



ECMC NOISE MITIGATION PLAN OPERATOR GUIDANCE

FORM 2A

Rule 304.c.(2)/Rule 423 - Noise Mitigation Plan

Document Control

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Rule Citation

Rule 304.c.(2). Noise Mitigation Plan

A noise mitigation plan consistent with the requirements of Rule 423.a.

Rule 423

See Appendix A.

Purpose of Noise Mitigation Plan

The purpose of the Noise Mitigation Plan is to provide a description of how an Operator plans to comply with the Rule 423.b. noise standards. This includes discussion of local government land use or zoning designation, topographical considerations that may impact noise levels, the planned stages of work and their durations, an explanation of how the Operator will comply with the Rule 423.b. noise levels with a reasonable expectation of compliance, Best Management Practices (BMPs), and equipment.

When background ambient noise level monitoring is required, the monitoring or the plan for the monitoring will be included in the Noise Mitigation Plan. Noise points of

compliance for Residential Building Units (RBUs) or High Occupancy Building Units (HOBUs) within 2,000 feet of the Working Pad Surface (WPS) will be identified in the Noise Mitigation Plan.

A Noise Mitigation Plan is required for all Form 2As submitted as part of a new Oil and Gas Development Plan (OGDP).

Guidance/Requirements

All Locations

1. Identification of available local government land use designation or zoning for the area of the proposed Oil and Gas Location.
2. Topographical considerations for the site that may influence noise impacts or noise propagation.
3. Only address the specific operations (i.e. drilling, completions, production, etc) that are planned at the proposed location. Provide a description of the planned stages of operation, the estimated duration of each stage, and the estimated noise levels created by each stage. Common operations include drilling, completions, flowback, and production.
4. Site-specific BMPs should be consolidated in one section of the plan to allow them to be easily identified and copied onto the Form 2A.
5. Operators shall provide sufficient evidence within the Noise Mitigation Plan for a reasonable expectation of compliance with Rule 423.b. noise standards.
 - a. This can vary based on the distance to the impacted receptor and may include, but is not limited to: modeling, historical data from the equipment used for operations, or other methods.
 - b. BMPs alone are not sufficient to establish a reasonable expectation of compliance.

Locations proximate to Residential Building Units

1. Rule 423.b. specifies the requirement to conduct baseline noise surveys as described in Rule 423.a.(5). for proposed Oil and Gas Locations with a Working Pad Surface within 2,000 feet of one or more Residential Building Units.
2. Rule 423.b. also addresses providing a preliminary plan for conducting background ambient noise surveys for Staff to consider at the processing stage.
 - a. The rule does not prevent operators from conducting the background ambient noise survey in advance and submitting it with their plan for Staff review.
 - b. The Director may require a background ambient noise survey closer to the start of construction as a condition of approval on the Form 2A.
 - c. The background ambient noise survey is to follow the requirements of Rule 423.c.(3). through Rule 423.c.(6).
 - d. Records are to be maintained and will be submitted to the Director upon request.
3. Background noise surveys should not be conducted during significant wind or weather events.
4. If the Working Pad Surface is within 2,000 feet of a Residential Building Unit (RBU), then noise points of compliance must be identified as described in Rule 423.a.(5).
 - a. Up to six noise points of compliance should be distributed around the Location in each direction where an RBU is Located within 2,000 feet. If the Location is surrounded by RBUs, six points of compliance should be distributed in multiple directions (based on the principle of geometric circle packing).

- b. One noise point of compliance can be used to monitor for multiple RBUs when the RBUs are clustered and the noise point of compliance is located where it will be most impacted by noise from the Location.
- c. The expectation is that confirmed noise points of compliance are identified in the Noise Mitigation Plan, rather than tentative points pending landowner access.
- d. Collect the Rule 423.b. background ambient noise survey data from the noise point of compliance or as close to the noise points of compliance as possible.

Locations with High Priority Habitat

- 1. In addition to compliance with other parts of Rule 423, for locations proposed in Colorado Parks and Wildlife (CPW) High Priority Habitat, operators are required to consult with CPW and expert federal agencies (for federal lands) to determine maximum applicable noise levels.

Cumulative Noise - Rule 423.d.

- 1. Detailed information regarding the background ambient noise survey must be included in the Noise Mitigation Plan if cumulative noise levels from the survey are being used to adjust the Rule 423.b. maximum allowable noise levels.
- 2. The background ambient noise level measurements should accurately represent the pre-construction conditions around the proposed location. Ambient monitors should not be placed near noise sources (alongside roads, near industrial buildings, etc.), unless it can be shown that the monitor's location accurately represents the noise levels 25 feet from the exterior wall of the closest RBU or HOBUs that is closest to the Working Pad Surface.
 - a. For example, it is acceptable to collect ambient noise data from a noise point of compliance near a road, if both the RBU and the noise point of compliance are at similar distances from the road.

3. For allowable noise levels to be adjusted based on background ambient noise levels through Rule 423.d., the ambient noise readings must be taken from the noise points of compliance.
4. The adjusted noise levels from Rule 423.d. must be clearly listed in the Noise Mitigation Plan and the noise measurement points must be noted.
 - a. The monitoring locations and the adjusted noise levels must be included in the plan as a BMP.
 - b. For Rule 423.d. ambient noise adjustments submitted by Form 4 Sundry, include this information in a BMP.
5. Operators must submit a Noise Mitigation Plan if the operator plans to use the higher ambient level measurements to adjust the thresholds above the levels identified in Rule 423.b.

Lesser Impact Area Exemption Requests

1. An approved Lesser Impact Area exemption from a Noise Mitigation Plan only applies to the submission of a Noise Mitigation Plan. It does not exempt an operator from the Rule 423 operating requirements.
2. An approved Lesser Impact Area exemption from a Noise Mitigation Plan means that the Operator will not be required to submit the information in Rule 423.a. The Director may still require a background ambient noise survey as a Condition of Approval (COA).
3. If an Operator is requesting an increase over the Maximum Permissible Noise Levels from Rule 423.b.(1). or Rule 423.b.(2)., a Noise Mitigation Plan must be submitted.
4. A Lesser Impact Area exemption to the plan requirement is not allowed if the proposed location is within certain distances to Residential Building Units and other cultural features. Per Rule 304.d.(5)., the Director may not grant an exemption for Oil and Gas Locations that are within 1/2 mile of a Residential

Building Unit, High Occupancy Building Unit, School Facility, or Child Care Center, or within 1 mile of a Residential Building Unit, High Occupancy Building Unit, School Facility, or Child Care Center within a Disproportionately Impacted Community.

Additional Information

Common Errors and Issues Encountered by ECMC Staff

1. Placing noise points of compliance or other monitoring locations in areas of unusually high and non-representative ambient noise, such as alongside roads or adjacent to noisy industrial facilities.

General Notes

1. Rule 423 applies to all Oil and Gas Operations.
2. Rule 423.b.(2). only applies to drilling and completions operations.
3. If a proposed Oil and Gas Location is in or near a CPW mapped High Priority Habitat (HPH), the Lesser Impact Area exemption request must identify the type of HPH and address how the proposed operations will not impact the resource of cause impacts so minimal as to cause no concern.
4. Background ambient noise monitoring data, continuous noise monitoring data, and noise monitoring data collected in response to a complaint are to be maintained and submitted to the Director upon request.
5. Any changes to a Noise Mitigation Plan that is part of an approved Oil and Gas Development Plan must meet Rule 404 Form 4 Sundry Notice requirements, unless the change is simply submitting data (such as ambient monitoring via Form 4 Sundry) that was required by COA during OGD approval.

Document Change Log

Change Date	Description of Changes
May 16, 2025	Updated with additional elaboration
July 28, 2025	Reviewed, ADA accessibility verified, Prepared for publication

Appendix A - Rule Citations

Rule 404. FORM 4, SUNDRY NOTICES

- a. The Form 4, Sundry Notice is a multipurpose form which will be used by an Operator to request approval from or provide notice to the Director pursuant to the Commission's Rules or when no other specific form exists.
- b. An Operator will comply with Rule 301.c for any Form 4 submitted to propose a change to an approved Oil and Gas Development Plan.
- c. An Operator will comply with Rule 304.a for any Form 4 submitted to propose a change to an approved Form 2A.
- d. If an Operator submits a Form 4 proposing a change to a previously approved noise, light, odor, or dust plan pursuant to Rules 423.a, 424.a, 426.a, or 427.a, the Director may approve the proposed change only if it provides equally protective or more protective standards to avoid, minimize, or mitigate adverse impacts from noise, light, odor, or dust

Rule 423 Noise

- a. Operators will submit a noise mitigation plan that demonstrates one or more proposed methods of meeting the maximum permissible noise levels described by this Rule 423 as an attachment to their Form 2As, as required by Rule 304.c.(2). An Operator may submit substantially equivalent information or plans developed through a Local Government land use process or federal process in lieu of the information required by this Rule 423.a unless the Director or Commission determines that the information or plan developed through the Local Government land use process or federal process is not equivalent. The noise mitigation plan will include at least the following information:
 - (1) An explanation of how the Operator will comply with the maximum permissible noise levels specified in Rule 423.b.(1). This is to include a description of methods to design acoustical mitigation measures or choose/site equipment appropriately such that the Operator has a reasonable expectation of compliance.

- (2) Estimated duration of each stage of operation, including drilling, completion, Flowback, production, and an estimate of the noise levels of each stage of operation;
- (3) Reference to topographical considerations of noise and noise propagation at the proposed Oil and Gas Location;
- (4) Description of Best Management Practices and best engineering practices for measuring and mitigating noise levels and an implementation schedule for such technology.
- (5) For proposed Oil and Gas Locations with a Working Pad Surface within 2,000 feet of one or more Residential Building Units, at least one, and no more than six noise points of compliance where monitors will be located. Operators will identify noise points of compliance using the following criteria:
 - A. Provide one noise point of compliance in each direction in which a Residential Building Unit is located within 2,000 feet of the proposed Working Pad Surface.
 - B. Noise points of compliance will be located at least 350 feet from the Working Pad Surface, and no less than 25 feet from the exterior wall of the Residential Building Unit that is closest to the Working Pad Surface. If a Surface Owner or tenant refuses to provide the Operator with access to install a noise monitor, then the noise point of compliance will be located at either the next-closest Residential Building Unit or an alternative location approximately the same distance and direction from the Working Pad Surface.
- b. A preliminary plan for how the Operator will conduct background ambient noise surveys to establish baseline conditions for noise levels on the site, for both A-scale and C-scale noise. The Director may require as a condition of approval on the Form 2A that the Operator conduct the background ambient noise survey between 30 and 90 days prior to start of construction and update the plan accordingly based on the results. Operators will conduct baseline noise surveys at the noise points of compliance identified pursuant to Rule 423.a.(5). When an

Operator conducts a background ambient survey the Operator will follow the same approach as outlined in Rule 423.c.(7) and over a 72-hour period, including at least 24 hours between 10:00 p.m. on a Friday and 4:00 a.m. on a Monday. Operators will record any significant weather events and take those events into account when establishing the baseline. A single cumulative daytime ambient noise level and a single cumulative nighttime ambient noise level will be established by taking the logarithmic average of all daytime or nighttime 1-hour Leq values measured and in accordance with the sound level data collection requirements pursuant to the maximum permissible noise levels.

- (1) All Oil and Gas Operations will comply with the following maximum permissible noise levels in Table 423-1 unless otherwise required by Rule 423. The Director may require Operators to comply with a lower maximum permissible noise level based on the consultation process with Relevant and Proximate Local Governments, CDPHE, or CPW pursuant to Rules 302.g, 309.e, & 309.f.

Table 423-1 - Maximum Permissible Noise Levels

LAND USE DESIGNATION	7:00 am to next 7:00 pm	7:00 pm to next 7:00 am
Residential/Rural/State Parks & State Wildlife Areas	55 db(A)	50 db(A)
Commercial/Agricultural	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)
All Zones	60 db(C)	60 db(C)

- (2) Unless otherwise required by Rule 423, drilling or completion operations, including Flowback:

- A. In Residential/Rural or Commercial/Agricultural, maximum permissible noise levels will be 60 db(A) in the hours between 7:00

- p.m. to 7:00 a.m. and 65 db(A) in the hours between 7:00 a.m. to 7:00 p.m.; and
- B. In all zones maximum permissible noise levels will be 65 db(C) in the hours between 7:00 p.m. to 7:00 a.m. and 65 db(C) in the hours between 7:00 a.m. to 7:00 p.m.
- (3) The basis for determining land use designation pursuant to Table 423-1 will be the Relevant Local Government's land use or zoning designation. The Director may consult with a Relevant or Proximate Local Government to identify the type of land use of the Oil and Gas Location and its surrounding area, taking into consideration any applicable zoning or other local land use designation.
- A. To protect public health, safety, and welfare, the Director may require Operators to comply with a lower maximum permissible noise level in areas zoned industrial, light industrial, or commercial, if the Oil and Gas Facility will be within 2,000 feet of a Residential Building Unit or High Occupancy Building Unit.
- B. In a noise mitigation plan submitted pursuant to Rule 423.a, an Operator may request a higher maximum permissible noise level than would otherwise be allowed by Table 423-1, if the Operator demonstrates that both the Relevant and any Proximate Local Governments agree to the higher maximum permissible noise level. The Director may apply that higher maximum permissible noise level as long as the requested level is protective of public health, safety, and welfare, and wildlife.
- (4) When operating in High Priority Habitat, Operators will consult CPW and, on federal lands, the Bureau of Land Management, or United States Fish and Wildlife Service, to determine the acceptable noise limits and monitoring protocols.
- (5) Operators may exceed the noise levels in Table 423-1 as measured at the nearest noise point of compliance if all affected Surface Owners and

tenants agree in writing to the higher noise limit requested by the Operator.

- (6) Unless otherwise required by Rule 423.b.(7), during the hours between 7:00 a.m. and the next 7:00 p.m. the maximum permissible noise levels listed in Table 423-1 may be increased 10 dB(A) for a period not to exceed 15 minutes in any 1-hour period. The increase is permissible only for a 1 hour period during any 12 hours.
- (7) Operators will reduce periodic, impulsive, or shrill noise by 5 dB(A) below the levels in Table 423-1. For periodic, shrill, and impulsive noise within 1000 feet of a Residential Building Unit, Operators will minimize noise that can be readily eliminated through maintenance, equipment modification, or other readily available procedures.
- (8) Pursuant to Commission inspection or upon receiving a complaint from a Local Government, or a Surface Owner or tenant of a property within 2,000 feet of an Oil and Gas Facility regarding noise related to Oil and Gas Operations, the Commission will conduct an onsite investigation and take sound measurements using the methods prescribed for Operators in Rule 423.c.

c. To demonstrate compliance with Tables 423-1 and 423-2 Operators will measure sound levels according to the following standards:

- (1) During pre-production activities and ongoing operations lasting longer than 24 consecutive hours such as drilling, completion, recompletion, Stimulation, and Well maintenance, in areas zoned residential or within 2,000 feet of a Building Unit, Operators will take continuous sound measurements from each noise point of compliance designated pursuant to Rule 423.a.(5).

(2) Monitoring Procedures.

- A. In response to a complaint or at the Director's request, Operators will measure sound levels at 25 feet from the complainant's occupied structure towards the noise source for low frequency (dB(C)) indicated issues. For high frequency (dB(A)) measurement will

be at the nearest point of compliance. For equipment installed at Oil and Gas Locations subject to a Form 2A approved prior to January 15, 2021, after the Commencement of Production Operations, no single piece of equipment will exceed the maximum permissible noise levels listed in Table 423-1 as measured at a point 350 feet from the equipment generating the noise in the direction from which the complaint was received.

- B. In situations where measurement of noise is unrepresentative due to topography or any other issue, Operators or the Commission may take the measurement at the nearest noise point of compliance, or at a different distance and extrapolate it to 25 feet from the complainant's residence (dbC) or the complainant's property line (dbA) using the following formula:

$$\text{db(A) distance 2} = \text{db(A) distance 1} - 20 \times \log 10 (\text{distance 2}/\text{distance 1})$$

$$\text{db(C) distance 2} = \text{db(C) distance 1} - 20 \times \log 10 (\text{distance 2}/\text{distance 1})$$

- (3) Operators will equip sound level meters with wind screens that are in good working order, and will take readings when the wind velocity at the time and place of measurement is not more than 5 miles per hour. In determining an Oil and Gas Operation's contribution to sound levels, the Director will consider wind readings that exceed 5 mph.
- (4) Operators will take sound level measurements 5 feet above ground level.
- (5) Operators will determine sound levels by averaging logarithmic minute-by-minute measurements made over a minimum 1-hour sample duration.
- (6) All sound meters will be type II meters at a minimum. All measurements will be reported using LeqA (fast) and LeqC (slow). Meters will be field calibrated pre-survey and post survey. Continuous surveys will be field calibrated pre-survey and post survey and pursuant to the manufacturer's recommended interval. All survey equipment will be inspected at time of calibration for compliance with the Commission's Rules.

- (7) Operators will take samples under conditions that are representative of the noise experienced by the complainant (e.g., at night, morning, evening, or during special weather conditions).
- (8) If a Building Unit, High Occupancy Building Unit, High Priority Habitat, or Designated Outside Activity Area is built or designated after an Oil and Gas Development Plan or Form 2A is approved, the Operator of the Oil and Gas Location need not comply with Rule 423.c with respect to the newly built or designated Building Unit, High Occupancy Building Unit, High Priority Habitat, or Designated Outside Activity Area.
- (9) Operators will maintain records to demonstrate compliance with this Rule 423.c, and will submit the records to the Director upon request.

d. Cumulative Noise. All noise measurements will be cumulative.

- (1) Noise measurements taken at noise points of compliance designated pursuant to Rule 423.a.(5) will take into account ambient noise, rather than solely the incremental increase of noise from the facility targeted for measurement.
- (2) At new or substantially modified Oil and Gas Locations where ambient noise levels at noise points of compliance designated pursuant to Rule 423.a.(5) already exceed the noise thresholds identified in Table 423-1, then Operators will be considered in compliance with Rule 423, unless at any time their individual noise contribution, measured pursuant to Rule 423.c, increases noise above ambient levels by greater than 5 dBC and 5 dBA between 7:00 p.m. and 7:00 a.m. or 7 dBC and 7 dBA between 7:00 a.m. and 7:00 p.m. This Rule 423.d.(2) does not allow Operators to increase noise above the maximum cumulative noise thresholds specified in Table 423-2 after the Commencement of Production Operations.
- (3) After the Commencement of Production Operations, if ambient noise levels already exceed the maximum permissible noise thresholds identified in Table 423-1, under no circumstances will new Oil and Gas Operations or a significant modification to an existing Oil and Gas Operations raise cumulative ambient noise above:

Table 423-2 - Maximum Cumulative Noise Levels

LAND USE	7:00 am to next 7:00 pm	7:00 pm to next 7:00 am
Residential /Rural/State Parks/State Wildlife Areas	65 db(A)	60 db(A)
Commercial/Agricultural	70 db(A)	65 db(A)
Light Industrial	80 db(A)	75 db(A)
Industrial	90 db(A)	85 db(A)
All Zones	75 db(C)	70 db(C)

- e. If Oil and Gas Operations result in persistent noise that adversely impacts public welfare, the Director may require the Operator to take action pursuant to Rule 901.a.