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AIR QUALITY MONITORING PLAN

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

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Prepared for:

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TABLE OF CONTENTS

1.0 PURPOSE	1
2.0 AIR MODELING STUDY	1
3.0 MINIMIZATION OF EMISSIONS	1
3.1 EQUIPMENT SELECTION	1
3.1.1 Electrical Driven Equipment	1
3.1.2 Internal Combustion.....	1
3.1.3 Pneumatics	1
3.1.4 Combustion Control Device	2
3.1.5 Glycol Dehydration.....	2
3.1.6 Capture Control Device	2
3.2 WORK PRACTICES.....	2
3.2.1 Odor Provisions	2
3.2.2 Well Maintenance Activities	2
3.2.3 Emergency/Accidental Venting.....	2
3.2.4 Exhaust Stacks	2
3.2.5 Natural Gas STAR.....	3
3.2.6 Open-Ended Piping and Valves	3
3.2.7 Covers and Hatches.....	3
3.2.8 Pressure Relief Devices	3
3.2.9 Storage Tank Controls	3
4.0 LEAK DETECTION AND REPAIR	3
4.1 AUDIO, VISUAL, AND OLFACTORY	3
4.2 OPTICAL GAS IMAGING	4
4.2.1 Leak Repair	5
4.2.2 Lease Holding Requirements.....	5
5.0 OZONE AIR QUALITY ACTION DAYS	6
6.0 EQUIPMENT MONITORING	6
6.1 STORAGE TANKS.....	6
7.0 AIR MONITORING	7
7.1 POLLUTANTS OF CONCERN	7
7.2 BASELINE MONITORING.....	7
7.3 CONTINUOUS MONITORING.....	7
7.3.1 Lease Holding Requirements.....	8
7.4 PERIODIC MONITORING	8

TABLE OF CONTENTS

7.4.1	Alert Levels	8
7.4.2	Location of Monitors	8
7.4.3	Transmission of data	8
7.4.4	Frequency	9
7.4.5	QA/QC	9
8.0	OTHER REQUIREMENTS	9
8.1	MARKING AND SIGNS	9
8.2	FUGITIVE EMISSION MONITORING (FEM) PLAN	9
8.3	STORAGE TANK EMISSION MANAGMENT (STEM) PLAN	9
9.0	NOTIFICATION AND REPORTING	9
9.1	NOTIFICATIONS	9
9.1.1	Well Maintenance Activities	10
9.1.2	Emergency Venting	10
9.1.3	LDAR Repairs Exceeding Five Days	10
9.1.4	Annual LDAR Notification	10
9.2	REPORTING	10
9.2.1	Natural Gas STAR Annual Report	10
9.2.2	Ozone Air Quality Action Reports	11
9.2.3	Quarterly Reports	11
9.2.4	Trend Evaluation	11
9.2.5	Condensate Storage Tanks	12
9.2.6	Leak Detection and Repair	12
9.2.7	Responsible Official Definition	13
9.2.8	CDPHE Reports	14
10.0	RECORDKEEPING	14
10.1	CONDENSATE TANKS	14
10.2	LEAK DETECTION AND REPAIR	14
11.0	REGULATORY	14
11.1	FEDERAL REGULATORY	15
11.1.1	New Source Performance Standards (NSPS)	15
11.1.2	National Emissions Standards for Hazardous Air Pollutants (NESHAPs)	16
11.1.3	Mandatory Reporting for Greenhouse Gas	16
11.1.4	Major Source Permitting	16
11.2	STATE REGULATORY	17

TABLE OF CONTENTS

11.2.1 Common Provisions Regulation	17
11.2.2 Regulation 1	17
11.2.3 Regulation 2	17
11.2.4 Regulation 3	17
11.2.5 Regulation 7	17

FIGURE 1 AIR QUALITY MONITORING STATION LOCATIONS

TABLE 1 ACUTE HEALTH GUIDANCE VALUES

TABLE 2 CHRONIC HEALTH GUIDANCE VALUES

APPENDIX A SITE LAYOUTS WITH AIR MONITORING LOCATIONS

TABLE OF ABBREVIATIONS

Abbreviation	Definition	Abbreviation	Definition
%	percent	LDAR	leak detection and repair
AIRS	aerometric Information Retrieval System	m ³	cubic meter
APEN	air pollution emission notice	MM	million
AMCV	Air Monitoring Comparison Values	MRL	Minimum Risk Level
ATSDR	United States Agency for Toxic Substance and Disease Registry	NESHAP	National Emission Standards for Hazardous Air Pollutants
AVO	audio, visual, and olfactory	NO _x	nitrogen oxides
BTEX	benzene, toluene, ethylbenzene and xylene	NSPS	New Source Performance Standards
Btu	British thermal unit	OGI	optical gas imaging
CAA	Clean Air Act	ppm	parts per million
CDPHE	Colorado Department of Public Health and Environment	PPRTVs	Peer-Reviewed Toxicity Values
City	City of Aurora, Colorado	REL	Reference exposure level
CFR	Code of Federal Regulations	RFC	Reference Concentration
CO ₂	Carbon Dioxide	STEM	storage tank emission management
COGCC	Colorado Oil and Gas Conservation Commission	TEG	triethylene glycol
EPA	Environmental Protection Agency	tpy	tons per year
g	gram	VOC(s)	volatile organic compound(s)
FEM	fugitive emissions monitoring	VOL	Volatile organic liquid
HAP	hazardous air pollutant		
HGV	health guidance value		
hp	horsepower		
hr	hour		
IRIS	Integrated Risk Information System		
kPa	kilopascals		

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 its 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

Minimization of emissions will be conducted to comply with Federal Environmental Protection Agency (EPA) and Colorado Department of Public Health (CDPHE) requirements and regulatory standards in accordance with the Clean Air Act (CAA). Minimization of emissions will consider currently enforceable and future requirements and regulatory standards.

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 at a minimum until higher tier non-road engines are feasible. 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 to reduce emissions of Nitrogen Oxides (NOx) and Particulate Matter (PM).

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 percent (%) 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 Glycol Dehydration

Glycol dehydration must be controlled to reduce emissions of VOC to include benzene. Operating parameters to include wet gas temperature and pressure, glycol recirculation rate, and control devices parameters will be monitored to have a design efficiency of at least 95%.

3.1.6 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 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 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 2 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. Approved equipment for OGI inspections include the FLIR GF320 and the FLIR GF320X. 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]. Upon commencement of production operations of future

wells by GMT Exploration or by other operators which potentially affect the emissions profile for the facility a new initial inspection will be required no earlier than 15 days and no later than 30 days from initiation. The LDAR program will continue for all wells at the site regardless of well ownership at the location.

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 continuing air sampling for the detection of hydrocarbon compounds and methane and periodic sampling using EPA Method TO-15 to include benzene, toluene, ethylbenzene and xylene (BTEX) compounds and methane.

7.2 BASELINE MONITORING

GMT Exploration will conduct hydrocarbon monitoring prior to construction to establish baselines for any continuous or periodic monitoring. The baseline monitoring event will include one air monitoring device at each pad location and additional monitors will be located in the vicinity of each pad location. The baseline shall be established from measurements and samples conducted during a minimum period of five continuous days prior to construction. A meteorological monitoring station will also be situated at the pad location and collect data at regular intervals of 15 minutes.

The continuous monitoring baseline shall be established using monitors that can detect the presence of hydrocarbons which will obtain a reading at 15-minute intervals. The baseline monitor will be the same make and model as the monitor used for continuous monitoring. All air monitoring readings and meteorological data will be accessible through a web-based portal in real time.

The baseline monitoring event will include collection of air emission samples utilizing whole air evacuated canisters, whole air sample bags, or other approved collection containers. Air samples will be collected over 24- hours and sent to a laboratory for speciation of hydrocarbons to include, benzene, toluene, ethyl benzene and xylenes (BTEX) using gas chromatography/mass spectrometry methods. Air samples will be delivered to an analytical laboratory to be analyzed by the United States Environmental Protection Agency (EPA) Method TO-15 modified for detection of BTEX and methane.

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 for both the initial development and full development phases. Data collected from continuous monitors shall be maintained in accordance with Section 10.0. Continuous monitoring shall meet a frequency of one cycle of detection for each successive 15-minute period. Monitors and data acquisition will be the AirWatch system provided by LT Environmental, Inc., (303 433 9788) or equivalent.

On site leak detectors calibrated for methane detection will be in use during all drilling and well completion activities. In addition to fixed air monitors, monitoring will be conducted for safety using personal air monitoring devices. These sensors will have alarm settings at 1 percent methane in air.

7.3.1 Lease Holding Requirements

In addition to the above requirement, continuous hydrocarbon and methane 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 whole air evacuated canisters, whole air sample bags, or other approved collection containers. Continuous monitors may be outfitted with the ability to automatically collect grab samples when collection thresholds are triggered. Collected samples will be sent to a laboratory for speciation of hydrocarbons and methane. One initial sample during each phase (drilling and completion) will be analyzed for the full list of compounds provided on Table 1 and Table 2. Subsequent samples will be analyzed for BTEX. The samples will be submitted for analyses to Pace Analytical Laboratory (303 522 9706).

7.4.1 Alert Levels

Based on other observations made at similar facilities, it has been identified that 1 part per million (ppm) detection above background on the hydrocarbon sensor will be used as the initial threshold value for obtaining an alert and for initial air sample collection. Alert levels may be amended based on baseline and continuous monitoring results. Alerts can be in the form of electronic mail alerts or can trigger automated whole air grab samples.

7.4.2 Location of Monitors

Three air monitoring/leak detection sensors will be placed generally near each primary corner of the pad. The preliminary location for three sensors on the pads is indicated as Item 5 on the Initial Development Site Layout and Full Development Site Layout included under Appendix A.

Four hydrocarbon monitors will be located generally in the four cardinal directions, at the preliminary locations indicated on Figure 1. A sensor will be placed between equipment and the nearest occupied residence. These monitoring devices will include the ability to capture grab samples for laboratory analysis. Depending on active development activities these locations may be adjusted. Additional sensors may be added based on initial readings, wind direction and speed measurements, and location of nearby sensitive receptors.

7.4.3 Transmission of data

Data summaries will be provided in quarterly reporting. Access can be obtained through operator for real time data through the web-based interface. Data will be stored on a secure database.

7.4.4 Frequency

Continuous monitoring shall meet a frequency of one cycle of detection for each successive 15-minute period.

In the event the hydrocarbon monitors do not register an elevated reading, during initial drilling operations one sample for laboratory analysis will be collected weekly. During well completion activities, one sample will be collected for laboratory analysis every two weeks. These samples will be collected over a 24-hour period using whole air evacuated canisters.

7.4.5 QA/QC

Daily verification of sensors on regular business days will be conducted via remote connection to verify operation and recording of data.

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

Notifications will be made to the City representative, Steve Rodriguez at srodigu@auroragov.org, or equivalent. A copy of notification must be maintained as described in Section 10.0 Recordkeeping.

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

Copies of annual reports submitted to EPA or CDPHE will be provided to the City representative, Steve Rodriquez at srodigu@auroragov.org, or equivalent.

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. The quarterly reports will be submitted to City representative, Steve Rodriguez at srodigu@auroragov.org, or equivalent.

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 Trend Evaluation

To evaluate if there are any health concerns, the monitoring results will be compared to health-based guidelines based on CDPHE guidance, *Exposures and Health Risks from Volatile Organic Compounds in Communities Located near Oil and Gas Exploration and Production Activities in Colorado* published by the Colorado Department of Public Health and Environment (CDPHE) on July 16, 2018.

CDPHE developed health-based guidelines for their study utilizing the following established community exposure standards:

- The EPA Integrated Risk Information System (IRIS) Reference Concentration (RfC): An RfC is an estimate of a continuous inhalation exposure to the human population above which it is likely to have an appreciable risk of deleterious effects during a lifetime.
- Center for Disease Control – United States Agency for Toxic Substances and Disease Registry (ATSDR) Minimum Risk Levels (MRL): A MRL is a health-based value developed to protect the health of the general population. A MRL is an estimate of the amount of a chemical a person can breathe each day without a detectable risk to health.
- EPA Peer-Reviewed Toxicity Values (PPRTVs): PPRTVs are derived after a review of the relevant scientific literature to develop equivalents of inhalation RfCs.
- California EPA Reference Exposure Levels (RELs): An REL is a concentration of a chemical at, or below, which adverse non-cancerous health effects are not anticipated to occur. They are derived by a review of animal or epidemiological studies.

- Texas Commission on Environmental Quality Air Monitoring Comparison Values (AMCVs): An AMCV is a collective term used to describe chemical-specific air concentrations used to evaluate air monitoring data that are set to protect human health and welfare. Short-term, AMCVs are based on data concerning acute health effects, odor potential, and acute vegetation effects, while long-term AMCVs are based on data concerning chronic health or vegetation effects.

Using the CDPHE guidelines developed using ATSDR values, samples will be collected for the chemical having the lowest risk value, benzene and the compounds commonly associated with benzene, toluene, ethyl benzene and xylenes. The results from each sample collected will be evaluated against the appropriate health-based guidelines listed in Table 1 and Table 2 per CDPHE guidance for each BTEX compound to determine the potential for exposure to the public. The evaluation will be included in the quarterly reports provided to the City.

The reports will include trend identification related to increases/decreases/spikes in concentrations or emissions, and pollutant data that is tied to health-based criteria for exposure limits and exceedances of CDPHE and ATSDR acute or chronic exposure levels.

9.2.5 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].

9.2.6 Leak Detection and Repair

9.2.6.1 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].

9.2.6.2 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.

9.2.7 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.

9.2.8 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].

11.0 REGULATORY

Compliance with EPA and CDPHE regulations are described below.

11.1 FEDERAL REGULATORY

11.1.1 New Source Performance Standards (NSPS)

11.1.1.1 40 CFR, Part 60 - NSPS Subpart A

The General Provisions apply to any facility where another subpart applies, except where specifically excluded by the other applicable subpart. As discussed below, this facility is subject to NSPS; therefore, the requirements of Subpart A may apply.

11.1.1.2 40 CFR, Part 60 - NSPS Subpart Dc

The heaters are rated less than the 10-million British thermal units per hour (MMBtu/hr) applicability threshold. No sources are subject to the requirements of 40 CFR Part 60 Subpart Dc.

11.1.1.3 40 CFR, Part 60 - NSPS Subpart Kb

The affected facility to which this subpart applies is any storage tank with a capacity greater than or equal to 75 cubic meters (m³) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984. This subpart does not apply to storage vessels with a capacity greater than or equal to 151 cubic meters storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals (kPa) or with a capacity greater than or equal to 75 m³ but less than 151 m³ storing a liquid with a maximum true vapor pressure less than 15.0 kPa. This subpart also does not apply to tanks with a design capacity less than or equal to 1,589.874 m³ used for petroleum or condensate stored, processed, or treated prior to custody transfer. Sources may be potentially subject based on size and vapor pressure of products stored.

11.1.1.4 40 CFR, Part 60 - NSPS Subpart IIII

Standards of Performance for Stationary Compression Ignition Combustion Engines Subpart IIII applies to diesel-fired compression ignition internal combustion engines that commenced construction after July 11, 2005 with a manufacture date of April 1, 2006 that are not fire pumps engines. Sources may be potentially subject based on date of manufacture and commence construction date.

11.1.1.5 40 CFR, Part 60 - NSPS Subpart JJJJ

Standards of Performance for Stationary Spark Ignition Combustion Engines Subpart JJJJ applies to natural gas-fired spark ignition internal combustion engines with a maximum horsepower (hp) rating greater than 500 hp and manufactured after July 1, 2007, and to engines with a maximum horsepower rating less than 500 hp and manufactured on or after July 1, 2008. Sources may be potentially subject based on date of manufacture and maximum horsepower rating.

11.1.1.6 40 CFR, Part 60 - NSPS Subpart OOOOa

NSPS Subpart OOOOa applies to affected facilities that commence construction, modification, or reconstruction after September 18, 2015. The affected equipment includes well completions, storage tanks, pneumatic controllers and pumps, and leaks.

11.1.2 National Emissions Standards for Hazardous Air Pollutants (NESHAPs)

The facility is an area source of Hazardous Air Pollutant (HAP) emissions, because the emissions of any individual HAP will be less than 10 tpy and total facility HAP emissions will be less than 25 tpy.

11.1.2.1 40 CFR, Part 63 - Subpart A

The General Provisions apply to any facility where another subpart applies, except where specifically excluded by the other applicable subpart.

11.1.2.2 40 CFR, Part 63 - Subpart HH

The NESHAP for Oil and Natural Gas Production Facilities applies to major sources of HAPs for all oil and natural gas production operations and area HAP sources where a triethylene glycol (TEG) dehydration unit is installed. This subpart applies to the facility as the TEG dehydrator is classified as an area source. Sources may be applicable based on annual throughput and benzene emissions.

11.1.2.3 40 CFR, Part 63 - Subpart ZZZZ

The NESHAP for Stationary Reciprocating Internal Combustion Engines Subpart ZZZZ applies to existing, new, and reconstructed reciprocating internal combustion engines (RICE) greater than 500 hp at major sources of HAPs, new or reconstructed engines less than 500 hp at major sources of HAP emissions, and new or reconstructed engines at area sources of HAP emissions. Sources may be applicable based on site-rated horsepower, stoichiometric ratio of spark ignited engines, type of internal combustion, whether the source is considered major for HAPs, and the commenced construction date.

11.1.3 Mandatory Reporting for Greenhouse Gas

Facilities must report emissions from the onshore petroleum and natural gas production industry segment within a basin only if emission sources specified in paragraph §98.232(c) emit 25,000 metric tons of carbon dioxide (CO₂) equivalent or more per year.

11.1.4 Major Source Permitting

The source is currently an area source but if it becomes a major source upon startup of sources an application for a Title V Operating Permit will be submitted to the CDPHE to satisfy requirements of Part 70.

11.2 STATE REGULATORY

11.2.1 Common Provisions Regulation

Emission control regulations adopted by the Air Quality Control Commission apply throughout Colorado unless otherwise stipulated. The Statement of Intent, Definitions, and General Provisions of this regulation apply to all emission control regulations adopted by the Commission unless otherwise stipulated.

11.2.2 Regulation 1

The provisions of this Regulation No. 1 are applicable to both new and existing sources and without regard to whether a source has been issued an emission permit.

11.2.3 Regulation 2

Emission of odorous air contaminants from any single source such as to result in detectable odors which are measured if detected after dilution with 15 or more volumes of odor free air shall be prohibited.

11.2.4 Regulation 3

Owners or operators of well production facilities for which commencement of operation occurs after January 1, 2020, must file Air Pollutant Emissions Notice(s) for all emission sources with reportable emissions no later than ninety (90) days following the commencement of operation, using the current Air Pollution Emission Notice forms. After initial construction a Construction Permit must be obtained to construct a new source or modify an existing source.

11.2.5 Regulation 7

Owners or operators of oil and gas emission sources shall be subject to the provision of this regulation. Well production facilities will be subject to the provision under Parts A and D of the regulation.

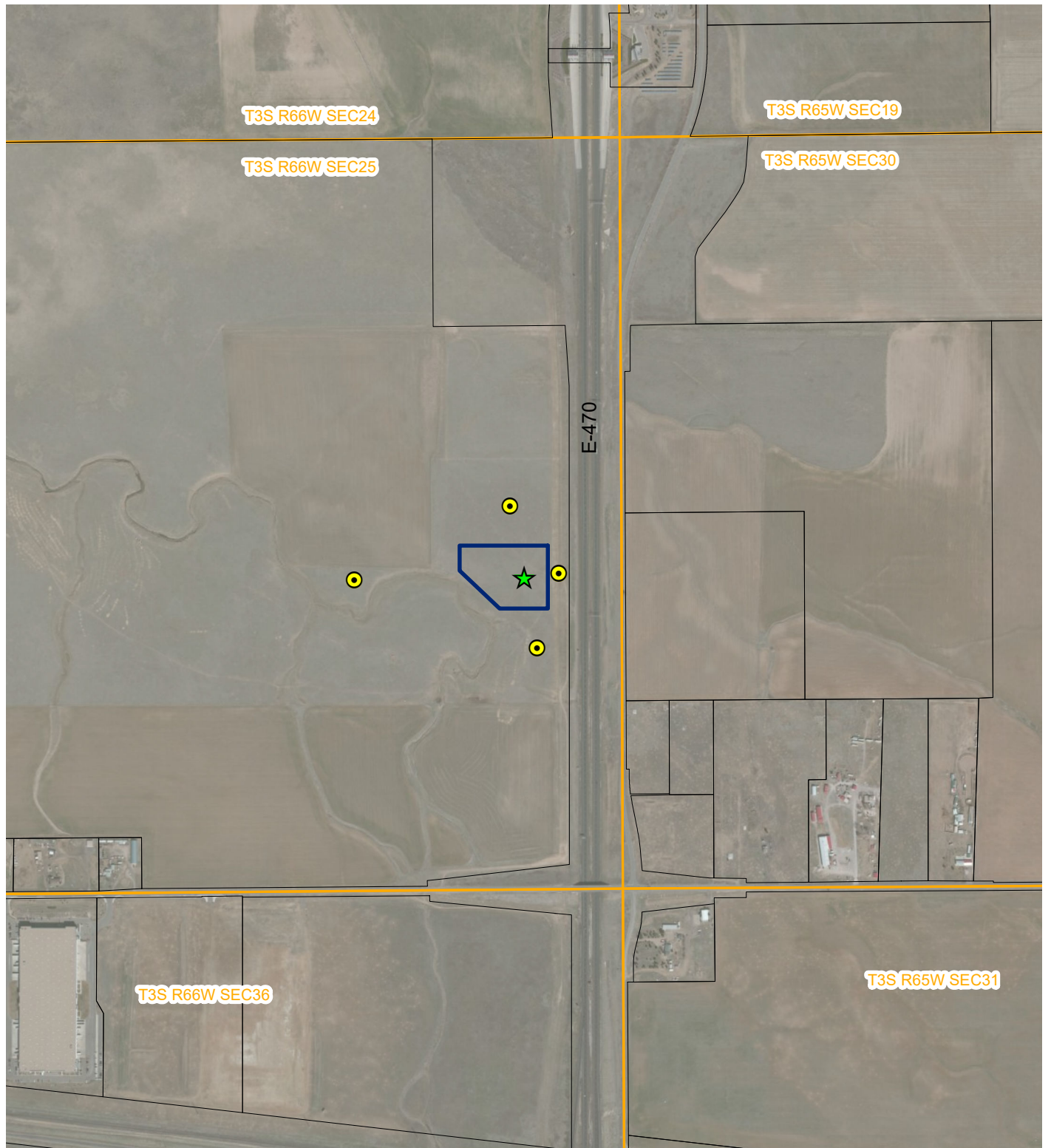







IMAGE COURTESY OF ESRI

LEGEND

-  PROPOSED AIR QUALITY MONITORING LOCATION
-  MAJESTIC PAD
-  APPROXIMATE PAD OUTLINE
-  PARCEL BOUNDARY
-  SECTION

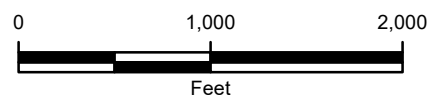


FIGURE 1
AIR QUALITY MONITORING
STATION LOCATIONS
MCC 3-66 25-27
AURORA, COLORADO
GMT EXPLORATION COMPANY, INC.



TABLE 1
ACUTE HEALTH GUIDANCE VALUES
BASELINE, CONSTRUCTION, PRODUCTION DRILLING, AND COMPLETIONS

Substance	Acute HGV
1,2,3-Trimethylbenzene	3.0
1,2,4-Trimethylbenzene	3.0
1,3,5-Trimethylbenzene	3.0
1-Butene	27
1-Pentene	12
2,2,4-Trimethylpentane	4.1
2,3,4-Trimethylpentane	4.1
2,3-Dimethylpentane	8.2
2,4-Dimethylpentane	8.2
2-Methylheptane	4.1
2-Methylhexane	8.2
2-Methylpentane	1.6
3-Methylheptane	4.1
3-Methylhexane	8.2
3-Methylpentane	1.6
Benzene	0.009
Butene	15.00
Butene	15.00
Cyclohexane	1.0
Cyclopentane	5.9
Ethane	NA
Ethylbenzene	20
Ethylene	25
Isobutane	33
Isopentane	8.1
Isoprene	0.048
Isopropylbenzene	0.51
Methanol	270
Methylcyclohexane	4.0
Methylcyclopentane	0.75
m-Ethyltoluene	0.25
m/p-Xylene	1.7
n-Butane	92
n-Decane	1.75
n-Heptane	8.2
n-Hexane	1.6
n-Nonane	3.0
n-Octane	4.1
n-Pentane	68

TABLE 1
ACUTE HEALTH GUIDANCE VALUES
BASELINE, CONSTRUCTION, PRODUCTION DRILLING, AND COMPLETIONS

Substance	Acute HGV
n-Propylbenzene	0.51
n-Undecane	0.55
o-Ethyltoluene	0.25
o-Xylene	1.7
Pentene	12
Pentene	12
p-Ethyltoluene	0.25
Propane	NA
Propylene	NL
Styrene	0.5
Toluene	2.0

HGV - Health Guidance Values

NA - Not Applicable

NL - Not Located in Literature

All Values are reported in parts per million

TABLE 2
CHRONIC HEALTH GUIDANCE VALUES
PRODUCTION FACILITIES

Substance	Chronic HGV
1,2,3-Trimethylbenzene	0.012
1,2,4-Trimethylbenzene	0.012
1,3,5-Trimethylbenzene	0.012
1-Butene	2.3
1-Pentene	0.56
2,2,4-Trimethylpentane	0.124
2,3,4-Trimethylpentane	0.124
2,3-Dimethylpentane	2.2
2,4-Dimethylpentane	2.2
2-Methylheptane	0.39
2-Methylhexane	2.20
2-Methylpentane	0.057
3-Methylheptane	0.39
3-Methylhexane	2.2
3-Methylpentane	0.057
Benzene	0.009
Butene	0.69
Butene	0.69
Cyclohexane	1.744
Cyclopentane	0.12
Ethane	NA
Ethylbenzene	0.23
Ethylene	2.5
Isobutane	10
Isopentane	8.0
Isoprene	0.042
Isopropylbenzene	0.081
Methanol	15.3
Methylcyclohexane	0.40
Methylcyclopentane	0.075
m-Ethyltoluene	0.025
m/p-Xylene	0.023
n-Butane	10
n-Decane	0.175
n-Heptane	2.2
n-Hexane	0.199
n-Nonane	0.0038
n-Octane	0.124
n-Pentane	8.0

TABLE 2
CHRONIC HEALTH GUIDANCE VALUES
PRODUCTION FACILITIES

Substance	Chronic HGV
n-Propylbenzene	0.051
n-Undecane	0.055
o-Ethyltoluene	0.025
o-Xylene	0.023
Pentene	0.56
Pentene	0.56
p-Ethyltoluene	0.025
Propane	NA
Propylene	1.744
Styrene	0.235
Toluene	1.328

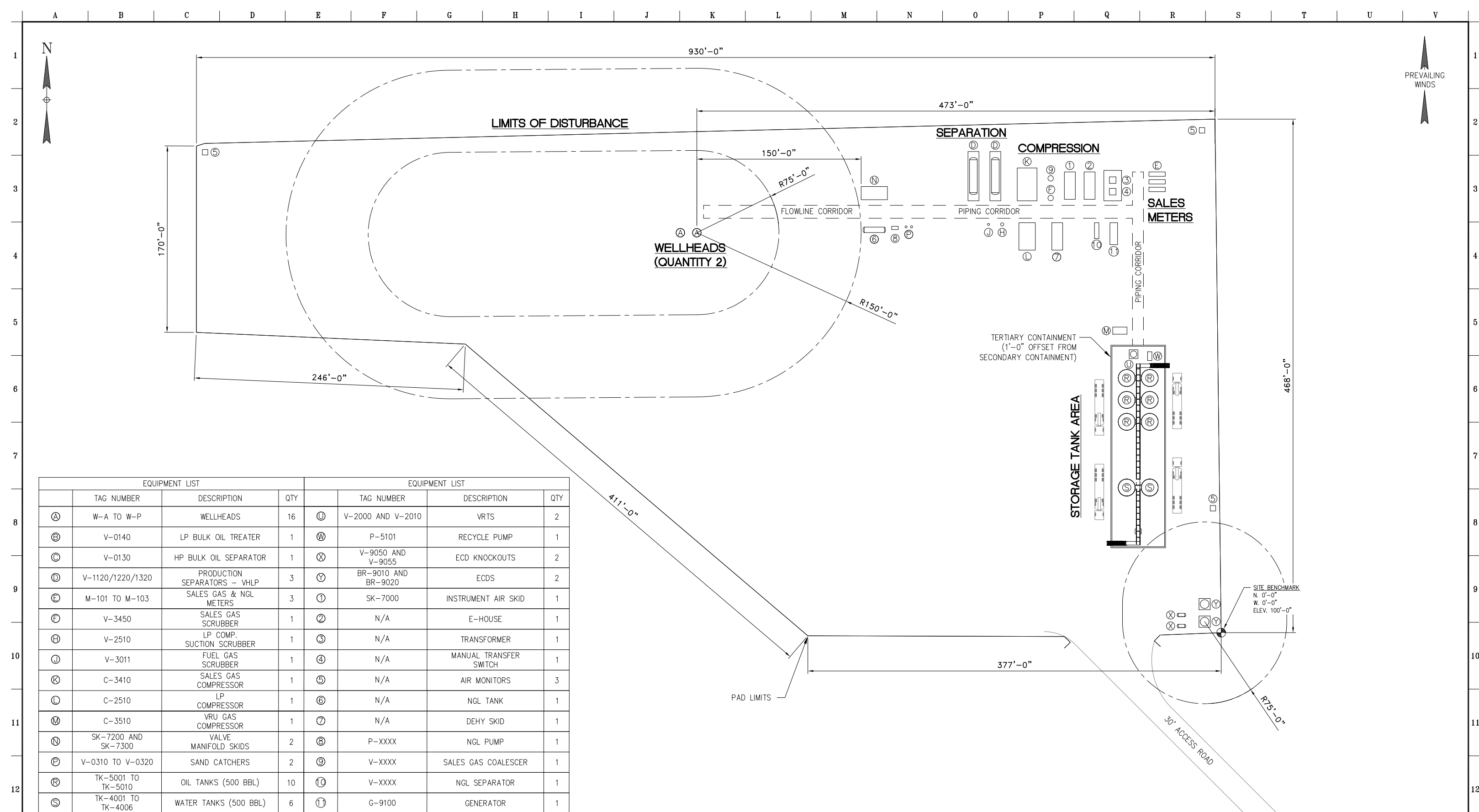
HGV - Health Guidance Values

NA - Not Applicable

NL - Not Located in Literature

All Values are reported in parts per million






EQUIPMENT LIST				EQUIPMENT LIST			
	TAG NUMBER	DESCRIPTION	QTY		TAG NUMBER	DESCRIPTION	QTY
Ⓐ	W-A TO W-P	WELLHEADS	16	Ⓐ	V-2000 AND V-2010	VRTS	2
Ⓑ	V-0140	LP BULK OIL TREATER	1	Ⓑ	P-5101	RECYCLE PUMP	1
Ⓒ	V-0130	HP BULK OIL SEPARATOR	1	Ⓒ	V-9050 AND V-9055	ECD KNOCKOUTS	2
Ⓓ	V-1120/1220/1320	PRODUCTION SEPARATORS – VHLP	3	Ⓓ	BR-9010 AND BR-9020	ECDS	2
Ⓔ	M-101 TO M-103	SALES GAS & NGL METERS	3	①	SK-7000	INSTRUMENT AIR SKID	1
Ⓕ	V-3450	SALES GAS SCRUBBER	1	②	N/A	E-HOUSE	1
Ⓖ	V-2510	LP COMP. SUCTION SCRUBBER	1	③	N/A	TRANSFORMER	1
Ⓙ	V-3011	FUEL GAS SCRUBBER	1	④	N/A	MANUAL TRANSFER SWITCH	1
Ⓚ	C-3410	SALES GAS COMPRESSOR	1	⑤	N/A	AIR MONITORS	3
Ⓛ	C-2510	LP COMPRESSOR	1	⑥	N/A	NGL TANK	1
Ⓜ	C-3510	VRU GAS COMPRESSOR	1	⑦	N/A	DEHY SKID	1
Ⓝ	SK-7200 AND SK-7300	VALVE MANIFOLD SKIDS	2	⑧	P-XXXX	NGL PUMP	1
Ⓟ	V-0310 TO V-0320	SAND CATCHERS	2	⑨	V-XXXX	SALES GAS COALESCER	1
Ⓡ	TK-5001 TO TK-5010	OIL TANKS (500 BBL)	10	⑩	V-XXXX	NGL SEPARATOR	1
Ⓢ	TK-4001 TO TK-4006	WATER TANKS (500 BBL)	6	⑪	G-9100	GENERATOR	1

NOTE:

REFERENCE DRAWINGS	
NO.	TITLE



SUMMIT
ENGINEERING SERVICES

400 Inverness Parkway, #200
Englewood, CO 80112
303.768.9191 Office
303.768.9292 Fax

REVISIONS						ENGINEERING RECORD	
NO.	DATE	DESCRIPTION	BY	CHK.	APP.	BY	DATE
Q	02/14/20	ISSUED FOR PERMITTING	MJB	JAE	JKK	DRN: MSH	01/17/18
P	11/20/19	ISSUED FOR PERMITTING	EAC	KMA	JKK	CHK: MRG	01/17/18
N	10/09/19	ISSUED FOR PERMITTING	EAC	KMA	JKK	APP: LLL	01/17/18
M	09/26/19	ISSUED FOR PERMITTING	NAS	KAP	KAP	AFE No.	
L	06/11/19	ISSUED FOR REVIEW	EAC	KAP	KAP	SESI JOB NO.	8365
K	05/23/19	ISSUED FOR REVIEW	EAC	KAP	KAP	PROJ. ENGR:	
J	05/23/19	ISSUED FOR REVIEW	EAC	KAP	KAP	SCALE: 1" = 40'-0"	

 GMT Exploration Company LLC	
<p align="center"> GMT EXPLORATION COMPANY LLC MAJESTIC – 16 WELL PAD NORTH WELL AND FACILITY PAD INITIAL DEVELOPMENT SITE LAYOUT </p>	
DWG. NO.	8365-01-6100
	REV Q

