AIR QUALITY MONITORING PLAN

LOCATION MCC 3-66 25-27
CITY OF AURORA, COLORADO

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Project Number: 091019001

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1.0 PURPOSE

The Air Quality Monitoring Plan is utilized by GMT Exploration Company LLC (GMT Exploration) to minimize degradation of air quality in compliance with local, state, and federal regulations for facilities within the jurisdiction of the City of Aurora (the City). This plan reduces the emissions of volatile organic compounds (VOCs), fugitive dust, and odors in compliance with state and federal standards.

2.0 AIR MODELING STUDY

GMT Exploration will participate and contribute financially it's proportionate share toward the development of an air dispersion model in accordance with the bond requirements indicated by the City.

3.0 MINIMIZATION OF EMISSIONS

3.1 EQUIPMENT SELECTION

3.1.1 Electrical Driven Equipment

Efforts shall be made to utilize electric equipment and electric line power for drilling rigs (not including surface rigs) and to operate production equipment where technically and economically feasible on electric power.

3.1.2 Internal Combustion

Tier 2 natural gas dual fuel hydraulic fracturing pumps shall be utilized. If Tier 4 natural gas dual fuel hydraulic fracturing pumps become technically and economically feasible, as well as commercially available, those pumps will be utilized.

3.1.3 Pneumatics

Pneumatic devices designed utilizing natural gas as the motive gas shall be limited to the use of no-bleed or intermittent-bleed pneumatic devices. Pneumatic devices may also be controlled by a closed vent system that routes gas back into piping. Pneumatic devices may be replaced with instrument- , air-, or electrically-driven devices.

3.1.4 Combustion Control Device

Combustion control devices must be enclosed, have no visible emissions, and have a design destruction efficiency of at least 98% for VOCs [Regulation 7, XII.C.1.d]. Control devices must be installed, calibrated, operated, and maintained in accordance with manufacturer's guidance. Combustion devices must be equipped with an auto-igniter and a surveillance device to detect the presence of flame when operating [Regulation 7, XII.C.1.e & f and XVII.B.2.b & d].

3.1.5 Capture Control Device

Vapor recovery control devices must be installed, calibrated, operated, and maintained in accordance with manufacturer's guidance.

3.2 WORK PRACTICES

3.2.1 Odor Provisions

GMT Exploration shall maintain compliance with odor standards pursuant to Colorado Oil and Gas Conservation Commission (COGCC) and Colorado Department of Public Health and Environment (CDPHE) regulations.

3.2.2 Well Maintenance Activities

Well maintenance activities shall route emission to a control device to reduce emissions [Regulation 7, XVII.H.1]. During liquids unloading events, any means of creating differential pressure must first be used to attempt to unload the liquids from the well without venting [Regulation 7, XVII.H.1]. The owner or operator must be present for planned events and must ensure minimization of venting [Regulation 7, XVII.H.1]. If venting of emissions is required, a notification shall be submitted as detailed in Section 9.1.1 of this plan.

3.2.3 Emergency/Accidental Venting

If emergency or accidental venting occurs a notification shall be submitted as detailed in Section 9.1.2 of this plan.

3.2.4 Exhaust Stacks

Exhaust stacks shall be vertical and, as feasible, positioned to minimize impact to the nearest residences.

3.2.5 Natural Gas STAR

GMT Exploration will participate in the Natural Gas STAR program. A representative of GMT will be appointed as the Natural Gas STAR Program Implementation Manager responsible for implementing the voluntary agreement with the United States Environmental Protection Agency (EPA). Annual reports of the best management practices (BMPs) will be provided to EPA as described in Section 9.2.1.

3.2.6 Open-Ended Piping and Valves

Open-ended piping and valves must be equipped with a cap, blind flange, plug, or secondary valve that seals the open end at all times except during operations requiring fluid flow through the open end. Open-ended lines and valves that are utilized for the purpose of emergency shutdown are exempt from this requirement [Regulation 7, XVII.B.3.a].

3.2.7 Covers and Hatches

Thief hatches must remain closed and latched when not in use. All other covers to atmospheric storage tanks shall be secured in a closed position.

3.2.8 Pressure Relief Devices

Pressure relief devices will be properly seated to prevent leakage.

3.2.9 Storage Tank Controls

Combustion control devices will be utilized to control emissions from tanks for the first 90 days and shall continue until uncontrolled VOC emissions from tanks are below 2 tons per year on a rolling 12-month basis [Regulation 7, XII.C.1.f.(iii), XII.D.1, XVII.G and Title 40 Code of Federal Regulation (CFR) 60.5395a(a)].

Emissions from the condensate tanks emitting greater than or equal to two tons per year of actual uncontrolled VOCs will be aggregated with other tanks within the ozone non-attainment area to ensure that the sum of uncontrolled actual emissions is controlled 90% of the time from May 1 to September 30 and 70% of the time for October 1 to April 30 [Regulation 7, XII.D.2 & 2.a.(x)]. Flare downtime, venting, and other situation where emissions are vented from the condensate tanks shall be considered in determining compliance.

4.0 LEAK DETECTION AND REPAIR

4.1 AUDIO, VISUAL, AND OLFACTORY

GMT Exploration will conduct monthly audio, visual, and olfactory (AVO) inspections on a monthly basis to detect leaks on lines and equipment in contact with VOC gas and liquid streams. Weekly AVO inspections are recommended to meet the requirement to inspect no more frequently than every 7 days but at least every 31 days [Regulation 7, XII.E.3.e and XVII.C.1.d]. Monitoring is not required for equipment that is unsafe, difficult, or inaccessible to monitor [Regulation 7, XVII.C.1.e].

AVO inspections shall include the following [Regulation 7, XVII.C.1.d]:

- Visual inspection of any thief hatch, pressure relief valve, or other access point to ensure that they are closed and properly sealed;
- Visual inspection or monitoring of the air pollution control equipment to ensure that it is operating, including that the pilot light is lit on combustion devices used as control devices;
- If a combustion device is used, visual inspection of the auto-igniter and valves for piping of gas to the pilot light to ensure they are functioning properly;
- Visual inspection of the air pollution control equipment to ensure that the valves for the piping from the storage tank to the air pollution control equipment are open; and

- If a combustion device is used, inspection of the device for the presence or absence of smoke. If smoke is observed, either the equipment must be immediately shut-in to investigate the potential cause for smoke and perform repairs, as necessary, or EPA Method 22 must be conducted to determine whether visible emissions are present for a period of at least 1 minute over 15 minutes of operation.

4.2 OPTICAL GAS IMAGING

GMT Exploration will develop, maintain, and follow a fugitive emission monitoring plan addressing leak detection and repair (LDAR) activities during the production phase. An optical gas imaging (OGI) camera will be utilized for the identification of leaks. Leak inspections shall be completed on the most stringent frequency as determined by regulatory applicability and estimated uncontrolled emissions as detailed below [Regulation 7, XVII.F.4.a]:

- Monthly when:
  - VOC emissions are greater than 50 tons per year (TPY);
- Quarterly when:
  - VOC emissions are greater than 12 TPY but less than or equal to 50 TPY;
- Semi-Annually when:
  - VOC emissions are less than or equal to 12 TPY, and
  - Facility is operating in the first five years of production and is connected to pipeline infrastructure.

Lesser frequencies for inspections are not included as they are less stringent than minimum federal requirements. Inspections shall continue semi-annually until the wells associated with the facility are plugged and abandoned.

The initial inspection is required no earlier than 15 days, and no later than 30 days, of commencing production operations [Regulation 7, XII.L.2.d]. At least once per calendar year the City will be notified of a planned inspection five business days prior in accordance with Section 9.1.4.

4.2.1 Leak Repair

When leaks are identified the leak will be repaired as soon as practicable with the first attempt of repair occurring within five days of discovery [Regulation 7, XVII.F.7.a]. Repairs must be made within 15 days of discovery unless a delay is attributable to a good cause. Repairs requiring shutdown may be delayed until the next scheduled shutdown but must be completed within two years of the initial discovery.

Monitoring of repairs is required within 15 days of the repair to verify successful repair [Regulation 7, XVII.F.7.a]. Monitoring may utilize an OGI camera, EPA Method 21, or the alternative screening procedure under EPA Method 21.

If repairs exceed five business days a notification must be submitted to the City as detailed in Section 9.1.3. Repairs exceeding 30 calendar days should be identified as being placed on delay and reported in annual federal reports as detailed under Section 9.2.5.2.

4.2.2 Lease Holding Requirements

In addition to the above requirement, OGI inspections will occur at the following frequencies until pipeline infrastructure is available and utilized:

- Monthly when:
  - Facility is not connected to pipeline infrastructure and in the first year of operation;
  - VOC emissions are greater than 50 TPY;
- Quarterly when:
  - Facility is not connected to pipeline infrastructure and in the second year of operation;
  - VOC emissions are greater than 12 but less than or equal to 50 TPY
- Semi-Annually when:
  - Facility is not connected to pipeline infrastructure and in the third or subsequent year of operation; and
  - VOC emissions are less than or equal to 12 TPY.

Inspections shall continue semi-annually until the wells associated with the facility are plugged and abandoned.

5.0 OZONE AIR QUALITY ACTION DAYS

GMT Exploration shall subscribe to Ozone Front Range list for CDPHE Air Quality Alerts. Notifications will be sent to the list recipients from June 1 to August 31.

During an ozone air quality action day, GMT Exploration will take measures to reduce emissions including:

- Minimization of vehicle and engine idling;
- Reduction of truck and worker traffic;
- Delay refueling activities; and
- Postpone construction activities as practicable.

Reporting in accordance with ozone air quality action days is detailed in Section 9.2.2.

6.0 EQUIPMENT MONITORING

6.1 STORAGE TANKS

Condensate storage tanks control devices shall be monitored at least weekly for proper operation [Regulation 7, XII.E]. Weekly monitoring shall include the following:

- For combustion devices:
  - Verification that pilot light is lit;
  - Verification that auto-igniter is functioning properly;
  - Verification that valves for piping gas to the pilot light is open;
  - Visual check for presence or absence of smoke;
- For vapor recovery units, a verification that unit is operating and vapors from the tank are routed to the unit;
- Verification that valves from the tank to the control device are open;
- For condensate storage tanks, a verification that thief hatches are closed and latched; and
- For control device surveillance systems, a verification that the system is functioning properly and collecting necessary information.

7.0 AIR MONITORING

7.1 POLLUTANTS OF CONCERN

GMT Exploration will conduct continuous and periodic air sampling for the detection of hydrocarbons.

7.2 BASELINE MONITORING

GMT Exploration will conduct hydrocarbon monitoring prior to construction to establish baselines for any continuous or periodic monitoring. The baseline shall be established from measurements and samples conducted during a minimum period of five continuous days.

The continuous monitoring baseline shall be established using monitors that can detect the presence of hydrocarbons. The baseline monitor should be the same make and model as the monitor used for continuous monitoring.

The periodic monitoring baseline shall be established by collection of air emission samples utilizing SUMMA canisters, Tedlar bags, or other approved collection containers. Air samples will be sent to a laboratory for speciation of hydrocarbons to include, but not limited to benzene, toluene, ethyl benzene and xylenes (BTEX) hydrocarbons using gas chromatography/mass spectrometry methods.

Data collected from baseline monitoring shall be maintained in accordance with Section 10.0.

7.3 CONTINUOUS MONITORING

Continuous monitors for petroleum hydrocarbons shall be established for monitoring during drilling and completion phases. Data collected from continuous monitors shall be maintained in accordance with Section 10.0.

7.3.1 Lease Holding Requirements

In addition to the above requirement, continuous monitoring shall continue during the production phase until pipeline infrastructure is available and utilized.

7.4 PERIODIC MONITORING

Periodic monitoring shall be conducted when continuous monitors indicate elevated levels of hydrocarbons. Periodic monitoring can be conducted by manual or automated use of SUMMA canisters, Tedlar bags, or other approved collection containers. Continuous monitors may be outfitted with the ability to automatically collect samples when collection thresholds are triggered. Collected samples will be sent to a laboratory for speciation of BTEX hydrocarbons.

8.0 OTHER REQUIREMENTS

8.1 MARKING AND SIGNS

Equipment required to file an Air Pollution Emissions Notice (APEN) will be marked with the Aerometric Information Retrieval System (AIRS) number assigned to the emission unit. [Regulation 7, XII.F.1]. Control devices shall display signage identifying the AIRS number for each emission unit being controlled.

8.2 FUGITIVE EMISSION MONITORING (FEM) PLAN

The facility will be incorporated into a FEM plan that covers the collection of fugitive emissions components [40 CFR 60.5397a(b)].

8.3 Storage Tank Emission Management (STEM) PLAN

The facility will be incorporated into a STEM plan within 90 days of commencement of operation. [Regulation 7, XVII.C].

9.0 NOTIFICATION AND REPORTING

9.1 NOTIFICATIONS

9.1.1 Well Maintenance Activities

For planned maintenance activities under Section 3.2.2 involving the intentional venting of gas, 48-hour advance written notice will be provided to the City. Notification shall include the following:

- Duration and nature of the venting event;
- Description of the necessity to vent emissions;
- Description of pollutants expected to be vented;
- Steps to be taken to limit the duration of venting; and
- Steps proposed to minimize similar events in the future.

9.1.2 Emergency Venting

Emergency venting or accidental venting of emissions as described under Section 3.2.3 shall be notified to the City within 24 hours of the occurrence of the event. Notifications shall include the following:

- Duration and nature of the venting event;
- Explanation on the cause of the event;
- Description of the necessity to vent emissions;
- Description of pollutants expected to be vented;
- Steps to be taken to limit the duration of venting; and
- Steps proposed to avoid similar events in the future.

9.1.3 LDAR Repairs Exceeding Five Days

Repair timeframes for leaks identified during an LDAR inspection which exceed five days shall be notified to the City. Notification shall include an explanation why additional time is needed to affect repairs.

9.1.4 Annual LDAR Notification

At least once per calendar year, GMT Exploration, will provide notification to the City five business days prior to an inspection with an OGI camera. Notification shall identify the location and the date the inspection will take place.

9.2 REPORTING

9.2.1 Natural Gas STAR Annual Report

GMT Exploration shall submit annual reports to EPA on an agreed upon schedule describing best management practices employed to reduce emissions.

9.2.2 Ozone Air Quality Action Reports

In accordance with Section 5.0, GMT Exploration shall submit an annual report detailing actions taken in response to ozone air quality action days no later than September 30 for the ozone season (May 1 to August 31).

9.2.3 Quarterly Reports

GMT Exploration will submit quarterly reports to the City certifying compliance with the requirements of this plan, report deviations, and indicate whether all equipment at facilities continues to operate within its design parameters.

Deviations, defined as periods of non-compliance with the requirements of this plan, shall be documented with the date and duration of the deviation. A compliance plan and schedule to achieve compliance is required if the deviation is ongoing.

Equipment that is not operating within its design parameters shall be identified with a corrective plan to return the equipment to operating within its design parameters.

The report shall be certified by a responsible official for truth, accuracy and completeness of the report.

9.2.4 Condensate Storage Tanks

Reporting for condensate storage tanks shall be submitted semi-annually by April 30 and November 30 of each year using CDPHE Air Pollution Control Division (Division) approved format describing the air pollution control equipment used during the preceding calendar year under Condensate Storage Tank System-Wide Reporting at https://www.colorado.gov/pacific/cdphe/air/oil-and-gas-compliance [Regulation 7, XVII.F.4].

9.2.5 Leak Detection and Repair

9.2.5.1 State Report

The owner or operator of each facility subject to the leak detection and repair requirements must submit a single annual report on or before May 31st of each year that includes, at a minimum, the following information regarding leak detection and repair activities at their subject facilities conducted the previous calendar year [Regulation 7, XVII.F.4]:

- Total number of well production facilities inspected;
- Total number of inspections performed per inspection frequency tier of well production facilities;
- Total number of identified leaks broken out by component type, monitoring method, and inspection frequency tier;
- Total number of leaks repaired for each inspection frequency tier;

- Total number of leaks on the delayed repair list as of December 31st broken out by component type, inspection frequency tier, and the basis for each delay of repair;
- Record of all reviews conducted for delayed repairs due to unavailable parts extending beyond 30 days for the previous calendar year; and
- Certification by a responsible official that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

The owner or operator of each facility subject to the leak detection and repair requirements must submit a single annual report on or before May 31st of each year that includes, at a minimum, the following information regarding leak detection and repair activities at their subject facilities conducted the previous calendar year [Regulation 7, XVII.F.4].

9.2.5.2 Federal Report

The owner or operator of each facility subject New Source Performance Standards (NSPS) Subpart OOOOa shall submit an annual report to US EPA Region 8 on or before March of each year that includes [40 CFR 60.5420a(b)]:

- Date of the survey;
- Beginning and end time of the survey;
- Name of operator(s) performing survey. If the survey is performed by optical gas imaging, you must note the training and experience of the operator;
- Ambient temperature, sky conditions, and maximum wind speed at the time of the survey;
- Monitoring instrument used;
- Any deviations from the monitoring plan or a statement that there were no deviations from the monitoring plan;
- Number and type of components for which fugitive emissions were detected;
- Number and type of fugitive emissions components that were not repaired as required;
- Number and type of difficult-to-monitor and unsafe-to-monitor fugitive emission components monitored;
- The date of successful repair of the fugitive emissions component;
- Number and type of fugitive emission components placed on delay of repair and explanation for each delay of repair; and
- Type of instrument used to resurvey a repaired fugitive emissions component that could not be repaired during the initial fugitive emissions finding.

9.2.6 Responsible Official Definition

Responsible official means one of the following:

- For a corporation: a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:
  - the facilities employ more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars); or
  - the delegation of authority to such representative is approved in advance by the permitting authority;
- For a partnership or sole proprietorship: a general partner or the proprietor, respectively.

9.2.7 CDPHE Reports

Reports of non-compliance reported to the CDPHE shall be copied to the City in addition to the above reports.

10.0 RECORDKEEPING

Records must be maintained on site or at a local field office or the local corporate office for a minimum period of two years from the creation of the record.

10.1 CONDENSATE TANKS

Inspections of condensate tanks shall be maintained for a period of five years. Records shall document the time and date of each inspection, the person conducting the inspection, a notation that each of the checks were completed, description of any problems observed during the inspection, description and date of any corrective actions taken, and name of individual performing corrective actions [Regulation 7, XII.E]. Additionally, the owner or operator shall, at all times, track the emissions, specifically VOC emissions reductions on a calendar weekly and calendar monthly basis to demonstrate compliance with the applicable emission reduction requirements of Regulation 7, XII.D.2. This shall be done by maintaining a Division approved spreadsheet of information describing the affected operations, the air pollution control equipment being used, and the emission reductions achieved. [Regulation 7, XII.F.3].

10.2 LEAK DETECTION AND REPAIR

LDAR records of OGI inspections must be maintained for a period of five years under Federal requirements [40 CFR 60.5420a(c)]. LDAR records of OGI and AVO inspection must be maintained for a period of two years under state requirements [Regulation 7, XII.L.6].