warrant the Commission's attention. First, because the thresholds are operator-proposed but Division-approved, it is unclear whether the Division retains discretion to unilaterally dictate threshold values, and if so, on what criteria. Second, as currently written, the rule provides no mechanism to distinguish between operations-induced seismicity and naturally occurring seismic events. Nevada is a tectonically active state, and natural events occurring within the monitoring radius could trigger amber- or red-light responses unrelated to operator activities. Third, the reporting architecture is unnecessarily duplicative: if the Division dictates the threshold, it is unclear why the operator must in turn report Division-defined events back to the Division. The Division will already have notice of any such event through its own monitoring.

AlterG recommends two structural revisions to Section 12:

- Specify, by reference to objective criteria (e.g., regional baseline magnitudes, distance to inhabited structures, recurrence intervals), how amber and red thresholds will be derived for any given well, so that operators can predict and plan around their compliance obligations; and
- Place the obligation to maintain the public-facing seismic-events website on the Division, rather than on individual operators. A single Division-operated website would identify all permitted operators and seismic events on a consistent basis, provide the public with a single authoritative source of information, and avoid the proliferation of inconsistent operator websites. Industry can reasonably be expected to contribute to the cost of such a website through permit fees, consistent with the cost-recovery approach taken in Section 32 of the Proposed Rule.

Finally, Section 12 as drafted appears to contemplate steady-state long-term injection rather than the elevated and short-duration seismicity environment of a stimulation event. By definition, stimulation operations are likely to produce multiple seismic events within a compressed time window. Triggering language calibrated for monthly recurrence (e.g., "third amber in six months") does not translate to a multi-day stimulation, where multiple amber-level events within a single month are an expected outcome. The Commission should establish distinct triggering criteria for (i) the discrete stimulation phase and (ii) long-term injection.

Section 13 ISMP Supporting Data Requirements: Define Key Terms

The supporting data requirements of Section 13 - including a five-year regional seismic catalog, a six-month local catalog, a predictive hazard model, and documentation of third-party monitoring agreements - will add significant time and expense to the pre-drill planning process and, as the Division has itself acknowledged, cannot be completed without specialized seismological consultants.

AlterG does not oppose the Division’s objective of developing a defensible seismic baseline for each stimulated well. We do, however, request that the Commission revise Section 13 to define several key terms whose meaning is, at present, left to the Division’s discretion:

- “Local” and “regional”, as those terms are used to scope the historic seismic catalog. Operators cannot plan or budget for data acquisition without knowing the geographic radius implied by these terms.
- If the Division intends to apply differential standards based on proximity to populated areas, critical infrastructure, or other receptors, “Sensitive” versus “non-sensitive” areas should be clearly defined.
- The interaction between the amber-light triggering language and short-duration events — in particular, the consequences of two amber events occurring within a two-month window during, or shortly after, a stimulation event.

Without these clarifications, the process outlined in Sections 12 and 13 has the potential to significantly constrain geothermal development in Nevada by introducing unbounded uncertainty into the permitting and operations timeline.

Section 14- New Well Construction & Siting Standards

This section requires that production casing undergo a pressure test at greater than or equal to 3,000 psig (not to exceed 70 percent of burst rating) for a minimum of 30 minutes, with 48-hour advance notice to the Division and results reported within 24 hours. As drafted, however, the provision does not allow for any pressure decline during the test. That standard is more stringent than the analogous oil-and-gas standards adopted in neighboring jurisdictions and by the federal government, and it is not technically achievable for stimulated geothermal wells, which involve large fluid volumes whose compressibility produces small but measurable pressure decreases during any extended pressure test.

Specifically, the Proposed Rule departs from established industry practice in three reference frameworks, each of which expressly permits a pressure decline of up to ten percent over a 30-minute test:

- New Mexico Administrative Code, 19.15.16 NMAC, which requires casing test pressures to be applied for 30 minutes and treats a drop of more than ten percent as indicative of a defective casing requiring corrective measures;
- BLM regulations at 43 C.F.R. § 3172.7(b)(8), which require all casing strings below the conductor to be pressure tested to 0.22 psi per foot of casing length or 1,500 psi (whichever is greater), but not to exceed 70 percent of the minimum internal yield, and which require corrective action only if pressure declines more than ten percent in 30 minutes; and
- North Dakota Industrial Commission Regulations, NDAC 43-02-03-21, which likewise permit a ten-percent pressure decline as the threshold for a successful test.
- Nevada Oil and Gas regulations in chapter NAC 522.265 allow for a ten percent pressure decline.

AlterG recommends that Section 14 be revised to expressly permit a pressure decline of up to ten percent over the 30-minute test, consistent with the standards above. Without such an allowance, there is minimal chance that a casing test will ever be successful for a stimulated geothermal well given the large fluid volumes being compressed during the test.

AlterG also notes that operators typically log pressure-test results in the daily time log and include the results in the completion report. We respectfully suggest that the Division accept this existing reporting mechanism in lieu of, or in addition to, the new 24-hour standalone reporting obligation. Aligning Nevada's pressure-testing regulations with the well-established oil-and-gas standards cited above will reduce confusion, improve compliance, and ensure that Nevada's geothermal program does not face an isolated and more stringent standard than every comparable jurisdiction.

Section 16- Pre-Stimulation Notification, Chemical Disclosure, and Post-Stimulation Reporting

Section 16 is one of the most operationally consequential provisions of the Proposed Rule. As drafted, it imposes a complex, multi-step compliance sequence with a fourteen-day pre-stimulation lead time, a comprehensive chemical disclosure obligation, real-time wellhead monitoring, stage-by-stage pressure reporting, monthly flow reporting, and a sixty-day FracFocus reporting obligation. AlterG offers the following targeted suggestions.

1. Allow Verbal Approval Where a Stimulation Plan Is Filed with the Drilling Permit

Subsection 16(1)(a)(2) requires written notice and Division approval before stimulation. AlterG recommends that the Commission allow verbal approval 48 hours in advance of a stimulation event where the operator has previously submitted a stimulation plan as part of the underlying drilling permit. This approach reduces duplicative paperwork for both the operator and the Division, preserves the 48-hour window during which the Division can deploy or coordinate seismic monitoring and on-site presence, and reflects the reality that the Division already has access to the underlying technical information through the drilling permit file.

2. Limit Property-Owner Notification to Offset Operators

As drafted, Section 16 requires written notice to all property owners and well operators in the Area of Review. AlterG recommends that pre-stimulation notification be limited to offset operators for purposes of frac protection. Notification to offset operators serves a clear technical and safety function — it allows neighboring operators to take protective measures for their own wellbores. Broad notification to non-operator property owners within a one-mile (or larger) radius adds administrative burden without producing a corresponding safety or environmental benefit. Public-facing transparency is already achieved through the FracFocus reporting required later in the same section.

3. Trade-Secret and Confidential-Ingredient Protections

Subsection 16(1)(c)(2) requires disclosure of all chemical additives, including trade-secret ingredients, with confidentiality available only upon Administrator approval. As drafted, the timing of that approval is

undefined, which creates a compliance gap relative to the sixty-day FracFocus reporting deadline: an operator could face an enforceable FracFocus disclosure obligation before the Administrator has acted on its confidentiality request.

AlterG recommends that Section 16 provide a defined Administrator decision deadline (we suggest 30 days from submission) and a clear safe-harbor pathway by which operators may identify confidential or proprietary ingredients without forfeiting compliance with FracFocus deadlines. The current text also significantly limits operational flexibility in the field, where technical limitations or product-availability issues during a stimulation may require last-minute substitution of approved additives. We recommend that the Commission provide an expedited approval pathway (or a pre-approved equivalency list) to accommodate these field realities without compromising disclosure.

4. Stage-by-Stage Pressure Reporting: Specify the Required Metric

Subsection 16(2) requires submission of stimulation pressures for each stage within 15 days of stage completion. This is a tight reporting deadline. The Division should specify whether the operator is to report the average stage pressure, the maximum, the minimum, the pressure-versus-time curve, or some combination of these metrics. Without that specification, operators cannot design data-collection protocols that reliably satisfy the obligation, and the Division cannot meaningfully compare submissions across operators.

5. Clarify Whether Flowback or Bleedoff Fluids May Be Used as Stimulation Fluids

Subsection 16(3) governs fluid sourcing for stimulation but does not address whether flowback or bleedoff fluids recovered from one stimulation may be reused as stimulation fluids in a subsequent event. Recycling of flowback fluids is an established beneficial-use practice that reduces fresh water consumption — a particularly important consideration in Nevada — and that should be expressly permitted, subject to appropriate chemistry disclosure.

In addition, the cross-reference in this subsection to “NRS 445A and NAC 445A” is overly broad. Chapter 445A of both the NRS and the NAC contains many subsections, only some of which are pertinent to geothermal stimulation fluid management. The Division should specify the particular subsections it intends to incorporate by reference so that operators have clear notice of the substantive standards with which they must comply.

Section 17- Administrator Emergency Shutdown Authority

This section gives the Administrator mandatory shutdown authority on the occurrence of specified seismic events and discretionary shutdown authority over operators within a five-mile radius of a seismic epicenter. Of all the provisions in the Proposed Rule, this is the one that, as drafted, creates the most severe and disproportionate risk for operators — potentially shutting in producing wells indefinitely based on events outside the operator’s control and with no defined pathway to resumption of operations.

1. The Rule Must Differentiate Between Induced and Natural Seismicity

Section 17 makes no distinction between induced seismic events attributable to an operator's activities and naturally occurring seismic events. Given Nevada's tectonic setting, a natural event of sufficient magnitude could trigger mandatory shutdown of an operator's wells under the literal text of the rule, regardless of whether the operator's activities caused or contributed to the event. AlterG urges the Commission to incorporate a causation finding into the mandatory shutdown trigger, such that shutdown is required only where there is a reasonable technical basis to attribute the triggering event to the operator's stimulation or injection activities.

2. Establish a Defined Pathway and Timeline for Resumption of Operations

As drafted, Section 17 specifies no maximum duration for a shutdown order. A well subject to a shutdown could remain shut indefinitely, with the only resolution pathway being a Commission settlement process of unspecified duration. The financial consequences of indefinite shut-in of a producing geothermal well are severe and, in many cases, project-fatal.

Compounding this concern, multi-well pads are increasingly common in geothermal development. A shutdown order issued in respect of one well on a pad could, as a practical matter, shut down power production across the entire pad with no easy operational pathway to restart. The Commission should specify how Section 17 applies in multi-well-pad contexts and should provide a defined resolution timeline — we suggest a maximum of 24 hours from the Administrator's initial order to a final Commission decision on resumption. Stand by fees for a frac crew can run upwards of 125,000 a day. It is not economically feasible for an operator to keep a frac crew in the stimulation stage on standby for more than 24 hours.

3. Distinguish Between Stimulation and Long-Term Injection

Like Section 12, the shutdown trigger in Section 17 is calibrated to long-term injection rather than to discrete stimulation events. The triggers and consequences appropriate for an isolated injection-related event are not the same as those appropriate for a multi-day stimulation, where elevated seismicity is the expected (and time-limited) result of the operation itself. The Commission should specify distinct triggers for the stimulation phase and the long-term injection phase.

4. Internal Inconsistency: Three-Mile Versus Five-Mile Radii

AlterG notes an internal inconsistency in Section 17. The first paragraph references mandatory action for red-light events within three miles, while Section 17(2) references discretionary authority over operators within a five-mile radius. The Commission should reconcile these distances and apply them consistently throughout the regulation, including in Section 12 (which uses three miles for ISMP monitoring) and Section 13 (which uses other radii for hazard modeling).

5. Service of Process and Hearing Logistics

Section 17(3) requires service of any shutdown order by personal delivery or certified mail to the operator's address of record. During an active stimulation, the logistics of certified-mail service are not conducive to timely delivery of a time-sensitive order. AlterG recommends that the Commission:

- Authorize service by electronic mail (with confirmed delivery receipt) in addition to personal delivery and certified mail;
- Authorize Division field inspectors to communicate verbally with the operator’s on-site representative during a stimulation, and to issue or rescind operational directives on a verbal basis with written confirmation to follow;
- Provide for an expedited hearing within fewer than 30 days of issuance of a shutdown order, so that disputed shutdowns can be resolved on a timeline consistent with the financial stakes involved.

Section 30 Fluid Reinjection and Placement

This section broadens the reinjection requirement from “fluids derived from geothermal resources” into “the same reservoir” to “all fluids” into “the same geothermal resource,” and deletes the prior by-product subsection. AlterG seeks one specific clarification.

The term “same geothermal resource” should be defined to mean the entire identified resource area, rather than a narrower zone within that area. Geothermal resources are typically managed at the field scale, with fluids produced from one part of the resource and reinjected into another part of the same connected system. A narrower interpretation of “same geothermal resource” would constrain field-management flexibility without yielding any environmental benefit, since the reinjected fluid remains within the same hydraulically connected resource.

IV. Conclusion

AlterG appreciates the opportunity to comment on LCB File No. R093-25 and the careful work the Division has undertaken to develop a stimulation framework for Nevada. We support the Proposed Rule’s general direction, and in particular the provisions identified in Part I above. We urge the Commission, however, to adopt targeted revisions to the provisions identified in Parts II & III before the rule is finalized. As drafted, several of those provisions — most acutely **Sections 10, 11, 12, 13, 14, 16, and 17** — would impose costs and timeline impacts disproportionate to the underlying regulatory objective, and in some cases would create operational and legal uncertainty that could materially constrain geothermal development in Nevada.

AlterG would welcome the opportunity to meet with Division staff to discuss any of the foregoing comments in greater technical detail, and we appreciate the Commission’s consideration of these comments in advance of the May 14, 2026 public hearing.

Respectfully submitted,



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